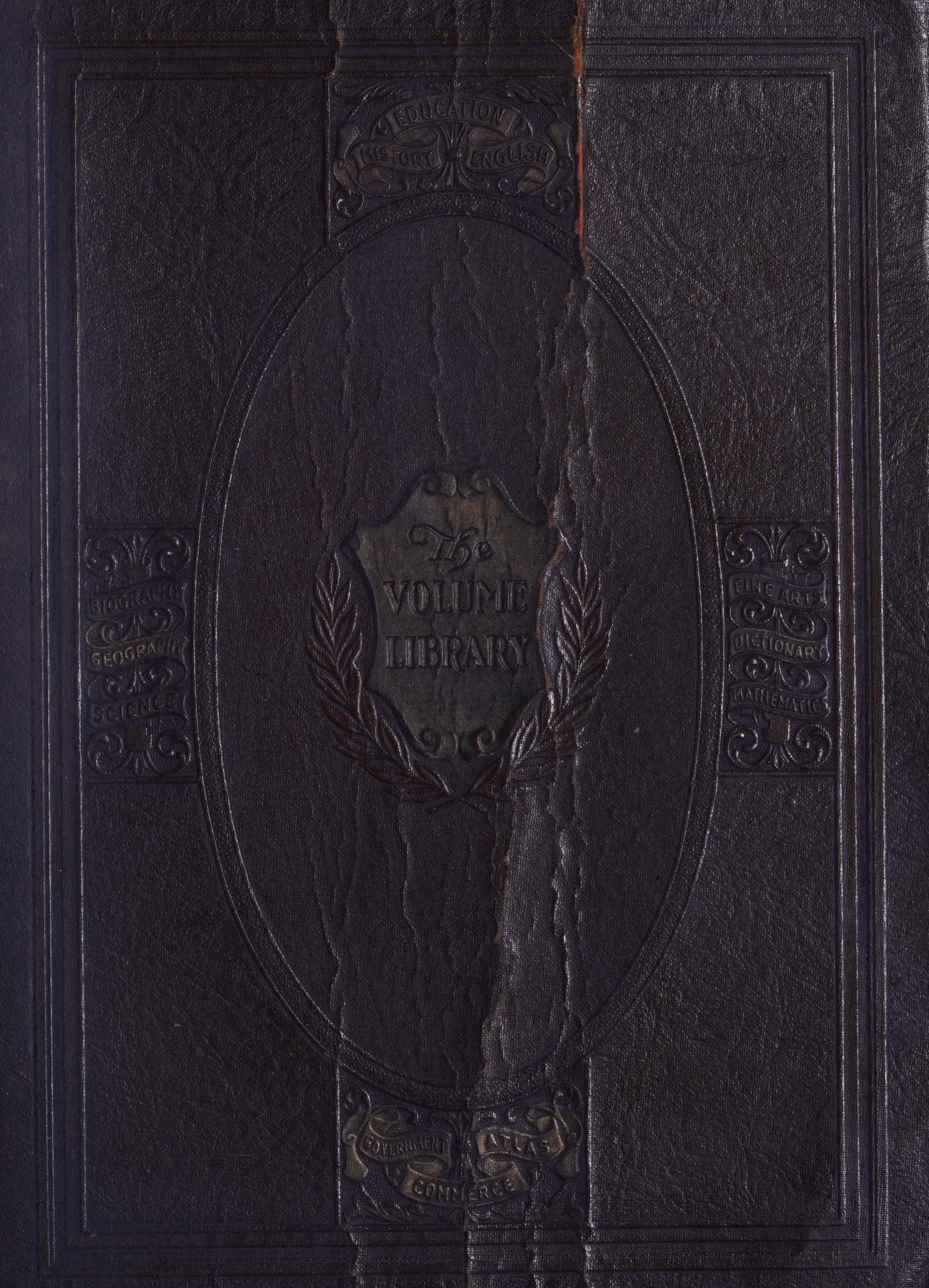

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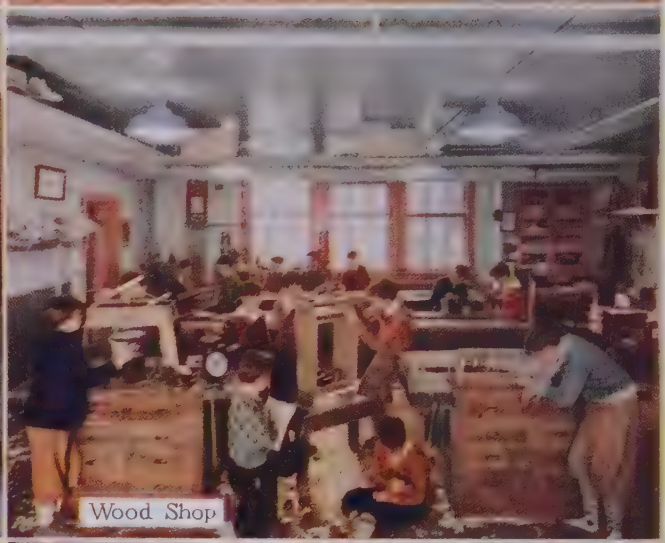
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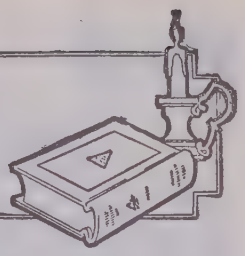
IN THE LABORATORY OF EDUCATION

1. The Story Hour. Georgene Faulkner, the "Story Lady," and her group of kindergarten children; Faulkner School, Chicago. 2. The Gardeners. These boys and girls of the kindergarten have been singing their garden song to the motion of spades, hoes and rakes; Doan School, Cleveland. 3. Commerce. A fifth grade geography project concerning the commerce of the United States, worked out on a large floor map; Francis W. Parker School, Chicago. 4. Wood Shop. A seventh grade group at the Francis W. Parker School. 5. Distillation of Water. A science experiment, showing purification by distillation of water that has been colored (in round flask) purple with potassium permanganate; New York Training School for Teachers. 6. Studying Applied Electricity. Senior high school students working in the industrial curriculum; Philadelphia.



BOOK I

EDUCATION



THE FIELD OF EDUCATION

If the 25,000,000 children of school age in this country were placed in a solid line, it would extend from the northeast coast of Maine to the southwest coast of California, and according to Professor Snyder, all except those that stood in the latter state do not go beyond the grammar-grades. Worse than that, the majority of our citizens and voters have probably not gone much, if any, beyond the end of the sixth grade. Thus the problem of doing the most and best for the grammar-school children is one of profound national importance for the safety and welfare of our country.

The end and aim of education is to develop each individual to the most complete maturity of all the powers of the body and mind. In its larger sense, education begins at birth, or with the marriage of the parents, and we must not forget, that, besides the school, there are more than fourscore different types of child-welfare organizations that are essentially educational, dealing with health, morals, recreation, occupation, religion and all the rest.

An educational system naturally falls into four grand divisions: The first deals with the child up to the dawn of the teens; the second, or intermediate or high school, includes the early, and the third, or collegiate, the later pubescent years; the fourth, or professional, deals with mature young men and women.

Primary Education.—The end and aim of primary education may be divided into (a) special, and (b) general. Under the first come reading and writing. The child who has mastered these arts has access to all the literature in the vernacular. He can transcend his own limits of time and space, and commune with the greatest minds that have left their written records and literature in any age or land. He can become a world citizen and learn from the printed page whatever he will about the life of his own community, state, nation, the world; and from this point on, in some sense, his education is in his own hands.

The point now to be stressed is how to insure that he will read the best, and not the worst, things in print. He has before him the world of letters and books. There is, alas, always the possibility that he will be degraded by reading what is vile and demoralizing, for there is printed matter which anti-vice societies destroy by the ton, which causes a moral decay that is impossible to those who cannot read. A graver danger, because one to which all are exposed, is that of spending their reading time upon the second or tenth best, for print now keeps alive masses of material which would have sunk to oblivion but for the printer's art.

Good Books.—Among the most precious educational agencies are those that determine the content of school readers, advise and list the best books and incite children to read them by means of story telling and libraries in the schoolrooms and arouse and direct the reading habit, which at about the end of the grammar grades reaches the highest point of its curve. At this age, more boys, and many more girls, are liable to have reading crazes than at any other. Hence some have gone so far as to advocate a kind of school Bible or canon so as to make certain that children shall know and feel the uplift of the greatest books that make the world's classic literature, in some epitomized form. By the aid of the story teller's art this ideal is no longer impossible. From the spontaneous reading interest of children, of which there are now several admirable special studies, it would appear that on leaving the grammar grades, each child should have some special reading interest and have acquired the habit of gratifying it in our now universally diffused libraries, to which most children have access.

Arithmetic is the door to mathematics. Although we have doubtless overemphasized it, it is essential that the child command the methods of ready and correct computation which are vital for every vocation. The simple rules of arithmetic and fractions, the laws and tables of mensuration, proportion, the elements of the roots and powers of numbers, with the elements of geometry, but not much of any algebra, should be attained. Fair penmanship and simple composition, with decent command of the English language, are of course essential. The movement to defer writing till the second grade, or the eighth year, is beneficent, and will do much to improve penmanship, while more oral and less written work will tend to give a better command of language, which lives, moves and has its being in the circuit from ear to mouth, and is a dead and lifeless thing on the long circuit from the eye that reads to the hand that writes.

Nature Study, a little school gardening and occupational work, note singing, which should precede note reading by several years and which cultivates not only the voice but the heart, is now believed to be both possible and desirable for nearly all children.

Geography should begin with the knowledge of the immediate environment perhaps of the schoolroom and widen to the town, the state, the nation and the world, in concentric irradiation, with some map drawing and sand modeling, with industrial, commercial and transportational elements always stressed. This work can often be naturally connected with the industries of the locality, sources of raw material, markets for the finished products, and be helped out by regular school visitations to the principal industries of the town.

History and Civics are vital for citizenship. Both may well begin with the locality, with visits to the city hall and other public institutions of knowledge, the historical monuments and their significance and sentiments inspired by the flag.

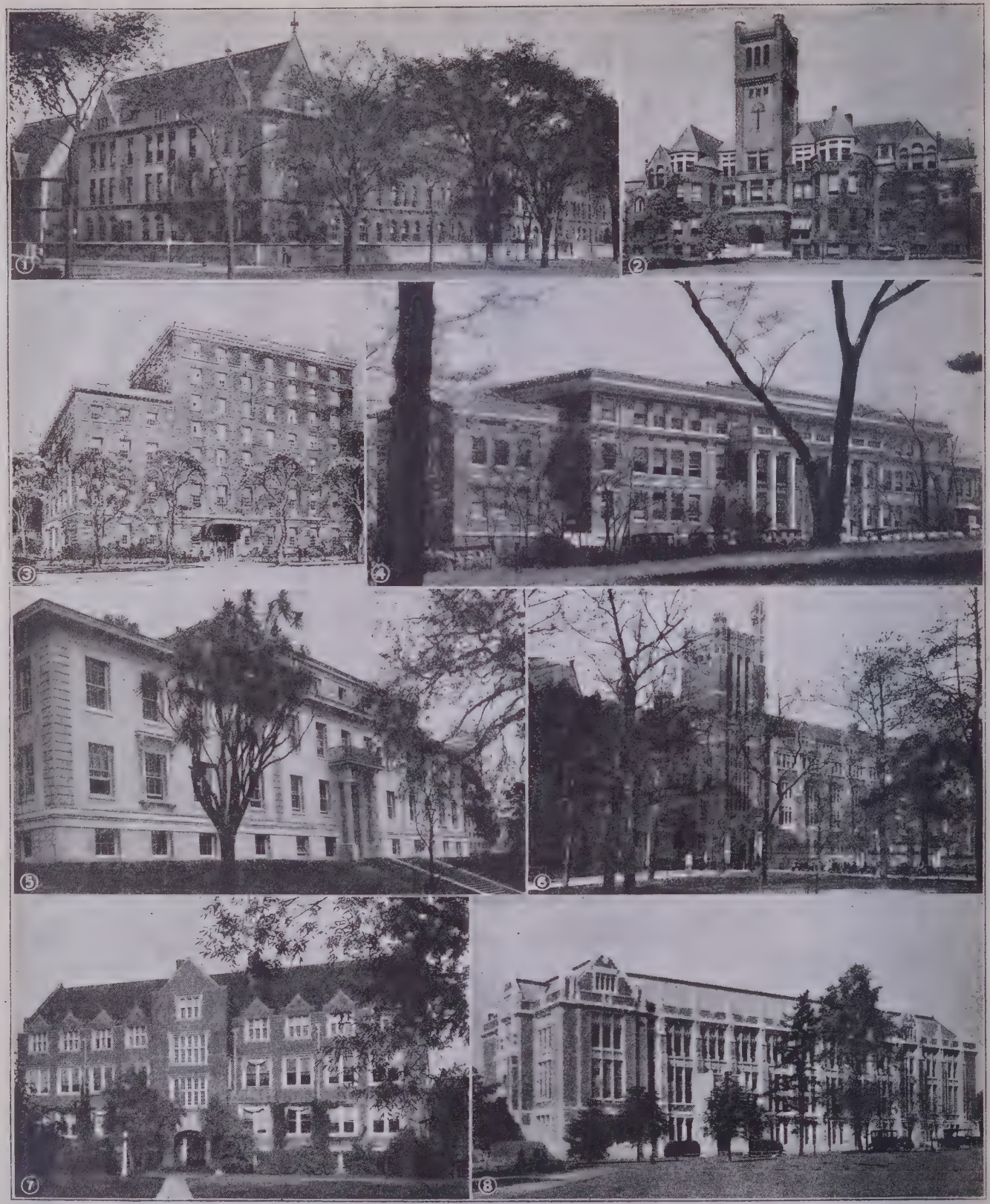
Besides these, there should be a margin or fringe of accessory influences pervading the grammar grades. Arbor Day and other holidays should always bring their lessons. There should be, if possible, visits to the reformatory and charitable institutions of the vicinity, and their lessons should be inculcated. Before leaving the grades, every child should have a good repertory of plays and games, and should have some practice in the elements of manual training as introductory to some form of skilled labor. The influence of the school house, room and yard should be made the best possible, and the personal influence of the teacher should culminate in occasional serious and carefully prepared talks upon life and its duties, obligations, social relationships.

At the very beginning of the teens, teachers and systems should recognize the marvelous expansion of energy and the new interests that are awakened and therefore the new methods that are necessary to enlist the best powers of the child.

Intermediate Schools.—Every community should have continuation schools to meet the needs of the thousands of children from thirteen or fourteen to sixteen who have left school and who cannot and perhaps should not find vocational employment. The needs of this class of children are now a great problem, and there is a growing consensus that industrial occupations should be provided for all who want them.

Moral Instruction.—In this critical period of life, habits that will endure are being formed more rapidly than any other. Morals need great attention. There is now a new awakening of the community to the dangers of sex errors, and the need especially for boys, if not also for girls, of some definite and personal instruction along these lines. It is when we consider this aspect of the subject that we realize most keenly the need of more male teachers, especially for boys who in these years experience, consciously or unconsciously, something of revolt against exclusive feminine control whether in the home or the school. Every boy needs a personal mentor such as the Big Brother movement contemplates. He also ought to be looked over by a vocation bureau and given hints at least concerning classes of occupations which he should avoid and those which he can hope to enter with some advantage.

A Sound Body.—Every school child should throughout this period have stated and repeated medical examination. The teeth almost always need attention and irremediable injury may follow if it is wanting. Ears and especially eyes should also be tested. The general condition of each child should be inspected and suggestions to parents and teachers made. In some lands a life and health book is kept, recording the observations of teachers, and the suggestions of physicians concerning regimen, diet, etc. Recent studies by the scores of hundreds show how many children are handicapped for life by defects that could be remedied and diseases that could be avoided. To this end, gymnastics, playgrounds, open-air schools, excursions, school meals, dietaries, free dispensaries and all the other health-giving agencies are now greatly desired.



BUILDINGS IMPORTANT IN THE FIELD OF EDUCATION

1. The School of Education, University of Chicago. 2. Indiana State Teachers College, Terre Haute. 3. Administration Building, National Education Association, Washington, D. C. 4. Demonstration School, George Peabody College for Teachers, Nashville, Tennessee. 5. Haviland Hall, housing the School of Education, University of California, Berkeley. 6. Russell Hall, Main Administration Building and Library of Teachers College, Columbia University, New York City. 7. Woodworth Hall, housing the School of Education, University of North Dakota, Grand Forks. 8. Education Hall, University of Washington, Seattle.

AIMS IN EDUCATION

OBEDIENCE is usually considered the greatest virtue, and at the same time, the most sacred duty of children. But unless we understand the meaning of the words "duty" and "virtue," we cannot judge of children's obedience rightly.

Virtue is not the same as goodness. Goodness is a quality of the soul which is born with the child. Virtue is the practice of goodness, the doing of good things. You may practice goodness without being good; or you may be good without having the training in practicing goodness. As one writer expressed it: "The tenderness of feeling shown by many children is goodness, not virtue; to abstain from theft in a thief would be virtue, not goodness."

Even the best natured child, the child with native goodness, may not practice the virtue of obedience unless he is trained to be obedient. On the other hand, there are obedient children whose obedience is far from being a desirable thing; it may be cowardice, cunning, fear, design, and what not.

Obedience as a duty has no meaning to the young child. The understanding of duty is based upon the ability to choose between right and wrong. It implies the appreciation of responsibility. But such choice and such responsibility are foreign to the young child.

OBEDIENCE AS A VIRTUE.—When do we owe obedience? Obviously only when we enter into an agreement or contract the carrying out of which requires that we do certain things. Under such a contract we may have to carry out the orders of some other person and obey his directions.

The child has never entered into any contract of this sort with you. Strictly speaking, he cannot therefore owe you anything.

It is true that he would not exist if it had not been for you becoming his parent. But his entrance into life was not of his own choice or will. He has no moral obligation on account of that. If there is any obligation it is that of the parent who owes proper care to the child for whose existence he is responsible.

This consideration may make the problem of training for obedience somewhat clearer.

Rather than to expect his child to be obedient from any sense of duty—a sense which does not exist—the parent must win his child's obedience.

How can this be accomplished?

Winning the Child's Obedience.—Obedience means that the child should respond promptly to his parent's, or teacher's, direction and command, without hesitating, or doubting, or arguing. This response, to be ideal, must become a sort of automatic reaction to a command, just as if the parent were pushing a button, the child doing the rest. This kind of response excludes, for the time being, independent thinking on the part of the child. He should not think for himself; he should mind.

For a number of purposes, this kind of obedience has its value. The child, inexperienced as he is, will be exposed to dangers which he does not understand, and the parent's superior intelligence and experience must have their force.

But we see here that obedience in this sense is necessary in the child's own interest, not to please, or to gratify, or to accommodate the parent.

The parent, therefore, must not expect this kind of obedience when there is no educational or safe-guarding purpose.

Again, obedience like this has its limitations. It is altogether mechanical. It does not appeal to the child's own intelligence and good will. In fact, it has the tendency to destroy the child's sense of independent thought and foresight, of self-control, of responsibility.



THE YOUNG SCULPTOR

A ten-year-old student of the Holmes School, Oakland, Pittsburgh, creating ships out of soap.

THE PRINCIPAL AIM OF EDUCATION MUST FOREVER BE TO GIVE THE CHILD THE POWER OF SELF-CONTROL, OF SELF-MANAGEMENT, AND THE SENSE OF RESPONSIBILITY, OF INDEPENDENT THOUGHT.

This is the reason why the method of securing obedience of the mechanical kind, valuable as it is, has to be employed with great caution.

The Motive of Fear.—About the worst method to secure obedience is unfortunately most commonly employed; to frighten the child by threats and punishments.

The motive of fear is the most treacherous of all motives. It breeds cowardice, deception, hypocrisy. It destroys character and personality. It prevents the development of confidence between child and parent, and will never teach a child the real reasons for right conduct.

Different Types of Children.—It must also be remembered that all children are not alike. There are many different kinds.

The timid child can be easily frightened. In fact, he will never be sure of himself unless commanded, or directed. Such a child, instead of being cowed by harsh commands, should be encouraged, cheered, heartened, stimulated, so that he may overcome his natural timidity and look out for himself as much as possible.

Sometimes this timidity is a sign of illness, or of nervous troubles, and then it is advisable to consult the family physician or the specialist.

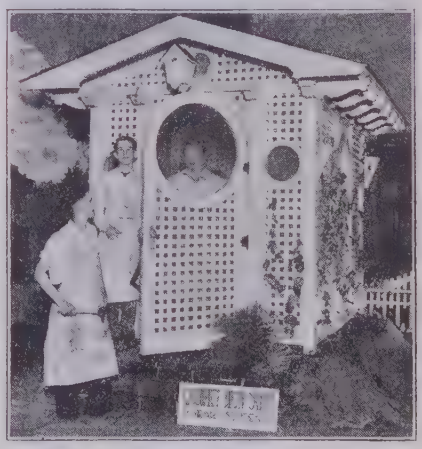
There is another type of child who, while not really timid, follows the line of least resistance. This is the conforming child. He is also easily led and will learn to obey without much trouble.

This, however, is in a measure his misfortune. In him, it encourages slothfulness of thought, laziness of action, loss of self-respect. Often such a child becomes a misfit in life because he has never learned to assert himself. He will miss his real self, and will drift into a sort of life which requires the least exertion on his part. He will forever be a follower, one of the mass—never becoming a leader, and quite helpless under a change of fortune. Yet, many of these conforming children have individual powers of their own which are well worth developing but which are lost on account of their lack of self-assertion. A strict enforcement of obedience in these cases is fraught with danger.

The non-conforming child, on the other hand, the child that is not easily led, but will assert himself and be contrary to suggestion and leadership, is the problem of most inexperienced parents.

His very self-assertion is a very hopeful sign for the development of a strong personality. Under ordinary circumstances parents ought to be happy for having obstreperous youngsters who will try their parents' skill and wisdom to the utmost. Home education is no sinecure, to be sure; but there is a great satisfaction in dealing with children who have minds of their own. They will be the greatest glory of parents in the end.

If the sense of self in a child defies all bounds, we may be dealing with a child personality that requires the advice of the psychiatrist. Extreme self-centeredness is a symptom of mental disease. Here it is not discipline, but expert treatment which is required.



HIGH SCHOOL PRODUCTS

Calumet High School, Chicago, students and the garden house made by them. The work of first year students.

The temperamental child is one in whom emotions play a great part. To train these emotions properly is often a great problem. Often we come across nervous disturbances in these children, especially at certain periods of their lives.

Of course, the fault lies sometimes with lack of firmness and consistency on the part of the educator.

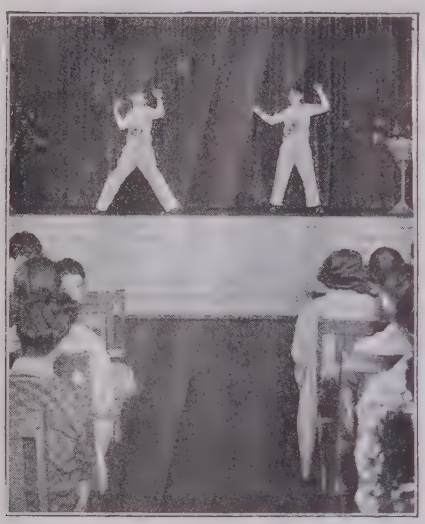
Generally speaking, we may assert that wherever there is failure to secure obedience, the fault does not rest with the child, but with the educator. So, do not wreak vengeance on the child, but search your own soul. Somewhere and somehow, you have failed; you have made mistakes.

To blame the child for misconduct without further investigation is just as wrong as for a physician to blame a patient for still having a fever after his treatment has

failed. The wise doctor will realize that his patient has no interest in being sick, and that his, the physician's, diagnosis and treatment must be at fault. Likewise, the child has no interest in being disobedient. He would do the right thing if he knew, or had been trained to do, the right thing.

Beginning Early.—Training in obedience of the right kind must begin early. It is really a training in habits of regularity.

It begins with the regular feeding of the baby, regular hours and habits of sleep, of bathing, of outdoor and indoor life, of play and exercise.



THREE CHEERS FOR OUR SCHOOL

Enthusiastic student body cheer leaders on the stage of the auditorium at the Commodore Sloat Elementary School, San Francisco.

A training in regularity has a remarkably calming and soothing effect upon a nervous child. It is in conformity with nature's laws.

In health, pulse and heart-beat are uncompromisingly regular; breathing follows a definite rhythm. The heavenly bodies move in infinite space with the regularity of a perfect clock. So must the life of a child in all its voluntary manifestations be tuned to rhythmical symmetry.

Life rhythm is the keynote of happiness and success. Only when the body and the mind are well tuned can there be physical and mental health.

The life of the universe is bound by laws of uncompromising regularity. A break in this regularity, and the world would go to smash. So the parent, in training his child in regular habits, must be consistent, firm, uncompromising. No weak giving in to coaxing or wheedling, or to crying and temper on the part of the child. No vacillation or indecision at any time.

A Proper Understanding.—Yet we must remember one thing. The laws of the universe are unchangeable because they are the manifestation of perfect order. We mortals cannot claim infallibility.

Our firmness must neither be arbitrary nor must it be mechanical. It must be based upon such knowledge and understanding of the child's nature and needs as we can obtain. It must be tempered by sympathy and love, terms which are not the same as weakness. It must be moderated by the knowledge that our own judgment may err.

Firm resolution on the part of the parent will not shock or repulse the child if there is a kindly smile accompanying the firm insistence, if the eyes in which an unchangeable resolution is expressed also have the twinkle and radiance of love.

The parent must know what and why he commands, or why he insists. In trifles, there is no need of dramatic force. He may often allow the child to follow his own preference when one way is as good, or about as good, as another. The parent will remember that a child's way is not that of an adult; that a child's standards of accuracy are not the same as those of an adult.

The parent will realize that he is the child's leader, but not his master, or owner. The child has his own rights as a human being. It is the parent's fine privilege to discover in his child a new soul, a new individuality, and to help that individuality to develop through the ages of infancy and childhood until the time comes when it can assert itself in an independent way.

The parent will learn to distinguish between "naughtiness," so-called, and distress. He will make sure that his child's apparent unwillingness to respond is not due to bodily or other causes.

The baby may cry because there is an actual discomfort or illness. The older boy or girl may not answer because he, or she, is, unbeknown to the parent, hard of hearing. The child may not give the right answers to questions because he is color-blind, or defective of vision. Eye-strain may be responsible for ill-temper, just as are indigestion and incipient disease.

The parent will learn to read the danger signs of fatigue, of illness, of nerve-strain, of unhappiness, before he insists upon his point.

The parent will understand situations and emergencies such as occur in the daily life of a child.

Generally speaking, it is necessary that the child should have his regular times for meals, play and sleep. Yet, there may be occasions when the parent's call for supper or bedtime is ill-timed, regularity notwithstanding. A child absorbed in his play is a human being seriously occupied in solving his life's problem. For every bit of play is really an experiment which helps the child to understand his surroundings and his own powers. He may be just in the midst of a fascinating problem, the solution of which is at hand if he can remain undisturbed.

The wise parent will not call his child away from his absorption by shouting from another room, nor scold indiscriminately when not promptly obeyed. He will sympathize with his child's problem, and if he thinks it reasonable to interrupt his child's preoccupation, he will take care that the chain of thought in the child's mind is not rudely broken.

All this calls for discernment, discretion, tact, understanding.

Winning the Child's Confidence.—The youngest child's response depends mainly upon a more or less mechanical habit. But the older the child grows, the more must we enlist his intelligent coöperation. Even the older child, it is true, must learn to obey immediately, instinctively, without at the moment questioning the parent's reason. He will do so if he has confidence in his parent; if he knows that his parent will never demand anything which is not for his good, which is not really necessary, which is not wiser than his own choice would be.

It is a great mistake to think that we must always insist that we are right. This claim of infallibility will quickly destroy a child's belief in his parent's discretion and good will. For our children see much more clearly than we think they do. They will find us out, and will discredit our pretense. They know that we err, as all humans err. They know that we are not perfect, and that to pose before them as perfect beings is, to say the least, a foolish camouflage.

A child honors his parent more, and trusts him more, if that parent is honest enough to admit a mistake promptly, and to rectify a wrong command or suggestion.

The Method of Suggestion.—The sooner the parents take their children into their confidence, the readier will be the response. Counseling is better than commanding; suggestions are better than demands.

When the child approaches adolescence and maturity, we must recognize his own unfolding power of reasoning, and must respect his opinions and convictions. At this critical period of development, the young mind becomes conscious of its own individual rights. A new personality arises. If opposed with too much authority, the young man or woman of fifteen or thereabouts will become rebellious, obstreperous, resentful, sullen or deceitful.

The Parent as His Child's Best Friend.—The most wonderful thing in the world is the friendship between parent and child. There is no need of enforcing obedience when the relationship between parents and their sons and daughters has ripened into mutual respect, reverence and confidence, when there is a firm basis of love. A child who knows that he can come to his mother and father in every crisis that confronts him; that there is no truer, or more sympathetic and understanding friend anywhere to be found than in his own home, whose closest confidants are his mother and his father, will have the strongest safeguard against wrongdoing there is in human life.

This is most necessary in the matter of the gravest problems which confront a boy or girl of adolescent age, namely, those connected with their awakening sex instinct, the problems of love, passion and marriage. If the proper foundation of confidence has not been laid long before this period arrives, the child's moral life may be wrecked on the rocks of unrestrained impulses.

From no other lips should a child learn the truth about the wonderful mystery of life, of motherhood and fatherhood, of his own birth and growth, than from those of his own parents. The sanctity and wonder of the marriage relation, the sweetness of child life as a product of this relation, will become living realities to the child if their true meaning is constantly exemplified to him in the frankness and honesty, and in the spirit and practice of love and purity of his own parents in his own home.

Children thus brought up will not resent their parent's advice and counsel in the matter of their own choice of mates, of their own marriage. Neither will they resent their parents' counsel in the matter of a choice of occupation. There will be a communion of hearts which will lead to mutual understanding and appreciation. If the counsel be not accepted, there will be no bitterness.

What we must develop in our children is not the blind and mechanical kind of obedience, but that which prompts the right-minded man and woman to bow before the laws of nature—a trustful yielding to sympathetic wisdom, a reverence for the law of righteousness.

AMERICAN EDUCATION

WHY go to school? What are the kinds of schools in the United States? What should one expect from studies in the public schools and other schools? How shall one earn a living, and how prepare to do so? These and many other questions are discussed in this department.

Why Go To School?—It pays, in dollars and cents, to go as far as one can in the right sort of school—in almost any school. As a matter of fact, Edison and Ford got along without much formal training; so did Lincoln and Walt Whitman. Very superior persons like these are outside the law of averages. Perhaps their superiority may lie in a specially active will and ambition, spurring an otherwise ordinary person to train himself. Somewhere, somehow, everybody who intends to amount to something in this world must get ready; and schools are the best answer we have learned to make to the problem of getting ready.

It pays in dollars and cents. One who leaves school early is shut out from all the professions. He cannot be a lawyer, a doctor, a teacher, a dentist, a surveyor, a cost accountant, a preacher, an electrical or chemical engineer, a modern architect, without preparation in school. Of course, almost anybody can work with his hands and feet, and we think that everybody ought to do, and keep on doing, some work of that sort; but the boy who quits school early is pretty surely condemning himself to work only with his hands and feet for the rest of his life. A girl may get a place in a ten-cent store as soon as the law allows her to leave school, and a boy who finishes the eighth grade may work at a soda fountain—both perfectly respectable jobs for a summer vacation, and both likely to have tragic consequences if continued after the school bell rings in the fall. Few important business positions go to young people with less than a high school training; and the overcrowding of every American university shows pretty clearly that even college education pays.

The "learned professions" have no monopoly of the new demand for training. For example, the day of the small farmer is passing. Workers have drifted to the towns, and the farmer has been compelled to use labor-saving machinery or give up his occupation. A good machine does the work of from three to ten men, so that a progressive farmer may find the losses in man power more than made up by the gain in machinery. Yet only a born genius can operate and repair all sorts of machines without training in mechanics. And the best place to get that training is in the right kind of school.

Mechanical requirements form only a part of the change in farm conditions. We have passed the years of heavy cropping at the expense of native richness. A return must be made to the land; different soils and varied crops require different treatment; crops that do well in one soil are not adapted to another. The raising of stock under modern conditions requires expert knowledge. In short, while there is still a bare living in old-fashioned farming, the men who make the big money on the farm are students; and the short cut to the things they need to know is the farmers' high school and the farmers' college. If a boy likes farming, but does not like the kind of school in his neighborhood, because he sees no use for Latin and ancient history; if he is in a hurry to get the best training for the big scale modern farming—the farming that pays—there are schools in his state where he can find the very courses he needs, and where he can work out part or all of his expenses while he learns about his own affairs.

Whatever the practical future we dream about, beyond the wheel-barrow and the retailing counter, schools can shorten our road. Reckoning the working wage of a lifetime, it can be fairly shown that every day in the four years of a completed high school course has been worth to an average student about ten dollars. It is work with the head that pays.

But the best rewards of going to school are not in dollars and cents. There is a



THE SENIOR PLAY

A delightful and valuable part of modern education is the opportunity to take part in plays. This scene is from *The Ivory Door*, as given by seniors at the Fifth Avenue High School, Pittsburgh. The picture shows the king and queen on the throne with a lady-in-waiting beside them.

stagnating littleness in the common routine of mechanical tasks, unless the mind has caught the secret of escape into broader fields. Training of the right sort gives a worldwide range to our interest in facts; makes us reluctant to accept mere hearsay; shows how to test information and appearances.

Yet this is only the groundwork of an always fascinating mental experience. However we get our training, in school or out, if it amounts to much, it teaches us to interpret our facts, to find the larger meanings of conduct, the relationships among physical events, in the light of principles. The reasoning student, unlike the news-gathering gossip, values facts as part of a network of cause and effect which it is his duty and pleasure to understand, for the common good.

This last phrase suggests the third degree of training. When facts have been collected, tested and explained, it remains to put our knowledge to practical use. This third function of schools is finding a steadily widening application in every school that attempts to do some definite work in the world, or to prepare for thoughtful citizenship.

The fourth possible service of schools is the training of feeling and taste, so that we come to appreciate life for the rich thing it may be, and to act with consideration for the interests of our fellows. Only the rankest kind of Philistinism attempts to express the value of an art object in dollars and cents. We must live, to be sure; eat, wear clothing, sleep in a house in winter time; but the best part of life is that which the Bible says shall not be by bread alone. Culture, like other desirable graces, cannot be bought and sold, but must be lived through. The big danger of leaving school too early is the danger of personal littleness; of stagnation in a mental treadmill; of the vulgarian's death in life. Students today have the opportunity to act in plays, to sing in musical performances, to express themselves in avenues of creative art.

College days do more than others for mental freedom, catholicity, and taste. When we come along toward the end of our journey, we know that no part of the way has been better worth traveling.

THE KINDS OF SCHOOLS IN THE UNITED STATES

The attempt to divide any big subject into its parts requires first a point of view. We can look at education from many different angles. Who pays the bills? Who directs and controls? Who measures results? How are the schools organized? And so on. The following analysis uses the more obvious viewpoints.

Support.—Schools are supported from one or more of these sources: public money collected by tax; fees, paid by students; assessments levied by societies, as for parochial schools; gifts and endowments. Gifts, endowments, fees and parochial assessments indicate dissatisfaction with the support or the character of public education. Parochial taxes, for instance, always indicate a belief that religion, usually a certain type of religion, is so important that it must be taught in school, and that only religionists should be trusted to teach it. Probably the only reason why religion cannot be taught in public schools is that there is so much practical difficulty in determining just what religion is.

Control.—In a democracy, the state must provide for the future safety of the government by guaranteeing intelligently patriotic citizenship. Schools stand at the head of means for making that provision. In order that the guarantee may hold, there must be sufficient state control for the purpose. In some states, parochial schools may receive a share of public moneys, if they satisfy the tests applied to public schools. In other states, parochial education is an unrelieved charge upon the church.

The amount of state control varies greatly in different parts of the country. New York State, for example, has an elaborate bureaucratic centralization of authority over all its schools, from top to bottom, with regents' examinations as its most characteristic feature. In most states, the control of the schools is practically local, with state aid for those schools which satisfy certain standards. In all parts of the country, college entrance requirements have had a marked influence in shaping public schools, an influence amounting often to practical control.

Testing Results.—How should the efficiency of teaching be measured? Can examinations be framed to measure correctly a pupil's progress? Should a bad examination paper entirely overrule a long period of good classwork? Or a good examina-

tion entirely cancel the memory of year-long failure to do required work well? Should high rating be given to pupils from schools employing trained teachers, along with good libraries and apparatus? What do we really mean by results, anyway? Are there local needs, such that central examining boards can hardly be fair to every region in the state? On all these questions, schools differ widely within each state, and from state to state.

Social Purpose.—There used to be, and still are, under one name or another, "finishing schools", whose function was to put the final polish on a perfect lady. There are schools of "liberal arts," maintained under the belief that one may be "cultivated" by the pursuit of time-honored courses in language, mathematics, history and biography. There are work-a-day schools of trade and industry, where one learns to write fifty words a minute on a typewriter, or to build a sky-scraper or a chicken-coop. Sociological schools aim to open the eyes of students to the needs of their fellows, and the proper means of satisfying those needs. Religion, art, medicine, engineering, agriculture, politics, law, education—schools for every social purpose. Whatever one wants to be or to do is taught by somebody, somewhere. Increasingly, vocational studies are winning a place in the public school.

Age of Pupils.—In "regular" schools, we expect each grade to be occupied by pupils of standard age—kindergartens and first grades from four to six, junior high schools at twelve to fifteen, and so on. But many thousands of people in this country need and should have school opportunities while they earn a living. So we have part time arrangements, especially in evening classes and correspondence schools, continuing the work of day schools, preparing for special vocations, or training for American citizenship. Students in part time schools are of course likely to be older than those in the regular sessions.

Organization.—For a life time, until recently, eight or nine annual promotions have brought average students through the elementary school, and four additional years have completed the high school course. There has been much repetition and much unnecessary subject matter in the eight year period, and so marked a difference in subjects and methods between high school and grades, that many pupils have left school rather than adapt themselves to the change. The discipline and course of study in the upper elementary grades have often been distasteful to adolescents—their studies seemed to have no connection with life. The one teacher in charge of a year's work was too often a misfit, from the pupil's view-point. The answer to all this has been either a "six-six" or a "six-three-three" plan: in both cases cutting short the elementary course—in the first plan, by making a six year high school: in the second, by inventing a new transitional school, with more vocational subjects, more freedom of choice, and departmental instruction. Under the old organization, pupils passed by grades, and a failure in even one subject was likely to hold the youngster back for an entire grade, no matter how brilliant he might be in other subjects. The newer organization promotes by subjects, and tends toward a liberal theory of requirements. The junior or connecting high school seems to be winning a permanent place. One of its best effects is in keeping pupils in school who would have left, under the old system.

Methods.—The kindergarten seeks to develop certain desirable qualities; generosity, team-spirit, resourcefulness, sense of rhythm, of form, and color, skill in simple games and hand-work. Its methods stimulate initiative, at the same time respecting the rights of other folks. Kindergarten methods deserve to influence the entire public school, and even the college; but this can hardly be found in practice. The very worst teaching is likely to be found in the college and university, where class-room procedure implies: *Here are the facts; take them or leave them!*

The recent adoption of the problem or project method is a belated attempt to do for advanced pupils what the kindergarten has so long done for little folks. It is a tardy effort to do things in school with some reference to the methods we must use outside. When the problems are rightly chosen, and really accepted as the youngster's own, school and life are near the proper meeting ground.

Of course the big differences in method are to be accounted for by the teacher's notion of what schools are for, and by his own humane resourcefulness. But within the range of sound intention, methods ought to differ; uniformity is deadening. Sound methods give well-chosen facts a permanent place in mind; build a habit of logical thinking; offer the contagion of enthusiasm for sport, for community affairs, for all sorts of wholesome activities. The final test of method is in the student's doing of his own will useful things which the school has prepared him to do.

Young people who have missed the chance to go to high school or college, and who want to make more of themselves than their present conditions promise, should remember the method of correspondence. Correspondence schools are in many respects the most useful American universities. There are important differences among these schools. Some of them are no doubt catch-penny concerns; but the long-established ones may be fully trusted by any young man or woman of grit and intelligence. Their text-books are authoritative, their methods are thorough, and their practical value in cash promotions cannot be doubted.

Preparation of Teachers.—President Garfield once said that a university could be established anywhere in the woods, by placing an enquiring young man at one end of a log, with Mark Hopkins at the other end. It doesn't so much matter how teachers acquire their information, their insight, their knack of suggestion, but it is immensely important that they acquire them. Schools can hardly differ from each other more widely than in the personality of their instructors. That school may be called inferior whose teachers are not several sizes bigger than their pupils, in the things they know, in their ability to think problems through, in their enthusiasm for studies worth while, and in their clear attractiveness of speech.

Experience is the best trainer of teachers, from the teacher's viewpoint, but it's pretty expensive for the pupils. The quality of work done in the best schools indicates that we should raise the general standard of preparation for teaching, but always with the proviso that a teaching personality is the biggest single item of fitness. It is pretty clear that no one with less than a high school training should teach in elementary schools, and that high school teachers should have the equivalent of a four year college course. In any case, a teacher's training should include psychology, the history of educational reform, and general methods.

Progressiveness.—Teachers differ in their willingness to experiment, and to accept the results of other people's experiments. There is a foolish, unreasoning imitation of fads in education, and there is stubborn insistence on outworn methods. Conservatives are likely to believe in old-fashioned decorum, and in mental discipline by way of the time-honored classics. Liberals tend to emphasize the individuality of their pupils, the importance of vocational training, and the possibility of mental discipline through subjects of practical value.

Progressiveness appears to be a matter of native temperament, modified by age and experience. Though American teachers have followed many fads, the willingness to experiment is a condition of progress. When the experimenter learns to do his experiments in a small way at first, and then to hold fast that which is good, his progressiveness may have fewer setbacks.

Morale.—Schools are unlike in that combination of manners, customs, morals, community spirit, and general motivation which may be called *morale*. School tone is another good name for it. Every school room, every class room even, has its own tone. If we listen to the treble notes from Vassar and Wellesley and the baritones from Harvard and Yale, we find that every college is playing its own social tune. Schools differ in personality even as individuals do, and we do well to choose among them as carefully as we choose among persons.

Many distinctions remain unmentioned in this series: Nationality of students, location of schools, entrance requirements, social position of graduates, vocational value of diplomas, general prestige of the school—all these offer means of comparison, and show great diversity. Within limits, diversity is a good and necessary thing. The test is always the value of the school or of the process for life purposes. To take a simple example: Fair trials of round vertical penmanship may give an average of fifteen or twenty words to the minute, while semi-slant or Spencerian script will under like conditions record twenty-five or thirty words a minute. When we find that slant writing is less fatiguing and fully as legible, only one conclusion is possible. Yet our pedagogues put us through the wholesale experiment in vertical round-hand.—It appears that some experiments in diversity are not worth the trial.—There are plenty of wise texts in the philosophy of education, but not enough working philosophers to go around.

An Ideal School is a dream, of course, but it is a dream worth working for, and not wholly unattainable. Its general principles are:

Society has needs, not always adequately stated in terms of cash, which schools must help to satisfy, by the development of socially useful personalities; including, in due time, for every student, vocational guidance and vocational training.

Every pupil has potentialities which it is the business of the school to discover, in order that, by stimulus and training, he may be fitted for the work which society needs at his hands.

It is easy enough to formulate such maxims. Fortunate centers of wealth, intelligence, and varied industry may go far toward realizing the ideal school. But before the country as a whole can follow their example, we must have a better public understanding of what education means, we must spend many times over more money for schools than we now spend, we must attract teachers from the finest American types, and we must give teachers a training adapted to their highly difficult task.

WHAT TO EXPECT FROM SUBJECTS IN THE PUBLIC SCHOOLS

Arithmetic.—The simple process arithmetic of the third and fourth grades is by far the most practical. Then in importance come [1] a working knowledge of common fractions, [2] tables of measurement, [3] simple interest. "Mental arithmetic", now unfortunately out of fashion, was one of the two best gymnastics of the grammar school a generation ago. Some of its problems were absurdly impractical, of course, but it did build a habit of picking apart complicated situations, item by item to find the key idea; and its handling of common fractions and quick cost computing had practical value. Beyond the few processes named above, most of the arithmetic taught in school might well be saved for a commercial course, given only to those who will need it in their business. Commercial arithmetic is the arithmetic of actual business practice, full of short cuts and tabulations, and entirely empty of much that was formerly insisted upon.

Composition.—Everybody should know how to write a clear, correct business letter and a pleasant friendly letter. The business letter leaves out everything unnecessary, but uses tact in putting its case. Old stock phrases are not so effective as words chosen directly for the object in mind. The friendly letter must know how to describe persons and places, must tell a story well, and should set forth the writer's opinions attractively. For the descriptions, it is important to find the right adjectives and the right comparisons. We understand new things best when we see how they resemble or differ from the things we already know well. A well told story has a plan and a point; it gives us in the beginning some clue to the persons and places of the action, but takes care not to be dryly descriptive. It keeps the secret of its climax until near the end; puts in nothing that doesn't help to make the point, has the sense to stop when its point is made. Good stories do not message a moral—it may be there, but the reader is credited with enough intelligence to find it. The friendly letter of incidents and descriptions may be pleasant, even charming, but the best moments of friendliness are in the sharing of opinions. Of course there are two good sides to such a transaction. Letters will reach their best when there are ideas in them worth sharing, sincerely held and frankly put, with literary skill. In general, sentences loosely strung together with *ands* are very bad in speech and much worse in writing. Students who really want to write well must be interested in words—for their exact meaning, for the notions they suggest, and for their sound. Much of the pleasure in reading prose comes from the rhythm of the phrases. We discover that it is possible to beat a sort of time as we read. But rhythm is not the first thing to take care of in writing. The one thing always needed is clearness. After that come strength for the business in hand, and whatever graces we can manage.

Drawing, like photography, is of two principal sorts, the mechanical and the pictorial. One measures precisely, works to scale, omits nothing necessary for exact reproduction; the other selects what will bring out certain characteristics and moods, omitting everything else. Mechanical drawing may be taught to anybody who has a little imagination and a great deal of patience. It is useful wherever any kind of building or making with tools is going on. Only those who learn the language of mechanical drawing can read it, but for them it is a means of giving and getting, almost without words, details which the draughtsman could not put into words if he wanted to, and could not understand if somebody else succeeded in wording.

Pictorial drawing is quite another matter. We can all of us do something at it, but only folks born with the knack and the impulse can go very far. Here the last word is to *draw the thing as one sees it.* The idea is not to reproduce *exactly,* as though for a carpenter or a tinsmith. A picture without a mood and a meaning quite beyond its actual lines isn't much of a picture. Every clever worker with pencil and brush puts himself into his picture. *Style,* that indefinable mixture of individuality and charm, is present in drawing just as truly as it is in literature.

At present, the bulk of professional drawing in this country goes to advertise our wares—a state of things which cynics enjoy. The offset is that while we are undoubtedly cheapening art by putting it to "base uses," we are at the same time giving an almost compensating charm to our commercialism, and are making sure that artists can live—at least on a par with other professions. An exhibit of advertising "originale", without their propaganda for this or that talcum or talking machine, is a really excellent art collection. The worker has his own standards of excellence, not altogether for sale; and meantime, the good by-product of better advertising is a training of the public taste in art.

The practical value of skill in drawing is very high, if it is combined with a trained general intelligence.

Folks who study music, pictures, poems, and other art forms find out after a while that all these things are alike. Each piece of art work is *one* with all its parts bound together by subject, intention, and treatment. There is pretty surely a climax or chief focus, to which, and from which, everything points. There is repetition, refrain, rhythm, balance of parts, so that one unit answers another, light answers dark, colors set each other off; yet all these things with such a personal selection and emphasis that an expert can surmise who the artist must have been.

Geography.—One of the best all-round values in school. Very useful in general reading. Necessary in government and in business. More important each year, by reason of the inventions which have made life so complex, every nation selling goods to every other, buying goods from every other, with instant communication and swift travel. If it isn't interesting, there is something wrong with the books or the teacher. Try testing yourself on the geography of places, peoples, and objects mentioned in the daily paper, and in magazines like the Outlook, Independent, World's Work, Review of Reviews. When our knowledge of geography is rich enough, maps become the most fascinating of publications. We see and climb the mountains, smell the salt marshes, hear the fog horns and the bells. We do not read "words, words" about towns and folks—we see them all as mental pictures. On this account it is better to have geography books with many pictures. The best aid to vivid imagining of distant places is travel, and the best travel is deliberate, with stops to find what the people are like and how they live. Of course, for practical purposes, geography of products—their growth, preparation, transportation, and values—is very important.

Grammar is good for two things, in the main. It does help to keep straight our difficult and crooked English speech, by framing and drilling on Rules of Syntax. Would you say *I did not believe it to be he,* or *I did not believe it to be him?* Rules of Syntax, simple ones at that, settle all such questions. If our speech falls below the level of the place we are seeking, the chances are against our getting the place. Nothing more surely marks the vulgarian than bad syntax, for cultured people are painstakingly correct in their use of the Mother Tongue.

But grammar has bigger uses than syntax. Folks who hear good speech at home have little need for Rules in Grammar, but everybody can find high values in analysis. The analysis of English sentences is not a grinding formality. The right kind of analysis looks for the real relationships among ideas. Learning how other people think is one of the very best ways to learn to think for ourselves. People who protest against the teaching of analysis in grammar have probably never really mastered it themselves. No single discipline in school can do more to make reading easy and accurate. College professors complain that their students have never been taught to read. What they mean is that students do not readily and always get the core idea of a sentence and a paragraph and fasten to that central idea such modifiers as are worth keeping. Analysis really *teaches us to read.*

Handwork in General.—Skill with simple tools is useful for everybody and is not inherited. Do you hoe or bat right handed? Try breaking yourself in to the other holding. Indian clubs give two arms, in place of one, for many useful movements. Laboratory manipulation takes the blundering suddenness out of our starts and stops; gives a patient control of our fingers; shortens the time of learning any other similar work with the hands. Many thousands of times in everybody's life, it is handy to be handy. We can save time and money by it; we can have and do things impossible to folks who wait for somebody else to do their tinkering for them.

History and Government of the United States.—Government of the people, by the people, for the people will perish from the earth if the people do not keep informed about public affairs and learn to make sound decisions. Government for the people really means one compromise after another, setting limits to the healthy aggressiveness which would go too far if it were not checked. Every American should know how full his country is of these "checks and balances"—nation and state; senate and house; legislature and courts; imports and exports; labor and capital; statute law and common law—to the end of a

long chapter. History will show how high have been the prices paid for the wisdom of compromise, and how sure is the failure of the peoples who do not learn to put wise limits on individual and local powers, for the general good. History helps us to avoid the blunders of the past; gives us the keen satisfaction of prophecy, along with the duty of citizenship. Civics gives a sense of the value of our institutions; shows us the distinctly American idea, worth keeping at heaviest cost; helps us to know from what points the dangers will come, with some hints of possible prevention or remedy; and trains us in the practical duties of citizenship.

Languages.—Latin.—The arguments *for* Latin are its help in the use and understanding of English, its "discipline," the culture from close acquaintance with fine literature, and the relatively good results from indifferent teaching. The arguments *against* Latin are that equal time spent on English would bring more results for English; that it is best to find our discipline in subjects of practical value; that the real appreciation of Latin literature comes only after so many years of study that the results are not worth the expenditure, especially in view of the wealth of English literature likely to be neglected by specialists in Latin; and that it is the duty of school authorities to provide teachers who can handle well the subjects we really need to know and use. It seems to the writer that the "antis" have rather the better of the argument, *theoretically*. Practically, if the best teachers of English, history, and science in any school cannot lead their pupils to think hard and work steadily in those subjects, it is probably well to fall back on the time honored Latin and mathematics. The first two years of Latin are especially useful in English. If English grammar has been badly taught, Latin grammar will insure an idea of sentence structure. The roots, prefixes, and suffixes derived from Latin make up a big percentage of literary English words. Time on the first two years of Latin is undoubtedly well spent. Beyond those years there is a period of rather neutral value in the study of Latin, before the real mastery of the language begins to bring delight. So our recommendation is two years of Latin for everybody who hopes to make something of himself mentally, and then either no more or at least four years more.

Modern Languages. — The world war shifted our emphasis on the modern languages in school. Not so many years ago, German was our most popular foreign language, with French second, Spanish negligible, and Italian practically untaught. After the war, French was easily in first place, Spanish had become popular, and German had dropped almost out of sight, along with Italian. The real reasons for studying any of these languages are some combination of these: to be ready for business, for travel, for advanced study in a foreign tongue, to bring social reputation, or for pleasure and discipline. Taking these points one by one, every great nation has its worthy literature. The interests of travel lead to the languages of those lands whose history has been of importance in shaping the traveller's own nation. Social eclat is a bubble hardly worth chasing. Pleasure in language study is largely a matter of personal taste. Advanced students will always need the languages used by science and philosophy. One who has studied Latin will find more of discipline in German than in the Romance tongues, but the adverse notion affirms that the time required to master German will give fair acquaintance with *two* of the languages derived from Latin. Tested by these principles, our popular eclipse of German is rather absurd, for every one of the values lost to the German language by war will come back and find us unready to use it. The new interest in Spanish has economic and political support, of a sort that should probably give it a third rank in general popularity, with French and German in the first and second places. Perhaps in the general order of values, business reasons for knowing a language rightly come first. It is this motive, along with the idea of Pan American union of interests, and the negative reaction against everything German, which has so greatly stimulated the study of Spanish. Just why Italian is neglected in America is hard to understand, unless it be on the ground of an already over crowded curriculum.

English Literature aims to inform, to convince, to persuade, to arouse, to entertain, or to charm. In the first service, it teaches us something new, or puts something old in a new light. Literature of conviction is not satisfied to teach by telling; it makes sure to give all the reasons in the case, so that we accept the opinions presented. To persuade is to reach the springs of decision, with action in a desired direction as a result; we arouse another when we excite him toward prompt and vigorous, or even violent, action. The word entertain speaks for itself. It includes the idea of charm, but the words are not interchangeable. We are not always charmed when we are entertained. Charm in literature lies for the most part in the style—the combination of fitness with unexpectedness, the happy suggestion of more than is really contained, the graceful, melodious, harmonious flow of words, the total unique attractiveness in the manner of writing—or speaking.

So when we read or write, some combination of these half dozen aims and effects is under way. The commonest and least important is mere entertainment. Ordinary gossiping conversations are like that. If the writer has a peculiarly attractive way of saying things, we grant him charm. Henry Van Dyke is charming when he writes of Little Rivers; R. L. Stevenson is charming in all his accounts of persons and places; the attractiveness of G. K. Chesterton is in the unexpectedness of wit; J. M. Barrie wins by the happy perverseness with which the youthful and the unconventional live on beyond their time in his pages; and so on. There is, then, a *mental* quality in charm which is more than idle entertainment. A wealth of rich satisfaction is to be had through pleasure in literary style. We haven't learned to read until this is a part of our satisfaction.

Of course we read in school a big bulk of things for their value as information; and this is a very respectable, worthy, necessary procedure. The richer our store of facts, the richer may be all the rest of our mental experience. When once we become absorbed in a subject for its own sake, it doesn't so much matter how the author says things. If we really want to know about some big subject—say the History of Religion, for example, we will plough through whatever the Encyclopedia Britannica has to say about that subject; but few people read in an encyclopedia for the fun of the thing. We may be peculiarly grateful to the writers who say important things in so pleasant or striking a way that we enjoy the learning process, and are thus painlessly led to become students. Literature has almost a monopoly of this insinuating cleverness of approach. For whenever the manner of the writing is so cleverly attractive as to win a reading regardless of content, the material has satisfied the first test of literature.

The second test of literature is that it shall be true, or seem to be true. The real student is always trying to find out which of these two he has in hand. Is the thing true, or does it only seem to be true? Does the author intend that we shall believe him, or does he only ask that we shall grant his *seeming* truthfulness? If he aims to have us accept his words as wholly and literally true, we must have a care. There are facts to be looked into, there is reasoning to think through, with eyes wide open for fallacies—those reasoning steps in which too much is assumed, or in which we allow our feelings to bias our judgment. If the writer merely asks us to admit that what he says seems true, well and good. He is aiming at the literature of sheer charm; or perhaps he is teaching indirectly, "as though he taught us not". When Maude Adams used to come to the foot-lights and challenge the house "Do you believe in fairies?"—we all rose, of course; but we meant that we believed in *her* kind of fairies. She made them seem real. So the student of literature must keep a good conscience in this matter of distinguishing between the real truth and the seeming truth.

Again, real literature is about subjects and problems permanently interesting. There was a time when good writing was expended on the question of how many angels could find standing room on the point of a sewing needle. However important and literary the discussion may have seemed to medieval school men, we have lost interest in the matter. We do not believe in that sort of angels any more; so it would require the combined skill of Barrie and Maude Adams to lift the discussion to the rank of literature, through seeming truth and seeming importance.

Young people of intellectual promise are pretty sure to be keenly interested at some time in the big meanings of life. They want to know what it is all for and about; why we should be in the church and obey the laws; how the world and the things in it were really "made"; what the stars and the flowers are; why is pain, and how much does goodness deserve because it is good? What is it to be good, anyway, and what is the use? Great books deal with these thousand and one haunting questions of youth. They do not always agree, and for many of the problems no answer worth hearing has ever been made. Yet literature is the speaking voice recording man's best answers to the riddles of experience; and the history of literature is a study of the groups, the influence, the fashions, of man's comment on life. Schools of writers may follow and imitate a leader; may band together in acknowledged acceptance of a set of ideas; or may simply write alike because certain subjects and opinions are "in the air." However that may be, English Literature serves its best purpose when it makes us bigger; brings new and richer information; gives clues for answering Pilate's question, "what is truth?" and supplies important specimen answers; expands us with new

meanings, new delights, new intentions.

Music.—The approach to musical appreciation is in a general way the same as the approach to literature, painting, or any other art. It has to do first with the composer's purpose, his *motif* or musical theme, and his intellectual problem. When a composer writes music for a great lyric poem, for example, his problem is to parallel the author's revelation in words by a second revelation in musical tones, both aiming to convey the same basic idea and emotion.

All art forms have structure or design. The commonest form is introduction, development, climax, conclusion. Wherever there is progression, this pattern is pretty sure to appear. The introduction brings in the persons, the setting, the motif, the problem; development puts these elements into action and reaction, with a tendency to build up to a point of strongest interest or crisis. Powerful effects may end abruptly with the climax. In any case, the conclusion must not be long-drawn, even if its service is to let us "down to the C Major of this life."

Literary composition recognizes a series of telescoping unities—the unity of the sentence, the paragraph, the chapter, the book. There may be a like simple complexity in music. A large purpose may bind together parts which are in themselves quite dissimilar. In that case, the subject is of course big enough to include all the subdivisions.

In music, as in all art forms, the basis of successful portrayal is technique. There is not the slightest hope of reaching high effectiveness except through patient study and repetition of exercises.

The word style has about the same meaning in music that it has in prose and verse. Give to each of two composers the same lyric poem for setting to music, agree as best possible about the mood, even assign the musical motif or key melody—each man's thought will take a characteristic manner of expression. Give to two violinists the same *Ave Maria*, or to two singers the same *O Sole Mio*, the two interpretations will differ not only in quality of tone, but in rhythm, phrasing, shading, intensity, and total effect. Each will have his own way of doing the thing—in other words, his own style. Style is thus tremendously important. It is almost true that the style is the man.

The big question about a book, a picture, a piece of music is not *Do I like it?* but *Does it do well the thing it set out to do?* When a singer finishes his song, he should have managed to make voice, style and all *incidental*, so that we find ourselves making impersonal comments, rather than personal ones. All art is a representation of human experience. The large problem of both appreciation and interpretation, the problem of art itself, has to do with the fidelity and the fullness of the interpretation.

To be sure there are social phases of art. No matter how well a thing may be done, it is possible that it is not worth doing; even possible that it is worse than worthless in its social tendencies. On this point, the typical views of the realist and the romanticist break apart. The realist recognizes no social obligation of art but the obligation of fidelity; while the broader view judges even art by its molding effect upon society.

High School Mathematics.—Values in school are practical, cultural, or some combination of the two. Algebra, geometry, and trigonometry are direct money makers only for teachers, scientists, surveyors, and certain higher industrial workers. But since these form a considerable bulk of the possible future occupation of young students, and since practically all colleges require them, it would be bad policy to omit the high school mathematics. There are other more general grounds for the use of these subjects. It is doubtful if ordinary mortals outside the groups named above will ever have the slightest direct need for the formulas of trigonometry or the demonstrations of geometry; but the indirect uses are very great. Abraham Lincoln once said that even after he had become a practicing lawyer, he had no satisfying notion of what proof meant *until he read Euclid*. To be sure there is very little value in memorized demonstrations—we might better be memorizing Mother Goose, for our grandchildren-to-be. The value lies where Mr. Lincoln put it, in the training of a reasoning habit. Students who have an eye on the future will allow nobody and no book to do thinking for them which they can do for themselves. This means that we shall close the text-book after reading the theorem, and work out our own proofs. It means that the so-called "originals" of geometry are the best part of the book. It means that when we have really mastered the subject, we can reproduce it; not by memory alone, or chiefly, but through step by step reasoning. Incidentally, it means that the attempt to teach reasoning to youngsters who have not yet reached the reasoning stage is necessarily a disheartening waste of time. There is another proviso. Some folks reason pretty clearly in one field, at least they get across to desired results somehow, without being able to tell how they do it, or to reason formally in another field of our choosing. This means that if first trials of high school mathematics show us to be at the time ill adapted to the work, it should be at least deferred, perhaps omitted altogether. Actual tests of college students show that nearly half of them have memorized their demonstrations in high school, as the best way out of an unwelcome predicament. Where we clearly cannot adapt the youngsters to their studies, we should adapt the studies to the youngsters; and we should try to so handle every subject that it shall have the largest possible character-building effect. For it is quite certain that the scholar in one subject is likely to be the ignoramus in another, and that the accurate reasoner in one field may be the hesitating blunderer in another, unless it has been possible to develop through Latin, history, physics, what-not, a general method of accurate analysis, selection-rejection, and synthesis, amounting to a trait of character.

High School Science.—Why? It is very interesting to see how big a proportion of the man-sized jobs in production, transportation, and even salesmanship require a natural science in order to master them. Our civilization depends on applied science. All men now fifty years old have lived through an age of miracles, and there is every indication of further discovery. It is the scientist who points the way. He is the Columbus of economic advancement. For the "other half" of us, who teach, write, draw, sing, entertain, argue, buy and sell, keep accounts, work with fingers and feet, science is the enlightener, showing us the kind of world we live in; making it comprehensible; delivering us from stupid superstitions, and opening far vistas of absorbing contemplation. The supreme intellectual conception is of an all-inclusive unity, of which every shifting phenomenon is but a shifting phase. Two panoramas are always unfolding—the world of nature, and the world of men. Science tries to understand both, and the best of all reasons for studying science are that the real student never knows a dull moment, and that at any time an unexpected surmise on the border-land of things known may bring new areas of the unknown into our service.

HOW SHALL I EARN A LIVING, and HOW PREPARE?

I. **Vocations in General.**—Vocational studies are supposed to fit the student to earn a living. "Living" should be figured as considerably more than a comfortable subsistence of food, clothing, and shelter. A bare living wage shuts out the worker and his dependents from many of the finer satisfactions of life. Married or single, a man ought to save from twenty-five to fifty per cent of his gross income. Money "saved" is stored and accumulated toward lump expenditures or lump investments. Lump investments are made either in the hope of enlarging the sum available for future lump expenditures or with the idea of "developing" something or other, playing finance or industry as a boy plays a game. The cash return may be the end in view, but more likely the game is played for its own sake. Many a rich man dies rather unconcerned about how his money shall be spent, or by whom. He has had his fun making the money.

Two variables make saving possible: one is the income, the other the outgo; and both are largely under control. Vocational studies of the right sort reduce the time necessary to reach a satisfactory income. Such studies are well chosen when they are adapted to the taste and talent of the worker, in a useful field not over-crowded. We have, for example, too many pettifogging lawyers, too many town doctors; not enough big preachers, not enough scientific farmers; and so on.

"Livings" are graded all the way up from pure brawn work to pure brain work; and the pay roughly follows the grade. There is also possible upward movement of compensation or gross income from year to year, say from twenty-one to forty-five or fifty years of age. Leaving school too young is very likely to fix one's place lower in both these grades than it might have been. The young man of thirty doing pure brawn work is not likely to do any other kind of work, nor to make any great improvement in his income, as time goes on.

The right sort of high school and the right sort of home, taken together, will probably lead a boy to know what his future work should be—and this is becoming more true also of American girls, each year.

Very often one work must be chosen as a stepping stone to another. In such cases, it is desirable that the temporary occupation should be useful in the permanent one, if possible. For instance, short-hand, type-writing, simple accounting are valuable on the way to big business

positions; pharmacy is highly practical in a doctor's occupation; carpentry is almost necessary to a building contractor; classroom teaching is indispensable to a wise supervision of schools; and so on.

The great American game for adults is undeniably the pursuit of wealth. From this angle, vocations are of two sorts—those from which the worker may properly hope to amass a considerable fortune in his own lifetime—say $100,000 or better—and those which are sure to fall below this result. In general, it is equally clear that big fortunes come through fees and profits, rather than through wages and salaries. Few professional men become wealthy by fees alone—they too must invest their surplus, for profit. Again, any wide awake, studious, "right-hanging" wage worker in this country may pass up through the salaried group into the employing and investing class, on the way to fortune.

Schools can do much more than they have yet done toward the pursuit of fortune through practical efficiency. The big business man needs a great store of *information* about all sorts of things; his conduct of business will be much more efficient if he himself is a *technical expert;* his larger business judgments depend upon *careful reasoning* in the big field of actual facts. Schools can furnish information, can develop technical skill, can provide for the exercise of judgment on typical industrial and commercial problems. It must be said that as yet in this country correspondence schools are making the only comprehensive effort to set the young worker on his way upward through wages and salaries toward the larger efficiency.



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Getting an Education always means a Hard Climb

Notwithstanding the reactions set up by classicists, and the more serious reactions set up by faddists in Education, there is a very sure and legitimate drift toward the use of the people's schools as definite training grounds for the people's work in a work-a-day world.

When all is said about the possible service of schools to business and industry, two interesting rejoinders are yet to make. One, unless a man is born for it, and rightly circumstanced, no amount of school training can make him a rich man. The knack of money-making is perhaps more inherent than acquired, and more social than technical.

The other rejoinder is that the great American pastime of getting rich doesn't interest quite everybody. The writers, the painters, the sculptors, the musicians, the preachers, the philosophers, the scientists have another notion of what life means. They want to *understand,* to *enjoy,* and to *share* the world they live in. To get and to give the biggest possible sum of the finest possible satisfactions appears to them to be an end which justifies their means of living. It guarantees a certain roundness of interest; insures that the pleasure of practical achievement will be matched by the pleasure of philosophical meditation; provides that art shall alleviate materialism; and that philanthropy will help to take away the curse of unfair accumulation. Here the practical, the thoughtful, the artistic, the fraternal-philanthropic, meet and fuse in a union which gets most out of life because it gives most.

II. What Shall I Do For A Living? An analysis of occupations for aid to students in choosing a life work.

Accounting. — Good possibilities for advancement. Leads toward business management and financial expert's work, with hardly a limit to the possible cash returns. But the accountant who intends to go above $2000 or $3000 a year must study widely and have an ambition to outgrow every position short of the top. High schools can give him only a beginning toward the knowledge required in his profession—the rest he must work out for himself in spare time, or in a school of business administration. Here are a few of the studies recommended in preparation for the high salaried appointments: Partnerships, Cost Accounting, Analysis of Accounts, Corporate Organization and Accounting, Auditing, Graphs, American Business Law, and Special Accounting for Railroads, Mines, Banks, Brokers, and Cities.

Preparation. The commercial course in any good high school or commercial college; the accounting courses in a reputable correspondence school—in either case, with special reference to the methods used in the business which the student is likely to connect himself with.

Advertising.—Advertising agencies make big sums, and individual workers are salaried above $15,000 a year in many instances. Requirements: understanding of salesmanship in general; knowledge of human nature; command of attractive, convincing English; ability to seize the winning points of an article or a project; skill in drawing or photography, or both. Variety of assignments, constant challenge to ingenuity and skill, and big financial

returns make advertising one of the best of business opportunities.

Preparation. Special courses in college, in technical schools, or in correspondence schools. Factory experience and selling experience highly desirable.

Architecture.—A clean, interesting business, but variable in its returns. It is doubtful if the average income of architects would reach $3000 a year. Established firms of wide reputation do much better than that, but two uncertainties work against even them—an uncertainty due to competition from other architects, and a periodic uncertainty which follows the tide of building conditions. If work were constant and were paid according to the knowledge, skill, and responsibility involved, it would be hard to find a more desirable occupation.

As superintendent of construction, an architect should have a practical knowledge of every trade called for in the construction of the building he plans. In the modern division of labor, this means that during the construction of an ordinary city dwelling, for example, the architect will be called upon to pass judgment on labor and materials for fifteen or more different sets of tradesmen. He must know how to compute quantities, prices, and strength of materials; he must be able to do mechanical drawing, free hand and perspective drawing, and color work from specifications. He will need all the mathematics offered in the best high schools, including geometry, trigonometry, and logarithms. And at the top of his profession he will need the general theory and history of architecture, for every type of building in use. All told, architecture offers a fascinating combination of the aesthetic and the practical, with the possibility that the architect may become also the contractor—which is another financial story.

Preparation. As indicated above, architects need a wide range of information and experience. There are two main types of preparation: the technical college and the correspondence school. Actual residence in a school of engineering is recommended.

Automobiles.—There are four phases of interest in motor cars—manufacturing, selling, operating, and repair. At the moment of this writing, an automobile is in use in the United States for every nine or ten inhabitants. When we figure that the retail price of these machines has run from $500 to $13,000, with perhaps an average of nearly or quite $1,000 a machine, the volume of this mushroom business is staggering. Tremendous fortunes are being made in the manufacture of trucks and motor cars, and respectable fortunes are being sunk there. Competition is now so severe, and the market is so nearly filled that a second rate machine or an inefficient selling system may spell ruin for its company. Some companies have tardily learned that the future depends upon keeping the customer satisfied, and that means service.

Only second to the fortune for the successful dealer is a good motor car. Dealers' commissions on sales run from twenty per cent to as high as forty per cent, so that in every good-sized town there is likely to be at least one man whose income is $50,000 a year from the sale of motor cars.

The operating of motor cars, for hire, is of course not an occupation to be taken seriously, except as a temporary expedient, perhaps in vacation time. Hardly more can be said for the repairing of cars, as a business. A young man who might have been satisfied, a few years ago, to be a carpenter or a blacksmith may be contented now as an auto-mechanic. Sixty or seventy cents an hour may look big to the boy of sixteen, but if he stays a few months too long at that sort of thing he will find that he has mortgaged his future beyond redeeming.

Preparation. The ordinary practice of picking up the trade of auto mechanic in a garage does not commonly lead far. One should take a mechanical engineering course in some school which specializes in the problems of motor transportation. Perhaps the best schools for the purpose are in Detroit, the motor car headquarters.

Banking.—An honest, dependable young man or woman will find a clerkship in a bank to offer a tranquil, unharassed existence, at moderate salary, with promotions so far apart that even ambition commonly ceases to disturb. If a young man is in love and wants to settle down, really settle, with $2,000 or $3,000 as the pretty sure limit of his income, almost any minor place in a bank will do.

Even the higher positions in ordinary banks do not pay big salaries. $5,000 is perhaps a fair average for the managing officials. But these men, being close to big business and fully informed, have opportunities for the quick turn-over of their private funds, and by this means their banking business becomes profitable. Bank officials do not become rich by economizing on their salaries. Either they have capital before they become bankers, or they acquire their capital on the side. One of the commonest sources of profit to banks and of personal income to their officials is in the underwriting of bonds—a process by which, with little cash actually invested, large sums may be realized in a short time, by reason of the big face values of the securities transferred.

One would say that the first requirement for a bank official is downright honesty. The temptation to borrow from the bank, in one way or another, for private speculation, is very strong. Other requirements are: very broad business information, wide social acquaintance, and very shrewd judgment of men and affairs. The general policy of the bank is determined by its board of directors, but the carrying out of that policy, the actual decision of a thousand and one points of practice, is in the hands of the cashiers, the vice presidents, the presidents. These are positions of great importance, great responsibility, and great opportunity.

Preparation. Studies in economics, in the history of public finance, in business management, in banking and bank accounting. All these courses are now offered in good colleges. A bank clerk who wants to study without leaving his job will do well to consider the correspondence schools.

Building—Contracting.—Big profits in honest building are most likely to be made in connection with real estate operations and on a large scale. But if the profits in this joint operation are to be both big and quick, the purchase of land must be made at the right price in the right locality, and in the nick of time; and the purchasing of materials must be managed with discounts for quantity, and with a view to saving money by doing a large amount of machining in the contractor's own plant.

Contracting is, then, one of the many occupations in which money can be made most rapidly by those who already have money, or have money and credit to carry them through to the period of returns.

One of the worst drawbacks on contracting is that it is subject to seasonal fluctuations. There are years, and series of years, in which practically nothing is doing; as there are dead towns and live ones, dead regions and live ones. The contractor must know when it is time to lie low, and when it is time to crowd the game through with every dollar he can command.

We are still in the period of national expansion; still in the period of congestion into manufacturing centers. This means that for a long time to come there will be a good opportunity for the building contractor.

Like an architect, a contractor should know all about materials, the handling of workmen, the processes involved in all sorts of building. If he knows drawing, so much the better. But his chief money making traits lie in the combination of executive ability to keep things going at high pressure, keenness in judging men and affairs, largeness of vision, good ability in buying and in salesmanship.

It's a man's job.

Building Trades.—Four years after the World War, tenders and helpers were getting $3.50 to $5.00 a day, and masons, carpenters, mechanics of all sorts, from $5.00 to $10.00 a day. This is fully four times the wage paid a generation ago If one tried to account for it, he would have to name among other things the continued effects of war; the American system of tariffs and living standards; the pressure of labor unions; the rapid industrialization of a once rural people; the continued expansion of America by development and by immigration; the interdependence of values, such that uplift or depression in one part of the field tends to produce a similar change all over the field.

He would also have to note that apparent high wages, if long continued, are pretty sure to be only apparently high. Necessity, or an unmistakable preference for work with the hands, of course justifies a boy or girl in choosing a mechanical trade. The satisfaction of building, making, and mending things is a strong one and a worthy one. If ambition lasts, there is always the possibility that the helper will become mechanic; the mechanic, foreman; the foreman, superintendent; the superintendent, employer. But let him beware of becoming a human machine. Every accumulation of automatic contrivances of steel in factories and shops tends to make a new set of flesh and blood automatons. To be one of these is to be cursed with the curse of modern industrialism. No matter how attractive the mess of pottage may seem in our restless younger days, the human birthright to freedom, vision, and the finer satisfactions of life should not be bartered away, of our own wills. The loss is even greatest when we are least aware of it.

Business Management.—Business management is so severe in its requirements that few men claim or attempt to know all

about it. Yet there are men whose knack of organizing and administrating amounts to genius. Such men find their place in the continued development of growing enterprises; or they may make a profession of setting weak and run-down industries on their feet, one after another. There is hardly any limit to the salaries such men may legitimately claim. When a company has several millions of investment and possible profits at stake, there will be no hesitating over a little matter of $50,000 a year to the right man.

Obviously one must be born for that sort of thing. But there are youthful indications of promise. The traits that make successful business managers for high school and college enterprises may expand into bigger effectiveness. No other type of engineering is likely to excel business management in the union of exciting adventure and big rewards.

The efficient manager is a constant student, always picking up facts, thinking out methods, testing and checking devices. He learns about his job from both books and men. There are schools for his profession nowadays. A few of the things he studies are: filing, indexing, correspondence; accounting, cost accounting, auditing, graphs; bonds, banking, brokerage, credit, collection; insurance, safety; business law; management, personnel, production; advertising, selling.

Civil Service.—Good for the man or woman who is willing to accept secure, steady employment at the sacrifice of high salary or fortune in business. Compensation from $1,000 to $4,200 or thereabouts, with the average around $1,600 or $1,800. The day's work is not more than eight hours; vacations of two to four weeks are given with pay. Provision is made for retirement on pension. Appointments are made from a list of persons eligible by examination, and the only favoritism on this list is in the interest of ex-service men. About equal numbers of men and women are appointed.

Civil Service examinations lead to positions as stenographer, typist, clerk, inspector, cashier, store keeper, gauger, light-house keeper, and general field work for the government, especially in the Post Office, Railway Mail, Internal Revenue, Immigration, and Customs Service. The probability of appointment may be judged from the fact that 20,000 to 45,000 appointments are made annually. Examinations cover elementary subjects actually needed for the work of the department. Separate examinations are given for Typist, Stenographer-Typist, Book-Keeper-Typist, Book-Keeper, First Grade Clerk, Post Office Clerk, Railway Mail Clerk, and Immigration Inspector.

One may study these subjects at home, or in the commercial courses of any good high school or business college.

Dentistry.—An established city practice in dentistry is worth at least $10,000 a year. The hours are regular, and there is little of the surgeon's or physician's responsibility for life and death. As compared with other occupations yielding a like income, the work of a dentist is narrow, monotonous, and unpleasant. But dentistry is necessary service, and an honest worker can find sustaining enthusiasm in it. There appear to be four general divisions of dentistry, concerned with diagnosis, repair, removal, and replacement. A good deal of scientific ingenuity has gone into diagnosis, repair, and replacement in recent years, to the advantage of the public health and of the dentist's finances.

A course in dentistry requires two or three years of residence in a dental college, sometimes more, with clinical practice.

Drawing, Designing, Illustrating, Cartooning.—Draftsmanship, or mechanical and architectural drawing, is a clerical member of the arts family, useful in bringing the creative notions of designers into form for the guidance of workmen. It requires patient exactness, and some training in the theory of mechanics and in the interpretation of conventional drawing. One who intends to do commercial designing should have some knowledge of mechanical drawing. Like other clerical positions, drafting cannot long hold a young man of ambition and talent, but it supplies a useful lower round in the ladder of progress.



This Man studied Hard for Nineteen Years

Designers are creative artists, whose practical success is limited only by the public demand for their inventions. The field for drawing a design is very great, in all sorts of enterprise. The commercial success of every milliner and garment maker depends on *design;* every house and all its furniture is first a mental, then a material, design; design is the interesting indispensable beginning of every lovely and every practical work of man's hand. Its contribution is as important in the foundry as in the studio. As our civilization progresses, the union of beauty with utility will be more and more insisted upon; and the man or woman who can effect this combination will be handsomely rewarded for work that is always a pleasure. Naturally, the studies which aid in designing will depend on the type of product intended. The big requisite is a creative fancy, and some means of giving form to that fancy so that less gifted folks can take up the work of material production where the artist-producer leaves off.

Illustrating gives visible body to the fancies recorded only in words until the illustrator takes hold. Good illustrations are an important second to good inventions of all sorts, especially in books and magazines. Of course, illustration at its best is also creative.

Cartooning.—There are many sorts of comment on life with pencil and brush. That comment may be serious or funny; highly imaginative and closely founded on fact; definitely limited or generally applicable. Cartoons are humorous pictured remarks on men and affairs. At their best, they make wise and influential recommendations. There is probably no surer way to keep people straight, inform their ignorance, and correct their crookedness, than the way of humorous public comment in drawings. A good cartoonist is therefore much more than a skillful worker with the pencil. He is a thoroughly informed and broadly experienced philosopher, with a responsibility and a power fully as great as that of editors themselves. Such combinations are rare, and the rewards to the few who possess them are correspondingly great. A youngster with a talent for sketching and an interest in history and politics might very well adopt cartooning as a future vocation; hold to it, and train himself for it in every election of studies and in his use of free hours.

Courses in design form an important part of every program in schools of fine and applied art. The better correspondence schools offer many excellent courses in industrial and artistic designing.

Dressmaking, Millinery, Tailoring. — A good business for those whose taste and skill lie that way, *if* they run their own shops or factories, and particularly if they have the cleverness to design beautiful apparel. Only a fair trade to follow for wages. Somewhat steadier than the building trades, but confining and sedentary.

Engineering.—*Civil Engineering.*—Survey, ing, Leveling, Sewerage, Draining, Irrigation and Water Supply, Road, Railroad and Bridge Building, Water Wheels, Stone, Brick, Concrete, Reinforced Concrete, are all within the scope of strictly civil engineering. 50,000 men are professionally engaged in this work in the United States. The rank and file of this army receive salaries of $2,000 or $2,500 a year. The greater the scope of work a man can effectively manage, the higher is likely to be his compensation. The big rewards in engineering go to a combination of two or more of the types in one man. For example, there is great demand now and will be greater future demand for men able to design, construct, install, and operate hydro-electric machinery. But this requires a working acquaintance with civil, mechanical, and electrical engineering. A man who has all that, with business ability, is able to command from $10,000 a year upward.

Mechanical Engineering, unmixed, has as its field general machine shop and foundry practice and the entire theory, construction, and operation of steam boilers and steam engines. There is enormous demand for competent mechanical engineers, but there is better compensation for the man who also knows about electrical machinery.

Electrical Engineering deals with all means of generating, controlling, and using direct and alternating currents. When we remember that a really up to date dwelling house has electric communication, electric lighting, electric kitchen and laundry appliances, and even electric heating; when we recall that our great cities use electricity as their chief means of transportation; that electric motors

and electric machines are in every modern factory and are bound to be; when we reflect that water power becomes widely available only through electric power; and that with all this we are only in our first fifty years of electrical invention, the profession of electrical engineering stands out as one of the best possible occupations.

Preparation.—Engineering requires such a broad foundation in mathematics and laboratory science, that four solid years in an engineering college make only a fair preparation. A man who is already engaged in elementary engineering may continue his studies by correspondence.

Engine Running.—At its simplest, an ill-paid, easily learned occupation hardly in the class with mason's helper; at its best a highly technical and expert profession, commanding many thousands of dollars a year. Good for the boy whom machinery fascinates, if he will study and move up.

Preparation depends on the type of machinery to be operated. Head engineers in big plants, on steamships, in power houses, and the like should be machinists capable of making prompt repairs. To rise in their profession, they should have studied mechanical and electrical engineering.

Farming.—No finer work could be found, for the right man, either as a general farmer or a specialist. Probably the greatest success will be made by the man who uses general cropping as a basis for a specialty. In the central states, there is a fortune in high grade cattle, with alfalfa; a fortune in fruit; middle westerners grow rich on wheat and corn; farmers near great cities will serve their local market. Any one of a score or more of plant or animal products may prove to be the one best adapted to a particular farm, farmer, or locality.

But the day of haphazard small farming is over. Farming as a desirable business is for the man of affairs who is also a student. Agriculture is decidedly the most popular course in some American Universities—Cornell, for instance. A successful farmer needs a working knowledge of soils and soil improvement; of the raising, harvesting, and marketing of all staple crops; of live stock and dairying; fruits and storage; market and truck farming; poultry; farm machinery; and general farm management. An up-to-date farmer is necessarily something of an engineer; understands motors, and all sorts of automatic farm machinery; can operate tractors, set up, run, and make simple repairs to the dozen or twenty complicated machines about the place. A real farmer who is also a real mechanic and a real business man can make in his own lifetime and under his own honest management a fortune comparing favorably with those of the cleverest operators in cities.

Forestry.—An interesting business, of very great public service in its preparation for future need. Followed for these reasons rather than for gain. Our country is still too eagerly absorbed in the present to draw any very searching lessons from the past, or make any adequate preparation for the future. A young man who likes the simple life of the woods and the burned over districts; who is best pleased to be in the wilderness for weeks at a time; who has a vision of checking needless waste in the forests, preventing timber theft, and restoring the essential life of the cutover barrens, may find no more congenial employment than forestry, either for his state or national government. Of course there is another phase of the forester's work—the raising of young trees. This is fully as important as the field work, but it is likely to be a bit monotonous. Each seedling brings forth many thousands of plants, all alike, all to be treated alike. Even so, *if the pay were the same*, which would you do, cultivate ten thousand pine trees, or drill and fill ten thousand decaying teeth?

Agricultural colleges and many universities now offer courses in forestry.

Journalism.—It all depends. We have no absorbing respect for the gossipy trade of news gathering and news purveying. In general, reporters are glad to print whatever their customers are glad to read; and the newspaper public is pleased to read a good many things that were better



This Man stopped Studying when Twelve Years Old

unread. The dividing line between gossip and legitimate news is probably in the mind of the reader or hearer of the tale.

Yet there is such a thing as a proper responsibility for the quality of news, and the difference between news and gossip is that one stops with the fact, enjoys the fact for itself, enjoys it most when there is a good odor of carrion about it; while the other always goes beyond the fact to the interpretation of the fact and the problem of proper social response. The slogan "All the news that's fit to print" sounds well, but the fitness depends on both the news and the public reading the news. The commercial maxim "Give the public what they want" has for the back-ground "The public be damned." The chief ground of objection to reporting as a trade is that so much "news" is damning. A second, very practical, objection is that the initial stages of reporting do not pay. One may shorten his apprenticeship by study. There are even "Schools of Journalism" now—perhaps the most important being connected with Columbia University.

Journalism proper is an occupation of dignity and importance second to none. The shaping of public opinion is very largely in the hands of men who write for newspapers and magazines. The ambition of every "cub" should be to shorten the time which must pass before he can print over his own signature the opinions which he believes are needed by his public. The truer and more far reaching the opinions, and the better they are put, the larger will be the ultimate financial compensation. Journalism is a first rate vocation for a wide awake youngster who can learn to think through the tangle of twentieth century society, business, and politics, and learn to put his ideas in a forceful, popular way.

The big profits of journalism do not come to the real journalist, but to the newspaper owner, who perhaps does not write at all. The running of a big newspaper is a business proposition, purveying news, feature articles, editorials, advertising, for a double consideration—major and minor. Circulation may pay costs, but advertising brings profits. Thousands of Americans have grown rich in the business, and it has a fascination which few escape who have once known it.

Preparation.—Good English courses in high school and college help, but the student must expect a savage aftermath of training in the daily rush and grind of newspaper work. College courses or their equivalent, the broader the better, are necessary for editorial positions. Newspaper management, as a business proposition, requires a business training, in school or out. On the general problem of learning to write, see whatever notes you can find on the methods of successful writers—for instance, read Stevenson's "A College Magazine" and Smith's Biography of O. Henry.

Laboratory Science.—There are three main services of laboratory science: the maintenance of public health; the supplying of technical information for use in business and industry; the discovery of new truth by research. The inner fascination of a scientist's work is in the third of these phases. There is always the brooding possibility of "a new planet swimming into his ken." Our half century differs from all others chiefly because so many discoveries have been made through research. When once a new substance, a new principle, a new technique has been demonstrated, the pot boiling question of practical utilization comes on. In fact, few men can afford to be pure scientists. Most laboratory workers are salaried employees whose personal satisfaction is in their work for its own sake, but who earn an honest living by turning their analysis to public or corporate advantage. If the discoverer can put his new notion into a contrivance that will catch the popular fancy, protect, manufacture, and market it himself, he is on the way to the pot boiler's high reward of fortune. This is the familiar history of those American inventions whose inventors are also business men.

Law.—If in doubt, don't choose Law as your profession. There are too many lawyers now. If you're bound to be a lawyer, be a big one—and an honest one. The temptation of a lawyer to be a parasite, a pettifogger, or a pander is great under our social conditions. Lawyers make the law and too often match each other in the game of circumventing, for a consideration, the laws that lawyers have made. Mr. Lincoln's type will always be needed, always be worthy of high respect, and always fairly well paid. There are thousands of lawyers of this sort, less famous.

To build a law practice requires hard, painstaking work with long hours of labor. A successful lawyer must have a strong personality, ingenuity, careful study of the law of many centuries. The legal profession is discouraging, because it usually deals with the troubles of other people. The greatest compensation goes to the attorney who can guide big business safely between the law and the gospel.

The study of law as preparation for a business career is becoming more and more popular each year. A college education is recommended before entering law school. Law courses require not less than three years of residence in a law school.

Manufacturing in General.—See Business Management, in this series. The safest way to go into the manufacturing business is to serve an apprenticeship in an already going concern, working up through the producing, the selling, and the managing phases of the business. There is great risk in undertaking the production of a wholly new article. The first thing to be investigated is whether the article itself will sell, after a reasonable campaign of publicity. Often the advertising costs are many times over the cost of production. Granted that the article is salable, one must make sure of *finance*. There must be enough good money in sight to see the project through to the stage where income more than matches outgo. A business cannot be regarded as established until its returns above all producing and distributing costs provide for refunding of original investments through profits.

When all is said, the men who make more money than they know what to do with are the men who have hit the happy combination of producing and marketing something all the people want, or something that enough folks can be made to think they want.

Medicine and Surgery.—These two fairly distinct professions must still be united in the fundamental training of doctors, and united to a considerable degree in country and small town practice. The big money goes to specialists in both departments; the limit is the sky and the patient's ability to pay; but since big fees cannot be collected in the country and can be collected in town, only city doctors can hope to become rich through the practice of their profession. Again, a popular physician in the country is likely to work himself out with sixteen or eighteen hours a day every day in the year; while city specialists have fixed hours of their own choosing, and at their own pleasure. All of which points to a condition needing remedy but very difficult to cure.

Every business has its own set of temptations. It is literally true that most people like to be humbugged. So big a proportion of human ills are "mental" that treatment by sugar pill and suggestion is a common practice. The two together constitute a faith healing for which the charge is no doubt legitimate enough, but it makes a genial cynic of the doctor. The faith tablet is particularly valuable in city practice, where so many women are worn out by their social duties. Country folks are commonly too busy to be sick above the ears.

The great advances in the doctor's profession in our time have been in bacteriological discovery, in general appliances, and in the instruments and methods of surgery.

Country practice and special surgery are the two departments most attractive. One to the humanitarian for its genuine service where help is much needed; the other to the scientific business man for its opportunities to make searching diagnosis and skillful operation, with an aftermath of possible riches.

The best courses in medicine and surgery require six years in college—two years of studies from the college of arts, and four years of strictly professional training.

Mining Engineering.—A doubtful occupation, unless one is willing to go to any remote part of the world where mining interests may lie; doubtful also because of the social conditions of mines and mining towns; attractive through possibility of adventure and discovery, technical interest, and fair remuneration. Managing engineers are likely to get from $2,500 to to $10,000 a year. Adequate preparation is a matter of several years' intensive study at a college of mines, with severe training in mathematics, physics, chemistry, geology, mineralogy, shop practice, smelting, reduction of ores, field and underground work.

Navigation.—The captain of an American merchant ship on the high seas makes about $400 a month; the four officers, from $250 down to $150 each. Board and room are furnished by the company, both at sea and in port. The prospect of employment at sea depends on the national policy in handling the merchant marine. At present, the outlook in the United States is not favorable. There is, however, always a tremendous tonnage of big boats on the great lakes. Lake navigation is a comparatively simple matter, though very definite information is needed, for navigation from point to point in all weathers.

Ocean navigation requires mathematics through trigonometry and logarithms, elements of navigation, piloting, chart, lead, log, dead reckoning, nautical astronomy, latitude, longitude, azimuth, meterology, methods of reckoning whereabouts, international rules and signals. These subjects may be studied either in school or by correspondence.

Nursing.—Professional nurses with diploma receive $30 to $60 a week, and maintenance, with prospect of fairly steady employment. Their professional interests are much like those of physicians and surgeons, with less responsibility. The indirect responsibility of nurses is very great, since the treatment of so many ailments consists in maintaining the conditions under which nature can eventually conquer the disease. The profession of nursing is likely to divide into two chief interests, like those of the doctor. Some nurses become almost assistant surgeons, by reason of their quick perception of what is needed, and their deftness of manipulation. Strange as it may seem to a layman, surgery has a fascination hardly equalled by any other calling, so that most hospital nurses would work only in the operating room, if they were free to choose. Nursing has the advantages of comparative freedom from monotony, strong technical and social interest, the satisfying of an instinct for fellow-kindness, and a fair financial independence.

Preparation.—Two or more years in an authorized school for nurses.

Preaching.—An indispensable social service, with a unique combination of reward and sacrifice. A preacher is not expected to seek riches, though his ability may guarantee comfort. Perhaps more than any other man in the community, he may know the keen satisfaction of eloquent leadership, and may enjoy the inner approval from an honest devotion to the really important interests of his people. No other man in the community gathers to himself such a wealth of affection as the priest or Protestant clergyman may receive. For in sickness and in health, for this world and for whatever other worlds there are, his devotion is for all who need him. The efficient clergyman is a very busy man. He must know his people intimately; he must christen, marry, confess and bury them; he must interest himself in the public welfare, through education, philanthropy and patriotic citizenship; and his duty as a sermonizer demands that he be a constant student, always learning, always thinking, so that he may not come empty-minded to his great opportunity on the seventh day.

Preparation.—Not less than a full college course of four years, with emphasis on history, sociology, literature, and public speaking. A really modern preacher will find more value in applied psychology than in metaphysics, and will have more use for science than for theology.

Railroad Operating and Management.—Many causes have reduced the desirability of railroad stocks, in recent years. One of the chief causes of the reduction or cancelling of dividends has been the great increase of operating costs, especially in wages for the maintenance of way, repair, and moving of trains. It has been possible for locomotive engineers to make $300 or more a month, with other wage employees grading downward from that sum, but all at rates which would have seemed incredibly high at the beginning of the century. What the future may hold does not appear, but probably wage earners will continue to find railroading one of the best paid employments in the country. Railroad agencies in the larger towns are positions of comfortable income; and at the top of each division are a group of men who earn excellent salaries by business management or technical efficiency as civil, mechanical, and electrical engineers.

Preparation.—High salaried positions in railroading are likely to be filled nowadays by graduate engineers, with practical experience. Ambitious men in lower positions will do well to investigate correspondence courses.

Salesmanship.—A vital necessity in all business enterprises. One should either choose a commodity line he knows a good deal about, or put himself through a rigid training. Actual factory experience in making the product one is to sell is often the best item of preparation. But it is necessary also to understand men; to be able to interest, entertain, and win by good-fellowship; to put very clearly the selling points of the article in mind; to compare it tactfully, without knocking rival articles; and to clinch a good impression into an actual sale. Retail salesmanship differs materially from wholesale; long range arguments are not like those close at hand. Great enterprises

have a sales organization and a sales management. At the top of his ambition a salesman sees one of these managing positions. On the way to it, he must perfect himself not only in the art, but in the theory of his business. He must know commercial law; the principles of credit and collection. Perhaps the three big requirements are: Know your goods; know your man; and learn to say the right thing in the right way.

There are books and schools of salesmanship. The graduate from these books and schools may some day graduate from salesmanship itself, into business management for his company.

Secretarial Work.—A secretary is a superstenographer and infra-manager; worth very much more than a typist, but still definitely responsible for the carrying out of suggestions, rather than for marked initiative. Secretarial work is a comparatively recent development in business and professions, to the advantage of everybody concerned. A position of dignity, and of better than clerical compensation. Worth training for, especially for women. Definite courses in secretarial work are now available in women's colleges, and in schools of business.

Teaching.—Financially, teaching now ranks with preaching, among the upper groups of wage positions, or at the lower end of salaries. Measuring the actual service of schools by the theoretically possible service, perhaps teachers get all they earn; but weighing the importance of schools with the importance of other trades and professions, there is still scant justice in the salaries of teachers.

The best teachers do not choose that work because they can make more in that way than in any other, or because they think they can make it more easily. Teaching is not a proper substitute for typewriting or clerking in a store. Good teachers, like good clergymen, give up something in choosing to teach. If they amount to much as teachers of literature, they themselves might write; if they can train business men, it is because they themselves could make money in business; if their physics and chemistry are sound, they could be consulting specialists for big corporations; if they have mastered history, the roots of statesmanship are in them. Now if all this is true, it is at once the condemnation of the schools of the present and the program of the schools of the future. Our schools are not close enough to our life. Teachers who come to their work because they like the subject-matter of the courses they teach, or because they enjoy their week-ends and summer vacations, even teachers who have a mothering fondness for children, or who take to teaching as a "sad mechanic exercise, like dull narcotics, numbing pain" are probably not the ones the schools most need. Good salaries help, but are not a guarantee of good teaching. Perhaps if salaries were advanced to a point where rigid selection might reject the unfit from a surplus of candidates, the schools would profit by the condition. To stop the advance of salaries short of that point is to invite indifferent typists, counter and kitchen girls to try their hands at teaching for a while.

Real teachers know their subject matter and know how to use it. But they have also a constitutional liking for seeing other folks grow, and for helping on the process. To guide a youngster in the mastery of facts worth while; to make and carry out a program of thinking which causes the student to keep on thinking after he leaves the school; to so relate schools to life that even while he is in school the student will begin to do well the things which it will be his life work to do well—that is teaching. It is a magnificent work. Its best rewards are not in any salaries, high or low; but in the life long gratitude and affection of the old boys and girls who know what it all meant.

One may begin teaching with only the background of an elementary school, if he can pass an examination in the subjects he is to teach, and in the theory of education; but such beginnings are necessarily at the pupils' expense. Proper training reduces the blunders of even the born teachers. It is character, personality, that really does the teaching; and personality is built up of what we were born to be, plus every experience we have gone through. It includes not only what we know, but what we have done, what we can do, what we enjoy, what we dislike, what we intend, at every turn. Other things granted, the richest personality will guarantee best teaching.

Writing.—The profession of writing, apart from news-mongering, business correspondence, or sermonizing, appears to be attracting every year a larger number of practitioners. Even poets, flocks of them, make a living by writing, supplemented by writing and talking about their writings. The popular maw for fiction is unfilled, though our presses are busier than the German Reichsbank making marks. We read everything, and so almost anything. The sheer bulk of our reading prevents a searching test of the things we read.

America is cosmopolitan in its fusion of standards in art. We have now an American realism, if such a thing can be anywhere—smoky gray, ill-smelling, clattering with discordant rackets on occasion, unmoral or immoral, quite continental in its notion that everything is grist to the artist's mill, but also continental in its tendency to grind only the coarser grains. We have symbolism, with real objects—stark, discordant lumps of stuff—standing for heaven knows what ideal opinions; and hazy cloud-banks of uncertainty portraying to the elect the solid facts of life. We have imagists, lifting incidental pictures into the dignity of a commentary on experience—the china decorators of art, leaving pleasant minor impressions of pleasant little things. And we have still some Anglo-Saxon art, thanks to our stars, mingling all the types that are fit to print, and judging fitness by a combination of fidelity to fact and safe social tendency. Of course it is possible to allege that a bad book is not bad to a good reader. On this ground we come at Mr. Pope's famous vindication of the ways of God to man; Whatever is, is right, at least when the right man looks at it.

All this indicates that there is plenty of room and a hearing for everybody who has something to say in print. Big fortunes are made in popular fiction, if the author is prolific, and comes into vogue. There is reason to think that many books are made with the fortune chiefly in mind. At its best, writing is a profession blending the art impulse with social melioration; the whole so cleverly done that the writer may forget about the compensation, as a thing assured. Necessity may bring lagging reluctance to the difficult moment of invention, but if we are to invent anything permanent in literature, necessity stops at the gate. Art is its own wage.

Schools can produce fair or good writers; there their power stops. They cannot make great ones. The English departments of our colleges encourage talent, and develop technique. They point out how this and that master of English learned his trade. They give local vogue and sometimes national reputation to promising undergraduate writers. Probably the best initial training to write may be found in college classes. But life itself furnishes the stuff that books are made of. Young people haven't really much to say until they have lived and thought, suffered and enjoyed. Even experience will be inert stuff without the born gifts of intellectual curiosity, imagination, and unflagging creative impulses.



TEACHERS IN TRAINING

Future teachers in the New York Training School for Teachers are delving into the secrets of radio, the study of which occupies a place in the curriculum.



COMMERCIAL TRAINING

In this display is featured the work of the commercial high schools of Chicago. Training includes instruction in office management and secretarial work.

EDUCATIONAL PLAYTHINGS

PLAY is the business of life of little children and good toys are the necessary materials for the success of this play if it is to hold for them rich, vital and joyful experiences.

Selection of Toys.—Great care must be taken to provide an environment and materials which will encourage wholesome and creative play, for it is in this play that the child is finding ways to interpret the physical and social life surrounding him; it is through constructive play that the child is having opportunities for proper physical, intellectual and social development and thus day by day becoming a useful member of society even while he is a child.

In selecting playthings for children, certain fundamental qualities and characteristics must be secured. All toys if they are to hold the interest of the child must have a "do with" quality—the toy must be one with which the child can experiment and through this experimentation produce creative results.

Value of Simple Playthings. — Children want to understand their playthings and the simple, easily used, easily taken apart and put together toy is more satisfactory in every way to the child than the elaborate and mechanical toy of which he cannot understand the workings, and which will be broken and useless if he does more than wind the key and watch it go.

The elaborate toy, such as the fully furnished doll house, the doll supplied with a trunk full of fussy, flimsy, unpractical clothes and toilet articles, the grocery store with every detail perfect, are overwhelming and are only interesting to the child for a short time and are then pushed aside and forgotten, whereas if the little girl is given materials and encouraged and helped to make her own doll house and simple furniture or the boy his own grocery store, the pleasure and profit will be far greater and the child's interest in using them more lasting.

Construction of Toys.—Toys must be well made and very strong and of some nonbreakable material if they are to withstand the constant vigorous and inexpert handling which they are sure to get if they are worthwhile and embody the qualities which make them interesting to children.

Toys should, as far as possible, be of such material, finish and workmanship as will allow of thorough washing and sterilization—especially those playthings designed particularly for the use of very little children.

Toys should be pretty and gay as well as durable; good line, proportion, material and workmanship, all help to make the plaything artistic, while bright colored paint adds very much to the attractiveness of many toys although certain wooden toys are more suggestive and attractive when left unpainted. Only nonpoisonous paints and dyes should be used on children's toys.

Toys should be realistic, representing as faithfully and simply as possible the things children see and use in the world around them; that is, toy animals should resemble real animals and not be grotesque caricatures of them; dolls should be pretty, childlike in feature, natural, and simply and attractively dressed and not oddities or overly sophisticated.

Toys should be large enough to be easily handled and manipulated; playing with tiny toys such as small blocks or small beads may strain the smaller muscles and cause nervous tension, while handling, pushing, pulling, grasping and lifting larger toys is of definite physical benefit. Care must be taken not to go to the other extreme and give the children toys which are too heavy and unwieldy to handle easily.

Toys which embody humorous characteristics and possibilities without being grotesque are great favorites; these toys are hard to find but there are some constructive materials which can be put together in all sorts of fantastic and funny combinations without being ugly or gruesome and there are some good picture puzzles with funny pictures.

There should be some toys or playthings which satisfy the child's dramatic interest, which can be used as properties in his dramatization of social situations in the life around him. Dolls, housekeeping playthings, toy animals, trains, boats, automobiles, the sand box and simple materials for dressing up and fanciful play are all valuable in his life.

Blocks.—Probably blocks are the playthings which stimulate the best construction as well as the most profitable form of dramatic play. Perhaps nowhere in the toy world has there been such a change and development for the better as there has been with blocks; instead of children sitting at tables handling a few small blocks which hold very limited possibilities of play, we now find them building on the floor, exercising their whole bodies in lifting, carrying and placing big blocks—blocks large enough to make real things of such size, form and combinations of construction as will enable the children to experiment and make the buildings they need in their play.

There are available some sets of blocks with which children can build structures big enough and strong enough to get into and use in their dramatic play; the blocks are simply and securely fastened together in such a way as to prevent danger of falling.

The children can build their own playhouse with as many rooms as they need to accommodate the group. They can build a two-story house with a staircase or an elevator. They can build their own automobiles or truck which will move on wheels provided in the set of blocks. They can make their own train or boat big enough to take any number of children traveling by land or sea.

Think of the satisfaction in this type of block building, of the possibilities for valuable social contacts and adjustments, for physical exercise, for planning and construction! Above all consider the possibilities of children making their own usable playthings, and of being able to change, reconstruct and build over whenever their play needs demand!

Experimenting.—Young children enjoy and benefit from playing with toys which give them much opportunity to handle, manipulate and experiment in a simple way; they like to put things together, to put one thing into another, to put a smaller object into a larger one. Such materials as large peg boards, nests of blocks, wooden beads, simple sets of colored wooden tablets which can be strung on a stick or laid out in patterns, large stone tiles for making simple designs are all interesting to them as simple materials for experimentation. They also enjoy as they grow older such materials as a magnet, scales, thermometer, measuring cups of different proportions, rulers, artiscope and magnifying glass. The materials afford opportunity for further and more exact handling and experimentation and stimulate an interest in additional scientific study.

Providing Physical Activity.—Very definite care should be taken to provide playthings and apparatus especially designed for physical activity—a few well chosen pieces of apparatus which will give opportunity for all round exercise. It is wise to keep a balance in this selection and provide equipment for climbing, swinging, hanging, pulling, balancing and similar play. This type of play material is particularly necessary for the city child whose opportunity for vigorous exercise is likely to be more limited than that of the country child, both in the house and out of doors.

There are many large pieces of apparatus now available for schools and playgrounds and for those who have large nurseries, such as the jungle gym, the tower gym, the highlow gym, low parallel bars, climbing rope, see saw, rocking boats and slide. For those who have only limited space there are excellent compact combinations of swing, swinging bars and rings and these, with balls, hoops, horse lines, wagons and toys to pull for the younger children, will provide good exercise in play form.

Where to Keep Toys.—A convenient place to keep playthings is necessary. A set of low open shelves is suggested—these shelves made wide enough to hold the large toys and close enough together to provide ample space for everything without having to pile one plaything on another. If children have a convenient place for their toys they can soon be taught to keep them in order and learn to be responsible for their own belongings.

Progression.—Children who when young have used and experimented with the kind of toys and play materials which we have been discussing will continue as they grow older to want playthings which enable them to pursue constructive experimental scientific and artistic activities. They will continue their interest in construction, but soon, instead of using blocks, they will use materials which offer more exact and elaborate possibilities such as erecto and mechano. They will be interested in more elaborate puzzles and materials which call for careful handling and they will enjoy using the magnifying glass, the microscope and simple sets of materials which are available for first experiments in chemistry and physics.

Many playthings at one time are confusing and over-stimulating. It is better for a child to have a few good, well chosen playthings with a new toy added from time to time as his play needs grow and require them.

And so we realize that the selection of children's playthings is a serious and significant matter, in that the interests, habits and attitudes of life are set up in these early years and the play life of the little child is setting the pattern for all future development.

NOTE: In the accompanying pages many educational playthings are illustrated.

PRIMARY EDUCATION

PRIMARY instruction is at first a parents' problem and very properly begins in the home. In no way can parents more helpfully coöperate with the school than by taking in hand the home-work, limiting it within reasonable time and holding the child to his best and most vigorous use of the time. In this way the home may supplement the school or become a check upon the school when such check is needed.

The Child and His Mother.—The world has recognized in art and story the sacredness of mother love. The intimacy of companionship between mother and child begins in the days of earliest infancy. We scarcely need Pestalozzi to teach us that in early education nothing can be compared with a mother's influence. The home training of a good mother is a preparation which sends the child out into life ready to profit by the best that life can give. The lullabies the mother sings her baby have in them more than calming into rest. "Sleep and rest, sleep and rest, father will come to thee soon." They give faith in mother love and father care and lead to that larger faith which illumines adult years.

The Child and His Father.—In these days of prominence given to club life, and to mothers' clubs in particular, there is danger that the importance of a father's relation to the child may be overlooked. The boy and his father, the father and his little companion daughter, these are comradeships that give the noblest impulses to home life.

It was a woman far past the meridian of life who wrote, "My most blessed memories are of my father. He was my first teacher and all through childhood he was my best friend. I learned to love whatever he loved and all that he loved was good and noble." Again a woman writes, "It is years since my father left me, but I can hear his rich voice now as he read to me out of my favorite books and gave me an introduction into the great world of his books." It is the father's privilege as well as the mother's to begin that nursery training that gives refinement and joy through all the coming years. What delight the child and father may have together as they wander hand in hand through storyland!

The father or the mother who is a good story-teller may be the child's greatest asset of bliss. The story hour may become not only the bright spot of the day but it may be looked back upon as the brightest spot or memory. Through the gentle art of story-telling the child may be given companionship and laughter and right teaching.

The ethical value of the story of moral conduct, the story that teaches without seeming to instruct, is beyond any amount of deliberate argument—stories that inculcate the virtues of childhood, such as kindness, gentleness, obedience to parents, respect to the aged, honesty, self-denial, truthfulness, usefulness, sympathy. Stories of pure laughter are equally good—quick, responsive, joyous laughter. Oh, the merry heart of Eugene Field, and the merry heart of children who have laughed with him!

The Child and the Teacher.—It remains for an artist to express by brush or chisel what a noble-hearted teacher may become in the life of a little child—a radiance to guide throughout life. Such influences were Pestalozzi, Froebel, Arnold of Rugby, Horace Mann, Mary Lyon, Alice Freeman Palmer, and an innumerable host of others whose names are written in letters better than gold.

Superintendent Maxwell relates an anecdote of a teacher in his school, which shows the divine possibilities of such a worker. With the unmistakable Yiddish accent the Jewish mother exclaimed, laying a respectful hand on Miss K's arm: "I cannot help seeing how these children love you. You know my Bennie and Rosie? They're in your school. Do you know, lady, when you stand on that platform in the school and you say something it is just like when God speaks."

Owen Kildare gives a graphic account of the effect upon him of the first gentle touch he had ever felt. One day a strange woman, it must have been a mother or a teacher, patted him on the cheek and he tells us that he almost cried for joy. "With a light pat on my cheek and one of the sunniest smiles ever shed on me, she put a penny into my hand. She was gone before I realized what had happened. Somehow I felt that had she come back, I could have said to her: 'Say, lady, I haven't got much to give, but I'll give you all me poipers, me pennies, and me knife if you'll do that agen.'" For such children it was written, "Give me no pity, but a place where falls the sunlight on my face."

Parent and Teacher.—For the mutual helpfulness of home and school it is desirable that parents and teacher should know and understand each other better. Mothers are awakening to the need of child study and are appealing to teachers for guidance. Parents and teachers are seeking mutually for instruction and parent-teacher associations are formed. Through the intelligent direction of such organizations the school may arouse the home to a fuller sense of its duties toward the child's education, for often the ignorant or unthinking home is woefully lax. The physical and moral welfare of the child, through the neglect of the home, must often become of the deepest concern to the teacher.

Moral development depends upon physical development. This means that the child's moral welfare must depend upon the economic conditions under which he lives, and just in proportion as we improve these conditions, just to that extent do we increase the chances of the child to become a healthy, happy, moral citizen. No school has done its full duty unless it has aroused the entire community to a sense of its responsibility and acquainted it with the real meaning of intelligent coöperation in the training of children.

Natural Understanding.—The teacher should be intimate enough with the parent to talk candidly and freely about the interest of the child, and whenever peculiar conditions demand it, parents and teachers should together make a careful study of the nature and the needs of the child. Late entrance into school, irregularity of attendance, indifference to school work, physical defects are important causes of retardation which can often be overcome to a great extent through intelligent coöperation.



THE STORY HOUR—FAIRMONT ELEMENTARY SCHOOL LIBRARY, DENVER

No parent should trust for his understanding of the rules of discipline of the school to the fragmentary and biased account of a child's interpretation. It is a fine service to the school when parents emphasize the fact that the school exists for the sake of helping the child and that the teacher is his good friend always.

The principal aid for children of incompetent homes must come from the school and the personal interest of the teacher. Of the worth of such a school and the method of such a teacher Judge Ben Lindsey has given this fine testimony: "Personal influence comes through personal contact, and since personal influence is perhaps the most powerful factor in moral or immoral development, there comes a grave responsibility to the teacher. With this responsibility comes also a great opportunity, that from the standpoint of service to mankind ought to be welcome, since there is no class of our citizens, not even parents themselves, who can do or are doing more to mold the character of the coming generations than the teachers in the schools."

Home Study.—The subject of "home study" has been regarded as so important that the National Education Association gave it a place upon its program, and these are some of the points reviewed in round table discussion:

(1) We must teach children how to study if we would secure the independence, concentration, organization, and persistence we desire.

(2) Should children do any home study? If so, how much and when?

(3) Parents should understand the aim of all home assignments and should agree with the teacher where the child should be given help in his work and where he should not.

(4) Children get none too much sunshine as it is, hence the question of time for home study and time for play.

(5) Children must be taught how to study, and this teaching should be by first guiding

them in pleasant work; then making them conscious of the process they are employing, noting its value and economy; third, arousing the will to do and to persist whenever desired; and fourth, selecting worthy subject-matter to give practice in the different fields—especially in concentration, persistence and independent thinking.

Home study fitted to advance this plan should in no way be detrimental to a child nor should it tax the parent unduly.

The following facts as formulated seem to be quite generally accepted: Children in the first four grades should be required to do very little, if any, study at home. The time out of school should be devoted to playing, occasional reading, and a little helpful service at home.

The children in the fifth and sixth grades should be required to do systematic reading at home under the direction of the teacher. Such reading should be closely related to the study of subjects in geography, history and literature.

The children in the seventh and eighth grades should be required to study one subject, as history, at home, and also to do systematic reading which should be closely correlated with the subjects taught in school. The home reading should be carefully selected, and graded as the subject-matter of the regular course has outlined.

WHEN THE CHILD FIRST GOES TO SCHOOL.—For most children the first grade is the first year in school, as the majority of children cannot attend the kindergarten. The program of the first year should be organized to meet the needs of the six-year-old child so that he may adapt himself to the life of the schoolroom as comfortably as possible. Ample opportunity should be given for outdoor exercize and physical development. The program of the first year work should include nature study, music, and handwork, language, reading, phonics, spelling, writing, some simple number work, not taken as separate and distinct subjects, but each illustrating and emphasizing the others, and all uniting to enlarge the child's experiences, to stimulate his curiosity, and to organize his knowledge. These subjects should be so arranged that they unify knowledge.

A child is interested in watching the preparation of its food. Interest is closely connected with curiosity. A child desires to know what can be known about objects that are interesting to him, such as his pet animals, his toys, etc. From this it is apparent that the mother or teacher has at the outset to seek to awaken in the child's mind a feeling of interest in the subject presented to it. This she will do partly by bringing out all that is striking, pretty, etc., in the subject, and partly by connecting it with known sources of interest in the child's surroundings. One chief aim of the instructor should be to develop new interests, answering to the different domains of knowledge to be dealt with, as history and natural science. It is evident that in order to awaken such a feeling of interest and study, attention must be paid to individual differences of sensibility.

Interest describes the effect of feeling, and more particularly pleasurable feeling, in rousing and sustaining the attention. The feeling may be the immediate result of the action of an object on the mind, as when a child is attracted by a pretty picture; or may be due to process of association and suggestion.

LEARNING TO READ — READING TO LEARN.—The mechanics of reading are so difficult that during the first and second years the energy of the reading lesson must be directed chiefly toward learning to read. This does not mean that the first reading lessons have no thought content, but this content comes at first chiefly through the suggestion of the teacher. But this is all to be changed. By the time the child has reached the third or certainly the fourth year in school the mechanics of reading should have been pretty thoroughly mastered. He reads independently now to get the thought for himself. If books have been presented to him in the right way the printed page becomes an open door by which he enters storyland. He enters because he loves it and reading is no longer a compulsion.

Two motives are strong enough to make any intelligent child a good reader—to read to himself because he wants to know, and to read aloud to others because he wants to make them understand the thing that is so well worth knowing. This involves two things—well selected reading and companionship, some one at hand, mother or father, teacher or class, to whom there is some joy in telling the story gathered from the printed page. It is not necessary to describe the method of such a lesson or the spirit of such a teacher.

Drill in Phonics.—As children are to be made self-helpful they must be taught the method of attacking new words in their daily reading. Phonic drill should be given daily in all the lower grades.

At first train the ear and vocal organs to recognize and imitate sounds. Clear distinct oral expression should be secured before any attempt is made to teach the written form. Not a few of the difficulties met by the child in mastering the mechanics of reading would be removed if his ear were trained to hear the correct sound. Very careful attention should be given to each child's ability to speak distinctly. If defects of hearing or speech are detected they should be attended to at once, for often such defects may be corrected in the young child.

After a little oral drill in clear and correct enunciation, written representations of sounds may be given, beginning with consonants and long and short vowels. New words which occur in the reading lesson should be broken up in the oral spelling lesson into syllables and spelled by sound or the sound of the vowel in the accented syllable should be given. As early as the second school year children should be able to pronounce with a fair degree of confidence almost any word that occurs in their reading lesson if they have been given the help of the accent and a few diacritical marks.

Exercises like the following may be multiplied for phonic drill: Review the consonant sounds in words with long or short vowels, and without using marks except over the first word of the groups. Place the phonogram *at* on the board. Let the pupils build the group of words *fat, bat, cat, hat, mat, rat, sat.* Beginning with *ate* they will construct the group—*ate, fate, gate, slate, plate, state.* In like manner use *an* and *ane, ad* and *ade, ap* and *ape, ag* and *age, am* and *ame, ack, ake* and *ace, ang* and *ange, and, ank, act, amp, ash.* Notice the effect of final *e* on the sound of *c* and *g*, and also on the sound of the preceding vowel.

Then take the phonograms containing short or long *e, i, o, u, y*, and make families of words as above. Give exercises in the same way with initial and terminal consonants: *sh, ch, wh*—she, shall, shell; cash, hash, lash; chin, chip, chick, child; much, such, touch; which, when, while, white.

Drill on final phonograms in words of more than one syllable: *ing*—coming, having, making, taking, living; *er* — hunter, mother, shiver, farmer; *en* — seven, garden, chicken, broken, woven; *est*—safest, surest, sweetest, dearest, kindest, honest; *ed* — lived, asked, raised, looked, wished, called, learned; *es*—waves, makes, takes, moves, loves, comes; *or*—sailor, honor, favor, savor; *et*—hatchet, bonnet, jacket; *y*—pithy, dusty, stormy; *ny* — sunny, funny, bunny; *ly*—slowly, truly, lovely; *ty*—kitty, empty, plenty.

In this way take other combinations and give frequent and thorough drills until the child can immediately produce the vocal sound from the written symbol. It is not sufficient to think that a sound once learned has been acquired. It must become a habit to speak with distinct utterance. Use phonics not only as a key to new words, but as an exercise in articulation. Divide words into syllables. Give drills on the small words that are frequently slurred over, as *to, was, of, for, from, get, just, can.* Attention should be given to voice and expression, such as characterize good conversation.

Such systematic drill in phonics should secure for the child the correction of bad habits of speech, such as nasal tones, drawling, dropping final sounds, mumbling, talking without movement of lips and jaw, and every kind of indistinct utterance, and in addition should give him power to read the printed page for himself.

Story-Telling as a Language Exercise.—Children delight in hearing good stories and in telling them again and again. The old, old story is the favorite. With the telling of the story there is often free dramatic action which may be developed into a fine method of interpretation. The story-teller gains power and freedom in the use of language. He enriches his vocabulary by unconsciously using the words of others; he enriches his life by entering into the lives of others and understanding the essential relation between motive and conduct.

The story may be made the basis of all kinds of language exercise. As in the first and second grades, what the child reads becomes the center of the school program so in the third grade language expression becomes the leading thought.

As *Hiawatha* has proved a very attractive story center for the second grade, so *Robinson Crusoe* has been found to furnish an excellent center for history, geography and language in the third-year course. From the fourth grade, on through the grammar course, history and geography form two important and interrelated centers of interest and study around which crowd many human interests and from which any amount of language teaching may be derived.

Written Work should follow as a natural sequence the oral lesson. Artificial writing is poor writing. The child talks because he wishes to talk and he talks well. In the same way he should write because he has something to write about. The technique of the art of good writing is laid down in a succession of well-organ-

ized lessons in our language books, but the practice of this art belongs to every lesson in the school and to the habit of every day. The study of grammar in the upper grades is important only as it becomes an intelligent means to the one great end, power and fluency in the use of the mother tongue.

Reading to Children.—It has been often repeated that the teacher must know literature and must read often to her class and that above all she should be a good reader as well as a good story-teller. Parents and teachers, all who mingle with little children, should know and love the books and poems that the children love. Let the teacher practice on a few of the best poems and read them to her class with responsive appreciation in her voice and she will never again be afraid that she cannot learn to read or that she cannot hold the interest of her class. A few beautiful poems are suggested here as suitable selections. Let each teacher add to these others of her own choosing. Select a few poems that appeal most strongly and then read those again and again until the words seem to be your very own. Let the teacher do this and she will in time find herself classed among the very few who are worthy to be called good readers.

Poems to Read to the Children

Rock-a-bye, thy cradle is green	Nursery rhymes.
The world is so full of a number of things	Stevenson.
What does little birdie say	Tennyson.
Twinkle, twinkle, little star	Jane Taylor.
Angels at the foot. (Watching Angels.)	Christina Rossetti.
Rockaby, lullaby, bees in the clover	Josiah Gilbert Holland.
Jam and jelly and bread are the best of food for me	Edward Lear.
The quangle-wangle's nest	Nonsense Book.
To-whit! to-whit! to-whee! Who stole the bird's nest	L. M. Child.
Who has seen the wind	C. G. Rossetti.
Great, wide, beautiful, wonderful world	W. B. Rands.
How many seconds in a minute?	Christina Rossetti.
What does the bee do?	Christina Rossetti.
Baby wants a lullaby. (Innocents' Island)	William Brightly Rands.
This is the way the ladies ride (Rhymes about a Little Woman)	William Canton.
Baby bye, here's a fly, let us catch him, you and I	Josiah Gilbert Holland.
Over hill, over dale. (Midsummer Night's Dream)	William Shakespeare.
O Lady Moon	Christina Rossetti.
While shepherds watch their flocks by night	Found in Golden Numbers.
Dark brown is the river. (Where Go the Boats)	Robert Louis Stevenson.
When the elf king went to battle. (The Magic Casement)	R. C. Lehman, Alfred Noyes.
As soon as the fire burns red and low. (The Sleepy Song in Pinafore Palace)	Josephine Dodge Daskam.
There is ever a song somewhere, my dear	James Whitcomb Riley.
The wind-broom sweeps so wondrous clean. (The Wind-Broom)	Richard Burton.
As I walked over the hills one day. (A Nursery Song, Pinafore Palace)	Mrs. Carter.
There's a merry brown thrush	Lucy Larcom.
Now the day is over. (Childs evening hymn)	Sabine Baring-Gould.

Both at home and in school read and reread: *Bed in Summer Time, I Saw You Toss the Kites on High, A Child Should Always Say What's True, How Do You Like to Go in a Swing?* Rossetti's *Who Has Seen the Wind? O Lady Moon, What Does the Bee Do?* Field and Riley and Cary and Others: *Waiting to Grow, Plump Little Baby Clouds, Sleep, Baby, Sleep, Rockabye Lady.* Jingles from the Jingle book and over and over read the rhymes of Mother Goose. Sometimes read selected psalms. Read with reverence and exaltation until the children, too, catch the uplift of the words. "When I look up unto the hills, behold, Thou art there." "The heavens declare the Glory of God, and the firmament showeth His handiwork."

Suggested Material for Help of Teachers.—The teacher of language and literature must know literature at its best. She must appreciate the double aim of language teaching—facility in the correct use of language and appreciation of good literature. For herself she needs the stimulation of the best that has been written and for her class she needs to know the literature for her grade. This is especially true for the teacher of the little ones. She must know the literature that children love, their poems and their stories, and she must practice well the art of story-telling.

The book-loving teacher will have a book-loving school. To lead children to the proper use of books the teacher must know children's books and enjoy using them.

An occasional period set aside during the week for the purpose of talking over with the children the books they have read will be found valuable. Every schoolroom should contain a library selected for the use of every child in every grade. Nowhere is the privilege of individual selection more valuable than in the choice of books. When "learning to read" has given place to "reading to learn" and "reading to enjoy" them the drudgery of learning has been overcome.

Poems that Children Love and Books that Help in Story-Telling

And I must follow, would I ever find
The inward rhyme to all this wealth of life.

Ingfen	One thousand poems for children	Jacobs Co., Geo. W.
Hazard	Three years with the poets	Houghton.
Burt	Poems every child should know	Doubleday.
Wiggin and Smith	Pinafore Palace	Doubleday.
Smith, Eleanor	Song books I and II	Milton Bradley.
Matthews	Poems of American patriotism	Scribner.
Harris and Gilbert	Poems by grades	Maynard-Merrill.
Barlee	Famous poems explained	Hinds, Noble & Eldrege.
Lear	Nonsense rhymes	Little.
Palgrave	Child's treasury of English song	Macmillan.
Bryant	How to tell stories to children	Houghton.
Bryant	Stories to tell to children	Houghton.
Houghton	Telling Bible stories to children	Houghton.
Harrison	In story land	Central Pub. Co.
Harrison	Two children of the foothills	Sigman Pub. Co.
Wiltse	The place of the story in early education	Ginn.
Wiggin and Smith	The story-hour	Houghton.
Wiggin and Smith	The posy ring	Doubleday.
Baldwin	Fifty famous stories retold	Am. Book Co.
Burt	Prose every child should know	Doubleday.
Burt	Legends every child should know	Doubleday.
Mabie	Myths every child should know	Doubleday.
Foster and Cummings	Asgard stories. (Valuable to teachers for its introduction)	Silver-Burdett.
Baldwin	Old stories from the East. (Bible stories)	American Book Co.
Richards	Five minute stories	Little.
Richards	Golden windows	Little.
Poulsson	Through the farmyard gate	Lothrop.
Poulsson	In the child's world	Milton Bradley.
Scudder	The children's book	Houghton.
Harrison	Uncle Remus. His songs and sayings	Appleton.
Pyle	Wonder clock	Harper.

Fairy tales from Andersen and selected tales from Grimm belong to every child. For other books of poems and stories see lists of books for children's library. Some books have been given in both lists because they belong equally to the teacher and to the child.

For Children at Home and the First Two Years in School

Jewett	The three baby bears	Dutton.
Dodge	Baby days. (Songs, stories, pictures)	Century
Burgers	Goops and how to be them	Stokes & Co.
Burgers	More goops and how not to be them	Stokes & Co.
Greenaway	Under the window	Warne.
Potter	The tale of Mrs. Jeremy Fiskes	Warne.
Potter	Peter Rabbit. Jeremy Fiskes	Warne.
Grimm	Fairy tales; ed. by Wiltse	Ginn.
Adelborg	Clean Peter and the children of Grubbylea	Longmans.
Lear	Nonsense books. Nonsense rhymes	Little.
Flanagan	Child stories and rhymes	Flanagan & Co.
Mother Goose, or the old nursery rhymes		Warne.
Mother Goose melodies, or songs for the nursery		Houghton.
Æsop	Child's version of Æsop's Fables; ed. by Stickney	Ginn.
Andersen	Fairy tales; selected and edited by Turpin	Maynard.
Brooks	Stories of red children	Ed. Pub. Co.
Beming	Little Indian folk. Little brothers of the West	Stokes.
Turpin	Child's book of poetry. Classic fables	Maynard.
Holbrook	Hiawatha primer	Houghton.
Alexander Blake	Graded poetry. Separate volumes for each grade	Merrill.
Andrews	Seven little sisters. Each and all	Ginn.
Brown	Stories of woods and fields	Globe.
Blaisdell	Little Boy Blue and his friends	Little.
Long	Nursery rhyme book	Warne.
Richards	Five minute stories	Estes.
Poulsson	Child stories and rhymes. Finger plays	Lothrop.
Grover	Sunbonnet babies. Overall boys	Rand-McNally.

Picture books by Nelson, Warne, Tuck, Dutton, bring a wealth of joy into the nursery.

Story of the three little pigs	Warne.
Story of the three bears	Warne.
All sorts of animals	Nelson.
Animals and their young. (Natural history series)	Tuck.
Cinderella and Red Riding Hood	Dutton.
Cosy nook farm. (Cosy nook farm series)	Tuck.
Our dogs. (Picture land series)	Tuck.
All about wild animals	Tuck.
Johnny Crow's garden	Warne.

LANGUAGE AND LITERATURE—Under teaching the child how to read, a detailed outline of suitable material arranged for first and second year language has been given, but the question may still be asked by the mother or the teacher how to instruct the little ones who are beginning to read. What is the method or what are the steps in the process?

Very little is heard nowadays about word method, sentence method or phonic method as separate methods in themselves. The best teaching chooses from all methods.

How the Several Methods May Be United in the First Reading Lessons: 1. Words as wholes. (a) Use of objects representing the word; (b) spoken word used in connection with the object; (c) the word as form, either script or printed form — the object, the idea, the vocal symbol, the written symbol, all in combination.

2. Words in combination. (a) Groups of words or words grouped in phrases; (b)

words arranged in sentences, grouped in paragraphs or as story wholes.

3. Analysis of words. (a) Words broken up into sounds—phonics; (b) words broken up into separate forms—letters.

The Eclectic Method as It Has Been Outlined for a Training School.—1. Conversational work whereby teacher gains knowledge of child's interests, intelligence, maturity, habits, home training, environment, and use of English. Here objects are often introduced.

2. (a) Blackboard work. Action sentences largely such in form and in content as have been used by child in conversational work. (Thought and sentence method.) (b) Discovery of parts of sentence words. (Word method introduced.) (c) Discovery of parts of words, letters, names and sounds of letters. (Phonic method.)

The test of good teaching is the drill that follows the development lesson. After the child has learned the nature of word symbols and has acquired a small reading vocabulary the importance of such drill exercises must be emphasized.

Analysis of a general plan for reading drill.—

1. Preparation through word mastery.

2. Results to be obtained. (a) Recognition of words at sight, (b) correct and easy enunciation, (c) mastery of sound and form elements, (d) knowledge of their meaning.

3. Methods by which this word mastery is acquired. (a) Writing new words, (b) reading new words, (c) spelling by sound and by letter, (d) meaning of new words, (e) use in original sentences. Briefly summarized, the reading drill should fix vocabulary and form word images.

4. Reading the new lesson. The test of good preparation is the grasp of thought and feeling as expressed through good vocal expression. The three arts of education—seeing, reading, thinking—should be combined in every reading lesson.

From the beginning give the child in his lesson something worth thinking about and from the first give him an interested audience—a teacher and a class who care for what he reads and will listen with interest. This will lead the child in his reading to form the habit of complete thought and complete expression as found not only in the single sentence but in the entire selection. Then what he reads will seem to him worth while and he will learn to love the printed page. As has been fitly said, he will enter the path "which our forefathers blazed through the wilderness and make of it a highway down which he may ride a king in his power to use the English language."

Things to Be Remembered in Teaching Reading.—1. Teach only such words as are needed for use.

2. Keep a complete list of all words taught.

3. Keep a separate list of all words found difficult. Review and review until mastered.

4. Call for silent reading. Have child tell you what he has read.

5. Call for silent reading of a dramatic passage. Have child act out what he has read.

6. Again call for silent reading, this time a longer passage. Have child tell in his own words what he has read.

7. From the very first sentence require natural tones. This can easily be done by simple, natural questioning.

8. Do not let any member of the class interrupt one who is reading aloud. There should be confidence, not confusion, when one is reading.

9. A few minutes of rapid drill in correction of errors common to the class is a good preliminary exercise. The teacher should correct, but not nag. Remember that drill exercises should be short.

10. Encourage every child to do his best and when he has done his best receive it in a pleasant, gracious manner. Children are sensitive to the atmosphere of approval. Encourage, suggest, do not repress.

11. Young children cannot study undirected. Work of a definite, concrete kind should be assigned to them. Through occupation they learn concentration.

12. Make the sentence or the thought a unit. By skillful questioning lead the child to the thought he is to give you from the reading, as, What did the dog do? Why did he like the boy? Such indirect help is the best way of suggesting right expression.

13. Short daily exercises of a rapid, decided, vigorous character should be given to train the class to quick recognition of words and sentences. It is a great gain in education to make a person quick and resourceful.

Suggestions and Devices for the Inexperienced Teacher.—The experienced teacher has long ago invented many of her own devices, has outgrown them and invented others. There are no fixed methods of teaching. It is a continual round of interesting change, the more interesting to the original mind which is always inventing something new. It must be remembered, however, that novelty is not the aim, but growth. The growing teacher welcomes that which adds new interest or in any way yields better results.

1. The first language lesson must begin with oral exercise—something interesting to talk about.

2. The unit of thought is the sentence. The child gives his thought, and the teacher writes it on the board, underlining the important word. It may be the child tells what he picked up from the table, as, "I have a book." Other children tell their story, as, "I have a ball," "I have a box." Each child finds his own story and his own particular word. This game of hide and seek gives zest and holds attention. It may be worked out in many ways.

3. Write the children's names. Let each child find the name of some other child or the age of some other child or the brother of some other child. Such exercises can be multiplied. The teacher makes her crayon talk, and the children talk to her. Write a nonsense rhyme upon the board. Read it to the class. Read again, pointing slowly to each word. Let children point to principal words.

B was a bat who slept all day,
Brown little bat!

Some teachers have enriched the child's fancy by adapting Lear's *Nonsense Rhymes* to the teaching of the alphabet.

C was a cat, crafty old cat,
D was a duck, dear little duck.

The pictures and the words make good seat exercises for copying.

4. Find and pronounce all words on the board containing a given letter, as *e, f, c*, etc.

5. Arrange the words of a paragraph in alphabetical order.

6. Write on the blackboard or on paper all the words of the reading lesson beginning with a certain letter. Instead of writing on the board the material in the word boxes may be used.

7. Words written upon the board promiscuously, so far as the initial letter is concerned, are to be grouped alphabetically in columns, each group with the initial letter at its head. Many forms of dictionary work may be given. Children must learn the alphabet, but there are better methods than the old mechanical method of the a, b, c's.

8. Build or write in columns all the words containing a given vowel sound.

9. Write in columns all words containing a given phonogram.

10. Words of the lesson are written on the board. Words are erased one by one and the child tells which word was erased.

11. Arrange words in duplicate columns except that the order of words is changed. Give to one of the class a pointer, and have him point to a word pronounced by the teacher. The game consists in seeing which child points first.

12. A child finds and pronounces all the words with a given ending or a given beginning. Valuable for prefixes and suffixes.

13. The teacher points to a word, the child arises and gives a sentence containing that word.

14. The singular form of nouns whose plurals are formed by adding *s* may be written upon the board. Let the children build the plural form by adding *s*.

15. Draw a doll house. Let children tell what furniture they want to put into it. Write these words in a column. Let children furnish by pointing to word and then to the place in the house where the furniture should be. Make, mark, or write word in the house. Picture of a ball game might be done in the same way.

16. Have pupils look through a paragraph and tell what has been read.

17. Have pupils look through a sentence or paragraph and act out the meaning.

18. Have pupils read a paragraph silently and illustrate the meaning by drawings or a series of drawings.

19. Give dialogue exercises frequently where one child replies to another. Encourage dramatic expression in voice and body.

20. The teacher should often read to the class and with the class. Exact imitation is not wanted but through suggestion and the glow of her own spirit the teacher may awaken her class to the love of interpretative reading.

Three Essentials in the Teaching of English.—1. Fixing the word in the child's vocabulary. 2. Fixing the word symbol through the activity of the eye and ear and hand. 3. Centering attention upon thought, rather than mere symbol getting, that in the end the child may gain mastery of thought and speech.

Suggestions for Seat Work Related to Primary Readings.—1. Seat work should be related to the lesson. The aim in all exercises should be to train the child to look for something in the lesson and expect to find it. It is the active mind, the attentive mind, that can be educated.

2. Provide worn-out books, magazines, advertisements, etc., which can be cut up. Provide blank books, one for each child. Print the letters of the alphabet on the board. Let the children find them, cut them out, and paste them neatly in order. *a* at top of page 1, *b* at top of page 2, etc., to *z*.

3. New words occurring in the reading lesson may be printed or written on the board; children may find these words, cut them out, and paste them on the proper page. This will give each child the printed vocabulary of his grade. When they can read words children may make dictionaries or word books by writing the words instead of cutting and pasting.

4. Put several alphabets in the same

box. From the letters in the boxes let the children build words that the teacher writes on the board.

5. Prepare sets of hektographed pictures with the name of the object printed plainly beneath the picture. Each set should contain twice as many cards as there are pupils in the class. Take half of each set and cut off the names. Now let the children, with the uncut card before them, match the separated pictures with their appropriate names.

6. Hektograph sentences on strips of cardboard. Cut these sentences into words or phrases and put each sentence into its own envelope. Write or print the sentence on the board and let the children build.

7. As soon as a few words can be recognized at sight, the pupils should build their own sentences, using separate words on bits of cardboard. Continue building sentences until the reading is taken up.

8. Copy from the board for form and punctuation. Very careful supervision should be given to all such copied work.

9. Copying memorized passages for exactness of form is a valuable extension of the previous exercises.

10. The teacher should use judgment as to the amount of seat work and its nature. Every child should be kept busy at some profitable employment. Playing with sticks, marking with a pencil, or doing anything else with no definite aim should not be permitted. The child should not be aided at every turn but should be left to his own resources as much as possible. He should be encouraged to think himself out of his own difficulties. Independence in action, accuracy and skill in mechanical work, are the large results to be sought in seat occupation.

The Children's Book Shelf—Third Grade

Scudder	Verse and prose for beginners	Houghton.
Dodge	Rhymes and jingles. When life is young	Scribner.
Wilson	Myths of the red children	Ginn.
Husted	Stories of Indian children	Pub. Sch. Pub. Co.
Husted	Stories of Indian chieftains	Pub. Sch. Pub. Co.
Defoe	Robinson Crusoe	Am. Book Co.
Kipling	Jungle book	Century.
Johonnot	Book of cats and dogs	Am. Book Co.
		Ginn.
Miller	Little people in feathers and furs	Dutton.
Lang	Blue fairy book	Longmans.
Ingelow	Three fairy tales	Heath.
Judd	Wigwam stories	Ginn.
	Arabian Nights; ed. by Clarke	Am. Book Co.
Andersen	Christmas tree and other stories	McLoughlin.
Coolidge	Nine little goslings	Little.
White	When Molly was six	Houghton.
Deming	Red folk and wild folk	Stokes.
Wade	Our little brown cousins	Page.
Wade	Our little Indian cousins	Page.
Wade	Our little Japanese cousins	Page.
Dodge	Stories of American history	Lothrop.
Dutton	In field and pasture. (World at work series)	Am. Book Co.
Hazard	Three years with the poets	Houghton.
Howliston	Cat tails and other tales	Flanagan.
Harris and Gilbert	Poems by grades. (2 vols.)	Scribner.
Dodge	Donald and Dorothy	Century.
Macdonald	Light Princess and other fairy tales	Burt.
Carter	Lion and tiger stories	Century.
Alden	Cruise of the canoe club	Harper.
Coolidge	What Katy did. (3 vols.)	Little.
Diaz	William Henry letters	Lothrop.
Stoddard	Talking leaves. Two arrows. (Indian stories.)	Harper.
Howells	Christmas every day and other stories	Harper.
Smith	The Browns, (7 vols., a series of books describing good times in the Brown family.)	Little.
Jewett	Town and city	Ginn.
Lane	Industries of to-day	Ginn.

The Children's Book Shelf—Fourth Year

Wiggin and Smith	Golden numbers	McClure.
Wiggin and Smith	Posy ring. Fairy ring	McClure.
Shute	Land of song. (3 vols. arranged for grades.)	Silver.
Baldwin	Old Greek stories	Am. Book Co.
Francillon	Gods and heroes	Ginn.
Alcott	Little men. Little women. Aunt Jo's scrap book	Little.
Daylor	Juan and Juanita	Macmillan.
Carroll	Alice's adventures in wonderland. Through the looking-glass	Macmillan.
Otis	Ten days a newsboy	Harper.
Otis	Toby Tyler, or ten weeks with a circus	Harper.
Guerber	Stories of the thirteen colonies	Am. Book Co.
Baldwin	Four great Americans	Am. Book Co.
Beebe	Four American naval heroes	Am. Book Co.
Mulock	Adventures of a brownie	Harper.
Harris	Nights with Uncle Remus	Houghton.
Schwartz	Five little strangers and how they came to live in America	Am. Book Co.
Hawthorne	Wonder-book and Tanglewood tales	Houghton.
Brooks	True story of Christopher Columbus	Lothrop.
Brooks	True story of George Washington	Lothrop.
Brooks	True story of Abraham Lincoln	Lothrop.
Brooks	True story of the United States	Lothrop.
Mott and Dutton	Fishing and hunting. (World at work series)	Am. Book Co.
Pierson	Among the farmyard people	Dutton.
Pierson	Among the meadow people	Dutton.
Wade	The coming of the white man	Page.
Wade	Our little African cousin	Page.
Wade	Our little German cousin	Page.
Wade	Our little Italian cousin	Page.
Carter	Stories of brave dogs	Century.
Burroughs	Squirrels and other fur bearers. (School edition.)	Houghton.
Jewett	Good health	Ginn.
Cyr	Stories of three great artists	Ginn.
Cyr	Art readers	Ginn.
Foster and Cummings	Asgard stories	Silver.
Coussens	Poems children love	Dodge.
White	A little girl of long ago	Houghton.
Richards	Five mice in a mouse-trap	Estes.
Richards	Joyous stories of Toto. Toto's merry winter	Estes.
Stockton	Fanciful tales	Scribner.
Aldrich	Story of a bad boy	Houghton.
Wyss	Swiss family Robinson	Heath.
Thomas	In sunshine land	Houghton.

The Children's Book Shelf—Fifth Year

Mabie	Legends every child should know	Doubleday.
Burt	Poems every child should know	Houghton.
Æsop	Three hundred Æsop fables; tr. by Townsend	McKay.
Lamb	Tales from Shakespeare	Houghton.
Ruskin	King of the golden river	Houghton.
Baldwin	Fifty famous stories retold	Am. Book Co.
Baldwin	Thirty more famous stories	Am. Book Co.
Baldwin	American book of golden deeds	Am. Book Co.
Eggleston	Stories of great Americans for little Americans	Am. Book Co.
Brooks	True story of Benjamin Franklin	Lothrop.
Brooks	True story of La Fayette	Lothrop.
Jordan	Book of knights and Barbara	Appleton.
Kingsley	Water babies	Ginn.
Hawthorne	Great stone face and other stories	Houghton.
Myrton	Child life in Japan and Japanese child stories	Heath.
Guerber	Story of the chosen people	Am. Book Co.
Haaren and Poland	Famous men of Greece	Univ. Pub. Co.
Haaren and Poland	Famous men of Rome	Univ. Pub. Co.
Eggleston	Stories of American life and adventure	Am. Book Co.
Eggleston	First book in American history	Am. Book Co.
Boyesen	Modern vikings	Scribner.
Bull	Fridtjof Nansen	Heath.
Gilman	Discovery and exploration of America	Lothrop.
Gilman	Colonization of America	Lothrop.
Blaisdell	Stories from English history	Ginn.
Eggleston	Strange stories from history	Harper.
Kelman	Stories from the crusades	Dutton.
Coolidge	Little country girl. New Year's bargain	Little.
Morey	Little Mitchell; the story of a mountain squirrel	McClurg.
Jackson	Letters from a cat	Little.
Duncan	Mary's garden and how it grew	Century.
Seton, Ernest Thompson	Lobo, Rag and Vixen	Scribner.
Seton, Ernest Thompson	Lives of the hunted	Scribner.
Kipling	Just so stories	Doubleday.
Andrews	Stories Mother Nature told her children	Ginn.
Black	Four Macnichols. An adventure in Thule	Harper.
Yonge	Prince and page	Macmillan.
Farrington	Tales of King Arthur	Putnam.
Greene	Legends of King Arthur	Ginn.
Meadowcroft	A B C of electricity	Am. Tech.
Chase	Stories of industry	Ed. Pub. Co.
Hunter	Stories of famous children	Ormsby.
Matthews	Stories of American patriotism. (School edition.)	Scribner.
Montgomery	Heroic ballads	Ginn.
Beard	Outdoor handbook. (For boys)	Scribner.
Beard	What a girl can make and do	Scribner.
	St. Nicholas Christmas book	Century.

The Children's Book Shelf—Sixth Year

Mabie	Heroes every child should know	Doubleday.
Mabie	Heroines every child should know	Doubleday.
Palgrave	Child's treasury of English song. (School edition.)	Macmillan.
Patmore	Children's garland from the best poets	Macmillan.
Horne	Stories of great artists	Am. Book Co.
Frost	King Arthur and his court	Scribner.
Frost	Knights of King Arthur	Scribner.
Seawell	Twelve naval captains	Scribner.
Munroe	Through swamp and glade	Scribner.
Mowry	American inventions and inventors	Silver.
Lindsay	Daniel Boone, backwoodsman	Lippincott.
Johnson	Exploits of Miles Standish	Appleton.
Stuart	Solomon Crow's Christmas pockets	Harper.
Duncan	Adventures of Billy Topsail	Revell.
Bonvet	Child of Tuscany	McClurg.
Eggleston	Hoosier schoolboy	Scribner.
Cody	Four American poets	Am. Book Co.
Cody	Four famous American writers	Am. Book Co.
Tomlinson	Washington's young aids	Wilde.
Tomlinson	Tecumseh's young braves	Lothrop.
Morris	Home life in all lands	Lippincott.
Roosevelt and Lodge	Hero tales from American history	Century.
Butterworth	In the boyhood of Lincoln	Appleton.
Chamberlain	How we are clothed	Macmillan.
Chamberlain	How we are fed	Macmillan.
Chamberlain	How we are sheltered	Macmillan.
Nicolay	Boy's life of Abraham Lincoln	Century.
Du Chaillu	Wild life under the equator	Harper.
Converse and others	Adventures of pirates and sea-rovers	Harper.
Converse et al	Adventures of Uncle Sam's sailors	Harper.
Converse et al	Adventures of Uncle Sam's soldiers	Harper.
Dickens	Christmas stories	Macmillan.

Cooper	Last of the Mohicans and others of Cooper's	Many publishers of school editions.
Grinnell	Jack among the Indians	Stokes.
Grinnell	Jack among the Rockies	Stokes.
Munroe	Derrick Sterling. Flamingo Feather	Harper.
McLeod	Shakespeare story book	Barnes.
Scott	Stories of a grandfather	Ginn.
Warner	Being a boy	Houghton.
Warner	In the wilderness	Houghton.
Jewett	The body at work	Ginn.
Jewett	Emergencies	Ginn.
Beard	Handicraft and recreation for girls	Scribner.
Adams	Harper's indoor book for boys	Harper.
Adams	Harper's indoor book for girls	Harper.
Benton	Saturday mornings, or how Margaret learned to keep house	Estes.
White	Child's rainy day book	Doubleday.
Brooks	Century book for young Americans	Century.
Brooks	Century book of the American revolution	

Book Shelf for Boys and Girls of the Upper Grammar Grades

Guerber	Legends of the middle ages	Am. Book Co.
Guerber	Story of the Greeks	Am. Book Co.
Guerber	Story of the Romans	Am. Book Co.
Guerber	Story of the English	Am. Book Co.
Mabie	Norse stories retold from the Edeas	Rand.
Wallach	Historical and biographical narratives	Am. Book Co.
Scott	Novels based on English history	Macmillan.
Rogazin	History of the world: earliest people	Harrison.
Church	Iliad for boys and girls; told from Homer	Macmillan.
Church	Odyssey for boys and girls; told from Homer	Macmillan.
Chapin	Wonder stories from Wagner	Harper.
Chapin	Stories of the Rhinegold	Harper.
Fiske	Discovery and colonization of North America	Ginn.
Fiske	Critical period of American history	Houghton.
Parkman	La Salle and the discovery of the great West	Little.
Parkman	Oregon trail	Little.
Roberts	Around the camp fire	Crowell.
Coffin	Abraham Lincoln	Harper.
Andrews	The perfect tribute (Lincoln.)	Scribner.
Abbott	Kit Carson. David Crockett	Dodd.
Brooks	Len, a New England village boy	Scribner.
Whitney	A summer in Leshe Goldthwaite's life	Houghton.
Whitney	We girls. Other girls	Houghton.
Stevenson	Treasure Island. Kidnapped	Rand.
Pyle	Merry Adventures of Robin Hood	Scribner.
Pyle	Story of Jack Ballister's fortune	Century.
Smith	Tom Grogan	Houghton.
Seton, Ernest Thompson	Biography of a grizzly	Century.
Twain	Adventures of Tom Sawyer	Harper.
Twain	Huckleberry Finn	Harper.
Stockton	Personally conducted	Scribner.
Verne	Tour of the world in eighty days	Burt.
Garland	Boy's life on the prairie	Macmillan.
Brown	Two college girls	Houghton.
Clark	Will Shakespeare's little lad	Scribner.
Doyle	Micah Clark	Longmans.
Wallace	Ben Hur	Harper.
Jackson	Ramona	Little.
Irving	Rip Van Winkle. Legend of Sleepy Hollow	Macmillan.
Kipling	Captains courageous	Century.
Cooper	Leather stocking tales	Putnam.
Murtfeldt and Weed	Stories of insect life; summer and autumn	Ginn.
Merian	Birds of field and village	Houghton.
Gibson	Sharp eyes. Eye spy	Harper.
Wright	Gray lady and the birds	Macmillan.
Miller	In nesting time. Autumn	Houghton.
Burroughs	Birds and bees	Houghton.
Ingersoll	Book of the ocean	Century.
Jewett	Control of mind and body	Ginn.
Gulick	The efficient life	Doubleday.
Hughes	Lakerim athletic club	Century.
Earl	On the school teams	Penn.
Thompson	Boy's book of sports	Century.
Kirkland	Six little cooks	McClurg.
Lane	Triumphs of science	Ginn.
Emery	Every day business	Lee.
St. John	Things a boy should know about electricity	
Munroe	The story of electricity	Appleton.
Lillie	Story of music and musicians	Harper.
Bolton	Famous American authors	Crowell.
Long	American poems. 1776–1900	Am. Book Co.
Bremer	Reader's handbook	Lippincott.
Champlin	Young folks' cyclopedia of common things	Holt.
Champlin	Young folks' cyclopedia of persons and places	Holt.
Champlin	Young folks' cyclopedia of literature and art	Holt.
Bulfinch	Age of fable	Lothrop.
Bulfinch	Age of chivalry	Lothrop.
Henley	Lyra Heroica	Scribner.
Eggleston	American war ballads and lyrics	Putnam.
Repplier	Book of famous verse	Houghton.

Household editions of poetry that the children love should be in every library.

Helps for Teachers of Language and Literature in the Upper Grades

Corson	Aims of literary study	Macmillan.
Corson	Voice and spiritual education	Macmillan.
Clark	Reading aloud	Holt.
Mabie	Books and culture	Dodd.
Legouve	Reading as a fine art	Penn Pub. Co.
Clark	How to teach reading	Scott-Foresman.
Chubb	Teaching of English	Macmillan.
Warner	Relation of literature to life	Harper.
Burroughs	Literary values	Houghton.
DeVinne	Correct composition	Century.
Stedman	Nature and elements of poetry	Houghton.
McMurry	How to study and teaching how to study	Macmillan.
Earhart	Teaching children how to study	Houghton.
McMurry	Methods in language	Macmillan.
McMurry	Methods in English	Macmillan.
Quinn	The art reader	Elson & Co.
Bates	Talks on the study of literature	Houghton.
Larned	Books, culture and character	Houghton.

NATURE STUDY.—Pestalozzi said that the child's first tutor is nature, and her tuition begins from the moment that the child's senses are open to the impressions of the surrounding world. Since his time nature study has been defined as "learning those things in nature that are best worth knowing to the end of doing those things which make life most worth living." Its aim is a happy, helpful adjustment. It is to set the child in the midst of nature as a companion worker.

The School Garden.—To this end, "happy, helpful adjustment," the school garden has proved most practical. Froebel recognized this long ago. "It is of the utmost importance," he said, "that every child should acquire the habit of cultivating a plot of ground. Nowhere as in the vegetable world can his action be so clearly traced by him, entering in as a link in the chain of cause and effect."

Value of School Gardens.—What do the children get out of the school garden. The teaching of the school is brought into contact with life, and, best of all the lives and experiences of the children. The point of contact reaches the home interests just as directly as those of the school. The tiny garden of the school is sure to be duplicated at the home—probably on a larger scale; and this alone is worth the whole effort. The responsibility of the garden develops strength and independence in character. Honest effort wins. Judgment, as well as physical effort and steadfastness of purpose, is demanded.

The first school garden in the United States regularly authorized by a board of education was planted in Boston in 1891, but the value of such school instruction was recognized as early as 1824, when it was argued that "Agriculture and the Gospel are the two great instruments of Divine Providence to check the voluptuousness and exercise the virtues of man." In 1900 vegetables were first planted in this Boston garden. Since that time the development of school gardens and the advancement of agricultural education in the United States have been very great.

How the School Garden May Become a Vital Part of the School Instruction.—A few practical illustrations from two of our own American schools will show how the school garden may become a center of great interest and a vital part of school instruction.

Connected with the school garden is a chicken yard. The children visit it every day and it has been the subject of daily conversation with their teacher. This is the story as they told it to her one day:

We went to see Biddy.
Biddy sat very still.
She looked at us.
We stood near Biddy's nest.
She was not afraid of us.
We would not hurt her.
Biddy had eleven little chicks.
They were white, black, and yellow.
They said, "Peep, peep, peep."

The teacher wrote these stories on the blackboard as the children told them to her and they became their reading lesson. Then she wrote for them this story on the blackboard and they read it to her:

I think that when a little chicken drinks,
he takes the water in his bill.
And then he holds his head up so that the
water can run down hill.

The children copied all these sentences on paper and illustrated them with drawings and free-hand cuttings of their own.

NATURE STUDY AND ELEMENTARY AGRICULTURE.—Elementary agriculture in the country schools should include the fundamental principles of agricultural practice, illustrated in large measure by such laboratory and field work as will be directly and immediately helpful and practical on the farms in the midst of which the school is located. Through the teaching of elementary agriculture in the country schools, the introduction of such needed reforms as seed improvement, improved culture of soils, and the checking of waste, is entirely practicable and possible. Since the country school term does not extend throughout the whole year, the work in agriculture cannot be very satisfactorily unified upon the basis of farm operations in season, yet there are certain topics best studied at each season of the year when first-hand contact with materials is possible. The following topics as outlined in Nolan's *One Hundred Lessons in Elementary Agriculture* suggest a course for a year's work.

Topics for Autumn Months.—1. Composition of soils. 2. Relation of soils to water. 3. Fertilizers. 4. Seeds and their germination. 5. Selecting and storing seed corn. 6. Tree planting. 7. Weeds. 8. Insects. 9. Fruits. 10. Pastures. 11. Agricultural clubs. 12. Storing fruits and grains for winter.

Topics for Winter Months.—1. Judging seed corn. 2. Elements of forestry. 3. The horse and its care. 4. The cow. 5. Milk and butter. 6. Sheep, hogs, poultry, etc. 7. Feeding and care of farm animals. 8. Comparative studies of agricultural products of various states. 9. Crop records and farm bookkeeping. 10. Roads, rural mail, parcels post, etc. 11. Farm machinery, fences, etc. 12. Farm buildings.

Topics for Spring Months.—1. Testing seed corn. 2. Hot-beds. 3. Gardening. 4. Cultural requirements for vegetables. 5. Beautifying home grounds. 6. Pruning. 7. Budding, grafting, etc. 8. Spraying for scale and codling moth. 9. Plowing, harrowing, and cultivating. 10. The potato crop. 11. Transplanting. 12. Valuable birds to agriculture. 13. Sowing farm crops.

In teaching the topics suggested above the aim should be to bring out the essential principles involved in the practice, and to lead the pupils to first-hand contact with the material in as many ways as possible. The country school-teacher should strive in each case to have the lesson tried out on the pupil's home farm. The aim of each lesson should be definite, to bring out and apply one single principle relating to the topic in hand.

An excellent method to unify and organize the work of elementary agriculture in the country schools is for the pupils and teacher to imagine that they have just purchased an unimproved forty acres of land, or perhaps better still, select a forty-acre field near the school grounds, and in theory manage it for one year. Require each pupil to provide a good permanent notebook and keep a record of every detail of procedure as the farm is selected, laid out, equipped with buildings, planted, cultivated, and managed throughout an imaginary year. The practices that would properly come next in point of time in the actual management of such a farm would furnish order and sequence for the topics of study and practical exercises throughout the school course. In this method the pupil should be required to read all the farm papers, bulletins and books available, and keep a diary record of an imaginary year of actual farming.

Such a course in elementary agriculture could be well adapted to the seventh and eighth grades. Three recitations a week would be sufficient for introducing the subject, giving the last half hour of the school program to this subject.

Suggested Lessons for School and Farm.—The most helpful method of conducting experiments and developing the outlines that follow is to assign to a certain pupil or group of pupils the responsibility of the experiments or particular tests that are to be made. From parents, and from books and bulletins with which the school library is supplied, the children gather any and all information possible bearing upon the subjects under study. After free class discussion and much questioning of the pupils, the class and teacher should together work out a simple outline according to which the children will write the results of their study and observations in composition form. Some of these productions should be read in class; all errors both in fact and in English should be noted, but the compositions need not be rewritten. The sheets as first written can be put together in booklets with original designed covers. This disposition of the compositions furnishes excellent motive for careful and correct composition work and a basis for prize and competitive contests.

Alertness on the part of the teacher for the practical and everyday problems that are constantly presenting themselves to the intelligent farmer will keep an industrious teacher busy finding room for the discussion and solution of the problems in the time usually allotted to such subjects in the school program. It is well to carry with the course and experiments practical mathematical problems such as construction and capacity of cribs and silos; amount of rainfall; estimating quantity of seeds needed per acre for planting; judging corn; value of fertilizers needed for land; shrinking of corn in cribs; profit per acre on the different crops; return from one bushel of seeds, and many others that will suggest themselves to the teacher. (For problems in agricultural arithmetic write for extension bulletins published by Ohio State University Agricultural College, Columbus.)

There are the best of reasons why teachers, especially in the rural districts, should be interested in these agricultural problems as school exercises. First, the spread of the knowledge and practice of scientific agriculture has vast economical value in improving the products of American agriculture; second, the teaching of it in the rural schools exerts a strong influence toward interesting the parents in the permanent worth and importance of the school. The teacher who enters intellectually into the simple and practical exercises in agricultural nature study here suggested will not be long left in doubt as to the community's responsive interest in the school and its estimate of its practical importance to the community. Children love to do things, especially things that are obviously useful; they need only judicial direction in order to turn their instincts into the various forms of self-education, which is the only kind of education that "sticks."

Special interest and profit result from investigating the literature and different writings in which allusions are made to corn and wheat and relative subjects. Splendid use can be made of that part of Longfellow's *Hiawatha* referring to Mondamin, with whom Hiawatha wrestled after the feast. To have a number of the pupils read a collection of such selections to the school and visitors Saturday afternoons makes a most interesting hour's exercise. Topics and practical tests can be made from the following outlines suited to the various grades. Perhaps the pupils of the first four or five grades may be too young to be taught the science of agriculture, but they are not too young to gain an abundance of knowledge along the line of nature study.

Exercises on Soil.—How Soil Is Formed.—When the earth cooled it was composed of solid rock, upon which the water acted, changing or breaking it up into small particles. This was caused by the force of falling rain and hail and the expansion, by freezing, of the water in the small crevices of the rock.

Lichens then grew on the rocks and sand, obtaining their food from the air, and in their death and decay bacteria acted upon them, forming humus. Plants then grew on the sandy loam formed, and the roots, reaching down into the rocky crevices, split the rocks.

The soil and remaining rocks were then acted upon by oxidation, gravitation, wind, tides, animals, glaciers and earthquakes. All of these tended to break up and loosen the soil and prepare it for the action of water and carbonic acid, which dissolves the rock.

There are three distinct classes of soil—the alluvial, which has been brought from other places by streams; the sedimentary, which is the soil which was originally formed there; and the glacial, which was carried there by glaciers.

I. To Show Retention of Water on Soil.—Materials — Samples of clay, gravel, sand-loam, leaf mold; five glass bottles or fruit jars and five funnels.

Fill each funnel with a different kind of soil, same amount in each by weight. Tie a muslin cloth over the small end of each funnel to prevent the earth from washing through and place them over the jars. Pour an equal amount of water into each at the same time, note the soil that permits the water to pass through the fastest and the soil that retains the water the longest. Find how each soil ranks in its power to retain moisture. After two or three pourings weigh each funnel, and note the slight difference in weight; which soil retains the most water; which soil dries off the soonest after a heavy rain; which will be ready to plant first in spring; which soil will stand a very dry summer best.

II. To Show Effect of Air on Soil.—Materials—Two chalk boxes.

Fill one with loam, loosely packed. Fill the other box with clay or leaf mold, tightly packed. Plant the same kind of seed in each one and give both the same attention. In which does the plant seem to grow better?

III. To Show the Advantage of Soil Foods or Fertilizers.—Materials — Four chalk boxes or boxes slightly larger.

Fill each box with the same kind of soil. In No. 1 place a small quantity of stable fertilizer. In No. 2 a small quantity of high-grade commercial fertilizer. In No. 3 same quantity of cheap commercial fertilizer. In No. 4 omit fertilizer. Plant

same kind of seed in each box; cultivate all plants in each box by the same method. Notice the difference between the plants that receive the fertilizers and those that do not.

Outline *for the Further Study of Soil, With Test Questions and Sources.*—

(a) Origin and tillage of soil.
(b) Moisture and drainage of soil.
(c) Fertilization and improvement of soil.
(d) Adaptation to vegetation.
(e) Effect of wind upon soil.
(f) Study of properties of soil.
(g) Renovation of worn-out soil.
(h) Alkali lands.

Questions.—1. What is soil?
2. What is subsoil?
3. How is soil formed?
4. What is humus?
5. How does the earthworm influence soil?
6. Why should soil be plowed before corn is planted?
7. Why should crops be well cultivated?
8. Name three plants that improve soil. How?
9. What is meant by rotation of crops?
10. How are the following produced? Sinking coasts, rising coasts, earthquakes, volcanoes, natural bridges, lakes, cataracts, oxbow loops, deltas, glaciers, coral reefs, coal gas, oil, deserts, tundras, and estuaries. (See U. S. bulletin No. 257.)

Sources and Summary *of Bulletins Needed.*—U. S. farmers' bulletins Nos. 77, 245, 257, 262. (See list.)

Exercises on Plants.—It is assumed that the pupils who are to take up elementary agriculture have had some nature study work, and in this way have learned something of the structure of common plants—that is, they know the names and understand to some extent the functions of their essential parts: roots and stems, leaves and flowers, including the reproductive organs, stamens, pistils. When the pupils do not have such knowledge some time should be spent on these simple exercises in the study of plant anatomy.

I. To Learn and to Find the Parts of the Flowers.—Gather flowers that have all the parts, and with a sharp knife take each out and name. Cut a cross section of the cherry blossom and name the parts present.

II. To Find Stamens and Pistils and to Compare Perfect and Imperfect Flowers.—Perfect flowers have both stamens and pistils present. From a strawberry blossom point out these organs. Flowers having pistils only are imperfect flowers. Find such a blossom and compare it with a perfect flower. Will an imperfect flower produce fruit? What kind of a flower is found on Indian corn plant? Where are the stamens on the corn plant? The pistils?

III. Roots and How They Get Their Food From the Soil.—Materials—(1) A large mouthed bottle, a glass tube, an egg, some sealing wax and water. (2) Sawdust and a marble slab.

Plant food must be in liquid condition before it can be absorbed by the plant. The root structure of the plant is very intricate. There are little roots attached to the rootlets that are so small the naked eye cannot discern them. These are called root hairs and through them the plant receives its food. They are composed of a single cell filled with an albuminous substance, called protoplasm, which is similar to the white of an egg.

As the covering of the cell is not porous in the ordinary sense of the word, the question arises as to how the liquid food enters the cell. This is accomplished by the principle of osmosis. It has been proved by scientists that if a dense liquid is separated from a less dense one by a thin membrane, they will flow together, the less dense fluid flowing into the more dense one in greater proportion than *vice versa.* This can be proved in the schoolroom with an egg, a glass tube, a large mouthed bottle, some water and some sealing wax.

The glass tube is inserted into the small end of the egg and sealed in place with the sealing wax. The shell of the large end of the egg is then broken off to expose the membrane, and the large end put into the water. The water and the white of the egg will, in the course of a few hours, flow up the tube.

After the liquid enters the root hair cell, it is carried up to the plant by means of capillary attraction, which is a power which tends to raise the water.

The root hairs of a root system can collect nourishment from the undissolved plant food by tending to dissolve it with an acid secreted in the membrane of the root hair. To prove this, cover a polished piece of marble with wet sawdust and plant a few seeds in it. The root hairs will sprout, and, when removed, the marble will be rough.

IV. To Show That Plants Give Off Moisture and the Rise of Water in Plants.—Materials—Crock or pot of earth containing a plant, a piece of cardboard, glass tumbler, and a piece of wax or tallow.

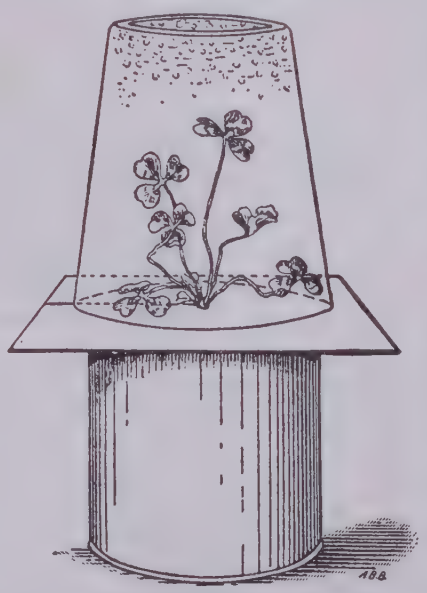


Figure to show that plants give off part of the moisture absorbed from the soil

Take a plant that is well started. Cut a slit in the cardboard and draw it around the plant. Seal the slit with wax or tallow so that no moisture can come up through it from below; cover the plant with the glass and set in a warm, sunny place. Moisture will condense on the inner surface of the glass. Where did the moisture come from? Does this experiment prove that water rises in plants? Why? Cut a stalk of green corn or the stem of a geranium three or four inches above the ground. Observe the moisture that gathers on the point where the stalk was cut. Where did this moisture come from?

V. To Show Root Development on Cuttings.—Materials—Branches ten to twelve inches long taken from a willow tree; a glass jar.

Place these cuttings in a glass jar partly filled with water. Place the jar in a warm place and in about twenty or thirty days you will observe the roots formed on many different parts.

VI. To Prepare Soft Cuttings.—Soft cuttings are sometimes made from leaves, but often from the stem. Insert the edge or a piece of a leaf in moist, warm sand; or lay the leaf, top side up, on the surface of the sand and fasten it down by running splinters through the veins in different places. Plants may spring up from the edges or at cut places in the leaf. In case of stem cutting secure thirty shoots from any strong herbaceous plant, such as the verbena or geranium, and divide them into cuttings of at least two nodes and several leaves. Break off a part of some of the leaves to check evaporation. Pack the sand firmly around the cuttings and they will soon take root.

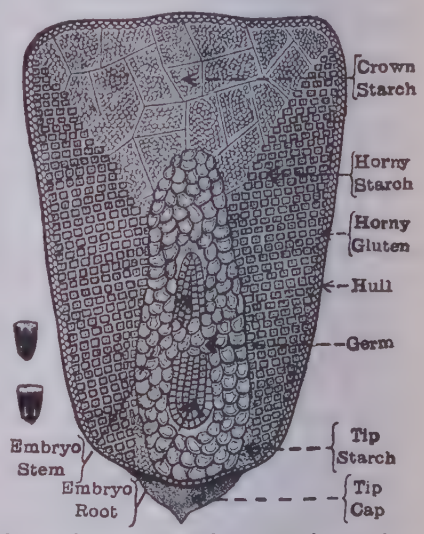


Figure showing parts and contents of grain of corn

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The suggestions here submitted cover the essential operations taught in our schools. They are not intended to teach the parent to take the teacher's place, but rather to supplement the school work of the child and to help the child over such difficulties as the parent may discover. The parent, by being the child's constant confidant and adviser, will remove many an obstacle in the way of the child's progress, and mitigate many an unfortunate experience. To the child, experiences in school, with their ambitions, their failures and their disappointments, are of the most vital importance, just as our adult life experiences are to us. There are many tragedies in childhood which we do not always realize. May the parent be always ready to help the child remove them or pass them by, so that he may not be checked in his career by an unnecessary tumble.

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MENTAL TEST PICTURES



WHAT IS WRONG WITH EACH PICTURE?



THE UNFOLDING FLOWERS

These little students of the Dalcroze method are listening to improvized music, coming up from the floor as the music rises. This is a combination musical and physical exercise and teaches relaxation and control and trains the ear in graduations of pitch. This is a kindergarten group in the Faulkner School, Chicago.



THE YOUNG DIRECTOR

The girl in the center is changing the beat from 2 to 3, 4, 5 or 6. The others must watch and accent strongly the first beat. The young director changes the beat at her pleasure and the children get the cue from the movement of the baton. This develops spontaneity and concentration. First and second grade children.

DALCROZE EURYTHMICS—A NEW NOTE IN EDUCATION

THE pictures on this page present Dalcroze eurythmics, which has been briefly described by J. J. Findlay, Professor of Education in the University of Manchester, England, as "the use of the body as a musical instrument." This method of making rhythm a physical as well as an intellectual reality was conceived about the beginning of the present century by Emile Jaques-Dalcroze, Professor of Theory at the Conservatory in Geneva, Switzerland.

Dalcroze evolved a system of definite musical accuracy which the pupil feels as well as knows. Very simply explained, the arms carry the conductor's beat, while the feet realize the rhythms played. From this basic principle all musical subjects, such as syncopation, phrasing, notes and rests are worked out on the floor.

Dalcroze eurythmics has enlisted the support of eminent musicians and educators in Europe and the United States. In America the method is being taught in a number of the leading schools for children. As shown in one of the illustrations, it is used in the kindergarten. The same principles are applicable in the training of older children and adults. Normal courses have been established and properly accredited teachers are trained for the field.

Dalcroze utilizes the child's instinct for play to develop in him the ability to learn, and what is of equal importance, the desire to learn. Speaking of her group of children from three to six years of age, a kindergartener of long and successful experience says that the children can hardly wait for the day to arrive when the Dalcroze teacher comes. "They change from prancing ponies to fluttering butterflies, to sturdy Indians, or to seeds and growing flowers, responding immediately to the magic touch of the music played by the teacher on the piano. She not only improvizes at the piano, but at the same time directs and helps her group, and yet she never seems to direct them. She is one with them and they all play with each other and suggest to each other games to be worked out in the group."



A STUDY IN CRESCENDO AND DE CRESCENDO

A group of seventh grade students of Dalcroze eurythmics. The girls in the center rise as the accompanying music increases in volume. Those in the surrounding circle drop correspondingly. The value of this exercise consists in the pupils creating different movements—even opposite in character—to the same music. It enlarges their vocabulary of gesture, and enables them to express themselves musically in any posture.

KINDERGARTEN EDUCATION

THE kindergarten program is designed to interest the child in the various helpers who serve the community, and directly, or indirectly, the home; to give him the right kind of experience, to explain that experience, to correct past experience and enlarge upon it; to help him to grow more kindly, courteous and unselfish, and to gain right habits of work and play.

Introduction.—When the little child enters Kindergarten, he is entering the world arena for the first time. It is his first real parting from his mother, in the majority of cases, so the Kindergarten aims to give him as much of the home atmosphere as possible, not only by making the surroundings attractive and homelike, with plants about, a piano, if possible a phonograph, comfortable looking chairs and tables that are just right for him, pictures hung low, so he can enjoy them, a sand table that is sure to delight his heart, but on the tables plenty of things to play with: beads to string, pegs of the different rainbow colors to put into the boards made for them, and dolls for the little girls to play with.

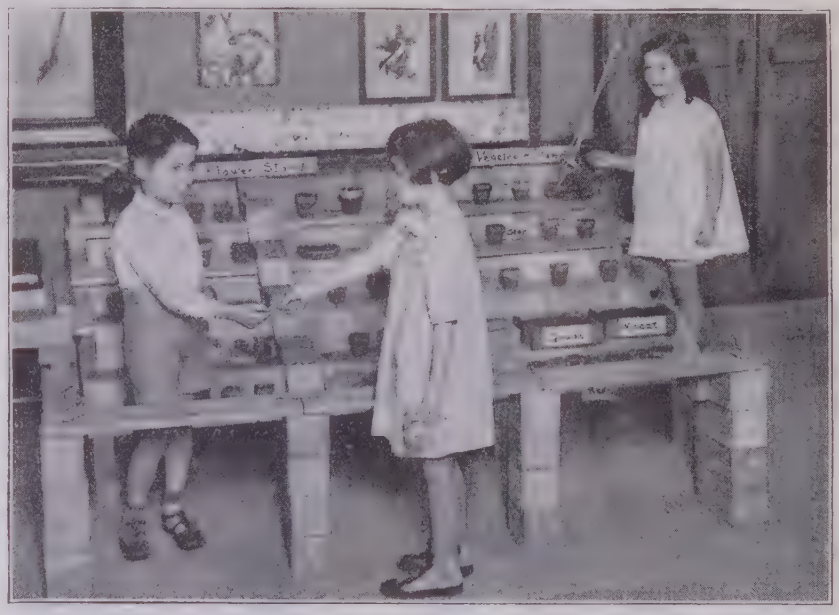
After he has enjoyed playing with his playthings, he can play with soft rubber balls, rolling them back and forth to each other, at first to anyone, then to a particular child. Some familiar games may also be played.

When the games have made us feel better acquainted we will march like soldiers to some martial tune played on the piano or phonograph.

The first day or two may be spent in this way, but when we have learned to greet each other with the "Good Morning" song, to march fairly well together, to carry our chairs where we want them, we are ready to gather around for a little talk, as we do for a little while every morning, a talk about some experience, a picture, or a story relating to the topic we are interested in.

As we grow accustomed to each other and have learned school ways a bit we are ready to follow the talk with some activity associated with it, either to build with blocks, with sand, or clay, or make something we can take home.

The topics the teacher chooses are those that not only *appeal* to the child as being most interesting and important, but *are* most important and have the largest meaning in social life, subjects relating to the community life about him and the world of nature, choosing, for nature material, things the child can use in his play projects.



RAISING PLANTS FOR SALE AND SELLING SEEDS

In this kindergarten project the boy is selling some flower seeds to the girl customer and they are using paper money. They had grown the plants in the flower pots from seed. Doan School, Cleveland.



A BUSY KINDERGARTEN SCENE

Teacher and children of the kindergarten of the Steele Elementary School, Denver. The toys are large, strong and simply constructed. Large floor blocks are used for building projects.

The songs and games relating to the topics are sometimes unrelated, but appealing to the child's emotional nature, make his day happier and full of music, developing as they do his sense of rhythm. The songs should be simple and the words learned before the tune is taught. The games chosen are those which not only relate to the topics but give them the right kind of physical exercise by means of rhythmic representation, teach them to coöperate with the larger group and learn fair play, as well as to follow their natural inclination to live in the world of "make-believe," which to them is very real.

The games chosen for this volume represent the various types of games used, that is:

Sense games, to increase the keenness of perception.

A Ball game, to teach direction and color.

A Skipping game, for agility, grace and courtesy.

The Family game, to show mutual helpfulness as represented by the family spirit.

Ten Little Indians, for imitation and counting.

The Kitty and the Mouse, a silent game for concentration and quiet.

The Squirrel, for attention and agility as represented by animals.

The Snowman, for dramatization and good physical exercise.

The Knight game, to teach civic ideals through play, and to introduce another physical exercise, the galloping horses.

The Parade, for the patriotic spirit, and to teach precision.

The Windmill, introducing another physical exercise as well as a demonstration of nature.

The Snail game, to teach coöperation by means of rhythmic activity.

Humpty Dumpty, for dramatization of a simple story.

A Bird game, showing how young birds are fed and thereby encouraging humane treatment of them.

The game called "Where, Oh, Where Has My Little Dog Gone?" for a running exercise.

The Farmyard game, in which the characteristics of different animals are imitated.

The Farmer game, for a dramatization of an industrial activity.

Stories.—The story gives the young child his background for literature, consequently there should be on our list stories which will make him appreciate good literature. Such stories may be repeated many times,

and eventually almost learned by heart. Children of this age enjoy fairy tales, especially, and love to have them repeated again and again. If the story is simple and within his comprehension, the child will be able to repeat it and even dramatize it, thus making it a part of himself. Humorous stories like "The Johnny Cake" or "The Gingerbread Boy," should be told for pure enjoyment.

Some stories should be read to the children as they will then concentrate all attention on the story itself rather than on the Storyteller. Stories like "Peter Rabbit" and "Little Black Sambo" are illustrations.

All stories should be simple and concise. Those in which some phrases are repeated over and over are much enjoyed by the children and help them to add words to their vocabulary.

Watercolor paper, also, paint brushes and watercolor in tubes.

Thin white paper for free cutting, and blunt pointed scissors.

Bogus paper or colored construction paper for making boxes, baskets and wagons.

Colored paper for folding boats, doll-hats and pin-wheels.

Colored paper cut in strips for making chains (standard colors only).

Pieces of soft wood, hammer, nails, and a saw for making sign-posts and ladders.

Weaving mats and fringes of heavy paper, mats made of linen, or looms may be made by the older children on the frame work of an old-fashioned slate, and set up with pieces of cloth dyed and cut in strips, or heavy jute.

Pieces of cloth and burlap, needles with large eyes and heavy thread for sewing.

These materials may be supplemented by many materials found at home, such as milk bottle tops for wagon wheels and spool boxes for wagon bodies.



GOING TO THE GROCERY

The children have built the store with the large Hill blocks. They have made their baskets and the shop is supplied with real groceries. Kindergarten group at the Faulkner School, Chicago.

Manual Activities.—First of all there are the playthings in Kindergarten, for example, dolls, a cradle, a doll house, toy animals, tin dishes, scoops, and shells for the sand table, bean bags, balls of various kinds, and picture books.

Wooden beads, large and small for stringing, that are shaped like balls, cubes and cylinders and colored with the six colors of the rainbow in standard shades.

Pegs of the six colors to put in square boards with round holes in them. Enlarged sticks from one to five inches long, either white or colored. Balls covered with colored worsted covers and string attached, the colors red, orange, yellow, green, blue, and violet.

Two-inch wooden balls, cubes, and cylinders for rolling, twirling, and building. Rubber balls for rolling, and bouncing.

Boxes of blocks like those originated by Froebel the founder of the Kindergarten.

These blocks may be supplemented by the still larger Hennessy building blocks. Many Kindergartens are supplied with the very large blocks, such as the Hill blocks, with which one may build a house large enough to play house in.

For making the more permanent things to take home, we have the plastilena or clay flour for modeling.

Drawing paper of a soft cream or gray tint and colored crayons to draw with.

Method of Using Materials.—With all Kindergarten materials the first exercises should be experimental. Just as the child when he first plays with the sand likes to scoop it up and run it through his fingers to see how it feels and how it flies through the air, so with his other materials; he wants to feel them and try experiments with them in his own way, before suggestions come from outside.

If the child has been truly interested in the stories and talks, he will have something in mind that he will like to make, to carry out the ideas conveyed; but if he merely plays aimlessly with the material, suggestions may be offered by means of questions to interest him in some project.

The best educators lead the child to think out his own projects rather than to imitate the work of some adult.

Froebel, the great Kindergartner, tells us to foster this impulse of creative self-activity if we would have our children grow to be valued citizens of the community.

A grocery store may be constructed in one corner of the room or one corner of the room may be screened off to make our store, then when the grocery man is established and buying and selling begins, we will make other things as we feel the need for them, keeping our store a week or two as the interest lasts. Other incidental projects may be carried out in addition to this one, but our aim being to increase the child's span of interest, we will give him every opportunity to enlarge upon the first project and help him to become an independent thinker.

We will proceed much the same way with the blocks shaped like bricks; then, having learned the possibilities of these, combine the two, when we find it to our advantage. The blocks divided diagonally make our houses seem much more real, so we use them as the work progresses for the roofs of our houses, but, of course, if we have the very large floor blocks, we use those in preference to any of the others, for our group projects. The sand table lends itself readily to this kind of progressive work as the picture can be added to each day, everyone contributing, working hard to see who can make the best product, as only the best may be used in the picture.

The sticks, tablets and rings may be used for flat pictures or patterns on the tables and many little number stories may be told as we make border designs or life forms with them. For instance, one ring for the head, one four-inch stick for the body, two two-inch sticks for each arm and each leg, and two one-inch sticks for the feet, make a little man, whom we can have running or walking; and we can make pictures of him.

SEPTEMBER

"The dusty road goes winding
Through the nodding yellow frame
When the bright September weather
Sets the goldenrod aflame."

Topics

The Home—Family Life.

The Carpenter, Who Builds the Home.

In our first talks we naturally think of the family at home, as heretofore the home has been the child's world. If there is a baby at home, what do we do for him? What does mother do? How can we help mother? Shall we sing to baby? Sing some familiar song like "Rock-a-bye-Baby." Then start a new lullaby. We might use the colored balls for babies and rock them to sleep; then tell a story about a baby.

Soon we will inquire about the other members of the family. What does mother do for us? Her different tasks lead us to ask for the game "Around the Mulberry Bush." When we talk about father's duties, sister's and brother's share, we may introduce the Family Song which we love to illustrate by finger-plays and games.

In connection with the activities of the father we may find that somebody's father is a carpenter and we can talk about how he builds the home and the tools he uses. Pictures of the carpenter working and an excursion to watch him building a home will add to the interest, and little girls as well as boys will enjoy building by means of dramatization, or with their materials.

If we have found milk-weed pods we will want to examine them, pick out some seeds and blow them as the wind blows them out-of-doors. The flowers that are brought in we may name, tell the color, and something about how they grow.

Stories.—The "Go Sleep" story or "Wake Up" story, furnish good examples of stories about a baby.

Thumbelina, in *Stories and Story-Telling* follows a little fairy girl on her first journey from mother and brings her back home to

tell all about her experience. All experience is valuable to the person who has it, only when he can tell about it to others or give out some product as the result of that experience.

The story of the "Three Bears" found in any collection of fairy stories, is intensely interesting to children at this age and with a little help in the way of properties, lends itself very readily to dramatization. All that is necessary is a table with three different sized bowls upon it, and the three chairs, and the children will do the rest. Great care is always exercised by the teacher that the children's expressions are correct, that is "Who has been *sitting* in my chair?" "Who has been *lying* on my bed?"

For the Carpenter there is the story "How the Home Was Built" in *Mother Stories*, by Maud Lindsay.

Songs.—Good Morning to You.
Here's a Ball for Baby.
The Family Song, in this volume. (*P. 40*)
The Milk-Weed Cradle.

Games.—Ring-a-Round-a-Rosy, or London Bridge for old familiar games.
Did You Ever See a Lassie?

Ball games, rolling the rubber ball to the center of the ring, or to some child whose name we call, and clapping when it reaches its destination.

Bouncing the ball to individual children, at first, by the teacher, then by the children who are most expert.

Around the Mulberry Bush.
The Family game, in this volume. (*P. 40*)
A Hiding game, in which one child hides his eyes and another goes out of the room so he can guess who has gone.

Manual Activities.—Among the various kinds of balls, those with worsted covers are most interesting when the child first comes to Kindergarten, as they are at a still earlier age. With these balls, color and direction may be taught by means of plays like the Ball Game in this volume, having the children mention the color when the balls are distributed and collected or choosing own color and naming it, then starting with the first motion round and round and adding a new motion each time the game is played, gradually learn the whole game.

The two-inch wooden balls may be rolled to hit a target which may be a tower built of a cube, cylinder, and ball on top, or anything that will fall easily when hit.

With our crayons we will enjoy making pictures of our balls, using the free arm movement for the motion round and round. With the water colors, if the six different colored balls are made, the three colors red, yellow, and blue will be sufficient and the opportunity may be given to paint yellow on a red ball to make orange, yellow on blue to make green, and blue on red for purple.

The colored wooden beads used in Kindergarten are strung on shoe strings and arranged according to color, or when the colors are learned, according to any rhythmic design, as two of one color, and one of white, etc.

The sand table is used a great deal for free play this month, especially with sea shells which make fine gardens in the moistened sand.

The soap bubble gives us the ball again and since we can make it float, it is still more fascinating to us.

After we have played with our blocks and handled them freely, we will want to make the chairs and table that the three bears used. If we would like a table cloth we will get out paper and scissors and cut a fringe for the cloth, then perhaps the three bowls. With the plastilena we can make the three bears, and still better bowls.

The family plays and those of the carpenter lead us to want to build a house, so we set to work with a will, building different kinds of houses with our cubes and playing at housekeeping with our dolls and housekeeping toys.

Pegs are used a great deal at this time for color arrangement, red, orange, yellow, green, blue, and violet, or to make gardens.

The art instinct is developed by drawing pictures of the fall flowers that are brought in, with our crayons, being careful to have our flower in the middle of the paper and neither way up to the top nor down to the bottom. Wire grass grown to seed makes a good subject for our drawing.

OCTOBER

"October's bright blue weather
When on the ground red apples lie,
In piles like jewels shining,
And redder, still, on old stone walls,
Are leaves of woodbine turning."

Topic
PREPARATION FOR WINTER

How Mother Prepares.
How Nature Prepares.
How Animals Prepare.
Hallowe'en.

Mother's work, canning and preserving, gives us much to talk about. Where does she get fruit and vegetables? How do they grow? Have different kinds of fruit and vegetables and talk about shape, color, and growth. The making of jelly is a simple process which the children may help to carry out if there are facilities for it.

Nature's preparation as shown by the falling of the leaves which have put on different colored dresses at the touch of Jack Frost; the falling of flower seeds and their protection from the cold by the leaves, and later the snow; the protection of baby buds on trees and bushes with a thick coating of varnish; the flight of the birds to seek a warmer home for the winter; all interest us and we like to help by planting bulbs to sleep under the ground and on our excursions by gathering cocoons which the caterpillar has built for his winter home. These nature talks may be carried over into the month of November, but before October has gone we will be interested in watching.

The preparation of animals is shown by Mr. Squirrel and his family, who can teach us all the greatest lessons in thrift and industry. If possible we would like to watch him carrying the nuts to his pantry in his mouth, if not we may have pictures and tell stories. The thickening of his coat for winter, as well as that of Brother Bear, who sleeps in his cave during the cold weather may be mentioned, too.

Hallowe'en preparations will occupy all our attention the last few days of this month for we must make many preparations for our first party and our fathers and mothers must be invited to see the fun.

Stories.—The Big Red Apple.
The Seed Babies' Blanket.
The Lion and the Mouse, in *Æsop's Fables*.

The Squirrels' Harvest, in *Half a Hundred Stories*, are good stories for this month, to which may be added a Hallowe'en tale.

Songs.—The songs started last month still hold our interest but to them may be added some Mother Goose songs. Some of the best are: Baa, Baa Black Sheep, Diddle, Diddle Dumpling, Wee Willie Winkie, Bye Baby Bunting, Jack Be Nimble, Polly Flinders, and from *Ring Songs and Games*: Jack and Jill, and Bo-Peep.

If a few Mother Goose songs are quickly learned because the words are already familiar, a song about the falling leaves may be introduced.

October Has No Butterflies.
Falling Leaves.

Mr. Squirrel, in *Small Songs for Small Singers*, are some of the best to add this month.

Games.—In connection with the Mother Goose songs, dramatic plays like Humpty Dumpty, in this volume, or Jack and Jill, will be interesting.

The Sense game for hearing, in this volume. (*P. 33*)
The Squirrel, in this volume. (*P. 38*)

Hiding the Ball, a game in which the six colored balls are placed in a row and while the child is hiding his eyes, one ball is taken away, so he may guess which color has gone.

Rhythms.—Marching, flying like birds, running lightly, skipping, and for dramatization, trees blown by the wind, leaves falling and blowing about to fall asleep at last on the ground.

Manual Activities.—Mother's activities lead us to play about the fruit and vegetable man, who walks the streets singing his wares and we find that the colored balls make fine fruit and vegetables, as so many are shaped like the balls. An excursion to the grocery store or bringing vegetables and



As October's Leaves Come Down
Kindergarten children dancing out of doors on a beautiful October day.

fruits to school encourages us to talk about their shape, size, and growth, which is especially well illustrated by cutting a cross section of the apple and showing the blossom form in the seed pockets. If we want to play preserving, as mother does, we will build the cellar and shelves for the cans with our cube blocks using the beads shaped like cylinders for the cans, the cube beads for boxes, and the larger cylinders for barrels of apples and potatoes. With our cube blocks we may also build the train that carries the fruit from one city to another, the telegraph poles along the road, and the railroad station.

With our clay or plastilena we may mould vegetables and fruit, with paper and scissors cut them out, free hand, or else paint them with crayons and then cut out for our market basket. Squash and carrots may be painted in mass on large sheets of paper.

With colored circles we may arrange a bunch of grapes on a card and paste it.

Beads are still popular and after an excursion to find nature material, we will enjoy making strings of hollow grasses and seeds, using seeds brought from home as squash, bean and pea, or rose-hips and berries.

Leaves collected may be pressed and pasted in designs, or a leaf marked on paper and colored and cut out by the children.

For Hallowe'en, pumpkins may be colored and cut out, with eyes, nose and mouth, for room decorations; also black cats and witches may be cut out of black paper and baskets made of construction paper for the nuts. The envelopes for the Hallowe'en invitations may be made by the children, and they may enjoy dressing in costume for the occasion.

NOVEMBER

"The valley is going to sleep,
The birds in their nests are still,
And the maple branches bend and break
Over the leafless hill."

Topic
THOSE WHO SERVE THE HOME

The Farmer.
The Cow.
The Baker and the Miller.
Thanksgiving.

The Farmer.—The city child may be interested in the farmer's Fall work by means of pictures, but the child in the country will readily tell how the farmer is cutting the grain, gathering fruits and vegetables to store for the Winter, or to sell to the grocer, and cutting hay for Lady Cow to eat.

The Cow.—Questions about our breakfast and where the milk and butter come from, will make us want to see how butter is made. The making of butter is a very simple process which can be carried out by the children with a little glass churn. When each child has turned the handle several times and the butter has come, they may watch the pressing and molding and taste the buttermilk, but the butter we will keep for our Thanksgiving party.

Lady Cow's food and how it is grown, makes us realize that she is not the only helper to make our glass of milk and our butter possible.

The Baker—is another interesting helper to the city child as mother with her bread board is to the country child. They love to visit the Baker and watch him make all his goodies, or look at pictures of him at his work.

When we inquire what he makes bread of, where flour comes from, where the Miller gets the grain, what the Farmer does to help, how it would be impossible to grow grain without sunshine and rain which God gives us, we realize the true Thanksgiving spirit, and are ready for a real Thank You day.

Biscuits are made if there are facilities, but the making may be postponed until the day we celebrate for Thanksgiving.

Thanksgiving.—The historical significance of the day is a bit beyond the little people, but they do enjoy dressing like Indians and Puritans for the Thanksgiving party, so a simple version of the story may be told to introduce the characters, who relish heartily the biscuits, butter and jelly we made.

Stories.—Pig Brother.
The Birthday Present.
The Johnny Cake.
Ole Man Rabbit's Thanksgiving Dinner.
Billy Bob-Tail.

Billy Bob-Tail learns the lesson of interdependence, when he goes out to seek his fortune. As he goes along he meets his different animal friends who ask him, separately, "Where are you going, Billy Bob-Tail?" To which he replies each time, "I am going out to seek my fortune." Then they ask, "May I go with you?" and he replies, "Yes, if you wish."

They all walk along until they come to the woods, when each one tells Billy Bob-Tail what he can do in case they hear a noise. When that danger is passed, they continued their journey until they reach a deserted house where each one begs to be allowed to stay with Billy Bob-Tail, all telling him, namely, the cow, the goat, the sheep, the dog, the cat, the turkey, the rooster, and the hen, what they can do to help him gain his livelihood.

Songs.—Mother Goose Songs.
Jack Frost.
The Mill.
Pat-a-Cake.
Song of Thanks.
Thanksgiving.

Games.—A Sense Game, in this volume. (*P. 38*)
A Skipping Game, in this volume. (*P. 37*)
The Muffin Man.
Ten Little Indians, in this volume. (*P. 37*)

Rhythms.—Skipping, galloping horses, and and Indian dance.

Manual Activities.—So far we have been using the sand table for free play with shells, making gardens, or just molding balls, but now we may be interested in building a group picture of the farm: the field for hay, and pasture for the cows, the barn of blocks, and anything they may suggest for use in the making of butter. The people and animals may be toys this time, but the buildings, fences, etc., are made by the children.

The sand table is again useful when we talk about the baker, for, with our different molds and moist sand, all kinds of cakes, pies, and bread may be made, and also the oven to bake them in.

With our blocks, we might like to play milk-man, making the wagon which we will fill with cylinder beads for the milk-cans, or else have a grocery store built of cubes, with large beads for the canned goods, and the larger cylinders for barrels, cutting out circles for paper money if we want to buy and sell, and perhaps a basket for our goods. To advertise our wares we can make a picture of a dish of fruit for Thanksgiving, by marking around patterns of fruit, coloring them, then cutting out and placing on a card with a white paper dish pasted over, that we have cut, free hand.

If simple weaving is to be used, the children should start early in the month, first learning the process by means of a game in which the children who represent the strip join hands and march in and out between other children who stand in rows several feet apart, then with wooden slats weaving in the heavy manila mats found in all packages of weaving, before using the other material.

When we talk about the Indians, another opportunity is given for a sand table picture for which tents, canoes and log-houses may be made.

DECEMBER

"Oh, holly branch and mistletoe,
And Christmas chimes wher'er we go,
And stockings hung up in a row,
These are thy gifts, December."

Topic
PREPARATION FOR CHRISTMAS

Loving and Giving.—Among the Mother Play pictures used by Froebel, the founder of the Kindergarten, is one called "The Flower Basket" which illustrates the Christmas thought better than any other. It is a picture of a mother and her children picking flowers that they have cultivated with care in order to fill a basket for the father's birthday, showing their great love for the father who has done so much for them. When the children have seen this picture, or one similar to it, and told their stories about it, the teacher can lead up to the thought that Christmas Day, or Christ's birthday, is celebrated by us because Christ did so much for us. We are glad he lived, and because he lived and taught us to be loving and kind, we celebrate the day by giving gifts to those we love best. Since we love father and mother best, we will want to make something for each of them, as well as plan an entertainment for their benefit on the last day of school before the holidays.

When the children have this thought they will be most enthusiastic about doing things for others, and enter into the real Christmas spirit of Loving and Giving with a will, playing at being Santa Claus' helpers as Santa Claus does for them. The toyman is visited, his different toys talked about, and the Toyman Game is played in school, the children being the toys and imitating their mechanical movements when exhibited. Santa furnishes a great deal of amusement and entertainment, while "The Night Before Christmas" is practically learned thru constant repetition as well as dramatic play.

Stories.—Christmas Stories are many and varied, but some of the best are:
The Shoemaker and the Elves.
The Story of the Christ Child.
The Legend of St. Christopher.
The Christmas Stocking.
The Story of Gretchen.
The Three Little Christmas Trees That Grew on a Hill.

Songs.—Every Kindergarten song book has one or two attractive Christmas songs for individual children to sing or for the whole group. Some of the simple ones are:
Santa Claus.
Martin Luther's Cradle Hymn, "Away in a Manger."
Holy Night, Silent Night.

Games.—The Toyman.

Dramatize "The Night Before Christmas."

Dame Get Up and Bake Your Pies.

Rhythms.—"Around the Christmas Tree," which is sung to the tune of "Mulberry Bush." Each verse ends with the words "so early Christmas morning" and when we have gone thru the motion of reaching for some toy on the tree we will finish with "This is the way we blow our horns," or "beat our drums" and suit the action to the words.

Manual Activities.—A sand table picture of Santa's Land with cotton for snow, his house built of blocks or cardboard and his sleigh filled with toys will keep some of the children busy while others are making their gifts.

The fireplace may be built with our largest blocks and paper stockings hung in it, or Santa Claus' sleigh with the reindeer drawing it, also boxes filled with toys. For room and tree decorations we will make chains out of strips of paper; cut out bells of red cardboard; make lanterns of paper by folding a square paper like a book, cutting slashes from the folded end toward the open, then opening out to paste the sides together; tissue paper balls, by cutting circles of paper, folding twice for the center, then holding by the center crush toward the outside and string on white thread until when pulled together a fluffy ball is made; and for strings, spaghetti cut in short lengths and cranberries, or just fluffy popcorn. For our gifts, we may make calendars, by painting a little scene for the picture at the top, and place the calendar pad just a little below in the center, or let the children cut out any simple design that is appropriate for Christmas, a tree, a bell, or some holly for the top; memorandum books with some design on the cover colored by their little hands, or the cover woven of linen mats; candle shades with the design on each of the four sides cut out and another colored paper for the facing; needle books with the cover design colored with crayons or watercolors; napkin rings woven or wound with raffia, and many other things that one's ingeniuty may suggest. The invitations for the entertainment may be printed by the teacher with some design at the center top colored by the children, and the envelope made entirely by them. Little songs and verses are now being learned by the children in anticipation of the great day, but even though our brains and hands are busy nearly every minute we will take time to sit in front of the fireplace we have made and tell Christmas stories or play about "The Night Before Christmas" so we may not lose all the joy of the festival in the bustle of preparation for it.



A Thanksgiving Party

JANUARY

"Summer fading, winter comes—
Frosty mornings, tingling thumbs,
Window robins, winter rooks,
And the picture story-books."

Topics

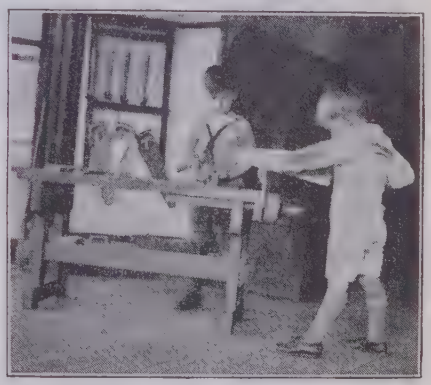
The Little New Year.
Natural Phenomena.
Community Life.

The Little New Year, who is, we learn, Old Father Times' messenger and has for companion, Sister January, with her gifts of ice and snow, is welcomed by the little people with a glad New Year's song and New Year's resolutions. These resolutions may be as different as the little people are different, but hearing others tell about their faults may help us to realize ours. Some one may resolve to come to school every day with clean hands and fingernails, some one else to remember to be polite and not interrupt others who are talking, some one else to brush his teeth every day, and still another, to come on time every morning. This leads us to discuss the importance of being on time for everything and what the clock does for us. A clock dial will help us to learn how to tell time, at least for the hours.

Natural Phenomena present new wonders to us at this time: the snow on the ground, icicles hanging from roofs, the frozen ponds, and the child is anxious to know how it all came about. If he has an opportunity to make a real snowman, the action of the sun on the snow will be shown when the snowman melts away; or, when cold water is put out for Jack Frost to kiss, the expansion of the water is clearly shown. The story "How the Cold Broke the China Pitcher" illustrates this very well.

We observe also the aspect of the sky these clear cold nights, the changing moon, growing from a tiny baby to the full round ball and then growing smaller every night, also the wonder of the stars, perhaps finding the Great Dipper and Orion.

Community Life. We have talked about the various food products and perhaps played grocery store, now we are ready to talk about the other buildings that make up the city or village. If we live in the city there will be churches, factories, office buildings, the armory, dwelling houses, stores and the post-office. If we live in the country there will probably be a church, a store, dwelling houses, a schoolhouse, and a mill in the village. After we have discussed what is necessary to make a city or village, we may concentrate on the furniture as our next project, and will ask: What shall we find there? What are they made of? Where does wood come from? How is it brought to the mill?



Kindergarten Carpenters

Songs.—The many pretty songs about The Little New Year, The Clock, The Snow, The Snowman, The Moon and Stars, keep us happy through this month. Some of them are:

The New Year.
Tick, Tock.
Storm and Sunshine.
The Moon Song.
Snowman.
Twinkle, Twinkle, Little Star.

Stories.—The Three Pigs.
Ten Little Fairies.
The Stars in the Sky.
Ludwig and Marlene.

paper, and the ice of cubes which we may cut and take to the ice-house.

Later we can make a snow picture on paper, representing the sky with blue crayon and leaving the ground white or tearing white paper to represent a hill and pasting it on; also the moon and a tree. The children will like to experiment with paper and scissors to see who can cut out the best tree and moon. Snowmen may be made with plastilena, of wet sand or with white chalk on paper. Pictures of snow-shovels may be made with sticks, or painted on paper with crayons.

When community life is discussed the problem will be to make the various buildings with our blocks, lay out streets with

FEBRUARY

"Step by step lifts bad to good
Without halting, without rest,
Lifting better up to best."

HEROES AND HERO WORSHIP

Topics

The Knights of Old.
The Postman.
St. Valentine's Day.
Lincoln's Birthday.
Washington's Birthday.

The Knights, of whom we have many interesting pictures, notably Sir Galahad, represent all the virtues: purity, truth, bravery, good cheer, and kindness, and



BUILDING WITH THE LARGE BLOCKS

One of the greatest developments in the toy world has been in the adoption of the large building blocks. They provide exercise for the children in lifting, carrying and placing the blocks in construction projects. This view, showing a completed ship, is in the kindergarten department of the Faulkner School, Chicago.

Games.—The Snowman Game, in this volume. (*P. 39*)
A Skating Game.
Sense Games, in this volume. (*P. 38*)

Rhythms.—Sally Go 'Round the Stars.
Marching with a book placed on the head to gain poise.

Manual Activities.—After Christmas the inclination will be to talk about our gifts so we are allowed to bring one of our toys to school to show the other children and play with. When we have had a good time with them we will make pictures of the simple ones: the horns, engines, cars, or the Christmas tree, as we remember it.

When we talk about the clock we can make clocks with construction paper and paste on a dial after we have built clocks with our fourth gift blocks. When we talk about the snow, we may want to make another sand table picture using cotton for the snow, sleds made of construction

our square tablets, make trees with sticks and fringed paper, etc. These problems should be thought out by the children and executed by them with the different kinds of blocks they have learned to use at this time.

The furniture store may be made, at first, by each child, then, when the need is felt for it, a community store should be made in one corner of the room, which is screened off for this purpose. Now the little hands will be busy making furniture of heavy paper or, possibly, wood, and weaving rugs. If we are fortunate enough to have a doll house, we can paper the rooms with wall-paper made by painting with our crayons back and forth across the paper until it is covered with straight lines and making the borders with stencils. The rugs could be made of paper mats, of burlap with overcast edges, or, on the home-made looms, with strips of colored cloth. If we do not own a doll house, individual ones may be made of shoe boxes.

appeal strongly to the little people as the pictures show them with their gayly plumed hats and warlike aspect on their prancing steeds. They love to imitate them in their games and learn many valuable lessons in their worship of the ideal. The *Mother-Play* pictures by Froebel, show the Knights searching for a good child, and the mother who has one, comes out joyfully to show him to them. Another picture shows the Knights turning away from the home because the child is naughty and cannot come out to see them. Through these pictures and stories about the Knights, the children learn many lessons in obedience, and how necessary it is to have the approval of others. The Knights will have nothing to do with the naughty child, will not even take him for a ride. Here is a fine opportunity to appeal to public opinion about the individual child's behavior and discover whether he has learned to live with the larger group, giving and taking as he will have to, in the world of affairs. The penalty for his disobedience

in Kindergarten is that no child can be a Knight in the games who has not been obedient all the morning.

If the projects for January carry over into the month of February, it may only be possible to start the talks and stories of the Knights before we take up the Postman and our national Heroes, but we will have another week at the end of February to continue the thought for, after all, they are all Knights in the best sense of the word.

The Postman, too, is something of a Hero, coming as he does to serve us in all kinds of weather. We talk about him, sing a Postman song and play Postman just before Valentine's Day.

Lincoln's and Washington's birthdays are celebrated just because they are national Heroes, but very simple stories are told about their childhood, as little children are not ready to appreciate their real service to mankind.

Songs.—The Postman.
America.
Our Flag.

Stories.—The stories for this month, may include such stories as:
The Search for a Good Child, in *More Mother Stories.*
David and Goliath, in *The Bible.*
How Cedric Saved His Kitten.
A Little Lad of Long Ago.
Stories About George Washington.

Games.—The Knight Game, in this volume. (*P. 38*)
The Parade, in this volume. (*P. 37*)
A Sense Game, in this volume. (*P. 38*)

Rhythms.—A Soldier's March.
An Orchestra which is formed by the children with different kinds of toy instruments and one of their number to lead them with a stick for a baton, while the teacher plays the tune on the piano. The orchestra can hardly do more than keep the rhythm, but the effect is interesting and the practice very fine for rhythmic sense.

Manual Activities.—When we see pictures of the Knights' castle we may want to try our skill at making a castle with our blocks using both the cubes and the bricks; cut out flags and paste a red cross on them for the Knights to carry; model the Knights on horse-back with our plastilena or clay, make horse lines with heavy cord or roving, or else with our colored folding paper, fold the square into sixteen squares, as we did for our baskets, boxes, wagons, houses, etc., and cut out these squares to lay on a paper in the form of a castle and paste. The Knights' hats may be made by folding two squares on the diagonal and pasting the short edges together with paper strips for a plume at the top.

For the soldiers we may make a sand table picture, folding tents, cutting out soldiers and fastening them on wooden foundations so they will stand or parade, or else painting flags with our crayons to fasten on sticks and place on the fort we have made.

When we talk about Lincoln, we can construct a log cabin of sticks, then make one of construction paper to take home, with Lincoln's picture pasted on a card. The log cabin is made by folding sixteen squares, then cutting up the three creases from the front edge one square space, the same from the back edge and pasting the center squares on top of each other; for the roof, bring the outer squares just to lap about half an inch so the house will stand squarely on the table.

St. Valentine's Day is celebrated by making valentines, the envelope to contain them and perhaps the Postman's bag by sewing two pieces of paper together overhand.

For Washington's birthday we will want to fold soldier hats, paste his picture on a card, paint a flag with crayons, and draw pictures of soldiers marching. If it is desirable to keep some things in book form a Washington book may be made, and the work drawn or pasted on the leaves. The soldiers we draw may be just like the men we make with our sticks on the table but carrying a flag; and a soldier hat makes them real to us.



Busy Moments in a Modern City Kindergarten
Children engaged in a variety of activities in a Philadelphia kindergarten

MARCH

"The brook is brimmed with melting snow,
The maple sap is running,
And on the highest elm, the crow,
His black wings is sunning."

HEROES OF LABOR

Topics

The Fireman.
The Blacksmith.
The Policeman.

NATURAL PHENOMENA

Topics

Water.
The Wind.

A visit to *The Fireman* and *The Blacksmith* will serve to show us some Heroes of Labor and the little people re-live their experience by means of dramatization. Little boys are always attracted by spectacular callings like that of the Fireman and the Policeman but deep in their hearts they do appreciate the importance of their work.

The kindly man who helps us across the crowded busy streets when we go to town, who watches our home or store, so thieves cannot take our goods, but is also ready to punish the wrongdoer, is a true Knight to the children if ever there was one, and this is the attitude they should have toward *The Policeman.*

If we are not able to show him the real Policeman, Fireman, or Blacksmith, pictures will serve to acquaint the child with their good work.

Water. — The forces that bring about the rejuvenation of nature are noticed now, as Water and Wind play such an important part in Mother Nature's house-cleaning. Water in the streets or roads, the result of melting snow and the Spring rain washing away as it does some of the accumulated dirt of the Winter, leads us to ask: What does water do for us? How it is used for bathing our bodies inside and out, by drinking one or two glasses of water before each meal, then by bathing our bodies regularly, cleaning our teeth and our hair. How we use it for washing our clothes, our dishes and our homes. How it sends the boats along the river that carry lumber and other goods for us, and how it makes everything grow.

The Wind's work is an interesting topic for the little people and at this stage we should expect them to tell all about the Wind's work, or about some picture illustrating the Wind's work, telling what they know by means of grammatical sentences even though simple and child like in form. The Wind, that mysterious unseen force which Mother Nature uses for her house-cleaning, by blowing the leaves and refuse about or to turn the windmill that pumps water from the ground, to dry the clothes on the line, to sail our boats, or our kites, is always interesting, and some day we will go out to watch the weathervane turn and hear the song Mr. North Wind sings while we wonder why we cannot see him when he takes our hat off our head.

"The Wind" by Robert Louis Stevenson, may be read to the children.

The bulbs we planted in the Fall may be brought out now and cared for by the children. If they are the white Narcissus bulbs, they may be put in individual glass jars, so the growth can be watched more closely.

Stories.—The Little Gray Pony.
The Wind's Work.
Aqua, the Water Baby.
The North Wind and the Sun.

Songs.—The Blacksmith
The Wind.
Who Has Seen the Wind?
Waiting to Grow.
I had a Little Pussy.

Games.—The Fireman, in *A Baker's Dozen for City Children.*
The Windmill, in this volume. (*P. 40*)
Oh, Where, Oh, Where Has My Little Dog Gone?, in this volume. (*P. 41*)
The Kitty and the Mouse, in this volume. (*P. 37*)

Manual Activities.—Of course, there will be the Fireman's hat to make, a ladder with sticks on the table, a real ladder with pieces of wood, if we have the tools for it, and perhaps a lantern of paper, to hang on the truck we make with our blocks. Now we may take time to make a picture book, making the cover of colored construction paper and the four pages of two sheets of drawing paper about nine by twelve inches large with the pictures cut out of magazines by the children and very carefully placed, one large one, or two small ones on a page. If some child has been out a long time we must be sure to make one for him.



HOUSEKEEPING PLAY WITH DOLLS AND SIMPLE FURNITURE

This type of play is valuable and interesting to boys and girls. In the kindergarten department of Teachers College, Columbia University.

For the Blacksmith, we will enjoy the free cutting of horseshoes or wagon wheels, then making his shop with our blocks and the horses to go into the shop. Boats may be folded to sail on the sand table pond, the bridge that goes over the water constructed of blocks and possibly the steam engine to go over the railroad bridge; Dutch boys and girls cut out and their clothes colored; windmills constructed of paper, steamboats for the ocean built of blocks, or anything the children suggest to make the picture complete. Water scenes may also be made by coloring the sky and water, and pasting on the sailboat we have cut out.

When we talk about the wind we will paint pictures of kites, of children flying kites, make pin-wheels and construct real kites.

Rhythms.—The Hansel Gretel folk dance, a Victrola record.

APRIL

So soft and gentle falls the rain,
You cannot hear it on the pane;
For if it came in pelting showers
'Twould hurt the budding leaves and flowers.

Easter.
Sources of Clothing.
Farmer's Spring Work.

If *Easter* comes early in April, we stop now to devote a week to the Easter thought and preparations for an Easter party, as we would have, had the date fallen in March. If the season is advanced the grass is beginning to grow, the brooks are flowing merrily along, and the buds are beginning to open on trees and bushes. If we are fortunate enough to have chickens there may be some little ones ready to come out of the shell, that we can watch. The crocus flowers peeping out of the earth or the bulbs that we planted in the Fall waking from their long sleep make us realize the awakening of Nature, and when this thought is followed by the story of "The Caterpillar and the Butterfly" the children gain the spiritual significance of the day without any other reference to it. The week's work might well culminate in a party to which we may wish to invite our parents.

After Easter we will want to tell what we did that day. If we went to church, all about the glad music, the flowers, and the beautiful church building. Then we will surely be quite eager to tell when we hear the first Robin, and our Audubon bird chart will be brought out to see if we can find Mr. Robin on it. Each day we will be interested to hear about how the birdie builds her nest, what she builds it of, and where. When other birds come, or we listen to their songs on a Victrola record, if not in reality, we may learn to find them on the chart.

If we have dolls in Kindergarten, they will need new clothes, so we will begin to talk about where we will find materials. If it is possible to visit the dry goods store we may see how it is bought and from that lead to the *Sources of Wool and Cotton*, showing pictures of the farmer shearing his sheep and of the cotton growing. At this time of year the children should be ready to tell some interesting stories about their pictures, and if some child is away on a visit or ill at home, we may enjoy composing a letter to him telling about our new picture. The community letter gives us an opportunity to show how well we can compose sentences, and helps to increase our vocabulary by comparing our story with others.

The Farmer's Work in Spring, the preparation of the ground, the planting of the seed, interest us through pictures when not through actual experience. Excursions to see the planter working give us the best idea, of course, and we come back quite ready to imitate his activites in our small way.

Songs.—To Baby Land.
Happy Easter.
Nature's Easter Story.
The Robin.
Raindrops.
The Rainy Day.

Stories.—The Caterpillar and the Butterfly.
Little Half Chick.
Peter Rabbit Stories.
Patty's New Dress.

Games.—The Snail, in this volume. (*P. 39*)
The Farmer, in this volume. (*P. 41*)
The Swing, a dramatization of Robert Louis Stevenson's verse, found in *"A Child's Garden of Verse."*

Rhythms.—O'er the High Hill, a folk dance.

Manual Activities.—For Easter we will be busy making Easter baskets, coloring Easter eggs, by marking around a pattern, and cutting them out, cutting and mounting Easter Rabbits, or making little chickens coming out of the eggs and coloring butterflies for room decorations. If we plan to invite the parents for an Easter party, we will have to fold envelopes and an Easter design on the invitation card. This party may be one for which the table is set and if there is time we may decorate doilies and napkins for the occasion, or make place cards. A little entertainment, an egg hunt, games and the lunch at the tables, will give us a happy time together. After the party the little people should be the housekeepers, clearing the tables, washing and drying the dishes, and putting them away, but if this is not possible because of numbers and lack of assistance, they should be given the opportunity after the daily lunch, or a birthday party, which is occasionally celebrated in this way.

After Easter we will build churches with our blocks, an organ for our church, boats to load with cotton and send down the river, or factories where cloth is made. With paper and watercolors we can make a fine church window by blending the different colors on an oblong paper, coloring a border and cutting out in the shape of a church window. Then when we have brought from home some pieces of cotton or woolen cloth we may make dresses for our dolls, cutting out the pattern first. A sunbonnet is easily made and is a welcome addition to the dolly's wardrobe.

For birds' nests there is plastilena or clay, blocks to build bird-houses with and sticks for the fence on which we may have a birds' store. Birds may be colored and cut out of paper and a slit cut in the body for the wings so when the bird is hung from a fine black thread he seems to fly.

A bath arranged in the school yard for the birds will make a fine place from which to observe their habits. The birds' store is merely a section of the fence devoted to things the birds may like to use in the building of their nests, with a bit of seed or other food to attract their attention.

Our pictures at this time should show great improvement. They should always have the sky and ground completely covering the paper and made with a much lighter stroke than at the beginning of the year; and the little boys and girls drawn may wear bright colored clothes while rolling their hoops, flying kites, or doing any of the activities the children wish to represent.

A rainy day may be celebrated by making umbrellas, cutting them free hand and mounting on a sheet, or drawing pictures of umbrellas.

MAY

"All the birds have come again,
Come again to greet us;
And a joyous song they raise
Chirping, singing merry lays;
Pleasant Springtime's happy days
Come again to greet us."

Topics

May Day.
Nurture of Growing Things.
Of Animals.

May Day.—When the season is early and the blossoms are already out the first week in May, we will have practised dancing around the Maypole in April and changed our program, but if blossoms are late in coming out we will begin now to prepare for our May Day celebration. To dance around the Maypole is great fun, but since we are so small we are content to just wind the streamers around the Maypole instead of weaving them, having two circles of children skipping if there are too many for one circle, with one, the outside circle, skipping clockwise and the other counter-clockwise. To entertain our visitors we will learn little flower songs and verses and perhaps have a Queen of May to preside.

After May Day we observe the busy gardeners all about us and talk about their work and tools used. If we have the opportunity to make our own little garden outside, we can plant and care for something that is easy to grow, like lettuce or radishes. The entire care of a plant teaches the child one of the greatest lessons in life—that loving care brings its own reward; also that responsibility goes with service, for our plant soon droops and fades if neglected. Our talks will be about how to prepare soil, tools to use and what to do for growing plants. If we cannot have a garden out-of-doors, we will at least have a box for a few seeds in our room and encourage conversation through pictures of a little gardener. How the sun and rain help the little plant to grow are brought to our attention by means of the stories. At this time, too, we will enjoy playing The Light-Bird game, making the Light-Bird by holding a piece of glass so the sun can shine upon it and send the reflection on the wall. When we try to catch the Light-Bird we will begin to realize that there are some things we may not grasp with our hands, but can hold the picture of in our eyes and hearts.

Songs.—The Woodpecker.
My Garden.
The Tulip.
Daffy-Down-Dilly.
Daisies.
The Dandelion.
Little Yellowhead.
Buttercups.
Pansies.
Good Morning Pretty Sunshine.

These are some of the best flower songs to select from, for individual children or groups of children for May Day.

Stories.—The Little Pink Rose, in *Stories to Tell to Children*, by Bryant.
Chicken Little.
The Kitten Who Forgot Kitten Talk.
Prince Harweeda.
The Line of Golden Light.

Games.—The Bird Game (p. 40).
The Farmyard Game (p. 39).
Chicken Little.
The Little Pink Rose.

Rhythms.—The Maypole Dance, which is really a skip for us.

Manual Activities.—May baskets for our May flowers, tulips colored and cut out, then pasted on a card as though they were growing out of a pot. Daffodils may be arranged the same way, or we may paint with our crayons from the real flower for May Day projects. The garden may be worked out in the sand table with shells for the borders, on our tables with sticks and seeds; or if we have half rings flowers may be made with those. The tools for use in the garden may be cut out of thin paper, freely, after we have made them on the table with our sticks, that is, tools like the rake, the hoe, the shovel. Pictures of the shovel or the hoe may be made with crayons, or pictures of children working with them. We take frequent walks these days and usually find some flower we like to make a picture of.



THE JUNGLE GYM

The jungle gym is an example of the large pieces of play apparatus now available for school equipment. Other equipment includes the tower gym, the highlow gym, low parallel bars, climbing ropes, see-saw, rocking boats and the ever popular slide.

The Farmyard furnishes a project that we will enjoy working out in our sand table, where we can make paper animals for the pig pen, for the dog kennel, for the sheep fold, and for the barn. These animals will stand up if two animals are cut out and pasted together leaving the legs free. Chicken coops and fences may be made of paper by the children. If we have a chicken we can make a runway for the chickens with our blocks.

With our clay, we may make a flower pot, dry it, paint it with shellac, and plant a flower seed in it, which we will take home for mother.

Educational play devices, such as the junglegym or the tower gym, are useful. With the coming of good weather the outdoor slide is much in demand by the kindergarten children.

JUNE

"Just to bloom beside your way
That is why the flowers are sweet;
You want fresh ones every day
That is why the flowers are fleet."

Topics

The Circus.
The Bees.
The Park.
Flag Day.

The Circus has come to town and our interest centers on that for a while. Now we tell about the different animals in the parade. Which are the wild animals? What are their names? What did the elephant do at the circus? Show us how he walks. How does the bear walk? Where do they like best to live? Tell about the clowns and the horses.

When the circus has gone we will be out in the fields again watching the busy bees at work among the flowers. To gather under the shade of a tree and tell stories about how the Queen Bee gathers her family of workers and drones and allots to each his particular task, which is zealously performed, and then be able to watch the honey bees as we gambol over the fields makes us more eager to do our work well, when we return to our room; so we go out for all relaxation periods these days and tell our stories there, if possible. The lesson we learn from the bees and birds and flowers is that all are as busy as can be at their particular tasks; the bees making honey and caring for their household; the birds with their little ones and eating the insects that trouble the trees and plants, and the flowers gathering all the sunshine and dew they can in order to grow fast and give forth perfume. They are always busy. Why should we play all the time.

Shorter periods of work and play are the rule at this time of year, although it is always understood that we must not be kept too long at a task. After a change we will be glad to go back to our project, but little children cannot concentrate on any project very long at a time. The last project for the year may be:

The Park, if we can visit one. We may find there a pond with ducks or swans in it that will attract our attention first; then buildings, flower beds, tennis courts, swings, and a merry-go-round; also automobiles that drive through the big gate—all of which we may represent in our sand table or on the floor.



THE OUTDOOR SLIDE

With the coming of spring the outdoor slide again leaps into popularity. The assistant director is shown here with children of the kindergarten.

On Flag Day we will tell the story of the first flag made by Mrs. Betsy Ross and learn to salute our flag as the soldiers do.

The closing festivities for the year might be a picnic at which we will serve in sandwiches the lettuce and radishes we have grown in our garden.

Stories.—Little Black Sambo.
The Baby Queen.
The Little Gray Grandmother.
The Coming of the King.

Songs.—The Kitten and the Dog.
Mr. Frog, in *Small Songs for Small Singers.*
Zoom, Zoom, Zoom.
Two Little Roses.
Away Among the Blossoms.

Games.—Merry-Go-Round.
Hide the Button.
A *Flower Game*, in which the gardener plants children for flowers, and names them as he plants. They curl up on the ground while the gardener waters them and the sunbeams shine on them, then some of the children represent birds and fly around waking the flowers which come up slowly and gradually unfold their blossoms, when other children representing bees and butterflies, fly among them. After a while the gardener picks a few of his flowers to sell or give to some one who is ill.

Rhythms.—Here We Go Up the Green Grass, or,
A Dolly's Dance which the children may do to music like that of the Dance of the Marionettes.

Manual Activities.—The Circus Parade will be eagerly made after we have talked about or, better still, really seen it. The wagons may be made of red cardboard, or of boxes turned so the open end is at the side, strips of cardboard for the bars, across the open end, and wheels cut out of the papers, or milk bottletops fastened on with brass paper fasteners. The horses and other animals may be cut out and pasted together so they will stand, and the horses harnessed to the wagons with strips of cardboard. Free drawing or a group product in which the animals and wagons are cut out and pasted on a large sheet upon which the background has been colored, may suit us better if we cannot make the real wagons. The Bradley *Picture Cut-Outs* make fine action figures for a circus border, as the arms and legs are cut out separately and fastened on with little fasteners.

Flowers may be made of parquetry circles, or free cutting and pasted for borders.

When we visited the park so many projects occurred to us that we will be kept busy, perhaps making the trolley that takes us there, with our blocks; making the Merry-Go-Round; the house where ice cream is sold; the flower-beds; the pond, which may be just a piece of glass for the toy ducks and swans, if we make our picture in the sand.

On Flag Day we will make a flag to place on the flagpole which is inside the big gate which we may make with out blocks.

Our last festivity, the Picnic for which we have grown lettuce and radishes, will be the occasion for a jolly good time under the trees, when we will sing the songs and play the games we like the best.

ATTAINMENTS

Through the topics discussed, we should gain much valuable information, through the exchange of ideas and suggestions by the teacher to feel a closer kinship with the environment, kindliness toward those who help to make our homes possible, toward animals, toward birds, and a definite feeling of responsibility for their care.

Habits of attention, of independent thinking, of closer observation, and ability to relate experiences by means of grammatical sentences, should have been acquired.

The stories and poems should make for a better appreciation of good literature, and through frequent repetition create better habits of attention as well as exercise the memory and increase the vocabulary. The power to dramatize simple stories and incidents should be increased because the feeling of self-consciousness has been overcome to some extent, also the ability to originate simple stories should have been fostered.

The singing of songs in the Kindergarten should make for better voice control, the use of the head tones instead of the throat, ability to listen to and reproduce tones on the piano, or with the voice, and to change the pitch of a song if started too low. The group as a whole should have learned to sing a number of simple songs, and each child should be able to sing a few of these alone.

The games and rhythms should have given us better control of the muscles, more poise, and should correct some physical defects. With the games, they should have acquired the ability to play with the larger group in a spirit of fairness and co-operation; greater ability to dramatize situations brought out by other activities. And the power for leadership and organization should have been increased. The feeling that he is part of a great whole and that his part should be done as well as possible if we are all to have a good time is best gained through games and folk dances, or rhythms.

The manual activities we engage in should gain for us better ability to imitate the best forms, to create new ones, to concentrate on a particular problem, to express our thoughts by means of pictures, and to make associations with the subject matter by choosing our own projects to work out. Habits of neatness, orderliness, and artistic arrangement should have been gained and a feeling for color and form should have been developed with a better knowledge of the laws of growth, through the nature material used.

Habits of courtesy, such as: "Good Morning Miss ———, Thank you, Excuse me, or Pardon me, and If you please" should become second nature as should the habit for the little boys of removing the hat when in the house.



MAKING FRIENDS OF BOOKS IN KINDERGARTEN
A happy, interested kindergarten group in the Oakman School for the Crippled, Detroit.

REFERENCE BOOKS FOR STORIES

The Teachers' Story-Tellers Book, by Alice O'Grady and Francis Throop, published by Rand, McNally & Co., Chicago.

Stories and Story-Telling, by Angela M. Keyes, published by D. Appleton & Co., New York.

Mother Stories, More Mother Stories, by Maud Lindsay, published by Milton Bradley & Co., Springfield, Mass.

For the Children's Hour, For the Story-Teller, by Carolyn Bailey and Clara M. Lewis, published by Milton Bradley & Co., Springfield, Mass.

How to Tell Stories to Children, Stories to Tell to Children, by Sara C. Cone Bryant, published by Houghton, Mifflin & Co., Boston.

Aesop's Fables, published by Macmillan & Co., London.

Half a Hundred Stories, published by Milton Bradley & Co., Springfield, Mass.

In Story Land, by Elizabeth Harrison, published by The Central Publishing Co., Chicago.

The Story Hour, by Kate Douglas Wiggin and Nora A. Smith, published by Houghton, Mifflin & Co., Boston.

BOOKS OF POEMS AND RHYMES
And Some Recommendations

From *A Child's Garden of Verse*, by Robert Louis Stevenson:
Bed in Summer.
The Swing.
The Rain.
The Wind.
My Shadow.

From *Memory Gems for Children*, by Jesse Carr Tyndall, published by Milton Bradley & Co., Springfield, Mass:
The Merry Brown Thrush.
All Things Bright and Beautiful.
Help One Another.
Three Little Rules.

From *Pinafore Palace*, by Kate Douglas Wiggin and Nora A. Smith, published by Grosset & Dunlap.
Do You Know How Many Stars?
Chicken in Trouble.
Pussy Willow.
One and One.

SONG BOOKS FROM WHICH SONGS HAVE BEEN RECOMMENDED

Ring Songs and Games, by Lucy Wheelock Graduates, published by Milton Bradley & Co., Springfield, Mass.

The Song Primer, Teachers' Ed., by Alys Bentley, published by A. S. Barnes & Co., New York.

Mother Goose Songs, More Mother Goose Songs, by Ethel Crowninshield, published by Milton Bradley & Co., Springfield, Mass.

Child Land in Song and Rhythm, by Jones-Barbour, published by Arthur Schmidt, New York.



First Year Music, by Hollis Dann, published by The American Book Co.

Song Stories for the Kindergarten, by Patty Hill, published by Clayton Summy, Chicago.

Small Songs for Small Singers, by Neidlinger, published by G. Schirmer, New York.

Songs of Happiness, by Carolyn Sherwin Bailey, published by Milton Bradley & Co., Springfield, Mass.

Song Echoes from Child Land, by Harriet Jenks and Mabel Rust, published by Oliver Ditson & Co., Boston, Mass.

Songs of the Child World, Nos. I and II, by Riley and Gaynor, published by The John Church Co., Chicago.

Finger Plays, by Emilie Poulsson, published by The Lothrop Publishing Co.

THE PARADE

Lillian M. Goetz

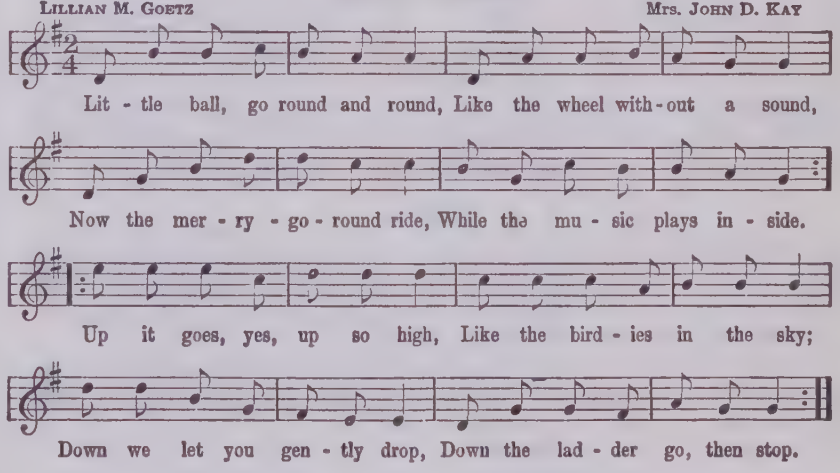
Sung to the tune of "The Five Knights."

Here comes Drum-major marching, marching, marching,
Here comes Drum-major marching, can you march, too?
Here comes a soldier marching, marching, marching,
Here comes a soldier marching, can you march, too?
Here come two soldiers marching, etc.
Here comes a bugler marching, etc.
Here come two buglers marching, etc.
Here comes a drummer marching, etc.
Here come two drummers marching, etc.
Here comes a fiddler marching, etc.
Here come two fiddlers marching, etc., until all are chosen.

Directions—The first child marches in front of the others until the words "can you march, too" when he salutes the one nearest him. That child then marches behind the Drum-major until time for him to choose a second soldier or a bugler according to the number of children playing. If there are enough children choose two of each kind to march together until all are in the line of march, then play some martial music while the band pretends to play.

BALL GAME

LILLIAN M. GOETZ — MRS. JOHN D. KAY



2.

Right and left swing like the clock
As it softly says, "Tick, tock."

Tick, tick, tick, tick, tick, tick, so
Mother's little clock will go.

Forward, back, for big church bell,
Ding-dong, ding-dong, ding-dong, dell.

Quickly make our cradle here
Sing "Bye-low" to baby dear.

Play with colored worsted balls with string attached If there is a loop on the string the children can hold and swing balls much more comfortably.

SKIPPING GAME

Tune, "Comin' Thru the Rye."
Words, Lillian M. Goetz.

On this bright and happy morning
Come and skip with me.
I will bow then take your hand,
And merry we will be.

Chorus.

Sing tra-la, la, la, la, la, la, la, etc.
(While the children skip.)

Now our happy skip is over,
Walking we will try,
'Till the lassie makes a curtsy,
Just to say, "Good-bye."

Directions—Let one child choose a partner and skip. When their skip is over let both go to other children and choose, making four to skip this time. Continue this way until all are chosen.

THE KITTY AND THE MOUSE

Kitty curls herself on a chair and goes to sleep, her pan for milk by the chair. Mouse creeps up on tiptoe to get pan, without waking kitty. If kitty hears the mouse she wakes and says "Meouw," scaring the mouse. If kitty does not waken and the mouse gets the pan, that mouse becomes the kitty for another game.

TEN LITTLE INDIANS

(A Game for Imitations)

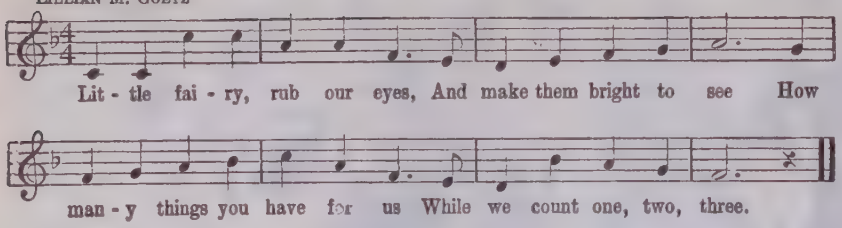
One little, two little, three little Indians,
Four little, five little, six little Indians,
Seven little, eight little, nine little Indians,
Ten little Indian boys.

Directions—As the song is sung, the children stand up one by one, and form a long line. The next time the song is sung, each child will imitiate the motions made by number one who is always the leader. He may imitate the activities of the baker, the carpenter, the soldier, the musician, etc.

SENSE GAMES

1. SIGHT

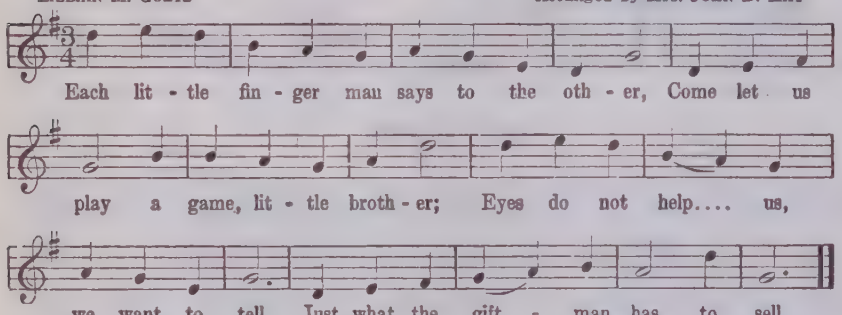
LILLIAN M. GOETZ



SENSE GAMES

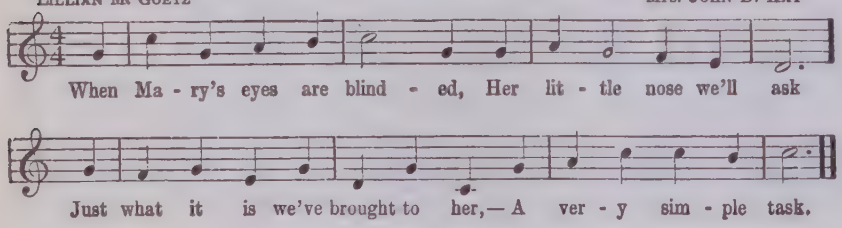
3. TOUCH

LILLIAN M. GOETZ — Arranged by Mrs. JOHN D. KAY



4. SMELL

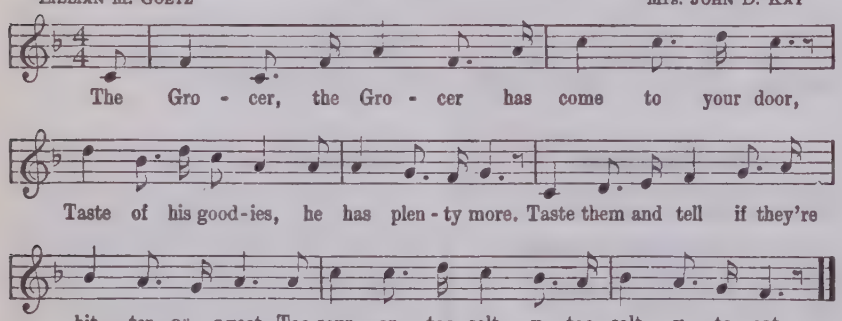
LILLIAN M. GOETZ — Mrs. JOHN D. KAY



SENSE GAMES

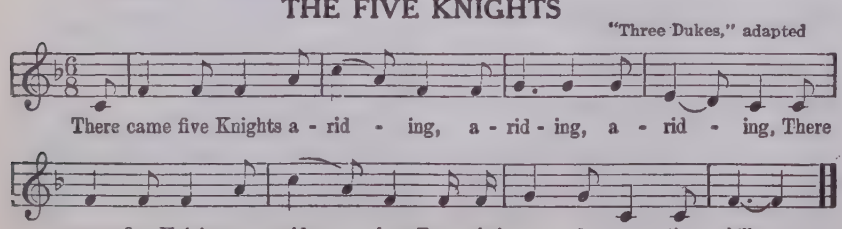
5. TASTE

LILLIAN M. GOETZ — Mrs. JOHN D. KAY



THE FIVE KNIGHTS

"Three Dukes," adapted



SENSE GAMES

1. SIGHT

Directions—Place a number of objects in front of the children, who are standing in a row or circle with their eyes closed, and cover the objects with a cloth. When all is ready have them open their eyes and sing, lifting the cloth only during the last measure. When the cloth is on again let each one tell what he saw.

2. HEARING

One child sits in a chair with eyes blindfolded.

Another child tiptoes back of him and raps on the chair, saying, "Little sister who knocks?", or "Little brother who knocks?" When the first child guesses the name, the second child sits in the chair and some one else knocks at the door.

3. TOUCH

Directions—The children stand with their hands behind them, while the gift-man walks up and down with his bag singing and placing some object in each pair of hands. When the children all have something, they feel of the object and tell its name or what it is like.

4. SMELL

5. TASTE

THE SQUIRRELS

Let two children represent the hollow tree by facing each other and joining hands as for London Bridge, stretching out arms shoulder high. A third child represents the squirrel and stands between the raised hands. When several trees are made, let another child stand in the center between the trees. At a given signal all the squirrels change trees and the odd child tries to find a tree to stand in. The squirrel who is left out stands in the center for another game.

THE FIVE KNIGHTS

O, what is it you wish, sirs, you wish, sirs, you wish, sirs,
O, what is it you wish, sirs, for your castle on the hill?

We've come to find a good child, a good child, a good child,
We've come to find a good child for our castle on the hill.

O, please take one of us, sirs, of us, sirs, of us, sirs,
O, please take one of us, sirs, to ride with you today.

The very best child that I see, that I see, that I see,
The very best child that I see, shall ride with me today.

And now we'll all go riding, a-riding, a-riding,
And now we'll all go riding to the castle on the hill.

THE FARMER

(Danish) '07

Music harmonized by Elizabeth D. Root

Would You Know the Farmer, etc.

Repeat for the succeeding verses, changing the words for the last two measures thus:

2nd time—Is cutting his wheat.
3rd time—Is gathering his wheat.
4th time—Is thrashing his wheat.
5th time—Is grinding his wheat.
6th time—Is baking his bread.
7th time—Is taking his ease.

Children join hands in a circle. As they begin to sing they move toward the left with long running steps for the first four lines of the song. The next four lines are sung more slowly to enable the children to demonstrate the words being sung, and children stand still during the action.

Verse 1. When the word "how" is sung, children take seed in their right hand from the bag they are pretending to carry on their left arm, and cast seed from right to left.

Verse 2. Cut the wheat by bending forward and forming the scythe by a bent right arm. The left hand is placed far up the right arm, as if for a scythe.

Verse 3. Form a wheel by bringing children close together with their hands on one another's shoulders. Step briskly on heels to imitate the sound a rolling wheel makes over the cobbles of a farmyard.

Verse 4. The right arm represents the flail which will thrash out wheat. This arm is stretched and bent alternately. At the same time stamping foot.

Verse 5. Grinding is done by turning "pancake". Couple join hands and turn under own arms.

Verse 6. Kneading is done by pushing clinched fists downward and forward.

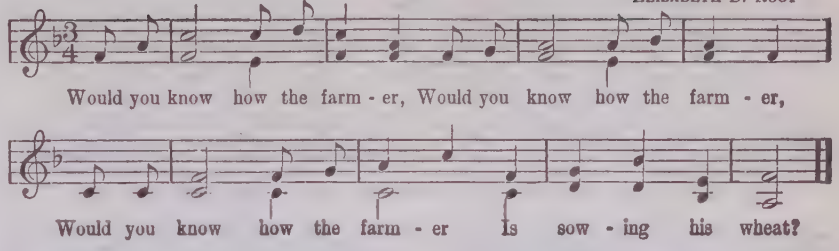
Verse 7. Baking bread: the right hand represents the long-handle shovel, upon which bread is placed in a big hot oven. Hold hand horizontally to keep bread from falling. Place left hand high on right arm to push shovel.

Verse 8. Children drop on left knee, put right hand under chin, rest elbow on knee and nod to child first on left then on right.

By permission, from *"Hinman Gymnastic and Folk Dancing," Vol.* III, published by A. S. Barnes, New York.

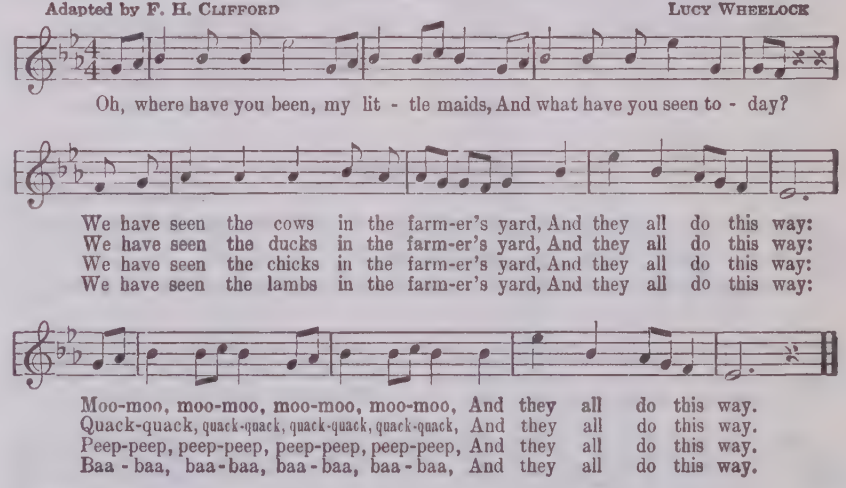
THE FARMER

(Danish, '07) Music harmonized by Elizabeth D. Root



THE FARM-YARD

Adapted by F. H. Clifford — Lucy Wheelock



THE FARM-YARD

By permission of authors and publishers, from *"Ring Songs and Games"*, published by Milton Bradley & Co., Springfield, Mass.

Directions—The children chosen to represent animals leave the room and decide what they would like to do. When they return the other children sing to them and they reply, imitating the action of the animals represented.



THE SNOWMAN

Lillian M. Goetz

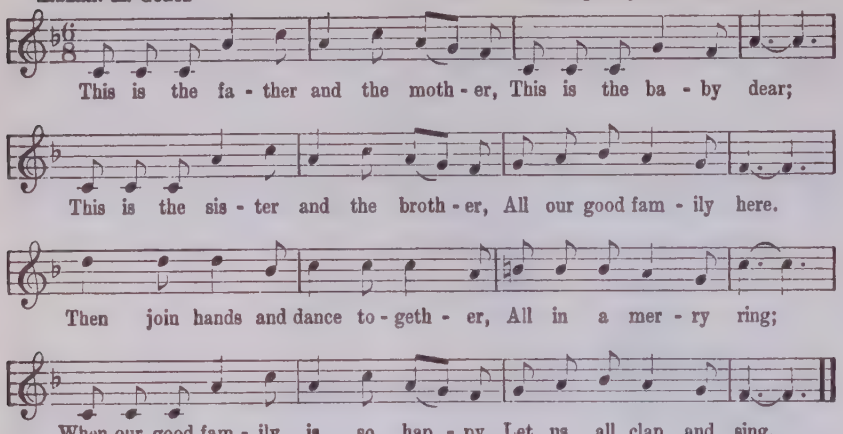
Snowstorm—Have all the children represent snowflakes and whirl softly about while some soft music is being played on the piano. After they have whirled about a bit they fall on the floor like sleeping snowflakes, then get up softly one by one until all are standing on the circle.

Snowman—All roll snow toward the center, where one is selected for the snowman and a hat is placed on his head.

Snowballs—When all are some distance away from the snowman each child will pretend to make a pile of snowballs. When each has a pile let them throw together knocking off the hat, first, then the arms, then all the snowman. When the snowman is down the children gather around while the sunbeams melt him. The fact that he joins the other children when they all drift back makes the melting of the snowman seem quite realistic.

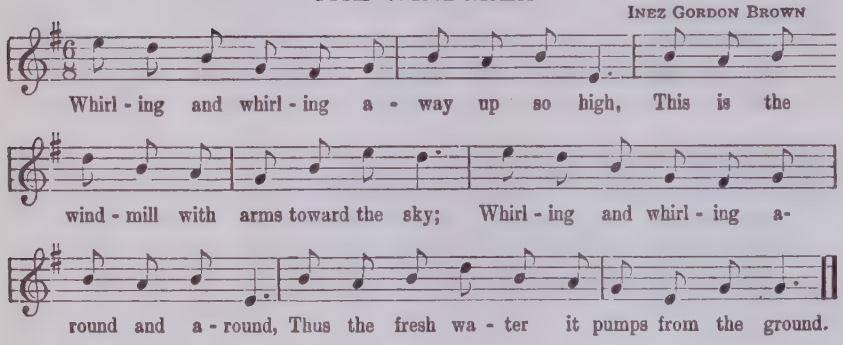
THE FAMILY

LILLIAN M. GOETZ — Arranged by Mrs. JOHN D. KAY



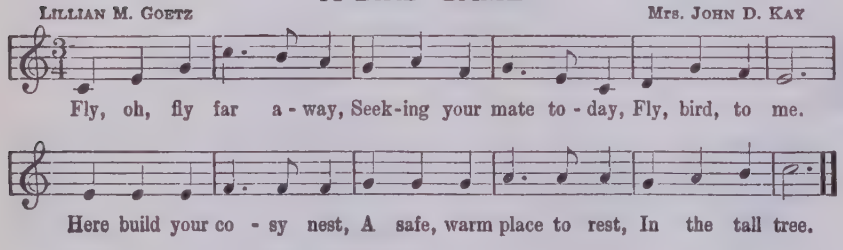
THE WINDMILL

INEZ GORDON BROWN

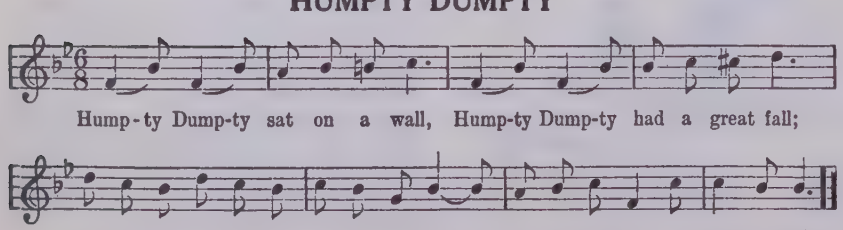


A BIRD GAME

LILLIAN M. GOETZ — Mrs. JOHN D. KAY



HUMPTY DUMPTY



THE WINDMILL

By Inez Gordon Brown

Directions—Two children stand in the center of the circle, back to back. Each extends arms, left high and right low. On accented words the right is lifted and left lowered, so there is an effect of whirling as the children's arms are constantly crossed. The other children in the circle sing the words of the song. After this, the music is repeated so that all have an opportunity to be windmills.

From *"The Kindergarten and First Grade"* magazine, published by Milton Bradley & Co., Springfield, Mass.

A BIRD GAME

2.

Mother-bird spreads her wings
Over two tiny things
Two wee blue eggs.
Some day she'll hear a call,
"Peep, peep, we're birdies all,
For food we beg."

3.

Fly, oh, fly far away,
Out of your nest to-day,
Wee birdies, too.
Follow the mother-bird,
"Peep, peep," her song is heard,
"I'll fly for you."

Directions—Choose a child for the father-bird who flies around looking for a mate. When the mother-bird has been chosen they select a place to build their nest then fly around finding imaginary straws and place in the nest. 2—When the nest is built, mother-bird finds two children to represent eggs and cuddles them by holding arms out straight from the shoulder and kneeling down to get close to the children who are curled up like eggs. While the mother-bird stays at home, the father-bird finds food for her. Soon the birds raise their heads calling "Peep, peep," and mother-bird assists in the search for food. 3—Finally the little ones are ready to fly, and follow the lead of the mother and father who show them how.

HUMPTY DUMPTY

By permission, from *"Mother Goose Songs for Little Ones,"* by Ethel Crowninshield, published by Milton Bradley & Co., Springfield, Mass.

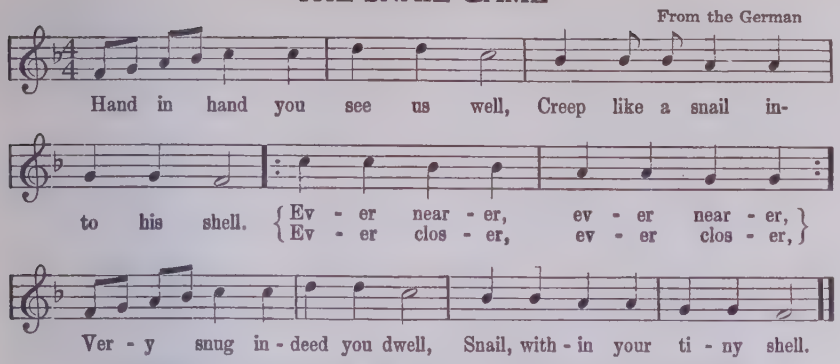
Lillian M. Goetz

Directions—Choose the King, his horses and two men beside Humpty Dumpty. Have Humpty sitting on a table or chair for the wall. When he has fallen off the wall, have the King drive his horses and with the assistance of his men try to put Humpty back again. After they find that is not possible, let the King drive his horses about the room while the following verse is sung to the same tune as the above verse:

Galloping, galloping, gayly they come,
All the King's horses are galloping home,
All the King's horses and all the King's men
Who couldn't put Humpty back again.

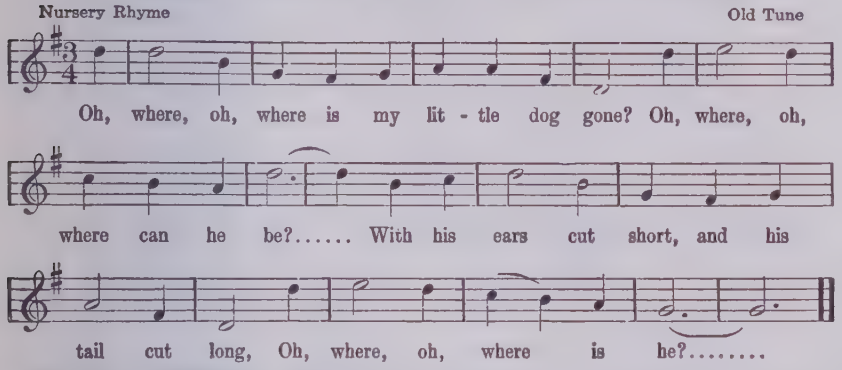
THE SNAIL GAME

From the German



WHERE, O WHERE IS MY LITTLE DOG GONE?

Nursery Rhyme — Old Tune

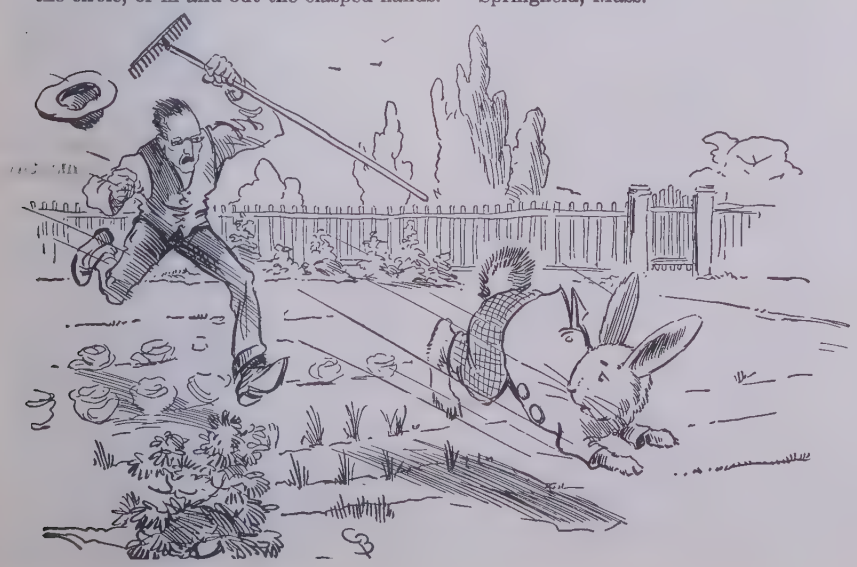


WHERE, OH WHERE IS MY LITTLE DOG GONE?

Directions—A single circle is formed facing inward, with the hands clasped. One of the players, the master, is in the center of the circle. The circle moves around in line of direction, that is, the players slide sideways right. The master skips around the circle in the opposite direction, holding his hand to his forehead and looking from side to side as if to find his dog. At the end of the verse, the circle halts on the last "be" and raises clasped hands high. The master also halts at the same moment and the one before whom he stops is the little dog. The little dog immediately turns and runs away around the circle, or in and out the clasped hands. Wherever the dog goes the master must follow the same path in his efforts to catch him. After he has caught the dog the master may join the circle and the dog becomes the master, when the game begins anew. Should the master fail to catch the dog, after a reasonable chance, the dog resumes his former place in the circle and the game may begin as before with the same master.

This game helps to encourage the children to slide quickly and lightly and not to drag, as they are likely to do at first, for all the children desire to hurry past the master so that he will not stop in front of them.

By permission, from *Rhythmic Action Plays and Dances*, by Irene E. Phillips Moses, publishers, Milton Bradley & Co., Springfield, Mass.



THE SNAIL GAME

From the German

Directions—The children form a line and join hands. The leader then leads them toward the center making a spiral while all the children march and sing with him. When he is in the center and the line is wound about him, he turns to go back the same way he came and all the children sing the second verse. The children do not let go of hands during the progress of the game.

2.

Hand in hand you see us well,
Creep like a snail out of his shell;
Ever farther, ever farther,
Ever wider, ever wider.
Who'd have thot this tiny shell
Would have held us all so well.

THE TALE OF PETER RABBIT

Once upon a time there were four little Rabbits, and their names were: Flopsy, Mopsy, Cotton-Tail and Peter Rabbit.

They lived with their mother in a sand-bank, underneath the root of a very big fir-tree.

"Now, my dears," said old Mrs. Rabbit one morning, "you may go into the fields or down the lane, but don't go into Mr. McGregor's garden, your father had an accident there—he was put in a pie by Mrs. McGregor."

Then old Mrs. Rabbit took a basket and her umbrella, and went through the wood to the baker's. She bought a loaf of brown bread and five currant buns.

Flopsy, Mopsy and Cotton-Tail, who were good little bunnies, went down the lane to gather blackberries; but Peter, who was very naughty, ran straight away to Mr. McGregor's garden.

First he ate some lettuces and some French beans; and then he ate some radishes; and then, feeling rather sick, he went to look for some parsley.

But round the end of a cucumber frame, whom should he meet but Mr. McGregor! Mr. McGregor was on his hands and knees planting out young cabbages, but he jumped up and ran after Peter, waving a rake and calling out, "Stop thief!"

Peter was most dreadfully frightened; he rushed all over the garden, for he had forgotten the way back to the gate. He lost one of his shoes among the cabbages and the other shoe amongst the potatoes.

After losing them he ran on four legs and went faster, so that I think he might have got away altogether if he had not unfortunately run into a gooseberry net, and got caught by the large buttons on his jacket. It was a blue jacket with brass buttons, quite new.

Peter gave himself up for lost, and shed big tears; but his sobs were overheard by some friendly sparrows who flew to him in great excitement and implored him to exert himself. Mr. McGregor came up with a sieve which he intended to pop upon the top of Peter; but Peter wriggled out just in time, leaving his jacket behind him, and rushed into the tool-shed, and jumped into a can. It would have been a beautiful thing to hide in, if it had not had so much water in it.

Mr. McGregor was quite sure that Peter was somewhere in the tool-shed, perhaps hidden underneath a flower pot. He began to turn them over carefully, looking under each.

Presently Peter sneezed—"Kertyshoo!" Mr. McGregor was after him in no time, and tried to put his foot upon Peter who

jumped out of a window, upsetting three plants. The window was too small for Mr. McGregor, and he was tired of running after Peter. He went back to his work.

Peter sat down to rest; he was out of breath and trembling with fright, and he had not the least idea which way to go. Also he was very damp with sitting in that can. After a time he began to wander about, going lippity—lippity—not very fast, and looking all around.

He found a door in a wall; but it was locked, and there was no room for a fat little rabbit to squeeze underneath..

An old mouse was running in and out over the stone doorstep, carrying peas and beans to her family in the wood. Peter asked her the way to the gate, but she had such a large pea in her mouth that she could not answer. She only shook her head at him. Peter began to cry.

Then he tried to find his way straight across the garden, but he became more and more puzzled. Presently he came to a pond where Mr. McGregor filled his watering cans. A white cat was staring at some goldfish; she sat very, very still, but now and then the end of her tail twitched as if it were alive. Peter thought it best to go away without speaking to her. He had heard about cats from his cousin, Little Benjamin Bunny.

He went back towards the tool-shed but suddenly, quite close to him, he heard the noise of a hoe—scr-r-ritch, scratch, scratch, scratch. Peter scuttered underneath the bushes. But presently, as nothing happened, he came out, and climbed upon a wheel-barrow, and peeped over. The first thing he saw was Mr. McGregor hoeing onions. His back was turned towards Peter, and beyond him was the gate!

Peter got down very quietly off the wheel-barrow, and started running as fast as he could go, along a straight walk behind some black currant bushes. Mr. McGregor caught sight of him at the corner, but Peter did not care. He slipped underneath the gate and was safe at last in the wood outside the garden.

Mr. McGregor hung up the little jacket and the shoes for a scare-crow to frighten the blackbirds.

Peter never stopped running or looked behind him till he got home to the big fir-tree. He was so tired that he flopped down upon the nice soft sand on the floor of the rabbit-hole and shut his eyes.

His mother was busy cooking; she wondered what he had done with his clothes. It was the second little jacket and pair of shoes that Peter had lost in a fortnight!

I am sorry to say that Peter was not very well during the evening. His mother put him to bed, and made some camomile tea, and she gave a dose of it to Peter. "One tablespoonful taken at bed-time!" But Flopsy, Mopsy and Cotton-Tail had bread and milk and blackberries for supper.

—*Beatrix Potter*

THE THREE BEARS

There lived once a little girl with her mother and father in a little house near a great, dark forest. She had such fine golden hair which hung in curls about her forehead that they called her Goldilocks. She was a very dear little girl, but liked to roam in the open, and often forgot that the time flies away from us just as a bird flies, and that you may lose your way, and much besides, if you do not think of going back home before it is too late.

She loved the dark green forest with all the lights of the sun playing in its depths, just as if there were fairies dancing all about. And the birds in the trees would sing to her and call her, she thought, and the squirrels would run up the tree trunks, playing hide and seek with her, and the little lizards would run across her path and then quickly glide away under the rocks. She loved to follow them as far as she dared, for her mother had warned her not to go too far into the woods as there might be wild beasts living there that would hurt her before she could run off home.

One day, when the sun was shining particularly bright, and the air was so balmy, and the birds sang so sweetly, and the green shadows of the forest looked so inviting, she strolled away, far, far into



the woods, running now after a playful squirrel, and then picking a pretty blue, or red, or white flower she saw in the distance. At last, when she began to look around she found herself in a place quite unknown to her. And she was tired and hungry, too. Oh! wasn't she frightened! She remembered all her mother had told her, and cried, but it was too late. There she was, alone in the woods, lost and forlorn.

When she looked further she saw a little house in front of her. It looked queer, not like her own dear little home; but she went forward thinking somebody must live in there who could show her the way. But when she entered she found the house quite still and empty. No one seemed to be around. But in the middle of the room stood a table, and on the table there stood three bowls filled with porridge, and around the table there stood three chairs. The bowls and the chairs were of different sizes, one was large, the next one was middle-sized, and the third one was very small. Being tired, she first sat down in the big chair; but that was too high and uncomfortable for her. So she tried to sit in the tiny, wee chair; but that was too small for her, and, oh! when she tried to sit down in it, it broke right in two, and the pieces fell on the ground. Then she sat down in the middle-size chair, and it was just right.

Being hungry, she thought she would try the porridge. So she took a spoonful out of the great, big bowl; but that was too hot for her. Then she took a spoonful out of the tiny, wee bowl; but that was too cold for her. Then she tried a spoonful from the middle-sized bowl, and that was just right. So she ate it all up.

After she had eaten, she went around the house to find what else there was. She found a stairway that led up to a bedroom on the next floor. There stood three beds, all nice and white and clean, with soft pillows and covers. One was a great, big bed; another was a middle-sized bed, and the third was a tiny, wee bed.

Being sleepy, she tried first to lie down in the great, big bed. But that was too big for her so that she could hardly find herself when she wanted to get up again. Then she tried the tiny, wee bed, but that was much too small for her. And then she tried the middle-sized bed which was just right. So she lay down and fell asleep.

Meanwhile, three bears—the father bear, the mother bear, and the baby bear, who lived in the house, came back from their walk to have their supper. The father was a great, big bear; the mother was a middle-sized bear, and the baby was a tiny, wee bear.

When they came into the house, they saw at once that somebody had been there. The great big bear, in his great big voice, said, "WHO HAS BEEN SITTING IN MY CHAIR?" The middle-sized bear, in her middle-sized voice, said, *"Who has been sitting in my chair."* And the tiny, wee bear, in his tiny, wee voice, said, "Who has been sitting in my chair, and oh! who has broken it."

Then when they wanted to eat their porridge, the great big bear said, in his great big voice, "WHO HAS EATEN OF MY PORRIDGE?" And the tiny, wee bear, in his tiny, wee voice, said, "Who has eaten of *my* porridge?" And the middle-sized bear, in her middle-sized voice, said, *"Who has eaten of my porridge, and has eaten it all up?"*

So they went hunting through the house to find who had been sitting in their chairs and had eaten of their porridge. When

they came to the bedroom, the great big bear said, in his great big voice, "WHO HAS BEEN LYING IN MY BED?" And the tiny, wee bear, in his tiny, wee voice, said, "Who has been lying in *my* bed?" And the middle-sized bear, in her middle-sized voice, called out, "*Who IS lying in my bed, fast asleep?*"

At that moment, Goldilocks woke up, and when she saw the three bears standing by her side, she jumped so quickly out of bed and ran to the window, opening it and leaping out, that the bears were taken by surprise. They ran quickly to the window to look after the fleeing girl, but she had already reached the trees which hid her from sight.

While the three bears were still wondering what it was all about, Goldilocks ran home where she shortly arrived out of breath, and badly frightened. After she had told her mother the story of her wanderings in the woods, and of the little house, and of the three bears, she promised never again to run so far away from home.

HÄNSEL AND GRETEL

Once upon a time there was a poor woodcutter living with his wife and two children in a little hut near the woods. One of the children was a little boy, named Hänsel and the other a little girl, named Gretel. They were very good children, but very small, indeed. Father and mother were working very hard, but could not earn much money. The father cut wood in the forest and sold it to the people in the village, and the mother had her hands full keeping her children and the house in good order.

After a very hard winter, when spring came again, the poor man was poorer than ever. The snow had been so deep that he could not go far into the forest, and the cold so great that they had to huddle up in the hut, burning up much of the wood the man had cut. So he could not sell much and when he counted over his money he found he would not have enough to buy food for his family.

Sorrowfully he talked with his wife, and she said, "The poor children will starve if we cannot buy them good food. We old people have been used to living on small rations, but the children need the best. What can we do?" Then the father said, "Good Father in heaven may take pity on them if I cannot feed their hungry mouths. Let us take them into the forest and leave them there, and the Good God may find food and shelter for them." With tears in her eyes the mother consented and they made up their minds to take their children to the forest in the morning and leave them there to the care of God.

The two children, however, had not gone to bed for very hunger, and so they overheard what father and mother were talking about. Gretel wept bitterly, and said to Hänsel, "What will become of us?" "Be quiet, Gretel," said he; "do not cry—I will soon help you." And as soon as their parents had fallen asleep he got up, put on his coat, and, opening the back door, slipped out. The moon shone brightly, and the white pebbles which lay before the door seemed like silver pieces, they glittered so brightly. Hänsel stooped down and put as many in his pockets as they would hold; then going back he said to Gretel, "Be comforted, dear sister, and sleep in peace; God will not forsake us." And so saying he went to bed again.

The next morning, before the sun rose, the mother went and awakened the two children. "Come," she said, "we are going into the forest to chop wood." But she could hardly speak for the tears which welled up in her eyes and nearly choked her. Yet, she smiled at the children and helped them dress. Then she gave them each a piece of bread, saying, "There is something to eat for your dinner; do not eat it before the time for there is nothing else." Gretel took the bread in her apron, for Hänsel's pockets were full of pebbles; and so they all four set out upon their way. When they had gone a little distance, Hänsel stood still and peeped back at the house; and this he repeated several times, till his father said, "Hänsel, what are you peeping at?" "Ah, father," said Hänsel "I am looking at my white cat sitting on the roof of the house, and trying to say good-bye." "You little fool," said the mother, "that is not the cat; it is only the sun shining on the white chimney." But in reality Hänsel was not looking at the cat; but every time he stopped he dropped a pebble out of his pockets upon the path.

When they came to the middle of the forest, the father told the children to collect dry wood, and he would make them a fire so that they would not be cold. So Hänsel and Gretel gathered together quite a little mountain of twigs. Then they set fire to them; and as the flame burnt up high, the mother said, "Now, children, lie down near the fire and rest yourselves, whilst we go into the forest and chop wood. When we are ready we shall come and call for you."

Hänsel and Gretel sat down by the fire, and when it was noon, each ate a piece of bread, and because they were tired they lay down to sleep. When they awoke it was quite dark, and Gretel began to cry. But Hänsel tried to comfort her by saying, "Wait a while till the moon rises, and then we shall quickly find the way home." The moon soon shone forth, and Hänsel, taking his sister by the hand, followed the pebbles which glittered like new coins of silver, and showed them the path. All night long they walked on, and as day broke they came to their parents' house, and knocked at the door. When mother opened it and saw the children, she broke out crying and hugged and kissed them, and the father came and hugged and kissed them, for both had been grieving about them.

But after a while, when hunger was again the daily guest in the man's house, and the children were fading away from lack of food, the children once more overheard their father saying to their mother, one evening, "Everything is again eaten up; we have only one half of a loaf of bread left, and then the children will starve. Shall we not try again to commit them to the grace of God, if he would feed them? We cannot keep them alive." And the mother said, with many sobs, "Yes, we shall take them deeper into the woods so that they may not find their way out."

Again the children had heard every word they said, as they lay awake from hunger. And as soon as the old people went to bed Hänsel slipped out thinking to find some more pebbles. But when he came out, there was no moon shining, and everything was dark, and he could not find any pebbles. So he went back, and comforting Gretel, he said, "Do not cry; sleep in quiet; the Good God will not forsake us."

Early in the morning the mother came as before, and took them out of bed, helping them to dress, and kissing them again and again, and gave them each a piece of bread, much smaller than the first time. On the way Hänsel broke his in his pocket, and, stopping every now and then, dropped a crumb upon his path. "Hänsel, why do you stop and look about?" asked his father, "keep in the path." "I am looking at my little dove," said Hänsel, "nodding a good-bye to me." "Nonsense," said the mother, "that is not a dove, but only the sun shining on the chimney." But Hänsel kept on dropping crumbs as he went along.

The father led the children deep into the woods, where they had never been before, and there making a big fire, he said to them, "Now sit down here and rest, and when you are tired you may sleep a while. When we have chopped down all the wood we need we shall come and fetch you."

When noon came Gretel shared her small piece of bread with Hänsel who had strewn his on the path. But they were very hungry, and they were so weak that they fell asleep. When they awoke in the dark night, and nobody had come to fetch them, Hänsel again comforted his sister, saying, "Only wait, Gretel, till the moon comes out, then we shall see the crumbs of bread I dropped, and they will show us the way home." At last, very late, the moon came out and shone brightly, but they could not see any crumbs. For the thousands of birds which had been flying about in the woods and fields had picked them all up. Hänsel kept saying to Gretel, "We will soon find the way;" but they did not, and they walked the whole night long and the next day, but still they did not come out of the forest; and they were so hungry, for they had had nothing to eat but the berries which they found upon the bushes. Soon they were so tired that they could not drag themselves along, so they lay down under a tree and went to sleep.

It was now the third morning since they had left their father's house and they still walked on; but they only got deeper and deeper into the forest, and Hänsel saw that if help did not come very soon they would die of hunger. All of a sudden they saw light gleaming through the dark forest, and when they went to follow its lead, they came to a clearing where the sun shone brightly. And the warmth of the sun's rays made them feel happier right away. And then they saw, right in the middle of the field, a little cottage, and when they went close up to it they saw that it was made of gingerbread and cookies, and the window-panes were made of clear sugar. Were the children not delighted! Think of what *you* would have felt if you would have come onto such a sweet kind of a cottage, all made up of cookies and candies! I don't think you would have to be very hungry to take a bite right away!

"Now," said Hänsel, "we shall have a glorious feast. I will eat a piece of the roof, and you can eat the window." So Hänsel reached up and broke a piece off the roof, in order to see how the gingerbread tasted, while Gretel stepped up to the window and began to break it. Then a voice called out of the cottage, "Tip-tap, tip-tap, mouse, who is eating off my house?" And the children answered, "The wind of the air, it does not care!" and they went on eating they were so hungry. Hänsel thought the roof tasted very nice, and so he tried a piece of the wall, and gave Gretel a piece of the roof to eat, and they sat down on the ground contentedly. Just

then the door opened, and an old woman, walking on crutches, came out. Hänsel and Gretel were so frightened they dropped the pieces of cake and gingerbread they had in their hands; but the old woman, nodding her head, said, "Ah, dear children, what has brought you here?" And when they had told her, she took them both by the hand and led them into her cottage. A good meal of milk and pancakes, with honey, apples and nuts, was spread on the table, and in the back room there were two nice little beds, covered with white, where Hänsel and Gretel lay down, and thought themselves in heaven. But the old woman was really a bad witch who wanted the children to serve her, and the woods around the cottage was an enchanted forest through which she lured children her way, and the little cottage was not really made of cakes and sugar, but changed back to wood and glass as soon as the children were asleep.

Early the next morning, the witch waked up the children with words as rough as they had been sweet the evening before. And she shook them, and said, "Get up, you lazy things, do you think you can sleep forever? Get up and into your clothes. Do you think that I will feed you and give you a bed to sleep in for nothing? I will show you! You will work for me for all you're worth!"

Now, the poor children, being so little, had never worked hard in their short lives. But before they had any breakfast, the old witch had Gretel make the fire, and sweep the rooms, and dust and do all kinds of things until she ached all over; and Hänsel had to chop and fetch the wood, and feed the chickens, and milk the cow, and gather the eggs, until he nearly dropped. Then, at last, she gave them something to eat, and it was not quite as good as the meal of bread and honey the evening before, believe me. But the children ate, and then had to go back to their work.

Well, indeed, the old witch made them work. Hänsel had to work in the garden, weeding the beds of flowers and vegetables, and hoeing the potatoes, and sifting the earth; and he had to take the cow out to the pasture, and drive her home, and feed her, and water her, carrying a big pail which was much too heavy for him. And poor Gretel had to keep the house clean, and scrub, and wash the dishes, and clean the vegetables, and peel the potatoes, and watch the fire in the stove, until she was so tired, just like Hänsel, that both just dropped into bed in the evening and fell asleep before they knew how to count one, two, three.

So this went on day after day, and week after week, and the children were very unhappy. They had plenty to eat, that was true, but they would rather be hungry, and home with their dear parents, than live here with the old witch, serving her like slaves. Yet, they did not know how to get out of the enchanted forest, and they thought they could not find the way home.

At last, they became so homesick that they resolved to try to get away, come what might. And so one morning, when the old witch was busy in the rear of the garden looking after her potatoes and berry-bushes, they slipped quietly out of the front door and began to run. They thought the witch, as she walked on crutches, would not catch them if they were running fast. But they had not run very far, when they looked back and saw the old witch coming after them, riding on one of her crutches as if it were a horse. And she came nearer and nearer and they became very much afraid. But they ran on, and soon came to a large piece of water. "We cannot get over," said Hänsel; "I can see no bridge at all." "And there is no boat either," said Gretel, "but there swims a white duck, I will ask her to take us over;" and she sang:

"Little Duck, good little Duck,
Gretel and Hänsel, here we stand;
There is neither boat nor bridge,
Take us on your back to land."

So the duck came to them, and Hänsel sat himself on, taking his sister in his lap, and both were happily carried over to the other side. But the witch had to stop when she came to the water, for this was the end of her enchanted forest, and she could not get across, and the duck would, of course, not carry her over; so she had to go back to her cottage and do her work alone.

But the children, when they had come to the other side, found that they were in a part of the forest which they knew. So they began to shout, "father, mother, we are here!" First there was no answer. But the parents had long been wishing they had not sent the children away; they were longing for them and could not be happy without them. And so they had gone every day into the woods, calling for them, and searching for them. But they could not find them, and they had to return home every night sadder than the night before.

But it so happened that they had just started out again to search for their dear children when they thought they heard someone call, "father, mother!" and they ran, but the sound was so faint and far away that they could not tell where it came from. But just then, Hänsel and Gretel called again, "father, mother, here we are!", and it sounded nearer. And then the father and mother began to shout, "Hänsel, Gretel, where are you?"—and the children answered, "Here we are!" And so, after much shouting and running, at last they came together, and you ought to have seen them rush into each other's arms, and the hugging and kissing and crying, and hugging and kissing and crying again, until they were too tired to do any more.

Then they went home in great happiness. And Hänsel and Gretel told them all about their stay with the old witch, and how they had learned to do so many things. And Hänsel, after this, was able to help his father, gathering up the wood father had chopped, and loading it on the wheelbarrow. So father could sell more in the village and earned more money; after a while, Hänsel even wheeled the barrow alone and sold the wood so that the father could stay in the forest chopping. And Gretel helped her mother in the house. By and by, they had some hens, and sold the eggs; and then they had a cow, and her milk, and sold butter and cheese. The children helped their parents in all this, and so they were not so poor any more, and their sorrows were ended. So they lived happily together for ever after.

THE FROG PRINCE

Once upon a time there lived a king and a queen who had a young daughter who was very beautiful. Near the castle of this king was a large garden, and in the midst of it stood an old, old oak tree, and beneath its branches splashed a little fountain. On a warm day, the young princess would like to run off to this garden and sit down in the shade of the old tree by the side of the fountain. With her she brought a golden ball which was her favorite plaything; and she would amuse herself by throwing the ball up in the air and catching it.

Now, one day it happened that this golden ball which the king's daughter threw up in the air, did not fall down into her hand but on the grass, and from there it rolled past the girl into the fountain. The water was so deep that no one could see the bottom, and when the princess saw that her ball had disappeared in the deep water she began to cry, and cried louder and louder. All of a sudden, a voice called to her, "Why do you weep, O king's daughter? What has happened to you?" She looked around to the spot whence the voice came and saw a big Frog stretching his ugly head out of the water. "Ah! you old water-paddler," said she, "was it you that spoke? I am weeping for my golden ball which has slipped away from me into the water."

"Be quiet, and do not cry," answered the Frog; "I can help you. But what will you give me if I fetch your plaything up again?"

"What will you have, dear Frog?" said she. "My dresses, my pearls and jewels, or the golden crown which I wear?"

The Frog answered, "Dresses, or jewels, or golden crowns are not for me. But if you will love me, and let me be your companion and playfellow, and sit at your table, and eat from your little golden plate, and drink out of your cup, and sleep in your little bed—if you will promise me all this, then I will dive down and fetch up your golden ball."

"Oh, I will promise you all," said she, rashly, "if you will only get me my golden ball." But she said to herself, "What is the silly Frog chattering about? How can he play and eat and sleep with me? Let him stay in the water where he belongs." But the Frog had dived under the water, and presently he swam up again with the ball in his mouth, and threw it on the grass. The king's daughter was full of joy when she again saw her beautiful plaything, and, taking it up, she ran off immediately. "Stop! stop!" cried the Frog, "take me with you! I cannot run as fast as you can." But all his croaking was useless; although he called loud enough, the princess did not hear it, she soon forgot the poor Frog and ran home to the palace.

The next day, when the king's daughter was sitting at the table with her father and mother and all his courtiers, and was eating from her own little golden plate, something was heard coming up the marble stairs, splish-splash, splish-splash; and when it arrived at the top, it knocked at the door, and a voice said, "Open the door, you daughter of the king!" So she rose and went to see who it was that called her; but when she opened the door and caught sight of the Frog, she shut it again quickly, and sat down at the table, looking quite pale. But the king saw that her heart was beating violently, and asked her whether it were a giant who had come to fetch her away who stood at the door. "Oh, no!" answered she; "it is no giant, but an ugly Frog."

"What does the Frog want with you?" asked the king.

"Oh, dear father, when I was sitting yesterday playing by the fountain, my golden ball fell into the water, and this Frog fetched it up again because I cried so much; but first, I must tell you, he pressed

me so much that I promised him he should be my companion. I never thought that he could come out of the water, but somehow he has jumped out, and now he wants to come in here."

At that moment, there was another knock, and a voice said:

"King's daughter, fairest,
Open the door!
Hast thou forgotten
Thy promises made
At the fountain so clear
'Neath the oak-tree's shade?
King's daughter, fairest,
Open the door!"

Then the king said, "What you have promised, that you must do; go and let him in." So the princess went and opened the door, and the Frog hopped in after her right up to her chair; and as soon as she was seated, the Frog said, "Take me up" —but she hesitated so long that at last the king ordered her to obey. And as soon as the Frog sat on the chair he jumped onto the table and said, "Now push your plate near me, that we may eat together." And she did so, but as everyone saw, very unwillingly. The Frog seemed to relish his dinner very much, but every bit the king's daughter ate nearly choked her. At last the Frog said, "I have satisfied my hunger and feel very tired from my long trip from the fountain; will you carry me upstairs now into your chamber, and make your bed ready that we may sleep together?" At this speech the king's daughter began to cry, for she was afraid of the cold Frog, and dared not touch him; and besides, he really wanted to sleep in her own beautiful clean bed.

But her tears only made the king angry, and he said, "He who helped you in the time of your trouble must not now be despised and cheated!" So she took the Frog up with two fingers, and put him in a corner of her chamber. But as she lay in her bed, he crept up to it and said, "I am so very tired that I shall sleep well; do take me up or I will tell your father." This speech made the princess only more afraid, and she became very angry and she picked up the Frog, and threw him with all her strength against the wall, saying, "Now, will you be quiet, you ugly Frog!"

But as he fell he was changed from a Frog into a handsome Prince with beautiful eyes. He told her how he had been changed into a Frog by an evil witch, and how he could only be saved by her alone when she took him into the palace and allowed him to come with her as her companion. On the morrow, they would go together into his own kingdom. So they were married and lived happily ever after.

THUMBLING

Once upon a time there lived a peasant who used to sit every evening by the hearth, poking the fire, while his wife spun. One night he said, "How sad it is that we have no children! Everything is so quiet here, while in other houses it is so noisy and merry."

"Ah!" sighed his wife, "if we had but only one, and were he no bigger than my thumb, I should be content and love him with all my heart."

After a time, a child was born to her who, although he was perfectly formed in all his limbs, was not bigger than a man's thumb. So they said to one another that it happened just as they had wished; and they called the child "Thumbling". Every day they gave him all the food he could eat; still he did not grow a bit, but remained exactly the height he was when he was first born. He looked about him, however, very knowingly, and showed himself to be a brave and clever fellow who would make the best of everything he did.

One morning the peasant was making ready to go into the forest to fell wood, and said, "Now I wish I had some one who could follow me with the cart."

"Oh, father," exclaimed Thumbling, "I will bring the cart. Don't you trouble yourself; it shall be there at the right time."

The father laughed at this speech, and said, "How shall that be? You are much too small to lead the horse by the bridle."

"That matters not, father. If mother will harness the horse, I can sit in his ear, and tell him which way to take."

"Well, we will try for once," said the father; and so, when the hour came, the mother harnessed the horse and placed Thumbling in his ear, and told him how to guide it. Then he set out quite like a man, with "Git up!", and "Hoah, boy!", and the cart went on the right road to the forest. Just as it turned a corner, and Thumbling called out, "Steady, steady!" two strange men met it; and one said to the other, "My goodness! what is this? Here comes a cart, and the driver keeps calling to the horse, but I can see no one." "That cannot be all right," said the other; "let us follow and see where the cart stops."

The cart went on safely deep into the forest and straight to the place where the wood was cut. As soon as Thumbling saw his father, he called to him, "Here, father; here I am, you see, with the cart; just take me down." The peasant caught the bridle of the horse with his left hand, and with his right took his little son out of its ear, and he set himself merrily on the straw. When the two strangers saw the little fellow, they knew not what to say for astonishment; and one of them took his companion aside and said, "This little fellow might make our fortune, if we could exhibit him in the towns. Let us steal him, for his father would never give him up."

So while Thumbling was asleep in the hay after his long ride, and his father was busy with his cart, the two strangers softly stole up to where the little fellow slept, and with a quick motion one of them slipped him into his pocket. Then they ran off. Thumbling woke up and shouted for his father; but his father could not hear him as the cart-wheels were squeaking and the boy's cries were muffled in the pocket. Towards evening, the two men sat down under a tree to rest. While they were sitting there, Thumbling quietly crawled out of the pocket and let himself down to the ground. Then quickly he ran off and crept into a mouse-hole where they could not see him. "Good evening, masters," said he, "you can go home without me;" and with a chuckle he crept into his hole still further. The two men poked their sticks into the hole, but all in vain, for Thumbling only went down further; and when it had grown quite dark, they were obliged to return home full of anger and disappointment.

As soon as Thumbling knew they were off, he crawled out of his hiding place, and said, "How dangerous it is to walk in this field in the dark; one might soon break one's head or legs!" So saying he looked around, and by great good luck he saw an empty snail-shell. "God be praised!" he exclaimed, "here I can sleep securely;" and in he went.

In the morning, when he woke up, he made up his mind to go back to his home. But for his little legs the way was very long, and he did not walk very far before he was quite tired again. He saw a haystack in a meadow near by, crept in and fell asleep quite readily. He had had so many adventures, had he not? that we may understand why he was such a sleepyhead. Indeed, the hay was so soft and warm, and smelled so sweet, that he slept quite soundly. The empty snail-shell had not been so soft and cozy as you may well believe, and had not smelled so good, either. He slept all night through.

Now, the maid of the farm to which the haystack belonged, got out of bed at dawn the next morning to feed the cow. Her first walk was to the haystack from which she took a bundle of hay, and just the bundle where poor Thumbling lay asleep. He still slept so soundly, however, that he knew nothing about it, and only awoke when he was in the cow's mouth. "Ah, goodness!" exclaimed he, "how came I into this mill!" But soon he saw where he really was. Then he took care not to come between the teeth, but presently slipped quite down the cow's throat. "There are no windows in this room," said he to himself, "and no sunshine, and I brought no light with me." Overhead his quarters still seemed worse, and, more than all, he felt his room growing narrower as the cow swallowed more hay. So he began to call out in terror, as loudly as he could, "Bring me no more food! I do not want any more food!" Just then the maid was milking the cow, and when she heard the voice without seeing anything, she was so frightened that she slipped off her stool and overturned the milk-pail. In great haste she ran to her master, the farmer, saying, "Oh, master, the cow has been speaking!"

"You are crazy," he replied, gruffly; but still he went himself to the stable to see what was the matter, and scarcely had he stepped in when Thumbling began to shout out again, "Bring me no more food, bring me no more food!" This terrified the farmer himself and he thought an evil spirit had entered into his cow, and so he ordered her to be killed. As soon as that was done and they were cutting up the carcass, a fresh accident befell poor Thumbling. For a wolf who had been attracted by the fresh meat sneaked near, made a snatch at the cow, and tore away the part where Thumbling was stuck fast. However, the little man did not lose courage, but as soon as the wolf had swallowed him he called out from inside, "Oh, Mr. Wolf, I know of a fine meal for you!" "Where is it to be found?" asked the wolf. "In the house by the meadow; you must creep through the gutter, and there you will find cakes, and bacon, and sausages, as many as you can eat," replied Thumbling, describing exactly his father's house.

The wolf did not wait to be told twice, but in the night crept in and ate away to his heart's content, much to the discomfort of Thumbling whose quarters inside the wolf became more and more crowded, just as they had been inside the cow. But Thumbling made the best of it as he well knew he would soon be saved. When the wolf had finished eating he tried to escape by the way he had entered, but as he was now fat and full you may know that the hole was no longer large enough for him. He could not squeeze himself through, try as much as he might. Thereupon Thumbling who had reckoned on this, began to

make a tremendous noise inside the poor wolf, screaming and shouting as loud as he could. "Will you be quiet," said the wolf; "you will awake the people." "Eh, what!" cried the little man, "since you have satisfied yourself, it is my turn now to make merry;" and he set up a louder howling than before. At last his father and mother awoke and came to the room and looked through the chinks of the door; and as soon as they saw the damage the wolf had committed and the wolf crouching in a corner, they ran and brought, the man his axe, and the woman the scythe. "You stop behind," said the man as they entered the room; "if my blow does not kill him, you must give him a cut with your weapon and chop off his head if you can."

When Thumbling heard his father's voice, he called out, "Father dear, I am here, in the wolf's body." "Heaven be praised!" said the man, full of joy, "our dear child is found again;" and he bade his wife take away the scythe, lest it should do any harm to his son. Then he raised his axe and gave the wolf such a blow on his head that he fell dead; and taking a knife, he cut him open and the little fellow, his son, jumped out. "Ah," said his father, "what worry we have had about you!" "Yes, father," replied Thumbling, "I have been travelling a great deal about the world. Heaven be praised! I breathe fresh air again."

"Where have you been, my son?" he inquired.

"Once I was in a mouse's hole, once inside a cow, and lastly inside that wolf; and now I will stop here with you," said Thumbling.

"Yes," said the old people, "we will not let you get away from us for all the riches in the world;" and they hugged and kissed him in their great joy. Then they gave him plenty to eat and to drink as he was very hungry, and had new clothes made for him, for his old ones, don't you think so?—were worn out with travelling.

GULLIVER AND THE LILIPUTIANS

Once there lived a lad in England who was very fond of the sea. He would watch the ships come in and out of the harbor, and at last he hired himself out to be a sailor on one of the ships. In those times they had not steamships with choo-choo engines, and smokestacks, oh no! but only vessels that were driven by the wind blowing against their sails; and they were so much smaller than the big steamers you know that the winds often played with them and drove them hither and thither, and sometimes threw them on the rocks and smashed them all to pieces.

Well, this young man, Gulliver was his name, was on one of these little sailships when a big storm came and hurled the ship hither and thither, and at last broke it up against the rocks of a strange land. All on board, the captain, and the sailors, and the boys, perished in the sea. Only Gulliver escaped. A big wave threw him upon the land, and the shock was so great that he knew nothing of himself He lay on the shore like one dead. Yes, he did.

At last he awoke. But what was his wonder and fright when he saw the sun shining in his eyes, and knew he was alive, and wanted to rise up, to find that he could not move. No, not even his hand, or his little finger. He could not turn his head from side to side. He just had to lie quite still. Then he heard a strange whispering all about him, and at last he felt something crawling up his side. And then, would you believe it: he saw something, or somebody, he did not know what it was, standing on his chin, looking straight into his eyes—and he did not know whether he, or the little man he saw there, must have looked more frightened. The little man was not more than six inches tall, about as long as daddy's hand, from the wrist to the tip of his long man finger. But the little man had a real head and real eyes, and was dressed like a fine gentleman, only his coat, and his trousers, and his hat, were, oh, so tiny and small. And he spoke to Gulliver in a strange language which Gulliver did not understand, and his voice was so faint that he could hardly hear him anyway

When Gulliver tried to say that he did not understand, and to ask what it all was about, and why he could not move, the little man looked so scared, oh, so scared, and held his tiny hands to his tiny ears—yes, he even fell back and nearly broke his little neck in his fall from Gulliver's chin. For you see, Gulliver's voice must have sounded like thunder to the little man, and the breath from Gulliver's mouth like a strong wind. And so Gulliver lay there, unable to move, and did not know what to make of it. He certainly had never seen such little people before.

Then, he heard a rip-rip-rip—and he felt that he could move his left arm. Then more of rip-rip-rip, and he could move his right arm. Then more and more of rip-rip-rip, and rip-rip-rip; and at last he could move his head, and raise his shoulders, and then his body, and finally he could rise up in his whole bigness The little people had thought they might find out what had come to them, in another way.

When Gulliver had stood up, he looked about him, but he could not see anybody or anything. Just the blue sky above him. Then he looked down on the ground; he saw bushes which looked like little trees, quite perfect. but oh, so much smaller than the trees he used to know. Of course, he could not see, at first, any of the little people one of whom had been scared off his chin by his words, for they had all hidden away when they saw that big giant of a man rise up like a huge mountain. In a little while, however, when they saw that Gulliver did not do anything wicked, or violent, but just stood there, they peeped out from behind the trees, and he could see little faces and little bodies which looked too funny for anything, just like little doll babies.

When he spied them, he sat down on the ground to see them better, and talked to them in the softest tone of his voice, and smiled at them. Of course, they did not understand what he said, but they thought he looked friendly and would do them no harm. So they ventured out and at last he saw so many of them, he could hardly count them: soldiers in gay uniforms, many on horseback, and fine ladies and gentlemen all dressed up in silks and gold, and women and children—oh, you ought to have seen those children! They were so very, very tiny, not larger, some of them, than your own little finger, and even smaller—those that had been brought there in their little go-carts. Gulliver wondered at them prodigiously, yes, prodigiously. For think of it, what tiny little heads they had, and such tiny little eyes, and such tiny little noses, and such tiny little mouths and lips, and such tiny little tongues, and such tiny, tiny, tiny little teeth! And their tiny little hands and tiny little fingers, and tiny little feet. And their clothes, such tiny little coats, and trousers, and skirts, and stockings and shoes!

And you ought to have seen the horsemen on their fiery steeds! Well, they were so small and tiny that it was quite a jump when one of them vaulted across Gulliver's left foot which he had moved too far over! A whole regiment of cavalry marched through between Gulliver's legs—as through a big, tall arch.

Then Gulliver saw what had bound him tight: millions and millions of little, fine threads, like silk, had been woven about him, and there was a little ladder on which the little man had climbed up to his chin, lying on the ground. And he saw that all the people of the land near by had come to see the big monster that had come to them from out of the sea, and he understood that they had been afraid, and had tied him while he did not know anything of himself, and was asleep, so that he might not hurt them. And he was thankful to them that they now trusted him for he knew he must look to them like a big, *big*, BIG giant. Well, he could pick up several of them in one hand, and put them into his pocket without feeling any weight, and if he was not careful he could walk over them with his big feet and crush a dozen of them at a time. Of course, they were afraid. But he was so careful that they soon knew he would not hurt them, and they showed him all around.

And what he saw was very wonderful. He saw their little houses, with the tiny little doors and windows; and their tiny little rooms smaller than those in your own doll's house, with tiny little beds, and tables and chairs, oh, so small! And think of the tiny little plates and cups and spoons and knives and forks. Well, the carpet in one of their biggest rooms was not any bigger than your little handkerchief!

And he saw their city which looked just like one made up of the toy houses you buy in the store. Their highest steeple was not any taller than the post of mamma's bed.

And then the tiny little cows they had! When the little milkmaid had milked one there was just enough milk to fill a fair-sized thimble. Now think, how many cows they had to milk to give Gulliver just one good glass full! And their tiny little dogs and cats! And the tiny little hens—oh! you will hardly believe how tiny their little eggs were. How big do you think they were? Well, just about like peas, and you may imagine how many Gulliver could eat for his breakfast.

Yes, they had a hard time, these little people, to feed their big giant guest, but they did their best. And they built him a house. Ten thousand workmen had to work at it for oh, so many days; and they had to cut down a hundred big forests with a thousand trees in each one of them, to make the walls, and the roof. And then the house was small for Gulliver. But he made the best of it.

And they thought that Gulliver might help them in their trouble. For by this time he had learned enough of their language to understand what they said to him. And they told him of their enemies, on an island across the sea, who were coming to attack them with their big fleet of ships. Gulliver laughed when he saw the great fear of these people who had told him that they were the Liliputians.

He made them describe to him where the enemy lived, that there was a big stretch of deep sea between their own land of Liliputia and the land of the enemy. Of course, the sea looked big and deep to them, but it was not much more than a pond to Gulliver.

So he asked them for a hundred pieces of their strongest rope. Their rope, indeed, was so thin that it looked more to Gulliver like cotton thread, such as mamma uses in sewing. But he twisted every two of the pieces together so that they made a stronger thread, and then started out.

He rolled up his trousers and waded into the sea. By the shore were collected all the men, women and children of Liliputia, watching their big friend on his trip across the deep sea. They were trembling after all for they had never seen anything like it, and they did not know whether the enemy would not kill him.

At first, the water only wetted his feet, then it came up to his knee, and finally it reached his waist. But it was not any deeper than that. After he had passed the deep stretch, and was out of sight of the Liliputians, he began to rise again out of the water, as it became more shallow towards the other shore. And so, his legs began to show above the water down to the knees, then his feet only were covered, and then he came quite close to the land on the other side.

And there he saw another crowd of little people assembled on the shore, shouting and screaming in terror. For they did not know what was happening to them, seeing such a big man mountain rising from the sea. And in the harbor of their city there lay fifty warships at anchor—big ships for them, but just like the toy boats you swim in the lake, to Gulliver. And everywhere were soldiers with bows and arrows, and spears. And when they saw Gulliver they shot their arrows at him and threw their spears at him. But their arrows were only as big as pins, and their spears as long as darning needles; and neither their arms nor their bows were strong enough to harm Gulliver. Whatever of their spears and arrows reached him felt only like little pin pricks, and he did not mind them.

Then he took out of his pocket the fifty pieces of twisted string and tied one end of each to one of the enemy's warships, holding the other end in his left hand. And when he had tied them all to the fifty pieces of string he started back again, dragging the fifty warships of the enemy with him. Now you ought to have seen the startled faces of the distressed enemy; and their cries and shouts and screams when they saw their big fleet of fine warships pulled away, and the soldiers with all their bows and spears could not stop Gulliver. But it served them right, for the Liliputians had done no harm to them, and the enemy just wanted to sail over and take all their goods away from them. The Liliputians only wanted to live in peace.

And so Gulliver, with the enemy's fleet in tow, waded back to Liliputia. First the water reached to his knees, then up to his waist, and then, coming up on the other side, he saw the Liliputians waiting for him on the other shore, on roofs of buildings, on the docks, and everywhere. And when they perceived Gulliver coming home to them with the mighty fleet of the enemy dragging behind him they gave a big shout of joy and welcomed him gratefully. They came to meet him, and took the arms away from the enemy soldiers, and fastened their ships to their own docks, and were happy that they could now be without fear.

They never forgot Gulliver's help but made him live in comfort while he stayed with them, and did all they could to show him how much they thought of the great help he had given them.

DAVID AND GOLIATH

A long, long time ago, when the Jews still lived in their home land of Palestine, far beyond the sea to the East, and many lands between here and there, they were sadly worried by the tribe of the Philistines who lived near by. The Jews were tilling their land in peace, and were tending their flocks; but the Philistines set upon them to drive them away or at least to take their acres and cattle and sheep.

And so the Philistines came with a mighty army of soldiers, and among them was a giant, by the name of Goliath, as tall as the tallest tree, and as strong as ten oxen. And he challenged the Jews to send one of their best men to fight with him, and whoever should win against the other should rule the land. If the Jew should win then the Philistines would go home and leave the land of the Jews in peace; but if Goliath should win, the Jews and their land should be the property of the Philistines to do with them as they pleased. And Goliath thought, of course, that no one man, or a dozen men, from among the Jews could conquer him.

The Jews were sorely tried, for they had no man to fight with the cruel, mighty giant. No matter what reward they offered, no one would come forward to stand up against Goliath. And Goliath came forth day after day from the camp of the Philistines and shouted his challenge. When nobody came to fight him he mocked the Jews and called them cowards, and the Philistines laughed and were sure that the Jews and their land would soon be theirs.

The tidings of the giant's challenge had gone through the land, and everybody trembled. But there was a brave shepherd's boy, by the name of David. When he heard of the bold threat of the Philistines, he set out to the camp of the Jews and offered to fight Goliath. The general of the Jews took pity on the young lad and warned him, and said, "The evil-minded foe will kill you." But David said, "I trust in the Lord, the God of our Fathers. He will not let me perish in the fight for His people against the wicked foe!"

And so, when Goliath stepped forth the next day to challenge the Jews, David came from their camp and placed himself in front of the boastful giant. When Goliath saw the little lad, he laughed and mocked him, saying "Am I a dog that you come to me with a stick?" For David had his shepherd's staff in his hand. He also had a sling-shot such as he would hurl stones with at the wild foxes that would disturb his sheep. And David said, "You come with a sword, and a spear and a shield. But I come in the name of the Lord, and you shall know that the Lord saveth not with sword and spear, and that he will give you today into my hand."

And when Goliath strode forth, David put his hand in his bag and took out a stone, and slang it, and smote the Philistine in his forehead. And Goliath fell upon his face to the earth. Then David rushed forward, and stood over the giant, and took Goliath's sword in his two hands and slew him, cutting off his head. And when the Philistines saw their champion was dead, they fled.

But the Jews rejoiced, and shouted, and David took the giant's head and brought it before Saul, the king of the Jews. And his praise was great.

THE LITTLE FIR TREE

In a meadow, right by a forest of many, many trees, and on the side of a path which led through the meadow and through the woods, stood a little fir tree. It was very little, indeed, and quite alone, as there was no other fir tree near. On its tiny branches, there were many, many needles—for you know, fir trees wear a prickly kind of leaves. I am sure you have often pricked your little hands when you tried to pick a nut, or an apple, or some candy sticks, or a present, from your Christmas tree—for the fir trees make the nicest, sweetest, best smelling, Christmas trees. The leaves are just like needles, and they are a dark green, and do not fall off in winter time when all the other leaves fly off, dressing themselves in all sorts of nice colors: brown, and orange, and yellow, and red, and dance about, and at last lie on the ground, covering the earth and keeping it warm throughout the time of ice and snow.

Well, this little fir tree was proud enough of its fine, green needles which looked so pretty when the other trees in the forest were bare, and the snow was white on the ground. But in summer time, when all the other trees were green also, and the wind played with their leaves, rustling and singing, it thought how pleasant it would be to look just like them. So he wished and wished, and thought and thought. And what do you think, happened? You know that was the time when wishes came true. And one morning, when the little fir tree woke up, he found himself covered with leaves just like the other trees, and and he was very happy. But in the afternoon, there came a goat along the path; and when he saw the little tree all decked out in green, juicy leaves, swip, swap, crunch—he just gobbled them all up, tearing at the little tree's branches so that he almost pulled them off, too, and left the poor little tree all bare. You know, the goat could not reach up to the other big trees, but the little tree was just his size.

So the little tree had no leaves at all, and it was very unhappy. "Oh!" it said, "I wish I had leaves of gold; the goat would not eat them, I am sure, and they would be so glorious and beautiful, and I would be quite a wonderful tree." So, when it woke up the next morning—well, you would have been astonished to see the little tree all covered with leaves of gold. They were so finely shaped, with little notches along the edges, and tiny veins branching out from stem to point, that they looked as if the most skillful goldsmith had fashioned them. And the little tree was very happy and proud.

But in the afternoon, there came a man along the path, travelling through the country. And when he came to the little tree and saw the beautiful golden leaves, he said, "Oh! what a great treasure." And he picked the leaves off the tree, one and all, and stored them in his pocket, and in a bag which he was carrying, running away as fast as he could—well, not very fast, to be sure, for the gold was quite heavy to carry. And there was the little tree, without leaves, all bare, again. And it was very much distressed, you can believe me, and it thought and thought, and then wished and wished—and what do you think it wished for now? It wished that

it had leaves of glass. They would look so pretty, it thought, and clink and clank and tinkle together, making wonderful music when the wind would blow.

The next morning, when the little tree woke up, behold! it was covered with leaves of clear glass! And the glass leaves clinked and clanked and tinkled and made wonderful music when the wind blew, and when the sun shone on them they looked like diamonds, and were so brilliant that you could not look at them, the light would blind you so.

But the wind which had been playing with the glass leaves, found the game so pleasant that it blew harder and harder to make more music. And at last, it blew a storm that rushed across the meadow, and bent the trees in the forest all over. And the poor glass leaves were swept off their branches, one by one, and altogether, until they lay broken and shattered in the grass. Then the little tree had no more leaves, and stood as bare as before. And it was very unhappy.

Then it thought of the pretty dark-green needles it had had before, and how sweet they smelled, and how fine they looked in winter when all the other trees stood bare and shivering in the cold, and it thought and it thought, and it wished and it wished, "Oh, if I could only have back my needles!"

And the next morning, when it awoke, the little tree laughed and laughed and laughed. And why did it laugh? It had back all its needles and looked just as it had looked before it had been wishing for other kinds of leaves. And it never grumbled again, and lived to be a big tree, with a tall straight trunk—and, who knows, some day Santa Claus may bring it to your house, all decked out in tinsel and goodies, and be your wonderful, lovely Christmas tree.

THE FROG AND THE OX

"Oh, father," said a little frog to a big frog, sitting by the side of a pool, "I have seen such a terrible monster! It was as big as a mountain, with horns on its head. It had a long tail, and hoofs divided in two."

"Tush, child, tush," said the old frog. "That was only Farmer White's ox. I can easily make myself as big; just you see." And he blew himself out. "Was he as big as that?" he asked.

"Oh, much bigger than that," said the young frog.

Again the old frog blew himself out, and asked the young frog if the ox was as big.

"Bigger, father," was the reply. "Much bigger."

Then the old frog took a very deep breath, and blew, and swelled, and swelled and blew—until he burst!

HORNS

One time a little boy went out on a farm with his mother. He had never been on a farm before, and everything seemed very strange to him. The sheep and the cows and the pigs were all very strange. He thought the cows were the strangest of all, because they had such queer things on their heads. He didn't know what they were, so one day he asked the old farmer about them. The farmer told him they were horns.

One evening soon after that the cows began to moo and bellow and set up an awful noise. The little boy was very much excited. He ran to the house as fast as he could and called to his mother, "Oh, mother, mother, come and see the cows. They are all blowing their horns."

THE FOX AND THE CROW

A crow had stolen a piece of meat. She flew to a tree and perched on a high branch. A fox saw her and wanted the piece of meat. So he sat down at the foot of the tree and spoke thus to the crow: "How handsome you are! What a glossy black your feathers show! And what a beautiful shape! The crow was very much flattered and listened with pleasure to the words of the wily fox. "I am sure," the fox went on, "you have as beautiful a voice as you have a body. Will you not sing a little song for me?" Anxious to please the fox the crow opened her mouth to sing—but, of course, she would only caw. But in opening her mouth she dropped the piece of meat which the fox quickly snapped up. He ran away laughing at the silly crow.



THE FOX AND THE GRAPES

A fox was very fond of grapes. One day he came to a garden where he saw bunches of beautiful, sweet, ripe grapes hanging from a vine which had climbed up a high trellis. His mouth began to water and he wanted those grapes. He tried to jump up to catch them with his mouth; but they were too high up. He tried to climb up the trellis, but he did not know how to climb. He simply could not reach them, trying whatever tricks he could think of. At last he turned away, disappointed, but comforted himself by saying: "Well, the grapes are sour, anyway."

THE SHEPHERD BOY AND THE WOLF

A shephered boy was watching a flock of sheep near the village where he lived. There lived some wolves in the forest near by, and he had been told to call for help as soon as he saw any wolves coming to steal a sheep. The boy thought he would try whether the men from the village would really come in answer to his call. So one day, he called out: "A wolf! a wolf!" And quickly the men came running with sticks and guns to drive the wolf away or kill him. Then the boy laughed and said, "Oh, I only called out for fun; there is no wolf here—I wanted to see whether you would really come when I called!" The men shook their heads and went home.

As he had such fun the first time, as he thought, the boy tried the trick another time. Again he cried, "A wolf! a wolf!" This time the men came again, but not so fast, and not so many; and those that came were quite angry at having been fooled again.

Then one day, a wolf did come. But when the boy cried out, in distress, "A wolf! a wolf!", nobody came. The wolf broke into the flock, and when the boy tried to drive him away with his stick he was badly bitten. It was with great trouble that he could get his frightened sheep back to the village.

THE FARMER AND HIS SONS

A farmer was about to die. His sons were not so ready to work as he had been, and so he was afraid they would not pay attention to the farm after his death, thinking they had money enough. He called his sons to his bedside and said: "My sons there is a treasure hidden in one of my vineyards. Find it!" The sons, after his death, took their spades and carefully dug over every part of their land. They found no treasure of gold, but the land, well turned over, gave them a wonderful and rich crop. They now understood what their father had meant; the treasure had come to them through their work.

THE LION AND THE MOUSE

A lion was asleep in his cave. A mouse, running over his face, awakened him. He was angry, and rising up was about to kill the mouse, when the mouse begged him to spare his life. "If you will let me go, I will surely be thankful for your kindness and help you when you are in danger," he said. The lion laughed and let him go. But he did not believe that the small mouse could ever help him, the big lion.

But shortly after this it happened that the lion was caught in a net by the hunters who bound him with strong ropes to the ground. He roared in rage and anguish, and the mouse, recognizing his voice, ran toward him. When he saw the lion's plight, he gnawed the rope with his sharp teeth and set the lion free. The lion was very grateful. The little mouse had been able to repay the big lion's kindness.

The Dog and the Shadow.—It happened that a Dog had got a piece of meat and was carrying it home in his mouth to eat it in peace. Now on his way home he had to cross a plank lying across a running brook. As he crossed, he looked down and saw his own shadow reflected in the water beneath. Thinking it was another dog with another piece of meat, he made up his mind to have that also. So he made a snap at the shadow in the water, but as he opened his mouth the piece of meat fell out, dropped into the water and was never seen more.—*Beware lest you lose the substance by grasping at the shadow.*

The Town Mouse and the Country Mouse.—Now you must know that a Town Mouse once upon a time went on a visit to his cousin in the country. He was rough and ready, this cousin, but he loved his town friend and made him heartily welcome. Beans and bacon, cheese and bread, were all he had to offer, but he offered them freely. The Town Mouse rather turned up his long nose at this country fare, and said: "I cannot understand, Cousin, how you can put up with such poor food as this, but of course you cannot expect anything better in the country; come you with me and I will show you how to live. When you have been in town a week you will wonder how you could ever have stood a country life." No sooner said than done: the two mice set off for the town and arrived at the Town Mouse's residence late at night. "You will want some refreshment after our long journey," said the polite Town Mouse, and took his friend into the grand dining-room. There they found the remains of a fine feast, and soon the two mice were eating up jellies and cakes and all that was nice. Suddenly they heard growling and barking. "What is that," said the Country Mouse. "It is only the dogs of the house," answered the other. "Only!" said the Country Mouse. "I do not like that music at my dinner." Just at that moment the door flew open, in came two huge mastiffs, and the two mice had to scamper down and run off. "Good-bye, Cousin," said the Country Mouse. "What! going so soon?" said the other. "Yes," he replied;—"*Better beans and bacon in peace than cakes and ale in fear.*"

The Wind and the Sun.—The Wind and the Sun were disputing which was the stronger. Suddenly they saw a traveller coming down the road, and the Sun said: "I see a way to decide our dispute. Whichever of us can cause that traveller to take off his cloak shall be regarded as the stronger. You begin." So the Sun retired behind a cloud, and the Wind began to blow as hard as it could upon the traveller. But the harder he blew the more closely did the traveller wrap his cloak round him, till at last the Wind had to give up in despair. Then the sun came out and shone in all his glory upon the traveller, who soon found it too hot to walk with his cloak on.—*Kindness effects more than Severity.*

The Swallow and the Other Birds.—It happened that a Countryman was sowing some hemp seeds in a field where a Swallow and some other birds were hopping about picking up their food. "Beware of the man," quoth the Swallow. "Why, what is he doing?" said the others. "That is hemp seed he is sowing; be careful to pick up every one of the seeds, or else you will repent it." The birds paid no heed to the Swallow's words, and by and by the hemp grew up and was made into cords, and of the cords nets were made, and many a bird that had despised the Swallow's advice was caught in nets made out of that very hemp. "What did I tell you?" said the Swallow.—"*Destroy the seed of evil, or it will grow up to your ruin.*"

The Hares and the Frogs.—The Hares were so persecuted by the other beasts, they did not know where to go. As soon as they saw a single animal approach them, off they used to run. One day they saw a troop of wild Horses stampeding about, and in quite a panic all the Hares scuttled off to a lake hard by, determined to drown themselves rather than live in such a continual state of fear. But just as they got near the bank of the lake, a troop of Frogs, frightened in their turn by the approach of the Hares, scuttled off, and jumped into the water. "Truly," said one of the Hares, "things are not so bad as they seem:—*There is always some one worse off than yourself.*"

The Fox and the Mask.—A Fox had by some means got into the store-room of a theatre. Suddenly he observed a face glaring down on him, and began to be very frightened; but looking more closely he found it was only a Mask, such as actors use to put over their face. "Ah," said the Fox, "you look very fine; it is a pity you have not got any brains."—*Outside show is a poor substitute for inner worth.*

The Jay and the Peacock.—A Jay venturing into a yard where Peacocks used to walk, found there a number of feathers which had fallen from the Peacocks when they were moulting. He tied them all to his tail and strutted down towards the Peacocks. When he came near them they soon discovered the cheat, and striding up to him pecked at him and plucked away his borrowed plumes. So the Jay could do no better than go back to the other Jays, who had watched his behaviour from a distance; but they were equally annoyed with him, and told him—"*It is not only fine feathers that make fine birds.*"

Androcles.—A slave named Androcles once escaped from his master and fled to the forest. As he was wandering about there he came upon a Lion lying down moaning and groaning. At first he turned to flee, but finding that the Lion did not pursue him, he turned back and went up to him. As he came near, the Lion put out his paw, which was all swollen and bleeding, and Androcles found that a huge thorn had got into it, and was causing all the pain. He pulled out the thorn and bound up the paw of the Lion, who was soon able to rise and lick the hand of Androcles like a dog. Then the Lion took Androcles to his cave, and every day used to bring him meat from which to live. But shortly afterwards both Androcles and the Lion were captured, and the slave was sentenced to be thrown to the Lion, after the latter had been kept without food for several days. The Emperor and all his Court came to see the spectacle, and Androcles was led out into the middle of the arena. Soon the Lion was let loose from his den, and rushed bounding and roaring towards his victim. But as soon as he came near to Androcles he recognized his friend, and fawned upon him, and licked his hands like a friendly dog. The Emperor, surprised at this, summoned Androcles to him, who told him the whole story. Whereupon the slave was pardoned and freed, and the Lion let loose to his native forest.—*Gratitude is the sign of noble souls.*

The Bat, the Birds and the Beasts.—A great conflict was about to come off between the Birds and the Beasts. When the two armies were collected together the Bat hesitated which to join. The Birds that passed his perch said: "Come with us"; but he said: "I am a Beast." Later on, some Beasts who were passing underneath him looked up and said: "Come with us"; but he said: "I am a Bird." Luckily at the last moment peace was made, and no battle took place, so the Bat came to the Birds and wished to join in the rejoicings, but they all turned against him and he had to fly away. He then went to the Beasts, but had soon to beat a retreat, or else they would have torn him to pieces. "Ah," said the Bat, "I see now—*He that is neither one thing nor the other has no friends.*"

The Hart in the Ox-Stall.—A Hart hotly pursued by the hounds fled for refuge into an ox-stall, and buried itself in a truss of hay, leaving nothing to be seen but the tips of his horns. Soon after the Hunters came up and asked if any one had seen the Hart. The stable boys, who had been resting after their dinner, looked round, but could see nothing, and the Hunters went away. Shortly afterwards the master came in, and, looking round, saw that something unusual had taken place. He pointed to the truss of hay and said: "What are those two curious things sticking out of the hay?" And when the stable boys came to look they discovered the Hart, and soon made an end of him. He thus learnt that—*Nothing escapes the master's eye.*

The Peacock and Juno.—A Peacock once placed a petition before Juno desiring to have the voice of a nightingale in addition to his other attractions; but Juno refused his request. When he persisted, and pointed out that he was her favorite bird, she said:—"*Be content with your lot; one cannot be first in everything.*"

The Ant and the Grasshopper.—In a field one summer's day a Grasshopper was hopping about, chirping and singing to its heart's content. An Ant passed by, bearing along with great toil an ear of corn he was taking to the nest.

"Why not come and chat with me," said the Grasshopper, "instead of toiling and moiling in that way?"

"I am helping to lay up food for the winter," said the Ant, "and recommend you to do the same."

"Why bother about winter?" said the Grasshopper; "we have got plenty of food at present." But the Ant went on its way and continued its toil. When the winter came the Grasshopper had no food, and found itself dying of hunger, while it saw the ants distributing every day corn and grain from the stores they had collected in the summer. Then the Grasshopper knew—*It is best to prepare for the days of necessity.*

A LITTLE BOY'S WALK

A little boy went walking
  One lovely summer's day:
He saw a little rabbit
  That quickly ran away.

He saw a shining river
  Go winding in and out,
And little fishes in it
  Were swimming all about.

And slowly, slowly turning,
  The great wheel of the mill;
And then the tall church steeple,
  The little church so still.

The bridge above the water;
  And when he stopped to rest
He saw among the bushes
  A wee ground-sparrow's nest.

And as he watched the birdies
  Above the tree-tops fly,
He saw the clouds a-sailing
  Across the sunny sky.

He saw the insects playing;
  The flowers that summer brings;
He said, "I'll go tell mamma!
  I've seen so many things!"

(From "*Finger Plays*," by Emilie Poulsson. Music by Cornelia C. Roeslee. Lothrop, Lee & Shepard Co., Boston.)

******

Little Boy Blue, come blow your horn,
The sheep's in the meadow, the cow's in the corn.

Where's the little boy that tends the sheep?
He's under the haystack, fast asleep.

Go wake him, go wake him. Oh! no, not I;
For if I wake him, he'll certainly cry.

******

Once I saw a little bird
  Come hop, hop, hop;
So I cried, "Little bird,
  Will you stop, stop, stop?"
And was going to the window
  To say, "How do you do?"
But he shook his little tail
  And far away he flew.

******

Peter, Peter, pumpkin-eater,
Had a wife and couldn't keep her;
He put her in a pumpkin-shell,
And there he kept her very well.

THE BUNNY

See the pretty Bunny
  With his big long ears!
He doesn't seem to see us—
  But don't you think he hears?
I should think he must,
  With his ears so long!
But I guess the reason he's so still
  Is 'cause he likes my song.

THE KITTEN AND THE BOW-WOW

The little kitten goes, "Me-yow;"
The little dog goes, "Bow-wow-wow!"
  If they should both together sing,
  Wouldn't it be a funny thing!
Me-yow!
Bow-wow-wow!
  What a funny, funny thing!

MR. ROOSTER AND MRS. HEN

Mister Rooster does nothing but crow,
He never lays an egg.
  But Mistress Hen lays an egg ev'ry day,
  And feels so glad because she can lay
  That she sings, "Cut, cut, ca-da-cut!"
And Mister Rooster joins the song
With "Cock-a-doodle doo!"



Little Jack Horner
Sat in a corner,
  Eating his Christmas pie;
He put in his thumb
And he took out a plum,
  And said, "What a good boy am I!"

THE FALLING LEAVES

Old Mother Earth has good children, the trees,
Who cover her up so she will not freeze;
  Steadily, steadily, day by day,
  They wrap her up in the warmest way,
By dropping their leaves for a thick, warm spread,
To cover her close in her winter bed;
  With brown ones, and red ones, and silver and gold:
  Surely this spread will keep out the cold.

******

"Jack Spratt could eat no fat,
  His wife could eat no lean,
And so betwixt the two
  They made the platter clean."

Old Mother Hubbard
Went to the cupboard,
  To get her poor dog a bone;
But when she came there,
The cupboard was bare,
  And so the poor dog had none.

******

What does little birdie say,
In her nest at peep of day?
  "Let me fly," says little birdie,
"Mother, let me fly away."

Birdie, rest a little longer,
Till the little wings are stronger.
So she rests a little longer,
  Then she flies away.

What does little baby say,
In her bed at peep of day?
  Baby says, like little birdie,
"Let me rise and fly away."

Baby, sleep a little longer,
Till the little limbs are stronger.
If she sleeps a little longer,
  Baby, too, shall fly away.
—Alfred Tennyson

******

There was a little girl
Who had a little curl
  Right in the middle of her forehead.
When she was good,
She was very, very good,
  But when she was bad—
  She was horrid.

THE ROBIN'S SONG

In a nest up in a tree,
  Heigh-o!
    Blow, wind, blow!
I have babies three,
Blow, wind, blow!
Blow, blow!
  Rock my babies for me;
Blow, blow!
  Swing the nest for me. * *

******

Mary had a little lamb,
  Its fleece was white as snow;
And everywhere that Mary went
  The lamb was sure to go.

WHEN I GROW TO BE A MAN

When I grow to be a man,
  I want to be six feet tall;
So that when the circus parades along
  I can see over the heads of all. * *

THE MOON

The moon is playing hide-and-seek,
  But if you'll only watch,
You'll see that the clouds will run away
  And out the moon will peep.
And the little star that's playing, too,
  Will quickly cry, "I spy!"
And run away and hide all day
  Behind the deep blue sky. * *



Three little kittens
Lost their mittens,
  And they began to cry:
"Oh, mother dear,
We very much fear
  That we have lost our mittens!"
"Lost your mittens,
You naughty kittens!
Then you shall have no pie."
"Mee-ow, mee-ow, mee-ow,
And we can have no pie!
Mee-ow, mee-ow, mee-ow!"

THE EVENING STAR

Out of my window at night
  I see a bright little star;
He's waiting to see me go to sleep:
His bright little eye a watch will keep,
  While a dear little bird
  On a tree close by
  Will sing me a beautiful lullaby. * *

FOOTPRINTS

I found little footprints in the snow,
And follow'd them up to see where they'd
    go:
They led to the foot of an old oak tree,
And near, a little brown rabbit I could see.
  The little brown rabbit wouldn't play
    with me,
  But ran away quickly right to the tree.
I followed his footprints, and what do you
    think I saw?
  A little rabbit's house with a small front
    door. * *

MR. FROG

Mister Frog came out of the pond one day
  And found himself in the rain.
Said he: "I'll get wet,
  And I may catch cold!"
So he jumped in the pond again. * *

TICK—TOCK

The big, tall clock in the hall,
The grandfather clock of all,
  Goes tick—tock; tick—tock;
    Tick—tock; tick.

But mamma's little clock on the shelf
Goes dancing like a merry little elf:
  Tick, tock; tick, tock;
  Tick, tock; tick, tock;
  Tick, tock; tick, tock;
  Tick, tock, tick.

But the one I like more than all the rest
Is my papa's watch, it's very much the best:
  Tick, tick, tick, tick,
  Tick, tick, tick, tick,
  Tick, tick, tick, tick,
  Tick, tick, tick, tick,
  Tick, tick, tick, tick,
  Tick, tick, tick. **

**Selections from *"Small Songs for Small Singers"*, by W. H. Neidlinger (New York, G. Schirmer).

THE BEES

The bees are flying and humming,
Why are they all coming?
  Honey to seek,
  Honey to seek.
    Bz, bz, bzzzzzzzzz.

******

Wee Willie Winkie runs through the town,
Upstairs and downstairs in his nightgown,
Rapping at the window, crying through the
    lock,
"Are the children in their beds, for now it's
    eight o'clock?"
—William Miller

There was a crooked man, and he went a
  crooked mile,
He found a crooked sixpence against a
  crooked stile;
He bought a crooked cat, which caught
  a crooked mouse,
And they all lived together in a little
  crooked house.

******

Little Bo-peep has lost her sheep,
  And can't tell where to find them;
"Leave them alone, and they'll come home,
  And bring their tails behind them!"

Little Bo-peep fell fast asleep
  And dreamt she heard them bleating.
But when she awoke, she found it a joke,
  For they were still a-fleeting.

Then up she took her little crook,
  Determin'd for to find them;
She found them indeed, but it made her
    heart bleed,
  For they'd left their tails behind them

******

I have just to shut my eyes
To go sailing through the skies—
To go sailing far away
To the pleasant land of play.
—Robert Louis Stevenson

******

As Tommy Snooks and Bessy Brooks
  Were walking out one Sunday,
Says Tommy Snooks to Bessy Brooks,
  "Tomorrow will be Monday."

SWEET AND LOW

Sweet and low, sweet and low,
Wind of the western sea;
Low, low, breathe and blow,
Wind of the western sea!
  Over the rolling waters go,
  Come from the dying moon and blow,
Blow him again to me,
  While my little one,
  While my pretty one
    Sleeps.

Sleep and rest, sleep and rest,
Father will come to thee soon;
Rest, rest, on mother's breast,
Father will come to thee soon.
  Father will come to his babe in the nest,
  Silver sails all out of the west,
Under the silver moon.
  Sleep, my little one,
  Sleep, my pretty one,
    Sleep!
—Tennyson

CRADLE SONG

Lullaby and good night!
With roses bedight;
Creep into thy bed,
There pillow thy head!
  If God will thou shalt wake
  When the morning doth break.

Lullaby and good night!
Those blue eyes close tight!
Bright angels are near,
So sleep without fear.
  They will guard you from harm,
  With fair dreamland's sweet charm.
(Music by Brahms, text from the German by Simrock.)

FIVE LITTLE CHICKADEES

Five little chickadees,
Peeping at the door;
One flew away,
And then there were four.
Chickadee, chickadee,
Happy and gay;
Chickadee, chickadee,
Fly away!

Four little chickadees,
Sitting on a tree;
One flew away,
And then there were three.
Chickadee, chickadee, etc.

Three little chickadees,
Looking at you;
One flew away,
And then there were two.
Chickadee, chickadee, etc.

Two little chickadees,
Sitting in the sun;
One flew away,
And then there was one.
Chickadee, chickadee, etc.

One little chickadee
Left all alone;
He flew away,
And then there was none.
Chickadee, chickadee, etc.

******

Politeness is to do and say
The kindest thing in the kindest way.

******

Kind hearts are the gardens,
Kind thoughts are the roots,
Kind words are the blossoms,
Kind deeds are the fruits.

******

Bow, wow, wow,
Whose dog art thou?
Little Tom Tinker's dog,
Bow, wow, wow!

******

Star light, star bright,
First star I see to-night;
I wish I may, I wish I might,
Have the wish I wish to-night.

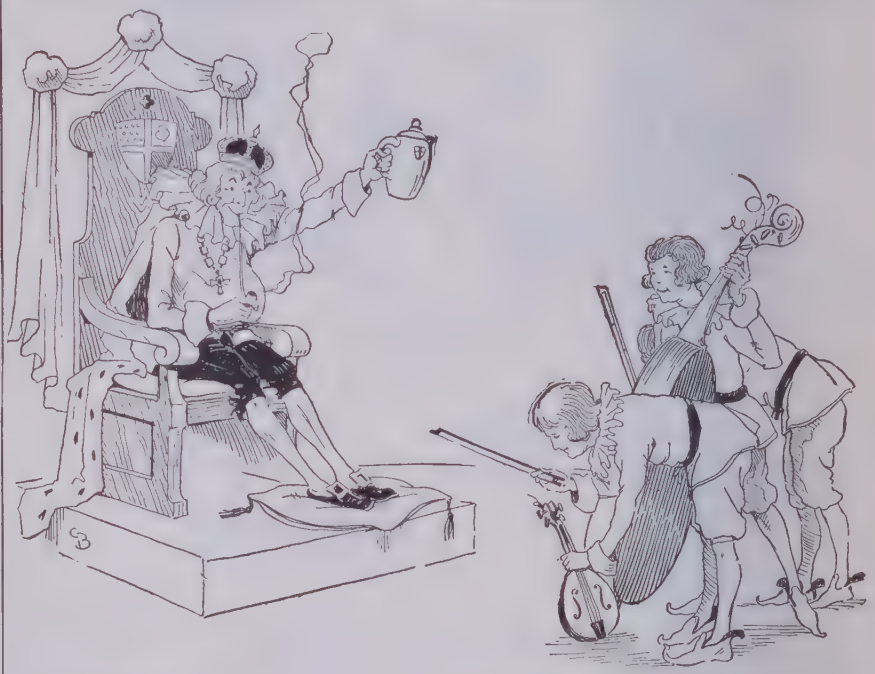
THE EGG IN THE NEST

There was a tree that stood in the ground,
The prettiest tree you ever did see;
The tree in the wood, and the wood in the ground,
And the green grass growing all around.

And on this tree there was a limb,
The prettiest limb you ever did see;
The limb on the tree, and the tree in the wood,
The tree in the wood, and the wood in the ground,
And the green grass growing all around.

And on this limb there was a bough,
The prettiest bough you ever did see;
The bough on the limb, and the limb on the tree,
The limb on the tree, and the tree in the wood,
The tree in the wood, and the wood in the ground,
And the green grass growing all around.

Now on this bough there was a nest,
And in this nest there were some eggs,
The prettiest eggs you ever did see;
Eggs in the nest, and the nest on the bough,
The bough on the limb, and the limb on the tree,
The limb on the tree, and the tree in the wood,
The tree in the wood, and the wood in the ground,
And the green grass growing all around,
And the green grass growing all around.



Old King Cole
Was a merry old soul,
And a merry old soul was he;

He called for his pipe,
And he called for his bowl,
And he called for his fiddlers three.

Every fiddler, he had a fiddle,
And a very fine fiddle had he;
Twee tweedle dee, tweedle dee, went the fiddlers.

THE HOUSE THAT JACK BUILT

This is the house that Jack built.
This is the malt,
That lay in the house that Jack built.
This is the rat,
That ate the malt that lay in the house that Jack built.
This is the cat,
That killed the rat that ate the malt that lay in the house that Jack built.
This is the dog,
That worried the cat, that killed the rat, that ate the malt that lay in the house that Jack built.
This is the cow, with the crumpled horn,
That tossed the dog, that worried the cat, that killed the rat, that ate the malt that lay in the house that Jack built.
This is the maiden all forlorn,
That milked the cow with the crumpled horn, that tossed the dog, that worried the cat, that killed the rat, that ate the malt that lay in the house that Jack built.
This is the man, all tattered and torn,
That kissed the maiden all forlorn, that milked the cow with the crumpled horn, that tossed the dog, that worried the cat, that killed the rat, that ate the malt that lay in the house that Jack built.
This is the priest all shaven and shorn,
That married the man all tattered and torn, that kissed the maiden all forlorn, that milked the cow with the crumpled horn, that tossed the dog, that worried the cat, that killed the rat, that ate the malt that lay in the house that Jack built.
This is the cock that crowed in the morn,
That waked the priest all shaven and shorn, that married the man all tattered and torn, that kissed the maiden all forlorn, that milked the cow with the crumpled horn, that tossed the dog, that worried the cat, that killed the rat, that ate the malt that lay in the house that Jack built.
This is the farmer sowing his corn,
That kept the cock that crowed in the morn, that waked the priest all shaven and shorn, that married the man all tattered and torn, that kissed the maiden all forlorn, that milked the cow with the crumpled horn, that tossed the dog, that worried the cat, that killed the rat, that ate the malt that lay in the house that Jack built.

WHO STOLE THE BIRD'S NEST

"To-whit! to-whit! to-whee!
Will you listen to me?
Who stole four eggs I laid
And the nice nest I made?"

"Not I," said the cow, "Moo-oo!
Such a thing I'd never do.
I gave you a wisp of hay,
But didn't take your nest away.
Not I," said the cow, "Moo-oo!
Such a thing I'd never do!"

"To-whit! to-whit! to-whee!
Will you listen to me?
Who stole four eggs I laid
And the nice nest I made?"

"Bobolink! Bobolink!
Now, what do you think?
Who stole a nest away
From the plum-tree, today?"

"Not I," said the dog, "Bow-wow!
I wouldn't be so mean, anyhow!
I gave the hairs the nest to make,
But the nest I didn't take.
Not I," said the dog, "Bow-wow!
I'm not so mean, anyhow!"

"To-whit! to-whit! to-whee!
Will you listen to me?
Who stole four eggs I laid
And the nice nest I made?"

"Bobolink! Bobolink!
Now, what do you think?
Who stole a nest away
From the plum-tree, today?"

"Coo-coo! Coo-coo! Coo-coo!
Let me speak a word, too!
Who stole that pretty nest
From little yellow-breast?"

"Not I," said the sheep, "oh, no!
I wouldn't treat a poor bird so.
I gave wool the nest to line,
But the nest was none of mine.
Baa-baa!" said the sheep, "oh, no,
I wouldn't treat a poor bird so!"

"Caw! Caw!" cried the crow;
"I should like to know
What thief took away
A bird's nest to-day?"

"Cluck! Cluck!" said the hen;
"Don't ask me again.
Why, I haven't a chick
Would do such a trick.
We all gave her a feather,
And she wove them together.
I'd scorn to intrude
On her and her brood.
Cluck! Cluck!" said the hen,
"Don't ask me again."

"Chirr-a-whirr! Chirr-a-whirr!"
All the birds make a stir!
"Let us find out his name,
And all cry, 'For shame!'"

"I would not rob a bird,'
Said little Mary Green;
"I think I never heard
Of anything so mean."

"It is very cruel, too,"
Said little Alice Neal;
"I wonder if he knew
How sad the bird would feel?"

A little boy hung down his head,
And went and hid behind the bed;
For he stole that pretty nest
From poor little yellow-breast—
And he felt so full of shame,
He didn't like to tell his name.
—Lydia Maria Child



"To-whit! to-whit! to-whee!
Will you listen to me?
Who stole four eggs I laid
And the nice nest I made?"

"Bobolink! Bobolink!
Now, what do you think?
Who stole a nest away
From the plum-tree, today?"

"Coo-coo! Coo-coo! Coo-coo!
Let me speak a word, too!
Who stole that pretty nest
From little yellow-breast?"

Hey! diddle, diddle,
The cat and the fiddle,
The cow jumped over the moon.
The little dog laughed
To see such sport,
And the dish ran away with the spoon.

LEAVES AND NUTS

The leaves are green, the nuts are brown;
They hang so high, they will not come down;
Leave them alone till frosty weather;
Then they will all come down together.

THE LAND OF NOD

From breakfast on through all the day
At home among my friends I stay,
But every night I go abroad
Afar into the land of Nod.

All by myself I have to go,
With none to tell me what to do—
All along beside the streams
And up the mountain sides of dreams.
—Robert Louis Stevenson

THE ROCK-A-BY LADY FROM HUSHABY STREET

The Rock-a-By Lady from Hushaby Street
Comes stealing; comes creeping;
The poppies, they hang from her head to her feet,
And each hath a dream that is tiny and fleet—
She bringeth her poppies to you, my sweet,
When she findeth you sleeping!

There is one little dream of a beautiful drum—
"Rub-a-dub!" it goeth;
There is one little dream of a big sugar plum,
And lo! thick and fast the other dreams come
Of popguns that bang, and tin-tops that hum,
And a trumpet that bloweth!

And dollies peep out of those wee little dreams
With laughter and singing;
And boats go a-floating on silvery streams,
And the stars peek-a-boo with their own misty gleams,
And up, up, and up, where the Mother Moon beams,
The fairies go winging!

Would you dream all these dreams that are tiny and fleet?
They'll come to you sleeping;
So shut the two eyes that are weary, my sweet,
For the Rock-a-By Lady from Hushaby Street,
With poppies that hang from her head to her feet,
Comes stealing; comes creeping.
—Eugene Field

THE BIRTHDAY

I am six years old. It's my birthday.
When I stand by the knob of the door
You can see I'm a little bit taller
Than when I was measured before.
I shall have a cake with thick frosting;
Seven candles on top I shall see;
And because I am taller and older
A happier child I should be. ††

(Poems marked †† are from *"Songs of Happiness."* Words by Carolyn S. Bailey. Music by Mary B. Ehrmann, Milton Bradley & Co.)

*****

Two ears and only one mouth have you;
The reason, I think, is clear:
It teaches my child that it will not do
To talk about all you hear.

Two hands and only one mouth have you,
And it is worth while repeating:
The two are for work that you must do,
The one is enough for eating.

Two eyes and only one mouth have you;
The reason of this must be:
That you should see a good many things,
But not talk about all you see.

THE DUCK DANCE

I saw a ship a-sailing, a-sailing on the sea;
And oh! it was laden with pretty things for me.
There were comfits in the cabin, and apples in the hold;
The sails were made of silk, and the masts were made of gold.

Four and twenty sailors that sat upon the deck
Were four and twenty white mice with chains about their neck.
The captain was a duck with a packet on his back,
And when the ship began to move the captain cried, "quack! quack!"

THE UMBRELLA MAN

Umbrellas to mend! Umbrellas to mend!
A little old tinker, our rainy day friend,
With patches and wire, and needle and glue,
Will make our umbrella as useful as new.

Umbrellas to sell! Umbrellas to sell!
He carries a number of new ones as well,
That he himself made, and he has some fine canes,
Tucked under his arms ev'ry day when it rains. ††

THE POLICEMAN

The giants in the fairy books
Are daring as you please;
But Kelly is as big and brave
As any one of these.
He's six feet tall
He wears a tidy uniform of blue.
He's Kelly, our policeman:
Have you a Kelly, too?

He gives the tired horses drinks.
He clears the crowded way
When little children go to school
And hurry home each day
I wonder when he goes to bed,
For all the dark night through
We hear the beat of Kelly's feet.
Have you a Kelly, too? ††

THE SHOEMAKER

Rap-a-tap-tap, rap-a-tap-tap,
Rap-a-tap-tap, rap-a-tap-tap,
Here's the good cobbler
Who works in his lap,
With hammer, and needle,
And waxed ends and glue,
Making our old shoes
As pretty as new.

Rap-a-tap-tap, rap-a-tap-tap,
Tic-a-tac, tic-a-tac, tic-a-tac-tee.
Who could cut patches
As neatly as he?
And who could so quickly
Put patches together,
Making our leaky shoes
Tight for wet weather? ††

THE LITTLE LAND

Deep down among the grasses,
As small as small can be,
There lies a Land of Little Things
That any child may see
Where Katydids and fireflies
And snails so queer and slow,
And spider folks and friendly worms
Go softly to and fro.

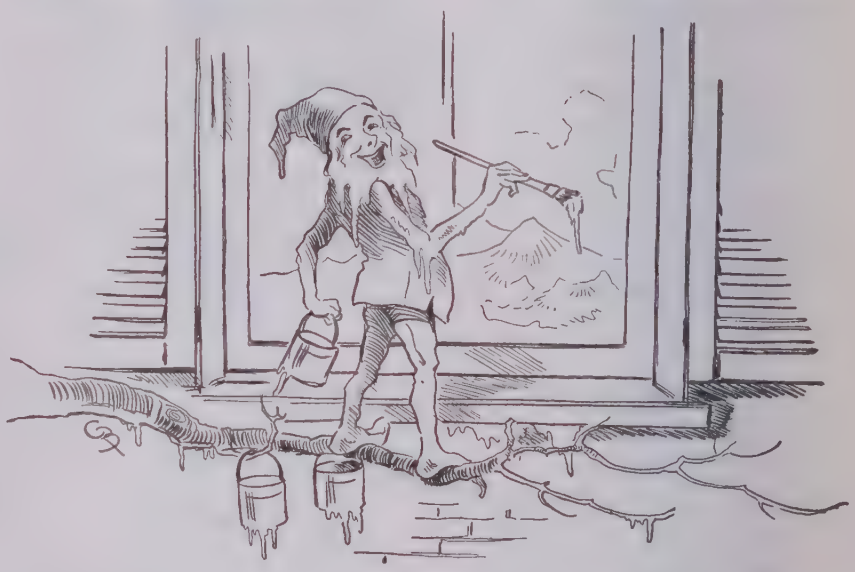
No child should cross its borders,
Nor touch it with his hand,
But only kneel down in the grass
And watch this Little Land
Where Katydids and fireflies
And snails so queer and slow,
And spider folks and friendly worms
Go softly to and fro. ††

THE CARPENTER

See the cheery carpenter,
Peep inside the door!
Pretty blocks and shaving curls
Lie upon his floor.

Hear his cheery hammer's song,
Hammer, hammer away!
Hear his cheery hammer's song,
Hammer all the day.

With his saw and shining plane
Boards are made to fit;
Many holes for screws he bores
With his shining bit.
Hear his cheery hammer's song, etc.



See the cheery carpenter,
Busy as can be!
He it is who builds the house
Strong and high for me.
Hear his cheery hammer's song, etc. ††

JACK FROST

Oh, Jack Frost is a merry little elf,
And a merry little elf is he!
He calls for his coat, and he calls for his brush,
And he calls for his paint pots, one, two, three,
And he calls for his paint pots three.

He paints with glee on ev'ry window-pane
Things very, very fine to see:
A mountain high, and a lake close by,
And a mighty forest tree, tree, tree.
And a mighty forest tree.

Oh, Jack Frost plays so many, many tricks,
He is so very pert and bold:
He pinches the cheeks and he tweaks the nose,
And he turns us blue with cold, cold, cold,
And he turns us blue with cold.

—Riley and Gaynor, "*Songs of the Child World*," *I.* The John Church Co., Cincinnati

THE BUSY ANTS

The ants are very, very small,
Almost too wee to work at all;
And yet they carry sand—until
Each ant has helped to build a hill.

The ants are very, very wee,
Almost too small for us to see;
But as they hurry through the grass
We will be kind and let them pass. ††

LITTLE THINGS

Little drops of water,
Little grains of sand,
Make the mighty ocean
And the pleasant land.

Thus the little minutes,
Humble though they be,
Make the mighty ages
Of eternity.

—Ebenezer Cobham Brewer

THE BLACKSMITH

Cling, clang, cling!
Cling, clang, cling!
Hammer and anvil so merrily ring.
Faithful old Dobbin must have a new shoe,
So, Master Blacksmith, we've brought him to you.
Light the forge fire,
The big bellows blow.
Dobbin will stand,
You needn't say, Whoa! ††

BUTTERCUPS AND DAISIES

Buttercups and daisies,
Oh, the pretty flowers;
Coming ere the spring time
To tell of sunny hours.
While the trees are leafless
While the fields are bare.
Buttercups and daisies
Spring up here and there.

Ere the snowdrop peepeth,
Ere the crocus bold,
Ere the early primrose
Opes its paly gold,
Somewhere on the sunny bank
Buttercups are bright;
Somewhere 'mong the frozen grass
Peeps the daisy white.

—Mary Howitt

THE BLUE-BIRD

Blue-Bird, dear Blue-Bird,
We saw you to-day!
Just for a flash—
Then you floated away.
Hands could not hold you,
Our cage was too small.
Hark! from the sky comes
Your far-away call.

Blue-Bird, dear Blue-Bird,
We know what you say.
Happy the children
Who see you to-day.
Brighter the sunshine,
More blue is the sky,
Happiness follows
Wherever you fly. ††

THE BROWNIES

Hist! Hist! Be still!
On tiptoe now advance!
We've come to have a merry Brownies' dance.
We will form our circle here,
Stepping lightly, for we fear
We may waken all the sleeping world perchance.

Oh, we're as light
As thistledown or dew.
We're Brownies of the Brownie band so true.
And we dance the live-long night,
Vanish with the morning light,
Hiding safe from mortal vision and from you.



THE SEE-SAW

We made a see-saw yesterday,
The board was good and long;
And all the while we were at play
We sang this pretty song:
"See-saw, see-saw,
So we go up and down,
See-saw, see-saw,
Going to the town."

A SPRING PROMISE

A little bit of blowing,
A little bit of snow,
A little bit of growing,
And crocuses will show!
On every twig that's lonely
A new green leaf will swing,
On ev'ry patient tree-top
A thrush will stop and sing.
A little bit of sleeting,
A little bit of rain,
The blue, blue sky for greeting,
The violets again!
And ev'ry frozen hillside
Its gift of grass will bring,
And ev'ry day of winter
Another day of spring. ††

THE FIREMAN

Hark! The siren! Clear the street!
See the horses, big and fleet!
Hook and ladder, truck and hose,
Following fast the engine goes.
Holding on as best he can
Rides the daring fireman.
Wasting not a bit of time
Up the burning house he'll climb,
Till we see his helmet red
At some window overhead.
Oh, how wonderful to be
Such a hero man as he! ††

OLD MOTHER WIND

Old Mother Wind is out to-day,
She has her magic broom.
She sweeps the garden very clean
That daffodils may bloom.
Old Mother Wind we cannot see,
But by her broom we know it's she.

Old Mother Wind is out to-day,
We feel her magic hands.
They pull our kites and push the ships
To strange and diff'rent lands.
Old Mother Wind we cannot see,
But by her broom we know it's she.

Old Mother Wind was out last night,
Upon the chimney red.
She sat and sang a sleepy song
As we were put to bed.
Old Mother Wind we cannot see,
But by her broom we know it's she. ††

MASTER ROBIN

If I could change places with you, Master Robin,
And live in your nest in the tree,
So snug and so high
With no roof but the sky,
Oh, Robin, what fun that would be!
Cheer-ee! Cheer-ee!

I'd swing and I'd sing and I'd carefully bring
Some food to your babies so wee,
And then, by and by,
I would teach them to fly,
Oh, Robin, what fun that would be!
Cheer-ee! Cheer-ee!

The beautiful world and the clouds softly curled
I'd reach with my wings, strong and free;
And I would be dressed
In a bright orange vest,
Oh, Robin, what fun that would be!
Cheer-ee! Cheer-ee! ††

TRACKS IN THE SNOW

Do you see these tiny tracks in the snow?
Don't you wonder what they are, where they go?
I think a Bunny Rabbit white
Has hopped across the snow last night.
Oh! What funny little tracks in the snow!

THE GIANTS

We'll play we're giants tall,
As tall as tall can be.
And when we reach clear up to the sky,
The moon and stars we'll see.

We'll bump our heads against the clouds;
Our hands we'll stretch so high
That we'll feel the points of the tiny stars
That hang up in the sky.

(All three from Riley and Gaynor's "*Songs of the Child World,*" I. Pub. by The John Church Co., Cincinnati.)

IMITATION SONG

This is the way we clap our hands,
We clap our hands, we clap our hands;
This is the way we clap our hands,
As merrily we play.

This is the way we show our hands, etc.
In beautiful array.

This is the way the clock does tick, etc.
And tells how time does fly.

This is the noise the guns do make, etc.
On celebration day.
(With appropriate motions, etc., can be continued.)

******

When I was a shoemaker,
And a shoemaker was I,
This way, and this way,
And this way went I.

When I was a gentleman,
And a gentleman was I,
This way, and this way,
And this way went I.

When I was a lady,
And a lady was I,
This way, and this way,
And this way went I.

(To be continued indefinitely. Old game.)

HAND-EXERCISE SONG

Roll your hands, roll your hands,
As slowly, as slowly, as slow can be.
Then fold your arms like me!

Roll your hands, roll your hands,
As swiftly, as swiftly, as swift can be.
Then fold your arms like me!

Clap your hands, clap your hands,
As softly, as softly, as soft can be.
Then fold your arms like me!

Clap your hands, clap your hands,
As loudly, as loudly, as loud can be.
Then fold your arms like me!

HOP, HOP, HOP

Hop, hop, hop!
Nimble as a top,
  Where 'tis smooth and where 'tis stony
  Trudge along, my little pony!
Hop, hop, hop, hop, hop,
Nimble as a top!

Whoa, whoa, whoa!
How like fun you go!
  Very well, my little pony,
  Safe's our jaunt though rough and stony.
Spare, spare, spare, spare, spare,
Sure enough we're there!

Here, here, here!
Yes, my pony dear;
  Now with oats and hay I'll treat you,
  And with smiles will ever greet you,
Pony, pony dear!
Yes, my pony dear!

RING GAME

It snows and it blows, and it cuts off my nose,
  So, pray, children, let me in;
I'll light my pipe, and warm my toes,
  And then I'll be gone again.

ROUND

Ring a ring a rosie,
A bottle full of posie,
All the girls in our town
Ring for little Josie.

(First published in *"Games and Songs of American Children,"* collected by Wm. Wells Newell, Harper & Bros.)

******

Oats, peas, beans, and barley grows,
Oats, peas, beans, and barley grows,
How, you, nor I, nor nobody knows,
Oats, peas, beans, and barley grows.

Thus the farmer sows his seed,
Stands erect and takes his ease,
Stamps his foot and clasps his hands,
And turns about to view his lands.

(Old Ring Game)

BLOCK CITY

What are you able to build with your blocks?
Castles and palaces, temples and docks.
Rain may keep raining, and others go roam,
But I can be happy and building at home.

Let the sofa be mountains, the carpet be sea,
There I'll establish a city for me:
A kirk and a mill and a palace beside,
And a harbor as well where my vessels may ride.

Great is the palace with pillar and wall,
A sort of a tower on the top of it all,
And steps coming down in an orderly way
To where my toy vessels lie safe in the bay.

This one is sailing and that one is moored:
Hark to the song of the sailors on board!
And see on the steps of my palace, the kings
Coming and going with presents and things!

Now I have done with it, down let it go!
All in a moment the town is laid low.
Block upon block lying scattered and free,
What is there left of my town by the sea?
Yet, as I saw it, I see it again,
The kirk and the palace, the ships and the men,
And as long as I live and where'er I may be,
I'll always remember my town by the sea.
—Robert Louis Stevenson

BED IN SUMMER

In winter I get up at night
And dress by yellow candle-light.
In summer, quite the other way,
I have to go to bed by day.

I have to go to bed and see
The birds still hopping on the tree,
Or hear the grown-up people's feet
Still going past me in the street.

And does it not seem hard to you,
When all the sky is clear and blue,
And I should like so much to play,
To have to go to bed by day?
—Robert Louis Stevenson

THE WIND

I saw you toss the kites on high
And blow the birds about the sky;
And all around I heard you pass,
Like ladies' skirts across the grass—
  O wind, a-blowing all day long,
  O wind, that sings so loud a song!

I saw the different things you did,
But always you yourself you hid.
I felt you push, I heard you call,
I could not see yourself at all—
  O wind, a-blowing all day long,
  O wind, that sings so loud a song!

O you that are so strong and cold,
O blower, are you young or old?
Are you a beast of field and tree,
Or just a stronger child than me?
  O wind, a-blowing all day long,
  O wind, that sings so loud a song!
—Robert Louis Stevenson



Little Miss Muffet
  Sat on a tuffet,
  Eating her curds and whey;
There came a spider
  And sat down beside her,
  And frightened Miss Muffet away.

TWINKLE, TWINKLE, LITTLE STAR

Twinkle, twinkle, little star—
How I wonder what you are!
Up above the world so high,
Like a diamond in the sky.

When the glorious sun is set,
When the grass with dew is wet,
Then you show your little light,
Twinkle, twinkle all the night.

In the dark blue sky you keep
And often through my curtains peep;
For you never shut your eye
Till the sun is in the sky.

As your bright and tiny spark
Lights the traveller in the dark:
Though I know not what you are,
Twinkle, twinkle, little star.

MY SHADOW

I have a little shadow that goes in and out with me,
And what can be the use of him is more than I can see.
He is very, very like me from the heels up to the head;
And I see him jump before me, when I jump into my bed.

The funniest thing about him is the way he likes to grow—
Not at all like proper children, which is always very slow;
For he sometimes shoots up taller like an india-rubber ball,
And he sometimes gets so little that there's none of him at all.

He hasn't got a notion of how children ought to play,
And can only make a fool of me in every sort of way.
He stays so close beside me, he's a coward you can see;
I'd think shame to stick to nursie as that shadow sticks to me!

One morning, very early, before the sun
was up,
I rose and found the shining dew on every
buttercup;
But my lazy little shadow, like an arrant
sleepy-head,
Had stayed at home behind me and was
fast asleep in bed.
—Robert Louis Stevenson

DAISIES

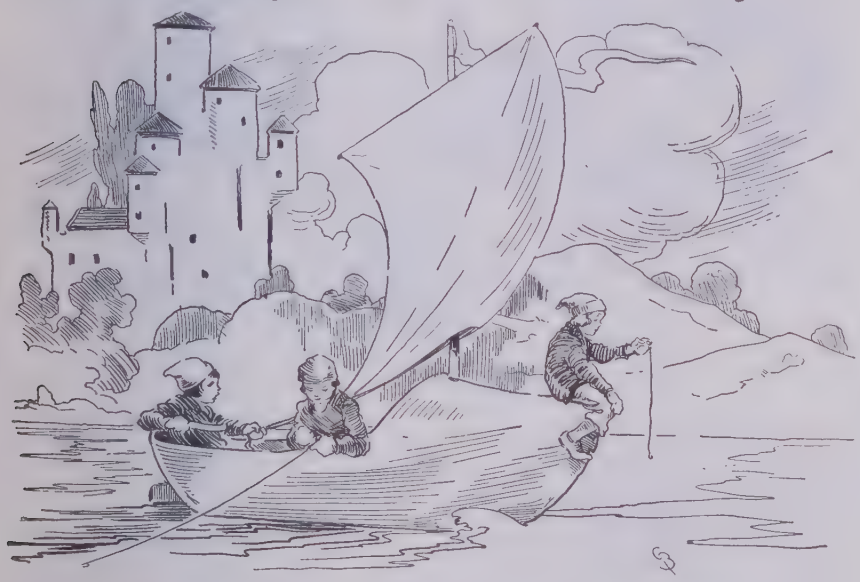
At evening when I go to bed
I see the stars shine overhead;
They are the little daisies white
That dot the meadow of the night.

And often while I'm dreaming so,
Across the sky the Moon will go;
It is a lady, sweet and fair,
Who comes to gather daisies there.

For, when at morning I arise,
There's not a star left in the skies;
She's picked them all and dropped them
down
Into the meadows of the town.
–Frank Dempster Sherman

All night long their nets they threw
To the stars in the twinkling foam—
Then down from the skies came the wooden
shoe,
Bringing the fishermen home;
'Twas all so pretty a sail, it seemed
As if it could not be;
And some folk thought 'twas a dream
they'd dreamed
Of sailing that beautiful sea.
But I shall name you the fishermen three:
Wynken,
Blynken,
And Nod.

Wynken and Blynken are two little eyes,
And Nod is a little head,
And the wooden shoe that sailed the skies
Is a wee one's trundle-bed;
So shut your eyes while mother sings
Of wonderful sights that be,
And you shall see the beautiful things
As you rock on the misty sea
Where the old shoe rocked the fishermen
three—
Wynken,
Blynken,
And Nod
—Eugene Field



WYNKEN, BLYNKEN, AND NOD

Wynken, Blynken, and Nod one night
Sailed off in a wooden shoe—
Sailed on a river of crystal light
Into a sea of dew.
"Where are you going, and what do you
wish?"
The old moon asked the three.
"We have come to fish for the herring fish
That live in this beautiful sea;
Nets of silver and gold have we,"
Said Wynken,
Blynken,
And Nod.

The old moon laughed and sang a song,
As they rocked in the wooden shoe;
And the wind that sped them all night long
Ruffled the waves of dew;
The little stars were the herring fish
That lived in the beautiful sea.
"Now cast your nets wherever you wish—
Never afeard are we!"
So cried the stars to the fishermen three,
Wynken,
Blynken,
And Nod.

THE SWING

How do you like to go up in a swing,
Up in the air so blue?
"Oh, I do think it the pleasantest thing
Ever a child can do!"

"Up in the air and over the wall,
Till I can see so wide,
Rivers and trees and cattle and all
Over the countryside—

"Till I look down on the garden green
Down on the roof so brown—
Up in the air I go flying again,
Up in the air and down!"
—Robert Louis Stevenson

NONSENSE ALPHABET

A was an ant,
Who seldom stood still,
And who made a nice house
In the side of a hill.
Nice little ant!

B was a bat,
Who slept all the day,
And fluttered about
When the sun went away.
Brown little bat!

C was a camel;
You rode on his hump;
And if you fell off,
You came down such a bump!
What a high camel!

D was a duck
With spots on his back,
Who lived in the water
And always said, "Quack!"
Dear little duck!

E was an elephant,
Stately and wise:
He had tusks and a trunk,
And two queer little eyes.
Oh, what funny small eyes!

F was a fish
Who was caught in a net;
But he got out again,
And is quite alive yet.
Lively young fish!

G was a goat
Who was spotted with brown:
When he did not lie still
He walked up and down.
Good little goat!

H was a hat
Which was all on one side;
Its crown was too high,
And its brim was too wide
Oh, what a hat!

I was some ice,
So white and so nice,
But which nobody tasted;
And so it was wasted.
All that good ice!

J was a jug,
So pretty and white,
With fresh water in it
At morning and night.
Nice little jug!

K was a kite
Which flew out of sight,
Above houses so high,
Quite into the sky.
Fly away, kite!

L was a lily,
So white and so sweet!
To see it and smell it
Was quite a nice treat.
Beautiful lily!

M was a man,
Who walked round and round;
And he wore a long coat
That came down to the ground
Funny old man!

N was a net
Which was thrown in the sea
To catch fish for dinner
For you and for me.
Nice little net!

O was an orange
So yellow and round:
When it fell off the tree
It fell down to the ground.
Down to the ground!

P was a polly,
All red, blue and green—
The most beautiful polly
That ever was seen.
Poor little polly!

Q was a quail
With a very short tail;
And he fed upon corn
In the evening and morn.
Quaint little quail!

R was a rabbit,
Who had a bad habit
Of eating the flowers
In gardens and bowers.
Naughty fat rabbit!

S was the sugar-tongs,
Nippity-nee,
To take up the sugar
To put in our tea.
Nippity-nee!

T was a tortoise
All yellow and black;
He walked slowly away
And he never came back.
Torty never came back!

U was an urn
All polished and bright,
And full of hot water
At noon and at night.
Useful old urn!

V was a veil
With a border upon it,
And a ribbon to tie it
All round a pink bonnet.
Pretty green veil!

W was a watch,
Where, in letters of gold,
The hour of the day
You might always behold.
Beautiful watch!

Y was a yew,
Which flourished and grew
By a quiet abode
Near the side of a road.
Dark little yew!

Z was a zebra,
All striped white and black;
And if he were tame,
You might ride on his back.
Pretty striped zebra!

FROM HIAWATHA

Then the little Hiawatha
Learned of every bird its language,
Learned their names and all their secrets:
How they built their nests in summer,
Where they hid themselves in winter;
Talked with them whene'er he met them,
Called them "Hiawatha's Chickens."

Thus the birch canoe was builded
In the bosom of the forest.
All the forest life was in it,
All its mystery and its magic,
All the lightness of the birch-tree,
All the toughness of the cedar,
All the larch's supple sinews—
And it floated on the river
Like a yellow leaf in autumn,
Like a yellow water lily.
—Henry Wadsworth Longfellow.

LET THE BUMBLE BE

One day I saw a bumblebee, bumbling on a rose,
And as I stood admiring him he stung me on the nose.
My nose, in pain, it swelled so large it looked like a potato,
So daddy said, though mother thought 'twas more like a tomato.
And now, dear children, this advice I hope you'll take from me,
And when you see a bumblebee just let that bumble be.
—Winifred Sackville Stoner, Jr. "*Facts in Jingles*," Bobbs, Merrill Co.

Over the river and through the wood,
To have first-rate play:
Hear the bells ring,
"Ting-a-ling-ding!"
Hurrah for Thanksgiving Day!

Over the river and through the wood,
Trot fast, my dapple-gray!
Spring over the ground
Like a hunting hound!
For this is Thanksgiving Day.

Over the river and through the wood,
And straight through the barn-yard gate
We seem to go
Extremely slow—
It is so hard to wait!



SLEIGHING SONG

Jingle, jingle, ring the bells,
Snow is on the ground,
The horses prance, the sleigh-bells ring,
Hark the merry sound!
Jingle, jingle, jingle, on the frosty air,
Jingle, jingle, jingle, sleigh-bells ev'ry-where,
Jingle, jingle, jingle, hear the merry cry,
Jingle, jingle, jingle, see the sleighs dash by!

Jingle, jingle, ring the bells,
Happy throngs dash by,
The air is full of noisy shouts,
See the cutters fly!
Jingle, jingle, etc.
—From Riley and Gaynor, "*Songs of the Child World*," *I*. The John Church Co., Cincinnati.

THANKSGIVING DAY

Over the river and through the wood
To grandfather's house we go;
The horse knows the way
To carry the sleigh
Through the white and drifted snow.

Over the river and through the wood—
Oh, how the wind does blow!
It stings the toes
And bites the nose
As over the ground we go.

Over the river and through the wood—
Now grandmother's cap I spy!
Hurrah for the fun!
Is the pudding done?
Hurrah for the pumpkin pie!

******

See a pin and pick it up,
All the day you'll have good luck!
See a pin and let it lay:
Bad luck you'll have all the day!

******

Peter Piper picked a peck of pickled peppers;
A peck of pickled peppers Peter Piper picked;
If Peter Piper picked a peck of pickled peppers,
Where's the peck of pickled peppers Peter Piper picked?

******

Elizabeth, Lizzy, Betty and Bess,
They all went together to seek a hen's nest.
They found a hen's nest with five eggs in,
They all took one and left four in.

THE HARE AND THE TORTOISE

The hare was very proud of his swift feet. When he met the tortoise, he made fun of her short legs and slow walk. But the tortoise said to him, "Even if you were as swift as the wind, I can beat you in a race." The hare laughed at this talk and agreed he would run a race with her. The fox was chosen to lay out the course and to fix the goal.

Both started together. The tortoise did not stop but ran forward, but went on her way, slowly but steadily. But the hare, who thought that the race was a foolish thing anyway, did not care to make an effort. After he had run a little way he lay down to sleep, meaning to wake up long before the tortoise had gone half the course. But he slept too long, and when he woke up and ran to the goal he found that the tortoise was already there, comfortably resting after her long and hard walk.

THE WIND

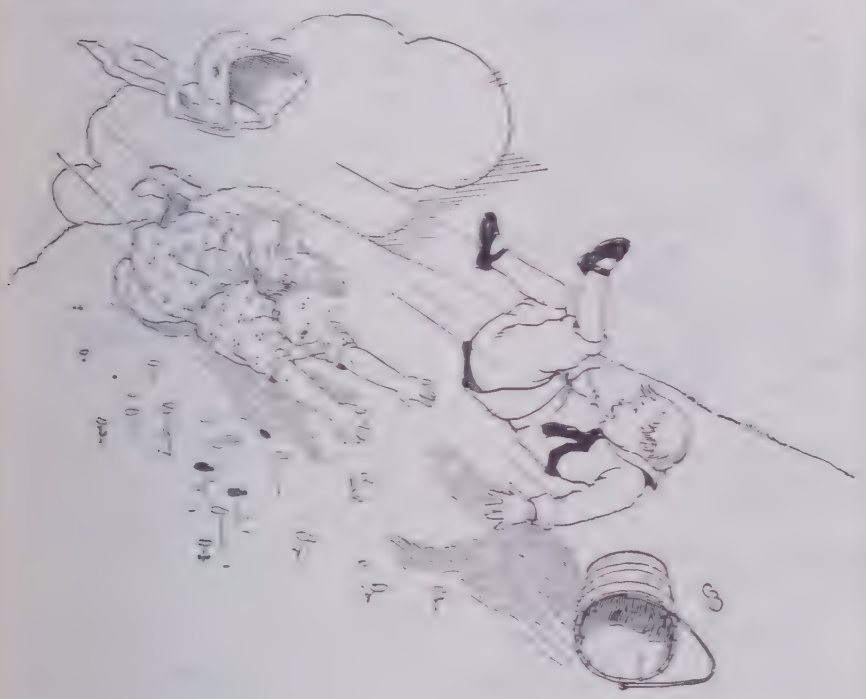
Whichever way the wind doth blow,
Some heart is glad to have it so;
Then blow it East or blow it West,
The wind that blows, that wind is best.

******

One, two, buckle my shoe!
Three, four, shut the door!
Five, six, pick up sticks!
Seven, eight, lay them straight!
Nine, ten, a good, fat hen;
Eleven, twelve, on the shelf.
One, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve.

CHILD RIDING ON MOTHER'S KNEE

This is the way the ladies ride:
Tri, tre, tre, tree,
Tri, tre, tre, tree!
This is the way the ladies ride,
Tri, tre, tre, tree;
Tri, tre, tre, tree!
(Swinging leg gently)



Jack and Jill went up the hill
To fetch a pail of water;
Jack fell down and broke his crown,
And Jill came tumbling after.

AROUND THE WORLD

In go-cart so gay
My sister I drew;
And I've promised to show her
The wide world through.
We have not yet started—
I own it with sorrow—
Because our trip's always
Put off till tomorrow.
—Kate Greenaway.

PLAY WITH THE FINGERS

This is the thumb:
He picks a plum;
He carries it in:
He puts it in the bin;
And the little fellow
Eats it all up.

This is the way the gentlemen ride:
Gallop-a-trot,
Gallop-a-trot!
This is the way the gentlemen ride,
Gallop-a-gallop-a-trot!
(Moving leg up and down with more rapid motion)

This is the way the farmers ride:
Hobbledy-hoy,
Hobbledy-hoy!
This is the way the farmers ride,
Hobbledy-hobbledy-hoy!
(Jerking leg up and down)

******

There was an old woman who lived in a shoe,
She had so many children she didn't know what to do;
She gave them some broth without any bread.
She whipped them all soundly, and sent them to bed.

Hush-a-bye, baby, on the tree-top,
When the wind blows the cradle will rock;
When the bough breaks, the cradle will fall,
And down comes cradle and baby and all.

THE WEATHER VANE

This way, that way,
Turns the weather vane;
This way, that way,
Turns and turns again.
Turning, pointing, ever showing
How the merry wind is blowing.
—*Emilie Poulsson, after Friedrich Froebel.*

IMITATION GAME

When I was a lady, a lady, a lady,
When I was a lady, a lady was I;
'Twas this way, and that way,
And this way, and that way,
And this way, and that way,
And this way went I.

(For lady, substitute other words, with corresponding gestures, like gentleman, fairy, blacksmith, baker, postman, cook, laundress, etc.)

THE PIGEON HOUSE

My pigeon house I open wide
And set the pigeons free;
They fly o'er the fields on every side
And light on the tallest tree;
But when they return from their merry flight
We close the door and say, "Good night!":
Coo-roo, coo-roo, coo-roo, coo-roo,
Coo-roo, coo-roo, coo-roo.

(From *"Songs and Games for Little Ones,"* Gertrude Walker and Harriet S. Jenks; Curwen & Sons.)

THE LITTLE PLANT

In the heart of a seed,
Buried deep, so deep,
A dear little plant,
Lay fast asleep.

"Wake!" said the sunshine,
"And creep to the light!"
"Wake!" said the voice
Of the raindrops bright.

The little plant heard,
And it rose to see
What the wonderful
Outside world might be.
—Kate L. Brown

THE RAIN

Pitter-patter goes the rain,
Oh! so many hours;
But though it keeps me in the house
It's very good for flowers.

******

Do all the good you can,
By all the means you can,
In all the ways you can,
In all the places you can,
At all the times you can,
To all the people you can,
As long as ever you can.
—John Wesley

******

Baa, baa, black sheep,
Have you any wool?
Yes, marry, have I,
Three bags full:
One for my master,
And one for my dame,
And one for the little boy
Who lives in the lane.

THE BOBOLINK

The bobolink is a jolly bird,
And a jolly bird is he;
A mother-olink has this bobolink,
And his chicky-olinks are three.

The bobolink, he wears a knob,
All black and white is he;
The mother-olink has a gown of brown,
And gray the babies three.

The bobolink has a merry song,
A merry song has he;
But when his babies try to sing
They just say, "Chee! Chee! Chee!"

—Riley and Gaynor, "*Songs of the Child World*," *II*. The John Church Co., Cincinnati.



Bye, baby bunting,
Daddy's gone a-hunting,
To get a little rabbit skin
To wrap the baby bunting in.

CHRISTMAS SECRETS

The air is full of mystery,
And secrets are a-wing;
And if you happen on one:
Don't you tell a single thing!
  And perhaps we've something hiding
  For each loved one dear,
  For Christmas day is coming
  And will soon be here.

Then Santa Claus will fly around
With heavy laden sleigh,
And down the chimney hasten
In his usual happy way.
  Oh, he brings such loads of presents
  To the children dear,
  And Christmas day is coming
  And will soon be here.

—Riley and Gaynor, "*Songs of the Child World*," *II*. The John Church Co., Cincinnati.

MULBERRY BUSH

As we go 'round the mulberry bush,
The mulberry bush, the mulberry bush,
As we go 'round the mulberry bush,
  So early in the morning.

This is the way we wash our clothes,
Wash our clothes, wash our clothes,
This is the way we wash our clothes,
  All of a Monday morning.

This is the way we iron our clothes, etc.,
  All of a Tuesday morning.

This is the way we scrub our floor, etc.,
  All of a Wednesday morning.

This is the way we mend our clothes, etc.,
  All of a Thursday morning.

This is the way we sweep the house, etc.,
  All of a Friday morning.

This is the way we bake our bread, etc.,
  All of a Saturday morning.

This is the way we go to church, etc.,
  All of a Sunday morning.
    (Old Game)

Tread, tread the green grass,
  Dust, dust, dust,
Come all ye pretty fair maids
  And walk along with us.

If you be a fair maid,
  As I suppose you be,
I'll take you by the lily-white hand
  And lead you across the sea.
    (Old Dancing Game Rhyme)

******

"Will you have a paper of pins?
For that's the way my love begins—
  And will you marry me, me, me,
  And will you marry me?"

"No, I'll not have a paper of pins,
If that's the way your love begins."

"Will you have a little lap-dog
Who may follow you abroad?
  And will you marry me, me, me,
  And will you marry me?"

"No, I will not have a little lap-dog
Who may follow me abroad!"

"Will you have a coach and four,
Footman behind and footman before?
  And will you," etc.

"No, I will not have," etc.

"Will you have a dress of red,
All trimmed 'round with golden thread?" etc.

"Will you have a satin gown,
All set off with a golden crown?" etc.

"Will you have the key to my chest,
To draw out gold at your request?" etc.

"Will you have the key to my heart,
That we may love and never part?" etc.

"Yes, I will have the key to your heart,
That we may love and never part,
  And I will marry you, you, you,
  And I will marry you."
    (Children's old Love Game)

THE FARMER IN THE DELL

The farmer in the dell,
The farmer in the dell,
  Heigh ho! for Rowley O!
The farmer in the dell.

The farmer takes a wife, etc.

The wife takes a child, etc.

The child takes a nurse, etc.

The nurse takes the dog, etc.

The dog takes the cat, etc.

The cat takes the rat, etc.

The rat takes the cheese, etc.

The cheese stands alone, etc.
    (Old Game)

COUNTING APPLE SEEDS

One, I love,
Two, I love,
Three, I love, I say,
Four, I love with all my heart,
And five, I cast away.
Six, he loves,
Seven, she loves,
Eight, they both love;
Nine, he comes,
Ten, he tarries,
Eleven, he courts,
Twelve, he marries;
Thirteen wishes,
Fourteen kisses,
All the rest little witches.

THREADING THE NEEDLE

  The needle's eye
  You can't pass by,
The thread it runs so true;
  It has caught many a smiling lass,
But now it has caught you.
    (Old Game)

******

It rains, it hails, it's cold, stormy weather;
In comes the farmer, drinking all his cider,
I'll be the reaper, who'll be the binder?
I've lost my true love, where shall I find her?
    (Another old Circle Game)

HAND-SLAPPING GAME

Pease porridge hot,
  Pease porridge cold,
Pease porridge in the pot,
  Nine days old.

RIDDLE

Two legs sat upon three legs
With one leg in his lap;
In comes four legs
And runs away with one leg;
Up jumps two legs,
Catches up three legs,
Throws it after four legs,
And makes him bring back one leg.
(Man, stool, leg of lamb, dog)

THE BULLDOG

Oh! the bulldog on the bank,
And the bullfrog in the pool!
The bulldog called the bullfrog
A green old water fool!

Oh! the bulldog stooped to catch him,
And the snapper caught his paw,
The pollywog died a-laughing
To see him wag his jaw.

Says the monkey to the owl:
"Oh! what'll you have to drink?
"Why, since you are so very kind,
I'll take a bottle of ink."
(College Song)

JOLLY OLD ST. NICHOLAS

Jolly old St. Nicholas,
Lean your ear this way!
Don't you tell a single soul
What I'm going to say!
Christmas Eve is coming soon,
Now, you dear old man,
Whisper what you'll bring to me,
Tell me if you can.

When the clock is striking twelve,
When I'm fast asleep,
Down the chimney, broad and black,
With your cap you'll creep.
All the stockings you will find
Hanging in a row;
Mine will be the shortest one,
You'll be sure to know.

Johnny wants a pair of skates,
Susy wants a dolly,
Nellie wants a story book,
She thinks dolls are folly!
As for me, my little brain
Isn't very bright;
Choose for me, Old Santa Claus,
What you think is right.

THE NIGHT BEFORE CHRISTMAS

'Twas the night before Christmas,
When all thru the house
Not a creature was stirring,
Not even a mouse.

The stockings were hung
By the chimney with care,
In hopes that St. Nicholas
Soon would be there.

The children were nestled
All snug in their beds,
While visions of sugar-plums
Danced through their heads.

Mamma in her 'kerchief,
And I in my cap
Had just settled our brains
For a long winter's nap.

When out on the lawn
There arose such a clatter:
I sprang from my bed
To see what was the matter

Away to the window
I flew like a flash,
Tore open the shutters
And threw up the sash.

The moon on the breast
Of the new fallen snow
Gave a lustre of mid-day
To objects below:

When what to my wondering eyes
Should appear—
But a miniature sleigh
And eight tiny reindeer!

With a little old driver,
So lively and quick:
I knew in a moment
It must be St. Nick

More rapid than eagles
His coursers they came,
And he whistled and shouted
And called each by name:

"Now, Dasher, now, Dancer,
Now, Prancer, now, Vixen!
On, Comet! On, Cupid!
On, Donner and Blitzen!

To the top of the porch,
To the top of the wall,
Now, dash away, dash away,
Dash away, all!"

He was dressed all in fur
From his head to his foot,
And his clothes were all tarnished
With ashes and soot;

A bundle of toys
He had flung on his back,
And he looked like a peddler
Just opening his pack.

His eyes, how they twinkled!
His dimples, how merry!
His cheeks were like roses,
His nose like a cherry.

His droll little mouth
Was drawn up like a bow,
And the beard on his chin
Was as white as the snow.

The stump of a pipe
He held tight in his teeth,
And the smoke, it encircled
His head like a wreath.

He had a broad face,
And a little round belly
That shook when he laughed
Like a bowl-full of jelly.

He was chubby and plump—
A right jolly old elf,
And I laughed when I saw him
In spite of myself.

A wink of his eye,
And a twist of his head
Soon gave me to know
I had nothing to dread.



As dry leaves before the wild hurricane fly,
When they meet with an obstacle, mount to the sky:
So up to the house-top the coursers they flew,
With the sleigh full of toys, and St. Nicholas, too.

And then, in a twinkling,
I heard on the roof
The prancing and pawing
Of each little hoof.

As I drew in my head,
And was turning around,
Down the chimney St. Nicholas came
With a bound!

He spoke not a word
But went straight to his work,
And filled all the stockings,
Then turned with a jerk—

And, laying his finger
Aside of his nose,
And giving a nod,
Up the chimney he rose.

He sprang to his sleigh,
To his team gave a whistle,
And away they all flew
Like the down on a thistle.

And I heard him exclaim
Ere he drove out of sight:
"MERRY CHRISTMAS TO ALL,
AND TO ALL A GOOD NIGHT!"

THE PUZZLED CENTIPEDE

A centipede was happy quite,
Until a frog in fun
Said, "Pray, which leg comes after which?"
This roused her mind to such a pitch,
She lay distracted in the ditch
Considering how to run.



THIS LITTLE PIG

This little pig went to market;
This little pig stayed home;
This little pig had roast beef;
This little pig had none;
This little pig said, "Wee, wee, wee,"
All the way home.

ONE, TWO

One, two,
Buckle my shoe;
Three, four,
Shut the door;
Five, six,
Pick up sticks;
Seven, eight,
Lay them straight;
Nine, ten,
A good fat hen;
Eleven, twelve,
Who will delve?
Thirteen, fourteen,
Maids a'courting;
Fifteen, sixteen,
Maids a'kissing;
Seventeen, eighteen,
Maids a'waiting;
Nineteen, twenty,
My platter's empty.

THE OWL AND THE PUSSY-CAT

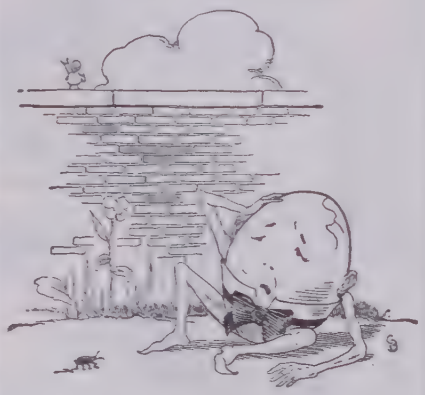
The Owl and the Pussy-Cat went to sea
In a beautiful pea-green boat,
They took some honey, and plenty of money,
Wrapped up in a five-pound note.
The owl looked up at the stars above,
And sang to a small guitar,
"O lovely Pussy! O Pussy, my love,
What a beautiful Pussy you are,
You are!
What a beautiful Pussy you are!"

Pussy said to the Owl, "You elegant fowl!
How charmingly sweet you sing!
O let us be married! Too long we have tarried:
But what shall we do for a ring?"
They sailed away for a year and a day,
To the land where the Bong-tree grows,
And there in a wood a Piggy-wig stood,
With a ring at the end of his nose,
His nose,
With a ring at the end of his nose.

"Dear Pig, are you willing to sell for one shilling
Your ring?" Said the Piggy, "I will."
So they took it away, and were married next day
By the Turkey who lives on the hill.
They dined on mince, and slices of quince,
Which they ate with a runcible spoon;
And hand in hand, on the edge of the sand,
They danced by the light of the moon,
The moon,
They danced by the light of the moon.
—Edward Lear

BOW WOW, SAYS THE DOG

"Bow wow,"
Says the dog;
"Meow,"
Says the cat;
"Grunt,"
Goes the hog;
And "squeak,"
Goes the rat.
"Two-who,"
Says the owl;
"Caw, caw,"
Says the crow;
"Quack, quack,"
Says the duck,
And what sparrows
Say, you know.
So, with sparrows and owls,
With rats and with dogs,
With ducks and with crows,
With cats and with hogs,
A fine song I have made
To please you, my dear;
And if it's well sung
'Twill be charming to hear.



HUMPTY DUMPTY

Humpty Dumpty sat on a wall,
Humpty Dumpty had a great fall,
All the King's horses and all the King's men,
Couldn't put Humpty back again.

AMERICA THE BEAUTIFUL

O beautiful for spacious skies,
For amber waves of grain,
For purple mountain majesties
Above the fruited plain!
America! America!
God shed his grace on thee
And crown thy good with brotherhood
From sea to shining sea!

O beautiful for pilgrim feet,
Whose stern, impassioned stress
A thoroughfare for freedom beat
Across the wilderness!
America! America!
God mend thine every flaw,
Confirm thy soul in self-control,
Thy liberty in law!

O beautiful for heroes proved
In liberating strife,
Who more than self their country loved,
And mercy more than life!
America! America!
May God thy gold refine
Till all success be nobleness
And every gain divine!

O beautiful for patriot dream
That sees beyond the years
Thine alabaster cities gleam
Undimmed by human tears!
America! America!
God shed his grace on thee
And crown thy good with brotherhood
From sea to shining sea!
—Katharine Lee Bates

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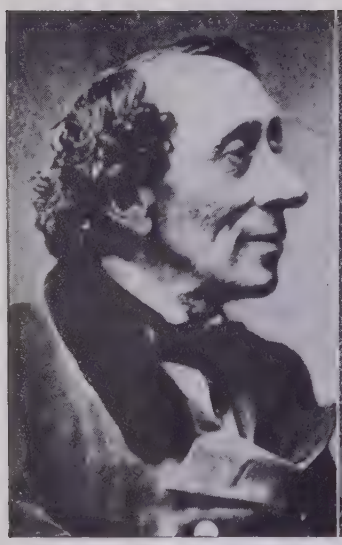
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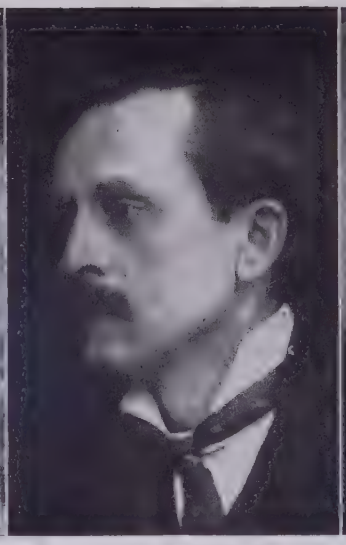
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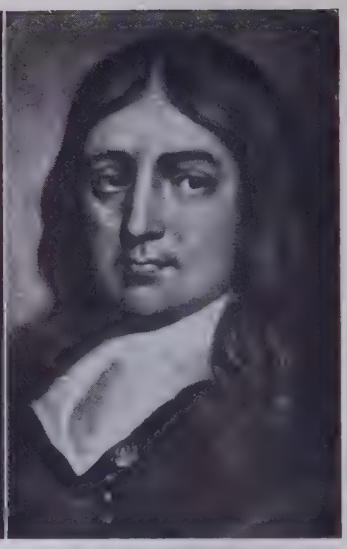
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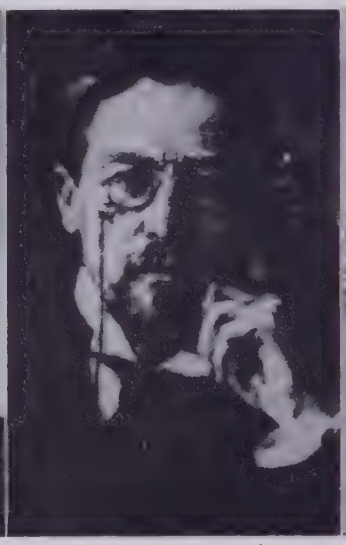
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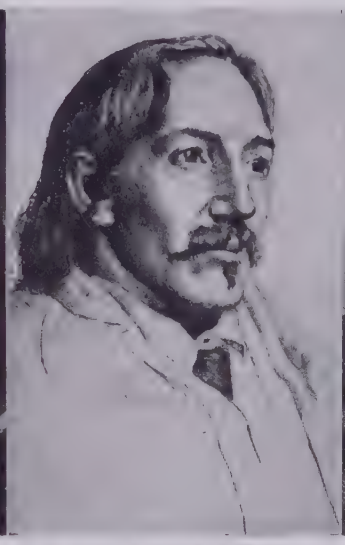
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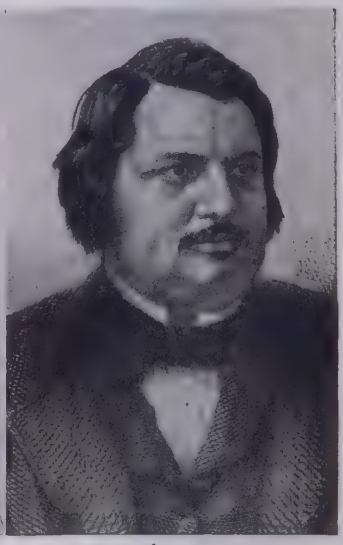
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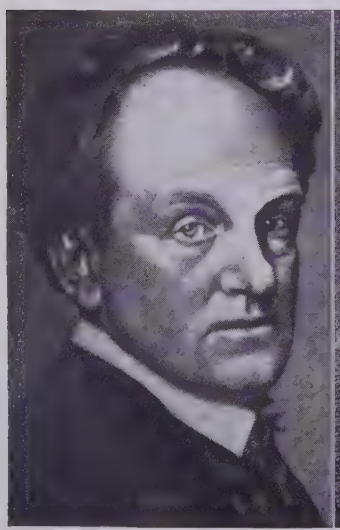
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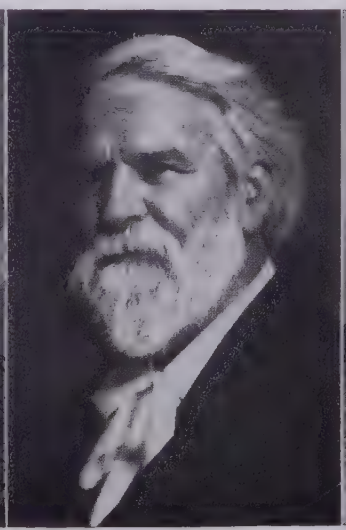
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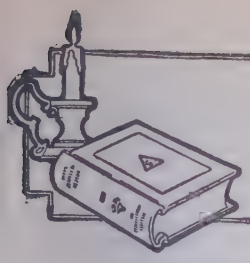


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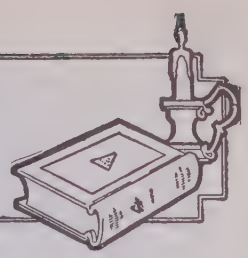
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BOOK II.

LANGUAGE AND GRAMMAR



CORRECT SPEECH

Easy Ways of Learning How to Speak Correctly

If all mothers realized the truth of Herbert Spencer's words: "Teach a child good English in the cradle and he will speak good English to the grave" I am sure that baby talk and slovenly speech would become obsolete. Well-meaning mothers are eager to give their children the right start in life but some of them do not realize that the so-called "Baby Talk" that is often used in talking to babies, puts a stumbling block in the way of children's progress. If grown people were taught two words for each object when they were trying to study a new tongue they would find themselves unable to know which word to use when trying to call an object by its name. The Baby comes into this world with impressions of millions of ancestors back of him but without any language medium to express thoughts that may come to him concerning the new world in which he lives. He is the most wonderful piece of machinery that has ever been created but he is the most helpless of young living things. The kitten, the little pup, the young colt all learn to walk and to express themselves long before the baby can perform these natural acts. Mother Cat has taught her young kitten how to converse in cat language and how to make its own living long before a baby can hold a rattle or say one word.

However, the baby is not an animated vegetable. It has more thoughts in its first days of babyhood than the kitten has in its entire life time. The baby is God's most wonderful creation. It has come not only into this world to live but it must live in a life to come and every parent should realize the great responsibility of parenthood and should strive in every way to give BABY a strong foundation upon which to build his life's character that leads him to Success or to Failure. Early impressions are lasting. The baby is but clay in the hands of the potters—his father and mother. Upon them depend his health, his happiness, his efficiency when he grows to maturity.

It is my belief that people in this world are judged by the way they dress, the way they talk, and the way they eat. I am sorry to call attention first to the manner of dress but I am sure that I am right in believing that when people first meet an individual they judge that one by the clothes he or she wears. The dress worn by anyone seems to indicate whether that person is rich or poor, slovenly or orderly, possessed of good or bad taste, thoughful or careless, stingy or generous. In fact a thousand thoughts come into the mind when we look at a person and the frame surrounding that person, which we call dress. In the same way we judge people by the way they eat, standing for a knowledge of good manners. If people know how to eat correctly they generally know how to act in good company. "Having passed the eating ordeal, I judge a man a gentlemen", said Chesterfield, who believed that manners would take a man where knowledge could not lead him in ways of success.

And correct SPEECH is the dress in which we clothe our thoughts. If we use coarse or slovenly speech we indicate that we have coarse or slovenly minds. If we "murder English", the term applied to using incorrect forms of speech, we are adjudged by those who know the English language, either as careless beings who do not make use of the knowledge we possess or as poor ignorants who have not had the opportunity of learning how to speak correctly. Incorrect speech very often makes us distasteful to high-class people just as ragged clothes bar us from going to beautiful receptions. A person with a cultivated ear for correct English actually suffers when hearing the beautiful English tongue mutilated just as one who loves a beautiful picture or object does not like to see it marred in any way. Using "I SEEN" and "I HAVE SAW" "I DONE IT", "AINT IT SO?", "BETWEEN YOU AND I", "THAT'S HIM", "I FEEL BADLY", "I LAID DOWN", "T'VE GOT A BOOK", "I was TALKIN' TO HER", "SEZ I", and similar expressions cause pain to the lover and user of CORRECT ENGLISH.

The foundation of a house is the most important part of that structure but there are many people who begin at the chimney to mend or to improve the house. The foundation stone, which should be laid through parental training even before the baby is born, is the most important part of the body house. Parents should try to make themselves well-informed parents upon all matters that lead to success before the baby comes. If the young husband and wife strive to help each other to speak good English and read good books that give them this help, the baby's first acquaintance with the English language will be that which is correct and with this impression he will go through life. But there are some mothers and a few fathers who think that it is necessary to talk ITSIE OOTSIE LANGUAGE when addressing a baby. In this respect they give the baby a worse reputation as a creature of understanding than they give to a pet. The man does not say to his dog: "Dear Ittle Bow wow Buster, do ooh lub me a ittle?" Instead he uses sensible language in talking to his dog and says "Buster, old boy, I know you're my friend and you will always love me."

When my little daughter was seven years of age she listened to a mother talking baby talk to her child and then she said "Dear mother, is it any wonder that the poor baby cannot talk English? Suppose you told me that the name of our milk giving animal was 'MOO MOO' and my father said "That is a cow", how would I know which was the correct name for the milk giver? In the same way, if you told me that the name of the machine that pulls cars is a 'Choo Choo' and my father called it "Locomotive" wouldn't I be puzzled as to the name that was proper for this piece of machinery?"

I agree with Winifred that nothing is more harmful as regards teaching a child how to talk than this baby talk.

The following jingle written by Winifred after our discussion expresses my sentiments:

Him is his muvver's Ootsie OOh
And muvver lub him yes she do.
Does him see de big moo moo
And the great big choo, choo, choo?
Hear him talk and say "Goo Goo!"
Watch him tiss his muvver, do,
Is him fraid ob big BOO BOO
Dat will catch him OOH! OOH! OOH!"
Thus some mothers talk each day
When with little ones they play
Then wonder WHY the babes don't say
English words in the proper way.

I have been accused by some mothers of taking the very joy out of their lives through ridiculing Baby Talk. It is their contention that the greatest happiness a mother has is in talking the ITSIE OOH Tongue. Nevertheless, even if I am depriving mothers of pleasure, I am pleading with parents to speak the best English that they know when they are in the presence of HIS MAJESTY, THE BABY.

In the first place they should cultivate gentle voices, for babies are very sensitive to harsh sounds and besides real language is intended to be spoken in a musical way. The Road to success is led, as someone has said, by musical tongues. We cannot all be Jenny Linds or Adelina Pattis but we can have pleasing voices which attract people to us rather than harsh, ear-splitting voices that drive folks away. If our parents give us, through hearing modulated voices, the proper foundation, it will be easy for us to speak gently and kindly. But even if we have not had this foundation it is the duty of every parent to train himself and herself for the benefit of the next generation.

Parents should be careful not to make contractions in speech. They should listen to themselves and hear if trying to be speedy has given them the tendency to say "Walkin", "Talkin", "Eatin", etc. When speaking to the baby it is wise to accentuate the ING. When Baby is learning to walk, hold out your arms and say; "Come walkING to me." When baby says something, the parent says "Baby is talkING to me." When the child is taking his food, say "Baby is eatING his dinner." In order to keep this in mind it might be well to put up a little motto BE CAREFUL OF THE INGS. Mottoes in times past were hung in every home but unfortunately most of them suggested death or punishment. I remember seeing in one home "BE SURE YOUR SINS WILL FIND YOU OUT." Naturally the children were haunted by these words. But cheerful mottoes that help us to speak better English, remind us of our duties, or suggest a smile are most helpful in every home.

In the Literary Digest published by Funk and Wagnalls, New York City, there is a lexicographer each week giving helpful suggestions in speech and answering questions that are asked by readers of

The Digest. This column has been helpful to many parents in knowing what is correct and what is not correct. Josephine Turck of Evanston, Illinois publishes a number of up-do-date books on "Your Every Day Vocabulary", "Correct English", "The Art of Conversation", and also a magazine called "Correct English; How To Use It". Her publications are most helpful and keep one up to date in the forms of speech since we must remember that language, just as dress, changes its style. Chaucer wrote beautiful English in his day but we no longer say "When that April with its showers swootie." Men like Huxley, Wooster, Webster, Roosevelt, etc., give us new words through explosions of speech and also through putting into books new word-forms that have been made in moments of excitement or through new inventions. At least 2,500 words, it is said, were coined during the last war and some of them are already in the new dictionaries.

THE DICTIONARY is our best friend in teaching us to speak correct English and in giving us an understanding of the words in this language. People may laugh at the old lady who said that "she read the dictionary from A to Z while her husband read the Bible from The World's creations to its end," but there is no better way to acquire flowing and rich robes in which to dress our thoughts than through seeking the dictionary's aid each day. When we read and find a new word or when we hear a new word spoken, to the dictionary we should go. And we should give the dictionary habit to our children. I believe in putting the dictionary on a low window seat so that it will be handy for every one in the house to seek for information. And I would suggest also that The Volume Library be placed next to the dictionary, making it easy of access. In the home equipped with these two good books in addition to the book that has always been called "The Good Book" there will be no need of a "cramped vocabulary" or of ignorance concerning the world's doings.

Some of us may suffer because we do not have many dollars but there are few people who need to suffer for lack of words in which to clothe their thoughts if they will only seek for new words each day to express thoughts. Instead of saying "AINT IT GRAND?" for everything that looks beautiful, husband and wife might amuse themselves by seeing who can find the greater number of adjectives to express the thought of beauty. Children can join in this game and thus expand their stock of words so that they will not get into the habit of depending upon a few very much overworked words to express their ideas. A little girl who played this game with me gave me the following list of words expressing grand:

Beautiful, handsome, pretty, lovely, graceful, elegant, delicate, dainty, refined, brilliant, splendid, rich, gorgeous, superb, magnificent, fine, sublime, enchanting, becoming, glorious, remarkable, radiant, great, noble, imposing, majestic, good, superior, choice, select, rare, priceless, exquisite, and precious.

I know of one mother who plays a game with her children called FAIRY WORDS. Each day she gives the children in the morning one or two new words, words that they have never heard before and asks them to see how often they can use the words during the day. These young children have started the very sensible plan of keeping diaries and each day they attempt to bring the NEW FAIRY WORDS into the diary. The mother reads what the children have written and corrects the sentences if Fairy Words have not been used correctly. We have all heard the story of the man who was told by a joking friend " He fell notwithstanding". The man went home and said to his wife "Oh I have such a funny joke—(Ha Ha). He fell nevertheless." People who do not have a thorough understanding of words are constantly making what the old lady who tried to talk French called FOX PAWS (Faux pas) or mistakes. Parents who correct their children not only for using blasphemy but also for making mistakes in English are giving the little ones a right start in life. There is a certain store in New York where I go to do all my shopping because the salespeople in that store speak good English. It is so much more pleasant to hear people use good English than to hear vulgarisms and lame constructions that I would walk ten blocks out of my way to buy from salespeople who are polite and well spoken. In the educational room of this store a short time ago I saw the following:

TEN DO NOTS

Do not say—Aren't they nice? SAY; Are they not nice?

Do not say—What did you come for? SAY; For what did you come?

Do not say—Tomorrow is Wednesday. SAY; Tomorrow will be Wednesday.

Do not say—Can I show you? SAY; May I show you.

Do not say—To who shall I send this? SAY; To whom shall I send this?

Do not say—These kind of lace. SAY; This kind of lace.

Do not say—If I had of known. SAY; If I had known.

Do not say—We haven't got any lace. SAY; We have not any lace.

Do not say—I only have these. SAY; I have only these.

Do not say—She don't like it. SAY; She doesn't like it.

DONT'S like these might be used on A HOME SLATE EACH DAY, pointing out to the children the CORRECT and INCORRECT FORM of words. It is always better to use the positive than the negative, teaching the child that he should say "May I show you" and saying nothing about "Can I show you." But when the child hears other children using CAN for MAY then it is necessary to tell him why he should use the polite MAY that suggests asking permission rather than the determined CAN that denotes he can do what he chooses. Sometimes in my own home I have used Winifred's Chautauqua Desk for one word each day. In the morning we would select one word such as DON'T or DOESN'T and during the day we listened attentively to hear if anyone in our house used don't for doesn't. Winifred kept score and at night we had a great deal of fun seeing if Daddy, Mother, or Winifred had been guilty. By being particular about the use of this word for only a single day it is surprising how we trained ourselves to be on the qui vive in keeping DON'T for DOESN'T out of our conversation on other days.

TEACHING CHILDREN TO READ AND TO SPELL AT AN EARLY AGE HELPS TO GIVE A GOOD COMMAND OF THE ENGLISH LANGUAGE

There are some educators who warn parents not to teach their children how to read at an early age, but from an extensive study of children both, from the physical and mental viewpoint, I am convinced that the muscles of the eyes are not injured by early reading and that the sooner a child finds the companionship of book friends, the sooner he will gain practical knowledge along all lines. I am not, however, advocating the old-fashioned or some of the modern methods of teaching reading. I use FAIRY TYPEWRITER to give children the open sesame to knowledge through the reading art. The typewriter, in my opinion, is the most helpful tool in teaching correct English and in helping the child to teach himself to read. My method of giving him this instruction is through showing three-year-old John or Mary the word CAT accompanied by a picture of the cat. I point to the letter C and ask the child if she can find this letter on the typewriter. The observing child soon discovers C and with one finger she strikes C and sings to the air of Twinkle, Twinkle, Little Star. "CCCCCCCCCCC CCC". The song helps her to strike rhythmically and not to jar herself or the machine. Then I show her the letter A and she makes a row of A's in the same way. A row of T's follows. Her eye is being trained and at the same time her sense of rhythm. By the time that she has made several rows of C's and A's and T's she is familiar with these letters. Then, to the air of an old Folksong which is now used in the United States to sing "We Won't Get Home 'Till Morning", the child sings and writes C-A-T cat, C-A-T cat, C-A-T cat, C-A-T cat. As she says "cat" she strikes the space bar, and after singing C-A-T cat for twelve times she has a picture of cat on Memory's walls that will remain through life. In the same way large words make impressions and the visual memory is developed while the child learns when to use the different punctuation marks, and gains some knowledge of what is good English through copying classics. Dr. M. V. O'Shea's Six Nursery Classics is an ideal book to use in giving children their first reading lessons. Through copying The House that Jack Built, the child recognizes the words that are used repeatedly and keeps these words for his own. As a mimic he copies punctuation marks and with a little help from his parents he learns when to use commas and when to use semicolons. Little Billy Walsh of Pittsburgh when but four years of age had a knowledge of all punctuation marks and rarely made a mistake in their use. He gained this knowledge through copying the classics on the typewriter and at the same time he gained a wonderful vocabulary and memorized beautiful thoughts of the masters. Carlyle has told us that we should make for ourselves "nests of pleasant and restful thoughts that cannot disturb, nor pain make gloomy nor poverty take away from us. Houses not built with hands for our souls to dwell in." And these nests of beautiful thoughts cannot be given to children too early nor through a more helpful instrument than the good Fairy Typewriter. The child who writes upon the typewriter, copying rhythmically good English, will not say CHUNE for TUNE, INDIAN and ENGINE, INJUN, TER for TO, DULLICATE for delicate, CONSTITOOTION for constitution, CORNFEDENSHALL for confidential, TELLAPHONE, and he will learn to spell correctly. The modern child does not spell correctly. Fairy Typewriter helps him to spell words as they should be spelled and to speak good English by learning to have a mental picture of what is good English.

A wise man once said: "Your morals are your own but your manners belong to the public," and when manners are mentioned "manner of speech" comes first. Few people are consciously vulgar or unkind, but so often an impression of crudity and rudeness is given simply because one is in ignorance of the right thing to do or to say. There are certain expressions and words which mark a man or woman as an uncultivated person. The woman who says: "Yeh" for "Yes" or shakes her head in the savage way of saying the positive, betrays lack of culture. In the same way when she says: "I am through" for I have finished, "Where is he at?" for "Where is he?", "I done it" for "I did it," "I ast her" for "I asked her," etc., she shows that either she did not receive the proper training in her youth or she has associated in her adult life with people who lack refinement. It is best to give our children good educational foundations in the way of providing them with words that will help them through life so that they may not suffer from Word Poverty. Man is literally what he thinks, and words express his thoughts. If he alters his words he changes his character. When he is very young teach the baby through setting him a good example, through allowing him to teach himself by writing good English on the typewriter that the English language is one of the most precious possessions of a liberty loving people. This composite language which embodies the history of the race should be cherished in its purity by everyone who uses it; and it should be each American's duty to guard it by precept and example from misuse.

GAMES TO TEACH CHILDREN CORRECT ENGLISH

It may seem ridiculous to some parents and teachers but I believe in teaching very young children something of the science of ETYMOLOGY and of PHILOLOGY. I tell the little ones that WORDS have mothers just as children have parents and that they have also cousins. Etymology, I tell them, is the name of a very interesting study that tells us about the words' mothers. Philology tells about the relatives. The simple international language, Esperanto, is perhaps the best medium through which to give this information because it is founded upon many Latin roots. I have used the following jingle written by my little daughter when she was five years of age, as a first lesson in etymology and philology:

HUNDIDO krias bow! wow! wow!
KATIDO krias meow! meow!
BOVIDO krias moo! moo! moo!
KOLOMBO krias coo! coo! coo!
SHAFIDO krias baa! baa! baa!
INFANO krias ma! ma! ma!

I tell the child that Hundido has a German mother Hund. Katido has also a German mother Katze, and Shafido has the same kind of a mother named Shaf. Bovido has a Latin parent named Bovus, Kolombo, a Latin parent named Columba, and Infano has a Latin mother Infans.

By using pictures with this chart and also representing the sounds of the animals children have little difficulty in learning that Hundido stands for dog in Esperanto. A knowledge of the origin of words is most helpful to anyone. In fact I believe that parents should teach very young children the names of various foods and objects in the home in Latin. This knowledge will be very helpful in years to come. The pre-school age is the most active of all ages and little three-year-old Mary will be interested in learning that long ago the little Roman children called Language LINGUA, or tongue, and that is how we got the word language.

The mother who has some knowledge of Latin can help to give her child a firm foundation upon which to build his English by teaching him the names of Latin mother-words and she can play tea party or various games to give him this knowledge. In the little Esperanto jingle that I have just given you, she can ask the children how many Latin mothers and how many German mothers they can find. After playing the game a few times the little ones will never forget that INFANO' or Infant, has a Latin mother word. The word mensa for table, sella (chair), pila (ball), rosa (rose), simia (monkey), puella (girl), puer (boy), mater (mother), pater (father), ursa (bear), luna (moon), animal (animal), sol (sun), domus (house), manus (hand), are easy to be remembered and help the child in his studies as he grows older.

The following Latin and English jingle may be used as a game and helps to give the child his proper language foundation:

Leo for lion the great king of beasts,
Tigris for tiger, on bones he feasts;
Simia, monkey; ursus a bear
Elephas, elephant; lepus, a hare.

Give each child the name of one of these animals, leo, tigris, simia, ursus (masculine bear), elephas, lepus. After each child tells what animal is represented call out suddenly: "Elephas chase simia!" "Ursus catch lepus!" "Leo chase tigris!" Each one must be on the qui vive for his or her name and this game trains the observation as well as the language memory. It also gives amusement to the children. Little two-year-old children have learned to know that elephas is the Latin for elephant and that simia stands for monkey.

ANAGRAMS

Anagrams are useful in teaching children their letters, in showing how words are spelled and in building Language Houses with correct English. Very little children may not know how to construct sentences but they can play with little boxes pretending that the boxes are cars in which they can load all the A's, B's, C's, etc., and let these cars travel to Language house which we may call AT, IT, OG, EN, AM, etc. Children can make bat, cat, fat, gat, hat, mat, nat, rat, sat, tat, vat, with AT. Using IT they can form bit, fit, hit, It, kit, lit, mit, pit, sit, wit, With EN they can make Ben, den, fen, hen, men, pen, ten. With AM dam, ham, ram, Sam, tam. With OG bog, cog, dog, fog, hog, jog, log.

Very often new words may be learned through playing this game. The word GAT is not well known but it is a word in the dictionary standing for a break in the river's bank. Spelling may be made a delight to children through the use of the typewriter, spelling with blocks and anagrams, and through having old-fashioned spelling BEES, giving the young folks only the simplest words to spell and singing songs to them before they spell.

To air of Farmer in The Dell, sing:

G-O-O-D good, G-O-O-D good
We are always happy when we're
G-O-O-D good.

F-L-A-G flag, F-L-A-G flag
Three cheers for the U. S. A. F-L-A-G
flag.

To air of Go Tell Aunt Betsy three children can play CAT and RAT. With cards C, A, T—one hung from each child's neck—the kiddies hold hands and dance around asthey sing:

C-A-T cat, C-A-T cat, C-A-T cat
C-A-T spells CAT.

Three other children with letters R-A-T, one letter hung around the neck of each child, join hands and sing to same air:

R-A-T rat, R-A-T rat, RAT- rat,
R-A-T spells rat.

Then the C-A-T, still holding hands, tries to chase the R-A-T, also still holding hands, so as to form a circle. The children think that this game is great fun. The Cat may be chased to Pat or any other word in the AT family.

WHAT DOES THE CAT DO?

Another game to teach spelling and to impress upon the child what a cat can do, while adding new words to said child's vocabulary and helping in flow of speech, is the following:

Mother begins by telling one thing that C-A-T can do. C-A-T laps M-I-L-K milk. Then the baby tries to tell something that C-A-T can do. The C-A-T meows! The C-A-T catches rats. The C-A-T purrs. The C-A-T plays with a ball.

When the child knows his friend from every angle the mother can introduce new animal friends into the nursery through pictures or she can take the child for a walk and show him these animals. So many of us go through the world with "Buttons for eyes" that we know very little about our animal friends. Recently I met a well educated man who would not believe me when I said that a cow did not have teeth in her upper jaw. The well trained baby can be taught all of these interesting facts in babyhood days, the days that make the greatest impression upon him. He can learn to spell about the Cow and make simple but correct sentences: The C-O-W cow gives milk. The cow eats grass. The cow says "Moo!" The cow is red.

By putting large red letters of the alphabet as a frieze around the nursery wall and talking about these letters or singing this little song to air of Twinkle Twinkle Little Star, the child is helped towards a knowledge of the signs that the Phoenicians gave us to express language or thought in written form:

A, B, C, D, E, F. G—H—I. J—K—L, M, N, O, P.—Q—R—S—T—U—V—W—X, Y, Z

I'm as happy as can be because I know my A. B. C.

By talking about LETTER A and comparing it with other letters A, the baby soon learns to know A for all time. Then teach him about B—and so through the alphabet.

PLAYING PUZZLES

Let the mother draw some letters and then ask the child to make these letters. Use the following jingle:

Make a letter which looks like a tent——A
Make a letter with its back bent——B
Make a letter with a round nose——P
Make a letter with tail and not toes——Q
Make a letter with humps on its back——B
Make a letter like a snake's track——S
Make a letter that's round as a ring——O
Make a letter that's straight as a string——I.

Reading from the classics to children and telling them stories help in giving good language foundations. After telling the

story ask the children to tell you the tale. The Peter Rabbit Tales, Jatakas Stories of India, are excellent stories that always interest little folks. The Jatakas Tales have been told in India to children for many generations in order to teach the young folks morals. They have been recently translated into English by Ellen C. Babbitt, and Felix Adler says: "'The Jatakas Tales' contain deep truths, and are calculated to impress lessons of great moral beauty," and best of all, as Miss Babbitt gives them, they are expressed in excellent English.

Long ago John Locke in his book "How to Bring Up Children" tells mothers "To instill sentiments of Humanity, and to keep them lively in young folks, will be to accustom them to Civility in their Language and Deportment towards their inferiors. He suggests also in teaching children how to command the English language that parents should begin with the home and talk with their young students about everything in the home. In the same way go to the forest and get acquainted with the forest. This plan has been adopted in our times by the A. S. Barnes Company in some of their spelling books that give the child big and little words concerning parts of houses, stores, etc. The words portico, arcade, porch, balcony, piazza, vestibule, veranda, mantelpiece, chandelier, baseboard, threshold, transom, skylight, eaves, shingles, rafters, chambers, dining room, sitting room, corridor, library, reception room are given in a HOUSE GAME. Children have been known to live in up-to-date houses until six years of age and to be ignorant of the meaning of transom, baseboard, etc. No wonder that they go through life without seeing ears and tongues that express thoughts readily.

WORDS TO BE USED FOR EXPRESSING THOUGHTS ABOUT THE STORE

Merchant, buyer, cashier, clerk, show case, show window, counter, shelf scoop, scale, barrel, bin, piece, dozen, quart, pint, gallon, ounce, bushel, peck, pound, piece, cheap, cord, wrap, loss, gain, package, parcel.

WORDS USED IN DESCRIBING THE FOREST

Trees, tall, low, briars, brambles, leaves, flowers, green, red, brown, colors, root, trunk, bark, twigs, limbs, branches, boughs, cedar, oak, chestnut, bamboo, cocoanut, elm, maple, pine, sycamore, earth, birds, animals, spring, summer, autumn, fall, winter.

In the same way parents can make lists of the things to eat, the objects in various rooms, the animals, birds, insects, etc. Each week select one subject and talk about that subject for an entire week, giving the child information about said subject, encouraging him to increase his vocabulary through spelling, writing, and recognition, both by eye and ear, of new words. In this way a parent can at least give his child a rich vocabulary if he cannot give him wealth in money, houses, and lands.

When foreigners study English they are often greatly confused because so many English words are pronounced the same but have different meanings. The young child is also confused by such words as pain, meaning an ache, and pane, standing for a glass window pane. A game played by a mother who has the dramatic instinct to show her children the meaning of words pronounced alike will be very helpful in giving new words to the gold mine of language and will assist in spelling.

Let us take the words bell and belle. She can ring the B-E-L-L and then show the picture of a fine lady called BELLE by name and acting as a belle in society. The following list of words may be used by parents in trying to show the meaning of similar sounding words:

Be, Bee; stile, style; hole, whole; blew, blue; bad, bade; him, hymn; knot, not; but, butt; made, maid; hear, here; time, thyme; wrote, rote; knew, new; rap, wrap; cent, sent, scent; in, inn; plum, plumb; ate, eight; jam, jamb; hart, heart; all, awl; stare, stair; read, reed; read, red; die, dye; knit, nit; fore, four; forth, fourth; to, too, two; threw, through; hew, hue; sun, son; wood, would; fir, fur; earn, urn; gait, gate; grate, great; hail, hale; mail, male; bare, bear; fair, fare; hair, hare; pair, pare, pear; their, there; meat, meet; berry, bury, etc.

A long list of these words will be found in Word Lessons by Alonzo Reed. I have found them very useful in helping children to understand the meaning of words with similar pronounciations and also to teach spelling. Professor Reed believes also in teaching quotations that are worth while and in using the words that we wish the children to understand. Note the following examples:

BE just and fear not—Shakespeare.

The BEE hive's hum shall soothe my ear.—Shakespeare.

Thine own true KNIGHT by day or NIGHT.—Shakespeare.

FOUL deeds will rise.—Shakespeare.

Behold the FOWLS of the air.—Bible.

Quotations may also be given with the words omitted that are to be featured. The mother may either write these quotations for the larger children or repeat them for the little folks. These language lessons are being written to help both little and big children. We must remember that there are one hundred and sixty eight hours in each week and the children are in school not over thirty hours, leaving one hundred and thirty eight hours for the education of home, church, and street. The church plays a very unimportant part as regards number of hours devoted to the child's education but the home and the street play a most important part. If the child hears his parents use bad English or the children in the street using slang and incorrect forms of speech he will use incorrect English despite all the rules that he learns at school. I met a little girl in Pittsburgh, a few years ago, who made ninety eight per cent in her language work at school. She could diagram, parse, and repeat like a polly-parrot every rule in her text book but when she came to one of my play classes she would call out "I seen Johnnie", "I've got ter git you", etc. It was apparent that she heard this language in her home and when she played in the public play grounds and in the streets. How to speak good English should be taught in the playgrounds as well as in the schools and parents should do everything to make children proud of English, the noble tongue, and glad to protect it by speaking correct English.

Some of the sentences that may be used to teach meanings of words that are pronounced:

They never fail who ( ) in a great cause.—Byron.

A beautiful red ( ) is made from the body of insects.

The shoemaker uses an ( ).

( ) the world's a stage—Shakespeare.

Bend under any ( )—Shakespeare.

Learn to labor and to ( ).—Longfellow.

The glorious ( ).

Go ( ) under the open sky.—Bryant.

It ( )a gale.

The ( ) sky bends over all.—Carlyle.

Sweet is pleasure after ( ).—Dryden.

The face against the ( ).

MAKING PICTURE WORDS

The English language must be taught, as far as spelling is concerned, chiefly through the eye. I encourage children to look at a word and to be sure that they know what that word looks like and then to shut their eyes and describe the word. In words like receive, relieve, separate, etc., words that I call THE TROUBLESOME words, I attempt to make pictures that children will never forget. When writing separate I use sepArate showing the A in the middle. As we know E is often used incorrectly in spelling this word. In the same way I write the words reEive, relIeve, nIece, pIece, sIege, thIef, concEive, percEive, recEipt, hEight, nEighbor, wEigh. Writing words in this way trains the visual memory. If children are taught that i follows L and e follows C as in the not very elegent word LICE they will remember how to spell the words through life. Sometimes when it is difficult to remember whether there should be one or two letters l at the end of a word I spell the word incorrectly and cut off one L leaving the picture of this cancellation in the child's mind. Example: UntilL.

A game may be played by all members of the family with TROUBLESOME WORDS. Typewrite a number of words that bother any one in the family and put them into a box. In the evening let each member of the family draw one by one from the box and see if the others can spell these words. If not any one makes a mistake the so-called TROUBLESOME WORD may be transferred to a box called WORD FRIENDS. Some of the words that I have used in this game are:

Achieve, aggrieve, belief, believe, brier, brief, brevier, chief, field, fiends, fierce, frieze, frontier, grief, lief, liege, lien, mien, niece, pier, pierce, piece, priest, relief, relieve, reprieve, retrieve, series, shield, shriek, siege, sortie, thief, thieve, tierce, tier, wield, yield, die, lie, tie, vie, kerchief, mischief, sieve, friend, deign, eight, feign, feint, freight, heinous, heir, inveigh, neigh, neighbor, obeisance, reign, rein, reindeer, skein, sleigh, their, veil, vein, weigh, conceit, conceive, ceil, ceiling, deceit, deceive, perceive, receipt, receive, either, neither, leisure, inveigle, seine, seize, weird, heifer, nonpareil, sleight, height, kaleidoscope, counterfeit, forfeit, surfeit, foreign, soverign, mullein, center, meager, meter, scepter, sepulcher, somber, theatre, acre, lucre, massacre, mediocre, phthisic, carouse, espouse, nasturtium, propel, ecstasy, plausible, assuage, naive, naivete, negligee, moralize, supervise, paralyze, idolize, chastise, magnetize, harmonize, celibacy, hypocrisy, privacy, spicy, tipsy, heresy, courtesy, decency, ruffian, precede.

The troublesome terminations are ar, er, or, cy, sy, ise, ize, yze, able, ible, eous, ious, ant, entcious, tious, ance, ence. And the only way to be sure of one's spelling is to have a picture of the word in mind. It is wise also to pronounce each word distinctly. Particularly is this necessary if we use words derived from foreign languages. Some of these words express a thought that no English word

can express and they are helpful in making word pictures but unless we are sure of ourselves it is wise not to use the foreign words in talking with our children. Among words that are in constant use we find: Ap-ro-pos, at-ta-che, bou-quet, chauf-feur, cor-tege, co-te-rie, cui-sine, de-bris, de-but, e-clat, e-lite, en-nui, ga-rage, ma-de-moiselle, mes-dames, mon-sieur, messieurs, mirage, mo-rale, neg-li-gee, qui-vive, re-gime, ren-dez-vous, re-su-me, so-bri-quet, soi-ree, trous-seau.

In the same way that we play with TROUBLESOME WORDS we may use HOMONYMS or words having the same sound as other words but differing in meaning, and also MISUSED WORDS.

The word LOVE is misused by most people. We hear educated parents say: "O how I love fried chicken!" "Oh how I love ice cream" when the thought to be conveyed is: "I like fried chicken and I like ice cream but I love my father and I love my mother." The word AWFULLY is used very often for VERY. Enthusiastic young girls say: "I had an AWFULLY good time". In the same way the word ELEGANT TIME is used instead of delightful. Everything is LOVELY to the enthusiastic young flapper. She has a lovely hat, a lovely time, and finds the weather as well as the people lovely. She might call her hat pretty and say that she had a pleasant time and call the weather "pleasant" instead of "lovely." The word "funny" is often used for strange. We hear girls say: "Isn't that the funniest thing! Isn't it funny that I cannot remember."

OTHER MISUSED WORDS

I propose (PURPOSE) to write a story.

He is a contemptible (CONTEMPTUOUS) being.

I would recommend (ADVISE) you to try this remedy.

I have spent most (ALMOST) all my money.

I am most (ALMOST) ready.

Her death is hourly anticipated (EXPECTED).

I expect (SUPPOSE) you went to the theater last evening.

He intends to locate (SETTLE) in Canada.

I calculate (INTEND) to go to NEW York.

I reckon (BELIEVE) she will come.

The gentlemen (MEN) and ladies (WOMEN) came.

She is perpetually (CONTINUALLY) annoying me.

This teacher keeps herself well posted (INFORMED).

We shall reside (LIVE) in New York.

Weeks have transpired (PASSED) and nothing has been done.

I guess (THINK) you can come.

I am stopping (STAYING) at The Ritz.

He learned (TAUGHT) me to play golf.

Can (MAY) I come to see you?

Tom is very ill but not dangerous (IN DANGER).

Do like (AS) your friend.

Prizes are often offered by advertising companies for the greatest number of words that can be made out of a single word, standing perhaps for the name of the company. Children will work diligently, looking through the dictionary for words to add to their collection, when such a prize is offered. Mothers will help their children by offering some reward for the largest number of words made out of any word either with anagrams or by writing the words on the typewriter. In the same way HOW MANY HOMONYMS and HOW MANY SYNONYMS may be goals for children who like to compete in games that mean something?

One of my little natural education kiddies showed me two boxes a few days ago. In one she had her HOMONYMS and in the other her SYNONYMS and she used these large words in the same way that a child would talk about a doll or a ball. In the HOMONYM collection I found words like (ho-hoe), (lo-low), (hail, hale), (beat-beet), (cellar-seller), (been-bin), (dew-due), (beach-beech), (piece-peace), (seam-seem), (tale-tail) (so-sow-sew).

Although this little girl was but seven years of age she understood the meaning of both HOMONYM and SYNONYM and had put together in her SYNONYM box such words as (Ache, pain, suffering, smart, pang, anguish, agony, to grieve, to suffer), (Banquet, feast, party, entertainment, festival,) (Cold, chill, frigid, wintry, frosty, raw, biting, nipping, chilly, unsympathetic) (Toy, plaything, gewgaw, trifle, bauble, trinket, gimcrack, club).

The same plan of teaching parts of speech has been tried by another friend. In one box her little boy keeps pictures of different objects that are marked with their names and sometimes with little jingles. "Let us play NOUNS" says little Tommy, with as much interest as some children say: "Lets play catchers."

He calls his Box of Interjections—NOISY WORDS. Some of the words in his box are: Ah! Aha! Ahoy! Alas! Alack! Bah! Bravo! Fie! Ha! Ho! Hulloa! Hurrah! Lo! O! Oh! Pshaw! Ugh! Ouch! Whew! Whist!

BUILDING LANGUAGE HOUSE out of correct phrases and sentences is another helpful way of teaching children to be on the qui vive for incorrect forms of speech. The correct sentences are written on straight pieces of cardboard resembling perfect bricks. The incorrect sentences are written upon crooked cards with corners missing, cards that cannot help to build a nice, straight house. Both crooked and straight cards are put into one box and all the children playing this game draw cards from the box. The child who draws a straight card reads his sentence and places the card as a foundation of his house. The child who draws a crooked card reads the sentence and tells why the building block of Language House is crooked.

The following are some of my CROOKED BRICKS:

I done it. I haven't did it. I seen it. I have saw it. Lay down and sleep. The cat laid down. The hen sets on eggs. I brung you somethin. I drawed a picture. Baby et a apple. You was naughty. Ten times two is twenty. If I was you I would be good. I feel good. Say, did you hear the news. Say, listen! I just hatter laff. I gotto go. I am pleased to meet you. Gimme a piece. Lemme see. Leave it lay. Leave me do it. I haven't got a dog. There's five dogs. I'm most ready. My heart is broke. My pants is tore. I kin ketch you. Will you come to dinner? I sure will. The baby looks like I do. Do you want off? I must of lost it. Its him. Its them. Give ot to him and me. Us girls want it. The plums are yourn. The flowers are ourn. You hadn't oughter do it. Where is he at? That's all the farthern I can go. I'm goan to do it. I can't wait on you any longer. John and Mary, they're comin. These kind are lovely. I only have two oranges. Do like your friend does. He extends kindness to me. I love a good breakfast. John laid down to rest I disremember the date. We have a mutual friend. She is a nice talker. I grow vegetables. Here is a house to let. All over the land. Her work is poor at best. I shall fall down. Do you mean to come? Is Mr. Jones in? Will I do this for you? What will I do? I don't choose to. We called at William's. By this means. All that was wanting. I am going over the bridge. I saw him not long since. My father has improved since. A couple of boys went to school. Directly as he came to town. The streets are nicely decorated. Her dress was perfectly awful. No one was there. No gold or silver. There were three persons present. He partook of refreshments. He settled the account. Yesterday's Times has come. He got onto the roof. They only sent me. The river has overflown its banks. You will not succeed without you study. The house cost more than you think for. An accident transpired yesterday. From whence did she come? Have you got money?

Parents may play a game with their children pretending that Queen Minerva rules over one realm and King Stultus (standing for the fool) rules over another. Sentences correct and incorrect should be placed in a large box and the children allowed to draw one at a time. When a correct sentence is drawn the child who draws it presents the sentence to wise Queen Minerva. When an incorrect sentence is drawn the card is presented to King Stultus, who inquires of Wise Minerva what is the matter with this sentence? Queen Minerva tells him and suggests how he can change the sentence.

Another way to show the children WHAT TO SAY and WHAT NOT TO SAY is to place the NEVER SAYS (or incorrect sentences) in one box and BETTER SAYS in another. Some of the incorrect sentences that I have already given will be helpful for the NEVER SAY box. Here are a few as I sometimes arrange them. First, notice the NEVER SAY, the expression NOT to use. Immediately following is the BETTER SAY, marked SAY:

NOT—Anyways, anywheres.
SAY—Anyway, anywhere.

NOT—Authoritive.
SAY—Authoritative.

NOT—Anyhow, anyway.
SAY—In any event, at any rate.

NOT—He is apt to fall.
SAY—He is likely to fall.

NOT—Any manner of means.
SAY—Any means.

NOT—Aren't you.
SAY—Are you not?

NOT—Ast.
SAY—Asked.

NOT—Talked among one another.
SAY—Talked with one another.

NOT—Swim any.
SAY—Swim at all.

NOT—The truth is apparent.
SAY—The truth is obvious.

NOT—I have all of them.
SAY—I have them all.

NOT—I have loaned.
SAY—I have lent.

NOT—I know that party.
SAY—I know that person.

NOT—I have proven it.
SAY—I have proved it.

NOT—At auction.
SAY—By auction.

NOT—It is me.
SAY—It is I.

NOT—Between you and I.
SAY—Between you and me.

NOT—Who is the letter for?
SAY—For whom is the letter?

NOT—Is it about done.
SAY—Is it almost done.

NOT—I love potatoes.
SAY—I like potatoes.

NOT—I am mad.
SAY—I am angry.

NOT—It is most interesting.
SAY—It is very interesting.

NOT—An historian.
SAY—A historian.

NOT—Both are alike.
SAY—They are alike.

NOT—I am afraid it will rain.
SAY—I fear it will rain.

NOT—He went around the world.
SAY—He traveled around the world.

NOT—He was beaten.
SAY—He was defeated.

NOT—He is bound to go.
SAY—He is determined to go.

NOT—I differ with you upon that point.
SAY—I differ from you upon that point.

NOT—I have every confidence in him.
SAY—I have the greatest confidence in him.

NOT—I have no other purpose than this.
SAY—I have no purpose other than this.

NOT—He acted like the rest.
SAY—He acted as the rest.

NOT—I'll hold the lines.
SAY—I'll hold the reins.

NOT—He loaned me money.
SAY—He lent me money.

NOT—Keep off of the grass.
SAY—Keep off the grass.

NOT—A child of two years old.
SAY—A child of two years.

NOT—Not a one was hurt.
SAY—Not one was hurt.

NOT—Neither the one or the other.
SAY—Neither the one nor the other.

NOT—The play is over with.
SAY—The play is over.

NOT—I'm not overly anxious.
SAY—I'm not over anxious.

NOT—I am anxious to see you.
SAY—I am eager to see you.

NOT—Wheat is plenty.
SAY—Wheat is plentiful.

NOT—It is plenty good enough.
SAY—It is quite good enough.

NOT—Did you take in the show?
SAY—Did you attend the show?

NOT—I shall try and go.
SAY—I shall try to go.

NOT—Wait on me.
SAY—Wait for me.

NOT—Do you want in?
SAY—Do you want to come in?

NOT—I'm a new beginner.
SAY—I'm a beginner.

NOT—Providing he has.
SAY—Provided he has.

NOT—Will you please repeat that word again?
SAY—Will you please repeat that word?

NOT—A large enough house.
SAY—A house large enough.

NOT—The box fell on the floor.
SAY—The box fell to the floor.

NOT—We conversed together on the subject.
SAY—We conversed on the subject.

NOT—I am coming to your house.
SAY—I am going to your house.

NOT—I expect so.
SAY—I believe so.

NOT—Equally as well.
SAY—Equally well.

NOT—He called upon me.
SAY—He called on me.

NOT—He died with fever.
SAY—He died of fever.

NOT—I donate ten dollars.
SAY—I give ten dollars.

NOT—I have a date.
SAY—I have an engagement.

NOT—Different than me.
SAY—Different from me.

NOT—Do away with.
SAY—Abolish.

NOT—He don't know.
SAY—He doesn't know.

NOT—He is home.
SAY—He is at home.

NOT—He was hung.
SAY—He was hanged.

NOT—I don't know if I can.
SAY—I don't know whether I can.

NOT—He is back of me.
SAY—He is behind me.

NOT—It will change inside of a week.
SAY—It will change within a week.

NOT—Keep me posted.
SAY—Keep me informed.

NOT—I raised my children.
SAY—I reared my children.

NOT—I sized him up.
SAY—I judged him.

NOT—He started to cry.
SAY—He began to cry.

NOT—I took French.
SAY—I studied French.

NOT—I saw him not long since.
SAY—I saw him not long ago.

NOT—Peaches are a healthy fruit.
SAY—Peaches are a wholesome fruit.

NOT—If I am not mistaken.
SAY—If I mistake not.

NOT—Because I don't choose to.
SAY—Because I would rather not.

Alice E. Ball has written a very clever book called "The Child's Own English Book" which described a number of games that mothers and teachers can play with children in order to impress upon the childish mind that which is correct and that which is incorrect. This book is published by Lippincott Publishing Co. Names of the parts of the body, of different animals, of toys, names of places, and of people are used in games. MY GRANDMOTHER'S CAT is suggested as a fine game to teach adjectives. One child begins: "My grandmother's cat is a good cat." The next child says: "My grandmother's cat is a white cat." Such words as ugly, beautiful, black, yellow, cross, etc., may be used.

In teaching children about verbs the game of LET US PRETEND will be very helpful. One child pretends to be Santa Claus and tells what he can do. Another child is an Indian, a third represents a sailor, etc. Each action expresses a VERB. "March," says the teacher, and the child marches, expressing action, and therefore march is a verb. Go! Stop! Look! Listen! Speak! Halt! Walk!

I have suggested the teaching of SYNONYMS and HOMONYMS to very young children. There is no reason why ANTONYMNS should not be taught. As we know words with opposite or nearly opposite meanings are called ANTONYMS. The mother may use a word conveying one idea, and the child follow with a word that expresses the opposite idea. If the mother says: "I shall free you." The child may reply: "I shall bind you." Mother says: "The water is deep." Child says: "The water is shallow." Mother says: "The sky is clear." Child says: "The sky is cloudy." Mother says: "The boy is rough." Child says: "The boy is gentle." Mother says: "The boy is polite." Child says: "The boy is rude."

If big people as well as little people could be taught to remember the meanings of various Latin stems used in English words they would have little trouble in understanding the meaning of words. Whenever we see ACT we know that something to do is implied. ACT or FER means to carry. Ferry is a carrying boat. MOV. and MOT. means to move, movement, movable, motor, locomotive. RUPT means to break. Bankrupt, Interrupt. SPIR means to breathe. Inspire, expire, (spirit). VOLV and VOLT mean to turn. Revolve, revolt, revolving, revolution.

ABBREVIATIONS

Abbreviations bother grown people as well as little folks. I have written many games to teach children these abbreviations but perhaps the quickest way that they can be learned is through writing the abbreviaton and its meaning on the typewriter. Another game with the same purpose is to have a box containing abbreviations that stand for various degrees, months of the year, people, and general terms used in business. Give each child one or two of these names, draw the abbreviation from its box and the child who is supposed to represent the abbreviation should stop forward and claim his title. The M. D. is taken by the doctor. The COL. by the COLONEL, the Pres. by the President. The Gov. by the Governor.

HOW MANY PERSONS AM I?

This is a game that may be played with such abbreviations as Mlle., Mme., LL.D., Esq., Ph.D., A.B., B.S.

OTHER ABBREVIATIONS THAT ALL CHILDREN SHOULD KNOW

A. D. (anno Domini, in the year of our Lord). A. M. (before noon). P. M. (after noon). ANON. (anonymous). Ans. (answer). AV. or Ave. (Avenue). B. C. (before Christ). Co. (company). Etc. (et cetera) and so forth. Ex. (example). Id (idem) the same. i. e. (id est) that is. Jr. (junior). N. B. (nota bene) note well. Pro tem (for the time being). P. S. (postscript). R. R. (railroad). Vs. versus (against). C. O. D. (Collect on delivery). Yd. (yard). $ (dollar). Qt. (quart). % (per cent). Doz. (dozen). Mr. (Mister) Mrs. (Mistress). Prof. (Professor). Hon. (Honorable). @ (at). Jan. (January), Feb. (February). Mar., Apr., Aug., Sept., Oct., Nov., Dec., represent other months of the year, while Sun., Mon., Tues., Wed., Thurs., Fri., Sat., stand for the days of the week. Names of the states are also abbreviated. Ala., Ark., Cal., Colo., Conn., Del., Fla., Ga., Ill., Ind., Kans., Ky., La., Md., Mass., Mich., Minn., Miss., Mo., Mont., Nebr., Nev.,

N. H., N. J., N. Y., N. C., N. Dak., Okla., Pa., R. I., S. C., S. Dak., Tenn., Tex., Vt., Va., Wash., W. Va., Wis., Wyo.

It is difficult to teach young children the correct use of punctuation marks but the typewriter and multiscope are very helpful. Through coyping words on the typewriter the child recognizes the little mark . ; : ? ! " - —, and gradually learns when to use them. I have printed these marks upon small cards which I put into the multiscope. They make beautiful designs and one may hear little four-year-old Alice say to her playmate: "Please give me another quotation mark to put into my multiscope." "Please lend me one of your semicolons." All children love to make designs, and punctuation marks make wonderful designs. Some of my children love to make flags, boats, houses, etc., on the typewriter through use of these marks. These games do not teach the correct use of punctuation but it familiarizes the child with marks that are used to give expression to sentences and phrases and after writing for a short time on the typwriter little Tom discovers that a period always comes at the end of a sentence that tells something, while a question mark comes when he asks a question. It is easy to know when to use exclamation points and quotation marks but it takes study and practice to know when to use commas, semicolons, and colons. The sooner we begin to gain this knowledge the better for us, as children are very observing and will take more interest in punctuating correctly when they are very young than when they grow older.

There is no better way to teach correct English, both spoken and written, than through encouraging children to write letters to their friends. My daughter Winifred began keeping a diary when she was three years of age and at this age she wrote a number of letters to various friends. Every time she wrote a letter it was for a purpose. She did not feel (as some children must feel) that she was writing exercises. She knew that what she wrote would reach some one. This gave her intense interest in her writing. She tried to spell correctly, to tell something worth while, and to express herself in her best style.

Keeping a diary each day is very helpful to children who are learning to write and to express thoughts. These diaries should be kept and pride taken in them so as to encourage the young folks to continue writing diaries through life. But books, our best friends, "that fill us with sunshine and gladness," giving us the best thoughts of all ages, are the best helpers in providing children with knowledge clothed in best language. A house may be provided with every other comfort and luxury. There may be elegant furniture, luxuriant baths, wonderful draperies, etc., but unless the house contains BOOK FRIENDS, it remains a house and not a home and it is a calamity in anyone's life if that one has no appreciation of books that prove a boon to their lovers, cheering them in sadness and giving them thoughts that inspire to the accomplishment of great deeds.

Making beautiful thoughts their own through help of parents singing beautiful songs and repeating classical sayings and poems give children real storehouses of worth-while thoughts to help them in every trouble. Children should also be encouraged to try to write jingles and short stories. Through attempting to put their thoughts into either poetic or good prose form they gain a wonderful knowledge of the technique of the English language.

There are a great many so-called children's books which are wholesome, entertaining, and educative; books that are genuine, vital and human. These books should be where children can read them. But many of the books called Children's books are innocuous, sentimental, cheap and silly in sentiment. It is a waste of time for children to read them. And the child who hears the talk of a cultivated father and mother, who explores with them the book friend's pages, has the finest opportunity to gain the larger aspects of life and to be well grounded not only in general information but in the forms of good language that express good thoughts.

Activity is a constant factor in mental growth. Children all want to do something and before reaching the adolescent period, they are rarely lazy and always eager to discover the wherefore of every why. And that is the time to interest them in correct English—not through learning rules of speech but through making word paintings for the child, and connecting these word pictures with his own experiences.

Habit is achievement—given the habit of speaking correctly, and of being particular about the words one uses—the child has an asset that will help him through life.

Probably there is no one time during the school day to which young pupils look forward with the same eagerness as Story Hour. Story Hour in the home can be made just as attractive. In this hour the parents as well as the children can tell stories. Story telling gives the child a good command of English and accustoms him to expressing his thoughts. THE OPEN FORUM both for home and school in which a subject is selected each day and one child leads the discussion, while the others take part, is ideal for thought expression. The Open Forum was used by the Romans years ago and it is the best means of giving information, getting people together, and of aiding in public speaking that has been invented by man.

At the present time I have sixty-two of these forums in the City of New York. New York has been accused of being a cold city. I know that there is no kindlier city in the world. All that is needed is the getting together of people. For that reason I started Open Forums, called "Neighborhood Forums" in every section of the city and they are doing good. Such forums started in rural districts or in small towns would be very helpful for readers of The Volume Library. This volume of useful information might be taken as a text book or a guide and the various subjects treated in this book used for topics of discussion by both big and little people.

Some of the subjects that ought to be discussed (in addition to general topics and current events) are ambition, bad company, beauty of character, chivalry and courtesy, conceit and vanity, cowardice and cruelty, discontent, bad temper, dishonesty, deceit, envy, love, frankness, friendship, generosity, honesty, honor, humanity, inhumanity, humility, modesty, justice, injustice, kindness to animals, laziness, observation, patriotism, perseverance, philanthropy, self control, self reliance, truth, thrift, fairy tales, nature stories of all countries and stories of famous people.

Some of the books that seem to be enjoyed by all children and that I have found most helpful in giving material for story telling in "Story Hour" or for discussion in "The Home Forum" are: In the Days of Giants by Abbie Farwell Brown; Heroes of Asgard, Annie and Eliza Keary; Stories from Wagner's Operas, A. A. Wagner; Old Greek Folk Stories, Josephine Peabody; Heroes, or Greek Fairy Tales, Charles Kingsley; Heroes and Kings, A. A. Church; Famous Legends, Emmeline G. Crommelin; A Child's Own Book of Verse (one-two-three), Ada Skinner; A Child's Book of Verses, Robert Louis Stevenson; Stories the Iroquois Tell their Children, Mabel Powers; Flower Fables, Louisa May Alcott; Child Stories from the Masters, Maud Menefee; Old Ballads in Prose, Eva March Tappan; Stories from the Fairy Queene, Mary Macleod; Book of Nature Myths, Florence Holbrook; The Bird Kindgom, Educators' Association; The Animal Kingdom, Educators' Association; Stories of Little Fishes, Leonore Mulets; Stories of Trees, Leonore Mulets; English Fairy Tales, Joseph Jacobs; Wonder Stories for Children, Hans Christian Andersen; Historical Girls, E. S. Brooks; Child Life in Many Lands, D. A. and M. Blaisdell; Showland Folks, Robert Peary; My Dark Companions and Strange Stories, Henry M. Stanley; Just So Stories, Rudyard Kipling; The Story Hour, Kate Douglas Wiggin and N. A. Smith; Dream Children, Horace E. Scudder; Christmas Every Day, William Dean Howells; Bimbi and Other Stories, Mary E. Wilkins; The Golden Windows, Laura E. Richards; The Book of Knight and Barbara, David Starr Jordan; A Book of Saints and Friendly Beasts, Abbie Farwell Brown; Nursery Rhymes and Tales of England, J. O. Halliwell.

Children not only love to hear stories and to tell them, but with the use of the typewriter or a box of anagrams they can make stories by copying from story books. Copying words trains the power of observation and helps in spelling and in English construction. My daughter Winifred knew many classics when she was but five years of age through copying short poems on the typewriter. At the present day rapid pronounciation of words is called "reading" but real reading as I see it, means a knowledge of spelling and even of etymology and a comprehension of the word's meaning.

When my daughter was in the preschool age she found great enjoyment in seeking for Baby Words as she called the words derived from various stems. In her BABY WORD BOOK Number One, which is on my desk at this moment, I find the first Mother Word as MAGNUS and beneath Mother Magnus, I find fifteen baby words and each defined. When Winifred Stoner was fifteen years of age, she was able to appear on the platform with such men as Sir Oliver Lodge, John Drinkwater, Gilbert K. Chesterton, Vilhjalmur Steffanson and other noted speakers and she found no trouble, not only in lecturing but in entering into discussion with other speakers and I attribute her ability to express herself so readily, not only in speaking but in writing, to her study of words when she was a baby. I would give her a certain Latin word and she sought for the words derived from the Latin root in the dictionary. This was her writing and her spelling lesson. Looking through her first book on Etymology, I find the following words: Magnus (large), Bellum (war), Donum (gift), Memoria (memory), Regina (queen), Parva (small), Virtus (virtue), Liber (liberty), Post (after), Amo (love), Servus (servant), Ardere (to burn), Putare (to clean),

Circulare (to make round), Bonus (good), Dominus (master), Aqua (water), Epistula (letter), Cara (dear), Pecunia (money), Vocat (he calls), Hortus (garden), Amicus (friend), Diligentia (diligence), Nauta (sailor), Femina (woman), Narrare (to narrate), Albus (white), Malus (bad), Latus (broad), Puer (boy), Verbum (word), Longus (long), Superus (superior), Simia (monkey), Timeo (I am afraid), Lateo (I hide), Multus (much), Herba (herb), Pupa (doll), Tabula (tablet), Cauda (tail), Silva (forest) Sanus (healthy), Liber, Libri (book), Extra (outside of), Preter (beyond), Audire (to hear), Semi (half), Corona (crown), Corpus (body), Credere (to believe), Forta (strong), Felix (happy), Grossus (fat), Hora (hour), Phonos (sound), Plenus (full), Quadra (square), Quietus (quiet), Radiare (to emit rays), Sal (salt), Stella (star), Ars (art), Tempus (time.)

This list of words has been very helpful to many mothers in giving their children an insight into the meaning of words and in encouraging them to study the dictionary. In Winifred's book I find 102 babies belong to MOTHER MULTUS and 225 belonging to Super. It was through playing games of this kind that Winifred became interested in seeking for all the ologies she could find in the dictionary, and later finding their meanings, to put them into jingle form. The following jingle, written when she was twelve years of age, has been used by teachers in a number of schools to give simple definitions for the various sciences:

SONG OF THE OLOGIES

By Winifred Sackville Stoner, Jr.

If we little kiddie kids would be wise and great,
Let us all begin right now, why should we all wait
Until we are quite grown up ere we learn so well
What is meant by OLOGIES so we all can tell?
ASTROL'OGY is known by men who tell our horoscopes,
ZOOL'OGY all children love, it tells about the goats.
And every sort of animal which we see in the ZOO,
The elephant and tiger cat and jumping kangaroo.
BIOL'OGY the students say is science of all life,
Concerning every living thing within this world of strife.
While AETIOL'OGY explains the cause of everything
And IDEAL'OGY to us so many thoughts will bring.
Old GEN-E-AL'-O-GY is great to tell our pedigree
AND SO-CI-OL'-OGY attempts to show what we should be.
CHRO-NOL'-O-GY will gladly tell of happenings long ago.
COS-MOL'-O-GY tells of the laws which cause our world to go,
PSY-CHOL'-O-GY is wisely called the science of the soul
And PHYS'-I-OL'-O-GY shows how to keep our bodies whole.
GE'-OL-O-GY most wisely tells about our good earth mother.
PHI'-LOL-O-GY relations shows 'twixt one tongue and another.
Good ET-Y-MOL'-O-GY explains the origin of words,
While OR'-NI-THOL-O-GY expounds much knowledge of the birds.
ETH'-NOL-O-GY some wise folks love, it tells of every race.
MES'-OL-O-GY explains to us effects of every place.
PHRE-NOL'-O-GY tells character from bumps upon the head.
NE-CROL'-O-GY, a science drear, treats about the dead.
And O-DON-TOL'-O-GY will tell just how our teeth to use,
MI-CROL'-O-GY of tiny things, will tell us all the news.
PA-THOL'-O-GY the doctors say is study of disease.
Explaining almost everything from cancer to a sneeze.
While OS-TE-OL'-O-GY will tell about our body's bones
And MIN-ER-AL'-O-GY explains about the rocks and stones.
If we would learn about the ape who was our grandpapa
Then AN-THRO-POL'-O-GY will tell exactly what we are.
CA-COL'-O-GY tells how to use our voices when we talk.
MY'-OL-O-GY to muscles points which help us chew, see, walk.
Strange OPH'-I-OL'-O-GY will tell about the hated snakes,
SEIS-MOL'-O-GY explains to us just why there are earthquakes.
TO-POL'-O-GY shows how to keep the facts we all should know,
And TOX-I-COL'-O-GY will tell of POISON, man's dread foe.
Wise PNEU-MA-TOL'-O-GY explains the science of the air
And HER'-PE-TOL'-O-GY will tell of reptiles everywhere.
ICH'-THY-OL-O-GY of fish gives information wise
And OP'-THAL-MOL'-O-GY explains all about the eyes.
CY'-TOL-O-GY tells us of cells which cause us all to live.
THE-OL-O-GY religious truths to erring mortals give.
HY-DROL'-O-GY of water tells if it be good and pure,
O-ROL'-O-GY of mountains great, the monarchs which endure.
Of insects EN-TO-MOL'-O-GY tells us so many things
And HA'-GI-OL-O'-GY of saints wearing snowy wings.
Queer HEL'-MIN-THOL'-O-GY explains about the wiggling worms,
BAC-TER-I-OL'-O-GY assists in learning about germs.
MUS-COL'-O-GY'S the science wise which tells about the mosses.
ME-TROL'-O-GY of measure shows our gains and losses.
TAU-TOL'-O-GY is what we kids are often prone to do
In using words which mean the same as if they were quite new.
Big E'-LEC-TROL-O-GY'S about the great electric sea.
PE-NOL'-O-GY of punishments — not meant for you and me.
PA'-LE-ON-TOL'-O-GY will tell of fossils in the earth
And AR'-CHAE-OL'-O-GY of things so long before our birth.
PAN-TOL'-O-GY is something great that none of us can gain
E'en though forever we should work with all our might and main,
'Tis universal knowledge wealth—we cannot get that lore.
But we can add from day to day rich treasures to our store.
And now with one more OLOGY we'll end this tale so long.
Singing the DOX-OL'-O-GY, that glorious Christian song.

Let the child sing to the air of Auld Lang Syne or Old Grimes Is Dead, one of those definitions each day and he will soon acquire a knowledge of the well known sciences in so far, at least, as knowing what each science teaches. The jingle will not be forgotten whereas a definition in prose is hard to be remembered.

Games played with words may be made most interesting if parents know how to dissect words and give the children ideas of the word's meaning. The parent who knows that the prefix A stands for WITHOUT can help the child to understand the meaning of many words. When he sees the word ABYSS he knows that A means without and byss is bottom. Therefore ABYSS means without bottom. The ATHEIST, means without God. "Ad" means to and "vance" stands for go. Therefore advance means to go to. "Gymn" means naked and "asium" place. Gymnasium (a place to be naked), HEPTA (seven), GON (angle), HEPTAGON (seven angles).

Other prefixes to help children in word building: AFTER (following), CON (together, with), DE (down, from), DIS (not, apart, separate), IN (in, into, on, upon, not), UNDER (below, beneath), UP (above), AUD (hear), BAT (beat), ATE (shaped), ANIM (breath), ALB (white), DORM (sleep), DENT (tooth), FLOR (flower), RE (back, again), PRE (before, forward, forth), POLY (many),

Useful suffixes: IST (one who practices an art), such as dentist, (tooth artist), oculist (eye artist), florist (flower artist), OR means one who—the agent: actor, doctor, instructor, author, director, tutor, conductor.

Giving children lists of words that rhyme and encouraging them to compose jingles helps them to gain a knowledge of words and their spelling while aiding them in expressing thoughts in the best form of speech, since poetry or even jingle seeks to place words in the position that makes them most pleasing to the ear. With words already given in the AT, IT, ET, AN, EM families the child can make rhymes about familiar objects Some of our greatest poets made their first rhymes with simple subjects as the cat, the dog, the turnip, etc Once given the love of speaking rhythmically, that love will continue through life. Spelling words and making jingles with letters may be also done while playing on the piano. I knew one little girl who was able to spell over a hundred words with the letters of the keys on the piano—c-d-e-f-g-a-b. Even long words such as baggage, cabbage may be spelled on this musical instrument. Words that rhyme with bay, cap, caw, bug, had, lag,nap,mug, dip, big, bid, fly, bow, cot, bun, bob, bog, fop, cod, bet, den, dew, bar, am, cub, up, ax, bed, beg, boy, gum, bud, ox, fix, dim, ate, are useful in giving a rhyming vocabulary.

If a child writes all the words of the BOY family on small cards and places them in a box, he can have these words handy when he is inclined to make a rhyme or he can add to his vocabulary when he hears a new word that rhymes with boy.

A game that my children have always enjoyed is that of FAIRY E. I give the children a box full of anagram E's and also simple words. It is the object of the game to see how often Fairy E can be used to change words. Given the word CAN

and Fairy E, changes it to CANE. The word TAP changes to TAPE, hat to hate, mad to made, cap to cape, pan to pane, pin to pine, hid to hide, dim to dime, fin to fine, rid to ride. Take the following words and see what E will do for them: Din, hop, rod, not, mop, rob, pop, slop, tub, cut, cub, ton, us, plum.

Children who are taught to play with letters and to analyze words never have trouble in spelling when they reach high school. The memory period (that is the keenest memory period of life), closes at the age of twelve years when the adolescent period of life begins—the sluggish time of life. Children should be made good spellers, good readers and good commanders of correct English, before the age of twelve years and it is only through much practice with speaking, singing, and playing with words as friends, that they will acquire this knowledge. Some mothers fear to teach their children how to spell before going to school as they think that they may interfere with the mechanical way of teaching spelling in the schools but it is my advice to every mother: Encourage your child to spell any word he sees, on the street car, in books, on sign posts, on bottles and cans. Teach him to use his eyes as eyes and to discover the meaning of words and combination of words that he sees. He must be taught also how to pronounce, to enunciate, and to hear words as they are pronounced. I agree with Ella Frances Lynch, who in her book "Educating The Child At Home," says: "The child who is not a good speller for his age at ten years of age is not likely to be a good speller for his age at twenty," and I would add at forty. I would plead with mothers also not to listen to so-called educators who believe in keeping children away from books until the tenth year. A child who has not learned to love books, our best friends, before the age of ten years, will never love books. Eyes will not be injured if children are given books with large print and the method of teaching reading through the use of the typewriter cannot injure any child. When once the doors of knowledge are opened to the child through his ability to read, that child will be a better and a happier child. He will find true book friends that will teach him the big lessons of life just as he finds friends in the living world. He will not have to grope in ignorance when he is eager to know the wherefore and the why of this and that. He can go to his book friends and gain the information he seeks.

Real education fits a child for life and the earlier we begin to give him the tools with which he is to make himself an active part of the great cosmic system, the better for that child and the better for his teacher. He should not be forced to study for so many hours each day. He should not be told "You must spell so many words this morning. You must read so many pages this afternoon." But he must be initiated into the mysteries of words and their meaning and shown how words put into various groups express different ideas. The younger the child, the more eager to learn he is and with a tactful teacher, the more readily he learns

I know one mother who tells me that she does not want her child to learn how to spell because she and her husband spell words when they wish to conceal certain things from this child. The little girl is aware that her parents are not open and above board with her and recently she told me: "Oh, they are spelling words on me all of the time. Goodness knows what they are going to do to me." This three-year-old child is suspicious of her parents, and she has a right to suspect that they are not what parents should be to her. Such parents are selfish and not worthy the name of father and mother. In the home where there is love and trust, the grown people do not use language that children cannot understand and they do not keep knowledge from their children in order to retain a medium of communication for grown folks only.

It is not necessary to say to a child, "Now we must have twenty minutes of language study, twenty minutes of reading, and twenty minutes of spelling." A knowledge of correct English and of literature may be given to the child while he takes walks, goes to the woods, learns about plants, different countries or people. I think that many teachers make a mistake in teaching children by presenting facts to the child as Geography, History, Spelling, etc. In every game that a child plays he should be taught to express himself in correct English and it is just as important to know how to spell Japan, as it is to know where Japan is located. Correct English as it is written and spoken, should be studied with every lesson and in the home each parent should have this big aim—to give the child a command of the English tongue.

All children love to ask questions. Little folks are human interrogation points and the questions should be answered—if possible. Of course there are questions asked by very small children that sometimes cannot be answered by very wise parents but parents should attempt to answer questions when they are asked. The game of CYCLOPAEDIA may be helpful to both parents and children. The little folks can put questions into a box and the parents may do likewise. In the evening, after dinner, each member of the family draws a question from the box, mounts the rostrum (which may be a real platform or a covered box), and tries to answer the question either by a short or long speech.

Parents may enclose in the box questions that will lead to interesting stories about birds, animals, etc. They may have to answer these questions themselves but the children will remember facts worth knowing about birds, animals, etc. Some questions that Winifred used in one of her games were:

What bird is called King of Birds? What bird sings "Cheerily Cheer Up." What bird is as black as night? What bird can turn its head all around? What bird is so powerful that he can hold two men on his back and can kick with greater force than a mule? What bird has the most beautiful suit of feathers. What bird has fur instead of feathers? What bird sings beautifully at night? Answers to all of these questions may be found in THE BIRD KINGDOM, published by The Educators' Association. Many interesting questions about animals may be made from THE ANIMAL KINGDOM books published by these same publishers. If children are trained to talk intelligently about their brothers, the birds and animals, they will feel more kindly to the bird and animal kingdoms and they will express themselves in correct English.

A knowledge of etiquette may be taught also in giving a knowledge of correct English. Mothers may pretend that they are going to a ball with their children. Each child will select a certain color for her dress and she must know how to spell that color. If the color happens to be pink then that child sticks to the color p-i-n-k during the game. All of the colors are brought into the game so that each child becomes familiar with the names of all colors. Next; each one selects a certain material to wear to the ball and the name of that material must be spelled correctly. Thus silk, woolen, velvet, chiffon, serge, linen, cotton, lace, organdie, etc., are mentioned and not only spelled but comments made concerning these materials. When convenient, samples are shown. Then each one selects some kind of trimming for the ball dress, such as embroidery, stitching, lace, gold braid, beads, ribbon, etc. Names of the jewels that will be worn such as diamonds, rubies, pearls, can be added with comment concerning the countries from whence the jewels have come. Footwear adds more words to the game and there may be comment concerning the music that will be heard. In a game of this kind, the child is constantly using his imagination and adding to his store of words and their meanings.

A home NEWSPAPER is another help in teaching and in inspiring children to seek for knowledge. When the little folks are pre-school age the newspaper will have to be very small but when there are larger children and a number of members in the family, a good sized budget can be typewritten each day. I know one family in which the youthful members publish a newspaper each week, setting the type and printing it without assistance from their parents. But in our home, Winifred and I used the typewriter and the "paste pot." We had a society column, a home making department, news items, general information, etc. When we first began our newspaper Winifred wrote only a few sentences each day on the typewriter but after a time she did most of the writing. This newspaper was read in the evening by Winifred and after she became the editor, her father and I found great amusement in listening to the descriptions of our various doings. Sometimes they were not exactly complimentary to us, but they made us see ourselves as others saw us and through editing this little sheet my young daughter gained useful information and learned how to express herself in correct English.

In taking walks, at the table, and even in the bath tub, mothers may give information that the child needs through play to a purpose. Children will not object to being bathed if the bathing process is not painful. Sometimes mothers and nurses are careless and fill the tub with too hot or too cold water but usually the reason that a bath is not looked upon as something pleasant is because the child is made to bathe and nothing more. I tried teaching my little daughter to recite Hiawatha when she was having her evening warm bath. I used a little birch bark canoe and a tiny celluloid doll for Hiawatha and by reciting the poem to her she made the words of Longfellow's classic her own and found enjoyment in taking a bath.

Question and Answer games help children to gain information and to learn to express themselves easily and clearly. Sometimes I sing jingles to children and then let them sing with me. After singing the jingle and dramatizing it, I ask the children questions and give them an opportunity to tell me how much they know about the jingle we have sung.

At other times I arrange games along the lines of old-fashioned Authors and with the addition of First Chance to tell certain stories marked on different cards. I play with the children, letting them ask questions which I answer, but I always give them an opportunity to express themselves. This game process of teaching children how to speak English and at the same time gaining practical information, I believe is one of the best ways to teach language. In these games I try to select the most interesting facts and I tell stories while playing the game. For children who go to school, questions like the following may be used on cards for a language game:

What is language?

Language is spoken and written signs to express thought.

From what word is language derived?

From Latin LINGUA, meaning tongue.

What signs were first used to express written thoughts?

Hi-e-ro-glyph-ics.

Who invented letters?

The Phoenicians.

What is grammar?

Grammar is the science which teaches the correct use of spoken and written speech.

How many parts of speech are there?

There are eight—noun, pronoun, adjective, verb, adverb, preposition, conjunction, interjection.

Both children and mothers can make questions and answers for the language game, adding to it each day and by playing the game frequently children will know all the parts of speech and the principal rules of English grammar.

FISH POND GAME

Cut out a number of pieces of paper of various colors in the shape of different fishes. Print on the back of each fish a correct or incorrect sentence. Let the children fish for these paper fish with small hooks like those used in playing jackstraws. The object of the game is to see how many good fish can be caught. The fish marked with correct phrases or sentences are called "good" and the others "bad." If a child does not know if his fish be good or bad, he must throw it back into the pond and wait until his turn to catch another. I have used this game in various languages, for both big and little people and the players have found it amusing, exciting, and instructive.

SEEKING NOUNS, PRONOUNS, Etc.

Give the children each a card with a sentence or verse printed on it and a command such as FIND A NOUN, FIND A PRONOUN, etc. The child reads the sentence and mentions the NOUN or PRONOUN. If he names the Noun or Pronoun correctly he keeps the card. If not, his right hand neighbor has first chance to mention Noun or Pronoun.

CHILDREN MAKE OWN LANGUAGE GAME

Tell the children that a noun is the name of anything. Each one writes or prints the name of an object on a piece of paper and puts the paper into LANGUAGE BOX. Explain that whatever we do is action and all action is represented by verbs. Let the children walk, talk, eat, run, jump, skip, see, hear, dance, sink, etc., so as to realize that these actions are called verbs. Then each child writes the name of his action upon a piece of paper and puts the paper in Language Box.

Then show the qualities of objects in the room. The picture is pretty. The table is round. The rug is soft. The carpet is square. The paper is white. The book is red. The curtain is soft. Each child writes the name of a quality of anything which signifies an ADJECTIVE upon a piece of paper and puts it into LANGUAGE BOX. Then let each child draw out a slip of paper and try to tell the part of speech to which the written word belongs. Very young children soon learn the different parts of speech by playing this game. After the noun, verb, and adjective, are well understood conjunctions, interjections, prepositions, adverbs, pronouns and articles are introduced and become familiar words to young students.

LANGUAGE BEE instead of SPELLING BEE

Mother mentions words and child tells the part of speech rather than spelling the word. The game is a little more interesting if there are captains, just as in spelling bees, and if some one holds a box full of words. The box is presented first to one side and then to the other to let the players draw a word. As soon as the word is drawn the player must say which part of speech and if he makes a mistake, or is not speedy in giving the word its correct name, the other side has the chance and the slow or incorrect player must be seated.

SINGING BEES

Singing bees are even more interesting. Use airs like Farmer in The Dell, We Won't Get Home Till Morning, Twinkle, Twinkle, Little Star, Go Tell Aunt Betsy, Here Comes The Duke A Riding, Long Long Ago, Upidee, and other folk and college songs that are easily sung. Select words that rhyme and write them on the blackboard. The children sing the song while spelling the words. There is nothing like rhythm to help one in spelling. In the same way teach very young children to write. Ask them to make a row of straight dots or if you have a conductor's ticket punch let the child punch a row of these dots in white paper. Using the dot as the aiming point let him sing—E-E-E-E-E-E-E-E-E-E-E-E-while making the written letter around the dot. In this way he has something for which to aim. The singing helps him to write rhythmically and to gain co-ordination of mind and muscle. After writing a row of the letter "E", he can try the letter L, which is only a little taller than E and very easily made and soon he can write all the letters of the alphabet. The history of the use of music as an adjunct to the alleviation of human ills dates back for ages. But music as a teacher of all the sciences has only recently been appreciated. I am now using records made by Frances Clarke, of beautiful old-time airs while the children sing their spelling lessons. I have tried a spelling lesson with the ampico also and found that the Fairy Music made lessons seem as play. The secret of all successful teaching lies in keeping the Fairy Interest at hand through play that instructs. There is no need to make lessons seem like drudgery. With love and eagerness to interest the child, any parent can inspire the young student with a desire to gain knowledge.

THE JINGLE FAIRY HELPFUL IN TEACHING YOUNG CHILDREN TO SPEAK GOOD ENGLISH

Who is there who does not consider the jingle "Thirty days hath September" as most useful in helping one to remember the number of days in each month? If this simple jingle has been such a great help to many people for many years why should we not try other jingles as Memory Helpers? To forget is not to get. Anything that we have really made our own, particularly through rhythmic form, remains with us. The child who learns a rule of grammar or any fact worth remembering in a jingle will not forget the rule or the fact.

When Winifred Sackville Stoner, Jr. was six years of age she wrote the following jingle to help her remember the parts of speech. Teach this little jingle to your children, singing with them to the air of Auld Lang Syne:

GRAMMAR IN A NUTSHELL

THE ARTICLES are oh so wee,
These little words are A, AN, THE.
The NOUNS are names of anything
As BOOK or PLAYGROUND, BALL or RING.
PRONOUNS are used for nouns instead—
MY face, HER hand, YOUR feet, HIS head.
All adjectives just tell the kind
Of everything that we may find
As GOOD and BAD and SOFT and SWEET
RUDE and NAUGHTY, WISE, and NEAT.
While of manner ADVERBS tell
AS SWEETLY, NEATLY, ILL, or WELL.
THE PREPOSITIONS help each day
IN our work or AT our play.
When relationship is shown
They must do the work alone.
Good CONJUNCTIONS join together
Men AND women, plume OR feather.
INTERJECTIONS will exclaim—
OH! ALAS! AH! What a shame!
But we cannot get along
In conversation or in song
Without the VERB, the subject's fate
Expressing action, being, state.
You ARE good and I LOVE you
Without these VERBS what would we do?

Even young children who cannot read, may be helped to understand the different parts of speech if they are taught this little song. The song tells them that the NOUN is the name of anything. In order to impress this fact upon the children's minds it is well to play the game of

FINDING NOUNS.

Mother and children go on a NOUN HUNT and see how many nouns can be found in the nursery. This is a very easy game because the noun being the name of anything is the name of everything. The child soon learns that the carpet, chair, picture, window, book, cradle, toy, etc., is a NOUN. When the meaning of a NOUN is clear to the child it is not difficult to explain the difference between a common and a proper noun, showing him that the common noun is the name of anything but the proper noun is the name of a real person like himself, a big town or city in which he lives, his native land, other countries, and the name of God whom he worships. In other words, PROPER should sound big and important to him.

In teaching him the names of PRONOUNS and their meaning play a game of telling a short story full of PRONOUNS like the PLUM PUDDING of Jack Horner that was full of plums. Tell a very brief story full of the words I, thou, he, she, it, we, you, they, my, thy, his, her, our, your, their. Then pause and see if the children can tell you the names of the PRONOUNS you have used. If they have

memorized the jingle GRAMMAR IN A NUTSHELL they will remember that MY, HER, YOUR, HIS are pronouns and you can easily show them that I stands for the proper noun — YOURSELF. HE stands for a proper noun—BOY or MAN, and SHE for a proper noun GIRL or LADY. With children who can read, many other games may be played, particularly that of THE LANGUAGE HOUSE which I shall explain later on in this chapter.

The game of WHAT IS IT, I have always found helpful and amusing. This game is played with small words that any mother can print on bits of cardboard. Use white cardboard and the seven colors of the rainbow to represent eight parts of speech with black for the INTERJECTION. Print the little articles A, AN, THE on white cards with VIOLET colored crayon. Use Violet and Indigo for the NOUN, and the PRONOUN. BLUE for the ADJECTIVE, GREEN for the ADVERB, YELLOW for the PREPOSITION; ORANGE for the CONJUNCTION, RED for the VERB (the life of the sentence) and BLACK for the wild INTERJECTION.

In making this game use nouns, pronouns etc., that are familiar to the children. Throw the cards all around the room and let the children scramble for them. Then mother and children sit in a ring. First the children count the number of cards each one has and the one who has the most cards begins the game. He separates his nouns, pronouns, etc., and tells what each word is and how many parts of speech he has for his LANGUAGE STORE. If he makes a mistake in calling a noun a noun, an adjective an adjective, etc., the other children may correct him and take away the card containing a misnamed PART OF SPEECH. The winner in this game is the child who holds the largest number of cards standing for different parts of speech that have been correctly named.

Through using the different colors the child becomes accustomed to the VIBGYORS, or colors of the prism and he realizes that the strong colors stand for important parts of speech, the verb being the most important in giving life to a sentence.

To impress this further upon his mind try this game: Use

THE HUMAN SLATE

Use large white cards with red ribbons attached so that the cards may be hung around a child's neck. In one pile place a number of cards with red lettered nouns painted or pasted upon them. In other piles place verbs, adjectives, adverbs, etc. Begin the game by allowing three children to select one card each from the NOUN, VERB and ADJECTIVE piles. As Tommy selects a noun, he hangs the card around his neck and stands with toes out, stomach in, chest out, chin in—waiting for FRIEND VERB to join him. The child who draws a verb takes his place with card around neck standing next to Tommy. And the child drawing an adjective stands third in line displaying his adjective as suspended from his neck. The other children then read what they see. Let us suppose that the three figures in the human slate make this sentence: JOHN IS GOOD. The mother then takes JOHN out of line, leaving the two words IS GOOD and the children realize how important JOHN was to the GOOD SENSE LINE. So back comes Mr. PROPER NOUN to make the sense complete. Then Mother removes the verb IS, leaving JOHN and GOOD. The children realize at once that the little word IS—the VERB, is most important so back comes VERB IS to complete common sense line. Then she takes away GOOD and again the children see that the ADJECTIVE GOOD is needed to make good sense. GOOD tells what John is. And John would not be anything without IS, whereas nothing would be said if the NOUN JOHN did not appear. Articles and other parts of speech may be added in playing this game and much amusement given while showing clearly the meaning of various words in the English language. This same game I have also played in teaching Latin, using simple words to teach children the meaning of Latin words and their position. Sometimes playing the game in Latin helps the children to understand English. Use words that are familiar to children such as Pupa, (doll), mensa, (table), and adjectives that apply to these objects. Pupa est alba (Doll is white) Mensa est magna (table is big) Simia est mala (Monkey is bad).

In the same way one can teach English through the use of Esperanto (Pupo estas blanka), (Tablo estas granda), (Simio estas malbona), giving the child an insight into etymology and at the same time showing him how sentences are built.

Many games may be played to teach the meaning of adjectives and to help children acquire a larger vocabulary. At the dinner table mother and children can play HOW MANY ADJECTIVES CAN WE SAY ABOUT THE DINNER. The meat is good or bad, tough or tender, thick or thin. The vegetables are hard or soft, green, yellow, white, red or orange. They are firm or mealy, delicious or unpleasant in taste. The same adjectives and many others may be applied to the fruits that have many colors and are sweet or sour, juicy or dry, ripe or unripe, etc. If parents could only find time to analyze speech while talking with little folks, children would have little trouble in understanding the rules of grammar when taught in school.

Children who can write on a typewriter (and little children three years of age have no difficulty in learning to use this fairy machine) gain a knowledge of the various parts of speech as well as how to spell words through writing these words on the typewriter. When Mother offers a reward to Johnnie if he can write a certain number of adjectives, nouns or pronouns on the typewriter, Johnnie gets busy and works with real interest and energy writing the words that he believes should be called nouns, pronouns, etc. I have in my possession a list of 25 adjectives written by little William Walsh, aged four years, a Pittsburgh boy whose mother encouraged him to gain a vocabulary through playing this game that develops the visual memory and that makes the child analyze sentences to see if a word is a noun, pronoun, etc.

The observing child notices that most prepositions are small words and that they are used to help other words. A child taught to see the real use of a conjunction will not make the mistake made by a poor school boy in one of the school rooms recently. He was asked to write a sentence with a conjunction in it and he wrote: "I hitched the horse with a halter to the fence. Halter is a conjunction because it joins the horse to the fence." The child who thoroughly understands WHAT IS A NOUN? will know that HALTER is the name of something and he will realize that a conjunction connects WORDS not tangible things.

It is very easy to make a child understand what is an interjection through making exclamations. I have often played games with the children representing various animals and each animal giving out a peculiar sound or exclamation. The little boy would go OH! The bear COOH! The cat MEOW! The dog BOW WOW! To kill two birds with one stone sometimes I give diaphramatical breathing exercises while teaching the child WHAT IS AN INTERJECTION. Standing erect and firmly on both feet we give

An Interjection Speech—with much gusto, expelling breath at each word:

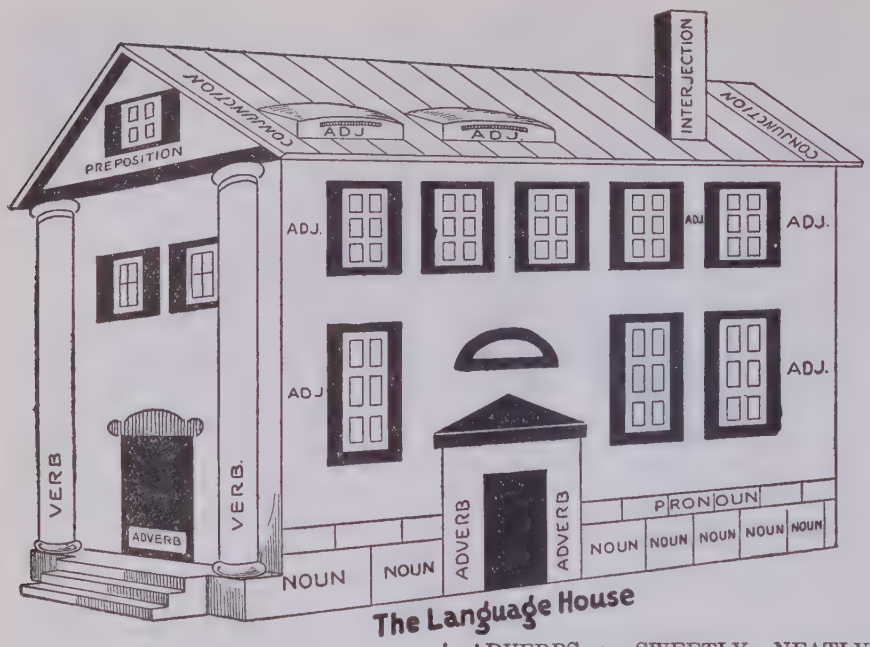
HI! HI! HI! FI! FI! FI!

ALAS! ALAS! OH MY! OH MY!

Children who play these games that I have suggested frequently cannot fail to understand the meaning of the various parts of speech but all children like variety in games. OUR LANGUAGE HOUSE is a game that always interests. Draw the picture of a large house on a piece of Manila paper. Make an exact duplicate on another piece of paper. In the picture represent the foundation of the house with large stones standing for nouns and bricks for pronouns. The props of the house are verbs. The doors and windows are adjectives and adverbs because they let the light into the house just as adjectives and adverbs give light to the meaning of words in a sentence. The gables stand for prepositions as they show relation to each other. The shingles are conjunctions because they join together. Needless to add the CHIMNEYS are interjections, the places that let out explosives. On the foundation stones print the names of nouns, on the brick, put names of pronouns, on the house supports, verbs, etc. but make your markings only on the duplicate, leaving picture of house number one just as a house. Then cut out number two, putting all the parts into a box. First explain to the child that the noun is a foundation of Language house. It is big and powerful and that is why we represent it with a foundation stone. But if we have no nouns then we use pronouns instead, which are represented by bricks. Without the props of the house it would fall down and without the verbs the language house could not exist. Any house would be dark and dreary without doors and windows and so would a sentence without adjectives and adverbs. Little fairy tales about parts of speech make them interesting to children. Even three-year-old children can play this game and learn through observation to pick out the parts of the house that stand for nouns and those that are pronouns, etc. The game develops observation and concentration as well as teaches facts worth knowing about words.

The baby can put NOUN BLOCKS on the foundation part of the big language house NUMBER ONE. He can build the house putting the chimneys in place, etc. His bigger brothers and sisters soon see the thought behind language house and by playing with the paper stones, bricks, etc., each bearing the name of a part of speech, they have little difficulty in knowing nouns, pronouns, etc., at meeting. These words become friends easily recognized when they hear them or see them under other circumstances.

The following jingle was written by my daughter to help some of her young friends understand the meaning of various words as parts of speech. If mothers will teach this jingle to their children, singing it to the air of AULD LANG SYNE, I am sure that they will find it a help to the little folks:



The Language House

OUR LANGUAGE HOUSE

In our good English Language House
No troublesome bad Error Mouse
Will cause the house to tumble down
From the foundation—a good NOUN.

In case strong nouns we cannot find
Good PRONOUN bricks help us to bind
The language house so firm and well
So we can read, write, talk, and spell.

For props we use the good VERBS strong
So full of action and of song
And for our windows to give light
The ADJECTIVES so clear and bright.

As ADJECTIVES, the ADVERBS fair
Let in the light, let in the air,
Through LANGUAGE HOME'S great open doors
Where of good knowledge we find stores.

For shingles in our roof we use
CONJUNCTIONS which we ne'er abuse
And each good gable we may name
A PREPOSITION in this game.

When we would call to passers by
Up to the chimney let us fly
As INTERJECTIONS there to cry
ALAS! ALAS! OH MY! OH MY.

In a large room or on a sandy play ground this game may be played with the children to represent the various parts of speech, holding up the roof or flying to the chimney as they utter exclamations.

Another of Winifred's jingles written to the same favorite air of Auld Lang Syne speaks of the EIGHT PARTS OF SPEECH, not counting the ARTICLES.

This jingle may be sung while pointing to THE LANGUAGE HOUSE just described.

THE PARTS OF SPEECH WE KIDDIES NEED

Eight parts of speech we kiddies need
When we talk or write or read
These are the NOUNS as JOHN, HOUSE, TEA
The PRONOUNS—I, THOU, HE, SHE, ME.

The VERBS—as TALK, WALK, EAT, LOVE, TELL.
ADVERBS as SWEETLY, NEATLY, WELL.
THE PREPOSITIONS—FROM, TO, AT
CONJUNCTIONS—AND, BUT, NOR, OR, THAT.

The ADJECTIVES—SWEET, GOOD, HIGH, LOW.
The INTERJECTIONS—OH! Hey! Hoy!
These parts of speech we need each day
When we study, when we play.

A mother recently wrote to my daughter asking her to write a jingle that would be helpful in pointing out to children the use of

BAD, BADLY, NICE, NICELY.

This song may also be sung to the air of AULD LANG SYNE.

I know a naughty little lad,
Who never makes his mother glad
And all his work is BADLY DONE
And so we call him "A bad son."

I know a little maiden too
Who is so nice and good and true
And all her work is NICELY DONE
So she is loved by every one.

Unfortunately even grown people do not seem to understand the use of the word badly. How often do we hear those who have made an extensive study of the English language—or are supposed to have made this study, say "I feel badly." In order to impress the bad use of badly upon youthful minds Winifred has written a verse which may be sung to her favorite air or to the air of Forty Little Urchins. This verse is used with a number of other verses in a jingle called

BAD FORMS OF SPEECH

We cannot feel L-Y-LY in our work or play.
"Oh but I feel badly!" never, never say.
"I feel gladly, sadly, I feel illy too!"
Don't these words sound very, very queer to you?

This little verse is being used in a number of fashionable seminaries and in several colleges at the present time to impress upon the minds of students how ridiculous it is to say that they feel badly. Even young children smile when we say "I feel illy" and when they once have the right ear training as to the correct form of bad and badly they will not make the mistake of using an adverb when they should use an adjective.

The other verses to this song will also prove helpful to parents in giving children reasons for using certain words.

"Susanna arrived safe" a telegram should read.
In this little sentence no L-Y we need.
Susan is quite safe, is what we want to say
And not how she traveled all along her way.

The mistake of using an adverb to describe safe arrivals is a very common error made by so called educated people, who do not seem to realize that they want to describe their condition, and not the manner in which they have traveled.

"Johnnie don't like lessons in the school each day."
If we speak quite plainly this is what we say;
"Johnnie do not like his lessons every day"
DOES NOT, I am sure, is what we mean to say.

Many people, big and little, are guilty of using DON'T for does not. If we train our children to avoid the use of DON'T, WON'T, CAN'T, SHAN'T etc., we shall be putting up a strong bulwark to prevent making this common "slip in speech."

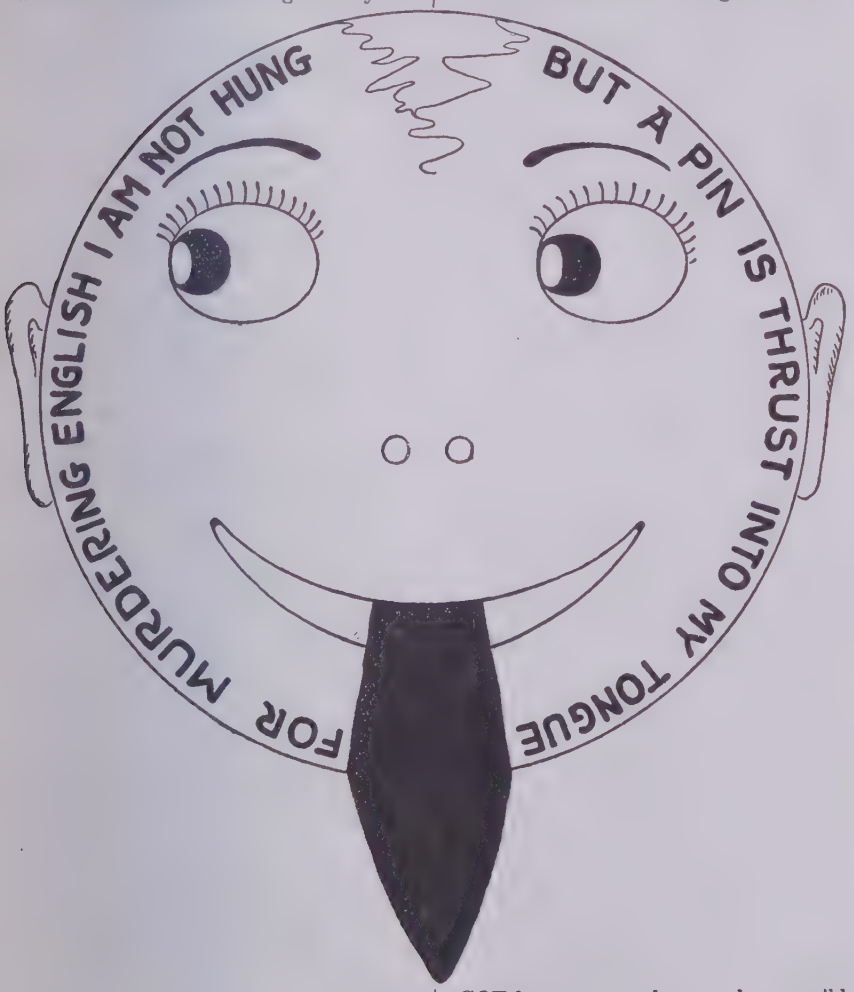
We have always used in our home what I call a TONGUE SLIP CHART. The chart is made to look funny so that each one in the home is inclined to laugh rather than to feel hurt when corrections are made. I draw the chart to resemble a funny round face with big ears and a long tongue hanging over the lower lip. Around the face I print this nonsense rhyme:

For murdering English I am not hung
But a pin is thrust into my tongue.

Each menber of our family has a fresh TONGUE SLIP for each week. The charts hang on the back of a door in our den with the object of helping the members of Stoner family to be careful about words as to pronounciation and manner of use. When Daddy Stoner is heard to make a mistake in English his attention is called to the error supposed to have been made. If he thinks that he has not erred we consult some of the best authorities on English so as to prove whether he is right or wrong. If he is found to have broken the rule he is then punished by having a real pin put into the tongue of his FUNNY FACE Chart. The same punishment is meted out to each member of the family. It keeps us on the qui vive and we are rarely guilty of using what one might call "sloppy English." We cannot say, however, that we are never in the habit of using what some people call slang—forceful expressions that have been invented by such men as Huxley and Theodore Roosevelt. Personally I believe that the English language needs new words and new styles of speech just as we need new styles in dress. The word "KIDDIES" I hope has come to stay but I can remember when I was criticised for using this word and allowing my daughter to use it. I would not, however, recommend the use of what is termed as "slang". People who are lazy mentally generally use words that require the least thought. Such people are prone to swear. The word DAMN is used by many well educated people, as they say, "for emphasis". I have been guilty of this myself but I believe that there is no excuse for parents

indulging in the use of blasphemous language. The word DAMN may be an innocent word in some uses but it has been used for blasphemy and therefore we should avoid it. The Tongue slip chart is a great aid in curing people of swearing as well as in teaching them to be thoughtful in selection of words that convey thought.

As a believer in rewards for those who do well, I have adopted the plan in my own home of making the owner of TONGUE SLIP CHART with the largest number of pins, do the honors on Saturday evening to the theatre, to candy, or magazines. In this way the Stoners use Saturday night for a sort of holiday. Some one is certain to make at least one slip during the week and so we are sure of some treat. The one who has to treat does it gracefully but



avowing not to be "the goat" on the following week and I notice that in the years that have passed since we first began playing this game, the number of pins for each member of the family becomes fewer and fewer. Perfection has not yet been reached. We may never reach that stage. But we are gaining more and more knowledge of the English language.

Now let us return to the jingle BAD FORMS OF SPEECH and discover a few more mistakes that are commonly made in every day speech.

Once I heard a soldier who had joined the band,
Say "I've got an uniform oh so very grand."

HAS and GOT are just the same so throw GOT away
And with YOU sound of good U use the letter A.

Children as well as big folks often get confused in the use of A and AN. They know that AN is used before a word beginning with a vowel sound such as AN APPLE, AN HOUR, AN ACORN and A is used before a word beginning with a consonant sound such as A DAY, A BOAT, A TOY. But when using words like UNIT and UNIFORM that are spelled with a vowel but have the consonant sound of Y they sometimes make mistakes. We say A UNIFORM, A UNIT, A UNIVERSE.

There have been many controversies concerning the use of the word GOT but the best authorities now agree to banish GOT from our speech as much as possible. If we have anything, we have it and GOT is a word that I tell my kiddies can be thrown out of the window. Sometimes we hear parents say: "YOU'VE GOT TO GET YOUR LESSONS." This is not good English. Got is used properly only in the sense of "acquired" or procured," or "secured." It is correct to say "I went to get a book and I got it. Mary got a position." But it is not correct to say "I have got an apple. Have you got a book? Tommy has got blue eyes."

In order to impress the use of HAVE and got upon the minds of your children play games with them, telling stories in which you use the word GOT where it should not be used and asking the kiddies to catch all of the superfluous GOTS and throw them out of the window.

Johnnie has been naughty. To-day he told a lie
And confessing to me, he said: "TWEEN YOU AND I".
"BETWEEN YOU AND ME" is what he meant to say
For an object follows preposition's way.

So many children have been scolded for saying "Me" instead of I that some little folks go to the opposite extreme and use I when they should use me. We hear grown folks make this same mistake, especially when they are trying to put on airs. Between is a preposition and the object of a preposition is always in the OBJECTIVE CASE. It might be well to have the children write a number of sentences on the typewriter using between. Printing "Between you and me," or using it for a writing lesson, also impresses this correct form of speech upon the child's mind. Seeing the correct form trains the visual memory, which helps the oral. Some people say, "This sentence does not look right." Others say, "This sentence does not sound right." It is wise to train both the eye and the ear when one is attempting to gain a knowledge of correct English.

Let the child write these expressions a number of times and give him also the prepositions "From, by, with, in, at" to use in sentences but never at the close of these sentences.

Between you and me. For you and me. Unto you and me.
Between him and me. For him and me. Unto him and me. For her and me. Unto her and me. Among them. With him. From him.

Play the game of SOLDIERS IN CORRECT FORM

Write sentences using the preposition at the end of the sentence and see if the children discover PREPOSITION out of place. Perhaps it would be better to play the game as parts of LANGUAGE as the trend of modern times is to get away from soldiers and to talk more of the constructive genius. I suggest soldiers because most children are interested in playing games of marching. Whether soldiers or builders the game can be made interesting by writing the words on separate pieces of paper and arranging them in line. Suppose we have these words:

WHAT DID GEORGE WASHINGTON CUT THE CHERRY TREE WITH?

The clever child picks up the preposition WITH and carries it from the last part of the sentence to the first part so that the sentence reads "With what did George Washington cut the cherry tree?"

I knock on the door and Bess says: "Who is there?"
I reply: "Its only me, your little sister Claire."
Bess says: "Verbs intransitive an object cannot own."
"IT IS I" I should have said in a gentle tone.

It is easier for a very little child to say ME rather than I and perhaps that is the reason why so many young children use the objective rather than the nominative. Perhaps the blame may also be laid to mothers who are fond of using "ITsie Ootsie language with babies" such as "Him is his muvver's Ootsie Oooh, And Muvver lub him yes she do." When the baby says "Me is so good". The mother

smiles and thinks that this baby talk is oh so cunning. As a consequence he suffers from his first impressions of right and wrong in using the English language. How often do we hear not only "It is me" but "That is her, That is him. Yes, it's them." And still oftener are heard the contractions "It's me, That's her, That's him, That's them." And I may be mistaken but from my experience the louder people talk the more prone are they to use the ME, HER, HIM, and THEM in preference to I, she, he, and they. A big lesson that all mothers should teach to their children is that of voice modulation. "A low soft voice is an excellent thing" not only in a woman but in a man and it is particularly pleasing in a child. It helps to make music out of speech. And surely we need more music in our every day speech, more rhythm, which is the very synovial fluid of existence—that which makes the wheels of life run more smoothly. We all know that a soft answer will turn away wrath and we know also that we prefer to hear a sweet low voice to a loud rasping one. Loud voiced people are never very popular at home or abroad. Therefore, it behooves us to train our children to be male and female Cordelias with voices "ever gentle, soft, and low" showing that the owners of the voices have control of their body machines. And the best way to teach children "The lesson of proper speaking" is to give them the example in speaking as we would have them speak, in showing them that we "can keep an even temper no matter what happens" and that we will never lose our own self respect by yelling or talking in a loud rasping voice. The nagging mother with a rasping voice, who fills her home with "DON'TS and MUST NOTS" is the mother who drives her children from home.

"I SEEN PIGS!" cries Tommy in a loud, loud tone.
SEEN is such a weak verb it can't stand alone.
So he should say "HAVE SEEN" or use SAW so strong
Which without another verb always gets along.

When children have difficulty in knowing when to say "I SEEN" and when "I SAW" TELL THEM THAT SEEN is a weak little verb that can never stand alone without an auxiliary or helping verb. Then let them write ten times on a typewriter "I have seen a pig. I have seen a dog. I have seen a man, I have seen a bird. I have seen a fly." There is no better tool or toy by means of which a child can learn to speak good English and to spell correctly than the typewriter. At the present time I am using the little portable Underwood typewriter in all of my schools because it is cheap, durable and attractive to children. Through using the typewriter a child gains co-operation of mind and muscle, he develops the muscles of his fingers so he can more easily play on the piano or violin, he finds pleasure in gaining knowledge, he can teach himself to read and to spell, and he develops his visual memory so that he becomes a good speller. It is not necessary for parents to expend large sums of money on buying new typewriters for the home. Instead of selling the old typewriters used in offices, I would suggest that Father bring home the typewriter and give Mother a chance not only to save time,—which means "save life"—in typewriting letters and matters pertaining to the home, but also gives her an opportunity to help little Tom and Mary gain information in reading, spelling, punctuation and good English. A typewriter, as I said in some of my pleas for education fully twenty years ago, is a sine qua non in the home. It is more important than the piano and the sewing machine. We have good canned music supplied to us through inexpensive phonographs. We can buy wonderful garments such as the pidgie-panties for little money. Therefore the mother needs the typewriter more than she does these other tools.

The mother who is supplied with a typewriter will have no difficulty in one lesson, to teach little Tom the use of SEEN and SAW. After he has written ten sentences with the weak verb SEEN, using it each time with some helping verb, she will show him that SAW is a strong verb that always stands alone, and ten times he will write on the fairy machine I SAW A PIG. After writing this sentence ten times he will see the verb SAW at all times standing alone and he will not say "I have saw a pig." Both his eye and his ear will be trained to know that SAW stands alone.

Of course, if the mother is not so fortunate as to have a typewriter in the home she can teach her child by having him print or write sentences with SAW, using the word SAW in larger print than the other words.

"I thank you" said Betty to her good friend Paul
SHE meant she was welcome, but said, "NOT AT ALL."
"CAN I COME TO SEE YOU? Betty dear," said Pete
"Will we go to dinner? Don't you wanter eat?"

The expression "Not at all" in answer to "Thank you" is certainly silly but it is often used by grown people as well as young folks. The true answer to "I thank you" is "You are welcome." In the same way it is silly to say "The pleasure is all mine." This sounds as if the person for whom you did a kind deed, reaped no benefit from the deed.

The use of CAN for MAY is another way of murdering English and it has been the cause, to my knowledge, of keeping several people from securing good positions. I know of two business men who refused to employ young ladies that I sent to their offices because these young ladies said "Can I come in?" CAN implies power. It suggests "Of course I can come in" whereas MAY has the polite and humble spirit. It indicates request for permission. In asking any favor children should be taught at all times to say "May" and before requests are granted the children should be requested to use THE FAIRY MAY rather than the BOASTFUL—CAN.

Writing sentences on the typewriter with CAN and MAY or playing games with sentences, either written or spoken, using these words, helps the children to understand when to use CAN and when to use MAY. Let the child knock on the door and say "May I come in." Give him a box of candy. Let him bring it to you and say "Mother may I have a piece?" Pretend that he is going to different places and let him ask "Mother may I go to the store? Mother may I go to the circus?" etc. "Mother may I borrow your pencil? Mother may I go with Susan? Mother may I have a piece of pie?"

MIGHT is also a potential verb, which expresses possibility or privilege. It may also be used in asking permission. "Mother, might I have a glass of water? Mother, might I have another cookie?"

CAN and COULD express ability and power. Harry CAN ride a horse. I COULD work for you. COULD you go with me? Yes I COULD go with you.

"EACH ONE LIKES THEIR OWN WAY" Peter loved to say
When he made long speeches almost every day.
"And I love you truly with all of my heart,
From you, darling Betty, I hadn't oughter part."

At one time I was introduced by the President of a great university with these words: "Every one likes their own way." This man had written a book on the English Language but apparently he had not learned to put into practice what he could preach in books. Early impressions are lasting and I learned from inquiry that his parents were not educated people and as a child he did not learn to speak good English. Perhaps there is no commoner mistake than this use of singulars with plurals in the conversation of educated people and in lectures delivered from public platforms. If the child's ear be trained to use each, every, either, neither, some one, somebody, anyone, anybody, every one, everybody, no one, nobody, one, and a person with singular, not plural verbs and pronouns he will continue to use these correct forms through life and to say "Each one likes his or her way" rather than "Each one likes their own way."

When Peter says "I love you truly with all my heart" he is using unnecessary words. He is a tautologist or one who makes needless repetition. If Peter loves he must love with his whole heart, not with a part of it.

Again when Peter asks "Will you go to dinner?" he expresses determination. Instead, he should say "Shall we go to dinner?" to represent simple expectation.

Give the child sentences like the following to impress upon his mind simple futurity and determination.

FUTURITY: I shall go to London next summer. I shall see you on Tuesday. I hope you will go with me. He will see you next week.

DETERMINATION: I will never leave you. I will not go with you. You shall go with him. He shall be punished.

A simple rule that may be followed tells us that in general simple futurity is expressed by SHALL in the first person and WILL in the second and third, while determination is expressed by WILL in the first and shall in the second and third. I would suggest to all parents the use of a good grammar or dictionary for consultation when in doubt as to how to use shall or will.

Should and would are used very much as shall and will. The following sentences with the correct use of shall, will, should, and would may help parents in teaching their children the correct use of these words:

Shall I go tomorrow? Shall I come to your house? Shall I go to the store? Shall we go to the movies? Shall we have some candy? He said to me: "You shall go." I shall pass the house this afternoon. Shall I ring the bell? You shall not escape. He shall receive a reward. I shall go away tomorrow and no doubt you will have a pleasant time. I shall have a party on Wednesday and I hope that you will come. I shall go to church. Will you go with me? I should like to have a nice cake for

supper. Yes, dear, I am sure you would enjoy one. Mother, I should like to have a new blue dress. Yes, Mary I am sure you would enjoy a new blue dress. Shall I descend and will you give me leave?—Shakespeare. Hear me, for I will speak—Shakespeare. Will you be patient? Will you stay awhile?—Shakespeare. Take care of your spirit and conduct and your reputation will take care of itself—Hamilton.

It may seem ridiculous to call one's attention to the expression—"DONT YOU WANTER EAT?" but if we listen as we walk on the public streets or ride in public conveyences we will hear well-dressed people using just such expressions and little urchins seem to take delight in saying "DONCHER." Our children must encounter people who use such expressions and it is well to call their attention to these vulgarisms in this amusing way so that they will be careful not to be guilty of using DONCHER, WANTER, LIKTER, KINDER, HADN'T OUGHTER, etc.

Peter found some flowers in a lovely nook.
He brought them to Miss Betty sleeping by a brook
And said "I LIE my gifts here while you're laid out there
With the sunbeams shinin' on your golden hair."

Rules for using LAY and LAID and for LIE, LAY, LAIN,
Save so many mortals from inflicted pain;
For it is not pleasant to a well-trained ear
LIE for LAY and LAY for LIE anytime to hear.

I have found my best success in impressing the right use of these words upon the minds of young children by playing games with them. I would lie down and say "I lie down." Very young children cannot understand the difference between a transitive and intransitive but you can show them that lie means to recline. No object is required. We do not LIE anything. But we do lay the book on the table. We lay a pencil on the book. We lay an apple on the book. We lay the rugs on the floor. But in speaking of the rug we say "The rug lies on the floor." The book lies on the table. The pencil lies on the book. I lay the key on the desk. The key lies on the desk. The soldiers lie down at night. The cat lies by the fire. The soldiers lay their guns down. The cat lays her mouse at my feet.

The following sentences may help mothers in talking to their children and in making games to teach the little folks when to say LIE and when to say LAY:

Tommy, please lay this book on the table and then lie down and rest. Mary, will you please lay aside your work and lie down for a few minutes. Charlie was a good boy and laid the candy on the shelf. Where is the book lying? It is lying on the table where Johnnie laid it.

If the mother remembers that to recline is used as LIE in the present and LAY and LAIN in the past participle—while LAY to place, in the present, has LAID and laid for both past and past participle, she will not be likely to make mistakes with the use of LIE and LAY. He has LAID the candy on the table. But he has lain down to rest.

Contractions such as Peter uses in saying SHININ' for shining should never be used by any one. People in the United States, so say foreigners, are in such a hurry that they sometimes do not finish the ends of their words when they are speaking. They say "Commin, walkin, talkin, eatin" instead of coming, walking, talking, eating.

When Peter used the telephone, Mary heard him say:
"Who is it yer want? I'll call them right away,
But I believe there's two folks in this house named Bess
And you want the youngest of the two I guess."

Many people, who use good English in ordinary conversation are prone to make mistakes in speaking over the telephone. At one time when I was visiting a school for girls I heard these girls, who recited rules in English each day, use the same language that Peter used in the above jingle substituting WHO for whom, using plurals with singulars, and making contractions in speech the School style. Mothers should be very particular in talking over the telephone and use WHOM do you wish? rather than WHO do you wish. YER is not English. When it is heard in the home, the children should play the game of "Throwing it out of the window" and never letting it come in again because it is a naughty lazy GNOME that spoils Good English Speech.

In talking of any two objects we compare the two as BETTER not best. If there are but two apples we say: "This apple is the better of the two." But if there are many apples we say: "This apple is the best."

Sentences.—To help keep these rules in mind:
Who is he? Who gave you the book? To whom did you give the book? Who do you think he is? From whom is the book? The girl, whom I saw, was Mary. Longfellow is an author whom I enjoy. Whom did you see when you were in Paris? To whom do you refer? Of the two teachers I like Miss Jones the better. Of the two houses I like the green one much the better. This apple is the best of all the dozen. Of all these books this one is the best. Of my two children Mary is the elder.

The following verses of BAD FORMS OF SPEECH may be recited verse by verse to the children each day so that they may try to find the mistakes that poor Peter made when he talked English.

Now each little kiddie use your clever mind.
And in Peter's talking surely you will find
Rules of grammar broken and many bad mistakes
That a clever kiddie never, never makes.

This is what Poor Peter says:
Last night ter me Jane says: "Must go ter town
Fer I haven't even got a single decent gown"
And I sez, sez I to she "You oughter wait a while
Soze to git a cheaper price and some better style."

I see by the paper a auto has been bought
By young Smith, oh yes its him by which we'uns wuz tot.
Guess he's made a fortune by teachin' public school
But he learned me nothin'—I thot him a fool.

The rule wuz wot this teacher learned his pupils by
No wonder that we hated school and people heard us sigh
When he axed the question "Where is London at?"
Each of us wud tremble like old Tommy Cat.

Peter on a visit cried—"Quick open up that door
And I'll sit this basket here right upon the floor
While I'm settin restin' because I'm kinder weak
Different from usual when I'm fat and sleek.

No wonder I feel badly, I've tuk two spoon of oils
These kind mixed in a bottle prescribed by Dr. Hoyles
But I'm sure they'll cure me before I traveling go
Arrivin' in old Paris and livin' at Bordeaux.

There I'll raise some children and rear lovely dogs
Now I only have some cats and a couple hogs.
Life without some live stock 'taint no life we know
This is really gospel, good friend, haint it so?"

Peter sailed for France but ne'er fulfilled his dream,
He fell overboard and some one heard him scream
As he sank from out of sight "I will, I will, will drown
Not a soul shall help me put my feet on ground."

Using the nonsense verse about Poor Peter, repeat it for the kiddies and see how many BAD GNOMES or mistakes Peter made. Through this jingle the child learns not to say TER for to, fer for for, soze for so as, git for get, oughter for ought to, sez for said. Point out to him that the little lady or knight who tries to keep English pure never says "Says I." Neither does the good grammarian say "To she" because the preposition *to* is followed by an objective like him, her, them, etc. In a previous talk it has beer suggested never to use HAVE and GOT together.

If the children in any home are too young to appreciate, the foolishness of Peter's conversation, the parents may use this jingle just the same to keep them on the qui vive in not making the same errors that poor Peter made. In this jingle are nearly all of the mistakes that are made by people, both educated and uneducated, in every day conversation. There are some people who talk very quickly and do not realize that they make contractions of syllables ending in ING and neither do they realize that they say "Fer for for." Constructive criticism made by various members of the house and the tongue chart that I have suggested will help to drive away the FERS, TERS, etc. and keep the good clean English words always in the home.

In verse fifteen Peter makes mistakes which I am sure all of the readers of these pages have heard. We often hear people say "I see by the paper" when they intend to say "I have read in the paper" or "I saw in the paper." "I have a auto" said a well to do man to me just yesterday. To impress upon children the use of A and An give them certain words that begin with vowels and consonant sounds and ask them does A or An belong with apron. Does A or An belong to ant? Other useful words

are aster, elephant, oak, elm, olive, almond, apricot, alligator, eagle, hat, desk, tiger, lion, bear, monkey, etc. These little articles are very important and if the ear is trained properly in childhood to use A with consonant sounds and AN with vowels the child will not make mistakes in use of the articles when he grows to be a man.

"It's him" is not often used by people who have studied the principles of grammar, but children who go to public school may hear such expressions and it is well to guard them from using an objective with is. *Who* refers to persons, *which* to things, and *that* to both persons and things. I have always suggested to children that they will be on the safe side by using *that.* The dog that I had last summer is dead. This is the book that I love best of all. Mary is the girl who won a prize. The pen which I hold was given to me by a king.

WE UNS is not English. We cannot say, "we wuz tot." We should say "We were taught" pronouncing taught as it is spelled and not as so many people from different parts of the United States say —TOT.

GUESS , I believe, is used in the north just as RECKON or CALCULATE is used in the south. It is much better to say "I suppose" or "I think."

Peter in this verse made some more contractions—teachin' and nothin'. He used He's for he has, and spoke of his teacher learnin' him. LEARN means to acquire knowledge. I expect to learn how to swim. I shall learn my lesson. I am eager to learn how to cook. TEACH means to impart knowledge. Let me teach you how to swim. Please teach me how to darn my own stockings.

In the sixteenth verse Peter makes some of the mistakes made in other verses and he puts his prepositions at the end of his sentences. "Learned his pupils by" and "Where is London at?" It is sometimes difficult to avoid putting prepositions at the end of sentences as the little boy who wrote a rule in grammar: "You should not use a preposition to end the sentence with" but parents who want to teach their children to use the best English will avoid the use of prepositions at the end of sentences.

AXED for asked and sometimes AST are heard and so is wud for would. If we use the broad sound of a as the English use it we are not so prone to give people the impression that we have said "AST." In the same way if we try to talk slowly and distinctly we will not say WUD for would any more than we will say Ter or TUh for TO.

In verse seventeen Peter cries "Open up the door." If one opens the door it is not necessary to say OPEN UP. In the same way when we ask our visitors to be seated we need not say "Sit down." I am sure that they cannot Sit Up. The vulgar expression SHUT UP YOUR MOUTH, is as incorrect in English form as it is in good manners. The French say "Fermez la bouche," close the mouth—and that is what we mean to say when we use the vulgar "Shut up your mouth." We hear also "Shut up the window," "Shut up the door."

"LEMME" belongs in the same class with Doncher, Whatyer, Gonna, Gimme and we should never allow this lazy, vulgar gnome to enter our homes. It stands for "Let me" and when one is about to use these two words he should be a little careful in saying them—Let me give you some water. Let me help you with your work. The same care must be exercised when one is going to say "DON'T YOU," "Going to," "What do you," and "Give me."

The next verb that seems to trouble poor Peter and sometimes troubles many other people is the verb set. He gets it mixed with sit. He should say "Set the basket" because set is a transitive verb that means to place something. Sit is always intransitive. To sit means to seat one's self. But the hen sits to cover and warms her eggs. The verb set, however, is also an intransitive verb when it means to decline, to go down. That is why it is correct to say "The sun sets."

We often hear the expression used by Peter, "Different than" — this rose is different than that rose, this doll is different than that doll. We should say different from since we mean to say that one thing is different from the other.

We have already spoken of the use of BADLY for bad. Sometimes it is used to mean very, very much as we hear people say "The carpet needs beating badly. I shall miss you oh so badly." This word is certainly much abused both in the sense of feeling LY—ly and in these colloquialisms.

From the days of old Squeers down to the present day children have heard the expression "You must take two spoonsful." Surely we do not take two spoons, but rather one spoon that is filled twice.

THESE KIND we hear every day. This kind is what we mean to say. THESE SORT sometimes we hear but not so often, for this sort. Such expressions as "People who kind of chill you. The man who gets sort of dull. I kind of felt my way at first. What kind of a house is it? It is a sort of a castle" should be avoided. The more elegant expressions are: "People who somehow chill you. The man who gets rather dull. I felt my way at first. What kind of house is it? It is a sort of castle."

Peter tells us that he ARRIVED IN PARIS and will LIVE AT BORDEAUX. We arrive AT a place but live IN it.

He informs us also that he will RAISE some children and REAR some dogs. He is not the only person who has made such an erroneous statement. Almost every day we hear the expression "I was raised in this or that place." PIGS are RAISED but children are REARED. I ONLY HAVE is another bad mistake. If we analyze this phrase we see that it means I am the only one that has anything, whereas the speaker means to say I have ONLY some cats and a couple of hogs. TAINT and HAINT are not included in the English language but we hear them each day along with such words and expressions as:—"Them's my sentiments. He don't love me. I love taters. I am mad at him. Let me sit besides you. You look good. Loan me some money. He has lots of money. I shall be back. I kin tell you. I done it. If its convenient for you. I have heaps of friends. She thinks like I do. I don't believe in them no how. There are none. It was no use to argue with him. Why blame it on me? I love cake. Its awfully nice. I was only saying the other day. It is overly nice. Sure, I'll be there. Don't blame that on me. They are both alike. I expect it is. Firstly, I remark. I hope he arrived in time. In our midst. I am stopping in Washington," etc.

Perhaps few people come to such a bad end as Peter, who fell overboard and using bad English to the last cried: "I will drown, no one shall help me" but I am sure that many people have lost fortunes, prestige, friends, peace of mind, and countless pleasures because they have been guilty of murdering good English. It is very painful to those who have been reared in an atmosphere of pure English to hear this language roughly treated by those who are either ignorant or careless. A knowledge of good English is a veritable gold mine for anyone who has it and it is the duty of every parent to lay the foundation for this "bonanza" in the cradle. Herbert Spencer spoke truly when he said "Teach a child to speak good English in the cradle and he will speak good English to the grave." Early impressions are lasting and if parents use the English language in the way that the masters of English tell us it should be used, then the children who inherit the Simian trick of imitation, will do likewise. Equipped with this best foundation stone upon which to build their education they will climb far more quickly and more surely to The Tower of Success than the unfortunate children who hear bad English in the cradle and who despite struggles to reform, even when they know all the rules of the English Language, are often guilty of "bad slips in speech." From the foregoing examples, one may conclude that nowhere in the entire field of education is early training more important than in the mastery of our mother tongue.

GRAMMAR.—The chief values of English grammar come through analysis and syntax. The analysis of sentences shows how ideas hang together, and so quickens our understanding of what we read, even bringing out meanings we should otherwise miss altogether. Mastery of analysis, applied as a habit in reading things worth while, presently becomes clear thinking. Every sentence we read is found to be made up of parts which belong to each other in interesting ways. Even the finest lyric poetry must be *understood* before it can be *felt,* and readers, who have trained themselves to the quick grasp of thought relations, find analysis the servant of poetry; not its enemy. The objections to analysis of literature are due in the main to bad preparation; we analyze the right thing at the wrong time—before we are ready for it—and so our tool becomes our tyrant. The remedy is not less analysis, but more, and better planned.

Syntax teaches the correct form which a word should take in serving one or another purpose in the sentence. Syntax may go far toward curing the blunders which mark careless or uncultivated speakers. But like analysis, syntax must become second nature if it is to be of much use in practical English.

Sentence Analysis.—"We think in words, and when we lack fit words, we lack fit thoughts." But thoughts are not higgledy-piggledy words. *Bandit, skid, stenographer, Ford, turtle, chauffeur, policeman, Packard* are promising high spots, but they tell no tale. One guess is as good as another, until we find *why, who, did, what, when, which, was, where.*

The *subject* of a sentence points out what we are talking about.

The *predicate* says what we have to say about the subject.

Modifiers narrow, enlarge, explain, or otherwise change the meaning of the notions they tie to.

The little tin brute skidded on the slippery corner, and in spite of all the pretty stenographer could do, turned turtle under the wheels of the Packard carrying the bandit on his get-a-way.

The simple subject is brute.

The simple predicate or predicate verb is *skidded and turned turtle.*

Everything else in the sentence is *modifier*.

Complements.—The assertion made by the sentence verb is often incomplete. The expressions:

John was
Velvet feels
Old age seems
Locomotives burn

are without meaning until the idea of the verb is finished by some complement. If we say *John was president*, or *John was tall*, the words *president* and *tall* are *attribute complements* (*or subjective complements*) since they complete the verb and describe the subject. The first is also commonly named *predicate noun*, the second *predicate adjective*.

Again, in *Bring me a chair*; *The tailor made John a coat*; the words *me* and *John* seem to receive action, and yet they are also the principal words in phrases from which the prepositions *to*, and *for* have been left out. Bring *to me*, Made *for John*. Such complements in phrases without *to* or *for* are called *indirect objects* (or dative objects.)

A few of the verbs most frequently using indirect objects are: *bring, build, do, get, hand, make, offer, pay, play, promise, read, sell, send, show, teach, tell, throw, wish*.

The principal sentence elements are those which have been named: subject, predicate, complement, and modifiers. In addition, there are independent, parenthetical, and connective elements.

If we say:

Locomotives burn coal,
We heard a thrush,
Strikes cause suffering,

the words *coal, thrush, suffering* are *object complements*. Each completes its verb, by naming the receiver or result of action, without modifying the subject.

A third type of complement is shown in: The President appointed Bryan *Secretary of State*.
Training made our soldiers efficient.
Here the terms *efficient* and *Secretary of State* are *objective complements*, having the double use of completing the action and modifying the object complement.

Subjects, Predicates, Complements, Modifiers are so named because of their parts in telling the thought. Sentences may be analyzed from another viewpoint, their *structure*. Sentences, of course, are made of words, but there are combinations of words which hang together and act as one. The sentences

Come *now*, (word modifier)
Come *at this moment*, (phrase modifier)
Come *before any grass grows under your feet* (clause modifier)

are all alike in meaning. Phrases and clauses may do the work of subjects, complements, modifiers, parentheses, or independent elements.

A *phrase* is a group of related words making no assertion.

A *clause* is a statement forming part of a sentence.

Sentences may be analyzed from a third viewpoint. *Each word* may be examined and classified.

At Smithville yesterday, with two men out and the bases full, Lefty White swung hard for another four-bagger; but Great Scott! he couldn't find what was on that ball for a decent foul strike!

Noun.—*Smithville* is the name of a place. *Lefty White* is the name of a person. In this sentence, *bases, bagger, breaks, strike* are names of things. (Names like these are called nouns.)

Pronoun.—*He* is used in place of the noun Lefty White

What stands for the speed, the break, the deceptive curve of the pitching. (Words which stand for nouns are pronouns.)

Verb.—*Swung, find, was* make the assertions, actually tell the story of the sentence. (Verbs are words which tell the story, make the assertion of the sentence.)

Adjective.—*Decent, two, that, another* are words which point out, show quantity or quality. (Adjectives limit or describe nouns and pronouns.)

Adverb.—*Hard* tells how something was done. (Adverbs modify verbs, adjectives, or other adverbs, to tell *how, when, where, why, how much*, and the *like*.)

Conjunction.—*And, but*, are connecting words. (Conjunctions connect words, phrases or clauses.)

Preposition.—*At, with, on, for* show the relation of Smithville, men, ball, four-bagger to swung, was, find.

In the hat is *on* the table
The cat is *under* the table
The lamp hangs *over* the table

the idea of relationship may be clearer. (A preposition introduces a phrase, and shows the relation between two ideas.)

Interjection.—Great Scott! does not really belong to the sentence; is used to let off steam. (An interjection is a word thrown in to show feeling.)

The eight terms foregoing—noun, verb, adjective, adverb, pronoun, preposition, conjunction, interjection—are called *the parts of speech*. In the examples above, single words are named. But phrases and clauses also serve as parts of speech.

I will go *home*,
I will go *to my house*,
I will go to the place *where* I *live*,

are respectively adverb, adverbial phrase, adverbial clause.

Phrases and clauses may thus take the place of nouns, adjectives, or adverbs.

Nouns — Subdivisions. — Most parts of speech may be sub-divided. For example, it is easy to see that such nouns as *Detroit, Patrick Henry*, are unlike the names *river, man*. 'A *common noun* is a general or class name. A *proper noun* is a specific or individual name. The common noun names a whole group of things, the proper noun names an individual thing.

Some grammarians use a third class of nouns, called *abstract*, a term easier to illustrate than to define. *Ice* is a substantial, material thing. It can be seen, handled, weighed, broken into parts. But *iciness*, though clearly enough a noun, has none of these concrete qualities of *ice*. The concreteness has been abstracted (taken away). Temperance, ugliness, beauty, blackness, are *abstract nouns*. It is better to regard them as special forms of the common or class name.

Another form of common noun is the collective noun, so called because it gives one name to a group of persons or objects taken together. *Committee, congress, congregation*, are collective nouns.

Nouns—Uses in the Sentence.—As Subject of Verb—*Airplanes* fly.

Object Complement—Automobiles multiply *accidents*.

Predicate Noun—Senators are *representatives*.

Objective Complement—The Americans elected Harding *president*.

Objective Adverbial—We walked a *mile*.

Object of Preposition—Three Men in a *Boat*.

Indirect Object—Give *Jim* the ball.

Appositive—Sheridan, the *Commander*, was at Winchester.

Independent by address—*Fred*, will you shut the door?

Independent with Participle—The *captain* being wounded, the lieutenant took command.

Independent with following adjective, adverb, or phrase—*Hat* in hand, he stood waiting. *Face* dirty, *clothing* ragged, *feet* bare, he played in the streets all day.

Possessive—The *alligator's* hide is tough.

(Mixed and doubtful cases will be found in the Section of *Puzzling Constructions*).

Verbs—Subdivisions.—General viewpoints are possible in subdividing verbs. Consider the following sentences:

(1) Radium exists (is).
(2) Gunpowder explodes.
(3) Gold is a metal.
(4) Rifle balls kill game.

With regard to the completeness of the assertion: Exists and explodes are verbs requiring no complement (*Complete predication*).
Is and kill are verbs requiring complements (*Incomplete predication*).

With regard to the nature of the thing asserted:
Exists and *is* are verbs of being (Static).
Explodes and *kill* are verbs of action (*Kinetic*).

With regard to the presence of a recipient or result:
Kill names an action which reaches an objective (Transitive).
Exists, explodes, is have no such recipient or result of action (Intransitive).

The third of these sets, transitive-intransitive, is the standard division, always difficult to defend, and now giving place to the first set. The terms static—kinetic are more useful in logic than in grammar.

Verbals.—A verbal is a hybrid of verb and some other part of speech. In *Skating on one foot is difficult*, skating resembles a verb—there is action in it, and it has a phrasal modifier; but its action is *implied*, not *asserted;* the word skating is also the name of something, actually used as subject in the sentence. So, here, skating is plainly a composite of verb and noun. Such a composite is called a verbal.

If the foregoing type-sentence had read *To skate on one foot is difficult*, precisely the same discussion might have been applied to the words *to skate*. That expression is also a verbal noun; or verbal. In

The brook came tumbling,
He fell whirling,

the words *tumbling, whirling* are pretty clearly adverbial—verbal combinations. There can be no objection to admitting a possible modification of the subject, in each case, but it seems that the words tumbling and whirling tell us how the brook came and how the man fell. So if we say

Fools came to scoff.

to scoff is also a verbal adverb, answering *why*.

Subdivision of Verbals.—All old grammars, and most modern ones, define an Infinitive as a verbal noun, and a participle as a verbal adjective. The foregoing examples would seem to overthrow these standard definitions. The old treatment of verbals leaves us "all in the foggy dew."

If we must divide verbals into classes, the only distinctions easy to maintain will be formal. Such expressions as *to see, to have known, to be heard*, may be called *infinitives;* they are verbal combinations with *to* (expressed or understood). Such expressions as *seeing, knowing, seen, known, being heard, having been heard*, may commonly be called *participles*. They are

verbals without the infinitive sign *to*.

It is well enough to know that standard practice still gives the name *Gerund* to a verbal noun having the form of a participle, as in the sentence.

I am surprised at your *knowing* that.

Some day, we may drop this troublesome word gerund from our English grammar and admit that participles may be used as nouns.

Verbals—Uses of Infinitives.

1. Noun, Subject.
   To compute the age of the earth is difficult.
   It is pleasant *to have* spending money. (Logical Subject).
2. Noun, Object Complement.
   Hounds like *to track* game.
3. Subjective Complement.
   To profiteer is *to overcharge*.
4. Following a Preposition.
   We can do nothing but *wait*. (Infinitive without to).
   It will be impossible for him *to get* back. (Infinitive phrase).
5. In Apposition.
   To define, *to classify accurately*, is often difficult. (The second infinitive is here a definite equivalent of the first.)
   A tough undertaking, this, *to reach* the South Pole!
6. In the Adjective Relation.
   A time *to speak* and a time *to hold* your peace.
7. As an Adverb.
   Fools came *to scoff* and remained *to pray*.
   He so far forgot himself as *to resist* an officer. (Phrase of Degree.)
8. In an Independent Phrase.
   To tell you the truth, it is too late.

Verbals—Uses of Gerunds.—(Verbal nouns without *to*).

1. Subject.
   The *finding* of America required heroism.
   There's no *telling* how it will end.
2. Object.
   When does he intend *going* to Boston?
3. Subjective Complement.
   The most difficult part of detection is *finding* sufficient clues.
4. Objective Complement.
   Do you call that *playing* the game?
5. Object of Preposition.
   I never heard of *making* it in that way.
6. Appositive.
   We found it good fun, *rounding* up the jack rabbits.
7. Adverbial.
   That fact is worth *finding* out. (Adverbial only in the sense of degree or measure of value.)

Verbals—Uses of Participles.—

1. Adjective.
   In Boston, stands a monument *built* to commemorate the battle of Bunker Hill.
2. Adverb.
   We went slowly, *looking* ahead for danger.
3. Subjective Complement.
   He seemed *spoiling* for a fight.
   The thread of his life seemed *broken*.
4. Objective Complement
   He kept the wheels *moving*.
5. After a preposition.
   They captured the city without a man *being* lost. Such cases as this argue for the nounal use of participles. Without a man being lost—without losing a man,—without loss of a man. Whether we say
   without *a man being lost*, or
   without *a man's being lost*, the verbal phrase is a nounal object of a preposition.
6. In a Grammatically Independent Phrase or Clause.
   The governor *being* what he is, reform is to be expected.

Adjectives—Subdivisions.—All adjectives limit the words they modify.

That one clever swordsman held the bridge.

The word *that* seems to point a finger, is demonstrative; pointing a finger at one man limits the number of men. The numeral *one* obviously limits. The word *clever* also limits or selects among swordsmen, since not all are clever. Even the word *all* in the expression *all adjectives limit*, tells us the number or quantity of the subject, and so fixes its limits. But two of these three adjectives merely limit or point out, while the third, "*clever*," also describes, shows quality. *Limiting adjectives merely point out or limit. Descriptive adjectives limit and qualify.*

Special Types of Limiting Adjectives.—Demonstratives and numerals have been mentioned above. *Cardinal numerals* tell how many, as *ten* men; ordinal numerals name a place in a series, as the *tenth* man. *The, a, an, are articles.*

In

Some gossip causes *much* trouble,

Some and *much* are indefinite limiting adjectives.

In

What book have you?

What is an *interrogative* limiting adjective.

Adjectives — Uses Of. — Direct Modifier, commonly preceding its noun.

Ripe melons, *low-hung* speedsters.

Detached Modifier, parenthetical.

Our beagle, *eager* enough to hunt for himself, was gun-shy.

Subject Complement.

The proof is *difficult*.

Adverbial Predicate Adjective.

The sun shines *warm*. In this case, *warm* is an adjective, or an adverb, or both, as you please to think it.

Objective Complement.

They found him *teachable*.

Substantive (Nounal).

"Only the *brave* deserve the *fair*."

Adverbs — Kinds Of. — Simple adverbs merely modify. Come *here*.

Conjunctive adverbs modify and connect.

Go *where* glory waits thee.

The terms simple and conjunctive have regard to the part which the adverb plays in the structure or framework of the sentence.

If we think of the ideas conveyed by the words themselves, that is, if we think of adverbs for their content, rather than for their part in sentence structure, we find several types. For instance, there are

1. Adverbs of *time*, and *time-order*.
   Do it *to-day*. Let John go *first*.
2. *Place*, and *place-order*, answering the question where.
   Put it *there*. Look *beyond*.
3. *Manner*, answering the question how.
   Booth acted *superbly*.
4. *Cause* or *Purpose*, answering why.
   He resigned for a woman's reason, *because*.
5. *Quantity*, answering how much.
   He is *little* better to-day.
   Our provisions were *almost* gone.
   The audience became *greatly* excited.
6. Mode of assertion, including assurance, doubt, affirmation, denial, contingency, concession, possibility, probability, logical source, and other like ideas.
   Assurance: There will *certainly* be another war.
   Doubt: *Perhaps* there may be, I admit it, *provisionally*.
   Negation: *No*, I think it will *not* be soon.
   Affirmation: *Yes, indeed*!
   Comtingency: I will go *if* you will.
   Concession: That part is *admittedly* an error.
   Possibility: *Possibly* the plan will succeed.
   Probability: But *probably* not.
   Connection with Reasoning: *Therefore, hence, since, because, consequently, accordingly, however.*

Prepositional Adverb.—

In

Think it *over;* worth attending *to;* that is the horse he was riding *on;* I saw the tree he was standing *by*, the words *over, to, on, by* have prepositional sense of relationship, but also a pretty clearly adverbial sense of place or manner. Historically, there is defense for such a construction, since words of this sort were originally adverbs.

Adverb, Uses of—

To modify a Verb, an Adjective, or another Adverb.

Drive SLOWLY.

A *very* weak case.

He came *somewhat* reluctantly.

Complement.

The manager is *out*. The curtain is *up*. The sun hangs *low*. The words *out, up, low* are adverbs of place or position. But it is hardly satisfactory to call them mere modifiers of the verb. They seem to complete the assertion of the verb and qualify the subject, as well.

Substantive after a Preposition.

Since *when;* from *thence;* till *now*.

Adjective.

The *then* Mrs. Brown; the *upward* motion; a *one-time* hero.

Conjunctive.

We will come *when* we can.

Interrogative.

Why do you do that?

Expletive, or Introductory.

There is no need for haste.

There comes a day of reckoning.

The term *expletive* means not necessary to the thought, but thrown in for the sake of smoothness, emphasis, and the like.

Responsive.

Yes, no, yea, nay.

Pronouns, Kinds Of—

A personal pronoun, even when standing by itself, shows whether it refers to the speaker, the person spoken to, or the person or thing spoken of. e. g. in

I think so, *we* will be there, *I* and *we* are words indicating the speakers.

You see, don't *you?* Here you are addressed.

They came, *It* is mine, Let me see *them*. *They, it, them*, are neither speaking nor spoken to, but are spoken of.

Only personal pronouns have this quality of distinguishing the speaker, the person addressed, the person or thing spoken of.

Demonstrative Pronouns point out or direct attention to some person or some thing.

This is my book. *These* are good actors. *That* was his last act. I will take *those*, please.

Herewith, Therewith are equivalent to the prepositional phrases *with this, with that*, in which demonstrative pronouns are objects of the preposition.

The **Interrogative Pronouns** are *who, which*, and *what*, used in asking questions.

What is your name? *Who's* your friend?

In general, *who* refers to persons, *what* to animals, plants or inanimate things, *which* to either persons or things.

Which and *what* may lose their pronominal quality, and become interrogative adjectives, e. g. in *Which* hat is mine? *What* book are you reading?

Relative Pronouns stand for nouns or pronouns, and connect or relate a modifier to the expression it modifies. e. g. in This is the cat *that* caught the rat, *that* is a relative pronoun, standing for the noun *cat*, and connecting the adjective clause *that caught the rat* with the noun cat. So, in What is he *who* speaks to me? Who is a relative pronoun, representing the pronoun he, and introducing the clause *who speaks to me*.

The word for which a pronoun stands is its *antecedent*.

Relative pronouns always connect, and in addition have various other uses. e. g.

(1) *Subject of verb in a clause.* There is the man *who* sold me the gold brick.

(2) *Object of verb in a clause.* The stone *which* the builders despised is become the head of the corner.

(3) *Object of Preposition.* Here comes a man on *whom* we can lay the blame.

The entire clause introduced by a relative pronoun is called a *Relative Clause*. When the clause does the work of an adjective it is a Relative Adjective Clause, as in the three examples just given. If its value is substantive, it is a Relative Noun Clause, as in I know *whom I have believed*.

Distributive Pronouns indicate that the object or objects for which they stand are to be considered *one at a time*, for instance, Each (man) may have three shots. The distributives are *each*, *either*, *neither*.

Indefinite Pronouns.—Standard text-books in grammar apply the term *Indefinite Pronoun* to such words as *some*, *any*, *few*, *all*, *many*, when used for nouns. It is easy to see that these words do indicate indefinite numbers or quantities. But when grammarians speak of *Distinctives* and *Reciprocals* as Indefinite Pronouns, the present writer is unwilling to follow them.

Reciprocal Pronouns are rather idiomatic phrases than pronouns. In the expressions *each other*, *one another*, whatever is declared about one of two things is true of the other also, hence the terms are reciprocal.

The gingham dog and the calico cat ate *each other*.

They did not love *one another*.

Compound Pronouns are, as their name shows, built up of several words.

Compound Personal Pronouns, *Myself*, *themselves*—also called *Reflexives*, since in them the action often turns back toward the subject—I hurt *myself;* and called *Intensives* because of their emphasis, myself, e. g., being a stronger word than *me*.

Compound Relative Pronouns.—Whosoever, whomsoever, whatever, whatsoever, are compound relatives, emphatic in meaning.

Prepositions, Kinds of—In form, prepositions are simple, compound, phrasal.

Simple: *at*, *by*, *for*, *from*, *in*, *of*, *off*, *on*, *through*, *till*, *to*, *up*, *with*, etc.

Compound: *alongside*, *athwart*, *notwithstanding*, *throughout*, *underneath*, etc.

Phrasal: *on this side*, *out of*, *away from*, *according to*, *on account of*, etc. He lives *on the other side of* the river equals *beyond* the river. So these phrasal prepositions, though they may be broken up into parts, yet seem to hang together with single meanings.

With regard to the source from which they have come, prepositions may be traced to *adverbs*, *nouns*, *verbs*, or *other prepositions*.

From *adverbs and other prepositions*: *into*, *until*, *upon*, *underneath*, *behind*, *before*, *above*, *toward*, *within*, *without*, *throughout*.

From *nouns and adjectives*: *athwart*, *aslant*, *around*, *below*, *despite*.

From *verbs*: *concerning*, *during*, *except*, *excepting*, *notwithstanding*, *past*, *save*.

Prepositions, Uses of—Technically, prepositions always introduce phrases, though the object of the preposition may itself be a phrase or a clause. Prepositional phrases may serve as

Nouns: *To the fort!* is our next order.
What he really said was *"over there."*

Adjectives: Ribs *of steel*, puss *in boots*.

Adverbs: Look *in your pocket*.
Come *in the morning*.

The *Object* of a Preposition may be any word, phrase, or clause having a nounal sense:

On the *hill;*
"Geordie Hoo" is a character in *"Beside the Bonnie Briar Bush."*
We are looking for *whatever is wrong here*.

Conjunctions, Kind of—In discussing conjunctions, it will be necessary to distinguish between the customary treatment and the logical one. Text-books of grammar invariably divide conjunctions into two classes, Co-ordinate and Sub-ordinate. They hold that co-ordinate conjunctions connect words of equal rank, phrases of equal rank, clauses of equal rank.

as:

William *or* his brother may go.
Look in the cupboard *and* under the dish pan.

Whether we go *or* whether we stay, the same difficulty awaits us.

The meaning of the term Co-ordinate is clear. We have no quarrel with it.

But Sub-ordinating Conjunctions are not so readily approved. The following list is taken from one of the most popular high school text-books of grammar:

(a) *Place:* where, whither, whence, etc.
(b) *Time:* while, when, as soon as, etc.
(c) *Manner:* as.
(d) *Cause:* as, because, for, since, etc.
(e) *Condition:* if, unless.
(f) *Concession:* though.
(g) *Result:* that, so that.
(h) *Purpose:* that, in order that.
(i) *Degree and Comparison:* as, than.

It would seem that nearly all these terms answer one of the tests for adverbs: *where, when, how, why, how much, in what mode* or *under what conditions?* Wherever the adverbial function is so clearly felt as to indicate that the connective is also a modifier, we should call the term a conjunctive adverb, rather than a sub-ordinating conjunction. For example, *in order that* is classed above as a sub-ordinating conjunction. But in the sentence

We disguised ourselves *in order that* we might escape, *in order that* is an adverbial modifier of the verb disguised, as well as a sub-ordinating connective.

The distinctions among prepositions, relative pronouns, sub-ordinative conjunctions, and conjunctive adverbs are not easy to make. In any case, to discover all the parts a word is playing in the sentence should be more important than to provide a conventional name for it.

Types of Co-ordinating Conjunctions are—

Copulatives: and, also, besides, likewise, too; so called because they do little more than join together like elements—they are nearly pure connectives.

Alternatives: Else, neither, not, or.

It is advisable to go carefully here, *else* there may be a mishap.

We cannot go ahead, *neither* can we turn back.

There seems little hope of averting world war, *or* of achieving desirable ends by war.

The alternative conjunctions imply a choice between two things.

Adversatives: *But*, *however*, *nevertheless*, *notwithstanding*, *only*, *still*, *yet*.

"Wilson Democrats sought to bring the United States into the League of Nations, but a certain group of Republican senators defeated the project." Here the second clause is in opposition to the first; it names an adverse fact. Hence the name adversative for all such conjunctions.

Causal: For, *hence*, *so*, *then*, *therefore*. Such conjunctions join two ideas related as cause and effect, or data and inference; that is, they are used in reasoning.

There can be no permanent political prosperity without economic prosperity: *hence* the great nations must be helped back to financial soundness.

Correlatives: When a pair or pairs of words are used as connectives, such pairs are called correlatives.

Either—or, *neither—nor* are correlative co-ordinating conjunctions.

Copulative as well as alternative conjunctions may go in correlated pairs: *alike—and*, *as well—as*, *at once—and*, *both—and*, *not only—but also*, *whether—or*. *Not only* bad intention works havoc, *but* bad judgment *also*. Here, the two ideas are taken one at a time, hence the connective is *disjunctive:* the ideas are of equal rank—the connection is co-ordinating: the function of the connecting words is little other than to connect—they are therefore copulatives.

Inflection.—Inflection is a change in form of a word which goes with a change in meaning or use in the sentence.

Nouns, for instance, commonly make some change in the form of a word to show whether one thing or more than one is meant.

Mouse, mice; box, boxes; loaf, loaves, etc.
This inflection is called *Number*.

The commonest indication of number is made by the addition of the letter s to the singular to form the plural:

boy, boys; girl, girls; boat, boats; train, trains.

Nouns ending in *s*, *sh*, *z*, *x*, *ch*, *soft*, and *o* preceded by a consonant, add *es* to the singular to form the plural:

lens, lenses; rush, rushes; waltz, waltzes; hoax, hoaxes; church, churches; hero, heroes.

Common nouns ending in y preceded by a consonant change the *y* to *i* and add *es* for their plural:

lady, ladies; city, cities, shanty, shanties.

Some nouns ending in *f* or *fe* form their plural by changing the *f* or *fe* to *v* and adding *es*.

wolf, wolves; loaf, loaves; sheaf, sheaves.

There are nouns which have no inflection for number, in which cases the form of some other word in the sentence will show the number of the noun. The word *were*, in the sentence *Deer were feeding* in the orchard, shows that there was more than one deer. Such words are *cod*, *grouse*, *sheep*, *salmon*, *swine*, *trout*.

Other nouns have either no singular or no plural number: scissors, shears, news, athletics, eaves, trousers, tongs, victuals, suds, tweezers, pliers, e. g., have no singular.

Pride, flax, show that some nouns have no plural. Other nouns have *two* plurals usually unlike in meaning.

brother, brothers (in a family), brethren (in a society).
fish, fishes (one by one), fish (all together).
shots, (discharges), shot (the balls discharged).

Nouns like measles, mumps, mathematics, politics, seem plural, but are singular.

Tidings, alms, means, are examples of nouns used as either singular or plural, without change of form.

The words foot, tooth, goose, ox, mouse, man, woman, child, furnish examples of irregular plurals, survivals of old endings in *en*, or of plurals by internal change.

The plural of Mr. Brown is Messrs. Brown. (Pronounce Messrs. mes yerz.)

Miss Black has for plural the Misses Black, or the Miss Blacks. Best usage seems to prefer the first of these for members of one family, the second for less closely related holders of the name Black.

Mrs. Browning—plural the Mrs. Brownings.

Compound nouns in *ful* generally add *s* to the last syllable:

pailful, pailfuls; spoonful, spoonfuls.

Other compound nouns make their principal words plural:

man-at-arms, men-at-arms.
mother-in-law, mothers-in-law.

Letters, Figures, and other Symbols form their plurals by adding the regular possessive sign: You skate your letter *s's* better than your figure 8's.

Foreign Plurals.—English has taken over the plurals of many foreign words, along with the singular. Both in spelling and pronunciation, the English fashion is to be preferred, where a choice is given.

Singular	Plural
alumnus, (mas.)	alumni
alumna, (fem.)	alumnae
analysis,	analyses
animalculum,	animalcula
antithesis,	antitheses
appendix,	appendixes, appendices
automaton,	automatons, automata
axis,	axes
bacillus,	bacilli
bacterium,	bacteria
bandit,	bandits, banditti
basis,	bases
beau,	beaus, beaux
cactus,	cactuses, cacti
cherub,	cherubs, cherubim
crisis,	crises
curriculum,	curriculums, curricula
datum,	data
dilettante,	dilettanti
erratum,	errata
focus,	foci
formula,	formulas, formulae
fungus,	fungi
genius,	geniuses, genii
genus,	genera
gymnasium,	gymnasiums, gymnasia
hippopotamus,	hippopotamuses, hippopotami
hypothesis,	hypotheses
index,	indexes, indices
larva,	larvae
madame,	mesdames
medium,	mediums, media
memorandum,	memorandums, memoranda
monsieur,	messieurs
nebula,	nebulae
oasis,	oases
phenomenon,	phenomena
radius,	radii
seraph,	seraphs, seraphim
stimulus,	stimuli
tableau,	tableaus, tableaux
terminus,	termini
thesis,	theses
vortex,	vortexes, vortices

Number in *personal pronouns* is commonly shown by a complete change of the singular form: the plural of *I* is *we;* the plural of *she* is *they*, etc. The inflections of pronouns will appear presently in a summary.

Gender.—Nouns and pronouns indicate sex (gender) in various ways.

By word endings:

abbot, abbess	baron, baroness
actor, actress	gentleman, gentlewoman
administrator,	administratrix

By changing a word in a compound name:

father-in-law,	mother-in-law
man-servant,	maid-servant

By substituting another word altogether:

son, daughter; monk, nun; boy, girl.

He, she, it—it being of unknown or neuter gender; he, masculine gender; she, feminine gender.

Personal pronouns change their form to show whether they stand for the speaker, the person addressed, or the person or thing spoken of. They are, therefore said to be *inflected* for *first, second,* and *third persons.*

In English grammar, nouns are also said to be in first, second, or third person, but since the noun itself does not change its form to name the person talking, talked to, or talked about, it is rather absurd to lumber up the place with *person in nouns.* The shell is empty.

Case of Nouns, Pronouns.—*Case* is always defined as a modification of nouns and pronouns to show their use in the sentence. For instance, a noun used as subject of a verb is said to be in the nominative case; a noun object of a verb is in the objective case, and so on. Latin grammar recognizes *seven* cases. English keeps three of the seven—nominative, possessive, and objective. But again, there is little excuse for the word *Case* in our grammar, for only one of all the uses of nouns has a form to match. Note this series:

1. The President is in town.
2. I saw the President.
3. I helped elect him President.
4. Give the President three cheers!
5. And three more for the President's wife!
6. America's chief, the President, will speak.
7. Mr. Harding is President.
8. The President having finished, we arose.
9. The President actually before his eyes, the visitor was satisfied.
10. We believed the President to be in error.
11. Mr. President, I arise to object!

Only in No. 5 does the noun show any change in form to mark its use in the sentence. What more need be said about the absurdity of teaching *Case* of nouns in English grammar?

But while our teachers and textbooks are so docile in accepting the notions handed down to them, we shall need to know the conventional cases of nouns.

In sentences 1, 6, 7, 8, 9, 11 the noun President is said to be in the *Nominative Case.*

Sentence 5 shows the *Possessive Case.*

Nos. 2, 3, 4, 10 use the word President in the *Objective Case.*—Since these notions are not reasonable, yet must be memorized for policy's sake, it is well to state them clearly.

A noun used as the subject of a verb is in the nominative case.

A noun in apposition with another noun or pronoun takes the case of the noun it is joined to.

A noun used as attribute complement is in the nominative case.

A noun used independently with a participle or prepositional phrase is in the nominative case.

A noun used as a term of address is in the nominative case.

Nouns used to show possession or ownership are in the possessive case.

The object of a transitive verb is in the objective case.

An objective complement is in the objective case.

An indirect object is in the objective case.

The subject of an infinitive is in the objective case.

To these we may add:

The attribute complement of an infinitive is in the objective case. I believed it to be *him.*

A noun used adverbially is in the objective case. We followed him a *mile.*

The Case of Pronouns agrees with that of nouns, but pronouns have a fairly complete set of forms to indicate their case.

Declension of Nouns.—*Declension* is an orderly arrangement of the inflections which show *person, number, gender,* and *case of substantives,* that is, of all words used as nouns.

The only changes of form in nouns are to show number and case. Sample Declensions:

Case	Singular	Plural	Singular	Plural
Nominative	man	men	lady	ladies
Possessive	man's	men's	lady's	ladies'
Objective	man	men	lady	ladies

DECLENSION OF PERSONAL PRONOUNS

First Person

Singular		Plural
Nom.	I	we
Poss.	my *or* mine	our *or* ours
Obj.	me	us

Second Person

Singular		Plural
Nom.	you	you
Poss.	you *or* yours	your *or* yours
Obj.	you	you

Third Person

Singular		Plural
Masculine, Feminine, Neuter		**All Genders**
Nom.	he, she, it	they
Poss.	his, her *or* hers, its	their *or* theirs
Obj.	him, her, it	them

Old Style

Singular		Plural
Nom.	thou	ye *or* you
Poss.	they *or* thine	your *or* yours
Obj.	thee	you

Relative and Interrogative Pronouns have a very simple declension:

	Sing. and Plural	Sing. and Plural
Nom.	who	which
Poss.	whose	whose
Obj.	whom	which

Possessive Forms.—The *possessive singular of nouns* is commonly formed by adding the apostrophe and letter *s* ('s).

Examples: lady's, girl's, James's

An optional form when too many *s* sounds come together uses the *apostrophe only* for the possessive singular:

For *conscience'* sake! *Ulysses'* boat.

Usage favors a *possessive phrase* for inanimate things, though the regular sign of possessive can seldom be called incorrect.

Leaves of the book, legs of the tripod, color of the apple, bottom of the boat

Joint ownership is indicated by using the possessive sign with only the last noun in the series; if Brown and Stratton own a

camp together, the possessive form will be *Brown and Stratton's* camp.

Separate ownership requires the sign of possession with each noun of the series; if White, Gray, and Green each furnished a picture for the photographic contest, the story will read: *White's, Gray's,* and *Green's* pictures were all approved.

Compound nouns and *groups of nouns in apposition* with each other add the possessive sign to the last word only:

Richard the Third's deformity
my brother-in-law's house
the King of England's power
Peter the Fisherman's loyalty

Double possessives are not uncommon:

that beau of Mabel's
that horse of Fred's

Modifications of Verbs.—*Voice* shows by a change in the form of the verb whether the action is coming toward the subject or going away from it. Not all verbs have voice.

An Indian shot a deer

Action *going out* from subject to object. Active voice *shot*

Deer was shot by Indian

Action coming in toward subject. Passive voice *was shot*

(With acknowledgments to Buehler's Modern English Grammar)

Verbs in the active voice take an *object.* In the passive voice, the former object becomes *subject.* Hence *only transitive verbs* have voice.

In the sentence *They called him a fool,* the verb called is in the active voice. The passive form will read *He was called a fool by them.* Here the word *fool* is a Predicate Noun, (Attribute Complement), since it completes the verb and refers to the subject.

(a) *His friends gave him an automobile,* becomes in the passive form.

(b) *He was given an automobile by his friends,* or

(c) *An automobile was given him by his friends.*

When the direct object from a sentence of the active form is also an object in the passive form, as in Sentence (b), it is called a *retained object.* In sentence (c) *him* is still an indirect object, as it was in sentence (b).

Mood or Mode.—The word mode means *manner.* As a modification of verbs, the word mode is interchangeable with *mood*—a term for state of mind, mental attitude, condition of the speaker's feelings. We speak of moods of certainty, uncertainty, doubt, command, and the like. In one way or another, our language shows these moods or modes of assertion. Verbs have forms for several moods. Observe the different moods in which the word *know* is here used:

I *know* it is true. (Assurance.)

If it *were* true, we couldn't be sure of it. (Doubt, unfavorable bias.)

Know your lesson to-morrow, I command you. (Command.)

He *may know* more than he admits. (Possibility.)

In grammar, the word *Mood* is used to point out states of feeling which are shown by the form of the verb. Mood is therefore a modification of verbs, marked by inflection.

Indicative Mood.—The *Indicative* is the mood of fact, or matter regarded as fact.

Your brother *has been* here. (Simple fact.)

If he was here, it is strange I did not meet him. (Not a denial of his being here; we think of him as here, but wonder about it.)

Subjunctive Mood.—*If my brother were here now,* we could play hockey.

In this sentence it is clearly understood that my brother is *not* here now. The verb *were* shows that the speaker does not regard the idea as fact.

May he come soon! expresses a wish, and of course implies that he is not here now.

The Subjunctive Mood expresses a wish, or a condition contrary to fact.

Come out of that! is an order, imperative. You are not yet "out of that". My mood is commanding something to be which is not.

The *Imperative Mood* expresses a command.

Verbals are sometimes spoken of as in the *Infinitive Mood,* since they do not go so far as to really declare anything; they indefinitely (in-finite-ly) imply, assume something.

We *go* fishing in Maine every summer.

It is fun *to go* fishing in Maine.

The first word *go* really *declares* the action of going; the second *implies* the action.

Many *verb phrases* show mood, or *manner of assertion.*

I *may go* indicates possibility;

You *may go* shows permission;

We *must go* shows necessity, and so on.

Not many years ago, all grammarians spoke of a *potential* mood, whose "auxiliaries" were *may, can, must, might, could, would,* and *should.* The word potential was well chosen, since it means something not yet fact, but which has the possibility of becoming fact. Nowadays, the potential mood has gone out of fashion, probably because the statement of potentiality is in itself a fact. It is true that *I may go,* etc. So we speak now of *Potential Verb Phrases,* not *Potential Mood.*

An *auxiliary verb* helps another verb to make an assertion.

Auxiliaries in present time are *do, be, have, shall, will, may, can, must.* The first three of these have many forms; all but the last have forms for past time.

Present	Past	Present	Past
do	did	shall	should
be (am)	was	will	would
(are)	were	may	might
have	had	can	could

Tense is a modification of verbs to indicate *time.*

The *Present Tense* indicates action or being *now.*

Here we *are.*

Westward the course of empire *takes* its way.

The *Past Tense* of verbs indicates action or being in past time.

Milton *became* blind.

I *shot* the albatross.

The *Future Tense* places action or being in the future.

There are two forms of future tense in English—one the simple assertion of what is to be, the other the strong assertion of the speaker's will that something shall be. The latter takes the form of a promise or the statement of determination.

Simple Futurity

I shall go	We shall go
You will go	You will go
He will go	They will go

Determination

I will go	We will go
You shall go	You shall go
He shall go	They shall go

The *Present Perfect Tense* or simply the Perfect Tense, regards an action or state as finished at the present time.

We *have made* a discovery implies that the discovery is now finished.

If this sentence were "Before you left, we *had found* the trouble in the battery circuit," the verb *had found* would point out an action finished some time ago, in past time.

The *Past Perfect Tense* relates to action or being wholly finished in past time.

Again, in the sentence "The president *will have been* out of office before then," action is thought of as finished at a date still in the future.

The *Future Perfect Tense* expresses action or being completed at a time still in the future.

The *Perfect* and *Past Perfect Tenses* do not use the past tense of the verb, but the past participle. We do not properly say I *have saw,* or I *have went,* but I *have seen,* I *had gone.* It is important that we should know thoroughly the forms of all verbs commonly used. Three of these forms furnish material for nearly all changes among verbs, and are therefore called *Principal Parts.*

The *Principal Parts* of a verb are the *First Person Singular of the Present Indicative* and of the *Past Indicative,* and the *Past Participle.*

Regular verbs form their past tense and past participle by adding *ed* to the *root,* that is, to the First Person Singular of the present indicative.

But irregular verbs blow whithersoever the winds of the past have listed; there is no way to a correct English speech without learning their principal parts.

Principal Parts of Common Irregular Verbs,—As supported by good usage. Good dictionaries contain other forms for many of these words. Only verbs commonly misused appear here.

Present	*Past*	*Past Participle*
arise	arose	arisen
am	was	been
awake	awoke	awakened
beat	beat	beaten
begin	began	begun
bite	bit	bitten
blow	blew	blown
break	broke	broken
bring	brought	brought
catch	caught	caught
choose	chose	chosen
come	came	come
creep	crept	crept
do	did	done
draw	drew	drawn
drink	drank	drunk
drive	drove	driven
eat	ate	eaten
fall	fell	fallen
fight	fought	fought
fly	flew	flown
forget	forgot	forgotten
freeze	froze	frozen
get	got	got or gotten
give	gave	given
go	went	gone
grow	grew	grown
hew	hewed	hewn
hide	hid	hidden
lay	laid	laid
lie	lay	lain
ride	rode	ridden
ring	rang	rung
rise	rose	risen
run	ran	run
see	saw	seen
sing	sang	sung
speak	spoke	spoken
spin	spun	spun
spring	sprang	sprung
steal	stole	stolen
stink	stunk	stunk
swim	swam	swum
swing	swung	swung

take	took	taken
tear	tore	torn
throw	threw	thrown
write	wrote	written

Verbs—Person and Number,—Like nouns, verbs make certain changes in form to show *how many* things are spoken of; and like pronouns, verbs have a few changes of form which go with the first, second, or third person of their subject.

The bird *flies;* the birds *fly.*

Leaves *fall;* the leaf *falls.*

These sentences illustrate what we might call *regular plurals* of verbs. Rather oddly, they reverse the way in which nouns show plural number, taking away an *s* where nouns would add *s.*

There are also bothersome irregularities in forming the plurals of verbs.

He is; they are.

I go; they go; he goes.

Again, there is no way to be surely right about these things but to learn the forms so well that they come naturally to mind when we need them.

In general, verbs give no sure indication of person. The verbs *walked, ran, saw, had been,* for example, will fit equally well the subject *I, you, he, we, they.* But English grammar declares that *verbs agree with their subjects in person and number.* A study of the following conjugations will show where this theoretical agreement has inflected forms to match. Again, it is useless to seek for reasons—*What is, is, because what has been, has been.*

Conjugation of the Verb "Be"

Principal Parts

Present Infinitive: to be
Past Tense: was
Past Participle: been

INDICATIVE MOOD

Present Tense

Singular	Plural
1st Person, I am	We are
2nd Person, You are	You are
3rd Person, He is	They are

Past Tense

I was	We were
You were	You were
He was	They were

Future Tense

I shall be	We shall be
You will be	You will be
He will be	They will be

Present Perfect Tense

I have been	We have been
You have been	You have been
He has been	They have been

Past Perfect Tense

I had been	We had been
You had been	You had been
He had been	They had been

Future Perfect Tense

I shall have been	We shall have been
You will have been	You will have been
He will have been	They will have been

SUBJUNCTIVE MOOD

Present Tense

I be	We be
You be	You be
He be	They be

Past Tense

I were	We were
You were	You were
He were	They were

Present Perfect Tense

I have been	We have been
You have been	You have been
He have been	They have been

Past Perfect Tense

I had been	We had been
You had been	You had been
He had been	They had been

IMPERATIVE MOOD

Present Tense

Singular	Plural
Be (you)	Be (you)

Infinitives

Present	Present Perfect
To be	To have been

Participles

Present	Past or Perfect	Present Perfect
Being	Been	Having been

Gerunds

Present	Present Perfect
Being	Having been

CONJUGATION OF THE VERB "SEE"

Principal Parts

Present	Past	Past or Perfect Participle
See	Saw	Seen

ACTIVE VOICE

INDICATIVE MOOD

Present Tense

Singular	Plural
1st Person, I see	We see
2nd Person, You see	You see
3rd Person, He sees	They see

Past Tense

I saw	We saw
You saw	You saw
He saw	They saw

Future Tense

I shall see	We shall see
You will see	You will see
He will see	They will see

Present Perfect Tense

I have seen	We have seen
You have seen	You have seen
He has seen	They have seen

Past Perfect Tense

I had seen	We had seen
You had seen	You had seen
He had seen	They had seen

Future Perfect Tense

I shall have seen	We shall have seen
You will have seen	You will have seen
He will have seen	They will have seen

SUBJUNCTIVE MOOD

Present Tense

(If) I see	(If) We see
You see	You see
He see	They see

Past Tense

(If) I saw	(If) We saw
You saw	You saw
He saw	They saw

Present Perfect Tense

(If) I have seen	(If) We have seen
You have seen	You have seen
He have seen	They have seen

Past Perfect Tense

(If) I had seen	(If) We had seen
You had seen	You had seen
He had seen	They had seen

IMPERATIVE MOOD

Present Tense

See (you)	See (you)

Infinitives

Present	Present Perfect
To see	To have seen

Participles

Present	Present Perfect
Seeing	Having seen

Gerunds

Present	Present Perfect
Seeing	Having seen

PASSIVE VOICE

INDICATIVE MOOD

Present Tense

1st Person, I am seen	We are seen
2nd Person, You are seen	You are seen
3rd Person, He is seen	They are seen

Past Tense

I was seen	We were seen
You were seen	You were seen
He was seen	They were seen

Future Tense

I shall be seen	We shall be seen
You will be seen	You will be seen
He will be seen	They will be seen

Present Perfect Tense

I have been seen	We have been seen
You have been seen	You have been seen
He has been seen	They have been seen

Past Perfect Tense

I had been seen	We had been seen
You had been seen	You had been seen
He had been seen	They had been seen

Future Perfect Tense

I shall have been seen	We shall have been seen
You will have been seen	You will have been seen
He will have been seen	They will have been seen

SUBJUNCTIVE MOOD

Present Tense

I be seen	We be seen
You be seen	You be seen
He be seen	They be seen

Past Tense

I were seen	We were seen
You were seen	You were seen
He were seen	They were seen

Present Perfect Tense

I have been seen	We have been seen
You have been seen	You have been seen
He have been seen	They have been seen

Past Perfect Tense

I had been seen	We had been seen
You had been seen	You had been seen
He had been seen	They had been seen

IMPERATIVE MOOD

Present Tense

Be (you) seen	Be (you) seen

Infinitives

Present	Present Perfect
To be seen	To have been seen

Participles

Present	Past	Present Perfect
Being seen	Seen	Having been seen

Gerunds

Present	Present Perfect
Being seen	Having been seen

PROGRESSIVE FORM, VERB "SEE"

(Action thought of as continuing or "progressing")

ACTIVE VOICE

INDICATIVE MOOD

Present Tense

1st Person, I am seeing	We are seeing
2d Person, You are seeing	You are seeing
3d Person, He is seeing	They are seeing

Past Tense

I was seeing	We were seeing
You were seeing	You were seeing
He was seeing	They were seeing

Future Tense

I shall be seeing	We shall be seeing
You will be seeing	You will be seeing
He will be seeing	They will be seeing

Present Perfect Tense

I have been seeing	We have been seeing
You have been seeing	You have been seeing
He has been seeing	They have been seeing

Past Perfect Tense

I had been seeing	We had been seeing
You had been seeing	You had been seeing
He had been seeing	They had been seeing

Future Perfect Tense

I shall have been seeing	We shall have been seeing
You will have been seeing	You will have been seeing
He will have been seeing	They will have been seeing

SUBJUNCTIVE MOOD

Present Tense

I be seeing	We be seeing
You be seeing	You be seeing
He be seeing	They be seeing

Past Tense

I were seeing	We were seeing
You were seeing	You were seeing
He were seeing	They were seeing

Present Perfect Tense

I have been seeing	We have been seeing
You have been seeing	You have been seeing
He have been seeing	They have been seeing

Past Perfect Tense

I had been seeing	We had been seeing
You had been seeing	You had been seeing
He had been seeing	They had been seeing

IMPERATIVE MOOD

Present Tense

Be (you) seeing	Be (you) seeing

Infinitives

Present	Present Perfect
To be seeing	To have been seeing

Participles

Present	Present Perfect
.....	Having been seeing

Gerunds

Present	Present Perfect
.....	Having been seeing

THE CONJUGATION OF A REGULAR VERB

Conjugation of the Verb Move in the Active Voice

Principal Parts

Present Tense	Past Tense	Past Participle
move	moved	moved

INDICATIVE MOOD

Present Tense

Singular	Plural
1st Person, I move	We move
2d Person, You move (thou movest)	You move
3d Person, He moves	They move

Past Tense

I moved	We moved
You moved (thou movedst)	You moved
He moved	They moved

Future Tense

I shall move	We shall move
You will move (thou wilt move)	You will move
He will move	They will move

Present Perfect Tense

I have moved	We have moved
You have moved (thou hast moved)	You have moved
He has moved	They have moved

Past Perfect Tense

I had moved	We had moved
You had moved (thou hadst moved)	You had moved
He had moved	They had moved

Future Perfect Tense

I shall have moved	We shall have moved
You will have moved (thou wilt have moved)	You will have moved
He will have moved	They will have moved

SUBJUNCTIVE MOOD

Present Tense

If I move	If we move
If you move (if thou move)	If you move
If he move	If they move

Past Tense

If I moved	If we moved
If you moved (if thou movedst)	If you moved
Ifhe moved	If they moved

IMPERATIVE MOOD

Present Tense

Move (you or thou)	Move (you)

Infinitives

Present	Perfect
To move	To have moved

Participles

Present	Perfect
Moving	Having moved

PASSIVE VOICE

INDICATIVE MOOD

Present Tense

1st Person, I am moved	We are moved
2d Person, You are moved (thou art moved)	You are moved
3d Person, He is moved	They are moved

Past Tense

I was moved	We were moved
You were moved	You were moved
He was moved	They were moved

Future Tense

I shall be moved	We shall be moved
You will be moved (thou wilt be moved)	You will be moved
He will be moved	They will be moved

Present Perfect Tense

I have been moved	We have been moved
You have been moved (thou hast been moved)	You have been moved
He has been moved	They have been moved

Past Perfect Tense

I had been moved	We had been moved
You had been moved (thou hadst been moved)	You had been moved
He had been moved	They had been moved

Future Perfect Tense

I shall have been moved	We shall have been moved
You will have been moved (thou wilt have been moved)	You will have been moved
He will have been moved	They will have been moved

SUBJUNCTIVE MOOD

Present Tense

I be moved	We be moved
You be moved (Thou be moved)	You be moved
He be moved	They be moved

Past Tense

I were moved	We were moved
You were moved	You were moved
He were moved	They were moved

Imperative Mode

Be (you, thou) moved	Be (you) moved

Infinitives

To be moved	To have been moved

Participles

Present	Past	Perfect
Being moved	Moved	Having been moved

Synopsis of a Verb.—A table of all forms of verb in a given person, number, voice and mood is called a *synopsis.*

Third Person, Singular Number, Active Voice, Indicative.

Third Person, Singular Number, Active Voice, Indicative.

Mood of verb "See"

Present Tense	He sees
Past Tense	He saw
Future Tense	He will see
Present Perfect Tense	He has seen
Past Perfect Tense	He had seen
Future Perfect Tense	He will have seen

Subjunctive MOOD

Present Tense	He see
Past Tense	He saw
Present Perfect Tense	He have seen
Past Perfect Tense	He had seen

In the Third Person, Singular Number, Passive Voice

INDICATIVE MOOD

Present Tense	He is seen
Past Tense	He was seen
Future Tense	He will be seen
Present Perfect Tense	He has been seen
Past Perfect Tense	He had been seen
Future Perfect Tense	He will have been seen

SUBJUNCTIVE MOOD

Present Tense	He be seen
Past Tense	He were seen
Present Perfect Tense	He have been seen
Past Perfect Tense	He had been seen

Comparison.—Many adjectives and ad verbs are modified to show *degree;* as, tall, taller, tallest; rapidly, more rapidly, most rapidly. This change of form is called *Comparison,* and its three degrees illustrated above are called *positive, comparative, superlative.*

Few limiting adjectives can be compared, nor do all descriptive adjectives admit of degrees. For example, perfect is a superlative without weaker forms; unanimous has no comparison; so the words, round, square, equi-angular, vertical, and a multitude more admit no change of degree. There is a kind of substitute for comparison in such cases. A thing which is round cannot of course be rounder, but some second object may be *nearly round;* and some third may be *more nearly* round than the second. In this sense nearly all adjectives and adverbs may be modified in degree by adverbial addition or subtraction.

The two standard means of comparison are (1) the use of the inflection *er* for comparative, *est* for superlative; (2) the prefixing of *more* for the comparative and *most* for the superlative. The *more—most* form is used in comparing long words, and words which do not sound well with the addition of *er—est.*

The following are examples of irregular comparison:

Positive	Comparative	Superlative
Ill, badly	worse	worst
well	better	best
little	less	least
much	more	most
far	farther	farthest

Prepositions, Conjunctions, and Interjections have no inflected forms.

SUMMARY OF SYNTAX

Definitions, Uses, Formal Rules, Examples

(Rules are numbered for Reference.)

A *noun* is the name of a person, place, object, or idea.

A *pronoun* is a word used in place of a noun.

Nouns and pronouns are called *substantives.*

1. The *subject* of a verb is in the *nominative case.*

Transitive verbs express action upon an object or product.

2. The direct *object* of a transitive verb is in the *objective* (accusative) case.

Whom shall I fear?

Intransitive verbs are often followed by substantives which rename their subject. Such complements are called *predicate nominatives, predicate nouns,* or *attribute complements.*

3. A substantive used as *attribute complement* agrees in case with the subject to which it refers.

It is *I. Whom* do you take me to be?

A substantive which helps to complete a verb but renames the object of the verb is called an *objective complement.*

4 An *objective complement* is in the *objective case*

The class elected him president.

5. The *object of a preposition* is in the *objective case.*

Give it to *me.* The cat is under the *stove.*

The receiver of an action may sometimes be thought of as the principal word in an adverbial phrase from which the preposition *to* or *for* is omitted. Such a complement is called an *indirect object.*

6. An indirect object is in the *objective case.* (Dative object.)

Bring *me* a chair.

Infinitives and participles do not really assert action or being, but they imply it, and in this sense may have subjects

Verbs of wishing, desiring, commanding, believing, declaring, perceiving, etc., are likely to be followed by objects which are at the same time *subjects of verbals.* It is this objective relation which justifies Rule 7, as commonly given:

7. The subject of a verbal is in the *objective case,* (Except in independent phrases)

She has *me* to protect her.

We thought *him* to be honest.

8. Substantives used with verbals in independent phrases are in the *nominative case.* ("Absolute".)

His *friends* advising it, he resigned

An appositive is a noun or pronoun used as explanatory of or equivalent to another noun or pronoun.

9. An appositive takes the case of the substantive to which it is attached.

The book was his, *Peter's.* (Possessive)

'Tis I, *Hamlet,* the *Dane* (Nominative.)

Give it to me, your *brother* (Objective.)

10. A noun or pronoun *independent by address* is in the *nominative case.* ("Vocative".)

"*Men of Athens,*————Him declare I unto you."

Mr. President, I rise to a point of order.

11. A noun or pronoun used *independently with a following adjective, adverb, or phrase* may best be regarded as in the objective case, since it is virtually the object in a prepositional phrase from which the preposition is omitted.

Hat in hand, he stood waiting.

Beard unkempt, clothes threadbare, he looked down and out.

Fences down, weeds everywhere, the place was desolate.

12. Nouns or pronouns showing ownership are in the *possessive case.*

John's farm, *your* shoes.

13. When an inanimate thing is personified, the *gender* of its noun or pronoun is *determined by custom.*

She's a good old boat! (Feminine.)

The *sun* is hiding *his* head. (Masculine.)

14. *Collective nouns* are *plural* when their units act separately as individuals; *singular* when the units act together as one. *Plural titles* are in this sense *singular nouns.*

The class has had its picture taken. (All together.)

The class have had their pictures taken. (Each person by himself.)

"The Newcomes" is by Thackeray.

15. *Nouns used adverbially* to measure time or distance are in the *objective case.* (*Adverbial objective.*)

We walked an *hour,* travelled four *miles*

16. A *substantive* used as an exclamation is commonly held to be *nominative.* But if the exclamation repeats an idea already used, it will take the case of the term repeated.

We shall be rich We! think of that!

"We'll make you do it!" *Me!* I guess not!

17 A *pronoun* must agree with its antecedent in *number, gender,* and *person.* Collective nouns take singular pronouns when the units act separately.

The Ship of State has refused to obey *her* rudder.

That is *he whom* you seek. (All three are in 3d Person, Masculine Gender, Singular Number.)

The *case* of a pronoun does not depend upon its antecedent, but upon its use in the sentence

A *verb* is a word which *asserts.* (Tells something of its subject)

18. A verb agrees with its subject in person and number.

I *am*	She *goes*
You *are*	They *go*
He *is*	

19. A compound subject with *and* takes a singular verb if the idea of the combined subject is of *one* thing; if the compound subject is made of parts acting separately, the verb is *plural.*

Roosevelt and Wilson *were* of opposing parties.

The sum and substance of the matter *is* this.

20. A *distributive* subject with *each, every, everyone, either, neither,* etc. requires a verb in the *singular:* a *disjunctive* subject with *either-or, neither-nor* takes a verb in the *singular* if the substantives are singular

Either the book *or* the teacher *is* wrong.

Each of us must use *his* own judgment.

21. *Nouns plural in form* but singular in meaning commonly take a verb in the *singular.*

Hydraulics *is* a practical study nowadays.

Mumps *is* contagious.

The news *is* discouraging.

22. When the subject acts upon an object, the verb is in the *active voice.* when the subject is a receiver or product of action, the verb is *passive.*

The hunter *shot* the deer. (Active.)

The deer *was shot* by the hunter. (Passive)

23. The *indicative mood* is used in questions and in simple assertions of facts or matter thought of as possible fact.

Were you there?

You *were* there.

If you *were* there, I did not see you. (See subjunctive mood, rule 24.)

24. The *subjunctive mood* expresses a *wish,* or a *condition contrary to fact.*

Would he *were* here!

If he *were* here, we would know about it.

(Implying denial. He has not been here.)

25. The *imperative* mood states a *command* or request.

Please *go* at once.

The subject of an imperative verb is *you* understood; the you is seldom expressed, unless the mood is emphatic.

26. *Infinitives* may be used as *subject, object* of verb, *attribute complement, object of preposition, appositive, adjective modifier, adverbial modifier,* or in an *independent phrase*

For examples, see discussion of *Verbals* in this article

27. Gerunds (Verbal nouns in *ing*) have the *uses of nouns* together with the power of implying action, being, or condition.

Examples have been given under *uses of Verbals*

28. *Participles* may be used as *adjectives, adverbs, subjective complements, objective complements, following a preposition,* or in *absolute phrases.*

See example under Verbals.

29. The comparative degree of adjectives and adverbs, not the superlative degree, is used in comparing two persons or things.

He is the *taller* of the two; in fact, the tallest of the three.

30. A *co-ordinating conjunction* connects words, phrases, or clauses of like rank, grammatically independent of each other.

I will come if I can *and* if the weather is good.

31. A sub-ordinating conjunction joins a dependent clause to a principal one.

Make hay *while* the sun shines

32. Interjections commonly have no grammatical relations in the sentence. In certain constructions, however, the interjection seems to have a phrasal modifier.

"Ah! for the pirate's dream of fight!"

33. Verbs *become, feel, look, seem, smell, taste, sound, grow* may take an *attribute complement* to describe the subject, or an adverb to modify the assertion of the verb.

He grew *tall:* poisonous mushrooms taste *good.*

He looks *well* may describe his own condition, and so the word *well* may be a predicate adjective relating to the subject; or the sentence may mean that he *searches thoroughly,* in which sense *well* is an *adverb* modifying looks.

34 Assertions of Simple Futurity take the form.

I, we	shall
You	will
He, they	will

Assertions of Strong Purpose, Promise, Threat, Consent

I, we	will
You	shall
He, they	shall

35 Adjectives should not take the place of adverbs, nor adverbs the place of adjectives.

36. The six tenses of English verbs in the Active Voice, Indicative Mood, are built up from the "principal parts" as follows:

Present Tense, Past Tense as in *Principal Parts. Future Tense, shall* or *will* (Rule 34) with *Present Infinitive* (less "to").

Present Perfect, have or *has* with *Past Participle Past Perfect, had* with *Past Participle*

Future Perfect, shall or *will* (Rule 34) with *Present* Perfect, the "have" form.

See Tables of Conjugation for Examples, and Table of Principal Parts.

37. The six tenses of English verbs in the Passive Voice, Indicative Mood, invariably use the past participle of the given verb, preceded by an appropriate form of the verb *"be".*

See Table of Principal Parts, and of Conjugations.

38. *Gerunds,* being verbal nouns, are modified by *adjectives* and *possessive pronouns.*

Now do it without *my* watching you.

Parsing.—To parse a word is to name its *class, subdivision, modification,* and *use in the sentence,* according to the following general scheme:

Nouns,—Common or Proper; Pronouns, Personal, Relative, Interrogative, Demonstrative.
1st, 2d, or 3d Person.
Masculine, Feminine, or Neuter Gender.
Singular or Plural Number.
Nominative, Possessive or Objective Case.
Use in Sentence (as indicated in rules above).

Verbs,—Transitive or Intransitive.
Active or Passive Voice (if transitive).
Indicative, Subjunctive, or Imperative.
Mood—Present, Past, Future, Present Perfect, Past Perfect, Future Perfect Tense.
1st, 2d, 3d Person.
Singular or Plural Number.
Subject, if a finite verb.
Use in the sentence, if a verbal.

Adjective,—Limiting, Descriptive, Positive, Comparative, Superlative Degree (if any).
Use, as Modifier or Complement.

Adverbs,—Simple, Conjunctive, Positive Comparative, or Superlative Degree (if any).
Use, as Modifier, or Connective, or Both.

Prepositions—Class Name, Use in introducing phrase.

Conjunctions—Co-ordinate or subordinate.
Use

Interjection—Class name.

Table of Parsing, Using Various Rules of Syntax.

1. Strikes bring trouble to three parties.
2. Consuls are representatives.
3. The Mexicans elected Gonzales president.
4. We drove twenty miles before we stopped.
5. John, throw me Fred's hat.
6. Shakespeare, the actor, was inconspicuous, but Shakespeare, the dramatist, was supreme.
7. Sheridan being at Winchester, the troops fought badly.
8. Swords drawn, they rushed up the hill—Hurrah!
9. We watched the bakers making bread.

WORD	CLASS	SUB-CLASS	MODIFICATIONS	USE
1. Strikes	Noun	Common	3d Person, Plural, Neuter, Nominative	Subject of "bring"
1. Trouble	Noun	Common	3d Person, Singular, Neuter, Objective	Object of "bring"
1. To	Preposition	.....	.....	Introducing phrase "to parties"
1. Three	Adjective	Numeral	.....	Modifies "parties"
2. Representatives	Noun	Common	3d Person, Plural, Masculine, Nominative	Agreeing with "Consuls"
3. President	Noun	Common	3d Person, Singular, Masculine, Objective	Objective Complement
4. Miles	Noun	Common	3d Person, Plural Neuter, Objective	Objective Adverbial
5. John	Noun	Proper	2d Person, Singular, Masculine, Nominative	By address
5. Fred's	Noun	Proper	3d Person, Singular, Masculine, Possessive	Ownership
6. Actor	Noun	Common	3d Person, Singular, Masculine, Nominative	apposition
7. Sheridan	Noun	Proper	3d Person, Singular, Masculine, Nominative	absolute
7. Badly	Adverb	Simple	Positive degree	modifies "fought"
8. Swords	Noun	Common	3d Person, Plural Neuter, Objective	phrase understood
9. Bakers	Noun	Common	3d Person, Plural, Masculine, Objective	subject of Verbal
8. Hurrah	Interjection	.....	.....	.....
1. Bring	Verb	Transitive	Active, Indicative, Present, 3d Person Plural	subject is "Strikes"
4. Before	Adverb	Conjunctive	.....	introduces clause
6. But	Conjunction	Co-ordinate	.....	connects clause

Common Errors in Syntax.—(Numbers refer to rules in the preceding summary. Correct forms are given first.)

This is the *better* of the two—not this is the *best* of the two. (29)

You and *I* did it—not *you* and *me* did it, nor *me* and *you*. (1)

We boys will be there—not *us* boys will be there. (1)

It was *I, she, he, they*—not *me, her, him, them*. (3)

We believed it to be *her, him, them*—not *she, he, they*. (3)

Between you and *me*—not between you and *I*. (5)

She is taller than *I* (am)—not she is taller than *me*. (1)

It was known to be *he*—not *him*. (3) He agrees with "It".

We were sure of its being *him*—(usage divided) (3) (5).

Let *everybody bring his* own lunch—not *their* own. (14) (24) (17).

We should all bring *our* lunches. (Action concerted.) (17)

Every boy and girl should do *his* best. (17) *Their* would be incorrect. *His* or *her* is correct, for formal.

Each of us *has his* problems—not *have their*.

The actor *whom* you saw was Otis Skinner—not *who*. (2)

Whom did you call for?—not *who*. (5)

Whom did you select?—not *who*. (2)

Who do you suppose it is? (3) Who agrees with it.

Who do you think I am? (3) not *whom*. Agrees with *I*.

Whom did you take me to be? (3) *whom* agrees with *me*.

The tree looks *beautiful*—not *beautifully*. (33)

The apple tastes *good*—not *well*. (33)

The tune sounds *harsh*. (33)

Roses smell *sweet*—not *sweetly*. (33)

She looks *charming*—not *charmingly*. (33)

We *shall* be drowned if we go there—not *we will be*. (34)

I *shall* be pleased to help you—not *will* be. (34)

The senate *has* adjourned—not *have* adjourned. (14)

There *are* all sorts of graft in town—not there *is* all sorts. (18)

Here *are* wealth and beauty—not here *is*. (Unless taken separately.) (18)

Neither of the men *shows* signs of giving in—not neither *show*. (18)

In both cases, there *are* bad birth and misfortune—not there *is*. (Unless taken separately.) (18)

One class of poets *believes* in symbolism—not *believe*. (18)

He is one of the best *actors that have* ever been here—not *has*. (17) (18)

Let *him* who will, come—not let *he*. (2)

The congregation *were* free to *express their opinions*, or *was* free to express *its* opinion. (14).

I *saw*—not I *seen*. (36)

I *did*—not I *done*. (36)

We *have gone*—not *have went*. (36)

We *were*—not we *was*. (18)

You *began* it—not you *begun* it. (36)

The wind *blew*—not the wind *blowed*. (36)

The glass is *broken*—not *broke*. (37)

I *caught, have caught*—not *catched, have catched*. (36)

Have been *chosen*—not have been chose. (37)

We *came* along,—not we *come*. (36)

We *have come*,—not *have came*. (36)

The baby *crept*,—not *creeped*. (36)

You've *done* it,—not you've *did* it. (36)

We *drew*,—not we *drawed*. (36)

He *has drunk* a glassful,—not *has drank*. (36)

Have driven,—not *have drove*. (36)

Have *eaten*,—not have *ate*. (36)

I *ate* my dinner,—not *eat*. (36)

Has *fallen*,—not has *fell*. (36)

The boys *fought*,—not *fit*. (36)

Has *flown*,—not has *flew*. (36)

I've *forgotten*,—not *forgot*. (36)

It *grew*,—not it *growed*. (36)

You *lie* low,—not *lay* low. (Lie, to recline; lay, to put down.)

Have *ridden*,—not have *rode*. (36)

We *rang* the bell,—not we *rung* it. (36)

Had *risen*,—not had *rose*. (36)

And then I *ran* away,—not then I *run* away. (36)

We *sang* a song,—not we *sung* it. (36)

Have *spoken*,—not have *spoke*. (36)

Troubles *sprang* up,—not troubles *sprung* up. (36)

Somebody *has stolen* my hat,—not has *stole*. (36)

The place *stunk*,—not *stank*. (36)

We *swam* a mile,—not we *swum*. (36)

Who's *taken* my bat?—not who's *took*? (36)

Have *torn*,—not have *tore*. (36)

Have *written*,—not have *wrote*. (36)

Say it *slowly*,—not *slow*. (35)

We can do that as *easily* as you please,—not as *easy*. (35)

The horse threw my brother and *me* out,—not my brother and *I*. (2)

We chose the foreman *who* we thought could handle the men,—not *whom*. (1)

I never saw a taller man than *he*,—not *him*. (1)

There isn't another girl in town so handsome as *she*,—not *her*. (1)

Mosses from an old Manse is a collection of essays and stories,—not *are* a collection. (14)

Now skate without *my* helping you,—not *me* helping. (38)

We ought to keep still about *his* being here,—not *him* being. (38)

PUZZLING CONSTRUCTIONS

A as Numeral.—

The article *a* often has the force of **one** (*1*).

A hundred men; a pound of cheese.

A, The as Distributives.—

Ten dollars *a pair*.

Fifty cents *an ounce.*
Fourteen dollars *the ton.*
"A", "an", and "the", above, all imply separation, singleness. *Each* pair, *each* ounce, *each* ton is priced by itself.

A With Plural Groups.—
A few more years will end it.
The group is plural in form, but singular in sense.

About.—
Come over *about* six o'clock.
Come *at* six.
About and *at* are much alike in function, though *about* is more strongly adverbial than *at.*
See heading "Prepositions", in this section.

"About" in Future Tense.—
(1) We are *about* to start for Saratoga.
(2) They are *about* leaving for the coast.
(3) He was *about* to pull the trigger.
The first two of these forms indicate action in the very near future, from a present viewpoint; the third sentence shows action which was in the very near future from a past view point.
Is the "about" in these phrases an adverb or a preposition?
(1) He is *about* six feet tall,—adverb of measure.
(2) He is *about* the house somewhere,—preposition.
(3) We are *about* ready,—adverb of measure or degree.
(4) They are *about* giving up,—equals almost (?).
(5) I must be *about* my Father's business,—preposition.
(6) I am *about* to show you.
In the six sentences above, there is doubt about (4) and (6). *About giving up* may mean almost giving up, in which case about is an adverb. But it may mean, like (5) that the thing which I am about is *giving up,* or *to show you.* If this is the meaning, *about* is a *preposition.*

Above, Below—Adjective or Adverb.—
(1) "Nor in the heavens *above* nor in the earth *beneath* shall exist thy image."
(2) In the examples *above.*
(3) Go *below* now.
(4) That book *above,* on the top shelf, is the one.
The idea of place is in each of these italicized terms, though all but one of them modify nouns. Yet place is not the only notion in these words. They also select or limit, like adjectives. We seem to need for them the term, adverbial adjective.

Adherent Appositive.—
Cousin Mary
Brother Edward
furnish examples of nouns very closely adherent, so closely that the expression *Cousin Mary* seems one title. The nouns *Mary, Edward* have a selective quality like adjectives; "Mary" picks out the cousin, as well as repeats the nounal idea.
We men must attend to it.
You fellows go.
In these expressions the selective quality of *"we", "you"* is very evident. Not *all* men, *all* fellows, but *we* men, *you* fellows.

Adjectives from Adverbs.—
Out-of-the-way nooks and corners.
Far-off times and places.
Our *erstwhile* neighbor.
Roosevelt, the *then* President, set the machinery going.
These are adjectives in their limiting and descriptive function, though the ideas of place and time are still present. In fact they describe by locating in place and time.
"A *very* fiend!" is an example of an adverb equivalent to an adjective.

Adjective Pronouns, Pronominal Adjectives.—An adjective pronoun is a word which is commonly an adjective but is in a given case used instead of a noun, e.g.
Enough has been said.
A *pronominal adjective* is a word which is commonly a pronoun, but is used as an adjective in the given case.
Tell me *which* color you prefer.
Say *what* horse I shall drive.

Adjectives Used as Nouns.—
Ten of the men.
The *tenth* was the lucky one.
He gave us *double* what we asked for.
See also *"For granted,"* in this Series.

Adverbial Nouns.—
A *great deal* better. (Degree, how much)
Potatoes worth *50c a peck last week.* (How much value, how much quantity, when.)
One twin was *half a head* taller than the other. (How much distance)
Encored *nine times.* (How much, numerically)
Somewhat dissatisfied. (How much, indefinite)
Nothing daunted.
It is five years since. (How much time)

Adverbs as Nouns.—
Come out of *there.* (—that place)
From *then* (—that time) till *now* (—this time)
This *once* } — This time)
At *once.* }
"Their Yesterdays."

Adverbs, Conjunctive, Introducing Adjective Clauses.—
"I remember, I remember
The house where I was born." (—in which)
This is the hill *where* the old tree stood. (—on which)
There came a day *when* he did not leave his couch. (—on which)
He told us the reasons *why* he did it. (—on account of which)
The casket *wherein* lay Portia's picture. (old form for *in which*)
The book *whereof* I speak. (old form for of which)

Adverb or Adjective.—
(1) The concert is *over.*
(2) Is he *through* with his speech?
(3) The enemy's flag is *down*; ours is *up.*
(4) The tide is *out.*
Apparently we may take our choice between calling these *adjective complements* describing their subjects, and adverbs modifying the verb *is.* To test the latter, compare:
"He is in the back room," which appears to furnish a purely adverbial phrase. There seems to be little beside the adverbial idea of place, in (3), (4); but the words *over* and *through* seem more descriptive of their subjects.

Adverb or Independent Phrase.—
(1) You will be there, *of course.*
(2) I am *surely* going.
(3) *To be sure* I will be there.
(4) The Shipping Board, *in fact,* did a great work.
It is hard to tell whether these italicized expressions are adverbs, or absolute phrases. If the feeling of a separate pulse of assertion is strong, the idea of independence will win; if the phrase seems to condition the verb in some way, it is adverbial. On these grounds, it may be well to call "surely" in (2) an adverb, and the other three independent phrases.

Adverbs Modifying Prepositions.—
We were *miles above* the clouds. (Adverbial noun.)
Come on! We're *almost through* the woods now.
His success was *far beyond* expectations.

Adverbs Which Modify Whole Clauses.—
Hardly, indeed not, perhaps, possibly scarcely, surely.
Perhaps we may be there.

Adverbs Without — *ly*, or Objective Complement.—
(1) The machine is set to cut *fine.*
(2) "Though the mills of God grind slowly,
Yet they grind exceeding *small.*"
(3) Grind my meal *coarse.*
Does "coarse" in (3) serve the same use as "fine" in (1)?
We think the absence of an object makes a difference. The word "fine" really tells how the machine cuts; the word "coarse" in (3) has this adverbial sense, if you choose to think it in that way, but it also *describes the meal.* It appears that some adjectives are thus *strongly adverbial.*
She cried her eyes *out* is clear case of an adverb used as objective complement in place of an adjective.
Ago, Years Ago.
He died *years ago.*
Ago is an adverb of time. *Years* is an adverbial noun measuring the degree of *ago.*
A Great Many; A Few. Best treated as single limiting adjectives.
All But—
Our ship was *all but* lost. (—*nearly* lost)
All but means *all except;* our ship was lost all except the margin that saved her. Idiomatic, of course, and the explanation of an idiom is seldom wholly satisfying. An appeal to the ancient history of the English language is quite likely to be more misleading than a careful analysis of present meanings in such cases.
All three, etc.
All six were caught.
All is here a limiting adjective.
None of the six got away.

"Appositive" Adjectives.—
A chasm, *sheer and impassable,* lay before them.
Adjectives may precede their nouns, follow immediately after their nouns, or follow intransitive verbs as complements. In each case the adjective really modifies the thought of the noun it relates to. The second of these three positions illustrated above, is sometimes called the appositive position.
Two cars, *John's and mine,* were stolen.
Socialism, so *rich* in many desirable ways, is poor in practicability.
Friendless and alone, he waited a better day.
In the last two sentences, it would be difficult to choose between calling the italicized words appositive adjectives, or grammatically independent.

Appositives and Compounds.—As commonly used, the terms *Peter the Hermit, Paul the Apostle,* are compound names. But if we say Paul the Apostle was aggressive, while Paul the Roman citizen stood on the defensive, the words apostle and citizen are appositives. The difference is in this case is properly indicated by the capitalization.

Appositives of Limitation.—His trouble was *much of it* imaginary, especially the *slights* of his friends.
"Much of it" may be called a deferred appositive limiting trouble, or the phrase "much of it" may be considered equal to "largely", and thus an adverbial noun with the adjective "imaginary." "Slights" is another selective appositive with trouble.
Our apples are *many* (*most*) of them Baldwins;
They *all* believed in him;

We *three* will come—are further examples of limiting appositives.

As.—Often very puzzling.

A noise *as* of thunder rolled in. Possible equivalents *are*

(1) A noise *like that* of thunder rolled in.

(2) (Such) a noise as (is that) of thunder, etc.

(3) A noise (apparently) of thunder, rolled in.

(4) A noise (seeming) of thunder, rolled in.

There are really several possible shades of meaning. One who speaks the original sentence may have in mind that the noise *resembles* thunder, and may be thunder; that it resembles thunder, but probably isn't; or that it pretty surely *is* thunder. The force of the word *as* varies accordingly, from a mere particle introducing the phrase *of thunder*, to a strong adjectival force with an adverbial phrase as modifier. It depends on what is in the speaker's mind when he uses the original sentence.

As, Almost a Preposition.—

They built a club-house *as* a headquarters.

This *as* is about equal to *for*, a true relation word.

A second, less acceptable disposition is to call headquarters an objective complement, introduced by as.

As, introductory.—They were regarded *as* friends. Friends is really an attribute complement. For consider:

They were friends.

They were considered friends.

In each case, the word friends refers to the subject, means the same thing as the subject. The word *as* is therefore a merely introductory term.

As.—Simple adverb: *As* tall.

Conjunctive adverb: As tall *as* you are.

Preposition: We like the Maine coast *as* a summering ground. (*As* nearly equal to *for*.)

Pronoun: Such *as* keep my commandments.

As, Adverb, Preposition or Introductory Particle.—

"I held you *as* a thing enshrined," equals, I considered you something sacred.

As in "I took you *for* a friend," there are three possible constructions, and a fourth which admits all three:

1. *As* is a mere introductory term bringing in the objective complement.

2. *As* is a preposition, equal to *for*.

3. As is a conjunction adverb, introducing the elliptical clause *as a thing enshrined* (would be held).

As—As.—

The matter is *as* long *as* it is short.

The first "as" is an adverb; simple; the second an adverb conjunction.

As, in clause.—

"God, I thank Thee that I am not *as other men are*, extortioners, unjust," etc.

As other men are is either an adverb or an adjective. Adverb, if it answers how, or the like; adjective, if, like unjust, it serves as attribute complement to describe the subject. In either case, it is here a connective.

As Phrases, Appositive.—

Mantell *as Hamlet* is perhaps a bit heavy; Mantell *as Lear* is marvelous.

It seems that the idea here is not so much to make an adverbial limitation as to characterize Mantell; Mantell is now Hamlet, now Lear. We call Hamlet and Lear appositives introduced by *as*.

As Phrases, Adverbial or Complementary.—

(1) He doesn't amount to much *as a citizen*.

(2) *As fiction*, his novels are poor; they are good *as psychology*.

(3) He left home a poor day *laborer*, and came back a rich *employer*.

Laborer and *employer* are best treated as attribute complements. He really was laborer, and when he came back he was employer.

In sentence (1) "as a citizen" is *almost if not* quite an adverbial phrase. If we substitute *"in the capacity of citizen"*, the adverbial function is clear.

In sentence (2) *"as fiction"* and *"as psychology"* are similarly adverbial. The Standard Dictionary is authority for calling *"as"* "almost a preposition" in such cases.

As Phrases After a Verb.—

(1) Magna was considered *as friendly*.

(2) The Hurons were regarded *as dependable*.

(3) The Delawares were thought of *as just*.

"Friendly" may well enough be called a predicate adjective introduced by "as". But the other two verbs of exactly the same meaning as "considered" do not seem to require or admit complements; they take adverbial modifiers. If we supply the word being in each case—*as being friendly*, etc. all three phrases are pretty clearly adverbial, of manner.

As Phrases, Independent.—

As for the matter you suggest, it doesn't interest me.

Of course there is a thought relation between the opening phrase and the sentence proper, but it would be hard to find a close grammatical relation. The "as" phrase is here introductory and "absolute".

As Well As, Either Collective or Distributive.

The poor man *as well as* the rich are benefited.

The poor man *as well as* the rich is benefited.

Both forms above are correct. The first takes the poor man and the rich together to make a plural idea, the second takes each man by himself.

As Well As.—

Equivalent to *also*, *like*, *besides*, etc.

Artists must know how to mix paints, *as well as* admire sunsets.

As Yet.—

He hasn't been here, *as yet*.

As yet equals *up to now*. But so does the word *yet* mean *up to* or *until now*. *As* is here of little value. It may be called a mere introductory term.

At All, In the least.—

It is not *at all* necessary. *At all* is adverbial, exactly equivalent to *in the least*, in the given sentence. It will be well enough to call each an idiomatic adverbial phrase, with an adjective pronoun as object of the preposition.

Bad, Badly.—

I feel *bad*, or I feel *badly*?

It depends on whether you wish to describe the state you are in, or the way in which you feel, the manner of your action in feeling. If this is a fair way of putting the case, it carries its own answer—The predicate adjective is required rather than the adverb. I feel *bad* equals I feel *sick*, or *uncomfortable*, or *chagrined*, or *hurt*—all adjectives.

Because—Therefore.—

Therefore because the weather was bad, we stayed in.

Because all my friends are gone, I would *therefore* go too.

Therefore—because are correlatives and when used together, they introduce subordinate clause. If *therefore* were used alone, the clauses would probably be grammatically co-ordinate and independent though still logically one would depend upon the other.

Between—Preposition or Adverb (?)—

"The hills,
Rock-ribbed and ancient as the sun,
—the vales
Stretching in quiet pensiveness between."

Between may be called a *preposition*, its object hills, understood; or may be called an *adverb*, answering the question *where*. In this case, the adverbial construction seems rather simpler.

But as a *Preposition.*—When but means except, it is a true preposition, to be followed by the objective case.

He spoke to every one *but* me.

"All of them wrong *but* I"—(Newman) is saved from incorrectness, if saved at all, only by the imperial prerogative—the king can do no wrong.

Yet see *"none but,"* in this series.

But as a *Substantive.*—

There are none here *but* will believe you.

But here equals *who not*. There are none here who will not believe you. An idiomatic pronoun, with three uses: substantive, connective, negative adverb.

But — That not, or *When not* (*In which not*).—

Never a day came but she watched on the hill.

By the side of.—

Equals "beside".

By the side of the brook. There is however no objection to regarding the phrase as a tandem series:

(1) By the side	(2) of the brook.
(1) Because	(2) of the accident
(1) On account	(2) of the strike
(1) By reason	(2) of his mistake, etc.

Can, May.—

See *May* in this series.

But.—

Preposition: There is no one here *but* me.

Conjunction: It would be a good thing, *but* we can't manage it.

Pronoun: Not a man *but* felt chagrined

Adverb: "Give her *but* the least excuse to love me."

We have *but* six.

Certainly.—

"Pardon me!"—"Certainly!"

It is well enough to call this *certainly* an adverb, but the verb it modifies must be supplied. Such condensations are very common, e. g. *of course, to be sure, quite the contrary, by no means*, etc.

Clause, Adverbial or Substantive.—

(1) We are glad *that you could come*.

(2) Your friends are anxious *that you accept the nomination*.

To say that these clauses are substantive with the omission of an introductory preposition, is of course a possible construction, but we call it rather far-fetched. If I say Give me the book, there is no change or forcing of meaning by adding the "omitted" preposition; *Give the book to me*. But try supplying the omitted, preposition "of" in sentences (1), (2), above. *We are glad of that you could* come is not quite the original idea. We prefer to call the clause *adverbial*.

(3) There is no evidence *that he did the deed*.

(4) I warn you *that it must not be*.

In (3) we are describing evidence.

In (4) there appears to be a genuine nounal function, object of the verb warn.

Clausal Antecedents.—

We must swim across without wetting our ammunition, which is no easy matter.

The antecedent of *which* is the entire clause preceding.

Clauses Modifying Adverbs.—

She lies *there where* the myrtle blooms.

Where the myrtle blooms is an adverbial clause modifying *there*. *Where* is really correlative with *there*, expressing the same idea.

Compound Connectives.—

As long as, as far as, as soon as, inasmuch as, in order that, in proportion as, no longer than, no sooner than are all adverbial in some sense,—time, space, cause, degree, etc.

Either—or, neither—nor, whether—or, are disjunctives, taking ideas one at a time.

Both—and, but—also, alike—and, at once —and are copulative conjunctions.

"Compound Reciprocals", Each Other, One Another Reciprocals.—

They love *each other*. *Each other* may be regarded as a compound word, one word, written in two parts. This is the idea of the "Compound Reciprocal." Or the relationship may be expressed as:

They (each) love (other).

The first treatment is probably clearer.

Conjunction Connecting Sentences.—

I will go, to be sure I will! *But* you must come too!

"Send them away, that they may go into the country and villages round about, and buy themselves somewhat to eat. *But* He answered and said unto them, Give ye them to eat. *And* they say unto Him, Shall we go and buy two hundred pennyworth of bread?

In literature and in common speech, sentences very often begin with a conjunction which connects the matter now coming with ideas expressed or understand before.

Conjunction or Adverb Introducing Clauses. The difficulty of deciding whether certain expressions are adverbial connectives or mere subordinating conjunctions has led a few grammarians to abolish one or the other of these terms. There appear to be three types of connectives introducing subordinate clauses: relative pronouns—this is the cat *that* caught the rat; conjunctive adverbs—I will come *when* you call; subordinate conjunctions—This is better *than* any other we have. If we test connectives for their possible use as nounals, and for the adverbial notions of time, place, manner, etc., it should become fairly clear that all three types of connectives exist, and that all three names should be mastered. The word *than*, for example, has no apparent nounal quality, nor has it in itself any adverbial force. Therefore, since it introduces a clause, we may call it a subordinating conjunction.

Co-ordinate Clauses With Subordinating Connectives.—

(1) He told me he did not recall, *which* was his way of saying he would not tell. (*—and this*)

(2) A parallel case is on page **00**, which see.

(3) "One Almighty is, *from whom* All things proceed, and up to Him return."

The three verbs of number (3) are equally important, though the form of the sentence does not show it. This is a case where thought relations overrule grammatical forms.

"My cargo was a great part of it lost, especially the iron, *which* I expected would be of great use to me."—Robinson Crusoe.

The relative *which* of the sentence pretty clearly equals *and this;* and the clause thus introduced is perhaps fully as important in thought as the "main" clause.

Correlatives.—Pairs of conjunctions are sometimes required for off-setting one idea against another:

Both Will *and* Tom fell in.

As well go *as* stay.

Neither black *nor* white.

Not only carelessness, *but also* criminal intent.

It is *at once* dubious *and* promising.

Most of these are pretty genuinely compound conjunctions. There may be doubt about the last one.

Do—, Uses.—

(1) For emphasis: *Do* come. I *do* say just that.

(2) Colloquial past tense: I *did* not see you.

(*I saw you not* would be very stiff.)

(3) In questions: *Do* you believe me? (*Believest thou* is of course out of form now.)

(4) To avoid repetition: He makes friends more easily than I *do*.

Double Attribute Complement.—

"Most men are *like* an egg, too *full* of themselves to hold anything else."—Josh Billings.

"Like" and "full" are both predicate adjectives, describing the subject men; but the second complement, "full" also explains how men are *like an egg*. In thought one of these complements modifies the other. Grammatically, they are independent of each other.

Ellipses in Complex Sentences.—

This is harder than it seems (hard).

The case is not so clear now as (it was) formerly.

There are more stars than (the stars are that) can be counted.

More came than (many) were asked.

He is as well as (is) usual (with him).

I like the Hamlet better than ever (I liked it before).

John was orphaned when (he was) a mere lad.

Will you come? I think (I will) not (come).

Pausing as if to consider, may read: Pausing as (he would pause) if (he were) to consider.

Else.—

Adjective in *Something else.*

Adverb in How *else* can we do it?

Exclamations and Exclamatory Sentences.—Interjections and exclamations are not commonly a part of the sentence with which they may occur. They are grammatically independent.

Exclamatory sentences are not ordinarily sentences at all. They may suppress a subject, a verb, or other sentence members. There are seldom many modifiers. Though of course the idea of a full rounded sentence may be so emphatic as to warrant classing the sentence as exclamatory.

"Alas! what a good outside falsehood hath!"

An interjection begins this remark, and a complete exclamatory sentence follows.

"Half a league! Half a league onward!"

Here is only an object complement, with two or three short modifiers.

For, a weakened Preposition in certain cases.

I took you *for* a friend is practically equivalent to I considered you a friend. If *for a friend* is an adverbial phrase. it is a very weak one, modifying *you* and *completing* the verb as surely as it tells the manner of taking. Here are three grammatical uses joined in one expression. Sound analysis will recognize *all three.*

"For Example", Introducing Appositive.—

Some "impractical" subjects are well worth studying; *for example, geometry.*

"Geometry" explains, illustrates, "Some difficult subject"; geometry *is* one of the difficult subjects. For example is an introductory expression, like *as, in other words, namely, that is, to wit.*

"For Granted", "For Sure", "For Certain."—

(1) We took that *for granted.*

(2) We considered that *self-evident.*

(3) We took that *for a waste* of effort.

(4) That was taken *for granted.*

(5) That was considered *a waste* of time.

(6) Let's try again, *for sure.*

(7) I can't tell *for certain.*

The adjectives *granted, sure, certain* appear to be used as nouns. Sentences (1) and (3) have "for" phrases as objective complements. Sentences (4), (5) show how the objective complement becomes an attribute complement in the passive construction. The "for" phrases of (6), (7) are adverbial.

Fractions.—

One-tenth of twenty is two.

"One-tenth" is a substantive in this case. If the statement were "one-tenth part of twenty is two", the fraction would be an adjective, numeral, indicating quantity or number, like *"two parts."*

Future Tense by a "Be" Phrase.—

(1) We *are* to go by the east road.

(2) They were *to be* here by this time.

(3) He *was* to have come to-day.

(1) Simple future.

(2) Future from a point of view in time past.

(3) In past time, we looked forward to an action which should have ended to-day.

Gerund, or mere noun.—

(1) They practised *piano-playing* and tennis. (A mere noun—no assertion implied.)

(2) The *finding* of the continent was credited to Vespucci. Probably *finding* is a noun, though it is possible to think action into it, in which case it becomes gerund, or near-gerund.)

(3) Dividing the proceeds justly was difficult. (Real gerund, as proved by the adverb justly.)

"Going" in Future Tenses.—

(1) I am *going* to be there.

(2) I am *going* to take back my promise.

(3) I was *going* to help you, but I can't do it.

(4) I have been *going* to call on you for a long time.

(1) and (2) are simple future tenses.

(3) Was future, from a past view point.

(4) Has been future up to the present time.

Groups Acting as Single Words.—

I shall be here *in case* you need me.

Save, *in order that* you may not want.

Yes, *on condition that* you come, too.

Well, *considering that* I have been so sick.

Inasmuch as you think so.

These are, in each case, equivalent to single connectives, adverbial, though it would often be difficult to supply a single word to act as substitute.

Had Rather—than.—

I *had rather* go *than* stay.

Idiomatic for *I prefer to go rather than* (*I prefer*) *to stay.* Here "had" really equals the present tense of prefer. *Than* is a subordinate conjunction introducing the clause (*I prefer*) *to stay*, through the adverb *rather.*

Hand in hand, Head over Heels.—

John is *head over heels* in debt.

Colloquial idiom, nouns used adverbially.

Similar expressions are: *day by day, word for word, three in a row, one behind the other.* Perhaps these expressions may be "absolute"; we think they seldom are so.

Hardly—When or *Scarcely—Before.*—

Hardly had the bell sounded *before* the hose-cart appeared.

Rearranged, this sentence reads: The bell had sounded *hardly before* the hose-cart appeared. This seems to indicate that *before* modifies *had sounded*, and *hardly* modifies *before*. *Before* introduces the time clause.

Himself, Appositive.—

The king *himself* was there. "Himself" is emphatic appositive.

Himself, Itself, as *Appositional Intensives.*—

It is the boss *himself.*

The bridge *itself* was strong enough.

Appositives, since they refer to the objects boss and bridge. *Intensives,* since they call special attention to the words they accompany. But not reflexives—there is no bending back of action upon the subject.

Infinitive Adverbs.—

Fools who came (why)? *to scoff,* remained *to pray.*

I'll be glad *to do* it; sorry *to disappoint* you.

That news is too good *to be* true.

An adverb commonly modifies a verb, an adjective, an another adverb. Here are all three sorts.

Infinitive as Objective Complement.—

(1) They chose him *to be* their president.

(2) They elected him *to represent* them.

(3) They chose him president.

(4) They elected him representative.

Sentence (1) clearly equals sentence (3). It doesn't much matter whether we call *to be* an introductory infinitive, or the verbal in an infinitive phrase used as objective complement.

But sentence (2) is not so clearly equivalent to (4). The option in this case recognizes the adverbial purpose of *to represent,* telling why they elected.

Infinitive in Apposition.—

To be or not *to be*: that is the question.

(*That*—to be or not to be.)

In order that.—

"Do evil *in order that* good may come."

In order that may be regarded as a compound conjunctive adverb, or may be broken into its parts.

In So Far As.—

In so far as that goes, the reasons are good.

I know nothing about it, except *in so far as* regards the original bargain.

Far is an adverb used as a noun, object of preposition *in. So* is a simple adverb modifying *far. As* is a subordinate conjunction, correlative with *so. In so far* modifies *are* (good); *as that goes* modifies *so far.*

In the Same Way In Which.—

You have done this *in the same way in which* I did it.

The expression *in the same way in which I did it* is adverbial, modifying the main verb *have done.* But the connecting phrases modify the verbs of both clauses alike.

It, Expletive or Anticipatory Subject.—

(a) *It* is fun coasting down a long, steep hill.

(b) *It* seems good to see you here.

(c) *It* is strange that here should be no footprints.

In (a), the real subject is the verbal phrase *coasting down a long, steep hill.*

The actual subject of (b) is *to see you here.*

(C) has a *clause* for subject.

In all three, the word "it" is a make shift of speech to delay naming the real subject.

It, Impersonal Object.—

Lord *it* over the nations;

"Come, and trip *it* as you go;"

Current slang: "Beat *it*!" "Whoop *it* up!"

All are examples of impersonal objects. So impersonal and idiomatic is this construction, that grammarians sometimes call these verbs intransitive. We prefer to call them transitive, with the object it.

It, Impersonal Subject.—

It happened so. *It* appears so. *It* thunders. *It* rains.

In all such cases, the word *it* has no clear antecedent, and hence cannot be called personal.

It Is—That, It Was—That.—

(1) *It is* money *that* makes the mare go.

(2) *It was* Wilson *who* brought to pass the League of Nations.

The idea is substantially unchanged if we omit the *It is—that, It was—who.* These phrases seem to call special attention to the subject of the sentence.

Kind Of, Sort Of.—

(1) "Dwarf Giant" is a *kind of* tomato.

(2) "Now by this hand, I gave it to a youth, a *kind of* boy, a little scrubbed boy."

(3) Just act *kind o'* natural like

(4) He *kind o'* mumbled in his teeth

In (1) Kind is a *bona fide* noun, modified by an adjective phrase. In (2) "*Kind of boy*" is not to be taken so literally; *kind of* has adjectival force. In (3) and (4), *kind o'* is adverbial.

Lest.—

(1) "Take heed *lest* ye fall."

(2) We feared *lest* the ship should sail without us.

(3) Be careful *lest* you go too far!

The clause in (2) is best called object complement. It certainly comes nearer telling *what* we feared than *how* we feared. Probably the first clause is adjective, and the third adverbial.

"Let" in Commands.—

Let the prisoner go free.

Let there be light!

Let the music play.

The old force of *let* as an active verb meaning *allow, cause,* and the like, is nearly gone. But grammatically, let, in the sentences above, is a present imperative addressed to *you.* The form is well enough described as a *weakened imperative.*

Like.—Adjective, Adverb, or Preposition?

(1) A book *like* its author, hard to understand.

(2) The boy ran *like* a deer.

(3) Thomas, *unlike* John, had doubts.

The standard objection to calling *like* a preposition is in the conventional ruling that prepositions can under no circumstances be compared. The word *like* may become *more* like, or *most* like. This objection seems rather arbitrary, when we remember that prepositions were once adverbs, and still have adverbial quality.

There are three possible dispositions of such "like" phrases:

(a) Like is an *adjective* in Nos. (1), (3), and an *adverb* in (2).

A book *like unto* its author; ran *like unto* a deer, etc.

(b) *Adjective or Adverb: like* its author (is); *like* a deer (runs).

(c) *Preposition,* indicating relationship of similarity.

Long.—

He slept all day *long.*

The word *long* makes here a sort of idiomatic repetition of the "all". The meaning is not that the day he slept was a long day, but rather that he slept through the day *from beginning to* end. "All day long" equals *the livelong day,* in which case the same intensification of *long* is secured.

Many A.—

A limiting adjective, of peculiar quality. The word *many* requires at least several individuals, but the word *a* takes these individuals one at a time. The verb with *many a* must be singular. *Many a* man *has* found that costly.

May, Can.—(The Potential Auxiliaries, with *Might, Could.*)

May has two meanings (1) permission and (2) possibility.

(1) I may go. (I have permission to go.)

You may go. (You have permission to go.)

(2) I may go. (Perhaps. It is possible, but rather doubtful.)

Can indicates power or ability.

He *can* do it. (He is able to do it.)

May and can are often improperly interchanged.

Me, Myself as Reflexives.—

I bought *me* a gun.

Now I lay *me.*

I will build *me* a nest.

Come here! I have hurt *myself.*

To reflex is to bend back. Reflexive pronouns indicate that the subject acts upon itself in some way.

Modifiers of an Entire Clause.—

(1) The Egyptians knew how to handle great blocks of stone—a secret which died with them.

(2) She failed to appear, which troubled us greatly.

In (1) the word secret is descriptive of the entire clause preceding it—a noun in apposition with a clause.

In (2) the antecedent of which is a clause; the second clause modifies the first.

Most—That.—

We found a garden the *most* beautiful *that* one could imagine. The adjective clause *that one could imagine* modifies *the most beautiful garden.*

Myself, doubtful in place of *I, Me.*—

"John, Mary, and *myself* were there" is not in best form.

"He handed the book to *myself*" is in still more doubtful taste.

Nearly.—

A giant *nearly* eight feet tall.

Feet is an adverbial noun modifying tall. *Eight* is a numeral adjective modifying feet.

Nearly is an adverb modifying eight.

Neck and *Crop.*—

He fell, *neck and crop.*

Colloquial idiom, nouns used adverbially.

Needs, as an Adverb.—

You must *needs* come just because I did!

"Needs" equals *of necessity.*

"Nice And".—

"Good And".—

Make my living room *nice and big.*

Pick out a car that's *good and* speedy.

Colloquial idiom, with the force of an adjective.

None But.—

(1) There is no one here *but* me.

(2) None but the brave deserve the fair.

(3) None but he can do it.

In (1), the word *but* is a preposition with the force of *except.* In (2) and (3), the expression *none but* seems to serve as one word, equivalent to *only.* This accounts for the nominative "he".

Objective Complement Transposed.—

He made *good* his threat.

Think best, See fit, Make good are similarly

used, with the objective complement before the object instead of after it.

Objects, Double.—

1. Strike *Robin*. Strike a *blow*. Little John struck *Robin* a *blow*.

2. Ask *him*. Ask a *question*. Ask *him* a *question*.

3. Tell *him*. Tell a *story*. Tell *him* a *story*.

Compare:

4. The pirates elected *Silver captain*.

5. I will build *me* a *house*.

The word *me* in sentence 5 is very unlike the other nine objects. It cannot stand alone with its verb. I do not build *me*. I build *for* me. The *me* is an indirect or dative object.

Again, the noun *captain*, though it does fill the test of a real object complement, also points to the object Silver: The action of electing captain fell upon Silver. Captain is an *objective complement*.

Of Phrases, Adjective or Adverbial.—

"Give me *of* your bark, O Birch-tree!" —H. W. L.

Of course it is possible to supply the word *some*, and so to call *of your bark* an adjective phrase.

But how of the following:

We are to share *of his riches*.

Come drink *of this spring*, John.

If these are parallel cases, the phrases in question are adverbial. This is at least a permissible alternative opinion.

One as Pronominal Adjective.—

One Jones is waiting to see you.

Here we do not imply that the number waiting is one rather than two or three; "one" here means *a person by the name*. It is a pronoun used as an adjective.

One by One.—

The petals dropped off *one by one*.

One by one the stars came out.

We think of *one by one* as a single term, and as such it is clearly adverbial of manner. If the expression itself is to be broken up, the first "one" is substantive adverbial followed by the phrase *by one*.

Opposite, in the phrase.—

Opposite me, preposition, relating *me* to something else, but *strongly adverbial;* but in *opposite to me*, adverb or adjective, depending on the context.

See *Preposition*, in this section.

An exact parallel: *Off the ice, off from the ice*.

Optative Phrases.—

Various forms expressing wish or desire are called optative, e.g.

Let's go now.

Let me never forget this day.

"*May there be* no moaning of the bar
When I put out to sea."

Would there were no winter!

Or, Introducing an Appositive.—

He is to speak on Pictorial Photography, *or* the Art of Making Real Pictures with the Aid of a Camera.

"Art", etc. is really an appositive phrase, explaining the meaning of Pictorial Photography.

The snow-apple, *or Famense*, is a fall variety.

"Famense" is an appositive, meaning the same as snow-apple, and introduced by "or".

Or Rather.—

(1) I direct, *or rather* request, you to be there.

(2) His work has this defect, *or rather* disadvantage.

(3) He has this fault, *or perhaps* one should say misfortune.

These three "or" groups are alike in several respects: Each is parenthetical, each is thrown in to qualify or displace a preceding term. We have to choose between calling them appositives, or coordinates;—e. g., in (1) the subject "I" may have two verbs, "direct" and "request", or the verb "request" may be thought of as an appositive with the verb "direct." Really there is nothing to hinder holding *both* opinions.

Out, Out of (See also Preposition, Double.—

(1) Careful! I am *out of* humor this morning!

(2) "For though from *out* our bourne of time and place."

(3) That bullet came from *in* this house.

The first *out* may mean empty, devoid, ill-conditioned—in which case *out* is an adjective.

The second *out* has a very different meaning, quite close to the meaning of *in* in sentence (3). The object of *from* appears to be the prepositional phrase *out our bourne*.

Over—Adverb or Preposition?—

(1) The operation cost *over* five hundred dollars.

(2) We travelled *over* a thousand miles.

(3) Throw the ball *over* the house.

(4) We roamed *over* a great area.

The first two sentences use *over* in the sense of more than, a measure, and therefore *adverbial*.

The second two cases, sentences (3), (4) use *over* to express physical relationship—prepositional.

Own.—

An adjective, with a peculiar suggestion of intensifying possession.

My *own* car.

Own may become pronominal—May not a man do what he will with his *own*?

Participle as Objective Complement.—

She kept the talk *going*.

Participles Become Adjectives or Adverbs.—Words participial in form often lose even the hint or assumption of action contained in a verbal, and become mere adjectives or adverbs. Note the difference between

A *stinging* cold day, and

The wind came *stinging* our faces and hands.

The first "stinging" is a pure adverb, giving the measure or degree of *cold*.

Participle, or Mere Adjective—Adverb?

His work makes him very *tired*.

The house stood in a *sheltered* nook.

The wind is *stinging* cold.

Two adjectives and an adverb, no participles. Even the implication of action is gone from the words *tired, sheltered*, stinging; though the last word has of course a very intense descriptive quality.

Phrasal Complement.—

His manners are *of the best*. (Attribute.)

He is *about my age*.

She worked herself *to death*. (Objective.)

Phrases in Apposition.—

There are two best places to live,—*in New York*, and *on the farm*, where I was born.

These two phrases are substantives, together equivalent to *two best places*.

Phrase Modifying an Adverb or Adjective.—

John is taller by *several inches*.

This gun shoots farther *by a mile*.

Phrasal Object.—

(1) "Give me *of your bark*, O Birch Tree!"

(2) He sang "*In the Gloaming*."

Of your bark is not a mere adverbial phrase describing the manner of giving. Something was actually given.

Phrasal Subjects.—

On the track is an unsafe position.

In my house is *in my castle*.

Phrases May Be Compared.—Hobble skirts are *little in fashion* among college girls, *less* among professional women, *least* among busy house wives. The phrase *in fashion* is really given three degrees of scope. The three might have been positive, was well as negative (much, more, most.)

Pleonasm.—(Repetition or "Padding", for effect.)

Thy rod and thy staff, they comfort me.

The smith, a mighty man is *he*.

The boy—Oh, where was *he?*

In a grammatical analysis, probably the opening term in each of the above sentences should be called *independent*. Alternatives: Give two subjects, or call one explanatory of the other.

Plurals, difficult, inconsistent, or exceptional.

Chief, chiefs; gulf, gulfs; thief, thieves; elf, elves; buffalo, buffaloes; canto, cantos; court-martial, courts-martial; major-general, major-generals; Knight - Templar, Knights-Templar; son-in-law, sons-inlaw; commander-in-chief, commanders-in- chief; roof, roofs; hoof, hoofs or hooves; proof, proofs; skiff, skiffs; muff, muffs; scarf, scarfs; man-of-war, men-of-war; attorney-at-law, attorneys-at-law; passer-by, passers by; woman-servant, women-servants;3 percent, 3 per cents.

Possessive Appositives.—

His brother John's hat fell over board.

The word John's modifies hat, yet at the same time also relates to brother. Really the expression "*His brother John's* acts as one word.

Predicate Adjective or Adverb.—

(1) The boy came *running* pell mell.

(2) The boy came *smiling*.

(3) The boy stood *defiant*.

We prefer to call "running pell mell" an adverbial phrase describing how the boy came. But "defiant" in (3) describes the *boy*, rather than the manner of his standing. "Smiling" in the second sentence, is either adverb or complement or both, as you please to direct your attention.

"Shadows dark and sunlight sheen
Alternate come and go."—H. W. Longfellow.

Either admit that Mr. Longfellow meant *alternately*, or call alternate a *predicate adjective*.

"They descended *fearless* into all gulfs and bedlams."

Fearless, like *alternate*, is either a Carlylian adverb, or a predicate adjective.

For this perplexing combination of adverb and predicate adjective, Whitney uses the name Adverbial Predicate.

Preposition, Double (See "Out", in this Series.)

(1) *Out of* may sometimes roughly equal *from*.

(2) *Instead of* may roughly equal *for*.

(3) *According to* may roughly equal *by*.

If *in consequence* should be common practice become one word, then such an expression as *in consequence of* would equal the single preposition through. See (2), (3) above.

Prepositions Following Their Objects.—

Whom is this *for?*

This is the book you called *for*.

"Pleasant it was when woods were green
And winds were soft and low
To lie amid some sylvan scene
Where, the long drooping boughs *between*", etc.

The deferred preposition is common in questions, and in poetry, (though 20th century poets take fewer licenses of this sort.)

Prepositions, formerly **Adverbs,** become **Conjunctions.—**

Pass *on*, pass *by*, shut the door *to*, go *to*, etc., are adverbial survivals. The adverbial quality is still present in all prepositions, along with the acquired function of connecting or *relating* ideas.

If the object of one of these relating words is a substantive word or phrase, the connective is called a *preposition*: as in *before my election;* but if the object is a clause, the same word is rather arbitrarily called a conjunction or a conjunctive adverb: *before I was elected.*

Preposition Of Omitted.—

Half the profits.

This side, inside, outside, beside the gate.

On board ship, worthy a better fate.

Preposition suppressed, or old genitive form which has omitted the sign "of".

Quoth.—

Equivalent to *said.* Past tense only.

Same as, Such as, So much as, As many as.—

(1) My car has not the *same* motor *as* yours. (has).

(2) We are not likely again to have *such* good times *as* those were.

(3) He does not care *so much* for fishing *as* for hunting.

(4) Give me *as many as* you take.

There is good reason for holding that *as* in such constructions was formerly a relative pronoun, but it is doubtful if much of this old pronominal force remains. If *as* were a relative pronoun, note that in sentence (1), it would be object of "has"; in (2), predicate nominative of "were"; in (3) object of "does care"; in (4) object of "take". Perhaps in the first sentence the substantive value of "as" may be optionally accepted. We prefer to call it a subordinating conjunction throughout.

So, as Adjective.—

You can hardly be surprised at his being boorish, for his parents were *so.*

So equals *boorish.*

So—That.—

We will manage *so that* you can stay over the week-end.

"So teach us to number our days *that* we may apply our hearts unto wisdom."

These clauses introduced by the subordinate conjunction that are both adverbial, modifying *so.*

Subject as Complements With Other Verbs Than Be.—

The prison doors *stood* wide *open.*

After the storm, the grain *lay flat.*

In that solemn place, the garrulous *stood silent.*

America promises that the poorest may *become rich.*

Milk *turns sour.*

Pigs *grow fat* on it.

Get busy.

I shall *go mad.*

My matches *have kept dry.*

Why should any man *remain ignorant?*

Do you *feel dizzy* up here?

"A rose by any other name would *smell as sweet.*"

"Such and Such," "So and So."—

He said he would see me at *such and such* a time.

In *such and such* a case, you will do *so and so.*

In these uses, we prefer to call *such and such* a compound demonstrative adjective, *so and so* a compound or phrasal adverb.

Than.—

A subordinating conjunction, used in comparison of a principal or preferred idea with a secondary or inferior idea.

This is better *than* that (is good).

Baldwins are sourer *than* russets (are sour).

Than.—

Conjunction: We can sooner make a new one *than* we can find the one we lost.

Preposition: *Than whom*—However the grammarians may object, good writers use the *than whom* phrase as freely as they use *of whom*, or *for whom.*

This rod is of vanadium steel, *than which* there is nothing better. *Than which* modifies better.

That for *When, Where, Why.—*

"On the instant *that* the clock struck twelve, light flashed in the room." (— when — in which) etc.

See Adverbs Introducing Adjective Clauses, in this series.

"That", "This" with plural noun.—

We have had no war with England *this hundred years.*

The "hundred years" is plural in form, but really singular in sense. It is thought of as a stretch of unbroken time.

That five dollars was soon gone.

Another illustration of a single idea in a plural form.

That—Subordinate Conjunction or Relative Pronoun?—

(1) I am not sure *that* you had better go.

(2) He said *that* he would be home for supper.

(3) "When the hours of day are numbered,
And the voices of the night
Wake the better soul, *that* slumbered,
To a holy, calm delight."

(4) "When *that* the poor have cried, Caesar hath wept."

(5) Now *that* spring has come.

The word *that* in No. 3 is clearly a *relative pronoun.*

In (4), (5) that has no discoverable nounal force; it is a subordinate conjunction.

The "that" of sentences (1), (2) appears to be intermediate. If you see marked nounal quality in it, call it relative pronoun, otherwise, say subordinate conjunction. We favor the latter.

You blundered in *that* you did not ask for help.

Here, *that* has pronominal meaning.

That With Three Functions.—

I fired on the instant *that* the latch clicked.

"That" equals *in which,* and this phrase here *modifies instant,* as an adjective; *modifies clicked,* as an adverb, and *connects,* as a sort of demonstrative relative pronoun.

That Is, To Wit, Namely.—

See "For Example" in this series.

The More, the Less, etc.—

The more he tries, *the less* he seems to accomplish.

The harder the task, *the greater* the triumph.

In both these sentences, the word "the" carries an idea of exact quantities in comparison. By so much as the task is more difficult, by that much is the conquest more to be gloried in. The word "the", since it *measures degree,* may well be called an adverb.

Then—When.—

Then, *when* we were almost defeated, help came.

The clause *when we were almost defeated* modifies *then. When* is correlative and identical in meaning with *then. Then* modifies the main verb came.

Other such pairs are *there—where, therefore—because.*

There, Expletive.—

There was no need of your being *there,*

The second *there* really serves as an adverb of place, but the first *there* merely starts the sentence going, delaying the appearance of the real subject. This expletive use is not confined to the subject position, however: Only in instant flight is *there* any hope for you. "Let *there* be light!"

"The which."—

The which task fell to me. An old compound pronominal adjective, now out of date.

This once.—

Just *this once!*—"Once" is here a substantive, equivalent to *one time.* "This" is a demonstrative adjective, pointing out which one time. There seems also to be some pronominal force in the word this,—something more than in *this apple.*

Though—Yet.—

Though he slay me, *yet* will I trust him.

Rearranged, I will trust him yet, though he slay me.

Though and *yet* do not appear to be associated like *so—that* or *then—when.* The clause *though he slay me* appears to set forth conditions under which I will trust him. We call yet a simple adverb, and though a subordinate conjunction.

Times.—

Three times one are three.

Times is an adverbial noun, showing the number or degree in which "one" is to be considered.

To be—Complement or Introductory Term?

1. He was thought to be a swindler.

2. He was thought to have secret resources.

If we call *to be,* in the first of these sentences, a merely introductory term, what shall we say of *to have* in the second? It seems much safer judgment to call both these infinitive phrases *attribute complements.*

'Used", with an Infinitive, to Show Repetition.—

(1) He used to come every day. (—He came)

(2) He was accustomed to come every day.

(3) He practiced coming every day.

What is the construction of to come? The expression is so idiomatic that we can hardly think of *to come* as either an adverb or an object complement, in the first sentence. The choice seems to favor the later idea. Such phrases are sometimes called *Frequentative.*

Verbal Absolute, or Subject of Sentence.—

(1) *To-day being* Sunday, we must be decorous.

(2) To-day being Sunday compels decorum.

(3) To-day's being Sunday, etc.

In (1) *To-day being Sunday* is an absolute participial phrase.

In (2), (3) the same phrase is a gerund. To-day is subject of the verbal in (2).

What a, What, in Exclamations.—

What a charmer she is!

What color! *What* grace!

What a pity!

All these italicized terms are descriptive; most of them imply both quality and degree. They are adjectives.

What, an adverb (?)

What a good time we had!

What delicious grapes!

There is sense of *degree* in these uses of what.

Which, what as Adjectives.—

Two red, three white, six brown, *which* last are mine.

A pronominal adjective; there is still in the word some *nounal* idea, but the main use is here selective.

The interrogative pronoun *what* may be similarly used.

What boat is that?

What as a Relative.

I will tell you *what* is the matter.

What—that which. Unquestionably used in place of a noun, and just as surely a connective. But these two functions make it a *relative pronoun.* Its antecedent is unexpressed. The word "thing" may be supplied as antecedent, if one is demanded.

What with.—

What with sickness and *what with* lack of work, they were in a bad way.

If *what with sickness* means *on account of, because of, through,* sickness, the phrases are adverbial, modifying *were.* No doubt this is pretty nearly the idea conveyed. But the *what with* phrases, while logically related, seem grammatically set apart. We prefer to call them absolute idioms.

Whether.—

A subordinating conjunction introducing a nounal idea. I don't know *whether* to go or stay. We haven't decided *whether* we shall buy or not.

Which, antecedent of—

The dentist said he must take an X-Ray picture, which operation seemed at first rather disquieting.

The antecedent of which is *must take an X-Ray picture;* or, if preferred, the noun operation, modified by the demonstrative which, is appositive with the whole predicate *must take,* etc.

Which may even refer to an adjective. He claimed to be *competent, which* he certainly was not.

Which an Adjective (?)

They have made up their minds to invest all they have in the venture, *which* decision will either make or break them.

Which is here a demonstrative term, pointing out the decision. It is also a connective, equal to *and this,* for the clause is rather of added information than of subordinate modifying quality. Little, if any, pronominal quality is found in the "which" of this sentence.

While—So.—

While you avoid slang in careful speech, you will not object to it in colloquial English, *so* the slang be effective. Here, the word *while* introduces a concession, the word *so* a *condition.* Each of the two has an adverbial sense, and a connective function. It is immaterial whether they be called conjunctive adverbs, or adverbial conjunctions, though we prefer the latter, since the connective idea seems the stronger.

With May Be Almost a Conjunction.—

Bring cups, saucers, and plates, *with* as many spoons as you can spare.

With, together with, in such constructions have rather the force of *and* than the relating force of prepositions.

Worth Doing.—

What is *worth doing* is *worth doing* well.

Worth is an adjective, doing is a verbal noun used adverbially to measure the degree of worth.

Yes, No, Really Elliptical.—

Commonly called adverbs, are not really so.

Will you be there? *Yes.* (I shall.)

Yes and *no* are rather abbreviated clauses than parts of speech.

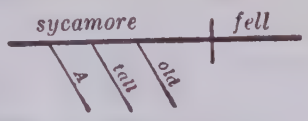
DIAGRAMS

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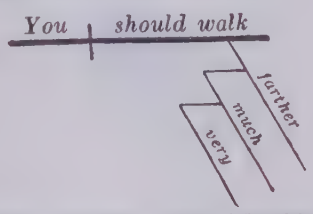
Subject, Predicate, and Sentence Line.



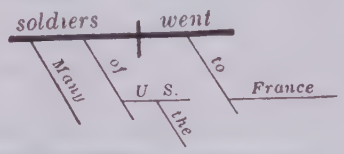
Adjectives.—A tall old sycamore fell.



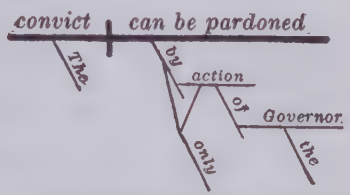
Adverbs.—You should walk very much farther.



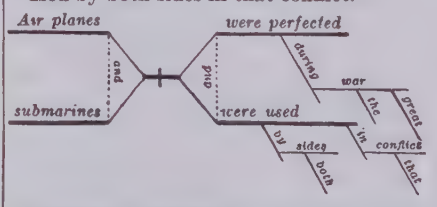
Phrases, Adjective and Adverbial. — Many soldiers of the United States went to France.



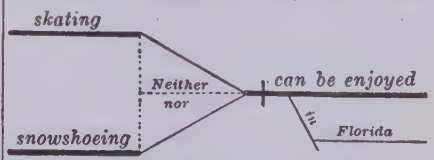
Adverb Modifying a Phrase.—The convict can be pardoned only by action of the governor.



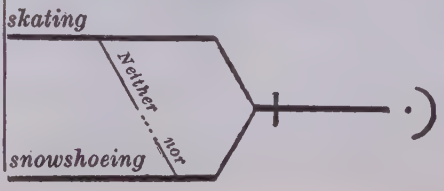
Compound Subject and Compound Predicate.—Airplanes and submarines were perfected during the great war, and were used by both sides in that conflict.



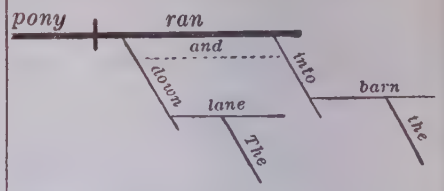
Compound Connective.—Neither skating nor snowshoeing can be enjoyed in Florida.



(Alternate diagram, in case neither and nor are held to modify, as well as to connect:



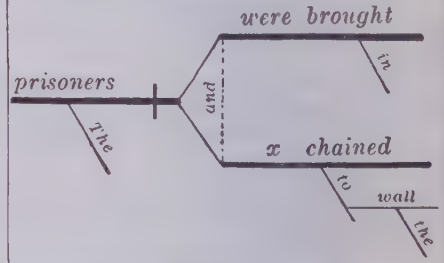
Phrases Connected.—The pony ran down the lane and into the barn.



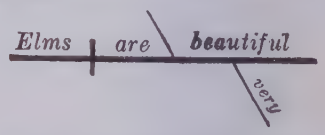
Object Complement.—Storms wreck many ships.



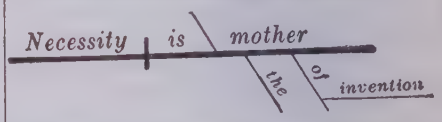
Words Omitted. — The prisoners were brought in and chained to the wall.



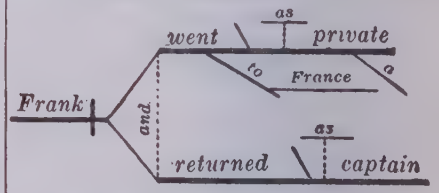
Attribute Complement.—Elms are very beautiful.



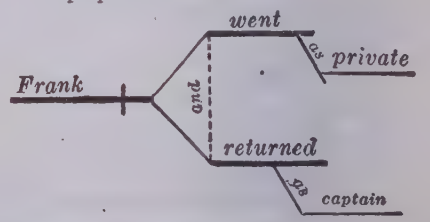
Necessity is the mother of invention.



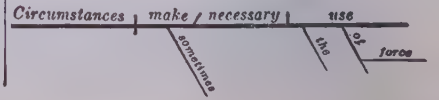
Particle.—Frank went to France as a private and returned as captain.



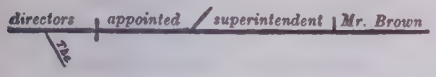
(Alternate diagram in case **as** is held to be a preposition:



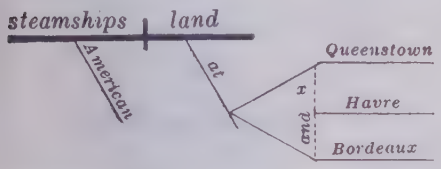
Objective Complement, (Adjective). — Circumstances sometimes make the use of force necessary.



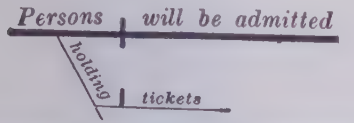
Objective Complement, (Noun). — The directors appointed Mr. Brown superintendent.



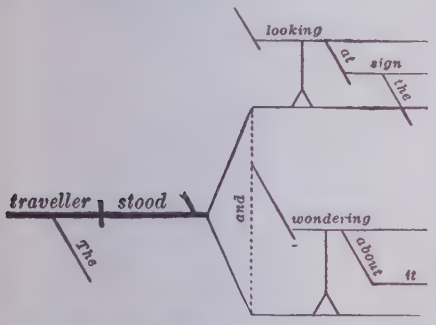
Several Objects of a Preposition.—American steamships land at Queenstown, Havre, and Bordeaux.



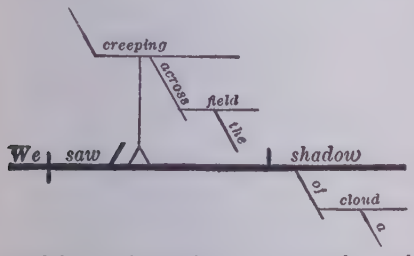
Participle, (As Adjective).—Persons holding tickets will be admitted.



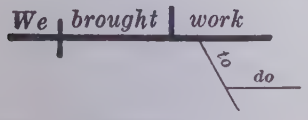
Compound Participial Complement, (Attribute).—The traveller stood looking at the sign and wondering about it.



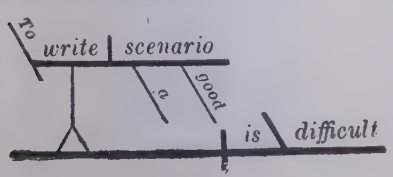
Participle as Objective Complement. — We saw the shadow of a cloud creeping across the field.



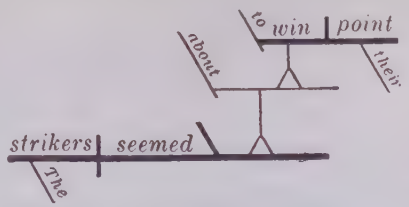
Infinitive as Adjective.—We brought work to do.



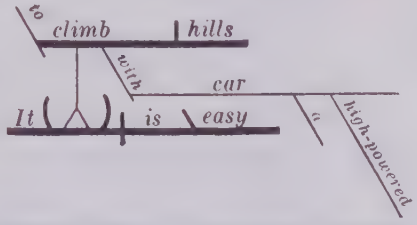
Infinitive as Subject.—To write a good scenario is difficult.



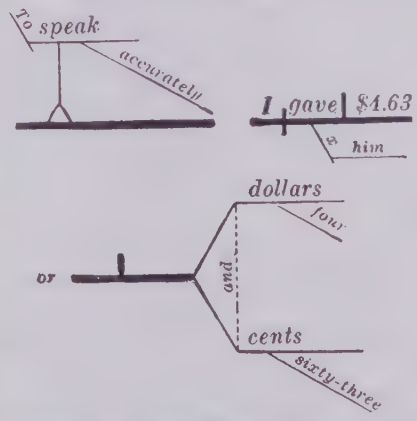
Infinitive in Phrasal Complement.—The strikers seemed about to win their point.



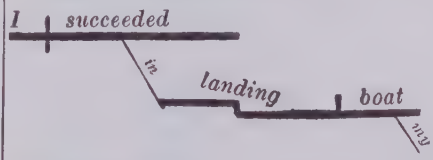
Infinitive as Appositive Subject.—It is easy to climb hills with a high-powered car.



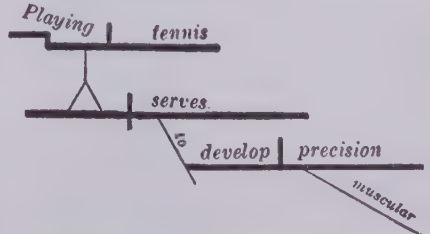
Indirect Object; Independent Infinitive. —To speak accurately, I gave him four dollars and sixty-three cents.



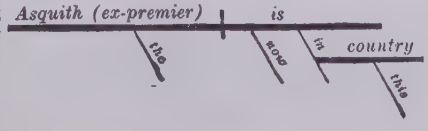
Gerund in Prepositional Phrase. — I succeeded in landing my boat.



Gerund as Subject.—Playing tennis serves to develop muscular precision.



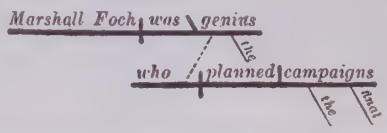
Noun in Apposition.—Asquith, the ex-premier, is now in this country.



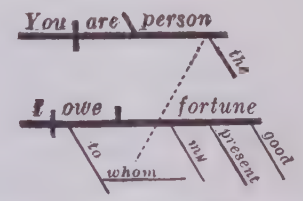
Adverbial Noun.—We had poor crops this year.



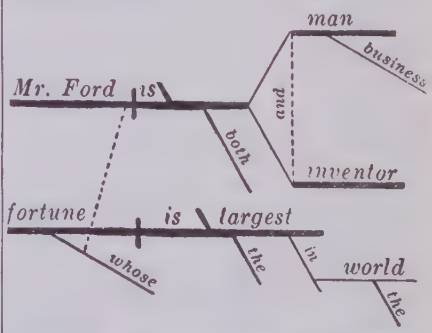
Adjective Clause.—Marshall Foch was the genius who planned the final campaigns.



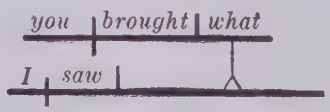
Connection Through Object of Preposition.—You are the person to whom I owe my present good fortune.



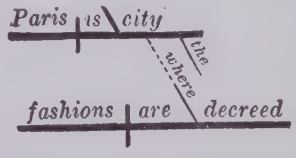
Connection Through Possessive Relative Pronoun.—Mr. Ford, whose fortune is the largest in the world, is both business man and inventor.



Connection Through Object in Clause.—I saw what you brought.

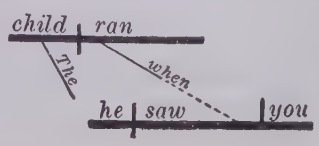


Connection Through Adverbial Relative. —Paris is the city where fashions are decreed.

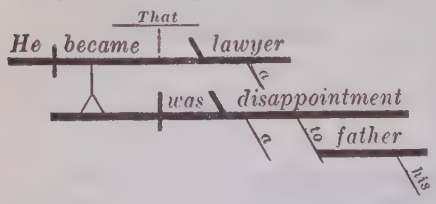


(The word **where** both connects and modifies.)

Connection Through Conjunctive Adverb.—The child ran when he saw you.

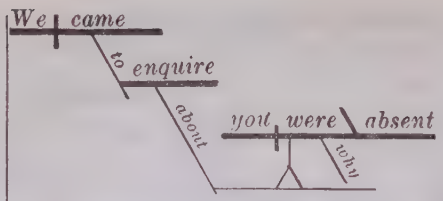


Clause as Subject.—That he became a lawyer was a disappointment to his father.



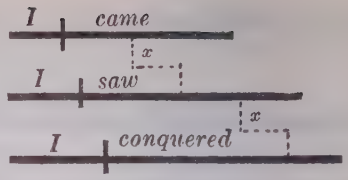
(That is an introductory word, or "particle.")

Clause as Object of Preposition.—We came to enquire about why you were absent.



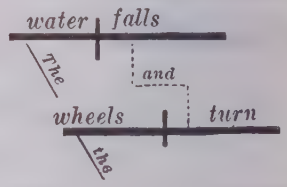
(Absent seems to be both adjective and adverb.)

Compound Sentences.—I came, I saw, I conquered.



(No connectives expressed or understood.)

The water falls and the wheels turn.



DICTIONARY OF PREPOSITIONS

SHOWING THEIR USE IN CONNECTION WITH PARTICULAR WORDS, ESPECIALLY VERBS

Abandoned *to*
Abate *of, from*
Abhorrence *of*
Abhorrent *to*
Abide *in, at, with, by*
Abominable *to*
Abound *in, with*
Abstinence *from*
Abut *on*
Accede *to*
Accompanied *by, with*
Accord (intrans.) *with*
Accord (trans.) *to*
Accordance *with*
Account *of, for, to*
Accountable *to* (a person) *for* (a thing)
Acquaint *with*
Acquaintance *with*
Acquiesce *in*
Acquit *of*
Adept *in*
Adequate *to*
Adhere *to*
Adjacent *to*
Adjourn *to, till, at, for*
Adjudge *to, in, of*
Adjust *to*
Admission (access) *to*, (entrance) *into*
Admit *of, to*
Admonish *of, by, against*
Advantage *over, of*
Advise *of, to*
Advocate *of*
Affinity *to, with, between*
Agree *with* (a person), *to* (a proposal), *upon* (things or conditions)
Agreeable *to*
Ambitious *of, to*
Amenable *to*
Analogous *to*
Analogy *to, with, between*
Angry *with* (a person), *at* (a thing)
Animadvert *on, upon*
Annex *to*
Answer *for, to*
Antecedent *to*
Antipathy *to, against, between*
Anxious *about, for*
Apologize *to* (a person), *for* (some act)
Apology *to, for*
Appeal *from* (one) *to* (another) *for* (aid, justice)
Appertain *to*
Applicable *to*
Apprehensive *of* (danger), *for* (one's life)
Appropriate *to*
Argue *with* (one), *against, for* (a person or view), *on* (a subject)
Arraign *for, by*
Arrange *with* (one) *for* (something)
Ask *of* (a person), *for* or *after* (a person, or thing), ask one *to* (a party)
Associate *with*
Assure *of*
Astonished *at*
Atone *for*
Bear *upon, with;* bear witness *against, in favor of*
Betray *to* (a person), *into* (a thing)
Betroth *to*
Blush *at* (one's vices), *for* (one)
Boast *of*
Border *on, upon*
Born *to* (good luck), *into* (the world), *of* (woman)
Bound *to, for* (a place)
Call *on, upon, at, for*
Capable *of*
Care *for*
Careful *of, for*
Careless *of, about*
Carp *at*
Catch *at*
Caution *against*
Certain *of*
Certify (one) *of* (a fact)
Change *for, with*
Charge *on*, or *against* (a person); charge (one) *with* (some act)
Clear (land) *of* (trees), (a man) *from* (debt), (a ship) *for* (action)
Coalesce *with*
Coincide *with* (one) *in* (opinion)
Commit *to*
Common *to* (several persons)
Commune *with*
Communicate *to, with*
Compare *to, with*
Compatible *with*
Compliance *with*
Conceive *of;* conceive (a purpose or ill-will) *against* (one)
Concerned *at, for*
Concur *with, in, on*
Conduce *to*
Confer (bestow) *on, upon*
Confer (consult) *with* (one) *on, upon* (a question)
Confide *in, to*
Conform *to*
Conformable *to, with*
Conformity *to, with*
Congenial *to*
Congratulate *on, upon*
Consist *of, in, with*
Consistent *with*
Consonant *to, with*
Consult *with, about*
Contend *with, against, for*
Contest *with*
Contiguous *to*
Contrary *to*
Contrast *with*
Conversant *in, with, about*
Convert *to, into*
Convict *of*
Convince *of*
Copy *from, after*
Correspond *to, with*
Covenant *between, with, for*
Cure *of*
Dash *against, upon, into, through*
Deal *in, by, with*
Debar *of, from*
Decide *on, upon, in favor of, against*
Defend *against, from*
Deficiency *of*
Deficient *in*
Defraud *of*
Demand *of, from*
Denounce *against* (a person); denounce (one) *for* (misconduct), *for* (a traitor)
Depend *on, upon*
Dependent *on, upon*
Deprive *of*
Derive *from*
Derogatory *to*
Descended *from*
Deserving *of*
Desirous *of*
Desist *from*
Despair *of*
Despoil *of*
Die *of* (disease), *by* (sword, famine), *for* (one, or for some cause)
Differ *with* (a person) *in* (opinion), *from* (a person or thing), *in* (some quality)
Difference *between* (things), *in* (quality, etc.); *on* (questions)
Different *from* (*than* is not allowed)
Difficulty *in, concerning, of, about*
Diminish *from, by*
Diminution *of*
Disabled *from, by*
Disagreeable *to, thereunto, in* (a less degree)
Disappointed *of* (a thing not obtained), *in* or *with* (a thing obtained)
Disapprove *of*
Discouragement *to* (vice); *at* (obstacles)
Disengaged *from, on* (a holiday)
Disgusted *at, with, by*
Dispose *of, to, for, among* (the poor)
Dispossess *of*
Dispute *with, between, among*
Disqualify *for, from*
Disregard *of*
Dissatisfied *with*
Dissent *from*
Distinct *from*
Distinguish *from, between*
Divide *between* (two), *among* (more than two)
Dote *on*
Doubt *of, about, concerning*
Dwell *in, at, on, upon, near*
Eager *in, for, after*
Embark *in, for*
Embellish *with*
Emerge *from*
Employ *in, on, upon, about, to*
Emulous *of*
Enamored *of, with*
Encounter *with*
Encouragement *to, of, among* (people)
Encroach *on, upon*
Endeared *to, by*
Endowed *with, by*
Endued *with*
Engaged *in, with, for*
Enjoin *on, upon, by, from*
Enter *on, upon, into*
Entrance *on, upon, into*
Envious *of, at*
Equal *to, with* [rare]
Equivalent *to, of*
Espouse *to*
Estimated *at, by, for, with, in,* etc.
Estranged *from, by*
Exception *to, against, at*
Excluded *from, by*
Exclusive *of*
Expelled *from, by, for*
Expert *in, at*
Exposed *to, for* (sale)
Expressive *of, to* (them)
Fall *under, on, upon, from, to*
Feed *on, upon*
Fight *with, against, for*
Filled *with*
Fond *of*
Fondness *for*
Foreign *to, from*
Founded *on, upon, in* (truth)
Free *from* or *of* (faults), *of* (a place), *with* (money), *in* (conduct), *for* (all), *to* (all)
Friendly *to*
Frightened *at*
Frown *at, upon*
Fruitful *in, of*
Furnished *with*
Glad *of, at, with*
Glance *at, upon, from, to*
Glow *with*
Grapple *with*
Grateful *to* (a person), *for* (a favor)
Greedy *of, after*
Grieve *at, for*
Guard *against*
Guilty *of*
Hanker *after, for*
Happen *to, on*
Healed *of*
Hinder *from*
Hiss *at*
Hold *in, against, of, from, for, to, under*
Impatient *at, for, of*
Impenetrable *by, to*
Impervious *to*
Impose *on, upon*
Inaccessible *to*
Incapable *of*
Incentive *to*
Inconsistent *with*
Incorporate *into, with*
Independent *of, on*
Indifferent *to*
Indulge *with, in*
Indulgent *to, of*
Influence *over, with, on*
Inform *of, about, concerning*
Initiate *into, in*
Initiation *into, in*
Inquire *of, after, for, about*
Inroad *into*
Insensible *to, of*
Inseparable *from*
Insinuate *into*
Insist *on, upon*
Instruct *in*
Insult *on, upon*
Intent *on, upon*
Intermeddle *with*
Intervene *between, in*
Intrude *on, upon, into*
Inured *to*
Invested *with*
Irritated *against, by* (a person); *at, by* (a thing)
Jealous *of*
Jeer *at*
Join *with, to*
Lean *on, upon, against*
Level *with*
Liberal *to, of, with, in*
Liken *to*
Live *in, at, with, on, upon*
Loaded *with*
Long *for, after*
Lord *over*
Meditate *on, upon*
Meet *with*
Militate *against*
Mingle *with*
Minister *to*
Mistrustful *of*
Mix *with*
Necessary *to, for*
Need *of*
Neglectful *of*
Negotiate *with*
Obedient *to*
Object *to, thereto*
Observant *of*
Observation *of*
Obtrude *on, upon*
Obvious *to*
Offend *against*
Overwhelmed *with, by*
Parcel (out) *among*
Parley *with*
Part *from, with*
Partiality *to, for*
Participate *in, with*

Patient *with, of, under, toward*
Pay *for*
Peculiar *to*
Penetrate *into, through*
Persevere *in*
Pertain *to*
Pitch *upon, on*
Play *on, upon, with*
Prefer *to, before, above*
Preferable *to*
Preference *to, over, above, before*
Prefix *to*
Prejudice *against*
Prejudicial *to*
Prepare *for*
Preserve *from, for*
Preside *over*
Press *on, upon*
Presume *on, upon*
Pretend *to*
Prevail *on, upon, with* (to persuade) *over, against* (to overcome)
Prevent *from*
Previous *to*
Prey *on, upon*
Prior *to*
Productive *of*
Pronounce *against* (a person), *on* (a thing)
Protect (others) *from*, (ourselves) *against*
Provide *with, for, against*
Purge *of, from*
Pursuance *of*
Pursuant *to*
Quarrel *with, among, about*
Quarter *on, upon*
Questioned *on, upon, by*
Rail *at, against*
Reckon *on, upon, with*
Recline *on, upon*
Reconcile *to, with*
Recover *from*
Reduce *to, under, by*
Refer *to*
Reflect *on, upon*
Refrain *from*
Regard *for, to*
Regret *for*
Regular *in*
Rejoice *at, in, on account of*
Relate *to*
Relish *for, of,* (gives relish) *to* (food)
Rely *on, upon*
Remain *in, at*
Remark *on, upon*
Remit *to*
Remonstrate *with* (a person), *against* (a thing), *for* (doing)
Remove *from*
Repent *of*
Repine *at*
Replete *with*
Repose *on, upon*
Repugnant *to*
Rescue *from*
Resemblance *to, between*
Resolve *on, upon*
Rest *in, at, on, upon*
Restore *to, from*
Rove *about, over, in*
Rub *against*
Rule *over*
Rush *against, on, upon*
Sated *with*
Satiate *with*
Saturate *with*
Save *from*
Seek *for, after, to*
Seize *on, upon*
Significant *to, of*
Similar *to*
Sink *into, in, beneath*
Sit *on, upon, in*
Smile *at, on, upon*
Solicitous *about, for*
Sorry *for*
Stay *in, at, with*
Stick *to, by*
Strip *of*
Strive *with, against, for*
Subject *to*
Submissive *to*
Taste *of* (a thing possessed), *for* (a thing desired or relished)
Tax *of, with, for, on, upon*
Tend *to, toward*
Thankful *for*
Think *on, upon, of, about*
Thirst *after, for*
Touch *at, on, upon*
Transmit *to*
Triumph *over*
Versed *in*
Vest *in* (a person), *with* (a thing)
Void *of*
Wait *on, upon, for, at*
Want *of*
Weary *of*
Weep *at, for*
Witness *of*
Worthy *of*
Yearn *toward, for*
Yield *to*
Yoke *with*
Zealous *for*

CLASSIFICATION OF LANGUAGES.—Language is the whole spoken and written body of words and methods of combining words used by a nation, a people, a race.

The researches of philologists have resulted in the classification of the languages of the world into the following families and branches.

The Indo-European or Aryan Family.—This family is of greatest interest to us because our own tongue belongs to it, and the races speaking these languages are the foremost nations in the history of the world. They have produced the greatest and richest literatures; their languages have a great wealth of words; and because of these things philologists have made a more thorough study of these languages than of any other group, and a study of them is at the basis of our modern science of comparative philology. This family has eight branches.

The Indian or Sanskrit Branch has been used in India since 2000 B. C. or earlier. The oldest form is the Sanskrit, in which are written the Songs of the Veda. The Sanskrit, Prakrit, and Pali are now dead; the Hindi, Bengali, and Mahratti are the modern representatives, and are spoken by 225,000,000 people.

The Iranian Branch occupies the great plateau of Iran and the valleys of the Euphrates and the Tigris. The dead dialects of this branch are the Old Persian, handed down to us in a few cuneiform inscriptions, and Zend, or Old Bactrian. The chief modern representatives are New Persian (in part), Kurdisch, Baluchi, Afghan, and Ossetic.

The Armenian Branch consists of the living dialects of the Armenian, the written form of which has been changed little since the fifth century of our era. It is used by the people of the Caucasus and south of the Black Sea.

The Greek Branch comprises the ancient and modern Greek literary languages and dialects. Our own civilization owes much to the Greek language, since it was the means of transmitting to us the wonderful civilization of the ancient Greeks. Much that is best in the literature, philosophy and art of modern Europe is due to Greek influence. The modern Greek is used in Greece, the Balkan states, Constantinople, along the coast of Asia Minor, Crete and Cyprus. It is the commercial language of the east Mediterranean.

The Italic Branch includes the ancient Latin, Umbrian, Sabellian, and Oscan, the Latin having in time entirely absorbed the other three. The Latin was the language of the Roman republic and empire and was used in western Europe and in the Mediterranean basin. In spite of the break-up of the Roman empire, Latin continued to be the language of the literary and scholarly classes for many centuries. Even today the Catholic church uses Latin as its official language. With the coming of the barbarians the Latin was gradually modified and with it as a basis there were formed ultimately a number of new languages called Romance languages. They are Italian, French, Provencal, Spanish, Portuguese, Rumanian, and Rhaetian.

The Celtic Branch is more closely related to the Italic branch than to any of the other branches of the Indo-European family. At one time it was dominant in all of western Europe, but in the course of centuries it was gradually crowded toward the west and is now used only in the northwestern part of France and in the British Isles. There are two groups: (1) the Northern or Gaelic, including Irish, Gaelic or Scotch, and Manx, and (2) the Southern or Britannic, including Welsh or Cymric, Cornish (extinct since the eighteenth century), and Armorican or Bas Breton in Brittany.

The Slavonic or Slavo-Lettic Branch is found in eastern Europe and has two groups: (1) the Slavic, to which belong the Russian, Bulgarian, Serbian, Polish, and Bohemian; (2) the Lettic, comprising Lithuanian, Lettish, and Prussian (now extinct). This branch is spoken by about 150,000,000 people.

The Germanic or Teutonic Branch is divided into three groups: (1) the Gothic or East Germanic, (2) the Scandinavian or North Germanic, (3) the West Germanic.

The Italian Language in its literary form was the old Tuscan dialect, and was given its literary prëeminence through the writings of Dante, Petrarch and Boccaccio in the fourteenth century. Although the literary Italian is read and spoken by all the educated people of Italy there still remain numerous dialects throughout the peninsula, and it is impossible for a native of southern Italy to understand the dialect of northern Italy. Italian is spoken in the various dialects by at least 35,000,000 of people in Italy, Sicily, Corsica, Sardinia, Malta, southern Switzerland, southwestern Austria, a small region in southeastern France, in Argentina, Brazil, and the United States.

The French Language assumed something like definite form in the middle of the ninth century. There were various dialects in different parts of France, but soon two supplanted all others; the langue d'oil, which is the language of the north of France, and the langue d'oc, the language of the south of France, which became the modern Provençal. These are thus named because the word "yes" was oil and oc in northern and southern France respectively. The langue d'oil had its origin in the dialect of Paris and the surrounding country, the Ile de France of Capetian times. The term Old French should be applied to the French of the period from the ninth to thirteenth centuries. Since that time the language has absorbed words from the Italian, Spanish and English, and many words have been constructed from the Latin. Modern French was well formulated by the seventeenth century, and is known for its polish, clearness, conciseness and logicalness. It has a rich literature and has been the diplomatic language of the world since the sixteenth century and is still largely used for that purpose. Outside of France the language is spoken in Belgium, western Germany, Switzerland, and eastern Canada, being used by about 65,000,000 people.

The Provençal takes its name from the region of its origin, Provence, originally a Roman province. It forms a natural connection between French and Italian, perhaps more closely allied with Italian than with French. Provençal was a definite language as early as the ninth century. It was the language of the troubadours and the Albigenses and is still spoken by 8,000,000 people.

The Spanish Language arose in different dialects in the small states of the Iberian peninsula, but ultimately the Castilian dialect became the literary language. Spanish descended from the ancient Latin, but has become more unlike its parent stock than any other of the Romance languages. The Arabic-speaking Moors left a definite impress and modified both the pronunciation and the words of the Spanish. The Spanish of everyday discourse is markedly different from the literary and official Castilian; in eastern Spain Catalonian prevails, while in the west Galician is most common. Spanish is very important, inasmuch as it is spoken by the people of Mexico, Central America, all of South America excepting Brazil, many islands of the West Indies, and the Philippine islands. In

all about 50,000,000 use the Spanish tongue; of these 20,000,000 live in Europe.

The Portuguese Language resembles Spanish more than any other of the Romance languages. It is spoken in Portugal, the Spanish province of Galicia, the Cape Verde islands, Brazil, Portuguese Guinea, Angola, and Portuguese East Africa. In all between 15,000,000 and 20,000,000 people speak Portuguese.

The Roumanian Language is spoken by about 10,000,000 people in Roumania, southeastern Hungary, Bessarabia, Macedonia, Albania, Thessaly, Epirus, and Istria. The origin of the language dates back to the second century of our era, in which the Emperor Trajan conquered Dacia and colonized it with Romans.

The Rhaetian Language is spoken by about 100,000 people in the eastern part of Switzerland, especially in the canton Grisons.

The Gothic Group has long been extinct, and we know it largely through the work of Ulfilas, who in the fourth century of our era translated the bible for the Goths who lived in the Danube valley and north of the Black Sea. The language ceased to be used when the Gothic kingdoms fell, with one exception; a small remnant of the Goths found refuge in the Crimean peninsula and partially maintained their language until the eighteenth century.

The Scandinavian Group comprises four languages, Danish, Swedish, Norwegian and Icelandic. Until the eleventh century these languages differed very little from each other.

The West Germanic Group is the most widely spread of all the Teutonic languages and is divided into High German, Low German, and Anglo-Saxon or English. From earliest times there were several dialects of the German language, all having sprung originally from one common tongue. These dialects tended to increase in number and each had its own written form. From the configuration of Germany the various groups of languages take their name, High German from the upper, or higher, part of Germany and Low German from the coastal plain. The modern literary German originated in the fourteenth century. At that time the imperial chancery and many of the lesser courts in Germany adopted German for Latin as the official language. Naturally in the intercourse between the imperial and other courts the imperial dialect was adopted. The imperial dialect was, of course, that used by the local court of the emperors, who at that time were living at Prague. So a High German dialect (Franconian) became *the kanzlei-sprache* or official language of Germany. By the end of the fifteenth century this language was used not only for private correspondence but was used by some of the universities. Through the work of Luther this language was given its greatest impetus toward widespread usage. In his translation of the bible he used the language of the Saxon chancery because it was the most widely used dialect. The bible and Luther's numerous writings were read throughout Germany. Gradually one part of Germany after another adopted this as the written language. The German language is spoken by about 90,000,000 people in Germany, Switzerland, Austria, the United States, Brazil, Argentine republic, and in the German colonies. German is a very expressive and forceful language and its great writers and thinkers have produced literary, philosophical, historical and scientific works which are unexcelled.

In the Netherlands a Low German dialect is the literary and official language, and is known to us as Dutch. About 5,500,000 speak this language. The Flemish, a language closely resembling the Dutch, is used in Belgium by about 3,000,000 Flemish people.

The Anglo-Saxon, or English, Language was introduced into the British isles in the fifth century (A. D. 449) by Teutonic tribes—Angles, Saxons and Jutes—coming over from the Danish peninsula and northwest Germany. One of the most striking features of the English language is its composite nature; no other language is made up of such diverse elements. The English have been the greatest word-borrowers of all nations. When the Anglo-Saxons came to England they adopted some of the expressions of the Celts whom they conquered. In the sixth century, when England was opened up to the Roman Catholic church, various Latin words were introduced. During the ninth and tenth centuries, while the Danes controlled England, and afterward, many Scandinavian words were brought into the language. The Norman conquest (1066) caused the introduction of the great bulk of the French element, which of course was originally Latin. The era of the crusades brought in several Arabic words. The trade and maritime relations with Holland caused Dutch words to be introduced. The Renaissance added many Italian words. Many literary and scientific terms were borrowed from the Greek, especially since the sixteenth century. All the countries and peoples with whom the English had any political or commercial relations in modern times were made to contribute to the English vocabulary—French, Spanish, Portuguese, Germans, Persians, Chinese, Russians, Malays, Tartars, Hindus, American Indians, and Australian aborigines. Because of this cosmopolitan character of our language it contains more words than any other language, variously estimated at from 150,000 to 300,000. English is spoken by about 150,000,000 people in the British isles, the United States, Canada, Australia, New Zealand, South Africa, and extensively in all the dependencies of England, such as Egypt and India. English is the commercial language of a large part of the world to-day and its influence in this field is steadily growing.

The Semitic Family.—This is second in importance because some of the Semitic people (Hebrews, Phenicians, Carthaginians, Assyrians, and Arabs) have played very prominent parts in the world's religious and commercial history and have made great literary contributions. It has two groups: (1). The northern group comprises the Assyrian and Babylonian, known to us through cuneiform tablets, Hebrew, Samaritan, Phenician, Punic or Carthaginian, Chaldean, and Aramaic or Syriac. All of these are now practically extinct, Hebrew being used to a certain extent for religious purposes. The Old Testament of the Hebrews is of great importance to us because on it our religion is partly based. (2). The southern group comprises Arabic and numerous dialects of little importance. The Arabic was the language of Mohammed and is now used, for religious purposes at least, in all the Mohammedan countries—northern Africa. including Egypt, all of the Turkish empire, and by about 50,000,000 in India.

The Hamitic Family has been sometimes classed with the Semitic, but insufficient proof of its connection has been produced. It has three groups: (1) The Libyan or Berber in northern Africa; (2) the Ethiopian, spoken from the southern part of Egypt south to the equator, the most conspicuous members being the Galla and Somali; (3) the Egyptian, the hieroglyphic language found on the old Egyptian monuments and papyrus remains. It had a modern representative, the Coptic, which, however, was overpowered by the Mohammedan conquests.

The Ural-Altaic or Scythian Family, like the Indo-European, is found in Europe and Asia, and has five branches. (1) The Finno-Hungarian is spoken by the Finns, Lapps, and Hungarians or Magyars. (2) The Samoyed is spoken in the northern part of Russia and Siberia, there being five dialects. (3) The Turkish is spoken from Turkey in Europe with interruptions as far east as the Lena. (4) The Mongolian is spoken still farther east but does not reach to the Pacific. (5) The Tungusic is spoken by the Tunguses and Manchus in the northeastern part of Asia. The grammar of this family is very simple; each word has an unchangeable root and one or more suffixes are attached, making it an agglutinative language. The western branches have a resemblance to the Indo-European family.

The Monosyllabic Languages of Southeastern Asia (Indo-Chinese).—Here belong Chinese with all its dialects, Siamese, Burmese, Tibetan, and all the Himalayan dialects. These languages consist entirely of monosyllables which can undergo no change. Each word or root can have the properties of various parts of speech according to its position in a sentence. The most important of all of these languages is the Chinese, it being the greatest in the world. The number of people speaking it is variously estimated at from 270,000,000 to 433,000,000.

The Malay-Polynesian Family is found in the islands south and east of Asia in the Pacific and Indian Oceans. It has three divisions: (1) The Malayan division is spoken on the islands extending from Formosa south to Australia and west to Madagascar, including Sumatra, Java, Borneo, the Philippine islands, the Celebes, the Moluccas, Formosa and Madagascar. (2) The Melanesian division is spoken on the Solomon islands, the New Hebrides, and the Fiji Islands, and probably by the people of New Caledonia, the Marshall islands, and other small islands north and east of Australia. (3) The Polynesian division is spoken on New Zealand (Maoris), the Samoan islands, the Tonga islands, the Marquesas islands, the Society islands, the Hawaiian islands, and Easter island. These languages have a very simple structure, having many vowels and very few consonants. The Polynesian dialect is the simplest of the whole group.

The Dravidian Family of Southern India and Ceylon is spoken by 56,000,000 people and has no known relation to other languages. In the cultivated dialects the influence of the Sanskrit is very noticeable owing to geographical proximity.

The Bantu Family occupies the southern part of Africa from the equator south to Cape Colony, with the exception of a region almost coterminous with German Southwest Africa, which is occupied by Hottentots and Bushmen. This language has numerous dialects, and is characterized by its uses of prefixes instead of suffixes.

The Central African Languages.—Between the Bantu family and the Sahara desert is a large group of dialects, numbering hundreds. These vary in structure, but philologists have not studied them sufficiently to come to any definite and satisfactory conclusions about them.

The American Family comprises the languages of the nations of North and South America excepting the Eskimo language in the extreme north. There are over four hundred dialects altogether, the most important of which are the Athabaskan, the Algonquin, the Iroquois, the Shoshonean, the Siouan, and the Maya in North America; the Caribbean, the Tupi, the Aymaran, and the Patagonian of South America. Whether these languages are derived from one original language is at the present time very doubtful.

The Australian Family.—In Australia and in Tasmania there are a number of related dialects which are rapidly becoming extinct. These languages have no importance except to the philologist.

Isolated Languages.—Besides these families of languages there is a considerable number of isolated languages. Such are the Basque in the Pyrennes mountains, the Etruscan (now extinct for 2,500 years) in Tuscany, some of the dialects of the Caucasus region, the Japanese and the Korean, the Eskimo language in the arctic region, and finally the clicking languages of the Hottentots and Bushmen in southern Africa, so-called because of the clicking sounds made by placing the tongue against the roof of the mouth and withdrawing it with a sucking action.

Universal Languages.—There have been over forty attempts to create a universal language which might serve as a means of communication for all peoples of the earth. Most of these attempts were made in the last fifty years. Those of greatest importance are: *Volopuk*, published in 1879 by Schleyer of Baden. Of the vocabulary, about one-third is of English origin, while the Latin and Romance languages furnish a fourth. The grammar is simplified to the utmost. *Esperanto*, published in 1887, by Zamenhof of Warsaw, latterly taken up for practical purposes in many countries, its use being promoted by special societies and periodicals. Its structure is so simple that the whole grammar can be completely mastered in an hour. There are no exceptions to the rules, perfect regularity being a leading feature of the language. The essential roots number only some 900, including grammatical inflexions, prefixes, and suffixes, and these are chosen from the principal European languages in such a way as to make their mastery easy to any person of ordinary education. *Ido*, a modification of Esperanto, published in 1907; and *Universal*, a very recent attempt of Molenaar of Bavaria.

PRACTICAL ENGLISH.—The word *English* as used above does not refer merely to English words. It concerns more than such questions as to whether this word or that is good English. It means the whole art of writing English for practical purposes, so far as that art is itself a practicable subject of study. It means not merely English, but the art of writing.

The art of writing has been studied systematically for two thousand years, and the principles laid down by Aristotle, after a careful inductive scrutiny of Greek authors, hold good for any language. They are psychological principles. They concern the nature of different audiences and different situations, and the fundamental laws of appeal to all audiences and every situation.

Aristotle devotes a third of his rhetoric to a study of audiences. There is no more practical injunction to a writer than this: Know the man you are writing to. Adapt your discourse to him and to the situation he is now in. Books on rhetoric, if they mention this principle at all, are likely to defer it till they come to the subject of argument. We place it first. It will keep you from writing into the air.

Keeping this preliminary principle in mind, we may proceed to divide our subject into ten sections: (1) Structure of the composition as a whole; (2) Structure of the paragraph; (3) structure of the sentence; (4) diction, or the choice of words; (5) punctuation and capitals; (6) proofreading; (7) argument and debate; (8) the forms of public speech; (9) journalism and short stories; (10) business English, especially business and social letters.

It will be observed that half of these topics deal with a great variety of particular situations—debates, after-dinner speeches, addresses, lectures, sermons, newspaper writing, short stories, advertisements, sales-letters, etc. The other and earlier half deal with principles which are applicable to all forms of writing, all audiences, all situations.

Structure of the Composition as a Whole.—No matter what the audience or the situation, no piece of English is practically effective unless it has unity, coherence, emphasis, and proportion. These terms are formal and time-honored, but they are the summing up of centuries of practical experience.

Unity implies singleness of purpose. It rests on the fact that you can produce only one effect at a time. Don't scatter. Make your point. Stick to your subject. Learn to shut out half the things that occur to you. Don't divide the reader's attention. Don't let him wander away and forget you. It is now or never.

Conversely, don't omit the one thing that you really meant to say. It is not enough to avoid irrelevance; you must bring in all that is relevant. Every practical writer can remember the days when he used to fill paper with readable stuff, only to find—later on—that it was mostly not to the point, and that the thing which lay nearest to his heart didn't get written down at all.

The Title.—Choose your title and then narrow it to fit the situation. At this minute I am writing in my cabin in the woods, and the birds are filling the birches with melody. But can I write about "Birds"? No; nor about "North American Birds," nor "Michigan Birds," nor any other vast phase of a vaster subject. But just outside my window a Wilson thrush is repeating his liquid, mellow performance at intervals of exactly five seconds; and I might possibly manage an article on "Intervals of Song in the Thrushes of Northern Michigan."

Outlines.—If you would be certain of unity, make an outline. It may be a very simple affair, consisting of half a dozen items. But a careful scrutiny of it will tell you whether you are attempting too much, and whether all your items logically come under the title you have chosen. Unity consists in a vital relation between title and content. In the case of an argument the outline must be not a mere list of topics, but a list of statements. In those half-dozen sentences you can read the whole theme in brief.

Never allow yourself to believe that you can't work from an outline. It is what all poor writers plead. The people who can't think till they have the pen in hand, and who then wander along after their own pens instead of guiding them—these are the people whose articles and letters are ineffective. Their stuff has no skeleton, no bones, no structure, no organic life. Make your work—not like an angleworm, that will live if you cut it in two. Make it like a human being. Make it as vitally organized as you yourself are.

Coherence means more than mere cohesion; it means a living connection of parts. It implies such an arrangement as will enable the reader to follow the thought readily. It implies a normal order. For narration the normal order is that of time; events must be set down in the order in which they occur. For description it is that of the relative position of objects, grouping, contiguity, nearness and distance, etc. For exposition and argument it is the logical relation of fact and observation to conclusion. When the parts of a composition are thus set down in their normal order a sufficient degree of coherence is usually established for the simpler forms of writing.

In the more subtle forms, however, such as exposition, and especially argument, coherence will demand not only a normal order but also connecting links in the form of conjunctions, transition sentences, and sometimes transition paragraphs. Such terms as "moreover," "consequently," "however," "on the other hand," "in the next place," my "second contention is," etc., are of great value in articulating an explanation or an argument.

Emphasis.—There will be a gain in emphasis if, without violating the principle of coherence, the items of a composition can be so arranged as to bring the most important or most striking at the end. The reader is more likely to remember the theme as a whole if his final impression is a strong or vivid one.

But the opening words of a composition are as important as the closing. Get attention at the start. Strike out at once for some vivid interest of the reader—only let it be a legitimate and not a sensational interest.

Scale.—It is often necessary to bring what one has to say within a certain assigned limit of space. This will call into requisition the faculties of comprehensive view and judicious selection. Inexperienced writers usually say a great deal more than is necessary to an adequate presentation of the subject.

A good exercise for training in the matter of writing to scale is to reduce a paper of one thousand words to five or six hundred without sacrificing any essential point. A converse exercise is to treat a given topic in five hundred words, expand it to a thousand, and then to five thousand.

Writing to scale is one of the best exercises for the development of a logical and organized sense of composition.

Proportion.—A piece of writing that is well proportioned is one in which the various points are given space in accordance with their relative importance. Of course mere physical size or mere extent of theme has nothing to do with that importance. The valve gear of a locomotive will probably call for more space than the boiler. Similarly a certain half-hour of your outing

may call for more space than the entire week preceding.

Introductions and conclusions should, in general, be very brief. Your paper must not be top-heavy, nor must you keep on after you have really finished. For a theme of five hundred words, probably the first one or two sentences of the opening paragraph will constitute a sufficient introduction; for one of twelve hundred to two thousand words perhaps one or two paragraphs might be required; for a book of three or four hundred pages the opening chapter might be reserved for introduction.

As a practical method of securing a right proportion, the assigning of a numerical value to the various topics of the outline will be found helpful. It may prevent the young writer from expending too much energy and flow of speech upon the first few points, and then telescoping the rest as the task begins to wear upon him.

Structure of the Paragraph.—Definition.—The paragraph is a modern device for avoiding an interminable sentence. In Milton's time a man could write a sentence of five hundred words, a sentence that would cover two pages of print, and go scot-free. Scholars would read it, and nobody else read anything in those days. Nowadays people wouldn't. But those old Latin-trained scholars were aiming at a large unit of thought. Often they indented before and after such a sentence to show that it was a unit. Now we keep the indentions, but we break the long unit up into several.

We state the topic briefly in one sentence. We are content to state it merely. Then we go on to illustrate it or defend it or amplify it. It may take three or four sentences to do this, but they will all be closely related. The group of sentences is unified by a single topic. The indention is a halting-place that permits the reader to breathe, look back, and fix the paragraph in mind.

So remember that the paragraph is a device to give you time. Take your time. Don't be afraid of making a short sentence if the thought is really emphatic. Save your long sentence to mass details of illustration or proof.

Unity in the Paragraph.—Our definition indicates in general what we mean by *paragraph unity*. But a bit of caution must be added with respect to the word *topic*. The amateur is likely to think of every item or point as a topic, and to indent accordingly. The result is a rapid-fire series of pseudo-paragraphs of two or three lines each, disconcerting and often misleading to the reader. Paragraph unity involves the generalizing of points under a real topic of sufficient note to command a real paragraph, with bulk enough to constitute a real unit of thought, and not a mere fragment. Colonel Roosevelt, in a paragraph of about two hundred words, deals with the following points: Premiums on meritorious conduct of policemen, a new system of pistol practice, the Bertillon system for identifying criminals, a police bicycle squad, and a new municipal lodging house. These points are all generalized, however, under the topic "Minor ways in which we sought to reform the police force," thus producing a logically unified paragraph.

Paragraph Length.—What we have said above has its bearing on paragraph length. By our definition a paragraph is a group of sentences. It should contain, as a rule, therefore, not less than three sentences of average length—twenty-five to thirty words each. This is the minimum. Your shortest paragraph should contain ordinarily not less than seventy-five to a hundred words. The paragraph consisting of a single long involved sentence should be avoided. Break such a sentence up into three or four shorter ones.

As to its maximum, a paragraph, even when theoretically well unified, should not include much more than three or four hundred words. A paragraph running on through several pages of print has a discouraging look to most readers, and is likely to result in a hazy impression. The normal average should be about two hundred words.

In three exceptional cases the short single sentence paragraph is in place. The first is that of *dialogue*, in which, by more or less arbitrary usage, whatever is said by a single speaker at one time, together with identifying or brief explanatory remarks by the writer, is put into a paragraph by itself. The second case is that of *special emphasis*, wherein the moment or point is of such supreme importance as to be briefly paragraphed by itself, and thus visually emphasized in the printing by its contrast with the longer units before and after it. The writer should be very sparing, however, in such use of the short paragraph, as any approach to a frequent use will naturally defeat its own end—that of emphasis. The third case is that of the *transition paragraph*, which expresses a brief summary, or anticipation, or both.

The number of paragraphs in a composition bears no necessary relation to the number of topics or points in an outline. It is possible occasionally to develop a theme by assigning a paragraph to each point in the outline. It is more probable, however, that related points will have to be grouped into a single paragraph; and it may be that a single point will require two or three paragraphs for its development. This is in accordance with what we have said about paragraph length and unity.

Coherence in the Paragraph means simply that every sentence shall be in its normal place in the paragraph, and that whatever connectives may be necessary to a ready progress of one's thought through the paragraph shall be supplied. The reader resents being led astray, and being compelled to zigzag through a paragraph.

Proportion in the Paragraph.—This means precisely the same as proportion in the theme as a whole, except that the principle is applied on a smaller scale. The points or subtopics in a paragraph must be given space in accordance with their relative importance.

Connection Between Paragraphs.—In exposition and argument it is often desirable to indicate the relation of paragraph to paragraph. This may be done by the conjunction at the beginning of the following paragraph (*e. g.*, "Moreover," "Besides," "As a result," "Notwithstanding," "Of no less importance," etc.). Or it may be done by the transition sentence, which is usually the first sentence of the following paragraph, although it may be found preferable sometimes to make it the last sentence of the preceding one. Or it may be done by the short transition paragraph. This last, however, is usually reserved for connecting one group of paragraphs with another group, rather than for connecting paragraph with paragraph.

Structure of the Sentence.—Definition.—The sentence is the fundamental unit of discourse. Hence the "sentence-sense," as it is often called, the ability instantly to recognize a sentence when one sees it, is a fundamental necessity of accurate writing. A sentence is a statement, question, or command that is grammatically complete—one that contains a subject and a predicate expressed, and that is not introduced by a dependent or subordinating word. The only exception is the imperative form, in which the subject is usually implied.

The sentence may be very short. The following are complete sentences (the first three being in the imperative form): "Wait." "Don't." "Come here." "I can't." "You're quite right."

A mere phrase (prepositional, participial, infinitive, etc.), or a dependent clause, is not a sentence, and may not stand alone as such. The following are not sentences: "In a few minutes." "Frightened almost to death." "Being sure of my ground." "Now, to proceed with the argument." "At least not at present." "Although of course we can't be certain." "Not unless you are willing." "Which is quite a different story." It is a mark of slovenly style to leave such expressions as these straying about like lost dogs. They must be attached to something—to a main clause of some sort; *e. g.*, "I can't answer all these letters, at least not at present." Of course in conversation such expressions are common enough, but the only right use of them in written discourse is in dialogue, when they represent what was actually said.

The converse error is that generally referred to as the comma blunder. Complete separate statements, and those closely connected in thought, must accordingly be separated by the period, the colon or the semicolon, but less often by the comma, unless there is a real conjunction joining the statements. The greatest temptation to the comma blunder comes when the second statement begins with a personal pronoun (*he, they, it*, etc.) or a conjunctive adverb (*then, therefore*, etc.), or when there is a close relation of cause and effect, or of contrast, between the two statements. The following sentences are correctly punctuated: "Come on, laddie. It's time to go home." "Tom wasn't afraid. He was simply waiting for the right moment." "You'd better not try that bridge. It isn't safe." "He would not take the crown; therefore 'tis certain he was not ambitious." "Be sure you're right; then go ahead." "Be sure you're right, and then go ahead." Special care should be observed in the writing of dialogue to avoid the comma blunder.

The only exception to the rule here stated is the case of the series form, in which short statements are sometimes separated merely by the comma; *e. g.*, "I have fought a good fight, I have finished my course, I have kept the faith."

Agreement.—Grammatical correctness requires an agreement or concord between certain parts of speech in the sentence. The commonest error is to confuse singular with plural. A verb must agree with its subject in number; both must be singular, or both plural.

The writer is sometimes misled in this matter when the subject comes before the verb. Notice the following: "Here *were* located the banking facilities of the colonies" (not *was*). "Coupled with the demand for the teaching of patriotism *have* come suggestions as to what course such instruction should take" (not *has*). "There *exist* in the minds of many people certain

prejudices against the foreigner." (Not *exists*).

Subjects joined by *and* commonly require a plural verb; *e. g.*, "There *are* my friend Barton and his wife coming toward us." (Not *there is* or *there's*.) "There *are* in this room a table, three or four chairs, and a small stove." (Not *is*.)

A plural noun coming between subject and verb sometimes misleads the writer: "The sound of his steps *was* gradually lost." "The size of the plates *varies* with the current capacity of the battery."

A collective noun is to be construed as singular or plural according as its parts are thought of separately or in the mass: "The crowd *were* throwing up their hats and shouting with excitement." "The crowd *was* headed by McAndrews, who was carrying a red flag."

The pronoun must agree with its antecedent in number: "The negro did not ask for the suffrage; but the responsibility involved in it has been good for *him*." (Not *them*.) "The drill press is a very useful machine. *It is* made in various forms and sizes." (Or, drill presses *are* made: not *They are* made.) The indefinite pronouns, *each, everybody, any one, a person, one*, etc., are singular, and should be so construed: "A person must have plenty of time if *he is* to do good work." (Not if *they are*.) "England expects every man to do *his* duty." (Not *their*.) The same is true of the correlatives *either —or, neither—nor*, when they connect singular nouns: "Either Arch street or Bond street *is* to be paved at once." "Neither your assumption nor your conclusion *is* justified."

Certain miscellaneous cases of agreement may be noted: "All the sprinters were attired in *track suits*." (Not *a track suit*.) A student writes: "The faces of both Goldsmith and Johnson were disfigured." He should say: "The face of Goldsmith was disfigured, and so was that of Johnson." Again: "There were *two* stained glass windows on *both* sides of the entrance." This is ambiguous. The writer means either "*A window to each side* or *two windows to each side*."

Government.—Certain cautions must be observed in the use of nominative and objective. After *it is* and *it was* we must have the nominative forms of the pronoun: "Is it *I* whom you mean?" "I believe it is *they*." "Wasn't it *she* whom we met at Newport?" Do not use the objective form of the pronoun for the nominative, or the nominative form in place of the objective. "*We* boys are going to the circus." "Uncle is going to take *us* boys to the circus." The same holds true when two pronouns are joined by *and*: "*He* and *I* were asked to report on the power loom." "The instructor asked *him* and *me* to report on the power loom." "Mr. Barlow invited Frank and *me* to be present at the recital." "Between you and *me*, I think he will bear watching."

Who and *whom* follow the same rule as any other pronoun: "I can't remember *who* it was." "*Who* was present at the reception?" "*Whom* are you looking for?" "For *whom* are you looking?" "He is a man *who*, I believe, is well qualified for the position." "He is a man *whom* I believe to be well qualified for the position."

In this connection may be noticed the correct use of verb tenses. The confusion of present, past, and perfect forms is unpardonable. We need only mention such horrible examples as, "He *come* up and introduced himself to me." "I think he *has went* out to lunch." "The water was *froze* solid." "I *seen* at once that there was no hope."

The forms of *lie* and *lay* are as follows:

Present	*Past*	*Past Participle*	*Present Participle*
lie (lies)	lay	lain	lying
lay (lays)	laid	laid	laying

Notice the following sentences: "I usually *lie* down for a little nap after dinner." "Just as I *lay* down yesterday, Dr. Harmon called." "The leaves have been *lying* on the lawn for some days." "*Lay* your books on the shelf, and let them *lie* there." Less obvious are certain inaccuracies in the use of the perfect tenses. In general, whatever goes back of the main verb should be stated in the pluperfect tense: "I often wish I *had been* born in the country." (Not *was born*.) "Men and women who *had been* shut up all day in the houses and shops came out to get a little fresh air." (Not *were* shut up.)

Unity.—Unity in the sentence means on a smaller scale the same thing as unity in the theme and in the paragraph. The sentence must be about *one* principal thing.

This does not imply that all sentences must be short: a very short sentence may be lacking in unity, while a very long one may be perfectly unified. "Peter Cooper founded Cooper Union, and his father made hats." Here is a sentence of only ten words, stating only two facts about Cooper, but the facts are so distantly related that they do not belong in the same sentence. Now take a longer sentence: "The road winds along by the river bank, and affords a glimpse of the stream now and then; and it is a shady, quiet road; but once in a while there is a clearing, and there the sun is very bright and warm." Here are five facts about the road; but they are so stated that not one of them stands out as the unifying fact.

Such a sentence may either be broken up into two or three shorter ones, or some of the facts may be subordinated by the use of other connectives besides the overworked *and*. Both methods might easily be applied to this sentence, and we should get something like this: "It is a shady, quiet road, *winding* along by the river bank, and affording a glimpse of the stream now and then; once in a while, however, there is a clearing, *where* the sun is bright and warm." A mastery of the principle of subordination, and of the various subordinating connectives, is more than half the battle for sentence unity.

Converse to the example just cited is the practice of writing a sentence in several separate fragments, when they really belong together: "We came to a path. It led off from the wagon road. It led through the woods. This path apparently was not much used. It was a narrow path." It should read somewhat as follows: "We came to a narrow path, apparently not much used, that led off from the wagon road through the woods."

Coherence.—So far as this principle applies to the sentence, it means that the parts should stand in a normal position. The subject must not be very far removed from the verb; modifiers must be reasonably close to the parts they modify; the reader must not be zigzagged through the sentence in a disconcerting way. A few examples will make the principle clear. The portions italicized should be inserted where indicated by the encircled 1. "Last week *I*, ① with an old friend of my father's, took a trip to New York City." "If a workman is honest, he *usually* is ① repaid for his honesty." "Of course ① everybody can*not* become the head of a great business concern." "I lived ① in the small western town in which I was born, *for about three years*." "*While I was in New Mexico*, I remember that ① I had a burro, which I rode every day." "The account was confirmed ① by Colonel Shackleton, who some years ago headed an exploration party to the far south, *to-day*." "In front of the stores ① different kinds of electric lights *hang*." "His hat ① had a narrow black band around it, *which he had worn all summer*."

A special case is that of condensed comparison, often attempted in such sentences as the following: "Every year was as bad if not worse than the year before." Such sentences are faulty in syntax as well as incoherent, and should be written as follows: "Every year was as bad as the year before, if not worse."

It is disconcerting to travel through a sentence like the following, with two *but's* in it: "Even in his letter to his wife, Macbeth shows that the temptation is strong, but he does not put it actually into words, but suggests that the third prophecy may come true." The second part of the sentence should read, "He does not, however, actually put it into words, but suggests," etc.

Coordination.—Parts of a sentence that are joined by coördinating conjunctions, such as *and, but, or*, should be similar in form: *e. g.*, "This ordinance was passed by the village board May 13th last, and which is now in effect." This is bad form. *Which* after *and* must be elided, or else it must appear in the first part of the sentence. Either of the two following forms is correct: "This ordinance was passed by the village board May 13th last, and is now in effect." "We have here an ordinance which was passed by the village board May 13th last, and which is now in effect." Take another example: "Elaine's treatment of Lancelot shows not only how great her love was, but also that she was kind and gentle." It should read, "*that* she loved him greatly," or "*how* kind and gentle she was," so that both clauses shall be introduced by *that*, or both by *how*. Again: "Finally the two friends parted, Savage going to the west of England, and Johnson remained in London." It should read, "Savage *went*," (with period after *parted*), or, "and Johnson *remaining*," so that both expressions shall be participial, or neither expression. Again: "A protective tariff is laid not as a source of revenue, but to protect growing industries." It should read, "*to produce* a revenue," or, "*as* a protection for." Again: "The northern colonies produced wheat, corn, and potatoes; and in the southern, tobacco, rice, and cotton were produced." Make both members active by writing, "and the southern, tobacco, rice, and cotton."

A special case of faulty coördination is what is known as the false series. A true series requires that all the members be in the same grammatical form. One method of correcting a false series is to introduce another *and*, where indicated, for example, by the circled 1 in the following: "The men were at work making molds, ① cores, and fixing the cupola for the afternoon heat." "The sudden introduction of a large volume of water causes contraction, ① leakage, and necessitates rapid firing." "During the summer I got lost in a cornfield ① got into two or three fights, and a few other disturbances." Another method is to supply such words as will make the three

members of similar construction; *e.g.*, "The men were at work making molds, *making* cores, and fixing the cupola."

Wordiness.—In general all statements should be as brief as is consistent with clearness. The thought is often unnecessarily repeated in the words of a sentence: "to return again," "to try the attempt," "a fine-looking appearance," "during the meantime," "all the whole afternoon," etc. Such phrases should be condensed. Somewhat more obvious, perhaps, is a certain loose extravagance of words resulting in a weak, spongy effect. The portions bracketed in the following should be excised: "It isn't right to lie to your employer in order [that you may be able] to go to the ball game." "You can see a number of fishermen fishing for [a species of fish known as the] black bass." "We drove along a beautiful road [which was] bordered by tall elms."

A careless writer will sometimes duplicate his constructions, especially his prepositions and conjunctions. The words bracketed in the following should be cut out: "The experience [of] which I am going to write about happened in my childhood." "It is argued that, because many children leave school at an early age, [that] their schooling should be such as will enable them to become good workmen."

A word may be said about *repetition*. There should be no awkward attempt to avoid repetition when it is necessary to clearness or effectiveness, but when neither of these ends is served the repetition becomes a burden. There is nothing gained by the presence of the bracketed words in the following: "Some of the lights were strung straight across the street, some [were strung] in a circle, and some [were strung] in arches." On the other hand, there is a distinct gain in force by the presence of those bracketed in the following: "I don't expect you to depend altogether on your notes, but [I do expect you] to study them." "If slavery is not wrong, nothing is [wrong]."

Ellipsis.—Words should not be omitted that are necessary to the grammatical or logical completeness of the statement. The verbal forms must be expressed whenever a change of construction makes it impossible for a single form to do double duty. Notice the forms supplied in brackets: "We rode back a great deal faster than we had [ridden] coming out." "Several proposals were received, but only one [was] considered." "All that Burns writes about is true; it has [taken place], and will again take place in the life of man." The same is true of the preposition: "We are not only prepared [for] but equal to the task." The article must be repeated when the nouns stand for distinct persons or things: "Thine is the kingdom, the power, and the glory." "The sum and substance of the matter is this." "Goldsmith produced a descriptive poem, a novel, and a comedy that are among the best of their kind." "We think of Browning as a poet and as a philosopher." *The* must always be used before *United States*. Idiom requires the following: "All day," "all night," "all the morning," "all the afternoon," "all the evening," "all the week," "all the spring," "all the autumn (or fall)," "all summer," "all winter." An adverb should be inserted between *very* (or *too*) and the participle in *ed*: "very greatly pleased," "very well satisfied," "too highly delighted." *That* should not ordinarily be omitted from the indirect discourse construction: "It must be remembered [that] they had no difficulty in getting the best education." Logical comparison requires insertions as follows: "The general appearance of the church is like [that of] most city churches." "His face has the appearance of [that of] a bright, hard-working young man." "Our basket-ball team ranks high compared with [those of] other schools." Correct syntax requires the following: "On the opposite shore from [that on] which the town is situated, you can see lofty hills."

Reference.—Pronouns and other reference words must be clear and explicit in their reference. The agreement of pronoun with antecedent has already been explained. A pronominal reference must not be ambiguous, as it is in the following: "Chesterfield had treated Johnson discourteously many years before when *he* had called on *him*." "The parasite lives on the host until all *his* energy is gone." "Duncan tells Macbeth that he intends to stay over night at *his* castle."

Reference must be explicit, and not merely implied: "There's no use writing to John; he won't answer *it*." Here *it* refers to the noun *letter implied* in the verb *writing*. Similarly we have sentences like the following: "He invited me to join him in a bear hunt, *which* I readily accepted." "True friendship is so rare that when you find *one* you cling to *him* like a drowning man to a straw." Sometimes the implied reference is in a noun: "The shore is very rocky at this point, and *these rocks* are broken by the force of the waves." "The marquis taxes the people for everything. they use; *this money* he spends in banquets and suppers." Occasionally it is the adverb that is not explicit: "The increase of patriotism is due to school training; it is *there* that the child is first taught to love the flag." "He fainted, and remained *so* for some minutes."

The participial construction is often difficult to handle. There must be a real subject to which the participle can be logically and grammatically related. The misrelated participle is a mark of careless thought and careless writing: "On preparing to leave the next morning, the ax could not be found." Grammatically this means, "The ax, on preparing to leave, could not be found." Now, it is not the ax that is preparing to leave. The writer really means, "On preparing to leave, *we* could not find the ax." The same fault is apparent in the following: "Some time ago, while attending a debate, the negro question was discussed." "On hauling up the anchor the breeze carried us down to the far end of the lake." "After scarfing the two pieces of iron, they are heated to a high temperature." "Being a girl, he saw that she was afraid to protest."

In this connection we may notice what Professor Newcomer has called sins against *logical conformity*. One or two examples will illustrate: "Honesty is the best policy in business as well as any other place." But *business* is not a *place*, and cannot logically be referred to as a place. The sentence should read: "as well as in any other calling, or occupation." Again: "The same thing is true of the doctor, the lawyer, or any other profession." Medicine and the law may be referred to as professions, but not doctor and lawyer.

Diction.—The bulk of the English language is made up of Latin and of Saxon terms. In the dictionary there are more words of Latin origin than of Saxon, but in the usage of conversation and in the most enduring monuments of our literature the Saxon element prevails. In general the inexperienced writer will do well to rely mainly on Saxon words. They are the words with which he is most familiar. They have the merits of naturalness, directness, simplicity, strength, and emotional coloring. They come from the heart, and life, and experience. On the other hand Latin words afford the advantages of formality, dignity, sonorousness, and a certain lofty and superior tone of discourse. They also offer a more exact and discriminating choice of terms than the Saxon, and hence constitute by preference the scientific and professional vocabulary.

Good Usage.—The choice of words implied in the term good usage is impossible of exact limitation. The best we can do is to indicate certain forms that are to be avoided, and generalize from the result. In ordinary written discourse, except realistic narrative, the following classes of words should be avoided: *localisms*, such as "peart," "sun-up," "tuckered out," "right smart," "some chilly," etc.; *vulgarisms*, such as "ain't," "might of been," "hadn't ought," "complected," "most everybody," "photo," "auto," etc.; *improprieties*, such as "leave us see," "the balance of the morning," "a man who is well posted," "an invite," "real pleasant," "a nearby house," etc., and slang terms, except in rare instances; *colloquialisms*, such as "up-to-date," "anyway," "quite warm," "right away," "handy," "a nice time," etc.; *technical terms*, except when one is writing for a special group of readers, such as "tort," "metabolism," "eidolon," "pony brake," "isothermic," "epicycloidal," "oxymoron" "esemplasm," "rheostat," etc.; *pretentious and affected terms*, such as "fistic encounter," "tonsorial parlor," "culinary department" (for kitchen), etc.; and *foreign terms*, such as "de trop," "fin de siècle," "cuisine," "sub rosa," "nil admirari," "zeitgeist," etc.

Apart from such cautions little can be said. The right choice of words is the ultimate test of one's place among the elect, and is a thing which only in its more obvious phases is subject to rule. It is to be acquired in its finer and more real quality only through wide and sympathetic contact with the masters of literature. (See Correct Use of Words.)

Precision, or discrimination between words of related meaning, can be acquired by scrupulous attention to definition and usage. Certain grosser faults, almost as much matters of spelling as of meaning, are involved in the confusion of the following: There, their; to, too; its, it's; then, than; lose, loose; led, lead; forth, fourth; principal, principle; quite, quiet; effect, affect; except, accept; later, latter; cavalry, Calvary. The writer should, however, train himself in the finer distinctions, such as are involved in obtain, attain; secure, procure; survive, recover; apt, likely, liable; imaginary, imaginative; poetry, verse; fact, truth; democracy, republic; egoist, egotist; human, humane; effective, effectual, efficient; grief, grievance; act, action, activity; last, latest; education, schooling, culture; accurate, correct, exact, precise; start, begin; politic, political, etc. (See Multiplex Dictionary, or books by Fernald, Fallows, or Roget. See, also, Dictionary of Homonyms.)

Idiom.—Every language has its idioms—peculiar personal forms that are in a way the meat and kernel of it, and yet often illogical and not amenable to rules or principles. No one knows English who does not know its idioms, and yet few suggestions can be given as to how they can be learned. They must be acquired by con-

tact and absorption. The most we can here do is to indicate a few idiomatic expressions by way of illustration.

Much of our idiom centers about the preposition. The cars stop *at* Adams street, not *on* Adams street. The picture hangs *on* the wall, *at* the right hand end of it, *to* the left of the door. There is a window *in* the west wall, not *on* it. We have the privilege *of hearing* a noted speaker, not the privilege *to hear* him. We are *under* the necessity of cutting expenses. We go *into* the room, and move about *in* it. There is a fence *in front of* the house, and one *back of it*, or *to the back of it*, or *behind it* (not *in back of* it). We leave *about* nine o'clock in the morning, not *around* nine o'clock, and there are *about* twenty of us in the party. We say *seldom if ever*, or *seldom or never*, but not *seldom ever*, or *seldom or ever*. Similarly we say *seems to be*, or *looks as if*, but not *looks to be*. We have confidence *in* a person, and confide a secret *to* him, because we have a high regard *for* him on account of our long intimacy *with* him. Your way may be different *from* mine, but is not necessarily better *than* mine. The student will have to master these and hundreds of others, each in its own special application. (See Dictionary of Prepositions.)

Proof Reading.—The correction of proof requires scrupulous attention to every unit of composition from the smallest to the largest. Corrections should be indicated in the margin, as nearly as possible opposite the mistake. When this is not possible a line should be drawn from the mistake to the correction. Mistakes are indicated on the page by underscoring, crossing out, drawing a vertical line through certain letters, drawing a line around certain words, and placing the caret where necessary. Corrections should be made neatly, and should be absolutely legible and unambiguous.

The signs commonly used in the correction of proof are the following:

✕ Change bad letter.	⊏ Move over.
⊥ Push down space.	□ Em quad space.
⅁ Turn over.	/–/ One-em dash.
⅁ Take out (*dele*)	/–/ Two-em dash
^ Left out; insert.	¶ Paragraph.
# Insert space.	No ¶ No paragraph.
v Even spacing.	*w.f.* Wrong font.
⌣ Less space.	..... Let it stand.
⁀ Close up entirely.	*stet.* Let it stand.
⊙ Period.	*tr.* Transpose.
⁄ Comma.	*Caps* Capital letters.
⊙ Colon.	*s. c.* Small caps.
;/ Semicolon.	*l. c.* Lower case or small letters.
⅄ Apostrophe.	*Ital.* Italics.
⅄⅄ Quotation.	*Rom.* Roman.
⁄ Hyphen.	
// Straighten lines.	

Punctuation and Capitals.—**The Period** as indicating the end of a declarative statement has been already explained. It must also be placed after every abbreviation, and after Roman numerals.

The Interrogation Point is placed after a direct question, or a part of a statement that is a question: "Where are you going?" "'What about the boy?' is a question that is more and more demanding an adequate answer." It is used—but with doubtful propriety—in parentheses to indicate doubt: "The patriotism (?) typified by the *Dreadnought* is much in evidence," etc.

The Exclamation Point is placed after words or expressions that are definitely exclamatory in character: "Oh! look! They're being driven back." "Oh, if John were only here now!" The words Oh and O are interjections expressing strong feeling. O is used in direct address and in expressions of surprise, indignation, or regret, and should never be followed directly by the exclamation point. "O Thou Great Helper of the weak, give us now of Thy strength."

The Comma is used (a) to set off clauses within the sentence, as "The way was long, and the wind was cold." "Not that I loved Cæsar less, but that I loved Rome more." (b) The dependent clause is usually set off when it begins a sentence, and is also set off when it ends one, unless closely connected in sense with preceding clause: "When you are ready, say so." "Come to the tent when you are ready." "We were about to give up the search and start for home, when we heard a faint call in the distance." (c) The relative clause is set off when it is additional, but not when it is restrictive: "This road, which is the old St. Louis trail, runs past our farm." "Our farm is on the road which is known as the old St. Louis trail." (d) The comma is used to separate the members of a true series: "Days, weeks, months passed slowly by." " * * * * * precept upon precept; line upon line; here a little, and there a little." "Society has to care for the pauper, the delinquent, and the defective." "For winter is past, the rain is over and gone; the flowers appear on the earth; the time of the singing of birds is come, and the voice of the turtle is heard in our land." Notice the comma before *and* in the last two quotations. The comma is used to separate two or more adjective or adverbial modifiers when they are not logically an integral part of the word they modify: "A tall, young, handsome fellow he was." "A tall, handsome young man." (e) The comma is used to set off vocatives, and introductor and more closely related parenthetical elements. "My gentle Puck, come hither." "What mercy can you render him, Antonio?" "Well, honor is the subject of my story." "There is, if I remember rightly, a spring near the shore." (f) The comma is used to set off an introductory adverb lest it may be regarded as a preposition: "Beyond, the mountains rose in their strength and silence." "Beyond the mountains lies the land of our hope." The comma, as does punctuation in general, marks divisions in the grammatical construction and it is used especially to prevent misunderstanding. It should not be overworked, and must not be used to show elocutionary pauses. A good elocutionist may make a pause, called the rhetorical pause, after any word of a sentence, if by so doing he can increase the impressiveness of his interpretation.

The Semicolon is often used to separate complete statements that are so closely related in thought as to make the period too much of a stop. It should not ordinarily be used to separate a dependent clause from the main clause. It is used before *i. e.*, "that is," and *e. g.*, "for example."

The Colon is the most formal of all the marks of punctuation. It is used to separate statements that are set in formal apposition with each other, the second being a repetition or explanation or illustration of the first: "The engineer is supremely the man of scientific imagination: he must see the structure before he builds it." The colon was formerly much used to separate the two parts of a long compound sentence, if the parts themselves contained semicolons; but the practice is not to be commended. It is used, also, to introduce a list, or a quotation formally stated: "We have to consider, therefore, the three following propositions: government ownership, government control, and private enterprise." Moulton, on page 246, says as follows: "A foundation task of the artist, etc." The colon is also used after the salutation in a letter: "Gentlemen: Referring to yours of the 14th, etc." No dash need follow the colon after such a salutation.

The Dash is used informally, somewhat as the colon is used formally: "There is only one method left—concession." "There were only three of us present—Hayes, Carter, and I." The dash also indicates a sudden break in the thought: Now, the silurian strata—but of course that doesn't interest you." It is further used to set off a parenthesis more decided than those inclosed by commas: "Any one who has had that experience—and almost every one has had—will understand what I mean."

The Parentheses, or curves, are used to inclose a still more definite parenthesis, one that is often independent grammatically of the rest of the sentence: "Late that night (it was about eleven-thirty, as a matter of fact) I became aware that he (Stanley) was regaining consciousness."

The Quotation Marks are used to include quoted matter that is stated in direct form. A quotation within a quotation is indicated by single quotation marks. Notice the following, observing, also, the use and position of period, comma, question mark, and capitals: "I can hardly agree with you in that matter," said David. "I don't suppose," remarked Anne, quietly, "that there is anything more to be said." "Come here, Silas," said Arden; "I want you to look at this letter." "Why do you ask me that?" inquired the grocer, anxiously. "A few minutes later," continued my father, "Dexter came up to me and said, 'What are you doing here?'" But note the absence of quotation marks in the following: The printer said that the bill would come to about twelve dollars.

The Apostrophe is used to indicate possession. For the singular we add *'s*: "Henry's watch." "Fisherman's luck." "Charles's ideas." The apostrophe without *s* is permissible when the noun ends in *s*; *e. g.* "Charles' ideas," and must be used alone in such names as Crœsus', Achilles', Moses', etc For the plural we add the apostrophe when the noun ends in *s* and *'s* when it does not: "The boys' tasks." "The ladies' aid society." "A book of children's stories." The apostrophe is less frequently used to indicate the possessive of objects; as, "the length of the field," not "the field's length," etc. But we say, "A year's absence," "two weeks' vacation," "at arm's length," "the water's edge," "a day's wages," "a dollar's worth," etc. The apostrophe is also used to indicate omitted letters in contractions: Don't, hasn't, you're, o'clock, etc. The *'s* is used also to indicate the plural of letters and figures: "Three 8's." "He doesn't make his *m's* correctly."

Capitals are used in general to distinguish personal or individual names from class names: David Farragut, Harlequin, Hamburg, Ceylon, American, etc. The words river, mountain, lake, street, building, etc., and official and professional titles are capitalized only when attached to prope

names: the Ohio River, Lake Erie, the Borland Block, the Hamilton Club, Central Park, Amherst College, Doctor McDonald, President Harper, etc. The following words are regularly capitalized: names of the Supreme Being; important words in the title of a book, article, etc.; historical epochs, wars, etc.; days of the week and months of the year (but not the seasons), holidays, holy days, etc.; abbreviations of title attached to proper names, and also A. D. and B. C.; the interjection O and the pronoun I; names of relationship when immediately preceding the name (*e. g.*, Aunt Amanda, Brother Amos,), and Father, when referring to any of the orthodox writers of the early Christian church (as, the Fathers); names of things personified, the first word of every independent sentence, and of every direct quotation (unless it is a phrase or fragment not in dialogue), the first word after a colon if it begins a letter or a formal quotation, and the first word of every line of poetry.

Argument and Debate.—The purpose of *argument* is to convince some one of the truth or falsity of a proposition—to make him agree with you in your view of the matter. To bring some one else to think as you do means that you must have good reasons for your own attitude and be able to present them in a convincing way. We have to consider, therefore, what constitutes a good reason.

(1) Practically all our reasoning falls under two broad general laws—those of induction and deduction. *Induction* is the primary form of reasoning. It means the drawing of a general conclusion from specific facts and observations. You decide, from certain facts, that a particular business firm is unfair or unreliable. It is apparent that the soundness of your conclusion will depend upon your getting at the real truth of the matter, and getting at it in a broad way.

Direct evidence is, on the whole, the best kind of proof. What you have yourself actually seen or experienced, may well be offered in support of your attitude. The experience of some one else may, however, be more convincing than your own, if he is a more practical observer or an authority. In citing authorities, it is absolutely essential to cite the best, those who are known to be accurate, truthful, unprejudiced, and thoroughly informed. Depend on weight of authorities, not on number. In offering *examples* to support a contention, you must remember that "one swallow does not make a summer," and that, similarly, one example does not prove a contention. In the same connection we may notice that, because one thing happens *after some other thing*, the first is not necessarily to be declared the cause of the second. We may be pretty certain that, if a field looks fresher after a rain, it is because of the rain; but we cannot be so sure that, if the wheat field is discovered ablaze after the train has just passed, it was the train that set it ablaze. A step further removed is the argument by *analogy*. The growth of the lily from the bulb is no argument for the immortality of the soul, though it is a very beautiful symbol of it. *Indirect evidence* is often very strong, as, to quote Thoreau, when you find a trout in the milk; but it is subject to the same allowances as direct evidence. The presence of a man at a horse race may indicate that he is interested in racing, but not that he is a gambler.

(2) The other general law of reasoning is that of *deduction*. It consists in the application to a specific case of a general proposition that is already admitted. The general proposition (major premise), its application (minor premise), and the resulting conclusion, constitute what is known as the syllogism. Take an example: Governments derive their just powers from the consent of the governed; our government of the Filipinos is without their consent; therefore it is unjust. It is obvious that you must be absolutely sure of your premises, or else your conclusion will be false. Practically every argument involves both the inductive and the deductive process.

(3) The presentation of arguments by speakers on both sides of a stated question constitutes a *debate*. The purpose of debate is, or ought to be, to get at the truth of the matter; and nothing can be more humiliating or demoralizing than the use of subterfuge, quibbling, rant, abuse, and intellectual trickery for the trivial satisfaction of beating one's opponents. The question chosen for debate should have two distinct sides to it. It should be stated affirmatively; *e. g.*, Resolved that the United States is justified in her occupancy of the Philippines (not, is *not* justified). The question should be discussed, and so formulated that both sides understand exactly in what sense it is to be understood. Then the preparation of the debate should proceed. The affirmative should apportion the arguments among its speakers, and the negative among its speakers. Each speaker should then study his argument, formulate its terms, collect his material, and prepare his brief.

The brief is the most important step in the process. It consists of a statement of the points which the speaker proposes to make, arranged in a logical way as main topics, minor topics, and subtopics. The order should be that of increasing importance, the weaker points coming first, and the stronger ones toward the end. All the points in the brief should be stated in the form of complete sentences. The speaker must prepare his refutation as well as his direct argument: that is, he must answer arguments that will be made, or might be made, on the other side. He will do well also to consult frequently with his colleagues to see that there are no overlappings or omissions. When the brief is completed, the argument should be written out *in extenso*, and absolutely mastered. It need not, and ordinarily should not be learned word for word. But the speaker must be sure of the exact phrasing of certain points, and must make certain that his transitions are easily apparent. In the delivery there should be no shouting, no striving for applause, no cheap allusion to the "ignorance and stupidity of our opponents." Speak calmly, naturally, firmly, quietly, and above all courteously.

The Forms of Public Speech.—We may distinguish the after-dinner speech, the address, the oration, the lecture, the sermon.

The After-Dinner Speech must be short and informal, yet it may be weighty. The greatest offense of after-dinner speeches is tedium. One good story is better than half a dozen. The diction should be eminently simple; for it is the very essence of the social temper to avoid technicalities on the one hand and extravagance on the other. Simplicity, restraint, and understatement are marks of breeding. Yet an examination of five-minute addresses by such men as Lowell, Curtis, and Henry Grady shows that this tiny form of composition may express important thoughts: it can get down to fundamentals; it can set up noble ideals. It can be "built like a watch," obeying on its own scale all those rules of organization which have been previously set forth.

The Address is a dignified speech of considerable length and great variety of subject. In a recent collection of addresses we note such topics as the influence of universities, the leadership of educated men, the scholar in a republic, the drama in America, the child and the state, general amnesty, secession. The presidential address of a society usually sums up recent tendencies which interest the society, and then gives some outlook on the future. Such is Miss Jane Addams' address on "Charity and Social Justice," before the St. Louis Congress of Charities, 1910, an address marked by broad historical retrospect and a penetrating philosophic prospect. The tone, or degree of dignity, in the diction of an address must be high. Humor must be kept very subordinate, and colloquialisms must be rare. On the other hand, unnecessary technicalities must be avoided, and display must be entirely absent. Before a recent meeting of the American Philosophical association the "papers" were so technical that even the members wrangled for hours as to their meaning. But the presidential address, by the late William James, on "The Energies of Men," was given in language so picturesque and clear that it was sought by a popular magazine, and was quoted far and wide.

The Oration is an elaborate discourse, treating an important subject in an impressive manner. Its purpose is not primarily that of the address; it seeks sooner or later to move the loftier emotions deeply. For this reason it is commonly felt that an oration should not be read; it should seem impressively impassioned and extemporaneous. The very name suggests *oral*, and recalls the whole ancient tradition of *rhetoric*, or public speech. It recalls Aristotle, with his distinction between the oratory of deliberation and that of display. Ancient *epideictic* oratory permitted a certain amount of display and beauty for its own sake. The modern form of oration which still preserves this tradition is the *eulogy*. Blaine's eulogy upon Garfield is a striking example of the legitimate exercise of the power of pure oratory. One who listened to the nominating speeches in the Republican Convention of 1908 cannot help regretting that the power of dignified eulogy—eulogy which unites a significant man to the times of which he is the expression—is practically lost. But the loss has some compensations. It is almost wholly a gain that young men are now advised to study Wendell Phillips instead of Daniel Webster. The plain, direct, *conversational* style is far more effective to-day than the older decorative and rhetorical style.

The basis of every good oration must be good organization and sound argument. Beyond that, the most important thing is for the orator to know his audience, that he may appeal to their sympathy, and, if need be, to their foibles. Remember that Aristotle, that great student of humanity, devoted a third of his treatise on oratory to the psychology of different audiences.

Journalism. Short Stories.—Perhaps the most valuable single gift to the journalist is the sense of mass and proportion. He must write accurately to space. He must

dwell on the significant, and boil the less important down to its lowest terms. Headlining is a science in itself, and keeps one man busy on every daily, for it is the art of telling the whole story in a few phrases.

As for diction, the trend of the times is toward simple words. It is only in rural districts that we find "fine writing," pretentious phraseology. Here it is often due to forcing an ignorant man to report something that he knows nothing about—as, for example, in this: "He has a pliable tenor of immense range, coupled with deep organ tones in his lower register. He will doubtless advance into deserved prominence in that mimic world which proves so fascinating to the actor and the singer." The day is passing when reporters talk about "infuriated animals" when they mean runaway horses. Headlining, however, has one bad effect on diction. It leads to the coining of short and ugly cant words, like *talk-fest*, to fit the exigencies of space. A sensible reporter avoids smartness in his diction; the people want the news, and not his verbal antics.

Short Stories.—The writing of short stories is an art which has grown with journalism and is closely allied to it. The short story finds its audience in the tired business men and the tired youths and maidens who shrink f om prolonged dealings of mind with novels—especially the sociological novels of the day. This means that the short story must be so constructed as to capture weak attention. An allegory or a tale, however lovely, does not do that, because it lacks plot and surprise.

Plot and surprise, then, the short story must have. Its material may be realistic or romantic, but it must be worked up into a story. On the other hand, there can be no intricate and elaborate plot, for that takes up space and time. The problem is to get a surprising incident, a surprising turn of affairs, and lead up to it neatly and briefly. The events must not cover a long period; the past must be ruthlessly foreshortened; a single day, sometimes a single hour, must disclose the whole complication and resolution of the events. So, as Brander Mathews has put it, a short story is not merely an abridged novel.

Again, there is no opportunity for showing the development of character. If there is to be change of character in your hero, you must catch him at the moment before the change comes. Most short stories do not attempt character-change, but deal with incidents. Of course, the more significant the incident is, the better. The ideal thing would be to catch the most important day, hour, and incident in the hero's life.

A good beginning is half the battle for it gets you your reader. Make it fresh and striking. Roughly speaking, do not begin either with description or with dialogue. Votes have shown that both are less acceptable than a paragraph which flashes before you an intrinsically interesting person or a striking situation.

Avoid dialect: there is no sale for it now, except to a few magazines from a few masters.

Avoid unpleasant and ghastly and cynical and "suggestive" material. Pure love, heroism in daily life, friendship, loyalty, ludicrous happenings, fair and honorable getting on in the world; hope, poetic justice—these are the themes that sell. Be human! and don't be trite, hackneyed, or commonplace.

Choose your title as carefully as if you were advertising.

Study your market—as in the book *1001 Places to Sell MS.* (Editor Co., Ridgewood, N. J.)

Sermons.—A sermon is not a lecture, although preachers sometimes forget the fact. The primary business of a sermon is to influence the human will in such a way as to bring the eternal into time; to make men feel that they may live the eternal life in the midst of time; and to make them attempt this divine task immediately. This definition may seem vague and abstract, but neither *eternal* nor *will* can be omitted from it. The teaching of morality without reference to spiritual motives is not preaching. The words *eternal* and *spiritual* are indeed difficult of definition, but the practical and progressive definition of these words is precisely the homiletic task.

So far as literary art is concerned, this end may be advanced by, say, three means: vitality of diction, vitality of organization, vitality of direct appeal.

Vitality of diction may best be studied in the sermons of the Christ. What strikes the literary student here is the variety, homeliness, beauty, and freshness of the language. The kingdom of heaven is not formally or scientifically defined. It is a kingdom of children, and of men reborn. It is a pearl, a net, a wedding-feast, a piece of silver, etc. This warm flood of fresh spiritual poetry was poured by the Great Preacher into the formal and frozen vocabulary of the Pharisees. No evangelist can be effective who does not learn this lesson. Preaching means relating the eternal to the ever-changing temporal, and the universally spiritual to the individually human.

Vitality of organization means that the whole sermon is easily grasped, that its main divisions are easily remembered, and that the point of the whole could be expressed in one paragraph or sentence.

Vitality of direct appeal means that the end is direct and forcible; that the peroration is not for display, but to accomplish a change of mental habits. Lyman Beecher drove one of his theological students back into the pulpit, and cried: "You have not cracked your whip; your whip has no lash." The figure was not wholly happy, for a preacher should leave his audience with a sense that he loves their souls more than he loves to lash them. But it emphasizes the indispensable appeal to the will.

Preaching from texts is primarily exegetical; but exegesis must not stop with formal explanation; it must run deep into life; here and now there are words and situations of common life which are essential to such exegesis as really comes home to men's business and bosoms. From the literary point of view there is one thing about texts, which the present writer does not remember to have seen mentioned. The Bible is full of superficially contradictory texts. This is because, of all books, it is truest to life. It does not blink the paradoxes of experience, but reconciles them by the *will*. A sermon on private prayer (Matt. 6: 6) should logically include or be followed by one on religious solidarity (Matt. 6: 10). It is characteristic of the Christ that he demands the coming of the whole kingdom as the first interest in the most private petition.

The *diction* of sermons should have a full Saxon element, and should be free from neologisms. The pulpit has done too much toward introducing such wretched words as *enthuse* and *mentality*. The pronunciation of the preacher should be correct, not eccentric; this is for no other reason than that false or eccentric pronunciation diverts the attention of the critical (and that means all the young) from his message.

Lecture means "reading," and most lectures are read—at least by the authors. They vary from the technical lectures of a university to the popular humorous lectures of a Bill Nye. Even in the case of popular lectures, no two styles or messages could differ more than Matthew Arnold's lecture on *Numbers* differs from Artemus Ward's on *The Mormons*. In the very same evening Wendell Phillips used occasionally to give his famous lecture on *The Lost Arts*, and follow it with an impassioned appeal to the same audience on the iniquity of slavery.

But in all popular lectures it is the primary purpose to please rather than to exhort. There must be fresh information, and there must be fresh humor. Scientific terms, if used at all, must be used sparingly, and must be explained. A wise lecturer will note the effect of his first delivery on the audience, and will remodel the lecture accordingly. Long descriptive passages will be shortened. Even in narratives of travel the human element must be present in every paragraph; for, as Stevenson said: "Nobody talks about mere scenery for more than two minutes at a time."

Business English. Social and Business Letters.—Saxon and Latin Elements.—Many of our most technical business words are of Latin origin; *e. g., advertise, auction, bill, bona fide, bonus, cancel, capital, cheat, clerk, collateral, competition, coöperation, corporation, currency, fiscal, fortune, gratis, grocer, guinea, interest, item, lien, mint, money, pecuniary, pound, premium, redeem, salary.*

A study of the history of these words, as found in any good unabridged dictionary, will throw a flood of light upon the movements which have produced modern business conditions. But, apart from these technical terms, it is inadvisable to load business English with Latin derivatives. Saxon terms still make the strongest appeal to the emotions and the will, and goods cannot be sold unless the will is touched. Plain, simple, strong words are the most effective. People's love of food, dress, the family—this must be reached; and it is best reached through words which were earliest associated in the buyer's mind with these deep interests.

Degree of Dignity.—But plain, simple words are not necessarily slang words. Business slang has so vast a vocabulary that it vitiates the usage of everybody. Business expressions are tending to displace social and literary expressions. Many Americans speak of "the balance" of the day instead of "the rest"; they speak of a man as "well posted," as if he were a ledger; and instead of asserting, declaring, maintaining, contending, they "claim" everything.

The young business man will not regret mastering certain more dignified phrases for many of the commoner vulgarisms of business parlance. If he is in the habit of saying *ain't*, he should master the following: *I'm not; you're not* or *you aren't; he's not* or *he isn't; we're not* or *we aren't; they're not* or *they aren't.*

Business English cannot always be as dignified as literary English, for business deals with all sorts and conditions of men. But a business man must command more than one vocabulary. Note the following

list of phrases, the second of which in each pair is the more dignified: *knock, complain; boost, praise; folks, family; cheap, inexpensive; back down, recede; anyway, at all events; a great success, very successful; mighty fine, extremely fine; right then, just then; quite a few, several; fired, dismissed; faked, falsified; hadn't ought, ought not; indorsed, approve; auto, car; without, unless.*

These are merely examples. Different situations and different customers require different vocabularies. But in general, business English should be plain and forcible without being vulgar. It is an error to think that educated customers wish to be addressed in magnificent words and swelling sentences. A truly educated man speaks simply. He goes to bed—not "retires"; has legs, not "lower limbs"; eats dinners, not "banquets"; builds a house, not a "residence"; calls a soup delicious, not "elegant"; has in his house a kitchen, not a "culinary department". If he receives a booklet advertising certain goods in highflown and bombastic language, he is as much offended by it as if it were full of such words as *fake, knock, boost, graft, boodle, swell, scads.*

Wordiness.—Time is money, and business English should cultivate brevity. A few words that catch the eye, hold the attention, present the arguments in a nutshell, are better than a wilderness of fine expressions. This principle applies to every form of business composition, from advertisements to report, from letters to booklets. Yet there is no merit in mere brevity. The few words must be the right ones. The short paragraphs must contain much meaning. Important facts must not be omitted. And if a good deal depends on one word, that word should appear often enough to be remembered.

This is particularly true in advertisements. A good advertiser keeps his keyword before the people. He varies the context to give freshness and attract attention, but he does not allow you to miss his precious word—his "Sapolio" or "Gold Dust Twins," or whatever it be. Into that word or phrase he packs as much of his story as possible.

Also the name and address of the maker are never absent from a good advertisement.

The headlines of an advertisement, like the headlines of a newspaper item, are extremely important. Their business is to catch the fleeting attention, for (as has been proved by the investigations of Professor W. D. Scott) people do not spend more than one-tenth the time on advertisements that they spend on the text of a paper or magazine, and many persons are unaware that they ever read advertisements—though we all do. A clear Saxon phrase, striking at once into some genuine human instinct or interest—this is the proper opening of an advertisement.

Not the price, but the quality—that is the important matter to name tellingly.

Business Letters.—We may distinguish three essentials of a good business letter—first, *courtesy*; second, *clearness*; third, *persuasiveness*. Brevity has been mentioned above.

Salutation and Closing.—Courtesy requires, first, that the salutation and the leave-taking should be free from brusqueness or indifference. Every man is entitled to the abbreviation *Mr.* before his name in the salutation and on the outside of the envelope. Physicians and other professional men are never offended if their correspondents take the trouble to give them their right professional title. Firms are entitled to be addressed as *Messrs.*, though incorporated companies—*e. g.*, The Macmillan Company—are not usually so addressed nowadays. *Dear Sir, Dear Sirs, Gentlemen, Dear Madam,* are proper business salutations. The last-given applies equally to girls and married women. The leave-taking may be *Yours truly, Yours very truly, Very truly yours*—the capital being used for the first word only. An unmarried woman should prefix *Miss* to her signature, or should place her full address to the left. A married woman should sign her legal name, and then place to the left the exact address which she wishes to see on the envelope of the reply, thus:

Yours truly,
Ellen Gates Adams.

Address!
Mrs. James Ward Adams,
1372 *Linden avenue,*
Chicago.

Care should be taken to avoid hackneyed, curt phrases, such as "Yours received and contents noted." The letter should have some ease, some individuality. It should impress the receiver as a piece of the courteous conversation of an educated and alert business man. Note how beginnings of replies may be varied: "We are glad to learn from your letter of March 12"; "The impression that we get from your favor of the third"; "We are glad to have your inquiry of the seventh concerning"; "You advised us on the fifth of last month that."

In cases where business relations are long established, the social form of salutation may be used; as, *My dear Mr. Jones.* This, however, should follow the full name and address of the person saluted, since business is business, and the letter is addressed to a particular Mr. Jones. Go out of your way to get his name right, and sign your own name uniformly every time; don't have John G. Jones doing business with F. H. Smith one day, and J. G. Jones with Frank H. Smith the next. Or, the name of the addressee may be put at the end of the letter, to the left of your signature.

Latterly it is the custom of many correspondents to begin sales-letters to strangers with the familiar *Dear Mr. Jones.* A good many people resent being so addressed by strangers. The form is not to be recommended, although it shows that the would-be seller is taking pains to be personal.

Circular or Form Letters are a necessity of modern business, and great things are claimed for them by houses that make a business of preparing and supplying them, together with specially inked ribbons which make it possible to match the salutation with the body. But no form-letter can wholly take the place of the individual letter. The personal touch at the end—"The last time I saw you"—cannot successfully be imitated in any form-letter.

In all business letters it is both courteous and persuasive to say *we* as little as possible and *you* as much as possible, provided condescension and undue familiarity are avoided. The customer is not much interested in your affairs or your success; he is deeply interested in his own. You must learn to take his point of view.

Collecting Letters.—In answering letters of complaint or in sending collection letters, courtesy must be observed with especial care. The hotter your correspondent's tone, the cooler should be your own. Do not argue with an angry man. Take all the blame you honestly can, and then be generous, if you would keep your trade.

Clearness means that descriptions and terms should be beyond mistake. Descriptions of goods should be exact, but not tedious. The person addressed must receive a clear mental picture, and without undue effort. Try to hit the thing off in telling phrases, presenting the goods imaginatively—*i. e.*, in a way that satisfies the buyer's needs.

Sales Letters.—A good sales-letter begins by nailing attention; the start is half the battle. It proceeds to describe the goods. Then it gives reasons for buying them—for the particular man's buying them; but he should not be furnished with descriptions of competing goods, for that divides his attention, increases his responsibility, and often unintentionally suggests buying elsewhere. Then the letter closes with some inducement to act promptly. The imperative mood "Do it now" is well enough if reasons and inducements have actually been offered; otherwise it is an impertinence.

Too much care cannot be exercised in the selection of stationery, the type of engraving or printing, penmanship or typing, etc. The first impression of a letter is given not by its subject matter (ideas, phraseology), but by its general appearance. A letter represents to some degree its sender, and one should not forward a shabby or a gaudy missive; these characteristics do not inspire confidence.

Social Letters.—We distinguish (a) formal notes in the third person, (b) notes to a stranger, (c) notes to acquaintances, (d) intimate personal letters.

Formal notes should be in the third person throughout, except when engraving makes the words "your presence" necessary. Thus: *Mr. and Mrs. Charles Henry Webster requests the pleasure of Mr. and Mrs. James Henry Hammond's company at dinner, Monday, June the seventeenth, at seven o'clock.* Below, at the left, appears the street number of the sender, and the date, thus; 1274 *Washington avenue, June the third.* The acceptance reads: *Mr. and Mrs. James Henry Hammond accept with pleasure the kind invitation of Mr. and Mrs. Charles Henry Webster to dinner on Monday, June the seventeenth.* The sender's address appears below, at the left. Regrets read: *Mr. and Mrs. James Henry Hammond regret that a previous engagement prevents their acceptance of Mr. and Mrs. Charles Henry Webster's kind invitation to dinner on Monday, June the seventeenth.*

These forms are pretty definitely fixed, and do not admit of much alteration or addition. The full names are used; it is *at* dinner in the invitation, *to* dinner in the reply; it is *on Monday* in the invitation, and *on* or *for Monday* in the reply. It is *June third* or *June the third*, not *June* 3d; and the year is not given. Wedding invitations of course give the year, and etiquette varies slightly in other details from year to year, as any good stationer is able to indicate. *Previous engagement* covers all excuses in regrets. *Illness in the family, absence from the city*—these expressions may be used, but are not necessary; any other excuses are inserted at the risk of bungling the note. Notes to a stranger begin *My dear Sir*, or *My dear Madam*, and his or her name appears at the left at the end. *Yours sincerely, Yours very truly* are proper endings. *Yours respectfully* is no longer used by careful writers in any sort of letter. *Yours cordially* is impossible in a note to a

stranger, and is of doubtful taste except when used by women in social notes. Observe the use of capitals in *Sir* and *My*.

Notes to acquaintances begin with *My dear Mr. Jones, My dear Miss Jones, My dear Mrs. Jones,* and end *Yours sincerely, Yours very sincerely, Very sincerely yours.* The addressee's full name need appear nowhere save on the envelope. In no kind of note or letter should a clergyman be addressed to or referred to as *Rev. Jones.* The initials, or the name, or *Mr.*, or *Dr.* must appear after *Rev.* The best form is *The Rev. William Mead Jones, D. D.*

Notes and letters to friends and inimates are of every shade of familiarity. *My dear Mr. Jones, My dear Jones, My dear William Jones, My dear Billy Jones, My dear Billy, Billy*—all of them are good if used with tact. Signatures vary from *Yours sincerely* to *Yours ever* to *Yours*, and may respond still further to personal affection, whim, or humor. *Your friend* is very rarely used, but it comes well from older people who mean it. The tone of intimate letters should be individual, recalling the very voice and gesture of the writer. All pretense, all stiffness, all bookishness must be absent from a truly intimate letter. In their place there is room for all the personal charm that the writer can command.

Order for Goods.—

Menominee, Mich., Jan. 10, 1936,
Burke and James,
Chicago.
Gentlemen:

If you have in stock a camera of the following specifications, will you please ship it to me at once by express, C. O. D.?

V. P. size, for roll film 2¼ x 3¼.
Anastigmat lens, f 4.5.
Shutter to 1/300 sec. preferably an Ilex.

If I am correctly informed, there is nothing in the Eastman line which quite meets these requirements, so the camera may be an Ansco V. P. Speedex No. 3.

Truly,
John P. Jones

Dun.—

OFFICE OF BROWN & SMITH
GROCERIES AND MEATS
Aug. 20, 1936.

Mr. Robert Henry,
114 Eagle St.,
Chicago, Ill.
Dear Mr. Henry:

We find ourselves considerably embarrassed just now, owing to the fact that so many of our customers have gone away for the summer, leaving considerable balances unpaid, whereas the wholesalers allow us only ten days' time.

Under the circumstances, would you mind our suggesting a credit period of not more than thirty days for all our charge accounts, including yours?

Respectfully yours,
BROWN & SMITH

Philadelphia, Pa.,
November 9, 1936.

James Clark, Esq.,
Boyertown, Berks Co.,
Pennsylvania.
Dear Sir:

We have waited patiently to receive a settlement from you of our overdue account, $322.85, and have written you sundry urgent requests to that effect without response.

You are a business man and must be aware that an account in this shape is not satisfactory. We do not want to go to law in this matter, but if we must suffer loss would rather come to a prompt and friendly compromise with you. If you cannot pay us 100 cents on the dollar, can you pay 75?

We want the matter closed as soon as possible, and shall expect to hear from you without further delay.

Yours very truly,
Caldwell & Kane.

Claim.—

Chicago, Ill.,
February 6, 1936.

Henry Carson, Esq.,
Little Rock, Ark.
Dear Sir:

We learn that you have been appointed assignee of Rogers & Green, of your city. Our claim against this firm is $213.42, for which we hand you duplicate bills inclosed, and would thank you to inform us what is the prospect for an early settlement.

We feel friendly toward the suspended firm and would willingly join in any reasonable composition of their affairs, so as to give them a chance to retrieve their losses.

Awaiting your early reply advising us of the condition of affairs, we remain

Yours very truly,
L. M. Tyson & Co.

Application.—

29 Wildover St., Xenobia, Wis.,
Oct. 1, 1936.

J. P. Samson, Ph.D.,
Principal Xenobia Academy.
Dear Sir:

May I ask you to have my qualifications in mind when students apply to you for private instruction in French or English?

I am a graduate of the university of this state, and hold a master's degree from Vassar College, with major and minor subjects named above. I have taught French for the past three years in the high school at Singleton, N. J., and would have continued there this year, had my mother's ill health not required me to be at home.

Very truly,
Fannie Wilson

Formal Invitation.—

Mr. and Mrs. Herbert Glenn Martin request the pleasure of Mr. and Mrs. Wentworth Smith's company at dinner on Friday the third of April at eight o'clock.
Windermere Woods.

Formal Acceptance.—

Mr. and Mrs. Wentworth Smith accept with pleasure Mr. and Mrs. Martin's kind invitation for dinner on Friday the third of April at eight o'clock.

Formal Regret.—

Mr. and Mrs. Wentworth Smith regret very much that a previous engagement prevents their accepting Mr. and Mrs. Martin's kind invitation for dinner on Friday the third of April.

Friendly Invitation.—

Dear Doc.:

You remember you promised to join me next year, for the kind of summer you and I like best? I have found the place. It's a small island off the coast of Maine, a place unspoiled by the rush of summer folks. Only eight or ten interesting native families and two or three camps of artists, the natives clustered in a hamlet near their harbor, and the camps tucked away in thickets of "cat-spruce" a mile from the village.

I know you will love it there. Those sailor-fishermen are a bit shy about accepting strangers,—perhaps that is what has kept the island from Bohemian intrusion,—but nobody can resist you, Doc. We stayed long enough this year to get some notion of what the place will be like. It's a little paradise, beautiful beyond anything else I know, and rare fun for a fisherman like you. It's too far north for blue fish, but cod are caught near there up to seventy-five pounds, haddock to twenty-five, gamy sea-pollock will rival big salmon for sport, and you are likely at any minute to hook a halibut for a battle unbeaten this side of California.

I've heard a lot about salt water fish not putting up a fight. Take it from me, Doc, that's all wrong. Small cod and hake do come up easily, but most of the fish you strike in this region I'm taking you to will empty your reel spool over and over if you let them have their way.

I claim your promise, Doc, on my double guarantee that you cannot be disappointed. Let me know when I can see you to talk it all over.

Jim.

Sept. 20, '37.

Congratulation.—

Dear A. N.:

It's a good many years since we heard from each other directly, but I learn in a roundabout way of your change of occupation for next year.

May I congratulate? You have outlasted by a good many years all the men we knew who were in the game when you and I began. You have come through the ordeal of managing a system that has doubled its difficulties every fifth year since you took hold. You have lived solidly up to your code, with a fair deal for every youngster and every teacher in your town. In an age of unreasoning quackery you have kept your head, favoring no half-baked schemes.

And while you have been a good school man, you have been so good a business man that you can step across now without a jolt from the second stage of life to the third—your own master, busy as you please, and no busier, at tasks of your own choosing, unharassed by the pressure of false standards.

You have had two parts of a fine life. I am sure the third will be best yet.

Your old friend,
Dick Henry.

Albany, N. Y.,
Sept. 20, 1938.

Condolence.—

365 Madison Ave.,
New York City, N.Y.,
December 6th, 1937.

My dear Marie:

The melancholy news of your sister's death has grieved me more than I can express, and I beg to tender you my heartfelt sympathy. Truly we live in a world where solemn shadows are continually falling upon our path—shadows that teach us the uncertainty of all temporal blessings and warn us that "here there is no abiding stay." We have, however, the blessed satisfaction of knowing that death cannot enter that sphere to which the departed are removed. Let hope and faith, my dear friend, mingle with your natural sorrow. Look to that future where the sundered ties of earth are reunited.

Affectionately yours,
Ada Jones.

Answer to Condolence.—

613 Greene Street,
Pittsburgh, Pa.,
December 16th, 1938.

My dear Ada:

You can't imagine how much good your words of comfort did me. It is in our hour of trial that we appreciate the sympathy of our kind friends. It helps us to bear more patiently the burden which is sent us. I shall, indeed, try to live in the hope that time will ease the pain.

Assuring you of my deepest appreciation of your sympathy, I am

Gratefully yours,
Marie Smith.

Announcing Visit.—

Kalamazoo, Michigan,
December 16th, 1937.

Mrs. Thomas Wood,
735 Park Avenue,
New York, N. Y.

Dear Aunt Carolyn:

I am eagerly looking forward to spending the holidays with you, and am planning to leave just as soon as school is over. Have decided to come on the train arriving at Pennsylvania Station at three in the afternoon Christmas Eve.

Hoping to see you and uncle Tom at the station, I am

Your loving niece,
Jane.

FIGURES OF SPEECH.—For practical purposes the distinction sometimes made between figures of speech, figures of grammar, and figures of thought, may here be discarded. The essential principle, which the reader may apply for himself, holds the same in all.

Definition. — A figure of speech is a means of expressing or intensifying one idea in terms of another. This fusion of terms is the essential principle of figures of speech; it is called connotation. That is to say, in addition to what is *denoted* or literally meant, there is *connoted* something else which serves as a helping or carrying idea. This connoted idea may be a distinct thought in itself, in which case its value is mainly illustrative; or it may be merely felt in the manner of expression, in which case it has an emotional value of some kind. The two values may be proportioned or blended in many degrees; but in any case the principle of connotation is present; the reader is made to think or feel somehow in terms foreign to the literal idea.

Illustration.—This connotation of ideas may be seen in its simplest form in the following paragraph from Macaulay, in which he is explaining the difference between two kinds of historical composition, the descriptive and the philosophical: "Of the two kinds of composition into which history has been thus divided, the one may be compared to a map, the other to a painted landscape. The picture, though it places the country before us, does not enable us to ascertain with accuracy the dimensions, the distances, and the angles. The map is not a work of imitative art. It presents no scene to the imagination; but it gives us exact information as to the bearings of various points, and is a more useful companion to the traveler or the general than the painted landscape could be, though it were the grandest that ever Rosa peopled with outlaws, or the sweetest over which Claude ever poured the mellow effulgence of a setting sun." Here the terms applicable to a map and a painting respectively, used purely to illustrate, are of material aid in making clear a somewhat abstruse literal subject. On the other hand, we are aware of a heightened feeling when David, lamenting over Saul and Jonathan, says of them: "They were swifter than eagles, they were stronger than lions." Here his sense of their work is so keen that he greatly overstates the case, describing them in terms that belong only to another order of beings; this because his emotion has so borne him on.

The Good of Figurative Language.—It is a mistake to suppose that figures of speech are merely decorative and ornamental elements put on for display. Nor are they more natural to educated people and men of letters than to the common and unlearned. They are an even more primitive and spontaneous manner of expression than the literal; reflecting, as they do, the picturing play of imagination, more native to man than the logical powers. Figurative language has advantages over literal, both for reader and writer. For the reader it is of advantage because it gives him the benefit of an associated idea more concrete or more intense than the literal, thus calling forth his more vivid realization. For the writer it is of advantage because it enables him to express a hard or subtle idea not only more clearly but in much less space; it enables him also to imply his feeling about some matter without dictating what the reader's emotion shall be. It is a kind of literary shorthand, conveying twice as much thought in the same place, thus economizing attention; and a literary tonic, using as it does twice as vivid terms and forms.

Note.—It follows from this that figurative language is especially adapted to the more inward and abstract ideas, which need to be reduced from hard logical processes to the picturing terms of sense perception. Thus, when Tennyson wants to describe the subtle idea of the manifold meanings of poetry, he puts it: "Poetry is like shot-silk with many glancing colors. Each reader must find his own interpretation according to his ability, and according to his sympathy with the poet." Here the simile both shortens and vivifies the whole description.

The Most Commonly Used Figures.—It would serve no practical purpose to make a minute list or analysis of the various figures of speech. It will be better to classify the most commonly occurring ones, reduce them to principle as the connoting idea is related to the literal, and refer them in each class to certain salient types.

As intimated in the paragraph of "Definition" figures fall into the two leading classes of *illustrative* and *emotional*; and as several figures in each class may be mere variants of one essential principle, they are best grouped according to types.

Illustrative.—In this class, which comprises the forms most commonly recognized as figurative, the connoted idea is introduced mainly for its interpretative and clarifying value; that is, the literal idea is associated with something more concrete, or better known, or more directly present to the senses. Three types may be named.

Figures of the Similitude Type.—In this type of figures the writer's effort is most purely illustrative: he is concerned with showing how in some point the literal idea resembles something which in other respects is totally different. Note that it is the general difference of class between the literal and the connoted idea which makes the figure; comparison of things in the same class is not figurative at all, but literal.

Simile.—When the idea to be illustrated is relatively simple it is said or assumed to be like something else; the word simile being just the Latin adjective *similis*, *simile*, like. Generally the comparing term, *like, as, so, resembles*, is expressed, though this is not essential.

Examples.—The figures from Macaulay and Tennyson are similes; the way in which they apply the connoted idea to the literal explains itself. The following is a plain and telling simile from Abraham Lincoln: "Once let slavery get planted in a locality, by ever so weak or doubtful a title, and in ever so small numbers, and it is *like the Canada thistle or Bermuda grass*—you cannot root it out."

Analogy.—But the ideas that need figurative illustration are not always so simple; they involve complex relations and principles that need to be brought out into the open, where the whole can be seen. Hence the similitude needs to be enlarged and deepened; it becomes not so much a likeness of things as a likeness of relations; one thing is represented as working in its sphere as does some other thing in its sphere. This deepening of the likeness, less picturesque perhaps but more charged with thought, is called analogy.

Examples.—Abraham Lincoln's well-known illustration of the divided house is an analogy. Its point is not that the state is like a house, but that the state in a certain condition is like the house in an analogous condition. "A house divided against itself c. not stand. I believe this government cannot endure permanently half slave and half free. I do not expect the Union to be dissolved—I do not expect the house to fall—but I do expect it will cease to be divided." A very familiar analogy is that between r : argument and a chain: as a chain is no stronger than its weakest link, so an argument is no stronger than its weakest premise. Analogy is probably the most widely useful of all the figures of the similitude type.

Parable.—In this figure the analogy is carried out in detail, in the form of a story or an extended description, so that not merely one but several elements of the connoted idea are made to convey a meaning and lesson. It is an analogy elaborated into a parallel case in which more familiar objects or events are displayed in like relations.

Examples.—The parables of the Bible, expecially in the teachings of Jesus, furnish the most perfect examples of this figure. A whole series of his parables, for instance, is devoted to explaining the real inwardness of the kingdom of heaven, in many aspects and relations. The following is one of his shortest parables: "The kingdom of heaven is like unto leaven, which a woman took, and hid in three measures of meal, till it was all leavened." In other parables he represented it as "like unto a grain of mustard seed"; as "like unto a man that is a merchant seeking goodly pearls"; as "like unto a treasure hidden in the field," etc. (*R. V.*); and by such parables he revolutionized men's ideas of what the kingdom of heaven essentially is.

Figures of the Identity Type.—This type comprises the figures wherein the similitude is not expressed, but implicit; that is, the connoted idea is not likened to the literal, but squarely identified with it. By this means vigor is gained, and the reader is put more directly in position to think the matter out for himself.

Metaphor.—In this figure the type is embodied most plainly, the other figures being in fact merely aspects or enlargements of this. Instead of saying one thing is like another, it says or assumes that one thing *is* the other. The word metaphor means a transfer; that is, of meanings.

Example.—In the following, from Chesterton, the literal idea conveyed is that men have many more ways of communicating ideas to each other than by words: "In the last resort all men talk by signs. To talk by statues is to talk by signs; to talk by cities is to talk by signs. Pillars, palaces, cathedrals, temples, pyramids, are *an enormous dumb alphabet; as if some giant held up his fingers of stone.*" Here, it will be noted, the figure is finished by a kind of simile (*as if*, etc.). Metaphor and simile, in fact, often interact with each other.

Trope.—This figure is merely metaphor in its most condensed and least obtrusive form.

The word, derived from a Greek word meaning *to turn*, denotes a word turned from its literal meaning to connote some figurative idea. *Trope* is by far the most frequent and spontaneous figure of all; all language, in fact, that has vigor and life in it will be found to derive its interest in large part from the words of metaphorical suggestiveness that it contains.

Examples.—Thus, to speak of a man's character as *warped*, or *twisted*, or *unbalanced*; of his disposition as *sunny* or *sour*; to speak of one as an *all-round* man, or as having intellectual *poise*, or as standing *four-square to all the winds that blow*, is to use the perfectly natural yet vigorous language of trope. Men are frequently using the vocabulary of their business or occupation in this accommodated sense; as when a person's sincerity of conduct is described as *straight goods*, or when a man who fulfills his promises is said to *deliver the goods*. A certain Cape Cod skipper once described an untrustworthy man's character by saying that "his center-board was crooked;" a farmer would perhaps have said that "you could not hitch to him." Stevenson describes the endeavors made by a certain community to dispossess a supposed haunted house of its infernal occupant: "Every kind of spiritual *disinfectant* was put in requisition." (*R. V.*,) When we speak of "improving the moral *tone*," we are employing the language of music for a more abstract idea.

Personification.—This is a form of metaphor in which the literal idea is conceived as a person, having something of the life and traits of personality; thus the idea is made to think and act is if alive. A very powerful figure, rightly used; its abuse consists in employing it idly or insincerely.

Examples.—Instead of enumerating the noble qualities with which a man was endowed by nature, Shakespeare puts the thought in far more vigorous form by making nature speak:

"His life was gentle; and the elements
So mix'd in him, that Nature *might stand up*
And say to all the world, This was a man!"

Personification is fully as effective in the form of personal touches, a kind of trope, as for instance: "Ideas have hands and feet, as Hegel said, and move the world," where the metaphorical attribution of personal members is sufficient to suggest the life that inheres in personality.

Allegory.—This figure expands and carries out the metaphor, much as parable expands the similitude; only, instead of blending the literal and connoted ideas, it gives merely the connoted idea, in the form of a narrative or description, and leaves the reader to make out the literal meaning for himself. It is much used as a vehicle for moral or spiritual truth.

Example.—It is a mistake to deem allegory an obsolete form, or to associate it only with its great literary exemplars like the *Pilgrim's Progress*, or Spenser's *Faërie Queene*. Its principle can be seen equally well in a shorter example, such as the following, from a German source: "A man had a plain strong-bow with which he could shoot far and true. He loved his bow so well that he would needs have it curiously carved by a cunning workman. It was done; and at the first trial the bow snapt." Here a story is told, and no claim is made for a second meaning of it; yet the reader cannot help getting a moral lesson from it. Another example employs the kindred figure called fable, in which animals are endowed with personality: "An old ruinous tower: which had harbored innumerable jackdaws, sparrows and bats, was at length repaired. When the masons left it, the jackdaws, sparrows, and bats came back in search of their old dwellings, but these were all filled up. 'Of what use now is this great building?' said they: 'come, let us forsake this useless stone-heap' " The figures allegory, fable, apologue, and parable are closely akin to each other, and frequently so run together that a minute distinction between them is unpractical.

Figures of the Selective Type.—In this type of figures the connoted idea, instead of being taken from some alien class of objects, is selected from the class to which the literal idea belongs; that is, the part or accompaniment which is immediately concerned in the action—the business part so to say—is used, and the rest is left out or taken for granted. Thus the reader's attention is concentrated and economized. Two figures, alike in principle, belong to this type.

Synecdoche.—This figure takes a part for the whole, or, less often the whole for a part, and makes it do the work of the whole idea. The figurative suggestion may be conveyed either by the noun or the verb, as best serves the writer's purpose.

Examples.—1. A part for the whole. This is very common in the language of business or labor: as when we say so many *hands* for work in the field; so many *spades* for digging; so many *spindles* in a factory; so many *rifles* in the army; so many *sail*, or *hulls*, in a fleet. "Every *eye* shall see him; with *fire* and *sword*:" "sounds as if some fair city were one *voice*," are synecdoches. 2. This is seen in the use of such a term as the *administration* for the persons in power. "That I may make thee an *astonishment*, and the *inhabitants* thereof a *hissing*," is a Scripture synecdoche, the effect or result, as a whole, put for the cause of it. 3. "Coleridge *sat on the brow* of Highgate hill in those days," is a synecdoche conveyed by the verb; it is Carlyle's way of saying that Coleridge resided in Highgate at a certain period of his life, which (also by synecdoche) he designates as "those days."

Metonymy.—In this figure not a part stands for the whole, but the aspect or accompaniment or result of the idea which has most direct significance for the thought conveyed is selected to do the work. The word metonymy means a transfer of terms.

Examples.—In "The bright *death* quivered at the victim's throat," Tennyson is speaking of a sacrificial knife. In "he had drunk up two thriving *businesses* like a bottle of sherry," Stevenson names the result of a life of dissipation. "The pen is mightier than the *sword*" uses the concrete instruments for what they produce: literature and war.

Emotional.—In this class of figures the connoted idea is not a definite image called up from a different class of objects, but rather a state of mind belonging to a different level of feeling: an emotion of wonder, or intense realization, or humor, or contempt, which draws the reader out of his ordinary placid mood to some degree of its own intensity. This emotional state is brought about not directly, but by assuming the manner of expression peculiar to such connoted mood and trusting to the reader's sympathy to share in it. Two types of this class of figures may be distinguished.

Figures of the Intensity Type.—In this type of figure the writer's feeling is heightened by his sense of the greatness or importance or deep meaning of his idea, and his manner of setting it forth corresponds. Of this type of emotional figures the most representative are:

Exclamation; which is simply an outburst of wonder or exultation, generally expressed by an elliptical form of the sentence, in which the thought is not formally stated by an indicative verb, but held up, as it were, for contemplation and wonder. In case where the thought is stated in full grammatical structure there is intensity enough in the context to support the emotion, which then is indicated merely by the mark of exclamation (!). The utterance of the emotion is often aided also by interjectional words.

Examples.—Hamlet's expression of wonder at the greatness of man is a very pure example of the figure: "What a piece of work is a man! how noble in reason; how infinite in faculty; in form and moving how express and admirable! in action how like an angel! in apprehension how like a god!"—Simple as the figure is, the right use of exclamation is a delicate mark of literary skill. Especially, if the writer marks his emotion merely by an exclamation point, he must judge accurately if the emotional value of his context warrants it; and, if he ventures on the support of interjections, he needs to guard against giving the impression of forcing the emotional note.

Interrogation.—A figure used principally in oratory and animated argument, is the asking of a question, not in order to elicit an answer, but to imply strongly the opposite of what is asked. It connotes a conviction so strong that the truth of it cannot be gainsaid; it is thus a kind of challenge.

Examples.—In the following, from one of Burke's speeches, it can be felt how he is asking questionss not to get an answer, as if it were something to be investigated, but as indignantly challenging hi: hearers to make any other answer than is implied- "What! Gentlemen, was I not to foresee? or, foresee: ing was I not to endeavor to save you from all these multiplied mischiefs and disgraces? * * * Was I an Irishman on that day that I boldly withstood our pride? or on that day that I hung down my head, and wept in shame and silence over the humiliation of Great Britain? I became unpopular in England for the one, and in Ireland for the other. What then? What obligation lay on me to be popular?"

Apostrophe.—This figure is an address to some absent or distant object as if it were present and could hear and respond; it connotes the fervor of intense realization. Thus, with the connoted idea, is conveyed emotionally the beauty or pathos of the thought.

Examples.—In the following, Stevenson, filled with the vivid realization of the truth that men follow ceaselessly after vague ideals, and never attain them, breaks forth into this fervid address to them: "O toiling hands of mortals! O unwearied feet, travelling ye know not whither! Soon, soon, it seems to you, you must come forth on some conspicuous hilltop, and but a little way further, against the setting sun, descry the spires of El Dorado." The intensity of the apostrophe, it will be noted, is supported by exclamation. Note also the synecdoche, "toiling hands," "unwearied feet."

Figures of the Animus Type.—In this type, as in the previous, there is a degree of intensity in the emotion; but the controlling element is the *kind* or direction of the emotion: it reveals how the writer would have his reader feel, in a sense of sublimity or of humor or of the absurd, toward the idea thus set forth—in other words, a certain animus toward it.

Hyperbole.—This is simply overstatement: describing a thing in terms so beyond all reasonable or possible bounds that the reader cannot be misled into understanding it literally; he adjusts the statement to fact, rather, in the spirit of it.

Examples.—The figure hyperbole, which is essentially a descriptive figure, seems to have had an interesting history. In the old times men used hyperbole because they could not set bounds to their own imagination; as when the Hebrew spies, sent out to explore Canaan, reported that the cities of that land were "fortified up to heaven," and of the inhabitants: "we were in our own sight as grasshoppers, and so we were in their sight." Of a hostile army also it is said: "The children of the east lay along the valley like locusts for multitudes; and their camels were without number, and as the sand which is upon the sea-shore for multitude." (*R. V.*) In modern times, however, it is used rather to induce in the reader an unbounded imagination, describing in exaggerated terms so that he will not try to measure or to number, but

simply surrender himself to an impression; as when an old-fashioned table is described in Hawthorne as "exhibiting as many feet as a centipede," or as when, describing an astonishing run in a violin passage, a non-musical man averred that the performer played "more than a million notes."

One can produce much the same effect as in hyperbole by a studied *understatement*, an exaggeration in reverse; and this may be regarded as a kind of transition to the next figure.

Irony.—In this figure the writer's animus is so strong, and the real state of the case so obvious, that he says or assumes the exact opposite, in the certitude that his meaning will be taken as it is. It connotes various degrees of contempt, or resentment, or indignation, or ridicule. Being mainly a vituperative figure, it is best employed in a tone of playfulness and lightness, else the writer may injure his case by seeming morose and cynical.

Examples—When Job says to his friends, in whose arguments he had discovered a fallacy, "No doubt but ye are the people, and wisdom shall die with you," we can feel the contempt with which he estimates their mental powers and conclusions. When Macauley, describing a man whose character he detests, begins, "It may well be conceived that, at such a time, such a nature as that of Marlborough would riot in the very luxury of baseness," the word *luxury* apprises us that he is putting his conduct in ironical terms; and he goes on to say, "Lest his admirers should be able to say at the time of the Revolution he had betrayed his King from any other than selfish motives, he proceeded to betray his country." Here the animus is unrelieved by any lightness of touch; it is pure vituperation. Such handling of one's aversions does not make friends.

The figure *Irony* has many forms and degrees of intensity; giving rise to a whole class of kindred figures: from *Innuendo*, which conveys the ironical suggestion by light hints and touches; through *Satire*, which makes its way by the general ironical or disparaging tone of the writing, to *Sarcasm*, which lets loose its indignant animus in undisguised and scathing terms. On the whole, irony is a rather dangerous figure; if much employed, it is apt to react on the writer's own disposition, or at best to misrepresent his character, especially to unsubtle readers.

Examples of Mixture Good and Bad.—1. When Stevenson, speaking of certain suburban resorts in the vicinity of Edinburgh, says, "There are places that still smell of the plough in memory's nostrils," he is mixing three figures together: trope or metaphor (*smell*), metonymy (*plough*, for farm usages), and personification (*memory's nostrils*, as if memory were a person;) and all the figures are alive. 2. When, however, a rustic preacher says "the Gospel ship is sailing on, full-laden and well-rigged, and will continue to sail and prosper, because it is founded on a rock," he is using two figures that have had their day, and were both true; but the mixture of them makes an incongruous idea, the two members annulling each other.

DICTIONARY OF WORDS FREQUENTLY MISUSED

Americans are said to speak their own language with less correctness than do any other intelligent people in the world. Perhaps the reason is that we do things too rapidly to do them well; we are careless of our speech as we are careless of many things we do; we perhaps consider correct speech a trifle, being quite satisfied in our communications of thought with a crude approximation of our real meaning.

The general classes of errors made by people of ordinary intelligence are few, and if one cares, these may be readily corrected. If one wishes to use words correctly he must give attention to what he reads; he must read good things, and he must study the words as well as the thought. If one wishes to speak correctly he must give conscious daily attention to his own speech, and to the speech of others. A man's speech is judged by the worst he does—not by the best—so that one who realizes that his use of words is faulty will be saved from his errors only by constant attention to his regular and daily use of words, either in speech or writing. It is not a case of using words with correctness and effectiveness on occasion, but if one is to be prepared for the occasion, he must learn never to lapse into slovenliness. Any man who values correct speech, and is willing to pay the price of constant attention to his own speech, will soon make few errors.

Abbreviations.—Such abbreviations as *e'er*, *ne'er*, *o'er*, *e'en*, *'tis*, *'mid*, and *'neath*, are legitimate in verse, but should not be used in prose.

Ability, Capacity.—*Ability* is the power of doing; *capacity* the faculty of receiving. "The *ability* is in me to do him good." "Man's *capacities* have never been measured."

Abortive.—That is *abortive* which is premature, not brought to completion. A plan may be *abortive* but not an act. We may speak of an *abortive* effort.

About.—Not to be used as *almost*. "The day is *almost* gone," not "The day is *about* gone."

Above.—This word should not be used as an adjective; as, "The *above* statement." Say "The *foregoing* statement."

Accept, Except.—*Accept* means to take; *except* means to exclude. "I *accept* your terms." "A few were *excepted* from condemnation."

Administer.—Not to be used in the sense of *deal*. We *deal* blows; we *administer* medicine, oaths of office, and affairs of state.

Affect, Effect.—To *affect* means to influence or to pretend. To *effect* means to bring about. "He *affected* intoxication." "He *affected* the audience strongly." "I shall *effect* a reform."

Aggravate.—This word means to make worse or to increase in intensity. Do not say, "His conduct *aggravates* (annoys) me," but "The climate *aggravates* the disease."

Ain't.—This is illiterately employed as a contraction for *are not, am not, is not*. It should not be used.

Allow.—This word is frequently misused for *think*, as "I *allow* that I shall go to town." Say, "I *think* that," etc.

Alone, Only.—That is *alone* which is unaccompanied; that is *only* of which there is no other. "He suffered *alone*" means that no one was with him. "*Only* he *suffered*" means that no other person did.

Alternative.—This word should not be used when more than two things are referred to. Not to be used for *course*. "He had this *alternative* left him"—a choice between two.

Amateur.—Do not use the word to mean one new, or unskilled, at a business, a novice. An *amateur* is skilled in something he likes but does not pursue as a business, as "An *amateur* photographer."

Anxious.—The word does not mean desirous, but concerned or worried. "I am not *anxious* to live in the country" should be "I am not *desirous*." We may say, "I am *anxious* concerning your safety."

Anybody, Any one, Anything.—These words are singular, and should always be referred to by singular pronouns. "*Anybody* can do as *he* pleases." "*Any one* is at *his* best here."

Anybody else's, Anybody's else.—The predominance of usage seems to be in favor of the first form, which is correct according to analogy of similar cases, which "throw" the apostrophe and s to the last word of the unified expression, generally nouns in apposition.

Appreciate.—The word does not mean *prize at value*, but *to rate at its true value*. In such expressions as "I *appreciate* your services *highly*," the adverb is superfluous.

Apt, Likely, Liable.—*Apt* means fit; *likely* means probable; *liable*, unpleasant probability. "Such *apt* and gracious words." "We are all *likely* to make mistakes." "If he exposes himself to the weather, he is *liable* to contract a cold."

As—As, So—As.—Use the former in affirmative and the latter in negative propositions. "We are *as* wise *as* our teachers." "I am not *so* young *as* I used to be."

As I take it.—Better say "As I understand," or "As it seems to me."

As though is often used for *as if*. In the sentence "He walked *as though* he were lame," if the ellipsis is supplied the error will be evident. "He walked *as* (he would walk) *though* he were lame." *As though* is seldom correct.

At.—"Where are you *at?*" A common error, in which *at* is superfluous. Say "Where are you?"

Audience.—Do not use when you mean *spectators*. An *audience* listens; *spectators* see what occurs. The preacher had a good *audience*. There were many *spectators* at the ball game.

Avoid is often used for prevent. "He shall receive no pay if I can *avoid* it." Say, rather, "If I can *prevent* it."

Awful, Awfully.—Do not use these words as intensives or for supposed force. *Awful* should mean that which inspires awe. "The *awful* mysteries of the world unseen."

Bad, Badly.—*Bad* is not to be used for severe, as "I have a *bad* headache." *Badly* is also inelegantly used for very much, as "I need money *badly*."

Balance.—The word means the *excess of one thing over another*, and should not be used for *remainder* or *what is left*. We may say, "He has a large *balance* in the bank."

Been to.—Do not say "I have *been to* New York," for "I have *been in* (or *at*) New York." You cannot *be to* a place.

Beside, Besides.—*Beside* is a preposition; *besides* is an adverb. "The tree stands *beside* the house." "I have more *besides* this."

Between.—Should be used with reference to two things only. Not "*Between* us three," but "*Between* you and me."

Blame it on.—A vulgarism used to mean *accuse* or *suspect*. "He *blames it on me*," should be "He *accuses* (or *suspects*) me."

Both alike.—In such expressions as "They are *both alike*," "The two boys *both* have blue eyes," *both* should be omitted.

Bran new.—The correct form is *brand new*.

Bring, Fetch.—*Bring* means to convey to this point; *fetch* means to go and bring. "*Bring* me your books." "*Fetch* the racquets from the house."

Burgle.—The word is an entirely unauthorized form.

But what.—Do not use when you mean *but that*. "I know nothing *but what* you told me," is correct. "I do not doubt *but what* he will succeed," should be, "I do not doubt *but that*," etc.

Calculate.—Often vulgarly used for *think* or *suppose*. To *calculate* means to arrive at by a mathematical process. We *calculate* a result. We do not *calculate* that it will rain.

Caliber.—The word means the diameter of a body, especially of the hollow inside of a cylinder. Figuratively it means *capacity of mind*. "His work is of high *caliber*" should be "His work is of high *order*. "He has a mind of great *caliber*" is correct.

Can, May.—These two forms are often misused. *Can* suggests power or ability; *may*, permission. "*Can* I take your place?" means "Am *I able* to do it." "*May* I go with you?" requests *permission*.

Character, Reputation.—One's *character* is what one really is; one's *reputation* is what people think of one. We may have a good *character* and a poor *reputation*, and *vice versa*.

Claim.—Not to be used in the sense of *assert* or *affirm*. *Claim* means properly to demand as due. It is incorrect to say "He *claims* that he is your brother." We may correctly say "I *claim* my right."

Clerk.—Not a verb. Do not say "John *clerks* for Smith & Co.," but "He is a *clerk*," etc.

Co-ed.—An unauthorized expression used to mean a young woman in a coeducational institution.

Complected.—This word is generally misused for *complexioned*.

Condign.—Often used to mean *severe*, but properly means *worthy* or *deserved*, as "The criminal suffered *condign* (that is *deserved*) punishment.

Congregate together.—In such expressions as "A large crowd *congregated together*" the word *together* should be omitted. *Congregate* means *gather together*.

Continual, Continuous.—The former often means *frequently repeated*; the latter means *uninterrupted, without break*, and is the stronger word. Thus we may say that the flow of a stream is *continuous;* that the clanging of a bell is *continual;* that *continual* showers drenched the ground.

Convict, Convince.—*Convict* is always used of something wrong, and refers to one's outer condition; "The man was *convicted* of the crime." *Convince* refers to the inner judgment, and may be used of either right or wrong; as, "I am *convinced* that you are right."

Couple.—This word does not mean *two* merely, but *two things paired* together; as, "The young *couple* is living on the hill."

Credible, Creditable.—*Credible* means worthy of belief, as, "Dr. Cook's story is not *credible*." *Creditable* means *worthy*, as, "He made a *creditable* address."

Dandy.—As an adjective the word is overworked slang, and should be avoided.

Definite, Definitive.—*Definite* means *specific*; *definitive*, final. "A *definite* (that is, *specific*) answer was given, but it was not *definitive (final)*."

Demean.—This word is often incorrectly used for *bemean* (that is, *lower*), as "He *demeaned* himself by his careless actions." It properly means to *behave one's self*, as "He *demeaned* himself properly."

Depot, Station.—A *depot* is properly a place where goods or stores are kept. The place where a railway train stops for passengers may better be called a *station*.

Die with, from.—Invalids do not die *with*, nor *from* but *of*, a disease.

Differ from, with.—One thing differs *from* another in appearance; one person differs *with* another in opinion.

Directly.—Not to be used in the sense of *as soon as*. Do not say "*Directly* they came we left," but "We left *directly*" is correct.

Disremember.—Provincial for *forget*, and should not be used.

Donate.—An unauthorized formation from *donation*. Better say "Make a *donation*."

Don't for doesn't.—Don't is the plural contraction of *do not*, therefore such common expressions as "He *don't* live here," "She *don't* like to sing," etc., are ungrammatical.

Don't think.—Instead of saying "I *don't think* it will rain," it is better to say "I *think* it will *not* rain."

Double negative.—Double negatives in English are universally common but incorrect. Avoid such expressions as "I *didn't* know *nothing* about it;" "I *haven't never* been there," "I *haven't* had *but* one vacation in ten years."

Due, Owing.—That is *due* which ought to be paid; as, "The note is *due* next month." *Owing* is used in the sense of *on account of;* as, "It was *owing* to his daring that the insurrection was checked."

Dutch for German.—Do not say *Dutch* when you refer to *German*. *Dutch* refers to *Holland*.

Each.—*Each* is singular in number, and should be used with a singular noun and verb. Do not say "*Each* comes in *their* turn," but "*Each* comes in *his* turn;" not "*Each* man were singled out," but "*Each* man *was*," etc.

Elegant.—*Elegant* means *refined*, in *good taste*. A much misused and much overused word.

Elocute.—This form is not justified by good usage.

Else.—By preponderance of custom, when *else*, joined to *anybody, somebody, any one*, or *some one*, forms a possessive, the '*s* is added to *else*, as *somebody else's*. Many, however, prefer to write the form *somebody's else*.

Emigrant, Immigrant.—These two words are often confused. *Emigrants* are people going out of a country; *immigrants* are people coming into a country.

Endorse or **Indorse.**—Do not say "*Endorse* (or *indorse*) on the back of," for these words mean *to write upon the back of*. *Indorse* is the spelling now generally preferred.

Enjoy poor health.—This expression should be avoided; no one really enjoys poor health.

Enthuse.—A verbal form not authorized by good usage. Better say "*Arouse enthusiasm*."

Equally as well.—The *as* is not necessary; say "*Equally well*."

Every.—Be careful to see that a verb in the singular number follows. "*Every* man *was* at his post."

Every one, Everybody, Everything.—These words, being singular, should always be referred to by singular pronouns. "*Every one* should mind *his* own business." "*Everybody* has *his* troubles." "*Everything is* in *its* place."

Evidence, Testimony, Proof.—*Evidence* is anything that tends to convince; *testimony* is evidence given by witnesses; *proof* is whatever establishes the truth of a proposition.

Except, Unless.—*Except* is not to be used for *unless*. Do not say "*Except* I am delayed, I shall arrive at three," but "*Unless* I am delayed," etc.

Existing truths.—*Existing truths* should always be expressed in the present tense. Do not say "Galileo taught that the world *was* round," but "*is* round."

Expect.—*Expect* refers only to the future, and is not to be used for *think* or *suppose*. Do not say "I *expect* I was there;" "I *expect* you had a pleasant time yesterday."

Farther, Further.—*Farther* refers to *linear distance*. "We had gone *farther* than I supposed." *Further* measures quantity or degree as, "I shall speak *further* on the question."

Female.—Not correctly used for *woman*.

Few and **a few.**—These words are different in meaning. "*Few* persons like Mr. Jones" means that he is generally disliked. "*A few* persons like him" means some, and perhaps all who know him.

Firstly.—Not an approved form. *First* is both an adjective and an adverb.

First-rate.—Correctly used as an adjective. "He has a *first-rate* place." but not "He did *first-rate*."

Fix.—Be sure that you intend to convey the idea of fastening firmly when you use *fix*. It should not be used to mean *repair, arrange*, or *set up*. "He stopped to *fix* the machine" is an error.

Former, Latter.—The less a writer uses these words the better, unless they are followed by a noun, as "the *former* rule" or "the *latter* member."

For to.—Do not say "I went *for to* see the show." *For* is superfluous.

Funny.—The word should not be used to mean *strange* or *curious*.

Gent.—This word should never be used.

Gesture.—Not to be used as a verb. Do not say "The speaker *gestured* frequently." Say, rather, "*gesticulated*."

Get.—Strictly, *get* means to obtain by voluntary effort. It does not signify mere possession. Do not say "I haven't *got* a cent," but "I haven't a cent." *Got* is also preferred by good writers to *gotten* in such expressions as "When he had *gotten* over his illness."

Get over.—Often incorrectly used for *survive* or to *recover*, as "He *got over* the disease," or "*to get over* a fact," meaning to *refute* it.

Get to go.—This expression is common in some parts of the country but should be avoided. Say "I was unable to go," or "I was prevented from going" rather than "I didn't *get to go*."

Good deal, great deal.—Perfectly correct expressions. "I have walked a *great deal*." "The boy liked school a *good deal* better than play."

Good, Well.—*Good* should not be used as an adverb. Do not say "You sang *good*," "Did you sleep *good* last night?" In these cases *well* should be used.

Guess.—*Guess* is commonly used in the United States to mean *think*, as in "I *guess* you are right" for "I *think*," etc.

Had ought.—Provincial and incorrect. *Had* or any form of the verb *to have* cannot correctly be used as an auxiliary with *ought*. Use *should* or *ought not*. Not "He *hadn't ought* to have gone," but "He *should not* have gone."

Hain't.—A vulgarism. There is no such contraction for *have not* or *has not*.

Hang, Hanged.—The verb *hang* has two forms for the past participle, *hanged* and *hung*. *Hanged* is used for persons; *hung* for other objects. "The man was *hanged*." "The coat was *hung* on the rack."

Have got.—See *get*.

Healthy, Healthful.—That is *healthy* which is in good health; that is *healthful* which promotes health. "The family was in a *healthy* condition, because they had been living on *healthful* food."

How.—*How* is not to be used for *what* nor for "*What did you say?*"

Human.—Not to be used as a noun. Do not say "The house was not fit for *humans* to live in," but "The house was not fit for *human beings* to live in.

Ideal.—Not to be used in the sense of *perfect* or *beautiful*; it properly means *that which exists in idea only*. "His *ideals* are high."

If I was.—Use the subjunctive in all cases where the conditions are contrary to fact. "If I *were* you, I should go." "If I *were* a man, I should practice law." I am not you, and I am not a man. Use the indicative in cases of uncertainty. "If I *was* in town that day, I did not see you." I am uncertain as to whether I was or not.

Illy.—Should be avoided; *ill* is the proper word, both as adjective and adverb. "He did the work very *ill*."

In, Into.—Use *in* to signify rest in a place; use *into* to signify motion toward a place. "He was standing with his hands *in* his pockets." "I put my hands *into* my pockets." "I came *in* an automobile." "The stranger walked *into* the room."

Inaugurate.—The word means to *induct into office* or to make a *ceremonious beginning*. It is not to be used for the simple things of life.

Individual.—The word should not be used in the mere sense of *person*. The word is correctly used in "Changes both in *individuals* and in communities."

Infinitive, cleft.—The *cleft* or *split infinitive* (that is, the *infinitive* with an adverb between the two parts) is avoided by careful writers. Do not say "He was in a position *to accurately observe* the proceedings," but "*accurately to observe*," or "*to observe* the proceedings *accurately*."

Initiate.—The word ought not to be used simply for begin. The word suggests ceremonious form; as, "The candidates were *initiated* into the lodge."

In our midst.—The possessive case is not to be used, but rather a construction with of; as, "*in the midst of us*."

Invite.—Not to be used as a noun. Do not say "I received an *invite*," but "I received an *invitation*."

Kind of a.—The "*a*" is superfluous.

Lady.—This word is not to be used for *wife*, or to mean simply *woman*.

Learn, Teach.—These words are often vulgarly misused. *To learn* is to receive instruction; *to teach* is to give instruction. "I can *learn* if you will *teach* me," is correct.

Lend.—*Lend* is a verb; *loan* a noun. I *lend* a man a dollar, and he receives the *loan*.

Less, Fewer.—*Less* has to do with *amount* or *quantity*, and *fewer* with numbers. "He had *less* money and *fewer* clothes than he needed."

Let requires the objective case. "*Let him* and *me* go," not "Let *he* and *I*."

Liable.—See *Apt*.

Lie, Lay.—By a vulgar error these verbs have been so confounded as to deserve some notice. *To lie* is neuter, and designates a state: *to lay* is active, and denotes an action on an object; it is properly to cause *to lie*. "A thing *lies* on the table;" "Some one *lays* it on the table." "He *lies* with his fathers;" "They *laid* him with his fathers." In the same manner, when used idiomatically, we say, "A thing *lies* by us until we bring it into use;" "We *lay* it by for some future purpose."

The confusion arises probably from the fact that *lay* appears in both verbs. The words are correctly used in the following sentences:

I *lay* myself upon the bed (action). I *lie* upon the bed (rest).

I *laid* myself upon the bed (action). I *lay* upon the bed (rest).

I *have laid* myself upon the bed (action). I *have lain* upon the bed (rest).

A hen *lays* an egg (action). A ship *lies* at the wharf (rest).

The murdered Lincoln *lay* in state (rest); The people *laid* the crime upon the rebels (action).

Like. As.—*Like* has a prepositional use, but *as* is a conjunction. Do not say "It looks *like* it was caused by fire," but "It looks *as if*," etc. The following are correct: "My brother looks *like* me." "He acted *as if* he were insane." "Do it *as* I do."

Likely.—See *Apt*.

Limb.—Do not use *limb* when you mean *leg*. *Limb* may be applied to any member, and it is not more modest than *leg*. "The woman had her *leg* broken."

Lit.—Not to be used for *lighted*. Instead of saying "He *lit* the gas," say "He *lighted* the gas." Do not say "He *lit* on his feet," but he *lighted* on his feet."

Locate.—This word should not be used in the sense of *settle*. It is used transitively to mean to *fix* or *place in a position;* as, "He *located* a claim."

Lot, Lots.—Very inelegantly used for *a great many, a great deal;* as, "He had a *lot* of money left him;" "She looks a *lot* like her brother." The word means *a distinct part or portion*. "He divided his goods into *lots*."

Lunch.—An authorized form both as noun and verb, but not considered so elegant as a noun as *luncheon*.

Mad.—Should not be used for *angry*.

Mail man.—An inelegant form for *postman*.

Me being.—Do not say, "He did not know of *me being* there." The possessive case is required. "He did not know of *my being* there." "There is little chance of *his winning* the game."

Monstrous.—*Monstrous* means *abnormal* or *deformed*. Not to be used for *large* or *immense;* as, "It was a *monstrous* gathering."

Most.—Not to be used for *almost;* as "He is here *most* every day."

Mutual.—Does not mean *common*, but *reciprocal*. "We may have a *common* friend, but a *mutual* dislike;" that is, a dislike for each other.

Myself.—Not to be used for *I*. Do not say "John and *myself* are friends;" but "John and *I*," etc.

Near.—Not to be used for *nearly*. Say "He was not *nearly* so unselfish as his brother," instead of "not *near* so unselfish," etc.

Nearby.—Should not be used as an adjective. We may say "The house is *nearby*," but not "A *nearby* house."

New beginner.—Omit the *new*; all beginners are *new*.

Nice.—A very generally misused word. Properly *nice* means *delicate, discriminating, fastidious*. The works of a watch show *nice* construction; a man may be *nice* in his manners. The word should not be used to mean *agreeable* or *charming*, as "I had a *nice* time."

Nicely.—Do not use *nicely* for *well*, as "The sick man is doing *nicely*."

Not as I know of.—Incorrectly used for *not that I know of*.

Notorious.—Implies some *bad* or *doubtful quality;* as, "He has a *notorious* reputation." Here his reputation is *not good*.

Noways.—Incorrectly used for *nowise*. Say "He was *nowise* to blame."

Of all others.—Do not say "He is the last one *of all others* you would expect it of." He could not be one of the *others*.

Off of.—Ordinarily *of* is superfluous. Say "The man fell *off* the roof," not "*off of*."

Only.—This word is often misplaced. Properly it should immediately precede the word or expression which it limits. Say "I have *only* three dollars;" "She sang *only* for us;" not "I *only* have" and "She *only* sang." "She *only* sang" would mean she did nothing else but sing.

Onto.—We get *on* a horse and *on* a chair, not *onto*.

Orate.—An unauthorized form commonly used to mean *to give an oration*.

Over.—Do not use *over* in the sense of *more than;* as, "I have *over* a hundred dollars;" "The stick is *over* a yard long."

Pants.—The word is a vulgar abbreviation for *pantaloons*, and should not be used.

Pardner.—Often incorrectly used for *partner*.

Partake.—One cannot *partake* of a meal alone. *Partake* means to *take* or *share* with another.

Partially.—The word is sometimes used in the sense of *partly;* as, "I have only *partially* examined it." It also means *with partiality*.

Party.—*Party* means a *group of people*, not a *single person*. Do not say "The *party* you sent to me," when you mean the *person*.

Patron.—A *patron* is one who shows *consideration* or *favor*. A charity ball may have *patrons*. Not to be used for *customer*.

Pellmell.—*Pellmell* means *mixed* or *mingled together*. The term cannot properly be applied to an individual. "He rushed *pellmell* out of the house" is obviously impossible.

Per.—*Per* day, *per* man, *per* pound, are better expressed by the plain English *a* day, *a* man, *a* pound. The word should be used only with Latin nouns, as *per diem, per annum*.

Photo.—Not to be used as an abbreviation for *photograph*.

Pled.—Not to be used for *pleaded*. Say "He *pleaded* for a pardon," "He *pleaded* for his friend."

Posted.—Not to be used in the sense of *informed*, as "He is a well *posted* man," "If I had been better *posted*."

Prejudiced.—*Prejudice* is an *unfavorable bias*; we cannot, therefore, be *prejudiced in favor* of anything. In such a case we should use *prepossessed*.

Presume.—Not to be used for *think* or *believe*. Do not say "I *presume* he is right," but "I *think* or *believe*."
Preventative.—Wrongly used for *preventive*.
Privilege, Right.—A *privilege* is a special advantage granted for conceded; a *right* is one's due. We grant *privileges*, but we claim *rights*.
Propose, Purpose.—*Propose* means to put forward for discussion or consideration; *purpose* means to intend. "I *purpose* going to town to *propose* a plan to my business partner."
Purchase.—Sometimes used pretentiously when *buy* would be better.
Quite.—To be used in the sense of *fully, completely*, as, "I am *quite* satisfied." Do not say, "There was *quite* a crowd," "I have *quite* a few friends."
Raise.—Often misused for *rear* or *bring up*. We *raise* chickens, but we *rear* children.
Real.—Not to be used adverbially in the sense of *very*, as "I am *real* tired. Say "I am *really* tired," or "*very* tired."
Reckon.—Provincial for *think*. "I *reckon* he will come soon." Say "I *think*" or "I *believe*."
Recommend.—Not to be used as a noun; as, "The teacher gave him a good *recommend*." *Recommendation* is the proper word.
Referee.—Not to be used as a verb. "The man acted as *referee*" is correct, but not "He *refereed* the game."
Replace.—To replace an object is *to restore it to its place*. Not used in the sense of *take the place of*.
Resurrect.—A colloquial word not to be used in writing.
Retire.—It is better to avoid the use of *retire* in the sense of *go to bed*.
Reverend.—As a title not to be used without *the*. "*The Reverend* Mr. Brown," not "*Reverend Brown*."
Set, Sit.—These verbs, like *lie* and *lay*, are often confounded in their use. *To set* is both transitive and intransitive; *to sit* is intransitive. "I *set* the hen, but she *sits* on her eggs." Incorrectly we speak of a *setting* hen instead of a *sitting* hen.

Christ came "*sitting* upon an ass," and, therefore, his disciples took a colt and "they *set* him thereon." The verb is correctly used in these sentences: "My dress *sits* well;" "We will *sit* up," that is, will not go to bed; "Congress *sits*." "We *set down* figures," but "We *sit down* on the ground."

We *set* a post, *set* glass, *set* milk, *set* the sails, *set* a bone, *set* a clock, *set* a price, *set* jewels, *set* an example.

The sun *sets*, one *sets* out, the current *sets* to the north; one *sets* forward, *sets* forth, *sets* off; Winter *sets* in.
Shall and Will.—These two forms are perhaps more commonly misused than are any other words in English. The rules with regard to the use of these words are as follows:

In declarative sentences, *shall* is used in the first person and *will* in the second and third persons to express simple futurity, as "I *shall* come"; "You *will* come"; "He *will* come."

In questions, however, *shall* is used rather than *will* in the second person to indicate simple futurity, as, "*Shall* you come?" In the first and third person, *will* is the proper word; as, "*Will* I come?" "*Will* he come?" To say "*Shall* I come?" would be to ask permission to come. "Shall he come?" would be a request that he be allowed to come.

In other cases *shall* and *will* express purpose or determination on the part of the speaker—*will* in the first person, and *shall* in the second and third.
Should and Would in general follow the same laws as *shall* and *will*.

In clauses expressing a condition, *should* is used in all three persons. "If I *should* try, I *should* succeed." "If he *should* come, he *would* meet you." (Here *should* expresses a condition.) *Should* is also used in all three persons to express a sense of duty. "I *should* (he *should*) come home early." (*Should* here expresses duty.) *Would* is also sometimes used to express a customary action; as, "He *would* come up to the window and look out." (*Would* here expresses habit or customary action.)
Sleeper.—Very generally misused for *sleeping car*.
Some.—Often misused for *somewhat*. "I am *some* tired this evening." Say "I am *somewhat* tired," etc.
Speciality.—An erroneous writing of *specialty*.
Splendid.—The word properly means *brilliant*. It should not be used for what is only *ordinarily good* or *commonplace*.
Stop.—Wrongly used for *stay*. We *stop* at the roadside; we *stay* with a friend or at a hotel.
Suicide.—Should not be used as a verb; as, "The prisoner *suicided* in the jail."
Sunday.—Not to be used as a verb. Say "He spent *Sunday* at home," not "He *Sundayed* at home."
Sure.—*Sure* is frequently misused for *surely*. "He will be here *sure*." Say, rather, "He will *surely* be here."
Suspicion.—Not a verb. Use instead *suspect*. "I *suspected* the truth of his statements."
That for So.—Instead of "He was *that* independent he would not speak," say "He was *so* independent."
Then.—Not an adjective. Do not say "the *then* president."
Thence.—Remember not to use *from* with this word. *Thence* means *from that place*. "He departed *thence* at noon."
These kind, Those sort.—*Kind* and *sort* are singular nouns, and should be modified by singular adjectives. Say "*this kind*," "*that sort*."
Through.—Often misused in the sense of *finished* "I am *through* with my breakfast" instead of "I have *finished* my breakfast."
Thusly.—An unauthorized form for *thus*.
Transpire.—*Transpire* properly means *to leak out, to become known*. It should not be used for *happen*. "It *transpires* that the couple had been married for a year" is correct.
Try and.—Do not use "*try and*" for "*try to*." Say "*try to come*," not "*try and come*."
Two first, two last.—Say "the *first two*," "the *last two*" rather than "the *two first*" or "the *two last*."
Unbeknown.—Not to be used for *unknown*.
Unique.—*Unique* means the only one of its kind. We cannot say, then, "*very unique*."
Use to.—Properly *used to*. There are many inelegant forms of this verb. Do not say "I *use* to"; "Didn't you *use* to?" "You *usen't* to."
Verbal.—Misused for *oral*. "He would not trust himself to write her a note, but sent her a verbal (should be *oral*) message."
Vocation.—A man's *vocation* is his calling, his regular business. His *avocation* is something outside of his business with which he occupies himself incidentally. My friend's *vocation* is the practice of law; his *avocation* is photography. Still, while *avocation*, in the sense of *vocation*, is usually avoided by good writers, such use has some sanction of authority.
Want, Need.—*Want* expresses both the desire for a thing and the fact that the thing is lacking; *need* expresses the necessity of having a thing. A man may *want* an automobile, though he may not *need* one.
Wa'n't.—Not to be used as a contraction for *was not* or *were not*.
Ways.—Often incorrectly used for *way*. Instead of "I walked a long *ways* with her" say "I walked a long *way*."
Whatsomever.—An unauthorized form for *whatsoever*.
While.—Often incorrectly used for *although* or *and*, as "*While* I believe you are honest, I cannot vote for you." *While* properly means *during the time that*, as "*While* I was musing the fire burned."
Widow woman.—The word *woman* is superfluous in this expression, as all widows are women.
Without, Unless.—*Without* is a preposition, and should not be used to take the place of the connective *unless*. "I shall not go *without* my father consents," should read "*unless* my father consents," or "*without* my father's consent."
Worse.—Not to be used for *more*. We do not dislike one thing *worse* but *more* than another.
Worst kind, worst way.—Vulgarisms used in the sense of *very much*.

BOOKS OF THE BIBLE ANALYZED

BOOKS OF THE OLD TESTAMENT

PENTATEUCH

Genesis. Account of creation, early history of the human race, and story of the patriarchs.
Exodus. Account of the exodus and the giving of the moral law by Moses.
Leviticus. Development of the nation and institution of priestly law.
Numbers. Further development and institution of social and political law.
Deuteronomy. Recapitulation of history and law.

HISTORIC BOOKS

Joshua. Conquest of Canaan, and separation of the tribes.
Judges. History of Israel under the administration of thirteen Judges.
Ruth. An Idyll of Jewish life in the period of the judges.
Samuel. Establishment of the kingdom under Saul and David.
Kings. Political history of the kingdoms of Judah and Israel.
Chronicles. Priestly history of the kingdoms of Judah and Israel.
Ezra. Continuation of Chronicles. Priestly restoration after the captivity.
Nehemiah. Continuation of Ezra. The political restoration.
Esther. A story of the Hebrew captivity.

POETRY

Job. A drama of the soul.
Psalms. Book of hymns.
Songs of Solomon. Hebrew pastoral poems.



DANIEL

From *The Prophets*, on the ceiling of the Sistine Chapel, Vatican. Painted by Michelangelo.

DIDACTIC POETRY OR BOOKS OF WISDOM

Proverbs. Practical moral maxims.
Ecclesiastes. Practical moral reflections.

MAJOR PROPHETS

Isaiah. The Messianic prophet.
Jeremiah. The prophet of sorrow.
Ezekiel. The priestly prophet.
Daniel. The apocalyptic prophet.

MINOR PROPHETS

1. Hosea.
2. Joel.
3. Amos.
4. Obediah.
5. Jonah.
6. Micah.
7. Nahum.
8. Habakkuk.
9. Zephaniah.
10. Haggai.
11. Zechariah.
12. Malachi.

BOOKS OF THE NEW TESTAMENT

Biography. Life of Christ as found in the four gospels, Matthew, Mark, Luke, John.
Historical. History of the Apostolic Church as given in the Acts of the Apostles.
Epistles. Continuation of the history of the Apostolic Church as given in the

PAULINE EPISTLES

Romans,
Corinthians, I and II,
Galatians,
Ephesians,
Phillipians,
Colossians,
Thessalonians I and II,
Timothy I and II,
Titus,
Philemon,
Hebrews.

GENERAL EPISTLES

James,
Peter, I, II,
John I, II, III,
Jude.

Prophetical. The Apocalypse or Book of Revelation.

DICTIONARY OF ABBREVIATIONS, CONTRACTIONS, AND DEGREES

A., a. Adjective.
A. Alto.
A., ans. Answer.
a, @. (Lat. *ad.*) *To*; at.
ā., āā., The like quantity of each. (*Used in medical formulas.*)
A. A. Associate of Arts.
A. A. A. S. American Association for the Advancement of Science.
A. A. G. Assistant Adjutant-General.
A. A. S. S. (Lat. *Academiæ Antiquarianæ Societatis Socius.*) Member of the American Antiquarian Society.
A. B. (Lat. *Artium Baccalaureus.*) Bachelor of Arts. [See *B. A.*]
Abbr., Abbrev. Abbreviated, Abbreviation.
Abl., abl. Ablative.
Abp. Archbishop.
A. B. S. American Bible Society.
A. C. (Lat. *Ante Christum.*) Before Christ; Arch-Chancellor.
Acad. Academy.
A. C. A. American Congregational Association.
Acc., acc. Accusative.
Acc., Acct. Account.
A. D. (Lat. *Anno Domini.*) In the year of our Lord.
Ad., advt. Advertisement.
A. D. C. Aide-de-camp.
Adj. Adjective.
Adjt. Adjutant.
Adjt.-Gen. Adjutant-General.
Ad. lib., Ad libit. (Lat. *ad libitum*), At pleasure.
Adm. Admiral; Admiralty.
Admr. Administrator.
Admx. Administratrix.
Adv. Adverb.
Æ., Æt. (Lat. *Ætatis.*) Of age, aged.
A. F. A. Associate of the Faculty of Actuaries.
A.-G., Adjt.-Gen. Adjutant-General.
Ag. (Lat. *argentum.*) Silver.
Agl. Dept. Agricultural Department.
Agr., Agric. Agriculture, Agricultural.
Agt. Agent.
A. H. (Lat. *Anno Hegiræ.*) In the year of the Hegira, or flight of Mohammed.
A. H. S. (Lat. *Anno Humanæ Salutis.*) In the year of human salvation.
A. I. A. Associate of the Institute of Actuaries.
A. L. of H. American Legion of Honor.
Al. Aluminium.
Ala. Alabama.
Alas. Ter. Alaska Territory.

Ald. Alderman.
Alex. Alexander.
Alf. Alfred.
Alg. Algebra.
A. M. (Lat. *Artium Magister.*) Master of Arts.
A. M. (Lat. *ante meridiem.*) Before noon.
A. M. (Lat. *anno mundi.*) In the year of the world.
Am., Amer. America, American.
Am. Asn. Sci. American Association for the Advancement of Science.
Amer. Phil. Soc. American Philosophical Society.
Amt. Amount.
A. N. Anglo-Norman.
An. (Lat *anno.*) In the year.
Anal. Analysis.
Anat. Anatomy, anatomical.
Anc. Ancient.
Anon. Anonymous.
Ans. Answer.
A. N. S. S. Associate of the Normal School of Science.
Ant., Antiq. Antiquities, antiquarian.
Anthrop. Anthropology, anthropological.
A. O. U. American Ornithologists' Union.
A. O. U. W. Ancient Order of United Workmen.
Ap., App. Apostle, apostles.
A. P. A. American Protestant Association; American Protective Association.
Apo. Apogee.
Apoc. Apocalypse; Apocrypha.
App. Appendix. [ly.
Approx. Approximate, appproximate-
Apr. April.
A. P. S. Associate of the Pharmaceutical Society.
Aq. (Lat. *aqua.*) Water.
A. Q. M. Assistant Quartermaster.
A. Q. M. G. Assistant Quartermaster-General.
A. R. (Lat. *anno regni.*) In the year of the reign.
Ar., Arab. Arabic, Arabian.
Ar., Arr. Arrive, arrives, arrived, arrival.
A. R. A. Associate of the Royal Academy.
Arab. Arabic, Arabian.
Aram. Aramaic.
Arch. Architecture.
Archæol. Archæology.
Archd. Archdeacon.
A. R. H. A. Associate of the Royal Hibernian Academy.
Arith. Arithmetic, arithmetical.
Ariz. Arizona.
Ark. Arkansas.
Arm. Armoric; Armenian.
Arr. Arrive, arrives, arrived, arrival.
A. R. R. (Lat. *anno regni regis or reginæ.* In the year of the King's (*or* Queen's) reign.
A. R. S. A. Associate of the Royal Scottish Academy.
A. R. S. M. Associate of the Royal School of Mines.
Art. Article.
A. S., A.-S. Anglo-Saxon.
Asst. Assistant.
A. S. S. U. American Sunday School Union.
Assyr. Assyrian.
Astrol. Astrology.
Astron. Astronomy, astronomical.
A. T. S. American Tract Society.
Atty. Attorney.
Atty.-Gen. Attorney-General.
A. U. A. American Unitarian Association.
A. U. C. (Lat. *anno urbis conditæ*), In the year from the building of the city—Rome.
Aug. Augmentative.
Aug. Augustus; August.
Auxil. Auxiliary.
A. V. Authorized Version.
A. V. Artillery Volunteers.
Avoir. Avoirdupois.
B. Bass; Book.
B., Brit. British.
b. Born.
B. A. Bachelor of Arts. [A. B.]
Bal. Balance.
Balt., Balto. Baltimore
Bank. Banking.
Bap., Bapt. Baptist.
Bar. Barrel; Barometer.
Bart., Bt. Baronet.
Bat., Batt. Battalion.
Bbl., bbls. Barrel; barrels.
B. C. Before Christ.
B. Ch. (Lat. *Baccalaureus Chirurgiæ.*) Bachelor of Surgery.
B. C. L. (Lat. *Baccalaureus Civilis Legis.*) Bachelor of Civil Law.
B. D. (Lat. *Baccalaureus Divinitatis.*) Bachelor of Divinity.
Bd. Bound.
Bdls. Bundles.
Bds. Bound in boards.
B. E. Bachelor of the Elements; Bachelor of Elocution.
Belg. Belgic, Belgian.
Benj. Benjamin.
Berks. Berkshire.
Bib. Bible, biblical.
Biog. Biography, biographical.
Biol. Biology, biological.
B. LL. (Lat. *Baccalaureus Legum.*) Bachelor of Laws.
B. ès L. (Fr. *Bachelier ès Lettres.*) Bachelor of Letters.
Bls. Bales.
B. M. (Lat. *Baccalaureus Medicinæ.*) Bachelor of Medicine.
B. M., B. Mus. (Lat. *Baccalaureus Musicæ.*) Bachelor of Music.
B. O. Branch Office.
B. O. Bachelor of Oratory.
Boh. Bohemian, *or* Czech.
Bost. Boston.
Bot. Botany, botanical.
B. O. U. British Ornithologists' Union.
Bp. Bishop.
Br., Bro. Brother.
Bret. Bas-Breton, *or* Celtic of Brittany.
Brig. Brigade.
Brig.-Gen. Brigadier-General.
Brit. Britain, Britannia, British.
B. S. Bachelor of Surgery; Bachelor of Science.
B. Sc. (Lat. *Baccalaureus Scientiæ.*) Bachelor of Science.
B. S. L. Botanical Society, London.
Bt. Baronet.
Bucks. Buckinghamshire.
bush. Bushel.
B. V. Blessed Virgin.
B. V. M. Blessed Virgin Mary.
bx., bxs. Box, boxes.
C. Cent, cents; Centigrade; Consul; Centime, centimes.
C., Cap. (Lat. *caput.*) Chapter.
C. A. Chartered *or* Chief Accountant.
Cal. California; Calendar.
Cam., Camb. Cambridge.
Cant. Canticles.
Cant. [Cantuar.]
Cantab. [at. *Cantabrigiensis.*) Of Cambridge.
Cantuar., Cant. (Mid. Lat. *Cantuaria.*) Canterbury.
Cap. (Lat. *caput*). Capital; Chapter.
Caps. Capitals.
Capt. Captain.
Card. Cardinal.
Cath. Catharine; Catholic.
C. B. Companion of the Bath.
C. C. Catholic Clergyman, Catholic Curate.
C. D. V. Carte de visite.
C. E. Civil Engineer.
Cel. Celsius.
Celt. Celtic.
Cent. (Lat. *centum.*) A hundred; Centigrade.
Centig. Centigrade.
Cert., Certif. Certify; Certificate.
Cf. (Lat. *confer.*) Compare.
c. ft. Cubic feet.
C.-G. Coast Guard; Commissary-General.
C. G. S. Centimeter, Gram, Second.
C. H. Courthouse.
Ch. Church; Chapter.
Chal. Chaldron.
Chal., Chald. Chaldee, Chaldaic.
Chanc. Chancellor.
Chap. Chapter.
Chas. Charles.
Chem. Chemistry, Chemical.
Ch. Hist. Church History.
Chic. Chicago.
Chin. Chinese.
Chr. Christ; Christian; Christopher.
Chron. Chronicle; Chronology.
C. I. Order of the Crown of India.
C. I. E. Companion of the Order of the Indian Empire.
Cin. Cincinnati.
Cit. Citation; Citizen.
Civ. Civil.
C. J. Chief Justice.
Cl. Clergyman; Clerk; Chlorine.
Class. Classical.
Clk. Clerk.
cm. Centimeter.
C. M. Certificated Master; Common Meter.
C. M. (Lat. *Chirurgiæ Magister.*) Master in Surgery.
C. M. G. Companion of the Order of St. Michael and St. George.
C. M. Z. S. Corresponding Member of the Zoölogical Society.
Co. Company; County; Cobalt.
C. O. D. Cash on delivery; Collect (*payment*) on delivery.
Cogn. Cognate.
Col. Colonel; Colossians; Column.
Coll. College; Collection; Colleague.
Coll. or *Colloq.* Colloquial; Colloquialism, Colloquially.
Colo. Colorado.
Com. Commander; Commerce; Commissioner; Committee; Commodore; Common.
Comm. Commentary; Commerce.
Comp. Compare, comparative; Compound, compounded.
Compar. Comparative.
Compos. Composition.
Com. Ver. Common version.
Con., contra (Lat.) Against.
Con. Cr. Contra credit.
Cong. Congregation, Congregational, Congregationalist; Congress.
Conj. Conjunction.
Conn. Connecticut.
Con. Sec. Conic sections.
Contr. Contracted, contraction.
Cop., Copt. Coptic.
Cor. Corinthians.
Cor. Mem. Corresponding Member.
Corn. Cornwall, Cornish.
Corrup. Corruption, corrupted.
Cor. Sec. Corresponding Secretary.
Cos. Cosine.
C. P. Clerk of the Peace; Common Pleas.
C. P. A. Certified Public Accountant.
C. P. C. Clerk of the Privy Council.
C. P. S. (Lat. *Custos Privati Sigilli.*) Keeper of the Privy Seal.
C. Q. D. Come quick—danger.
Cr. Credit, creditor.
C. R. (Lat. *civis Romanus.*) A Roman citizen.
C. R. (Lat. *Custos Rotulorum.*) Keeper of the Rolls.
Cres. Crescendo.
Crim. Con. Criminal conversation, or adultery.
Crystal., Crystallog. Crystallography.
C. S. Court of Sessions; Clerk to the Signet; Civil service.
C. S. A. Confederate States of America.
C. S. I. Companion of the Star of India.
csks. Casks.
ct. (Lat. *centum.*) A hundred.
Ct. Court.
Ct., Conn. Connecticut.
C. T. Certificated Teacher.
C. T. A. U. Catholic Total Abstinence Union.
Cu. (Lat. *cuprum.*) Copper.
cub., cu. ft. Cubic, cubic foot.
Cur., Curt. Current—this month.
cwt. A hundredweight; Hundredweights.
Cyc., Cyclo., Cyclopædia.
D. Deputy.
d. (Lat. *denarius, denarii.*) A penny, pence.
d. Died.
Dan. Daniel; Danish.
Dat. Dative.
Dav. David.
D. C. (Ital. *da capo.*) From the beginning.
D. C., District of Columbia.
D. C. L. Doctor of Civil (*or* Canon) Law.
D. D. (Lat. *Divinitatis Doctor.*) Doctor of Divinity.
D. D. D. (Lat. *dat, dicat, dedicat.*) He gives, devotes, and consecrates. (The formula by which anything was consecrated to the gods or to religious uses by the Romans; still used in funeral inscriptions.)
D. D. S. Doctor of Dental Surgery.
D. E. Dynamic Engineer.
Dec. December; Declination.
decim. Decimeter.
Def. Definition.
Deft. Defendant.
Deg. Degree, degrees.
Del. Delaware.
Del. (Lat. *delineavit.*) He (*or* she) drew it.
D. Eng. Doctor of Engineering.
Dep., Dept. Department.
Dep. Deputy.
Der. Derived, derivation.
Deut. Deuteronomy.
D. F. Dean of the Faculty; Defender of the Faith.
D. G (Lat. *Dei gratia.*) By the grace of God.
Dict. Dictionary; Dictator.
Dim., Dimin. Diminutive.
Dis., Disct. Discount.
Dist. District.
Dist. Atty. District Attorney.
Div. Divide, dividend, division, divisor.
D. Lit., D. Litt. Doctor of Literature.
D. L. O. Dead Letter Office.
D. M., D. Mus. Doctor of Music.
D. M. D. Doctor of Dental Medicine.
D. O. Doctor of Osteopathy; Doctor of Optics.
do. (Ital. *ditto.*) The same.
Dols. Dollars.
Dom. Econ. Domestic Economy.
Dor. Doric.
doz. Dozen.
Dpt. Deponent.
Dr. Debtor; Doctor; Dram, drams.
Dram. Dramatic, dramatically.
D. S. (Ital. *dal segno.*) From the sign.
D. Sc. Doctor of Science.
D. T. (Lat. *Doctor Theologiæ.*) Doctor of Theology.
Du., Dut. Dutch.
Dub. Dublin.
Duo. 12mo. Duodecimo (twelve leaves to a sheet).
D. V. (Lat. *Deo volente*). God willing.
D. V. M. Doctor of Veterinary Medicine.
D. V. S. Doctor of Veterinary Surgery.
dwt. (Lat. *denarius*, and English *weight.*) Pennyweight, pennyweights.
Dyn., Dynam. Dynamics.
E. East, eastern; English; Edinburgh.
ea. Each.
E. Aram. East Aramæan language, generally called Chaldee.
Eben. Ebenezer.
E. C. Eastern Central; Established Church.
Eccl., Eccles. Ecclesiastes; Ecclesiastical.
Eccles., Ecclesiol. Ecclesiology.
Econ. Economy.
Ed. Editor; Edition; Edinburgh.
Edin. Edinburgh.
Edm. Edmund.
E. D. S. English Dialect Society.
Edw. Edward.
E. E. Errors excepted.
E. E. Electrical Engineer.
e. g. (Lat. *exempli gratia.*) For example.
E. I. East Indies, East Indian.
E. I. C., E. I. Co. East India Company.
E. I. C. S. East India Company's Service.
Elec., Elect. Electric, electricity.
Eliz. Elizabeth, Elizabethan.
Emp. Emperor, empress.
Ency., Encyc. Encyclopædia.
E. N. E. East-northeast.
Eng. England, English.
Eng., Engin. Engineer, engineering.
Eng. Dept. Department of Engineers.
Ent., Entom. Entomology, entomological.
Env. Ext. Envoy extraordinary.
Ep. Epistle.
Eph. Ephesians; Ephraim.
Epiph. Epiphany.
Epis. Episcopal.
Epist. Epistle, epistolary.
Eq. Equal, equivalent.
Equiv. Equivalent.
Esd. Esdras.
E. S. E. East-southeast.
Esp., Espec. Especial, especially.
Esq., Esqr. Esquire.
et al. (Lat. *et alibi.*) And elsewhere.
et al. (Lat. *et alii*, or *aliæ, alia.*) And others.
etc., &c. (Lat. *et cæteri, cæteræ*, or *cætera.*) And others, and so forth.
Eth. Ethiopia, Ethiopian.
Ethnol. Ethnology, ethnological.
et seq., sq., or *sqq.* (Lat. *et sequentes*, or *et sequentia.*) And the following.
Etym. or *Etymol.*, Etymology.
Ex. Example; Examined; Exception; Exodus.
Exc. Excellency; Except, excepted.
Exch. Exchange; Exchequer.
Exd. Examined.
Ex. Doc. Executive Document.
Exec. Executor.
Execx. Executrix.
Exod. Exodus.
Exon. (Lat. *Exonia.*) Exeter.
Exr. Executor.
Exx. Executrix.
Ez. Ezra.
Ezek. Ezekiel.
E. & O. E. Errors and omissions excepted.
F. Fellow: Folio: Fahrenheit.
f. Farthing, farthings.
f., fem. Feminine.
f. Franc, francs.
Fahr. Fahrenheit.
F. A. S. Fellow of the Society of Arts.
F. A. S. E. Fellow of the Antiquarian Society of Edinburgh.
F. B. S. E. Fellow of the Botanical Society of Edinburgh.

F. C. Free Church of Scotland.
Fcp. Foolscap.
F. C. P. S. Fellow of the Cambridge Philosophical Society.
F. C. S. Fellow of the Chemical Society.
F. D., Fid. Def. (Lat. *Fidei Defensor*). Defender of the Faith.
Feb. February.
Fec. (Lat. *fecit.*) He (*or* She) did it.
F. E. I. S. Fellow of the Educational Institute of Scotland.
Fem. Feminine.
F. E. S. Fellow of the Entomological (*or* Ethnological) Society.
Feud. Feudal.
F. F. V. First Families of Virginia. [*Humorous.*]
F. G. S. Fellow of the Geological Society.
F. I. A. Fellow of the Institute of Actuaries.
F. I. C. Fellow of the Chemical Institute.
fi. fa., Fieri facias. (Lat.) A form of judicial writ.
Fig. Figure, figures; figurative, figuratively.
Finn. Finnish.
F. K. Q. C. P. I. Fellow of the King's and Queen's College of Physicians, Ireland.
Fl. Flemish; Florin, florins; Flourished.
Fla. Florida.
Flem. Flemish.
F. L. S. Fellow of the Linnæan Society.
F. M. Field Marshal.
Fo., Fol. Folio.
F. O. Foreign Office; Field Officer.
F. O. B. Free on board.
For. Foreign.
Fort. Fortification.
F. P. Fire-plug.
F. P. S. Fellow of the Philological Society.
Fr. France, French; Francis; Francs.
fr. From.
F. R. A. S. Fellow of the Royal Astronomical (*or* Asiatic) Society.
F. R. C. P. Fellow of the Royal College of Physicians.
F. R. C. P. E. Fellow of the Royal College of Physicians, Edinburgh.
F. R. C. S. Fellow of the Royal College of Surgeons.
F. R. C. S. E. Fellow of the Royal College of Surgeons, Edinburgh.
F. R. C. S. I. Fellow of the Royal College of Surgeons, Ireland.
Fred. Frederick.
Freq. Frequentative.
F. R. G. S. Fellow of the Royal Geographical Society.
F. R. H. S. Fellow of the Royal Horticultural Society.
F. R. H. S. or *F. R. Hist. S.* Fellow of the Royal Historical Society.
Fri. Friday.
Fries. Friesland, Friesic.
Fris. Frisian.
F. R. Met. S. Fellow of the Royal Meteorological Society.
F. R. M. S. Fellow of the Royal Microscopical Society.
F. R. S. Fellow of the Royal Society.
F. R. S. E. Fellow of the Royal Society, Edinburgh.
F. R. S. L. Fellow of the Royal Society of Literature.
F. R. S. S. Fellow of the Royal Statistical Society.
F. S. A. Fellow of the Society of Arts, *or* of Antiquaries.
F. S. A. Scot. Fellow of the Society of Antiquaries of Scotland.
Ft. Fort; Foot, feet.
Fth. Fathom.
Fur. Furlong.
Fut. Future.
F. Z. S. Fellow of the Zoölogical Society.
F. & A. M. Free and Accepted Masons.
G. Genitive; Guinea, guineas; Gulf.
Ga. Georgia.
G. A. General Assembly.
Gael. Gaelic; Gadhelic.
Gal. Galatians.
gal. Gallon, gallons.
Galv. Galvanism, galvanic
G. A. R. Grand Army of the Republic.
G. B. Great Britain.
G. B. & I. Great Britain and Ireland.
G. C. B. Grand Cross of the Bath.
G. C. H. Grand Cross of Hanover.
G. C. L. H. Grand Cross of the Legion of Honor.
G. C. M. G. Grand Cross SS. Michael and George.
G. C. S. I. Grand Commander of the Star of India.
G. D. Grand Duke, Grand Duchess.
Gen. General.
Gen. Genesis; Genitive.
Gend. Gender.
Genit. Genitive.
Gent. Gentleman, gentlemen.
Geo. George; Georgia.
Geog. Geography, geographical.
Geol. Geology, geological.
Geom. Geometry, geometrical.
Ger., Germ. German.
Gi. Gill, gills.
G. L. Grand Lodge.
G. M. Grand Master.
Go., Goth. Gothic.
G. O. M. Grand Old Man (applied to Gladstone).
Gov. Governor.
Gov.-Gen. Governor-General.
Govt. Government.
G. P.-O. General Post-Office.
gr. Grain, grains; Gross.
Gr. Great; Greek.
Gram. Grammar, grammatical.
gro. Gross.
G. T. Good Templars; Grand Tyler.
gtt. (Lat. *gutta* or *guttæ.*) Drop *or* drops.
Gun. Gunnery.
H. Hour, hours.
Hab. Habakkuk.
Hag. Haggai.
Hants. Hampshire.
H. B. C. Hudson's Bay Company.
H. B. M. His (*or* Her) Britannic Majesty.
H. C. Heralds' College; House of Commons.
H. C. M. His (*or* Her) Catholic Majesty.
h. e. (Lat. *hoc est, hic est*). That (*or* this) is.
Heb., Hebr. Hebrew, Hebrews.
Her. Heraldry, heraldic.
Hf.-bd. Half-bound.
H. G. Horse Guards.
H. H. His (or Her) Highness; His Holiness (the pope).
Hhd. Hogshead, hogsheads.
H. I. H. His (or Her) Imperial Highness.
Hind. Hindu, Hindustan, Hindustani.
Hist. History, historical.
H. J., H. J. S. (Lat. *hic jacet, hic jacet sepultus.*) Here lies, Here lies buried.
H. M. His (*or* Her) Majesty.
H. M. P. (Lat. *hoc monumentum posuit.*) Erected this monument.
H. M. S. His (*or* Her) Majesty's Service, Ship, *or* Steamer.
Hon., Honble. Honorable.
Hond. Honored.
Hor., Horol. Horology, horological.
Hort., Hortic. Horticulture, horticultural.
Hos. Hosea.
H. P. Half-pay; High-Priest; Horse power.
H. R. House of Representatives.
H. R. E. Holy Roman Empire, *or* Emperor.
H. R. H. His (*or* Her) Royal Highness.
H. R. I. P. (Lat. *hic requiescit in pace.*) Here rests in peace.
H. S. (Lat. *hic situs.*) Here lies.
H. S. H. His (*or* Her) Serene Highness.
Hum., Humb. Humble.
Hun., Hung. Hungary, Hungarian.
Hund. Hundred, hundreds.
Hyd., Hydros. Hydrostatics.
Hydraul. Hydraulics.
Hydros. [See *Hyd.*]
Hypoth. Hypothesis, hypothetical.
I. Island.
Ia. Iowa.
Ib., Ibid. (Lat. *ibidem.*) In the same place.
Icel. Iceland, Icelandic.
Ich., Ichth. Ichthyology.
Id. (Lat. *idem.*) The same.
Ida. Idaho.
i. e. (Lat. *id est.*) That is.
I. H. S. (Lat. *Iesus* [or *Jesus*] *Hominum Salvator.*) Jesus the Savior of Men.
Ill. Illinois.
Imp. (Lat. *imperator.*) Emperor; Imperial; impersonal.
Imp., Imperf. Imperfect.
Imper. Imperative.
in. Inch, inches.
Incog. (Ital. *incognito, incognita.*) Unknown.
Ind. India, Indian; Indiana.
Indic. Indicative.
Ind. Ter. Indian Territory.
Inf., Infin. Infinitive.
In lim. (Lat. *in limine.*) At the outset.
In loc. (Lat. *in loco.*) In its place.
I. N. R. I. (Lat. *Iesus* [or *Jesus*] *Nazarenus Rex Iudæorum* [or *Judæorum*].) Jesus of Nazareth, King of the Jews.
Ins., Insur. Insurance.
Ins.-Gen. Inspector-General.
Inst. Instant; the present month; Institute, Institution.
Int. Interest.
Int. Dept. Department of the Interior.
Intens. Intensive; Intensative.
Interj. Interjection.
Intrans. Intransitive.
In trans. (Lat. *in transitu.*) On the passage.
Int. Rev. Internal Revenue.
Introd. Introduction.
I. O. F. Independent Order of Foresters.
I. O. G. T. Independent Order of Good Templars.
I. O. O. F. Independent Order of Oddfellows.
I. O. R. M. Improved Order of Red Men.
I. O. S. M. Independent Order of Sons of Malta.
I. O. U. I owe you.
i. q. (Lat. *idem quod.*) The same as.
Ir. Ireland, Irish.
Irreg. Irregular.
Is., Isa. Isaiah.
I. S. Irish Society.
Isl. Island.
I. S. M. Iesus [or *Jesus*] *Salvator Mundi.* Jesus Savior of the world.
It., Ital. Italy; Italic; Italian.
Itin. Itinerary.
J. Judge; Justice.
J. A. Judge Advocate.
Jac. Jacob, Jacobus.
J. A. G. Judge Advocate General.
Jan. January.
Jav. Javanese.
J. C. Jesus Christ.
J. C. D. (Lat. *Juris Civilis Doctor.*) Doctor of Civil Law.
J. D. (Lat. *Jurum Doctor.*) Doctor of Laws.
Jer. Jeremiah.
J. G. W. Junior Grand Warden.
J. H. S. [*I. H. S.*].
Jno. John.
Jon., Jona. Jonathan.
Jos. Joseph.
Josh. Joshua.
Jour. Journeyman; Journal.
J. P. Justice of the Peace.
Jr. Juror; Junior.
J. U. [or *V.*] *D.* (Lat. *Juris Utriusque Doctor.*) Doctor of Both Laws. (*i. e.*, of civil and of canon law.)
Jud. Judith.
Judg. Judges.
Jul. July; Julius; Julian.
Jul. Per. Julian Period.
Jun. June.
Jun., Junr. Junior.
Juris. Jurisprudence.
K. King; Knight.
Kan., Kans. Kansas.
K. B. Knight of the Bath.
K. B. King's Bench.
K. C. King's Counsel.
K. C. B. Knight Commander of the Bath.
K. C. H. Knight Commander of Hanover.
K. C. M. G. Knight Commander of St. Michael and St. George.
K. C. S. I. Knight Commander of the Star of India.
K. E. Knight of the Elephant (in Denmark).
Ken., Ky. Kentucky.
K. G. Knight of the Garter.
K. G. C. Knight of the Grand Cross.
K. G. C. B. Knight of the Grand Cross of the Bath.
K. G. E. Knight of the Golden Eagle.
K. G. F. Knight of the Golden Fleece.
K. G. H. Knight of the Guelphs of Hanover.
Ki. Kings.
kilog. Kilogramme.
kilom., kilo. Kilometer.
Kingd. Kingdom.
K. L. B. Knight of Leopold of Belgium.
K. L. H. Knight of the Legion of Honor.
K. M. Knight of Malta.
Knick. Knickerbocker.
K. N. S. Knight of the Royal North Star (Sweden).
Knt. Knight.
K. of P. Knights of Pythias.
K. P. Knight of St. Patrick.
Ks. Kansas.
K. S. Knight of the Sword (Sweden).
Kt. Knight.
K. T. Knight of the Thistle; Knight Templar.
K. T. S. Knight of Tower and Sword (Portugal).
Ky. Kentucky.
L. Latin; Lake; Lord; Lady.
L., l., £. (Lat. *libra.*) Pound, pounds (sterling).
L., lb., lb. (Lat. *libra*), Pound, pounds (weight).
La. Louisiana.
L. A. Law Agent; Literate in Arts.
Lam. Lamentations.
Lat. Latin; Latitude.
lb. Pound, pounds (weight).
l. c. Lower case (in printing).
l. c., loc. cit. (Lat *loco citato.*) In the place before cited.
L. C. Lord Chamberlain; Lord Chancellor.
L. C. J. Lord Chief Justice.
L. C. P. Licentiate of the College of Preceptors.
Ld. Lord.
Ldp. or *Lp.* Lordship.
L. D. S. Licentiate of Dental Surgery.
Leg., Legis. Legislature, legislative.
Leip. Leipzig.
Lev. Leviticus.
Lex. Lexicon.
Lexicog. Lexicography, lexicographer, lexicographical.
L. G. Life Guards.
L. Ger. Low German *or* Plattdeutsch.
L. H. D. (Lat. *Litterarum Humanarum Doctor.*) Doctor of Humanities.
L. I. Light Infantry; Long Island.
Lib. (Lat. *liber*), Book.
Lib. Library, librarian.
Lieut., Lt. Lieutenant.
Lieut.-Col. Lieutenant-Colonel.
Lieut.-Gen. Lieutenant-General.
Lieut.-Gov. Lieutenant-Governor.
lin. Lineal, or right-line measures; *e. g.*, lin. yd.; lin. ft., etc.
Linn. Linnæus, Linné, Linnæan.
Liq. Liquor, liquid.
Lit. Literally; Literature, literary.
Lit. D. or *Litt. D.* (Lat. *Literarum Doctor.*) Doctor of Literature.
Lith. Lithography.
Liv. Livre.
LL. B. (Lat. *Legum Baccalaureus.*) Bachelor of Laws.
LL. D. (Lat. *Legum Doctor.*) Doctor of Laws.
LL. I. Lord Lieutenant of Ireland.
LL. M. Master of Laws.
L. M. Long meter.
Lon., Lond. London.
Lon., Long. Longitude.
Log. (Lat. *loquitur.*) He (*or* she) speaks.
Lou. or *La.* Louisiana.
Lp. Lordship.
L. P. Lord Provost.
L. S. (Lat. *locus sigilli.*) Place of the seal.
l. s. d. (Lat. *libra, solidi, denarii.*) Pounds, shillings, pence.
Lt. Lieutenant.
Lt. Inf. Light Infantry.
Luth. Lutheran.
m. Married; Masculine; Meter, meters; Mile, miles; Minute, minutes.
M. Marquis; Middle; Monday; Morning; Monsieur.
M. (Lat. *mille.*) Thousand.
M. (Lat. *meridies.*) Meridian, Noon.
M. A. (Master of Arts.) [*A. M.*]
Mac., Macc. Maccabees
Mach., Machin. Machine, machinery.
Mad., Madm. Madam.
Mag. Magyar; Magazine.
Maj. Major.
Maj.-Gen. Major-General.
Mal. Malachi; Malay, Malayan.
Manuf. Manufactures, manufacturing.
Mar. March; Maritime.
Marq. Marquis.
Mas., Masc. Masculine.
Mass. Massachusetts.
M. Ast. S. Member of the Astronomical Society.
Math. Mathematics, mathematician, mathematical.
Matt. Matthew.
M. B. (Lat. *Medicinæ Baccalaureus.*) Bachelor of Medicine.
M. B. (Lat. *Musicæ Baccalaureus.*) Bachelor of Music.
M. C. Member of Congress; Master of Ceremonies.
Mch. March.
M. C. P. Member of the College of Preceptors.
M. D. (Lat. *Medicinæ Doctor.*) Doctor of Medicine.
Md. Maryland
Mdlle. (Fr. *mademoiselle.*) Miss.
Mdse. Merchandise.
M. E. Most Excellent; Military Engineer; Mining Engineer; Mechanical Engineer.

M. E. Methodist Episcopal.
Me. Maine.
Meas. Measure.
Mech. Mechanics, mechanical.
Med. Medicine, medical; Mediæval.
Med. Lat., Mediæv. Lat. Mediæval Latin.
Mem. Memorandum, memoranda.
M. E. S. Methodist Episcopal South.
Mess. & Docs. Messages and Documents.
Messrs. (Fr. *messieurs.*) Gentlemen.
Met. Metaphysics, metaphysical.
Metall. Metallurgy.
Metaph. Metaphysics; Metaphorical.
Meteor. Meteorology, meteorological.
Meth. Methodist.
Meton. Metonymy.
Mex. Mexico.
Mfd., Mfs. Manufactured, manufactures.
Mfg. Manufacturing.
M. F. H. Master of Foxhounds.
M. Hon. Most Honorable.
M. H. Ger. Middle High German.
M. I. C. E. Member of the Institute of Civil Engineers.
Mich. Michaelmas; Michigan.
Mid. Middle; Midshipman.
Mid. Lat. Latin of the Middle Ages.
Mil., Milit. Military.
M. I. M. E. Member of the Institute of Mining Engineers.
Min. Mineralogy, mineralogical; Minute, minutes.
Minn. Minnesota.
Min. Plen. Minister Plenipotentiary.
Miss. Mississippi.
Mlle. (Fr. *mademoiselle.*) Miss.
M. L. S. B. Member of the London School Board.
MM. Their Majesties.
MM. (Fr. *messieurs.*) Gentlemen.
mm. Millimeters; Micrometers.
Mme. (Fr. *madame.*) Madam.
M. N. A. S. Member of the National Academy of Sciences.
M. N. S. Member of the Numismatical Society.
Mo. Missouri; Month.
mo. Month.
Mod. Modern.
Mod. (Ital. *moderato.*) Moderately.
Mon. Monday.
Mons. (Fr. *monsieur.*) Sir, Mister.
Mont. Montana.
M. P. Member of Parliament.
M. P. P. Member of the Provincial Parliament.
M. P. S. Member of the Pharmaceutical Society; Member of the Philological Society.
Mr. Master, Mister.
M. R. A. S. Member of the Royal Asiatic Society.
M. R. C. P. Member of the Royal College of Physicians.
M. R. C. S. Member of the Royal College of Surgeons.
M. R. C. V. S. Member of the Royal College of Veterinary Surgeons.
M. R. G. S. Member of the Royal Geographical Society.
M. R. I. Member of the Royal Institution.
M. R. I. A. Member of the Royal Irish Academy.
Mrs. Mistress (when abbreviated pronounced mis'sis).
M. S. Master of Surgery.
M. S. Master of Science.
M. S. (Lat. *Memoriæ sacrum.*) Sacred to the memory of.
MS. Manuscript.
MSS. Manuscripts.
Mt., Mts. Mount, mountains.
Mus. Museum; Music, musical.
Mus. B. (Lat. *Musicæ Baccalaureus.*) Bachelor of Music.
Mus. D., Mus. Doc., Mus. Doct. (Lat. *Musicæ Doctor*), Doctor of Music.
M. W. G. M. Most Worthy Grand Master.
Myth. Mythology, mythological.
N. Noon; North; Noun; Number; New; Neuter.
N. A. North America, North American.
Nah. Nahum.
Nap. Napoleon.
Nat. Natural; National; Natal.
Nat. Hist. Natural History.
Nat. Ord. Natural Order.
Nat. Phil. Natural Philosophy.
Naut. Nautical.
N. B. New Brunswick; North Britain (*i. e.* Scotland).
N. B. (Lat. *Nota bene.*) Note well, Take notice.
N. C. North Carolina.
N. D., N. Dak. North Dakota.
N. E. New England; Northeast.
Neb. Nebraska.
Neg. Negative, negatively.
Neh. Nehemiah.
Nem. con. (Lat. *nemine contradicente.*) No one contradicting; unanimously.
Nem. diss. (Lat. *nemine dissentiente.*) No one dissenting; unanimously.
Neth. Netherlands.
Neut. Neuter.
Nev. Nevada.
New. Test., N. T. New Testament.
N. F. Newfoundland.
N. H. New Hampshire.
N. H. Ger. New High German.
N. J. New Jersey.
N. L., N. Lat. North Latitude.
N. M. New Mexico.
N. N. E. North-northeast.
N. N. W. North-northwest.
N. O. New Orleans.
No. (Lat. *numero.*) Number.
nol. pros. (*nolle prosequi,*) To be unwilling to proceed.
Nom. Nominative.
Non con. Non-content, dissentient. (The formula in which Members of the House of Lords vote.)
Non obst. (Lat. *non obstante.*) Notwithstanding.
Non pros. (Lat. *non prosequitur.*) He does not prosecute.
Non seq. (Lat. *non sequitur.*) It does not follow (as a consequence).
n. o. p. Not otherwise provided for.
Nor., Norm. Norman.
Nor. Fr., Norm. Fr. Norman French.
Norm. [Norman.]
Norw. Norway, Norwegian, Norse.
Nos. Numbers.
Nov. November.
N. P. Notary Public.
N. S. New style (since 1752); Nova Scotia.
n. s. Notspecified.
N. S. J. C. (Fr. *Notre Seigneur Jésu Christ.*) Our Lord Jesus Christ.
N. T. New Testament.
Num., Numb. Numbers.
Numis. Numismatic, numismatology.
N. V. M. Nativity of the Virgin Mary.
N. W. Northwest.
N. W. T. Northwest Territory.
N. Y. New York.
N. Y. H. S. New York Historical Society.
N. Z. New Zealand.
O. Ohio; Old.
ob. (Lat. *obiit.*) He (*or* she) died.
Ob., Obad. Obadiah.
Obdt., Obt. Obedient.
Obj. Objective.
Obs. Obsolete.
Oct. October.
Oct., 8vo. Octavo.
O. F. Odd Fellows.
O. H. Ger. Old High German.
O. H. M. S. On Her Majesty's Service.
O. K. "All correct."
Okl. Oklahoma.
Old Test., O. T. Old Testament.
Olym. Olympiad.
O. M. Old Measurement.
O. M. I. Oblate of Mary Immaculate.
Op. Opposite, opposition.
Opt. Optative; Optics, optical.
Ordn. Ordnance.
Ore. Oregon.
Orig. Original, originally.
Ornith. Ornithology, ornithological.
O. S. Old Style (previous to 1752); Old Saxon.
O. S. A. Order of St. Augustine.
O. S. B. Order of St. Benedict.
O. S. F. Order of St. Francis.
O. T. Old Testament.
O. U. A. M. Order of United American Mechanics.
Oxf. Oxford.
Oxon. (Lat. *Oxonia, Oxoniensis.*) Oxford; of Oxford.
Oxonien. (Lat. *Oxoniensis.*) Of Oxford.
oz. Ounce. [The *z* in this contraction and in *viz.*, represents an old symbol (ȝ), used to mark a terminal contraction.]
P. Page; Participle; Past; Pole; Port.
Pa. Pennsylvania.
P. a., par. a. Participial adjective.
Paint. Painting.
Pal., Palæont. Palæontology, palæontological.
Par. Paragraph.
Parl. Parliament, parliamentary.
Part. Participle.
Particip. Participial.
Pass. Passive.
Pat. Patrick.
Pathol. Pathology.
Payt. Payment.
P. C. (Lat. *Patres Conscripti.*) Conscript Fathers.
P. C. Police Constable; Privy Council, Privy Councilor.
P. C. S. Principal Clerk of Session.
Pd. Paid.
P. E. Protestant Episcopal.
P. E. I. Prince Edward Island.
Penn. Pennsylvania.
Pent. Pentecost.
Per., Pers. Persia; Persian; Personal.
Per. an. (Lat. *per annum.*) Yearly.
Per cent, per ct. (Lat. *per centum.*) By the hundred.
Perf. Perfect.
Peri. Perigee.
Persp. Perspective.
Peruv. Peruvian.
Pet. Peter.
P. G. M. Past Grand Master.
Phar., Pharm. Pharmacy.
Ph. B. (Lat. *Philosophiæ Baccalaureus.*) Bachelor of Philosophy.
Ph. D. (Lat. *Philosophiæ Doctor.*) Doctor of Philosophy.
Phil., Phila. Philadelphia.
Phil. Philip; Philippians; Philosophy, philosophical.
Phil. Trans. Transactions of the Philosophical Society.
Philem. Philemon.
Philol. Philology.
Philos. Philosophy, philosophical.
Ph. M. Master of Philosophy.
Phenic. Phenician.
Photog. Photography, photographic, photographer.
Phren., phrenol. Phrenology, phrenological.
Phys. Physics, physical; physiology, physiological.
Physiol. Physiology, physiological.
Pinx., Pxt. (Lat. *pinxit.*) He (*or* she) painted it.
Pk. Peck.
Pl. Place; Plate; Plural.
P. L. Poet Laureate.
Plff., Pltf. Plaintiff.
Plu. Plural.
Plup., Plupf. Pluperfect.
Plur. Plural.
P. M. (Lat. *post meridiem.*) Afternoon.
P. M. Past Master; Peculiar Meter; Postmaster.
P. M. G. Postmaster-General.
P. O. Post-office.
P. & O. Co. Peninsular and Oriental Steam Navigation Company.
Poet. Poetry, Poetical.
Pol. Polish.
Polit. Econ. Political Economy.
P. O. O. Post-office order.
Pop. Population.
Port. Portugal, Portuguese.
Poss. Possessive.
pp. Pages.
p. p. Past (*or* perfect) participle.
P. P. (Lat. *pater patriæ.*) Father of his country.
P. P. Parish priest.
P. P. C. (Fr. *pour prendre congé.*) To take leave. [*T. T. L.*]
Pph. Pamphlet.
p. pr. Present participle.
Pr. Present; Priest; Prince.
P. R. (Lat. *populus Romanus*), The Roman people.
P. R. Prize Ring.
P. R. A. President of the Royal Academy.
P. R. C. (Lat. *Post Romam conditam.*) After the building of Rome. [*A. U. C.*]
Preb. Prebend.
Pref. Prefix; Preface.
prep. Preposition.
Pres. President; Present.
Pret. Preterit.
Prim. Primary.
Prin. Principal; Principles.
Print. Printing.
Priv. Privative.
Prob. Problem; Probable, probably.
Prof. Professor.
Pron. Pronoun; Pronounced, pronunciation.
pron. a. Pronominal adjective.
Prop. Proposition; Properly.
Pros. Prosody.
Pro tem. (Lat. *pro tempore.*) For the time being.
Prov. Proverbs, proverbial, proverbially; Provincial, provincially; Provost.
Provinc. Provincial.
Prox. (Lat. *proximo.*) Next, *or* of the next month.
Prs. Pairs.
P. R. S. President of the Royal Society.
P. R. S. A. President of the Royal Scottish Academy.
Prus. Prussia, Prussian.
P. S. (Lat. *post scriptum.*) Postscript.
P. S. Privy Seal.
Ps., Psa. Psalm, psalms.
Psychol. Psychology.
Pt. Part; Payment; Point; Port.
P. T. Post Town; Pupil Teacher.
Pub. Public; Published, publisher.
Pub. Doc. Public documents.
P. V. Post village.
pwt. Pennyweight.
Pxt. [See *Pinx.*]
Pyro., Pyrotech. Pyrotechnics.
Q., Qu. Query; Question.
Q. C. Queen's College.
q. d. (Lat. *quasi dicat.*) As if he should say.
q. e. (Lat. *quod est.*) Which is.
Q. E. D. (Lat. *quod erat demonstrandum.*) Which was to be proved.
Q. E. F. (Lat. *quod erat faciendum.*) Which was to be done.
Q. E. I. (Lat. *quod erat inveniendum.*) Which was to be found out.
q. l. (Lat. *quantum libet.*) As much as you please.
Q. M. Quartermaster.
Q. M.-Gen. Quartermaster-General.
Qr. Quarter (28 pounds); Quire.
Q. S. Quarter Sessions.
q. s. (Lat. *quantum sufficit.*) A sufficient quantity.
qt. Quart.
Qu. Queen; Query; Question.
Quar., quart. Quarterly.
Quar., 4to. Quarto.
Ques. Question.
q. v. (Lat. *quod vide.*) Which see.
Qy. Query.
R. Railway; Réaumur; River.
R. (Lat. *rex.*) King; (Lat. *regina*) Queen.
R. (Lat. *recipe.*) Take.
R. A. Royal Academy, Royal Academician; Rear-Admiral; Royal Arch; Royal Artillery.
Rabb. Rabbinical.
Rad. (Lat. *radix.*) Root.
R. A. M. Royal Academy of Music.
R. A. S. Royal Agricultural Society.
R. C. Roman Catholic.
R. D. Rural Dean.
R. E. Royal Engineers; Royal Exchange.
R. E. Reformed Episcopal.
Réaum. Réaumur. [See *R.*]
Rec. Recipe.
Recd. Received.
Recpt. Receipt.
Ref. Reference.
Ref. Ch. Reformed Church.
Ref. Pres. Reformed Presbyterian.
Reg. Regular.
Reg., Regr. Registrar.
Reg., Regt. Regiment, regimental.
Rel. Religion, religious.
Rel. Pron. Relative Pronoun.
Rem. Remark, remarks.
Rep. Report; Representative.
Rep., Repub. Republic; Republican.
Res. Resolution.
Retd. Returned.
Rev. Revelation; Revenues; Reverend; Review; Revise.
Revd. Reverend.
Revs. Reverends.
Rev. Stat. Revised statutes
R. F. D. Rural free delivery.
Rhet. Rhetoric, rhetorical.
R. H. S. Royal Humane Society.
R. I. Rhode Island.
R. I. H. S. Rhode Island Historical Society.
R. I. P. (Lat. *requiescat in pace.*) May he (*or* she) rest in peace.
Riv. River.
R. M. Royal Mail; Royal Marines.
R. M. A. Royal Marine Artillery; Royal Military Asylum.
R. M. L. I. Royal Marine Light Infantry.
R. M. S. Royal Mail Steamer; Royal Mail Service.
R. N. Royal Navy.
R. N. R. Royal Naval Reserve.
R. O. Receiving Office.
Robt. Robert.
Rom. Roman, Romans.
Rom. Cath. Roman Catholic.
R. P. Regius Professor.
R. R. Railroad.
R. S. A. Royal Scottish Academy.
R. S. E. Royal Society of Edinburgh.
R. S. L. Royal Society of London.
R. S. P. C. A. Royal Society for the Prevention of Cruelty to Animals.
R. S. V. P. (Fr. *répondez s'il vous plaît.*) Answer, if you please; Please reply.
Rt Right.
Rt. Hon. Right Honorable.
Rt. Rev. Right Reverend.
R. T. S. Religious Tract Society.
Rt. Wpful. Right Worshipful.
Russ. Russia, Russian.
R. V. Revised Version.

R. W. Right Worshipful; Right Worthy.
R. W. D. G. M. Right Worshipful Deputy Grand Master.
R. W. G. M. Right Worshipful Grand Master.
R. W. G. R. Right Worthy Grand Representative.
R. W. G. S. Right Worthy Grand Secretary.
R. W. G. T. Right Worthy Grand Treasurer; Right Worthy Grand Templar.
R. W. G. W. Right Worshipful Grand Warden.
R. W. J. G. W. Right Worshipful Junior Grand Warden.
R. W. S. G. W. Right Worshipful Senior Grand Warden.
Ry. Railway.
S. Saint; Saturday; Section; Shilling; Sign; Signor; Solo; Soprano; South; Sun; Sunday; Sabbath.
s. Second, seconds; See; Singular; Son; Succeeded.
S. A. South Africa; South America.
S. A. (Lat. *secundum artem.*) According to the rules of art.
Sab. Sabbath.
Sam., Saml. Samuel.
Sam., Samar. Samaritan.
Sans., Sansc., Sansk. Sanscrit, Sanskrit.
S. A. S. (Lat. *Societatis Antiquariorum Socius.*) Fellow of the Society of Antiquaries.
Sat. Saturday.
Sax. Saxon, Saxony.
S. B. South Britain (England and Wales). [N. B.]
S. C. South Carolina.
S. C. (Lat. *senatus consultum.*) A decree of the senate.
Sc. [Scil. Sculp.]
Scan. mag. (Lat. *scandalum magnatum.*) Defamatory expressions to the injury of persons of high rank or dignity.
S. caps., Sm. caps. Small capitals (*in printing*).
Sc. B. (Lat. *Scientiæ Baccalaureus.*) Bachelor of Science.
Sc. D. (Lat. *Scientiæ Doctor.*) Doctor of Science.
Sch. (Lat. *scholium*), A note.
Sch., Schr. Schooner.
Sci. Science.
Sci. fa. Scire facias. (Lat.) A form of judicial writ.
Scil. Sc. (Lat. *scilicet.*) Namely; to wit.
S. C. L. Student in Civil Law.
Sclav. Sclavonic.
Scot. Scotland, Scotch, Scottish.
Scr. Scruple, scruples.
Scrip., Script. Scripture, scriptural.
Sculp., Sculpt., Sculpture.
Sculp. Sc. (Lat. *sculpsit.*) He (*or* she) engraved it.
S. D. Senior Deacon.
S. D., S. Dak. South Dakota.
S. D. U. K. Society for the Diffusion of Useful Knowledge.
S. E. Southeast.
Sec. Second.
Sec. Leg. Secretary of Legation.
Sec., Sect. Section.
Sec., Secy. Secretary.
Sen. Senate, senator.
Sen. Doc. Senate Document.
Sep., Sept. September.
Seq. (Lat. *sequentes, sequentia.*) The following or the next.
Serg.-Maj. Sergeant-Major.
Serg., Sergt. Sergeant.
Serj., Serjt. Serjeant.
Serv. Servian.
Sess. Session.
S.-G. Solicitor-General.
s. g. [sp. gr.]
Sh., S. Shilling, shillings.
Sing. Singular.
S. J. Society of Jesus.
S. J. C. Supreme Judicial Court.
Skr. Sanskrit.
Slav. Slavonic, Slavonian, Slavic.
Sld. Sailed.
S.-M. Sergeant-Major.
S. M. Lond. Soc. (Lat. *Societatis Medicæ Londiniensis Socius.*) Member of the London Medical Society.
S. N. (Lat. *secundum naturam*), According to nature, naturally.
Soc. Society.
S. of Sol. Song of Solomon.
Sol.-Gen. Solicitor-General.
Sp. Spain, Spanish; Spirit.
s. p. (Lat. *sine prole.*) Without issue.
S. P. C. A. Society for the Prevention of Cruelty to Animals.
S. P. C. C. Society for the Prevention of Cruelty to Children.
S. P. C. K. Society for the Promotion of Christian Knowledge.
Spec. Special, specially.
S. P. G. Society for the Propagation of the Gospel.
sp. gr., s. g. Specific gravity.
S. P. Q. R. (Lat. *Senatus Populusque Romanus.*) The Senate and People of Rome.
sq. Square; *sq. ft.* Square foot, feet; *sq. in.* Square inch, inches; *sq. m.* Square mile, miles; *sq. yd.* Square yard; *sq. rd.* Square rod.
Sr. Senior; sir.
S. R. I. (Lat. *Sacrum Romanum Imperium.*) The Holy Roman Empire.
S. R. S. (Lat. *Societatis Regiæ Socius.*) Fellow of the Royal Society.
SS. Saints.
SS. (Lat. *scilicet*), namely; (Lat. *semis*), half.
S. S. Sunday School.
S. S. C. Solicitor before the Supreme Court.
S. S. E. South-southeast.
S. S. W. South-southwest.
St. Saint; Stone; Strait; Street.
St. (Lat. *Stet.*) Let it stand (*in printing*).
S. T. Sons of Temperance.
Stat. Statute, statutes; Statuary.
S. T. D. (Lat. *Sacræ Theologiæ Doctor.*) Doctor of Divinity.
ster., stg. Sterling.
St. L. St. Louis.
S. T. P., (Lat. *Sacræ Theologiæ Professor.*) Professor of Theology.
Str. Steamer, steam vessel.
Subj. Subjunctive.
Subst. Substantive; Substitute.
Suff. Suffix.
Sun., Sund. Sunday.
Sup. Superior; Superlative; Supplement; Supine; Superfine.
Supt. Superintendent.
Surg. Surgeon, Surgery.
Sur.-Gen. Surgeon-General.
Surv. Surveying, Surveyor.
Surv.-Gen. Surveyor-General.
s. v. (Lat. *sub voce.*) Under the word *or* title.
S. W. Senior Warden; Southwest
Sw. Sweden, Swedish.
Switz. Switzerland.
Syn. Synonym, synonymous.
Synop. Synopsis.
Syr. Syria, Syriac.
T. Tenor; Ton; Tun; Tuesday.
T. A. B. Total Abstinence Brotherhood.
Tan. Tangent.
Tart. Tartaric.
T. C. D. Trinity College, Dublin.
Tech. Technical, technically.
Tenn. Tennessee.
Ter. Territory.
Term. Termination.
Teut. Teutonic.
Tex. Texas.
Text. rec. (Lat. *textus receptus.*) The received text.
Th. Thomas; Thursday.
Theo. Theodore; Theodosia.
Theol. Theology, theological.
Theor. Theorem.
Thess. Thessalonians.
Tho., Thos. Thomas.
Thurs. Thursday.
Tier. Tierce.
Tim. Timothy.
Tit. Title; Titus.
T. O. Turn over.
Tob. Tobit.
Tom. Tome, volume.
Tonn. Tonnage.
Topog. Topography, topographical.
Tp. Township.
Tr. Translation, translator, translated; Transpose; Treasurer; Trustee.
Trans. Transaction; Translation, translator, translated.
Trav. Travels.
Treas. Treasurer.
Trig., Trigon. Trigonometry, trigonometrical.
Trin. Trinity.
T. T. L. To take leave. [P. P. C.]
Tu., Tues. Tuesday.
Turk. Turkey, Turkish.
Typ. Typographer.
Typog. Typography, typographical.
U. Utah.
U. C. (Lat. *Urbis Conditæ.*) From the building of the city—Rome. [A. U. C.]
U. J. D. [J. U. D.]
U. K. United Kingdom.
U. K. A. Ulster King-at-Arms; United Kingdom Alliance.
Ult. (Lat. *ultimo.*) Last; Of the last month.
um. Unmarried.
Unit. Unitarian.
Univ. University.
U. P. C. United Presbyterian Church.
U. S. United States.
U. S. (Lat. *ut supra.*) As above.
U. S. A. United States of America; United States Army.
U. S. L. United States Legation.
U. S. M. United States Mail; United States Marine.
U. S. M. A. United States Military Academy.
U. S. N. United States Navy.
U. S. N. A. United States Naval Academy.
U. S. S. United States Senate; United States Ship *or* Steamer.
U. S. S. Ct. United States Supreme Court.
Ut. Utah.
Ux. (Lat. *uxor.*) Wife.
V. Verb; Verse; Victoria; Violin.
V., vs., (Lat. *versus.*) Against.
V. (Lat. *Vide.*) See.
V.-A. Vicar Apostolic; Vice-Admiral.
Va. Virginia.
Val. Valve; Value.
Var. Variety.
Vat. Vatican.
v. aux. Verb auxiliary.
V. C. Vice-Chancellor; Victoria Cross.
v. def. Verb defective.
V. D. M. (Lat. *Verbi Dei Minister.*) Minister of the Word of God.
Ven. Venerable.
V.-G. Vicar-General.
v. g. (Lat. *verbi gratia.*) For example.
v. i. Verb intransitive.
Vice-Pres. Vice-President.
Vid. (Lat. *Vide.*) See.
v. imp. Verb impersonal
v. irr. Verb irregular.
Vis., Visc. Viscount.
Viz. (Lat. *videlicet.*) Namely; to wit. [Oz.]
v. n. Verb neuter.
Voc. Vocative.
Vol. Volume.
Vols. Volumes.
V.-P. Vice-President.
v. r. Verb reflexive.
V. Rev. Very Reverend.
Vs. (Lat. *versus.*) Against.
V. S. Veterinary Surgeon.
v. t. Verb transitive.
Vt. Vermont.
Vul. Vulgate.
Vulg. Vulgar, vulgarly.
vv. ll. (Lat. *variæ lectiones.*) Various readings.
W. Wednesday; Week; Welsh; West, western.
Wall., Wallach. Wallachian.
Walt. Walter.
Wash. Washington.
w. c. Water closet.
W. C. A. Women's Christian Association.
W. C. T. U. Women's Christian Temperance Union.
Wed. Wednesday.
Wel. Welsh.
w. f. Wrong font (*in printing*).
Whf. Wharf.
W. I. West Indies, West India.
Wis., Wisc. Wisconsin.
Wk. Week.
W. Lon. West Longitude.
Wm. William.
W. M. Worshipful Master.
W. N. W. West-northwest.
Wp. Worship.
Wpful. Worshipful.
W. S. Writer to the Signet.
W. S. W. West-southwest.
Wt. Weight.
W. Va. West Virginia.
Wyo. Wyoming.
X. Christ.
Xm., Xmas. Christmas.
Xn., Xtian. Christian.
Xnty., Xty. Christianity.
Xper., Xr. Christopher.
Xt. Christ.
Xtian. Christian.
Y., Yr. Year.
Yd. Yard.
Yds. Yards.
Ye. The; Thee. [or th.
Ym. Them. (Y for Anglo-Saxon letter
Y. M. C. A. Young Men's Christian Association.
Y. M. Cath. A. Young Men's Catholic Association.
Y. M. H. A. Young Men's Hebrew Association.
Y. P. S. C. E. Young People's Society of Christian Endeavor.
Yr. Their; Year; Younger, Your.
Yrs. Years; Yours.
Y. W. C. A. Young Women's Christian Association.
Zach. Zachary.
Zech. Zechariah.
Zeph. Zephaniah.
Z. G., Zoo. Zoölogical Gardens.
Zoöchem. Zoöchemistry, zoöchemical.
Zoögeog. Zoögeography, zoögeographical.
Zoöl. Zoölogy, zoölogical.

LIBRARIES

Libraries existed in early Egypt and Assyria, the records of those days being inscribed on bricks of clay and stone. Later came the use of papyrus and parchment, making the keeping of records a simpler matter. The earliest libraries were generally attached to the temples, for but few except the priests were well enough educated to write and read. The scribes were a recognized part of the ecclesiastical organization. By far the most celebrated library of antiquity was the Alexandrian. Some of the great rulers maintained libraries of their own. By the time that the Roman Empire was flourishing, there were a number of libraries established by various emperors, and wealthy Romans like Cicero also maintained private libraries.

Charlemagne encouraged the founding of libraries in the eighth century and there was a continuous growth of the monastery collections. But until the discovery of printing from movable types all books had to be laboriously hand-lettered and reading was not a common accomplishment. Books were so valuable that many of them were chained to the desks and shelves in the libraries of state, or in religious houses, and the Laurentian Library in Florence still maintains one room in which the manuscripts are chained to their desks in order to illustrate the method by which the library once kept all its treasures. With the invention of printing books became cheap enough for the common man to possess them and reading grew to be a more universal accomplishment. Gradually the great state and ecclesiastical libraries opened their doors to students. The universities grew apart from the supervision of priests and established their own secular libraries. As early as the twelfth century the Moors had seventy public libraries, of which that of Cordova contained 250,000 volumes. But, although Pisistratus is credited with the honor of introducing a public library at Athens about 337 B.C., it must be remembered that only free citizens could use such an institution, and that much of the population consisted of bondsmen and slaves. The early public libraries were reference collections and open only to the few who qualified.

The early libraries in the United States were privately owned. In 1731, Benjamin Franklin founded the first public library, to which anybody might belong upon payment of a small annual fee. The modern idea of a public library, supported by general taxes and open free to all people, with lending privileges for all residents of the district who can show their reliability by having a guarantor, or similar method, is virtually a development that has come since 1876. When it is realized that the first free public library was established in 1833 in Peterborough, New Hampshire, and that it was two years later before New York and Michigan became the pioneers in arranging for state authorization of taxes to support public libraries, the growth of library work in its first century is recognized as phenomenal. A number of the larger American libraries were originally private collections. The New York Public Library, for instance, is a combination of the Astor, Lenox and Tilden private collections, to which there are annual additions from private funds and from taxes. Many of the great libraries of the world are reference libraries, but European cities, like American ones, are increasing the number and scope of municipal free libraries from which people may borrow books for home use, as well as consult the reference sections.

Specialized work is constantly increasing the usefulness of the library. There are training schools in which students may prepare themselves for various forms of librarianship. Libraries maintain separate rooms for children's use; have collections of books with raised type for the blind; keep separate collections of music and art; gather data for business and technological workers, and frequently have lecture rooms in connection with their buildings. Library service reaches those in penal institutions, in asylums and hospitals;

it supplies books in various languages for the foreign-born, and installs graded collections of suitable books for use in schools.

In the larger cities the main library establishes branches in outlying districts. It frequently puts small collections into industrial establishments for the use of those employed there. Traveling libraries are sent into rural districts under state and county supervision. In some instances a motor bus carries books and a traveling librarian from place to place. Books may be borrowed and retained until the wagon again makes its rounds. The library extension service in Alberta, Canada, reaches the workers on the Mackenzie River, beyond the Arctic Circle, sending books by canoe and dog sled over a spring and by the same means of transportation getting back the volumes sent the previous year.

Although the number of books in a library is but a partial index of its size, since many contain manuscripts and other data of great value besides the bound books, the table below shows the libraries housing over a million books each.

THE FRENCH ACADEMY

Cardinal Richelieu, Secretary of War and Foreign Affairs to King Louis XIII of France, was the founder of the French Academy. It was in 1635 that he called together some of the most distinguished writers of his day and suggested their forming an association that would have for its objects the development and purification of the French language. To this end the group undertook the publication of a great dictionary that has been revised several times in the course of the succeeding centuries. The membership of the Academy numbered forty and on the death of any member, those remaining elected his successor, so that it has been self-continuing. The members are often called the "immortals." During the French revolution the society was suppressed, but it was renewed in 1795 as a branch of the newly-created Institute of France. The Academy controls several trust funds out of which it grants prizes for literary work that is also of moral worth. Included in the membership are great authors, editors, statesmen, and military leaders of their day.

Great Libraries

Library	City	No. of Vols.
National Public Library	Leningrad	4,566,600
National Library	Paris	4,000,000
Library of Congress	Washington	3,907,400
Public Lenin Library	Moscow	3,500,000
New York Public Library	New York	3,295,400
British Museum	London	3,000,000
Harvard University	Cambridge, Mass.	2,988,000
Prussian State Library	Berlin	2,128,700
Yale University	New Haven	1,922,200
Chicago Public Library	Chicago	1,745,600
Bavarian State Library	Munich	1,500,000
Boston Public Library	Boston	1,442,800
University and Regional Library	Strasbourg	1,300,000
Bodleian	Oxford	1,250,000
National Library	Vienna	1,200,000

III. CULINARY WORDS AND PHRASES

agneau (*ä-nyō*). Lamb.

à la (*ä lä*), **au** (*ō*), **aux** (*ō*). With; according to; after the manner of; as *huitres aux champignons*, oysters with mushrooms.

If a dish is cooked, or served, or made, with anything as an ingredient or garnish, the dish may be said to be "*à la*" that substance. So it may be possible to ascertain the meaning of phrases not given below by looking elsewhere in the vocabulary under the word used with the words "*à la*."

à la béarnaise (*ä lä bā-ärn-nāz'*). With a sauce of tarragon vinegar in which shallots have been boiled till it is reduced, then combined with egg yolks and butter, and beaten in a bain marie, then seasoned with red pepper and lemon juice.

à la béchamel (*ä lä bā-shä-mel'*). After the fashion of Béchamel (a French gastronomer); said of a sauce (see Béchamel); also prepared or served with this sauce.

à la Bercy (*ä lä bâr-sē'*). Served with béarnaise sauce, stuffed green pepper and stuffed tomato.

à la bigarade (*ä lä bē-gä-räd'*). Flavored with (Seville) orange juice or peel.

à la bonne femme (*ä lä bôn fäm*). Of, or in the style of, the housewife; specifically said of a kind of maigre soup made with fish, bouillon, legumes, and an assortment of vegetables.

à la bordelaise (*ä lä bôr-de-lāz'*). With Bordeaux wine; said of various preparations containing it; as of a sauce, with garlic, shallots, or onions, chopped mushrooms, and a piece of marrow; also with sauce à la bordelaise.

à la bourguignotte (*ä lä boor-gē-nyot*). Generally, prepared with the addition of red wine of Burgundy, or of Bordeaux, or of the Midi (*i. e.*, meridional provinces of France). At Bordeaux, or when made elsewhere with Gironde wine, the dish would be *à la bordelaise*.

à la caledo'nion (*ä lä*). Boiled slowly in plain water and then baked with dressing of butter, chopped parsley, and a little lemon juice; said of finnan haddie when so cooked.

à la Camerani (*ä lä kä-mā-rä' nē*). After the fashion of Camerani; said of a kind of rich chicken-liver soup.

à la Chateaubriand (*ä lä shä-tō-brē-äN'*). With maître d'hôtel butter.

à la chevreuil (*ä lä she-vrú'y'*). Served with a savory sauce; said of fillets of beef.

à la chipolata (*ä lä chē-pō-lä'tä*). Containing an addition of the strongly flavored Italian sausages, or the mince with which they are filled.

à la chiffonade (*ä lä shē-fo-näd'*). See chiffonade.

à la cocotte (*ä lä kō-kot'*). Baked (as eggs) in a cocotte, with butter and cream, or with cheese, or the like, and served in the cocotte.

à la crapaudine (*ä lä krä-pō-dēn'*). Like a crapaudine (the flat piece of iron on which a grate pivot rests); said of grilled chicken, pigeon, etc., when prepared by boning, removing the legs and wings, and pressing flat.

à la Créole (*ä lä krā-ōl*). With tomatoes.

à la Croissy (*ä lä krwä-sē'*). Containing carrots in quantity, or at least strongly flavored with them; said specifically of a purée of onions, carrots, turnips, and parsnips stewed in coulis. According to others, containing turnips in quantity, or strongly flavored with them.

à la daube (*ä lä dōb*). Stewed in daube; said specifically of dishes cooked with small square pieces of salt pork, the round slices of carrots, glaced onions, and turnips.

à la Dauphiné (*ä lä dō-fē-nā'*). With various vegetables, spinach, lettuce, leek, onions, sorrel, beets, etc.; said of a kind of soup.

à la Dauphinoise (*ä lä dō-fē-nwäz'*). Generally, sauced over with a thick sauce (or with egg yolk), bread-crumbed, and then fried.

à la diable (*ä lä dē-ä'bl*). Deviled.

à la financière (*ä lä fē-näN-syär'*). With extract of truffles (literally, after the style of a financier); said of a variety of espagnole sauce, and of dishes served with it.

à la Flamande (*ä lä flä-mäNd'*). Containing cabbage, but more particularly Brussels sprouts, and, usually, turnips and carrots cut in big slices.

à la Florentine (*ä lä flō-räN-tēn'*). See à l'Italienne.

à la Génevoise (*ä lä zhä-ne-vwäz'*). Cooked with champagne; said of certain dishes of fish.

à la godiveau (*ä lä gō-dē-vō'*). With balls made of mincemeat, usually of veal.

à la Holstein (*ä lä hōl'stin*). Fried, and served with a fried egg, sardelles, capers, pickled beets, and pickles, and sometimes scraped horse-radish.

à la jardinière (*ä lä' zhär-dē-nyär'*). Made with a typical collection of cooked vegetables, as soups, ragoûts, and removes. See jardinière.

à la julienne (*ä lä zhü-lyen'*). With various vegetables sliced in strips, as carrots, turnips, leeks, onions, celery, lettuce, tarragon, sorrel; said especially of a kind of rich stock soup. Also said of potatoes cut in very slender strips and fried crisp floating in hot fat.

à l'Algérienne (*ä läl-zhā-rē-en'*). Cooked with slices of raw ham; said of a preparation of fowl.

à la Languedoc (*ä lä läNg-dok'*). Cooked with or in olive oil; with olive oil.

à l'Allemande (*ä läl-mäNd'*). Having a German provincial peculiarity of preparation, as a garnish of sauerkraut, prunes stewed in wine, quenelles of potatoes, etc.

à la Loren'zo (*ä lä*). Made of minced crab meat, put on toast spread with anchovy paste, then all covered with parmesan cheese and bread crumbs, buttered, browned in the oven, and served.

à l'Alsacienne (*ä läl-sä-syen'*). With pork and frankfurters; also with onions and pork.

à la lyonnaise (*ä lä lē-ô-nāz'*). With flaked or sliced fried onions; as, potatoes *à la lyonnaise*, or lyonnaise potatoes; sauce *à la lyonnaise*, or Lyons sauce, that is, espagnole sauce with flaked onions fried in oil.

à la macedoine (*ä lä mä-sä-dwän'*). Made with or of a typical collection of *green* vegetables, mostly in white sauce; also applied to collections of ripe fruit imbedded in jellies, etc.

à la Maintenon (*ä lä maN-te-nôN'*). A term variously used to designate a mode of cooking mutton or lamb chops; as, (*a*) wrapped in caul; (*b*) garnished with cockscombs and truffles; (*c*) served with a soubise; (*d*) served with financière sauce; (*e*) served with d'Uxelles sauce, etc.

à la maître d'hôtel (*ä lä mä'tr dō-tel'*). Prepared by a substantial, and homely, modest sort of cooking. Also served with maître d'hôtel butter.

à la Marengo (*ä lä mä-ren'gō*). With some garlic and oil.

à la Marseillaise (*ä lä mär-se-lāz'*). With Marsala wine.

à la Maryland (*ä lä*). With a sauce of butter and cream, with or without wine. It is like à la Newburgh, but less rich.

à la Meyerbeer (*ä lä mī-ûr-bâr'*). Shirred and served with broiled kidney and truffle sauce; said of eggs.

à la Milanaise (*ä lä mē-lä-nāz'*). See à l'Italienne.

à la mode de Caën (*ä lä mōd de käN*). A term used to designate tripe prepared with vegetables, leeks, wine, cognac, etc.

à la Napolitaine (*ä lä nä-pō-lē-tän'*). See à l'Italienne.

à la neige (*ä lä nāzh'*). In some form that suggests snow, as with white-of-egg froth, or in balls of white boiled rice, or the like.

à la New'burgh (*ä lä*). With a sauce made of cream, egg yolks, Maderia or sherry wine, and butter shaken in a dish over a slow fire until they thicken. Said also of this sauce.

à la nivernaise (*ä lä nē-vâr-nāz'*). Containing a nivernaise; said of a kind of soup à la julienne. See nivernaise.

à la Normande (*ä lä nôr-mäNd'*). Generally, with apples in the composition of the dish in some shape or other.

à la Périgord (*ä lä pā-rē-gôr'*). Flavored with, or consisting of, truffles—alluding to the circumstances that these mushrooms grow of excellent size and quality in the province of Périgord.

à la Polonaise (*ä lä pō-lō-nāz'*). Having red beets or red cabbage, so as to have their juice, color, and taste; as Polish ragoût, or borsh, which is the type of dishes *à la Polonaise*.

à la poulette (*ä lä poo-let'*). With white velouté sauce.

à la printanière (*ä lä praN-tä-nyâr'*). Made with a typical collection of cooked *early* or *spring* vegetables; of a somewhat wider application than à la jardinière.

à la Provencale (*ä lä prō-väN-säl'*). Generally, prepared with more or less of olive oil, and flavored with garlic.

à la Reine (*ä lä rän*). Of, or after the style of, the queen; said specifically of a kind of chicken soup [*potage à la reine*, (*pō-täzh' ä lä rän*)] containing white meat of chicken pounded and rubbed to a powder.

à la Ro'land (*ä lä*). Made of minced lobster meat in the same manner as *à la Lorenzo* dishes of crab meat. See à la Lorenzo.

à la Saint Cloud (*ä lä saN'kloo*). With sliced truffles; said of a kind of velouté sauce.

à la serviette (*ä lä ser-vyet*). Served in or on a napkin, as braised truffles.

à la Soubise (*ä lä soo-bēz'*). Generally containing onions in quantity; or, at least, strongly garnished and flavored with them; especially, served with a white onion sauce used with lamb or mutton.

à la tartare (*ä lä tär-tär'*). With tartare sauce, or a sauce of similar ingredients. Also, said of a steak chopped and garnished with onions, pickles, pickled beets sardelles, and yolk of egg, to be eaten raw.

à la turque (*ä lä türk*). Shirred and served with chicken livers and mushrooms; said of eggs. Also boiled with rice and saffron; said of chicken.

à l'Aurore (*ä lō-rôr'*). With a pink sauce made by coloring velouté sauce with lobster coral or Armenian bole. Also said of sliced hard-boiled eggs put in a dish, covered with velouté, sprinkled with grated egg yolk, and baked.

à la vert pré (*ä lä vâr prā*). Colored green with vegetables, as with a purée of spinach.

à la Viennoise (*ä lä vyä-nwäz'*). Applied to dishes usually and typically prepared in the Austrian capital, such as the dumplings termed nockerlin, quenelles of potatoes, and others.

à la Villeroi (*ä lä vēl-rwä'*). With atelets sauce. Also, said of a poached egg put in a thick white sauce, then covered with egg yolk and bread crumbs, and fried.

à la vinaigrette (*ä lä vē-nē-gret'*). With vinaigrette sauce.

à l'espagnole (*ä lä-spä-nyōl'*). Made savory with espangole sauce; specifically, served with a garnish of onions, garlic, green peppers, mushrooms, tomatoes, and minced ham cooked together, and bound with espagnole sauce.

à l'huile (*ä-lwēl*). In olive oil; with olive oil dressing.

Alici (*ä-lē-chē*). Anchovies, or a similar small fish preserved in oil according to the Italian fashion.

à l'impératrice (*ä laN-pä-rē-träs'*). Said of shirred eggs served with a slice of paté de fois gras upon each egg.

à l'Irlandaise (*ä lēr-län-dez'*). Containing potatoes in some form, and often cabbage, etc., in mass or as a prevailing garnish.

à l'Italienne (*ä lē-tä-lē-en'*). Generally made of, or garnished with, savory macaroni, or paste of that kind, or with ravioli; or made savory with Parma cheese.

Allemande sauce (*äl-mäNd'*). Velouté sauce, with the addition of essence of mushrooms, cream, and a leason, or binding, of yolk of eggs.

Alose (*ä-lōs'*). Shad.

Aloyau (*ä-lwä-yō'*). Loin of beef: short rib of beef.

Amontillado (*ä-mōn-tēl-yä'dō*). A cheaper variety of wine classed as sherry, but in reality a wine from Sicily or other Mediterranean or Atlantic islands, mixed with a little real sherry.

ananas (*ä-nä-näs'*). Pineapple.

anchois (*ăN-shwä'*). Anchovies.
anchovy (*an-chō'vi*). A small fish of the herring family caught in the Mediterranean, and pickled for exportation.
andouile (*ăn-doo'y*). Tripe.
anguilles (*ăn-gē'y*). Eels.
anguilles grillée (*ăn-gē'y grē-yā'*). Spitch-cocked, or grilled, eels.
anisette'. A cordial or liqueur flavored with anise seeds.
arroz à la Valencia'na (*ăr-rō'ä lä*). Valencia rice, a farinaceous substance in grains like rice.
artichaut (*ăr-tē-shō'*). Artichoke.
asperge (*ä-spârzh'*). Asparagus.
aspic (*ăs-pēk'*). A savory jelly made of calves' feet, etc., or with extract of meat, flavored to suit the fancy, and stiffened with gelatine.
au (*ō*). See *à la*.
au beurre roux (*ō bûr roo*). With browned butter.
au chingaras (*ō shaN-gä-rä'*). Sandwiched with ham and grilled; said of ox palates.
au four (*ō foor*). Baked in the oven, as a stuffed fish.
au fromage (*ō frō-mäzh'*). With cheese.
au gras (*ō grä*). Containing meat; said of soups so made.
au gratin (*ō grä-taN'*). With a crust made by browning in the oven; as spaghetti is often served *au gratin*.
au jus (*ō zhü*). In juice; in broth.
au kirsch (*ō kērsh*). With kirschwasser; as an omelet or a punch containing this liqueur is termed *au kirsch*.
aumelette (*ōm-let'*). Omelet.
au naturel (*ō nä-tü-rel'*). In the natural condition; as, anchovies *au naturel*—*i. e.*, without oil or seasoning.
au rhum (*ō rüm*). With rum.
auro'ra sauce. Sauce à l'aurore. See *à l'Aulore.*
au suprême (*ō sü-prăm'*). With supreme sauce.
au vert pré (*ō vâr prā*). With sweet or fresh herbs, especially, when they give a green color to the dish.
au vin blanc (*ō vaN blăN'*). With white-wine sauce, as fillets of fish.
aux (*ō*). See *à la*.
aux cressons (*ō kres-sôN'*). With watercresses.
aux rognons (*ō rō-nyôN'*). With kidneys.
ballotine (*bä-lō-tēn'*). A shoulder of lamb, boned, stuffed, larded, and braised.
barbue (*bär-bü'*). A kind of fish.
bard (*bär*). Barbel, a kind of fish.
bardes de lard (*bärd de lär*). Fat slices of bacon for covering meat to be braised.
bar le duc (*bär le dük*). A kind of jam of white gooseberries.
Bava'rian cream. A cream jelly thickened with gelatine and set in a mold, and variously flavored and enriched; a Bavaroise; a kind of flummery.
Bava'rian dumplings. Boiled pudding, consisting of bread fried in fat, bread crumbs soaked in cream or milk, eggs, butter, flour, salt, and spice; or some other similar composition.
Bava'rian sauce. A modified Dutch sauce of vinegar, eggs, and butter flavored with crayfish butter.
Bavaroise (*bä-vä-rwäz'*). Bavarian. See *Bavarian cream.*
bécasse (*bā-käs'*). Woodcock.
Béchamel (*bā-shä-mel'*), or more properly, **Béchamelle.** Velouté white sauce mixed with cream; named after Louis de Béchamel, a French gastronomer.
beignet (*bā-nyā'*). A fritter.
benedictine (*ben-ē-dik'tin*). A cordial resembling chartreuse.
beurre (*bûr*). Butter.
beurre frais (*bûr frā*). Fresh (unsalted) butter.
beurre lié (*bûr lē-ā'*). Dutch sauce with less butter than usual.
beurre noir (*bûr nwär*). Butter browned without flour.
beurre roux (*bûr roo*). Butter browned with flour.
biscuit (*bē-skwē'*). French sponge cake.
bis'cuit à couper (*ä koo-pā'*). A form of sponge cake to be sliced and glaced with flavored sugar or sugar mixed with fruit juice.
bis'cuit à la Génoise (*ä lä zhā-nwäz'*). Sponge cake with anise-seed flavor, to be cut and toasted.
bis'cuit à l'Ursuline (*ä lür-sü-lēn'*). A sponge cake with rice and apple or apricot jam mixed into the paste, and grilled orange flower.
bisque (*bisk or bēsk*). A soup of crayfish, made by cooking them in broth with herbs, sliced roots, and seasoning; other similarly prepared shellfish soups or sauces are also called *bisques.*
blancmanger (*blăN-maN-zhā'*) or **blamange** (*blä-mänj'*). A jelly made with calves' feet, or gelatine, and milk of almonds; also, a jelly made of milk and starch, isinglass, or sea moss, with or without added chocolate, grenetine, or the like. This latter dish is more properly called *flummery.*
blanquette (*blăN-ket'*). A mince of white meat, as of chicken, warmed in velouté sauce, and pointed with butter and lemon juice. It often has added to it mushrooms, morels, or truffles.
blond (*blôN*). Concentrated juice or extract of some viand, used to add to certain sauces to give them body; as *blond de veau* (*de tō*), a rich broth of veal made by slowly stewing veal with accessories of ham, rabbit, or the like, with standard broth, shallots, cloves, etc.
bœuf de chasse (*bûf de shäs*). The sportsman's round of beef—the biggest joint of the animal.
bombe glacé (*bôNb glä-sā'*). A confection consisting of an ice casing frozen in the form of a truncated cone with cream of some kind, as Bavarian cream, inside.
Bordelaise sauce (*bôr-de-läz'*). Espagnole sauce with garlic, aromatic herbs, and Bordeaux wine.
bouillabasse (*boo-yä-bäs'*). A soup made of fish broiled and seasoned with onion, orange peel, saffron, oil, and other seasoning to suit the taste.
bouilli (*boo-yē'*). Beef stewed, generally in one piece, and served with sauce.
boulettes de hachis (*boo-let' de hä-shē'*). Forcemeat balls.
bouquet garni (*gär-nē'*). A tied bunch of parsley, onions, bay leaf, and thyme, used to boil in soup to flavor it.
bourguignonnes (*boor-gē-nyon'*). Snails baked with a dressing of shallots, garlic, lemon juice, and butter.
braise (*brāz*) or **braisé** (*brā-zā'*). A piece of braised meat, or a dish prepared by braising; also a preparation mixed and prepared of various ingredients in or with which dishes are braised.
braisé de Boulanger (*brā-zā' de boo-läN-zhā'*). A compound sauce in which meat is smothered when being braised.
bretonne sauce (*brā-ton'*). Espagnole sauce characterized by juice of fried onions or purée of onions.
Brie cheese or **Brie** (*brē*). A soft, white cream cheese.
bris'ket or **brisquet** (*brē-skā'*). The breast; the part of the breast next to the ribs.
broccoli (*brok'kō-li*). A kind of cabbage resembling the cauliflower.
brochet (*brō-shā'*). Pike; luce—a kind of fish.
brocheton (*brō-she-tôN'*). Pickerel.
brut (*brü*). An effervescent wine.
bückling (*bük'ling*). Red herring. [appearance.
buisson (*bwē-sôN'*). A dish disposed in a pyramid, and having a prickly
bur'goo. Oatmeal porridge.
Burgun'dian sauce. Espagnole sauce flavored with shallots and red Burgundy wine.
cabillaud (*kä-bē-yō'*). A fresh cod.
café (*kä-fā*). Coffee.
café au lait (*kä-fā' ō lā*). Coffee with hot milk; coffee to which milk is added during the process of infusion or boiling.
café bavaroise (*kä-fā' bä-vä-rwäz'*). Coffee with whipped cream.
café noir (*kä-fā' nwär*). Black coffee; that is, coffee without milk.
café parfait (*kä-fā' pär-fā'*). A form of coffee ice cream.
café Turc (*türk*). Turkish coffee; that is, coffee prepared by pouring boiling water on very finely ground coffee in the cup.
caille (*kāl*). Quail.
calipash'. A part of turtle next to the upper shell, containing a dull greenish gelatinous substance, esteemed as a delicacy.
calipee. A part of a turtle attached to the lower shell. It contains a fatty, gelatinous substance of a light yellowish color, esteemed as a delicacy.
Camembert cheese (*kä-măN-bâr'*). A rich, sweet, cream cheese, of a yellowish color, made in the neighborhood of Camembert, in Normandy, France.
canard (*kä-närd'*). A duck.
canellons (*kä-ne-lôn'*). Hollow sticks or rolls of baked puff paste.
canelons (*kä-ne-lôN'*). Rugosities of ox palate, or preparations of them, covered with farce, rolled, and gratinated.
caneton (*kä-ne-tôN*). Young duck; duckling.
cannelon of meat (*kä-ne-lôN'*). A baked roll of highly seasoned mincemeat.
ca'pers. The pungent, grayish green flower buds of a trailing shrub (*Capparis spinosa*) of southern Europe.
capilotade of chick'en (*kä-pē-lō-täd'*). A kind of ragoût made of remains of fowl or game and some simple brown sauce.
ca'pon. A castrated cock. It fattens better and is tenderer than the uncastrated ones.
car'dinal sauce. Velouté variously flavored and colored red, as with cochineal.
carnichons (*kär-nē-shôN'*). Gherkins.
carré (*kä-rā*). Breast.
carrelet (*kär-lā'*). A fish, the sole or flounder.
cassareep'. A brown, slightly sweet, aromatic thick extract made from the juice of the manioc.
casserole (*kas'se-rōl*; French pron. *käs-rôl'*). Stewpan.
cas'serole of rice. An ornamental pie case made of paste of prepared rice.
cassis (*käs-sēs'*). Black currants; also, a kind of jelly, and a kind of liqueur or cordial, flavored with black currants.
caviare (*kä-vē-är*) or **caviar** (*kav'-i-är*). Roe of sturgeon, and other large fish, prepared and salted, and used as a relish. They often resemble morning-glory seeds in appearance.
cèpes (*sāp*) or **ceps** (*sā*). An edible kind of mushroom.
champignons (*shäN-pē-nyôN'*). Mushrooms.
chapon (*shä-pôN'*). Capon.
chapon au gros sel (*shä-pôN ō grō sel*). Plain boiled capon; literally, capon served with a big lump of salt (placed upon it).
charlotte russe (*shär-lot' rüs*) or **charlotte à la russe** (*shär-lot' ä lä rüs*). A dish of custard or whipped cream inclosed in a cup of sponge cake.
chartreuse à la Parisienne (*shär-trûz' ä lä pä-rē-syen'*). A showy entrée, consisting chiefly of quenelles of forcemeat, containing ragoût and kebobs; an entrée de force; an entrée à surprise.
chasse café (*shäs kä-fā'*). A drink of liqueur served after the coffee at dinner.
chateaubriand sauce (*shä-tō-brē-äN'*). See *maître d'hôtel butter.*
chaufroid sauce (*shō-frwä'*). A white or brown jelly containing some sauce; a sauced jelly, or a gelatinized sauce.
cher'vil. A plant (*Anthriscus cerefolium*) with finely divided leaves. Two curly varieties are used in soups and salads.
chiffonade (*shē-fō-näd'*). A salad preparation of lettuce, chervil, sorrel, and scallions, with fresh butter, and some bouillon poured over it. When milk or fresh cream is added, it is called *potage à la chiffonade*; otherwise *potage de santé* (*pō-täzh' de säN-tā'*).
chil'i. A kind of red pepper or capsicum.
chil'i sauce. A sauce condiment made with chilis, tomatoes, etc.
Chinese' stur'geon soup. A soup of beef and veal, containing pieces of cartilage from the sturgeon's head boiled tender.
chive. A plant allied to the onion, of which the young leaves are used in omelets, etc.
choucroute (*shoo-kroot'*). French sauerkraut, or sauerkraut in general.
choufleur (*shoo-flür'*). Cauliflower.
choux (*shoo*). (*a*) Cabbages. (*b*) See *choux pâtissiéres.*
choux de Bruxelles (*shoo de brü-sel'*). Brussels sprouts.
choux de mer (*shoo de mâr*). Sea kale, a kind of cruciferous pottage root.
choux pâtissières (*shoo pä-tē-syâr'*). Soufflés in small molds; small cakes of baked batter.
civet (*sē-vā'*). A ragoût of hare [civet de lievre (lyā'vr)], deer [*civet de chevreuil* (*she-vrü'y*)], or other game, into which wine and onions enter as ingredients.
clare'mont sauce. Butter sauce flavored by frying onions in it. The onions are removed after frying.
cock'a-lee'kie. Capon soup, boiled with leeks and prunes — a favorite Scotch dish.
cock'tail of oysters or clams. A dish containing oysters or clams seasoned with ketchup, pepper, etc., and served in a tumbler or glass.
cocotte (*kō-ket'*). A kind of iron casserole with two loop handles and a cover.
cœurs d'artichauts (*kûr-där-tē-shō'*). Artichoke heads.
cognac (*kō-nyäk'*). A brandy distilled at Cognac, in France; hence, loosely, any French brandy.
coing (*kwaN*). Quince. A liqueur, or ratafia, is made flavored with quince; and a jelly of quinces is called *coing de tranches* (*de träNsh*).
collared. This term is loosely used with no apparent definite meaning in the names of various dishes.
col'lared beef. A thin piece of beef, usually from the flank, rolled into a round form.
col'lops. Small pieces or slices.
com'fit. A dry sweetmeat; fruit, seed, or the like, preserved in sugar and dried.
compiègne cake (*kôN-pyän'*). A kind of cake intended to be drenched with liqueur, sliced, and sandwiched with apricot jam.
com'pote (French pron. *kôN-pōt'*). Cooked fruit; fruit preserved with sugar so as to preserve its form. Also, a savory dish of pigeons, quails or larks, mixed with peas or mushrooms.
confit (*kôN-fē'*). A dry sweetmeat; fruit preserved in sugar and dried; a comfit.
confiture (*kôN-fē-tür'*). Preserves.
consommé (*kôN-sō-mā'*). Strong broth of meat and vegetables, concentrated till slightly browned; in restaurants applied to thin soups such as would be made by this broth diluted.
cor'dial. A sweet and aromatic liquor. A *liqueur* is an alcoholic cordial.
côte (*kōt*). A rib.
côtelette (*kōt-let'*). A small rib; part of a rib; a piece of meat with the rib attached; a cutlet.

court bouillon (*boo-yŏN'*). A very rich bouillon made by braising bouillon vegetables in butter, evaporating down, and then boiling in wine. It is added to sauces.
crême (*krăm* or *krâm*). A cordial of the relatively thick or viscid kind, such as *crême* de la menth (cream of minth), *crême* de la moka (cream of mocha coffee), *crême* de cocoa (cream of cocoa), etc.
crême bachique (*krăm bă-shēk'*). A custard jelly with wine and egg-froth.
crême brulée (*krăm brû-lā'*). Brown sugar, or caramel, with cream.
crême fouettée à la paysanne (*foo-et-ta' ă lă pā-zăn'*). Whipped cream.
créole (*krā-ōl'*). See *à la créole.*
crêpes (*krāp*). Small fried cakes; a form of French pancake.
cressons (*krā-sŏN'*). Cresses.
crevette (*krā-vet'*). Shrimp.
croquants (*krō-kăN'*). A piece of crisp pastry or confection which makes a crunching sound between the teeth, as a macaroon or a nougat.
crouton (*kroo-tŏN'*). Small pieces of bread fried in butter or oil, for use as a garnish to salmis, fricassees, etc., or to serve with soups.
croquembouches (*krō-kăN-boosh'*). Small mounted pieces of crisp pastry, such as macaroons, nougats, gimblettes, etc.
crum'pet. A kind of large, thin, light cake or muffin cooked on a griddle.
cuissot (*kwē-sō'*). Haunch.
cyg'net. A young swan.
dantesques (*dăN-tesk'*). Frozen custards.
dariole (*dă-rē-ōl'*). A piece of pastry consisting of a shallow cup of short paste, filled with a rich compound of cream or custard with macaroons, fruit, or the like.
darne (*dărn*). Slice; cut.
de (*de*). Of.
demi-tasse (*dā-mē-tăs'*). A small cup for black coffee.
désossée (*dā-sō-sāL'*). Boned.
diablotins (*dē-ab-lō-taN'*). (*a*) Frozen custards. (*b*) Neapolitan dragées. (*c*) Chocolate bonbons in paper.
dinde (*dăNd*). Turkey.
dindonneau (*dăN-dō-nō'*). Young turkey; turkey pout.
di zara (*sē zā'rā*). A less common name for maraschino.
Dutch sauce. Butter emulged with yolk of egg, or a sauce with this as a basis; Hollandaise sauce.
éclanche (*ā klăNsh'*). Shoulder of mutton.
écrevisse (*ā-kr-vēs'*). Crayfish.
empotage (*ăN-pō-tăzh'*). Consommé or gravy broth.
en ballon (*ăN bā-lŏN'*). Boned and stuffed with forcemeat, etc.—said of fowls' legs so cooked.
en brochette (*ăN brō-shet'*). On wooden skewers.
en caneton (*ăN kā-ne-tŏN'*). A term used to designate fowls' legs boned and stuffed with forcemeat, etc.
en casserole (*ăN kā-s-rōl'*). In a casserole.
en coquille (*ăN kō-kē'y*). (Served) in shells, as oysters prepared as if to be escalloped and then baked in shells and served.
en cracovie (*ăN krā-kō-vē'*). With salpicon wrapped in calf's udder or pig's caul—said of ox palates.
escargots (*ăs-kär-gō'*). Snails.
escarole (*es-kă-rōl'*). A species of chicory used for salads; also, a variety of lettuce resembling this.
espagnole sauce (*es-pă-nyōl'*). Brown sauce made by boiling meat and flavoring vegetables and spices in normal broth to a glace, browning with roux, and removing the fat.
esturgeon (*es-tûr-zhŏN'*). Sturgeon.
faisan (*fā-zăN'*). Pheasant.
fanchonettes (*făN-shō-net'*). Small cakes like tartlets covered with meringue froth, with jam, currants, etc.
farcie (*fär-sē'*). Stuffing of forcemeat.
farine de riz (*fă-rēn' de rē'*). Rice flour.
fausse tortue (*fōs tôr-tû*). Mock turtle.
fécule de pommes de terre (*fā-kül' de pum de târ'*). Potato starch, used especially in making Savoy cakes, and other gateaux.
feuilletage (*fû-ye-tăzh'*). Puff paste.
filet (*fē-lā'*). Eng. **fil'let.** (*a*) The under cut of the loin of beef and venison. (*b*) Breast of fowl or game when cut out [the inner muscles near the bone being the filet mignons (*fē-lā' mē-nyŏN'*)]. (*c*) Any longish strips of meat or vegetables.
filet du dedans (*fē-lā' dû dă-dăN'*). The under cut of the loin of beef; a filet.
fil'let. See *filet.* Fillet is the usual spelling in English culinary books.
Fin'nan had'die. Haddock cured in peat smoke, originally coming from Findon (pronounced *fin'an*) in Scotland; also, haddock smoked in other ways.
flageolets (*flă-zhō-lā'*). Beans.
flamms. Pancakes.
fleurons (*flû-rŏN'*). Punched-out ornaments of bread (crusted or fried), or of paste (baked), or of other materials.
Flor'ence cakes or **Flor'entines.** A kind of cake consisting of a thin shell of puff paste containing a composition of curds, butter, yolks, flour, bitter almonds, and lemon, or a very similar composition.
flum'mery. A cold, sweet dish chiefly of cereals, often with fruit in it, molded and to be eaten with wine, milk, or sauce.
foie (*fwă*). Liver.
fond (*fŏN*). The broth or juice from braised flesh or fish, usually served as a sauce.
fondue (*fŏN-dû'*). A preparation of cheese, eggs, and butter melted together.
fraise (*frāz*). Strawberry.
framboise (*frăN-bwăz'*). Raspberries.
frangipane (French pron. *frăN-zhē-păn'*). A kind of compound pastry cream flavored with almonds, with which pastry is garnished.
fromage (*frō-măzh'*). Cheese.
fromage à la Chantilly (*ă lă shăN-tē-yē'*). **fromage de Chantilly** (*de shăN-tē-yē'*). Apricot jam.
fru'menty. A food prepared by boiling wheat in milk to a jelly, usually with the addition of currants, sugar, egg yolk, and spice.
fumet (*fü-mā'*). A high-flavored substance, such as extract of game, for flavoring dishes of food; also, less properly, a ragoût of partridge and rabbits braised in wine.
gal'atine. Boned fowl, veal, or the like, stuffed with pieces of meat and force, boiled, and served cold, with a garnish of jelly or aspic.
gal'imaufry or **gallimafrée** (*gă-lē-mă-frā'*). A kind of ragoût of various kinds of meat highly flavored.
garbanças (*gär-băn-săs'*). Chick-peas.
garbure (*gär-bür'*). A soup of bacon and cabbage or other vegetables sometimes with cheese added.
Gas'cony sauce. Velouté with capers, truffles, and egg yolk.
gaspacho (*găs-pă'chō*). A bread-and-vegetable salad, made by the Spanish, containing pimentoes, tomatoes, oil, and vinegar, and (in the richer form) fish, crayfish, piquant preserves, etc.
gâteaux (*gă-tō'*). Cakes of flour, butter, and eggs.
gâteaux de puits d'amour (*de pwē dă-moor'*). Lovewells.
gauffres (*gō'fr*). Waffles.
gelée (*zhe-lā'*). Jelly.
Gene'va sauce. A coulis of fried onions with meat essence or espagnole, with anchovy butter, and usually port or claret wine. It is used especially with fresh water fish.
génoise sauce (*zhā-nwăz'*). Espagnole sauce flavored with fumet and red wine.
génoises (*zhā-nwăz'*). Glazed cakes of sugar, eggs, flour, and almonds.
gibelotte (*zhē-blot'*). Stewed rabbit; sometimes, stewed chicken or other white meat.
gibier (*zhē-byā'*). Game, as hare, deer, etc.
gigot (*zhē-gō'*). Leg of mutton.
gimblettes (*zhaN-blet'*). Small pastry preparations, such as croquignoles and croquembouches. Small pastry, or patés de petit four; they are used as ingredients of croquembouches.
glace (*glās*). A glaze, or broth, reduced by boiling to a gelatinous paste, so that when poured over meats it will give them a shiny appearance.
glacé (*glă-sā'*). Covered with glace.
glaced (*glāst*). Iced; having a shiny appearance produced by a coating of sugar, gelatine, or glace.
glaize or **glase** (*glāz*). A glace.
godiveau (*gō-dē-vō'*). A kind of mincemeat, usually of veal, made into balls, to garnish the interior of hot patés and vol-au-vents.
gold'en buck. A Welsh rarebit served with a poached egg on it.
goujon (*goo-zhŏN'*). Gudgeon, a rather coarse fish.
goulash (*goo-lăsh'*). See *gulash.*
gratin (*grā-taN'*). The brown crust formed upon a gratinated dish; also, the dish itself.
grat'inate. To cook, as macaroni, in a savory sauce or broth until the juice is absorbed and a brown crust forms.
gren'adine. A kind of fricandeau, with a basis of forcemeat.
grenouille (*gre-noo'y*). Frog.
grill. To broil.
grenadin (*grā-nă-daN'*). A small fricandeau, or dish made with a basis of forcemeat.
groseille à maquereau (*grō-zā'y ă mă-k'rō'*). Gooseberry.
gros rôti (*grō rō-tē'*). A large joint of roast meat.
Gruyère cheese (*grü-yâr'*). A kind of salted cheese in thin cakes.
guava jel'ly (*gwă'vă*). An excellent jelly made from the slightly astringent fruit of either of two tropical trees.
gulash (*goo-lăsh'*), or **Hunga'rian gulash.** A ragoût of rump steak flavored with paprika.
gum'bo. A soup thickened with the mucilaginous pods of the okra; also, the okra pods themselves.
hareng (*ă-răN'*). Herring.
haricot (*ă-rē-kō'*). A stew or ragoût of meat. Also, the common string bean.
haricots verts (*ă-rē-kō' vâr*). Green string beans.
Hollandaise sauce (*ō-lăN-dāz'*; Eng. pron. *hol'lan-dāz'*). See *Dutch sauce.*
homard (*ō-mär'*). The European lobster—larger than the American lobster, called *homard americaine* (*ō-mär'dă-mā-rē-kăn'*).
hors d'œuvres (*ôr dûv'r*). Relishes; dishes which, while not sufficient to constitute a substantial meal, are served by themselves; as patties, rissoles, and other hot, light entrées, and cold entrées, such as sardines, oysters, anchovies, etc. The latter (*cold hors d'œuvres*) are eaten directly after the soup.
huitres (*wē-tr'*). Oysters.
huitres au lit (*ō lē*). Same as pigs in blankets.
hure de sanglier (*ür de săN-glyā'*). Head of wild boar.
jambon (*zhăn-bŏN'*). Leg.
jardinière (*zhär-dē-nyär'*). A dish cooked à la jardinière. See *à la jardinière.* Jardinière soup has as many roots and green vegetables as can be; it differs from julienne soup by the prevalence of green vegetables in it.
julienne soup (*zhü-lyen'*). Soup à la julienne. See *à la julienne.*
jus (*zhü*). Broth; soup juice; gravy.
kip'pered her'ring. A herring split, salted, and smoked.
kirshwasser (*kērsh-vds'ür*). A cordial distilled from the juice of the small black cherry.
klöse (*klü'ze*). Dumplings.
kumiss (*koo'mis*) or **kumys.** A beverage consisting of a liquor made by fermenting milk, originally mare's or camel's milk.
kummel (*koom'mel*). A liqueur made in Germany and Russia flavored with cumin, caraway, or fennel.
laitue (*lā-tü'*). Lettuce.
langouste (*lăN-goost'*). The crawfish.
langue (*lăNg*). Tongue.
lapereau (*lă-p'rō'*). Young rabbit; cony.
lapins en accolade (*lă paN ă nă-kō-lăd'*). A brace of rabbits on a dish.
lasagne (*lă-săN'y*). Ribbonlike strips of macaroni paste; also noodles.
leason (*lē'son*). Thickening, as flour, starch, egg yolk, etc.
lebkuchen (*lāp'koo'ken*). A cake of flour and honey, variously flavored; also, a similar cake of flour and sugar.
legumes (*lē-gûmz'*). Peas, lentils, or beans; improperly, fruit or green vegetables.
lev'eret. A young hare.
levreau (*lă-vrō'*). A young hare. *Levreau au sang* (*ō săN*) is a dish of young hares cooked with added pigeon blood.
macarons (*mă-kă-rŏN'*). Macaroons.
macaro'ni. A paste of wheat flour and water dried in the form of long slender tubes. When prepared in still smaller tubes it is called spaghetti and vermicelli.
macaroon. A small cake composed chiefly of whites of eggs and sugar (meringue) with pounded almonds, or sometimes filberts, cocoanut, or the like.
macédoine of fruit (*mă-sā-dwăN'*). A sweet jelly with whole fruit in its substance.
macédoine of veg'etables. A mixture of several vegetables, cooked, with some white sauce added.
macédoine sal'ad. A salad of mixed vegetables.
macroon'. A macaroon.
madère (*mă-dâr'*). Madeira wine.
maigre (*mā'gr*). Lean meat; also, any food other than meat. Also, a kind of fish. *Maigre soups* are those without meat, such as those used in Lent.
maitre d'hôtel but'ter (*mā'tr dō-tel'*). Butter mixed with parsley, lemon juice, salt, and nutmeg—cold *maître d'hôtel sauce.*
manchons de veau à la Gérard (*măN-shŏN' de vō ă lă zhā-rär'*). A dish of slices of veal rolled and stuffed.
maraschino (*mă-rä-skē'nō*). A cherry cordial made in Dalmatia from a sour cherry called *marasca*; hence, a similar liqueur prepared elsewhere.
marasquin (*mă-rä-skaN'*). French for maraschino.
marchand de vin (*mär-shăN' de vaN'*). Stewed with shallots, espagnole, and claret wine—said especially of kidneys.
march'pane. A cake of pounded almonds or pistachio nuts and sugar.
marsala (*mär'sä-lä*). A class of white Sicilian wines, of which the best kinds resemble Madeira, but are lighter.
mayonnaise sauce (*mā-yŏ-nāz'*). A sauce of egg yolk and oil worked together less properly with vinegar.

meringue (*mă-rang'*). Icing of white of egg and sugar thoroughly beaten together, sometimes with starch added.
mouton (*moo-tôn'*). Mutton.
mul'ligatawny. A spiced or curried soup of hashed chicken and rice.
Na'ples biscuit. Lady fingers.
Neapol'itan ice, Neapol'itan ice cream. Ice or ice cream prepared in layers, especially when colored, as in white, red, and yellow.
Neapol'itan sauce. Espagnole flavored with grated horse-radish.
nec'tarine. A smooth skinned variety of peach. The *Spanish nectarine* is a plum-like West Indian fruit, which is made into a sweet conserve.
nesselrode pudding (*nes'sel-rō-de*). Iced or frozen chestnut-and-fruit pudding.
neufchatel cheese (*nûf-shă-tel'*). A cheese made by thickening cream by heat and pressing it in a small mold.
nivernaise (*nē-vâr-nāz'*). A ragoût-like dish of carrots stewed in consommé.
nougat (*noo-gä'*). A mixture of almonds, pistachios, filberts, or the like, and honey or sugar baked together.
nouilles (*noo'y'*). Noodles.
œufs (*ûf*). Eggs.
œufs brouillés. Scrambled eggs.
ognon (*ō-nyôn'*). Onion.
o'kra. A plant, the long green, mucilaginous pods of which are used in soups, stews, etc.
olla (*ōl'lă*). Ragoût.
Or leans sauce. A mince of carrots, anchovies, hard-boiled eggs, and gherkins, with peppersauce.
pain (*pan*). Bread.
panais (*pă nā'*). Parsnips.
panée (*pă-nā'*). Bread-crumbed (over egg yolk, sauce, butter, or fat) previous to frying.
pannequets (*păn-kā'*). French pancakes.
paprika (*pă'prē-kă*). A mild kind of red-pepper condiment obtained from *Capsicum annum*. Pabrica.
paté (*pă-tā'*). A pasty.
paté de foie gras (*pă-tā' de fwă grä*). Pie of fat livers.
patés (*pă-tā'*). Pasties.
patés de petit four (*de pe-tē' foor*). Small fancy cakes.
persillade of fish (*pâr-sē-lăd'*). Fish with parsley.
petit rôti (*pe-tē' rō-tē'*). A roast fowl.
petit salé (*să-lā'*). Pickled pork in small pieces.
petits pois (*pe-tē' fwă*). Peas.
pigeonnaux (*pē-zhō-nō'*). Squabs.
pigeons innocents (*pē-zhôn' ē-nō-sănt'*). Squabs.
pilau (*pi-law'*) or **pillau.** An oriental dish of rice stewed with mutton, lamb, or fowl, almonds, raisins, and saffron and other spices.
pimen'to. Allspice, or Jamaica pepper.
pimo'la. An olive stuffed with sweet peppers.
piquante sauce (*pē-kănt'*). Espagnole with pickles added and flavored with shallots.
plombière (*plôn-byâr'*). A kind of frozen fruit pudding.
poché (*pō-shā'*). Poached.
poisson (*pwă-sôn'*). Fish.
polen'ta. Porridge.
pomme (*pum*). Apple.
pomme de terre (*de târ*). Common Irish potatoes.
pompa'no. A highly esteemed marine food fish.
potage (*pō-tăzh'*). Soup; pottage; broth.
pot pourri (*pō poo-rē'*). A ragoût of various meats and vegetables cooked together.
printanière (*pran-tă-nyâr'*). A dish cooked à la printanière. See *à la printanière*. Printanière soup is the same as jardinière soup, essentially.
pumpernickel (*poom'per-nik'l*). Black bread made in Westphalia of unbolted rye. It is of an acid taste.
purée (*pū-rā'*). A pulpy maceration of meat, vegetables, fruit, or the like, passed through a sieve.
quartier (*kär-tyā'*). Quarter; especially forequarter.
ragoût (*ră-goo'*). A rich compound consisting of quenelles (forcemeat), mush rooms, truffles, etc., mixed with a rich sauce, and used to garnish rich dishes.
ramequin (*ram'ē-kin*; French pron. *rä-me-kan'*). A pastry, consisting of a preparation of cheese inclosed in or mixed with puff paste, and baked or browned. Cheese straws are thin ramequin of cheese mixed with puff paste.
rémoulade (*rā-moo-lad'*). A purée of anchovies, capers, parsley, shallots, and hard-boiled eggs, dressed with spices, oil, and vinegar.
rissole (*rē-sōl'*). A kind of pastry made of minced and spiced meat or vegetables, or fruit, wrapped in paste, and fried in fat.
rissolé (*rē-sō-lā'*). Browned by baking or frying.
romaine salad (*rō-mān'*). A kind of mixed vegetable salad.
roquefort (*rōk-fôr'*). A French cheese made from the milk of ewes, cured in a cavern in the limestone rock at Roquefort, France.
roulette (*roo-let'*). A dish consisting of a slice of meat spread with stuffing, rolled, and stewed or braised.
roux (*roo*). Browned by frying in butter or other grease.
Rus'sian soup. A gravy soup of veal, fowl, etc., with souchets of salmon, eel, perch, mullet, quenelles of whiting, lobster coral, and mushroom purée.
salad russe (*să-lăd'rûs*). A dish of chicken meat, ham, veal, etc., sliced, arranged separately and served with truffles, and tartar sauce, or caviar and sardelles, etc.
Sal'ly Lunn. An English tea cake.
salmagun'di. A salad of cold chicken, veal, eggs, beets, anchovies, etc., finely minced and spiced.
salmis (*săl-mē'*). A ragoût of roast game or fowl in rich gravy or sauce.
sal'picon (French pron. *săl-pē-kôn'*). A ragoût or rich compound of chopped meat or fish and vegetables with savory sauce, used as a separate dish, as a garnish, to stuff meats, etc.
sauce beurrée à l'Anglaise (*bû-rā' ä läng-glāz'*). Butter sauce.
sauce Colbert (*kōl-bâr'*) Brown sauce with meat glace, lemon juice, parsley, and butter stirred in.
sauce de gourmets (*de goor-mā'*). A coulis with a purée of tomatoes and crayfish butter.
sauce piquante (*pē-kănt'*). An acid or sour sauce.
sauce Robert (French pron. *sōs rō-bâr'*). A full-flavored Spanish sauce.
sauce rousse (*roos*). Brown sauce.
saumon (*sō-môn'*). Salmon.
sauté (*sō-tā'*). Lightly and quickly fried in little grease.
scones (*skōnz*). Scotch cakes of oatmeal or flour.
souchet (*soo-shā'*) or **souchie** (*sōō-shē'*). A stew of fish in a soup-like savory broth.
soufflé (*soo-flā'*). A dish consisting of batter of starch or flour, eggs, milk or cream, and butter, beaten light and baked and served hot while light and spongy. Soufflés may be variously flavored, as with ginger, vanilla, chocolate, etc.
spaghetti (*spä-get'tē*). Hollow tubes of dried Italian paste, in size between macaroni and vermicelli.
Span ish cream. Gelatine pudding containing custard, gelatine, and beaten white of eggs, set in a mold.
Span'ish puffs. Meringues.
suprême sauce (*soo-prăm'*). Velouté flavored with mushrooms and consommé of fowls.
tar'tare sauce. Mayonnaise sauce with vinegar and chopped green herbs, pickles, and capers.
tête (*tāt*). Head.
timbale (French pron. *tan-bâl'*). A drum-like case of macaroni or rice filled with some composition, as with forcemeat or ragoût.
truf'fle. A kind of edible mushroom that grows underground.
Turk'ish cof'fee. Café au Turc.
tutti-frutti (*toot'tē-froot'tē*). A confection consisting of preserved fruits of various kinds.
veau (*vō*). Veal.
vinaigre (*vē-nā'gr'*). Vinegar. *Vinaigre a l'éstragon* (*ä lās trä-gôn'*) is vinegar flavored with tarragon.
volaille (*vō-lāl'*). Poultry.
vol-au-vent (*vō-lō-văn'*). A light puff-paste case baked and then filled with a ragoût, fricassée, or the like.
Welsh rare'bit or **rab'bit.** A dish consisting essentially of toasted bread on which is served toasted or melted cheese.
white sauce. Same as velouté, or similar sauce.
wiener schnitzel (*vē'ner shnits'el*). A cut of veal from the leg fried in batter and seasoned with paprika, etc., after a style attributed to the Viennese.

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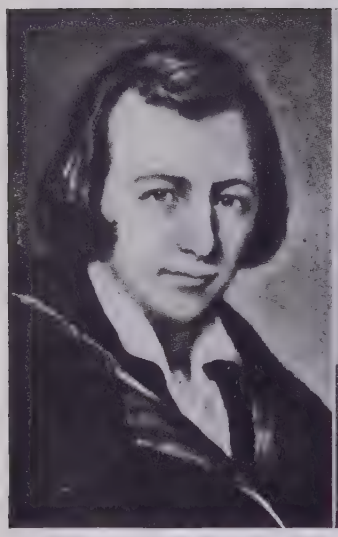
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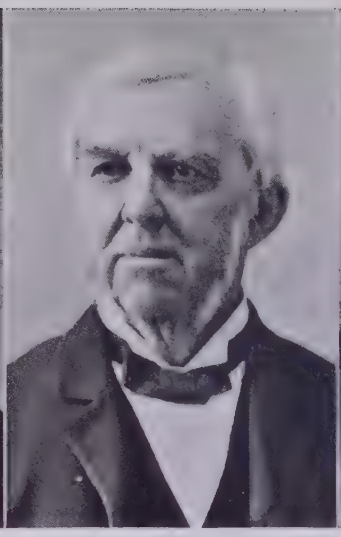
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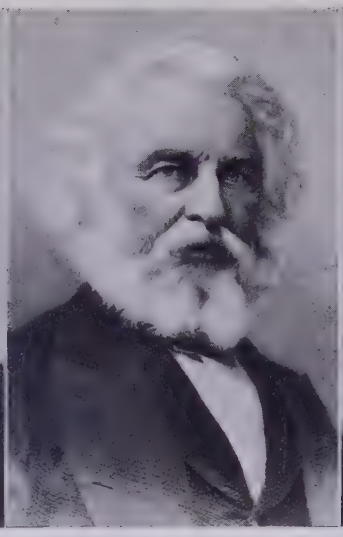
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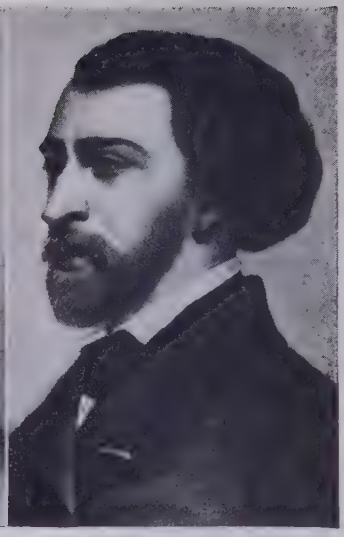
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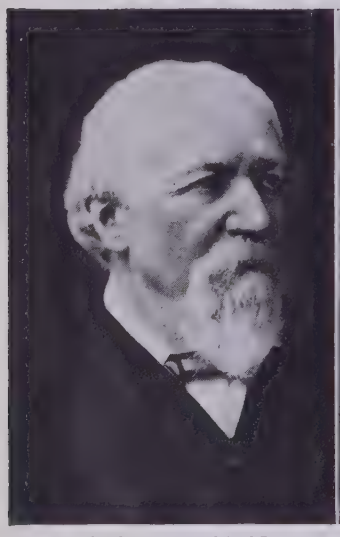
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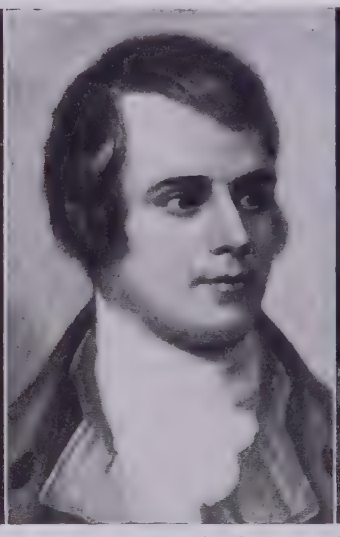
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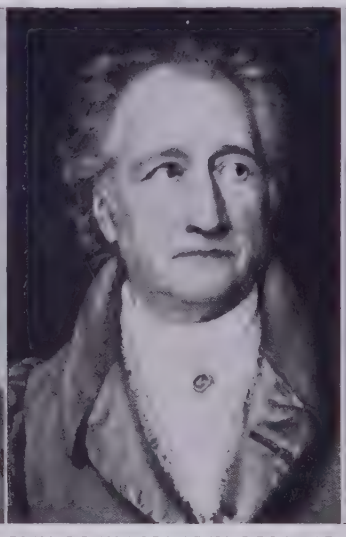
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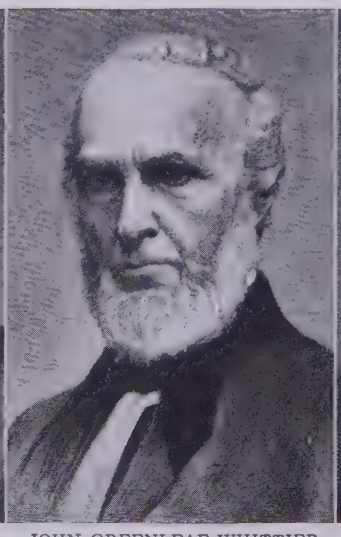
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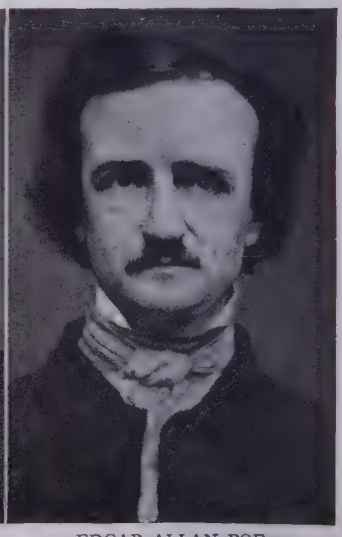
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BOOK III

LITERATURE

LITERATURE, IN ITS MOST EXTENDED significance, comprehends everything written in a given language which is colored by the temperament of the writer. A geometrical treatise should be colorless, though Euclid's *Elements* are marked by a sense of form and proportion peculiar to the Greek mind. A plain statement of fact is almost invariably colored by the sentiment of the narrator and his belief as to what is interesting and important. In a narrower sense, literature is restricted to writings to which the temperament of the writer has imparted charm, whether by reason of his earnestness and breadth of mind, his love of nature or of his fellowmen, or his peculiar power of embodying impressions in a verbal form of attractiveness and suggestion.

To the writer, literature is a method of expression and communication. Men naturally desire to express themselves, to put into form their ideas on some subject that appears to them of interest and importance. Matthew Arnold, influenced largely by his familiarity with the poetry of Wordsworth, defined literature to be a criticism (expression of judgment) of life. It would be nearer the truth to say that it contained a criticism of life. As man is essentially a "social animal," in the phrase of Aristotle, he desires to communicate his views to others. Even Milton, whose soul "like a star dwelt apart," sought an audience "fit though few." This desire to express and to communicate is the impelling force to the creation of literature, even when some peculiar perversity makes a writer use a cryptic or unintelligible style. The desire to produce something beautiful—the artistic impulse—which at first would seem to be strictly individualistic, is compounded with and modified by the desire to express thought and sentiment and to communicate them to others.

This being so, it is evident that a writer must use the language of his time and must embody the views and general principles of his age. Even when a man addresses a remnant who adhere to the ideas of the last generation, or the few progressives who have an intimation of the future or have caught sight of the new light which is soon to be the "light of a common day" to the next generation, he must deal with ideas which are somewhat in vogue in his own time. For this reason literature is representative of its own age, though as the temperament which makes the writer is usually one which sympathizes with progress and hates embodied injustice, it tends to express the advanced ideas of that age rather than the reactionary or stationary ones. "Write on my tomb," said the poet Heine, "that I was a soldier in the cause of freedom." The same words might be engraved on Shelly's monument. There are many, like Shakespeare and Tennyson, to whom the ordered civilization of the present seems most significant; to others, like Sir Walter Scott, the pathos or magnificence of the past appeals more strongly. But all write for a certain number of those who sympathize with them; each must have a living audience.

For this reason the literature of any time is a mirror of the thought of the time, and as there is a gradual evolution of thought, not merely an accumulation of knowledge, the tone of literature changes with advancing civilization. It is a peculiarity of this evolution that it is not a continuous process, but is an irregular movement with periods of quiescence and of advance. Nor is the movement, as far as we can see, always in one direction. It seems to follow the line of least resistance, even if the impelling force is forward. Consequently, there are periods in which the national spirit—reflected in national literature—is in quite distinct moods. The prevailing views on politics, religion, philosophy, society, duty, and even property are gradually modified. For a number of years one set of these ideas seems prevalent, then they weaken and change, sometimes with great rapidity, and another period is inaugurated.

ENGLISH LITERATURE.—As the English nation is continuous, so the literature of one period is bequeathed to the next. It may seem that an early period was more energetic or more spiritual or more artistic than a later one, still the influence of what was taught in one century is never entirely lost. The literature survives, and continues to exercise an influence on many minds long after the termination of the period in which it appeared.

AMERICAN LITERATURE. — American literature is not readily or satisfactorily defined. It excludes all the literatures of this Western Hemisphere except that of the United States, and even in the United States is generally reckoned as exclusive of all languages except English.

Branch of English Literature.—Obviously American literature belongs to the generic class English literature. American literature is the American expression of human interests in artistic prose or verse.

But the prose or verse of America does not differ materially in form from that of Great Britain. This definition concedes similarity of interests and methods, but suggests that there is possibly a difference in point of view. Such a difference may be readily discerned, but not in the realm of pure art.

PARALLEL OUTLINES OF WORLD LITERATURE

In., Indian; Per., Persian; Arab., Arabian; Dan., Danish; Swed., Swedish; Ic., Icelandic; Nor., Norwegian; Sp., Spanish; It., Italian; Port., Portuguese; Russ., Russian.

TABLE I. FROM THE BEGINNING TO THE BIRTH OF CHRIST

Date	Egyptian	Babylonian and Assyrian	Hebrew	Indian and Persian	Chinese	Historical Events
4000 to 3000 B. C.	*Moral Precepts* of Ptah-hotep. Hieroglyphic records on tombs.	**King Sargon** (3800 B. C.)—*Early Tablets.*—Earliest record of a Semetic line of kings ruling in North Babylonia.				Civilization in Egypt and Babylonia.
3000 to 2000	Inscription of Una. *Book of the Dead* — A collection of prayers, mythical in character, dealing with the future state of the soul. *Song of the Yarper*—Oldest version of a funeral drinking song.	Inscriptions. **Hammurabi** (c. 2300). — *Code* — Great statesman-ruler. His reign called the Golden Age of Babylon.				2700, Chaldean literature already voluminous. 2234, Astronomical observation in Babylonia.
2000 to 1000	*Pentaur*—A prose poem descriptive of battle. The nearest approach to the epic in Egyptian literature. *Papyrus Ebers* (c. 1550) — An extensive medical treatise found by G. M. Ebers. *Amarna letters*—Clay tablets. The official archives of two kings of Egypt. Show evidence of advanced literary activity.		*Oldest Songs of the Old Testament.* — The Song of Deborah. Many of the psalms.	*The Vedas* (In.)—The collective designation of the ancient sacred literature of India. Prayers, sacrificial formulas, legends, rules for conduct. *Mahabharato* (In.) — A great epic narrative, containing about 100,000 stanzas.	*Oldest Songs of She-King Book of Changes* — A book of poetry, chiefly religious.	2000, Chaldean rule over Syria. Mycenaean civilization. 1380, Rameses II. 1040, King David.
	Greek					
1000 to 500	**Homer.** — *Iliad* and *Odessey* — Epic poems containing the story of the siege of Troy and the wanderings of Ulysses. The greatest epic of all literatures. **Hesiod.**—*Works and Days*—Poet of humble descent and occupation, his work a collection of reflections and precepts relating to a rural household.	668-608. Golden age of Assyrian literature. *Descent of Ishtar Into Hades*, etc. — Ishtar was the chief goddess in the religion of the Babylonians and Assyrians.	*Joel, Amos, Hosea* — Minor prophets. *Psalms* — Sacred poems. *Jeremiah*—The book of lament over Israel's humiliation.	**Zoroaster.** — *Avesta* (Per.) — The bible of Zoroastrianism. *Ramayana* (In.) — The second of the two great epic poems of mediaeval India.	**Lao-Tse.** — The reputed founder of the philosophy of Taoism. **Confucius.**— The most famous of all the sages of China. His doctrines were ethical and political.	1000, Zoroaster. 776, First Olympiad. 753, Founding of Rome.

TABLE I. FROM THE BEGINNING TO THE BIRTH OF CHRIST—Continued

Date	Greek	Latin	Hebrew	Indian and Persian	Chinese	Historical Events
1000 to 500 B.C. Cont.	**Sappho.**—One of the two greatest leaders of the Æolian school of lyric poetry. Passion, sincerity and grace in her work. **Anacreon.**—A graceful, lyric poet who sang of wine, love, and merry company.		*Songs of Solomon*—Hebrew pastoral poems.	*Laws of Manu* (In.)—Ancient law-book of the Hindus. *Brahmanas* (In.)—Writings relating to prayer and sacrifice. *Upanishads*—Speculations on the nature of the world and man.		586, Babylonian captivity.
500 to 400	**Pindar.**—The greatest of the Greek lyric poets. **Æschylus, Sophocles, Euripides.**—Writers of tragedies. Their works are so full of deep human content that they belong to the world's greatest treasures. **Aristophanes.**—The greatest writer of Greek comedy. **Plato.**—The most important of the Athenian philosophers.		*Job*—A drama of the soul. *Ruth*—An idyl of Jewish life in the period of the judges.		**Mencius.**—Second in rank among Chinese sages. Taught that man by nature is good.	492, Persian war. 490, Marathon; age of Pericles. 438, Parthenon. 431-404, Peloponnesian war.
400 to 300	**Isocrates.**—The fourth among the ten Attic orators. **Demosthenes.**—A celebrated Athenian orator. **Æschines.**—An Athenian orator. **Aristotle.**—The founder of the Peripatetic school of philosophy. **Xenophon.**—An Athenian historian.		*Malachi*—A minor prophet. *Daniel*—The apocalyptic prophet.	**Panini's** *Sanskrit Grammar*—The greatest of India's grammarians. His is the oldest preserved Sanskrit grammar. Cuneiform inscriptions near Persepolis.		399, Execution of Socrates. 390, Gauls sack Rome. 336-323, Alexander the Great.
300 to 200	**Theocritus.**—The creator of bucolic poetry in Greek. **Eratosthenes.**—Famous for astronomical, geographical and mathematical labors. **Apollonius.**—A Greek scholar and epic poet. *Septuagint version of Hebrew Scriptures*—A translation made at Alexandria by seventy Greek scholars.		*Ecclesiasticus*, or *Jesus, Son of Sirach*—Practical moral reflections.	*The Puranas* (In.)—The name of a class of poetic Hindu works of mixed cosmogonic, epic, and didactic character. Beginning of the Indian drama.		264-241, First Punic war. c. 229, Achæan league.
200 to 100	**Bion.**—A Greek bucolic poet noted for his sharp and incisive sayings. **Moschus.**—Author of eight bucolic poems elegant in expression. **Polybius.**—One of the most important Greek historians.	**Plautus.**—*Comedies: Aulularia, Captivi, Pseudolus*, etc.—Rich in humor and invention, his comic art rivals that of Shakespeare. Our modern drama owes much to him. **Pacuvius.**—A learned and able imitator of Greek literature. **Ennius.**—*Annals, Thyestes*, etc.—The writer of the first great Roman historic epic. He made the Latin language suitable for lofty poetry. **Terence.**—*Comedies; Andria, Phormio*, etc.—His comedies are almost modern in their elegance, and have been widely copied by French and English dramatists. **Lucilius.**—*Satires*—A daring satirist who spoke out his full meaning in language that was sometimes lofty and sometimes half-Greek and full of slang. **Cato the Elder.**—*Concerning Agriculture*—At once a fine writer and a writer of strong works in prose. "The father of Latin prose."	**Sudraka.**—An Indian dramatist.		218-201, Second Punic war. 168, Fall of Macedonia. 146, Greece became Roman territory. 113-102, Invasion by Teutons.
100 to A.D.	*The Anthology* compiled. Contains poems from forty-seven Greek poets.	**Varro.**—*On Agriculture, On Languages*—"The most learned of the Romans." A great encyclopædist who wrote on various subjects with authority. **Cæsar, Julius.**—*Commentaries*—At once a great statesman, writer, and historian. His work on the Gallic war is read in modern schools for its perfect style. **Cicero.**—*Orations, Essays, Letters*—Rome's finest writer. The model of prose style for all time, ranging from lofty and powerful declamations to urbane and rhythmically beautiful passages. **Lucretius.**—*Concerning Nature*—The most original philosopher-poet in Latin. He expounded the Epicurean philosophy with an intensity of feeling that was almost madness. Tradition makes him to have died insane. **Catullus.**—*Lyrics*—In his strong passionate language the model of the modern Italian poet, d'Annunzio. **Sallust.**—*Histories: Catiline Conspiracy, War with Jugurtha, Memoirs*—An accurate historian who wrote with clearness and vigor. **Nepos.**—*History, Biographies*—Style is colloquial, but biographies are fair, sympathetic and well arranged. **Vergil.**—*Georgics, Æneid*—The greatest of the Roman epic writers. His *Æneid*, partly imitated from Homer, is remarkable for its pathos and deep feeling. **Horace.**—*Odes, Satires, Letters*—The most polished and the most quoted of all the lyric writers. His Satires and Epistles are read with delight as representing the philosophy of life which Horace characterizes as the "golden mean."			63, Cicero consul. 49-45, Civil war. 44, Cæsar killed. 31, Battle of Actium. 27, Augustus emperor. 4, Birth of Jesus?

TABLE II. FROM JESUS TO MOHAMMED, 1-600 A. D.

Date	Latin	Early Christian Literature—Greek and Latin	Greek	Oriental	Historical Events
A. D. 1 to 100	**Livy** (59 B. C.-17 A. D.).—*History of Rome*—Originally in 142 books, only one-fourth of which now exist. Not a philosophical historian, but wrote in a fascinating style. **Seneca** (3 B. C.-65 A. D.).—*Tragedies, Moralistic Essays, Satires*—Epigrammatic, wise, rhetorical; he created a new and florid style.		**Josephus, Flavius** (37-100).—*History of the Jewish War, Jewish Antiquities*—A Jewish historian who wrote in Greek in such pleasing style as to win the title of "the Greek Livy." His history gives a detailed account of the fatal war with Rome. **Plutarch** (c. 46-125), *Lives, Morals, Table Talk*—Master in sketching character. His work is permeated by lofty enthusiasm and a warmth of portraiture.		14, Death of Augustus. 68, Death of Nero.

TABLE II. FROM JESUS TO MOHAMMED—Continued

DATE	LATIN	EARLY CHRISTIAN LITERATURE	GREEK	ORIENTAL	HISTORICAL EVENTS
1 to 100	**Ovid** (43 B. C.-18 A. D.) *Metamorphoses, Heroides,* etc. A court poet who wrote much that is beautiful and much that is indecent. He died in exile. **Pliny the Elder** (23-79).—*Natural History.* An encyclopædist who has left us a large work drawn from the writings of a multitude of other men. He died in the eruption of Pompeii. **Lucan** (39-65 A. D.).—*Pharsalia.* The author of this third important Roman epic. He dared the displeasure of Nero and lost his life. **Petronius** (—66).—*Satire*—The first writer of realistic literature. His work is remarkable for its knowledge of the world, brilliant criticisms, and its pictures of low life in Italy.		**Epictetus** (c. 50).—*Discourses.* — An eminent philosopher, born a slave, who led a life exemplary of the pure morals which he taught.		70, Destruction of Jerusalem by Titus. 79, Destruction of Pompeii by Vesuvius.
100 to 200	**Juvenal** (40-120), *Satires.*—A vigorous satirist of Roman life, depicting hideous vices and cauterizing them with words of fire. **Quintilian** (42-118).—*Rhetoric and Criticism*—A genial writer on practical education, abounding in anecdotes and examples. **Martial** (43-104).—*Epigrams*—Very witty but obscene epigrammatist. **Tacitus** (55-117)—*Germany, History, Annals,* etc.—A scientific, historical writer, though prejudiced against the emperor. His style is obscure yet terse and vigorous. **Pliny the Younger** (61-115).—*Epistles*—A rather self-conscious personage whose letters are written with one eye on the public at large. The facts he gives regarding his time make his epistles attractive reading. **Suetonius** (72-c. 160).—*Lives of the Cæsars, Lives of Eminent Grammarians*—A voluminous writer, from whom we have the lives of the first twelve Cæsars. His style is dry but precise. **Apuleius, Lucius** (c. 130).—*Golden Ass, Concerning Magic*—Writer of romance who protrayed conditions of his time with much humor and in life-like colors.	*New Testament.* **Justin Martyr.**—*Apologies for the Christians.*—Important as defender of Christian religion. Was an ardent student of philosophy. Said to have been beheaded in 165 because he refused to offer sacrifice to heathen gods. **Clement of Alexandria.**—*Exhortation to the Greeks.*—A defense of the faith, designed to win converts. **Tertullian** (c. 150-230).—*Apology, Tracts.* The creator of Christian Latinity. His works imprinted on Western theology a legalistic character which it never lost. Sharply attacked moral laxities of his time. **Origen.**—The greatest theologian of the third century. He developed the allegorical interpretation of scripture.	**Dion Chrysostomus** (c.50-117).—*Orations.*—Though his writings have but little inherent value he is famous on account of the beauty of his style. **Lucian** (c. 120-200).—*Dialogues of the Dead, Satires.*—A bold satirist who, fertile in invention and racy in humor, ridiculed the religion, philosophy and literature of his people. **Appian** (c. 150).—*History of Rome.*—His point of view is purely Roman but the work is invaluable for the history of the civil wars. **Galen** (c. 130-170).—A celebrated physician and prolific writer. Nearly every phase of medical science is indebted to him. **Dio Cassius** (c. 150-235).—*History of Rome.*—Though a Roman senator he adopted Greek in his writings. The work is a model of diligence.	**Kalidasa** (In).—*Dramas*—The most illustrious name in the second epoch of Sanskrit literature. This is the period of artificial poetry. Kalidasa is rich in creative fancy and strong in powers of description. His fame rests on his dramas, but he is also an epic and lyric poet. *Talmud* begun. This great work is the encyclopædia of Jewish civilization.	98-117, Trajan. 117-138, Hadrian. 138-161, A. Pius. 161-180, Marcus Aurelius.
200 to 400	**Ausonius** (310-390).—*Mosella.*—A Latin poet of Gaul in whom we first find the modern love of nature predominant. His best known poem is called *Mosella,* from the river Mosella; but he also dwelt on many subjects.	**Athanasius** (c. 293-373).—*Discourses, Histories.*—The father of Greek orthodoxy. **Chrysostom.** — *Homilies, Commentaries, Epistles.*—An eloquent expounder of Christian doctrine. **St. Ambrose** (c. 340-397).—A learned bishop noted for his mild and gentle, but inflexible character. **Jerome** (c. 340-420).—*Latin Bible* (vulgate).—This translation was destined to become the Bible of the occident. **Prudentius** (c. 348-405).—*Hymns.*—The greatest of the early Latin Church. The *Hymns* were designed for devotional use. **St. Augustine** (354-430).—*Confessions.*—Greatest of the Latin fathers. Taught that outside of the true church there could be no salvation.	**Herodian** (c. 170-c. 240).—*History of the Roman Empire.*—A sober, accurate and impartial historian. **Plotinus** (c. 204-270).—*Enneads.*—A Greek philosopher characterized by depth of thought and pithy language. **Longinus** (213-273).—A rhetorician so learned that he was called "a living library and a walking museum." **Longus.** — *Daphnis and Chloe.*—This pastoral romance is considered the best of all ancient romances on account of its graceful narrative and deep, natural feeling. **Musæus.**—*Hero and Leander*—A short epic of love. In its warmth of feeling it has touches that are almost modern.	Completion of Palestine *Talmud.*	Hau dynasty in China. 226, New Persian empire. 272, Defeat of Zenobia. 273, Death of Plotinus. 284, Reorganization by Diocletian.
400 to 500	**Claudian** (c. 365-408).—*Rape of Proserpine, Epigrams,* etc.—The last of the classical Latin poets. His poetical gifts were considerable, especially in the mastery of language and meter.			GOTHIC **Bishop Ulfilas** (c. 311-381).—*Gothic Bible*—The earliest literary monument in Germanic speech, translated by the bishop of the Visigoths, and formed the basis of Arian Christianity for two centuries. One manuscript is preserved in the *Codex Argenteus* in Upsala.	313, Edict of Milan by Constantine. 361-363, Julian. 376, Visigoths admitted. 395, Death of Theodosius. 410, Alaric sacks Rome. 449, Saxons invade Britain. 455, Vandals sack Rome.
500 to 600	**Boethius** (470-525).—*Consolations of Philosophy, Translations.*—Almost the last Latin prose writer who also knew Greek. He ends the Roman period of literature with his philosophic treatises.	**Fortunatus, Venantius** (c. 530-600).—*Hymns, Epitaphs, Epistles.* The chief Latin poet of his time. *The Royal Banners Forward Go,* is his most famous hymn. **Gregory the Great** (540-604.—*Exposition of Job, Dialogues.*—As a pontiff he was the great organizer of the ritual and public services of the Roman Church. One of the four greatest teachers of the Western church.		*Moallakat* (Arab.)—A collection of seven prize poems by as many authors. ANGLO-SAXON *Beowulf*—An epic poem, one of the most interesting literary monuments among Germanic peoples. Its mythological elements show great antiquity.	527-565, Justinian. 571, Birth of Mohammed. 590, Gregory becomes pope. 593, Books printed in China.



ALEXANDRE DUMAS
France



MIGUEL de CERVANTES SAAVEDRA
Spain



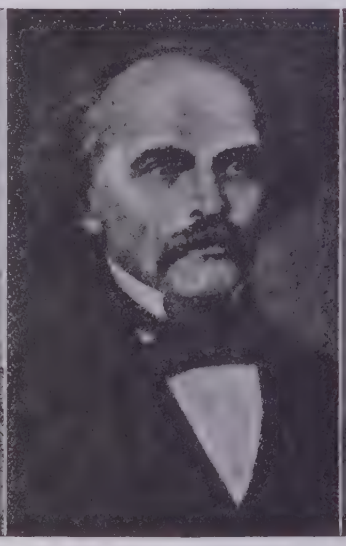
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Italy



COUNT LVOFF TOLSTOI
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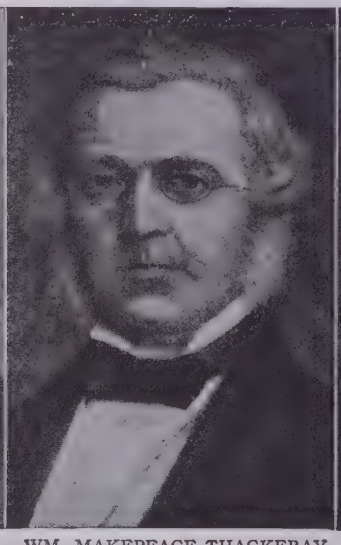
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HENRIK IBSEN
Norway



WM. MAKEPEACE THACKERAY
England



JOHANN VON SCHILLER
Germany



PAUL HEYSE
Germany

FAMOUS WRITERS

TABLE III. FROM MOHAMMED TO DANTE, 600-1300

DATE	ENGLISH	GERMAN	SCANDINAVIAN	ARABIAN, PERSIAN	HISTORICAL EVENTS
600 to 700	**Bede** or **Baede** (673-735).—*Ecclesiastical History, Poems*—Inspired by early Christian sentiment. **Cædmon** (675?).—*Paraphrase of Scripture*—Showing how strong an appeal the bible story made to the reverence of the race.	This is the period of the infiltration of Roman civilization and Roman ideas.	400-1000, *Hundreds of Runic Inscriptions* (Dan.) — Very brief. Some in verse. Generally commemorate the dead. Very important for history, language, mythology. 400-1500, *About 2000 Runic Inscriptions* (Swed.) — Some authors known, as Ubir, Bali, Asmundr, Karasun. About 160 are in poetic form. Important for history, language, art.	**Mohammed's** *Koran*, the sacred book of Islam, collected shortly after his death. Many odes and lyrics in Arabic. *Bundahish* (Per.)—Date very uncertain. A work on cosmogony and theology.	622, Flight of Mohammed from Mecca, the Hegira. 632, Death of Mohammed. Rapid spread of Mohammedanism.
700 to 800	*Traveler's Song* (700?)—Illustrates the sentiment of a wandering singer and the Anglo-Saxon's love of home. **Alcuin** (735-804).—*Letters, Biographies. Crist, Elene, Andreas*—Friend of Charlemagne, wrote a comparatively pure Latin. **Cynewulf** (c. 750-825).—*Poems*—Serious poems of moral simplicity and power.	*Lay of Hildebrand, Wessobrunn Prayer, Muspilli*—All are in the old Germanic alliterative verse. Authors are unknown. The *Lay of Hildebrand* is an example of the rough, uncouth ballad out of which the German national epic was, later, to be constructed.		In the latter half of this century Arabia enjoyed a glorious reputation in science and literature under the patronage of Haroun-al-Raschid. **Abu Hanifah** (702-772).—*Code of Laws*—Still in force in many parts of the Ottoman empire. **El-Asinal.**—*Romance of Antar* (Arab.)—A long poem upon the poet Antara.	687, Battle of Testry. 711, The Arabs enter Spain. 732, Arabs repelled at Tanes. 751, Pepin the Short, king of Franks.
800 to 900	**Alfred the Great** (c. 849-901).—*Translations* — Some original matter interpolated, *e. g.*, narrative of others; versified by Longfellow.	**Otfrid** (c. 800-870).—*Gospel Book*—A poetic version of the life of Christ, and, like the *Heliand*, doubtless intended to supplant the old heathen epic. *Heliand* (c. 830)—An alliterative epic in Old Saxon speech, treating the gospel account of the life of Christ. Numerous religious writings, visions of judgment, lives of saints, epic gospel narratives, harmonies, and a few political compositions fill up the tenth century.	**Skalds** (800-1100). — *Drapas* (Ic.)—Vivid laudatory poems describing feats and battles of contemporary Scandinavian and English rulers. Traveled from court to court. **Anonymous** (850-1200).—*Elder (or poetic) Edda* (Ic.)— About 35 poems in alliterative verse dealing with myths (Odin, Thor, Frey) and hero legend (Sigfrid story). Composed in Iceland, Norway, Greenland; vivid, dramatic, terse.	**Al-Kindi** (c. 800).—*Medicine, Astrology* (Arab.)—Remains of 200 works on science and philosophy. **Abu Ubaidah** (824), (Arab.).—*History*, in 105 monographs including histories of Mecca and Medina.	800, Charlemagne crowned emperor of the west. 809, Death of Haroun-al-Raschid. 814, Death of Charlemagne. 843, Treaty of Verdun. 878, Treaty of Wedmore.
900 to 1000	**Alfric** (955-1020).—*Homilies, Grammar*—Writings in Latin. A man of power and sincerity. During the tenth and eleventh centuries the Anglo-Saxon or English language was undergoing radical grammatical changes. The great authors of these two centuries wrote in Latin, it being intelligible to the learned, for whom they wrote.	**Ekkehard.**—*Lay of Walther of Aquitaine* (c. 930)—*Waltharius manu fortis* is a short epic in Latin hexameters describing the adventures of Hildegunde of Burgundy and of Waltharius as hostages at the court of Attila. **Roswitha** or **Hrotswith.**—*Dramas*—A nun of Gandersheim who wrote six dramas in Latin in the Christian spirit of her time to take the place of the pagan plays of Terence.	**Egil Skallagrimsson** (Ic.), (900 - 983). — *Höfudlausn* (Head-ransom); *Sonatorrek*, (Son-Loss)—Daring, straightforward, original in expression. **Eyvind Skáldaspillir** (Nor.), (c. 910-995).—*Poem on King Hákon, Háleygjatal*—Is a fine poet and excellent man, but imitator of predecessors, whence his nickname "destroyer of skalds." **King Harald Harfagre** (Nor.), (933).—*Snaefridardrapa*—Encouraged skaldic poetry and is said to have been a poet himself. **Thorbjörn Hornklofi** (Nor.).—*Poem on Harold Harfagre, Wardin.* **Einar Helgason Skalaglam** (Ic.), (c. 945).—*Vellekla* (Goldwant)—Powerful and exalted. Fine diction. Melodious verse. **Halfred Vandraedaskald** (Ic.), (c. 970).—*Poems on Various Chiefs*—Faithful, upright, but a bitter enemy. Fluent poet. Master of language and verse.	**Rudagi** (——954), (Pers.).—*Divan*—Graceful, fluent lyrics. The first great poet of Mohammedan Persia. **Ebu-Alruml** (905); (Arab.).—*Poems*—Lyrics and other types of verse.	912, Treaty with Rollo.
1000 to 1100		**Notker III.**—*Translations*—A monk of St. Gall, the forerunner of the Renaissance. He translated into German Boethius' *Consolations of Philosophy*, the *Psalter*; Aristotle's *Categories*, etc. *Ruodlieb* (c. 1030)—A Latin epic with novelistic features, describing the life of the time. **Williram.**—*Song of Solomon*—William Abbot of Ebersberg in Bavaria, translated the *Song of Solomon* into German. **Ezzo.**—*Lay of Ezzo*—A scholastic of Bamberg whose *Lay* was to be sung as an anthem on the last great pilgrimage to the Holy Sepulchre before the crusades.	**Sigvat Thordarson** (Ic.), (995-1045)—*Vikingarvisur* (Viking lays), *Bersöglisvisur* (Lays of Frankness)—Greatest poet of days of Olaf the Holy. Tactful, discreet, honest, ease and elegance. *Runic Inscriptions* (Nor.), (1050-1350)—Some in verse. About 150, and of no great importance. Some older than 1050.	**Firdusi** (c. 940-1025), (Pers.).—*Book of Kings*—One of the foremost poets of all literature. A great epic dealing with the Persian monarchs. **Mutanabbi** (965), (Arab.).—*Divan*—A series of poems. **Avicenna** (980-1037), (Arab.). *Medicine, Philosophy*—Philosophical and scientific works. His work on philosophy has been a text-book for European universities.	962, Restoration of Holy Roman empire. 981, Greenland discovered.
	ENGLISH / FRENCH			**Hariri** (c. 1054-1122), (Arab.).—*Mohamat*—Moral and satirical prose and verse. **Al-Hasan al-Nisaburi** (died 1015), (Arab.).—*Commentary on the Koran.*	1054, The great schism. 1066, Normans conquer England. 1096, First crusade.
	William of Malmesbury (1095-1142).—*History of Kings of England*—Of some value as an original. **Geoffrey of Mcnmouth** (1154-——).—*History of English Kings*—Largely legendary.	*Song of Roland.* The greatest of the old French epics relating the adventures and death of Roland, a nephew of the Emperor Charlemagne. Probably composed at the end of the eleventh century.			

TABLE III. MOHAMMED TO DANTE—Continued

DATE	ENGLISH	GERMAN	FRENCH	SCANDINAVIAN	SPANISH	ARABIAN, PERSIAN	HISTORICAL EVENTS
1100 to 1200		*The Lay of the Nibelungs*—It is the Iliad of Germany.	**Villehardouin** (1150-1212). *Conquest of Constantinople*—The most valuable French prose of the Middle Ages.	**Snorre Sturlason** (Ic.), (1178-1241).—*Heimskringla* — History of kings of Norway from prehistoric times to 1177. *Younger* (or prose) *Edda*. Scientific handbook on Norse mythology poetic diction and versification.	**Unknown,** twelfth century (Sp.).—*Poem of the Cid*—Great narrative poem on the national hero.	**Omar** (-1123), (Pers.).—*Quatrains*—Philosophic and meditative stanzas.	1118. Order of Knight Templars founded.
		Wolfram von Eschenbach (c.1170-1220).—*Parzifal*—The greatest epic of its time. A phychological treatment of the story of the spotless Percival in his search for the Holy Grail.				**Averrohes** (1126-1198), (Arab.).—*Science, Philosophy*—Important works on criticism, astronomy, medicine.	1138. Battle of the Standards. 1163. Notre Dame of Paris founded.
1200 to 1300	**Roger Bacon** (1214-1294).—*Natural Science, Philosophy*—A man in advance of his age.	**Gottfried von Strassburg** (c. 1200).—*Tristan and Isolde*—His great court epic is naturalistic, breathing the spirit of French poetry. Gottfried was the master poet of passion.	**Jean, Sire de Joinville** (1224-1317).—*Life of St. Louis*—A friend of Louis IX., whom he accompanied in the first crusade.			**Sadi** (Pers.) (c.1184-1291) *Rose-Garden, Tree-Garden, Odes*—Catholic in view and taste, elegant in finish.	1196. Observatory at Seville.
		Berthold von Regensburg (1247-1272).—*Sermons*—The greatest German preacher of the middle ages. His language is direct, dramatic, sincere.					1206. Franciscan order founded. 1215. Magna Charta signed.
		Master Eckart (1260-1327).—*Sermons*—The first of the mystics.					1229. University of Toulouse founded. 1248. Cathedral at Cologne begun.

Marie de France.—*Lays, Fables*—Peculiar charm from their elegant conciseness and their personal note. *Aucassin et Nicolette*—An excellent example of the chanter fable of the twelfth century.
Lorris and **Meung.**—Joint authors of the *Romance of the Rose*, a poem on the "Art of Loving."

TABLE IV. FROM DANTE TO THE PRE-REFORMATION PERIOD, 1300-1600

DATE	ENGLISH	GERMAN	FRENCH	PERSIAN	ITALIAN, SPANISH, PORTUGUESE	SCANDINAVIAN	HISTORICAL EVENTS
1300 to 1400	**Sir John Mandeville** (1300-1371). *Travels*—Possibly a pen name. His travels are an extraordinary medley of invention and report.	**Tauler** (1300-1361)—*Sermons*—A great preacher of Strassburg, and the forerunner of Luther.			**Dante Alighieri** (It.), (1265-1321).—*Divine Comedy*—Great epic, written in the first person.	Collections of old provincial laws (Dan.),(c. 1300).—Fine picture of life of early times in all its phases.	1295. Marco Polo returned to Venice.
					Francesco Petrarch (It.), (1304-1374).—*Sonnets and Songs*—Lyrics mostly concerning Laura.	**St. Birgitta** (Swed.), (1303-1373).—*Revelations*—Mystical, conversations between Christ, Mary and Saints.	1309. Popes in Avignon.
	John Wycliffe (1324-1384).—*Translation of Bible*—A man of great power and sincerity. A dialectician and scholar.				**Giovanni Boccaccio** (It.), (1313-1375).—*Decameron*—A series of 100 tales in prose.		
	William Langland (1330-1400).—*Piers the Plowman*—Extraordinary man of broad humanity. First expression of the voice of the poor.		**Jean Froissart** (1337-1410). *Chronicles*—A vivid and striking account of the events which took place in his days.				
	Geoffrey Chaucer (1340-1400).—*Canterbury Tales, Short Poems*—A scholar, a poet of chivalry and a witty narrator of stories in verse.			**Hafiz** (c.1390), (Pers.)—*Poems*—Lyrics of a very high order.		**Eystein Asgrimsson** (Ic.),(1350).—*Lily*—Artfully wrought, popular religious poem.	1348. University of Prague founded.
					Iñigo López de Mendoza (Sp.), (1398-1458).—*Sonnets*—The first in Spain to compose sonnets in imitation of Petrarch.		1386. University of Heidelberg founded.
1400 to 1500	**Sir Thomas Malory** (1430- —).—*Morte d'Arthur*—Worked over a large part of the Arthurian legends in prose. The original for Tennyson's *Idylls of the King*.	**Geiler von Kaisersberg** (1445-1510).—*Sermons*—The representative preacher of the century.	**Charles of Orleans** (1391-1468).—*Poems*—Called the last of the Trouvères. His poetry in which art takes too often the place of thought, reaches a perfection of form in which we see already the approach of the Renaissance.		**Matteo M. Boiardo** (It.), (1430-1494).—*Orlando Inamorato*—A long romantic poem.		1409. University of Leipzig founded.
					Girolamo Savonarola (It.), (1452-1498). — *Sermons, Poems*—Political and theological writings.		1453. Fall of Constantinople.
		Johann Reuchlin, Erasmus of Rotterdam—Famous humanistic scholars.	**François Villon** (1431-1485).—*Ballads*—The most remarkable poet of the fifteenth century. His *Testaments* are among the masterpieces of French poetry.		**Niccolò Machiavelli** (It.), (1469-1527).—*History, The Prince*—Profound but not too scrupulous.		
	Sir Thomas More (1478-1535).—*Utopia, Life of Edward V.*—A man of fine character. Plan suggested perhaps by Plato's *Republic*.	**Thomas Murner** (1475-1537).—*Satires, History*—Famous for attacks on Luther. Witty, ironical pulpit-orator.	**Philipe de Commines** (1445-1509). — *Memoirs*—Give the best accounts we have of the reigns of Louis XI. and Charles VIII.		**Ludovico Ariosto** (It.), (1474 - 1533). —*Orlando Furioso*—A romantic poem of chivalry.		
						Christian Pedersen (Dan.),(1480-1554) —*Translation of Luther's Bible* (1550)—Father of modern Danish literary language.	

TABLE IV. DANTE TO THE PRE-REFORMATION PERIOD—Continued

Date	English	German	French	Italian, Spanish, Portuguese	Scandinavian	Historical Events
1500 to 1600 Con.	**William Tyndale** (1484-1536).—*Translation of Bible*—On his translation of the scriptures later versions are founded. **Hugh Latimer** (1485-1555).—*Sermons*—One of the most distinguished of British reformers. **Andrew Wyntoun.**—*Chronicle of Scotland*—Story of Wallace. Much admired by Walter Scott.	**Martin Luther** (1483-1546).—*Translation of the Bible, Treatises, Hymns*—Inaugurator of the Reformation. **Ulrich von Hutten** (1488-1523).—*Poems, Songs*—Humanist and soldier, he supported the work of Luther. **Hans Sachs** (1494-1576).—*Shrove Tuesday Plays, Poems*—Prolific cobbler mastersinger of Nuremberg. **Philipp Melanchthon** (1497-1560).—*Treatises, Text-Books*—Colleague of Luther.	**Francois Rabelais** (1483-1553).—*Philosophy, Satire*—Scholar, philosopher, satirist, and innovator. Rabelais has left to posterity in the *Life of Gargantua and Pantagruel* a compendium of his vast knowledge. **Clément Marot** (1495-1544). — *Poems*—Excelled in the lighter forms of poetry, such as the madrigal, the rondeau, the ballad, etc. Boileau calls his poems "elegant badinage."	**Francesco Guicciardini** (It.), (1483-1540).—*History, Politics.*—Cool, observant *Recollections*; masterly *History of Italy.* **Gil Vicente** (Port.), .(c. 1485-1536). — *Dramas* — Founder of the Portuguese drama. **Vittoria Colonna** (It.), (1490-1547).—*Poems*—Sonnets on the death of her husband. **Juan Boscán** (Sp.), (1493-1543).—*Poems*—Introduced Italian measures into Spain. **Jacopo Nardi** (It.), (1496-1556).—*History of Florence*—Animated history with the faults of a contemporary. **Benvenuto Cellini** (It.), (1500-1571).—*Autobiography*—A remarkable picture of his times. **Garcilaso de la Vega** (Sp.), (1503-1536).—*Poems*—Refined but lacking in originality. **Hurtado de Mendoza** (Sp.), (1503-1575).—*History, Fiction—War of Granada*, a comic novel, *El Lazarillo de Tormes.*	**Brodr Niels** (Dan.), (1495).—*Rimkrönikel* (rhymed chronicle).—Each king tells his own life and deeds. First Danish book printed. **Olaus Petri** (Swed.), (1493-1552).—*Religious Works, History, Hymns*—Unbiased historian. Luther of Sweden. Father of modern Swedish literary language. **Hans Tausen** (Dan.), (1494-1561).—*Religion*—Age of Reformation. Polemical. *Morality and Mystery Plays* (Dan.), (1500-1600)—Same origin and fate as in other countries.	1492. Discovery of America. 1498. Martyrdom of Savonarola. The Reformation Raphael and Michelangelo in art. 1509-1547. Henri VIII. king of England.
	Sir Thomas Wyatt (1503-1542).—*Sonnets, Lyrics*—Introduced with Howard the Italian forms, sonnet and madrigal; made Italian literature a new force in England. **Henry Howard** (earl of Surrey), (1517-1547).—*Translation of the Æneid, Songs, Sonnets*—Introduced Italian forms and blank verse. **John Fox** (1517-1587).—*Book of Martyrs*—His book had great influence in strengthening the reformers and was one of the literary influences on the Puritans who came to America.	*Till Eulenspiegel*, oldest version (1515)—A large collection of witty, popular anecdotes, the hero of which was the prince of rogues, Till Eulenspiegel.	**John Calvin** (1509-1564).— *Institutes of Religion*, etc. The second head of the reform. His *Institutes of the Christian Religion* is a statement of the doctrine of the religious innovators, and, like his other works, shows a remarkable erudition. **Jacques Amyot** (1513-1593). — *Translations From the Greek.* These translations, especially those from the works of Plutarch, stand as a model of the best language of the sixteenth century. **Pierre de Ronsard** (1524-1585).—*Sonnets, Odes*, etc.—As a poet Ronsard enjoyed in his time a celebrity second to none. **Etienne Jodelle** (1532-1573).—*Cléopâtre, Eugène* — His *Cléopâtre* may be said to mark one of the epochs of the French theater. **Michel E. de Montaigne** (1533-1592).—*Essays*—The work of the sixteenth century the most read to-day. Writing without order or plan he reaches the knowledge of mankind through the study "in good faith," of himself.	**Giorgio Vasari** (It.), (1512-1574).—*Lives of Celebrated Artists*—A gossipy book of information and anecdote about artists. **Luiz de Camoens** (Port.), (1524-1579).— *Lusiad, Poems*—Greatest poet of Portugal. *Lusiad* a celebrated historical epic. **Ponce de León** (Sp.), (1528-1591).—*Lyrics*—Original poems; translations from classics; translations from Hebrew poets.	1531. College de France.
	Thomas Sackville (1536-1608).—*Mirror for Magistrates.* A poet of force and imagination. Afterward, as Lord Buckhurst, a courtier and politician. Worked in collaboration with others and had a hand in the first English tragedy. **Edmund Spenser** (1552-1599.)—*Faërie Queene, Shepherd's Calendar.* Called the "poet's poet." Great in romantic allegory, the ode, and the sonnet. **Sir Walter Raleigh** (1552-1618).—*History of the World*—A politician and adventurer; friend of Spenser. Some fine passages in his work.	**Johann Fischart** (1550-1590).—*Treatises, Epic and Satire*— The master of German satire in the later sixteenth century. Achieved fame in 1577 by *The Fortunate Ship of Zürich*, treating the friendship between the cities of Zürich and Strassburg. Toward the end of the sixteenth century English comedians introduced English plays into Germany.		**Ercilla** (Sp.), (1533-1595).—*Aruacana*—An epic poem on the revolt in Chili. **Fernando Herrera** (Sp.), (1534-1597). — *Lyrics*—Erratic and patriotic poems; author called the Divine. **Torquato Tasso** (It.), (1544-1595).— *Aminta, Jerusalem Delivered*—The latter a great epic on the capture of Jerusalem in 1099. **Miguel de Cervantes Saavedra** (Sp.), (1547-1616).—*Don Quixote, Poems in Galatea*—The first is the great masterpiece of Spanish literature. *Galatea*, a prolix pastoral romance in prose, with verses.	**Tycho Brahe** (Dan.), (1546-1601).—*Astronomy*—Made regular and careful observations of the movements of the planets.	

TABLE IV. DANTE TO THE PRE-REFORMATION PERIOD—Continued

Date	English	German	Italian, Spanish, Portuguese	Scandinavian	Historical Events
1500 to 1600 Cont.	**Richard Hooker** (1553-1600).—*Ecclesiastical Polity*—His prose has dignity and force. His book is the authority for the Church of England. **Sir Philip Sidney** (1554-1586).—*Arcadia, Poems*—Singular beauty of character. *Arcadia* is a pastoral romance of great merit. **Francis Bacon** (1561-1626).—*Essays, Philosophy* — Many beautiful and acute things in his essays and his philosophical works. **Christopher Marlowe** (1564-1593).—*Dramas*—Most important of Shakespeare's predecessors. His tragedies, although full of horrors, are sublime in tone. **William Shakespeare** (1564-1616).—*Dramas* (37 plays), *Sonnets*—The best of all writers, compounded; wit, humor, characterization, philosophy, musical and phrase power, and construction.		**Pietro Sarpi** (It.), (1552-1623).—*History of Council of Trent* — Philosophical and historical.	**Gudbrand Thorlaksson** (Ic.), (1584).—*Translation of Bible*—Unwearied author and translator of religious works.	

TABLE V. SEVENTEENTH CENTURY, 1600-1700

English	German	French	Scandinavian	Italian, Spanish, Portuguese	American	Historical Events
	Jacob Ayrer (1605).—*Dramas*—Constructed under the influence of the English comedians, a new German drama, based on the art of Hans Sachs. He popularized the operetta. Sixty-six plays were published in 1618 under the title *Opus Theatricum.*	*L'Avocat Patelin*—Is the masterpiece of the French theater in the middle ages and it remains to-day as one of the best examples of the comic play and of the Gallic wit. **François de Malherbe** (1555-1628).—*Poems*—Brought into poetry a harmony and a purity of style unknown before him. There is more work than genius in his poems.		**Lope de Vega** (Sp.), (1562-1635).—*Dramas, Lyrics*—Dramas of unusual number, variety, and power. **Galileo Galilei** (It.), (1564-1642).—*Scientific*—Physical and astronomical discussions. **Tassoni** (It.), (1565-1638).—*Rape of the Bucket*—A mock heroic poem. **Tommaso Campanella** (It.), (1568-1639).—*Philosophy*—Philosophical and political. **Guillen de Castro** (Sp.) (1569-1631).—*Dramas*—His *Youth of the Cid* furnished the basis for Corneille's *Cid.*		
		St. François de Sales (1567-1622).—*Religious Works*—Preacher and writer of religious works whose influence was felt and is still felt by pious minds.	**Arngrim Jonsson** (Ic.), (1568-1648).—*History of Iceland*—Revived study of Icelandic antiquities. **Johannes Thomae Bureus** (Swed.), (1568-1652).—*Book on Runes*—Founder of runology. Grammatical works. Busy with old Scandinavian manuscripts.			
Ben Jonson (1574-1637).—*Dramas*—A scholar and man of letters. A learned constructor of plays, had also the true lyrical faculty. **John Fletcher** (1576-1625); **Francis Beaumont** (1586-1616).—*Dramas*—Well constructed plays, but of a low moral tone.	**Jacob Boehme** (1573-1624).—*Mysticism, Theosophy*—The founder of the mystical theosophy of the century.	**Mathurin Régnier** (1573-1613).—*Satires*—His poems, few in number, are imitated from the ancients. He borrowed also considerably from the Italian satirists.	**Magnus Olafsson** (Ic.), (1573-1636).—*Dictionary* — First Icelandic dictionary.			1572. Massacre of St. Bartholomew.
Robert Burton (1577-1640).—*Anatomy of Melancholy*—Full of out-of-the-way learning and quotations bearing on the subject.	**Georg Weckherlin** (1584-1653). — *Odes* and *Songs*—One of the first German poets to write sonnets and Alexandrines.	**Hugo Grotius** (Dutch), (1583-1645). — *Law, Philosophy, Translation*—Famous scholar and statesman. Modest, pious, gentle, generous.	**Anders Arrebo** (Dan.) (1587-1637).—*Poetic version of David's Psalms, Hexaemeron*—Florid language. Good description of nature, Alexandrines, mythological references	**Gomez de Quevedo** (Sp.), (1580-1645).—*Theology, Satires, Poems*—Political and religious prose; humorous and satirical works.	**John Smith** (1580-1631).—*A True Relation of Virginia*—A romantic recital of thrilling adventures. **William Bradford** (1588-1657).—*History of Plymouth Plantation*—A full and clearly written account to 1649.	1588. Defeat of the Spanish armada.
Robert Herrick, (1591-1674).—*Poems*—Lyrics, many of them of charming quality and ingenuous construction.	**Johann Lauremberg** (1590-1658).—*Satirical Poems* — A patriotic satirist of the customs, language and dress of his time, especially of imitation of the French. **Friederich von Spee** (1591-1635).—*Lyrics*—Von Spee and Johann Scheffler were exponents of the Catholic religious lyric.	**Racan** (1589-1670).—*Pastoral Poems*—A poet full of a melancholy charm, highly appreciated by his contemporaries.			**John Winthrop** (1590-1649).—*History of New England*—A simple, personal narrative, with occasional freshness of style.	
George Herbert (1593-1633).—*The Temple*, etc.—Animated by a devotional spirit and an æsthetic spiritualism.						

TABLE V. SEVENTEENTH CENTURY—Continued

English	German	French	Scandinavian	Italian, Spanish, Portuguese	American	Historical Events
Izaak Walton (1593-1683).—*The Complete Angler*—Prose of a delightful character, full of simple piety and love of outdoor nature.	**Martin Opitz** (1597-1639). — *Criticism, Translations, Poems*—Translated from Greek, Latin and Italian, and set up fixed principles of poetic art. He has been called "the father of German poetry"	**Guez de Balzac** (1594-1654).—*Eloquent Prose*—His somewhat oratorical but elegant and harmonious style had an excellent influence on the progress of the anguage. **René Descartes** (1596-1650).—*Philosophy*—The founder of the school of philosophy, based upon reason, known under the name of *Cartesianism*. Besides being a great philosopher, Descartes made remarkable scientific discoveries.	**Gustavus Adolphus** (Swed.), (1594-1632).—*Speeches, History, Hymns* — Hero of Thirty Years' war. Intended to write also about his own life and reign, but did not get beyond Karl IX.			
	H. M. Moscherosch (1601-1669).— *Novels, Poems* — Represents the beginning of the transition from satire to novel under Spanish influence.	**Vincent Voiture** (1598-1648).—*Letters.*—Enjoyed during his lifetime the reputation of a wit and his letters had a prodigious success. **Jean de Mairet** (1604-1686).—*Tragedies*—His *Sophonisbe* and *Cleopatra* are the first tragedies adhering strictly to the unities.	**Georg Stiernhielm** (Swed.), (1598-1672).—*Works on Language and Mathematics, Poems* — Introduces new period in literature. Earliest Swedish sonnets. Great linguist, greater poet.	**Calderón Barca** (Sp.), (1600-1681).—*Dramas*—Dramas with love, jealousy and honor as motives.		1600. Martyrdom Giordano Bruno. 1603, England and Scotland united under James I.
Sir Thomas Browne (1605-1682).—*Philosophy, Theology*—One of the most learned men of his time. His style exerted a great influence on Charles Lamb.	**Friederich von Logau** (1605-1655).—*Epigrams*—This great epigrammatist wrote 3000 German epigrams. Some were translated by Longfellow.	**Pierre Corneille** (1606-1684).—*Tragedy, Comedy*—Called the "Father of French tragedy." Among his tragedies four are ranked among the masterpieces of the world's literature: *Le Cid, Horace, Cinna* and *Polyeucte.* He was also the author of the best comedy written until then (1642): *Le Menteur.*	**Lars Wivallius** (Swed.), (1605-1669).—*Lyrics*—Love of liberty and nature. Long imprisoned.			
Thomas Fuller (1608-1661).—*Church History of England*—A chronicle, with passages of wit or natural pathos. **John Milton** (1608-1674), *Areopagitica, L'Allegro, Il Penseroso, Comus, Paradise Lost, Paradise Regained,* etc.—A poet, grave, learned, of mental dignity but gifted with musical power as much as Shakespeare. **Samuel Butler** (1612-1680).—*Hudibras*—A rhyming jingle, destitute of elevation but with here and there a witty couplet. Anti-Puritan throughout. A favorite book of Charles II.	**Paul Gerhardt** (1607-1676).—*Hymns and Poems*—After Luther the greatest hymn-writer of the Lutheran church, and like Luther modeled his hymns on the popular ballads.	**Mlle. de Scudéry** (1607-1701).—*Novels*—One of the leaders of the "Précieuses" and called by them the "Tenth Muse." She published a number of voluminous novels which contain many interesting allusions to the events of her days. The best known of these novels is *Artamène, ou le grand Cyrus.* **Paul Scarron** (1610-1660).—*Comic Plays, Poems*—Author of a number of witty, burlesque poems. His widow became the famous Madame de Maintenon.		**Antonio de Solis** (Sp.), (1610-1686), —*Conquest of Mexico*—An eloquent spirited account of Cortes in Mexico.		1607, Jamestown, Va., founded. 1610, Galileo discovered Satellites of Jupiter.
Jeremy Taylor (1613-1667).—*Holy Living,* etc.—The "Shakespeare of Divines." Passages of rare poetic beauty and organ-like volume. **Richard Baxter** (1615-1691).—*Saint's Rest*—One of the *Vade mecums* of the later Puritans, earnest and sincere.	**Andreas Gryphius** (1616-1664).—*Dramas*—The German Shakespeare of the seventeenth century. His best work is in his comedies.	**François de la Rochefoucauld** (1613-1680).—*Maxims, Memoirs*—His maxims, full of bold paradoxes, give him a lasting reputation. He asserts that the love of self is the only motive for all human actions.	**Hallgrim Pjettursson** (Ic.), (1614-1674).—*Psalms* — Printed about 40 times. Clearest revelations in a northern tongue of the spirit of reformation.		**Anne Bradstreet** (1613-1672).—*The Tenth Muse*—An affected and cumbersome didactic poem.	
John Evelyn (1620-1706).—*Diary*—Of inestimable value, as it covers seventy years of dramatic English history.	**Philip von Zesen** (1619-1689).—*Novels*—Showed original talent as translator of the novel of gallant adventure.	**Jean de la Fontaine** (1621-1695).—*Fables, Contes,* etc.—The *Contes,* inspired by Ariosto and Boccaccio, although full of wit are too often indecent. The reputation of the poet rests on his remarkable *Fables* which won for him the surname of "The Inimitable." **Molière (Jean B. Poquelin),** (1622-1673).—*Comedies; Le Misanthrope,* etc.—The greatest writer of comedies not only of his time but of all times. He has not been equaled in France, perhaps not in any country, and he is placed by common consent among the great men of genius who belong to the world. **Blaise Pascal** (1623-1662).—*Philosophy, Mathematics*—Not only a great mathematician but also a thinker and a philosopher. His *Pensées* (Thoughts), fragments of a religious work which he did not live long enough to finish, and his *Letters* remain as models of French literature.	**Stefan Olafsson** (Ic.), (1620-1688).—*Poems*—Lyric, ironic, satirical, moralizing.			1618-38, Thirty Years' war.
	Christoffel von Grimmelshausen (1624-1676).—*Novels*—The most important novelist of the period. *Simplicissimus,* the first great rogue novel in German literature, deals with the vicissitudes of the Thirty Years' war.					

TABLE V. SEVENTEENTH CENTURY—Continued

English	German	French	Scandinavian	Italian	American	Historical Events
		Mme. de Sévigné (1626-1696).—*Letters*—Her charming familiar letters written to her daughter give interesting information on the court life of her time. **Jacques Bossuet** (1627-1704).—*Sermons*, etc.—The greatest orator and the greatest writer of his time. In his funeral orations especially he reached absolute perfection of oratorical style.				1625. Charles I., king of England.
John Bunyan (1628-1688).—*Pilgrim's Progress, Holy War*—Simple, idiomatic, with passages of rare beauty. Animated by simple, natural piety. A classic too much neglected.		**Charles Perrault** (1628-1703).—*Stories for Children*—His stories are known all over the world and have immortalized his name.	**Olof Rudbeck** (Swed.) (1630-1702).—*Atlantika, Works on Botany and Anatomy*—Very famous in anatomy. *Atlantika*, fanciful, represents the north as cradle of civilization.		**Henry Norwood** (1628-1670?)—*A Voyage to Virginia*—Surprisingly well written in parts, and informative.	1628. Gustavus Adolphus killed at battle of Lützen.
John Dryden (1631-1700).—*Virgil Translated, St. Cecelia's Day*, etc.—A fine critic. The father of fluent prose. Many energetic lines of verse, especially in his satires. A man of fine talent but limited genius.			**Peder Syv** (Dan.), (1631-1712).—*Collection of Proverbs*—Promoted study and use of Danish instead of Latin. Wrote first Danish grammar.		**Michael Wigglesworth** (1631-1705).—*The Day of Doom*—A poem on the day of judgment, according to the views of the time.	
John Locke (1632-1704).—*Essay on Human Understanding, Thoughts on Education*, etc.—A sound, practical thinker, whose works illustrate the common sense and unspiritual tone of his age.		**Louis Bourdaloue** (1632-1704).—*Sermons*—A severe and austere preacher. The strength of his reasoning has made his sermons famous.				
Samuel Pepys (1633-1703).—*Diary* — His *Diary*, not intended to be public, throws light on the life and habits of a capable business man of the eighteenth century.	**Caspar von Lohenstein** (1635-1683).—*Dramas, Novels*—Represents the decline of German Renaissance. Reveled in themes of blood, incest, and cruelty.	**Mme. de La Fayette** (1634-1693).—*Novels*—Replaces the bombastic style of the pastorals of the time by a real language. **Nicolas Boileau** (1636-1711).—*Epistles, Art, Poétique, Satires*—These works stamp him as a real poet and as a great critic. He did much to elevate the literature of the century. **Malebranche** (1638-1715).—*Philosophy*—Whatever may be the opinion of his theology, his rich and poetical style cannot be denied, and he is considered a great writer. **Jean Racine** (1639-1699).—*Tragedy*—Brought the French classic tragedy to its perfection. He understood men better than Corneille and consequently his tragedies are more human. It has been said that Racine painted men as they are, and Corneille as they should be. **Jean de La Bruyère** (1645-1696).—*Character Studies*—Above all a moralist who in his *Charactères* satirized without mercy his surroundings.	**Thomas Kingo** (Dan.), (1634-1703).—*Hymns*—Denmark's most favorite hymn-writer and one of the world's best. **Thormod Torfason** (Ic.), (1636-1719).—*History of Norway*—A revolutionizing history. **Niels Stensen** (Dan.), (1638-1686).—*Mineralogy*—Finest work on subject ever written. Great student of astronomy. **Lars Johansson** (Swed.), (1638-1674).—*Lyrics*—Drinking songs, songs of love, casual poems.			1634. Wallenstein assassinated.
Sir Isaac Newton (1642-1727).—*Principia*, etc.—A great mathematician, he laid the foundation of our understanding of the mechanical structure of the universe.	**Christian Weise** (1642-1708).—*Plays, Novels*—Schoolmaster poet of Zittau, wrote after the manner of the Latin school dramas. He marks an advance by introducing fresh characters from the life about him and employing an unstilted style. **G. W. Leibnitz** (1646-1716).—*Philosophic Writings*—The first great scientific German philosopher of the modern type, sought to reconcile spirit and matter. Chief works deal with the goodness of God, the liberty of man, the origin of evil, and his theory of monads, or atoms. **Christian Thomasius** (1655-1728).—*First German Monthly*—Sought to bring universities into close touch with national life. Delivered the first of university lectures ever given in the German tongue.	**Samuel Columbus** (Swed.), (1642-1679).—*Works on Grammar, Poems, Hymns*—Unusually melodious poetry. **Harvin Spegel** (Swed.), (1645-1714).—*Glossarium Swedogothicum, Poems, Hymns*—Wrote *Guds Verk och Hvila*, religious, didactic poem. Best as writer of hymns. **François de la Motte Fénelon** (1651-1715).—*Télémaque*, etc.—Was not equaled in his century for the charm of his style. Less vigorous than his rival Bossuet, the influence of his sermons and his religious works was not less great. **Jean François Regnard** (1655-1709).—*Comedies in Verse*—His comedies, especially *Le Joueur*, show a decided comic talent.	**Vincenzo da Filicaja** (It.) (1642-1707).—*Lyrics*—Purely academic poet. Odes in lofty style.	**William Penn** (1644-1718).—*Brief Account of Pennsylvania*—Confidently religious and philanthropic in tone.	1642. English civil war. 1649. Charles I. of England beheaded. 1660. Restoration of the Stuarts.
			G. E. Dahlstierna (Swed.), (1661-1709).—*Poems*—Affected and bombastic, Patriotic. **Jon Thorkelsson Vidalin** (Ic.), (1666-1720).—(*Postille Family Book of Sermons*)—Bold eloquence.			

TABLE VI. EIGHTEENTH CENTURY, 1700-1800

English	German	French	American	Italian, Spanish, Scandinavian	Historical Events
Daniel Defoe (1661-1731).—*Robinson Crusoe*—A born story-teller and pamphleteer.			**James Blair** (1656-1742).—*Sermons, No Cross No Crown*—Comparatively modern prose, written with pious zeal.		
Jonathan Swift (1667-1745).—*Tale of a Tub, Gulliver's Travels* — Unequaled as a satirist and writer of allegories in simple, nervous, idiomatic English.		**Jean Massillon** (1663-1742).—*Orations*—One of the great French sacred orators. He lives in his *Petit Carême*.	**Cotton Mather** (1663-1728).—*Elegy of Rev. Nathaniel Collins, Sermons*, etc. — Voluminous ecclesiastical writings of "pedantic and fantastic quaintness."		1666. Great fire of London.
Joseph Addison (1672-1719)—*Essays*—Originator of the social essay, marked by kindly, gentlemanlike humor in the urbane style.		**Alain René Le Sage** (1668-1747).—*Gil Blas, Comedies*—Best known as the author of *Gil Blas*, a satirical novel, and the first one to depict truly the manners of society.		**G. Battista Vico** (It.), (1668-1744).— *Scienza Nouva* — Metaphysical and scientific.	
Sir Richard Steele (1672-1729).—*Essays*—Established the *Tatler*. A good second to Addison.			**William Byrd** (1674-1744).—*The Dividing Line* and *other tracts* — Full of fresh humorous observations on life.		
		Duc de Saint Simon (1675-1755).—*Memoirs*—An original and powerful writer whose memoirs are a rich mine for those who study the period in which he lived.	**Robert Beverly** (1675-1716).—*History of Virginia*—A straightforward narrative of slightly polemic purpose.	**Scipione Maffei** (It.), (1675-1755).—*Dramas*—His *Merope* is the first classic Italian tragedy.	1675. Greenwich observatory founded.
	Christian von Wolff (1679-1754).—*Philosophical Writings* — The modern scholastic who popularized philosophy and brought rationalism to bear upon theology.				
Bishop Berkeley (1684-1753). — *Philosophy* — A very acute thinker, English founder of one form of idealism.		**Philippe Destouches** (1680-1754). — *Comedies in Verse*—His *Le Glorieux* is an excellent comedy of manners and the best of his plays.		**Ludvig Holberg** (Dan.), (1684-1754).—*Comedies, Historical Works, Philosophy, Comic Poetry*—Founder of Danish drama. Satirical comedy. Natural language of daily life. Fine picture of Copenhagen life.	
Alexander Pope (1688-1744).—*Poems*—The model poet of his time and century. Imparted to the couplet vigor, pungency, and some variety.				**Emanuel Swedenborg** (Swed.), (1688-1772).—*Philosophy* — Prominent scientist. Founder of religious sect with adherents chiefly in England and America.	1688. English revolution.
Samuel Richardson (1689-1761).—*Novels; Clarissa Harlowe, Pamela, Sir Chas. Grandison* — Founder of the sentimental moral novel, and gifted with the story-telling faculty.		**Alexis Piron** (1689-1773).—*Comedies in Verse*—The many superior qualities displayed in his poetical works are spoiled by the licentious nature of some of them. His best comedy *La Métromanie*, is one of the masterpieces of the French theater.			
Bishop Butler (1692-1752).—*Natural and Revealed Religion*—The orthodox moralist of his day, ponderous in style and common-place in method.	**J. C. Guenther** (1695-1723).—*Lyrics* — A lyric poet of personal feeling, modeling his lyrics upon the ballad, and thus the forerunner of Goethe.	**Voltaire** (**François Marie Arouet**) (1694-1778).—*History, Letters, Philosophy, Poems, Dramas*, etc. — The greatest literary genius of the eighteenth century. Poet, historian, political and satirical writer, philosopher, writer of tragedies, he excelled in every branch of literature. His works fill from 75 to 80 volumes.		**H. A. Brorson** (Dan.), (1694-1764). — *Hymns*—Wrote some of the best Danish hymns.	
	J. Bodmer (1698-1783).—*Criticisms, Translations*—Attacked Gottsched for subordinating the poet's imagination to the understanding, and finally wrought the latter's downfall.			**Pietro Metastasio** (It.), (1698-1782).— *Musical Dramas*—Lyric smoothness of melody.	1697. Peace of Ryswick.
Henry Carey (1700-1743). *Poems; Sally in Our Alley*, etc.—A light gift of doggerel satire.	**J. C. Gottsched**, (1700-1766).—*Dramas, Criticisms*—For twenty years literary dictator in Leipzig, sought to reform the German drama on the model of the French, but insisted upon historic costume, and banished the clown from tragedy.				
James Thomson (1700-1748).—*The Seasons*, etc.—A delicate feeling for the quieter aspects of nature, harmoniously expressed.			**Jonathan Edwards** (1703 - 1758) — *Sermons, Surprising Conversions*, etc.—Strong and highly imaginative proclamations of Calvinism.	**Ignacio de Luzan** (Sp.), (1702-1754).—*Art of Poetry, Poems*—Helped introduce French influence in Spanish.	
			Benjamin Franklin (1706 - 1790). — *Poor Richard's Almanac, Autobiography*— Wise and sagacious utterances of a fair, avowed utilitarian.	**Finn Jonsson** (Ic.), (1704-1789). — *Ecclesiastical History of Iceland*—List of royal decrees. History up to 1740.	1704. Boston *News Letter* established.

TABLE VI. EIGHTEENTH CENTURY—1700 to 1800—Continued

English	German	French	Scandinavian	Italian, Russian	Historical Events
Henry Fielding (1707-1754).—*Tom Jones, Amelia, Jonathan Wild*, etc.—The first great realistic novelist. Depicts life broadly and faithfully.		**Comte de Buffon** (1707-1788).—*Natural History* — A great naturalist and a writer whose style still serves as a model.	**Karl von Linné** (Swed.) (1707-1778).—*Botany, Travels* — Founder of science of botany. Language is naïve, expressive, simple, clear. **Johan Ihre** (Swed.), (1707-1780).—*Swedish Dictionary* — Founder of modern Swedish philology. His dictionary was epoch-making. **Sven Lagerbring** (Swed.), (1707-1787).—*History of Sweden*—Opposed fantastic historical writing of Rudbeck and other predecessors.	**Carlo Goldoni** (It.), (1707-1793).—*Comedies*—Animated character comedy, mostly in prose.	
Samuel Johnson (1709-1784).—*Dictionary, Rasselas, Lives of the Poets, Vanity of Human Wishes*—A man great in eighteenth century learning and letters. The critical authority of his day. **David Hume** (1711-1776).—*History of England*—The first learned historian of England. A philosopher of acumen.	**Friederich von Hagedorn** (1708-1754).—*Anacreontic Lyrics, Fables*—Essentially a social poet. He gave the dominant tone to the German lyric for twenty-five years. **Albrecht von Haller** (1708-1777).—*Science, The Alps*—Great Swiss anatomist and physiologist. Came under the influence of English poets and wrote *The Alps* in the spirit of the English nature poetry.	**Louis Gresset** (1709-1777).—*Poems, Comedies—Vert-Vert*, a jocular poem, and *Le Méchant*, a comedy, are the best known of his works. **Jean Jacques Rousseau** (1712-1778).—*Fiction, Education*—The world-wide influence of the works of this man cannot be measured.	**Olof von Dalin** (Swed.), (1708-1763).—*Journalism, History, Comedy, Tragedy, Poems*—Represents beginning of era of French influence. Shows influence of Pope, Addison, Swift, Voltaire.	**Prince Antioch Kantemir** (Russ.), (1708-1744).—*Poems*—Bold satirist of the social life of his own people. Verse form under French influence. **Michail Lomonossow** (Russ.), (1711-1765).—*Lyrics*—Scholar and poet Founder of Russian metrics. Grounded in Russian folk-song.	1708. Battle of Oudenarde. 1710. St. Paul's cathedral, London, completed.
Laurence Sterne (1713-1768).—*Tristram Shandy, Sentimental Journey*—A writer in whom affectation becomes an art. Some pathetic passages have become classic.		**Denis Diderot** (1713-1784).—*Fiction, Encyclopedie* (Ed). One of the most powerful exponents of the ideas and philosophy of the eighteenth century. **Etienne de Condillac** (1715-1780). — *Metaphysics*—A friend of Rousseau a d Diderot, and, as a philosopher, for a long time a disciple of Locke. His *Treatise on Sensations* put him at the head of the "Sensualiste" school.			
Thomas Gray (1716-1771).—*Elegy in a Country Churchyard*, etc.—A scholar-poet, Production limited but of fine workmanship.	**C. F. Gellert** (1715-1769).—*Novels, Letters, Fables, Poems*—A poet of the people. Great stylist as letter writer. His *Swedish Countess of G.* is the first social novel in Germany. **Ewald von Kleist** (1715-1759). — *Nature Poetry, War Odes* — A Prussian military officer. Influenced in his poetry by Thomson. A spirit of melancholy unites with his passionate love for nature. **J. J. Winckelmann** (1717-1768).— *History of Ancient Art*—His work opened a new epoch in the history of art, and marked the beginning of modern archæology as a branch of science. **J. W. L. Gleim** (1717-1803).—*Anacreontic Lyrics, Grenadier Songs*—A mediocre poet of love and wine and of war-songs, best known as a generous patron of needy poets.				1717. Alliance between France, England and Holland.
Tobias Smollett (1721-1771).—*Humphrey Clinker, Roderick Random*, etc.—Originator of the sea-story. Inclined to vulgar coarseness. **Sir William Blackstone** (1723-1780).—*Commentaries on the Laws of England*—Learned and careful, with a conception of the dignity of law. **Adam Smith** (1723-1790).—*Wealth of Nations*—The first great economist. The moderns hardly equal to him in natural keenness of insight. **Oliver Goldsmith** (1728-1774).—*Vicar of Wakefield, Essays, Deserted Village, She Stoops to Conquer*, etc.—A true and graceful touch both in prose and poetry. Supposed to be the original compiler of *Mother Goose Melodies.* **Edmund Burke** (1729-1797).—*Essays, Orations*—Prose, sometimes musical and poetical, and, at the same time, a statesman's grasp of principle.	**F. G. Klopstock** (1724-1803).—*Messiah, Lyrics, Odes*—The first genuine poet of the eighteenth century. Inspired by Milton's *Paradise Lost*, he wrote his *Messiah.* He was also a great lyric poet. **G. E. Lessing** (1729-1781).—*Criticisms, Plays*—The greatest critic of Germany. Turned the minds of the Germans from the French stage to Shakespeare and German folk-drama, introduced the English comedy of common life, developed a new type of national German tragedy, and preached the evangel of brotherhood and religious toleration.	**Jean François Marmontel** (1723-1799).—*Novels, Tragedies*—Also a noted encyclopedist.	**Gerhard Suhm** (Nor.), (1722-1780).—*History of Norway*—Wrote a work on the north to 1400 in 14 volumes. **Bjorn Haldorsson** (Ic.) (1724-1794).—*Dictionary*—Originally an Icelandic-Latin dictionary, but published for the first time in 1814 with Danish meanings by R. Rask. **P. F. Suhm** (Dan.), (1728-1798).—*History of Denmark*—In 14 volumes ending with the year 1400. Characteristic ponderousness of age. **C. B. Tullin** (Nor.), (1728-1780).—*Poems*—Poems describing nature and didactic poems. Influenced by Thomson and Pope. Too much detail in description.	**Carlo Gozzi** (1722-1806).—Italian dramatist. **Guiseppe Parini** (It.), (1729-1799), *Poems, Odes*—His *Giorno* is one of the best works in Italy in the eighteenth century.	1727. George II., king of England.

TABLE VI. EIGHTEENTH CENTURY—Continued

English	German	French	Scandinavian	Italian, Spanish, Russian, American	Historical Events
William Cowper (1731-1800).—*The Task, John Gilpin*, etc.—Divests poetry of the affectations of Pope. Writes on simple themes.	**Solomon Gessner** (1730-1788).—*Idyls, Pastorals*—His *Idyls* the most popular German book in Europe before the appearance of *Werther*. His prose is delicately balanced, but very artificial. **C. M. Wieland** (1733-1813).—*Oberon, Novels*—Best known as author of the novels *Don Sylvio of Rosalva*, describing his transition from pietism to nature poetry; *Agathon*, giving his views of the antique; and the metrical romance *Oberon*, treating of the adventures of Huon of Bordeaux. **Immanuel Kant** (1724-1804).—*Critical Philosophy*—The greatest German philosopher. Substituted critical philosophy for the old dogmatic metaphysics, demanded obedience to the moral law, laid the foundations of modern æsthetics. He was the founder of the transcendental philosophy.	**A. de Beaumarchais** (1732-1799).—*Comedies*—Celebrated especially for his two witty and well constructed plays, *Le Barbier de Séville* and *Le Mariage de Figaro*, in which we find much of the spirit that is coming with the French revolution.	**Gustav Filip Crentz** (Swed.),(1731-1785).—*Poems*—Idyllic poetry. Tender in personality and expression. Delights of nature and of love. **Gustav Fredrik Gyllenborg** (Swed.), (1731-1808).—*Poems*—Best in didactic and satirical poetry. Wrote also fables and an epic.	**Girolamo Tiraboschi** (It.), (1731-1794).—*Literary History*—A valuable history of Italian literature. **Ramonde Cella Zrug** (Sp.),(1731-1799).—*Dramas*—Short farces of everyday life. **George Washington** (1732-1799).—*Farewell Address, State Papers*, etc.—Broadly patriotic and well-considered.	
				Thomas Godrey, Jr. (1736-1763).—*The Prince of Parthia, Poems*—Imitative but original in imagination and marked by color. **Patrick Henry** (1736-1799).—*Speeches, Letters*, etc.—Eloquent, ardent, and profoundly impressive. **Thomas Paine** (1737-1809).—*The Crisis, Common Sense, Rights of Man, Age of Reason*, etc.—Journalistic and talented, and generally effective.	1734. University of Göttingen founded.
Edward Gibbon (1737-1794).—*Decline and Fall of the Roman Empire*—A painstaking and learned historian. Constructive powers of broad scope.		**Bernardin de St. Pierre** (1737-1814).—*Paul and Virginia*. This popular work brings into French literature the taste for "nature" as it is. St. Pierre was in literature a disciple of J. J. Rousseau.			
James Boswell (1740-1795).—*Life of Samuel Johnson*—Shows the true reporter's instinct for the point of a story. The book is otherwise that of a toady, though an unusual biography.			**Karl Mikael Bellman** (Swed.),(1740-1795).—*Songs, Lyrics*—Bubbling joy of life. Fluent writer. Wrote just to amuse. Musical. Very popular. **J. H. Wessel** (Nor.), (1742-1785).—*Poems, Plays*—Effective parody of dramas of the day, which were written in French style. Elegant language. *Love Without Stockings* is his best known work.		1740. Reign of Frederick the Great begins.
William Paley (1743-1805)—*Evidence of Christianity, Natural Theology*—A cogent reasoner on the old premises. **Hannah More** (1745-1833).—*Coelebs in Search of a Wife, Sacred Dramas*—Something of a minor poet, something of a dramatist and story-teller.	**J. G. von Herder** (1744-1803).—*Criticisms, History*—The chief factor in the literary revolution known as "storm and stress." His work in history sets forth the evolution of human institutions.		**Klaus Fasting** (Nor.), (1746-1791).—*Poems*—Famous for critical essays and spirited epigrams. Admirer of French literature.	**Gabriel Derschawin** (Russ.) (1743-1816).—*Lyrics, Odes*, etc.—His ode *To God* translated into all European languages. Rhetorical but a strong poetic vein.	
Jeremy Bentham, (1748-1832), *Philosophy, Essays*—Greatest critic of legislation and government in his day.	**Johann Wolfgang von Goethe** (1749-1832).—*Dramas, Lyrics, Elegies, Sonnets, Epigrams*—The greatest German poet. A universal genius. Before 1800 he had imitated Shakespeare, Ossian, Goldsmith and the ballad poetry, sung odes in the manner of Pindar and Klopstock, lived his story of *Werther*, and created a new German classicism in *Iphigenie, Tasso*, and *Hermann and Dorothea*. His life poem, *Faust*, is based upon the doctrine of redemption by ceaseless striving, and typifies the philosophical struggle of the poet's own life.	**Comte Mirabeau** (1749-1791).—*Orations*—The greatest orator of the French revolution. His speeches have been published and are his principal title to literary distinction.	**Edw. Storm** (Nor.),(1749-1794).—*Poems*—Author of splendid heroic ballads.	**Vittorio Alfieri** (It.), (1749-1803).—*Tragedies* Classical in spirit, observing the unities.	
Richard B. Sheridan, (1751-1816), *The Rivals, School for Scandal, Speeches*, etc.—Writer of witty dialogue and constructor of telling stage situations. Comedies still acted. **William Blake,** (1757-1827), *Songs of Innocence, Songs of Experience*—"The single Englishman of supreme and simple poetic genius of his time." **Robert Burns,** (1759-1796), Scotch poet. *Poems*—Lyrics, songs and satires in Scotch dialect, marked by music, pathos and wit.			**Johan Henrik Kellgren** (Swed.), (1751-1795).—*Journalism, Poems*—Lyric and satiric poetry. Most prominent of the literary men who were intimate with Gustaf III. **Enevold Falsen** (1755-1808).—*Dramas*—His *Dragedukhen* enjoyed great popularity.	**Tomás de Yriarte** (Sp.), (1750-1791).—*Literary Fables*—Original fables directed toward literary subjects.	1755. Earthquake at Lisbon. 1756-1763. Seven Years' war. 1759. Battle of Quebec.
		Claude Rouget de Lisle (1760-1836).—*Marseillaise*—The immortal national hymn of France.			
	A. von Kotzebue (1761-1819).—*Plays*—Now almost forgotten, he was the most popular dramatist of his time. His plays are very numerous, and catered to the public taste.	**André Chénier** (1762-1794).—*Lyrics*—A model in purity of form. His style in the lyrics is passionate, but not personal.			

TABLE VII. NINETEENTH

English	American	French
	Thomas Jefferson (1743-1826).—*Notes in Virginia, Declaration of Independence*—Full of wise foresight and keen acumen. **John Marshall** (1755-1835).—*Life of Washington, Decisions*, etc.—Profound and wise, but rather heavy. **Alexander Hamilton** (1757-1804).—*Contributions to the Federalist*—Keen and ingenious, full of information.	
	Alexander Wilson (1766-1813).—*American Ornithology*—Pioneer investigations of a shrewd observer.	**Xavier de Maistre** (1763-1852).—*Novels, Essays*—Models of vigorous narration. Deserves prominent place among French novelists. **Mme. de Staël** (1766-1817).—*L'Allemagne, Delphine, Corinne*, etc.—The first to set forth the principles of the Romantic school. Her book on Germany did much to bring the thought of that country into France.
Maria Edgeworth (1767-1849).—*Popular Tales*—Stories of middle-class domestic life, of excellent moral tone and some power of characterization.		**Benjamin Constant** (1767-1830).—*Politics, Religion*—His works, both on politics and religion, are skeptical in tone. He also wrote *Adolphe*, a novel of some value. **Jean François Michaud** (1767-1839).—*History of the Crusades*, etc.—The founder of the universal biography.
		François de Chateaubriand (1768-1848).—*René, Genius of Christianity, Atala*, etc.—Undoubtedly the greatest writer of his century, and his influence on the literature of the first half of the nineteenth century is considerable.
		Baron de Cuvier (1769-1832).—*Natural History*—One of the best known French naturalists. **Napoleon I.** (1769-1821).—*Proclamations, Letters, Memoirs*—His letters and his memoirs bear the stamp of the great genius whose characterization cannot be given in this restricted space.
William Wordsworth (1770-1850).—*The Excursion, Poems.*—Nature poems and descriptive poems. Many fine sonnets. First expression of modern feeling for nature. **James Hogg** (1770-1835).—*Pastorals, Shepherd's Calendar*—Scotch verses. One or two lyrics of sweetness and simplicity. **Sir Walter Scott** (1771-1832).—*Novels, Lady of the Lake, Poems*—Originator of the historical novel. Tone natural and wholesome. Secure in the estimation of posterity. **Sidney Smith** (1771-1845).—*Sermons, Essays*—The witty divine. Master of the expository style. **James Montgomery** (1771-1854).—*Hymns, Poems*—A man universally esteemed; best remembered now for his hymns, of which some hundred are found in our hymnals. **Samuel T. Coleridge** (1772-1834).—*Essays, Rhyme of Ancient Mariner, Translation*, etc.—A man of remarkable gifts, intellectual and poetic; a keen critic; a natural master of verbal melody.	**Charles Brockden Brown** (1771-1810).—*Wieland, Ormond*, etc.—Weird and sensational, of the Godwin type. **William Wirt** (1772-1834).—*Life of Patrick Henry, Letters of a British Spy*—Interesting and informative, but also imaginative.	**Charles Fourier** (1772-1839).—*Socialism*—A socialist whose system did not prove practical although it had many followers.
Robert Southey (1774-1843).—*Biographies of Nelson, Wesley*, etc., *Poems*—A man of industry and worth. Better as a prose stylist than a poet. **Charles Lamb** (1775-1834).—*Essays of Elia*, etc.—A quaint and delicate essayist; a friend of Coleridge. **Walter Savage Landor** (1775-1864).—*Imaginary Conversations, Count Julian, Heroic Idyls*, etc.—Classic scholar and writer. Reactionary and old-fashioned in his thought but a remarkable stylist. **Jane Austen** (1775-1817).—*Novels; Pride and Prejudice, Emma*, etc.—Her novels depicting upper middle-class life are delightfully realistic and full of quiet humor. **Thomas Campbell** (1777-1844).—*Pleasures of Hope, Lyrics*, etc.—Something of a critic His lyrics have much vigor and verve. **Henry Hallam** (1777-1859).—*Europe During the Middle Ages, Constitutional History of England*—Strong, vigorous, historical writing from a standpoint now antiquated. **William Hazlitt** (1778-1830).—*Table Talk, English Poets*, etc.—Critical essays; contain some true eloquence, and many powerful phrases **Thomas Moore** (1779-1852).—*Biographies, Lalla Rookh, Irish Melodies*, etc.—Songs of much melody but of an unreal sentimentality.	**Robert Treat Paine** (1773-1811).—*Adams and Liberty, Poems*—Superficial, but of noticeable metrical facility. **Henry Clay** (1777-1852).—*Speeches, Letters*, etc.—Attractive because of personality and power. **Washington Allston** (1779-1843).—*Art Lectures, Poems*—Highly artistic in intent and achievement. **James Kirk Paulding** (1779-1860).—*Novels*—Romances of little present interest. **Francis Scott Key** (1780-1843).—*Poems, Star Spangled Banner*, etc.—The chief poem is a national song of patriotic ardor. **William E. Channing** (1780-1842).—*Addresses, Sermons*—Social papers, clear, tolerant, thoughtful. **John James Audubon** (1780-1851).—*Birds of America, Quadrupeds of America*—Marked by keen observation and wide interest.	**Jean Baptiste Biot** (1774-1862).—Philosopher and mathematician. **Pierre de Béranger** (1780-1857).—*Lyrics*—His songs, which have great lyric qualities, were very popular in his day and are still valued.

CENTURY, 1800-1900

German	Scandinavian	Italian, Spanish, Russian	Historical Events
	Anna Maria Lenngren (Swed.), (1755-1817).—*Poems*—Satiric and idyllic, but realities depicted in natural and simple colors. Her poetic career rather too late to show extreme traits of this period.		
J. G. Fichte (1762-1814).—*Philosophic Writings, Orations*—The philosopher of the Romantic school and the exponent of the philosophy of individualism. His great work *Addresses to the German Nation* helped arouse the revolt against Napoleon. **Jean Paul Friederich Richter** (1763-1825).—*Novels, Esthetics*—United elements of "storm and stress" with Fichte's philosophy. Often represents the idealist in conflict with real life.	**J. T. Baggesen** (Dan.), (1764-1826).—*Novels, Essays, Travels, Lyrics, Rhymed Letters*—Clothed his sparkling wit in most elegant language. Restless nature.	**Carlo G. Botta** (It.)—(1766-1837).—*Histories*—Dignified histories of the American war of independence and of Italy.	1763. *Georgia Gazette* established at Savannah.
Wilhelm and **Alexander von Humboldt** (1767-1825 and 1769-1859).—*Criticism, Science, Travels*—Great scientists and travelers. Wilhelm, virtual founder of the University of Berlin, was a great classical scholar. Alexander wrote the great masterpiece *Cosmos*. **A. W. von Schlegel** (1767-1845).—*Criticism, Poems*—The great critic of the Romantic school. Gave the Germans his famous lectures on *Dramatic Art and Literature*, and contributed to their classical translation of Shakespeare, 1797-1810. **Zacharias Werner** (1768-1823).—*Plays, Sonnets*—Next to Tieck, the greatest dramatist of the Romantic school. **F. E. D. Schleiermacher** (1768-1834).—*Addresses, Criticisms*—The preacher of the Romantic school, famous for his *Addresses on Religion*, his *Monologues*, and his *Letters* on *Lucinde*. **Ernst Moritz Arndt** (1769-1860).—*Warsongs, Lyrics*—A sturdy patriot. An earnest, religious spirit prevades his work. Most effective in stirring his nation to revolt against Napoleon. **Friederich Hölderlin** (1770-1843).—*Hyperion, Lyrics*—Devoted to Greek culture. Poetic activity early cut off by insanity. Was the most gifted lyric genius at the close of the century. **G. W. F. Hegel** (1770-1831).—*Philosophy*—The philosopher of collectivism and of evolution in history.		**Quan Krylow** (Russ.), (1768-1844).—*Fables, Odes, Epistles, Tragedies*—Full of wit and humor. His fables very popular with the Russian people.	
	Jon Espolin (Ic.), (1769-1836).—*History of Iceland 1262-1832*—Twelve large quartos in annalistic form. Valuable as source, but often uncritical.		
Heinrich Zschokke (1771-1848).—*Novels*—Prolific novelist, social and political reformer. His best novels are written in the spirit of Scott's *Waverley Novels*.	**Hans Christian Oersted** (Dan.), (1777-1851).—*Science*—Discovered electric magnetism.		
Novalis (Friederich von Hardenberg) (1772-1801).—*Novels, Lyrics, Criticism*—The sentimental poet of the Romantic school. His *Hymns to the Night* contain some of the most spiritual poetry in the German tongue. **Friederich von Schlegel** (1772-1829).—*Criticism, Novels*—Both critic and poet and wrote the greatest novel of the Romantic school, entitled *Lucinde*, dealing with the limitations of conventional society. **J. L. Tieck** (1773-1853).—*Novels, Lyrics*—The most prolific writer of the Romantic school. His *Puss in Boots* is the best satirical German drama. He is unrivaled in the world of phantasy.	**Franz Mikael Franzén** (Swed.), (1772-1847).—*Poems, Hymns*—Exquisite lyric poems. Tender in feeling, clear in form.		1772. Partition of Poland.
	Countess Gyllembourg (Dan.), (1773-1856).—*Novels* — Pseudonym. J. L. Heiberg's mother. Describes everyday life in all classes of society.	**Jean Charles Sismondi** (It.), (1773-1842), *Histories*—Extensive history of the literature of the south of Europe.	
F. N. J. Schelling (1775-1854).—*Philosophy*—A disciple of Spinoza, taught the identity of spirit and nature, and published *Philosophy of Nature* (1797), *The World Soul*, (1798) and *System of Transcendental Idealism* (1800).	**Malte Bruun** (Dan.), (1775-1826).—*Geography.* **J. P. Mynster,** (Dan.), (1775-1850), *Theology*—One of Denmark's greatest theologians.	**Alberto Lista** (Sp.), (1775-1848).—*Criticism*—Literary criticism of a wholesome nature.	1775. Battle of Bunker Hill.
			1776. American independence.
Heinrich von Kleist (1777-1811).—*Dramas, Novels*—Poet of a tragic life. The most original dramatist of North Germany. His *Prince von Homburg* is Prussia's greatest historical drama. **F. de la Motte Fouqué** (1777-1843).—*Tales, Lyrics*—A later Romanticist, popularly known for his charming *Undine* (1811), the story of a water sprite without a soul. **Clemens Brentano** (1778-1842).—*Novels, Ballads*—Best known for his work on *The Boys' Wonder Horn*, the first extensive collection of German ballads.	**Jons Jakob Berzelius** (Swed.), (1779-1848).—*Chemistry.* Enjoys world-wide fame. **Adam Gottlob Oehlenschlaeger** (Dan.), (1779-1850).—*Poems, Tragedies*—Very prolific and brilliant writer. Material chiefly from Scandinavia. Wholesomely human. His *Helge* was model for Tegnér's *Frithiofs Saga*.	**Ugo Foscolo** (It.), (1778-1827).—*Poems, Dramas*—Serious, often melancholy.	
Friedrich von Raumer (1781-1873).—*Historian*—A voluminous writer.			

TABLE VII. NINETEENTH

English	American	French
	John C. Calhoun (1782-1850).—*Speeches, Papers*, etc.—Forceful in logical thinking and clear exposition. **Daniel Webster** (1782-1852).—*Orations*—Elevated in thought and eloquent. **Thomas Hart Benton** (1782-1858).—*Thirty Years' View*—Rich and racy observations of wide experience.	
Leigh Hunt (1784-1859).—*Essays, Sketches, Memoirs, Poems*—A minor poet. A *littérateur* of appreciation rather than of creative power. **Thomas De Quincey** (1785-1859).—*Confessions of an Opium Eater*, etc.—Passages of magnificent color. A learned man, lacking in sound realistic judgment.	**Washington Irving** (1783-1859).—*Knickerbocker's History of New York, Sketch Book*, etc.—Humorous, with delicate sentiment and grace.	**Henri Beyle** (Stendhal), (1783-1842).—*Novels*—His novels *Le Rouge et le Noir* and *La Chartreuse de Parme* bring into literature an analysis of one's self more true than the self-presentation of the Romantic school in general.
Lord Byron (1788-1824).—*Poems*—Vigorous, eloquent, sardonic, iconoclastic. A great satirist and in many respects a great poet.	**Richard Henry Dana** (1787-1879).—*Poems: The Buccaneer*, etc.—Overambitious and not wholly successful. **Alexander Campbell** (1788-1866).—*Religious Debates, Editorials, Sermons*, etc.—Incisive in thought, tolerant in spirit, vigorous.	**François Guizot** (1787-1874).—*Histories*—His remarkable historical works have founded the school of philosophical history.
	James Fenimore Cooper (1789-1851).—*Leather Stocking Tales, The Spy*, etc.—Romantic and overfortunate in coincidence, but readable. **Jared Sparks** (1789-1866).—*American Biographies*—Commendable efforts of a pioneer biographer. **Fitz Greene Halleck** (1790-1867).—*Poems, Marco Bozzaris*, etc.—Spirited but overwrought; sometimes graceful. **Augustus B. Longstreet** (1790-1870).—*Georgia Scenes*—Frankly humorous and delightfully fresh.	**Alphonse de Lamartine** (1790-1869).—*Poems, History of the Girondists*, etc.—The first, in date, of the great poets of the Romantic school. An idealist whose harmonious verses and high ideals have continued to grow in favor.
	George Ticknor (1791-1871).—*History of Spanish Literature*—Scholarly and authentic.	**Eugène Scribe** (1791-1861).—*Comedies*—The author of a large number of plays which show more dramatic skill than study of manners or character.
Percy B. Shelley (1792-1822).—*Queen Mab, Adonais, The Sky Lark*, etc.—A remarkable gift of lyrical melody. Full of generous impulse and the unbalanced judgment of youth. A genius. **Capt. Fred Marryat** (1792-1848).—*Peter Simple, Jacob Faithful*, etc.—Boys' stories, but evincing considerable narrative skill. **Felicia Hemans** (1793-1835).—*Lyrics*—A minor poet of grace, sweetness and tenderness.	**John Howard Payne** (1792-1852).—*Home Sweet Home*—Universal in appeal and satisfying in form.	**Victor Cousin** (1792-1867).—*Philosophy, Metaphysics*—The chief of a school of philosophers called the Eclectics.
	Samuel G. Goodrich (1793-1860).—*Peter Parley Books*—Popular introductions with a flavor of fiction.	**Casimir Delavigne** (1793-1843).—*Dramas, Elegies*—Author of popular elegies, but especially remembered as a dramatic writer.
George Grote (1794-1871).—*History of Greece*—A learned and sound historian, but superseded by modern exact research.	**William Cullen Bryant** (1794-1878).—*Addresses, Letters, Poems: Thanatopsis*, etc.—Dignified and poised, serious and helpful.	**Augustin Thierry** (1795-1856).—*History of France*, etc.—Historian of the Romantic school.
John Keats (1795-1821).—*Endymion, Hyperion*, etc.—A true poet, dying too young to reach full fruition of his remarkable artistic powers. **Thomas Arnold** (1795-1842).—*Roman History, Sermons, Essays*—A man of wide influence as headmaster of Rugby. An historian of the old school. **Thomas Carlyle** (1795-1881).—*French Revolution, Cromwell, Sartor Resartus, Essays*, etc.—A very great though one-sided man. A prose poet, an historian of insight and industry, impatient of shams.	**Joseph Rodman Drake** (1795-1820).—*The Culprit Fay*—Cleverly executed, but ingeniously fanciful. **James G. Percival** (1795-1856).—*Poems: Prometheus*, etc.—Unsustained, though not without positive merits. **John Pendleton Kennedy** (1795-1870).—*Swallow Barn, Horse Shoe Robinson*, etc.—Old-fashioned but interesting pictures of southern life. **William H. Prescott** (1796-1859).—*Conquest of Peru, Ferdinand and Isabella*, etc.—Excellent history, very interestingly told. **Thomas C. Haliburton** (1796-1865).—*Sam Slick*—Humorous with the raciness of the soil.	**François Auguste Marie Mignet** (1796-1884).—*Histories*—Like that of Guizot his history is founded upon a philosophical basis.
Samuel Lover (1797-1868).—*Songs, Ballads*—A writer of slap-dash Irish stories and some good songs.	**Hugh Swintose Legaré** (1797-1843).—*Addresses, Articles, Letters*—Academic, stilted and in good form.	**Louis Adolphe Thiers** (1797-1877).—*French Revolution, History of the Empire*, etc.—A great historian and statesman. His histories are realistic and scientific.

CENTURY—Continued

German	Scandinavian	Italian, Spanish	Historical Events
Achim von Arnim (1781-1831).—*Novels, Poems*—Like Brentano, a Heidelberg Romanticist, and assisted with the *Wonder Horn*. **Adelbert von Chamisso** (1781-1838).—*Peter Schlemihl, Poems*—A later Romantic lyrist, wrote ballads and *Peter Schlemihl*, the story of a man who sells his shadow, and finds his way through the world with seven league boots, a romantic treatment of the poet's own life.	**Finn Magnusson** (Ic.), (1781-1847).—*Mythology*—Thorough student of northern antiquities. **N. M. Petersen** (Dan.), (1781-1862).—*History, Mythology*—Wrote a work on Scandinavian mythology and a history of Danish literature. **Esaias Tegnér** (Swed.), (1782-1846).—*Speeches, Poems, Frithiofs Saga*—World-wide renown. Great persona ity and original poet. Brilliant figures, clear expression. Musical lyric verse. Influenced by German and Greek. Emphasizes Scandinavian mythology. **Erik Gustaf Geijer** (Swed.), (1783-1847).—*History, Philosophy, Poems*—Very great both as historian and poet. A scholar. His poetry appeals to the people. **Christopher Hansteen** (Nor.), (1784-1873).—*Astronomy*—Became widely known by his study of the earth's magnetism.		
Jacob Grimm (1785-1863).—*Fairy Tales, Dictionary*—With his brother W lhelm, founder of modern German philology, and compiler of the great German dictionary; known in literature for his large collection of *Fairy Tales*. **Ludwig Börne** (1786-1837).—*Letters from Paris*—A Jew from the Frankfort ghetto. Famous for his *Letters*, written as a protest against narrowing social limitations. **Wilhelm Grimm** (1786-1859).—*Critical Writings*—See Jacob Grimm mentioned above. **A. Justinus Kerner** (1786-1862).—*Lyrics, Soothsayer of Prevorst*—Famous lyric poet and Romantic mystic. His *Soothsayer* is a collection mysterious sayings and doings. **Ludwig Uhland** (1787-1862).—*Criticism, Ballads*—Poet of Romantic type, wrote ballads, historical plays, patriotic poems, and treatises on German legends. **J. von Eichendorff** (1788-1857).—*Lyrics, Life of a Good-for-Nothing*—The greatest lyric poet of the Romantic movement. Essentially a poet of nature, and the ideal of a free "Wanderleben" is the recurring theme. **Arthur Schopenhauer** (1788-1860).—*Philosophy*—The philosopher of pessimism. His *World as Will and Idea* left a deep impression. **Friedrich Rückert** (1788-1866).—*Sonnets in Armor, Poems*—Poet of the war of Liberation. His *Sonnets in Armor* resound with the clank of arms. Also a great interpreter of oriental life and poetry.	**Bjarne Thorenson** (Ic.), (1786-1841).—*Poems*—Unique poems of love and patriotism. Excellent poems on deceased fr ends. **Rasmus Rask** (Dan.), (1787-1832).—*Grammatica Works*—Great scholar in comparative philology. Was the first to publish the so-called Grimm's law. **B. S. Ingemann** (Dan.), (1789-1862).—*Novels, Lyrics, Hymns*—The Walter Scott of Denmark. Romantic idealization of middle ages. **Gustaf W. Gumaelius** (Swed.), (1789-1877).—*Historical Novels*—In spirit of Walter Scott. **J. C. Hauch** (Dan.), (1790-1872).—*Novels, Dramas, Lyrics*—A genuine Romanticist of deep moral earnestness. Not very popular. Best are his lyric poems.	**Alessandro Manzoni** (1785-1873).—*Novel, Dramas—The Betrothed*, the greatest Italian novel. **Silvio Pellico** (1789-1854).—Italian dramatist, poet, novelist.	1786. Swedish academy founded. 1789. Beginning of French Revolution.
Theodor Körner (1791-1813).—*Lyre and Sword*—The young hero-poet, who fell in Lützow's corps in the war of Liberation, immortalized his poetic gift in his *Lyre and Sword*, a collection of patriotic lyrics. **Franz Grillparzer** (1791-1872).—*Dramas, Lyrics*—The greatest Austrian dramatist. He has neither contemporaries not successors who can be compared to him for classic beauty and depth of human experience. His *Waves of the Sea and of Love* is a great modern love-tragedy. **Wilhelm Müller** (1794-1827).—*Lyrics*—Master of the popular lyric. Poet of the German people in a higher degree than any other Romantic singer. His *Songs of the Greeks* are full of sentimental patriotism for Greek independence.	**K. F. Dahlgren** (Swed.), (1791-1844).—*Novels, Short Stories, Poems*—At first allegorical and mystical. Later became leading humorist. **J. L. Heiberg** (Dan.), (1791-1860).—*Dramas, Poems*—Humorous. Son of P. A. Heiberg. Very popular. One of the best writers. Sharp critic. Musical comedies and other romantic plays. **Karl J. L. Almqvist** (Swed.), (1793-1866).—*Novels, Essays, Poems*—Unique, imaginative, mystical. Fine characterization. **H. N. Clausen** (Dan.), (1793-1877).—*Criticism*—A clear critic in the domain of theology. **Poul Möller** (Dan.), (1794-1838).—*Novels, Poems, Student Songs*—Spiritually sound and original in thought and expression. Influence on later realism. **M. C. Hansen** (Nor.), (1794-1842).—*Novels*—Romantic. His stories are bright, but not national.	**Gino Capponi** (1792-1876).—Italian historian.	1792. French republic declared.
August von Platen (1796-1835).—*Venetian Sonnets, Poems, Stories*—A romantic poet and master among the German sonnetists. His drama *The Fateful Fork* ridiculed the fate tragedy of the time. **K. L. Immermann** (1796-1840).—*Novels*—A late Romantic writer best known as the author of *The Epigons*, foreshadowing the tragedy of his own life, and *Munchhausen* distinguished for its description of Westphalian peasant life. **Heinrich Heine** (1797-1856).—*Lyrics, Short Stories*—The greatest lyric poet after Goethe, strongly imbued with Romanticism. Best known as the author of *The Journey to the Harz Mountains* (1826), and the *Book of Songs* (1827).	**Christian Winther** (Dan.), (1796-1876).—*Tales, Poems*—A master of style. Thoroughly and naturally Danish. Emphasizes nature of Denmark. **K. J. Böstrom** (Swed.), (1797-1866).—*Philosophy*—Created an independent philosophic system. **Henrik Hertz** (Dan.), (1797-1870).—*Dramas, Epics, Satires*—Founder of the new comedy in Denmark. Elegant and correct in style. Most original in his lyric poetry.	**Cecilia Bohl von Faber** (Fernan Caballero), (1797-1877).—Spanish *novels*.	1796. Washington issues his "Farewell Address."

TABLE VII. NINETEENTH

English

Robert Pollock (1798-1827).—*Course of Time*—A sound, serious, and heavy poet; suits Scotch theologians.

Thomas Hood (1798-1845).—*Poems*—A humorous poet of the first rank: some pathetic verses of high quality.

Thomas B. Macauley (1800-1859).—*Essays, History of England, Lays of Ancient Rome*—He makes history alive and readable. A partisan, but on the right side.

Harriet Martineau (1802-1876).—*Political Economy*, etc.—A woman of remarkably strong intellect. Her positions well argued but perhaps too radical.

Sir Edward Bulwer Lytton (1803-1873)—*Last Days of Pompeii, Last of the Barons*, etc.—A versatile and successful *littérateur* in several forms of the novel, but preëminent in none.

Benjamin Disraeli (1804-1881).—*Lothair, Vivian Grey*, etc.—Society novels eminently readable but thoroughly artificial.

James Martineau (1805-1900).—*Philosophy*—A philosophical thinker of insight and honesty.

Elizabeth Barrett Browning (1806-1861).—*Aurora Leigh, Poems*—A pleasing lyrical gift and warm, human sympathy made her a favorite poetess in the Victorian era.

John Stuart Mill (1806-1873).—*Political Economy*—Of thorough intellectual honesty and diamond-clear intellect, he furthered the cause of political justice and personal freedom.

Charles Darwin (1809-1882).—*Origin of Species, Descent of Man*—Lucid and attractive in style and an unflinching lover of truth, he has had a greater influence on thought than any man of his time.

Alfred Tennyson (1809-1892).—*In Memoriam, Idylls of the King, Poems*—The national poet of the late nineteenth century; a painstaking artist and master of verbal melody.

Elizabeth Gaskell (1810-1865).—*Cranford, Mary Barton*, etc.—A writer of charming feminine humor. One of the first to make the economic problems the basis of a story.

William M. Thackeray (1811-1863).—*Vanity Fair, The Newcomes, Henry Esmond*—Satirist and humorist, but with great powers of characterization, especially of the everyday social elements.

Charles Dickens (1812-1870).—*Novels: David Copperfield, Oliver Twist, Christmas Carol*, etc.—A broader humorist than Thackeray, appealing to the common human sympathies and the ordinary sense of the ridiculous.

Robert Browning (1812-1889).—*Dramatic Lyrics, Poems, The Ring and the Book*—A powerful poet, intent more on subtle analysis of character than lucidity. His interest lay "in the development of a soul."

American

Amos Bronson Alcott (1799-1888).—*Concord Days, Table Talks, Sonnets and Canzonets*—Suggestingly idealistic, but lacking in general interest.

George Bancroft (1800-1891).—*History of the United States*—Faithfully prepared and honestly presented.

Horace Bushnell (1802-1876).—*Nature and the Supernatural, Work and Play*—Serious, didactic efforts with spiritual purpose.

George D. Prentice (1802-1870).—*Editor Louisville* (Ky.) *Journal*—Witty, sarcastic, daring and effectiv .

Ralph Waldo Emerson (1803-1882)—*Conduct of Life, Representative Men, Essays, Poems*—The prophet of American culture. Coalesces oriental conceptions and occidental individualism.

Jacob Abbott (1803-1879)—*Rollo Books*—Popular favorites of unsophisticated youth.

Nathaniel Hawthorne (1804-1864).—*Twice Told Tales, Scarlet Letter, Marble Faun*, etc.—Marked by a subtle mastery and the touch of genius.

John S. C. Abbott (1805-1877)—*Biographies, Histories*, etc.—Ephemeral in interest or easily eclipsed.

Charles E. A. Gayarré (1805-1895).—*History of Louisiana, Fernando de Lemos*, etc.—Entertaining and scholarly bilingual productions.

Nathaniel P. Willis (1806-1867).—*Poems, Sketches, Editorials*, etc.—Skillfully elaborated but diminishing in fame.

William Gilmore Simms (1806-1870).—*Poems, Novels, Biography*, etc.—Versatile, original and artistic.

Henry W. Longfellow (1807-1882).—*Outre Mer, Hyperion, Poems, Hiawatha*, etc.—Popular in appeal and simple in form.

John G. Whittier (1807-1892).—*Editorials, Household Poems*—With Burns' love of nature and human nature.

Edgar Allan Poe (1809-1849).—*Tales, Poems: Raven, Annabel Lee*, etc.—Excellent in artistic "totality of effect."

Albert Pike (1809-1891).—*Hymns to the Gods, Poems*, etc.—Of recognized interest and merit.

Oliver Wendell Holmes (1809-1894).—*Autocrat of the Breakfast Table, Novels, Poems*—Clever, witty, versatile, and skillful.

Margaret Fuller Ossoli (1810-1850).—*Summer on the Lakes, Papers on Literature and Art*—Notable in transcendental aim and in merit of achievement.

Harriet Beecher Stowe (1811-1896).—*Uncle Tom's Cabin*, etc.—Far-reaching in its influence.

French

Auguste Comte (1798-1857).—*Positive Philosophy*—His course on positive philosophy is one of the important works of the nineteenth century.

Jules Michelet (1798-1874).—*History of France*—Has given a new conception of history. According to him it is a resurrection of the life of the people studied in its material and in its spiritual aspect. His style is admirably adapted to his conception of history.

Honoré de Balzac (1799-1850).—*Novels*—The author of the *Comédie Humaine*, a collection of novels which embraces the whole of society. Balzac is considered as the chief of the "realistic school," although there is great share of idealism in his novels, in which many of the heroes are mere symbols.

Alfred de Vigny (1799-1863).—*Cinq Mars*, etc.—One of the great poets of the Romantic school. His distinguishing features are an extreme delicacy and a subtle melancholy. His *Cinq Mars*, in which history is often arranged to suit his views, is recommended on account of its style.

Victor Hugo (1802-1885).—*Novels, Lyrics*—One of the world-poets. In the field of epic poetry he has no rival and as a lyricist but very few. His dramas are valued more as admirable lyric pieces than as plays

Alexandre Dumas (1803-1870).—*Novels, Dramas*—The author of a large number of popular novels based upon history and remarkable for their easy style and the excessive fertility with which they abound. His dramas have a place in the history of the French theater.

Prosper Mérimée (1803-1870).—*Stories, Novels*—His stories alone give him a place among the authors of the nineteenth century. They are little masterpieces.

Eugène Sue (1804-1857).—*Mysteries of Paris, Wandering Jew*, etc.—His popular novels, in which imagination plays the principal part, were enjoyed in his time.

C. A. de Sainte-Beuve (1804-1869).—*Criticisms*, etc.—Is the incomparable master of criticism.

George Sand (Mme. Dudevant), (1804-1876).—*Novels*—Her literary career can be divided into four periods She wrote romantic novels, then philosophical or socialistic novels, before reaching the rustic idyls in which she excelled.

Alexis de Tocqueville (1805-1859).—*Political Science, Histories*—The author of *Democracy in America*, in which the institutions and customs of America are keenly observed.

Alfred de Musset (1810-1857)—*Tales, Poems, Dramas*—Some of his poems—*Les Nuits, te Souvenir*, etc.—are among the most beautiful in French literature. They express the sufferings of love as they have never been expressed before or after. His comedies are an exquisite blending of dream and reality.

Henri Martin (1810-1883).—*History of France*—One of the best reference works we have.

Theophile Gautier (1811-1872).—*Criticism, Novels, Poems*—Poet and prose writer who regarded plastic beauty as the supreme aim of art. His constant preoccupation was to suppress all emotions which might interfere with the composition in his writings.

J. Sandeau (1811-1883).—*Novels*—A painstaking writer whose novels have enjoyed a certain popularity.

Victor Duruy (1811-1894).—*History*—His *History of Rome* is especially valuable. He was the originator of many reforms made in public instruction in France.

CENTURY—Continued

German	Scandinavian	Italian, Spanish, Russian	Historical Events
Wilhelm Häring (W. Alexis), (1798-1871).—*Patriotic Novels*—One of the first and the ablest of the German imitators of Walter Scott, wrote a series of patriotic novels treating of German history. **Hoffmann von Fallersleben** (1798-1874).—*Poems*—Philologist and poet, best known for his lyrics in the style of the ballad.		**Giacomo Leopardi** (It.), (1798-1837).—*Poems*—Permeated with "the infinite vanity of all things."	
		Alexander Pushkin (Russ.) (1799-1837).—*Poems, Stories, Novels, Dramas*—A great poet. Romantic at first. Later emphasized national feeling in Russian literature. Greatly influenced by Byron.	1799. Death of Washington.
C. D. Grabbe (1801-1836).—*Dramas*—Deeply pessimistic and romantically unbalanced, but often masterful in dramatic characterization. **Wilhelm Hauff** (1802-1827).—*Lichtenstein, Man in the Moon, Short Stories*—An eminent novelist, greatly influenced by Walter Scott. *Lichtenstein* is a story of Württemberg in the sixteenth century.	**Fredrika Bremer** (Swed.), (1801-1865).—*Novels*—Describes family life of middle classes realistically. Worked for emancipation of woman. Was popular in America and England.	**Manuel Breton de los Herreros** (Sp.), (1800-1873).—*Dramas*—Popular modern Spanish poet. Gives a good picture of Spanish social life.	1801. Discovery of first asteroid by Piozzi.
	R. Keyser (Nor.), (1803-1864).—*History*—Wrote a learned work on the Catholic church in Norway.		
Eduard Mörike (1804-1875).—*Lyrics, Stories*—The greatest lyric poet of Suabia. There is a peculiar charm in his delicacy of touch and his simplicity.	**Johan Ludvig Runeberg** (Swed.), (1804-1877).—*Poems, Dramas*—Born in Finland. Describes realistically Finnish home-life. Idyllic, epic, and lyric poetry. Fine characterization. Most popular are *Fänrik Ståls Sägner*, dealing with Finnish-Russian war of 1808-1809. **J. N. Madvig** (Dan.), (1804-1886).—*Latin Grammar*—Great linguist and Latin scholar.		1804. Napoleonic code adopted in France.
Heinrich Laube (1806-1884).—*Novels, Plays*—Witty, declamatory and sententious, but seldom a delicate poet. His chief works are novels or dramas of purpose in the spirit of radical Young Germany.	**Hans Christian Andersen** (Dan.), (1805-1875).—*Fairy Tales, Novels, Dramas, Poems*—Used language of the people and of childhood. Next to Bible, his *Fairy Tales* have been translated into the most foreign languages.		1805. Battle of Trafalgar.
	Jonas Hallgrimsson (Ic.), (1807-1845).—*Island Gunnarsholmi*—Popular patriotic songs. Excellent power over language. One of the best poets of modern Icelandic. **J. S. C. Welhaven** (Nor.), (1807-1873).—*Poems*—Polemic sonnets, lyric and descriptive. Opposed bitterly the hyper-patriotism of Wergeland. **H. A. Wergeland** (Nor.), (1808-1845), *Poems*—Poet, patriot, and hater of Denmark. Brilliant, original, and imaginative. **Fred. Paludan-Müller** (Dan.), (1809-1876).—*Poems, Mythological Plays*—Subjects from Greek mythology, Bible and from life. *Adam Homo* is his greatest work. Satire of life. A monumental work.		1807. Fulton's steamboat on the Hudson.
		Alexei Kolzow (Russ.), (1809-1842).—*Lyrics*—Deep feeling. The Russian Burns. **Nikolai Gogol** (Russ.), (1809-1852), *Plays, Tales, Novels*—The greatest of Russian humorists. Satirizes all classes of society.	1809. Battle of Wagram.
Fritz Reuter (1810-1874).—*Poems, Novels*—A Mecklenburg poet who wrote in his own dialect. A born story-teller, with broad realistic humor. **H. Ferdinand Freiligrath** (1810-1876).—*Poems, Translations*—Poet of the Revolution and friend of Longfellow. Some of his finest translations are from Robert Burns.	**P. A. Munch** (Nor.), (1810-1866).—*History*—His great history of Norway is in eight short volumes. Brilliant and industrious. Both Munch and Keyser were overpatriotic in believing Norway the hearth of Scandinavianism from the historic point of view.	**W. G. Belinsky** (Russ.), (1810-1848).—*Criticism*—In spite of the censorship of the press he exerted a powerful uplifting influence on society by his literary criticisms.	
Karl Gutzkow (1811-1878).—*Novels, Plays*—For a time the most influential writer in Germany. Combated the misuse of political and clerical power. *Uriel Acosta*, his best drama, is a strong plea for freedom of thought.	**A. Munch** (Nor.), (1811-1884).—*Lyric Poems*—His chief work is *Pigen fra Norge*, taken from Norwegian history. **August Blanche** (Swed),. (1811-1868).—*Comedy, Novels, Short Stories, Sketches*—Was very popular. Comedy deals with lower classes. Novels sensational. Stories and sketches realistic.		
Berthold Auerbach (1812-1882).—*Novels, Short Stories*—The poet of the Suabian Black Forest. His stories of village life, though not realistic, charm by their naive elements.	**P. C. Asbjörnsen** (Nor.), (1812-1885).—*Folk Tales*—The Grimm of Norway.	**Alexander Herzen** (Russ.). (1812-1870).—*Journalism*—Greatest journalist of his time. Devoted to pleas for liberal institutions.	1812. U. S. and English war.
Friederich Hebbel (1813-1863).—*Dramas*—The chief German dramatist of the century. A great innovator. His best works represent the clash of new epochs with those passing away.	**S. A. Kierkegaard** (Dan.), (1813-1855).—*Philosophy*—Denmark's greatest religious thinker. Strong imagination. Wrote a beautiful poetic prose.		

TABLE VII. NINETEENTH

English

Charles Reade (1814-1884).—*Peg Woffington, Cloister and Hearth*, etc.—A vigorous narrator, animated by hatred of injustice.
Anthony Trollope (1815-1882).—*Barchester Towers*, etc.—Admirably realistic presentation of English society, political and ecclesiastical.
George Rawlinson (1815-1902).—*Five Great Monarchies*—A learned Assyrian and Oriental scholar.
Charlotte Brontë (1816-1855).—*Jane Eyre, The Professor*, etc.—Great power in novels based on narrow experience.

James Anthony Froude (1818-1894).—*History of England*—A brilliant prose-writer, makes history human and interesting and suggestive.
George Eliot (1819-1880).—*Silas Marner, Spanish Gypsy, Poems*—The greatest woman novelist. A realist with insight. Powers of wit and characterization; construction not remarkable.
Charles Kingsley (1819-1875).—*Hypatia, Poems*—His novels, in spite of slight affectations and a taint of sentimentality, are vigorous and wholesome.
John Ruskin (1819-1900).—*Stones of Venice, Modern Painters*, etc.—A great stylist. As art critic, subjective and governed by the moral suggestiveness of the object. As economist, an idealist.

John Tyndall (1820-1893).—*Scientific Papers*—Unsurpassed, unless it be by Huxley, as a popularizer of Darwin's ideas.
Hebert Spencer (1820-1903) —*First Principles*, etc.—A deep thinker but ponderous in style. Applied principle of evolution to sociology, history, etc.

Matthew Arnold (1822-1888).—*Essays and Criticisms, Sohrab and Rustum, Poems*—Liberal in thought, but dominated by aristocratic prejudice on the literary side. As a poet inclined to despairing pessimism; weak in the power of verbal melody.

Edward A. Freeman (1823-1892).—*Histories*—A conscientious, honest, painstaking historian.
Thomas Hughes (1823-1896).—*Tom Brown at Oxford*, etc.—A manly, breezy person, who wrote one good book for boys.

Thomas Henry Huxley (1825-1895).—*Man's Place in Nature*, etc.—A master of exposition and, with Tyndall, very effective in presenting the idea of evolution.
R. D. Blackmore (1825-1900).—*Novels: Lorna Doone*, etc.—Infused an element of romance into the modern novel, *Lorna Doone*.
Dinah Maria Mulock (1826-1887).—*John Halifax*, etc., *Poems*—Author of some twenty novels of which *John Halifax* is the best. Also of pleasing minor verse.

Dante Gabriel Rossetti (1828-1882) —*Poems: The Blessed Damozel*, etc.—A highly imaginative poet, a master of color in verse and on canvas.

American

John Lothrop Motley (1814-1877).—*Dutch Republic. United Netherlands*—A rapid, easy style in presenting results of research.
Rufus W. Griswold (1815-1857).—*Christian Ballads, Poets and Poetry of America, Famous Poets*—Valuable critical studies marred by partisanry

John G. Saxe (1816-1887).—*The Money King, New Rape of the Lock*, etc.—Humorous and sprightly.
Samuel A. Allibone (1816-1889).—*Literature and Authors*, etc.—Laborious and valuable.
Henry D. Thoreau (1817-1862).—*Walden, Excursions*—Redolent of nature love, and cultured scholarship.
John Bigelow (1817-).—*Life of Benjamin Franklin*—Sympathetic and sage. Died 1911.

J. G. Holland (1819-1881).—*Timothy Titcomb's Letters, Kalvina*—Enjoyed a large popularity.
Edwin P. Whipple (1819-1886).—*Essays and Reviews, American Literature*—Of very distinct cultural value.
James Russell Lowell (1819-1891).—*Among My Books, My Study Windows, Bigelow Papers, Poems: Sir Launfal*, etc.—Keen, sparkling, scholarly, and artistic.
Walt Whitman (1819-1892).—*Poems: Leaves of Grass, My Captain*, etc.—Unique in claim and form.
Julia Ward Howe (1819-1910).—*Social and Philosophical Papers, Battle Hymn of the Republic*—Representative of the spirit of the times.
Margaret J. Preston (1820-1897).—*Beechenbrook, Cartoons, Colonial Ballads*—Cultured and of human interest.

Richard Grant White (1821-1885).—*Words and Their Uses, Everyday English*—Scholarly and suggestive.

Thomas Buchanan Read (1822-1872).—*Poems, Drifting, Sheridan's Ride*, etc.—Commendable, especially in form.
James Parton (1822-1891).—*Biographies*—Serviceable, but not satisfying.
Edward Everett Hale (1822-1909).—*The Man Without a Country, His Level Best*—Vigorous and pointed, but provincial.
Donald G. Mitchell (1822-1909).—*Dream Life, Reveries of a Bachelor*—Attractive in meditation and grace.
George H. Boker (1823-1890).—*Plays, Poems of the War*—Inadequately appreciated.
Francis Parkman (1823-1893).—*Oregon Trail, Montcalm and Wolfe*, etc.—Romantic, picturesque and of real interest.

George W. Curtis (1824-1892).—*Potiphar Papers, Prue and I*, etc.—Widely popular and effective.
Bayard Taylor (1825-1878).—*Northern Travel, Greece and Russia, Poems of the Orient, Translation of Faust*—Too good at many things to be best at any.

Stephen Collins Foster (1826-1864).—*Old Folks at Home, Old Uncle Ned*, etc.—Popular in vein and melody.

Lew Wallace (1827-1905).—*The Fair God, Prince of India, Ben Hur*—Uneven, but at times highly successful

French

Eugene Labiche (1815-1888).—*Comedies*—A master in the art of writing many light comedies or vaudevilles.

Leconte de Lisle (1818-1894).—*Poems*—One of the greatest poets of the second half of the nineteenth century. He was the head of the group of poets called the Parnassians who sought above all technical perfection in poetry. He is a pessimist and in all his poems we see an aspiration toward death as the final rest.

Emile Augier (1820-1889).—*Dramas*—One of the masters of the modern French drama. Less aggressive than his contemporary Dumas the Son, his influence in some respects was greater
Gustav Flaubert (1821-1880).—*Novels*—Wrote the most perfect novel of the century, *Madame Bovary*. On the other side his *Salammbo* is purely romantic.
Octave Feuillet (1821-1890).—*Novels, Dramas*—All his novels describe society.

Henri Murger (1822-1861).—*Novels*—His *Scenes of Bohemian Life*, in which he depicts the bohemian life of a certain class of students, is still enjoyed.
Edmond de Goncourt (1822-1896).—*Novels*—He and his brother Jules de Goncourt claim to be the first to paint true life. They are the apostles of "modernism."
Emile Erckmann (1822-1899).—*Novels*—With Alexandre Chatrian he wrote a large number of novels in which are painted in a free and simple style the customs and thoughts of the Alsatians especially during the wars of the first empire.
J. Ernest Renan (1823-1892).—*Life of Jesus*, etc.—Critic and historian but above all a marvelous artist, he greatly influenced the thought of his day. With Taine, but in a different way, he contributed to the triumph of positivism.

Alexandre Dumas the Son (1824-1895.)—*Novels, Dramas*—Marvelously clear and concise style. Dramas full of wit but lack in kindliness.

Alexandre Chatrian (1826-1890).—*Novels*—See Erckmann (1822-1896).

Francisque Sarcey (1827-1899).—*Criticism*—A recognized authority on the drama, his criticism bears especially on the theater.
H. A. Taine (1828-1893).—*History of Literature*, etc.—*Origins of Contemporary France*, his most powerful work, shows his genius as a critic and as historian. He belongs to the same school as Renan but he is more aggressive.

CENTURY—Continued

German	Scandinavian	Russian, Spanish, Hungarian	Historical Events
Otto Ludwig (1813-1865).—*Dramas, Shakespeare Studies, Novels*—Master of detail-painting in his novels. His novel *Between Heaven and Earth* has become a classic. His dramatic work suffered under critical acuteness. **Richard Wagner** (1813-1883).—*Operas*—Creator of the music-drama. Insisted that German drama must be national and so drew for themes on older Germanic myths.	**J. Moe** (Nor.), (1813-1880).—*Poems*—Lyrics. Assisted Asbjörnsen in collecting the popular tales of Norway.	**Iwan Gontscharoff** (Russ.), (1813-1891).—*Novels*—At first romantic then realistic. His great work *Oblomoff* represents strongly that inertia which renders the hero incapable of action.	
Emanuel Geibel (1815-1884).—*Poems, Voices of the Time*—Successful writer of popular songs. *Voices of the Time* treats political events in a conciliatory tone.		**Michail Lermontow** (Russ.), (1814-1841).—*Poems, Novels*—Powerful prose. Strongly attacked the government and the prevailing tone in society.	1814. Stephenson's locomotive. 1815. Battle of New Orleans.
Gustav Freytag (1816-1895).—*Novels, Dramas*—His *Ancestors* is a cycle of the greatest modern German novels, awaking the national consciousness of the German people.		**José de Espronceda** (Sp.), (1816-1842).—*Lyric Poetry*—Imbued with the manner and spirit of Byron.	1815. Napoleon defeated at Waterloo.
Theodor Storm (1817-1888).—*Lyrics, Novels*—Masterful writer of the novel of reminiscence. The lyric note is prominent in his prose.		**Alexis Tolstoi** (Russ.), (1817-1875).—*Dramas*—Excellent historical dramatist. Fine artistic sense.	
	J. C. Hostrup (Dan.), (1818-1892).—*Comedies, Popular Songs*—A great favorite. Adapts language to characters. Vivid picture of student life and life of middle classes.	**Iwan Turgenieff** (Russ.), (1818-1883).—*Stories, Novels*—Great prose-artist. Melancholy pessimism. Faithful reflection of the inner development of Russian society.	
Gottfried Keller (1819-1890).—*Novels, Short Stories*—Master of the "novelle," or short story. Strong independence of spirit reflected in this Swiss poet.	**Meir Goldschmidt** (Dan.), (1819-1887).—*Journalism, Novels, Short Stories*—Good stylist. Felt keenly his Jewish origin, but was not ashamed of it.		
Salomon Mosenthal (1821-1877).—*Novels*—Chiefly historical, including *Leah the Forsaken, The Queen of Sheba*, etc.		**Feodor Dostoveysky** (Russ.), (1821-1881).—*Novels*—Great power of psychological analysis. Even claimed by Russian criminologists as their colleague. **Nikolai Nekrassoff** (Russ.), (1821-1888).—*Lyrics*—Depth of feeling. Rare impassioned lyric power.	1821. Greek war of independence against Turkey.
		Alex. Petőfi (Hung.), (1823-1849).—*Lyrics, Translations*—One of the greatest lyric poets of the nineteenth century. Truth and naturalness. Full of the passion, melancholy, and humor of the Hungarian.	1824. National gallery in London opened.
Conrad Ferdinand Meyer (1825-1898).—*Short Stories, Novels*—Countryman of Keller, and one of the best story writers of the century. Particularly happy in giving true historical coloring to his novels.			
J. V. von Scheffel (1826-1886).—A late successor of Walter Scott. *Ekkehard*, one of the greatest German historical novels. *The Trumpeter of Säkkingen*, an epic in the Romantic spirit.		**Michail Saltykow** (Russ.), (1826-1889).—*Satiric Tales*—Written with his heart's blood. Keen wit, original in invention. **Juan Valera** (Sp.), (1827-).—*Novels*—Combines elegance of language with depth of thought.	
	Victor Rydberg (Swed.), (1828-1895).—*Philosophy, History, Mythology, Novels, Poems*—Great scholar, poet, and philosopher. Extreme purist in language.		

TABLE VII. NINETEENTH

English

George Meredith (1828-1909).—*The Egoist, Diana of the Crossways*, etc.—Novels of extraordinary power. Style epigrammatic and not attractive.

Samuel R. Gardiner (1829-1902).—*Histories*—A happy combination of attractive narrative and scholarly thoroughness.

Jean Ingelow (1820-1897).—*Poems*—A charming lyrical talent, of limited productive power.

Justin McCarthy (1830-) —*History of Our Own Times, Novels*—A prolific journalist, novelist, and historian of modern times Died 1912.

Edward Lord Lytton, (Owen Meredith), (1831-1891).—*Biography of Bulwer Lytton, Lucile*, etc.—Fluent writer of light verse and society verse.

Edwin Arnold (1832-1904).—*Light of Asia, Poems*—An able journalist and prolific minor poet.

William Morris (1834-1896).—*Essays on Art*, etc., *Poems, Earthly Paradise*—Prolific as a narrative poet, fond of classic and mediæval legends.

George du Maurier (1834-1896).—*Peter Ibbetson, Trilby*—Artist and poet. *Peter Ibbetson* is a fanciful romance of dream life. *Trilby*, scene in Latin quarter of Paris, a masterful study of character.

John Richard Green (1837-1883).—*History of the English People*—Industrious and conscientious. His work more than a record of war and politics. Clear and simple style.

Algernon Chas. Swinburne (1837-1909).—*Poems*—A poet of remarkable musical power, master of headlong but involved prose, a critic of enthusiasm and eloquence.

John Morley (1838-).—*Criticisms, English Men of Letters*, (Ed.).—A sound literary historian and critic and a thinker of force and scope. Died 1923.

Walter H. Pater (1839-1894).—*Marius the Epicurean*, etc.—A wonderfully finished prose style, which sometimes diverts attention from the justness and beauty of the thought.

Henry Austin Dobson (1840-1921).—*Vignettes in Rhyme, Proverbs in Porcelain*—The English Horace. An authority on eighteenth century social and literary life. Charming light verses.

Thomas Hardy (1840-).—*Novels: Tess of d'Urbervilles*, etc.—Novels depicting country life. A writer of broad humanity. His books possess at once wit, realism, and an idyllic quality. Died 1928.

William Black (1841-1898).—*Novels: In Silk Attire*, etc.—His stories have considerable charm but not much force. Gaelic Scotland depicted pleasantly but unconvincingly.

Robert W. Buchanan (1841-1901).—*Alone in London, Poems*—A minor poet and dramatist of considerable output Known for his attack on Rossetti in *The Fleshly School of Poetry*.

American

Henry Timrod (1829-1867).—*Poems*—Admirable in poetic instinct and manner

Chas. Dudley Warner (1829-1900).—*My Summer in a Garden, Little Journey*, etc.—Catholic in interests and attainments

John Esten Cooke (1830-1886).—*Novels: Survey of Eagle's Nest*, etc. *Lives of Lee and Jackson*—Prime favorites with romantic youth.

Paul Hamilton Hayne (1831-1886).—*Sonnets, Legends, Lyrics*—In sonnets excellent, in other poems too prolific.

Louise May Alcott (1832-1888).—*Little Women, Little Men*—Influential in their popular appeal.

Edmund C. Stedman (1833-1908).—*Victorian Poets, Poets of America, Alice of Monmouth, Panic in Wall Street*—Showing creative power and critical ability.

Chas. Farrar Browne (Artemus Ward) (1834-1867).—*Artemus Ward, His Book*, etc.—Humorous in exaggeration and perversion.

Frank R. Stockton (1834-1902).—*Rudder Grange, The Lady or the Tiger*—Ingenious in plot, straightforward in style.

Moses Coit Tyler (1835-1900).—*History of American Literature*—Accurate and exhaustive.

Samuel L. Clemens (1835-1910).—*Innocents Abroad, Huckleberry Finn*, etc.—Thoroughly representative of American humor.

Thomas Bailey Aldrich (1836-1907).—*Novels: Marjorie Daw*, etc.—Cultivated and of literary talent.

William Dean Howells (1837-1921).—*Venetian Life, Rise of Silas Lapham*, etc.—Realistic and entertainingly descriptive.

John Burroughs (1837-1921).—*Wake Robin, Winter Sunshine*—Strongly uttering the charms of nature.

Mary Mapes Dodge (1838-1905).—*Hans Brinker*—In high favor with children.

Albion W. Tourgée (1838-1905), *A Fool's Errand, Bricks Without Straw*—Valuable for the point of view.

Thomas R. Lounsbury (1838-).—*Life of Cooper, Studies in Chaucer*, etc.—Of recognized scholarship and ability. Died 1915.

Francis Bret Harte (1839-1902).—*Luck of Roaring Camp, Gabriel Conroy, Poems*—Of international fame. Faithful and skillful character portrayal.

Joaquin Miller (1841-1913).—*The Danites in the Sierras, Songs of the Sierras*—With the sweep and breadth of the prairies.

Sidney Lanier (1842-1881).—*The Boy's Froissart, Tiger-Lilies, Poems*—Artistic to a high degree

John Fiske (1842-1901).—*Myths and Myth-Makers, Histories*—Scholarly and fair-minded.

Henry James (1843-1916).—*Daisy Miller, Portrait of a Lady*, etc.—Of characteristic conception and style.

George W. Cable (1844-) —*Old Creole Days*, etc.—Successful in achievement of purpose.

Elizabeth S. Phelps Ward (1844-1911) *Gates Ajar*, etc. Widely read for religious sentiment.

French

Jules Verne (1828-1905).—*Twenty Thousand Leagues Under the Sea, Around the World in Eighty Days*, etc.—His novels have done much to popularize several branches of science. Interesting and instructive, they have been widely read all over the civilized world by both young and old.

Jules de Goncourt (1830-1870).—*Novels*—See Edmond de Goncourt (1822-1896).

Victorien Sardou (1831-1908).—*Dramas*—Although the theater of Sardou is generally superficial this author has a remarkable talent for showing exterior life and many of his vaudevilles, comedies and historical dramas met with pronounced success.

Henri Meilhac (1832-1897), **Ludovic Halévy** (1834-1908).—*Comedies*—Wrote together a number of very successful light comedies. They created the "operetta."

Edouard Pailleron (1834-1899).—*Comedies*—His light comedies are full of graceful and delicate touches. In the *Monde ou l'on s'Ennuie* his tone is considerably raised.

Henri Becque (1837-1899).—*Dramas*—With the "Corbeaux" (Crows) a new school of drama was inaugurated: The naturalistic play. In spite of his exaggerations dramatic art owes a great deal to Becque.

Sully-Prudhomme (1839-1907).—*Poems*—One of the greatest poets of the nineteenth century. From the "Parnassians" he took their respect for form. He was not only an artist but a thinker and a moralist. In him positivism and idealism are perfectly blended.

Gaston Paris (1839-1903.)—*Philology*—Greatest literary critic of France since Sainte-Beuve, especially on early French literature.

Alphonse Daudet (1840-1897).—*Novels*—In most of his works Daudet is a painter of rare ability of manners and customs; in two or three he shows a very keen psychological insight. He is one of the great prose writers of the century.

Emile Zola (1840-1902).—*Novels*—Called the head of the naturalistic school because he defined the theories of the school. His twenty volumes of the Rougon-Macquart series are a grand epopee of "human animality." In his later works materialism becomes idealism and his intense pessimism an exaggerated optimism. He is in literature a great painter of immense crowds.

Albert Sorel (1842-1906).—*Histories*—A brilliant writer. His history of *Europe and the French Revolution* is much esteemed.

Ernest Lavisse (1842-).—*Histories*—Is a moralist as well as an historian. He draws from the history of the past examples and lessons.

François Coppée (1842-1908).—*Poems, Dramas*—The poet of the humble, as he called himself, has excelled in pictures of real life and the study of interiors. Wrote also a number of plays which deserve praise

José de Hérédia (1842-).—*Poems*—The most impersonal and impassive of the Parnassian poets. His poems are on a small scale but perfect in form. Died 1905.

Paul Verlaine (1844-1896).—*Poems*—A unique poet. Without discipline or method he produced among a large number of imperfect and meaningless poems a few masterpieces which have made of him the imitator of a certain kind of modern poetry.

Anatole France (1844-).—*Novels*—His novels are really "frames in which he puts the adventures of his soul." In *Sylvestre Barnard* and other works we find the author himself and his philosophy, which derives from Montaigne and Renan. His style is inimitable and by many he is considered the greatest writer of our times. Died 1924.

CENTURY—Continued

German	Scandinavian	Italian, Spanish, Russian	Historical Events
	Henrik Ibsen (Nor.), (1828-1906).—*Dramas, Poems*—Most masterful dramatic genius of the nineteenth century. Sharp satire, terse and vivid dialogue. Attacked conventional hypocrisy.	**Leo Tolstoi** (Russ.), (1828-1910).—*Novels, Essays, Criticisms*—Strong individualism paired with the doctrine of non-resistance. Powerful appeal to simple life of the people as a standard of civilization.	
Friederich Spielhagen (1829-).—*Novels*—The novelist of German social conditions. *Problematic Characters* and *In Rank and File* are two novels attempting to reconcile the clash of the classes. Died 1911.			
Paul Heyse (1830-).—*Novels, Short Stories, Poems*—Long the central figure of the Munich school of poets.			
Marie von Ebner-Eschenbach (1830-).—*Tales, Novelettes*—The most venerable among the women writers of Germany Died 1916.			
			1831. Death of Mrs. Siddons.
	B. Björnson (Nor.), (1832-1910).—*Novels, Dramas, Poems*—Very popular. Forceful, deeply in earnest. Author of Norway's favorite national song. Active in public questions.		1832. Cholera in Europe and America.
Felix Dahn (1834-).—*History, Novels*—Noted historian and historical novelist, famous as author of *A Struggle for Rome*, dealing with the conflict between the Goths and Romans. Died 1912.	**Jonas Lie** (Nor.), (1833-1908).—*Stories, Dramas*—Sketches of nature and popular life in the north of Norway.	**José Eschegaray** (Sp.), (1833-).—*Dramas*—Most prominent representative of the modern Spanish dramatists. Romantic in tone.	
	Mathias Jochumsson (Ic.), (1835-).—*Poems, Dramas*—Lyric and tragic. Translator of Shakespeare, Byron.		1835. Morse's model electrical telegraph.
		Giosué Carducci (It.), (1836-1907).—*Poems*—Progressive, liberty-loving lyrics.	
Georg Ebers (1837-1898).—*Egyptology, Novels*—An Egyptologist. Wrote novels dealing with Egyptian life.			
Ludwig Anzengruber (1839-1889).—*Dramas, Prose Tales, Poems*—Highly endowed Austrian dramatist. A pioneer of realism.			1839. Daguerre's perfected photographic process.
		Giovanni Verga (It.), (1840), —*Novels*—Tales of Sicilian peasantry. Died 1922.	
	Karl Snollsky (Swed.), (1841-1903).—*Poems*—Clear elegant form.		1844. Electrical telegraph between Baltimore and Washington.
Karl Robert Eduard Hartmann (1842-1906).—*Philosophy, criticism.*	**Georg Brandes** (Dan.), (1842-).—*Literary Essays*—A piercing literary critic. Splendid use of language. Has had a hard career. Died 1927.		
Friedrich Nietzsche (1844-1900).—*Philosophy, Criticisms*—Prophet of individualism. His greatest work, *Thus Spake Zarathustra*, left an indelible impression on the literature of his time.			
Detlev von Liliencron (1844-1910).—*Epics, Poems*—The chief lyric poet of the epoch.			

TABLE VIII. LATE NINETEENTH CENTURY AND EARLY TWENTIETH CENTURY

English	American	French	German, Scandinavian	Russian, Czechoslovak, Polish, Italian, Spanish	Historical Events
Robert Louis Stevenson (1850-1894). *Poems, Essays, Stories*—A great stylist.	**Arthur S. Hardy** (1847-1930). *Novels.*	**Anatole France** (pseud. of Jacques Anatole Thibault), (1844–1924). *Novels*—A master of satire and form.	**Ernst von Wildenbruch** (German), (1845–1909). *Dramas, Short Stories, Poems*—A great historical dramatist.	**Antonio Fogazzaro** (It.), (1842–1911). *Poetry, Novels.*	1848. Napoleon declared President in France.
William Drummond (Canadian), (1854-1907). *Poems* of the French habitant.	**Joel Chandler Harris** (1848–1908). Southern Negro and animal tales.	**Frédèric Masson** (1847–1923). *Histories*—His best known work is on Napoleon.	**Holger Drachman** (Dan.), (1846–1908). *Novels, Lyrics, Dramas.*	**Benito Pérez Galdós** (Sp.), (1845–1920). *Novels, Dramas*—Depicts political and religious life.	
George Bernard Shaw (1856-). *Essays, Plays.*	**James Lane Allen** (1849–1925). *Novels.*	**Ferdinand Brunetière** (1849–1906). *Criticism.*	**August Strindberg** (Swed.), (1849–1912). *Novels, Dramas, Lyrics.*		1852. Napoleon declared Emperor.
Joseph Conrad (1857-1924). Of Polish birth. A novelist whose sea stories take first rank.	**Eugene Field** (1850–1895). *Poems* of childhood—*With Trumpet and Drum.*	**Jean Richepin** (1849–1926). *Dramas.*	**Ellen Key** (Swed.), (1849–1926). Sociological writings.	**Henryk Sienkiewicz** (Polish), (1846–1916). *Novels*—Historical.	
A. Conan Doyle (1859-1930). *Novels, Adventures of Sherlock Holmes.*	**Henry Van Dyke** (1852–). *Essays, Poems.* Died 1933.	**Pierre Loti** (pseud. of Louis M. J. Viaud), (1850–1923). *Novels, Travels.*	**Hermann Sudermann** (German), (1857–1929). *Plays, Novels*—His greatest novel was *Dame Care.*	**Edmondo d'Amicis** (It.), (1846–1908). *Novels—Cuore* is best known.	1853-56. Crimean War.
Charles W. Gordon (Ralph Connor, pseud.), (1860–). A Canadian writer of life in western Canada.	**James Whitcomb Riley** (1853–1916). *Poems of Childhood.*	**Paul Bourget** (1852–). *Novels*—A keen analyst.	**Henrik Pontoppidan** (Dan.), (1857–). *Novels*—Great writer of ironic prose.	**Giuseppe Giacosa** (It.), (1847–1906). *Novels.*	1861-65. Civil War in the United States.
Sir James M. Barrie (1860–). *Novels, Plays—Little Minister.*	**Thomas Nelson Page** (1853–1922). *Novels—In Ole Virginia.*	**Jules Lemâitre** (1853–1914). *Dramas, Criticism.*	**Karl Gjellerup** (Dan.), (1857–1919). *Novels.*	**A. Palacio Valdés** (Sp.), (1853–). *Novels.*	1869 Transcontinental railroad completed in United States.
Sir Rabindranath Tagore (In.), (1861–). *Poems, Essays, Stories.*	**Francis Marion Crawford** (1854–1909). *Novels*—Best known for his *Saracinesca* series.	**Paul Hervieu** (1857–1915). *Dramas.*	**Selma Lagerlöf** (Swed.), (1858–). *Novels, Short Stories* of great charm.	**Wessewolod Garschin** (Russ.), (1855–1888). *Novels.*	
Bliss Carman (Canadian), (1861–1921). *Poetry.*	**Gertrude Atherton** (1857–). *Novels*—Many of them historical.	**Eugene Brieux** (1858–). *Dramas*—Depicts and attacks bad in life of his day. Died 1932.	**Verner von Heidenstam** (Swed.), (1859–). *Novels, Poems.*		1871. France a republic.
Emily Pauline Johnson (Canadian), (1862–1913). *Poetry.*	**Agnes Repplier** (1858–). *Essays.*	**Henri Bergson** (1859–). *Philosophy, Essays.*	**Knut Hamsun** (Nor.), (1860–). *Novels*—Depicts life of the laborer.	**Matilde Serao** (Sp.), (1856–1927). *Novels*—Popular in style.	
Sir Horatio Gilbert Parker (Canadian), (1862–1919). *Historical novels.*	**Margaretta W. Deland** (1858–1919). *Novels*—New England life.	**René Doumic** (1860–). *Criticism* — History of French literature.	**Gustaf Fröding** (Swed.), (1860–). *Lyrics.*		1876. Centennial Exposition, Philadelphia.
Israel Zangwill (1864-1926). *Novels, Dramas, Essays*—Depicts Jewish life.	**Hamlin Garland** (1860–). *Novels*—His *Middle Border* series is most popular.	**Maurice Maeterlinck** (Belgian), (1862–). *Plays*—Many mystical plays, *The Blue Bird* being one of the most popular.	**Gerhart Hauptmann** (German), (1862–). *Dramas—The Sunken Bell.*	**Anton Chékov** (Russ.), (1860–1904). *Dramas. Short Stories.*	
William Butler Yeats (Irish), (1865–). *Poetry, Dramas.* Irish settings.	**William S. Porter** (O. Henry), (1862–1910). Master of the short story with surprise ending—*The Four Million.*	**Marcel Prévost** (1862–). *Novels.*	**Arthur Schnitzler** (German), (1862–). *Plays.* Died 1931.	**G. d'Annunzio** (It.), (1863–). *Novels, Plays, Poetry.*	1881. American Federation of Labor organized.
Rudyard Kipling (1865–). *Stories, Novels, Poems.* Best known for tales of the English in India—*Soldiers Three; Jungle Book.* Died 1936.	**Edith Wharton** (1862–). *Novels—House of Mirth.*	**Maurice Barrès** (1862–1923). *Novels.*			
Herbert G. Wells (1866–). *Novels, History.*	**John Fox, Jr.** (1863–1919). *Novels,* largely of the southern mountains.				
Arnold Bennett (1867–). *Novels.* Died 1931.	**Clyde Fitch** (1865–1907). *Society Plays.*				
John Galsworthy (1867–). *Novels.* Died 1933.	**William Vaughan Moody** (1869–1910). *Poems, Dramas—Great Divide.*				
	Edwin Arlington Robinson (1869–). *Poetry.* Died 1935.				

TABLE VIII. LATE NINETEENTH CENTURY AND EARLY TWENTIETH CENTURY—(Continued)

English	American	French	German, Scandinavian	Russian, Czechoslovak, Polish, Italian, Spanish	Historical Events
George Russell (AE, pseud.), (Irish) (1867–). *Poetry.*	**Booth Tarkington** (1869–). *Novels, Plays*—Depicts modern American youth.	**Romain Rolland** (1866–). *Novels—Jean Christophe.*	**Oskar Levertin** (Swed.), (1862–1906). *Short Stories, Essays, Poems*—A great literary critic.	**Jacinto Benavente** (Sp.), (1866–). *Dramas.*	1887. Queen Victoria's Jubilee.
Stephen Phillips (1868–1915). *Poems.* Tragedies in blank verse.	**Theodore Dreiser** (1871–). *Novels.*				
Stephen Leacock (Canadian), 1869–). *Humor, Short Stories.*	**Amy Lowell** (1874–1925). *Poems*—The modernist of her day.	**Edmond Rostand** (1868–1918). *Dramas*—His *Cyrano de Bergerac* began a revival of romantic drama.	**Frank Wedekind** (German), (1864–1918). *Novels, Plays.*	**Vicente Blasco Ibañez** (Sp.), (1867–1928). *Novels—Four Horsemen of the Apocalypse.*	1893. World's Columbian Exposition, Chicago.
John Millington Synge (Irish), (1871-1909). *Plays* of Irish life.	**Josephine Preston Peabody Marks** (1874–1922). *Poems, Plays—The Piper.*		**Per Hallström** (Swed.), (1866–). *Novels, Lyrics, Dramas.*		
Norman Duncan (Canadian), (1871–1916). Tales of Labrador life.	**Robert Frost** (1875–). *Poems*—Depicts country life.	**Paul Valéry** (1871–). *Novels, Poetry.*	**Martin Andersen Nexö** (Dan.), (1869–). *Novels.*		1898. Spanish-American War.
Gilbert K. Chesterton (1874–). *Essays, Criticism, Satire.*	**Willa Sibert Cather** (1876–). *Novels.*—Life in the Middle West in early days.	**Henri Bernstein** (1876–). *Dramas.*	**Johan Bojer** (Nor.), (1872–) *Novels* — Depicts man's struggle for life.	**Maxim Gorki** (Russ.), (1868–). *Novels* — Depicts labor's struggles.	
John Masefield (1875–). *Poems, Plays.*	**Jack London** (1876–1916). *Stories*—Adventure on land and sea.				1903. First successful airplane flight.
Robert W. Service (1874–). (Canadian) *Poems*—Yukon life.	**Nicholas Vachel Lindsay** (1879–). *Poems.* Died 1931.	**André Maurois** (pseud. of Emile Herzog), (1885–). *Novels, Biography.*	**Thomas Mann** (1875–). (German) *Novels* — Best known is *Buddenbrooks.*	**Leonid N. Andreev** (Russ.), (1871–1919). *Short Stories, Plays.*	
Lord Edward J. M. D. P. Dunsany (Irish), (1878–). *Dramas*—Irish life and legend.	**James Branch Cabell** (1879–). *Novels—Jurgen.*		**Emil Ludwig** (1881–). (German) *Biographies.*		1914. World War began.
Alfred Noyes (1880–). *Poems.*	**Sinclair Lewis** (1885–). *Novels*—Depicts American small town life, *Main Street* being his best known story.	**François Mauriac** (1885–). *Poetry*—Harsh realism.	**Sigrid Undset** (Nor.), (1882–). *Novels.*	**Grazia Deledda** (It.), (1872–). *Novels.*	
John Drinkwater (1882–) *Plays, Abraham Lincoln.* Died 1937.	**Joyce Kilmer** (1886–1918). *Poems.*	**Jules Romains** (pseud. of Louis Farigoule), (1885–). *Novels, Poems, Plays.*			1918. World War ended.
David H. Lawrence (1885–1930). *Novels, Plays.*	**Eugene G. O'Neill** (1888–). *Dramas*—Depicts the sordid side of life. *Anna Christie.*		**Franz Werfel** (1890–). (German) *Novels, Plays—The Goat Song.*		1930. The London Naval Arms Conference.
Robert J. C. Stead (Canadian), (1888–). *Novels*—Depicts settlement of western Canada.	**Edna St. Vincent Millay** (1892–). *Poems.* **Hervey Allen** (1889–). *Anthony Adverse.*	**Paul Morand** (1888–). *Novels, Poems*—Impressionistic in style.	**Erich Maria Remarque** (1898–). (German)—*Novels—All Quiet on the Western Front.*	**Karel M. Capek** (Czechoslovak), (1890–1927). *Plays*—Modernistic, *R.U.R.* best known.	1933. Japan resigns from League of Nations.

A GRADED LIST OF BOOKS FOR THE READING OF CHILDREN OF ALL AGES

BOOKS FOR VERY LITTLE CHILDREN

"We have found that the youngest children like pictures large in figures, strong and simple in coloring, and well defined in outline." C. W. Hunt.

Author	Name of Book	Publisher
Adelborg, Ottilia	Clean Peter and the Children of Grubbelea	Longmans.
Bergengren, Ralph	Jane, Joseph and John: Their Book of Verses	Atlantic Monthly Press.
Brooke, Leslie	Johnny Crow's Garden, a picture book	Warne.
Brooke, Leslie	Johnny Crow's Party	Warne.
Brooke, Leslie	Nursery Rhyme Picture Book	Warne.
Brooke, Leslie	The Golden Goose Book	Warne.
Burgess, Gellett	Goops and How to Be Them	Stokes.
Burgess, Gellett	Goops and How Not to Be Them	Stokes.
Burnett, Frances Hodgson	The Racketty Packetty House	Century.
Byron, May	Humpty and Dumpty: Their Adventures	Henry Frowde.
Byron, May	Rufus	Henry Frowde.
Byron, May	Hungry Peter	Henry Frowde.
Caldecott, R.	The Diddle-Diddle Picture Book	Warne.
Crane, Walter	Cinderella's Picture Book	Lane.
Crane, Walter	Baby's Own Aesop	Warne.
Dodge, Mary Mapes	Baby Days	Century.
Francis, J. G.	A Book of Cheerful Cats and Other Animated Animals	Century.
Greenaway, Kate	Marigold Garden	Warne.
Greenaway, Kate	Mother Goose	Warne.
Greenaway, Kate	Under the Window	Warne.
Grover, Eulalie Osgood	Sunbonnet Babies' Book	Rand.
Grover, Eulalie Osgood	The Overall Boys, a first reader	Rand.
Hopkins, W. J.	The Sandman: his Farm Stories	Page.
Lear, Edward	Nonsense Book	Little.
Le Fevre, Felicite	The Cock, the Mouse, and the Little Red Hen	Jacobs.
Lucas and Bedford	Four and Twenty Toilers	McDevitt-Wilson.
O'Shea, M. V.	Six Nursery Classics	Heath.
Poulsson, Emilie	Finger Plays	Lothrop.
Poulsson, Emilie	The Runaway Donkey	Lothrop.
Poulsson, Emilie	Through the Farmyard Gate	Lothrop.
Rackham, Arthur	Mother Goose	Century.
Roadknight	Old Fashioned Rhymes and Poems	Longmans.
Smith, E. Boyd	The Farm Book: Bob and Betty Visit Uncle John	Houghton.
Smith, L. R.	Eskimo Stories	Rand.
Stevenson, R. L.	A Child's Garden of Verses (illustrated by Jessie Willcox Smith)	Scribner.
Stevenson, R. L.	A Child's Garden of Verses, school edition	Rand.
Wiggin and Smith	Posy Ring	Doubleday.
Wiggin and Smith	Tales of Laughter	Doubleday.

BOOKS FOR CHILDREN FIVE TO SEVEN YEARS OLD.

Most of the books which are listed under "Books for very little children" will be enjoyed by children of this age, who can now read them themselves. The following may be added:

Andrews, Jane	Seven Little Sisters Who Live on the Round Ball That Floats in the Air	Ginn.
Bannerman, H.	Little Black Sambo	Altemus.
Browning, Robert	The Pied Piper of Hamelin (illustrated by Hope Dunlap)	Rand.
Boutet de Movel, R.	Joan of Arc	Century.
Diaz, A. M.	Story of Polly Cologne	Lothrop.
Jackson, Mrs. Helen Hunt	Letters from a Cat	Little.
Jackson, Mrs. Helen Hunt	Our Children's Songs	Harper.
Moore, Clement C.	The Night Before Christmas (pictures by Jessie Willcox Smith)	Houghton.
Bailey, C. S. & Lewis, C. M.	For the Children's Hour	Milton Bradley.
	(stories suitable for dramatization)	
Field E.	Love Songs of Childhood	Scribner.

BOOKS FOR CHILDREN SEVEN TO TEN YEARS OLD.

Aanrud, Hans	Lisbeth Longfrock, translated from the Norwegian by Laura E. Poulsson	Ginn.
Alcott, Louisa May	Under the Lilacs	Little.
Andrews, Jane	Ten Boys who Lived on the Road from Long Ago to Now	Scribner.
Barrie, J. M.	Peter Pan in Kensington Gardens (illustrated by Arthur Rackham)	Scribner.
Burnett, Francis Hodgson	Little Lord Fauntleroy	Scribner.
Carrol, Lewis	Alice in Wonderland (illustrated by Tenniel)	Putnam.
Carey, Alice and Phoebe	Ballads for Little Folks	Houghton.
Chisholm, L.	The Golden Staircase	Putnam.
Collodi, C.	Pinocchio, the Adventures of a Marionette (translated by W. S. Cramp)	Ginn.
Craik, Mrs. Dinah Mulock	The Adventures of a Brownie	Harper.
Craik, Mrs. Dinah Mulock	The Little Lame Prince	Rand.
Cruikshank, G.	Fairy Book	Putnam.
De Musset, Paul	Mr. Wind and Madam Rain	Harper.
Eastman, C. A.	Indian Boyhood	Little.
Eggleston, Edward	Stories of Great Americans	Americans.
Field, Eugene	With Trumpet and Drum	Scribner.
Grimm, J. L. K. and W. K.	Fairy Tales (illustrated by Rackham)	Doubleday.
Harris, Joel Chandler	Uncle Remus, his songs and his sayings Nights with Uncle Remus	
Kelman, I. H.	Stories from the life of Christ	Dutton.
Kingsley, C.	The Heroes; or Greek Fairy Tales	
Kipling, R.	Just So Stories	Doubleday.
Kipling, R.	The Jungle Books	Doubleday.
Lang, Andrew	Blue Fairy Book	Longmans.
Lang, Andrew	Blue true story book	Longmans.
Lucas, E. V.	Old-Fashioned Tales	Stokes.
Mabie, H. M.	Norse Stories	Dodd.
Macdonald, George	The Princess and the Goblin	Lippincott.
Olcott, F. J.	Bible Stories to Read and Tell	Houghton.
Page, T. N.	Among the Camps	Scribner.
Page, T. N.	Two Little Confederates	Scribner.
Peary, R. E.	The Snow Baby	Stokes.
Ruskin, John	The King of the Golden River	Ginn.
Scudder, H. E. Compiler	The children's book, an anthology of famous stories and poems	Houghton.
Stevenson, Burton S. (Editor)	The Home Book of verse for young people	Holt.

NATURE BOOKS

Author	Name of Book	Publisher
Beard, D. C.	The American Boy's Book of Bugs, Butterflies and Beetles	Lippincott.
Bertelli, L.	The Prince and His Ants	Holt.
Blanchan, Neltjie	Birds that Every Child Should Know	Grosset.
Bostock, F. C.	Training of Wild Animals	Century.
Bralliar, Floyd	Knowing Insects Through Stories	Funk.
Bearley, H. C.	Animals' Secrets Told	Stokes.
Burgess, T. W.	Bird Book for Children	Little.
Burroughs, John	Squirrels and Other Fur-Bearers	Houghton.
Chapman, F. M.	Our Winter Birds	Appleton.
Chapman, F. M.	Travels of Birds	Appleton.
Clarke, E. C.	Astronomy from a Dipper	Houghton.
Comstock, Mrs. A. B.	The Pet Book	Comstock.
Dana, F. S.	Plants and Their Children	Am. Book Co.
Fairbanks, H. W.	Stories of Rocks and Minerals	Ed. Pub. Co.
Fairchild, D. G. & M. H.	Book of Monsters	National Geo. Society.
Kipling, Rudyard	Jungle Book	Century.
Lang, Andrew	Animal Story Book	Longmans.
Maeterlinck, Maurice	Children's Life of the Bee	Dodd.
Miller, O. T.	First Book of Birds	Houghton.
Miller, O. T.	Second Book of Birds	Houghton.
Mitton, G. E.	Book of Stars for Young People	Macmillan.
Morley, M. W.	Bee People	McClurg.
Moseley, E. L.	Trees, Stars and Birds	World Book Co.
Patterson, A. J.	The Spinner Family	McClurg.
Perkins, L. F.	The Cave Twins	Houghton.
Rogers, J. E.	Trees that Every Child Should Know	Grosset.
Seton, E. T.	Rolf in the Woods	Doubleday.
Seton, E. T.	Wild Animals I Have Known	Scribner.
Sewell, A.	Black Beauty	Stokes.
Sharp, D. L.	Beyond the Pasture Bars	Century.
Thompson, J. M.	Water Wonders Every Child Should Know	Grosset.
Wright, M. O.	Gray Lady and the Birds	Macmillan.

AMUSEMENTS AND OCCUPATIONS FOR GIRLS AND BOYS.

Adams, J. H.	Harper's Electricity Book for Boys	Harper.
Adams, J. H.	Harper's Indoor Book for Boys	Harper.
Adams, J. H.	Harper's Outdoor Book for Boys	Harper.
Adams, J. H.	When Mother Lets Us Carpenter	Moffat.
Beard, D. C.	Little Folks' Handy Book	Scribner.
Beard, D. C.	On the Trail	Scribner.
Beard, D. C.	Shelters, Shacks and Chanties	Scribner.
Bond, A. R.	American Boys' Engineering Book	Lippincott.
Bond, A. R.	Inventions of the Great War	Century.
Bond, A. R.	Scientific American Boy	Munn.
Burrell, C. F.	A Little Cook Book for a Little Girl	Estes.
Cave, E.	Boys' Camp Book	Doubleday.
Claudy, C. H.	Battle of Baseball	Century.
Collins, A. F.	Book of Magic	Appleton.
Collins, A. F.	Book of Wireless	Appleton.
Collins, A. F.	Boys' Book of Model Aeroplanes	Century.
Collins, A. F.	Manual of Wireless Telegraphy and Telephony	Wiley.
Darrow, F. L.	Boys' Own Book of Great Inventions	Macmillan.
Duncan, F.	When Motner Lets Us Garden	Moffat.
Fisher, D.	What Shall We Do Now?	Stokes.
Fullerton, E. L.	Book of the Home Garden	Appleton.
Hardy & Hewitt	Game Book for Boys and Girls	Dutton.
Hall, A. N.	Boy Craftsman	Lothrop.
Hall, A. N.	Carpentry and Mechanics for Boys	Lothrop.
Hall, A. N.	Handicraft for Handy Boys	Lothrop.
Hall, A. N.	Home Made Toys for Girls and Boys	Lothrop.
Johnson, Constance	When Mother Lets Us Cook	Moffat.
Judson, C.	Junior Cook Book, 1920	Barse and Hopkins.
Kilpatrick, V. E.	Child's Food Garden	World Book Co.
Mackay, C.	House of the Heart and Other Plays for Children	Holt.
Onken, W. H. and Baker, J. B.	Harper's How to Understand Electrical Work	Harper.
Ralston, V.	When Mother Lets Us Sew	Moffat.
Shafer, D. C.	Harper's Everyday Electricity	Harper.
Stevenson, Augustus	Children's Classics in Dramatic Form	Houghton.
Thayer, E. R. L.	When Mother Lets Us Draw	Moffat.
Verrill, A. H.	Harper's Wireless Book	Harper.

BOOKS FOR CHILDREN TEN TO TWELVE YEARS OLD.

Alcott, L. M.	Little Men	Dutton.
Alcott, L. M.	Little Women	Little.
Aldrich, T. B.	Story of a Bad Boy	Houghton.
Aldrich, T. B.	Arabian Night's Entertainment	Ginn.
Baldwin, James	Fifty Famous Stories Retold	A. B. C.
Baldwin, James	Old Greek Stories	A. B. C.
Barbour, R. H.	The Crimson	Century.
Bennett, J.	Master Skylark, A Story of Shakespeare's Time	Century.
Brooks, E. S.	Century Book of the American Revolution	Century.
Burnett, F. H.	Editha's Burglar	Estes.
Burnett, F. H.	Sarah Crewe	Scribner.
Cervantes	Don Quixote	Lane.
Cervantes	Don Quixote (retold by Parry, illustrated by Crane)	Lane.
Chambers, R. W.	Cardigan	Harper.
Clemens, S. L.	The Prince and the Pauper	Harper.
Colson, Elizabeth (compiler)	Children's Letters	Hinds.
Darton, F. J. H.	Tales of the Canterbury Pilgrims (Retold)	Stokes.
Defoe, O.	Robinson Crusoe	Various.
Diaz, William Henry	Letters	Lothrop.
Dodge, M. M.	Donald and Dorothy	Century.
Du Chaillu, P. B.	Land of the Long Nights	Scribner.
Eastman, C. A.	Indian Scout Talks	Little.
Eggleston, Edward	The Hoosier School Boy	Scribner.
Eggleston, G. C.	Long Knives	Lothrop.
Griffis, W. E.	Brave Little Holland	Houghton.
Haskell, H. E.	Katrinka, The Story of a Russian Child	Dutton.
Hale, L. P.	Peterkin Papers	Houghton.
Hawthorne, Nathaniel	Grandfather's Chair	Various.
Henty, G. A.	True to the Old Flag	Various.
Jamison, C. V.	Toinette's Philip	Century.
King, Charles	Cadet Boys	Harper.
Kingsley, C. H.	The Water Babies	Dutton.
La Motte - Foque, F. H. K.	Undine	Doubleday.
Lagerlof, Selma	Wonderful Adventures of Nils	Doubleday.
Lamb, C.	Adventures of Ulysses	Various.
MacDonald, G.	The Princess and the Goblin	Lippincott.
MacDonald, G.	At the Back of the North Wind	Lippincott.
Martineau, H.	Feats on the Fiord, a Tale of Norway (Illustrated by Arthur Rackham)	Dutton.
Mitchell, S. Weir	The Youth of Washington	Century.
Munroe, K.	The White Conquerors, a Tale of Toltec and Aztec	Scribner.
Munroe, K.	The Flamingo Feather	Harper.
Munroe, K.	At War with Pontiac	Scribner.
Ouida	A Dog of Flanders	Various.
Ouida	The Nurnberg Stove	Various.
Parton, James	Captains of Industry (2 Vol.)	Houghton.
Porter, Jane	Scottish Chiefs	Various.
Pyle, H.	King Arthur and His Knights	Scribner.
Pyle, H.	The Adventures of Robin Hood	Scribner.
Richman and Wallach	Good Citizenship	A. B. C.
Riley, James Whitcomb	Rhymes of Childhood	Bobbs-Merrill.
Sewell, Anna	Black Beauty	Various.
Stockton, F. R.	Jolly Fellowship	Scribner.
Swift, J.	Gulliver's Travels	Various.
Taylor, Bayard	Boys of Other Countries	Putnam.
Thackeray, W. M.	The Rose and the Ring	Various.
Wiggin, K. D.	Bird's Christmas Carol	Houghton.
Wiggin, K. D.	Timothy's Quest	Houghton.
Wiggin, K. D. and Smith, N. A.	Golden Numbers	Houghton.
Wyss, J. D.	Swiss Family Robinson	Various.

BOOKS FOR CHILDREN TWELVE TO FOURTEEN YEARS OLD.

Abbott, E. H.	Molly Make Believe	Century.
Alcott, Louisa May	Jo's Boys	Little.
Alcott, Louisa May	Eight Cousins	Little.
Alcott, Louisa May	An Old-Fashioned Girl	Little.
Aldrich, T. B.	Majory Daw	Houghton.
Amicis, Edmondo de	Cuore	Crowell.
Andrews, M. R. S.	The Perfect Tribute	Scribner.
Austin, Oscar P.	Uncle Sam's Soldiers	Appleton.
Barbour, R. H.	Captain of the Crew	N. Y. Book Co.
Barbour, R. H.	For the Honor of the School	Grosset.
Barbour, R. H.	Weatherby's Inning	Appleton.
Barrie, James	Peter and Wendy	Scribner.
Barnum, P. T.	Life (Written by Himself)	Scalfield.
Bjornson, Bjornstjerne	The Happy Boy	Macmillan.
Black, William	Four Mac Nicols	Harper.
Bolton, S.	Girls Who Became Famous	Crowell.
Brady, Cyrus Townsend	Border Fights and Fighters	Doubleday.
Brady, Cyrus Townsend	For Love of Country	Grosset
Brady, Cyrus Townsend	Commodore, Paul Jones	Appleton.
Brooks, E. S.	Historic Americans	Crowell.
Brooks, E. S.	Century Book of American Revolution	Century.
Brown, J.	Rab and His Friends	Various.
Brown, J.	Marjorie Fleming	Crowell.
Bunyan, J.	Pilgrims Progress	Century.
Bennett, J.	Barnaby Lee	Century.
Burnett, F. H.	The Secret Garden	Stokes.
Cable, G. W.	The Cable Story Book	Scribner.
Church, A. J.	Story of the Iliad	Macmillan.
Church, A. J.	Story of the Odyssey	Macmillan.
Churchill, Winston	The Crisis	Macmillan.
Churchill, Winston	The Crossing	Grosset.
Coffin, C. C.	The Boys of '76	Harper.
Cooper, J. F.	The Pilot	Various.
Cooper, J. F.	The Last of the Mohicans	Various.
Cooper, J. F.	The Spy	Various.
Cooper, J. F.	The Deerslayer	Various.
Cooper, J. F.	The Prairie	Various.
Crane, Stephen	Whilomville Stories	Harper.
Crittenden, Marriott	Uncle Sam's Business	Harper.
Custer, E. B.	The Boy General	Scribner.
Custer, E. B.	Boots and Saddles	Harper.
Dana, R. H.	Two Years Before the Mast	Various.
Daskam, J. D.	The Madness of Philip	Doubleday.
Davis, R. H.	Stories for Boys	Scribner.
Dawson, Coningsby	Carry On	Lane.
Dickens, Charles	A Child's History of England	Various.
Dickens, Charles	Christmas Stories	Various.
Dickens, Charles	David Copperfield	Various.
Dix, B. M.	Merrylips	Macmillan.
Dix, B. M.	Soldier Rigdale	Macmillan.
Dodge, Mary Mapes	Hans Brinker or the Silver Skates	Scribner.
Doyle, Conan	Micah Clarke	Longmans.
DuChaillu, Paul	The Country of the Dwarfs	Harper.
Dumas, Alexander	The Black Tulip	Various.
Dumas, Alexander	The Count of Monte Cristo	Various.
Earle, Alice Morse	Customs and Fashions of Old New England	Scribner.
Edgeworth, Maria	Tales	Macmillan.
Ewing, J. H.	Story of a Short Life	Little.
Ewing, J. H.	Jan of the Windmill	Ball.
Field, E.	Christmas Tales and Christmas Verse	Scribner.
Finnemore, John	Wolf Patrol; a Tale of Baden-Powell's Boy Scouts	Macmillan.
Ford, Paul Leicester	The Many-Sided Franklin	Century.
Frederic, Harold	In the Valley	Scribner.
French, H. W.	The Lance of Kanana	Lothrop.
Froude, J. A.	English Seamen in the Sixteenth Century	Scribner.
Garland, Hamlin	The Long Trail	Harper.
Garland, Hamlin	Boy Life on the Prairie	Harper.
Gilchrist, Beth	The Camerons of Highboro	Century.
Gilder, R. W.	Lincoln the Leader	Houghton.
Hagedorn, Herman	You Are the Hope of the World	Macmillan.
Hagedorn, Herman	Boy's Life of Theodore Roosevelt	Harper.
Hay, Jan	The First Hundred Thousand	Houghton.
Henley, W. E.	Lyra Heroica	Scribner.
Holmes, Oliver Wendell	Poems	Various.
Howells, William Dean	A Boy's Town	Harper.
Hughes, Thomas	David Livingstone	Macmillan.
Hughes, Thomas	Tom Brown at Rugby	Various.
Ingelow, Jean	Mopsa the Fairy	Lippincott.
Irving, W	Rip Van Winkle	Various.
Jackson, Helen Hunt	Ramona	Little.
Jamison, Mrs. C. V.	Lady Jane	Century.
Jenks, A. E.	Childhood of Ji Shib the Ojibwa	Atkinson, Mentzer.
Jewett, Sarah Orne	The White Heron	Houghton.
Jewett, Sarah Orne	Betty Leicester	Houghton.
Jesitt, Sophie	God's Troubadour	Crowell.
Johnson, Owen	The Varmint	Little.
Keller, Helen	The Story of My Life	Grosset.
Kelly, Myra	Little Citizens	Doubleday.
Kipling, Rudyard	The Drums of the Fore and Aft	Doubleday.
Kipling, Rudyard	Captains Courageous	Doubleday.
Lamb, C.	Tales from Shakespeare	Various.
Lang, Andrew	Story of Joan of Arc	Dutton.
Larcom, Lucy	A New England Girlhood	Houghton.
Lee, Jeannette	Mr. Achille	Dodd.
London, Jack	The Cruise of the Dazzler	Grosset.
Longfellow, H. W.	The Courtship of Miles Standish	Various.
Longfellow, H. W.	Hiawatha	Various.
Longfellow, H. W.	The Hanging of the Crane	Various.
Longfellow, H. W.	Evangeline	Various.
Longfellow, H. W.	Other Poems	Various.
Lowell, J. R.	The Vision of Sir Launfal	Various.
MacManus, Seumus	Donegal Fairy Stories	Doubleday.
MacDonald, A.	Through the Heart of Tibet	Caldwell.
Marryat, F.	Children of the New Forest	Harper.
Marryat, F.	Masterman Ready	Dutton.
Martin, G. M.	Emmy Lou	Doubleday.
Masefield, John	Martin Hyde	Little.
Mitchell, S. Weir	Hugh Wynne	Century.
Muloch, D. M.	John Halifax, Gentleman	Various.
Nicolay, Helen	Boy's Life of Lincoln	Century.
Ollivant, Alfred	Bob, Son of Battle	Doubleday.
Palgrave, F.	Golden Treasury of Songs and Hymns. (Illustrated by Parrish.)	Duffield.
Parkman, Francis	Montcalm and Wolfe	Little.
Peabody, Josephine Preston	The Piper. (Stratford Prize Play.)	Houghton.
Plutarch Lives: abridged		Ginn.
Poe, Edgar Allen	The Gold Bug	Various.
Pyle, Howard	Men of Iron	Harper.
Pyle, Howard	Otto of the Silver Hand	Scribner.
Pyle, Howard	The Story of the Grail	Scribner.
Pyle, Howard	The Story of Jack Ballisters's Fortunes	Scribner.
Reppler, Agnes	Book of Famous Verse	Houghton.
Rice, Alice H.	Mrs. Wiggs of the Cabbage Patch	Century.
Richards, Caroline Cowles	Village Life in America	Holt.
Richards, Laura E.	Captain January	Estes.
Richards, Laura E.	Florence Nightingale	Appleton.
Richards, Laura E.	Elizabeth Fry, the Angel of the Prisons	Appleton.
Riis, J. A.	The Making of an American	Macmillan.
Roosevelt, Theodore	Letters to his Children	Scribner.
Roosevelt, Theodore	Ranch Life and the Hunting Trail	Century.
Roosevelt, Theodore	Stories of the Great West	Century.
Roosevelt and Lodge	Hero Tales from American History	Century.
Saintine, J. X. B.	Picciola	Putnam.
Scott, Sir Walter	Ivanhoe	Various.
Scott, Sir Walter	The Lady of the Lake	Various.
Scott, Sir Walter	Kenilworth	Various.
Scott, Sir Walter	The Talisman	Various.
Seton-Thompson, Ernest	Biography of a Grizzly	Century.
Seton-Thompson, Ernest	Lives of the Hunted	Scribner.
Seton-Thompson, Ernest	The Trail of the Sandhill Stag	Scribner.
Shakespeare, W.	The Merchant of Venice	Various.
Shakespeare, W.	Midsummer Night's Dream	Various.
Shakespeare, W.	Julius Caesar	Various.
Shaw, Flora	Castle Blair	Little.
Southey, Robert	Life of Lord Nelson	Various.
Stanley, H. M.	My Kalulu	Scribner.
Stevenson	The Black Arrow	Various.
Stevenson	Kidnapped	Various.
Stevenson	Treasure Island	Various.
Stockton, F. R.	The Lady or the Tiger	Scribner.
Stockton, F. R.	Rudder Grange	Grosset.
Stockton, F. R.	Captain Chap	Lippincott.
Stowe, Harriet Beecher	Uncle Tom's Cabin	Various.
Stuart, F. P.	The Adventures of Piang, the Moro Jungle Boy	Century.
Sutcliffe, Mrs. A. C.	Robert Fulton and the Clermont	Century.
Tappan, E. M.	In the Days of Queen Victoria	Lothrop.
Tarkington, Booth	Penrod	Doubleday.
	(Treasury of War Poetry)	Houghton.
Trowbridge, J. T.	Cudjo's Cave	Lothrop.
Twain, Mark	Tom Sawyer	Harper.
Twain, Mark	Huckleberry Finn	Harper.
VanDyke, Henry	The Other Wise Man	Harper.
Wallace, D.	Ungava Bob	Grosset.
Warner, Charles Dudley	A Hunting of the Deer and other Essays	Houghton.
Warner, Charles Dudley	Being a Boy	Houghton.
Webster, Jean	Daddy Long Legs	Century.
Webster, Jean	When Patty Went to College	Century.
White, William A.	The Court of Boyville	Macmillan.
Whittier, J. G.	Poems	Various.
Wiggin, Kate Douglas	Polly Oliver's Problem	Houghton.
Wiggin, Kate Douglas	Rebecca of Sunnybrook Farm	Houghton.
Wiggin, Kate Douglas	A summer in a Canon	Houghton.
Williams, J. L.	Adventures of a Freshman	Scribner.
Woolsey, S. C.	A Guernsey Lily	Little.
Yonge, Charlotte M.	Book of Golden Deeds	Various.
Young, S. H.	Alaska Days with John Muir	Revell.

BOOKS FOR BOYS AND GIRLS OF HIGH SCHOOL AGE.

Novels

Allen, James Lane	The Choir Invisible	Macmillan.
Allen, James Lane	A Kentucky Cardinal	Macmillan.
Arnim, Countess von	Elizabeth and her German Garden	Macmillan.
Ashmun, M. E.	Stephen's Last Chance	Macmillan.
Ashmun, M. E.	Isabel Carleton's Year	Macmillan.
Austen, Jane	Pride and Prejudice	Various.
Austen, Jane	Emma	Various.
Bacheller, Irving	Eben Holden	Harper.
Barrie, J. M.	The Little Minister	Various.
Bennett, Arnold	Buried Alive	Doran.
Black, William	Madcap Violet	Harper.
Black, William	Judith Shakespeare	Harper.
Blackmore, R. D.	Lorna Doone	Various.
Bronte, Charlotte	Jane Eyre	Various.
Bronte, Emily	Wuthering Heights	Various.
Cable, G. W.	Sevier	Scribner.
Cable, G. W.	Grandissimes	Scribner.
Churchill, Winston	Coniston	Macmillan.
Churchill, Winston	Mr. Crewe's Career	Macmillan.
Churchill, Winston	Richard Carvel	Macmillan.
Collins, Wilkie	The Moonstone	Dodd.
Collins, Wilkie	The Woman in White	Dodd.
Connor, Ralph	The Man from Glengarry	Revell.
Conrad, Joseph	Typhoon	Putnam.
Craddock, C. E.	The Prophet of Great Smoky Mountain	Houghton.
Craik, Dinah M.	John Halifax, Gentleman	Various.
Crane, Stephen	The Red Badge of Courage	Appleton.
Crawford, F. Marion	Mr. Isaacs	Macmillan.
Curtis, G. W.	Prue and I	Various.
Daudet, Alphonse	Tartarin of Tarascon	Various.

Davis, Richard Harding	Soldiers of Fortune	Scribner.
Dickens, Charles	A Tale of Two Cities	Various.
Dickens, Charles	Oliver Twist	Various.
Dickens, Charles	Hard Times	Various.
Dickens, Charles	Our Mutual Friend	Various.
Dickens, Charles	Pickwick Papers	Various.
Dickens, Charles	Dombey and Son	Various.
Dickens, Charles	Little Dorrit	Various.
Doyle, Conan	The White Company	Various.
Dumas, Alexander	The Three Guardsmen	Various.
Dumas, Alexander	Twenty Years After	Various.
Duncan, Norman	Dr. Luke of the Labrador	Revell.
Ebers, George	An Egyptian Princess	Macmillan.
Edgeworth, Maria	The Absentee	Various.
Edgeworth, Maria	Castle Rackrent	Various.
Eliot, George	The Mill on the Floss	Various.
Eliot, George	Silas Marner	Various.
Ferber, Edna	Fanny Herself	Stokes.
Ford, Paul Leicester	The Hon. Peter Stirling	Grosset.
Fox, John, Jr	The Little Shepherd of Kingdom Come	Grosset.
Goldsmith, Oliver	The Vicar of Wakefield	Various.
Halevy, Ludovic	The Abbe Constantine	Various.
Harland, Henry	The Cardinal's Snuff Box	Grosset.
Harrison, Henry	Queed	Grosset.
Harrison, Henry	V Vs Eyes	Grosset.
Hawthorne, Nathaniel	The House of Seven Gables	Various.
Holmes, Oliver Wendell	Elsie Venner	Various.
Hope, Anthony	The Prisoner of Zenda	Grosset.
Hope, Anthony	Rupert of Hentzau	Grosset.
Howells, William Dean	The Rise of Silas Lapham	Houghton.
Hughes, Thomas	Tom Brown at Oxford	Various.
Hugo, Victor	Les Miserables	Various.
Ibanez, Blasco	The Four Horsemen of the Apocalypse	Dutton.
Jewett, Sarah Urne	The Country of the Pointed Firs	Houghton.
Johnson, Owen	Stover at Yale	Stokes.
Johnston, Mary	To Have and To Hold	Houghton.
Lane, Elinor	Nancy Stair	Appleton.
Lever, Charles	Charles O'Malley	Various.
Locke, William J	Septimus	Burt.
London, Jack	Martin Eden	Macmillan.
London, Jack	The Sea Wolf	Donohue.
Lover, Samuel	Handy Andy	Various.
Lytton, Sir Edward Bulwer	Last Days of Pompeii	Various.
Lytton, Sir Edward Bulwer	Rienzi	Various.
Marshall, Archibald	Novels, (Picturing English Country Life)	Dodd.
Moore, F. F.	The Jessamy Bride	Duffield.
Morley, Christopher	Paranassus on Wheels	Doubleday.
Norris, Frank	The Pit	Doubleday.
Page, Thomas Nelson	Marse Chan	Scribner.
Page, Thomas Nelson	Meh Lady	Scribner.
Page, Thomas Nelson	Red Rock	Scribner.
Porter, Jane	Thaddeus of Warsaw	Various.
Scott, Sir Walter	Guy Mannering	Various.
Scott, Sir Walter	Quentin Durward	Various.
Scott, Sir Walter	Ivanhoe	Various.
Scott, Sir Walter	Kenilworth	Various.
Shelly, Mrs.	Frankenstein	Everyman.
Sienkiewicz, Henryk	With Fire and Sword	Various.
Stevenson, Robert Louis	Dr. Jekyll and Mr. Hyde	Scribner.
Stevenson, Robert Louis	St. Ives	Grosset.
Stockton, Frank	The Casting Away of Mrs. Leeks and Mrs. Aleshine	Century.
Stowe, Mrs. Harriet Beecher	Old Town Folks	Houghton.
Tarkington, Booth	Seventeen	Harper.
Tarkington, Booth	Alice Adams	Doubleday.
Tarkington, Booth	A Gentleman from Indiana	Doubleday.
Thackeray, W. M.	Henry Esmond	Various.
Thackeray, W. M.	Vanity Fair	Various.
Trollope, Anthony	Barchester Towers	Everyman.
Wallace, Lew	Ben Hur	Grosset.
Westcott, E. N.	David Harum	Grosset.
Weyman, Stanley	Under the Red Robe	Longmans.
White, Stewart Edward	The Rules of the Game	Grosset.
White, Stewart Edward	The Blazed Trail	Grosset.
Wiggin, Kate Douglas	A Cathedral Courtship	Grosset.
Wiggin, Kate Douglas	Penelope's Irish Experiences	Houghton.
Wiggin, Kate Douglas	Penelope's Progress (in Scotland)	Houghton.
Wister, Owen	The Virginian	Macmillan.

BIOGRAPHY.

Addams, Jane	Twenty Years of Hull House	Macmillan.
Aldrich, Mrs. T. R.	Crowding Memories	Houghton.
	American Men of Letters Series	
	English Men of Letters Series	
	American Statesmen Series	
	English Statesmen Series	
Antin, Mary	The Promised Land	Houghton.
Asquith, Margot	An Autobiography	Doran.
Barrie, J. M.	Margaret Ogilvy	Scribner.
Bispham, D.	A Quaker Singer's Recollections	Macmillan.
Bok, Edward	Americanization of, By Himself	Scribner.
Breshkovsky, Catherine	Little Grandmother of the Russian Revolution	Little.
De Quincey, Thomas	Confessions of an English Opium Eater	Various.
Garland, Hamlin	A Son of the Middle Border	Macmillan.
Gilchrist, Beth Bradford	Life of Mary Lyon	Houghton.
Grayson, David	The Friendly Road	Grosset.
Grenfell, W. F.	The Adventure of Life	Houghton.
Grenfell, W. F.	Autobiography	Houghton.
Hough, Emerson	The Way to the West	Bobbs.
Irving, Washington	Life of Goldsmith	Various.
Jefferson, Joseph	Autobiography	Century.
Lockhart, J. G.	Life of Scott, (Abridged)	Macmillan.
MacKenzie, Jean	The Story of A Fortunate Youth	Atlantic.
Morlet, John	William Ewart Gladstone	Macmillan.
Morris, Clara	Life on the Stage	Doubleday.
Morse, E. W.	Life and Letters of Hamilton Wright Mabie	Dodd.
Muir, John	Story of My Boyhood and Youth	Houghton.
Oliphant, Mrs. M. O. W.	Francis of Assisi	Macmillan.
Palmer, G. H.	Life of Alice Freeman Palmer	Houghton.
Peat, H. R.	Private Peat	Bobbs.
Repplier, Agnes	In Our Convent Days	Houghton.
Acanchez, N.	Life of Mrs. Robert Louis Stevenson	Scribner.
Schurz, Carl	Abraham Lincoln	Houghton.
Schurz, Carl	Henry Clay	Houghton.
Sedgwick, A. D.	A Childhood in Brittany Eighty Years Ago	Century.
Southey, Robert	Life of Nelson	Various.
Thoreau, H. D.	Walden	Various.
Trevelyan, G. M.	Garibaldi and the Thousand	Longmans.
Twain, Mark	Life of Joan of Arc	Harper.
Washington, Booker T	Up from Slavery	Houghton.

PLAYS

Barrie, Sir James	A Kiss for Cinderella	Scribner.
Barrie, Sir James	Quality Street	Scribner.
Barrie, Sir James	The Admirable Crichton	Scribner.
Barrie, Sir James	Alice Sit by the Fire	Scribner.
Bennett, Arnold and Knoblauch, Edward	Milestones	Doran.
Goldsmith, Oliver	She Stoops to Conquer	Various.
Howells, William Dean	The Sleeping Car	Houghton.
Howells, William Dean	The Mouse Trap	Houghton.
Housman and Baker	Prunella	Brentano.
Kennedy, Charles Rann	The Servant in the House	Harper.
Maeterlinck, Maurice	The Blue Bird	Dodd.
Pinero, Sir Arthur Wing	The Amazons	Baker.
Rostand, Edward	Cyrano de Bergerac	Stokes.
Rostand, Edward	L'Aiglon	Harper.
Sheridan, Richard	The Rivals	Various.
Sheridan, Richard	The School for Scandal	Various.
Shakespeare, William	Romeo and Juliet	Various.
Shakespeare, William	Julius Caesar	Various.
Shakespeare, William	The Taming of a Shrew	Various.
Shakespeare, William	A Midsummer Night's Dream	Various.
Shakespeare, William	Macbeth	Various.
Shakespeare, William	Hamlet	Various.
Shakespeare, William	King Lear	Various.
Shakespeare, William	King Henry V	Various.
Shakespeare, William	Richard III	Various.
Shakespeare, William	Twelfth Night	Various.
Shakespeare, William	A Winter's Tale	Various.
Synge, J. M.	Riders to the Sea	Badger.
Yeats, William Butler	The Land of Heart's Desire	Dodd.

SHORT STORIES

Aldrich, Thomas Bailey	Marjorie Daw	Houghton.
Andrews, Mary Raymond Shipman	Bob and the Guides	Scribner.
Bacon, Josephine Daskam	Smith College Stories	Scribner.
Bangs, John Kendrick	The House Boat on the Styx	Harper.
Barrie, James	Auld Licht Idyls	Scribner.
Bunner, H. C.	Short Stories	Scribner.
Bunner, H. C.	Zadoc Pine	Scribner.
Conrad, Joseph	Youth	Doubleday.
Davis, Richard Harding	Van Bibber and Others	Harper.
Deland, Margaret	Old Chester Tales	Harper.
Doyle, Sir Arthur Conan	Adventures of Sherlock Holmes	Collier.
Doyle, Sir Arthur Conan	Memoirs of Sherlock Holmes	Collier.
Doyle, Sir Arthur Conan	The Return of Sherlock Holmes	Collier.
Dunbar, Paul Lawrence	Folks from Dixie	Dodd.
Garland, Hamlin	Main Travelled Roads	Harper.
Harte, Bret	Luck of Roaring Camp and Other Stories	Houghton.
Hawthorne, Nathaniel	Twice Told Tales	Various.
Irving, Washington	Tales of a Traveler	Various.
Irving, Washington	The Alhambra	Various.
Jewett, Sarah Orne	Short Stories	Houghton.
Kelly, Myra	Little Citizens	Doubleday.
Kipling, Rudyard	The Day's Work	Doubleday.
Kipling, Rudyard	Plain Tales from the Hills	Doubleday.
Kipling, Rudyard	Under the Deodars	Doubleday.
MacLaren, Ian	Beside the Bonny Briar Bush	Dodd.
Poe, Edgar A.	Weird Tales	Various.
Tarbell, Ida M.	He Knew Lincoln	Macmillan.
Twain, Mark	The Jumping Frog	Harper.
Van Dyke, Henry	The Blue Flower	Scribner.
Wilkins, Mary E.	A New England Nun and Other Stories	Harper.
Williams, Jesse Lynch	Princeton Stories	Scribner.

ESSAYS

Carlyle, Thomas	Essay on Burns	Various.
Emerson, Ralph Waldo	Essays	Various.
Holmes, Oliver Wendell	Autocrat of the Breakfast Table	Various.
Irving, Washington	The Sketch Book	Various.
Lamb, Charles	Essays of Elia	Various.
Lee, Sidney	Shakespeare and the Modern Stage	Scribner.

Mabie, Hamilton Wright	Essays That Every Child Should Know	Doubleday.
Maeterlinck, Maurice	My Friend, the Dog	Dodd.
Mathews, William	Getting on in the World	Scott.
Roosevelt, Theodore	American Ideals	Putnam.
Roosevelt, Theodore	The Strenuous Life	Century.
Root, Elihu	The Citizen's Part in Government	Yale U. Press.
Stephen, Leslie	Hours in a Library	Putnam.
Stevenson, Robert Louis	Virginibus Puerisque	Various.
Taft, W. Howard	Present Day Problems	Dodd.
Taft, W. Howard	Four Aspects of Civic Duty	Scribner.
Van Dyke, Henry	Little Rivers	Scribner.
Van Dyke, Henry	Fisherman's Luck	Scribner.
Warner, Charles Dudley	Backlog Studies	Houghton.
Warner, Charles Dudley	In the Wilderness	Houghton.
Wilson, Woodrow	Mere Literature	Houghton.
Winter, William	Shakespeare's England	Moffat.
Winter, William	Gray Days and Gold	Moffat.

POETRY

Arnold, Matthew	Sohrab and Rustum	Various.
Frost, Robert	North of Boston	Holt.
Gayley, C. M.	The Poetry of the People	Ginn.
Gummere, F. B.	Old English Ballads	Ginn.
Henely, W. E.	Lyra Heroica	Scribner.
Longfellow, Henry Wadsworth	Tales of a Wayside Inn	Various.
Macaulay, Thomas Babington	Lays of Ancient Rome	Various.
Newcomer, and Andrews	Twelve Centuries of English Poetry and Prose	Scott, Foresmen.
Noyes, Alfred	Tales from the Mermaid Tavern	Stokes.
Quiller-Couch, A. (Ed.)	Oxford Book of English Verse	Oxford.
Palgrave, F.	Golden Treasury of Songs and Lyrics	Macmillan.
Seeger, Alan	Poems	Scribner.
Service, Rovert W.	Rhymes of a Red Cross Man	Barse & Hopkins.
Stedman, E. C.	American Anthology	Houghton.
Stedman, E. C.	Victorian Anthology	Houghton.

CHOOSING A VOCATION

Briggs, LeBaron R.	Girls and Education	Houghton.
Clow, F. R.	Introduction to the Study of Commerce	Silver.
Eliot, C. W.	Training for Effective Life	Houghton.
Esenwein, J. B.	Writing the Short Story	Hinds.
Frederick, Christine	Household Engineering	Am. Sch. H. Econ.
Husband, J.	America at Work	Houghton.
Lockwood, F. C.	The Freshman and the School	Heath.
Palmer, Alice Freeman	Why Go to College	Crowell.
Palmer, G. H.	Self Cultivation in English	Houghton.
Quinn, Mary J.	Planning and Furnishing the Home	Harper.
Weaver, E. W.	Vocations for Girls	Barnes.

VOCATIONS FOR BOYS

Wingate, C. F.	What Shall Our Boys Do for a Living	Doubleday.

A DICTIONARY OF AUTHORS, BOOKS, CHARACTERS AND LITERARY TERMS

The following dictionary aims to supply information about books and authors, and has been prepared with the purpose of omitting everything which does not contribute its mite of usefulness or pleasure to him who seeks to read intelligently. Its probable service may be indicated by the following questions and answers:

1. What does the careful student need to know concerning an author?

Ans. His nationality or his language, when he lived, for what he is famous.

2. What does a student need to know about a literary work?

Ans. What it is about, in what manner or style it is written, why it has value, what is its significance.

3. What does a student need to know about a character in drama or novel?

Ans. The human type to which he belongs, what his individual characteristics are, why he is admirable or despicable, whether he is well portrayed.

Such questions as these every reader of intelligence will wish to answer; this dictionary will help him. If the student happens to hear the name of Artemus Ward, for example, he may find by turning these pages who he was, when he lived, and what he wrote. If the student wants to know about the Iliad, he will find it summarized here. The things he will find in this dictionary may be indicated clearly in a table:

1. Names, dates, chief or representative works of English authors.
2. Names, dates, chief or representative works of American authors.
3. Brief identification of important foreign authors.
4. Descriptions of many of the more famous works of English and American authors.
5. Description of famous works in other languages.
6. A few character sketches which may serve as models in school work.
7. Explanation of some of the common literary terms, e. g., epic, ballad, comedy, etc.
8. Miscellaneous literary information.

Adam Bede, English novel by George Eliot, published in 1859. In this as in most of her works two stories are intertwined. Adam Bede, the hero, is a faithful and honest carpenter. He falls in love with Hetty Sorrel, a pretty dairymaid who has not the good sense to appreciate his worth. She becomes infatuated with the local squire, Arthur Donnithorne, and is betrayed by him. He is good-hearted but thoughtless. That he is not wholly bad is shown by his remorse after a child is born to him and Hetty and she is brought to trial on a charge of murdering it. Dinah Morris, a Methodist preacher, stands by Hetty in her trouble, and eventually becomes the wife of Adam Bede. The first story, then, is of Adam's disappointed love and later happy marriage; the second is of Hetty's tragedy and its effects.

The book is famous for its pictures of country life, its understanding of human nature, and of the motives of conduct. Many of the sayings of Mrs. Poyser, one of its rustic characters, have become proverbial. She is "not one of those as can see the cat i' the dairy an' wonder what she's come after." *Adam Bede* is often regarded as the best of the author's works. Dickens said that reading it marked an epoch in his life.

Adams, (Parson), Character in Fielding's novel *Joseph Andrews.* One of the most lovable characters in fiction. Parson Adams was absent-minded enough to forget he had a horse to ride and set forth afoot; he was improvident enough to give away all his money and having nothing with which to pay his own debts; he was often in a fist fight; he was the butt of innumerable practical jokes. In spite of his faults, his simple piety, his generosity, and his good intentions have endeared him to all who read.

Ade, George (1866-), American humorist, best known for his *Fables in Slang,* many of which have been dramatized for motion pictures, and *The College Widow,* a very successful play.

Addison, Joseph (1672-1719), English poet, dramatist, essayist, author of narrative sketches, statesman. He is most famous for the essays and narratives. Many of these, like the Sir Roger de Coverly sketches, appeared in papers like the *Spectator,* of which he was an editor. He praised good books, criticized the follies of mankind with a mild satire, never bitter or malicious. Common sense, moral purpose, and pleasant humor are characteristic of him. Johnson said: "Whoever wishes to attain an English style, familiar but not coarse, and elegant but not ostentatious, must give his days and nights to a study of Addison". Benjamin Franklin studied Addison with such a purpose.

Adonais, a formal elegy (1821) in which the English poet, Shelley, laments the death of a fellow poet, John Keats, whose death was at that time thought to have been hastened by harsh criticism. The poem imitates the classical elegy, as does Milton's *Lycidas.* The first half of the poem mourns the loss of the poet, cut off in his prime; the second half rejoices that he is with the immortals.

Aeneid, The, an epic poem in the Latin language by Vergil. The poem tells the story of the flight of Aeneas from Troy after it was captured by the Greeks in the famous war, of his adventures on land and sea, his visit to the underworld, and his final arrival in Italy where he founded the Roman state. Book I. Aeneas sails from Troy, heading for Italy, but is driven ashore at Carthage, where he is hospitably received by Queen Dido. Book II. Aeneas tells Dido the story of the capture of Troy, through the deceit of the wooden horse, of his flight with his family, and of his wife's death. Book III. Aeneas tells of his perilous voyage and of the death of his father, Anchises. Book IV. Dido falls in love with Aeneas, but he sails away. She then kills herself. Book V. Aeneas visits Sicily, and holds games there in honor of his father's memory. Book VI. Aeneas visits the infernal regions. Book VII. Aeneas reaches Italy and wins the king's daughter, thereby incurring the hatred of Turnus, who had been betrothed to her. Book VIII. Preparations for war are made by Aeneas and Turnus. Book IX. Turnus attacks the camp of Aeneas and burns his ships. Books X and XI. The war goes on. Book XII. Aeneas accepts the challenge of Turnus to single combat. Turnus is killed.

Aesop, ancient Greek fabulist. See FABLE.

Alcott, Bronson (1799-1888). American. Member of the transcendental group of authors living chiefly in Concord and Boston, Mass., about the middle of the nineteenth century.

Alcott, Louisa M. (1832-1888), American writer of stories for children. The best known is *Little Women.* Daughter of Bronson Alcott.

Aldrich, Thomas Bailey (1836-1907), American author of stories and poems. *Marjorie Daw* and *The Story of a Bad Boy* are well known.

Alfred, (The Great) (849-901). He was a patron of learning and letters, and himself an author, translating various books from the Latin into English.

Alice's Adventures in Wonderland (1865), a delightful story for children with much truth in its whimsical absurdities. It was written by C. L. Dodgson a learned mathematician of Oxford University, England, under the pen-name of Lewis Carroll, and, was illustrated by Sir John Tenniel. Alice falls asleep and dreams that she follows a rabbit into his hole and finds herself in a strange land where she meets and talks with the Mad Hatter, the Walrus, the Tortoise, and many other grotesque personages. *Through the Looking Glass* (1871) is a sequel.

Allen, James Lane (1849-), American novelist and short story writer. Best known work *The Choir Invisible.*

Allworthy, (Squire), a character in Fielding's novel, *Tom Jones* (1749). In Allworthy, Fielding has depicted the eighteenth century gentleman who is the "favorite of both Nature and Fortune", one who has "an agreeable person, a sound constitution, a solid understanding, and a benevolent heart", as well as "one of the largest estates in the county". Like Sir Roger de Coverly, Allworthy has all the substantial merits of the century and fewer than usual of its vices.

Amelia, the heroine of Fielding's novel, *Amelia* (1751). She is a character of unfailing charity, wedded to a man of many faults. She is depicted with the tenderness which characterized the writing of Fielding's last years. Thackeray said she was "the most charming character in English fiction".

Ancient Mariner (1817), ballad by Coleridge. The ancient mariner is a man condemned to wander forever and tell his story in expiation of his cruelty in shooting the albatross which followed his ship.

Anna Karenina, a Russian novel, by Tolstoy, English translation 1886. This is one of the world's greatest novels. Dealing with the familiar entanglement of husband, wife, and lover, it surpasses other novels in the subtlety with which it traces the heroine's character. Wedded to a selfish husband much older than she, Anna Karenina falls in love with Count Vronsky, a brilliant young officer, and thereafter

wavers between happiness and regret, until she becomes an exile from society, and, as she realizes what people think of her, passes gradually from defiance to ennui and despair. When she can endure life no longer, she throws herself beneath the wheels of a moving train. "And the candle by which she had been reading the book filled with pain and sorrow, deceit and evil, flared up with a brighter light, illuminating for her everything that had been enshrouded in darkness, then flickered, grew dim, and went out for ever."

Antiquary, The, English novel, by Scott. This is a novel of superstition and magic, with the talkative eccentric, Jonathan Oldbuck, and the weak-minded Edie Ochiltree as its most interesting characters. The story is a conventional one, involving rival lovers, a villain, and a wicked mother-in-law, but is full of excitement, humor, and tenderness.

Antony and Cleopatra. This is a tragedy by Shakespeare founded on information given in North's *Plutarch*. It relates the story of the infatuation of Mark Antony, the Roman triumvir, for Cleopatra the queen of Egypt. The splendor of ancient Egypt makes a rich setting for this representation of one of the most powerful men and one of the most fascinating women known to tradition. The fascination of Cleopatra, "Serpent of the Nile", undermines in this play the character of the man who was so strong and ambitious in the play, *Julius Caesar*.

Apologia Pro Vita Sua (In defense of his life) (1865), an autobiography of spiritual experience and a justification of religious affiliation written by John Henry, Cardinal Newman. The work was called forth by an attack upon Newman, who had gone from the church of England to the church of Rome, by Charles Kingsley, an Anglican clergyman. The work is famous for its clearness of expression and of reasoning, for its spiritual refinement, and for the light it throws upon the mental unrest of the time.

Apparition of One Mrs. Veal, The, a story (1706) by Daniel Defoe of a visit paid by the spirit of Mrs. Veal to one of her friends. It is told with such particularity that it seems true. Defoe learned this trick for making a narrative seem true long before he employed it in *Robinson Crusoe*.

Arcadia (1580-81), a pastoral romance by Sir Philip Sidney. The name Arcadia has come to designate a land of ideal simplicity and charm where the intrigues of elegant lovers and the affairs of state always run fortunately, unimpeded by the laws of probability or of cause and effect.

Arden, Enoch. A poem by Alfred Tennyson, narrating the adventures of a seaman who, shipwrecked on an uninhabited island in the tropical seas, spends many years in solitude, and when rescued, returns home to find his wife married to another, with whom she lives in happiness. Arden proves his nobility of spirit by refusing to reveal to her the fact of his existence, suffers in silence, and dies broken-hearted. Arden is a true hero after the highest conception of a hero. He is as great as King Arthur—by his unconquerable will, and by bowing before love and duty.

Ariosto (1474-1533), Italian poet, author of *Orlando Furioso* (The Mad Orlando), a romantic story in verse dealing with chivalric adventure.

Artful Dodger, The, a youthful character in Dickens's novel, *Oliver Twist*. He has been reared among criminals and gets his nickname because of skill in eluding the police. He is remembered for his droll and jaunty comments on everything and everybody.

Arthurian Romances, stories concerning a mythical king of the Britons and his knights of the Table Round. These stories appeared in various languages during the Middle Ages and have been much developed in modern times, especially in German and English. The chief groups, or cycles, of these romances are those dealing with (1) Merlin, the magician. (2) Gawain, originally a model knight, but in later stories (like the *Idylls of the King*) debased. (3) The search for the Holy Grail, in which either Percival or Galahad is the hero. (4) Tristan and his love for Iseult. (5) Launcelot and his love for Queen Guenevere. (6) The death of Authur. In English the best known of modern works based on this material are Tennyson's *Idylls of the King* and *Sir Galahad*, Arnold's *Tristram* and *Iseult*, Morris's *The Defence of Guinevere*. Richard Wagner's employment of the Arthurian material in his operas is well known. Some of the best of the older versions of the material are: *The Mabinogion*, a collection of Welsh tales of the fourteenth century; *Lays of Marie de France*, twelfth century; *Romances of Chretien de Troies*, twelfth century. These may be obtained, translated into English in the convenient *Everyman's Library*, published by E. P. Dutton.

The characters of the Arthurian stories represent types of men and women. Those who live according to the code of chivalry are made heroic; those who transgress the code are disapproved. Thus the stories as a whole enable us to see a knightly community in which each individual holds his place by virtue of his moral ideals and conduct. Much of the moral enthusiasm of the Middle Ages and later periods has been wrought into the characters and plots of these stories.

As You Like It is one of Shakespeare's romantic comedies, fanciful, witty, and full of the spirit of youth. The action is divided between the court of Charles, who has usurped the dukedom of his older brother, Frederick, and the forest of Arden, where the deposed Frederick holds sway. The play describes the flight to the forest of Arden of Frederick's daughter, Rosalind, disguised as a boy, and Charles' daughter, Celia, dressed as a rustic lass. There several scenes of love-making ensue. Touchstone, the court jester, tries his court manners on Audrey, a simple country maid; Rosalind, beneath her disguise, has a chance to test the fidelity of her lover, Orlando; and Celia finds a mate in Orlando's brother. The happy outcome of these love affairs and the repentance of the usurping duke furnish a pleasant ending to which the persistent melancholy of Jaques is in amusing contrast.

Aurora Leigh (1857), a novel in verse form by Elizabeth Barrett Browning. In telling a conventional love story, the author introduces contemporary theories regarding the improvement of society.

Austen, Jane (1775-1817), English novelist who gives neat pictures of life among the gentry of an English village. Best novels *Pride and Prejudice* and *Emma*.

Autocrat of The Breakfast Table. A series of narrative essays by Oliver Wendell Holmes which purport to record the conversation of a boarding-house. Holmes introduces comment on various subjects, anecdotes, poems, puns, and fancies. The book is a good one to read at odd moments, dipping in here and there.

Bacon, Francis (1561-1626), English prose writer, statesman, scientist. Best known work, *Essays*.

Baconian Theory, the theory that Bacon was the author of literary works which are usually attributed to Shakespeare. Supporters of this theory argue that the name of Bacon is introduced in acrostic cipher in many of the plays and sonnets.

Ballad. A ballad is "a song that tells a story". The oldest baliads were handed down from parents to children by word of mouth, as proverbs and weather sayings often are, and only in comparatively recent times got into writing.

Balzac, Honore de (1799-1850), French novelist, author of *The Human Comedy*, a series of novels classified to represent all phases of human experience. *Old Goriot* and *Eugenie Grandet* are two of the best.

Barchester Towers (1857). The title novel of a series by Anthony Trollope. The series depicts the life of an English cathedral town, and is notable for its realistic treatment of the clergy.

Bardolph is one of the group of low but amusing characters found in *Henry IV*, *Henry V*, and *The Merry Wives of Windsor*, plays by Shakespeare. He is an unprincipaled thief, roysterer, and coward whose end is hanging. His red nose is a great source of amusement to his companions.

Barkis is the stage-driver who marries Peggotty, the faithful old nurse of *David Copperfield*, a novel by Dickens. His chief claim to fame is his proposal of marriage, couched in the words, "Barkis is willing".

Barnaby Rudge (1841). One of the two historical novels written by Dickens. It deals with the religious riot of 1780 in England. Dickens gives an effective portrait of Lord George Gordon, the fanatic who incited this riot.

Barrie, Sir James M. (1860-), Scotch novelist and dramatist. *Sentimental Tommy* (a novel); *The Little Minister*, *Peter Pan*, *What Every Woman Knows*, (plays).

Bell, Currer and Acton, see **Bronte.**

Ben Hur. An historical romance by Lew Wallace (American), the action of which takes place in the time of Christ. Judah Ben Hur, a wealthy young man, because of accidentally knocking a tile from the roof while he is viewing the entrance of a new Roman governor into Jerusalem, gets arrested and condemned to the galleys. Many exciting adventures ensue, including the famous chariot race. The account of the conversion of Ben Hur to Christianity has added greatly to the popular interest in the book. Its sales have been enormous. The dramatic representation of the story has also had great popularity.

Beowulf. An early English (Anglo-Saxon) epic. The story consists of three episodes: (1) Beowulf with a small band of followers crosses the sea to aid a friendly people whose land is being ravaged by a monster named Grendel. Beowulf defeats Grendel in hand to hand conflict, and the monster flees, mortally wounded. (2) Grendel's mother seeks to avenge her son, but Beowulf follows her to her lair at the bottom of a mere and kills her. (3) In his old age Beowulf loses his life in combat with a fire-dragon which is devastating his kingdom. The hero of this poem shows a spirit of self-sacrifice which gives a nobility of spirit to the work, unusual in primitive compositions. So many of the customs and ideals of the people are revealed in the narrative that we are able to get a good conception from it of the Anglo-Saxon civilization.

Biglow Papers. Humorous and shrewd verses in the Yankee dialect, by James Russell Lowell, begun during the Mexican War. They are vigorously anti-slavery.

Blackmore, R. D. (1825-1900), English novelist. Best known for his romance of Devonshire life, *Lorna Doone*.

Blake, William (1757-1827), English poet, painter, engraver. Highly imaginative. *Songs of Innocence*.

Bleak House (1852-3). Novel by Charles Dickens. In this novel Dickens satirizes the injustice of delay in the Court of Chancery. The story is one of sin, concealment, and retribution. Several of the characters are memorable: Mrs. Jellyby, a woman devoted to foreign missions but neglecting her own family; Mr. Chadband, a shallow-minded pulpit-orator; Mr. Skimpole, poverty-stricen through his own improvidence; Jo, the street sweeper, a pathetic boy of the slums, who "don't know nothink". The novel is one of the most carefully constructed of all the author's narratives.

Blithedale Romance, The (1852). Novel by Hawthorne. This is a story which grew out of Hawthorne's interest in the Brook Farm Experiment. It depicts a community united in equality and fraternity. The novel is not one of Hawthorne's best, but the portrait of Zenobia, probably suggested by the character of Margaret Fuller, is interesting.

Boffin, Mr. A character in Dicken's novel, *Our Mutual Friend*. He is an illiterate old man who comes into a fortune, and uses it with generosity and wisdom. He assists the marriage of John Harmon and Bella Wilfer, though it means the loss of most of his fortune. Mrs. Boffin is equally amiable.

Boswell, James (1740-95), English writer (Scottish) who, though contemptible personally, wrote the best biography in the language, *The Life of Samuel Johnson*.

Bottom, Nick, the weaver in Shakespeare's *Midsummer Night's Dream*, belongs to a group of artisans including Quince, the carpenter; Snug, the joiner; Flute, the bellows mender; Snout, the tinker, and Starveling, the tailor. Shakespeare represents these characters as artisans of his own time living in ancient Athens. They plan to give a play of *Pyramus and Thisbe* before the Duke on his wedding day. Bottom is cast for Pyramus, but he covets the other parts, even that of the lion. He is a great braggart and very self-important, ordering about the other characters, although he is not in charge of the play. During the rehearsal Puck places an ass, head upon him, and causes the fairy queen to fall in love with him. Bottom's self-esteem is so great that he accepts the attentions of the fairies with perject equanimity. The clownish, literal Bottom is the most clearly individualized character in the play.

Bride of Lammermoor, The (1819). A tragical romantic story by Scott, depicting the love of a penniless youth, Edgar, Master of Ravenswood, for Lucy Ashton. A feud between the families and the intrigues of Lucy's worldly mother, culminating in Lucy's madness and Edgar's death, makes the story as pathetic as *Romeo and Juliet*. Leslie Stephen called this "in some respects the best and most artistic of Scott's novels". The opera, *Lucia di Lammermoor*, is based on this novel.

Bronte Sisters: Charlotte (1816-55), **Emily** (1818-48), **Anne** (1820-49). Three gifted English women, poets and novelists, of unfortunate life and morbid temperament. Two novels, *Jane Eyre*, by Charlotte, and *Wuthering Heights*, by Emily, entitle them to fame.

Brook Farm Experiment (1841-47), was an unsuccessful attempt to found an ideal community where all the members should labor with their hands as well as pursue scholarly vocations. The members were in sympathy with the Transcendentalists. Hawthorn's *Blithedale Romance* is an idealized picture of this community.

Brooke, Dorothea. The heroine of George Eliot's novel, *Middlemarch*. Dorothea is a high-minded woman who wishes to devote herself to service of mankind, but never finds so noble an opportunity as she seeks. Her life is one of good intentions unfulfilled, and unfulfilled not so much through any fault of her own as through the lack of opportunity which the author thinks characteristic of modern life.

Browning, Elizabeth Barrett (1806-61), English poetess. Wife of Robert Browning. Author of *Sonnets from the Portuguese*.

Browning, Robert (1812-89), English poet. Browning's chief characteristics are vigor and eccentricity of style, originality of thought, extraordinary range in subject-matter, and a resolute cheerful philosophy. *Rabbi Ben Ezra*; *Cavalier Tunes*.

Bryant, William Cullen (1794-1878), American poet and editor. Poems of nature and of general human experiences. *Thanatopsis*.

Bulwer-Lytton, Edward (1803-73), English novelist and dramatist. Novel: *The Last Days Of Pompeii*; play: *Richelieu*.

Bunner, H. C. (1855-96), American poet and story writer. Editor of *Puck*. Author of *Short Sixes*, (stories).

Bunyan, John (1628-88), English Puritan. *Pilgrim's Progress* was written by him while he was in prison for preaching without authority.

Burke, Edmund (1729-97), English prose writer. Devoted to liberty, (*Speech on Conciliation with the Colonies*, speeches against Warren Hastings), but also conservative, seeking liberty through the gradual improvement of existing government (*Reflections on the French Revolution*).

Burnett, Mrs. F. H. (1849–1924), American author of *Little Lord Fauntleroy* (1886), a story for children.

Burney, Frances (Madame D'Arblay) (1752-1840). English. Disciple of Dr. Johnson, who spoiled her style. Novel, *Evelina*; *Diaries and Letters*, famous for the pictures they give of men and events in her time.

Burns, Robert (1759-96), Scottish poet. Burns appeals to emotions common to all men, and alike in tenderness and humor, is everywhere read with affection. He is the favorte poet of the common man and of the outcast. Conviviality has never found better expression than in his works; better

songs than have never been written. *Auld Lang Syne; Tam O'Shanter.*

Burroughs, John (1837-1921), American naturalist. Author of many books about nature.

Byron, George Gordon Noel (1788-1824), English poet, "the arch-apostle of revolt". He was a man of brilliant abilities but undisciplined character. For his wit and fluent rhetoric he remains famous, though he has not kept the great fame he once had. *Prisoner of Chillon; Childe Harold.*

Cable, George W. (1844-1925), American story writer. Stories of Louisiana. *Old Creole Days.*

Caliban. Character in Shakespeare's *The Tempest.* He represents human intelligence combined with bestial morality. The son of a witch, half beast and half man, he has been introduced into several literary works since Shakespeare's day. Recent works are Percy Mackaye: *Caliban and the Yellow Sands*; W. L. George: *Caliban.*

Campbell, Thomas (1777-1844), English poet. Poems of warfare: *Ye Mariners of England, Hohenlinden.*

Canterbury Tales. A collection of stories written by Geoffrey Chaucer, English poet of the fourteenth century. In a *Prologue* the author describes nine and twenty pilgrims, typical mediaeval folk of different social stations, who agree to entertain themselves on their pilgrimage to Canterbury by telling stories as they ride. After this introduction the stories begin. They are of various sorts, some coarse, some refined, some humorous, some tragic. In the stories and in the description of the pilgrims between stories we get an idea of the character of Chaucer himself. He seems to have been a man with remarkable power to observe men and women, understand their faults and follies and see through their hypocrisies. This power of observation was combined with a remarkable sense of humor and a remarkable kindliness.

Carducci, Giosue (1835-1907), Italian critic and poet

Carey, Alice (1820-70), American poetess, chiefly known as the author of playful and moral verses for children.

Carlyle, Thomas (1795-1881), English prose writer. Carlyle was a man of personal oddity, querulous, savage, gloomy, tender, by turns. He developed an eccentric, vigorous style. His favorite subjects were history, biography, literature, economics. *Essay on Burns, Sartor Resartus, French Revolution, Heros and Hero Worship.*

Carmen (1847) is the title of a romance by Prosper Merimee (French). It is a tragic story with a passionate gypsy heroine who is beloved by Don José, the cavalryman. The story is well known in its operatic version, and as a motion picture play, acted by Geraldine Farrar.

Carroll, Lewis, see **Alice in Wonderland.**

Carton, Sidney. The hero of Dicken's *Tale of Two Cities.* Through the greater part of the story Carton appears as a dissipated and unprincipled man, but at the end shows himself a hero by taking the place of a condemned prisoner, Charles Darnay, to whom he bears a striking resemblance. By this means he saves Darnay and secures the happiness of Darnay's wife, with whom he is in love, but loses his own life.

Cass, Godfrey. Godfrey Cass, in George Eliot's *Silas Marner,* is a self-centered man who had concealed a previous marriage from his wife, Nancy, a woman whose main characteristics were "an unselfish clinging to the right, and a sincerity clear as the flower-born dew." His character is skillfully drawn. He had a "wavering nature, too averse to facing difficulty to be unvaryingly simple and truthful". At last, however, he brings himself to confess the secret he has concealed and partially redeems himself thereby. He is a character of the sort George Eliot frequently introduced in her novels, one in whom weakness and amiability mingle.

Castle Rackrent (1801) Story by Maria Edgeworth. It is a chronicle rather than a novel, recounting without a very careful plot, the follies and crimes of an Irish family through several generations. The story lacks plot but has humor and depicts character well. Scott acknowledged great indebtedness to Miss Edgeworth

Caxton, William (1422-91), first English printer. Important for spreading the influence of the Renaissance through England.

Caxton, The (1850). Novel by Bulwer-Lytton. The story concerns a love-affair interrupted by wordly ambition. There is gentle satire of politics and of society. One of Lytton's best novels.

Cellini, Benvenuto (1500-71), Florentine artist in gold, silver, and bronze, whose memoirs sketch his own brilliant and spectacular career, and also give a good picture of the most interesting of all periods in the history of Italian art. *Autobiography.*

Chanson de Roland or "The Song of Roland" is a poem in Old French which tells the heroic story of the fight of Count Roland, a leader in Charlemagne's army, against the Saracens. Roland's army was treacherously ambushed at the pass of Roncesvalles. There a prodigious combat ensued in which the knights did marvelous deeds of valor. Roland fought more fiercely than any, with his sword, Durendal, but at last, fatally wounded, was constrained to sound on his horn of ivory a call for help. The call was heard by Charlemagne thirty leagues away. He came and took revenge on the Saracens.

Chateaubriand, Francois Rene, Viscount de (1768-1848). Champion of Christianity and of the American Indian, whom de depicted as a noble savage.

Chatterton, Thomas (1752-70). A precocious genius who passed off his own poems as ancient works he had found in manuscript. Unappreciated and despairing, he committed suicide in his eighteenth year. *The Rowley Poems,* were his chief productions

Chesterfield, Lord (1694-1773), statesman and author, best known for his *Letters to his Son* in which he gives wordly advice for self advancement. His attempt to take the credit for aiding Samuel Johnson in writing his *Dictionary* (without deserving the credit), called forth a stinging letter from Johnson which marked the end of the system of patronage of authors.

Chesterton, Gilbert K. (1874-), an English essayist who writes in a clever, paradoxical style.

Childe Harold's Pilgrimage. A narrative and descriptive poem by Lord Byron. Canto I. describes travels in Spain and Portugal; Canto II. in the near East; Canto III in Belgium (including a visit to the field of Waterloo, a year after the famous battle), and up the Rhine to Switzerland; Canto IV. in Italy, with famous descriptions of Venice and Rome.

Christmas Carol, A. A ghost story of Christmas, by Charles Dickens, published in 1843, with illustrations by John Leech. "We are all charmed," wrote Lord Jeffrey to the author, "with your *Carol,* chiefly, I think, for the genuine goodness which breathes all through it, and is the true inspiring angel by which its genius has been awakened. The whole scene of the Cratchits is like the dream of a benevolent angel, in spite of its broad reality, and little Tiny Tim in life and death almost as sweet and touching as Nelly."

Churchill, Winston (1871-), an American novelist who chooses American problems and settings for his stories. Author of *The Crisis* and *Richard. Carvel.*

Cid, The, (1636). A play of the cape and sword type by the French dramatist, Corneille, who adapted it from a play in Spanish. It preserves the legend of the Cid, a hero of ancient Spanish romances and chronicles. The Cid killed the father of the girl he was to wed because of an insult to his own father. His betrothed then demanded vengeance upon him, but eventually found her love strenger than her desire for revenge.

Clarissa Harlowe, The History of. A novel by Samuel Richardson, published in 1751. It is written chiefly in the form of letters, and tells the story of a young woman of good country family who is abducted by the libertine, Lovelace. Clarissa's misfortune and death form the story, which is expanded to eight volumes by the microscopic analysis of every emotion of the unfortunate heroine. She was the favorite heroine of Richardson's generation.

Climax. The word is derived from a Greek word meaning ladder, and properly applies to the complete rising action of a plot. It has, however, come to be used of the acme, or highest point of the rising action.

Cloister and The Hearth, The. An historical novel by Charles Reade, depicting the life of the fifteenth century in Europe, when the Renaissance ideals were struggling with the mediaeval. The journey of the hero, Gerard, through Holland, Germany, France, and Italy gives a chance for the author (1) to recount many thrilling adventures; (2) to describe peasants, clergy, burgomasters, adventurers, German mediaeval innkeepers, robbers, deported French villagers, and Italian coutiers; and (3) to emphasize the power of the church by description and inoident. The author studied innumerable documents to enable himself to write his novel. The hero, Gerard, and the herione, the devoted Margaret, are represented as being the parents of the distinguished Dutch scholar, Erasmus.

Coleridge, Samuel Taylor (1772-1834), English poet and critic. He was one of the English Lake Poets, so-called from the section in which they preferred to live. With Wordsworth he published the famous *Lyrical Ballads* in 1798. This work heralded a new era of imaginative work. Like De Quincy, Coleridge was a victim of the opium habit. Best known works: *Kubla Khan, Christabel, The Ancient Mariner.*

Collins, Wilkie (1824-89), an English novelist whose stories are distinguished for their elaborate plots. He wrote *The Woman in White* (1860) and *The Moonstone* (1868).

Comedy In comedy men and women are represented in a conflict with circumstances which renders them ridiculous and is ended without disaster.

Complete Angler, The (1653). A book of narratives in dialogue form, with scenes from nature, advice on angling, songs and reflections pleasantly mingled. The author was Isaac Walton.

Comus. This is a masque written by John Milton for a Michaelmas festival in 1634 at Castle Ludlow, the home of the Earl of Bridgewater, in Shropshire. Music written by Henry Lawes and stage settings designed by Inigo Jones, accompanied its production. The triumph of virtue over evil is the tneme. Virtue is embodied in the lady, who is lost in the wood and lured to the home of the enchanter Comus, a son of Circe. She refuses to drink his potion, and is rescued by the Attendant Spirit, with the aid of Sabrina, the water-nymph. The high moral quality of the Lady's speeches makes a striking contrast to the gross materialism of Comus's utterances.

Confessions of an English Opium Eater (1821). Thomas De Quincey's account of his own experiences, telling how much opium he could take in a day and what the effects were, recounting various trivial events of his life and showing how these became the material of his dreams, glorified and distorted by the influence of the drug. This book, first published without his name, brought De Quincey a ready market for his writings and confirmed him in a literary career.

Conrad, Joseph (1857-1924). A novelist of Polish birth who writes in English. He is the author of stories of thrilling adventure, chiefly of the sea. Among his best works are: *Youth* (short stories); *The Arrow of Gold, Victory* (novels).

Cooper, James Fenimore (1789-1851). An American novelist who describes life on the Indian frontier and at sea. *The Leather-Stocking Tales, The Pilot,* and *The Spy* are the best of his works. He has been widely read in other countries.

Coriolanus. An historical play of Shakespeare's later dramatic period. The scene is laid in the time of the early Roman republic in the fifth century B.C. Coriolanus was banished from Rome, and, in consequence, led the Volscian troops against his native city. He was persuaded to turn back only by the prayers of a procession of Roman matrons, headed by his own wife.

Cotter's Saturday Night, The. A poem by Robert Burns published in 1786. The picture he gives of the Scoteh laborer's family gathered around the hearth to rest and worship drives home the truth that the strength of a nation lies in its devotion to work and religion.

Count of Monte Cristo, The. A novel by the elder Dumas. This is one of the most exciting boy's books in the world. Edward Dantés is unjustly imprisoned for twenty years through the evil schemes of two rivals and the corruption of a magistrate. While in prison he is told the secret hiding place of an enormous treasure on the Island of Monte Cristo, and, escaping from his dungeon, finds the treasure, and establishes himself as Count of Monte Cristo, a mysterious person of unparalleled wealth. The sole purpose of his life comes to be the punishment of those who had wrongfully sent him to prison, but though he accomplishes his purpose he finds that revenge is not sweet.

Cowper, William (1773-1800). An English poet. Author of *The Diverting History of John Gilpin* (a humorous ballad, widely known), and *The Task.*

Crabbe, George (1754-1832). English poet who wrote realistic descriptions of country life in *The Village.*

Craddock, Charles Egbert (1850-1922). Under this pen name Mary Noailles Murfree, American novelist, writes stories of life in the Tennessee mountains. *The Prophet of the Great Smoky Mountains.*

Cranford is a novel by Mrs. Gaskell, published in 1853. It makes interesting to the reader the petty economies and pleasures of a group of old ladies in an English village. Miss Mattie Jenkins, Miss Betty Barker, Miss Pole, Miss Forrester, and others are described with sympathetic humor.

Crawford, Francis Marion (1854-1909). An American writer of romantic novels, many of which have Italy as their scene. *A Roman Singer, Saracinesca.*

Crawley, Rawdon. In Thackeray's *Vanity Fair.* "a novel without a hero," Rawdon Crawley is one of the chief male characters. Good of heart, slow of intellect, with boyish affection and spendthrift neglect of obligations mingling, he is best remembered for the great scene in which he strikes down the profligate Lord Steyne in defence of his honor. The character of Rawdon Crawley is in itself adequate proof of the completeness with which Thackeray understood the "gentleman" and the "gentleman's code."

Criticism. The chief objects of literary criticism are (1) to judge, (2) to interpret, (3) to give personal impressions of books. Criticism may be favorable or adverse. It has been said that the aim of criticism is to give answers to three questions with regard to a book: (1) What is it about? (2) How is it written? (3) Is it worth while? Matthew Arnold defines criticism as "a disinterested endeavor to learn and propogate the best that is known and thought in the world." (See *Suggestions for Preparing Reports on Books,* in another part of this *Encyclopedia.*)

Crothers, Samuel (1857-1918). Unitarian minister and author of witty essays. *The Gentle Reader*

Curtis, George William (1824-1892). American editor and political orator; author of *Prue and I.*

Cycles. Cycle is a word used to designate works which taken together represent a complete story or a complete division of some great narrative material. For instance, all the romances telling of Sir Gawain constitute the Gawain Cycle. (See Arthurian Romances.) A cycle of miracle plays is a group which tells the biblical story of mankind from creation to the day of doom.

Dame Care (Frau Sorge) (1888). This story by Hermann Sudermann tells of a boy whose life was so full of misfortune that he seemed to be a foster-child of Dame Care. His father was shiftless but tyrannical, his mother full of complaint, his sisters somewhat disreputable. The boy made great sacrifices in attempting to save the family honor. At the close of the story he seems about to gain release from trouble in a happy marriage.

Dana, Charles A. (1819-97). Editor of the *New*

York Sun from 1868 to his death.

Dana, Richard Henry, Jr. (1815-82). Author of *Two Years Before the Mast*, an excellent sea story for boys.

Daniel Deronda (1876). George Eliot's last novel. In this novel two stories are merged. The first tells of the life of Gwendolyn Harleth, a beautiful but selfish girl. She marries Grandcourt, a cynical man of the world, and is very unhappy. At last she is partially released from misery by his death. The second story, which is the main thread of the plot, tells of Daniel Deronda, a boy who is ignorant of his parentage. He falls in love with a Jewish girl, Mirah, and eventually learns that he is himself the son of a Jewish opera singer. The two stories unite through the intimacy which grows up between Gwendolyn and Daniel Deronda, and the improvement of her character under his influence. George Eliot wrote the novel as a study in racial heredity, and succeeded in making it an interesting defence of the Jewish tradition.

D'Annunzio, Gabriel (1864-). Italian. Author of plays and novels. He has attracted much attention by his occupation of Fiume. *The Triumph of Death.*

Dantes, Edward, see **Count of Monte Cristo.**

D'Arblay, Madame, see **Burney, Frances.**

Darwin, Charles (1809-82). An English scientist whose book, *The Origin of Species*, published in 1859, presented elaborate evidence in support of the theory of evolution, and had a marked effect upon the thought of the time.

David Balfour (1893). Romantic novel by Robert Louis Stevenson. This novel continues the story of *Kidnapped*. It tells of David's attempt to help Alan Breck Stewart out of Scotland, of his own imprisonment, subsequent release, and marriage after varied fortunes to Catriona Drummond.

David Copperfield (1850). Novel by Charles Dickens. It gives the biography of the hero, including his sad childhood and bitter experiences as student and apprentice, the loss of his child-wife, Dora, and the later business prosperity and second marriage of his manhood. The novel is undoubtedly to some extent autobiographical. David's nurse, Peggotty; his tyrannical stepfather, Mr. Murdstone; his aunt, Betsy Trotwood; his landlord, Mr. Micawber, and other characters, are famous examples of Dickens's ability in characterization. Most of the characters are eccentric. David Copperfield was Dicken's own favorite among his works and is sure to hold its place because of the humor, kindliness, and graphic delineation of persons and places. No one can afford to be unfamiliar with this novel.

Davis, Richard Harding (1864-1916). American war correspondent and author of delightful stories of adventure. *Gallagher and Other Stories, The Princess Aline.*

Daudet, Alphonse (1840-98). French author of pleasing novels and short stories. He prefers to deal with subjects from common life. The Tartarin series, including *Tartarin of Tarascon* ,are humorous stories about a boastful French provincial.

Decameron. A collection of one hundred tales by Boccaccio, an Italian of the fourteenth century. A group of ladies and gentlemen isolate themselves in the garden of a country estate to escape from the plague, according to the opening of the book, and there tell these hundred stories for their amusement.

Defoe, Daniel (1659-1731). An English political pamphleteer and realistic novelist. He had the gift of making a story seem real by putting in a great deal of small detail. Author of *The Shortest Way With Dissenters*, a tract which brought him to trouble with the authorities of church and state; *The Journal of the Plague Year*, which is almost wholly fiction; and *Robinson Crusoe.*

Deland, Margaret (1857-). American writer of novels and short stories of village life. *Old Chester Tales. The Awakening of Helena Ritchie.*

De Morgan, William (1839-1917). English novelist. He is the author of books which have been compared to the novels of Dickens, because of their subject-matter, tone, and length. He began writing novels after he was sixty years old. *Alice for Short, Joseph Vance.*

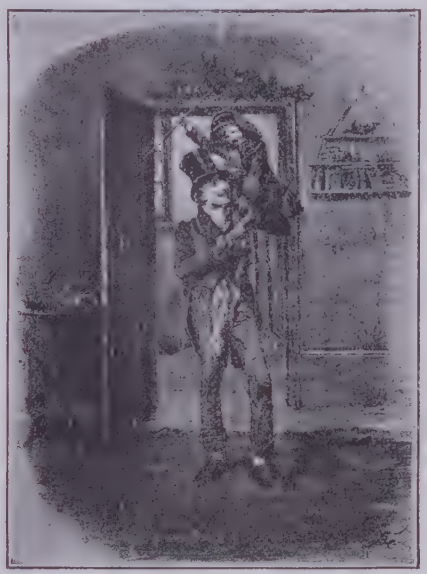
De Quincey, Thomas (1785-1859). A brilliant English prose writer, famous for the musical quality of his style. His habit of taking opium undoubtedly affected his writing, increasing a natural tendency to queer dreams. Carlyle wrote of him: "Eccovi, this child has been in hell!" Some of his best works are *Levana and Our Ladies of Sorrow, Confessions of an English Opium Eater, The English Mail Coach.*

Desdemona. The heroine of Shakespeare's play, *Othello*. Her character is one of entire sincerity and devotion. Rarely has a dramatist succeeded so well in portraying innocence without any sacrifice of interest. Hazlitt says of her, "we lose sight of her personal charms in her attachment and devotedness to her husband." That a woman of this sort should be killed by the man she loves makes a tragic situation of the most powerful kind.

Deserted Village, The. A poem of about three hundred lines by Oliver Goldsmith (English), written in heroic couplets. It is supposed to describe Goldsmith's native village in Ireland, which was depopulated to make part of the large private estate of a noble. Goldsmith introduces into the poem descriptions of the village parson and of the schoolmaster. These portraits are done with a kindliness and truth which makes them favorites. Throughout, the virtues and the pleasures of common life are depicted with sympathy.

Diana of the Crossways. A novel by George Meredith in which Diana, the heroine, is continually finding herself in a critical position. She is always coming to the crossways, that is to say, and must choose which of two difficult paths to take. Her difficulties are those of love, marriage, divorce, and money matters. They offer a chance for the making of several witty epigrams, such as Meredith is fond of weaving into his narratives. Diana is a remarkable study in feminine character. She has wit, beauty, and a capacity for loyalty. Her betrayal of a state secret to a newspaper is an incident the probability of which has caused a good deal of discussion. It has been alleged that her character was modeled upon that of Mrs. Norton, granddaughter of Richard Brinsley Sheridan.

Dickins, Charles (1812-70). The most popular of English novelists. Dickens's genius was best employed in telling stories of odd and humorous characters, but he enjoys great fame for the tender and pathetic narrative in which his work is often artificial and melodramatic. Perhaps the best of his works are: *Pickwick Papers* (early humorous sketches), *Tale of Two Cities* (a story of the French Revolution), *David Copperfield* (partly autobiographical), *Bleak House* (a story of the law's delay), *Christmas Stories* (in which the author's optimism finds best expression), and *Great Expectations* (the best of the later novels.



DICKENS CHRISTMAS CAROL

Dickinson, Emily (1830-86). A New England poet, author of quiet and simple verses.

Doctor Faustus, see **Faust.**

Dr. Jekyll and Mr. Hyde by Robert Louis Stevenson, was published in 1886. This is the story of a London physician of good reputation, who by means of a drug which he has discovered can change himself from Dr. Jekyll to Mr. Hyde, a person of cruel and criminal tendencies. The story is, therefore, one of a double personality, and is readily understood as an allegory of the good and the bad which unite in every human being. The allegory is carried to its natural conclusion when the evil personality predominates and Dr. Jekyll becomes transformed into Mr. Hyde without the aid of his drug and even against his own wish.

Dodgson, C. L., see **Alice in Wonderland.**

Dogberry. A character in Shakespeare's *Much Ado About Nothing*. Dogberry is a conceited and ignorant official with a blundering tongue. Hazlitt calls him a standing record of "formal gravity of pretension and total want of common understanding."

Doll's House, The. A play by Henrik Ibsen, the great Norwegian dramatist. Nora, the heroine, is a woman of restricted education who has been brought up to be merely an ornament, or doll, in the house of her husband. She makes tragic mistakes in consequence of this, and finally, at the end of the play, leaves the house to learn for herself the necessary lessons of which she has been deprived. The play is a protest against undue restriction of woman's sphere.

Dombey and Son (1846-7). A novel by Dickens. It tells a melodramatic story of the Dombey family. Mr. Dombey neglects his gentle daughter, Florence, but takes great pride in Paul, his son. His pride is shattered by misfortunes, however. Mrs. Dombey, a second wife, humiliates him by deserting the house; Paul dies while still a boy; Mr. Dombey's business fails. Meanwhile Florence gains the friendship of some plain seafaring people and marries one of them, Walter Gay. Her good fortune and faithfulness relieve Mr. Dombey's old age. Among the minor characters Cap'n Cuttle, with his seaman's jargon, is prominent. Paul Dombey's death afforded Dickens a chance for exhibiting the pathos of which he was fond.

Don Juan. A character famous in literature as the type of licentious adventurer. After Don Juan's many escapades, according to legend, the statue of a man he had killed in a duel descended from its pedestal and delivered him to the devil, body and soul. Mozart has an opera founded on this story. The title is *Don Giovanni*. Byron's *Don Juan* and Shaw's *Man and Superman* show its influence. There are dramas based upon the story in various languages.

Don Quixote (1605-15). A famous satirical romance by Cervantes, a Spaniard. The two chief characters are Don Quixote, a dignified gentleman crazed by reading stories of chivalry, and Sancho Panza, an ignorant but shrewd country fellow, his servant. The ill-sorted pair go adventuring, and Don Quixote's insane attempt to demean himself always as a knight leads them into many ridiculous situations. To his disordered mind windmills are giants and hotel wenches are beautiful princesses. After long wanderings the odd pair return to the village from which they set out and Don Quixote regains his sanity. The book satirized the absurdities into which chivalric stories and chivalric sentiment had degenerated. It is so full of fun and wisdom that dramas and stories have been derived from it in many languages.

Donatello is a young Italian count in Hawthorne's *Marble Faun* who bears a marked resemblance to the famous statue of a faun by Praxiteles. His character is that of a carefree pagan until he falls in love with Miriam and commits a crime for her sake. Then he develops into a conscience-stricken member of civilized society, and gives himself up to justice. Throughout the story Hawthorne makes a mystery of the resemblance of Donatello to the statue, producing thereby that sense of wonder so familiar to readers of his works.

Dooley, Mr., see **Dunne, F. P.**

Doyle, Sir Arthur Conan (1859-). Englishman, author of short stories and historical romances. The best known are the *Sherlock Holmes Series* of detective stories, and *The White Company*, an historical romance.

Drama. The drama is a form of art in which a story is presented by means of action.

Dramatic Monologue. A form of art, perfected by Robert Browning, in which a speaker reveals his character by the words he utters at a critical (or dramatic) moment of his life.

Drinkwater, John (1882-). Contemporary English playwright. Author of the successful play *Abraham Lincoln.*

Drummond, William Henry (1854-1907). A Canadian poet who wrote in the dialect of the French-Canadian habitant. *Johnny Courteau, The Habitant.*

Dryden, John (1631-1700). Author of dramas, poems, and essays. He was a man of strong intellect who wrote in a polished style.

Dumas, Alexandre (the elder) (1803-70). Frenchman; author of an enormous number of novels written alone and with collaborators. Professor Cross says: "Dumas made history a background for imaginary adventure and sword-play." *The Count of Monte Cristo, The Three Musketeers*, and *Twenty Years After*, are the best.

Dumas's son, Alexandre, became a famous dramatist Because the names of the two men are the same, it is customary to designate them as "father" and "son," or "the elder" and "the younger."

The Dunciad. "The epic of the dunces," a satire in heroic verse by Alexander Pope. It is directed against the people who had offended the author, and especially against authors. Daniel Defoe and Robert Walpole were among those satirized.

Dunne, Finley Peter (1867-). An American humorist who writes in the dialect of an Irish-American very shrewd and entertaining comments upon interests of the day, especially political affairs.

Dunsany, Lord (1878-). A contemporary English playwright. *The Gods of the Mountains.*

Edgeworth, Maria (1767-1849). An Irish novelist who excelled in descriptions of Irish life and manners. *Castle Rackrent.*

Edwards, Jonathan (1803-58). A minister and writer of stern Puritanical works of theology. He was missionary to the Stockbridge Indians, and president, for a brief time just before he died, of Princeton College. *The Freedom of the Will, Sinners in the Hands of an Angry God.*

Eggleston, Edward (1837-1902). An American novelist who pictures early days in Indiana. *The Hoosier Schoolmaster.*

Egoist, The (1879). English novel by George Meredith. This was the novel which established Merideth with the reading public at home and abroad. The interest centers in Sir Willoughly Patterne and his fastidious search for a woman sufficiently perfect to become his wife. There is little action in the novel, but much very subtle analysis of egoistic sentiments. R. L. Stevenson wrote in praise of the novel in his essay "Books Which Have Influenced Me."

Egyptian Princess, The (1864). Historical romance by the German author, Georg Ebers. This novel unfolds a story of deception and revenge in ancient Egypt and Persia. The main story concerns

Cambyses, deceived into marrying Nitetis, an Egyptian princess who he thinks is the daughter of the king. He spurns Nitetis, when he learns the truth, and revenges himself upon his deceivers. The novel is based upon a careful study of ancient times, and depicts them with fidelity. Several historical personages are introduced.

Elegy. A funeral song or a song in honor of the dead.

Elegy Written in a Country Churchyard. A much quoted poem by Thomas Gray, the English poet of the eighteenth century. It embodies happily phrased reflections upon fame and death. Stoke-Pogis, near Eton, is the churchyard described.

Elia. The name assumed by Charles Lamb in writing his essay. He took this name from a clerk in the South Sea House.

Eliot, George (1819-80). Under this name Mary Ann Evans wrote her novels. She was a woman of remarkable intellect, well known as a translator before she began to write fiction. As a novelist she is notable for her sincerity, her insight into character, and her sympathy with common life. She was greatly influenced by the scientific thought of her time, and shows this influence in the comments upon life introduced into her stories. Her best novels represent English country life: *Adam Bede*, *The Mill on the Floss*, *Silas Marner*, *Middlemarch*. *Romola*, a story of Florentine life in the fifteenth century, is only a little inferior to these.

Elsie Venner. This is a novel of New England life by Oliver Wendell Holmes, published in 1859-60. It is based on the theory that pre-natal accidents may influence the character of a human being. Elsie Venner has a nature so strange that it seems allied to that of the snake which bit her mother before she was born.

Emerson, Ralph Waldo (1803-1882). American essayist, poet, lecturer. Emerson was a writer of energetic intellect, with ethical enthusiasms very valuable in the growing democracy at home and in the intellectual relationships with Europe which were developing.

Emile (1762). A narrative by Jean Jacques Rousseau, French novelist and philosopher. Though narrative in form, the book aims to lay down an ideal method of educating children. Emile, the hero, is a boy who learns directly through experiment and personal experience. Many educators since Rousseau have based their theories upon his principles.

Emma (1816). This is one of Jane Austen's realistic stories of English village life one hundred years ago. The charming but officious heroine, who is anxious to make matches among her friends, finally marries her wise counsellor, Mr. Knightley. So cleverly drawn are the characters that they seem like old friends.

Epic. An epic is a long narrative poem in a dignified style, celebrating the deeds of great heroes. Example: Homer's *Iliad*, Virgil's *Aeneid*, Milton's *Paradise Lost*.

Epictetus. Greek slave (first century A. D.) who gained his freedom and became famous as a philosopher, teaching calm endurance of the ills of life. *Discourses*.

Esmond, Beatrix. An interesting character in Thackeray's novel, *Henry Esmond*, and in its sequel, *The Virginians*. In the first novel she is a coquette, none too scrupulous, but beautiful and vivacious enough to charm men. With her, Esmond, the hero, is in love until her flirtation with the pretender to the throne of England reveals to him her true character. In *The Virginians* she is an old woman, conceited and not in the best repute, her beauty gone, a pathetic and unpleasant remnant of her old self.

Essay, The. A brief expression of opinion either upon some special aspect of a subject, or upon the whole subject, treated very generally. The essay is usually in prose. Examples: Montaigne's *Essays* (French); essays in the *Spectator* and *Tatler*, by Addison and Steele.

Essay on Man, An. A verse essay by Alexander Pope (English), in which the author attempts to explain the nature of man, his place in nature, and his relation to God. The style is epigrammatic.

Eugene Aram (1832). A novel by Bulwer-Lytton. The hero is a man of blameless character who has committed murder under unusual circumstances. The work is founded upon an incident of actual life, and furnishes an early instance of the tendency of our times to sentimentalize the criminal.

Eugenie Grandet (1833). A novel by Balzac (French). This is a story of Eugenie Grandet, daughter of a rich miser. Left with great wealth by the death of her father, she unselfishly helps the man she loves to marry another woman, and, left alone, without the power of enjoying her wealth, devotes herself to philanthropy. Her whole life is one of self-sacrifice.

Eustacia Vye, see **Vye, Eustacia.**

Evelina, by Frances Burney, is a novel which portrays the manners of London society in the eighteenth century. It consists chiefly of the letters of Evelina, a young girl visiting in London, to her guardian, Mr. Villars, in the country, describing her visits to Bath and Ranelagh, to the opera and the play. A mystery about the heroine and several complicated love affairs enliven the plot.

Evelyn, John (1620-1706). An English scholar whose most interesting work is his *Diary*.

Everdene, Bathsheba. The heroine of *Far From the Madding Crowd*, a novel by Thomas Hardy (English). Capricious, headstrong, and a bit vain, she has nevertheless enough womanly charm and beauty to win the love of three men. Something sterling in her character survives the tragic experiences which life brings her, and unites her finally with Gabriel Oak, who has loved and deserved her for years.

Everett, Edward (1794-1865). American statesman, editor, and orator, governor of Massachusetts, minister to England, president of Harvard.

Expedition of Humphrey Clinker (1771). A novel in the form of letters, written by Tobias Smollett (English). The novel tells of the journey of the hero and of Mattew Brambel about England. The characters are humorous; the incidents coarse but amusing; the pictures of the life of the times vivid.

Fable. A simple narrative which has the purpose of illustrating or teaching a plain truth. The most famous fables are those supposed to have been written by Aesop, an ancient Greek. In the most familiar fables animals are represented as speaking and acting like human beings.

Faerie Queene (1590-96). A long poem by Edmund Spenser. The poem was planned as an epical account of the virtues of the Christian knight. Only six complete books exist, though Spenser planned to write twelve. The six books tell of the adventures of knights and ladies, each of whom represents a virtue. Holiness, temperance, chastity, friendship, justice and courtesy are represented, each in a book. Spenser professed to be writing an allegory, but no one has been able to understand completely the application of his incidents and characters to events and persons of the age.

Falstaff, Sir John. A famous character in Shakespeare's *Henry IV.* and *The Merry Wives of Windsor*. He is a fat old rogue, the leader of a gang of thievish ruffians with whom Prince Hal, later King Henry V., consorts. Dr. Johnson says: "He is a thief and a glutton, a coward and a boaster, always ready to cheat the weak and prey upon the poor, to terrify the timorous and insult the defenceless". Yet he "makes himself necessary to the prince by perpetual gaiety, and by unfailing power of exciting laughter".

Far From The Madding Crowd, A novel by Thomas Hardy, appeared in 1874. The love affairs of the delightful rustic heroine, Bathsheba Everdene, are the basis of a narrative which includes vivid and charming pictures of rural life, such as the lambing and the scenes at the public house. Other models of graphic description in the book are the scene of the storm at night and of the sword play in the glen.

Farce. A form of comic drama in which the humor is often boisterous, the situations somewhat improbable, and the characters unreal.

Farewell Address, see **Washington's Farewell Address.**

Fathers and Sons (1861). A novel by Turgenev (Russian). The novel depicts the rebellion of the younger generation against the political and social institutions sanctioned by the elder generation. The book is interesting for the insight it gives into the intellectual unrest of the period.

Faust. Faust, or Dr. Faustus, is a famous literary character appearing in dramatic works in several modern languages. He typifies the gifted human being who is eager to enjoy life completely, to know all, to have all power, and to enjoy all pleasure. This zest for living brings him to realize that the satisfaction of all his desires will mean the loss of his soul. Thus the story of Faust, however told, presents a spectacle of contrasting light and shade, portraying the life of man in all its richness, but with the gloom of supernatural evil always in the background. Dramas: (English) Marlowe's *Dr. Faustus;* (German) Goethe's *Faust*. Operas: (German) by Schumann; (French) by Gounod and by Berlioz.

Federalist, The (1787-88). A series of papers which advocated the principles embodied in the proposed constitution of the United States. It was written by Hamilton, Madison, and Jay.

Fiction. Fiction is a term which properly describes all representations of scenes, characters, or events, some of which are imaginary. The word is, however, commonly applied to novels, short stories, and romances, rather than to dramatic works. Fiction and fact are antithetical in meaning.

Field, Eugene (1850-95). American author, best known for his verses for and about children. *Love Songs of Childhood*.

Fielding, Henry (1707-54). English dramatist and novelist, most famous for his novels. They give hearty and honest pictures of life, sometimes frankly coarse, but never mean. The candor of Fielding's work has given him an influence over later writers, who have admired the quality in him. His novels are: *Joseph Andrews*, *Tom Jones*, and *Amelia*. Byron called him "the prose Homer of human nature."

Fiske, John (1842-1901). American historian. Author of *Periods in the Modern History of America*, a series of histories.

Fitch, Clyde (1865-1909). American playwright, author of *The Truth*, *Captain Jinks of the Horse Marines*, and *Nathan Hale*.

Fitzgerald, Edward (1809-1883). An Englishman; translator from the Persian of the *Rubaiyat*, or quatrains, supposed to have been written by Omar Khayyam in the twelfth century.

Flaubert, Gustave (1821-80). French novelist, famous for the elaborate care with which he wrote his stories. *Madame Bovary*.

Folio. Literally a *leaf*. The word is commonly used to designate a book of the largest size. Strictly it applies to a book made of sheets of paper each of which is folded once in the process of making the book.

Foster, Stephen C. (1826-64). American poet, best known for his songs in negro dialect, such as *Old Black Joe* and *Old Kentucky Home*.

Fox, John Jr. (1863-1919). American novelist who wrote conventional and popular stories with the scene laid in the South. *The Little Shepherd of Kingdom Come*, *The Trail of the Lonesome Pine*.

Foxe, John (1516-87). English Protestant. Author of the *Book of Martyrs*, a very widely read work giving a prejudiced account of the religious persecution under Queen Mary.

France, Anatole (1844-1924). French author whose real name is Thibault. Best known for his narrative work in which irony, tenderness, humor and fancy mingle. Best known work, *The Crime of Sylvestre Bonnard*.

Francesca Da Rimini. A character in Dante's *Divine Comedy*. In real life she was a person of only local importance, but through Dante's masterly handling of her story she has become a famous personage. She was the wife of Gianciotto Malatesta, but fell in love with his brother Paolo. Their reading together of an old romantic story led to the expression of their love. When their love was discovered they were both killed by Gianciotto. In the *Inferno*, Francesca suffers for her sin, saying in her suffering: "There is no greater pain than to remember happy days in days less fortunate." The story of Francesca and Paolo has been given dramatic form by Stephen Phillips (English), George Boker (American), and D'Annunzio (Italian).

Frankenstein (1818). A "scientific" romance by Mrs. Shelley, wife of P. B. Shelley, the English poet. A young man named Frankenstein becomes interested in discovering the principle of life, and after long study constructs a being in likeness of a man, to which he succeeds in imparting vitality. The monster thus created upon the laboratory table finds his life unhappy because his frightful appearance keeps all human beings aloof, and demands that Frankenstein create a companion for him. When Frankenstein refuses, the monster becomes an avenging fury venting his resentment in a series of brutal crimes which culminates in Frankenstein's death. The monster is last seen floating to his own extinction upon an ice-raft in the arctic sea.

Franklin, Benjamin (1706-90). Early American statesman, inventor, and author of an *Autobiography* and *Poor Richard's Almanac*. He was a poor boy who learned the printer's trade, educated himself by reading and observation, and became prosperous and famous both at home and abroad. He was a signer of the *Declaration* and the *Constitution*, and ambassador to France. He made Philadelphia the center of the American culture of his time. No man in the history of modern times has shown such pre-eminent ability in so many fields as Franklin.

Free Verse. Free verse is a form of writing midway between verse of the usual rhymed sort and prose. It has "unrhymed cadence," as Miss Amy Lowell says. It is writing "whose cadence is more marked, more definite, and closer knit than that of prose, but which is not so violently nor so obviously accented as the so-called 'regular verse'." Good examples are to be found in the writing of Miss Amy Lowell, Mr. Robert Frost, Mr. Edgar Lee Masters.

Freeman, Mary E. Wilkins (1862-1930). A writer of realistic short stories describing life in New England villages. Her work has humor and pathos alike. *The Revolt of Mother* is one of the best short stories in the English language. Her best work is in the volume called *A New England Nun and Other Stories*.

Freneau, Philip (1752-1832). An early American writer of poems on political subjects, humorous poems, and poems about nature. In politics he was a strong anti-Federalist. Some of his best poems are: *The British Ship*, *The Wild Honeysuckle*, and *The Indian Burying Ground*.

Froissart, Jean. A French chronicler of the fourteenth century who gives a faithful picture of men and events of his time. He gives full expression to the ideals of chivalry as he comprehended them. His *Chronicle* is the best contemporary account that we have. Scott's historical novels dealing with the middle ages have been described as "Froissart modernized."

Frost, Robert (1875-). An American poet who has attracted much attention for his poems of New England country life, many of them in free verse. *North of Boston*.

Fuller, Margaret (1810-50). An American essayist and literary critic. She was a transcendentalist, editor of the *Dial*, and interested in the Brook Farm Experiment. Married Marquis Ossoli. Author of *Women in the Nineteenth Century*.

Gallegher and Other Stories. A volume of short stories by Richard Harding Davis. Gallegher, the title story, is an excellent story of a quick-witted boy in a newspaper office who turns amateur detective and has many thrilling adventures. Of the other stories in the volume the best are perhaps the Van Bibber stories, in which the hero is always getting into difficulties and always getting out with neatness, ease, and despatch. The whole volume is readable.

Galsworthy, John (1867-). English novelist and playwright. Among his best works are *The Patricians*, a novel; and *Strife* and *Justice*, plays.

Garland, Hamlin (1860-). American author of

narratives which often depict life in the Middle West. *A Son of the Middle Border* is autobiographical. *Main Travelled Roads.*

Garrick, David (1717-79). A famous actor, especially of Shakespearean parts; a friend of Dr. Johnson, and member of the Literary Club. In spite of short stature he succeeded in acting tragic parts as well as comic. Goldsmith described him as "an abridgement of all that is pleasant in man".

Garrison, William Lloyd (1805-79). An American orator and editor. The avowed purpose of his paper, *The Liberator*, was to effect the abolition of slavery. Garrison was one of the more violent or radical abolitionists. He was once dragged through the streets of Boston for expressing his views upon the policy of the government.

Gaskell, Mrs. Elizabeth (1810-65). An English novelist of much personal charm. She is best known for her novel, *Cranford*, in which she tells the story of a community of ladies. She was interested in the economic questions of her day and wrote of them, but is remembered best for her pictures of quiet village life.

Gibbon, Edward (1737-94). An English gentleman of means who gave his life to the most careful study of Roman antiquities, and wrote *The Decline and Fall of the Roman Empire.*

Gil Blas. A rambling tale of adventure written in the early eighteenth century by a Frenchman, Alain Rene Le Sage. The purpose which the author announced was to give true pictures of life and convey moral instruction. The scenes of the story are laid in Spain. Gil Blas sets forth with a mule and a little money to complete his education at the university and to seek his fortune. He is diverted from his first object by the accidents of his journey and his own love of adventure. Many lively and humorous incidents ensue, in the course of which the reader is enabled to become acquainted with all grades of society and all kinds of men and women, with the dens of thieves, the chambers of noblemen, the prison and the palace. The most famous character in the book is a quack doctor named Sangrado, who is depicted with great truth and satire. The book is a mine of incident seemingly invented without effort.

Gilbert, Sir William (1836-1911). An Englishman, author of the words of some of our best comic operas, like *The Mikado* and *Pinafore*, and of the highly diverting verses called *The Bab Ballads.* Sullivan composed the music for the operas, and the combination of Gilbert's words and Sullivan's music has proved unusually fortunate.

Gilder, Richard Watson (1844-1909). An American lyric poet, editor of *The Century* magazine for many years.

Gissing, George (1857-1903). An English writer of novels and short stories. He is particularly successful in showing the life of the poor. His novels are sad but give an impression of being true. They reflect the sadness of Gissing's own life. *The Odd Women, The New Grub Street.*

Glasgow, Ellen (1874-). An American novelist. Her best known work is *The Wheel of Life.* She often deals with the problems of women.

Godfrey, Cass, see **Cass, Godfrey.**

Godkin, Edwin Lawrence (1831-1900). A war correspondent and editor, born and educated in Ireland. He spent most of his life in America, and as editor of the *Nation* had a very important effect upon men and events. He was a fearless critic of political corruption.

Godwin, William (1756-1836). An Englishman who had a marked effect upon the men of his time, although he is now little read. He wrote novels, but is best known for an anarchistic treatise on society and government, entitled *Political Justice.*

Goethe, Johann Wolfgang Von (1749-1832). German. One of the greatest writers of modern times. He wrote plays, novels, and poetry. His best known plays are *Faust, Iphigenia in Tauris,* and *Hermann and Dorothea.* Carlyle translated one of his novels, *Wilhelm Meister's Apprenticeship.*

Gogol (1809-52). The "father of Russian realism". Author of *Dead Souls,* a novel, and *The Inspector,* a comic play.

Goldoni (1707-93). Italian. He was the author of many plays, comedies representing Italian life and types of character. The plots and the dialogue are especially good.

Goldsmith, Oliver (1728-74). Son of an Irish clergyman. Goldsmith is famous for his plays, his novel, *The Vicar of Wakefield,* and his poem, *The Deserted Village.* In addition to these he did a great amount of hack writing, and it has been said that he touched nothing with his pen which he did not adorn. His play, *She Stoops to Conquer,* still holds the boards. Very few plays see production for a hundred years. He was a very improvident and lovable character. In a comic description by one of his friends he was said to write like an angel but talk like poor Poll.

Grant, Robert (1852-). An American lawyer who has written several novels dealing with social problems. *Unleavened Bread, The Chippendales, Law and the Family.*

Grant, Ulysses S. (1822- 85) American general and President of the United States. Author of a very successful and interesting autobiography, called *Personal Memoirs.*

Gray, Thomas (1716-71). English poet. Gray was the author of *An Elegy Written in a Country Churchyard.* which is one of the most frequently quoted of English poems.

Greeley, Horace (1811-72). Founder and editor of the *New York Tribune.* Greeley had a very wide influence upon American opinion about the time of the Civil War especially throughout the country districts. His writing was often terse and effective. He made the phrase, "Go West, young man".

Gregory, Lady Augusta (1859-) One of the group of poets interested in the Irish Theatre. Author of many successful one act plays. *The Gaol Gate, The Bogie Man.*

Grimm Brothers,-Jacob (1795-1863), Wilhelm (1786-1859). German scholars, students of philology, grammar, and folk-lore. They are interesting to readers of literature because they collected and preserved the old German fairy stories.

Gulliver's Travels by Jonathan Swift is a satire published in 1726-27. The point of the satire is lost now that the conditions satirized are past, but the book remains interesting as a story. In four parts it tells of the hero's voyages to imaginary lands. pigmies; Book I to Brobdigna, the land of the pigmies: Book II to Brobdingang, the land of the giants; Book III to various countries, chief of which is Laputa, the home of eccentric scholars; and Book IV to the country of the Houyhnhums, a land where horses with an intelligence superior to that of mankind, carry on an ideal government. The first two books are the best.

Haggard, H. Rider (1856-1925). English novelist. Author of interesting stories, improbable in plot. His stories are told of strange lands. Africa is a favorite scene. *Allan Quatermain.*

Hakluyt, Richard (1552-1616). English traveller in the age of Elizabeth who compiled from the books of travel of the day a volume called *The Navigations, Voyages, and Discoveries of the English Nation.*

Hale, Edward Everett (1822-1909). An American clergyman best known to us for his story *The Man Without a Country.* Another well known story of his is *My Double and How He Undid Me.*

Halleck, Fitz-Greene (1790-1867). One of the so-called Knickerbocker school of writers, a group of men living in New York during the early nineteenth century. He was the author of *Marco Bozzaris.* He was a close friend of Joseph Rodman Drake who wrote *The Culprit Fay.*

Hamilton, Alexander (1757-1804). American statesman of the Revolutionary period. Chief contributor to the *Federalist.*

Hamlet. Perhaps the best known of Shakespeare's tragedies. Hamlet, Prince of Denmark, urged to seek vengeance by the ghost of his murdered father, defers action and indulges in melancholy reflections; but at last he screws his courage to the sticking point, and kills the usurping king. The walking of the ghost across the stage, the madness of Ophelia, the feigned madness of Hamlet, the assassination of the king and the death of Hamlet by a poisoned rapier furnish the somewhat melodramatic excitement which still makes the play popular.

Handy Andy. A rollicking story by Samuel Lover, who was a song-writer and popular entertainer as well as novelist. The story tells of the mishaps which befell the well-intentioned bungling hero. He was always doing the wrong thing, his mistakes bringing about complications in love and in politics which are very farcical. "Andy Rooney", says the author, "was a fellow who had the most singularly ingenious knack of doing everything the wrong way". At the end of the book Handy Andy is discovered to be really Lord Scatterbrain and weds his cousin like the true hero of old romance.

Hard Cash (1863). A novel by Charles Reade which purports to disclose abuses in the management of private asylums for the insane and in the laws governing such institutions. The story is highly sensational, but like most of Reade's works is full of facts gathered by the author with great pains.

Hard Times (1854). A novel by Charles Dickens in in which he satirizes extreme reliance upon statistics and a mechanical understanding of human relations. Its best known characters are Thomas Gradgrind, who worships statistics, and Josiah Bounderby, a conceited self-made man who holds in contempt the humble life from which he came.

Hardy, Thomas (1840-1928). The venerable English novelist and poet. Author of *Tess of D' Urbervilles, Far From the Madding Crowd,* etc.

Harris, Joel Chandler (1848-1908). American author who wrote *Uncle Remus, His Songs and Sayings.* Uncle Remus, the old negro, and his humorous stories of Brer Rabbit are well known abroad as well as in America.

Harte, Francis Bret (1839-1902). American author, best known for his stories about mining and lumbering camps in the West. *The Outcast of Poker Flat, The Luck Of Roaring Camp, Tennessee's Partner.*

Hawthorne, Nathaniel (1804-64). American novelist whose masterly novels and short stories depict with great subtlety the austere ideals and the mysteries of conscience which are sometimes called Puritan. *The Scarlet Letter, The House of the Seven Gables.*

Hay, John (1838-1905). American statesman and author. Wrote one novel, a considerable amount of verse, and with Nicolay, the authoritative life of Lincoln.

Hazlitt, William (1778-1830). English literary critic and essayist. Stevenson said, "We are all mighty fine fellows, but we can't write like William Hazlitt".

Hearn, Lafcadio (1850- 1904). American author. Wrote stories and sketches of singular beauty, chiefly New Orleans or Japan. *Out of the East.*

Heart Of Midlothian, The (1818). A novel of Scottish life and character by Scott. The story mainly concerns two sisters, Jeanie and Effie Deans. When Effie is on trial for child-murder, Jeanie will not tell a lie to save her, but after sentence is pronounced walks all the way to London to secure a pardon. The character of Jeanie and that of Madge Wildfire, the witch, are the most memorable in the book.

Hereward The Wake (1866). An historical romance of the period of the Norman Conquest, written by the English clergyman, Charles Kingsley, with copious use of historical records of the time with which it deals. Manly daring in heroic contests against odds, with a constant purpose on the part of the author to illustrate muscular Christianity, gives the work its individuality.

Herrick, Robert (1591-1684). A Cavalier poet, author of religious poems and dainty lyrics of nature. *Hesperides.* Author of the well known

"Gather ye rosebuds while ye may,
Old time is still a-flying."

Hewlett, Maurice (1861-1923). Author of novels and short stories whose scene is usually laid in the Middle Ages. *The Forest Lovers, New Canterbury Tales.*

Hiawatha (1855) Poem by the American poet, Longfellow. Hiawatha is a mythical hero of the American Indians. He gives them their arts and after founding their civilization withdraws at the coming of the white man

"To the kingdom of Ponemal
To the land of the Hereafter."

Henry, Patrick (1736-99). American orator of the colonial period. Only fragments of his speedhes have been preserved.

Henry Esmond (1852) An historical romance by Thackeray telling the story of Esmond's life, of his courtship of the beautiful Beatrix Esmond, of his military career, of his part in bringing the Pretender to England when Queen Anne was dying, of the failure of his political hopes and of his hope of marrying Beatrix, and finally of his marriage to Lady Castlewood. Beatrix's mother, and their emigration to America.

Herbert, George (1593- 1623). English clergyman and poet. Author of verse fantastic in form and sentiment, but at times genuinely sincere.

Hooker, Richard (1554-1600). Author of a treatise, *Of the Laws of Ecclesiastical Polity.*

Hoosier Schoolmaster, The (1870). A story by Edward Eggleston, depicting country life in Indiana in the middle of the last century. The hero encounters many difficulties in his school-teaching, but faces them all pluckily, and at last wins through. To-day the book has interest chiefly for the vivid and intimate picture it gives of pioneer conditions in the Middle West.

Horatius. A ballad by Macaulay. One of the *Lays of Ancient Rome.*

Howe, Julia Ward (1819-1910). American poet, author of the *Battle Hymn of the Republic,* reformer, and advocate of woman's suffrage.

Howells, William Dean (1837-1920). American editor, essayist, and novelist. Novel, *The Rise of Silas Lapham;* farce, *The Sleeping Car.*

Huckelberry Finn, The Adventures of (1884). A humorous chronicle of the life of boys by Mark Twain (S. L. Clemens). Huck and his pal, Tom Sawyer, run away from home and adventure down the Mississippi River on a raft. Until their final return home, thrilling, and pathetic incidents succeed one another in rapid succession in a narrative so skillful and human that it places the author among the great natural story-tellers of the world.

Higginson, Thomas Wentworth (1823-1911). American historian. *Young Folks' History of the United States.*

Hohenlinden. A famous ballad by Thomas Campbell, beginning,

"On Linden, when the sun was low
All bloodless lay the untrodden snow".

Hollinshed, Raphael (d. about 1580). Wrote the *Chronicles of England, Scotland, and Ireland.* The work furnished Shakespeare with much of the historical material of his plays.

Holland, J. G. (1819-1881). Founder of the *Century Magazine,* then called *Scribners' Monthly.* Author of poetry and novels. *Bittersweet, Seven Oaks.*

Holmes, Oliver Wendell (1809-94). American physician, author of poetry, novels and prose sketches. Famous for his humor and his sentiment. *The Chambered Nautilus* (poem), *Elsie Venner* (novel), *The Autocrat of the Breakfast Table* (miscellany).

Homer. The reputed author of the early Greek epic poems, *The Iliad* and *The Odyssey,* which preserve ancient Greek traditions and have influenced tremendously the art and literature of Europe and America. Homer is supposed to have lived in the ninth or tenth century B. C.

Hughes, Thomas (1823-96). English. Author of *Tom Brown's School Days,* probably the greatest story of its kind in the language.

Hugo, Victor (1802-85) Great French romantic poet, dramatist, and novelist. He is best known in America by his novels, *Les Miserables, Notre Dame de Paris,* and *The Toilers of the Sea.*

Hume, David. (1711-76). Scottish philosopher. Author of *Treatise of Human Nature.*

Hunt, Leigh (1784-1859). Essayist and poet, literary critic, friend of Shelley and Keats.

Huxley, Thomas (1825-95). English scientist who had remarkable gifts for stating in clear and simple language the scientific ideas of his time. *On a Piece of Chalk.*

Hypatia (1838). An historical romance by Charles Kingsley (English) with its scene laid at Alexandria in the fifth Christian century. Here, as in a half dozen other great books, we see two civilizations confront one another, and realize the opposition of their ideals. The grapple of Goth, Greek, Roman, and Christian is depicted in scenes of great vividness and energy. The defect of the book is its inclusion of a great mass of erudition, which makes many pages dull.

Ibsen, Henrik (1828-1906). Scandinavian playwright. Author of problem plays dealing with modern life. In these he raises questions without answering them. Typical plays are *A Doll's House*, *Pillars of Society*, *Hedda Gabler*, *Ghosts*. In all these we see a somewhat morbid society. Nazimova has acted in several of Ibsen's plays with great success.

Idylls of the King, The (1859-85). A group of narrative poems in excellent blank verse, by Tennyson (English). The poems tell incidents which are either drawn from the old romances of King Arthur's court, or invented by Tennyson in the manner of the old romances. King Arthur, with his sterling virtue, is the central figure. The stories are arranged in such a way as to show the gradual decline of knightly ideals through sin, until, in the *Passing of Arthur*, the great king, mortally wounded, is borne to Avalon by fairy maidens, and the civilization which he established is left to crumble. In his last words King Arthur declares his faith that this civilization will contribute something to the progress of mankind.

Iliad, The. An epic poem of ancient Greece, attributed to Homer. It tells the story of the ten years' siege of Troy by Greek armies which sought to bring Helen, the most beautiful of mortal women, back to Sparta, from which she had been carried away by Paris, a Trojan prince. The epic tells of pitched battles; of individual combats; of the great Greek warrior, Achilles, sulking in his tent; of the fight between Achilles and Hector, during which Hector is slain. The poem is full of action and vivid descriptions of combat.

Il Penseroso (The thoughtful man) (1634). A poem by Milton (English) in which he describes the pleasures of meditative life, contrasting these with the pleasures of a less thoughtful, more mirthful life such as he described in a companion poem, *L'Allegro*.

In Memoriam (In memory) (1850). A collection of over a hundred short poems by Tennyson (English), all in the same meter, and all associated with the death of Hallam, the author's best friend. The various poems were written at intervals through a number of years, and record the varying moods and thoughts of his sorrow. They are described by the poet himself as,

"Short swallow-flights of song, that dip
Their wings in tears, and skim away."

The whole group of poems constitutes one of the noblest elegies in the language.

Inland Voyage, An (1878). Chapters of travel by Stevenson, (Scottish), recording, with humor and fancy, a canoe-trip through France and Belgium. Throughout the work one finds that gay cheerfulness which made the author so charming a companion, and an abundance of that lively sense of the drama of life which transforms trivial incident into great adventure.

Ivanhoe. A novel by Sir Walter Scott (Scottish), published in 1819. Its scene is laid in England in the twelfth century, a period of adjustment between the Normans and the Saxons. The Saxon hero, Ivanhoe, a retainer of Richard Coeur de Leon, has been disinherited by his father because of his love for his father's ward, Rowena. His successive adventures, as victor in a brilliant Norman tournament, wounded prisoner in Front-de-Boeuf's burning castle, and champion of his noble Jewish benefactress, Rebecca, in her trial for witchcraft, end with his marriage to Rowena. Cedric, Athlestane and Rowena; Gurth the swineherd and Wamba the jester, serfs of Cedric; Isaac and Rebecca, the Jews; Locksley, or Robin Hood, and his band of outlaws; the Norman nobles, De Bracy, Front-de-Boeuf, and Bois Guilbert; Prince John and King Richard himself, are chief among the groups of characters which figure in this romance, of which Wilfred of Ivanhoe is the hero.

Jackson, Helen Hunt (1831-85). American. Author of *Ramona* and *A Century of Dishonor*, both of which deal with the treatment the American Indian has received.

Jacobs, W. W. (1863-). English writer of stories, humorous and terrible, dealing chiefly with sailors and longshoremen.

James, Henry (1843-1916). American novelist who made his home in England. Author of novels full of subtleties. Many of his novels describe the experiences of Americans in Europe. *Daisy Miller; The Portrait of a Lady.*

William James (1842-1910), the noted philosopher, was a brother of Henry James.

Jane Eyre (1847). Novel by Charlotte Bronte (English). This novel tells the story of an unfortunate heroine, of the indignities she suffered as a governess, of her strange wooing by Mr. Rochester, an impetuous gentleman with a mysterious past, of her discovery that he was the husband of an insane woman whom he kept under guard in a room of his house, of the burning of the house, the blinding of Rochester in an attempt to rescue his wife from the flames, and his subsequent marriage to the heroine. The novel had an extraordinary hold upon readers of its time because of the novelty of a heroine without physical charm, a mutilated hero, and stormy passions.

Jay, John. American statesman of the Revolutionary period. One of the contributors to the *Federalist*.

Jefferson, Thomas (1743-1826). A Virginian gentleman, third president of the United States, author of the *Declaration of Independence*, founder of Democratic principles in the nation.

Jeffrey, Francis (1773-1850). Editor of the *Edinburgh Review* which exercised considerable influence over public opinion concerning literary works a hundred years ago.

Jewett, Sarah Orne (1849-1909). Writer of stories about New England village life. *The White Heron, A Winter Courtship.*

John Gilpin, The Diverting History of. A rollicking ballad by William Cowper (English) which recounts a wild ride taken by an awkward and unwilling gentleman upon a runaway horse.

Johnson, Samuel (1709-84). A remarkable figure in English letters, famous for his sayings more than for his writings. Because of his interesting conversation and personality he drew a circle of famous men about him. Boswell became his biographer, composing the best biography in any language. Macaulay's *Essay on Johnson* gives a vivid but somewhat exaggerated account of Johnson. His greatest literary work was the *Dictionary of the English Language*.

Johns, Henry Arthur (1851-). English dramatist. *Michael and His Lost Angel.*

Jonson, Ben (1573-1637). English poet and dramatist, best known as the author of the English version of a song, "Drink to me only with thine eyes."

Joseph Andrews (1742). A novel by Henry Feilding (English). This novel tells the story of a virtuous servingman, Joseph Andrews. It gives an entertaining and true picture of life in the eighteenth century. Its most famous character is Parson Adams, one of the most lovable of country clergymen. The book was begun as a parody of Richardson's story of the virtuous servingmaid, *Pamela*.

Julius Caesar. A tragedy by Shakespeare dealing with the assassination of Caesar and the subsequent struggles between his friends, led by Octavius and Antony, and his enemies, led by Brutus and Cassius. Caesar, at the height of his power in 44 B.C., is warned to beware the ides of March, but proceeds to the senate house where he is stabbed by the conspirators. The mob hears Brutus deliver a speech justifying the murder of Caesar, but turns to Antony when he appeals to Caesar's love for them and reads his will. Civil war follows in which Antony and Octavius finally defeat Brutus and Cassius at Philippi. Thus imperialism triumphs in the end over republican ideals.

Because Shakespeare chose to make Brutus the hero of his play, he was forced to degrade somewhat the historical character of Caesar. Caesar is here represented as vacillating, suspicious, and easily flattered. He is persuaded to stay at home from the senate because his wife has a dream, but decides to go when the dream is interpreted favorably. He brags about his courage. He swoons in a public place. In many ways he is far from being the triumphant conqueror of history.

It is Brutus, then, with the rise and fall of whose fortunes we are chiefly concerned. He is not easily influenced, but joins the conspiracy only after mature reflection has convinced him that Rome must be rid of Caesar. Even Antony shows his belief in Brutus's integrity of purpose when he says,

"He only in a general honest thought
And common good to all, made one of them."

Junius Letters (1769-1772). A series of letters criticizing George III. and his government. Their authorship is one of the great literary mysteries.

Katharina, the heroine of *The Taming of the Shrew*, a play by Shakespeare. Speaking to a young man, she threatens "to comb his noddle with a three-legg'd stool, And paint his face and use him like a fool." From such talk her reputation becomes so terrible that only a bold man, like Petruchio, dares attempt to tame her, and show the real womanliness under her bravado.

Kenilworth (1819). An historical romance by Sir Walter Scott (Scottish). Its scene is laid in Elizabethan England. Queen Elizabeth, courted by Leicester, in the midst of a brilliant pageant at Kenilworth Castle, forms a striking contrast with Amy Robsart, his unacknowledged bride, who is imprisoned and murdered by Leicester's minion, Varney.

Kidnapped (1886). A lively story of fighting, wandering, and family treachery, by R. L. Stevenson (Scottish). The hero of the book, David Balfour, is sent to sea by a treacherous and cruel uncle. There he meets Alan Breck, a spirited and hard-fighting Jacobite. They have wonderful adventures on sea and shore, till with courage, persistence, and good fortune they win their way to happiness at the end of the book.

King Henry V. One of three historical plays by Shakespeare, dealing with the character of Henry V. In King Henry IV., part 1, the gay life of young Prince Hal is described; in part 2 his reflections upon his manner of life are given; and in Henry V. the patriotism and wisdom of his character as king are set before us. The action of Henry V. covers the years from 1414 to 1420, including a treacherous plot upon the king's life by three of his nobles, a campaign in France, the battle of Agincourt, and the king's courtship of the French princess, Katherine. The play is remarkable for its patriotic passages (e.g., Act III, Scene 1), and its delineation of typical soldiers, some, like Fluellen the Welshman, Macmorris the Irishman, and Jamy the Scot, from different parts of Henry's kingdom; others, like, Pistol, Nym, and Bardolph, from the scum of the army. King Henry VI. carries on the history into the next reign.

King John. One of Shakespeare's historical or chronical plays. It gives hints of the patriotic enthusiasm shown more strongly in Richard II. and in Henry V. The scene is laid in England and in France in the early part of the thirteenth century. The play describes some of the plots and intrigues of John's cruel reign, the wars with France, and the pitiful death of Prince Arthur. It will be noticed that the chronical plays are constructed loosely, without the careful attention which is given to unity in the tragedies.

King Lear. One of the most powerful of Shakespeare's tragedies. The plot deals with the ingratitude of King Lear's daughters, Goneril and Regan, and the fidelity of his daughter Cordelia. The ungrateful daughters rob the old king of his power, prejudice him against Cordelia, and deprive him of all but the bare necessities of life. Their cruelty drives him out into a violent storm one night, with a few faithful servants. The weight of troubles leaves him insane and raving. Cordelia, however, comes to his aid with an army. Then follow in rapid succession the violent deaths of Goneril and Regan, the death of Lear, the death of Cordelia, and the curtain falls upon a desolate kingdom, over which, however, a virtuous soverign is to rule.

King of the Golden River, The. A fairy story by John Ruskin (English) in which cruelty and selfishness are fittingly punished, and unselfish kindness wins a great reward.

King Richard II. Like many of Shakespeare's historical plays this is based upon Holinshed's *Chronicles*, a popular history published in 1577. The play covers the time from 1398 to 1400, and describes the deposition and death of the unpopular Richard II. His downfall is due to his intervention in a quarrel between Bolingbroke and Norfolk, two of his noblemen, and his banishment of them both. Bolingbroke returns with an army, and, supplanting Richard on the throne, becomes Henry IV. The play is remarkable for the patriotic speeches of old John of Gaunt and the pathetic philosophic utterances of the deposed Richard.

King Richard III. This is an historical play by William Shakespeare. The character of the king is one which many distinguished actors, such as Garrick, Kean, Edwin Booth, and Mansfield, have portrayed upon the stage. The title page of the first known edition speaks of the play as "containing his treacherous plots against his brother Clarence; the pittieful murther of his innocent nephews; his tyrannical usurpation; with the whole course of his detested life and most deserved death." The character of King Richard is thus sketched by the critic Hazlitt: "The Richard of Shakespeare is towering and lofty; equally impetuous and commanding; haughty, violent, and subtle; bold and treacherous; confident in his strength as well as his cunning; raised high by his birth and, higher by his genius and crimes; a royal usurper, a princely hypocrite, a tyrant, and a murderer of the house of Plantagenet".

Kingsley, Charles (1819-75). Church of England clergyman, poet and novelist. *Hypatia; Water Babies.*

Kipling, Rudyard (1865-). English author of stories and poems, dealing chiefly with life in India, children, and the glory of the Empire. His wide knowledge of the world and men, and his insistence on the simple and elemental virtues regardless of convention have attracted to him a large audience *Barrack Room Ballads* (verse); *Plain Tales From the Hills* (stories of Indian life); *Stalky and Co.* (story of boys).

Kubla Khan. A poem by Coleridge (English), written in very musical verse. The poem describes a fantastic vision of royal splendor.

Lady or the Tiger, The. A famous hoax story by Frank Stockton (American) in which readers are left puzzled by the ending.

L'Allegro (1645). A poem by John Milton (English) describing the pleasures of innocent mirth.

Lamb, Charles (1775-1834). English humorist, author of *Essays of Elia*. His work combines humor with sentiment, and mingles pathos with both.

Lamb, Mary (1764-1847). Sister of Charles Lamb and author with him of *Tales From Shakespeare*.

Landor, Walter Savage (1775-1864). English poet, author of imaginary conversations between famous

characters in fiction and history, such as *Pericles and Aspasia.*

Langland, William (14th century). Englishman; author of *Piers Plowman*, an allegorical poem showing the unrest of the laboring classes.

Lanier, Sidney (1842-81). An American musician, poet, and critic. *Marshes of Glynn.*

Larcom, Lucy (1826-93). New England poet; author of *Childhood Songs, Wild Roses from Cape Ann.*

Last of the Mohicans, The (1826). A romance by James Fennimore Cooper (American). The subject of this story is the warfare of the French and Indian forces against the British in Northern New York during the early history of the American colonies. The hero is Hawkeye, a woodsman whose knowledge of the forest and of Indian character is complete, and whose skill with the rifle is unmatched. Indian treachery, bloody fighting, heroic rescues and hairbreadth escapes follow one another in rapid succession. The hush and gloom of the primeval forest with its skulking savages gives the story a setting which is highly effective.

Last Days of Pompeii, The (1834). An historical romance by Bulwer-Lytton (English) which tells a thrilling story of the ancient city of Pompeii as it was in the days before it was buried by the great eruption of Vesuvius. Gladiatorial contests, banquets, plots, and counterplots make the story instructive and exciting. The characters are wholly fictitious and the whole conception of life in Pompeii is pure fiction, but the author has studied the ruins and relics of the buried city to good purpose.

Lay of the Last Minstrel, The (1805). A narrative poem by Scott, the chief interest of which is in its description of scenes and customs of the borderland of Scotland, and an occasional burst of poetical declamation.

Lays of Ancient Rome (1842). Dramatic and popular stories told in verse, concerning heroic deeds of Roman men and women. Thomas Babington Macaulay (English) was the author.

Legend of Sleepy Hollow, The (1819). A short story by Washington Irving (American). The story narrates the midnight adventures of Ichabod Crane—an ungainly schoolmaster of timorous heart—with a spectral, headless horseman whom he encountered while returning home from a party at the home of Katrina Van Tassel, to whom he was paying suit. After his wild race with the headless horseman Ichabod disappeared from the community. Katrina soon afterwards married Brom Bones, a daredevil horseman who "looked exceedingly knowing" whenever the story of Ichabod was mentioned.



IRVING'S LEGEND OF SLEEPY HOLLOW

Lincoln, Abraham (1809-65). Farmer, storekeeper, lawyer, president of the United States. The author of letters and addresses which are among the masterpieces of the language. *Letter to Mrs. Bixby, Gettysburg Address.*

Lindsay, Vachel (1879-). A contemporary American poet who deals with unusual subjects in unusual ways. *The Congo.*

Little Dorrit (1855-58). A novel by Charles Dickens (English). The story concerns the experiences of the Dorrit family in the Marhalsea debtor's prison, and their subsequent release and life of affluence. Governmental red tape is satirized.

Little Minister, The (1891). A well-known novel by Sir James Barrie (English). As a play, with Maude Adams taking the part of Babbie, it won great success. It describes the romance of the young minister, Gavin Dishart, and the fascinating but mysterious Babbie, in a village of stern, orthodox Scotch weavers.

Little Women (1868). A story for children written by Louisa M. Alcott (American). It is a genteel narrative of a New England girlhood.

Locke, John (1632-1704). An English philosopher. Author of *Essay Concerning Human Understanding.*

Locke, William J. (1863-). English novelist. Author of *The Beloved Vagabond, Septimus.*

Lockhart, John Gibson (1794-1854). (English.) Literary critic and biographer. Best known for his *Life of Sir Walter Scott.* Lockhart was Scott's son in-law.

London, Jack (1876-1916). An American, author of novels and short stories of adventure in remote places and outposts of civilization. *The Call of the Wild.*

Longfellow, Henry Wadsworth (1807-1882). Scholar, teacher, best known American poet of his generation. His prevailing sentiments have a very general appeal. His translations helped to bring European culture to America. England honored him by placing his bust in the Poet's Corner of Westminster Abbey. *The Children's Hour, Evangeline, Hiawatha, Tales of a Wayside Inn.*



EVANGELINE

Looking Backward (1888). A Romance by Edward Bellamy (American). A fantastic romance which relates the strange experiences and impressions of the Bostonian, Julian West, who awakens from a trance in the year 2000, and sees great changes in economic and social conditions.

Lorna Doone (1869). A stirring romance by R. D. Blackmore (English). Its scene is Exmoor, a county in southwestern England; its heroine, Lorna Doone, is the daughter of a family of aristocratic robbers and smugglers; its hero, John Ridd, has many exciting adventures among the outlaws, and at last becomes the protector of Lorna against her own kin. Passionate human beings doing deeds of physical prowess in a wild and beautiful country furnish forth a model romance.

Lovelace, Richard (1618-58). A Cavalier lyric poet (English). His best known lines are:

"Stone walls do not a prison make,
Nor iron bars a cage."

Lowell, Amy (1875-). A member of the famous Lowell family; a leader among American writers of free verse.

Lowell, James Russell (1819-91). American scholar, literary critic, essayist, and poet. Prominent among the Abolitionists; first editor of the *Atlantic Monthly*; minister to Spain and to England. *A Fable for Critics; The Vision of Sir Launfal; Harvard Commemoration Ode.*

Lycidas (1638). A poem by John Milton (English) in the form of a pastoral elegy, in which he commemorates his friend Edward King. An elegy is a lament for the dead; a pastoral elegy is such a lament with simple country scenery for a background and shepherds and shepherdesses for characters.

Macaulay, Thomas Babington, Lord (1800-59). English orator, poet, essayist, and historian. Very precocious as a child. *Lays of Ancient Rome, History of England.*

Macbeth. A tragedy by Shakespeare. The weird sisters, or fates, prophesy that Macbeth shall become king. This enlivens his ambitions to such an extent that he murders King Duncan and by violence gains the crown of Scotland. Lady Macbeth urges him on to do the deed and tries to keep him from remorse after it is done. His way is not easy, however. He finds it necessary to conceal his first crime. He is plagued by remorseful visions. Then suspicion begins to awaken against him; Lady Macbeth talks of the crime in sleep-walking delirium; Macduff, an honest nobleman, with strong forces takes the field against him. Meanwhile, the weird sisters prophesy again in ambiguous words which seem to shadow forth security for Macbeth, but which really foretell doom. Their prophecy is fulfilled in his violent death. The play is notable for the energy and consistency of its plot and for marvelous depiction of mental apprehension and distress.

Machiavelli, Niccolo (1469-1527). Italian writer on history and politics. He advocated the unscrupulous employment of any means to further the good of the state. *The Prince.*

MacKaye, Percy (1875-). American writer of plays and pageants. *The Scarecrow, Caliban and the Yellow Sands.*

Malaprop, Mrs. The pompous old aunt of Lydia Languish in Sheridan's comedy, *The Rivals.* She uses words so incorrectly that her name has become proverbial for such mistakes as the following: "Headstrong as an allegory on the banks of the Nile"; "precipitate one down the prejudice."

Malory, Sir Thomas (1400-78). Author of *Morte d'Arthur,* a prose translation of various stories concerning King Arthur and the Round Table.

Mandeville, Sir John. To him is attributed the fourteenth century prose work. *Voyages and Travels of Sir John Mandeville.* This is a record of impossibilities, told with an air of truth.

Marble Faun, The (1860). A romance of four artists in modern Rome, by Nathaniel Hawthorne (American). The murder of a monk by the thoughtless Donatello, at the suggestion of a glance from the persecuted Miriam is witnessed by their New England friend, Hilda. The effect of this crime upon the characters of these three people forms the theme of a tragic story in a brilliant setting.

Marjorie Daw. A clever story by Thomas Bailey Aldrich (American), told in the form of a series of letters. Marjorie Daw is a totally imaginary girl created for the pleasure of an invalid, John Flemming, by his friend, Edward Delaney.

Markham, Edwin (1852-). American poet. Author of *The Man With the Hoe.*

Marlowe, Christopher (1564-93). English dramatist, contemporary of Shakespeare, author of *Dr. Faustus* and *Tamburlaine.* He is sometimes called the father of the English drama, because he popularized the use of blank verse and disregarded the old dramatic unities. According to tradition he was killed at the age of twenty-nine in a tavern brawl.

Marmion (1808). A poem which "turns upon the private adventures of a fictitious character," but has a background of important historical events. It paints the manners of feudal times in the heroic manner. The poem opens in August in the year 1513, and ends with the battle of Flodden Field, about a month later. There are six cantos, which introduce us to the clangor of arms, troops on the march, drawbridge, portcullis, and the other appurtenances of a mediaeval castle, to the intrigues of guilty love and the brutality of mediaeval punishment. The poem ends with the battlefield and its deeds of valor. As is customary in Scott's work the action is stirring, the verse spirited.

Masefield, John (1874-). English poet and dramatist. *The Tragedy of Nan.*

Masters, Edgar Lee (1868-). American writer of free verse. *The Spoon River Anthology.*

Mather, Cotton (1663-1728). Bigoted preacher of the colonial period of America. Author of *Magnalia Christi Americana,* intended for a church history of New England. He was one of the chief men concerned in the Salem witchcraft persecution.

Maud Muller. A popular poem by J. G. Whittier (American) recounting the unfulfilled romance of the judge and Maud Muller, whom he sees and admires as she rakes the hay. Its most famous lines are:

"For all sad words of tongue or pen
The saddest are these: 'It might have been!'"

Maupassant, Guy de (1850-93). French writer of short stories. Sometimes called the greatest master of that form of literature.

Merchant of Venice, The. This is one of Shakespeare's early comedies. It tells the story of Bassanio, who borrows money from his friend Antonio, the merchant of Venice, to court Portia, a rich heiress of Belmont. Antonio, in turn, has borrowed three thousand ducats from Shylock, the Jewish money-lender, agreeing to forfeit a pound of his flesh if he does not return it on time. Antonio's payment is delayed, and Shylock demands the pound of flesh nearest Antonio's heart. This means a demand for his life. Portia, disguised as a lawyer, frees Antonio and disgraces Shylock through a legal quibble. He may have the flesh but can shed no blood in taking it. Shylock's goods are declared forfeit for plotting against a citizen of Venice. The minor episodes in the play include the elopment of Shylock's daughter with a Christian, the selection of Bassanio as a husband for Portia by his choice of a certain casket, and the joke played upon Bassanio and his attendant, Gratiano, by Portia and her maid Nerissa, who pretended to part with their bethrothal rings.

Meredith, George (1828-1909). A distinguished English novelist and poet, famous for the brilliance of his ability in dialogue and characterization. *The Ordeal of Richard Feveral, Diana of the Crossways, The Egoist.*

Merrick, Leonard (1864-). English novelist and short story writer who has been much influenced by French life and art.

Midsummer Night's Dream, A, A play by Shakespeare (English). It is the most delightful fairy play that has ever been written. The scenes are laid chiefly in a wood near Athens in the legendary days of King Theseus. The king's courtiers mingle incongruously in the play with the fairies and a group of clownish artisans. The plot is concerned with two pairs of lovers whose tangled affairs are finally straightened out by fairy intervention. The dignified court scenes, the clumsy attempts of the artisans to present a play, the pranks of Puck, and the songs and dainty fancies of the fairies combine to make a very novel and attractive fantasy.

Miller, C. H. (Joaquin) (1841-1913). An American poet, the "Poet of the Sierras". A traveller and a hermit in the California mountains. *Songs of the Sierras.*

Milton, John (1608-74). Usually ranked as the second greatest English poet. He spent his youth and early manhood in study. Aiming deliberately to be a poet, he retired to a beautiful country place, Horton, near Windsor. There he composed *Comus L'Allegro, Il Penseroso,* and *Lycidas.* When civil war broke out, he took the side of the Puritans against the king. After the Commonwealth was established, he served as secretary under Cromwell, and became blind by using his eyes excessively in preparing pamphlets for the government. *Paradise Lost,* his greatest work, was dictated to relatives and friends after he became blind.

Mitchell, S. Weir (1829-1914). An American physician; author of novels and sketches. *Hugh Wynne.*

Moody, William Vaughan (1869-1910). American poet and dramatist. Author of *An Ode in Time of Hesitation,* and *The Great Divide.*

Moonstone, The (1868). A novel by Wilkie Collins (English). The story tells of a diamond taken from the forehead of an Indian idol, cursed by its Brahmin custodians to give it evil influence, bequeathed to an English girl, and finally restored to its place after being instrumental in mystery and murder.

Moore, Thomas (1779-1852). An Irish poet. Author of *Irish Melodies* and *Lalla Rookh.*

More, Sir Thomas (1478-1535). An English scholar prominent in the renaissance, beheaded by order of Henry VIII. He was the author of *Utopia,* a prose work describing an ideal state.

Morte D'Arthur. A romance by Sir Thomas Malory (English) written and published in the fifteenth century. From various romances in French Malory selected most of the stories of Arthur and his Round Table which are here translated into English. Merlin, Launcelot, Gawain, Guenevere and Arthur, Tristram and Isolt, Galahad, Percival, and many names less known to fame appear in various parts of the rambling narrative. It is marked by the spirit of chivalry which characterizes such romances, emphasizing troth, faith, generosity, humility, and other knightly ideals. Tennyson relied chiefly upon this work when writing the Idylls of the King.

Morris, William (1834-96). (English.) A member of the Pre-Raphaelite school, poet, versatile artist, social reformer. *The Defense of Guenevere, The Earthly Paradise.*

Motley, John Lothrop (1814-77). American historian. Author of *The Rise of the Dutch Republic.*

Murfree, Mary N., see **Craddock.**

Newman, John Henry (1901-90). A Roman Catholic cardinal. Author of the hymn, *Lead Kindly Light,* and of essays famous for their literary style. Some of the best of these are in a volume called *The Idea of a University.* Newman was an Englishman.

Nibelungenlied. An old German epic which tells the stories of wrathful and violent old heroes and heroines—Sigurd, Brunhild, Gudrun, and others. The work is full of supernatural events and pagan sentiments. It has inspired many operatic and literary works of later times.

Ninety-three (1874). An historical romance by Victor Hugo (French) which gives vivid pictures of warfare.

Norris, Frank (1870-1902). American novelist of great promise whose early death left unfinished a series of three novels in which he planned to tell the history of wheat and the human tragedy and comedy in which it plays an important part. The two completed novels are *The Octopus* and *The Pit.*

North, Christopher. The pen-name of John Wilson (1785-1854). He was a Scotchman, professor in Edinburgh University, and for many years connected with *Blackwood's Magazines.* He was a friend of De Quincey and Wordsworth. Author of *Noctes Ambrosianae,* a medley of prose and verse.

Norton, Charles Eliot (1827-1908). A professor at Harvard University, translator of Dante, friend of many literary men in England and America.

Notre Dame (1831). An historical romance by Victor Hugo (French) telling a story of Paris in the fifteenth century. Very vividly it brings before us the ancient city with its people of high and low degree, clerical and lay, and especially its great cathedral, which gives the romance its name. For its exciting action and tense scenes the book has been widely read, both in French and in the English translation.

Noyes, Alfred (1880-). English poet. Author of musical lyrics such as *The Barrel-Organ,* and narrative pieces such as *Tales of the Mermaid Tavern.*

Nym. A cowardly rogue who appears in several of Shakespeare's historical plays. He is hanged for pillage after the battle of Agincourt. He conceals his cowardice by never smiling and by speaking with deadly insinuation.

Odyssey. A Greek epic poem by Homer. The poem tells the story of the adventures of Odysseus, or Ulysses, who is condemned to wander over the ocean because of having displeased the god, Poseidon. Before he finally reaches his home in the island of Ithaca, he does many deeds, both crafty and brave, and encounters strange personages. He escapes the dangers of Polyphemus, the savage one-eyed giant; Calypso, the nymph; Circe, the sorceress; Scylla and Charybdis; and the singing Sirens who lure sailors to destruction. He lives happily for a time among the fortunate Phoenicians, whose orchards bear fruit all the year. Such marvelous incidents as these have kept men reading the work through many centuries.

O. Henry. The pen-name of Sidney Porter (1867-1910). An American author of ingenious short stories. His characteristic style is flippant and slangy, but very clever. His favorite trick is that of surprising readers with an unexpected ending. *The Four Million.*

Oliver Twist (1841). A melodramatic novel by Charles Dickens (English). Its hero is Oliver Twist, a workhouse waif who is brought to the school for pickpockets kept by a crafty old Jew, Fagin. Associated with Fagin are the brutal robber, Bill Sykes, and the kind-hearted but disreputable Nancy. Oliver is not corrupted by his surroundings, and finally escapes from the slums, and is decently established in life by the aid of charitable friends. Bill Sykes and Fagin get their just deserts at the end of the story.

Omar Khayyam, see **Rubaiyat.**

Origin of Species, The (1859). A volume by Charles Darwin (English) in which he records the results of years of scientific observation in all parts of the world, and argues that his observations establish that theory of the development of man from lower forms of animal life which is known as the theory of evolution. The book is regarded as an epoch-making work. It aroused a controversy which has not yet ceased.

Our Mutual Friend (1864-5). A novel by Charles Dickens. (English). John Harmon's father has left him a large estate on condition that he marry Bella Wilfer, who is unknown to him. Harmon disappears and is thought dead, and the estate goes to Mr. and Mrs. Boffin, who take Bella Wilfer into their family. Harmon becomes their secretary, under an assumed name, to test the character of Bella. Her apparently frivolous and mercenary nature develops into womanliness through the kindly plot of Mr. Boffin. She and John are married, and in time she is told of their wealth. Minor plots introduce Jenny Wren, Lizzie Hexam, Bradley Headstone, Silas Wegg, and others.

Page, Thomas Nelson (1853-1922). American author of novels and stories some of which describe life in Virginia. *Red Rock.*

Paine, Thomas (1737-1808). An English defender of the American Revolution in the pamphlet *Common Sense* (1776).

Pamela (1740). An early novel by Samuel Richardson (English). The story is told in a series of letters which pass between Pamela Andrews, a serving girl, and her friends. The letters tell of her difficulties in repelling the advances of her master, and of her final agreement to marry him. Thus the cause of virtue is upheld. To illustrate virtuous conduct was, indeed, Richardson's frank purpose. The story is too long for the reading public of the present day, too prudentially moral, and too smugly self-satisfied.

Paradise Lost (1667). A long poem by John Milton, the English poet of the Puritan period. The purpose of the poem is "to justify the ways of God to man". First, the poem relates how some of the angels revolted against God and were cast out of Heaven into Hell, to punish their rebellion. Afterward it tells of their deliberations and final decision to revenge themselves upon the Almighty by invading the earth and leading man to sin. The poem continues the story of the success of Satan, chief of the fallen angels, in corrupting Adam and Eve, the first human beings, and bringing about their expulsion from the garden of Eden. This expulsion is the "loss of Paradise", which gives the poem its title. *Paradise Lost* is regarded as the best epic in the language.

Parker, Theodore (1810-60). An eloquent Unitarian clergyman, prominent as a writer and speaker upon abolition. American.

Parkman, Francis (1823-93). American writer of historical narratives concerning French and Indian wars, and the life of the pioneers. *The Oregon Trail.*

Pater, Walter (1839-94). A scholarly English essayist; author of melodious, highly finished prose. *The Renaissance; Marius the Epicurean.*

Patterne, Sir Willoughby. The hero of Meredith's novel, *The Egoist.* His unsufferable conceit and self-satisfaction are displayed in a series of love affairs.

Pepys, Samuel (1633-1703). An Englishman of the time of Charles II. who kept a diary in cipher. This has been translated. It is one of the most curious books in existence.

Percy, Bishop Thomas (1729-1811). Compiler of *Reliques of Ancient English Poetry* (1765), which preserved for us many specimens of early ballads and songs which might otherwise have been lost.

Petruchio. The husband of Katharina in Shakespeare's *The Taming of the Shrew*. It is he who conceives and carries out the plan of making a gentle, obedient wife out of a notorious shrew by bullying her shamefully, all the time pretending everything is as she wishes it and for her own good.

Phillips, Stephen (1864-1915). An Englishman who revived the poetic drama. *Paolo and Francesca; Ulysses.*

Phillips, Wendell (1811-84). A brilliant American orator; a strong Abolitionist.

Phillpotts, Eden (1862-). An English novelist who has written many novels with scenes laid on Dartmoor, Devonshire. *Children of the Mist.*

Pickwick Papers (1836). A novel by Charles Dickens (English) depicting the droll adventures of a benevolent gentleman, Mr. Pickwick, and his ludicrous friends. So funny are many of the situations and so true the characters, in spite of their caricature, that much of the *Pickwick Papers* has passed into popular knowledge. Sam Weller and his sayings, and the trial of Bardell vs. Pickwick are perhaps the best known features of the book. The illustrations by "Phiz" exactly suited the text.

Pilgrim's Progress (1678). A religious allegory by John Bunyan (English). In this work the Christian life is revealed by means of a story recounting the experiences of Christian on his way to the City of God. The Slough of Despond, Vanity Fair, the Hill of Difficulty, and the Valley of the Shadow of Death are but a few of the places invented by Bunyan to represent the trials and temptations to which mankind is liable. At last, through faith, hope, and charity the hero surmounts all obstacles and wins eternal bliss. So simple is the narrative and so vivid are its pictures that the book has been a favorite in Protestant households for the edification of young and old.

Pinero, Sir Arthur Wing (1855-). A popular English dramatist. Author of *The Second Mrs. Tanqueray.*

Pistol. A character in several of Shakespeare's plays. He is a London ruffian, boastful, noisy, avaricious, cowardly—"with a killing tongue and a quiet sword."

Poe, Edgar Allan (1819-49). American poet and writer of fantastic and highly finished short stories. Among his more famous poems are *Annabel Lee* and *The Raven*. Well known stories by him are detective stories, like *The Gold Bug* and *Murders in the Rue Morgue;* stories of horror, like *The Black Cat* and *The Masque of the Red Death.*

Poor Richard's Almanac (1732-58). A yearly collection of pithy sayings into which is condensed, shrewd advice for the conduct of life. The work was written by Benjamin Franklin (American). The best known saying from the work is, "Honesty is the best policy." The work did much in establishing habits of thrift and common sense among the colonists.

Pope, Alexander (1688-1744). English poet; best representative of the classical spirit of the eighteenth century. His poems were chiefly in polished couplets upon didactic subjects. *An Essay on Criticism; An Essay on Man; The Rape of the Lock.*

Porter, Sidney, see **O. Henry.**

Portia. An heiress of Belmont, the heroine of Shakespeare's play, *The Merchant of Venice*. She is represented as a very resourceful and attractive woman. Her remarks about her unsuccessful suitors show discernment and wit, and her reception of the successful suitor, Bassanio, modesty and capacity for emotion. Her independence and power of initiative in evolving the scheme for Antonio's release, her eloquence in the court-room, her patience and justice to Shylock, combine to make her one of the best of Shakespeare's heroines.

Prescott, William H. (1796-1859). American historian; author of *The Conquest of Peru* and *The Conquest of Mexico*. As he had been almost blinded in his college days by a piece of bread thrown by a boisterous student, he worked against terrible odds in writing of history.

Pride and Prejudice. This novel was written by Jane Austen (English) in the year 1796, when she was twenty-one years old. Like her other novels it deals with the love affairs of young women in the upper middle class of English society, in the latter part of the eighteenth century. The characterization of Mrs. Bennet, the foolish and complaining mother, of Mr. Bennet, the peace-loving father, and of Elizabeth, the heroine, proud but admirable, is surprisingly capable, considering the youth of the author.

Prince and the Pauper, The (1881). A fascinating romance by Mark Twain (American) telling the story of a pauper boy who changes places with the prince, later King Edward VI. of England. The experiences of the pauper, transported from the slums to the palace, and of the young prince, plunged suddenly into the life of the streets in mediaeval London, afford Mark Twain the sort of opportunity which he enjoys. He gives a vivid picture of the life of the times; he rouses our anger against cruelty; he stirs our sympathy for the poor.

Quentin Durward (1823). A novel by Sir Walter Scott (Scottish) with its scene laid in France during the fifteenth century. Quentin Durward, a valorous young Scot, is sent by Louis XI. ostensibly to escort Isabelle of Croye to the Bishop of Liege. Actually, Louis intends to have her seized by the outlaw, William de la Marck. After protecting her through sieges and plots, the hero wins the lady's hand with the approval of Louis and her rightful sovereign, Charles the Bold, of Burgundy.

Quickly, Mistress Nell. Dame Quickly is one of Falstaff's friends appearing in several of Shakespeare's plays. She is the hostess of a tavern in Fastcheap, London. In Henry V. she has become the wife of Pistol. That Shakespeare could depict a coarse, garrulous woman so truly is a proof of the width of his sympathy and of his understanding of human nature.

Radcliffe, Mrs. Anne (1764-1823). English writer of Gothic romances—romantic novels full of mysteries and horrors. *The Mysteries of Udolpho.*

Raleigh, Sir Walter (1552-1618). An explorer and a favorite of Queen Elizabeth; the man who dreamed the colonial empire of Great Britain. He was imprisoned in the tower by James I. for thirteen years, and during this imprisonment wrote a *History of the World.*

Ramona (1885). This novel, by Helen Hunt Jackson, is an appeal for just treatment of the American Indian. The scene is in California.

Reade, Charles (1814-84). English novelist; author of *The Cloister and the Hearth, Peg Woffington, It is Never Too Late to Mend.*

Rebecca. Rebecca, daughter of Isaac of York, the Jew, is the most interesting female character in Scott's *Ivanhoe*. Her charity in nursing the sick, devotion to her old father, bravery and dignity before a court of unjust accusers, determined resistance to the advances of Brian de Bois Guilbert, and generous renunciation of any possible claims upon Ivanhoe, the man she loves, make her a memorable character.

Repplier, Agnes (1857-). A highly intelligent American essayist.

Richardson, Samuel (1689-1761). The first important English novelist. He wrote exceedingly long novels in the form of series of letters. *Pamela; Clarissa Harlow.*

Riley, James Whitcomb (1849-1916). (The Hoosier Poet). An American poet and lecturer. *The Raggedy Man.*

Rip Van Winkle (1819). A short story by Washington Irving (American). Rip wanders into the Catskill Mountains one day on a hunting trip, gets lost, encounters a party of noisy dwarfs, drinks a cup of their liquor, and falls asleep. Upon awakening twenty years later he returns in great perplexity to his native village, where many of his old friends are now dead, where customs have changed, and where his very relatives do not recognize him. With his mellow old age as a village notoriety the story ends. The whole idea of a long sleep and innocent awakening into a new world is so whimsical and attractive that the story has been widely popular. Joseph Jefferson's chief success on the stage was in the character of Rip, the ne'er-do-well.

Robinson Crusoe (1719). This work was written by Daniel Defoe (English). It is the most famous story for boys ever written. Early in the story Robinson Crusoe, sole survivor from a wreck, crawls out upon the beach of a deserted island, with only his native wits and the gifts of fortune to save him from starvation. He first rescues from the wrecked vessel tools and provisions which will be of use to him; next he organizes his time and energy, builds a home, plants crops, and tames wild creatures with industry. With great detail Defoe tells of the marooned man's experiences, carrying the account through several years. When at last Crusoe sees the print of a human foot on the sand of his shore one day, the reader shares his amazement and suspense. The footprint is that of a savage whom Crusoe names Friday, and adopts as a servant. At last the island is invaded by savages, and later by European sailors. All Crusoe's resourcefulness is needed to save his life, but he eventually masters the situation, and sails back to England in prosperity. The secret of the book's success lies chiefly in two features: (1) the minute details which make it seem like a record of actual experience, and (2) the ingenuity of Crusoe in fighting a battle for life, alone, under primitive conditions.

Rochester, Edward. The hero of *Jane Eyre*, a novel by Charlotte Bronte. He is wealthy, accomplished, brave and generous, but "proud, sardonic, harsh to inferiority". His youth was dissipated. An insane wife lives under guard in a remote room of his mansion. He is not deterred, however, from attempting to marry Jane Eyre. The facts are revealed just in time to stop the wedding, but later, after his wife's death and his own mutilation in an attempt to rescue her from a fire, Jane thinks well enough of him to become his wife. The unusual plot and the paradoxical characters gave the novel a wide public interest.

Romola (1863). A novel of Florentine life in the fifteenth century written by George Eliot (English). In spite of the great amount of historical detail which the author wrought into the book, her interest centers not in Florentine history but in the moral degradation of one of her characters. This character is Tito Melema, a Greek who wanders



IRVING'S RIP VAN WINKLE

into the city one morning, a shipwrecked and friendless stranger, but who establishes himself in the favor of influential persons by his cleverness and becomes a man of importance. His rise in importance, however, is accompanied by a gradual moral deterioration, until at the end of the story he is utterly unscrupulous, all because of seeking his own interest and taking the easiest way, whether right or wrong. In tracing Tito's debasement through his own actions, George Eliot is illustrating a favorite theory of hers: "Our deeds determine us as much as we determine our deeds."

Romeo and Juliet. An early romantic tragedy by Shakespeare (English). Its scene is laid chiefly in Verona in the fourteenth century. Romeo, a Montague, falls in love with Juliet, of the house of Capulet. Despite the bitter feud between their families they are secretly married by Friar Laurence, but unfortunately just after the wedding Romeo becomes involved in a brawl with the Capulets and slays Tybalt, the cousin of Juliet. He is sentenced to banishment, and goes to Mantua. Juliet's parents, unaware of her marriage, insist upon her wedding Count Paris. To escape this second marriage Juliet, on the advice of Friar Laurence, takes a potion which will make her appear dead for forty-two hours. She is buried in the Capulet vault. Friar Laurence sends a message to Romeo calling him to her rescue, but the message miscarries, and when Romeo hears that Juliet is dead, he comes to her tomb, takes poison, and dies just before she awakens. She finds him dead and stabs herself. Friar Laurence tells the story of the tragedy to their assembled families, who decide to become reconciled.

Roosevelt, Theodore (1858-1919). An American who is considered one of the best representatives of his time. He was a soldier, a hunter of big game, an historian, and President of the United States. *The Winning of the West; Ranch Life and the Hunting Trail.*

Rosalind is the delightful heroine of *As You Like It.* Brave and adventurous when she dresses as a boy and goes to the forest of Arden, mischievous when she teases Orlando about his love, and always witty, gay, and captivating, she is, as Professor Dowden says, "a figure which quickens and restores our spirit as music does".

Rossetti, Dante Gabriel (1828-1882). Pre-Raphaelite painter and author of many beautiful ballads and sonnets. (English.) *House of Life* (a series of sonnets); *The Blessed Damozel.*

Rubaiyat (1859). An English version by Edward Fitzgerald (English), of the verses of an ancient Persian philosopher and poet. The verses record melancholy reflections upon life in vivid and simple figures, likening existence to a day's rest in a journey, or man to a clay pot. The prevailing reflection is that since life is brief and the future uncertain, one should enjoy the present with feast and song.

Ruskin, John (1819-1900). A famous English prose writer, critic of art and of social conditions. He is famous for his application of moral ideas in the criticism of art. *Modern Painters; The Seven Lamps of Architecture: Praeterita* (his autobiography).

Saxe, John G. (1816-87). A humorous American poet. *The Proud Miss McBride.*

Scott, Sir Walter (1771-1832). Scottish poet and novelist; author of *Marmion* and *The Lady of the Lake* (poems); *The Heart of Midlothian, Ivanhoe The Bride of Lammermoor* (novels). Scott attempted to live like a feudal baron. His estate, Abbotsford, near Melrose, furnished background for such a life; horses, dogs, a retinue of servants, and lavish entertainments were but a part of it. Through his poems and novels he wrote under the inspiration of that which was best in the spirit of the Middle Ages—the sense of honor, faith, physical bravery, chivalry toward woman, the love of king and country.

Seton-Thompson, Ernest (1860-). Naturalist and writer of books about animals. *Wild Animals I Have Known.*

Shakespeare, William (1564-1616). Greatest of English dramatists. Very little is known of his life. He was born and died in Stratford-on-Avon; he had slight formal education; he learned the craft of the playwright as an actor and manager in London theatres; he became prosperous and moderately famous in his own life-time; he was buried in the church at Stratford. Shakespeare's plays fall into three large groups; historical or chronicle plays comedies, and tragedies. The best examples of these respectively are: for the chronicle play, *Henry V.*; for tragedy, *Macbeth, Romeo and Juliet, Hamlet, Othello, King Lear;* for comedy, *Twelfth Night, The Merchant of Venice, Midsummer Night's Dream, As You Like It.* Shakespeare's greatness is in (1) his complete and sympathetic understanding of men and women of all types, (2) his conception of what is noble and what is base, (3) his mastery of the problems of dramatic representation, (4) his master of vocabulary and metre.

Sharp, Dallas Lore (1870-). American naturalist and professor of English at Boston University. Author of interesting essays about nature. *A Watcher in the Woods.*

Shaw, George Bernard (1856-). An Irishman; author of witty and entertaining plays. *You Never Can Tell; Man and Superman.*

Shelley, Percy Bysshe (1792-1822). English poet of radical ideas. Author of poems which have strange and beautiful imagery, and express noble but impractical ideals. Best known and most readable poems: *To Night, The Cloud, To the West Wind, To a Skylark, Adonais.*

Shelley, Mary Wollstonecraft Godwin (1797-1851). Second wife of Percy Bysshe Shelley, the poet, and herself the author of a remarkable scientific romance, *Frankenstein.*

Sheridan, Richard Brinsley (1751-1816). English dramatist, author of *The School for Scandal; The Rivals.*

Sherlock Holmes, The Adventures Of. Detective stories by Sir Arthur Conan Doyle (English) with two characters which closely resemble characters in Poe's detective stories. The quick-witted and imperturbable Holmes and his slow-minded friend, Watson, make an effective pair. The stories are varied in subject-matter, but in almost all the mystery of some crime is solved by Holmes's minute observation and agile reasoning.

Shylock. Shylock, the Jewish money-lender in the *Merchant of Venice,* may be viewed as an "inexorable dog" who hates all Christians and plots against their lives, loves his money and oppresses his young daughter Jessica; or he may be pitied because he belongs to an abused race and stands alone in the play, opposed to all the other characters and deserted even by his daughter.

Sidney Carton. Carton is a character in Dickens's *A Tale of Two Cities.* He is a dissipated man but is in love with Lucie, the heroine. The striking resemblance which he bears to Charles Darnay, the husband of Lucie, enables him to change places, with Darnay, and go to the scaffold in his stead, purified and exalted by the sacrifice.

Sidney, Sir Philip (1554-86). English courtier, soldier, and author, of the age of Elizabeth, in England. *Arcadia.*

Silas Marner. This is a novel by George Eliot (English), published in 1861. "In the old days there were angels who came and took men by the hand and led them away from the city of destruction. We see no white-winged angels now. But yet men are led away from threatening destruction; a hand is put into theirs; . . and the hand may be a little child's". This is the theme of the novel, which shows the redemption of Marner, a miserly weaver, by his love for a little child. He has been robbed of his hoard of gold, but is recompensed by finding a little child, Eppie, upon his threshold. Eppie turns out to be the unacknowledged daughter of Godfrey Cass, the village squire, by an unfortunate first marriage.

Sinclair, May A. A contemporary English novelist. Author of *The Divine Fire.*

Smith, F. Hopkinson (1838-1915). An American painter, lighthouse engineer, and author of novels and short stories written with a good deal of vigor. *Colonel Carter of Cartersville; Caleb West, Master Diver.*

Smollett, Tobias (1721-71). English novelist; author of rather coarse narratives which give a graphic and true picture of English life in the eighteenth century. *Roderick Random; The Expedition of Humphrey Clinker.*

Sohrab and Rostum. A narrative poem by Matthew Arnold (English). It tells the story of a Persian warrior who unwittingly engages in personal combat with his own son and mortally wounds him before learning of their relation.

Southey, Robert (1774-1843). Poet laureate of England and one of the group of Lake Poets, though he wrote better prose than verse. *The Life of Nelson.*

Spectator, The (1711-14). A periodical founded by Addison and Steele, and contributed to by them and a group of their associates. It was devoted to narratives concerning Sir Roger De Coverley, to literary criticism, to satirical essays upon men and society. There were 555 papers in all, of which Addison wrote 274 and Steele 236. So popular was the work that it could be found upon every breakfast table and in every coffee-house. Its effects upon English thinking and English manners were considerable.

Spencer, Herbert (1820-1903). An Englishman who wrote concerning the application of the evolutionary theory to society. *Autobiography.*

Spenser, Edmund (1552-1599). A poet who employed allegory and classical allusion to excess, but who wrote with a remarkable poetic sense of words and a remarkable musical sense of sounds. *The Faery Queen.*

Stedman, Edmund Clarence (1833-1908). An American poet and literary critic. *Poets of America.*

Steele, Richard (1672-1729). English essayist; with Addison editor of the famous periodicals, *The Tatler* (1709-11) and *The Spectator* (1711-14).

Sterne, Lawrence (1713-68). English clergyman, author of the most whimsical novel in the language—*Tristram Shandy.* Two famous characters in this book are *Uncle Toby* and *Coporal Trim.*

Stevenson, Robert Louis (1850-94). Scottish writer. Because of ill health he travelled much and lived in many places, including California, Saranac Lake, N. Y., France, Switzerland, and the South Sea Islands. His ill health did not prevent his laboring constantly at literary tasks, producing romances like *Treasure Island,* perfect short stories like *Will o' The Mill,* and poems for children, chiefly in a volume called *The Child's Garden of Verses.*

Stockton, Frank R. (1834-1902). American writer of amusing short stories and novels. *The Casting Away of Mrs. Leeks and Mrs. Aleshine; The Lady or the Tiger.*

Stowe, Harriet Beecher (1812-96). American novelist; author of *Uncle Tom's Cabin* (1852) which was of great assistance to the anti-slavery cause.

Swift, Jonathan (1667-1745). English prose humorist and controversialist. Author of *A Tale of a Tub, The Battle of the Books, Gulliver's Travels.* He was Dean of St. Patrick's Cathedral, Dublin.

Swinburne, Algernon Charles (1837-1909). An English poet distinguished for his skill in the use of verse forms and the choice of words to produce musical effects. *Atalanta in Calydon.*

Synge, John Millington (1871-1909). Irish dramatist. Author of *Riders to the Sea; The Playboy of the Western World.*

Tale of Two Cities, A (1859). A novel of the French Revolution by Charles Dickens (English). Dr. Manette, a political prisoner, released from long imprisonment, rejoins his daughter, Lucie, and sees her happily married to Charles Darnay, who has just been tried and acquitted on a charge of treason. In the midst of their happiness, however, they become objects of suspicion in Paris. At last, through the maliciousness of a wine-seller named Defarge, and of his villainous wife, Darnay is imprisoned again and condemned to death; but Sydney Carton, an Englishman who loves Lucie, takes Darnay's place in prison and dies in his stead upon the guillotine. The scene of the execution, with the knitting-women calmly numbering the numerous victims as time and again the knife falls, is justly famous as a piece of rhetoric,—rather melodramatic, but effective.

Talisman, The (1825). A novel by Sir Walter Scott (English) telling a story of the third crusade. Palestine is the scene of its action, during an interlude in the fighting. Two noble adversaries, Richard the Lion-hearted and Saladin the Sultan, are the chief warriors. The reader's interest centers, however, in the soldierly exploits and the courtship of the Prince of Scotland, disguised as Sir Kenneth of the Couchant Leopard, who wins the hand of Lady Edith Plantagenet. The love story is in Scott's best romantic vein. The romantic effect is heightened by descriptions of the splendor of the armies, of a great sand-storm on the desert, of marvelous feats of swordsmanship,—descriptions which suitably develop the main action.

Tanglewood Tales (1853). A collection of tales by Nathaniel Hawthorne (American). Hawthorne draws his material from the ancient Greek myths but simplifies them and makes them less sombre, so that children may enjoy the stories. In this volume he tells such stories as those of the Minotaur, a monster who was killed by Theseus, of Circe's Palace, where men were turned to pigs, and of the Golden Fleece, wrested away from a dragon, which guarded it by Jason and his Argonauts.

Tarkington, Booth (1869-). An American writer, author of popular plays, novels, and short stories. *Penrod* describes the pranks of a small boy; *Seventeen,* the sentimental affairs of a youth; *The Magnificent Ambersons,* life in a Middle Western city.

Taylor, Bayard (1825-78). An American author, called by Professor Bronson "the man of letters in motion." He was a great traveler, and wrote and lectured upon his experiences. *Views Afoot; Poems of the Orient.*

Tempest, The. This is a romantic drama by Shakespeare (English). It has an impossible plot, and is written in the spirit of contentment which marked the author's old age. Its chief character, Prospero, a magician, is a model of magnanimity. Caliban, a beastly creature with something of human intelligence but no moral sense, contrasts with him most sharply. The plot opens with a tempest, caused by Prospero's magic. This tempest brings to Prospero's desert island the duke who had formerly usurped his throne. After a day of marvels Prospero regains his dukedom, and all sail away to Italy.

Tennyson, Alfred, 1st Lord (1809-92). Tennyson is the most representative and popular of English poets of the Victorian period. His first volume of poems, in 1832, was severely criticized, but the next volume, published in 1842, was a great success. In 1850 he published *In Memoriam,* an elegy in memory to Arthur Hallam. In 1859 came *Idylls of the King.* In 1850 he was made Poet Laureate, and in 1884 was created Baron. His poems are polished in style, fluent, and melodious. In thought they reflect the accepted standards of morals and behavior. *The Princess, Maud, Enoch Arden, The Charge of the Light Brigade, Crossing the Bar.*

Thackeray, William Makepeace (1811-63). English novelist, poet, and essayist; most noted for his novels. The most famous of these give pleasant, satirical pictures of English society. He had a very easy, urbane style, a moralizing vein of sentiment, and genial humor. His best known novels are: *Vanity Fair, Henry Esmond,* and *The Newcomes.*

Thanatopsis. A poem of consolation upon thought of death, written by William Cullen Bryant (American). He concludes with the exhortation that a man should so live that he may approach his grave,
"Like one who wraps the drapery of his couch
About him, and lies down to pleasant dreams."

Thaxter, Celia L. (1835-94). American poet. *The Sandpiper.*

Thomas, James (1834-82). Scotch poet; author of gloomy, pessimistic works, of which *The City of Dreadful Night* is best known.

Thompson, Francis (1859-1907). An English Roman Catholic poet. His best known poem is *The Hound of Heaven*, an interpretation of a passage in the psalms.

Thomson, James (1700-48). A Scotch romantic poet. Author of *The Castle of Indolence*, written in the Spenserian stanza, and of *The Seasons*, a poem in blank verse which showed an interest in nature not common in his day.

Thoreau, Henry David (1817-62). An American nature-lover who lived for two years in a hut which he built at Walden Pond, near Concord, Massachusetts. In a book, called *Walden*, he recorded his thoughts and observations upon nature and man.

Ticknor, George (1791-1871). First Professor of Modern Languages at Harvard University; one of the most influential people in establishing the Boston Public Library. He gave a great incentive to American scholarship. *History of Spanish Literature*; *The Life of Prescott.*

Tito, Melema. One of the leading characters in George Eliot's *Romola.* His great personal charm, which endears him to all whom he meets, is offset by the weakness of his character, which develops into positive cruelty and treachery. Failing to go in search of his shipwrecked benefactor is the beginning of his moral degradation. Later this first lapse leads to his denying his benefactor entirely, selling his wife's cherished library,—the legacy of her father,—and being false to his wife and his country. His characterization is one of the most detailed and convincing studies in moral deterioration to be found in English fiction.

Tom Brown's School Days (1856). This story, written by Thomas Hughes (English), is probably the best story of school life ever written. It relates the experiences of the hero at Rugby, including his acquaintance with the famous headmaster, Doctor Arnold. Cricket, football, fagging, bullying, and poaching receives more attention in the story than lessons do. *Tom Brown at Oxford* takes the hero to college.

Tom Jones (1749). A novel by Henry Fielding (English), said by Thackeray to be the last in which an English novelist was allowed to depict a man as he is. It is, indeed, very outspoken. The hero, Tom Jones, is a foundling who grows up into an impulsive, frank, and generous boy. He loves Sophia Western, daughter of the local squire, but has a rival, Blifil, a malicious hypocrite. Tom gets into scrapes, is disinherited, has several discreditable adventures with women; but through all his wanderings remains frank, well-intentioned, and kind of heart. At the end of the story he is discovered to be the rightful heir to a fortune, reforms, marries Sophia, and launches upon a virtuous and happy career.

Treasure Island (1883). A pirate story by Stevenson (Scottish), originally written for the entertainment of his stepson, Lloyd Osborne. The hero is Jim Hawkins, a boy whose father keeps a seaside tavern. At the tavern lives a terrible old seaman who guards the secret of the burial place of pirate treasure. A murderous gang is after this secret, but the old man dies without revealing it, and the map of Treasure Island passes into the possession of Hawkins. Friends of his proceed to fit out a vessel to seek the treasure, but their purpose leaks out, and some of the pirate gang enlist in the crew. Mutiny on board ship, cold-blooded murders, strategy and fighting, on sea and ashore, form the material of the remaining story, until the treasure is found. The book has all the best features of a good pirate yarn, including a diabolical villain, Long John Silver, the one-legged cook.

Trilby (1895). A novel by George Du Maurier (English), which attained great popularity a generation ago. It concerns the infatuation of three young English students of art, living in the Latin Quarter of Paris, with Trilby, an artist's model. Eventually, through the hypnotic influence of Svengali, a sinister Austrian Jew, she becomes a famous singer, but loses her power and dies when his influence is removed.

Trollope, Anthony (1815-82). An English novelist. He wrote about fifty novels, of which the best known is *Barchester Towers*, a story of life in a cathedral town.

Twain, Mark (1835-1910). (Penname of S. L. Clemens.) The greatest American humorist, known and honored abroad as well as in America. *The Adventures of Huckleberry Finn* and *The Adventures of Tom Sawyer* are fascinating stories concerning the adventures of boys living near the Mississippi River, in the middle years of the last century. *Innocents Abroad* is a whimsical account, full of characteristic buffoonery, of the author's European travels. *A Connecticut Yankee at King Arthur's Court* tells the remarkable adventures of a modern Yankee who finds himself living at the court of Arthur. These works represent the author at his best.

Twelfth Night. This is one of Shakespeare's romantic comedies, in keeping with the spirit of the festival which is celebrated in England on the twelfth night after Christmas. It was written to give amusement, but even while amusing us Shakespeare shows us characters which are so true to life that they instruct us as well. He satirizes the conceited and languishing Malvolio, at the same time winning our admiration for the whole-hearted and faithful Viola. The humor runs from vulgar but droll scenes showing Sir Andrew Aguecheek and Sir Toby Belch in their cups, to the scenes of refined comedy with witty dialogue, in which Viola has the leading part. The plot is one of mistaken identity in which four lovers are involved in ludicrous situations.

Ulysses. The Latin name for the Greek hero, Odysseus. He has a prominent place in the Iliad and is the chief character in *The Odyssey. The Odyssey*, indeed, concerns itself with his adventures after the fall of Troy. Ulysses is the most crafty of all the characters in Homeric epic. To him his comrades turn when a difficult situation arises, and by following his ingenious counsel extricate themselves from their troubles.

Uncle Tom's Cabin (1852). A novel by Harriet Beecher Stowe (American). Judged by the usual literary standards, this is an inferior book; but judged by its influence upon human life it must be rated one of the great books of all time. It was read very widely at the time of its publication and had a considerable effect in winning freedom for the negro race in America. The story depicts the horrors of slavery by tracing the history of Uncle Tom, a faithful old slave, who is sold because of his master's loss of fortune. First he goes to a kind master, and has a happy life; but after a few years he has the misfortune to be sold once more, this time to a cruel master, Simon Legree, who tyrannizes over him, and finally, in a burst of wrath, has him so severely flogged that he dies from his wounds. Famous passages in the book describe the escape of Eliza, a fugitive slave, from the blood-hounds; the death of Little Eva, daughter of one of Tom's masters; and a slave-auction of the most heartless sort.

Uriah Heep. A dishonest and repulsive clerk in Dicken's *David Copperfield.* He conceals his true character under a mask of fawning humility. His name has become almost a synonym for hypocrisy.

Van Dyke, Henry (1852-1933). Clergyman, professor, and minister to Holland. Author of poetry, essays, and stories. *Fisherman's Luck, The Other Wise Man.*

Vanity Fair (1847). A novel by William Makepeace Thackeray (English). In its sub-title this novel is called a story "without a hero." The complete title, accordingly, informs the reader that the world will be depicted as a mart like that in *Pilgrim's Progress*, where only baubles and trinkets are for sale and all at high prices, a place where no man is really heroic, no man without his folly. Becky Sharp, a clever adventuress, is the leading character. Although she had disreputable parents, she succeeds through her own efforts in getting well married, in living lavishly by evading creditors, and in winning her way into smart society. At last her husband, Rawdon Crawley, catches her in a compromising situation with Lord Steyne, an old rake, unmasks her, and leaves her. Thereafter she sinks into a cheap, vagrant life, trying more or less in vain, to seem respectable. The more admirable characters in the book are Amelia Sedley, sweet-natured but weak, and Dobbin, faithful and honest though a bit dull. Many readers consider *Vanity Fair* the greatest of English novels.

Vicar of Wakefield, The (1766). A novel by Oliver Goldsmith (English). The hero of this book is a benevolent, lovable, country clergyman, one who unites in his person, as Goldsmith says, "the three greatest characters upon earth: he is a priest, a husbandman, and the father of a family." The story tells of the misfortunes which fall upon the Vicar's family, of the follies of Moses, a blundering son, of the worldliness of the mother and daughters, of the family's loss of property, and worst of all, of the elopement of Olivia, one of the daughters, with a philandering squire of the neighborhood. Throughout the troubles which beset him, the Vicar maintains a steadfast, hopeful composure. At the end of the story, perhaps with some abuse of coincidence, misfortune gives way to prosperity and happiness. The character of the Vicar,—a smiling Job,—is the great feature of the work. He has been called one of the highest compliments ever paid to human nature.

Viola. She is the winsome heroine of Shakespeare's play, *Twelfth Night.* Disguised as a page, she enters the service of Orsino, the man she loves. To him she is loyal, even when he bids her help him to woo another woman, Olivia.

Walden (1854). In this book Henry D. Thoreau gives an account of an experiment in simple living. He tells how he went to live on the shore of Walden Pond, near Concord, Massachusetts. He built a hut with his own hands; he raised beans and other vegetables for his food. By simplifying his life he was able to support himself with a few hours' labor each day, and to have the major part of his time for reading, walking, writing, and the observation of birds, beasts, and flowers. Thoreau did not write the book with the idea of arguing that all men should live as hermits in the woods, but as an illustration of the fact that luxury is not essential to high-mindedness and quiet happiness.

Wallace, Lew (1827-1905). A general in the United States Army; author of historical novels. The best known, *Ben Hur*, has been exceedingly popular, and has had enormous sales. The stage version of the story has been equally successful.

Walpole, Horace (1717-97). Author of vivacious *Letters*, and of a Gothic romance, *The Castle of Otranto.* Walpole was an English nobleman, a dictator to society. The house where he lived, Strawberry Hill, near London, which held his private printing press and a remarkable collection of curios, is famous.

Walpole, Hugh (1884-). *The* English novelist. *Dark Forest*; *Fortitude.*

Walton, Izaak (1593-1683). A retired English shopkeeper who immortalized his love for fishing in *The Complete Angler.* Also the author of excellent biographies of men of his time.

"Ward, Artemus" (1834-67). Penname of Charles F. Browne, and American humorist, lecturer as well as writer. His humor was broad and full of common sense. *His Book.*

Ward, Mrs. Humphrey (1851-1920). An English novelist; niece of Matthew Arnold; wife of the editor of Ward's English Poets. Her novels deal with problems of English social, economic, and religious life. *The Testing of Diana Mallory*; *Marcella.*

Warner, Charles Dudley (1829-1900). American essayist and editor. Author of *My Summer in a Garden*; *Being a Boy.*

Washington, George (1732-99). Best known as patriot and first president of the United States. Author of the *Farewell Address*, and other state papers.

Washington's Farewell Address. This address was delivered in 1796 at the close of his last administration. It was written with the assistance of Madison and Hamilton. Washington states his intention to retire now that no urgent affairs demand his attention, and thanks the people for their support. He then makes suggestions for their conduct in the future, especially regarding domestic unity and foreign neutrality. (1) Unity of government must be preserved; to this end America has inducements of common interest, descent, and so forth. A tendency to change the Constitution frequently and excessive party spirit are dangerous to unity. (2) Harmony with all nations and partiality or dislike for none is the best policy. Phrases from this address are frequently quoted in addresses and articles upon political subjects.

Webster, Daniel (1782-1852). Great American orator. Born on a New Hampshire farm, he studied law, became United States Senator, and later Secretary of State. He was an opponent of State Rights. *Bunker Hill Orations*; *Reply to Hayne.*

Wegg, Silas. A character in Dicken's *Our Mutual Friend.* He is a one-legged man who keeps a street still. He is hired by Mr. Boffin to read to him *The Decline and Fall of the Roman Empire.* Wegg occasionally "drops into poetry." He is a deceitful but amusing rogue.

Wells, Herbert George (1866-). The foremost English novelist of his generation. He has written upon a great variety of themes, but usually shows a keen interest in social problems, science, and religion even in books dealing with other materials chiefly. *The Research Magnificent*; *Mr. Britling Sees It Through.*

Westward Ho (1855). A novel by Charles Kingsley (English). The story tells the adventures of Amyas Leigh, a sailor in the days of Queen Elizabeth. His first voyage was around the world with Sir Francis Drake. Afterward he went to the continent of South America, to find Rose Salterne, an English girl who had married a Spaniard. After some fighting he and his men have to abandon their ship, and strike inland. For many months they tramp over the continent, fighting, accumulating gold, and rescuing a white girl from the Indians. They return to England at last, taking Ayanacora, the white girl, with them. Amyas goes out again soon afterwards to fight against the Spanish Armada, and loses his eyesight from being struck by lightning, just after the fight is won. He then returns home and marries Ayanacora. The book gives a good picture of the seafaring of the period. Famous persons introduced include Sir Walter Raleigh, Sir Richard Grenvil, and Edmund Spenser.

White, Gilbert (1720-93). An Englishman who observed very minutely the things which lay about him in a small village and recorded his observations in a book called *The Natural History and Antiquities of Selborne.*

White, William Allen (1868-). American author of novels and short stories. *The Court of Boyville.*

Whitman, Walt (1819-92). An American poet of radical democratic ideas. His verse forms were as unconventional as his ideas. He has a high reputation in Europe as well as in America. *Leaves of Grass*: *Oh Captain! My Captain* (Upon the death of Lincoln).

Whittier, John Greenleaf (1807-92). An American poet. A Quaker, a native of Massachusetts. An ardent advocate of abolition, as in the lyrics, *Voices of Freedom;* the author of religious poetry (*Laus Deo*), and poems (*Snow Bound*) describing life in rural New England, with close attention to nature.

Wiggin, Kate Douglas (1859-1923). (Penname of Mrs. George Christopher Riggs.) American author of clever novels and short stories, many of them intended for children. *Penelope's Progress; The Bird's Christmas Carol.*

Wigglesworth, Michae (1631-1705). A minister in colonial Massachusetts who expressed his stern theology in *The Day of Doom*, a rhymed narrative which influenced New England for a century.

Wilde, Oscar (1856-1900). Brilliant Irish poet and playwright. One of the group of young men who founded the "aesthetic movement," an artificial following of "art for art's sake." His experiences in prison led to his writing *The Ballad of Reading Gaol. Lady Windermere's Fan* is one of his cleverest plays.

Wilkins, Mary E., see **Freeman.**

Willis, Nathaniel Parker (1806-67). A journalist of the Knickerbocker School whose works were esteemed in his time. Little read to-day.

Wilson, John, see **North, Christopher.**

Winthrop, John (1588-1649). First Governor of Massachusetts Bay Colony, and author of the annals of the colony (1630-49), called *The History of New England.* This has served as a source of material for later writers.

Wister, Owen (1860-). American novelist. *The Virginian.*

Woolman, John (1720-72). A New Jersey Quaker preacher, an early opponent of slavery. His *Journal* attracted the attention of Charles Lamb.

Wordsworth, William (1770-1850). A great English poet. In his youth he was in sympathy with the French Revolution, but later became a conservative. He spent most of his long and peaceful life in the Lake Country in the northwestern part of England, enjoying the beautiful scenery of that region, and devoting himself to poetry. About him and his sister Dorothy gathered Southey, Coleridge, and others, known as the Lake Poets. Wordsworth finds the same inspiration in nature that many people find in religion.

"But he was a priest to us all
Of the wonder and bloom of the world."

The Prelude; Michael; Ode on the Intimations of Immortality; sonnets.

Wuthering Heights (1848). A novel by Emily Bronte (English). The scene is laid in Yorkshire, where the author lived. The story is concerned with the almost superhuman hate of Heathcliff, for his neighbors and friends. He hates even his own wife and child, and vents his wrath upon them cruelly. Death after death ensues as the story proceeds, until at last Heathcliff himself dies and the family which remains is at peace. Few if any stories have so concentrated a passion of wrath within them as this has. "Beyond the madness and terror of 'Wuthering Heights' romantic fiction has never gone."

Wycliffe, John (1324?-84). A religious reformer who conceived the idea of translating the Bible into English. The style of the translation made the scripture intelligible to the common folk of England. Wycliffe suffered much persecution for his work. He was one of the chief forerunners of the Reformation.

Yeats, William Butler (1865-). A contemporary Irish poet, who, like other poets of the Irish renaissance, derives his inspiration from the old legends and folk-lore of his country. *The Land of Heart's Desire.*

Young, Edward (1683-1765). An English clergyman, author of a religious poem, *Night Thoughts.*

SHAKESPEARE'S "AS YOU LIKE IT"



DUKE FREDERICK. ' Mistress. despatch you with your safest haste."—*Act I., Scene III.*

DICTIONARY OF PSEUDONYMS AND SOBRIQUETS

PEN NAME OR SOBRIQUET	REAL NAME
Abbott, Madeline Vaughan	Mrs. Charles E. Bushnell.
Achitophel, "Achitophel and Absalom"	Earl of Shaftesbury (1621-1638).
Ackermann, Gottlieb	Franz Xavier Mayer.
Ackworth, John	Rev. F. R. Smith.
Adam, Madame (Edmond)	Juliette Lamber.
Adams, Moses	Geo. Wm. Bagley.
Adams, Stephen	Michael Maybrick.
Addison of the North, "The Man of Feeling"	Henry Mackenzie.
Adeler, Max	Charles Heber Clark.
Admirable Doctor	Roger Bacon.
Adonais, "Adonais"	Keats (name given by Shelley).
Agate	Whitelaw Reid.
Aglaus	Henry Timrod.
Akers, Elizabeth	Mrs. E. M. Allen.
A. K. H. B.	Rev. A. K. H. Boyd.
Alcaeus	James Montgomery.
Alcibiades, *Punch*, 1846	Lord Tennyson.
Alexander, Mrs.	Mrs. Annie Alexander Hector.
Alexander of the North, The	Charles XII of Sweden.
Alexander, Sir Drawcansir	Tobias George Smollett.
Alexander the Coppersmith, LL. D.	Thomas Erskine, Baron Erskine.
Alexander the Corrector	Alexander Cruden.
Allen, F. M.	Edmund Downey.
Alte Fritz, Der	Frederick the Great.
Americus	Francis Lieber.
Ames, Lucia True	Mrs. Lucia Ames Mead.
Amyand, Arthur	Capt. E. A. Haggard.
Anacreon Moore	Thomas Moore.

Pen Name or Sobriquet	Real Name
Anacreon of Painters	Francesco Albani.
Anacreon of Persia	Hafiz.
Andrews, Annulet	Mrs. J. Kingsley Ohl.
Ane of that Ilk	Prof. W. E. Aytoun.
Angelical Doctor	Thomas Aquinas.
Angler, An, "Salmonia."	Sir Humphry Davy.
Anstey, F	T. Anstey Guthrie.
Apostate, Julian the	Roman Emperor Julian.
Apostle of Germany	St. Boniface.
Apostle of Ireland	St. Patrick.
Apostle of Temperance	Rev. Theobald Mathew.
Apostle of the English	St. Augustine.
Apostle of the French	St. Denis.
Apostle of the Frisians	St. Willibrord or Wilbrod.
Apostle of the Gauls	St. Irenæus.
Apostle of the Goths	Ulfilas.
Apostle of the Indians	Rev. John Eliot.
Apostle of the Indies	St. Francis Xavier.
Apostle of the North	Ansgar or Anscharius.
Apostle of the North	Bernard Gilpin.
Archibald, Mrs. G	Mrs. George A. Palmer.
Amstrong, Regina	Mrs. C. H. Niehaus.
Arnold, Birch	Mrs. J. M. D. Bartlett.
Arp, Bill	Charles H. Smith.
Ashmont	J. Frank Perry.
Astrophel	Sir Philip Sidney.
Atlas	Edmund Yates.
Attic Bee	Sophocles.
Attic Muse	Xenophon.
Atticus	Joseph Addison (name given by Pope in "Prologue to the Satires").
Aunt Elmina	Mrs. Isaac Slenker.
Austrian Hyena	Baron Julius Jakob von Haynau.
Autocrat, The	Dr. Oliver Wendell Holmes.
Ayres, Alfred	Thomas E. Osmun.
Bab, "Bab Ballads"	W. S. Gilbert.
Baba, Ali	Alberigh Mackay.
Badinguet	Napoleon III.
Balfour, Clara	Mrs. Felicia Dorothea (Browne) Hemans.
Ballin, Ada S	Mrs. Oscar G. D. Berry.
Bard of Avon	Shakespeare.
Bard of Ayrshire	Robert Burns.
Bard of Rydal Mount, The	Wm. Wordsworth.
Barnaval, Louis	Charles De Kay.
Barnes, Catharine Weed	Mrs. Henry Snowden Ward.
Bates, Charlotte Fiske	Mme. Adolphe Roge.
Bayard, The Polish	Prince Józef Anton Poniatowski.
Baylor, Frances Courtenay	Mrs. Geo. S. Barnum.
Beard, Frank	Thos. Francis Beard.
Beau Brummel	George Bryan Brummel.
Beauclerc	Henry I. of England.
Beaumont, Averil	Mrs. Hunt.
Beau Nash	Richard Nash (also called "King of Bath").
Bede, Cuthbert	Rev. Edward Bradley.
Bell, Acton	Anne Brontë.
Bell, Currer	Charlotte Brontë.
Bell, Ellis	Emily Brontë.
Bell, Lilian	Mrs. Arthur Hoyt Bogue.
Bell, Lura	Julia May Williamson.
Bell, Nancy	Mrs. A. Geo. Bell
Belloc, Marie Adelaide	Mrs. Frederick S. Lowndes.
Bell-the-Cat	Archibald Douglas, fifth earl of Angus.
Belted Will	Lord William Howard
Benson, Carl	Charles Astor Bristed.
Bentzon, Th	Marie Therese Blanc.
Berkeley, Thusneida	Mrs. Mary L. Metcalfe.
Berwick, Mary	Adelaide Anne Procter.
Bess, Good Queen	Queen Elizabeth of England.
Bettina	Elisabeth or Bettina(Brentano) von Arnim.
Bevans, Neile	Nellie Bingham van Slingerland.
Bibliophile	L. A. Allibone.
Bibliophile, P. & Jacob	Paul Lacroix.
Bickerdyke, John	Charles H. Cook.
Bickerstaff, Isaac	Swift and Steele.
Biglow, Hosea	J. R. Lowell.
Billings, Josh	Henry W. Shaw.
Bisland, Elizabeth	Mrs. Elizabeth Wetmore.
Black Douglas	(Generic name of Scotch family of Douglas.)
Black Prince, The	Edward, Prince of Wales, son of Edward III. of England.
Blacksmith, The Learned, "Sparks from the Anvil"	Elihu Burritt.
Blanchard, Neltje	Mrs. F. N. Doubleday.
Blind Harry	Henry the Minstrel.
Bluff Hal, or Harry	King Henry VIII. of England.
Boisgilbert, Edmund	Ignatius Donnelly.
Boldrewood, Rolf	Thos. Alex. Browne.
Bon Gaultier	Prof. W. E. Aytoun and Sir Theo. Martin.
Bonehill, Capt. Ralph	Edwd. Stratemeyer.
Bouverie, Bartholomew	Rt. Hon. W. E. Gladstone, M. P.
Boz	Charles Dickens.
Bozzy	James Boswell.
Braddon, Miss M E	Mrs. John Maxwell.
Brannigan, Calvin	Jas. Jeffrey Roche.
Breitmann, Hans	Charles Godfrey Leland.
Briscoe, Margaret Sutton	Mrs. A. J. Hopkins.
Brooke, Magdalen	M. H. M. Capes.
Brooks, Esta	Mrs. E. P. Evans.
Brooksby	Capt. Pennell Elmhurst.
Brown, Tom	Thomas Hughes, Q. C., M. P.
Brown, Tom, the Younger	Thomas Moore.
Brydges, Harold	James Howard Bridge.
Bunny	Carl E. Schultze.
Burlington Hawkeye Man	Robert Jones Burdette.
Burnett, Frances Hodgson	Mrs. Stephen Townsend.
Butt, Beatrice May	Mrs. W. H. Alhusen.
Byron, The Russian	Alexander Sergeivitch Puschkin.
C	Mrs. J. Farley Cox.
Cadenus	Jonathan Swift.
Calderwood, M	William F. Robertson, M. D.
Caliban	Robert Buchanan.
Caliban	Louis Jean Emmanuel Gonzalès.
Cambridge, Ada	Mrs. George F. Cross.
Candidus	Samuel Adams.
Carmen Sylva	Queen of Roumania.
Carroll, Lewis	Rev. Chas. L. Dodgson.
Carter, Nick	J. Russell Coryell.
Carton, R. C	R. C. Crutchett.
Cartwright, Julia	Mrs. Henry Ady.
Caryll, Ivan	John Carl.
Caskoden, Edward	Charles Major.
Castlemon, Harry	Charles A. Fosdick.
Catholicus	Cardinal John Henry Newman.
Cato	Alexander Hamilton.
Champ	Jas. W. Champney.
Chester, Eliza	Harriet Eliza Paine.
Chester, Morley	Emily Underdown.
Chicot	Epes Winthrop Sargent.
Chinese Gordon	Maj. Gen. Charles George Gordon.
Citizen King	Louis Philippe.
Clark, Henry Scott	Millard F. Cox.
Cleeve, Lucas	Mrs. Howard Kingscote.
Cleisthbotham, Jedediah	Sir Walter Scott.
Clement, Clara Erskine	Mrs. James Forbes Waters.
Coe, Captain	E. Card Mitchell.
Collingwood, Harry	W. J. C. Lancaster.
Collins, Mabel	Mrs. Keningale Cook.
Collins, Percy	Price Collier.
Colman, R. W	James Hogg, the Ettrick Shepherd.
Colmore, G	Mrs. Gertrude Colmore Dunn.
Common Sense	Thomas Paine.
Condroux, Alfred	Honoré de Balzac.
Confessor. The	Edward III., King of Anglo-Saxons.
Connor, Marie	Marie Connor Leighton.
Connor, Ralph	Rev. C. W. Gordon.
Conqueror, William the	Duke of Normandy.
Conway, Hugh	Fergus Hume.
Coo-ee	W. S. Walker.
Coolidge, Susan	Sarah C. Woolsey.
Corelli, Marie	Eva Mary Mackay.
Cornwall, Barry	B. W. Procter.
Corrector, Alexander the	Alexander Cruden.
Cotonnet	L. C. Alfred de Musset.
Craddock, Charles Egbert	Mary N. Murfree.
Craik, (Georgiana M	Mrs. May.
Crayon, Geoffrey	Washington Irving.
Creyton	J. T. Trowbridge.
Crichton, The Admirable	James Crichton.
Crinkle, Nym	And. C. Wheeler.
Croaker & Co	Joseph Rodman Drake, Fitz-Greene Halleck.
Cromarty, Deas	Mrs. Watson.
Crowfield, Christopher	Mrs. H. Beecher Stowe.
Cruiser, Benedict	G. A. Sala.
Curate of Meudon (le Curé de Meudon)	Francois Rabelais.
Curtius	Noah Webster.
Cusack, George	Grace Carter-Smith.
Cushing, Paul	Roland Alexander Woodsey.
D'Ache, Caran	Emmanuel Poiré.
Dacre, J. Colne	Mrs. A. S. Boyd.
Dagonet	George R. Sims.
Dale, Alan	Alfred J. Cohn.
Dale, Darley	Francesca Maria Steele.
Daly, Frederic	Louis Frederic Austin.
Damsel of Brittany	Eleanora, granddaughter of Henry II. of England.
Danbury News Man	J. M. Bailey.
Danby, Frank	Mrs. Julia Frankau.
D'Anvers, N	Mrs. A. Geo. Bell.
Davy	Alexandre Dumas.
Dean, Mrs. Andrew	Mrs. Cecily Sedgwick.
Dean, The	Jonathan Swift.
De Burgh, A	E. M. Alborough.
Defender of the Truth	Henry VIII. of England.
Deland, Margaret	Mrs. Lorin F. Deland.
Delorme, Joseph	Chas. Augustin Sainte-Beuve.
Democratic Tory, A	"Benj. Disraeli: the Past and the Future," John Skelton.
Democritus, Junior	"Anatomy of Melancholy" Robert Burton.
Devoore, Ann	Mrs. R. P. Walden.
Dix, Dorothy	Elizabeth M. Gilmer.
Dobson, Austin	Henry A. Dobson.
Doctor Angelicus	Thomas Aquinas.
Doctor Authenticus	Gregory of Rimini.
Doctor, The	Robert Southey.
Doe, John	Geo. Cavendish Bentinck
Donovan, Dick	Joyce Emerson Muddock.
Dooley, Martin	Finley Peter Dunne.
Douglas, George	George D. Brown.
Douglas, Marian	Annie Douglas Green Robinson.
Doyle, Conan	Sir Arthur C. Doyle.
Drapier, M. B	Jonathan Swift.
Drinkwater, Jennie Maria	Jennie Conklin, M. D.
Droch	Robert Bridges.
Duchess, The	Mrs. Hungerford.
Duncan, Sara Jeannette	Mrs. Everard Cotes.
Dunning, Charlotte	Charlotte D. Morse.
Dunshunner, Augustus	Prof. Wm. Aytoun.
Egerton, George	Mrs. R. Golding Bright.
Eichberg, Annie	Mrs. John Lane.
Elia	Charles Lamb.
Eliot, George	Marian Evans.
Eliot, Max	Mrs. Granville Alden Ellis.
Elmwood	James Russell Lowell.
Emery, Clay	Clayton Mayo.
Enemy to Peace, An	Jonathan Swift.
English Opium Eater	Thomas De Quincey.
English Rabelais, The	Dean Swift.
English Republican, An	Algernon Chas. Swinburne.
English Roscius, The	David Garrick.
English Tory	Sir Richard Steele.
Englishman, An	Thomas Paine.
Ettrick Shepherd	James Hogg.
Expounder of the Constitution	Daniel Webster.
Falconer, Lanoe	Mary Elizabeth Hawkes.
Fancy, One of the	Thomas Moore.
Fane, Violet	Lady Currie.
Farnam, Ella	Ella F. Pratt.
Farquharson, Martha	Martha F. Finley.
Fat Contributor, The	W. M. Thackeray.
Father of Angling	Izaak Walton.
Father of English Poetry	Title given by Dryden to Chaucer.
Father of Epic Poetry	Homer.
Father of His Country	Given by Roman Senate to Cicero.
Father of His Country	George Washington.
Father of History	Herodotus.
Father of Jests	Joseph Miller.
Father of Letters	Francis I., King of France.
Father of Letters	Lorenzo de' Medici, Ruler of Florence.
Father of Medicine	Hippocrates.
Father of Music	Giovanni Pietro Aloiso Pierluigida Palestrina.
Father of the People	Louis XII. of France.
Father of Tragedy	Title bestowed by Athenians upon Æschylus.
Federalist, A	Noah Webster.
Fellow of the Royal Society, A	Cotton Mather.
Female Howard	Mrs. Elizabeth Fry.
Fern, Fanny	Sara Payson(Willis)Parton
Field, Michael	Miss Bradley and Miss Cooper.
Fielding, Howard	Charles W. Hooke.
Finn, Mickey	Ernest Jarrold.
Fitz-Boodle, George	W. M. Thackeray.
Fitznoodle	B. B. Vallentine.
Fitzvictor, John	Percy Bysshe Shelley.
Fleming, George	Julia Constance Fletcher.
Flynt, Josiah	Josiah Flynt Willard.
Fontenoy, Marquise de	Margaret Owen Cunliffe.
Forbes, Athol	Forbes Alexander Phillips.
Forrester, Francis	Daniel Wise.
Forrester, Frank	Henry Wm. Herbert.
Forrester, Isola	Mrs. Reuben Merrifield.
Foucher, Paul	Victor Hugo.
Fra Diavolo	Michele Pezza.
Fra Elbertus	Elbert Hubbard.
France, Anatole	Jacques Anatole Thibault.
Francis, M. E	Mrs. Frank Blundell.
Frank, Dr	J. Frank Perry, M. D.
Freeman, A	Jean Joseph Louis Blanc.
Freeman, Mrs	First duchess of Marlborough.
Froissart, Jean	Alphonse Daudet.
Garrett, Edward	Mrs. John R. Mayo.
Gaston, Marie	Alphonse Daudet.
Gates, Eleanor	Mrs. Richard Walton Tully.
Gath	George Alfred Townsend.
Gay, Mr. Joseph	Alexander Pope.
Gazul, Clara	Prosper Mérimée.
Gentleman, A	Edmund Hoyle.
George, G. M	Mrs. Spurrell.
Gerard, Dorothea	Mme. Longard de Longarde.
Gerard, Emily	Mme. de Laszowski.
Gerard, Morice	Rev J. Jessop Teague.
German Milton, The	Friedrich Gottlieb Klopstock.
German Plato, The	Friedrich Heinrich Jacobi.
German Voltaire, The	Christoph Martin Wieland.
G. G	Henry George Harper.
Gibbons, Lucy	Lucy G. Morse.
Gift, Theo	Mrs. G. S. Boulger.

Pen Name or Sobriquet	Real Name
Gilman, Winona	Mrs. F. Schoeffel.
Gissing, George	J. Storer Glouston.
Gladiolus	Wm. Ewart Gladstone.
Glyn, Elinor	Mrs. Clayton Glyn.
Glyndon, Howard	Mrs. Laura C. R. Searing.
Godfrey, Hal	Charlotte O'Conor-Eccles.
Going, Maud	E. M. Harding.
Gooch, Fanny C.	Fanny C. G. Iglehard.
Good Gray Poet	Walt Whitman.
Good Knight, without Fear and without Reproach, The	[Chevalier. Pierre du Terrail de Bayard
Goodman, Maude	Mrs. A. E. Scanes.
Goodwell, Godek	Horace Greeley.
Gordon, A. M. R.	Alexander Macgregor Roe.
Gordon, Julien	Mrs. Van Rensselaer Cruger.
Gorki, Maxime	Alexi Maximovitch Peshkov.
Goslett, Paul	Chas. Lever.
Gower, The Moral	John Gower.
Graduate of Oxford	John Ruskin.
Graham, John	David Graham Phillips.
Grand, Mme. Sarah	Mrs. McFall.
Gray, Maxwell	Miss M. G. Tuttiett.
Great Commoner	William Pitt.
Great Elector	Frederick William, Elector of Brandenburg.
Green, Anna Katharine	Mrs. Charles Rohlfs.
Greenwood, Grace	Sara Jane Lippincott.
Greville, Henri	Mme. Durand.
Grey, Barton	George Herbert Sass.
Grier, Sydney C.	Miss Gregg.
Grile, Dod	Ambrose Bierce.
Gubbins, Nathaniel	Edward Spencer Mott.
Gushington, Angelina	Lady Dufferin.
Gyp	Countess de Martel.
Haliburton, Hugh	James Logie Robertson.
Hall, Owen	James Davis.
Hamilton, Gail	Mary Abigail Dodge.
Hard Pan	Geraldine Bonner.
Harland, Marion	Mrs. Mary V. Terhune.
Harlequin	Robert Harley
Harrod, Frances	Frances Forbes-Robertson.
Harte, Bret	Francis Bret Harte.
Hawthorne, Alice	Septimus Winner.
Hayes, Henry	Ellen Olney Kirk.
Hegan, Alice Caldwell	Mrs. Cale Young Rice.
Helvidius	James Madison.
Henry, John	Hugh McHugh.
Herbert, Morgan	Margaret M. H. Mather.
Hero of the Nile	Horatio Nelson.
Heron, E. and H.	Mrs. Kenneth and Mr. Hesketh Prichard.
H. H.	Helen Hunt Jackson.
Hibernia	Jonathan Swift.
Hickson, Mrs. Murray	Mrs. S. A. P. Kitcat.
Hierro	Victor Marie Hugo.
Hill, Headon	F. Grainger.
Historicus	George Grote.
Historicus	Sir W. Vernon Harcourt.
Hobbes, John Oliver	Mrs. Pearl M. J. Craigie.
Hoffman, Prof.	Angelo Lewis.
Hogan, Ernest	Reuben Crowdus.
Holdsworth, Annie E.	Mrs. Lee-Hamilton.
Holland	E. J. Edwards.
Holloway, Laura	Laura C. H. Langford.
Holm, Saxe	Probably Helen Hunt Jackson.
Honeycombe, Henry	Leigh Hunt.
Hope, Anthony	Anthony Hope Hawkins.
Hope, Ascot R.	R. Hope Moncreiff.
Hope, F. T. L.	Dr. Farrar.
Hope, Graham	Jessie Hope.
Hopper, Nora	Mrs. Wilfred H. Chesson.
Huntington, Faye	Theodosia T. Foster.
Hutchinson, Ellen M.	Ellen M. H. Cortissoz.
Ignatius, Father	J. L. Lyne.
Inchiquin	Robert Southey.
Incorruptible, The	Robespierre.
Ingham, Col. Frederick	Edward Everett Hale.
Ingoldsby, Thomas	Rev. R. H. Barham.
Innominato	Mgr. Eugene Boeglin.
Iota	Mrs. Kathleen M. Caffyn.
Irish Gentleman, An	Thomas Moore.
Iron Duke	Duke of Wellington.
Iron Hand, The	Gottfried von Berlichingen.
Ironquill	Eugene F. Ware.
Iron, Ralph	Mrs. S. C. Cronwright.
Ironside	Edmund II. (989-1016).
Ironside, Nestor	Sir Richard Steele.
Irrefragable Doctor	Alexander of Hales.
Isa	Mrs. Isa Craig-Knox.
Ivory Black	Thomas A. Janvier.
Jacob Omnium's Hoss	W. M. Thackeray.
James, S. T.	Horace E. Scudder.
Jay, W. L. M.	Julia L. M. Woodruff.
Jeames	W. M. Thackeray.
Jean Jacques	Jean Jacques Rousseau.
Jean, Paul	J. P. F. Richter.
Jessamine, James	Bryan Waller Procter.
Jessamy Bride	Mary Horneck (Mrs. Gwyn.)
Jewish Plato, The	Philo Judæus.
Jobber, A.	Daniel Defoe.
Johnson, Benjamin F.	James Whitcomb Riley.
Johnson, Effie	Mrs. Orson Richmond.
Josiah Allen's Wife	Marietta Holley.
J. S. of Dale	Frederick J. Stimson.
June, Jenny	Mrs. David G. Croly.

Pen Name or Sobriquet	Real Name
Kata Phusin	John Ruskin.
Keith, Leslie	Grace L. K. Johnston.
Kendall, B.	Baroness Kurt von Kendall.
Kerr, Orpheus C.	Robert C. Newell.
Kerr, Sherrill	Julia Magruder.
King, Katherine Douglas	Mrs. Burr.
King Maker, The	Richard Nevil.
King of Courts	Quintus Hortensius.
Kirk, Eleanor	Eleanor K. Ames.
Kirke, Edmund	James R. Gilmore.
Kit	Prof. John Wilson.
Klingle, George	Mrs. Holmes.
Knickerbocker, Cholly	John W. Kellar.
Knickerbocker, Diedrich	Washington Irving.
Kron, Karl	Lyman Hotchkiss Bagg.
Kvelve	Rasmus B. Anderson.
Lady, A.	Mrs. Julia Ward Howe.
Lady, A.	Jane Austen.
Lady of Massachusetts	Mrs. Lydia Maria Child.
Laicus	Rev. Lyman Abbott.
Langstaff, Launcelot	Washington Irving et al.
Last of the Fathers	St. Bernard.
Last of the Goths	Roderick of Spain.
Last of the Romans	Aëtius, a Roman general.
Last of the Tribunes	Nicolo Gabrini Rienzi, Cola di Rienzi.
Laughing Philosopher	Democritus of Abdera.
Laurence Slingsby	George Henry Lewes.
Laurie, Annie	Winifred Black.
Le Baron, Grace	Mrs. Henry Macy Upham
Lee, Home	Harriet Parr.
Lee, Vernon	Violet Paget.
L. E. L.	Letitia E. Landon.
Leslie, Amy	Lillie West Brown.
Leslie, Mrs. Frank	Mrs. Miriam F. F. Wilde.
Leviathan of Literature	Dr. Samuel Johnson.
Liberator, The	Simon Bolivar.
Light-Horse Harry	General Henry Lee.
Lion of the North	Gustavus Adolphus.
Little Comedy	Catharine Horneck (Mrs. Bunbury).
Little Corporal	General Bonaparte.
Little Giant	Hon. Stephen A. Douglas.
Little Mac	Gen. George B. McClellan.
Little Magician	Hon. Martin Van Buren.
Little Master	Hans Sebald Beham.
Little Thomas	Thomas Moore.
Logan, Celia	Mrs. J. B. Connelly.
Logan, Olive	Mrs. W. Wirt Sikes.
Lothrop, Amy	Anna Bartlett Warner.
Loti, Pierre	L. M. Julien Viaud.
Ludlow, Johnny	Mrs. Henry Wood.
Luska, Sidney	Henry Harland.
Lyall, Edna	Ada Ellen Bayly.
Lycidas	Edward King.
Lys, Christian	Percy Jas. Brebner.
Maartens, Maarten	J. I. N. W. van der Poorten Schwartz.
MacDermott, B.	Robert M. Sillard.
Mackenzie, Fergus	James Anderson.
Mackie, Pauline B.	Mrs. Herbert M. Hopkins.
MacLaren, Ian	Rev. John MacLaren Watson.
Maclean, Mona	Miss Todd.
MacNab, Frances	Agnes Fraser.
Mad Anthony	General Anthony Wayne.
Madman of the North	Charles XII. of Sweden.
Maid of Orleans	Joan of Arc.
Maid of Saragossa	Augustina Zaragoza.
Maitland, Thomas	R. Buchanan.
Malachi Malagrowther	Sir Walter Scott.
Malet, Lucas	Mrs. William Harrison.
Man of December	Napoleon III.
Man of Destiny	Napoleon Bonaparte.
Man of Ross	John Kyrle.
Mantuan Swan	Vergil.
Maori	James Inglis.
Marchant, Bessie	Mrs. J. A. Comfort.
Market Gardener, A	R. D. Blackmore.
Marlitt, E.	Henriette Eugénie John.
Marlowe, Charles	Harriet Jay.
Mars, Victor de	Joinville.
Marshal Forward	Field Marshal von Blücher.
Marshes, A Son of the	Mrs. Owen Visger.
Martin, Ellis	Marah Ellis Ryan.
Martin, George Madden	Mrs. Atwood R. Martin.
Marvel, Ik	Donald Grant Mitchell.
Marvel, Matthew	E. P. Ackerman.
Mathers, Helen	Mrs. Henry Reeves.
Mathetes	John Wilson.
Matthaeus, Thomas	John Tindal.
Maxwell, Ellen Blackmer	Ellen B. Barker.
May, Sophie	Rebecca Sophia Clarke.
McManus, Blanche	Mrs. M. F. Mansfield.
Meade, L. T.	Mrs. F. Toulmin Smith.
Meredith, Owen	Earl of Lytton.
Merlin	Lord Tennyson.
Merriam, Florence A.	Mrs. Florence M. Bailey.
Merriman, Henry Seton	Hugh Stowell Scott.
Merry Monarch	Charles II. of England.
Merrypebble, Mr.	Wm. E. Gladstone.
M. E. W. S.	Mrs. Jno. Sherwood.
Mignon, August	John A. Darling.
Mill-boy of the Slashes	Henry Clay.
Miller, Joaquin	Cincinnatus Heine Miller.
Miller, Olive Thorne	Harriet Mann Miller.
Millman, Helen	Mrs. Caldwell Crofton.
Miln, Louise Jordan	Mrs. George Crichton Miln.
Miss Teerius	Mrs. Fred Horner.
Moderator	Thomas Chatterton.

Pen Name or Sobriquet	Real Name
Modern Messalina	Catharine II. of Russia.
Monk, Lewis	Matthew Gregory Lewis.
Montbard, Georges	Charles Auguste Loves.
Moore, Mollie E.	Mary Evelyn Moore Davis.
Morley, Mrs.	Queen Anne.
Morning Star of the Reformation	John Wycliffe.
Morris, Peter	John Gibson Lockhart.
Mortimer, Geoffrey	Walter M. Gallichan.
Morton, Hugh	Charles M. S. McLellan.
Mother Ann	Ann Lee.
Mowbray, J. P.	Andrew C. Wheeler.
Mühlbach, Luise	Mme. Klara (Müller) Mundt.
Mulholland, Rosa	Lady Gilbert.
Mulock, Miss	Mrs. G. L. Craig.
Nasby, Petroleum V.	David Ross Locke.
Nero of the North, The	Christian II. of Denmark.
Nesbit, E.	Mrs. Hubert Bland
Newton, Aubrey	Ambrose Winterton.
Noble Lord, A.	Lord Byron.
Nobleman, A.	Oliver Goldsmith.
Nordau, Max	Simon Sudfeld.
North, Barclay	William C. Hudson.
North, Christopher	Prof. John Wilson.
Northern Herodotus	Snorro Sturleson.
Novalis	Friedrich von Hardenberg.
Nox, Owen	Charles B. Cory.
Octogenarian, An	Walter Savage Landor.
O'Dowd, Cornelius	Charles James Lever.
Officer, An	Major Alexander Jardine.
Ogden, Ruth	Frances Otis Ide.
Ogilvy, Gavin	J. M. Barrie.
O'Hara Family	J. and M. Banim.
O. K.	Mme. Olga (Kirêef) Novikoff.
Old Bachelor, An	George William Curtis.
Old Bullion	Col. Thomas Hart Benton.
Oldcastle, John	Wilfred Meynell.
Old Ebony	William Blackwood.
Old Hickory	Gen. Andrew Jackson.
Old Noll	Oliver Cromwell.
Old Public Functionary	James Buchanan.
Old Rowley	Charles II. of England.
"Old Sleuth"	Harlan P Halsey.
Oldstyle, Jonathan	Washington Irving.
O'Neill, Rose Cecil	Mrs. Harry Leon Wilson.
Only, The	Jean Paul Friedrich Richter.
Optic, Oliver	Rev. Wm. T. Adams.
O'Reilly, Private Miles	Charles G. Halpin.
O'Rell, Max	Paul Blouët.
Oriana (*Oriens Anna*, The Dawning Anna)	Anne, queen of James I.
Otis, James	James Otis Kaler.
Ouida	Louise de la Ramée.
Owen, Jean A.	Mrs Owen Visger.
Oxenham, John	Mr. Dunkerley.
Pacificus	Alexander Hamilton.
Palmer, Lynde	Mrs. A. A. Peebles.
Pansy	Isabella Macdonald Alden.
Papaverius, Thomas,	Thomas De Quincey.
Parley, Peter	Samuel G. Goodrich.
Partington, Mrs.	Benjamin P. Shillaber.
Paston, George	Miss E. M. Symonds.
Pathfinder of the Rocky Mountains	Maj.-Gen. John C. Fremont.
Pattieson, Peter	Sir Walter Scott.
Patton, J. B.	Edmund White.
Paul	Sir Walter Scott.
Paul, Jean	Jean Paul F. Richter.
Paul, John	Chas. Henry Webb.
Peasant Bard	Robert Burns.
Pellegrin	Lamotte Fouqué.
Pendennis, Arthur	W. M. Thackeray.
Pennsylvania Farmer	John Dickinson.
Perkins, Eli	Melville D. Landon.
Pfaal, Hans	Edgar Allan Poe.
Philosopher of Malmesbury	Thomas Hobbes.
Phœnix, John, Gentleman	Capt. George H. Derby.
Phiz	H. K. Browne.
Pindar, Peter	Dr. John Wolcott.
Plon-Plon	Prince Napoleon Joseph Charles Bonaparte.
Polish Byron, The	Adam Mickiewicz.
Poor Richard	Benjamin Franklin.
Porcupine, Peter	William Cobbett.
Plymley, Peter	Sydney Smith.
Porte Crayon	David Hunter Strother.
Powell, Richard Stillman	Ralph Henry Barbour.
Prescott, Dorothy	Agnes Blake Poor.
Prescott, E. Livingston	Edith K. Spicer-Jay.
Pretender, The Old	James Francis Edward Stuart.
Pretender, The Young	Charles Edward Stuart.
Prevost, Francis	Harry F. P. Battersby.
Prince of Destruction	Tamerlane, or Timour.
Protestant Pope	Pope Clement XIV.
Prout, Father	Francis S. Mahony.
Q.	Arthur T. Quiller-Couch.
Q.	Douglas William Jerrold.
Quad, M.	C. B. Lewis.
Quaker Poet	John Greenleaf Whittier.
Quarles	Edgar Allan Poe.
Queen of the East	Zenobia of Palmyra.
Quinn, Dan	Alfred Henry Lewis.
Quirinus	Dr. Döllinger.
Quixote of the North	Charles XII. of Sweden.

Pen Name or Sobriquet	Real Name
Quiz	Charles Dickens.
Rail-Splitter, The	Abraham Lincoln.
Raimond, C. E.	Elizabeth Robins.
Raine, Allen	Mrs. Beynon Puddicombe.
Raleigh, Cecil	Mr. Rowlands.
Ranger, Robin	James M. Freeman.
Rare Ben	Ben Jonson.
Redden, Laura Catherine	Laura C. Searing.
Reid, Christian	Francis C. Tiernan.
Republican, A	Charles Pinckney.
Reybaud, Mme. Charles	Henriette Arnaud.
Rheinhardt, Rudolph H.	George Hempl.
R'Hoone, Lord	Honoré de Balzac.
Riddell, Mrs. J. H.	Mrs. C. E. L. Riddell.
Rita	Mrs. E. M. J. von Booth.
Rives, Amelie	Princess Troubetskoi.
Robertson, Muirhead	Henry Johnson.
Robinson, A. Mary F.	Mme. Emile Duclaux.
Rohan	Koda Nariyuki.
Rosny, J. H.	The Brothers Boex.
Ross, Adrian	Arthur Reed Ropes.
Ross, Albert	Linn Boyd Porter.
Ross, Martin	Violet Martin.
Rough and Ready	General Zachary Taylor.
Rover	Alfred Gibson.
Roving Englishman	Hon. E. C. Grenville-Murray.
Rowe, Bolton	Benj. C. Stephenson.
Rowe, Saville	Clement Scott.
Royal Martyr	Charles I. of England.
Royce, Ashley Allen	Nathaniel Hawthorne.
Roy, Rob	John Macgregor.
Runnymede	Benjamin B. Disraeli.
Rupert of Debate	Earl of Derby.
Rusticus	J. K. Fowler.
Rutherford, Mark	Wm. Hale White.
Sailor King, The	William IV. of England.
Saint Remy	The Duc de Morny.
Saladin	William Stewart Ross.
Salem, Hezekiah	Freneau.
Samian Sage	Pythagoras.
Sand, George	Mme. Dudevant.
Sand, Jules	Jules Léonard Sylvain Sandeau.
Sanghamita, Sister	Countess M. A. de S. Canavarro.
Saunders, Marshall	Margaret M. Saunders.
Saunders, Richard	Benjamin Franklin.
Sauzade, John S.	James Payn.
Savonarola, Jeremy	Francis S. Mahony.
Schreiner, Olive	Mrs. S. C. Cronwright.
Scottish Solomon, The	James VI. of Scotland, and I. of England.
Scourge of God	Attila, king of the Huns.
Scriblerus, Martinus	Swift, Pope, and Arbuthnot.
Scriblerus Secundus	Henry Fielding.
Seeley, Charles Sumner	John William Munday.
Semiramis of the North	Margaret, daughter of Waldemar III. of Denmark.
Semiramis of the North	Catherine II. of Russia.
Seraphic Doctor	St. Bonaventura.
Setoun, Gabriel	Thomas Nicoll Hepburn.
Sevenoaks	Alfred S. Edwards.
Sharp, Luke	Robert Barr.
Shaw, Flora	Lady Flora Lugard.
Sidney, Margaret	Harriett Mulford Lothrop.
Siegerson, Dora	Mrs. Clement Shorter.
Siegvolk, Paul	Albert Mathews.
Single-Speech Hamilton	William Gerard Hamilton.
Sinjohn, John	John Galsworthy.
Slick, Sam	T. C. Haliburton.
Slingsby, Philip	N. P. Willis.
Smith, T. Carlyle	John Kendrick Bangs.
Soldiers' Friend	Frederick, Duke of York.
Sparks, Timothy	Charles Dickens.
Spinner, Alice	Mrs. Augusta Zelia Fraser.
Spy	Leslie Ward.
Stanlaw, Penrhyn	Penrhyn Stanley Adamson.
St. Aubyn, Alan	Frances Marshall.
St. Clair, Victor	G. Waldo Browne.
Stella	Miss Esther Johnson (so called by Swift).
Stepniak	S. Kartcheffsky.
Sterne, Stuart	Gertrude Bloede.
Stewart, Philip	Philip Robinson.
St. Laurence	Alfred Laurence Felkin.
Stonehenge	J. H. Walsh.
Stonewall Jackson	Thomas Jonathan Jackson.
Stretton, Hesba	Sarah Smith.
Stuart, Cosmo	Cosmo Chas. Gordon-Lennox.
Stuart, Esme	Miss Leroy.
Stuart, Leslie	T. A. Barrett.
Sturgis, Dinah	Mrs. Belle A. Whitney.
Subtle Doctor	Duns Scotus.
Surfaceman	Alex. Anderson.
Swan, Annie S.	Mrs. Burnett Smith.
Swan of Cambrai	Fenelon.
Swedish Nightingale	Jenny Lind (Madame Goldschmidt).
Sweet Singer of Israel	King David.
Swift, Benjamin	William Romaine Paterson.
Sylva, Carmen	Elizabeth, Queen of Roumania.
Sylvander	Robert Burns.
Symington, Maggie	Mrs. Sarah M. Blathwayt.
Syntax, Dr.	Wm. Combe.
Temple, Hope	Mme. Andre Messager.
Templeton, Laurence	Sir Walter Scott.
Teufelsdrockh	Thomas Carlyle.
Thanet, Octave	Alice French.
Theuriet, Andre	Claude Adhemar.
The Widow	Teresa Dean.
Thomas, Annie	Mrs. Pender Cudlip.
Thomas, Karl	Karl Thomas Richter.
Thompson, Wolf	Ernest Thompson Seton.
Thorn, Margaret	Ethel S. Cann.
Thorpe, Kamba	Elizabeth Whitfield Bellamy.
Thurston, Henry T.	Francis Turner Palgrave
Tippecanoe	General W. H. Harrison.
Titcomb, Timothy	J. G. Holland.
Titmarsh	W. M. Thackeray.
Tivoli	Horace W. Bleackley.
Toby	Charles Dickens.
Toby	Jonathan Swift.
Toby, M. P.	Henry W. Lucy.
Tottenham, Blanche L.	Mrs. Arthur Ram.
Tower, Martello	Commander F. M. Norman.
Trask, Katrina	Mrs. Spencer Trask.
Travers, Graham	Dr. Margaret Todd.
Trois-Etoiles	E. C. Grenville-Murray.
Turner, Ethel	Mrs. H. R. Curlewis.
Twain, Mark	Samuel L. Clemens.
Two Brothers	Alfred and Charles Tennyson.
Tyler, G. Vere	Mrs. Lachlan Tyler.
Tynan, Katherine	Mrs. H. A. Hinkson.
Tytler, Sarah	Henrietta Keddie.
Uncle Charles	Charles Welsh.
Uncle Remus	Joel Chandler Harris.
Uncommercial Traveler	Charles Dickens.
Upper Servant, An	Jonathan Swift.
Vagabondia	Frances Hodgson Burnett.
Valens	Richard Burke.
Vandegrift, Margaret	Margaret T. Janvier.
Varley, John Philip	Langdon E. Mitchell.
Venerable Nestor Ironsides	Richard Steele.
Verne, Jules	M. Olchewitz.
Viator Vacuus	Thomas Hughes.
Violinist, A	Eric Mackay.
Virgin Queen, The	Queen Elizabeth.
Voltaire	Francois Marie Arouet.
Wagstaff, Simon, Esq.	Jonathan Swift.
Ward, Artemas	Charles F. Browne.
Warden, Florence	Mrs. G. James.
Wetherell, Elizabeth	Susan Warner.
Winter, John Strange	Mrs. H. E. V. Stannard.
Wizard of the North	Sir Walter Scott.
Yellowplush, Charles, Esq.	W. M. Thackeray.
Yendys, Sidney	Sydney Dobell.
Yorick	Laurence Sterne.
Zadkiel	Capt. R. J. Morrison, R. N.
Zeta	J. A. Froude.
Z. Z.	Louis Zangwill.

MYTHOLOGY—The word myth originally signified speech or discourse, and was identical with the word logos. After the age of Pindar and Herodotus, however, it came to be synonymous with the Latin word *fabula*, fable or legend. According to the present use of our language, a myth is an idea or fancy presented in the historical form; and though, of course, any fiction at any time, in this shape, might be called a myth, yet by usage the word is confined to those fictions made in the early periods of a people's existence—particularly of the Greeks and Romans—for the purpose of presenting their religious belief, and generally their oldest traditions, in an attractive form. The tendency to create myths in this way seems inherent in every people; there is no people so uncivilized as to be without them.

A myth is not to be confounded with an allegory; the one being an unconscious act of the popular mind at an early stage of society, the other a conscious act of the individual mind at any stage of social progress. Even myths of which the allegorical significance is pretty plain, such as the well-known Greek myth of Prometheus and Epimetheus, were received as facts of early tradition by the Greeks.

The ancient Greeks believed their gods to be of the same shape and form as themselves, but of far greater beauty, strength, and dignity. They also regarded them as being of much larger size than men, for in those times great size was esteemed a perfection, supposed to be an attribute of divinities, to whom they ascribed all perfections. A fluid named *ichor* supplied the place of blood in the veins of the gods. They were immortal, but they might be wounded or otherwise injured. They could make themselves visible or invisible to men, and assume the forms of men or of animals. Like men they stood in daily need of food and sleep. The meat of the gods was called *ambrosia*, their drink *nectar*. The gods, when they came among men, often partook of their food and hospitality.

Like mankind, the gods were divided into two sexes; namely, gods and goddesses. They married and had children. Often a god became enamored of a mortal woman, or a goddess was smitten with the charms of a handsome youth, and these love-tales form a large portion of Grecian mythology.

To make the resemblance between gods and men more complete, the Greeks ascribed to their deities all human passions, both good and evil. They were capable of love, friendship, gratitude, and all affections; on the other hand, they were frequently envious, jealous, and revengeful. They were particularly careful to exact all due respect and attention from mankind, whom they required to honor them with temples, prayers, costly sacrifices, splendid processions, and rich gifts; and they severely punished insult or neglect.

The most important classes of myths are the religious and moral. The usual classification is as follows:

Superior Gods.—Jupiter, Neptune, Apollo, Mars, Mercury, Vulcan, Janus, Saturn, Pluto, Bacchus, Juno, Minerva, Diana, Venus, Vesta, Ceres, Rhea.

Inferior Gods.—Cœlus, Sol, Æolus, Plutus, Æsculapius, Pan, Luna, Aurora, Nox, Iris, Latona, Themis, Nemesis, Fortuna, Fama. Several gods peculiar to the Greeks: Enyo, Ergane, Cotytto, etc. Several gods peculiar to the Romans. Priapus, Terminus, Vertumnus, Pomona, Flora, Feronia, Pales, etc.

Mythical Beings.—Titans, Giants, Pygmies, Tritons, Sirens, Nymphs, Muses, Graces, Hours, Seasons, Fates, Furies, Harpies, Winds, Genii, Somnus, Mors, Manes, Lares, Penates, Satyrs, Fauns, Gorgons, Amazons, Centaurs, Minotaur, Chimæra, Geryon, Hydra, Pegasus, Scylla, Charybdis, Sphinx, Typhon.

Deified Heroes.—Inachus, Phoroneus, Ogyges, Cecrops, Deucalion, Amphictyon, Cadmus, Danaus, Pelops, Minos, Perseus, Hercules, Theseus, Jason, Castor, Pollux, and heroes of the Theban and the Trojan wars, etc.

Most of the heroes were at last viewed as sons of gods, and often of Jupiter himself. The veneration for the heroes was, however, less sacred and less universal than the worship of the gods. The heroes received only an annual commemoration at their tombs, or in the vicinity, when offerings and libations were presented to them. Sometimes the respect paid them exceeded these limits, and they were exalted to the rank and honors of the gods. The introduction of solemnities in memory of heroes is ascribed to Cadmus.

Many also are known under a variety of names, for as example:

Apollo, Canoba, Cynthius, Delius, Delphicus, Demarus, Horus, Khrishna, Mythras, Numius, Oros, Pæan, Phœbus, Pythius, Sol.
Aurora, Eos.
Bacchus, Biformis, Brisæus, Dionysus, Nyctelius, Nyseus.
Buddha, Gautama.
Ceres, Cybele, Hestia, Ops, Prisca, Rhea, Vesta.
Cupid, Eros, Kama.
Diana, Artemis, Dyctinna, Hecate, Luna, Phœbe, Proserpine, Tergemina.
Flora, Chloris.

Hercules, Alcides, Sem.
Juno, Hada, Hera, Moneta, Nuptialis, Parthenos, Sospita.
Jupiter, Ammon, Apis, Assabinus, Belus, Capitolinus, Ceraunius, Demarus, Dies Pater, Dodonæus, Genitor, Gragus, Grapsios, Hemphta, Imperator, Indra, Jove, Maximus, Muscarius, Olympius, Osiris, Pluvius, Saturnius, Scter, Zeus.
Mars, Corythaix, Gradivus, Quirinus, Papremis, Silvester.
Mercury, Camillus, Caresa, Hermes, Quadratus, Thoth, Vialis
Minerva, Athena, Ergotis, Glaukopis, Pallas, Pylotis.
Neptune, Consus, Poseidon, Varuna.
Pan, Incubus, Innus, Mendes, Supersus.
Pluto, Dis, Februus, Hades, Shesa, Urgus.
Saturn, Chronos, Krodo.
Venus, Acidalia, Aphrodite, Armata, Astarte, Clucina, Cypria, Cythera, Dione, Erycina, Hortensis, Idalia, Onuva.
Vulcan, Hephæstos.

DICTIONARY OF MYTHS

Achates.—Æneas and Achates were friends. The devotion of Achates was so unselfish and exemplary that *Fidus Achates* became a proverb.

Achelous.—The son of Oceanus and Terra, or Tethys, god of the river of the same name in Epirus. As one of the numerous suitors of Dejanira, he entered the lists against Hercules, and, being inferior, changed himself into a serpent and afterward into an ox. Hercules broke off one of his horns and defeated him, after which, according to some, he was changed into a river.

Acheron.—To separate that portion of hades reserved for the punishment of the wicked, Pluto surrounded it with Phlegethon, a river of fire, while the Acheron, a deep and black stream, had to be passed by all souls before they reached Pluto's throne and heard his decree. Acheron is also used to signify hades or hell itself.

Achilles, the son of Peleus and Thetis, was the bravest of all the Greeks in the Trojan war. During his infancy, Thetis plunged him in the Styx, thus making every part of his body invulnerable except the heel by which she held him. To prevent him from going to the Trojan war, Thetis sent him privately to the court of Lycomedes, where he was disguised in a female dress. As Troy could not be taken without his aid, Ulysses went to the court of Lycomedes in the habit of a merchant, and exposed jewels and arms for sale. Achilles, choosing the arms, discovered his sex, and went to the war. Vulcan made him a strong suit of armor, which was proof against all weapons. He was deprived by Agamemnon of his favorite Briseis, and for this affront he would not appear on the field till the death of Patroclus impelled him to vengeance. He slew Hector, who had killed Patroclus, and tying his corpse to his war car, dragged it three times around Troy. He is said to have been killed by Paris, who inflicted a mortal wound in his vulnerable heel with an arrow.

Actæon.—A famous hunter, who, having surprised Diana as she was bathing, was turned by her into a stag, and killed by his own dogs.

Adissechen.—In Indian mythology the serpent of a thousand heads which hold the universe in place.

Admetus.—A king of Thessaly, and husband of Alcestis, famous for his misfortunes and his piety. Apollo tended the flocks of Admetus for nine years, when he was obliged to serve a mortal for having slain the Cyclops.

Adonis.—A beautiful youth, loved by Venus, and slain by a wild boar which he was hunting. Venus was inconsolable at his loss, and at last obtained permission from Proserpine that Adonis should spend six months on earth with her and six months among the shades. Adonis is also the name given to a Syrian god, supposed to be slain by a wild boar in Lebanon, and to revive every year. He is identified with the Greek Adonis, beloved by Venus.

Adrammelech.—God of the people of Sepharvaim, to whom infants were burned in sacrifice (II. Kings xvii, 31). Adar was the sun worshiped under a particular attribute.

Ægæon.—One of three brothers, huge monsters, with fifty heads and a hundred arms. According to the most ancient tradition, Ægæon and his brothers conquered the Titans when they made war upon the gods, and secured the victory to Zeus, who thrust the Titans into Tartarus, and placed Ægæon and his brothers to guard them.

Ægeus.—King of Athens, and father of Theseus.

Ægis.—The shield of Jupiter, made by Vulcan, was so called and symbolized "divine protection." The shield of Minerva was called an ægis also.

Ægle.—A nymph; a daughter of Æsculapius; one of the Hesperides; also the name of one of the sisters of Phaëton.

Ælurus.—The cat. An Egyptian deity held in the greatest veneration. Herodotus tells us that Diana, to avoid being molested by the giants, changed herself into a cat. The deity used to be represented with a cat's head on a human body.

Æneas.—A Trojan prince, son of Anchises and Venus. He married Creusa, the daughter of Priam, and they had a son named Ascanius. During the Trojan war Æneas behaved with great valor in defense of Troy. When the city was in flames he is said to have carried away his father, Anchises, on his shoulders, leading his son, Ascanius, by the hand, his wife following them. Subsequently he built a fleet of twenty ships, with which he set sail in quest of a settlement. He was driven on the coast of Africa, and was kindly received by Dido, queen of Carthage, who became enamored of him; but he left Carthage by the order of the gods. He has been praised for his piety and his submission to the will of the gods; the term "Pius" is generally appended to his name.

Æolus, the ruler of storms and winds, was the son of Hippotas. He reigned over Æolia, was the inventor of sails, and a great astronomer. The poets have called him the god of the wind.

Æsculapius.—The son of Apollo and Coronis, the daughter of a Thessalian king. By his father he was committed to the care of the wise centaur, Chiron, who taught him botany, together with the secret efficacy of plants. By means of this information, Æsculapius became the benefactor of mankind. In tradition he is noted as having awakened the dead.

Æsir, plural of As or Asa, the celestial gods of Scandinavia, who lived in Asgard (god's ward), situate on the heavenly hills between earth and the rainbow. The chief was Odin.

Æson.—The father of Jason and brother of Pelias, who seized the kingdom rightfully belonging to Æson.

Æstas.—The god of summer; he is crowned with corn and generally holds a sickle in his hand. By poets and artists the seasons are all personified. They are frequently seen together on relievi, medals, and gems. The artists have also followed the poets in representing the four ages of life by depicting Ver (spring) as infantile and tender; Æstas (summer) as young and sprightly; Autumnus (autumn) mature and manly; and Hiems (winter) as old and decrepit.

Agamemnon, king of Mycenæ and Argos, was brother to Menelaus, and son of Plisthenes, the son of Atreus. He married Clytemnestra, and Menelaus Helen, both daughters of Tyndarus, king of Sparta. When Helen eloped with Paris, Agamemnon was elected commander-in-chief of the Grecian forces invading Troy.

Ahriman.—Most malevolent of all the Persian gods.

Ajax, son of Telamon and Peribœa, or Eribœa, was one of the bravest of the Greeks in the Trojan war. After the death of Achilles, Ajax and Ulysses both claimed the arms of the dead hero, which were given to Ulysses. Some say that Ajax was killed in battle by Paris, but others record that he was murdered by Ulysses.

Alastor.—A surname of Jupiter. Among the lesser gods the name Alastor is given to the unforgetting, revengeful spirit, who, in consequence of some crime perpetrated, persecuted a family from generation to generation.

Alcestis, or **Alceste.**—A daughter of Pelias, and the wife of Admetus. To save her husband's life, she died in his stead. By request of Apollo, the gods had granted eternal life to Admetus but on the condition that when the appointed time came for the good king's death, some one should be found willing to die in his stead. This decree was reported to Alcestis, Admetus' beautiful young wife, who offered herself as substitute, and cheerfully gave her life for her husband. But immortality was too dearly bought at such a price; and Admetus mourned until Hercules, pitying his grief, descended into hades and brought her back.

Alecto.—One of the Furies. She is represented with her head covered with serpents, and breathing vengence, war, and pestilence.

Alectryon.—A servant of Mars, who was changed by him into a cock because he did not warn his master of the rising of the sun.

Alfadur.—In Scandinavian mythology the Supreme Being—Father of All.

Alpheus and Arethusa.—The Greek fable says that Alpheus, the river-god, fell in love with the nymph Arethusa, who fled from him in affright. Diana came to her rescue.

Al Sirat.—A narrow bridge extending from this world to the next over the abyss of hell, which must be passed by every one who would enter paradise.

Althæa.—The mother of Meleager. She caused the death of her son and killed herself in remorse.

Amacitia.—The goddess of friendship. In Greek mythology she was represented with her head bare, her dress open near the heart, holding in her left hand an elm, around which a vine clung, filled with clusters of grapes.

Amazons.—A nation of women-soldiers who lived in Scythia. Hercules defeated them, and gave Hippolyte, their queen, to Theseus for a wife.

Ambrosia.—The food of the gods; so called because it made them not mortal, *i. e.*, immortal.

Ammon.—One of the names bestowed on Jupiter. As Jupiter Ammon, he was represented as having the horns of a ram.

Amphion.—Son of Jupiter and Antiope. He cultivated poetry, and made such progress in music that he is said to have been the inventor of it, and to have built the walls of Thebes by the sound of his lyre.

Ancæus.—A son of Neptune, who, having left a cup of wine untasted to pursue a wild boar, was killed by it, which gave rise to the proverb, There's many a slip twixt the cup and the lip."

Anchises.—A son of Capys and Themis. He was so beautiful that Venus came down from heaven on Mount Ida to enjoy his company. Æneas was the son of Anchises and Venus, and was intrusted to the care of Chiron the Centaur. When Troy was taken, Anchises had become so infirm that Æneas had to carry him through the flames upon his shoulders, and thus saved his life.

Andromache.—Daughter of Ëetion, king of Thebes. She married Hector, son of Priam, and was the mother of Astyanax. Her parting with Hector, who was going to battle, is described in the *Iliad* and has been deemed one of the most beautiful passages in that great work. Pope's translation of the *Iliad* (book 6) describes with great pathos and beauty the parting of Hector from his wife and child. The passage is too long for quotation, but this quatrain from it shows the style:

> Thus having spoke, th' illustrious chief of Troy
> Stretch'd his fond arms to clasp the lovely boy;
> The babe clung crying to his nurse's breast,
> Scared at the dazzling helm and nodding crest.

Andromeda.—Andromeda, to atone for a crime of which she was guiltless, was to have become the victim of divine anger. The whole country was laid waste with plagues, which, according to the oracle of Jupiter Ammon, were not to cease until Andromeda, swallowed up by a sea-monster, should, by her death, expiate the crime of her mother. Perseus beheld the maiden fastened with chains to a rock, and a monster rising out of the sea ready to devour her; while her parents stood on the shore in despair. Perseus rushed down upon the monster, struck a deadly blow, delivered the fair maiden and obtained her as his wife. After her death she was placed among the stars.

Angurvadel.—Frithiof's sword, inscribed with Runic letters, which blazed in time of war, but gleamed with a dim light in time of peace.

Antæus.—One of the giant sons of Neptune whose home was in Libya. His strength was invincible so long as he remained in contact with his mother earth. Once lifted from the earth and allowed again to touch it his strength increased. One of the exploits ascribed to Hercules was the exhibition of his strength in overcoming Antæus.

Antigone.—In the story of Œdipus, Antigone appears as a noble maiden, with a truly heroic attachment to her father and brothers. When Œdipus had put out his eyes, and was obliged to quit Thebes, he was accompanied by Antigone, who remained with him till he died at Colonus, and then returned to Thebes. After her two brothers had killed each other in battle, and Creon, the king of Thebes, would not allow Polynices to be buried, Antigone buried him by night, against the orders of Creon, for which offense he ordered her to be buried alive. She, however, killed herself on hearing of the sentence. The death of Antigone is the subject of a tragedy written by Sophocles.

Aphrodite.—One of the names under which Venus was worshiped. She was said to be the daughter of Zeus, but later poets frequently relate that she was sprung from the foam of the sea, whence they derive her name.

Apis.—One of the Egyptian gods worshiped under the form of an ox.

Apollo.—Son of Jupiter and Latona; called also Phœbus. He was the god of the fine arts and the reputed originator of music, poetry, and eloquence. He had received from Jupiter the power of knowing futurity, and his oracles were in repute everywhere. As soon as he was born he destroyed with his arrows the serpent Python, which Juno had sent to persecute Latona; hence he was called Pythius. He was not the inventor of the lyre, as some have supposed, but it was given to him by Mercury, who received in return the famous Caduceus. He received the surnames of Phœbus, Delius, Cynthius, Pæan, Delphicus, etc. He is in sculpture generally represented as a handsome young man with a bow in his hand, from which an arrow has just been discharged.

Arachne.—A Mæonian maid, named Arachne, proud of her skill in weaving and embroidery, in which arts the goddess of wisdom had instructed her, ventured to deny her obligation, and challenged her patroness to a trial of skill. Minerva accepted the challenge and they met to try their skill. Arachne produced a piece of cloth in which the amours of the gods were woven, and as the goddess could find no fault with it, she tore the work to pieces. Arachne, in despair, hung herself. Athena loosened the rope and saved her life, but the rope was changed into a cobweb, and Arachne herself into a spider.

Ares.—The Greek god of war, known as Mars by the Romans.

Arethusa.—A wood nymph of Elis, in Greece, who, pursued by the River Alpheus, was changed into a fountain and ran under the sea. The waters of the fountain, mingled with the river, rose again in the fountain of Arethusa in the island of Ortygia.

near Syracuse. According to another version of the same legend, it was Diana herself, and not Arethusa, whom the river-god of the Alpheus pursued; and when this pursuit ended in the island of Ortygia, there arose the fountain Arethusa.

Argo.—A fifty-oared ship in which Jason and his companions made their voyage to Colchis in search of the golden fleece. This ship was built of pines cut from Mount Pelion, and, although larger than any other previously constructed, moved lightly and easily, and was therefore called the *Argo* (swift-sailing). From her name those who embarked in her were called Argonauts. The mast of the *Argo* was taken from the forest of Dodona, where the oaks were endowed with the power of making predictions; therefore the ship was regarded as an animated being, in accord with fate, to which a man might commit himself with confidence.

Argonauts.—One of the most celebrated enterprises of the heroic ages, one which forms a memorable epoch in Grecian history, a sort of separation-point between the fabulous and the authentic, was the Argonautic expedition. This was a voyage from Greece to Colchis in order to obtain the golden fleece, conducted by Jason, the son of Æson, king of Thessaly. The undertaking was imposed upon him by his uncle Pelias. He invited the most illustrious heroes of Greece to unite in the expedition, and among those who joined were Hercules, Castor and Pollux, Peleus, Pirithous, and Theseus. The vessel built for the purpose was named *Argo*, which after various adverse events arrived at Æa, the capital of Colchis.

Argus.—A son of Arestor, whence he is sometimes called Arestorides. He had a hundred eyes, of which only two were asleep at one time. Juno set him to watch Io, whom Jupiter had changed into a heifer, but Mercury, by order of Jupiter, slew him, by lulling all his eyes to sleep with the notes of the lyre. Juno put the eyes of Argus in the tail of the peacock, a bird sacred to her.

Ariadne.—Daughter of Minos and Pasiphæ. She fell in love with Theseus, when sent by Ægeus with of the Athenian youths and maidens as tribute, to be devoured by the Minotaur. She gave him the clew of thread by which he found his way out of the labyrinth, and accompanied him on his return to Athens as far as Naxos, where he deserted her. Bacchus found her there, made her his wife, and set in the stars the crown which he gave her at their marriage.

Arion.—A Greek bard, who, having thrown himself into the sea to escape from pirates, was taken up by dolphins, and carried on their backs safe to land.

Aristæus.—Protector of vines and olives, huntsmen and herdsmen. He instructed man also in the management of bees, taught him by his mother Cyrene. He was the father of the famous Actæon.

Artemis.—The daughter of Zeus and Leto, or Latona, and twin sister of Apollo, was the goddess of chastity, of the chase and the woods.

Asgard.—In Scandinavian mythology Asgard represents the city of the gods, situated at the center of the universe, and accessible only by the bridge Bifrost, *i. e.*, the rainbow.

Asir.—In northern mythology the most powerful, though not the oldest, of the deities; usually reckoned as twelve gods and twelve goddesses The gods are Odin, Thor, Baldur, Niörd, Frey, Tyr. Bragi, Heimdall, Vidar, Vali, Üllur, and Forseti; the best-known of the goddesses Frigga, Freyja, Iduna, and Saga.

Astarte.—Noticed in the Old Testament under the name Ashtaroth, an ancient Syrian deity, who was adored as the goddess of the moon; hence Jeremiah calls her "the queen of heaven." Solomon built her a temple on the Mount of Olives.

Astræa.—Daughter of Zeus and Themis, and the last of the immortals to quit the earth as the wickedness of mortals increased.

Astyanax.—Son of Hector and Andromache, was hurled from the walls of Troy on its capture.

Atalanta.—Daughter of Iasus and Clymene. She took part in the Calydonian hunt. She required every suitor to run a race under penalty of death if she defeated them. Hippomenes defeated her by throwing in her path three golden apples given him by Aphrodite, which Atalanta turned aside to pick up. They were both turned into lions for profaning the sacred grove of Zeus.

Ate.—Daughter of Zeus. She led both gods and men into rash actions. Zeus banished her from Olympus.

Athena.—One of the twelve great Greek divinities. She sprang, full armed, from the head of Zeus. She was the virgin goddess of wisdom, agriculture, and art, and was also a warlike divinity.

Atlas.—A Titan, son of Iapetus and Clymene. Being defeated in the war of the Titans against the gods, he was condemned to bear the heavens upon his shoulders.

Atreus.—A king of Mycenæ, son of Pelops and Hippodamia, and father of Agamemnon and Menelaus, who, from him, were called the *Atridæ*. The crimes and calamities of Atreus and his family afforded a prolific subject for the Greek poets.

Atropos.—One of the three Parcæ, or Fates; the one that cut the thread of life. As wife of Pluto, and queen of hell, Proserpine presided over the death of mankind; and, according to the opinion of the ancients, no one could die if the goddess herself, or Atropos, the minister, did not cut off one of the hairs from the head.

Augean Stables.—The stables of Augeas, king of Elis, in Greece. In these stables he had kept 3,000 oxen, and the stalls had not been cleansed for thirty years. When Hercules was appointed to cleanse these stables, he turned the course of the river Alpheus through them.

Augurs.—Their principal business was to observe the flight and cry of birds, from which they predicted future events. They also explained other omens and signs.

Auræ.—The auræ, or sylphs, nymphs of the air, a species of sportive, happy beings, and well-wishers to mankind; they were winged and represented as flying.

Aurora.—The goddess of the morning, or of the dawn; sometimes described as the goddess of day. She is represented as standing in a magnificent chariot, sometimes drawn by winged steeds. A brilliant star sparkles upon her forehead, and, while with one hand she grasps the reins, she holds in the other a lighted torch.

Avatar.—The incarnation or descent of the deity Vishnu, of which nine are believed to be past, and the tenth is yet to come, when Vishnu will descend from heaven on a white-winged horse, and introduce on earth a golden age of virtue and peace.

Avernus.—Properly, a small, deep lake in Campania, occupying the crater of an extinct volcano, and almost completely shut in by steep and wooded heights. The entrance to the infernal regions, called Avernus, is described as having around it a host of dreadful forms—Disease, Old Age, Terror, Hunger, Death, War, Discord, and the Furies, the avengers of guilt.

Azazel.—Ewald considers Azazel to have been a demon belonging to the pre-Mosaic religion. Another opinion identifies him with Satan, or the devil. Milton makes him Satan's standard bearer.

Azrael.—Meaning in Hebrew "help of God." In the Jewish and the Mohammedan mythology, the name of an angel who watches over the dying, and separates the soul from the body.

Baal.—A sun god, the center of whose worship was Phenicia, whence it spread to neighboring countries

Bacchus.—Called also Dionysus, son of Zeus and Semele, god of wine. He married Ariadne after her desertion by Theseus.

Baimwawa.—In American Indian folk-lore, the sound of thunder.

Balder.—The god of peace, son of Odin and Frigga. He was killed by the blind war-god, but was restored to life at the general request of the gods.

Ballos.—A famous horse given by Neptune to Peleus as a wedding present, and afterward given to Achilles.

Balmung.—In Norse mythology, the sword of Siegfried forged by Vulcan.

Banshee.—The domestic spirit of certain Irish or Scottish families, supposed to wail shortly before the death of one of the family. The banshee is allowed only to families of pure stock.

Barguest.—A frightful goblin among fairies, armed with teeth and claws. An object of terror in the north of England.

Bay-tree.—The tree of Apollo, hence a shield against lightning. A wreath of bay-leaves was worn as protection during thunder-storms. The withering of a bay-tree was dreaded as an omen of death.

Beelzebub.—A heathen god of evil at the head of nine ranks of demons and second only to Satan. Also the god of flies.

Befana, La.—The fairy of Italian children, who is supposed to fill their stockings with toys on Twelfth Night.

Bellerophon.—Son of Glaucus, king of Corinth, and Eurymede. Having killed Bellerus, he fled to Prœtus for protection. Antea, Prœtus' wife, became enamored of Bellerophon, and on his rejecting her advances, she accused him to her husband, who thereupon sent him to Iobates, king of Lycia, with a letter requesting that he be put to death. Iobates accordingly sent him to kill the Chimæra, which Bellerophon did with the aid of the winged horse Pegasus. After other trials, in which he was successful, Iobates gave him his daughter in marriage.

Bellona.—Goddess of war. She prepared the chariot of Mars when he was going to war, and appeared in battles armed with a whip and holding a torch.

Belphegor.—A god of evil, worshiped by the Moabites. An archfiend who had been an archangel.

Belus.—The name of the Chaldean sun-god.

Berenice.—A princess who vowed to sacrifice her hair to the gods, if her husband returned in safety. She suspended her hair in the temple of Venus. After her husband's safe return the locks disappeared, and the astronomer Conon reported that Jupiter had placed the queen's locks among the stars, and pointed out the constellation since called Berenice's hair.

Berg Folk.—Pagan spirits doomed to live on the Scandinavian hills till the day of redemption.

Bertha.—The white lady who guards good German children, but is the terror of the bad, who fear her iron nose and big feet. Corresponds to the Italian La Befana.

Bheem.—One of the five brotherhoods of Indian demi-gods, famous for his strength.

Bifrost.—In Norse mythology, a bridge between earth and heaven, over which none but the gods could travel It leads to the palace of the Fates.

Bilskirnir.—A wonderful palace built by Thor for the use of peasants after death.

Bona Dea.—A Roman divinity, worshiped by women as a chaste and prophetic goddess.

Boreas.—The name of the north wind blowing from the Hyperborean mountains. According to the poets, he was son of Astræus and Aurora. He was passionately fond of Hyacinthus.

Bragi.—The son of Odin and Frigga and the god of poetry and eloquence. He is represented as an old man with flowing white beard.

Brahma.—The supreme god of the Hindus, represented with four heads and four arms. He is regarded as the creator of the universe, and forms, with Vishnu the preserver, and Siva the destroyer, the Hindu trinity.

Briareus.—A giant with fifty heads and a hundred hands. He hurled a hundred rocks at Jupiter in a single throw and Jupiter bound him under Mount Ætna with a hundred chains.

Bukadawin.—The god of famine among American Indians.

Butes.—An Argonaut beloved by Aphrodite, who snatched him away as he was swimming toward the Sirens.

Byblis.—According to Ovid, the daughter of Miletus, sister of Caunus, and niece of Sol. From her tears arose the fountain of Byblis.

Cacus.—A giant, son of Hephæstus, living on Mt. Aventine, who plundered the neighboring country. He stole from Hercules some of the cattle of Geryon, dragging them by their tails to his cave that their tracks might not be discovered. He was, however, detected and slain by Hercules.

Cadmus.—Son of Agenor, king of Phenicia. When his sister Europa was carried off by Zeus, Agenor sent Cadmus to find her. Unable to do this he settled in Bœotia and built Thebes, having followed a cow to that place from Thrace by direction of the oracle of Delphi. He slew a dragon which guarded the well of Ares at that place, and sowed the teeth, from which armed men sprung, the ancestors of the Thebans. He married Harmonia, and the two were changed to serpents. Cadmus is said to have introduced or invented the alphabet.

Cæneus.—Originally a maiden, beloved by Poseidon, she was by him changed to a man, and took part in the Argonautic expedition and Calydonian hunt. He was buried under a mass of trees by the Centaurs, and changed into a bird He recovered his female form in the lower world.

Calliope.—The Muse who presided over epic poetry and rhetoric. She is generally depicted using a stylus and wax tablets, the ancient writing materials.

Callisto.—In Greek mythology an Arcadian huntress, a companion of Artemis, beloved of Zeus and transformed by him into a she-bear. In this form she was slain by Artemis in the chase. She was placed among the stars as the constellation Arctos (bear).

Calpe.—One of the two pillars of Hercules, the other named Abyla. These two were originally only one mountain, which Hercules tore asunder, pouring the sea between them.

Calypso.—One of the daughters of Atlas. When Ulysses was shipwrecked on her coasts she received him with hospitality, and offered him immortality if he would remain with her, which he refused to do. After seven years' delay he was permitted to depart from the island.

Camdeo.—The Hindu god of love.

Camilla.—Virgin princess of the Volscians. She was so swift that she could run over a field of corn without bending a blade, or make her way over the sea without wetting her feet.

Canopus.—The Egyptian god of water. The Chaldeans worshiped fire, and sent all the other gods a challenge, which was accepted by a priest of Canopus. The Chaldeans lighted a vast fire, when the Egyptian deity spouted out torrents of water and quenched it.

Capitolium.—The temple of Jupiter Optimus Maximus at Rome, was situated on the south summit of the Mons Capitolinus, so called on account of the temple.

Capys.—(1) Son of Assaracus, and father of Anchises. (2) A companion of Æneas, from whom Capua was said to have derived its name.

Cassandra.—Daughter of Priam and Hecuba. She was left when young asleep in the temple of Apollo, where her ears were purified by serpents so that she could understand the voices of nature. Apollo, becoming enamored, conferred upon her the gift of prophecy, but upon her refusing to grant his desires, ordained that no one should believe her prophecies. Upon the capture of Troy she fell to the lot of Agamemnon and was killed by Clytemnestra.

Cassiopeia.—The chief stars of this constellation form the outline of a chair. Cassiopeia boasted that the beauty of her daughter Andromeda surpassed that of the sea-nymphs. The sea-nymphs complained to the sea-god of this affront, and Andromeda was chained to a rock to be devoured by sea-monsters. Perseus delivered her and made her his wife. The mother was taken to heaven and placed among the stars.

Castor and Pollux.—Twin brothers, called the Dioscuri, sons, according to some, of Zeus and Leda. They took part in the Argonautic expe-

dition. Castor was famous for his skill in managing horses, and Pollux for his boxing.

Cauther.—In Mohammedan mythology the lake of paradise, whose waters are as sweet as honey, as cold as snow, and as clear as crystal; and any believer who tastes thereof is said to thirst no more.

Cecrops.—In mythology is represented with upper part of his body human, the lower part that of a dragon. Cecrops is said to have founded Athens, and to have divided Attica into twelve communities, and to have introduced the first elements of civilized life; he instituted marriage, abolished bloody sacrifices, and taught his subjects how to worship the gods.

Centaurs.—Monsters, half horse, half human. They are especially celebrated for their contest with the Lapithæ in the mountains of Thessaly.

Cephalus.—Husband of Procris, loved by Eos, who advised him, when he rejected her advances, to try his wife's fidelity. Disguising himself as a lover, he returned to Procris, but she received his advances with disdain. He made himself known, loaded her with reproaches, and left her in a rage. Procris then fled to Crete, where Artemis gave her a dog and an unerring spear and sent her back. To obtain the dog and spear, Cephalus pretended to love her, and a reconciliation followed. He killed her accidentally with the spear.

Cerberus.—The three-headed dog that keeps the entrance of the infernal regions. He prevents the living from entering and the shades from escaping. Orpheus lulled Cerberus to sleep with his lyre; and the sibyl who conducted Æneas through the inferno, also threw the dog into a sleep with cake seasoned with poppies.

Ceres.—The daughter of Saturn, sister of Jupiter and Neptune. She was the goddess of corn, flowers, and harvest. She is represented as riding in a chariot drawn by dragons, and crowned with poppies. She was the mother of Proserpine, who was seized by Pluto while she was gathering flowers. Ceres was the Roman name for mother-earth.

Chaos.—The vacant space which existed before the creation of the world, and out of which the gods, men, and all things arose. Chaos was called the mother of Erebus and Night.

Charon.—A god of the infernal regions, son of Nox and Erebus, who conducted the souls of the dead in a boat over the rivers Styx and Acheron.

Charybdis.—A woman who robbed travelers and was turned by Jupiter into a dangerous whirlpool on the coast of Sicily, opposite Scylla. Scylla and Charybdis are generally mentioned together to represent alternative dangers.

Chibiabos.—A musician, ruler in the land of spirits, and friend of Hiawatha. Personification of harmony in nature.

Chimæra.—A celebrated monster goat, lion, and dragon, which continually vomited flames. It was destroyed by Bellerophon.

Chiron.—A centaur, son of Philyra and Saturn. He was famous for his knowledge of medicine, and taught mankind the use of plants and herbs. He was placed among the stars, and is known as Sagittarius.

Chloris.—The goddess of flowers, known as Flora in Greek mythology.

Chou.—An Egyptian god corresponding to the Roman Hercules.

Cimmerians.—People living in a land of perpetual darkness.

Circe.—A sorceress, daughter of Sol and Perseis, celebrated for her knowledge of magic and venomous herbs. Ulysses, on his return from the Trojan war, visited her coasts, and his companions were changed by her potions into swine.

Clio.—The muse who presided over history.

Clotho.—The youngest of the Fates, three daughters of Jupiter and Themis, supposed to preside over the moment of birth. She held the distaff and Lachesis spun the thread of life.

Cluricaune.—An Irish elf, who guards a hidden treasure. He has an evil disposition, and appears as a wrinkled old man.

Clytemnestra.—Daughter of Tyndareus and Leda, sister of Castor, Pollux, and Helena; wife of Agamemnon; and mother of Orestes, Iphigenia, and Electra. During her husband's absence at Troy she lived in adultery with Ægisthus, and on his return to Mycenæ she murdered him with the help of Ægisthus. She was subsequently put to death by her son Orestes, to revenge the murder of his father.

Clytie.—A water-nymph who loved the sun-god, Apollo, and was changed into a sunflower. In this form, she turns always toward the sun.

Cocytus.—A river of the infernal regions. The unburied dead wander on its banks for 100 years, and it is known as the river of lamentation.

Colchis.—A country of Asia famous for the expedition of the Argonauts, and the birthplace of Medea.

Comus.—The god of revelry, presiding over feasts.

Concordia.—The goddess of peace and concord, one of the oldest at Rome. She is represented holding a scepter budding with fruit, and a horn of plenty. Camillus raised a temple to this goddess, in the capital.

Consentes Dii.—The twelve Etruscan gods who formed the council of Jupiter, consisting of six male and six female divinities—Jupiter, Neptune, Mercury, Apollo, Mars and Vulcan; Juno, Ceres, Vesta, Minerva, Diana and Venus.

Cophetua or **Copethua.**—A mythical king of Africa, of great wealth, who fell in love with a beggar-girl, and married her. Her name was Penelophon, but Shakespeare writes it Zenelophon in *Love's Labor's Lost.*

Corybantes.—Priests who served at the worship of the mother of the gods. The name came from their habit of striking themselves in their religious dances.

Cressida.—Daughter of Calchas the Greek, beloved by Troilus, son of Priam. They vowed eternal fidelity, and as pledges Troilus gave the maiden a sleeve, and Cressida gave the Trojan prince a glove.

Creusa.—Daughter of Priam and wife of Æneas. She was lost in the city of Troy when her husband escaped from its flames.

Cronos.—The youngest of the Titans. Cronos was also known as the father of Jupiter.

Cupid.—God of love, son of Jupiter and Venus, represented as a winged boy, naked, armed with a bow and arrows, and often with a bandage covering his eyes. He shot his arrows into the hearts of both gods and men. Like all the gods, he put on different forms to suit his plans. He became the husband of Psyche.

Cybele.—A goddess, daughter of Cœlus and Terra, and wife of Saturn. On her birth she was exposed on a mountain, where she was tended and fed by wild beasts, receiving the name of Cybele from the mountain. She is represented on a throne with lions at her side.

Cyclops.—One-eyed giants who forged the thunderbolts of Jove. Homer describes them as wild, insolent, lawless shepherds, who devoured human beings. A later tradition represents them as Vulcan's assistants.

Cyparissus.—A beautiful youth, beloved by Apollo, whose favorite stag he inadvertently killed, and who was metamorphosed into a cypress because of his grief.

Cythera.—A name given to Venus from the island Cytheræa, where she first rose from the foam of the sea.

Dag.—In mythology of the north this name is given to the "radiant son of night." The name is also applied to the last of a treacherous race, the Hundings.

Dagon.—A national god of the Philistines, formed in human shape upward from the waist, and resembling a fish downward, with a finny tail.

Dagun.—In Indian mythology a god who reconstructed the world when it had been destroyed after creation.

Dahak.—In mythology of Persia the ages of the world are divided into periods of 1,000 years. When the cycle is complete, the reign of Ormuzd will begin, and men will be good and happy; but this event will be preceded by the loosing of Dahak, who will break his chain and fall upon the world, and bring on man the most dreadful calamities.

Daikoku.—A mythical god invoked by Japanese workers. He is represented as holding a full sack, which he beats to bring from it all useful articles, and the sack never becomes empty.

Daityas.—Among Hindu gods these are powerful to work evil.

Danaë.—The daughter of Acrisus, king of Argos, who became the mother of Perseus. An Italian legend related that Danaë came to Italy, built the town of Ardea, and married Pilumnus, by whom she became the mother of Daunus, the ancestor of Turnus.

Danaides.—The fifty daughters of Danaus, king of Argos, who married the fifty sons of their uncle Ægyptus.

Daphne.—A nymph, daughter of Penios. Apollo courted her, but she fled from him, and was, at her own request, turned into a laurel tree.

Daphnis.—A Sicilian shepherd, son of Hermes (Mercury), by a nymph, was taught by Pan to play on the flute, and was regarded as the inventor of bucolic poetry. A naiad to whom he proved faithless punished him with blindness, whereupon his father, Hermes, translated him to heaven.

Deiphobus.—A son of Priam and Hecuba, and, next to Hector, the bravest among the Trojans. After the death of Paris, he married Helen, but was betrayed by her to Menelaus, by whom he was slain and fearfully mangled on the capture of Troy by the Greeks.

Delius.—A name of Apollo, from Delos, the island in which he was born. The name Delia, of his sister Diana, has the same origin.

Delphi.—A town on Mount Parnassus, famous for the oracle and the temple of Apollo. Over the cleft of a cavern was placed the tripod on which sat the priestess through whose mouth he was thought to reveal the future.

Demeter.—The mother of Persephone, who was evidently a goddess of the earth, whom some ancient system married to Zeus, the god of the heavens.

Demogorgon.—The genius of the soil or earth, the life and support of plants. He was depicted as an old man covered with moss, and was said to live underground.

Deucalion.—The son of Prometheus, who, according to the legend, was, with his wife Pyrrha, the sole survivor of the Thessalian deluge.

Diana.—An ancient Italian divinity, whom the Romans identified with the Greek Artemis. At Rome Diana was the goddess of light. She was a daughter of Jupiter, and was born of Latona, or Leto, on the island Delos, at the same time with Apollo. As in Apollo the sun was deified and adored, so was the moon in Diana.

Dido.—Daughter of Belus, King of Tyre. She was married to Sychaeus, who was murdered for the sake of his wealth by Pygmalion. Dido then fled with some followers and founded Carthage. A neighboring king, Hiarbas, sought her hand in marriage; but she refused, and, erecting a funeral pile, ascended it and stabbed herself. Vergil, in the *Æneid*, makes Æneas visit her, and her death the consequence of his desertion.

Diomed.—A Greek hero of the Trojan war, a son of Tydeus, and a king of Argos. He was a favorite of Minerva, who, according to Homer, encouraged him to attack and wound both Mars and Venus, who were engaged on the side of the Trojans.

Diomedes.—The cruel tyrant of Thrace, who fed his mares on the flesh of his guests, was overcome by Hercules, and was given to the same horses as food.

Dione.—The youngest of the Titan sisters and reputed mother of Venus. The name has also been poetically applied to Venus herself.

Dionysus (Bacchus).—Son of Jupiter and Semele, the daughter of Cadmus. He was the god of wine, and is generally represented crowned with vine leaves.

Diræ.—The avenging goddesses, or Furies.

Dis.—A name sometimes given to Pluto, and hence also to the lower world.

Discordia.—A malevolent deity corresponding with the Greek Eris, the goddess of contention. She was driven from heaven by Jupiter because she sowed dissensions among the gods. At the nuptials of Peleus and Thetis she threw an apple among the gods, which was the primary cause of the ruin of Troy, and of infinite misfortunes to the Greeks.

Dives.—Demons of Persian mythology. According to the Koran, they are ferocious and gigantic spirits under the sovereignty of Eblis.

Dodona.—The most ancient oracle was that of Jupiter at Dodona, a city of the Molossi, said to have been built by Deucalion.

Donar.—A name given, sometimes, to Thor, the thunder-god, in Norse mythology.

Doris.—Daughter of Oceanus and Tethys, wife of Nereus, and mother of the Nereides.

Draupnir.—The marvelous ring belonging to Odin, with which he worked magic. It was burned on the funeral pyre of his son Balder.

Droma.—The chain forged for the purpose of binding the Fenris wolf, but which he broke. Hence the proverb, "to dash out of Droma."

Dryads.—Wood nymphs, believed to be sent from heaven. The dryads were distinguished from the hamadryads in this, that the latter were supposed to be attached to some particular tree, with which they came into being, lived and died; while the former had the care of the woods and trees in general.

Duergar.—Dwarfs who dwell in rocks and hills; noted for their strength, subtlety, magical powers, and skill in metallurgy. They are the personification of the subterranean powers of nature.

Durga.—A goddess worshiped among the Hindus.

Echidna.—A monster, half woman, half serpent, mother of the Chimæra, the Sphinx, Cerberus, the Hydra, etc.

Echo.—A nymph who by her incessant talking engaged the attention of Hera while Zeus sported with the nymphs. Hera punished her by changing her into an echo; she pined away in consequence of an unrequited love for Narcissus, until nothing remained but her voice.

Egia.—One of the nine beautiful giantesses seen by Odin along the seashore, known as wave-maidens. Her son became guardian of Bifrost, the rainbow bridge.

Egil.—The Vulcan of northern mythology, one of the three brothers who married the swan-maidens. He was a great archer, killed his brother. Völund by command of the king, and himself later became a peasant.

Egipans.—Rural deities who inhabited the forests and mountains, the upper half of the body being like that of a man, and the lower half like that of a goat.

Egis.—Part of the armor of Jupiter used by Minerva as a shield.

Eira.—An attendant of the goddess Frigga, and a skillful nurse. She gathered herbs and plants for the cure of both sickness and wounds and taught the science to women.

Elatus.—A prominent warrior among the mythical people of Thessaly and the father of Caneus, whom Neptune changed into the form of a man.

Elbegast.—One of the dwarfs of Scandinavian mythology who dwelt in a magnificent palace underground, and drew their servants from the bosom of the earth.

Elberich.—In the German hero legends a dwarf who aided the Lombard Emperor Otnit to win the daughter of the soldan of Syria. He is identical with the Oberon of French and English fairy mythology.

Electra.—The bright or brilliant one. A daughter of Agamemnon and Clytemnestra, and the sister of Iphigenia. She became the accomplice of Orestes in the murder of their mother.

Elf.—The water sprite, known also as Elb, from which the name of the river Elbe is said to be derived. Elves are more properly known as mountain fairies, or those airy creatures that dance on the grass or sit in the leaves of trees and delight in the full moon.

Elivagar.—In Norse mythology the name of a great stream in Chaos, flowing from a fountain in the land of mist. This stream was much frequented by the elves at their creation.

Elysium.—The paradise of the Greeks, known also as the Happyland. Departed mortals were adjudged to Elysium or to Tartarus by the sentence of Minos and his fellow judges in the "Field of Truth." Elysium is described as adorned with beautiful gardens, meadows, and groves; where birds ever warble; where the river Eridanus winds between banks fringed with laurel, and "divine Lethe" glides in a quiet valley; where the air is always pure, and the day serene; where the blessed have their delightful abode.

Embla.—An elm tree found in human form, by the gods, according to northern mythology.

Empyrean.—A term used by the ancients to express the highest heaven, where the blessed enjoy the beatific vision. Its name is derived from its having been supposed to be the region of fire.

Enceladus.—A Titan, son of Terra, and the most powerful of all the giants who conspired against Jupiter, and attempted to scale heaven. He was struck by Jupiter's thunderbolts, and chained beneath Mount Ætna.

Endymion.—In Greek mythology the setting sun, with which the moon is in love. One of the many renderings of his story is that Endymion was a beautiful youth who fed his flock on Mount Latmos. One clear night, Diana, the moon, looked down and saw him sleeping. The cold heart of the goddess was warmed by his beauty, and she came down to him, kissed him, and watched over him while he slept. Another story was that Jupiter bestowed on him the gift of perpetual youth united with perpetual sleep. One version of this myth made sleep a reward for piety, while another version made it a punishment for presuming to fall in love with Hera.

Enipeus.—A fabled river in Thessaly. Poseidon assumed the form of the god of this river in order to obtain possession of Tyro, who was in love with Enipeus. She became the mother of Pelias and Neleus.

Enyo.—One of the gray maidens who became the goddess of war, and who delights in bloodshed and the destruction of towns, and accompanies Ares in battles.

Eolus.—Known in Roman mythology as the god of the winds.

Eos.—Goddess of the morning, known as Aurora among the Romans. Every morning she arose from the couch of Tithonus to announce the coming of the day to gods and mortals.

Epaphus.—The son of Zeus and Io, born on the river Nile, after the long wanderings of his mother. He became king of Egypt, and built Memphis.

Erebus.—Son of Chaos. The name is used by the poets to signify the dark spaces under the earth through which the shades passed on their way to hades.

Ergatis.—A name given to Minerva. It means the work-woman, and was given to the goddess because she was credited with having invented spinning and weaving.

Eris.—The goddess of discord; a sister of Mars, and a daughter of Night; the same as the Roman "Discordia."

Erl-king.—Name given to the king of the elves, or a spirit of the air. According to tradition, its home is in the Black forest of Germany, and it appears as a goblin, working harm and ruin, especially among children.

Eros.—The Greek name of the deity called Cupido (Eng. *Cupid*) by the Romans. He is said to have come forth from the egg of Night, floated on Chaos, and to have inherited arrows with which he pierced all things, thereby giving new life, and a torch with which he lighted the world. See *Cupid*.

Erythela.—One of the daughters of Night, appointed to guard the golden apples in the gardens of the Hesperides.

Eumenides or **Erinyes.**—The three furies, Tisiphone, Alecto and Megære, the avenging goddesses, originally the personification of the curses pronounced upon a criminal.

Eumolpus.—A Thracian bard, son of Poseidon and Chione, was regarded as the founder of the Eleusinian mysteries, and the first priest of Demeter. His descendants continued to be her priests at Eleusis.

Euphorbus.—The son of Pantheus, one of the bravest of the Trojans, slain by Menelaus, who dedicated his shield in the temple of Hera (Juno), near Mycenæ. Pythagoras asserted that he had once been Euphorbus, and in proof of his assertion took down at first sight the shield from the temple of Hera.

Euphrosyne.—One of the three Graces. She specially represented joy, as her sisters stood for splendor and pleasure.

Europa.—A daughter of Agenor, king of Phenicia, and Telephassa. Her beauty attracted Jupiter, and to become possessed of her he assumed the shape of a handsome bull, and mingled with the herds of Agenor while Europa was gathering flowers in the meadows. She caressed the animal and mounted on his back The god crossed the sea with her, and arrived in Crete, where he assumed his proper form and declared his love. She became the mother of Minos, Sarpedon, and Rhadamanthus.

Eurydice.—Wife of Orpheus. After her death, her husband ventured to go to hell, where by the melody of his lyre he obtained from Pluto the restoration of his wife provided he did not look behind on their journey back to earth. Eager to see his wife, he looked behind, and so lost her forever.

Eurylochus.—One of the companions of Ulysses in his wanderings, and the only one of them who was not changed by Circe into a hog.

Eurystheus.—King of Argos and Mycenæ, who appointed the twelve labors of Hercules.

Eurytos.—The god made tutor to Hercules, by Mercury, who taught him the use of the bow and arrows.

Evadne.—Wife of Capaneus, and mother of Sthenelus. Her husband having been killed at the siege of Thebes, she threw herself upon the funeral pile, and was consumed with him.

Excalibur.—(Written also Excalibor, Escalibar, etc.) The name of King Arthur's sword. When about to die, he sent Sir Bedivere to throw the weapon into a lake near by. Twice eluding the request, the knight at last complied. A hand and arm rose from the water, clutched the sword, and brandished it three times; then both sank.

Fada.—A fée or kobold of the south of France, sometimes called "Hada." These house-spirits, of which, strictly speaking, there are but three, bring good luck in their right hand and ill luck in their left.

Fafnir.—In northern mythology the eldest son of the dwarf king, Hreidmar. The slaying of Fafnir is the destruction of the demon of cold or darkness who had stolen the golden light of the sun.

Fahfah.—Name given to one of the rivers of Paradise in the mythology of the east.

Fates.—In Greek and Roman mythology the Fates are identical with the Parcæ. They were three sisters, daughters of Night, whom Jupiter permitted to decide the fortune and especially the duration of mortal life. One of them, Clotho, attached the thread; the second, Lachesis, spun it; and the third, Atropos, cut it off when the end of life arrived. They were viewed as inexorable, and ranked among the inferior divinities of the lower world. Their worship was not very general. The Parcæ were usually represented as three old women, with chaplets made of wool interwoven with the flowers of the narcissus, and wearing long robes—Clotho with a distaff; Lachesis sometimes having near her several spindles; and Atropos holding a pair of scissors.

Fauni.—The fauns differ from the satyrs. They are represented in human form, but with erect and pointed ears and the tail of a goat. Ease and freedom from care are their chief characteristics. Their festival was celebrated at Rome on the 5th of December.

Faunus.—Son of Picus; who was the son of Saturnus, mythical king of Italy. Picus was a fabulous king of Latium, and a prophetic divinity. Faunus was king of the Latins, and father of Latinus. He was warshiped as the god of fields and shepherds, was sometimes identical with the Arcadian Pan of the Greeks, and was regarded as one of the founders of the religion of Latinum.

Fay.—(Fr. *fée*). A fairy; an elf.

Felicitas.—A symbolical, moral deity of the Greeks and Romans. She was the goddess of happiness and prosperity, and is frequently seen on Roman medals, in the form of a matron, with the staff of Mercury and a cornucopia.

Feng.—The name taken by Odin in the capacity of wave-stiller. Under this name he teaches mortals to distinguish between good and bad omens and to know the moods of the winds.

Flora.—The Romans had a particular goddess of blossoms and flowers, whom they worshiped under the name of Flora. She is said to have been the same as the Grecian nymph Chloris.

Fortitudo.—A deification of courage and bravery was one of the moral deities of the Romans.

Fortuna.—Known also as Fortune and sometimes as the goddess of chance, to whom was ascribed the distribution and the superintendence of prosperity and adversity in general.

Fortunatæ Insulæ.—The Isles of the Blessed, mythical islands in the Atlantic where Elysium was supposed to be placed.

Fraud.—An evil god seen by Dante between the sixth and seventh circles of the Inferno.

Freki and Geri.—The two wolves of Odin. When Odin, seated on his throne, overlooks heaven and earth, his two wolves lie at his feet.

Frey.—Scandinavian god of the sun and of rain, and hence of fertility and peace. He was one of the most popular of the northern divinities. No weapons were ever allowed in Frey's temple, although oxen and horses were sacrificed to him. His name was connected with the taking of any solemn oath, a heavy gold ring being dipped in the blood of the sacrifice and the oath sworn upon the ring. One of the most celebrated of the temples built to Frey was at Therva, in Iceland.

Freyja.—She was the sister of Frey, and the wife of Odur, who abandoned her on her loss of youth and beauty, and was changed into a statue by Odin, as a punishment. She is known as the northern goddess of beauty and love; plants were called Freyja's hair, and the butterfly, Freyja's hen.

Frigga.—In Scandinavian mythology the wife of Odin, the queen of the gods, and the mother of Baldur, Thor, etc. She sometimes typifies the earth, as Odin does the heavens. The Anglo-Saxons worshiped her as Frea. The name survives in Friday.

Frodi.—The son of Frey, a god of peace. Under his direction two giantesses turned a pair of magic millstones which ground out gold according to his wish and filled his coffers. Excited by greed he forced them to labor, allowing rest only long enough for the singing of one verse. When Frodi himself slept, the giantesses changed their song and proceeded to grind out an army of troops to invade the land. These troops represent the vikings.

Furies.—Among the divinities of the lower world were three daughters of Acheron and Night, or of Pluto and Proserpine, whose office it was to torment the guilty in Tartarus, and often to inflict vengeance upon the living. The Greeks called them "Furies."

Fylgie.—Guardian spirits in Norse mythology. Besides the Norns or Dises, who were regarded as protective deities, the Norsemen ascribed to each human being a guardian spirit named Fylgie, which attended him through life.

Gabriel.—Is called "chief of the angelic guards" in *Paradise Lost*; but in another place Michael is said to be "of celestial armies prince," and Gabriel "in military prowess next."

Gæa (Ge).—The personification of the earth among the Greeks. Among the Romans she was worshiped as Tellus.

Galatea.—A sea-nymph, beloved by Polypheme. She herself had a heartache for Acis. The jealous giant crushed his rival under a huge rock, and Galatea, inconsolable at the loss of her lover, was changed into a fountain.

Ganesa.—Goddess of wisdom, in Hindu mythology.

Gangler.—The gate-keeper in Odin's palace who gave the explanation of the northern mythology that it might be recorded.

Ganymede.—A Phrygian youth, son of Tros, king of Troy, according to Homer, and the most beautiful of all mortals, was carried off by the gods that he might fill the cup of Zeus (Jupiter), and live among the immortal gods. Later writers state that Zeus himself carried him off, in the form of an eagle, or by means of his eagle, from Mount Ida; and he is generally represented sitting on the back of a flying eagle.

Garm.—A fierce dog that kept guard at the entrance of Hel's kingdom, the realm of the dead. He could be appeased by the offering of a Hel-cake which always appeared in the hand of one who, on earth, had given bread to the needy.

Gemini.—One of the names given to the twins, Castor and Pollux, under which they were transported to dwell among the stars.

Genii or **Ginn.**—An intermediate race between angels and men. They ruled on earth before the creation of Adam.

Gerda.—Wife of Frey, and daughter of the frost giant Gymir. She is so beautiful that the brightness of her naked arms illuminates both air and sea.

Geryon.—Was a monster, said to be the offspring of Chrysaor and Callirhoë, and to have three bodies and three heads. He was monarch of three islands in the dusky west, where his numerous flocks were kept by the herdsman Eurytion, and guarded by a two-headed dog called Orthrus. The destruction of this monster formed one of the twelve labors of Hercules.

Giallar Bridge.—The bridge of death, over which all must pass.

Giallar Horn, The.—Heimdall's horn, which went out into all worlds whenever he chose to blow it. According to northern mythology, he blew a long-expected blast as a rallying call to the battle which ended the reign of the gods Odin, Frey, and Tyr.

Gian ben Gian.—In Arabia, King of the Ginns or Genii, and founder of the Pyramids. He was overthrown by Azazel or Lucifer.

Gigantes.—The Giants, sprung from the blood that dropped from Uranus upon Gæa. They fought against the gods, but were conquered with the aid of Hercules. They personified the great powers of nature—as their names signify: Cottos (eruption), Briareos (hurricane), and Gyes (earthquake). In fables the giants are beings of monstrous size, with dragons' tails and fearful countenances. They attempted to storm heaven, being armed with huge rocks and the trunks of trees, but were killed by the gods with the assistance of Hercules, and were buried under Mount Ætna and other volcanoes. In Scandinavian mythology they are described as evil genii of various forms and races, enemies of the gods. They dwelt in a territory of their own, called Giant-land. They had the power of assuming divers shapes, and of increasing or diminishing their stature at will.

Gill.—The infernal river of Scandinavian mythology.

Ginungagap.—In Norse mythology the vast chaotic gulf of perpetual twilight which existed

before the present world, and separated the region of fog from the region of heat. Giants were the first beings who came to life among the icebergs that filled this vast abyss.

Gladsheim.—The palace of Odin, in which were the great hall Valhalla (the hall of the slain) and the twelve seats occupied by the gods when holding council.

Glasir.—A marvelous grove in Asgard, in which the leaves were all of shimmering red gold.

Glendoveer.—In Hindu mythology is a kind of sylph, the most lovely of the good spirits.

Gnome.—One of a class of spirits or imaginary beings which were supposed to tenant the interior parts of the earth, and in whose charge mines, quarries, etc., were left. Rübezahl, of the German legends, is often cited as a representative of the class.

Goblins and Bogies.—Familiar demons of popular superstition, a spirit which lurks about houses. It is also called hobgoblin. Goblin is used in a serious sense by Shakespeare in *Hamlet*, where the ghost is supposed to be a "spirit of health or goblin damned."

Golden Apples, The.—The golden apples in the gardens of the Hesperides were a great treasure which was thought to be altogether unattainable. The gardens were watched by a monstrous dragon, and to bring the golden fruit to Eurystheus was one of the tasks imposed upon Hercules.

Golden Fleece.—Ino persuaded her husband, Athamas, that his son Phryxos was the cause of a famine which desolated the land, and he ordered him to be sacrificed to the angry gods. Phryxos made his escape over sea on a "ram which had a golden fleece." When he arrived at Colchis, he sacrificed the ram to Zeus, and gave the fleece to King Æetes, who hung it on a sacred oak. It was afterward stolen by Jason in his celebrated Argonautic expedition.

Gorgons, The.—Three sisters, with heads covered with serpents. Two of them, Stheno and Euryale, were immortal, while Medusa was mortal. Originally a beautiful maiden, she was transformed into a gorgon by Athena for profaning her temple, and her appearance was so terrible that those who gazed upon her were changed into stone. She was killed by Perseus, and Athena placed her head in the center of her shield.

Graces.—To the retinue of Venus belonged the Graces, servants and companions of the goddess. They were said to be daughters of Jupiter and Eurynome, or, according to others, of Bacchus and Venus herself, and were three in number—Splendor, Pleasure, and Joy. They were honored, especially in Greece, and had temples in the principal cities. Altars were often erected to them in the temples of other gods, especially in those of Mercury, Venus, and the Muses.

Grida.—Wife of Odin and mother of Vidar. She lent Thor her girdle, staff, and glove, warning him to beware of treachery.

Gripir.—A horse-trainer, servant of Odin, who could foretell events of the future. He could teach a young hero all that he might need to know. He is compared to Chiron the Centaur.

Hades or Pluto.—Brother of Zeus and Poseidon, obtained the kingdom of the lower world in the division of the world among the three brothers, and his name was often used as synonymous with the abode of the shades. He carried off and married Persephone, or Proserpine.

Hamadryades.—Nymphs, each of whom was born and died with the tree in which she lived.

Harmonia.—A daughter of Menelaus and Helen. She was privately promised in marriage to Orestes, the son of Agamemnon; but her father, ignorant of the engagement, gave her hand to Pyrrhus, the son of Achilles, whose services in the Trojan war he had valued.

Harpies.—Winged monsters who had the face of a woman, the body of a vulture, and feet and angers armed with claws. They were three in number—Aëllo, Ocypete, and Cæleno—and were daughters of Pontus and Terra.

Hebe.—Daughter of Zeus and Hera. She served as cupbearer to the gods until Hercules was received among them, when she was given to him in marriage.

Hecate.—A mysterious threefold goddess, daughter of Perses and Asteria, sometimes identified with Selene in heaven, Artemis on earth, and Proserpine in the lower world.

Hector.—Son of Priam and Hecuba, the bravest of the Trojan heroes. He married Andromache. Upon his killing Patroclus, friend of Achilles, the latter was roused to vengeance. He pursued Hector and slew him, and then dragged his body at his chariot wheels into the camp of the Greeks.

Hecuba.—Daughter either of Dymas of Phrygia, or of Cissius king of Thrace, wife of Priam. She was carried away as a slave by the Greeks, and was either transformed into a dog or threw herself into the sea.

Heimdall.—In northern tales a god who lived in the celestial fort Himinsbjorg, under the farther extremity of the bridge Bifrost, and kept the keys of heaven. He is the watchman or sentinel of Asgard, sees even in sleep, can hear the grass grow, and even the wool on a lamb's back. Heimdall, at the end of the world, will wake the gods with his trumpet.

Helena.—Daughter of Zeus and Leda, the most beautiful woman of Greece. In her youth she was carried off by Theseus, but was rescued by her brothers Castor and Pollux. She married Menelaus, but was seduced and carried to Troy by Paris. The Greek chiefs who had been her suitors resolved to take vengeance, and accordingly sailed against Troy. After the death of Paris she married his brother Deiphobus. When Troy was captured Helena betrayed Deiphobus to the Greeks, and became reconciled to Menelaus, with whom she lived until his death. The accounts of her death differ.

Helicon.—A range of mountains in Bœotia, sacred to Apollo and the Muses, from which sprung the fountains of the Muses—Aganippe and Hippocrene.

Helios.—The god of the sun, called Sol by the Romans.

Helle.—Daughter of Athamas and Nephele and sister of Phryxus. When his stepmother Ino was about to sacrifice Phryxus to Zeus, Nephele rescued her two children, who rode away through the air on a ram with the golden fleece, which Hermes gave. Between Sigeum and the Chersonesus, Helle fell into the sea, which received the name of Hellespontus in consequence.

Hellen.—Son of Deucalion and Pyrrha, mythical ancestor of all the Greeks.

Hell Shoon.—In Icelandic mythology indispensable for the journey to Valhalla as the obolus for crossing the Styx.

Helmet of Hades.—A helmet borrowed from Pluto and worn by Perseus, rendering him invisible. Minerva lent him her buckler; and Mercury, wings, winged shoes, and a short curved sword. After he had slain Medusa he restored them again, and presented the gorgon's head to Minerva, who placed it in the middle of her shield.

Hera.—Greek name for the wife of Jupiter, known among the Romans as Juno. Hera was worshiped in many parts of Greece, but more especially at Argos, in the neighborhood of which she had a splendid temple, on the road to Mycenæ. She had also a temple in Samos. Hera was usually represented as a majestic woman of mature age.

Heraclidæ.—Name given to the descendants of Hercules, who, in conjunction with the Dorians, conquered the Peloponnesus eighty years after the destruction of Troy, or B. C. 1104, according to mythical chronology. This legend represents the conquest of the Achæan population by Dorian invaders, who henceforward appear as the ruling race in the Peloponnesus.

Hercules.—The most celebrated of the Grecian heroes. He was the son of Jupiter and Alcmena. The birth of Hercules was attended with many miraculous events. Before he was eight months old Juno sent two snakes to devour him, which he seized, and crushed to death. He achieved a series of enterprises known as the "Twelve Labors of Hercules." These were: (1) To slay the Nemean lion; (2) To destroy the hydra which infested the marshes of Lerna; (3) to bring to Eurystheus the Arcadian stag with the golden horns and brazen hoofs; (4) to bring to his master the boar of Erymanthus; (5) to cleanse the stable of King Augeas, in which 3,000 oxen had been kept for thirty years, and which had never been cleaned out; (6) to destroy the Stymphalides, terrible carnivorous birds; (7) to capture the bull that was desolating Crete; (8) to capture the mares of Diomedes, which breathed fire from their nostrils, and ate human flesh; (9) to procure the girdle of Hippolyte, queen of the Amazons; (10) to bring to Eurystheus the flesh-eating oxen of Geryon, from the island of Erythea; (11) to bring away some of the golden apples from the gardens of the Hesperides; (12) to bring up from hades the three-headed dog Cerberus. Besides these labors he performed numerous other difficult feats. He was conducted by Mercury to Omphale, queen of Lydia, became her slave, and he permitted her to dress in his armor while he was sitting to spin with her female servants. He delivered Dejanira from the Centaur Nessus, whom he killed. The Centaur, as he expired, gave Dejanira a mystic tunic, which, in a jealous paroxysm, she gave to Hercules to put on, which he had no sooner done than he was seized with a desperate distemper which was incurable. He erected a burning pile on Mount Œta, on which he cast himself. Jupiter surrounded the burning pile with smoke, amidst which Hercules, after his mortal parts were consumed, was carried to heaven in a chariot drawn by four horses.

Hermes.—One of the twelve great Greek divinities, son of Zeus and Maia. He was the herald of the gods and the god of eloquence, prudence and skill, and conducted the shades of the dead from the upper to the lower world. He also was the patron of commerce and riches, and inventor of the lyre. The Romans identified their god Mercurius with Hermes.

Hermione.—A daughter of Mars and Venus, who married Cadmus. She was changed into a serpent, and placed in the Elysian fields.

Hero.—A beautiful priestess of Venus, greatly enamored of Leander, who used to swim across the Hellespont to see her, while she directed his course by holding a burning torch on the top of a high tower. One stormy night Leander was drowned, whereupon Hero threw herself into the sea and perished also.

Hesperides.—The Hesperides are called daughters of Night, because their origin and existence are veiled in darkness. Their names were Ægle, Erytheia, and Arethusa; and they were appointed to guard the golden apples, which were the gift of Earth to Juno on her wedding day. The celebrated gardens of the Hesperides abounded with fruits and were carefully guarded by a dragon which never slept.

Hesperus.—A supposed son or brother of Atlas enrolled among the deities after death, and made identical with the evening star.

Hestia.—The Greek name for Vesta. She was the goddess of the domestic hearth.

Hippocrene.—A fountain of the Muses, on Mount Helicon, in which they bathed. "The whole mountain was celebrated for its fresh rills, and cool groves, and flowery slopes"; and the legends of the locality, as if in sympathy with its natural features, were free from the harshness characterizing those of other mountains more wild and rugged.

Hippolyte.—A queen of the Amazons, given in marriage to Theseus by Hercules. Hippolytus was their son.

Hippolytus.—Son of Theseus and Hippolyte. His stepmother, Phædra, fell in love with him. He fled to the seashore, where, his horses taking fright and rushing among the rocks, his chariot was broken into pieces, and he was killed. According to some accounts, he was restored to life by Diana.

Hippomenes.—Son of Megareus, and great-grandson of Poseidon (Neptune). He conquered Atalanta in a foot-race by dropping three golden apples, one by one, which she stopped to pick up. By this delay she lost the race.

Hobomoko.—An evil spirit known among American Indians.

Hödeken.—A famous German kobold, or domestic fairy servant; so called from wearing a little felt hat pulled down over his face.

Hoder.—In Norse mythology a blind god who destroyed his brother Balder, at the instigation of Loki, without meaning to do so. He is the type of night and darkness, as Balder is of light and day.

Hofvarpnir.—The fleet steed of Ina, in Scandinavian legend, which traveled through fire and air and enabled his messenger of the gods to see all that was happening on the earth.

Honir.—In Asgard tales, name given to the god of mind or thought.

Horæ.—Daughters of Zeus and Themis, the goddesses of the order of nature and of the seasons. They guarded the doors of Olympus, and promoted the fertility of the earth.

Horus.—The Egyptian god of the sun, son of Osiris and Isis, who was also worshiped in Greece and at Rome.

Hugin.—One of Odin's two ravens, which carried him news from earth, and, when not thus employed, perched upon his shoulders. The personification of thought or intellect.

Hugon.—A kind of evil spirit in the popular superstition of France—a sort of ogre made use of to frighten children.

Hundred-eyed.—Argus, in Greek and Latin fable. Juno appointed him guardian of Io, but Hermes killed him with a stone; whereupon Juno transplanted his eyes into the tail of her peacock.

Hyacinthus.—A youth beloved by Apollo, and accidentally slain by him while playing at quoits. From his ashes sprang the flower which bears his name.

Hyades.—Daughters of Atlas and one of the Oceanides. They were five in number, and were changed into a constellation called the Hyades.

Hydra.—A celebrated monster which infested the neighborhood of Lake Lerna, in the Peloponnesus. It was one of the labors of Hercules to destroy the monster, which he accomplished with the aid of Iolas.

Hygeia.—The goddess of health, daughter of Æsculapius. She was held in great veneration among the ancients.

Hymenæus or Hymen.—The god of marriage among the Greeks. He was the son of Bacchus and Venus, or, according to some, of Apollo and one of the Muses.

Hyperboreans.—A fabulous people, supposed to live beyond the north wind, in a land of perpetual sunshine.

Hyperion.—A son of Cœlus and Terra, who married Thea. Aurora was their daughter. The name Hyperion is often used by the poets to signify the sun; as, for instance, by Shakespeare in *Titus Andronicus*.

> Even from Hyperion's rising in the east.
> Until his very downfall in the sea.

Also in *Troilus and Cressida* and other of Shakespeare's plays, the same license is used.

Hypermnestra.—One of the Danaides, who were the fifty daughters of Danaus. She was ordered by her father to murder her husband Lynceus on the night of their marriage, which she refused to do. Danaus wished to punish her for her disobedience, but afterward forgave her, and left his kingdom at his death to Lynceus.

Hypsipyle.—A queen of Lemnos, daughter of Thoas. During her reign, Venus, whose altars had been slighted, punished the Lemnian women by causing their husbands' affections to be estranged from them. This enraged the women, and they put to death their male relatives, except

in the case of Hypsipyle, who spared her father Thoas.

Iacchus.—The solemn name of Bacchus in the Eleusinian mysteries, whose name was derived from the boisterous song called *Iacchus*. In these mysteries Iacchus was regarded as the son of Zeus and Ceres, and was distinguished from the Theban Bacchus (Dionysus), the son of Zeus and Semele.

Iapetos.—The father of Atlas and ancestor of the human race, called the progeny of Iapetes. By many considered the same as Japheth.

Icarius.—An Athenian who hospitably received Dionysus in Attica, and was taught the cultivation of the vine.

Icaros.—Son of Dædalos, who flew with his father from Crete; but the sun melted the wax with which his wings were fastened on, and he fell into the sea, hence called the Icarian.

Ida.—A mountain range of Mysia, in Asia Minor, celebrated in mythology as the scene of the rape of Ganymede and of the judgment of Paris. In Homer the summit of Ida is the place from which the gods watch the battles in the plain of Troy. It is an ancient seat of the worship of Cybele. A mountain in Crete, known as Mount Ida, was closely connected with the worship of Jupiter.

Idæan Mother.—Cybele, who had a temple on Mount Ida, in Asia Minor.

Idomeneus.—Son of Deucalion. He led the Cretan forces against Troy, and was one of the bravest of the Greek heroes of the Trojan war. On his return, being overtaken by a storm, he vowed to sacrifice to Poseidon the first object he met on landing. This was his son, whom he accordingly sacrificed. A plague was sent upon Crete in consequence, and Idomeneus was banished.

Iduna or **Idun.**—Daughter of the dwarf Svald, and wife of Bragi. She kept in a box the golden apples which the gods tasted as often as they wished to renew their youth. Loki on one occasion stole the box, but the gods compelled him to restore it. Iduna seems to personify that part of the year when the sun is north of the equator. Her apples indicate fruits generally. Loki carries her off to Giant-land when the sun descends below the equator, and he steals her apples. In time, Iduna makes her escape, in the form of a sparrow, when the sun again rises above the equator; and both gods and men rejoice in her return.

Ifing.—In Scandinavian mythology the great stream between the earth and the sacred lands, whose waters never froze.

Ilus.—Son of Tros and Callirrhoë the founder of Ilium, called also Troy after his father.

Inachus.—One of the river-gods, a son of Oceanus and Tethys, and father of Phoroneus and Io. He was the first king of Argos, and is said to have given his name to the river Inachus.

Indra.—In Hindu mythology the ever-youthful god of the firmament, and the omnipotent ruler of the elements. He is a most important personage in Indian fable. In the Vedic period of the Hindu religion, he occupied a foremost rank, and, though degraded to an inferior position in the Epic, he long enjoyed a great legendary popularity. In works of art he is represented as riding on an elephant.

Ino.—Daughter of Cadmus and Harmonia, married to Athamas after the death of Nephele.

Io.—Daughter of Inachus, and beloved by Zeus, who changed her into a white heifer to escape Hera's jealousy. Hera set Argus to watch her, and Zeus directed Hermes to steal her away. Finally Hermes killed Argus. Hera then sent a gadfly to torment Io, who wandered from land to land over all the earth, finding rest at last on the Nile, where she was restored to her natural form. She was afterward identified with Isis.

Iolaus.—Son of Iphicles, relative and faithful companion of Hercules.

Ion.—Son of Apollo and Creusa, fabulous ancestor of the Ionians.

Iphicles.—Son of Amphitryon and Alcmene, and brother of Hercules.

Iphigenia.—A daughter of Agamemnon and Clytemnestra. When the Greeks, going to the Trojan war, were detained at Aulis by contrary winds, they were informed by a soothsayer that, to appease the gods, they must sacrifice Iphigenia to Diana. As the fatal knife was about to be plunged into her, Iphigenia suddenly disappeared, and a goat of great beauty was found in the place where she had stood ready for the sacrifice.

Irene.—The Roman goddess of peace, and daughter of Zeus and Themis, and one of the Horæ.

Iris.—Daughter of Thaumas and Electra, messenger of the gods, especially of Hera. The rainbow was considered the road on which she traveled, and she was therefore identified with it.

Irus.—The beggar of gigantic stature who kept watch over the suitors of Penelope. His real name was Arneos, but the suitors nicknamed him Irus because he carried their messages for them. Ulysses, on his return, felled him to the ground.

Isis.—The Egyptian goddess of the earth, also identified with the moon. Her worship prevailed extensively in Greece, and also in Rome under the emperors.

Israfil.—Known among Arabians as the angel of music, who possessed the most melodious voice of all God's creatures. This is the angel who is to sound the resurrection trump, and make music for the saints in paradise. Israfil, Gabriel and Michael were the three angels that warned Abraham of Sodom's destruction.

Ithaca.—In mythology the island-kingdom of Ulysses. The city of Ithaca, the residence of Ulysses, was situated on a precipitous, conical hill, now called "eagle's cliff," occupying the whole breadth of the isthmus. Ithaca was also the home of Penelope.

Ithuriel.—One of the angels commissioned by Gabriel to search for Satan, who had effected his entrance into paradise.

Ixion.—King of the Lapithæ, treacherously killed Deioneus. Zeus purified him, and carried him to heaven, giving him a seat at the table of the gods.

Jamshid.—King of the genii, famous for a golden cup full of the elixir of life. This cup, hidden by the genii, was discovered while digging the foundations of Persepolis.

Janus.—An ancient king who reigned in Italy. He was a native of Thessaly, and, according to some writers, a son of Apollo. He built a town which he called Janiculum. Some authors make him to have been son of Cœlus and Hecate. He is represented with two faces, because he was acquainted with the past and future. His temple was always open in time of war, and was shut when peace existed.

Jason.—In Greek legend, king of Iolchos in Thessaly, celebrated for his share in the Argonautic expedition. On his return to Iolchos with Medea as his wife, he avenged the murder of his parents and his brother by putting Pelias to death. Unable to retain possession of his throne, however, he fled to Corinth, where, after some time, he married Glauce (or Creusa), daughter of the king, and put away Medea and her children. Different accounts are given of his death.

Jinn.—A sort of fairies in Arabian mythology, the offspring of fire. They are governed by a race of kings named Suleyman, one of whom "built the pyramids." Their chief abode is the mountain Kâf, and they appear to men under the forms of serpents, dogs, cats, monsters, or even human beings, and become invisible at pleasure. The evil jinn are ugly, but the good are beautiful. According to fable, they were created from fire two thousand years before Adam was made of earth.

Jord.—Daughter of Night and mother of Thor. In Scandinavian mythology the name given to primitive earth.

Jove.—Known in classical mythology as the god of thunder. The name Jove is but another appellation, rarely given to Zeus or Jupiter.

Juggernaut or **Jaggernaut.**—A Hindu god. The temple of this god is in a town of the same name in Orissa.

Juno.—A celebrated deity among the ancients, daughter of Saturn and Ops. Jupiter married her, and the nuptials were celebrated with the greatest solemnity in the presence of all the gods. By her marriage with Jupiter, Juno became the queen of all the gods, and mistress of heaven and earth. She presided over marriage, and patronized those of her sex who were distinguished for virtuous conduct. Paris gave her great offense by giving the golden apple, as an award to beauty, to Venus instead of herself.

Jupiter.—The chief of all the gods of the ancients. According to Varro, there were three hundred persons of that name. To him of Crete, who passed for the son of Saturn and Ops, the actions of the rest have been attributed. Jupiter was educated in a cave on Mount Ida, in Crete, and fed with the milk of the goat Amalthæa. While he was very young he made war on the Titans, whom he conquered. The beginning of his reign in the supernal regions was interrupted by the rebellion of the giants who were sons of the earth, and who were desirous of revenging the death of the Titans; but by the aid of Hercules Jupiter overpowered them. Jupiter married Metis, Themis, Ceres, Euronyme, Mnemosyne, Latona, and Juno. His worship was universal: he was the Ammon of the Africans, the Belus of Babylon, and the Osiris of Egypt.

Kama.—The Hindu god of love. His wife is Rati (pleasure). He is shown riding on a parrot or a sparrow, holding in his hand a bow of flowers and five arrows, each tipped with the bloom of a flower supposed to conquer one of the senses. His power is so much exalted that even the god Brahma is said to succumb to it.

Kami.—The gods of ancient Japan. The name, in modern times, designates any spiritual saint, and may also be applied to a prince.

Kaswa.—The camel admitted into Moslem paradise, the favorite camel of Mohammed which fell on its knees in adoration when "the prophet" delivered the last clause of the Koran to the assembled multitude at Mecca.

Kederli.—In Mohammedan mythology is a god corresponding to the English St. George, and is still invoked by the Turks when they go to war.

Kelpie.—In mythology of Scotland a spirit of the water seen in the form of a horse. Each lake has its kelpie.

Kobold.—A house-spirit in German superstition. In northern lands the name is sometimes used in place of elf or dwarf, representing an underground spirit. Probably the same as the Scotch brownie.

Koppelberg.—The hill which miraculously opened to receive the children who followed the Pied Piper. This belongs to mythology, as people in the middle ages considered Odin as the leader of disembodied spirits, and from this came the Pied Piper. The rats were the restless souls of the dead, which the Pied Piper released by drowning.

Krishna.—In Hindu mythology the eighth incarnation of Vishnu. According to some authorities, he is considered distinct from all the Avatars, as these had only a portion of the divinity, and Krishna was Vishnu himself in form of "the Black One."

Kronos.—Kronos (Time) was the youngest of the Titans, and as the heavens measure out time to us, and earth is considered its beginning, he is said to be born of Uranos and Ge. He was generally worshiped under the name of Saturn.

Kuvera.—In Hindu mythology the god of riches, represented as frightfully deformed, and as riding in a car drawn by hobgoblins.

Lab.—The sorceress-queen in *Arabian Nights*. She tried to change Beder, the young king of Persia, into a halting, one-eyed hack; but Beder was forewarned, and changed Lab herself into a mare.

Lachesis.—One of the three Fates, or Parcæ. She spun the thread of life.

Ladon.—The dragon who guarded the apples of the Hesperides, and was slain by Hercules. Ladon is also the name of the father of Daphne and Metope.

Læding.—In Norse mythology the strong chain with which the wolf Fenris was bound. He easily broke the chain, and from this legend has grown the saying, "to get loose out of Læding." A stronger chain was known as Droma.

Laërtes.—A king of Ithaca who married Anticlea, daughter of Autolycus. Ulysses was their son, and succeeded him on the throne, Laërtes retiring to the country, and devoting his time to gardening, in which employment he was found by Ulysses on his return from the Trojan war, after twenty years' absence.

Laocoon.—A priest of Apollo who, in the Trojan war, was opposed to the admission of the wooden horse to the city. For this, as a punishment, two enormous serpents were sent to attack him, which they did while, accompanied by his two sons, he was offering a sacrifice to Neptune. The serpents coiled round him and his sons, and crushed them to death.

Laodamia.—The wife of Protesilaus, who was slain before Troy. She begged to be allowed to converse with her dead husband for only three hours, and her request was granted. Hermes (Mercury) led Protesilaus back to the upper world; and, when Protesilaus died a second time, Laodamia died with him.

Laomedon.—The king who built the walls of Troy, assisted by Neptune and Apollo, who had displeased Jupiter, and were sent to work for wages. Neptune built the walls of Troy, while Apollo tended the king's flocks on Mount Ida. When the two gods had done their work, Laomedon refused the reward he had promised, and expelled them from his dominions. Neptune sent a sea-monster to ravage the country; and a maiden, chosen by lot, was from time to time sacrificed to propitiate it.

Lapithæ.—A mythical people of Thessaly, noted for their defeat of the Centaurs.

Lares.—Gods of inferior power at Rome, who presided over houses and families. They were two in number, sons of Mercury and Lara.

Latinus.—A son of Faunus and Marica, king of the Aborigines in Italy, who from him were called Latini.

Latona.—A daughter of Cœus the Titan and Phœbe. She was admired for her beauty by Jupiter. Juno made Latona the object of her vengeance, and sent the serpent Python to persecute her.

Leander.—A youth of Abydos. He was passionately in love with Hero, a young girl of Sestos. He was in the habit of swimming across the Hellespont to visit her, in doing which, on a tempestuous night, he was drowned. Lord Byron performed the same feat in 1810, an exploit which he has celebrated in verse in his occasional pieces. He expresses surprise that, as the truth of Leander's story had been questioned, no one had hitherto tested its practicability.

Leda.—A daughter of King Thespius and Eurythemis, who married Tyndarus, king of Sparta. She is famous for her intrigue with Jupiter. She was the mother of Pollux, Helena, Castor, and Clytemnestra. She is said to have received the name of Nemesis after death.

Lemures.—The specters or spirits of the dead. They were said to wander about at night as specters, and to torment and frighten the living. In order to propitiate them the Romans celebrated the festival of the *Lemuralia* or *Lemuria*.

Lethe.—The river that separates hades from the Elysian fields. The Greeks believed in a magical power of the waters of this river, which the souls of all the dead are obliged to taste, that they may forget everything said and done in the earth.

Liber.—An ancient Roman divinity of wines, identified afterward with Bacchus.

Libertas.—The goddess of liberty, to whom several temples were erected at Rome. Libertas is represented in works of art as a matron, with the pileus, the symbol of liberty, or a wreath of laurel.

Sometimes she appears holding the Phrygian cap in her hand.

Libissa.—Queen of fays and fairies.

Libitina.—An ancient goddess of Rome, who presided over the burial of the dead. At her temple at Rome everything necessary for funerals was kept, and persons might there either buy or hire such things. Hence a person undertaking the burial of a person (an undertaker) was called "libitinarius," and his business "libitina."

Lidskialf.—The throne of Alfadir, whence he can view the whole universe.

Lif.—In Norse mythology the name given to man who is to occupy the purified earth when goodness resumes its sway.

Lilinau.—In American Indian folk-lore Lilinau was wooed by a phantom. She followed his green waving plume through the forest, and was never seen again.

Lilith.—In Hebrew mythology a female specter who lies in wait for children in order to destroy them. The older traditions tell of Lilith as a former wife of Adam and the mother of demons. Amulets were worn as protection from her powers.

Lobaircin.—In Irish mythical tales a fairy shoemaker resembling an old man, who resorts to out-of-the-way places, where he is discovered by the noise of his hammer. He is rich, and, while any one keeps his eye fixed upon him, cannot escape, but the moment the eye is withdrawn he vanishes.

Lofn.—The Scandinavian god who guards friendship.

Lofua.—The Scandinavian goddess who reconciles lovers.

Loki.—The great god of fire in Norse mythology.

Lorelei.—In German legend a siren who haunted a rock of the same name on the right bank of the Rhine. She combed her hair with a golden comb, and sang a wild song which enticed fishermen and sailors to destruction on the rocks and rapids at the foot of the precipice. In northern mythology Lorelei is represented as immortal, a daughter of the Rhine, and dwelling in the river bed.

Lotis.—A nymph, who, to escape the embraces of Priapus, was metamorphosed into a tree, called, after her, Lotus.

Lubins.—A species of goblins in Normandy that take the form of wolves, and frequent churchyards. They are very timorous, and take flight at the slightest noise.

Lucifer.—The planet Venus when a morning star, called by the Greeks Phosphorus. The same star when seen in the evening was called Hesperus or Vesper.

Lucina.—The goddess who presides at the birth of children. She was a daughter of Jupiter and Juno.

Lud.—In ancient British mythology the king of the Britons.

Luna.—She was the daughter of Hyperion and Theia, and was distinct in name, descent, and story from Diana, who was taken as goddess of the moon. To Luna was ascribed great influence in relation to the birth of men. Luna seems to have been especially worshiped by the Atlantides.

Lycomedes.—A king in the island of Scyros, to whose court Achilles was sent, disguised as a maiden, by his mother, Thetis, who was anxious to prevent his going to the Trojan war. Some traditions say that Lycomedes treacherously killed Theseus by throwing him from a rock.

Mænalus.—A mountain in Arcadia, extending from Megalopolis to Tegea, celebrated as the favorite haunt of the god Pan. The Roman poets frequently use the adjectives "Mænalius" and "Mænalis" as equivalent to Arcadian.

Mæra.—The dog of Icarios. Icarios, having made wine, gave it to some shepherds, who, thinking themselves poisoned, killed him; recovering themselves, they buried him. His daughter, Erigone, being shown the spot by his faithful dog Mæra, hung herself through grief.

Mammon.—In demonology, placed at the head of nine ranks of demons. Also a Syriac word used in the scriptures to signify either riches or the god of riches. By poetic license, Milton makes Mammon one of the fallen angels.

Manes.—The name given by the Romans to the spirits of the departed. The god of funerals and tombs.

Mani.—Name given in ancient Norse mythology to the moon. Later known as the son of Mundilfori; taken to heaven by the gods to drive the moon-car. He is followed by a wolf, which, when time shall be no more, will devour both Mani and his sister Sol.

Manitou.—The great spirit of American Indians.

Mars.—The god of war, was the son of Jupiter and Juno, or of Juno alone, according to Ovid. The loves of Mars and Venus are greatly celebrated. On one occasion, while in each other's company, Vulcan spread a net around them, from which they could not escape without assistance. They were thus exposed to the ridicule of the gods till Neptune induced Vulcan to set them at liberty. During the Trojan war Mars interested himself on the side of the Trojans, and defended the favorites of Venus with great determination.

Marsyas.—A celebrated piper of Cœne in Phrygia. He challenged Apollo to a trial of skill in music, which challenge was accepted, the Muses being appointed umpires. The palm of victory was awarded to Apollo, who tied his antagonist to a tree and flayed him.

Medea.—A celebrated magician, daughter of Æetes, king of Colchis, and niece of Circe. When Jason came to Colchis in quest of the Golden Fleece, Medea fell in love with him, and they exchanged oaths of fidelity; and, when he had overcome all the difficulties which he had to encounter, Medea embarked with him for Greece. She lived in Corinth with her husband Jason for ten years, with much conjugal happiness, when he became enamored with Glauce, daughter of Creon, king of Corinth. To avenge herself on Jason she caused the destruction of Glauce, and killed her two children in his presence.

Medusa.—One of the three gorgons, daughter of Phorcys and Ceto. She was the only one of the gorgons subject to mortality. She was celebrated for her personal charms and the beauty of her hair, which Minerva changed into serpents. According to Apollodorus and others, the gorgons were born with snakes on their heads instead of hair, and with yellow wings and brazen hands. Perseus rendered himself famous by his conquest of Medusa. He cut off her head and placed it on the ægis of Minerva. The head had the power of changing those who looked at it into stone.

Megæra.—One of the furies; sometimes said to personify a guilty conscience.

Megin-giord.—A magic belt worn by the god Thor. He once proposed to show his strength by lifting great weights, but when challenged to pick up the giant's cat, he tugged and strained, only to succeed in raising one paw from the floor, although he had taken the precaution to enhance his strength as much as possible by tightening his belt Megin-giord.

Meleager.—A celebrated hero of antiquity who signalized himself in the Argonautic expedition, and especially by killing the Calydonian boar, a famous event in mythological history.

Melissa.—A nymph, said to have discovered the use of honey, and from whom bees were believed to have received their name. There can be no doubt, however, that the name really came from a Greek word meaning honey, and was hence given to nymphs.

Mellona.—One of the rural divinities, the goddess of bees.

Melpomene.—One of the Muses, daughter of Jupiter and Mnemosyne. She presided over tragedy. She is generally represented as a young woman wearing a buskin, and holding a dagger in her hand.

Melusina.—The most noted among French fairies. She was condemned to become every Saturday a serpent from the waist downward, as a punishment for having, by means of a charm, inclosed her father in a high mountain, in order to avenge an injury her mother had received from him. She married Raymond, count of Poitiers, and, having been seen by him during her loathsome transformation—in violation of his solemn promise never to visit her on a Saturday—was immured in a subterranean dungeon of the castle of Lusignan.

Memnon.—A king of Ethiopia, son of Tithonus and Aurora. He came with ten thousand men to assist Priam in the Trojan war, where he behaved with great courage, and killed Antilochus, Nestor's son, on which Nestor challenged Memnon to fight, but he refused on account of the great age of the challenger; but he fought Achilles, who killed him. A statue was erected in his honor which had the property of uttering a melodious sound every day at sunrise.

Mendes.—An Egyptian god like Pan. He was worshiped in the form of a goat.

Menelaus.—King of Lacedæmon, brother of Agamemnon and husband of Helena. After Helena's flight with Paris, Menelaus and Ulysses went to Troy to demand her restitution; on the failure of their attempt Menelaus and his brother organized the expedition against Troy. After the capture of the city he became reconciled to Helena, and they lived happily in Sparta.

Mentor.—A friend of Ulysses, to whom the latter confided the care of his house and the instruction of his son Telemachus on departing for the Trojan war.

Mephistopheles.—One of the seven chief devils in the old demonology, the second of the fallen archangels, and the most powerful of the infernal legionaries after Satan. He figures in the old legend of *Dr. Faustus* as the familiar spirit of that magician. To modern readers he is chiefly known as the cold, scoffing, relentless fiend of Goethe's *Faust* and the attendant demon in Marlowe's *Faustus*.

Mercury.—Has been identified with the Greek Hermes. The Romans of later times transferred all the attributes and myths of Hermes to their own god. The Fetiales, however, never recognized the identity; and, instead of the "caduceus," they used a sacred branch as the emblem of peace. The resemblance between Mercurius and Hermes is indeed very slight. The worship of Mercury was very common among Egyptians, Greeks, and Romans, and many temples were consecrated to him. At Rome there was a particular festival held for the expiation of merchants, in honor of Mercury.

Meriones.—A Cretan hero, son of Molus, who was one of the bravest heroes in the Trojan war, and usually fought along with his friend Idomeneus.

Mermaids.—Wave maidens of northern mythology, and classed with nymphs in Grecian and Roman. They were generally represented as young and beautiful virgins, partially covered with a veil or thin cloth, bearing in their hands vases of water, or shells, leaves, or grass, or having something as a symbol of their appropriate offices. They were attendants of the gods.

Merope.—One of the Pleiades, daughter of Atlas, and wife of Sisyphus.

Merops.—King of Cos, whose wife was killed by Artemis for neglecting to worship her. Merops tried to kill himself, but was changed to an eagle, and placed among the stars.

Meru.—In Hindu mythology a sacred mountain, 80,000 leagues high, situated in the center of the world. It is the abode of Indra, and abounds with every charm that can be imagined. The Olympus of the Indians.

Midas.—A king of Phrygia, son of Gordius or Gorgias. According to some traditions, in the early part of his life he found a treasure, to which he owed his greatness and opulence. He showed hospitality to Silenus, in return for which Bacchus permitted him to choose whatever recompense he pleased. He demanded of the god that whatever he touched might be turned into gold. His wish was granted; but, when the very food which he attempted to eat became gold in his mouth, he prayed Bacchus to revoke the favor, and he was ordered to wash himself in the river Pactolus, the sands of which were turned into gold by the touch of Midas. Afterward, in consequence of maintaining that Pan was superior to Apollo in singing and playing the flute, he had his ears changed into those of an ass by the god.

Midgard.—In Scandinavian mythology the name given to the earth. Out of the giant's flesh they fashioned Midgard (middle garden), as the earth was called, which was placed in the exact center of the vast space, and hedged all around with Ymir's eyebrows, which formed its bulwarks or ramparts. The solid portion of Midgard was surrounded by the giant's blood or sweat, which now formed the ocean, while his bones made the hills, his flat teeth the cliffs, and his curly hair the trees and all vegetation.

Midgardsormen (earth's monster).—The great serpent that lay in the abyss at the root of the celestial ash. Child of Loki.

Milo.—A celebrated Crotona athlete, who is said to have felled an ox with his fist, and to have eaten the beast in one day.

Mimir.—In Scandinavian mythology the god of wisdom. Also god of the ocean, which is called "Mirmir's well," in which wit and wisdom lay hidden, and of which he drank every morning from the horn Gjallar.

Minerva.—The goddess of wisdom, war, and all the liberal arts, sprang, full-grown and armed, from the head of Jupiter, and was immediately admitted to the assembly of the gods, and became one of the most faithful counselors of her father. Her power in heaven was great; she could hurl the thunders of Jupiter, prolong the life of men, and bestow the gift of prophecy. She was known among the ancients by many names. She was called Athena, Pallas, Parthenos, Tritonis, and Hippia, Sais, and other names. She is usually represented with a helmet on her head with a large plume on it, in one hand holding a spear, and in the other a shield with the head of Medusa on it. Temples were erected for her worship in different places, one of the most renowned of which was the Parthenon at Athens. She was the tutelar deity of the city of Athens.

Minos the Second.—Was a son of Lycastes, the son of Minos the first, and king of Crete. He married Pasiphæ, the daughter of Sol and Perseis.

Minotaur.—A celebrated monster, half a man and half a bull, for which a number of young Athenian men and maidens were yearly exacted to be devoured. The Minotaur was confined in a famous labyrinth, where at length it was slain by Theseus, who was guided out of the labyrinth by a clew of thread given to him by Ariadne, daughter of King Minos.

Mithras.—In Persian mythology one of the principal gods of the ancient Persians, a personification of the sun. He was regarded as a mediator between the two opposite deities, Ormuzd and Ahriman, or the principle of good and the principle of evil.

Mjolnir.—From mythology of northern lands. The name of Thor's celebrated hammer—a type of the thunderbolt—which, however far it might be cast, was never lost, as it always returned to his hand; and which, whenever he wished, became so small that he could put it in his pocket.

Mnemosyne.—A daughter of Cœlus and Terra, mother of the nine Muses. Jupiter assumed the form of a shepherd in order to enjoy her company.

Moloch.—A god of the Phenicians to whom human victims, principally children, were sacrificed. Moloch is figurative of the influence which impels us to sacrifice that which we ought to cherish most dearly.

Momus.—The god of mirth amongst the ancients according to Hesiod, was the son of Nox. He amused himself by satirizing the gods by turning into ridicule whatever they did.

Moakkibat.—A class of angels, according to the Mohammedan mythology. Two angels of this class attend every child of Adam from the cradle to the grave. At sunset they fly up with the record of the deeds done since sunrise. Every good deed is entered ten times by the recording angel on the credit or right side of his ledger, but when an evil deed is reported the angel waits seven hours, "if happily in that time the evil-doer may repent."

Moiræ.—The Greek name for Parcæ, or the Fates. These grave and mighty goddesses were represented by the earliest artists with staffs or scepters, the symbols of dominion. They received the same homage as the Furies.

Morpheus.—A minister of the god Somnus, who imitated very naturally the gestures, words, and manners of mankind. He is sometimes called the god of sleep. He is generally represented as a sleeping child of great corpulence, with wings.

Mowis.—The bridegroom of Snow, (who according to American Indian tradition) wooed and won a beautiful bride; but when morning dawned, Mowis left the wigwam, and melted into the sunshine. The bride hunted for him night and day in the forests, but never saw him more.

Musæ.—The Muses, certain goddesses who presided over poetry, music, dancing, and all the liberal arts. They were daughters of Jupiter and Mnemosyne, and were nine in number—Clio, Euterpe, Thalia, Melpomene, Terpsichore, Erato, Polyhymnia, Calliope, and Urania.

Myrmidons.—The trusty followers of Achilles. They are said to have inhabited originally the island of Ægina, and to have emigrated with Peleus into Thessaly. The Myrmidons disappear from history at a later period.

Mysterious Three, The.—In Scandinavian mythology were Har "the Mighty," the "Like-Mighty," and the "Third Person," who sat on three thrones above the rainbow. Then came the Æsir, of which Odin was chief, who lived in Asgard (between the rainbow and earth); next came the Vanir, or gods of the ocean, air, and clouds, of which deities Niörd was chief.

Naiads.—The nymphs of fresh water, whether of rivers, lakes, brooks, or springs. Many of these nymphs presided over springs which were believed to inspire those who drank of them.

Naraka.—The hell of the Hindus. It has twenty-eight divisions, in some of which the victims are mangled by ravens and owls; in others they are doomed to swallow cakes boiling hot, or walk over burning sands.

Narcissus.—A beautiful youth, who, for his unfeeling heart, was caused by Nemesis to see his own image reflected in a fountain and to become enamored of it. He gradually pined away and was changed into the flower which bears his name.

Nausicaa.—A daughter of Alcinous, king of the Peæacians, and Arete, who conducted Ulysses to the court of her father.

Nectar.—Wine conferring immortality, and drunk by the gods.

Neleus.—Son of Poseidon and Tyro, brother of Pelias. He was cast off by his mother and brought up by countrymen. He settled in Pylos, and became father of Nestor. He and all his sons except Nestor were killed by Hercules.

Nemean Lion.—A monstrous lion, near the forest of Nemea, which wasted the surrounding country and threatened destruction to the herds. Hercules promised to deliver the country of the monster, and Thespius rewarded Hercules by making him his guest so long as the chase lasted. Hercules slew the lion, and henceforth wore its skin as his ordinary garment, and its mouth and head as his helmet.

Nemesis.—One of the infernal deities, daughter of Nox. She was the goddess of vengeance. She is made one of the Parcæ by some mythologists, and is represented with a helm and a wheel. The term is sometimes used to signify vengeance itself.

Neoptolemus.—Called also Pyrrhus, son of Achilles and Deidamia; he was one of the Greek heroes concealed in the wooden horse, and killed Priam. Andromache fell to his lot, and he became by her father of several children. He married Hermione and was killed at Delphi.

Neptune.—In Roman mythology the divine monarch of the ocean. The principal exploits and merits ascribed to Neptune are the assistance to Jupiter against the Titans; the building of the walls and ramparts of Troy; the creation and taming of the horse; the raising of the Island Delos out of the sea; and the destruction of Hippolytus by a monster from the deep.

Nereus.—A son of Pontus and Gæa, and husband of Doris, by whom he became the father of the fifty nereides.

Nessus.—A centaur who attempted to carry off Dejanira but was shot by Hercules with a poisoned arrow. His poisoned blood was afterward the cause of Hercules' death.

Nestor.—King of Pylos, son of Neleus. He was spared by Hercules when his brothers and father were killed. In his youth he was a distinguished warrior, taking part in the Calydonian hunt and Argonautic expedition. At the siege of Troy he was of advanced age, and distinguished for his wisdom and eloquence.

Nickar or **Hnickar.**—The name assumed by Odin when he personated the destroying principle.

Nicneven.—A gigantic and malignant female spirit of the old popular Scottish mythology. The hag is represented as riding at the head of witches and fairies at Hallowe'en.

Nidhögg.—The dragon that gnaws at the root of Yggdrasil, the tree of the universe in Scandinavian mythology.

Nifiheim.—Mist-home of old Norse mythology. The region of endless cold and everlasting night, ruled over by Hela. It consists of nine worlds, to which are consigned those who die of disease or old age. This region existed "from the beginning" in the north, and in the middle thereof was the well Hvergelmir, from which flowed twelve rivers.

Ninus.—A son of Belus. He built Nineveh and founded the Assyrian monarchy, of which he was the first sovereign, B. C. 2059. He married Semiramis, whose husband had destroyed himself through fear of Ninus. He reigned fifty-two years.

Niobe.—A daughter of Tantalus, king of Lydia, and Euryanassa, or Dione. She married Amphion, and, according to Hesiod, they had ten sons and ten daughters. All the sons of Niobe expired by the darts of Apollo, and all the daughters, except Chloris, were destroyed by Diana. Niobe, overwhelmed with grief, was changed into a stone.

Niörd.—The Scandinavian sea-god. He was not one of the Æsir. Niörd's son was Frey (the fairy of the clouds), and his daughter was Freyja. His home was Noatun. Niörd was not a sea-god like Neptune, but the spirit of water and air. The Scandinavian Neptune was Ægir, whose wife was Skadi. His temples were near the seashore and all aquatic plants belonged to him.

Nisus.—A Trojan youth who accompanied Æneas to Italy, after the fall of Troy, and who is celebrated for his devoted attachment to Euryalus.

Nix.—Little creatures not unlike the Scotch brownie and German kobold. They wear a red cap, and are ever ready to lend a helping hand to the industrious and thrifty.

Nokomis.—Daughter of the moon, American Indian myths. Sporting one day with her maidens on a swing made of vine canes, a rival cut the swing, and Nokomis fell to earth, where she gave birth to a daughter named Wenonah.

Nornir or **Norns.**—The three fates of Scandinavian mythology, past, present, and future. They spin the events of human life, sitting under the ash-tree Yggdrasil which they carefully tend. Their names are Urda (the past), Verdandi (the present), and Skuld (the future). Besides these three Norns, every human creature has a personal Norn or fate. The home of the Norns is called in Scandinavian mythology Doomstead.

Nox.—Goddess of night, considered among the ancients as one of their oldest divinities, and was worshiped by them with great solemnity.

Nymphæ.—The nymphs, female divinities of a lower class. They were divided into: (1) Nymphs of the watery element, comprising the Oceanides, nymphs of the ocean; Nereides, nymphs of the Mediterranean; Naiades, the naiads or fresh water nymphs. (2) Nymphs of mountains and grottoes, called Oreades. (3) Nymphs of forests and groves, called by different names. (4) Nymphs of trees (supposed to die with the trees which had been their abode), known as Dryads and Hamadryads.

Oceanides and **Oceanitides.**—Sea nymphs, daughters of Oceanus, from whom they received their name. According to Apollodorus, they were 3,000 in number, while Hesiod speaks of them as consisting of forty-one.

Oceanus.—A powerful deity of the sea, son of Cœlus and Terra. He married Tethys, the Oceanides being their children.

Odhærir.—In Scandinavian mythology the mead or nectar made of Kvasir's blood, kept in three jars. The second of these jars is called "Sohn," and the third "Bohn." Probably the nectar is the "spirit of poetry."

Odin.—The king of gods and men, and the reputed progenitor of the Scandinavian kings. He corresponds both to the Jupiter and the Mars of classical mythology. As god of war, he holds his court in Valhalla, surrounded by all warriors who have fallen in battle, and attended by two wolves, to whom he gives his share of food; for he himself lives on wine alone. On his shoulders he carries two ravens, Hugin (mind) and Munin (memory), whom he dispatches every day to bring him news of all that is doing throughout the world. He has three great treasures, namely, Sleipnir, an eight-footed horse of marvelous swiftness; Gungnir, a spear, which never fails to strike what it is aimed at; and Draupnir, a magic ring, which every ninth night drops eight other rings of equal value. The German tribes worshiped Odin under the name of "Woden." The fourth day of the week, Wednesday, was sacred to him.

Odur.—In Scandinavian mythology, husband of Freyja, whom he deserted. He abandoned his wife on her loss of youth and beaty, and was punished.

Odysseus.—A Greek form of the name Ulysses.

Œdipus.—He was the son of Laius, king of Thebes and his wife Jocasta. Laius, having been warned by an oracle that his throne and life were in danger from this son, gave him to a hersdman to be killed. But his life was saved, and he was reared by a peasant. Afterward he ransomed Thebes from the Sphinx by answering her riddle, unwittingly killed his own father, married Jocasta, and became king of Thebes. Subsequently discovering his parentage, he destroyed his eyesight, and wandered away from Thebes, attended by his daughter Antigone, who remained with him till his death.

Ægir.—God of the ocean, whose wife is Ran. They had nine daughters, who wore white robes and veils. These daughters are the billows, etc.

Orges.—In nursery mythology giants of very malignant dispositions, who live on human flesh.

Olympia.—Celebrated games which received their name either from Olympia, where they were observed, or from Jupiter Olympus, to whom they were dedicated.

Olympus.—A mountain in Macedonia and Thessaly. The ancients supposed that it touched the heavens, and thus they have made it the residence of the gods, and the place where Jupiter held his court. On the top of the mountain, according to the poets, eternal spring reigned.

Omphale.—A queen of Lydia, daughter of Iardanus, and wife Tmolus, after whose death she reigned herself. The story is frequently told of Hercules serving her as a slave, and of his wearing her dress, while Omphale put on the skin and carried the club.

Ops.—A daughter of Cœlus and Terra, the same as the Rhea of the Grecks, who married Saturn, and became mother of Jupiter. She was known among the ancients by the different names of Cybele, Bona Dea, Magna Mater, Thya, Tellus, and Proserpina.

Orestes.—A son of Agamemnon and Clytemnestra. His father was slain by Clytemnestra and Ægisthus, but young Orestes was saved, and married a sister of Agamemnon. He was indulgently treated by Strophius, who educated him with his son Pylades. The two young princes formed the most inviolable friendship. When Orestes had arrived at years of manhood he avenged his father's death by killing his mother, Clytemnestra.

Orion.—A giant and hunter, who, when intoxicated, offered violence to Merope, and was in consequence deprived of his eyesight. His eyesight was restored, and he lived as a hunter with Artemis. He was placed among the stars after his death.

Orithyia.—A daughter of Erechtheus, beloved by Boreas, who carried her off as she was wandering near the river Ilissus.

Orlog.—A god of Norse fable personifying the eternal law of the universe, from whose decree there was no appeal.

Ormuzd.—The name of the supreme deity of the ancient Persians, and of their descendants, the Parsees and Ghebers. He is an embodiment of the principle of good, and was created by the will of the great eternal spirit, Zervan-Akharana, simultaneously with Ahriman, the principle of evil, with whom he is in perpetual conflict. Ormuzd is the creator of the earth, sun, moon, and stars, to each of which he originally assigned its proper place, and whose various movements he continues to regulate.

Orpheus.—A legendary character, son of Œagrus and Calliope. He was instructed by the Muses, and enchanted with his lyre not only wild animals but trees and rivers. He accompanied the Argonauts, and on his return married Eurydice, who died from a serpent's bite. To recover her, Orpheus visited the infernal regions, when Pluto promised him his wife on condition that he should not look back on her until he had reached the upper world. He turned around, however, to see if she was following, and she disappeared from his sight. His grief made him reject the advances of the Thracian women, who in revenge drowned the sound of his lyre with their shrieks, and tore him to pieces in a Bacchanalian orgy.

Osiris.—A great deity of the Egyptians, husband of Isis. The ancients differ in opinion concerning this celebrated god, but they all agree that as ruler of Egypt he took care to civilize his subjects, to improve their morals, to give them good and salutary laws, and to teach them agriculture. He was worshiped under the form of an ox.

Ossa.—A celebrated mountain in the north of Thessaly, connected with Pelion on the southeast, and divided from Olympus on the northwest by the vale of Tempe. It is mentioned in the legend of the war of the giants.

Pactolus.—The river whose sands turned to gold when Midas washed in the waters by order of Bacchus.

Paimosaid.—In American Indian myths a walking thief, especially one who walks through cornfields about harvest time to pluck the ears of maize or corn.

Palæmon.—Originally called Melicertes. Son of Ino; called Palæmon after he was made a sea-god. The Roman Portunus, the protecting god of harbors, is the same.

Palamedes.—Son of Nauplius and Clymene, a Greek warrior at the siege of Troy. Agamemnon, Diomedes, and Ulysses caused a Phrygian captive to write to Palamedes a letter in the name of Priam, which they concealed in his tent. They then accused him of treachery, and upon finding the letter, caused him to be stoned to death.

Pales.—The goddess of shepherds, presiding over cattle and pastures, whose festival, the Paliha was celebrated on the 21st of April, the day of which Rome was founded.

Palladium.—A sacred image of Athena, which was supposed to keep safe the city in which it was preserved. Zeus threw it from heaven as Ilus was beginning to build Troy, and Ilus built a sanctuary for it. Ulysses and Diomedes carried it away.

Pallas.—A name of Minerva. She is said to have received the name because she killed a noted giant bearing that name.

Pan.—The god of shepherds, huntsmen, and the inhabitants of the country. He was in appearance a monster; he had two small horns on his head, and his legs, thighs, tail, and feet were like those of the goat. He was the inventor of the syrinx or shepherd's flute. Sudden fright without visible cause, a panic, was ascribed to Pan. The Romans identified Faunus with him.

Pandarus.—A son of Lycaon, who aided the Trojans in their war with the Greeks. He broke the truce which had been agreed on by the contending armies, and wounded Menelaus and Diomedes. He was at last killed by Diomedes.

Pandion.—King of Athens, father of Procne and Philamola, in whose reign Bacchus and Demeter are said to have come to Attica.

Pandora.—The first woman on earth. When Prometheus stole fire from heaven Zeus bade Hephæotus to make a woman from earth. Aphrodite gave her beauty, Hermes boldness and cunning, and each god gave some gift. Hermes took her to Epimetheus, who married her. In his house was a jar which he had been forbidden to open. Pandora was tempted by curiosity to open the lid, when all the evils incident to humanity poured out, and she had only time to shut the lid, preventing the escape of Hope.

Pantheon.—A celebrated temple at Rome, built by Agrippa in the reign of Augustus, and dedicated to all the gods.

Parcæ.—The Fates, powerful goddesses who presided over the birth and life of mankind. They were three in number, Clotho, Lachesis, and Atropos, daughters of Nox and Erebus, according to Hesiod, or, according to what he says in another place, of Jupiter and Themis.

Paris.—In Greek mythology, the second son of Priam, king of Troy, by Hecuba. His mother dreamed before his birth that she had brought forth a firebrand, which was interpreted to mean that he would cause the destruction of Troy. To prevent this the child was exposed on Mount Ida, where he was discovered by a shepherd, who brought him up as his own son. Here his grace and courage commended him to the favor of Œnone, a nymph of Ida, whom he married. At the marriage of Peleus and Thetis a dispute arose whether Hera, Athena, or Aphrodite was the most beautiful, and as such entitled to the golden apple. Paris was chosen judge, and decided in favor of Aphrodite, who had promised him the fairest woman in the world for his wife. Subsequently he visited Sparta, the residence of Menelaus, who had married Helena (or Helen), the fairest woman of the age, whom he persuaded to elope with him. This led to the siege of Troy, at the capture of which he was killed by an arrow.

Parnassos or **Parnassus.**—A mountain near Delphi, in Greece. It contained numerous caves, glens, and romantic ravines. It has two summits, one of which was consecrated to Apollo and the Muses, the other to Bacchus. It was anciently called Larnassos, from larnax, an ark, because Deucalion's ark stranded there after the flood. After the oracle of Delphi was built at its foot it received the name of Parnassos. It is celebrated as one of the chief seats of Apollo and the Muses, and an inspiring source of poetry and song.

Parthenope.—One of the sirens, whose dead body was washed ashore on the present site of Naples. She threw herself into the sea out of love for Ulysses.

Patroclus.—The gentle and amiable friend of Achilles in Homer's *Illiad*.

Pauguk.—Name given to the great power, death, in American Indian mythology.

Pau-Puk-Keewis.—In American Indian folk-lore a mischievous magician, who is pursued by Hiawatha, goes through a series of wonderful transformations in his endeavors to escape, and finally becomes an eagle.

Pax.—The goddess of peace, worshiped in Greece under the name Irene. Pax wears a crown of laurel, and holds in her hand the branch of an olive tree.

Peboan.—In America Indian folk-lore the personification of winter in form of a great giant who shook the snow from his hair and turned water into stone by his breath.

Pegasus.—The winged horse which sprung from the blood of Medusa. He ascended to the immortals and was used by Zeus to carry thunder and lightning. He was also the horse of the Muses.

Peleus.—King of the Myrmidons at Phthia in Thessaly. Having in conjunction with his brother Telamon murdered his half-brother Phocus, he was expelled by Æacus from Ægina and went to Thessaly. He was purified from the murder by Eurytion who gave Peleus his daughter Antigone in marriage, and a third part of his kingdom.

Pelias.—The name of the spear of Achilles, which was so large that none could wield it but the hero himself.

Pelion.—A high mountain in Thessaly celebrated in mythology. Near its summit was the cave of the Centaur Chiron. The giants, in their war with the gods, are said to have attempted to heap Ossa and Olympus on Pelion, or Pelion and Ossa on Olympus, in order to scale heaven. On Pelion the timber was felled with which the ship Argo was built.

Pelops.—Son of Tantalus and Dione, husband of Hippodamia, king of Pisa in Elis; from him the southern peninsula of Greece, or the Peloponnesus, derived its name. His father once invited the gods to a banquet, and killed Pelops and served him; they refused to taste the dish, and he was restored to life.

Penates.—The household gods of the Romans, in which were included the Lares.

Penelope.—The faithful wife of Ulysses, who being importuned, during his long absence, by numerous suitors for her hand, postpones making a decision among them until she shall have finished weaving a funeral pall for her father-in-law, Laërtes. Every night she secretly unravels what she has woven by day, and thus puts off the suitors till Ulysses returns.

Peri.—Peris are delicate, gentle, fairy-like beings of eastern mythology, begotten by fallen spirits. They direct with a wand the pure in mind the way to heaven. These lovely creatures, according to the Koran, are under the sovereignty of Eblis; and Mohammed was sent for their conversion, as well as for that of man.

Persa or **Perseis.**—A daughter of Oceanus, and wife of Helios (the sun), by whom she became the mother of Æetes, Circe, Pasiphaë, and Perses.

Perseis.—A name given to Hecate, as the daughter of Perses by Asteria.

Persephone.—The Greek name of Proserpine. Homer describes her as the wife of Hades (Pluto), and the formidable, venerable, and majestic queen of the shades, who rules over the souls of the dead, along with her husband.

Perseus.—Son of Zeus and Danaë. Polydectes, the king of Seriphos, to which Danaë and Perseus were borne in the boat in which they were set afloat when Perseus was born, treated them kindly, but, falling in love with Danaë, he dispatched Perseus to fetch the head of the Gorgon Medusa. Under the guidance of Athena and Hermes, he obtained the winged sandals, the helmet of Pluto which rendered him invisible, the magic wallet, and buckler which served as a mirror. By help of the mirror he cut off Medusa's head and escaped and went to Æthiopia, where he discovered and saved Andromeda. He afterward returned to Argos with her, and accidentally killed Acrisius, his grandfather, by hitting him with a quoit.

Phædra.—A daughter of Minos and Pasiphaë, who married Theseus. She became the mother of Acamas and Demophoön. She brought an unjust accusation against Hippolytus (a son of Theseus before she married him), who was killed by the horses in his chariot taking fright, causing him to be thrown under the wheels and crushed to death. On hearing this, Phædra acknowledged the falseness of the charge she had brought against Hippolytus, and hanged herself in despair.

Phaëton.—Son of Helios and Olymene. He obtained from his father permission to drive the chariot of the sun for one day. He was unable to control the horses, and they rushed so near the earth as to set it on fire. Zeus killed him with a thunder bolt and flung him into the river Eridanus. His sisters, for their excessive grieving, were changed into poplars.

Phaon.—Originally an old and ugly boatman of Mitylene, who received youth and beauty from Aphrodite for carrying her across the sea without accepting pay. Sappho is said to have fallen in love with him and to have leaped from the Leucadian rock on his slighting her. But, while Sappho is a historical character, Phaon is purely mythical.

Philoctetes.—A celebrated archer, friend and armor-bearer of Hercules, whose bow and poisoned arrows he inherited. On his voyage to Troy he was wounded in the foot either by a snake or one of his own arrows. The wound produced an intolerable stench, and Philoctetes was left alone in Lemnos. Subsequently he was sent for, as Troy could not be taken without the arrows of Hercules. At Troy he was cured, and killed, among others, Paris.

Philomela.—A daughter of Pandion, king of Athens. Her sister Procne had married Tereus, king of Thrace, and, being separated from Philomela, spent her time in great melancholy. Tereus treated Philomela with great cruelty. In poetry we frequently find the nightingale alluded to as Philomela.

Phœbe.—The goddess of the moon, and sister of Phœbus; a name of Diana. See *Diana*.

Phœbus.—The god of archery, prophecy, and music. He was the son of Jupiter and Latona, and brother of Diana (Artemis). He was god of the sun, as Diana, his sister, was the goddess of the moon.

Phœnix.—A fabulous bird described as being as large as an eagle; its head finely crested with a beautiful plumage, its neck covered with gold-colored feathers, its tail white, and its body purple or crimson.

Phryxus.—Son of Athamas and Nephele and brother of Helle. He was to be sacrificed to Zeus in consequence of the intrigues of his stepmother Ino. Nephele rescued her children, who rode away on the ram with the golden fleece. He arrived safely in Colchis, married Chalciope, daughter of Æetes, and sacrificed the ram to Zeus.

Phyllis.—A daughter of Sithon, or, according to some authorities, of Lycurgus, king of Thrace. She received Demophoön, who landed on her coasts on his return from the Trojan war, and fell in love with him, and he reciprocated her affection; but afterward proving faithless, Phyllis hanged herself, and, according to an old tradition, was changed into an almond tree.

Picus.—King of Latium, son of Saturn, who married Venilia. As he was hunting he was met by Circe, who became enamored with him. She changed him into a woodpecker.

Pierides.—A name given to the Muses, because they were born in Pieria, or, as some say, because they were supposed to be the daughters of Pierus, a king of Macedonia, who settled in Bœotia.

Pirene.—A celebrated fountain of Corinth, at which Bellerophon is said to have caught the horse Pegasus. It gushed forth from the rock in the Acrocorinthus, was conveyed down the hill by subterraneous conduits, and fell into a marble basin, from which the greater part of the town was supplied with water. The poets frequently used Pirenis in the general sense of Corinthian.

Pleiades.—Means the "sailing stars," because the Greeks considered navigation safe at the return of the Pleiades, and never attempted it after those stars disappeared. The Pleiades were the seven daughters of Atlas and Pleione, named Electra, Alcyone, Celæno, Maia, Sterope, Taygete, and Merope. They were transformed into stars, one of which (Merope) is invisible, out of shame because she alone married a human being. Some call the invisible star "Electra," and say she hides herself from grief for the destruction of the city and royal race of Troy.

Pluto.—He was a second brother of Jupiter, and received, as his portion in the division of empire, the infernal regions, or the world of shades. The chief incident in the history of Pluto is his seizure and abduction of Proserpine, who thereby became his wife, and the queen of the lower world.

Plutus.—The god of riches; was probably of allegorical rather than mythical origin, since his name in Greek is but the common term for wealth.

Pluvius.—"The sender of rain," a surname of Jupiter among the Romans, to whom sacrifices were offered during long-protracted droughts.

Podalirius.—The son of Æsculapius, and brother of Machaon, with whom he led the Thessalians of Tricca against Troy. He was, like his brother, skilled in the medical art.

Pollas.—Meaning "the goddess protecting the city." A surname of Athena at Athens, where she was worshiped as the protecting divinity of the Acropolis.

Polites.—A son of Priam and Hecuba, and father of Priam the younger. He was slain by Pyrrhus.

Pollux.—A son of Jupiter and Leda, brother to Castor.

Polydorus.—(1) King of Thebes, son of Cadmus and Harmonia, husband of Nycteis, and father of Labdacus. (2) Son of Priam and Hecuba. When Ilium was on the point of falling into the hands of the Greeks, Priam intrusted Polydorus and a large sum of money to Polymnestor, king of the Thracian Chersonesus.

Polyhymnia.—Daughter of Jupiter and Mnemosyne. One of the Muses, who presided over singing and rhetoric.

Polyphemus.—A celebrated Cyclops, son of Neptune and Thoösa, the daughter of Phorcys. He is represented as a monster with one eye in the middle of his forehead. Ulysses was his captive, but escaped by putting a firebrand in the monster's eye.

Polyxena.—Daughter of Priam and Hecuba, beloved by Achilles, and whose treachery led to the latter's death. Neoptolemus slew her on the tomb of his father.

Pomona.—A nymph at Rome, who was supposed to preside over gardens and to be the goddess of fruit trees.

Ponemah.—In American Indian mythology the name of the land of the future life, or the spirit-land.

Poseidon.—Called Neptune by the Romans; was the god of the Mediterranean Sea. He was a brother of Zeus (Jupiter), and Hades (Pluto), and it was determined by lot that he should rule over the sea. The palace of Poseidon was in the depth of the sea, near Ægæ, where he kept his horses with brazen hoofs and golden manes. With these horses he rides in a chariot over the waves of the sea, which become smooth as he approaches, while the monsters of the deep play around his chariot. Poseidon, in conjunction with Apollo, is said to have built the walls of Troy for Laomedon.

Priamus.—The last king of Troy, was son of Laomedon, by Strymo, called Placia by some writers. He married Arisba, whom he divorced in order to marry Hecuba, by whom he had a number of children, the most celebrated of whom were Hector, Paris, Deiphobus, Helenus, Laodice, and Cassandra. After he had reigned some time, Priam was anxious to recover his sister Hesione, who had been carried into Greece by Hercules, and to achieve this, he manned a fleet, the command of which he gave to his son Paris, who instead of obeying the

paternal instructions, carried away Helen, the wife of Menelaus, king of Sparta. This caused the Trojan war, which lasted for ten years. At the end of the war Priam was slain by Neoptolemus, the son of Achilles.

Prometheus.—Son of the Titan Iapetus and Clymene, and brother of Atlas, Menœtius, and Epimetheus. He is represented as the great benefactor of men in spite of Zeus (Jupiter). He stole fire from heaven in a hollow tube, and taught mortals all useful arts. In order to punish men, Zeus gave Pandora as a present to Epimetheus, in consequence of which diseases and sufferings of every kind befell mortals. He also chained Prometheus to a rock on Mount Caucasus, where in the daytime an eagle consumed his liver, which was restored in each succeeding night. Prometheus was thus exposed to perpetual torture; but Hercules killed the eagle and delivered the sufferer, with the consent of Zeus, who in this way had an opportunity of allowing his son to gain immortal fame.

Proserpina.—A daughter of Ceres and Jupiter, called by the Greeks Persephone. As she was gathering flowers Pluto carried her off to the infernal regions, where he married her. Ceres, having learned that her daughter had been carried away by Pluto, demanded of Jupiter that Pluto should be punished. As queen of hell, Proserpine presided over the death of mankind. She was known by the names of Hecate, Juno Inferna, Libitina, and several others.

Proteus.—A sea deity, son of Oceanus and Tethys, or, according to some writers, of Neptune and Phœnice. He had received the gift of prophecy from Neptune, but when consulted he often refused to give answers, and puzzled those who consulted him by assuming different shapes.

Psyche.—A beautiful maiden who excited the envy of Venus, who bade her son Cupid to inspire her with a love for the basest of mortals. Cupid fell in love with her himself and conveyed her away to a lonely spot where, unseen and unknown, he visited her, bidding her never seek to know who he was. Her curiosity overcame her and she lighted a lamp to look upon him as he slept. A drop of oil fell from the lamp and woke him, and he left her with reproaches. She wandered about seeking her lover, and finally fell into the power of Venus, who forced her to perform the severest and most humiliating services, in which she was secretly aided by Cupid. She at length overcame Venus' enmity, was made immortal, and reunited to Cupid. The word Psyche means the soul.

Pukwana.—The smoke from the calumet or peace-pipe among American Indians. The pipe was made from stone found near the headwaters of the Mississippi. A quarry, located near the mountains, was famous among the Indians, who had made the adjacent territory neutral ground. Here they came and provided themselves with pipes. To apply the stone to any other use than that of pipe-making would have been sacrilege in their mind. From the color, they even fancied it to have been made, at the great deluge, out of the flesh of the perishing Indian.

Puk-Wudjies.—The pygmies of American Indian folk-lore; little wild men of the woods.

Pygmalion.—A grandson of Agenor. He made a beautiful statue, which he fell so deeply in love with, that Venus, at his earnest petition, gave it life.

Pythia.—The priestess of Apollo and Delphi. She is represented as crowned with laurels and seated on a tripod similarly adorned and placed over a chasm whence arose a peculiar vapor.

Pylades.—Son of Anaxibia, sister of Agamemnon. His father was king of Phocis; and after the death of Agamemnon, Orestes was secretly carried to his father's court. Here Pylades contracted that friendship with Orestes which became proverbial.

Pyramus.—The lover of Thisbe, who, on account of her supposed death, stabbed himself under a mulberry tree. Thisbe, afterward, finding the body of her lover, killed herself on the same spot with the same weapon; and the fruit of the mulberry has ever since been as red as blood. See *Thisbe.*

Pyrrhus.—Known also as Neoptolemus, a son of Achilles, remarkable for his cruelty at the siege of Troy. He was slain at Delphi, at the request of his own wife, by Orestes.

Python.—A celebrated serpent sprung from the mud and stagnated waters which remained on the surface of the earth after the deluge of Deucalion. Apollo killed the monster.

Quirinus.—An Italian divinity, identified with Romulus as assimilated to Mars.

Rachaders.—In Indian mythology the second tribe of giants or evil genii, who had frequently made the earth subject to their kings, but were ultimately punished by Shiva and Vishnu.

Radegaste.—In Slavonic mythology a tutelary god of the Slavi. The head was that of a cow, the breast was covered with an ægis, the left hand held a spear, and a cock surmounted its helmet.

Ragnarök (twilight of the gods).—The day of doom, when the present world and all its inhabitants will be annihilated. Vidar and Vali will survive the conflagration, and reconstruct the universe. In Scandinavian mythology the belief is taught that after this time the earth or realm will become imperishable and happiness sure.

Rahu.—In Hindu mythology the demon that causes eclipses. One day Rahu stole into Valhalla to quaff some of the nectar of immortality. He was discovered by the Sun and Moon, who informed against him, and Vishnu cut off his head. As he had already taken some of the nectar into his mouth, the head was immortal; and he ever afterward hunted the Sun and Moon, which he caught occasionally, causing eclipses.

Rakshas.—Evil spirits in Hindu myths, who guard the treasure of Kuvera, the god of riches. They haunt cemeteries and devour human beings; assume any shape at will, and their strength increases as the day declines. Some are hideously ugly, but others, especially the female spirits, allure by their beauty.

Ravana.—According to Indian mythology, was fastened down between heaven and earth for 10,000 years by Siva's leg, for attempting to move the hill of heaven to Ceylon. He is described as a demon giant with ten faces.

Ravens.—According to an oracle from the gods, delivered at ancient Athens, ravens prognosticate famine and death because they bear the characteristics of Saturn, the author of these calamities, and have a very early perception of the malign influence of that planet.

Remores.—Birds which retard the execution of a project.

Rhadamanthus.—A son of Jupiter and Europa, brother of Minos, and king of Lycia. He was so renowned for his justice and equity, that, after death, he was made one of the three judges in the underworld.

Rhamnus.—A daughter of Nox, and otherwise known as Nemesis. The city of Rhamnus was under her special patronage.

Rhea.—Daughter of Uranus and Gæa, a goddess of the earth. By Cronos she became mother of Hera, Pluto, Poseidon, Zeus, and other divinities.

Rhesus.—Marched to the assistance of Troy. An oracle had declared that the city could not be taken if his horses drank the water of the Xanthus and fed on Trojan grass. Ulysses and Diomedes slew Rhesus and carried off his horses.

Romulus.—According to tradition, the founder of Rome. He was a son of Mars and Ilia, and was twin brother of Remus. The twins were thrown into the Tiber, but were saved and suckled by a she-wolf till they were found by Faustulus, a shepherd, who brought them up. Disputes arising between the brothers in reference to the building of the city, Romulus caused Remus to be slain.

Saga.—Goddess of history in Scandinavian mythology.

Salamander.—A fabulous animal supposed by the ancients to live in and have the quality of eating fire.

Salmoneus.—King of Elis, who, wishing to be thought a god, used to imitate thunder and lightning by driving his chariot over a brazen bridge, and darting burning torches on every side.

Salus.—The Roman goddess of health and prosperity.

Sarpedon.—A Lycian prince, son of Zeus and Laodamia. He was killed at the siege of Troy by Patroclus.

Saturnus.—The son of Cœlus, or Uranus, by Terra. It was customary to offer human victims on his altars till this custom was abolished by Hercules. He is generally represented as an old man bent with age, and holding a scythe in his right hand.

Saturnalia.—Feasts in honor of Saturn. Slaves were reputed masters during the three days they lasted; were at liberty to say what they pleased; and were served at table by their owners. These festivities were held annually toward the end of December.

Satyr.—A sylvan deity, or demigod, represented as a monster, half man and half goat; having horns on his head, a hairy body, with the feet and tail of a goat. They belong in the train of Bacchus, and have been distinguished for lasciviousness and riot. Although mortal, they are superior to the cares and sorrows of mortal life.

Scylla.—A maiden whose body the enchantress Circe changed below the waist into frightful monsters always barking. The old Greek story is that Circe was jealous of Scylla, and so deformed her by pouring the juice of poisonous herbs into the water in which she bathed. This sudden metamorphosis so terrified Scylla that she threw herself into the sea, and became the rocks which bear her name.

Sedrat.—The lotus tree which stands on the right-hand side of the invisible throne of Allah. Its branches extent wider than the distance between heaven and earth. Its leaves resemble the ears of an elephant. Each seed of its fruit incloses an houri; and two rivers issue from its roots. Numberless birds sing among its branches, and numberless angels rest beneath its shade.

Segesta.—A rural divinity who protected corn during harvest time.

Semele.—Daughter of Cadmus and Harmonia, at Thebes, and accordingly sister of Ino, Agave, Autonoë, and Polydorus. She was beloved by Zeus (Jupiter). Hera (Juno), stimulated by jealousy, appeared to her in the form of her aged nurse Beroë, and induced her to ask Zeus to visit her in the same splendor and majesty with which he appeared to Hera. Zeus warned her of the danger of her request; but as he had sworn to grant whatever she desired, he was obliged to comply with her prayer. He accordingly appeared before her as the god of thunder, and Semele was consumed by the lightning; but Zeus saved her child Dionysus (Bacchus), with whom she was pregnant. Her son afterward carried her out of the lower world, and conducted her to Olympus, where she became immortal under the name of Thyone.

Serapis or Sarapis.—An Egyptian divinity whose worship was introduced into Greece in the time of the Ptolemies. His worship was introduced into Rome together with that of Isis.

Seriswattee.—The Janus of Hindu mythology.

Sex.—Milton says that spirits can assume either sex at pleasure, and Michael Psellus asserts that demons can take what sex, shape, and color they please, and can also contract or dilate their form at pleasure.

Silenus.—A demigod who is represented generally as a fat old man riding on an ass, with flowers crowning his head.

Silvanus or Sylvanus.—A deity presiding over woods, forests, and fields. He is also called the protector of the boundaries of fields.

Sirens.—They were a sort of sea goddesses, said by some to be two in number, by others, three, and even four. They lured to destruction those who listened to their songs. When Ulysses sailed past their island he stopped the ears of his companions with wax, and had himself tied to the mast of his ship. Thus he passed with safety, and the sirens, disappointed of their prey, drowned themselves.

Sirius.—Known in mythology as the faithful dog of Orion, and set in the heavens as a bright star by Diana when she mourned the display of her archery which caused Orion's death.

Sisyphus.—Son of Æolus and Enaretta. After death he was condemned, in the infernal regions, to roll a stone to the summit of a hill, which always rolled back, and rendered his punishment eternal.

Siva.—The third of the Hindu triad of divinities, who, among a thousand names, bears also that of Mahadeva. The greatest confusion exists as to his attributes; now he is said to be the destroyer, and now the creative principle.

Sol.—The Greeks and Romans worshipped Apollo as the god and dispenser of light, and in view of this attribute named him Phœbus; yet they conceived another distinct divinity, distinguished from Apollo under the literal name applied to designate the sun, *viz.*, Sol. This name, therefore, was employed to express not only the actual body in the heavens, but also a supposed being having a separate and personal existence.

Somnus.—Son of Nox and Erebus. He was one of the infernal deities, and presided over sleep.

Specter of the Brocken.—Among German myths, a singular colossal apparition seen in the clouds, at certain times of the day, by those who ascend the Brocken, or Blocksberg, the highest peak of the Hartz mountains.

Sphinx or Sphynx.—A fabulous monster who ravaged Thebes until answer should be found to her enigmas. On Œdipus having explained all the riddles, the monster immediately flung herself into the sea and perished. The form of the so-called Egyptian sphinxes is that of a winged lion with a human head and bust, always in a lying attitude, whereas the Greek sphinxes are represented in any attitude which might suit the fancy of the poet.

Stentor.—One of the Greeks who went to the Trojan war. He was noted for the loudness of his voice, and from him the term "stentorian" has become proverbial.

Styx.—A celebrated river of the infernal regions. The gods held it in such veneration that they always swore by it, the oath being inviolable.

Surya.—The sun-god, according to the Hindu *Veda*, whose car is drawn by seven green horses, the charioteer being Dawn.

Syrinx.—An Arcadian nymph, who, being pursued by Pan, fled into the river Ladon, and at her own prayer was metamorphosed into a reed, of which Pan then made his flute.

Tantalus.—Son of Zeus, father of Pelops and Niobe. For his crimes on earth (some say the murder of Pelops) he was punished in the lower world by being placed in a lake, the waters of which receded whenever he tried to drink, while overhead hung branches of fruit which also receded whenever he tried to reach them. The English verb "tantalize" comes from his name.

Tarpeia.—Daughter of Tarpeius, who admitted the Sabines to the fortress on the Capitoline hill, tempted by their gold bracelets. As they entered they threw their shields upon her, crushing her to death. Part of the hill was called the Tarpeian rock from her.

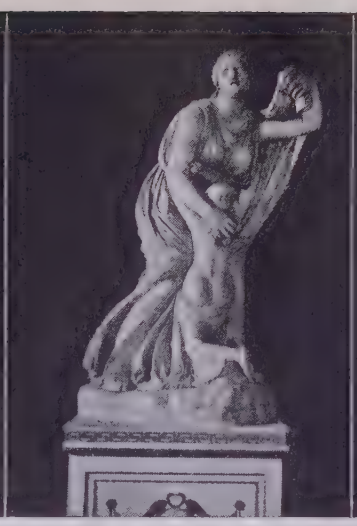
Tartarus.—A dark abyss under the earth in which the Titans were chained when their father feared their strength. The music of Orpheus penetrated its depths and caused the condemned to cease their toil. The name has come to signify an inner region of hell, to which the gods sent the exceptionally depraved.

Telemachus.—Son of Penelope and Ulysses. At the end of the Trojan war he went in search of his father, whom, with the aid of Minerva, he found. Aided by Ulysses, he delivered his mother from the suitors that beset her.

Terpsichore.—One of the Muses, daughter of Jupiter and Mnemosyne. She presided over dancing.



POSEIDON (NEPTUNE) FROM MELOS
National Museum, Athens



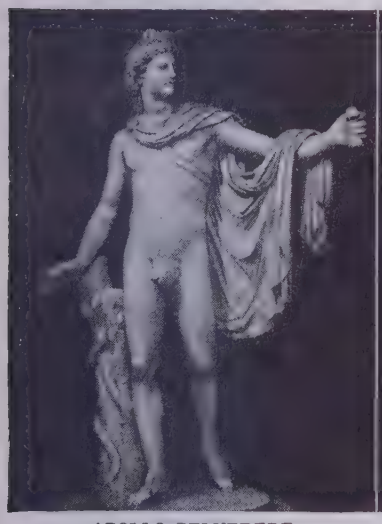
NIOBE AND HER YOUNGEST DAUGHTER
Uffizi, Florence



MELPOMENE, MUSE OF TRAGEDY
Louvre, Paris



APHRODITE (VENUS)
Vatican, Rome



APOLLO BELVEDERE
Vatican, Rome



ATHENA (MINERVA) FROM HERCULANEUM
National Museum, Naples



HERCULES, FARNESE
(Copy after Lysippus)
National Museum, Naples



SATYR
(Praxiteles)
Capitoline Museum, Rome



CENTAUR AND EROS (CUPID)
Louvre, Paris



GANYMEDE WITH EAGLE
National Museum, Naples



HERA (JUNO) BARBERINI
Vatican, Rome



HERMES (MERCURY) OF THE BELVEDERE
Vatican, Rome

Themis.—The daughter of Cœlus and Terra, and the goddess of law; according to some legends, married to Jupiter.

Thenus.—The goddess of justice and one of the most celebrated of the Titanides, or daughters of Uranus and Titæa. To her is ascribed the first uttering of oracles, and also the first introduction of sacrifices.

Thersites.—The ugliest of the Greeks that came to the siege of Troy. He was chastised by Ulysses for reviling Agamemnon and killed by Achilles for ridiculing him.

Theseus.—Son of Ægeus and Æthra. He killed Procrustes and other robbers and monsters, and the Marathonian bull. He also went to Crete, volunteering as one of the seven youths sent as tribute to be devoured by the Minotaur, which by the help of Ariadne he killed. He deserted Ariadne at Naxos and defeated the Amazons, whose queen he married. He took part in many exploits and finally invaded the lower regions to assist his friend Pirithous in carrying off Persephone. Here he was imprisoned until delivered by Hercules.

Thespian Maids, The.—The nine Muses. So called from Thespis, in Bœotia, near Mount Helicon, often called Thespia Rupes.

Thetis.—A sea deity, daughter of Nereus and Doris. She married Peleus, their son being Achilles, whom she plunged into the Styx, thus rendering him invulnerable in every part of his body except the heel by which she held him.

Thisbe.—A beautiful girl of Babylon, beloved by Pyramus. They lived in adjoining houses and conversed through a crack in the wall. They agreed upon a rendezvous at the tomb of Ninus, and Thisbe, who arrived first, fled from a lioness, which smeared with blood the veil she dropped. When Pyramus arrived he slew himself, supposing her to have been devoured by the lioness, and Thisbe, when she found her lover's body, also killed herself.

Thor.—In Scandinavian mythology the eldest son of Odin and Frigga; strongest and bravest of the gods. He launched the thunder, presided over the air and the seasons, and protected man from lightning and evil spirits. His wife was Sif ("love"); his chariot was drawn by two he-goats; his mace or hammer was called Mjolner; his belt was Megin-giord, and whenever he put it on his strength was doubled; his palace, Thrudvangr, contained 540 halls; Thursday is Thor's day. The word means "refuge from terror."

Titans.—The children of Uranus and Gæa. They deposed their father and raised their brother Cronus to the throne of the gods. They were overcome by Zeus, who confined them in a cavity below Tartarus.

Tithonus.—A son of Laomedon, king of Troy. He was so beautiful that Aurora became enamored of him, and persuaded the gods to make him immortal; but, as she forgot to ask for eternal youth, he became decrepit and ugly, and was, therefore, changed by her into a cicada.

Tityus.—A famous giant, son of Jupiter and Trera. His body was so vast that it covered nine acres of ground. He had dared to offer an insult to Juno and in punishment was chained like Prometheus while a vulture feasted on his liver. He is mentioned by Vergil.

Tomalin.—A valiant fairy knight, kinsman of King Oberon. Tomalin is not the same as "Tom Thumb," as we are generally but erroneously told, for in the "mighty combat" Tomalin backed Pigwiggen, while Tom Thumb seconded King Oberon. This fairy battle was brought about by the jealousy of Oberon, who considered the attentions of Pigwiggen to Queen Mab were "far too nice."

Trimurti.—The name of the Hindu triad of deities; or Brahma, Vishnu, and Siva united in one godhead, and spoken of as an inseparable unity.

Triptolemus.—Son of Oceanus and Terra, or, according to some authorities, son of Celeus, king of Attica, and Neæra. He was in his youth cured of a severe illness by Ceres, with whom he became a great favorite. She taught him agriculture, and gave him her chariot drawn by dragons, in which he traveled over the earth, distributing corn to the inhabitants.

Triton.—Son of Neptune, who dwelt with his father and mother in a golden palace in the bottom of the sea, or, according to Homer, at Ægae. Later writers describe him as riding over the sea on sea-horses or other monsters.

Trolls.—Dwarfs of Northern mythology, living in hills or mounds; they are represented as stumpy, misshapen, and humpbacked, inclined to thieving, and fond of carrying off children or substituting one of their own offspring for that of a human mother. They are called hill-people, and are especially averse to noise, from a recollection of the time when Thor used to fling his hammer after them.

Tros.—Son of Erichthonius and Astyoche, and grandson of Dardanus. He was married to Callirrhoë, by whom he became the father of Ilus, Assaracus, and Ganymedes, and was king of Phrygia. The country and people of Troy derived their name from him. He gave up his son Ganymedes to Zeus (Jupiter) for a present of horses.

Troy.—The capital of Troas, in Asia Minor. A city whose fame belongs entirely to the heroic age, and the siege of which by the Greeks, for the recovery of Helen, which lasted for ten years, is the subject of Homer's grand epic, and the most renowned legend of all antiquity.

Typhœus or Typhon.—A famous giant, son of Tartarus and Terra, who had a hundred heads. He made war against the gods, and was put to flight by the thunderbolts of Jupiter, who crushed him under Mount Ætna.

Tyr.—In Norse mythology, a warrior deity, and the protector of champions and brave men; he was also noted for his sagacity. When the gods wished to bind the wolf Fenrir, Tyr put his hand into the demon's mouth as a pledge that the bonds should be removed again. But Fenrir found that the gods had no intention of keeping their word, and revenged himself in some degree by biting the hand off. Tyr was the son of Odin and brother of Thor.

Ulin.—An enchantress, who had no power over those who remained faithful to Allah and their duty; but if any fell into error or sin, she had full power to do as she liked. Thus, when Misnar (sultan of India) mistrusted the protection of Allah, she transformed him into a toad. When the Vizier Horam believed a false report, obviously untrue, she transformed him also into a toad. And when the Princess Hemjunah, to avoid a marriage projected by her father, ran away with a stranger, her indiscretion placed her in the power of the enchantress, who transformed her likewise into a toad. Ulin was ultimately killed by Misnar, sultan of Delhi, who felled her to the ground with a blow.

Ulysses.—The famous king of Ithaca, son of Anticlea and Laërtes, or, according to some, of Sisyphus. He married Penelope, daughter of Icarius, on which his father resigned to him the crown. He went to the Trojan war, where he was esteemed for his sagacity. On the conclusion of the war he embarked for Greece, but was exposed to numerous misfortunes on his journey. In his wanderings, he with some of his companions, was seized by the cyclops Polyphemus, from whom he made his escape. Afterward he was thrown on the island of Æae, where he was exposed to the wiles of the enchantress Circe. Eventually he was restored to his own country, after an absence of twenty years. The adventures of Ulysses on his return from the Trojan war form the subject of Homer's *Odyssey*.

Urania.—One of the Muses, daughter of Jupiter and Mnemosyne. She presided over astronomy.

Utgard-Loki.—The chief of the giants, in Norse mythology.

Valhalla.—In Scandinavian mythology the palace of immortality wherein are received the souls of heroes slain in battle.

Valkyrs.—The battle-maidens of Scandinavian mythology. They were mounted on swift horses and held drawn swords. They rushed into battle and selected those destined to death and conducted them to Valhalla. The number of Valkyrs differs greatly according to the various mythologists and ranges from three to sixteen, the greater part of them, however, naming only nine.

Varuna or Vrauna.—In Hindu mythology, the deity who presides over the waters of the ocean corresponding with *Neptune* of classic mythology.

Venus.—The goddess of beauty, and mother of love. She attained but little importance until she was identified with the Greek goddess Aphrodite. It is said that she sprang from the foam of the sea, and was carried to heaven, where all the gods admired her beauty. Jupiter gave her in marriage to Vulcan, but she intrigued with some of the gods, notably with Mars, their offspring being Hermoine, Cupid, and Anteros. She became enamored of Adonis, which caused her to abandon Olympus. Her contest for the golden apple, which she gained against her opponents Juno and Minerva, is a prominent episode in mythology. She had numerous names applied to her, conspicuous among which may be named Anadyomene, under which cognomen she is distinguished by the picture representing her as rising from the ocean, by Apelles. Sparrows and doves were customarily yoked to her chariot; her girdle inspired all hearts with passion for the wearer; and her son Cupid was her attendant and minister. The myrtle was sacred to her. Her favorite residence was at Cyprus.

Vesta.—The ancient goddess of fire. Æneas was believed to have brought the eternal fire of Vesta from Troy, along with the images of the Penates; and the prætors, consuls, and dictators, before entering upon their official functions, sacrificed, not only to the Penates, but also to Vesta at Lavinium. In the ancient Roman house, the hearth was the central part, and around it all the inmates daily assembled for their common meal (cœna); every meal thus taken was a fresh bond of union and affection among the members of a family, and at the same time an act of worship of Vesta, combined with a sacrifice to her and the Penates.

Vestal.—One of the virgin priestesses who, among the Romans, were consecrated to the service of Vesta. Their employment was to take care that the sacred fire of Vesta was not extinguished. The vestal took a solemn vow of chastity for the thirty years of her service; the dreadful punishment of a violation of which was that she should be buried alive in a subterranean vault near the Collina gate.

Victoria or Victorina.—The mother of Victorinus; after whose death she was hailed as the mother of camps; and coins were struck bearing her effigy.

Vidar.—The Scandinavian god of wisdom, noted for his thick shoes, and not infrequently called "The god with the thick shoes."

Virtus.—The Roman personification of manly valor. She was represented with a short tunic, her right breast uncovered, a helmet on her head, a spear in her left hand, a sword in the right, and standing with her right foot on a helmet.

Vishnu.—In Hindu mythology one of the great deities of the Hindu triad, ranking as the *Preserver*, after Brahma, the *Creator*, and before Siva, the *Destroyer*. It is believed that he has appeared on earth nine times, his tenth *avatar*, or incarnation, having yet to come.

Vulcan.—The son of Jupiter and Juno, who was lamed (according to some legends) by being kicked out of Olympus by Jupiter, and falling in Lemnos. He was the god of fire, and he forged the thunderbolts of his father in the forges of Ætna. Venus was married to him. But the legends differ very much in their account of him.

Wenonah.—Mother of Hiawatha and daughter of Nokomis. Nokomis was swinging in the moon, when some of her companions, out of jealousy, cut the ropes, and she fell to earth "like a falling star." That night was born her first child, a daughter, whom she named Wenonah. In due time, this lovely daughter was wooed and won by Mudjekeewis (the West Wind), and became the mother of Hiawatha. The false West Wind deserted her, and the young mother died.

Woden.—The Anglo-Saxon form of the Scandinavian god Odin; Wednesday is called after him.

Wooden Horse.—Vergil tells us that Ulysses had a monster wooden horse made by Epeos after the death of Hector, and gave out that it was an offering to the gods to secure a prosperous voyage back to Greece. By the advice of Sinon, the Trojans dragged the horse into Troy for a palladium; but at night the Grecian soldiers concealed therein were released by Sinon from their concealment, slew the Trojan guards, opened the city gates, and set fire to Troy.

Xanthos.—The marvelous, though mythical, horse of Achilles.

Yama.—In the *Rigveda*, the name of the god who rules in heaven over the blessed—the Manes, Fathers, or Pitris—and is therefore called king.

Yggdrasil.—In Scandinavian mythology the great ash tree which binds together heaven, earth, and hell. Its branches extend over the whole earth, its top reaches heaven, and its roots hell. The three nornas, or fates, sit under the tree, spinning the events of man's life.

Zem.—The sacred well of Mecca. According to Arab tradition, this is the very well that was shown to Hagar when with Ishmael in the desert. It is supposed to be in the heart of the city of Mecca.

Zephyr.—The personification of the west wind, described by Hesiod as a son of Astræus and Eos. Zephyrus and Boreas are frequently mentioned together by Homer, and both dwelt together in a palace in Thrace.

Zeus.—Called Jupiter by the Romans, the greatest of the Olympian gods, was a son of Cronus (Saturnus), and Rhea. When Zeus and his brothers distributed among themselves the government of the world by lot, Poseidon obtained the sea, Hades the lower world, and Zeus the heavens and the upper regions, but the earth became common to all. According to Homer, Zeus dwelt on Mount Olympus in Thessaly, which was believed to penetrate into heaven itself. He is called the father of gods and men. He is the supreme ruler, who with his counsel manages everything; the founder of law and order, whence Dice, Themis, and Nemesis are his assistants. Everything good, as well as bad, comes from Zeus; according to his own choice he assigned good or evil to mortals; fate itself was subordinate to him.

Zohak.—The giant of Persian mythology who keeps the "mouth of hell." He was the fifth of the Pischdadian dynasty, and was a lineal descendant of Shedâd, king of Ad. He murdered his predecessor, and invented both flaying men alive and killing them by crucifixion. The devil kissed him on the shoulders, and immediately two serpents grew out of his back and fed constantly upon him He was dethroned by the famous blacksmith of Ispahan, and appointed by the devil to keep hell-gate.

Zohara.—An oriental queen of love, and mother of mischief. When Harut and Marut were selected by the host of heaven to be judges on earth, they judged righteous judgment till Zohara, in the shape of a lovely woman, appeared before them with her complaint. They then both fell in love with her and tried to corrupt her, but she flew from them to heaven; and the two angel-judges were forever shut out.

Zosteria.—A surname of Minerva. She had two statues under that name in the city of Thebes, in Bœotia. The word signified girt, or armed for battle, words synonymous among the ancients.

Zulzul.—According to Chinese mythology the sage whose life was saved in the form of a rat by Gedy, the youngest of the four sons of Coreud. Zulzul gave him, in gratitude, two poniards, by the help of which he could climb the highest tree or most inaccessible castle.

PRONUNCIATION OF MYTHOLOGICAL TERMS

KEY TO PRONUNCIATION

ā̈te, climāte, fâre, an, ămount, ärt, åpt, final; ēke, êvent, bĕnd, decĕnt, hēr; īre, fĭll; tōld, ŏnly, ôrdeal, hŏp, cŏnnote; fūse, ûnify, spûrn, cûp, circŭs, mo͞on, co͞ols.

MYTHOLOGICAL PRONUNCIATIONS

Achates (ȧ-kā′tēz)
Achelous (ȧ-kĕ′lŭs)
Acheron (ȧ-kĕ′rŏn)
Achilles (ȧ-kil′ēz)
Actaeon (ak-tē′ŏn)
Admetus (ȧd-mē′tŭs)
Adonis (ȧ-dō′nĭs)
Adrammelech (a-dram′me-lech)
Ægeus (ē′jē-ŭs)
Ægis (ē′jĭs)
Ægle (ē′glē)
Ælurus (ē-lu′rus)
Æneas (ē-nē′ȧs)
Æolus (ē′ō-lŭs)
Æsculapius (ĕs′kû-lā′pĭ-ŭs)
Æsir (ē′sĭr)
Æson (ē′sŏn)
Agamemnon (ăg′ȧ-mem′nŏn)
Ahriman (ä′rĭ-mȧn)
Ajax (ā′jȧks)
Alastor (ȧ-lăs′tŏr)
Alcestis (ăl-sĕs′tĭs)
Alecto (ȧ-lek′to)
Alectryon (ȧ-lek′tri-ŏn)
Alfadur (ȧl-fä′dŭr)
Alpheus and Arethusa (ăl′fē-ŭs and ăr′ē-thū′sȧ
Al Sirat (as-sē-rät′)
Althaea (ăl-thē′a)
Amazons (ȧm′ȧ-zŏn)
Ambrosia (ăm-brō-′zhī-ȧ)
Ammon (ăm′ŏn)
Amphion (ăm-fī′ŏn)
Ancaeus (ăn-sē′ŭs)
Anchises (ăn-kī′sēz)
Andromache (ăn-drŏm′ä-kē)
Andromeda (ăn-drŏm-′ē-dȧ)
Angurvadel (än′gur-vä′dĕl)
Antaeus (ăn-tē′ŭs)
Antigone (ăn-tĭg′ō-nē)
Aphrodite (ăf′rō-dī′tē)
Apis (ā′pĭs)
Apollo (ȧ-pŏl′ō)
Arachne (ȧ-răk′nē)
Ares (ā′rēz)
Arethusa (ăr′ē-thū′sȧ)
Argo (är′gō)
Argonauts (är′gō-nôt)
Argus (är′gŭs)
Aridane (ăr′ĭ-ăd′nē)
Arion (ȧ-rī′ŏn)
Aristaeus (ăr′ĭs-tē′ŭs)
Artemis (är′tē′mĭs)
Asgard (ăs′gärd)
Asir (ā′sĭr)
Astarte (ăs-tär′tē)
Astraea (ăs-trē′ȧ)
Astyanax (ăs-tī′a-năks)
Atalanta (ăt′ȧ-lăn′tȧ)
Ate (ā′tē)
Athena (ȧ-thē′nȧ)
Atlas (ăt′lăs)
Atreus (ā′trē-ŭs)
Atropos (ăt-′rō-pŏs)
Augean Stables (ô-jē′an)
Augurs (ô′gŭr)
Aurae (ô′rē)
Aurora (ô-rō′rȧ)
Avatar (ăv-ȧ-tär′)
Avernus (ȧ-vûr′nŭs)
Azazel (ȧ-zā-′zĕl)
Azrael (ȧz′rā-ĕl)

Baal (bā′ăl)
Bacchus (băk′ŭs)
Balder (bôl′dēr)
Balmung (bäl′mo͞ong)
Banshee (bän′shēe)
Barguest (bär′guest)
Beelzebub (bē-ĕl′zē-bŭb)
Befana, La (lä bā-fä′nȧ)
Bellerophon (bĕ-lĕr′ō-fŏn)
Bellona (bĕ-lō′nȧ)
Belphegor (bĕl′phē-gor)
Belus (Bē′lŭs)
Berenice (bĕr′ē-nī-sē)
Bertha (bûr′thä)
Bifrost (bē′frēst)
Bilskirnir (bĕl′skēr′nēr)
Bona Dea (bōnȧ dēa)
Boreas (bō′rē-ăs)
Bragi (brä′gē)
Brahma (brä′mȧ)
Briareus (brī-ā′rē-ŭs)
Byblis (bĭb′lĭs)

Concordia (kŏn-kôr′dĭ-ȧ)
Consentes Dii (kŏn-sĕn′tēz dī′ī)
Cophetua (co-phet′u-ȧ)
Corybantes (kŏrĭ′-băn′tēz)
Cressida (krĕs′ĭ-dȧ)
Creusa (krē-ū′sȯ′)
Cronos (krō′nos)
Cupid (kū′pĭd)
Cybele (sĭb′ē-lē)
Cyclops (sī′klŏps)
Cyparissus (sĭp-ȧ-rĭs′ŭs)
Cytherea (sĭth′ēr-ē′ȧ)
Dag (dăg)
Dagon (dā′gŏn)
Daikoku (dī′kō′ko͞o)
Danae (dăn′ā-ē)
Danaides (dȧ-nā′ĭ-dēz)
Daphne (dăf′nē)
Daphnis (dăf′nĭs)
Deiphobus (dē-ĭf′ō-bŭs)
Delius (dēlĭ-ŭs)
Delphi (dĕl′fī)



The majestic columns of the Temple of Zeus with the Acropolis in the distance, Greece.
Publishers Photo Service.

Cacus (kā′kŭs)
Cadmus (kăd′mŭs)
Calliope (kȧ-lī′ō-pē)
Callisto (kȧ-lĭs′tō)
Calypso (kȧ-lĭp′sō)
Camilla (kȧ-mil′ō)
Canopus (kă-nō′pŭs)
Capitolium (kăp′ĭ-tō′lė-ŭm)
Cassandra (kȧ-săn′drȧ)
Cassiopeia (kăs′i-ō-pē′yȧ)
Castor (kȧs′tēr)
Cecrops (sē′krŏps)
Centaurs (sĕn′tôrs)
Cephalus (sĕf′a-lŭs)
Cerberus (sûr′bēr-ŭs)
Ceres (sē′rēz)
Chaos (kā′ŏs)
Charon (kā′rŏn)
Charybdis (kȧ-rĭb′dĭs)
Chimaera (kĭ-mē′rȧ)
Chiron (kī′rŏn)
Chloris (klō′rĭs)
Cimmerians (sĭ-mē′rĭ-ănz)
Circe (sûr′sē)
Clio (klē′ō)
Clotho (klō′thō)
Cluricaune (klo͞o′rĭ-kôn)
Clytemnestra (klī′tĕm-nĕs′trȧ)
Clytie (klī′tĭ-ē)
Cocytus (kō-sī′tŭs)
Colchis (kōl′kĭs)
Comus (kō′mŭs)

Demeter (dēmē′tĕr)
Dēmogorgon (dē′mō-gôr′gŏn)
Deucalion (dû-kā′l-ĭŏn)
Diana (dī-ăn′ȧ)
Dido (dī′dō′)
Diomed (dī′ō-mĕd)
Dionedes (dī′ō-mē′dēz)
Dione (dī-ō′nē)
Dionysus (dī′ō-nĭ′sŭs)
Dis (dĭs)
Discordia (dĭs-kôr′dĭ-ȧ)
Dodona (dō-dō′nȧ)
Donar (dō′när)
Doris (dō′rĭs)
Draupnir (droup′nēr)
Droma (drō′mȧ)
Dryads (drī′ȧds)
Durga (do͞or′gä)
Echidna (ē-kĭd′nȧ)
Echo (ĕk′ō)
Egil (ē′gil)
Egipans (ē′jĭ-pan)
Egis (ē′jĭs)
Elbegast (ĕl′bĕ-gȧst)
Elberich (ĕl′bēr-ĭk)
Electra (ē-lĕk′trȧ)
Elf (ĕlf)
Elivagar (ĕl-i-vȧg′är)
Elysium (ē-lĭsh′ĭ-ŭm)
Embla (ĕm′blȧ)
Empyrean (ĕm-pĭ-rē′ăn)
Enceladus (ĕn-sĕl′ȧ-dŭs)

Endymion (ĕn-dĭm′ĭ′-ŏn)
Enyo (ē-nī′ō)
Eolus (e′o-lus)
Eos (ē′ŏs)
Epaphus (ep′ȧ-fŭs)
Erebus (ĕr′ē-bŭs)
Eris (ē′rĭs)
Eros (ē′rŏs)
Erytheia (ĕr′ĭ-thē′ȧ)
Eumenides or Ernyes ′ (û-mĕn′ĭ-dēz) or (ē-rĭn′ĭs)
Eumorlpus (ŭ-mŏ′rl pŭs)
Euphobus (ū-fôbŭs)
Euphrosyne (û-frŏs′ĭ-nē)
Europa (û-rō′pȧ)
Eurydice (û-rĭd′ĭ-sē)
Eurylochus (ū-ril′ŏ-kŭs)
Eurystheus (û-rĭs′thūs)
Eurytos (û-rī′tŏs)
Evadne (ē-văd′nē)
Excalibur (ĕ x-cal′i-bur)
Fafnir (fäv′nēr)
Fauni (fô′nī)
Faunus (fô′nŭs)
Felicitas (fē-lĭs′ĭ-tăs)
Feng (fĕng)
Flora (flō′rȧ)
Fortuna (fŏr-tū′nȧ)
Freki (frek′ē)
Frey (frī)
Freyja (frī′ȧ)
Frigga (frĭg′gä)
Frodi (fro′di)
Furies (fū′rĭz)
Fylgie (fēl′gye)
Gabriel (gā′brĭ-ĕl)
Gaea (jē-ȧ)
Galatea (găl′ä-tē′ȧ)
Ganesa (gȧ-nā′sȧ)
Ganymede (găn′ĭ-mē′dē)
Garm (gärm)
Genii (jē′nĭ-ī)
Gerda (gĕrdȧ)
Geri (gēr′ē)
Geryon (jē′rĭ-ŏn)
Giallar (gyäl′lar)
Ginungagap (gĭn′no͞on′gä-gäp)
Gladsheim (gläts′hăm)
Glasir (glä′sir)
Glendoveer (glĕn′dō-vēr′)
Gnome (nōm)
Gorgons (gôr′gŏnz)
Grida (grē′dȧ)
Gripir (grē′pir)
Hades (hā′dēz)
Hamadryades (hām a′-drī′ă-dēs)
Harmonia (här-mō′nĭ-ȧ)
Hebe (hē′bē)
Hecate (hĕk′ȧ-tē)
Hector (hĕk′tēr)
Hecuba (hĕk′û-bȧ)
Heimdall (hām′dăl)
Helena (hĕl′ē-nȧ)
Helicon (hĕl′ĭ-kŏn)
Helios (hē′lĭ-ŏs)
Helle (hĕl′ē)
Hellen (hĕl′ĕn)
Hera (hē′rȧ)
Heraclidae (hĕr′ȧ-klī′dē)
Hercules (hûr′kû-lēz)
Hermes (hûr′mēz)
Hermione (hēr-mī′ŏ-nē)
Hero (hē′rō)
Hesperides (hĕs-pĕr′ĭ-dēz)
Hesperus (hĕs′pēr-ŭs)
Hestia (hĕs′tĭ-ȧ)
Hippocrene (hĭp′ŏ-krēn)
Hippolyte (hĭ-pŏl′ĭ-tē)
Hippolytus (hĭ-pŏl′ĭ-tŭs)
Hniikar (nē′kar)
Hippomenes (hĭ-pŏm′ĕ-nēz)
Hodeken (hä′dē-ken)
Hoder (hō′der)

Hofvarpnir (hŏf-värp'nĭr)
Honir (hŏn'ĭr)
Horae (hō'rē)
Horus (hō'rŭs)
Hugin (hū'gĭn)
Hugon (hū-gon')
Hyacinthus (hy-ȧ-sĭn'thŭs)
Hyades (hī'ȧ-dēz)
Hydra (hī-drȧ)
Hygeia (hī-jē'yȧ)
Hymenaeus (hī'mĕn-ē-ŭs)
Hyperboreans (hī'pēr-bō'rē-ănz)
Hyperion (hī-pē'rĭ-ŏn)
Hypermnestra (hī'pērm-nes'trȧ)
Hypsipyle (hip-sip'i-lē)
Iacchus (ī-ăk'ŭs)
Iapetos (ī-ăp'ē-tos)
Icarius (ĭk'ȧ-rē-ŭs)
Icaros (ĭk'ȧ-rŏs)
Idaean (i-dae'an)
Idomeneus (i-dom 'e-nŭs)
Idun (ē'doon)
Ifing (ē'fing)
Ilus (ī'lŭs)
Inachus (ĭn'ȧ-kŭs)
Indra (ĭn'drȧ)
Ino (ī'nō)
Io (ī'ō)
Ion (ī'ŏn)
Iphicles (ĭf'ĭ-clēs)
Iphigenia (ĭf'ĭ-jē-nī-a)
Irene (ī-rē'nē)
Iris (ī'rĭs)
Irus (ī'rŭs)
Isis (ī'sĭs)
Israfil (iz'rȧ-fēl)
Ithaca (ĭth'ȧ-cȧ)
Ithuriel (ĭ-thū'rĭ-el)
Ixion (ĭk-sī'ŏn)
Jamshid (jäm-shēd')
Janus (jā'nŭs)
Jason (jā'sŭn)
Jinn (jĭn)
Jord (yôrd')
Juggernaut (jŭg'ĕr-nôt)
Juno (jōō'nō)
Jupiter (jōō'pĭ-tēr)
Kama (kä'mȧ)
Kami (kä'mē)
Kelpie (kĕl'pĭ)
Kobold (kō'bōld)
Krishna (krĭsh'nȧ)
Kronos (krō'nos)
Lab (lȧb)
Lachesis (lȧk'ē-sĭs)
Ladon (lā'dŏn)
Laeding (lā'ding)
Laertes (lā-ûr'tēs)
Laocoon (lā-ŏk'ō-ŏn)
Laodomia (lā-ŏd'ȧ-mĭ'a)
Laomedon (lā-ŏm'ē-dŏn)
Lapithae (lăp'ĭ-thē)
Lares (lā'rēz)
Latinus (lȧ-tī'nŭs)
Latona (lȧ-tō'nȧ)
Leander (lē-ăn'dēr)
Leda (lē'dȧ)
Lemures (lĕm'û-rēz)
Lethe (lē'thē)
Liber (lī'ber)
Libertas (lĭ-bûr-tȧs)
Lif (lēf)
Lilith (lil'ith)
Lofn (lōfn)
Lofua (lō'fū)
Loki (lō'kē)
Lorelei (lō'rē'lī)
Lotis (lō'tĭs)
Lubins (lū'bĭns)
Lucifer (lū'sĭ-fēr)
Lucina (lû-sī'nȧ)
Lud (lŭd)
Luna (lū'nȧ)
Lycomedes (lĭk-ō-mē'dēz)
Mammon (mam'mon)
Manes (mān'nēz)
Mani (mā'nī)
Manitou (măn'i-tō)
Mars (märz)
Marsyas (mär'sĭ-ăs)
Medea (mē-dē'ȧ)
Medusa (mē-dū'sȧ)
Megaera (mē-jē'rȧ)
Megin-giord (mā'gin-gyērd)
Meleager (mĕl'ē-ā'jēr)
Melissa (mē-lĭs-ȧ)
Melpomene (mĕl-pŏm'ē-nē)
Melusina (mĕl'û-sē'na)
Memnon (mem'nŏn)
Menelaus (mĕn-ē-lā'ŭs)
Mentor (mĕn'tŏr)
Mephistopheles (mĕf-ĭs-tŏf'ē-lēz)
Mercury (mûr'kû-rĭ)
Mermaids (mûr'mādz)
Merope (mĕr'ō-pē)
Merops (mē'rŏps)
Meru (mā'rōō)
Midas (mī'dȧs)
Midgard (mĭd'gärd)
Mimir (mē'mĕr)
Minerva (mĭ-nûr'vȧ)
Minos (mī'nŏs)
Minotaur (mĭn'ō-tôr)
Mithras (mĭth'răs)
Mjolnir (myĕl'nir)
Mnemosyne (nē-mŏs'ĭ-nē)
Moloch (mō'lŏk)
Momus (mō'mŭs)
Moirae (mor'rē)
Morpheus (môr'fē-ŭs)
Musae (mū-sae')
Myrmidons (mûr'mĭ-dŏnz)
Naiad (nā'yăd)
Naraka (năr'ȧ-kȧ)
Narcissus (när-sĭs'ŭs)
Nausicaa (nô-sĭk'ā-ȧ)
Nectar (nĕk'tär)
Neleus (nē'lūs)
Nemean (nē-mē'ăn)
Nemesis (nĕm'ē-sĭs)
Neoptolemus (nē-ŏp-tol'ē-mŭs)
Neptune (nĕp'tūn)
Nereus (nē'rūs)
Nessus (nĕs'ŭs)
Nestor (nĕs'tŏr)
Nickar (nē'kar)
Nidhogg (nēd'hŏg)
Niflheim (nĕv'l-hām)
Ninus (nī'nŭs)
Niobe (nī'ō-bē)
Niord (nyērd)
Nisus (nī'sŭs)
Nix (nĭx)
Nokomis (nō-kō'mĭs)
Nornir (nôr'nĭr)
Nox (nŏks)
Nymphae (nĭm-fē'ȧ)
Oceanides (ō-shē-ăn'ĭ-dēz)
Oceanus (ō-sē'ȧ-nŭs)
Odhaerir (od-hē'rir)
Odin (ō'dĭn)
Odur (ō'dōōr)
Odysseus (ō-dĭs'ūs)
Œdipus (ĕd'ĭ-pŭs)
Ogres (ō-gērs)
Olympia (ō-lĭm'pĭ-ȧ
Olympus (ō-lim'pŭs)
Omphale (ŏm'fȧ-lē)
Ops (ŏps)
Orestes (ō-rĕs'tēz)
Orion (ō-rī'ŏn)
Orithyia (ôr-ĭ-thē-ȧ)
Orlog (ôr'log)
Ormuzd (ôr'mŭzd)
Orpheus (ôr'fē-ŭs)
Osiris (ō-sī'rĭs)
Ossa (ŏs'ȧ)
Pactolus (păk-tō'lŭs)
Palaemon (pȧ-lē'mŏn)
Palamedes (păl-ȧ-mē'dēz)
Pales (pā'lēz)
Palladium (pă-lā'dĭ-ŭm)
Pallas (păl'ȧs)
Pan (păn)
Pandarus (păn'dȧ-rŭs)
Pandion (păn-dī'ŏn)
Pandora (păn-dō'rȧ)
Pantheon (păn-thē'ŏn)
Parcae (pär'sē)
Paris (păr'ĭs)
Parnassus (pär-năs'ŭs)
Parthenope (pär-thĕn'ō-pē)
Patroclus (pȧ-trō'klŭs)
Pau-Puk-Keewis (pô-pŭk-kē'wĭs)
Pax (păks)
Pegasus (pĕg'ȧ-sŭs)
Peleus (pē'lūs)
Pelias (pē'lĭ-ăs)
Pelion (pē'lĭ-ŏn)
Pelops (pē'lŏps)
Penates (pē-nā'tēz)
Penelope (pē-nel'ō-pē)
Persephone (pēr-sĕf'ō-nē)
Perseus (pûr'sūs)
Phaedra (fē'drȧ)
Phaeton (fā'ē-tŏn)
Phaon (fā'ŏn)
Philoctetes (fĭl-ok-tē-tēz)
Philomela (fĭl-ō-mē'lȧ)
Phoebe (fē'bē)
Phoebus (fē'bŭs)
Phoenix (fē'niks)
Phryxus (frĭ'sus)
Phyllis (fĭl'ĭs)
Picus (pī'kŭs)
Pierides (pī-ĕr'ĭ-dēz)
Pleiades (plē'yȧ-dēz)
Pluto (plōō'tō)
Plutus (plōō'tus)
Pluvius (plōō'vĭ-ŭs)
Podalirius (pōd-ȧ-lir'ē-ŭs)
Polias (pol'ĭ-ŏs)
Polites (pŏ-lī'tēz)
Pollux (pŏl'uks)
Polydorus (pŏl-ĭ-dō'rŭs)
Polyhymnia (pŏl-ĭ-hĭm'nĭ-ȧ)
Polyphemus (pŏl-ĭ-fē'mŭs)
Polyxena (pō-lĭk'sē-nȧ)
Pomona (pō-mō'nȧ)
Poseidon (pō-sī'dŏn)
Priamus (prī'ȧ-mus)
Prometheus (prō-mē'thŭs)
Proserpina (prō-sûr'pĭ-nȧ)
Proteus (prō'tūs)
Psyche (sī'kē)
Pygmalion (pĭg-mā'lĭ-ŏn)
Pythia (pĭth'ĭ-ȧ)
Pylades (pĭl'ȧ-dēz)
Pyramus (pĭr'ȧ-mŭs)
Pyrrhus (pĭr'ŭs)
Python (pī'thŏn)
Quirinus (kwī-rī'nŭs)
Ragnarok (rŏg'nȧ-rûk')
Rahu (rä'hōō)
Rakshas (rŭk'shŏs)
Rhadamanthus (răd'ȧ-măn'thŭs)
Rhamnus (răm'nŭs)
Rhea (rē'ȧ)
Rhesus (rē'sŭs)
Romulus (rŏm'û-lŭs)
Saga (sä'gȧ)
Salamander (săl'ȧ-măn-dĕr)
Salmoneus (săl-mō'nŭs)
Salus (sā-lŭs)
Sarpedon (sär-pē'dŏn)
Saturnus (sa-tûr'nŭs)
Saturnalia (săt'ŭr-nā'lĭ-ȧ)
Satyr (sāt'ĕr)
Scylla (sĭ-le'ȧ)
Semele (sĕm'ē-lē)
Serapis (sē-rā'pĭs)
Silenus (sī-lē'nŭs)
Silvanus (sĭl-vā'nŭs)
Sirens (sī'rĕnz)
Sirius (sĭr'ĭ-ŭs)
Sisyphus (sĭs'ĭ-fŭs)
Siva (sē'vȧ)
Sol (sŏl)
Somnus (sŏm'nŭs)
Sphinx (sfinks)
Stentor (stĕn'tŏr)
Styx (stĭks)
Surya (sōōr'yȧ)
Syrinx (sĭr'inks)
Tantalus (tăn'tă-lŭs)
Tarpela (tär-pē'yȧ)
Tartarus (tär'tȧ-rŭs)
Telemachus (tē-lĕm'ȧ-kŭs)
Terpsichore (tûrp-sĭk'ō-rē)
Themis (thē'mĭs)
Thersites (thēr-sī'tēz)
Theseus (thē'sūs)
Thespian (thĕs'pĭ-ăn)
Thetis (thē'tĭs)
Thisbe (thĭz'bē)
Thor (thôr)
Titans (tī'tănz)
Tithonus (tĭ-thō'nŭs)
Tityus (tĭt'ĭ-ŭs)
Tomalin (tŏm'ȧ-lĭn)
Trimurti (trē-mōōr'tē)
Triptolemus (trĭp-tŏl'ē-mŭs)
Triton (trī'tŏn)
Trolls (trōlz)
Troy (troi)
Typhoeus (tī-fō'ŭs)
Tyr (tēr)
Ulysses (û-lĭs'ēz)
Urania (û-rā'nĭ-ȧ)
Utgard-Loki (ōōt'gard Lō'kē)
Valhalla (văl-hăl'ȧ)
Valkyrs (vâl-kĭrz)
Varuna (vär'ŏo-nȧ)
Venus (vē'nŭs)
Vesta (vĕs'tȧ)
Vestal (vĕs'tăl)
Victoria (vĭc-tō'rĭ-ȧ)
Vidar (vē'där)
Virtus (vûr'tŭs)
Vishnu (vĭsh'nōō)
Vulcan (vŭl'kăn)
Wenonah (wē-nō'nȧ)
Woden (wō-dĕn)
Yama (yä'mȧ)
Yggdrasil (ĭg'drȧ-sĭl)
Zem (zĕm)
Zephyr (zĕf'ĕr)
Zeus (zūs)
Zosteria (zos-tē'rē-a)
Zulzul (zŭl-zŭl)

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FIRST AMERICAN FLAG IN BATTLE

BOOK IV

HISTORY

What History Is.—History is a chart of humanity and its development. It shows in broad lines the direction and conditions of human progress and degeneration; the possibilities and limitations, the growths and inhibitions of human life. It is not merely the record of battles and of the births and deaths of rulers. It is the biography, perhaps one might say the autobiography, of the human race. "It must include all the races and tribes of men within its scope," says Lord Bryce, "and it must bring all these races and tribes into a connection with each other such as to display their annals as an organic whole. . . It is also the task of Universal History so to trace the march of humanity as to display the relations which each part of it bears to the others; to fit each tribe and race and nation into the main narrative."

Importance of the Study of History.—A query of Coleridge was whether history is but the sternlight of a ship, lighting only the wake behind it. It is one of the tragedies of humanity that it has learned so little from its own past. "Study the past to discern the future," said Confucius. It can be said that about the only light that can be shed upon the future is that cast by the records of the past. So one might say, following the figure of Coleridge, that history is not the sternlight of a ship; it is the headlight of the locomotive.

History the Beginning of Culture.—A comprehensive view of the past is the background of any intelligent picture of the present. "History is one," said the late Lord Acton, and that is the first thing to know in the process of culture. To comprehend the historic unity, and to see the world whole are the essential foundations of a cultured person, who is not content to drift like a fly on a chip, on a planet of whose past he knows nothing, and in an age which gives no account of itself. Without a knowledge of the past, human beings would be staggering in the dark toward a denser darkness into which no eye could penetrate.

The study of humanity seen whole, on the earth seen whole; of those events which have causes and are causes, and of this interrelation of cause and effect; of the reaction of man and his environment: this study is one of the noblest of all human tasks.

The Field of History.—There is no sharp dividing line between ancient times and pre-historic antiquity; but wherever that line is to be drawn, it is somewhere near the appearance of the phonetic alphabet which the Phœnicians devised, probably from the Minoan text, and which Cadmus brought to Greece. The alphabet appears after civilizations have risen and fallen and human development has reached far stages; but history begins with the alphabet in which the essential records were enshrined and accurately kept. There are other sources of history than in the written record; as in coins, monuments, ruins and tombs.

Authentic tradition begins to take on vague and indefinite content somewhere about the period of 5000 B. C., but the accurate historic chronicle (and there is yet little accuracy) begins with the written record which began to take shape only after Cadmus brought the alphabet from Phœnicia to Greece, so late, that the epics of Homer had been handed down for generations and learned "by heart," till Pisistratus, who became tyrant of Athens, 560 B.C., edited the first critical text of Homer, one of the most important literary tasks ever accomplished.



THE WORLD 3000 B.C.

Physical Foundations of History.—To the ancients the earth presented itself as a flat disk surrounded by water. The known world was to them a great island. The Hebrews, Babylonians and Greeks held this notion as expressed in Homer; Hesiod thought that the earth was held midway between the sky and the infernal regions. About 500 B. C. Hecatæus of Miletus wrote the first geography and drew the map of the world showing the two continents, Europe and Asia, with the River Oceanus surrounding them. Eratosthenes, the Greek philosopher, 250 years later, conceived the earth as a sphere, and found the true method of ascertaining its shape, estimating its circumference at 29,000 miles. Greek geography developed with the colonization of the Mediterranean, the travels of Herodotus, the expedition of the "Ten Thousand," and Alexander's conquest of India. About 50 B. C., Strabo mapped the world as far as Ireland, which he placed north of England.

A Twofold Presentation of History.—Our department of history presents a series of illustrations which follow in chronological order to give the younger students a picture of the succession of events in America. The reference articles include both American and foreign history, treated topically and alphabetically arranged for easy consultation by more mature students.

FIRST AMERICAN FLAG IN BATTLE

The painting reproduced on the opposite page depicts one of the most stirring episodes in American history. A small body of Americans under Colonel Gansevoort were holding Fort Schuyler in the Mohawk Valley of New York in August, 1777. A much larger force of British under General St. Leger laid siege.

The garrison was without a flag when the enemy appeared, but their pride and ingenuity soon supplied one in conformity to the pattern adopted by the Continental Congress. Shirts were cut up for the white stripes, bits of scarlet cloth were joined for the red, and the blue ground for the stars was composed of an old cloth coat belonging to Captain Abraham Swartwout who was then in the fort. Before sunset this curious mosaic-work standard, as precious as the most beautifully wrought flag of silk and needlework, was floating over one of the bastions.

During the siege occurred one of the bloodiest battles of the war. During this battle the garrison made a sally under Colonel Willet and fell furiously on that portion of the camp occupied by Sir John Johnson and his Royal Greens. The enemy was driven back and a large quantity of clothing, blankets, stores and camp equipage, together with important papers and five British standards, were taken. It was probably during this sally that the first American flag received its baptism of fire in an actual battle. After their return to the fort the five British standards were raised in full view of the enemy upon the flagstaff beneath the crudely made American standard, and the whole garrison, mounting the parapets, made the forest ring with three loud cheers. Of this event the artist, Mr. E. Percy Moran, has made a typically heroic battle picture, one that should appeal to the patriotism of every American.

Abyssinia.—Abyssinia, with an area of 432,000 square miles and a population of from three to eight millions, is an inland country lying between the Anglo-Egyptian Sudan and the Red Sea. The main rivers are the Black and the Blue Nile, through which Abyssinia (or Ethiopia), has made its main contribution to civilization in the water and soil they have carried annually down the Nile. The three months of incessant rainfall in the Abyssinian mountains each year has kept Egypt alive for seventy centuries. Egypt has been intimate with Ethiopia since an early date, and even with Jerusalem, which the Queen of Sheba visited in the time of Solomon, and whose son by him was the first Menelik. The Abyssinians are a black people, with a perverted form of Christianity left over from the monkish invasion of the Dark Ages. The Portuguese entered the country two years before the discovery of America, looking for a lost kingdom in the Far East. They kept a footing for 150 years, but since, as before, the history of the country is a ghastly record of internecine wars. In 1870 Italy, seeking lands to colonize, occupied some of the Red Sea coast but met with disastrous defeat at Adowa in 1896. There is scarcely any manufacturing in Abyssinia, and commerce is in the hands of foreigners. Italy declared war against Abyssinia in 1935. In 1936 the Italians completed their conquest of the country and Abyssinia became a part of Italy.

Adams' (John) Administration—(1797-1801).

I. Political Parties, Formation of.—The Fathers of the American Nation can be roughly divided into two groups as to a state of mind and a way of thinking: particularists and nationalists; these represented the centrifugal and the centripetal, the organizing and the dissenting forces of society. More or less this distinction has lasted to this day, and the recognition of this fact furnishes the clue to the most of American History. Hamilton led the forces who wanted an adequate national government, before and after the Constitution was adopted; Jefferson led those who, as he once said, wanted for a national government but a committee with a few clerks. These stood for state rights and theoretical anarchy sufficiently modified to secure individual rights, especially in property. Jefferson always availed himself of Hamilton's interpretation of the Constitution when it was in the interests of his schemes, and where he did he was generally right, but he objected vigorously to Hamilton and his allies availing themselves of this principle. The rift between the two groups widened into two political parties, known as the Federals and Republicans, but the Republicans stood really for democracy which at that time was a term of reproach and it was the Federalist party that worked for a Republican form of government.

II. Napoleon Averts War Between France and the United States.—Upon the ratification of the Jay Treaty, France broke off relations with the United States, sending Pinckney, who was then our Representative at Paris, back home. One of the first things Adams had to do upon accession to office was to send a Commission to Paris consisting of Elbridge Gerry (Mass.), John Marshall (Virginia), and Charles C. Pinckney the rejected minister, on a mission to preserve the peace. Agents of the French government met them with a demand for a bribe which was refused, upon which they were directed to leave France. There was an immediate change of feeling in this country and preparations were made for war with Washington as Commander-in-Chief, and the building of a navy was begun with vigor and hostilities had already begun when Napoleon came into power and restored peace with the United States.

III. Washington Becomes the Capital.—George Washington died at his home at Mount Vernon in 1799, (Dec. 14th), and in less than a year, Nov. 22, 1800, Congress met in Washington for the first time. As a compromise between Hamilton and Jefferson on the matter of the assumption of the state debts by the national government, the District of Columbia was formed out of an area of ten miles square taken from Maryland and Virginia, in which the City of Washington was begun as Capital of the nation.

IV. Alien and Sedition Laws (1798).—These laws were passed by the Federalists in 1798 and were very unpopular among those who stood out for individual rights against the national security. The Alien law authorized the President to order any persons of foreign birth who might be deemed injurious to the nation to be deported immediately, while the Sedition laws imposed fines and imprisonment upon those who should combine to oppose any measure of the government or publish malicious articles or make scandalous attacks upon the President or Congress. They were designed to preserve the unity and dignity of the national government.

Adams' (John Quincy) Administration (1825-1829).

I. Internal Improvements.—Adams and Clay stood together on the matter of internal improvements, while a reaction was in progress among the southern leaders including Calhoun, who had advocated them. The South was reverting to the narrow views of earlier liberal principles holding



THE WORLD 700 B.C.

that no national improvements should be made at the public expense.

II. Erie Canal.—The Erie Canal, completed in 1825, was the means of turning western traffic into the lakes and rivers by means of this canal into the Atlantic Ocean through the Hudson River. The perseverance of DeWitt Clinton, after whom the canal was derisively called 'Clinton's Ditch', was largely responsible for its construction.

III. First Railroad (1826).—In 1826 the first American Tramway was built at Quincy, Mass., two miles long, and was used to carry stone for building the Bunker Hill Monument. Steam was not used in this country on a railroad until 1829, horse power being employed for a time on the first railroad offering passenger service, the Baltimore & Ohio, chartered in 1827.

IV. "Tariff of Abominations" (1828).—So was the tariff of 1828 called by the South, again on account of cotton. The southerners held that the burden fell upon them, because 600,000 bales of cotton exported annually to foreign countries brought in return nearly every article used in the South. It was twelve years before (1816), when Jefferson and Calhoun had advocated a tariff.

V. Death of Jefferson and Adams.—Thomas Jefferson and John Adams had been political enemies, then friends, and came at last to agree freely upon the issues of the day. During the administration of his son, John Adams died on the fourth of July, 1826, and almost at the same hour Jefferson died, each thinking the other was alive. The American people were profoundly impressed with the singular coincidence.

Africa.—Africa is the second in size of the great land divisions of the globe. With the most startling contrasts of desert and tropical growth, it covers an area of 11,262,000 square miles, exclusive of the islands which properly belong to it. Africa is the southwestern extension of the vast Eurasian land mass, connected by the Isthmus of Suez, ninety miles wide. Not long ago, geologically speaking, this connection was much wider, covering even since Pliocene times, the Red Sea and the Gulf of Aden, while the continent was connected with Europe through Spain. The two continents now approach each other to within nine miles at the Strait of Gibraltar. The African coast line is almost destitute of bays, harbors and peninsulas, and contrasts sharply with that of Europe, which with an area of one-third that of Africa, has a coast line 1,000 miles longer. In these features Africa resembles South America, while Europe is like Asia and North America.

The Congo Basin is larger than that of the Mississippi. It drains an elevated area of 1,170,000 square miles, and has next to the Nile and the Amazon, the largest volume of water of any river in the world. The Basin of Lake Chad lies in the center of the continent, the lake of that name having no outlet. The Nile is the only living stream that crosses the great arid region from the Atlas Mountains in the Northwest of Africa to Baluchistan. Two-thirds of this dry land lies west of Suez and is called the Desert of Sahara. All the Great African Rivers, excepting the Niger, rise in the mountains in the south and southeastern parts of the continent: the Nile, Zambezi, Congo, Orange and minor streams. The Nile alone drains a basin of 1,600,000 square miles.

North Africa has been the scene since the earliest age of predatory wars, and the whole of North Africa has been at different times under the sway of many different tribes and nations. The Egyptian wars, the Carthaginian wars, the Mohammedan and Roman wars are but a few of the principal conflicts. After the slave trade was abolished by the English in the last century, societies were organized for the exploration of the Dark Continent. The most notable discoveries were made by the missionary, David Livingstone, who spent 23 years in exploration. Henry M. Stanley who was sent out under the auspices of the New York Herald, found the missing missionary. It was before this period that the French conquered Algeria, one of the conquests made for civilized and not for selfish purposes, the undertaking having been made for the purpose of ridding the Mediterranean of the Barbary pirates. A period of settlement, conquest and development followed. The Suez Canal was finished and opened in 1869, making unnecessary the trip around the Cape of Good Hope on the way from Europe to India, China and Australia. In 1875 British bankers managed to buy a controlling interest (177,000 shares) of the canal stock which gave the British control. For 300 years there had been no such scramble for territory as was made by Europe in Africa about the middle of the nineteenth century. The Germans, Portuguese, Belgians, Italians, French, Dutch and English acquired large territories. The discovery of gold in South Africa brought many English, then the discovery of diamonds drew more. The Dutch, or Boers, forced the foreigners to pay taxes and to render military services, but did not allow them a voice in government. It was another case of taxation without representation, and in addition, compulsory fighting without the franchise. This was the issue of the South African war in which the English were right as they were wrong when the American Colonies fought for less than this. Many Americans sympathized with the Boers who were far more tyrannical than the British had ever been with their ancestors. Through this war the British won domination of the south of the Dark Continent, but immediately gave the people self-government, which they had been denied by the Boers.

The North and South Temperate Zones are now occupied largely by the whites, but the masses of the population of 140,000,000 are of the black races. These include some of the largest and some of the smallest of mankind, the Wahuma of Ruanda, for example often standing six feet six inches in height, while other races are pygmies.

Black Africa lies south of the Sahara Desert. Cut off from the rest of the world by the sand reaches on the north and by the ocean on the other three sides, the black man has dwelt in undisturbed seclusion for uncounted ages. Until modern times the whites have been coming and going, but recently the country has been divided among European nations and now only Abyssinia and Liberia remain independent states. One of the most important elements in the future of this continent is negro fecundity. To this has to be added the fact that the white peoples have introduced measures of sanitation and civilization generally that are rapidly increasing the numbers of the blacks. Now Islam threatens to rule Africa through proselyting among the blacks, among whom they are making many converts. The real danger is that the Arab will make of the negro an arm with which to wield the scimiter and make Africa Mohammedan, and "the executor of sinister adventures."

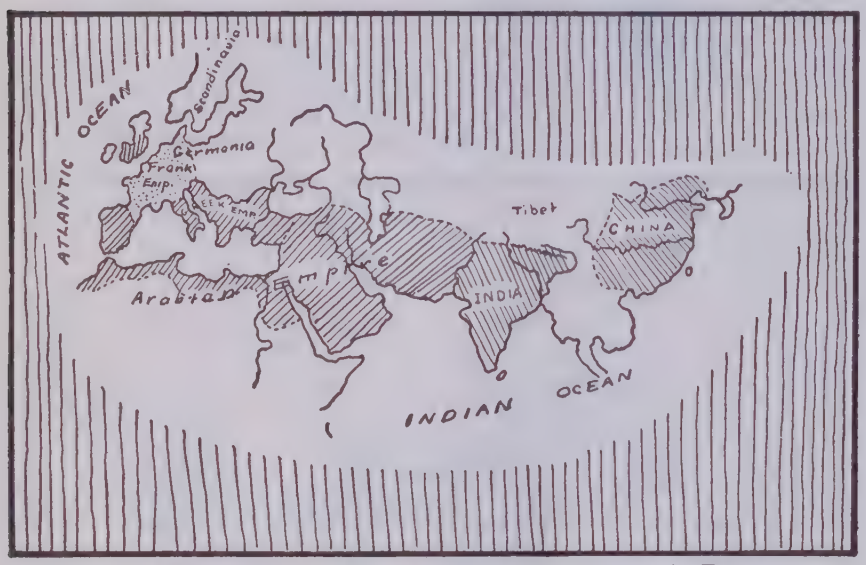


THE WORLD ABOUT 300 A.D.

Agriculture Department Authorized by Congress (1889).—In 1889 the Department of Agriculture was authorized by Congress and has since been so enlarged, that it is now without doubt the most useful scientific organization in the world. In addition to the 3,000 specialists in all parts of the world, working out the problems of modern science as applied to the needs of the American farmer, there is a vast organization devoted to the social, cultural and economic interests of farm life which have already revolutionized the status of the farmer in this country and aided him in every civilized land on earth. As one example of its influence, the Bureau of Entomology alone covering the field of "bugs," with its affiliated activities among the states, is saving the American farmer $500,000,000 a year.

Alaskan Purchase.—The territory of Alaska belonged to Russia by right of discovery and in the nineteenth century its management was in the hands of the Russian-American Company, who seemed unable to make the enterprise pay. Consequently Russia did not greatly value this possession.

During the Civil War, the danger of attack by England through Canada had made the United States feel the need of a military stronghold in the northern Pacific. Through the influence of Seward, the United States purchased Alaska from Russia in 1867 for $7,200,000. It was used first only as a military station, but later the discovery of gold and the utilization of the rich resources of timber, furs and fisheries turned it into a commercial center as well.



THE WORLD ABOUT 800 A.D.

Algeria.—Lying between the Mediterranean Sea on the north and the Sahara Desert on the south is Algeria. It is a French colony, occupying the central position of the old Barbary states. In ancient times the Numidians were settled in the eastern part of what is now Algeria; the Moors (Mauri) in the western. Thus the history of Algeria, or old Numidia, down to the time of the Turkish dominion, is inseparable from that of Tunisia and Morocco. Under Roman dominion at the close of the Punic Wars, the people of these countries enjoyed prosperity and a high degree of civilization. In 440 A. D. the Vandal conquest resulted in a return to barbarism. Oriental civilization was introduced with the Mohammedan conquest in the seventh and eighth centuries. In 1492, the Moors and Jews, who were driven out of Spain, settled in Algeria, and proceeded to revenge themselves in acts of piracy. Algiers was taken by Spain in 1509, but Horuk Barbarossa, a Turkish pirate chief, drove out the Spaniards in 1515 and established a system of military despotism and piracy. European nations strove in vain to check the outrages of the Barbary pirates. In 1815 a United States fleet, under Stephen Decatur, stopped their depredations on American ships, while about the same time Algiers was bombarded by the British. Piracy continued until 1830 when the French took possession of Algiers, and then Algeria. For seventeen years the Arabs resisted and the Berbers struggled against the force of European civilization. In 1901 France completed the conquest, and in 1912 Tunisia, Algeria and Morocco were united under French dominion. Since French occupation trade has increased and a railway line parallel to the coast has been built. The government, instituted by France, consists of a governor general and an advisory council of government, but the legislative power lies with the French chamber. In 1911, the population of Algeria was 5,563,828, of which 795,522 were Europeans. Among the natives, the independent and industrious Berbers predominate, living in the southern oases and throughout the mountain ranges, like the nomadic Arabs of the plains and steppes to the west, they worship Mohammed, but they do not, like the latter, practice polygamy. In Algeria are to be found French, Tunisians, Moroccans, Spaniards, Italians, Turks, Negroes, Moors and Algerian Jews. Theirs is a country of steep and rocky coasts, few good harbors, agricultural lands used for farming and grazing, mineral wealth and great forests.

America.—400 years before the birth of Christ, Plato wrote an account of a great island called Atlantis which was said to be larger than Africa or Asia. Other ancient writers mentioned it as a mysterious land where strong and powerful people lived and which, because they were so wicked, was sunk into the sea. Navigators dared not journey far to the west for fear that they would encounter impediments strewn in the ocean. Although these accounts are only fables, it is believed by students of history that the Phœnicians, or Canaanites, became acquainted on their sea voyages with the continent of America. The ships of Phœnicia were known to all ancients, and people marveled because they risked the waters beyond the Pillars of Hercules, now known as Gibraltar. Evidences of visits by the ancients are to be found in New England, as for example, the Writing Rock, at Dighton, Massachusetts, containing hieroglyphic inscriptions similar to those found in Asia, and the famous Skeleton in Armor, discovered at Fall River, which closely resembles drawings taken from the sculptures unearthed in the rock-walled cities of Mexico, so markedly like ruins of ancient Asia. There seems to be ground for believing that long before the Christian era an Asiatic race traveled through North America and settled in Mexico. The ruins of the Mound Builders in the West, especially in the Mississippi Valley, covering acres of territory, are other sources of speculation. Historians have formulated theories around them, some saying that these strange builders were descendants of crews from Japan who were driven across the Pacific; others, and more reasonably, that they were an Asiatic race, the Shepherd Kings, who drove their flocks from Central India to Egypt, built the Pyramids, wandered back to Siberia where mounds like those in the Mississippi Valley are to be found. It is possible that they then went north to Behring Strait, at that period very narrow, crossed into Alaska, journeyed south to Mexico, Central America and Peru. As for the inhabitants that Columbus found in the West Indies, who were spread throughout the continent, it is not likely that they descended from the ancient people who are supposed to have preceded them, but more probably they are related to the Mongolian emigrants who came across Behring Straits.

In the eleventh century the Northmen had established a colony in Greenland, and it is probable that prior to the fifteenth century they had seen New England which they knew by the name of Vinland. Following the voyage of Columbus, in 1492, in which he reached the West Indies, Spanish patronage made possible a number of other expeditions during which most of the islands and the continental shores of the Caribbean Sea and the Gulf of Mexico were explored. These were still supposed to be connected with the Asiatic continent until the expeditions of Vespucius, Jacques and Coelho (1501-1503) established the belief that there really was a new world. Cortez (1519-1521) and Pizarro (1531-33) succeeded in their conquest of Mexico and Peru, and explored much of the Pacific coast; Drake (in 1577-1580) reached the northern coast of California. The eastern coast was explored by Spanish adventurers only as far north as Chesapeake Bay; the rest was left for the French and English after the decline of Spanish power in Europe. As for the colonizing of America by European nations—the Spanish settled in both North and South America; the French in the St. Lawrence region particularly, but also to a great extent in the West Indies; the English on the Atlantic coast at strategic points among the islands and along the shore from Florida to the Kennebec; the Portuguese confined themselves chiefly to Brazil. Holland and Sweden made fair showings at first, but the Swedish colonies along the Delaware and the Hudson were soon overcome by Dutch conquest (1655), and the Dutch were in turn overwhelmed by England in 1664. The colonial period in United States history records the progress of the western adventurers in carving a nation from the rough elements of the new world. The struggles with the native Indians, the competition of France and England, after the weakening of Spanish power, over the land and resources, the Seven Years' War between the French and the British, resulting in the practical exclusion of the French, and finally the uprising of the colonists against the restrictions of the mother country and their successful fight for independence—each is a chapter in the story that is typically American—a story

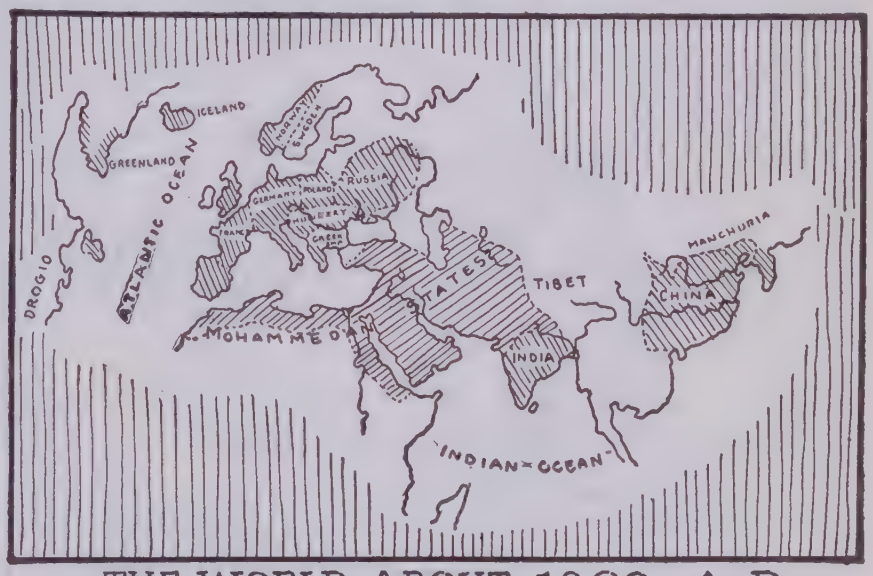
of development founded on a basic idea of initiative and freedom. Similar stories are true of other groups in the Americas, and today all the independent states, north and south, are republican in government, Brazil being the last to become a republic, in 1889.

The name "America" was first employed to designate the entire known western world by Mercator in 1541. It really consists of the two geologically independent sections, already mentioned, extending from the Arctic Ocean to the Isthmus of Tehuantepec in Mexico, in the West and Florida in the East. The northern section is connected with the southern by the two great parallel ridges, Central America and that territory including Haiti, Porto Rico, and the lesser Antilles, joining at the eastern side. Originally the name "America" was used only for central Brazil, in honor of Americus Vespucius, the Italian, who claimed he discovered it. Without Greenland and the Archipelago its area is 16,000,000 square miles. Two-thirds of the continent is north of the equator, and in each great section may be found diversified vegetation and all varieties of climate. In Central America, a region of the trades or easterly winds, the climate is that of a semi-tropical island, with enormous rainfall. All of tropical South America is within the trade-wind belt, where the rainfall makes possible the vast forests of the Amazon basin and the volume of the river and its tributaries. Zoologically considered, South America includes both Central America and the Antilles, and the plains of Mexico, east, west and south of the plateau of Anahuac, but the animal life of South America and North America proper have almost no common features.

North America may be divided into a few great geological units, the Canadian or Cambrian shield, the Coastal plain, the Eastern highland, the Great Central lowland, the Western highland, the Rocky Mountains, the Inter-mountain Plateau, whose southern, higher part is called the Colorado Plateau, the Great Basin, the Columbia lava plateau, and the Pacific border ranges. The Andes Mountains in South America correspond to the Rockies in North America, the Alleghany-Appalachian system in the United States to the Brazilian chain. In each country there is also a lateral range beginning in the north center, turning first south and then east, till it ends somewhat north of the eastern vertical chain, and in each it is the oldest part of the country.

No other drainage systems can equal those of America. The Amazon River alone sends more water to the ocean than the eight largest rivers of Asia together. The Mississippi carries more water than all the streams of Europe. There are more than 100,000 miles of navigable water in the St. Lawrence, Mississippi, Amazon, Orinoco, and Plata systems together, and there are 89,000 square miles of water in the five Great Lakes of North America alone. The Gulf of Mexico bears the same relation to the northern continent as the Argentine plain to the southern; both lie in the same position with regard to the eastern and western mountain chains, but one is submerged. The boundless mineral resources of both Americas are centered along the entire western coast, of which the great continental backbone is the Andes. The treasures in these mountains are practically untouched, though the world's entire supply of bismuth comes from Bolivia, the largest amount of thorium from Brazil, and the deposits of nitrate in Chile supply nearly all the world's consumption of nitric acid. Platinum comes from Columbia, tin from Bolivia, diamonds from Brazil, which is second in their production only to South Africa. Great deposits of coal and iron are to be found in the Andes, vanadium especially in Peru, tungsten in Bolivia, Argentine and Brazil, sulphur in Chile, and asphalt in Trinidad and Bermudez. In North America a somewhat different story may be told of a rapid and reckless exploitation of natural resources until conservation has come to be a word calling attention to the danger of a diminishing supply in the face of extravagant consumption. Faith in the great stretches of undeveloped land and little explored mountain ranges of the northwest incline many to optimism in viewing the North American situation regarding resources. And yet those who see farthest anxiously deplore the unlimited consumption of necessities like oil, coal and timber, foretelling the inevitable fate of a people who "waste their substance in riotous living." The record of the years since the first colonists settled in North America has been a record of discovery and development, made possible by the vast forests, the fertile soil, the powerful rivers, the oil wells, the deposits of coal, iron, gold, silver and minerals too numerous to mention, and the waterways to the sea. The Canadian Northwest, where development has been slower, now presents a field as attractive as, though of a different nature from, that of South America. Its mines, fisheries, forests, fields, the industries of the coast, like shipbuilding, are developing steadily, and its progress in agriculture alone is attracting world-wide attention.

American Federation of Labor.—The Federation of Organized Trades and Labor Unions of the United States and Canada was formed at Pittsburgh in 1881, when a number of separate labor unions joined together with the purpose of fighting the all-powerful Knights of Labor. The Knights of Labor was then the largest organization of workmen in the country and it seemed to be injuring the cause of labor by its autocratic methods. It ruled its members, rather than bringing them freedom. The new Federation aimed to be more democratic, to allow the workman and his local union to be supreme and the national organization was only incidental. This movement met with ready response among other dissatisfied workmen, and in 1886 the convention of independent trade unions added their numbers to it, under the new name, American Federation of Labor. Its membership grew with increasing rapidity and it was finally able to drive the Knights of Labor from the field. Today the American Federation, with its membership of more than 3,000,000, is the largest and most powerful labor organization in this country. It has maintained its democratic methods—the local union is still the dominant factor and the national unit only serves to further co-operation, increase membership and issue propaganda. The American Federation represents the more conservative element in the labor population and stands for trade unionism as opposed to industrial.



THE WORLD ABOUT 1200 A.D.

American Revolution.—The English colonists, who, in the middle of the eighteenth century, occupied the eastern strip of the North American continent (see map), had been largely ignored by England and allowed to control their own affairs. Therefore, when, about 1770, George III. tried to exert new authority in the form of taxes, the colonists refused to pay these taxes. George III. sent troops to force obedience. The colonists opposed these troops, and thus began the American Revolution, in 1775.

A Confederate Congress of delegates from the different states established independent government and organized a revolutionary army under George Washington. On July 4, 1776, the Declaration of Independence proclaimed the thirteen colonies a free nation and the colonists determined not to cease fighting until this freedom was acknowledged.

The English sent over large numbers of troops, among whom were 17,000 Hessians (hired German soldiers). The colonists were aided by the voluntary services of the Frenchmen, Lafayette and De Kalb, the German Baron von Steuben and the Polish generals Kosciusko and Pulaski. In 1778 France acknowledged the independence of the colonies and sent a fleet to their aid.

For the first two years of the war the colonists suffered disastrous defeats; but after the capture of a British army at Saratoga in 1777, Washington gained control of the northeast, and with the surrender of the British General Cornwallis at Yorktown, Virginia, in 1781, the south was won.

By the Treaty of Paris in 1783 between England and the colonies the independence of the colonies was guaranteed.

Antarctica.—Antarctica is the continent that surrounds the South Pole. From that it stretches, astronomically speaking, to the Antarctic Circle. Like the northern part of Greenland it is ice covered, but lying at high altitudes, the South Pole itself being 10,200 feet high. It is covered with snow well up to the coast line, which is often sheer precipitous cliff of granite covered with ice, where the rock forms show continental characteristics.



THE WORLD ABOUT 1500 A.D.

Little is known of the continent, but three regions have been studied, the largest being Victoria Land whose known coast extends from the 160th to the 170th meridian east, and from about latitude 70 to 80 degrees. The sea wall is nowhere less than 4,000 feet high and contains coal deposits in sandstone and granite. Mountain peaks, some of them extinct volcanoes, lie back and rise to an altitude of 15,000 feet. The summer is colder and the winter is warmer than the North Polar regions, the coldest known weather registering minus 67 degrees Fahrenheit. Dawson City has registered much colder weather. No land animals, so far as known, exist; many varieties of birds nest on the beaches, among which are the petrel and the penguin. The vegetation consists of mosses, lichens, and tussock grasses. In the Antarctic waters are found five varieties of seal, while sea-lions and sea-elephants are found well to the north. Sea life is very rich, ranging from mollusks, medusæ and fishes to dolphins and whales.

Antietam.—A creek in Maryland where was fought a decisive battle of the Civil War in 1862. Lee had crossed the Potomac into northern territory in the hope of gathering recruits in Maryland and marching on to Washington. He was met at Antietam by McClellan with a force of 75,000 Federals, against which his 40,000 Confederates held their ground firmly. Neither side was defeated; but Lee saw from this battle the impossibility of advancing into northern territory, and withdrew his troops into Virginia, to continue the war on defensive lines.

Appomattox.—A town in Virginia where Lee surrendered to Grant at the close of the Civil War, April 9, 1865. Lee had retreated from Richmond and Grant was in pursuit, when the Federal General, Sheridan, came upon the front of Lee's army and made escape impossible. The terms of the surrender provided by Grant were just and kind—all Confederate soldiers were released on parole to return to their homes.

Argentine Republic.—When Juan Diaz de Solis, a Spaniard, sailed up the estuary of the Rio de la Plata, South America, in 1515, like all other explorers he proclaimed the lordship of his king over the country round about. Don Pedro de Mendoza, another Spaniard, coming in 1535, chose and occupied the site of Buenos Aires. Other Spanish towns were soon founded, and by 1580 the settlement was firmly established. Buenos Aires flourished and became the chief city of the new viceroyalty. In 1806 the British captured the city but were unable to establish themselves firmly. During a general revolt the republic of the United Provinces of the Rio de la Plata was founded, and by 1826 the independence of the Spanish colonies in South America was completed. The viceroyalty of Buenos Aires had included the provinces of upper Peru, but since the Peruvians differed widely in manners, customs, and language from their neighbors, they were left to do as they wished, while the people of the Rio de la Plata took the name of the Argentine Republic (1853). Years of strife and uprising followed—a decade of national financial discredit due to banking schemes in Europe, and another decade of expense and struggle for national defense. Argentine enjoyed remarkable material prosperity, however, even while she was subduing Indian tribes and conquering the desert. She acquired additions of territory from Chile by treaty in 1881, including the greater part of Patagonia; other boundary disputes were gradually settled, and in 1904 the government was financially reorganized under President Quintana. After eighty years of turbulent political life, Argentine has succeeded in gaining a place among young nations; she has improved her country, built railroads, schools; extended her industries, especially farming and stock raising, and carried on commerce successfully with great nations of the world. Her population, numbering 7,885,237 in 1914, is composed (in the order of their number), of Italians, Spaniards, Russians, Uruguayans, French, Turks, Austro-Hungarians, Brazilians, Chileans, Paraguayans, English, Germans, Bolivians, and Swiss. She is second in size of South American states and contains an area of 1,135,840 square miles. Her government is a federal republic, ruled by a president, a vice-president, a federal assembly composed of a senate and a house of deputies. Provincial governors are elected by the people and territorial governors of sparsely settled parts are appointed by the president.

Armada.—The name of the Spanish fleet sent out by Philip II. in 1588 against the English, in the hope of avenging the execution of Mary, Queen of Scots and forcing the Catholic religion on England.

After numerous encounters with the English fleet, the Armada was defeated off the coast of northern France, near Gravelines. Only half of the original fleet returned to Spain; the rest had perished in storm or in battle.

Asia.—Asia is the largest of all the continents, with an area of 17,250,000 square miles. It covers more than a third of the land surface of the globe with more than one eleventh of its total area of land and sea. It is separated from Europe, which is but a peninsular appendage, by the Urals reaching from the north to the Caspian Sea, thence to the Caucasus range and the Black Sea. Its vast and teeming populations number about a billion souls, or nearly two-thirds of all mankind, and these for the most part have been weeded out by many elements of war and disease and pestilence and famine and flood, leaving the hardy and the immune. This is a fact to be reckoned with in the problem of Asia.

Asia is but thirty minutes from the United States (by aeroplane) at Behring Straits, which are but forty miles wide, while from the southern points of Asia to Valparaiso is half way round the world. The Aleutian Islands of Alaska, reach out into the Pacific Ocean to within 600 miles of Japan. Asia has the greatest extremes of climate, the highest mountains, and the greatest table-lands in the world. It is hardly probable that the first forms of human life appeared in Asia, for the oldest individual remains have been found in Java. But it is pretty certain that the first civilizations of which we have any evidence, and the earliest of evidence comes from Archeology and Comparative Philology, are indigenous to Central Asia, whence, with increasing numbers and decreasing food supply, the first migrations started in all directions like the spokes of a wheel. The plains whose inhabitants first rise out of the historic mists, lie some-

where between the Caspian Sea and the Pamir, which is called the roof of the world. The Pamir is where India, Afghanistan and Turkestan meet, and where the bottoms of their valleys are more than two miles "in the air," while the summits lie thousands of feet higher. The Pamir is a great geographical center. From it ranges of mountains radiate like the leaves of a fan, but mainly to the eastward and westward, the table-land of Thibet, for example, lying between the Himalayas to the south and the Kuenlun to the north. This is the highest plateau in the world, and few people can live there, and these only in the sparsely cultivated valleys. For this table-land lies from 17,000 feet high to the west to 9,000 feet in the east. Large areas in this central portion of the continental domain are sterile or desert spaces, where areas as large as Europe have little soil and few conditions with which to support life. But over the map of Asia



THE WORLD ABOUT 1700 A.D.

one could place the maps of seventy Frances and have room in which to lose Germany and England; or he could put over it the maps of North and South America and Europe combined. Some parts of Asia are abnormally congested with teeming populations, but not more so than some portions of Europe. There are areas of fertile soil in the hinterland large and rich enough to support another population equally great. More people can live on this vast continent than all the people alive today. So that Asia is not in need of American room. Asia could easily support the entire population of the known world without much overcrowding. (See Siberia, Manchuria, Mongolia, etc.)

There are seven great river systems, with the peculiarity that vast regions drain inland into land-locked salt water seas, as if Asia were a world to itself. In the Chinese system there are four great rivers: the Si-Kiang, the Yang-tze-Kiang, the Hoang-Ho and the Amur, flowing eastward to the Pacific Ocean. There are two systems in India, overlapping to the north, the Indus flowing to the Gulf of Arabia, draining the land of the Punjab, or the "Five Rivers," and the Ganges and the Brahmaputra draining towards the Pacific slope. Towards the Arctic the Siberian system drains the land through the Lena, Yenesei and Obi, while those rivers flowing into the Aral, Caspian and Dead Sea have no outlet to the ocean the Caspian being 85, and the Dead Sea 1,300 feet below the sea level.

The great masses of population are found in the immense territory of China, Siberia and India. The Chinese Empire contains 4¼ millions of square miles, or more than one and one-third as much as the United States. The people number, according to the Chinese Customs Reports, 439,000,000. Siberia with the Russian dependencies has 6½ million square miles, with a population of over 25,000,000, and India has 1,789,154 square miles with 325,000,000 people. China contains nearly a third of the human race and India a fifth, while the two territories together are about equal in area to Europe and the United States together.

All the five great races of man live in Asia, the white, black, brown, red and yellow. The red and black races are weak, numerically and otherwise. The great mass of the population is made up of the yellow and brown races with a tenth of the population white. The latter are found in Asia Minor, India, Arabia, Persia, Afghanistan and Baluchistan, with a few scattered elsewhere. The yellow race is distinctly the Asiatic type and numbers seven-tenths of the population, while Asia itself contains, with the Islands, nearly seven-tenths of all mankind. Moreover, yellow blood has percolated into Siberia, Russia, Caucasus, Asia Minor, Afghanistan and Baluchistan. One of the main but remote causes of the Russo-Japanese war was that certain Slavs claimed for their race Asiatic origin, and made this kinship an excuse with the Asiatics for extension and domination in Asia.

Roughly speaking, the two great groups of the yellow races center, the Manchus and Mongols, around the Altai Mountains and the Sinetic or Chinese in the south of China or the region lying to the north of the Himalayas. These two branches include many stocks. It has been suggested that the North American Indians are related to the ancient arctic and sub-arctic stocks, among whom are the Koriaks and Kamchatkans, and of whom there are about ten thousand left. The north, east and west Mongols have centered about Lake Baikal, but have moved so far in one direction as China and to the Caspian Sea in the other, extending even to the Danube. It must be borne in mind that while most of the world's great religions have come from Asia, this is but a matter of geography, for these religions have all been given by the white races, both Semitic and 'Aryan', who are geographically, but not distinctively Asiatic.

Asia Minor.—Asia Minor is a term invented during the Middle Ages to describe the peninsula between the Ægean, Black and Caspian Seas and the Levant, better known as Anatolia. It included a great number of petty states: To the north was Mysia, Bithinia, Paphlagonia and Pontus; to the south, Caria, Lycia, Pisidia, Pamphylia and Cicilia; while in the center lay Lydia, Phrygia, Galatia, Lycaonia, Cappadocia and Armenia. On the western coast in ancient times lay Troas (Troy) immortalized in the Iliad, the history of which is mere tradition. Troy is said to have been founded by Dardanus, succeeded by Erichthonous, celebrated for his splendid horses. Tros named the city Troy, and Ilus changed the name to Ilium which was burned by her Grecian conquerors. (See Phrygia and Lydia.)

Assyria and Babylonia.—The latest and most reliable researches incline to the belief that the earliest cradle of human knowledge is to be found in the low river lands of the Euphrates and the Tigris. There is abundant evidence that the original settlers in part of these fertile valleys, a non-Semitic compound race, styling themselves Shumerians and Akkadians, even in 7000 B. C. had developed cuneiform writing and a flexible language. It is supposed that an offshoot of this ancient stock, which later amalgamated with the Semitic Assyrians and Babylonians, swept over Egypt and established the dynasty of the Hyksos or shepherd kings. Their language long survived in the rituals used in the temples of Babylonia. Ages went by without leaving much in the way of historic documents, but the old Babylonian Empire is generally supposed to have lasted from about 4000 B. C. to 731 B. C. It is also called the Chaldean Empire. The first King Sargon (to be distinguished from a much later one), about 3800 B. C. extended his sway to the Mediterranean shores, and under Hammurabi, one of the wisest and most progressive rulers of antiquity, Babylonia and Assyria were united.

Nothing in ancient times seems to have made the impression on the imagination of every race as did the splendor and extent of the two queen cities, Babylon and Nineveh. The walls girding Babylon were twenty leagues in circumference and from three to four hundred feet high. About 2000 B. C. Babylonia, after having been long subject to Elam, a nation of non-Semitic people to the east, achieved its independence. Assyria was being settled from Babylonia, and in its earlier stages it

developed side by side with Babylonia, from 1900 to about 1000 B. C. Then followed a time when Assyria and Babylon each held the overlordship for a period. In 1237 B. C. the Assyrian Empire appears to have been founded, and while Assur-nasir-pal was king, 884-859 B. C., Assyria became the leading empire of the world. In 745 B. C. King Tiglath-Pileser made himself master of Babylon, and was successful in war against Syria and Armenia. Assur-bani-pal, king of Assyria and overlord of Egypt as well, erected splendid buildings and did much for art and literature. The states subject to the Assyrian monarch were loosely bound, however, and constant rebellion resulted from the despotic method of government. After the death of Assur-bani-pal, Babylon revolted with success. About the same time the Medes in the north rose against the Assyrian yoke; the savage Scythians tribes rushed in, and ruin for the proud and splendid empire followed. Nineveh, the great metropolis, was taken and burned. Babylon enjoyed, however, a brief resurrection, from 608 to 538 B. C., under Nebuchadnezzar and Belshazzar. The latter was dethroned by Cyrus, the Persian, and Babylon became subject.

This ancient people gave much to the world in astronomy, mathematics, an exact system of weights and measures, cuneiform writing, a system of canals and river dykes, irrigation, important industries, including the manufacture of rugs, linen and silk garments, brick, silver and goldware, architecture, arts, especially sculpture, in which they excelled for centuries and which they transmitted to the early Greeks. Their creed, like that of most Oriental nations, was a nature worship originally Some of the most enlightened among them conceived the idea of one all-ruling God. Subsequently their religious conceptions became more and more debased, falling into superstition and the worship of fish gods, bird gods, and of Mylitta, the type of the grossest sensuality. The earliest legends and religious myths of these people tallied singularly closely with those of the early Hebrews, their Semitic kinsfolk.

Austerlitz.—A town in northeastern Austria the site of Napoleon's great victory in December, 1805.

Napoleon was then threatening to spread his power over all Europe so that Austria, Russia and England were joining in military preparations for his overthrow. Napoleon's hope for safety lay in striking at the united armies of Austria and Russia before England could send her aid. This he did at Austerlitz, marching his army of 65,000 against 82,500 Russians and Austrians. By clever strategy he put the enemy to flight, causing them a loss of 27,200 while his own loss numbered but 6,800.

By the Treaty of Pressburg, following, the Austrian and Russian emperors were forced to admit Napoleon's claims to the very territories of which they had hoped to deprive him.

Australia.—Australia means "Southland." It lies, the largest island and the smallest continent, in the Southern Ocean and entirely in the Southern Hemisphere. It was once a part of an enormous continent stretching from the North Polar regions, but now partially submerged, by the shallow waters of those straits which separate Asia and Australia from the Great Island System lying between. Australia is 2,400 by 1,900 miles in extent, covering an area of 2,946,000 square miles, but a little less than the United States proper, or Europe. Tasmania is separated from the Australian mainland by the Bass Straits which average but 200 feet in depth. The land has the main characteristics which the geographers desire of a continent, high and bold coasts with mountain ranges nearby, and a depressed interior. 95 percent of the land surface of the continent being under an altitude of 1,500 feet, while the highest peak, Mount Kosciusko, is but 7,500 feet in height.

A generation after the discovery of America the first map of Australia very much resembled our maps of Antarctica today. Although the Chinese are supposed to have visited the land in the thirteenth century, the first recorded voyage was made by the Dutch in 1606. Afterwards many voyages were made, Captain Cook visiting the island in 1770 (April 14). His party, finding so many plants new to science, named the place "Botany Bay." By 1822 the whole coast had been determined. The Dutch having ignored the land for the greater apparent riches of the East Indies, the English re-discovered it and began colonization. This was caused mostly by the American Revolution which took so great a heritage from the British race. Australia, instead of the United States, became the "dumping ground" for British criminals, where persons condemned for crime had been sold into servitude for the sum of $100 each. In 1798, the first shipload of this type of colonist was sent to "Botany Bay," and an attempt was made quite unsuccessfully, to make "farmers of pickpockets," and it was not till after many crude experiments and as many insuperable difficulties, that free men and women came to emigrate to these lands which are, even though subject to severe drouths, among the best grazing lands in the world. The way Australia has overcome her handicaps is one of the many conspicuous romances of modern history, for it now contains a prosperous population of about 5,000,000.

The most conspicuous geographical and economic features of Australia are the two great plains; the alluvial area covering half a million square miles stretching across the continent, and the Australian Steppes in the northwest covering 400,000 square miles. The climate is very dry, two-fifths of Australia getting annually but ten inches of rain, and part of that not more than five inches. There have been some drouths of dreadful consequences. Nevertheless, next to sheep and cattle raising, agriculture is the principal source of wealth. Timber is an important asset but the land is rich in minerals. Gold was discovered early in this century, starting an industry which has grown in volume till it had aggregated up to 1911, about 2¾ billions of dollars. In 1891 the number of sheep reported was 106,421,068, yielding a half billion pounds of wool, while the number of cattle increased in thirty years, (1865-95), from 3¾ million to 11¾ million head.

The aborigines seem to be a distinct race, without records, and even without traditions of having come from other lands. Their languages and dialects show a remote connection with the Papuan tongues.

Politically, Australia is a commonwealth. The people have realized a commonwealth in fact as well as in name. The railroads are owned for the most part by the government, i. e.: by the people, and this fact has made it possible for lines to be built in areas which offer no immediate dividends, but tend to develop the country, extend population and advance civilization more rapidly than if these highways were built up only where the traffic would warrant. The Commonwealth is a Federal state under the supreme authority of the Crown of Great Britain, by Act of Parliament, dating with the opening day of the twentieth century, January first, 1901. This Act formed a union of the colonies of New South Wales, Victoria, Queensland, South Australia, and Western Australia.

The circumference of Australia is 8,000 miles, or about one-third of that of the earth.

Austria-Hungary.—In 1438 the House of Austria recovered possession of the imperial crown of Germany. There had been endless fighting between the German states, and Maximilian now tried to restore peace. The Diet forbade war between the states, but in vain, for the German princes, drunk with ambition, had no thought of being curbed in their desires. In 1520, Souleïman, the Ottoman sultan, set out to conquer, and succeeded in 1521 in taking Belgrade, the stronghold of Hungary, which state lay east of the Leitha River. Allied with the Protestants of Germany, he captured Rhodes from the Knights of Saint John, and passing the Danube, destroyed the Hungarian army at Mohacz, (1526). Ferdinand of Austria now fell heir to the crown of Hungary, but was dethroned by John Zapoli, a Magyar claimant, whom Souleïman supported. Hungary was ravaged, and the sultan crowned his vassal king of Hungary at Buda. About 1547 Souleïman was busy with wars in Asia against the Persians, and the Hungarians were able to drive back the Ottomans on the Danube. The feeble policy of Austria during the religious wars of the seventeenth century was suddenly changed when an enterprising prince, Ferdinand II., ascended the throne. He blew up the heretical churches and burned all the Bibles he could lay hands on. The Bohemians rose in revolt and chose a king for themselves. Then followed a war in Central Europe, one hundred years after the Reformation, which, though under the mask of religion, was really a political struggle. In fact, Ferdinand was determined to make Germany an Austrian province. For thirty years Protestants and Catholics—Bohemians, Danes, Austrians, Germans, Italians, Spaniards, Bavarians and Swedes struggled one after another, Gustavus Adolphus, leader of the last named, for a time checking the advance of Catholicism and the Austrians on the Baltic shore. Finally Richelieu of France, entered the fray and was successful in the West, aided by Swedish victories at Brandenburg, Silesia, and Saxony. Austria, which had tried to prevent religious liberty in Germany, had been vanquished, and Germany was only nominally an empire, composed of a confederation of politically and religiously independent states. The dream of Otho the Great, of Frederick Barbarossa and of Charles V. for a united empire was still unrealized.

The French Revolution in the eighteenth century aroused the crowned heads of Europe to unite "for the safety of their crowns." France was menaced on three sides. When she had proclaimed herself a republic and executed Louis XVI., Austria, Prussia, Piedmont and England joined the

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coalition, followed by Spain and Naples, Holland, Portugal and the German Empire, through the influence of its two leading states. The Austrians desired the French fortresses on the Scheldt, but when Napoleon appeared and by sheer genius placed France again in the foreground, all the armies of Austria were unable to withstand him. In 1805 he entered Vienna and a short time later won the battle of Austerlitz, over the emperors of Austria and Russia, as a result of which Austria lost all influence in Italy and Switzerland. Napoleon, now Emperor of France, conceived a world empire, and part of his plan was the elevation of his relatives to the kingships of states all under the confederation of the Rhine. The old German Empire was dissolved; instead of holding the title of Holy Roman Emperor, Francis II. now descended to the position of merely Emperor of Austria. The 370 German states, constantly at war, were reduced to thirty or forty, and united under the protection of Napoleon into a federated state from which Austria and Prussia, the two half Slav states, were excluded.

Following the fall of Napoleon and the Revolution of 1848, reactionary Austria fell into the hands of the revolutionists. Metternich, representative of autocratic power, fled, and a new constitution was proclaimed. Bohemia took courage from Vienna and declared the full equality of Slavs and Germans in the kingdom. Meanwhile there was revolution in Hungary, and the Viennese, hating the Slavs, momentarily sympathized with the Hungarians. Ferdinand of Austria abdicated in favor of his nephew, Francis Joseph, whom the Magyars refused to accept. The real ruler was the head of the ministry, Prince Schwartzenberg, whose policy, like that of Metternich, was absolutism. He aimed at complete subjection to the Austrian Germans. In the struggle that followed, Hungary was successful and made herself an independent state, until Austria, aided by Russia, crushed her. Meanwhile Prussia was becoming a powerful rival of Austria. Both states, largest and strongest in the German Confederation, were disliked by their neighbors, and neither gave promise of advancing the cause of German union. In 1862 Otto von Bismarck was appointed Minister of Foreign Affairs and President of the Cabinet by King William I. of Prussia. Under him was organized the military system of Prussia, the system of "blood and iron" which was to defeat Austria and France, and reunite Germany. Seven years of war between Austria and Prussia left the former excluded from Germany, abandoning her claims to Schleswig and Holstein and Venetia, while Prussia added much to her territory, including Schleswig - Holstein, (originally wrested from Denmark), formed secret treaties with the states of southern Germany, and strengthened herself by the North German Confederation. Following the Franco-Prussian War (1870-1871), the King of Prussia was made the Emperor of united Germany, from which, of course, Austria was excluded.

Disorder and rebellion marked the early part of the reign of Francis Joseph, who came to the throne of Austria in 1848. The German minority looked contemptuously at the other races, and it was necessary to rule by martial law until 1854. An attempt was made to Germanize all Austrian subjects. The German language was made obligatory in courts, civil administration, and in the schools of the Hungarians, Servians, Roumanians, Croatians, Slavonians and Bohemians. The subjection of other races than the German in the Chamber of Nobles and the Chamber of Deputies was met by the Hungarians with stout resistance. The Austro-Prussian War was a blessing in that it established the fact that Austria was not a German state and should no longer "seek her center of gravity" outside her own boundaries. The rights of her subject races were finally at least partially recognized; there was a complete reorganization—political, financial, military. A Protestant and a foreigner was invited by Francis Joseph to accept the chancellorship of this Catholic and reactionary empire. The independent existence of Hungary was recognized, and a prime minister appointed, (1867). Francis Joseph was crowned king of Hungary and the Hungarian crown and color were added to the imperial flag of Austria. But the question of the internal weakness of Austria-Hungary was not solved by coupling the names together, as the struggles of the present day have continued to show. The race antagonism manifested itself more strongly than ever following the Great War in which those who were related by blood to the Poles and Slavs of Russia were forced to do Germany's will and fight their kinsmen. While peace negotiations with Russia were going on, (1918), the Czechs and Slavs of Austria-Hungary were uniting with the Poles against the Austrian ministry, declaring that their hatred would endure as long as the country remained under the yoke of Germany. They asserted their right to form themselves into free and democratic states independent of the "Fatherland" or Austrian authorities. A revolutionary movement, extending to the army and navy, kept the country in a turmoil and disrupted the monarchy, resulting in the abdication of Emperor Charles (1918). Governments of their own were formed by the Czechs in Bohemia, the southern Slavs at Laibach, and the Croats at Agram. In Hungary great excitement existed over the hope of forming a republic, while the German-Austrians set up a separate administration. A revolution in Hungary, without much bloodshed, resulted in the triumph of the new government which promised to restore freedom of the press, trial by jury, right of assembly and association, and proclaimed military and civil amnesty. An appeal for order went out from the new cabinet, organized by Count Michael Karolyi, promising new rights and privileges and care for soldiers and war victims.

Babylon, Capture of, by Cyrus.—In 539 B. C. Cyrus, the Persian, already renowned for his conquests in the East, marched against Babylon. King Nabonidas of the Babylonian Empire had foreseen this attack and for ten years had been fortifying his city against it. Though Cyrus defeated the king's men in the open field, when they had retired behind the insurmountable wall of their city he was unable to assail them. After vain attempts he withdrew his troops a few miles up the Euphrates River, which river flows into the city of Babylon, and he set them at work with spades to drain the waters of the river into a channel. On a night when the Babylonians were feasting, this drainage was completed and the Persians were able to march along the empty river bed, entering Babylon through the unguarded river gate. A horrible massacre took place in the darkness and on the following morning Cyrus was king of Babylon.

Balkan Peninsula.—The Balkan peninsula is the storm center of modern Europe. It has been called the "Whirlpool of Europe." It lies adjacent to Asia and is peopled with races of distinct types and all with their race hatreds. The situation has been complicated by the presence of an alien and discordant element, this peninsula having been the meeting ground of Asia and Europe and the field of war for a thousand years between the two civilizations, while before that it was the scene of constant internecine strife.

Europe has three great southern peninsulas, of which this is the easternmost. It lies between the Adriatic Sea to the west, and the Black Sea to the east, with the Danube to the north. Its area is about 175,000 square miles, and includes European Turkey, Servia, Bulgaria, Bosnia, Herzegovina and parts of Dalmatia, Croatia, Montenegro, and Greece. Southeast of the peninsula is the Bosphorus, about twenty miles long, connecting the Black Sea with the Sea of Marmora, which in turn is joined with the Ægean Sea by the Dardanelles. Greece, Roumania, Montenegro, Servia and Bulgaria are called the Balkan states, and these have all been carved out of the Turkish Empire during the nineteenth century.

The political significance of the Balkan peninsula is found in its geography, its position being one of the most strategic in the world, culminating at Constantinople, where opens the gateway from western Europe to the countries bordering on the Black Sea and the farther East; it is emphasized in the fact that this spot since a little time before the discovery of America (1453), has been, with the vast hinterland, under the domination of the "Unspeakable Turk." For three centuries this peninsula was a Turkish and Mohammedan possession, with all that meant in its access to regions beyond, which have been ruled by fire and sword.

Ballinger - Guggenheim Controversy. — The progressive element of the Republican party complained bitterly over the alleged support of the President given to the "Guggenheim Interests," in the appointment of the Seattle Attorney of those interests as Secretary of the Interior, who made the attempt to validate immense coal titles in Alaska through illegal applications, which if successful, would have placed in their hands property admitted by their own engineers to be worth $4,000,000,000.

Bannockburn—a creek in Scotland, the site of a famous battle in 1314, when 40,000 Scotchmen under Robert Bruce defeated 60,000 English. The Scotch loss was 4,000, the English 10,000.

Since 1286 the king of England had laid claim to the throne of Scotland and exacted tribute from Scottish lords. After the Battle of Bannockburn and a few Scotch invasions into England, Scotland was granted her freedom in 1328 with Robert Bruce as king.

Belgium.—Belgium as a nation dates from 1830. Under the Congress of Vienna, Belgium (the Spanish Netherlands), was joined to Holland when Norway was made a part of Sweden. When the Spanish colonies declared their independence early



in the nineteenth century, and Metternich proposed the offices of the Holy Alliance to coerce them again into slavery, England objected and laid the train for the Monroe Doctrine, later encouraging Belgium in a successful revolt against Holland. In January, 1813, a conference of ministers in London recognized the new state, which adopted a liberal constitution, but it was not until 1839 that Holland accepted the situation. The crown was offered to the uncle of Queen Victoria, Leopold of Saxe-Coburg. Leopold II. succeeded him in 1865, and reigned until his death in 1909, when he was succeeded by the present king, Albert I.

The neutrality of Beligum was guaranteed under the treaty of 1831, by Great Britain, France, Austria, and Russia. By an international conference in 1885, Leopold II. was made sovereign of the Congo Free State, with 900,000 square miles inhabited by 30,000,000 people. On August 2, 1889, he bequeathed to Belgium all his sovereign rights, and by convention the right was granted to Belgium to annex the state at any time after 1900. Charges of cruelty on the part of government officials against the inhabitants of the Congo Free State and exposures regarding the use of the country as a means of private income for Leopold II. resulted in abolishing his overlordship and annexing the State in 1908.

The two great political parties of Belgium have been the Catholics and the Liberals, the former having opposed the principle of democracy and political equality. During the past few years the Socialists have gained in strength. Before 1893, in a population of over 6,000,000, less than 140,000 people were allowed to vote; a constitutional revision gave 1,350,000 electors a right to cast 2,066,000 votes, the Catholics having retained the right to cast two or three votes each in special cases.

In 1916 there were about 3,000,000 Walloons as compared with 4,000,000 Flemings in Belgium. The Walloons are of a French type, darker than the Flemish, and more vivacious. Because of the difference in the two types, Germany hoped to foster a separatist spirit among the Flemings, and succeeded, during the Great War, in forcing a division, with headquarters for Flanders in Brussels, and for the Walloons in Namur. Protests arose from both sections, and Belgium learned what distrust and hatred of German schemes meant when starvation followed financial oppression, and men were deported to serve Germany's purposes. The inhabitants took refuge in the interior, and the army of occupation of Germany did everything in its power to crush Belgium. When the Allies had recovered Ypres, Mons, Roulers and other important cities which had been seized, and peace was established (November 11, 1918), Belgium faced the future, sick with the remembrance of innumerable horrors, devasted homes, a financial loss of over $275,000,000 in four years, and with her whole transport and industrial system disorganized. Complete reconstruction has been attempted and the Inter-Allied Commission is at work planning ways and means.

Bell's Telephone.—Many inventors had tried to hit upon a device for transmitting speech through space, but they had been electricity experts who studied the theory of sound waves without considering the apparatus of the human ear. Alexander Graham Bell was a professor of vocal physiology and understood thoroughly the mechanics of speaking and hearing. His longing to improve the lot of his wife, a deaf mute, added zeal to his researches.

Through the telegraph he knew the power of wire to carry sound, but how to make it carry the various graduations of sound involved in speech was his problem. While studying the diaphragm of the human ear, which vibrates as it is hit by sound waves and so produces hearing, he was struck with the idea of manufacturing such a diaphragm which should reproduce sound waves exactly as they are reproduced by the human ear. This is the principle of the telephone. There is a diaphragm at either end of the wire, so that the sound waves produced by the voice of the speaker at one end are transmitted to the other end of the wire, where a diaphragm is in contact with the ear of the listener.

Bell worked for two years to perfect his invention after he had gained the leading idea. In 1876 the telephone was patented and exhibited at the Philadelphia Centennial Exposition. At first it received little attention, but the Brazilian Emperor Dom Pedro was struck with wonder on hearing it talk and thereupon the eminent scientists began to examine it, granting it the prize of highest honor at the Exposition.

Although it was not thought at the time that the telephone would ever be more than a plaything, the business management of Mr. Hubbard saw it put to practical use. It is now one of the necessities of life.

Bolivia.—Bolivia, a neighbor of Brazil, Argentine, Peru and Chile, comprises an area of 708,195 square miles of South American territory. For two centuries after the Spanish conquest it was a part of Peru, but in 1825 it proclaimed independence and set up a republican form of government, the first president being General Sucré. Civil wars followed and later (1879-84), Chile wrested from Bolivia the coast province of Atacama, with its valuable nitrate and guano deposits. Boundary disputes with Brazil ended in Bolivia's acquisition of additional territory, 1,221 square miles, commercial facilities and a payment of $10,000,000. In 1917, Bolivia severed diplomatic relations with Germany.

The southwestern part of Bolivia is high and mountainous, the northern and eastern consisting of low terraces and plains. A plateau lies between the Andes, west, and the Cordillera Real, east. There is heavy rainfall on the eastern plains, and the mean annual temperature on the lowlands is 74° F., while it is about 63° on the highlands. Nearly three-fourths of the country is covered with forests from which valuable timber is obtained—mahogany, rosewood, cedar, jacaranda, quebracho, gum trees, and dyewoods. The high plateaus are treeless, and mimosa and bamboo are found in lower altitudes. Among other valuable products of Bolivia are cocoa, cinnamon, rubber, vanilla, sarsaparilla; and the metals tin, silver, gold, copper, iron, lead, zinc, cobalt, platinum, antimony, bismuth, quicksilver; the nonmetals alum, arsenic, borax, talc, mica, marble, salt, saltpetre, asphalt, petroleum, precious stones, such as topaz, turquoise, amethyst, and lapis lazuli. Gold is carried by the streams flowing down into the Amazon; silver is plentiful, though the mines are not extensively worked. In the eastern valleys of the Cordilleras are raised coffee, cocoa, sugar, tobacco, cotton, rice, yucca, manioc, maize, alfalfa, pineapples, oranges, bananas, lemons and peaches; besides sheep and goats. Navigable streams cover several thousand miles; railroads and telegraphs establish communication between the cities. The country depends upon river ports, having no seaport of its own. About fifty per cent of the population are Indian, twenty-five per cent mixed Spanish and Indian, and thirteen per cent white. The state religion is Roman Catholic.

Boxer Rebellion.—A "patriotic" society called the Boxers, began early in 1900 to massacre the native Christians in Northern China and to kill Missionaries and other foreigners. At Pekin foreign ministers and their associates were besieged by Chinese troops who were in sympathy with the Boxers. President McKinley sent warships to protect the resident Americans and these were joined by troops of Japan and the other powers. War was declared, several towns were captured and battles fought and Pekin was taken, after which order was restored.

Braddock's Defeat; the first battle of the French and Indian War in 1755. The English General Braddock led a force of British soldiers and colonist volunteers against the French at Fort Duquesne (now Pittsburgh). Having prepared his attack according to the European methods of open warfare, Braddock was helpless when surrounded by French and Indians in ambush. His brave and desperate fight ended in defeat. Braddock himself was killed and 977 out of his 1,456 men perished.

Brazil.—When Vicente Yanez Pinzon, a Spaniard, discovered the northeastern coast of Brazil in 1500, he did not take possession of the land because a treaty made previously with Portugal had assigned all the new country east of about longitude 50° W. to Portugal. In the same year Pedro Alvares Cabral, a Portuguese, on his way to India, happened upon the Brazilian coast south of Bahia, and took possession in the name of Portugal. It was some time, however, before Portugal gave much attention to colonizing the new territory, the first colony being formed in 1532 by Martin Alfonso de Souza, and other sections being granted to distinguished Portuguese on condition that they would settle them. Bahia, founded in 1549, was the capital until after 1762, when it was changed to Rio de Janeiro. Although the French and Dutch attempted to settle in Brazil, the Portuguese successfully drove them out. The country developed rapidly, owing to the growth of the sugar industry, and the discovery of rich gold and diamond mines in the interior. Expeditions were made to the interior and several towns were founded. When Napoleon drove Dom John, prince regent, out of Portugal, the prince fled to Brazil (1808), and established his capital at Rio de Janeiro. His son, Dom Pedro, remained as regent in Brazil and led the movement for Brazilian independence from Portugal after his father had returned to Portugal as king. Dom Pedro was crowned Emperor Pedro I. of Brazil in 1822. The Revolution of 1889 forced his son, the second emperor, to abdicate, and a federal constitution was adopted. A more carefully prepared constitution was framed in 1893, and insurrections raging at that time were settled by President Peixoto. In 1917, Brazil sympathized with the Allies in the Great War, and declared war on the German government.

Brazil is the largest country in South America, and comprises two-fifths of the southern continent. Its area is 3,209,878 square miles, much of which, especially along the western and northern boundaries, is unexplored. The southeastern coast has excellent land-locked harbors and channels, but in the northeast there are few harbors, except the estuary and the Bay of Maranhão. The Amazon River and its tributaries form the finest system of navigable waters in the world, ships being able to sail long distances up the rivers. Most of Brazil has a moderate and healthful climate, with abundant rains, but a portion of the northeastern coast is subject to periodical drouths, lasting for several years and resulting in many deaths. The warmest region is the Paraguan depression, formed by the Amazon and Paraguay, meeting in the center of the continent, where swamps and rank tropical undergrowth abound. The coast range is the forest region known as the Brazilian Plateau; eastward are open grasslands. North is the Guinea plateau, partly open and partly covered with the scattered growth of trees and brush. Brazil ranks next to South Africa in the production of diamonds. In addition it produces gold, quartz, coal, silver, copper, lead, immense deposits of iron, as yet practically useless because of the lack of coal, also petroleum, lignite, peat, monazite, sulphur, precious stones, rubber, Brazilian nuts, petrified wood, vegetable oils, drugs, cabinet woods, especially rosewood, coffee, which is the largest export, sugar, tobacco, and cacao. Manufacturing is done on a small scale, railroads and telegraph lines connect the towns, and the navigation of rivers makes possible a successful system of commerce. There has been as yet little exploitation of mines, but the past few years have seen an increase especially in the exportation of manganese. Cattle roam the broad, grassy spaces, and the woods are thick with wild hogs, puma, jaguar, sloth, monkeys, birds and reptiles. The forests have been worked for years, and the fisheries are famous, 2,000 varieties of fish having been discovered by Agassiz in the Amazon River alone. The population, a large part of which is Catholic, consists of pure Portuguese, whose language is the national language, negroes, aborigines or native Indians, German and other European immigrants, some Americans, and people of mixed race, the most numerous of all.

Buchanan's Administration (1857-1861)

I. Dred Scott Decision (1856-1857).—The Dred Scott Decision was made by the Supreme Court of the United States, in 1856, but was not made public till after the inauguration of Buchanan, who sympathized with slavery. There had remained the question as to whether a slave taken by his master to a free state became free. A negro named Dred Scott had been taken from Missouri into several free states and upon his return with his master sued for his freedom on the ground that his sojourn in free territory made him a free man. The Supreme Court finally decided that Scott, not being a citizen, could not sue in the Missouri courts. The Missouri Compromise was declared null and void, opening the way for slavery in all free territory, from which, it declared slave property could no more be shut out than a horse or a cow. The South was delighted; the Democratic party in the North was split in two, and the Republicans were more than ever determined to put an end to slavery.

II. John Brown's Raid (1859).—John Brown had been so prominent in the border troubles in Kansas that a price had been set on his head. He settled in 1859 in Harper's Ferry, Va., where he attempted to stir up a slave insurrection and to secure the liberation of the negroes. With less than twenty followers one Sunday night in October, 1859, he seized the United States armory at that place. The slaves failed to support him and several of his men were killed, including his two sons, and he was captured by Colonel Robert E. Lee, of the United States army. He was tried for murder and treason and hung in December of 1859.



III. Lincoln's Election (1860). — The national democratic convention which met in 1860 split over the slavery issue and each portion held its own convention and nominated candidates — one declared for Stephen A. Douglas and the other nominated John C. Breckinridge. A group calling themselves the Constitutional party nominated John Bell. The Republican party met at Chicago on May 16th and nominated Abraham Lincoln. Their platform repudiated the Dred Scott Decision, demanded the admission of Kansas as a free state, did not encourage interference with slavery in the states, but insisted that the territories must be kept free and called for a Homestead law and for a railroad to the Pacific. There were 303 electoral votes cast out of which Lincoln received 180, Breckinridge 72, Bell 39 and Douglas 12.

IV. Confederate States of America (1861).—South Carolina was probably the only state that would have voted for secession at the time of the election of the first anti slavery President. But the leaders precipitated matters, and at a convention passed an ordinance of secession, declaring, "that the union now existing between South Carolina and the other states, under the name of the United States of America, is hereby dissolved." Preparations were made for an independent government and messengers sent to other states. Within six weeks Mississippi, Florida, Alabama, Georgia, Louisiana, and later Texas held conventions and passed ordinances to the same effect. Delegates met at Montgomery, Alabama, on February 8, 1861, and organized a government under the name of "The Confederate States of America," adopting a provisional constitution, electing the next day, Jefferson Davis, of Mississippi, as President and Alexander H. Stephens, of Georgia, as Vice-President. A permanent constitution was adopted March 11. Among the changes made differing from the Constitution of the United States was the declaration of "the sovereign and independent character of each state," the prohibition of protective tariffs and of the appropriation of public money for internal improvements. The Presidential term was six years and he was eligible for but one term. An election was held in which Davis and Stephens received the unanimous electoral vote and the Capitol was set up at Richmond, Virginia, February 22, 1862.

Buena Vista—a town in northern Mexico, the site of a decisive battle of the Mexican War in 1847. 5,000 Americans under General Zachary Taylor held the fortress, the rest having gone to reinforce General Scott at Vera Cruz. Santa Anna led 20,000 Mexicans against the weakened stronghold, but all his attacks were repulsed by the Americans and at length he withdrew his men. The Mexicans lost 2,000 men, the Americans only 750. This victory closed Taylor's successful northern campaign and thereafter all effort was turned toward subduing the south of Mexico.

Bulgaria.—Bulgaria, with an area of about 33,647 square miles and a population of less than 5,000,000, is one of the Balkan states which for centuries paid tribute to the Turk. Like the history of this entire region, that of Bulgaria is devoted to the oppression and killing of Christians by the Turks. Bulgarian independence grew out of sorrow. After the revolt of Bosnia in 1875, the Turks, fearing a general Christian uprising among their sympathizers, sent the Bashi Bazouks among the Bulgarians with orders to kill all whom they found. The Mohammedan fanatics threw themselves upon the villages and towns and massacred thousands of innocent men, women and children to the horror of all Europe, which is and has been well used to horrors. Russia, especially, was aroused through race sympathies, and the Czar declared war upon Turkey, defeating that power. The war issued in the treaty of San Stefano, which gave the most of Turkey to Russia. England resisted this treaty, and insisted upon the revision of the agreement, upon which the Congress of Berlin was called in June, 1878. Montenegro, Servia, and Roumania were declared independent, while Bulgaria was constituted a self-governing principality, paying an annual tribute to the Sultan. A constitution was adopted in 1879 at Tirnova, providing for a legislative assembly elected by popular vote, and Sophia was designated the capital. The prosperity of Bulgaria aroused the jealousy of Servia and war resulted, when Belgrade, the Servian capital, was saved by the Austrians. For seven years Stambouloff was the real ruler of Bulgaria, the main point of his policy being Bulgarian independence, but he was assassinated in the street. The majority of the people of Macedonia are Bulgarians, and this district is a constant source of friction between Bulgaria, Servia and Greece. In the Great War Bulgaria played a sullen and deceitful part and then threw its weight to the Kaiser's Allies, even to the Turks who for centuries had exploited and murdered its people.

Bull Moose Party.—The country replied to the attitude of President Taft towards Big Business in the election of 1910, by electing many democratic governors, and changing the republican majority in Congress of 47 to a democratic majority of 54. President Roosevelt led the progressives in his own party and a new party was organized, called the Bull Moose party which was finally slaughtered by Colonel Roosevelt himself. For a time, however, this party served to crystallize the moral sentiment of the American people, but its influence did not last long for want of leadership.

Bull Run, a small stream in Virginia, the site of two important battles of the Civil War, both disastrous to the Union.

The first occurred on July 21, 1861, when General McDowell advanced from Washington with 18,500 men to meet General Johnston commanding 18,000 Confederates. Both forces were as yet untrained, but the superior organization of the Confederates, the impassable resistance of "Stonewall" Jackson and the addition to their number of fresh re-enforcements, won the victory for the Confederates. The disgrace of this defeat awoke the northerners to the solemnity of their situation.

The second battle of Bull Run, in the last days of August, 1862, was a masterpiece of strategy on the part of the Confederate General, Lee, whose forces numbered half those of his enemy. The Federal army under General Pope was continually attacked from an unexpected direction and forced to change its plan of battle. The subordinate Federal generals did not obey orders and caused great confusion. On the first of September the northerners fell back to Washington, having lost 14,500. The Confederate loss was 9,500.

Bunker Hill, the site of the first pitched battle of the American Revolution. Here the Americans under General Prescott twice drove back the British under General Gage, but, their ammunition having given out, they were forced to surrender. The American force of 1,500 lost 450 men; the British lost 1,050 out of 2,500. This battle not only proved the mettle of the American troops, but so reduced the English force that it was equivalent to an American victory.

Bureau of American Republics.—In 1889 President Harrison, through the influence of his Secretary of State, Blaine, called the first Pan-American Congress at Washington. Here the representatives from all the republics of South and Central America came together to discuss means of increasing trade, furthering intercourse with each other and providing arbitration in case of disputes. Their one permanent work was the founding of the Bureau of American Republics, with its headquarters at Washington. The function of this organization is to collect and distribute information about the American Republics. It corresponds with the governments and answers any questions sent from them. It publishes a monthly bulletin containing the latest information as to the resources and the commercial situation of the republics.

The ambassadors from the various American republics at Washington, together with the United States Secretary of State, form the governing board of the Bureau. Its business is transacted in the beautiful Pan-American Building, donated by Andrew Carnegie.

Canada.—Canada measures 2,700 miles from the Atlantic to the Pacific, and 1,600 miles from the international boundary line to the Arctic outposts, covering an area of 3,729,665 square miles. The area under water is 125,756 square miles. In addition to the nine provinces, there are the Yukon and Northwest Territories, the boundaries of which were revised in 1912. The population in 1911 was 7,204,838.

Many large rivers flow into Hudson Bay, while the St. Lawrence system, including the Great Lakes, drains an area of a half million square miles, part of which, however, is in the United States. The Canadian Atlantic coast line is 10,000 miles, that of the Pacific, owing to many deep inlets, nearly as large, while the coast line of the Arctic ocean is unknown but very large. The whole coast line of Canada is far in excess of the circumference of the globe. In the Hudson Bay country, kept cold by Arctic currents along the coast, the winters are long and the summers short. British Columbia is tempered by the Japan Current, zero weather seldom occurring on the coast. The great interior plain stretching from Winnipeg to the coast, while cold in winter, has a hot summer, and long days with much sunshine, making it an ideal farming country. The soil is very rich and the land capable of growing wheat, owing to peculiar climatic conditions, in some places very nearly to the Arctic Circle. Vancouver and the vicinity have a climate like that of England, while Victoria at the southern extremity of Vancouver Island is called the Riviera of Canada. The forest resources of the Dominion are immense, nearly 400,000,000 acres out of the 550,000,000 acres of forest containing timber of commercial value. There is no finer timber in the world than that of British Columbia. Canada contains the world's most extensive fisheries, supporting 91,000 fishermen and their families. In addition to the great fur industry, carried on by many trappers and tradesmen, fur-farming has come to be remunerative. The mineral resources of the Dominion are great, largely discovered in recent years and aided by the Canadian Geological Survey, as able and useful a body of men as are to be found in the world. They are explorers as well as scientists and are adding much to the Canadian contribution to civilization. The country is especially rich in gold, silver, lead, coal, iron, copper, petroleum and salt, while the nickel deposits furnish most of the world supply.

Nearly half of the population are engaged in Canada's pre-eminent industry, agriculture. Politically and economically, the farmer is a power. There are many large irrigation projects completed or under process of development, the most ambitious being that of the Canadian Pacific Railway along its main line in Alberta. This tract contains 3,000,000 acres. In 1912, there were 32,449,420 acres under field crops. Under the British North American Act of 1867, a federal government was established with the name of The Dominion of Canada. Since that date new provinces have been created and added to the original four: Ontario, Quebec, Nova Scotia, and New Brunswick.

It is probable that Canada was seen by the early Norsemen but John Cabot reached the Gulf of St. Lawrence in 1497. Jacques Cartier followed, among others, in 1534, and took formal possession for the King of France. Colonization projects followed, and the country was gradually developed and exploited, principally for its wealth of furs. In 1663 Louis XIV. dissolved the Company of New France and placed Canada under direct control of the French crown, although later the Company of the West controlled the colonial trade. The English colonists came into conflict with the French in the latter part of the seventeenth century, and the French and English wars began which finally ended in the overthrow of Montcalm by Wolf at Quebec. Rupert's Land and the Northwest Territories, which had been held by the giant monoply known as the Hudson's Bay Company since 1670, were surrendered to the British crown in 1869, two years after the formation of the Dominion of Canada. Like the Louisiana Purchase in the United States, it added a new "Empire" to the existing states, laying the physical foundations of one of the great nations of the future.

The executive authority of government is vested in the King of England, but exercised in his name by the governor general and the ministry which is responsible to the House of Commons. The Canadian Parliament consists of the Senate and the House of Commons. When England entered the Great War in 1914, Canada was called upon to aid her, and a Military Service Act was passed by the Canadian Parliament. Quebec protested that this Act was enforced with greater severity in that province than anywhere else; draft riots resulted and threats of secession from the confederation were heard. German agents were blamed for the undercurrent of disloyalty to England and the national government of Canada. Canada as a whole, however, contributed generously and loyally to the Allied cause.

Carthage.—Carthage was the greatest of all the colonies of Phœnicia. With the waning of Phœnician power, that of Carthage increased. Founded at a strategical point of Africa, with Sicily lying between her and Italy, with a fertile territory around it and a harbor large enough for any vessel, Carthage became the commercial rival of Greece and the political rival of Rome, at one time threatening its very existence. Many of the merchant kings of Tyre emigrated to Carthage upon the encroachments of the kings of the East, helping to make it the head of the Phœnician world. The mother country had grown rich and luxurious and her people were unwilling or unable to defend themselves when Sargon subjugated them. The book of Judges says of the people of Dan (Laish), "They dwelt careless, after the manner of the Sidonians, quiet and secure." This complacency has been the downfall of many a nation since. There were but two classes of people in Carthage—the rich landowners and merchants, and the poor who did the day's work, making an oligarchy. The two judges and the senate were subordinate to the nobles, or the hundred judges. The people had little to say in public affairs. In 480 Carthage made war on the Greek cities in Sicily, which was renewed from time to time. Then came the Punic wars, beginning with Rome relying on its army and Carthage supreme on the sea. In 311 B. C., Rome began to create a fleet, and in 263 B. C., won its first naval battle at Mylae, whereupon the Roman senate decided to invade Africa. Hamil Car maintained himself against Roman attacks for six years. Hannibal took command of the Carthaginian armies



at twenty-eight years of age, and became a leader unsurpassed by any other general in ancient or modern times.

In 218 B. C. Hannibal crossed the Ebro, conquered the people to the Pyrenees, and pushed into Gaul with an army of 50,000 foot, 12,000 horse, and 37 elephants, marched over the Alps, with mountaineers rolling stones down upon his soldiers, losing half his troops and all his draught animals. Reinforced by 60,000 Gauls, he marched through the swamps of Arne, losing an eye, and gained Etruria, defeating the Romans at Cannæ, where the Romans lost 80,000 men with eighty men of senatorial rank. Some of the Italian allies went over to Hannibal. But Hannibal failed to follow up this victory in marching at once to Rome. He took Capua, the second city of Italy, but he was finally defeated by Marcellus, because he could obtain no help from home, and afterward he was defeated by Scipio at the decisive battle of Zama.

Celts.—Far back in the days before histories were written, it is believed that a barbaric people known as Celts (or Kelts) wandered farther than the rest of their race from their home on the vast plateau of Central Asia and were the first of the Aryans to reach Europe. Here they were encountered as early as 2000 B. C., on the western portion of the continent, scattered, wandering tribes.

On their long journey from the plains of Asia to Western Europe some of the Celts fell by the way and settled in Bohemia, in parts of Germany, along the Moselle and Rhine. The rest continued as far as middle France, which became the center of their wanderings.

A characteristic of the Celts in all their doings was a slowness and lack of cohesive plan. This was largely owing to their low stage of civilization. Their religion was yet in a crude stage. Their priests (Druids) brought human sacrifices to their gods. We hear of a Cannulus (god of war), of a Taramicus (chief god), of Belisama (a sort of Minerva), and many others, but in different tribes these gods bore different names. With one portion of the Celts it was Bormo, with others Grannus (a kind of Apollo), that was chiefly worshipped.

Gaul, the France of today, having become their new home, fractions of the Celts continued to seek other regions. Large numbers penetrated Spain, where they mingled with the original inhabitants and formed a new stock, the Keltiberians. In the course of centuries, they gradually drove out or amalgamated with the various tribes in northern Italy. The Romans spoke of this part of their empire as Gallia Cisalpina, Gaul this side of the Alps, and continually waged war with the Celtic invaders. Brennus, chieftain of a great Celtic army, in the early days of the Roman republic, 390 B. C., seized Rome itself. About a hundred years later, we hear of the extermination of his tribe by the Romans, In 278 B. C., a huge band of Gauls ravaged Asia Minor, Macedonia and Greece, and finally, after many battles, founded Galatia. In 238 the Cisalpine Gauls formed a league against the Romans, but were crushed in 225 at Telamon. And at Mutina, in 193, the great Boji (a Celtic tribe) were wiped out. Between 58 and 51 B. C., Julius Cæsar conquered the Celts in Gaul, and the history of that branch of the race thereafter properly belongs to the history of Rome.

Meanwhile, in the centuries preceding, another great wave of Celtic adventurers had crossed over to Britain, also to Ireland. There is scant record today of these migrations; their object seems to have been plunder and conquest, or at best settlement in less crowded territory. Certain it is that by the time of Julius Cæsar England, Wales, Scotland and Ireland were inhabited almost solely by Celts. Here, too, the Romans vanquished.

Cæsar first invaded England with an army and subdued the natives, and after him Claudius and Agricola followed. Agricola carried the Roman eagle as far as Scotland. The Emperor Hadrian built the famous Roman wall from the Tyne to the Solway in 121 A. D., and Antoninus later strengthened this wall. A legend tells of the conversion of the Trinobantes, a powerful Celtic tribe, to Christianity in 180 A. D., but this is not authentic.

Gradually the power of Rome declined and her hold on Britain grew weaker. But this did not mean freedom for the Celts, for at the same time the savage raids of the Picts and Scots from the North grew more frequent.

Between 286 and 294 A. D., a British chief, Cerausius, proclaimed the independence of the island and in 410 A. D., Honorius of Rome renounced all claim to Britain. The last Roman soldiers left and Britain was now exposed to the inroads of the fierce Saxons, Angles and Jutes. Vortigern, king of the Celtic Damonii, defeated the invading hordes of Picts and others in 411 A. D. This, however, was only a respite. The raids of the Northmen continued with increasing strength until the island was given over to the Angles and the Saxons, and what Celts were not exterminated or assimilated, sought refuge in the remote corner of Wales.

It is claimed that the Irish are the best representatives of early Celtic civilization, inasmuch as their isolation caused them to mingle less with foreign races. The history of early Ireland, however, consists chiefly of legends and traditions, and these cannot be relied on for accurate information. There are legendary accounts of five distinct invasions of Ireland: that of Partholan, the Greek; that of Nemed of Scythia; that of the Firbolgs, who came under five chiefs and settled in different parts of the island; that of Tuatha De Danaan, and lastly that of the Milesians or Scots. The Irish also invaded Britain repeatedly, settling in Wales, Cornwall, Devon and in the northern districts of Scotland. The Irish were converted to Christianity during the fifth century, and their great missionary, St. Patrick, did much to plant the new religion firmly in the soil.

Centennial Exposition.—In 1876, by decree of Congress, an international industrial exposition was held at Philadelphia to celebrate the one-hundredth anniversary of America's freedom. This was the first of a series of such international expositions. Congress voted a capital of $10,000,000 to be raised by contributions of $10 each.

The five main buildings of the exposition were Memorial Hall (the art gallery), Machinery Hall, Horticultural Hall, Agricultural Hall and Main Exhibition Building. Other buildings were erected by the national government, by state governments, by foreign governments, by industries and by individuals, making a total of one hundred and ninety buildings. The exposition lasted about five months and its attendance showed thirty-three nations represented.

Central America.—Central America includes the six republics of Panama, Guatemala, Honduras, San Salvador, Nicaragua, and Costa Rica, with British Honduras. To the northwest lies Mexico, to the southeast Columbia or New Granada, and on its other sides are the Pacific Ocean and the Caribbean Sea. This strip of land, comprising Central America, connects North and South America, though the Panama Canal, completed in 1914, makes possible a passage of ships between the two bodies of water. The area of Central America is estimated at about 200,000 square miles; the population is about three and a half million. There are three distinct classes of people—the whites, mestizoes, or the offspring of whites and Indians; and the pure-blooded Indians or aboriginal natives. About one-twelfth of the population is white. The table-lands have a moderate temperature, but the low-lands suffer from excessive heat. The vegetable productions are as various as the climate and the zoology is that of all tropical America. Agriculture is the chief means of livelihood; some of the other industries are mining of gold, silver, iron, lead and mercury, the working of jasper and marble, and the collection of sulphur and salt. Guatemala is known for its large number of active volcanoes, having more for its extent of territory than any other country, except Java. The highest in Central America, Agua, is said to have an elevation of 15,000 feet. The coast lands are narrow, the rivers small and short, but there are several lakes of considerable size.

Central America contains relics and ruins of interest, showing the life of the aboriginal inhabitants who had gained some knowledge of the arts of life. The Spaniards in 1524 organized Guatemala; little by little they subdued the natives. The government, instituted by Spain, was in a measure subject to Mexico, but in 1821 the inhabitants declared their independence. In 1823 the five states united as a republic, but civil dissensions dissolved the union.

Central Asia.—The first known home of any civilization was in the valleys of the Oxus and the Jaxortes Rivers. There is now here a vast desert plateau, probably once fertile, covering large parts of Afghanistan, Turkestan, Thibet, Eastern Turkestan and Mongolia, where there is little rainfall, no outlet for the streams except in rare instances, but where the moisture on the mountain sides, melting into rivulets, enables the earth to this day to support a population. The streams and rivers lose themselves in salty swamps or sink into the sands. The Himalayas separate the frozen plains of Thibet from the sun-baked plains of India and for ages separated their inhabitants. But the mountain chains in Asia run east and west; thus China lay open towards the East. This also shows how the configuration of a country determines migrations as well as the development of tribes. Later the outlets of trade were the same routes over which once lay the paths of invasion and conquest. From Central Asia migrations proceeded eastward to the valleys of the Chukiang, Yang-tse-Kiang and the Hoang-ho; southeastward to the valleys of the Indus and the Ganges; westward toward the valleys of the Tigris and the Euphrates, and further on to the Nile. Not only were these river valleys the routes of commerce and migration, they furnished fertility of soil to the farmer and the tribesman who herded his flocks. Those people, whom we know as the Chinese, came down the Hoang-ho; the Hindus came through the Punjab and the Indus valley.

Chalons, Battle of.—In the middle of the fifth century A. D. the Huns, a barbaric tribe from Central Asia, under the mighty leadership of Attila had conquered much of Eastern Europe and were preparing to subdue Western Europe as well.

The Roman Emperor Aetius and King Theodoric of the Visigoths, the two most powerful rulers in Europe, formed an alliance against these invaders and in 451 their combined armies opposed Attila at Chalons-sur-Marne, in northern France. Although not actually defeated, Attila's army was so slaughtered in this encounter that he was never again able to terrify Europe.

Chile.—The first European to land in Chile was Magellan, the Portuguese explorer, at Chiloe, in 1500. After the conquest of Peru by Pizarro, an expedition was made to Chile under the leadership of a Spaniard, Diego de Almagro (1535). Although unsuccessful, it was followed by another, in 1542, under Pedro Valdivia, who succeeded in annexing the territory as far as the Maipu River, and in founding the capital, Santiago. Northern Chile formerly was a part of the dominions of the Incas of Peru. By 1550, the conquest of Chile was complete to latitude 37° S. The governors of Chile were subordinate to the viceroys of Peru and were appointed by the King of Spain. Chile, with other Spanish provinces, revolted from Spain, was at first defeated, but finally succeeded in establishing her independence in 1818, though the last stronghold was not taken until 1826. In the revolt Don Bernardo O'Higgins, son of one of the last viceroys of Peru, played an important role, and was the first dictator of the new republic. When peace was at last gained, Gen. Blanco Encalada became the first constitutional president. In 1865, Chile and Peru were in war with Spain; a little later Chile defeated Peru and Bolivia and advanced her borders to the north. Trouble with the United States over the wounding of two American marines in a riot at Valparaiso resulted in an apology and payment of indemnity by the government of Chile, though for a time war seemed imminent. Revolutionary outbreaks in Chile were common, for the social organization was feudal and the government, even after the establishment of the republic, remained conservative. The past few years have seen a new growth of liberalism.

Chile lies near Peru, Bolivia, and the Argentine Republic, bounded on the south and west by the Pacific Ocean, and comprising about 307,620 square miles. Its breadth ranges from 50 to 200 miles. The valley of Chile is the richest part, suitable for stock-raising. Cattle graze on the plains and rolling lands lying between the Andes and the coast range. The mountains are covered with heavy forests. In central Chile the land is fertile, but in the southern part it is poor, excessive rainfall making it unfit for agriculture. The whole country is subject to earthquakes, several towns having been almost totally destroyed in recent years. The mineral products are most important, consisting of nitrate of soda, large beds of which are found in the northern deserts and are valuable especially for fertilizing purposes; there are also excellent bituminous coal, copper, silver, gold, quicksilver, lead, iron, antimony, and bismuth. Wheat, barley, maize, hemp, potatoes, beans, apples, pears, peaches and oranges are raised and exported.

The constitution of the republic is modeled on that of the United States, the government consisting of a president, an advisory council, and a legislature composed of a Senate and a Chamber of Deputies. Chile was the first South American state to construct railways, and a fairly extensive telegraph system is in operation.

China.—Ancient China lay in two river valleys: the Hoang-ho and the Yang-tse-Kiang. How the people came there and from where is little known, further than that when they migrated from their home near the Caspian Sea they were already in possession of some degree of civilization, knew some astronomy, cultivated flax and grain, and wove cloth for garments. The Chinese is probably the oldest of all extant civilizations, but the one of whose origins we know the least. This may be due to isolation or distance or both, to race pride



or difference in creed and culture. The legends handed down are purely mythical, dating the Creation, for example, two million years before the birth of Confucius. Mythical dynasties fill in long periods of time which do not concern us here. But it is pretty certain that prior to 2200 B. C. rulers were elected, and that before that date no ruler governed all of China. Suy-Jin-Sho, about 2852 B. C., is said to have taught the use of fire, and Fu-Hi to have invented the process of making iron, while his successor showed the farmer how to use the plow. The Emperor Chun laid down the five immutable laws: duties of fathers to children; of a king to his subjects; of the aged to the young; of married people and friends to each other. The foundations of Chinese civilization are these laws, principally the respect for ancestors, a fundamental idea which has stereotyped Chinese life and thought and kept it unprogressive for four thousand years. The founder of the Chang dynasty was a superior man and celebrated by Confucius (Kung-Fu-Tzse), China's greatest philosopher and moral teacher. Confucius confined his teachings to the daily intercourse of men and their relations to each other. He was a sensible and normal man and untouched by the dreamy tendencies of the Hindu. "He spoke of human affairs," said one of his successors, "and he left the supernatural alone." Law and order were his subjects, not anarchy and intrigue. He expounded the writings of the ancients, enjoined conformity to their principles together with morality of life and fidelity to ethical principles. To the question of a student who asked if there were any one word which might be taken as a general rule of behavior throughout a man's life, he replied: "Is not such a word 'Reciprocity'?" "Do not unto others what you would not have them do unto you," he said. Confucius died 478 B. C., 73 years old, saying: "No wise ruler appears; no one in the whole kingdom desires my advice; it is time for me to die."

Mencius (Meng-tse), appears in 371 B. C., the first Chinese apostle of democracy. He taught: "The people are the chief element in a country; after them are the deities of the arable land and the corn; while the ruler is the least important of all." It is no wonder that he lived in retirement and died neglected, although he received official recognition in 1,300 years and was given fourth place among the scholars in the Halls of Confucius. His refutation of the Taoist, Chan Chu, who taught "Every man for himself," showed him in the "Middle Way" as taught by Aristotle, and he opposed the socialists who claimed that all, even kings, should sow and reap if they would eat. In 247 B. C., the Emperor, Tsin-Chi-Hwang-Ti, accomplished a thorough revolution, introduced many reforms, built roads and canals, erected the Great Chinese Wall after he had driven back Huing Nu, the ancestor of the Huns. He also burned all the books.

The kingdom of the Huns arose in modern Mongolia about 1200 B. C., and created the beginnings of a political unity. After the unification of the Huns under the Chan Tschau dynasty, 1122 B. C., the Chinese feudal system began. The Huns wasted northern Shansi in 910 B. C. and in 700 advanced to Shantung, and in 650 B. C. devastated Pechili. The incursions of these Mongolians from behind the Great Wall were made by the same peoples who later invaded Europe. With cabins on wheels and drawn by oxen, themselves living on horseback with dried meat and desiccated milk packed between the saddles and the backs of their steeds, the Tartars swept over the earth, north, south, and west, laying it waste. In 1203 A. D. these hordes united under Temudjin, better known as Ghengis-Khan, Chief of Chiefs, who after overwhelming his former masters, the Chinese emperors, defeated Persia, Russia and Poland, penetrating Europe as far as the waters of the Oder and Moravia. He imposed his yoke upon Russia for two centuries, dying in 1227, ruling China, Thibet, Persia, and the most of Russia, to which his grandson added Pechu and Cechin, China. It is said that Ghengis-Khan destroyed 18,500,000 human lives.

In 1368 the Chinese Ming dynasty expelled the Mongolians and ruled till after the arrival of the Portuguese in 1514, but not until after Timur (Tamerlane), had scourged the world and the Turks had taken Constantinople and driven an alien wedge into the very trunk of Europe, which

has not been dislodged to this day. In 1644 A. D. China was again overthrown by the Manchu Tartars who reigned till the beginning of the present century. "So the yellow race," says Duruy, "has made a great noise in the world. Through the Huns, it brought about the fall of the Roman Empire; through the Mongols of Ghengis-Khan it raised in the thirteenth century the vastest domain in the universe; through those of Tamerlane it overthrew and crushed the population of twenty kingdoms; through the Turks it held Christendom in check for centuries; through the Chinese it has constituted a great society which for fifty centuries and with unbroken continuity has caused a large portion of the human race to enjoy the benefits of civilized life."

China today has nearly a third of all the people in the world, 438,000,000, according to the Chinese Census Reports.

Chivalry.—The institution of Chivalry arose in the eleventh century and died out in the fifteenth. It was a distinctively religious as well as military institution which developed the spirit of gallantry. The protection of the weak was one of its first duties, but especially when women became its object, being carried sometimes to great excess. Loyalty was held in high esteem, with fidelity to engagements both tacit and defined, and a breach of faith was held to be a disgrace which no valor could offset.

Education for the offices of chivalry was begun at the age of seven, when a youth was a page or valet till the age of fourteen, when he became a squire. Lords and knights trained boys in martial exercises, while the ladies of the castle taught them the duties of religion and love. At the age of twenty-one the squire became a knight, for which he prepared himself by prayer and fasting until he was inducted into his high calling through elaborate ceremonies.

Cleveland's Administration (1885-1889), (1893-1897).

Interstate Commerce Act (1887).—An important act of legislation was enacted by Congress in 1887, establishing the Interstate Commerce Commission. This act was amended by later legislation. The members are prohibited from engaging in any other business, and any person is ineligible who is in the employ of, or holds any official relations to any common carrier, subject to the provisions of the act. The Commission has power to inquire into management of common carriers and is required to enforce the provisions of the act. The general purpose is to prevent discrimination by common carriers, through rebates or otherwise and to secure reasonable and just transportation charges.

CLEVELAND'S ADMINISTRATION

I. Charleston Earthquake.—On August 31, 1886, Charleston was visited by the most violent and most destructive earthquake that had up to that time occurred within the borders of the United States. Seven-eighths of the houses of the city were rendered uninhabitable. The property damage was estimated at $8,000,000. Many persons were killed.

II. The Statue of Liberty.—In 1886 the Statue of Liberty was completed in New York harbor. It was designed by M. Bartholdi. The French people presented it as a gift to the United States in commemoration of the friendship between the two nations.

III. Department of Agriculture.—During the first Cleveland administration, an additional department of government was created by Congress and a Secretary of Agriculture was added to the President's cabinet in 1889.

IV. Columbian Exposition. — The Four Hundredth Anniversary of the discovery of America by Columbus was celebrated in the form of an international exposition in Chicago in the summer of 1893. The total cost of the exposition exceeded $26,000,000. All the civilized nations of the world participated as exhibitors.

V. Rural Mail Delivery.—The free delivery of rural mails was inaugurated on January 1, 1896.

VI. The Monroe Doctrine.—During the second Cleveland administration the controversy over the boundary line between British Guiana and Venezuela became acute. England threatened to act contrary to the long established Monroe Doctrine by landing troops and occupying Venezuelan territory. Cleveland and his Secretary of State, Richard Olney, made vigorous protest and warned England to hold strictly to the prevailing doctrine. The President was prepared to use the United States Navy to enforce the American point of view. England graciously acceded to the American demand and thus gave final authority to the unwritten but effective international code known as the Monroe Doctrine. Cleveland will always be remembered for his vigorous assertion of American principles.

Civil Service Reform.—The custom whereby the President of the United States, on coming to office, would place new people in all government positions had, by the time of Grant's accession (1869-1877), resulted in a vast amount of political corruption as well as inefficiency in the civil service. In 1871 the pressure of public opinion caused Congress to pass the first law of Civil Service Reform, authorizing the President to organize a system for regulating the appointments of minor civil service positions. The President appointed a commission which arranged competitive examinations for applicants to the civil service. This method of appointment was in practice for three years, at the end of which time the influence of the politicians in Congress prevailed in withdrawing the financial support from the Commission.

In 1881 President Garfield was assassinated by a disappointed office-seeker and this horrible calamity aroused public opinion to such an extent that Congress was forced to pass the Pendleton Bill in 1883, again providing for the Civil Service Commission and examinations. The number of offices thus filled was to be 14,000. Each President since has added to the number and in 1912 no less than 367,000 positions were under the authority of the Civil Service Commission.

Excellent work in building up this system has been contributed by George William Curtis, the head of the first Commission; by Theodore Roosevelt, head of the Commission under President Arthur, and by Gen. John C. Black, head of the Commission under Roosevelt and Taft.

Civil War, Declaration of in United States.—When Lincoln became President, March 4, 1861, he at once made clear his purpose to bring back to the Union the seven southern states which had seceded and were actively preparing for defense. "The Union must be preserved," he said, "with or without slavery." He wished to avoid war and was determined that, if it came, the South must strike the first blow. His Cabinet was divided; some wished a compromise with the South, others would allow the Union to be broken A majority, however, supported the President in sending supplies to the Federal garrison at Fort Sumter. (See Sumter, Firing on.)

When Fort Sumter was attacked, the flag of the Union defeated, the South had willfully broken the law of the land. Lincoln sent a proclamation to Congress, calling for 75,000 volunteers to put down the unlawful rebellion of the southern states. He commanded the members of the Confederacy to "disperse and retire peaceably to their respective abodes within 20 days." Congress approved the proclamation and soon 90,000 volunteers were in readiness. Jefferson Davis, President of the Confederacy, thereupon called for 32,000 volunteers and authorized attacks on northern merchant vessels. Lincoln declared a blockade against all foreign ships entering southern ports and enforced this blockade with United States Warships.

In the North party distinctions were forgotten as Democrats and Republicans united to defend the Union.

Civil War in the United States.—(For events leading up to this war see United States—History.)

The Civil War between the Confederacy of southern states which had seceded from the Union and the northern states which upheld the Union, began in 1861, when the Confederates fired on the Union force at Fort Sumter. The southern states which made up the Confederacy were: South Carolina, Mississippi, Florida, Alabama, Georgia, Louisiana, Texas, Arkansas, North Carolina, Virginia and Tennessee.

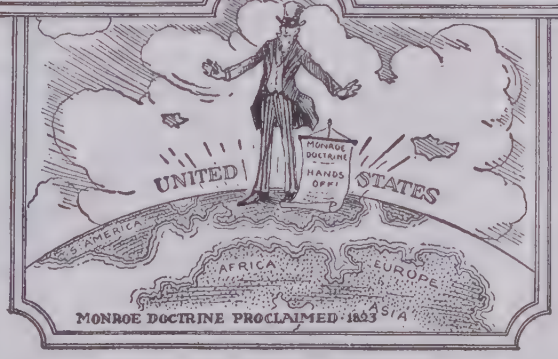
The northern (Federal) army was nearly double that of the Confederates and the northerners had the additional advantage of the national fleet which blockaded the harbors of the South. The South had superior military organization under the able General Lee, while the command of the northern troops was continually shifted.

The fighting was mainly on southern territory. Three attempts of the Confederates to cross the border were immediately repulsed. The two chief aims of the Federals were the capture of the Confederate capital, Richmond, and the control of the Mississippi. The latter was attained after the long siege of Vicksburg in 1863; but for four years Lee kept the Union army from Richmond. He was forced to surrender after Grant's "hammering" campaign of nearly a year. Sherman's triumphant march through southern territory (1864-5) did much to weaken the Confederacy and the two naval victories of Farragut aided the success of the North.

The wise and strong leadership of President Lincoln kept up a morale in the North, without which victory would have been impossible.

Columbian Exposition.—In 1893 the World Columbian Exposition was held in Chicago in honor of the four-hundredth anniversary of Columbus' discovery of America. The exposition should rightly





have been on the preceding year, but preparations were not then complete.

Congress voted a sum of $1,500,000 for the enterprise, Chicago gave a fund of $10,000,000 and the total expenditure was estimated at $26,000,000. The site of the exposition was the lake front at Chicago, where many buildings were erected for the various exhibits.

Conservation Policies. — President Roosevelt in his first message to Congress opened "the most vital internal question of the United States," and prevailed upon Congress to authorize him to withdraw at his discretion timber and mineral lands, including more than 100,000 acres of Alaska coal lands. The timber lands amounted to 150,000,000 acres. In May, 1908, he called the famous conference of governors at the White House to outline a policy and in June, 1902, the Reclamation Act was passed, which provided room and homes for tens of thousands of people.

Coolidge's Administration (1923-1929).—By rigid economy in governmental expenses substantial reductions in the income tax rate were made possible under the presidency of Calvin Coolidge. The Dawes reparation plan regarding the manner of payment and collection from Germany of reparations was signed in London on August 30, 1924, by representatives of the Allied powers and Germany.

On May 26, 1924, the president signed an important measure which limited immigration after July 1, 1927. This Act divided the aggregate quota in accordance with the national origin of the entire population according to the latest census.

In the opening of the sixth Pan American Conference at Havana on January 16, 1928, President Coolidge pleaded for friendship and understanding. Richard Evelyn Byrd made his first flight over the north pole in 1926, and on June 29-30, 1927, flew from New York to France. The outstanding event of 1927 was the transatlantic flight of Charles A. Lindbergh from New York to Paris which greatly stimulated interest in Aeronautics.

In 1928 talking moving pictures witnessed a great revolution of the industry.

Crimean War.—In 1853 Napoleon III. of France demanded that Turkey turn over to Roman Catholic monks all the "holy places" in Palestine occupied by Greek Catholics. Russia, the strong Greek Catholic nation, opposed such a measure and declared a protectorate over all Greek Catholics in Turkish territory. Turkey forbade Russia's protectorate, whereupon Russia declared war on Turkey. France and England, failing in their attempts to arbitrate, joined the war on the side of Turkey.

The fighting was chiefly on land, as the Russian fleet avoided encounter with the combined French and English fleets. The Turks defended their own country successfully, while France and England centered their attack on Crimea, a province of Russia on the Black Sea. Here, after the long siege of Sebastopol, Russia surrendered. By the peace treaty in 1856, Bessarabia was ceded to Turkey by Russia, the Danube was opened for foreign navigation, the Black Sea became neutral territory for international commerce and the integrity of the Turkish Empire was established.

Crusades.—The Roman people and their neighbors were still, after the fall of the Empire, killing each other in the wars of the barons, largely because they had nothing else to think about. But at Constantinople (so called by Constantine of the Byzantine Empire), the people were devloping learning and the arts to some degree, maintaining a high standard of comfort, and also some stability of government. As early as 637, A. D., Jerusalem had fallen into the hands of the Saracens,

who permitted the Christians to continue their pilgrimages to the Holy City for political reasons. But in the eleventh century occurred another one of the great Chinese Tartar invasions, this time of the Seljukian Turks, a wild and ferocious race with few human traits or instincts. They overran the whole of the Saracen Empire before they entered Europe, taking Palestine and exposing the Christians to the greatest hardships and indignities, even cruelty and death. The news of such conditions leaked out to the Western world, and Alexius I. (1081-1118), of the Eastern Empire, wishing to regain the provinces that had been taken by the Turk, appealed to Pope Urban II. for aid to help win back the Holy Land. The Pope saw his opportunity in something that could be construed as an act of piety to extend the limits of the church and also of the Papal control and prestige. There was also the possible recovery of Eastern supremacy.

At this juncture Peter of Amiens, a priest called the hermit, returned from the East where he had seen and even experienced much of the hardship endured by the Christians of Jerusalem. It suited the Pope to welcome him and make of him the chief means of the propaganda that was to awaken Christendom to the Papal purposes of militant imperialism. Peter travelled throughout all Western Europe preaching eloquently of the injustice he had suffered in Jerusalem.

Councils were held at Placentia and Clermont, Peter preaching the Holy War, which, considering the state of Europe and the morals of mankind, set a very dangerous precedent. But Europe was aroused. Whatever may have been the motives of the Pope, his words after Peter had spoken at Clermont were those of a statesman: "Go now and take the sword of the Maccabees and protect the people of God..... The barbarous Turks have planted their colours on the very shores of the Hellespont, *hence they threaten war to all the states of Christendom. Unless you oppose a mighty barrier to their triumphant course, how can Europe be saved from invasion?*"

At the conclusion of this address the whole assembly arose and shouted: "God wills it," and then proceeded to enroll for the Crusade, so called from the fact that all agreed to wear a red cross on the right shoulder. They were soon joined by thousands from every quarter of Europe, and the First Crusade had begun. Early in the spring of 1096, A. D., 700,000 of them, divided into two armies, started for the Holy Land. The first army marched under Peter the Hermit. He had no authority and they had no discipline. It was one of those ghastly tragedies born of ignorance or foolish dreaming which have cursed the race from the beginning, though perhaps never more conspicuously than during the Crusades. Peter's army was destroyed. Many were killed on the way through Hungary and Bulgaria on account of the outrages they had committed on the inhabitants, for the Crusade had become a movement, and movements always attract those who have their own axes to grind. The second army was under experienced commanders like Godfrey and Baldwin, and it reached Constantinople.

The cause of the Crusaders became a prey first to the crimes of those individuals who had crept into the army for purposes of personal gain, then to the jealousies and fears of the Byzantines against those of their own faith; then to the jealousies and quarrels of the Roman Crusaders amongst themselves. Indeed it was the old story—the Crusades were destroyed as the Greek civilization was destroyed—they committed suicide—through their crimes and blunders. The Turks were better organized, not better equipped; they were ruled by one mind. The European commanders were divided among themselves. Through these conditions the Cross lost what had been gained in the conquests of the first Crusades and the crescent won through unity of aim and interest and command. The Christians had to call for help, and again a Crusade was preached. Louis VII. of France and Conrad of Germany marched upon the Turks, but both met defeat, after which a violent disease broke out in the Christian camp, terminating the second Crusade without one particle of advantage to the Christian cause. In 1174, the illustrious Saladin was sovereign ruler of Arabia, Syria, Egypt, and Persia. He re-conquered Palestine and laid siege to Jerusalem, taking it after defeating the Christian army on the field of Tiberias, A. D. 1177. Jerusalem remained in the hands of the Turk from that day till General Allenby took it again during the Great War.

Several other Crusades followed with more disastrous results, each one illustrating what nobody seemed to have the intelligence to realize, that the whole tragic movement was and had been a series of object lessons on the insanity of insubordination and dissension in any great task or any great cause.

The results of the Crusades were both good and bad. The Pope failed to unite to Rome the Greek Church whose Heads had betrayed the Christian armies to the Turk. The movement undermined Feudalism and laid foundations for the erection of larger and stronger states in Europe. The Crusaders being brought into close contact with Greece and the Arabs, found to their amazement that these peoples were far more advanced in the arts, amenities and comforts of life than were the people of Western Europe. This led to the revival of learning. Books were brought back. Scholars returned with the Crusaders. Universities were founded, Padua and Paris in 1180; the universities of Naples in 1230; Vienna in 1238; Salamanca in 1240; Cambridge in 1280; Lisbon in 1290.

The Crusades opened up the communications between the East and the West; and an enormous business came to be transacted along these routes. This impulse laid the foundations of the greatness that was to accrue to France, England, Portugal and Spain, the nations first to take advantage of the new commerce. But probably the most important and far-reaching effect of this world movement was that, although defeated, the Crusaders were victors, in that they finally stopped for a period the triumphant advance of the Turk, till Western Europe was awakened and vivified by the new learning and enriched by the new commerce, to be able to stop at last at the Danube the advance of Islam and prevent Europe from becoming an Asiatic satrapy.

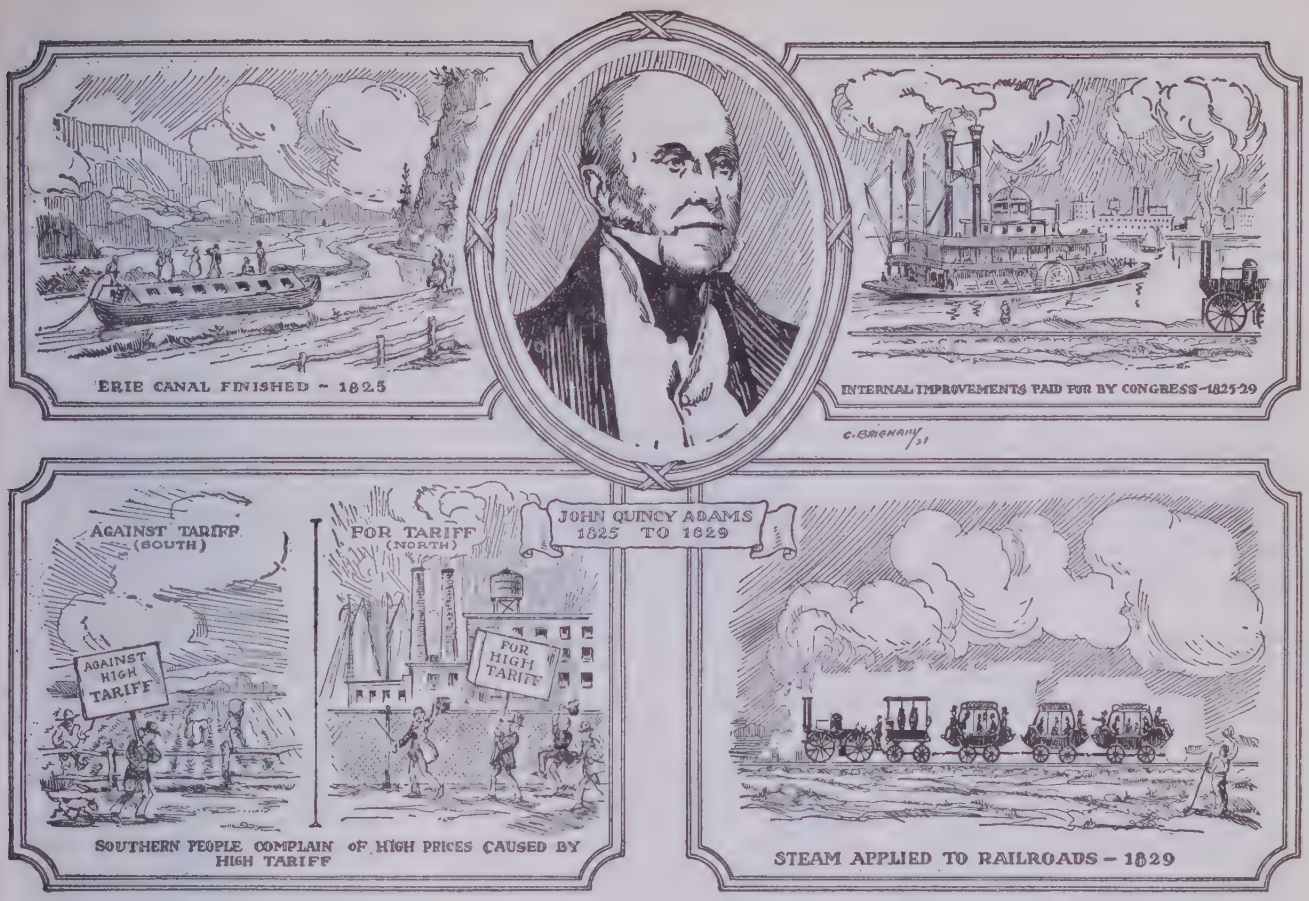
Cuba.—Cuba, called the Queen of the Antilles, was discovered by Columbus in 1492, settled by the Spaniards in 1511, contended for by French, Dutch, English and West Indian filibusters, and finally restored to Spain by the treaty of Paris, (1763). In 1848 the United States offered Spain $100,000,000 for the island, and meanwhile insurrections were occurring in Cuba against harsh Spanish rule. The United States battleship "Maine" was blown up in Havana harbor, 1898, while on a friendly visit, and as a result the Congress of the United States adopted resolutions declaring Cuba independent. War with Spain followed, during which Cuba was involved in the fights of El Caney, San Juan, the battle of Santiago, and the struggle before Las Guasimas. Under the treaty of peace the United States formally assumed the government until the Cubans framed a constitution. In 1902 the republic of Cuba came into existence and American troops were withdrawn. The Cubans later made a treaty with the United States by which the products of each are given a preference in the markets of the other.

Cuba is the largest and most westerly of the West Indies, situated at the entrance of the Gulf of Mexico, extending 775 miles from Cape Maysi on the east to Cape Antonio on the west, with a breadth of from 30 to 160 miles, and an area of 45,872 square miles. It is a beautiful island, covered with forests, and remarkable for its mineral waters and its limestone caverns containing stalactites. Its soil is marvelously rich, and agriculture flourishes, the sugar and tobacco industries being highly important. Among other products are copper, asphalt, iron, cocoanuts, palms used for hats and baskets, bananas, guavas, coffee, cacao, rice, maize, cotton and oranges. The population consists of Spanish, Cubans, Chinese, and other mixed nationalities. About two-thirds of these are white.

Custer's Troops Massacred.—In the latter half of the nineteenth century the discovery of gold attracted many settlers to the western part of the United States and one of the most sought after regions was on the border line of Dakota and Wyoming. This territory had long been occupied by the Sioux Indians who were reluctant to give way to the white man. The President ordered them to move westward into Montana, but they remained firm under their leader, "Sitting Bull", and fought off any invaders. An army was sent to drive back this tribe, but did not reckon with their strength. After two other bands of soldiers had been defeated, General George Custer in 1876 attacked Sitting Bull in the valley of Little Big Horn. Custer's troops were greatly outnumbered by the Indians, completely surrounded and cut off from any chance of escape. A horrible massacre ensued in which Custer and every one of his men were killed.

After the news of this disaster a larger army was sent, which succeeded in driving back the Sioux. Sitting Bull was captured and killed Dec. 15, 1890.

Denmark.—Denmark is the smallest of the three Scandinavian kingdoms. Its area is but 15,582 square miles, being connected with the European mainland by a peninsula, only forty miles wide. A part of this area is composed of sand dunes, lagoons and shallow bays, while the coast is indented by deep fjords or inlets. The surface does not reach an altitude of more than 500 feet. Denmark is an agricultural country, nearly 39 per cent of its population of two and three-quarter millions being farmers. The land early became the home of the Angles, Saxons and Jutes, whose brethren settled in



England. From these came the Vikings, who sailed as far as America and conquered large regions in Europe. A united kingdom sprang up about the ninth century. The history of Denmark is mostly like that of other countries, the history of war, mostly fruitless, and irrational and withal cruel. Napoleon brought the country to the verge of ruin, and in 1807, the British fleet reduced Copenhagen, after destroying the Danish fleet. In 1830 the Schleswig-Holstein affair developed animosity between the Danes and Germans, the German population rising against Denmark, until Prussia abandoned the cause of the Duchies and restored the former status. The question of the succession arose again in 1863, when the Germans overran Denmark. Schleswig, Laurenburg and Holstein were taken by Prussia and Austria. In the war between Austria and Prussia in 1866 these Duchies went to Prussia, During the Great War, Denmark, like the other Scandinavian countries, did no fighting.

Egypt.—"Egypt is the gift of the Nile," said Herodotus. This is not only true in the sense that the water has fertilized the borders of the river that runs here through the great desert, but the very life of the people, their trade, religion, industry and daily occupations were determined by the Nile. The fertility of Egypt is due to rainfall, in Abyssinia, and this great natural irrigation system became the mother of artificial irrigation systems, wherein the increase of population necessitated an arrangement since known as conservation. Above the delta, Egypt proper is but a few miles wide, and it is annually enriched by the overflow which reaches over twenty feet in depth. From ancient times these waters have been diked, reservoired, canaled, water-wheeled and otherwise handled and controlled, till the land has been refreshed by waters and soil from the Abyssinian uplands and the lakes of Equatorial Africa. Some of the most prolific causes of local disputes in ancient days arose out of questions of agricultural boundaries and the water rights of the ditches and canals made for drainage and irrigation.

Lower Egypt from the cataract to the sea is 700 miles long and varies in width from one to twelve miles. With little labour a man can raise each year three crops of grain, flax, vegetables and grasses, while grape vines flourish on the hillsides. Metals and building stones come from the Arabian mountains to the east, which, with the desert to the west, protect the people from invasion. The Nile is also the main artery of commerce and makes possible the situation of Egypt, a nation lying between two seas and three continents. Geographically, therefore, Egypt has every advantage. Manetho, who lived about 300 B. C., wrote a chronology from which we have learned a great deal about ancient Egypt.

The ancients considered Egypt as a part of Asia, not considering, as we do today, that the Isthmus of Suez cut it off from that continent. Up to the time of Menes, 5000 B. C., the country was inhabited by Cushites, a Hamitic people, who came by way of the Isthmus, as came later the Egyptians, probably from the plateaus of Central Asia, where their ancestors surrounded the Aryans. The small Cushite states existed for centuries before they were subdued by Menes, whose dynasty lasted for eight centuries. From Menes to the Persian conquest in 527 B. C., twenty-six dynasties are recorded. The ancient Empire at Memphis lasted till about 2800 B. C., the Upper valley having been conquered and made into one kingdom. Memphis degenerated into anarchy and decay when the rival princes of Thebes seized the kingdom, ruling in ten dynasties for 1,708 years, and conquering Ethiopia and the negro tribes of the Upper Nile. About 2000 B. C., a horde of Asiatic invaders, called the Hyksos, or Shepherd Kings, plundered the country as far as Fayum, slaughtering the inhabitants without mercy, burning their cities and destroying their records and improvements. It is believed that King Apepi, or Nub of the Hyksos, was the Pharaoh who made Joseph prime minister. The New Empire began with Ahmes I., the first king of the eighteenth dynasty, which expelled the Hyksos and rebuilt Egypt. Under him and his successors a desire for conquest arose with a military caste which first introduced into Egypt the use of the horse in war. The character of the people changed for the worse, but they became masters of the land, from Ethiopia to the Euphrates.

Under Thothmes I. and III., the palaces of Karnak and Luxor were built and Egypt ruled as far as Nineveh. Rameses II., or Rameses the Great, is said to be the most brilliant figure in Egyptian history, and among Egypt's most famous builders. He was the son of Seti I. Rameses defeated

the Hittites in battle and made a treaty. It is supposed that they taught the Greeks the rudiments of their art. Seti had built the Temple of Ammon at Thebes, "the most splendid single chamber ever built by an architect." Some believe that it was under the reign of Rameses that Egypt fell to the Assyrians from whom the Greeks helped to free it again. This started a Greek settlement in Egypt where the Greeks came to learn the wisdom of the Egyptians.

In 525 B.C., Egypt became a part of the Persian Empire, having been conquered by Cambyses, the successor of Cyrus.

Eighteenth Amendment (1919).—On January 16, 1920, Nebraska was the 35th state to ratify the Eighteenth Amendment to the Constitution of the United States, prohibiting the sale and manufacture of intoxicating liquors. As a war measure for the conservation of grain, the Food Production Bill had been passed on November 21, 1918, prohibiting the sale of intoxicating liquors after July 1, 1919, but the law was feebly enforced and the liquor interests went to the Supreme Court to be defeated unanimously on a decision rendered December 15, 1919.

Ecuador.—At the time of the conquest of Peru by the Spaniards Ecuador formed part of the great empire of the Incas. As the presidency of Quito it was long included in the vice-royalty of Peru. From 1710 it became part of the presidency of New Granda (or Santa Fé de Bogotá). In the revolutionary war against Spain, Ecuador, along with the neighboring territories, secured its independence (1822), and was ultimately erected into a separate republic in 1831.

A series of civil wars ensued, lasting almost without intermission for more than twenty years. A free school system has been established and three universities are maintained. Commerce flourishes and the government is progressive. Ecuador has enjoyed great prosperity in recent years. In August, 1868, a very destructive earthquake occurred. In 1869, Garcia Moreno, the head of the clerical party, overthrew the government. He was assassinated in 1875 and Dr. Antonio Borrero, the candidate of the non-official party, was elected president. A constitution was adopted and a president elected, and until 1884 the republic enjoyed a reasonably peaceable government. In 1884 another constitution was formed, which, with modifications in 1887 and 1897, has since been in force.

Emancipation Proclamation.—Lincoln abhorred slavery—yet his aim in the Civil War was not the freeing of the slaves but the preservation of the Union. At first he felt that to proclaim them free would be an unwise war measure, as it might antagonize the few slave states, known as "Border States," which had not seceded. By the second year of the war, however, he perceived that the freeing of the slaves would help the northern cause. In 1862 he recommended a resolution, which Congress passed, offering pecuniary aid and cooperation to any state which would free its slaves. The same year Congress freed the slaves in the District of Columbia and in all territories of the United States.

After the battle of Antietam, when the North had the upper hand, in the Fall of 1862, Lincoln issued a warning that if the Confederate States did not cease fighting and return to the Union by January, 1863, their slaves would be freed. As the Confederates paid no heed, Lincoln issued the Emancipation Proclamation on the appointed date.

According to this document the slaves in all rebellious states became free, with the exception of a few regions which had opposed secession. In the "Border States" slavery was allowed to continue. The army and navy would protect the freedmen wherever their authority extended. The negroes were advised "to labor faithfully for reasonable wages," but such as desired would be accepted for military service.

This move greatly weakened the South by depriving the wealthy class of $2,000,000,000 in property. It strengthened the North by adding to their army within a year 100,000 freed negroes, and by winning for them the moral support of the European powers who were opposed to slavery.

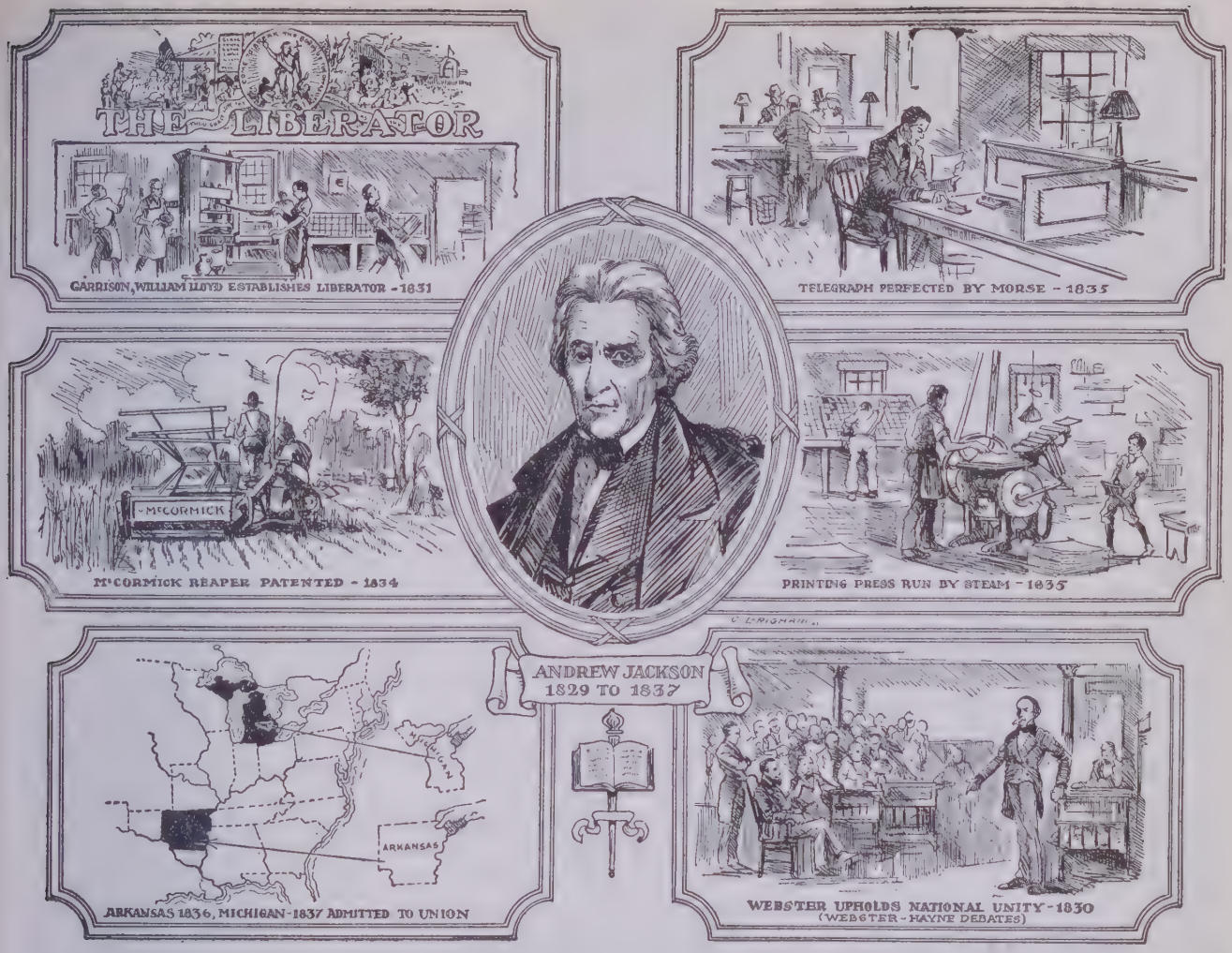
England.—The first people of whom we have record on the British Islands were a few families of savages of the lowest types of mankind. These dwelt on the banks of the southern and eastern rivers, and all they had with which to defend themselves against the cave-lion, cave-bear, hyena, elephant and many other large and dangerous animals, was the use of pieces of flint for tools and weapons alike. These savages died out or fled, probably before the ice age ended. The next race whose remains persist was a people of short stature, narrow heads and high cheek bones, with long hair knotted above their painted faces, who used axes, knives and darts made of bone, stone or wood. They lived on herbs of the forest, shell fish from the shore, or the game they could kill. These were the Iverians. The word Erin comes from Iverio.

About the year 500 B. C. an Aryan people, the Celts, after conquering the most of Spain and France (Iberia and Liguria), invaded and conquered England (Albion). They wore gold and silver ornaments and were armed with implements of bronze. They raised horses and cattle and mastiffs and tilled the soil. But the history of England begins with the invasion of that Island by Cæsar in 55 and 56 B. C. Doubtless the Phœnicians had been trading there for centuries, but they destroyed their records and the Celts had none. At least they had no books, but Cæsar tells us that they used the Greek alphabet for writing brief messages and the like. The Romans opened the country and in a hundred years had conquered it as far north as the Firth of Forth. They held the country for over 400 years.

At the mouth of the Elbe and Rhine, largely in and about Schleswig, lived three races of sea-wolves who called themselves Angles, Jutes and Saxons. They were Teutons of the Dutch rather than the German stock. After the withdrawal of the Roman garrisons, numbering 50,000 men, to oppose the invasions of the Germans in Rome, Vortigern, a British king of Kent, was foolish enough to invite these barbarians, who were good fighters and sailors, to come to England and help him fight the Picts and Scots, promising money and lands. He settled them on the Island of Thanet at the mouth of the Thames, hoping to keep them properly penned up, but under Horsa and Hengist they plundered and massacred their way to London, which they took, and became masters of the country. Thus came the Anglo-Saxons to Angle-land which might as well have been called Saxonland or Jutland as England. The Jutes founded their first kingdom in Kent, the Saxons settling further south under their king Cedric in 495 B. C., who formed the kingdom of Wessex or West Saxons, and Guest tells us that either directly or indirectly he became the ancestor of all the British kings and queens down to this day. It is likely that at this time lived King Arthur, if he ever lived at all, but it is not known whether his kingdom was near the northern boundary or in Cornwall and South Wales. But he was always fighting against the heathen Angles and Saxons and Jutes, only to be conquered himself, that is, the wars between the British and English resulted in Anglo-Saxon supremacy.

Christianity made some progress among the Britons but it was late in subduing the conquering race. In the year 597 A. D. Augustine and the Roman missionaries landed on the Island of Thanet, where Ethelbert, King of Kent, ordered them to stay till he knew what to do with them. He feared that they might get the better of him with their magic arts. But they came to an interview praying for the eternal salvation of those to whom they should come, and were offered hospitality in Canterbury where they preached to all who might listen. Soon Edwin, King of Northumberland, embraced Christianity. He was the strongest of all the English kings and his capital, Edinburgh, was named after him. In his day it was called Edwin's Burgh. After some backsliding, missionaries from Ireland and Scotland came to preach in England. The last of the kingdoms to be converted was Sussex, the people of which the papists taught to fish.

Charlemagne had a friend in England named Alcuin of York. He went to live in France to teach the people who were far behind the people of England in learning, for Charlemagne had to send to York for books for his school. It was in the Court of Charlemagne that Egbert, the first king of all England was trained. After Egbert came the great Danish invasions, followed by many years of pillage and fighting. Indeed there was scarcely a nation in those days free from the terrors of such war for very long at a time. Then we hear of Ethelbert, Ethelbart, Ethelwulf and Ethelred before we come to "England's Darling," or Alfred, who seems to have been one of the noblest characters who ever ruled a people. Under him there was the same series of wars with the pagans, but Alfred conceived the idea that to fight the sea-wolves he must have a navy, and he built the first British fighting fleet which he manned with the bravest sailors in the realm. He defeated the Danish fleet at Swan-wic (Swanage). But the Danes pushed on in great numbers, and Alfred fought against heavy odds till he with a few retainers was driven into a swamp where they nearly starved. In the spring after the dreariest of winters Alfred got his men together and attacked the Danes at Chippenham, defeating them, whereupon Guthrum, the Danish leader, became a Christian, Alfred became his god-father. He treated the vanquished with clemency and set himself to the task of building up the devastated country. He collected and studied all the old laws of the nation, keeping those he thought good and adding others based on the laws of Moses. These laws he laid before the Witan, or council of wise men, Witan



meaning wit or wise. He established justice in the administration of these laws and in many cases he was judge himself. He sent gifts to churches in Rome and Jerusalem and even as far as India, being the first Englishman to open communication with that country. In those days nearly all the working classes were slaves —ploughmen, shepherds, carpenters, cooks, and dairy-maids. These were bought and sold for from five to ten shillings. A slave market in Bristol was maintained for hundreds of years. But little by little this condition was mitigated.

Several kings followed before Ethelred, the Unready, forgot his defences and the Danes began to come again. They defeated the British at the battle of Maldon, after which England endured another period of misery. London was then called Augusta, so named by the Romans. King Alfred had rescued it from the Danes and built a fort on the present site of the Tower of London. The Londoners were rich and powerful and free, and they succeeded in beating back the corsairs. But about this time the English massacred many Danes, whereupon their friends on the continent made fearful reprisals which resulted in the Danish occupation of the island. Later Canute was crowned as king. The Londoners elected as their king Edmund Ironside, who fought many battles with Canute but lost in the end. After many cruelties Canute reformed, became a Christian, and favoured the English in many ways.

After a visit to the Pope at Rome he went to Scotland and made the king do homage to him. This was the king who was uncle of Duncan. With him was Macbeth who afterward murdered Duncan, and of whom Shakespeare writes. Canute died when he was but forty years old, and evil sons reigned after him. The monarchy was under the Danes, Canute and his sons, Harold and Hardicanute until 1042. The Saxon dynasty was restored in the person of Edward the Confessor, who reigned twenty-five years. His wife was the grand-daughter of Canute. He was one of the last Anglo-Saxon Kings. William, Duke of Normandy, who conquered England, was of the blood of Rollo or Rolf the Norseman and his men who, a hundred and fifty years before, had invaded France and conquered it, but were conquered in turn by the civilization of the Gauls, Romans and Teutons, whom they found there. These races all became amalgamated and even their language became French. Not more than 10,000 Normans entered England, and these did not mix for more than a generation. During William's reign of twenty-one years (1066-1087), the feudal system was established. The king became supreme landlord, making every man potentially a soldier, and his throne became the strongest in defence in all Europe. Vast changes were made to bring England up to the standards of Europe, and the Domesday Book was compiled containing the registration and survey of all the estates of England and their owners and retainers. The invaders became builders instead of destroyers. They built some of the most beautiful churches and schools in Europe, and in time themselves became Englishmen. Soon afterward Anselm became the Archbishop of Canterbury, through whose efforts Henry I. granted the Charter fo Liberties which became the groundwork of the Magna Charta under King John. During this reign Flemish weavers began the manufacture of woolen cloth at Worsted, making the name of the article, worsted. Four Norman kings had reigned eighty-eight years when Henry came to the throne and established a centralized despotism.

Henry was the first of the Angevin or Plantagenet line which reigned for 245 years, till 1399. The immediate successor of Henry II. was Richard I., the Lion Hearted, born at Oxford but educated abroad to become the Duke of Aquitaine. He joined the Crusaders and his brother John was made regent. After a brilliant career in the East Richard was imprisoned by one of the Christian Allies, Emperor Henry VI., from whom he was ransomed by a large sum. He perished in battle 1199, aged forty-two.

The reign of John was so perfidious that he was deserted by all but seven of his followers, who were foreigners. At Runnymeade, a meadow between Windsor and Staines, the great charter of English liberties was signed. (See Magna Charta.) The Mad Parliament was held at Westminster in 1258, but in 1295 a large sum of money being needed to defray the expenses of the war with France, Scotland and Wales, the first regular Parliament was called. The exclusive right of the Parliament to impose taxes was established. Later in 1322 it was decided that the consent of Parliament was needed for the validity of any enactment. In 1349 the Black Death carried off nearly a half of the population, and similar destruction followed in 1361 and again in 1369. England struggled through a long period of misery under many feeble and wicked kings, the Lancastrian line beginning in 1399. The Privy Council gradually usurped the powers of Parliament. "The War of the Roses" resulted in the accession of the Yorkist kings of the White Rose. The infamous Richard III. became king at thirty-three years of age in 1483, and reigned two years until he was vanquished in battle by Henry of Richmond, the first of the Tudor Kings.

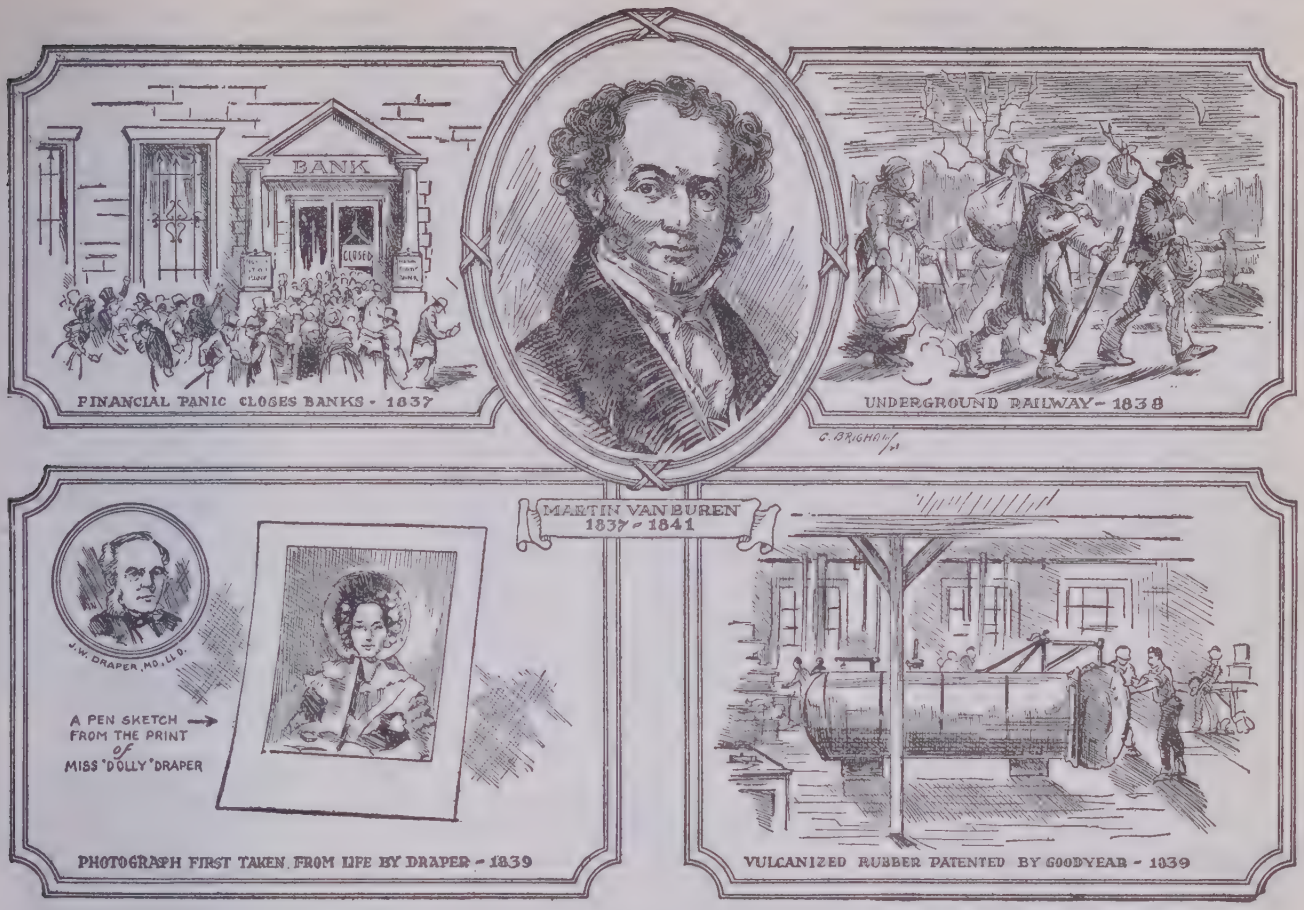
The Tudor kings came at the close of the medieval period, finding England prostrate and near to inward dissolution through the civil wars. They left to the Stuarts a kingdom strengthened and developed, united with Scotland, and free from Rome. They laid the foundations of the British Empire of today. The great achievement of this period was the religious and political revolution which brought about the separation from the church of Rome. For a long time before Henry VIII., the people had been dissatisfied. Wycliff had voiced the English feeling in his attack upon the organization and discipline of the church, although the nation was not ready to follow him in his views of the doctrines of Rome. The Papacy became the ally of France during the hundred years' war. The clergy had become very wealthy with ill gotten gains and equally corrupt and had ceased to perform properly the duties of their office. The English clergy stood apart from the nation, owing allegiance to a foreign power, till the antagonism reached the limit of endurance. The whole question arose out of the issue of Henry's divorce, ironically enough, since this king so soon found an easier method of getting rid of his wives. He made no important changes in church doctrines, keeping a "popery without a pope," but he gave the English Bible to his subjects, although he was to be its interpreter. Changes of doctrine were made under his son. A reaction occurred under his daughter, Mary but, the sect of the Puritans grew up, and Elizabeth had to manage between these two extremes. The Catholics claimed Mary Stuart for the rightful Queen. The Spaniards interfered and were about to settle the matter with an "invincible armada," but the defeat of this fleet settled the matter. The Puritans grew in power and appeared in increasing numbers in the House of Commons, while the government made many efforts to diminish their influence. James stood for the divine right of kings, and an established church as the support of the monarchy. He taxed the country without the consent of Parliament and pursued a distasteful foreign policy. He imprisoned some of the most distinguished members of the bar. attacked the House of Lords, and was all in all an unkingly man. The House of Commons was the only estate in England which had the power or inclination to offer effectual resistance to the crown. This body made its protestations under James, and more effectually under Charles I., who was false to the core and incapable of keeping faith. The Commons found it impossible to control such a king by constitutional means. As he persisted in his illegal and arbitrary course, the conflict developed, and the Commons determined to regain the liberties of the nation through the elimination of so irresponsible a despot. Charles was beheaded and Cromwell took the helm. Cromwell was a despot but used a kind of despotism with which the people were unfamiliar. His brilliant foreign policy made England stronger than it had ever been. His energy and ability dazzled even his enemies. After his son and successor had made a feeble attempt to carry on the work of the great Cromwell, the mass of the nation hurried to receive the returning Stuarts. It is probable that never in English history has there been such an anti-climax as the reign of Charles II., after Cromwell. The Royal Palace became little better than a public brothel. Men openly scoffed at anything that smacked of morality. The literature of the time was mostly base and sensual, and what Cromwell had built up abroad for the dignity and security of the nation fell away. But a reaction came, and the Whig party was formed in 1679. Such was the despotic rule of James II. that Whigs and Tories united in asking William of Orange to invade the country and assist in the restoration of the ancient liberties of England. James fled to France and Parliament declared William and Mary king and queen of England. In 1700 an Act of Settlement made the English sovereign as much a creature of an act of Parliament "as the pettiest tax-gatherer of the kingdom."

This revolution was a victory for the liberty of the English people and it showed that they had determined that no king should reign in England who did not reign for the good of the people. All the pretensions of the older despots had been wiped away forever. The people even hunted down the "bloody Jeffreys," whom they carried to the Tower, where he finally died in misery. In the reign of William religious toleration made its appearance and the persecution of the dissenters ceased. They built chapels and held services without fear of interference. William saw the growing power of France and the benighted bigotry of the church of Louis XIV., who had been persecuting the Protestants most cruelly. Many of these unfortunate people fled to England, carrying with them many useful trades and arts, especially silk-weaving, in which they were especially skillful. Many of these descendants of the Huguenots are still among the noblest of the people of England and her colonies. Until this time no one could even print a pamphlet without permission, but liberty of the press was established in 1695, upon which a number of newspapers sprang into existence. There had been but one or two before, and these hampered. Later, the speeches in Parliament were allowed to appear.

Meanwhile the wars with France were going on. After Anne came to the throne England and Scotland were united. When she died, the people sent for a petty German Prince, George of Hanover, and made him king. He was the most prosaic and mediocre of individuals and could not even speak English. Whig and Tory strife began to take the place of civil wars. Both parties wished to maintain the British monarchy under the Constitution, the latter feeling that the Constitution was beyond mending, and the former wishing to keep it in touch with the growing needs of the people. The Tories acted for the higher classes, the Whigs for the whole nation. "The Tories wished all people to obey the bishops, to believe the prayer book and to go to church. The Whigs thought all people should judge for themselves, and might become dissenters if they wished." The English and French came to blows about the American colonies and things went badly for England until Pitt came to the front. His very personality inspired the English nation, and he became its idol. He ended the rule of France in America when he sent Wolfe to Quebec, where he defeated Montcalm in 1759. England became interested in India, and the East India Company was formed. There again Pitt fought it out with the French and East Indians as he had contended with the French and Indians in America, and at the battle of Plassey in 1757, defeated the enemy. Since that time the British have ruled India and have kept the peace for the most part in that land of anarchy.

The American Revolution followed, in which the United States was lost to the British crown under George III., who went mad. In the year that the Constitution of the United States was adopted, 1787, England abolished the slave trade. Britain gained more of India and the whole of Ceylon, began to plant colonies in Australia, New Zealand and Tasmania, thus expanding while France was not growing at all. Then came the French Revolution and the wars of Napoleon. Wellington at Waterloo and Nelson at Trafalgar ended this long and bloody war. After the reigns of George IV. and William II., Queen Victoria came to the throne, the greatest and wisest ruler, as well as the best beloved, who ever sat on the throne of England. Her reign saw the development of the great industrial revolution and the material enrichment of the Empire, the Afghanistan wars, the Crimean war and the Sepoy rebellion. In the American rebellion, the English people sympathized with the section that furnished their cotton; the government recognized the Confederacy as belligerents; and for a time the whole nation sought to establish a slave-holding republic in a half of this land. An international tribunal assembled at Geneva awarding money to America, for damage to her shipping. It is believed that it was through the good offices of Queen Victoria that England did not come out openly as an ally of the South. In 1867, the Dominion of Canada was formed, embracing all the provinces except Newfoundland. The Zulu wars in South Africa were soon followed by the South African war in which England contended for rights of representation with taxation and military service. When the English won they proceeded at once to turn over control of South Africa to the Dutch who were in the majority, an act of good faith unexampled in international policy up to that time.

The heroic part which Great Britain played in the war of 1914 is too long and fine a story to be told in so brief a resume as this, but it is well to remember that but for the navy of Great Britain, the world



would have gone to the Hun in thirty days after hostilities began. Whatever may have been the outcome of the "Peace", in the first instance Britain fought, as her Allies fought, for the principle of Public Right against the despotism of Public Might.

Erie, Battle of Lake.—When the prospect of the Americans was dreariest in the War of 1812 a small, hastily built fleet under Commodore Perry defeated an English fleet under Barclay on Lake Erie in September, 1813, and so turned the whole tide of events. Through this victory the United States gained control of the Great Lakes and were able to re-capture Detroit. Out of 490 men the Americans lost 123 and out of 460 Englishmen 135 were killed.

Europe.—The old Assyrians spoke of Asia Minor as Assur, sunrise or East, and they called the land to the West Irib or Ereb. From this came the name Europe, to designate the smallest of all the continents except Australia, its area being 3,796,000 square miles, or one-fourth greater than that of the United States, not including Alaska. The coast line of Europe, lengthened by many islands, channels and deep penetrations of the sea into the land, has been one of the largest factors in its development. The low plains, the rivers, the absence of deserts, the temperate climate, the distribution of rainfall, and the variety of mountainous structures are features of value, responsible for the abundance of crops, the accessibility to markets of the world, and the immense store of mineral wealth. The three most important topographic forms are the highland belts in the south, the secondary mountains north of this, and the lowlands. The highland belt is the western extension of the great mountain chains extending through the Old World from the upper courses of the Yang-tse and Hoang rivers to the Atlantic. The Caucasus Mountains and those of Crimea are a part of this zone, interrupted by the depressions of the Black and Ægean Seas, beyond which lie the Alps, the Apennines, the Balkan Mountains and the Carpathians. Not connected with these are the high Pyrenees and the Sierra Nevadas of Spain. The secondary mountains, or those lying to the north of the highland belt, are shorter and of greater variety, all comparatively low, except the Scandinavian Mountains. The Urals to the east are an isolated group, the longest chain of the continent, rising from Asia and sloping away to the plain on the European side. Vesuvius is the only active volcano. Two-thirds of Europe is lowland, a continuation of the low plains of northern Asia, extending through Russia, northern Germany, and France to the Pyrenees. Especially noteworthy are the high plains of Switzerland, the plains of south Germany and of Castile in Spain. Most important of the mountain-inclosed lowlands are those of the Alpine streams, the Po Basin, the upper Rhine, and the Danube, the upper and lower plains of Hungary, and the Wallachian plain. Roughly speaking, Europe consists of the eastern part, or Russia, with its unbroken lowlands and mountains on the eastern and southern edges, and the western part, the remainder of the continent, composed of plains and mountains. The chief characteristics of the former section are its uniformity and inaccessibility, for the most part, to the sea; that of the latter, its variety, richness and accessibility to the influences of the sea.

The varied and complicated geological structure of Europe can only be touched upon briefly. There is a rich distribution of minerals—for example, extensive iron mines in Alsace and Lorraine and Luxemburg; coal and iron in Belgium, iron in Austria and France, one of the most remarkable fields being around Chavigny and Nancy. Iron, gold and platinum are found abundantly in Russia; silver and zinc in Germany; sulphur in Sicily and southern Italy; tin, iron and coal in England; copper, silver, lead and quicksilver in Spain, and copper in Portugal.

Roughly speaking, and considering only the Indo-European or Aryan stock, the Teutonic peoples live at the north, the Slavs at the east, the Celts, what there is left of them, in the western part of Europe, while the Latins have more completely populated the south. The Celts once possessed Europe from the Alps to the British Islands, but they were broken up by the Roman conquests. The Celtic language is now spoken only in the Scotch highlands (Gaelic), in parts of Ireland (Irish), in Wales (Cymric), and in Brittany (Armorican). The Teutonic race consists of two branches, the Germanic, from which have sprung Germans, Dutch, and English, and the Scandinavian, now divided into Danes, Swedes, and Norwegians. The Slavs include Russians, Poles, the Czechs or Bohemians, the Servians, Croatians, etc. The Greek and Latin group comprises

Italian, French, Spanish, and Portuguese. The Mongolian race is represented by the Turks, Finns, Lapps and Magyars or Hungarians, all of whom have come to Europe in comparatively recent times. European civilization began with the Greeks, flowered in a few centuries into something which quickly faded, for in poetry, art, philosophy and architecture, that brief moment of the Athenian has never been surpassed. With the decline of Rome, vast migrations set in among the northern races; devastating invasions from Central Asia overran the land as far as the middle of France; Europe relapsed into barbarism and anarchy—for anarchy is barbarism—and with the Renaissance or Revival of Letters, followed by the Reformation, a new impulse was given to the human mind and spirit, resulting in what is both good and bad in the so-called western civilization of today. With this awakening, Copernicus discovered the new heavens about the time that Columbus discovered the new earth, and the mind of the Middle Ages expanded indefinitely and infinitely to comprehend the new heavens and the new earth. But almost never was there a time when for some reason or pretext men were not fighting each other in a succession of wars.

Of late years Europe had developed commercially at the expense of her agricultural industry, and is to a large extent dependent on other countries for her food products. In 1933 most European countries were forced to abandon the gold standard by the adoption of silver currency by the United States and Great Britain.

Federal Reserve Act (1913).—The Federal Reserve Act was passed by Congress and signed by President Wilson, December 23, 1913. It divides the country into twelve federal districts, in each of which there is a city with a federal reserve bank. Each national bank is obliged to enter the system, thus becoming a member "bank". The governing committee of the national system (seven members), is composed of the Secretary of the Treasury, the Comptroller of the Currency and five other members appointed by the President. The system has given the United States one of the best instead of one of the worst currency systems in the world; and has prevented the recurrence of the periodical financial panics deliberately "engineered" in times gone by, by those wreckers who built false lights on the shore.

Feudalism.—The word *Feudum*, from which Feudalism is derived, appears first in the records of the Frankish king, Charles the Fat (884-887 A. D.), but the system had existed before that time. After the death of Charlemagne in 814, his empire drifted into chaos, although many of the things he accomplished endured in the industrial, social and political aspects of the Feudal System. The great conflict between the Romans and the Germans brought about the confusion which resulted in the organization of Feudalism, in which the land was divided by the lord between his tenants and the serfs to whom he offered protection in return for service. The great highways which had been the bond of organization of ancient Rome had fallen into decay, and great stretches of the country had become impassable. On the German side of the Rhine there were no roads at all, and rebellious barons could get well under way before the king had tidings of their sedition. Europe was in a state of anarchy, except for the numerous little despotisms which formed a hierarchy of land holders. Service was military or agricultural and later it took the form of money payments. The system was a combination of the old Roman custom of land grant for military service and the German custom of men following their lord as chief. It raised up great lords and depressed the poorer classes, who became villains or serfs, bound to the land. They lost all the old Teutonic privileges of meeting in national assembly and became abject creatures.

The result was a growth of towns, with a fixity of life hitherto unrealized. Houses grew up around castles, and these were defended by walls. Charlemagne founded Hamburg which was to become one of the capitals of the Hansa League, destined to be supreme in northern Europe for two centuries. In Germany these towns were fortified by burgs or fortified castles around which grew up many of those cities of Germany which have become famous. Sometimes these towns joined forces and defied Dukes and Kings, while in northern Italy, from the eleventh century onward there was a great number of city commonwealths. "Feudality recognizes two principles, the land and the sword, riches and force—two principles on which everything depends and to which everything is related, since it is necessary to own land in order to have the right to draw the sword." The suzerain knelt before his lord and swore to be his man—*homo*—thus comes the word homage. They took justice in their own hands, and the duelling system grew up. In France the feudal clergy held a fifth of the land, in Germany a third. But the church increased its possessions through bequests of the dying and gifts of the living. The will of the feudal lord was law. He could exact what he desired and there was no recourse. The serf could neither marry nor change his abode, nor could he bequeath his goods without the permission of his lord. Vassals were continually fighting against other vassals, lords against lords, and all against their sovereigns. To him who had the might of the sword belonged the power to enforce peace and "justice".

Fifteenth Amendment.—The Fifteenth Amendment gave the right of vote to all male negroes and forbade the state governments in any way to deprive them of this right. It was proposed by Congress in February, 1869. Virginia, Georgia, Mississippi and Texas, the only southern states not yet re-admitted to the Union after the Civil War, were to be admitted on condition that they accept this amendment, which they did. The Amendment received the support of the necessary number of states and became law in March, 1870.

Finland.—Finland is a table-land from 400 to 600 feet above sea level, lying chiefly in the extreme northern part of Russia. Its area is about 144,255 square miles and its population about two and a half million, mainly Finns and Lapps. These people were pagans, ruled by independent kings, until the twelfth century, when the Swedes invaded the land and introduced Christianity. In 1808 Russia conquered the Swedes and annexed Finland. When Russia attempted to abolish the autonomy of the country and make it a province, the Finns migrated in large numbers, many of them coming to America. During the late war, Germany's evident design of constituting two minor states, the Ukraine and Finland, in order that a new unified Russia might not rise from the ruins of Bolshevism, succeeded in so far as many Finns were won over to the side of the Huns, who promised Finland expansion and power if she would be a sort of guard for Germany over Russia. Revolution in Finland resulted in conflicts between the Red Guards (Bolshevists) and the White Guards (Pan-Germans). Finland established an independent government, which was recognized by most of the nations of Europe, including Soviet Russia. Civil strife continued, however, until the signing of the Brest-Litovsk Treaty between Germany and the Bolshevist government, of Russia. Four days later (in March, 1918,) Germany signed a treaty with Finland, having meanwhile invaded Finland and occupied the Aland Islands. For a while it seemed that she would make Finland a monarchy under her control, and by the treaty she virtually established a protectorate over the little country. She promised to do everything possible to have the independence of Finland recognized by the world, but Finland had to promise that no territory over which she was sovereign would be given up without first consulting Germany. Consular and diplomatic relations were established between the two countries and a commercial agreement entered into which made Finland a practical vassal of Germany.

Flodden Field.—In 1512 James IV., king of Scotland, sent to Henry VIII. of England a list of grievances which the latter refused to rectify. Thereupon, in 1513, James equipped a formidable army of 60,000, marched across the border and took possession of a number of English strongholds. Henry VIII., who was then fighting against the French, sent the Earl of Surrey with 40,000 men against James at Flodden Field. Surrey succeeded in surrounding the Scotch army and so gained the advantage. The Scotch kept up the fight through the day in spite of the death of their king, eighty of their chieftains and 10,000 men, but at night they silently withdrew. The loss of 4,000 had so weakened Surrey's army that he did not pursue. Peace was made without gain on either side.

Fourteenth Amendment.—During the months that elapsed between the close of the Civil War and the next session of Congress, President Johnson took many steps toward restoring to the southern states their former privileges. The Congress which met in December, 1865, was largely made up of northern Republicans whose attitude toward the South was bitter. They wished to punish the vanquished states more thoroughly and to establish a positive freedom for the negro. The new governments of the southern states granted the negro no civil rights and made his position almost as humble as before the war. Congress brought help to the negro through the Freedman's Bureau and the Civil Rights Law (passed over the President's veto), and in June, 1866, they proposed to the states the Fourteenth Amendment.

The Thirteenth Amendment had made the negro free—the Fourteenth would make him a citizen, with the citizen's right to the protection of the law. Whether the negro could vote would be decided by the states separately, but if a state denied the vote to negroes, her representation in Congress would be diminished accordingly.



The Amendment also annulled all debts incurred by the Confederacy and prohibited the leaders of the Confederacy to hold Federal office until pardoned by Congress.

Although the President had officially readmitted most of the southern states to the Union, Congress regarded them as no better than territories and the acceptance of this Fourteenth Amendment was made the condition on which Congress would recognize them as states. Tennessee acquiesced in July, 1866, and was recognized by Congress, but the other southern states refused to ratify. Congress was determined to bend the south to its will and in March, 1867, passed the Reconstruction Acts.

The South was divided into five military districts, each under the surveillance of a Federal general. These generals, with troops at their command, were to supervise the establishments of new state governments and allow no government to be formed that was opposed to the Fourteenth Amendment. Under this system the ratification was completed on the 28th of July, 1868.

France.—The Franks were a confederacy of German tribes on the lower Rhine. They were neighbors of the Angles and Saxons till in 486 A. D., they invaded and conquered a part of Gaul. Their king, Clovis, grandson of Merwig (from whom comes the name of the Merovingian dynasty), drove out the Visigoths and married Clotilda, a Christian, daughter of one of the Burgundian princes. The Franks soon adopted the language of the Gauls, which had become Latinized. The Romance, or Romanized (Latinized) languages developed into the Provencal tongue of southern France and the French, Spanish and Italian languages. The descendants of Clovis, who died in 511 A. D., kept the crown he had won for nearly two centuries, but the history of these times is another pathetic chronicle of the crimes and follies of feeble and wicked kings. In 687, Pepin, a Mayor of the Palace, founded the Carlovingian dynasty. His son, Charles Martel, distinguished himself through one of the greatest services ever done for Christendom, stopping the Moslem invasion in 732. His son, Pepin the Short, was the father of Charlemagne. Karl, or Charles the Great, came to the throne in 771. He is one of the great men in history, as soldier or politician, and is renowned for his intellectual ability. He found a chaos of nations and institutions around him and left them moulded into a great empire which, although it fell to pieces at his death, was the foundation for the French kingdom which became a bulwark against the hordes of pagans and barbarians that threatened Christian Europe from the East and the North.

The first requisite for kingship in those days was military ability, and in this Charlemagne was distinguished. He was able to defend his realm and his people and to make further conquests. He had an equal gift for administration. To these talents he added wisdom and insight, literary and artistic tastes, love of learning and skill in legislation. He reformed the coinage, founded schools, collected libraries and encouraged scholarship, through which he succeeded in welding unsettled tribes into permanent communities. During his time Christianity first took on a political form. He subdued the Germanic and Tartar tribes to the North and East, conquered the Saxons, vanquished the Avars of Hungary, drove the Lombards from Italy and the Saracens from Spain as far as the Ebro, and was crowned Emperor by the Pope at Rome on Christmas Day of the year 800. He allowed each nation to retain its own laws, chiefs and free assemblies, and his own central government kept in touch with them through the reports and activities of Royal Commissioners who visited them at stated intervals. He died in 814 A. D., after a reign of forty-three years, having ruled an empire that included what is now the whole of France, northern and central Germany, the island of Corsica and northern and central Italy, and much of Austria, except Hungary.

After him we read of such men as Louis the Debonair, or Mild, Louis the Stammerer, Charles the Fat, and Charles the Simple. It was under the last named of these kings that the Norsemen or Normans invaded northern France under Rollo and founded Normandy. The Capetian kings ruled from 987 to the reign of Philip of Valois, 1328. Hugh Capet, the first of these kings and an able man, established Paris as the seat of his government and enacted some good laws. Under the reign of Philip (his grandson), Peter the Hermit preached the first Crusade, and William the Conqueror invaded England. Philip's son, Louis the Fair, reigned wisely and said to his son and successor on his death-bed: "Remember that royalty is nothing more than a public charge, of which you must render strict account to Him who makes kings and will judge them."

After several rulers who did little, came Louis IX., called Saint Louis. His mother, Blanche of Castile, was regent from his accession at the age of twelve years. Louis was one of those rare characters who can be a Christian on a throne, but his zeal for religion prompted him to engage in two tragic Crusades. He died during the second at Tunis in 1270 A. D., in his fifty-sixth year, and in the forty-fourth year of his reign. Philip III., his son, defeated the Saracens in Algiers, and his son, Philip IV., suppressed the Knights Templars.

France had no king of note till 1364 A. D., when Charles the Wise was crowned. He labored with such diligence to repair the losses of his successors that he was able to drive the English from France except

from Bordeaux, Bayonne and Calais. He was a patron of letters and himself had a library of 900 volumes, which became the foundation of the great library of Paris. His successor became insane, but was followed by Charles VII., under whom the English laid siege to Orleans, the scene of one of the most remarkable events in history. When Orleans was about to surrender, a little girl of seventeen appeared from a humble cottage on the borders of Lorraine and asserted that she had received a divine commission to raise the siege of that city and procure the coronation of Charles at Rheims. She was examined by a committee and sent on her mission. The British were defeated and Joan of Arc became to history the Maid of Orleans. But the episode is marked by an act of extraordinary brutality. She fell into the hands of the English, who burned her in the public square at Rouen.

Charles was followed by the sinister and infamous Louis XI. He had a certain cynical ability and did much for the promotion of commerce, but he established the modern system of diplomacy with the advice to his agents that the enemy would lie but they must lie harder. His life was miserable from a guilty conscience and fear of death, and he died miserably.

The War of the Spanish Succession followed not long after the death of Louis XI., in which much blood was shed over the rival claims of two princes to the throne of Germany, made vacant by the death of Maximilian, Emperor of Germany in 1519. Henry II. persecuted the Huguenots, starting the civil wars which devastated France for several reigns. Under Charles IX. the Protestant religion had made much progress with some of the most distinguished men in the kingdom in the ranks of the church, among whom were the Prince of Condè and Admiral Coligny. One of the most memorable events of his reign was the massacre of St. Bartholomew, under circumstances of the foulest treachery. The massacre was aided by the populace and extended over the entire kingdom, some writers estimating the number murdered at 70,000. Whatever that number was, it was certainly large enough to disgrace the reign of Louis XI.

Henry IV. ascended the throne a Protestant but abjured that faith and became a Catholic. After civil wars were ended, he issued the celebrated Edict of Nantes, granting Protestants the free exercise of their religion and a political status in society. The Duke of Sully was his famous Counsellor. But this wise king was assassinated by a monk named Ravaillac in 1610, the twenty-first year of his reign. Louis XI. was nine years old at the death of his father, but upon assuming the throne later, he chose the famous Richelieu as his Prime Minister, who became one of the greatest statesmen and one of the most unscrupulous diplomats that Europe has produced. He laid the foundations of France upon which Louis XIV. built. Since this Louis was only five years of age when he came to the throne, the Queen mother raised Mazarin to the post of Prime Minister. The reign of Louis XIV. is one of the longest in history, and is in some respects the most brilliant. For much of his success he was under obligations to his generals and ministers, Colbert among the latter, with Condè, Turenne and Vauban among the defenders of the realm. He undid the good work of Henry IV., in the revocation of the Edict of Nantes, and all Protestant ministers were required to abjure their faith or leave France. It is not known how many people left, but the highest figure given is a half million. The loss of these Huguenots was an irreparable loss to France. Louis was a vain man, a cruel spendthrift, feeling no sympathies for the common people who created his wealth and fought his battles, but he encouraged art, literature and science. The Louvre and Versailles were built, and alongside the brilliant names of Condè and Turenne are those of Bossuet, Fenelon, Bourdaloue in the French pulpit, Boileau, Racine, Pascal, Descartes and many others who have been leaders in thought. Louis reigned till his seventy-eighth year, or the seventy-third of his occupancy of the throne. He was succeeded by his great-grandson, Louis XV., who also came to the throne at the age of five years, under the regency of the Duke of Orleans. Cardinal Fleury became his Prime Minister. The Austrian Succession broke out after the death of Charles VI. The claimants were Maria Theresa and Charles the Elector of Bavaria. The English and their allies supported the former who won, acknowledged by the Treaty of Aix-la-Chapelle. During this reign also England won the French possessions in Canada. Louis died in 1774, in the fifty-ninth year of his reign. These two kings of France, Louis XIV. and Louis XV., reigned for one hundred and thirty-two years. Louis XVI., grandson of his predecessor, ascended the throne of France at twenty years of age. The conditions in France were appalling, although liberal doctrines had been disseminated by the most brilliant writers of the age, such as Rousseau, Voltaire, the Encyclopedists, to say nothing of those in England, and in America where the revolution was about to break. The American Declaration of Independence was signed two years after the accession of Louis, and the Revolutionary War in America followed, in which France was more interested, probably, than in the cause of democracy, for the reason that it was waged against her age-long foe, England. The Marquis de Lafayette became the spokesman of those Frenchmen who sympathized with the American cause, as Queen Marie Antoinette had always sympathized. It must be remembered that the France that helped the American people in that issue, indeed which saved the cause at that time, was the France of Louis XVI. and his expiring regime. It was the France which, so to speak, was beheaded at the Guillotine, while her executioners of the Red Terror were those with whom later we had our own troubles and nearly came to war.

After the French Revolution—the result of discontent with the old social order—(see French Revolution)—came the political reaction such as nearly always follows in cases of anarchy and confusion. A tyrant arose and offered the people government, perhaps the worst of which was better than none at all. Napoleon certified his authority by sheer military genius to those who believe that Might is Right. It would be a poor type which would not make some pretense of the betterment of the people, as Napoleon did, but at bottom he was an altogether selfish and ambitious human being who bought his buttons with the dreadful price of the blood of Europe. The first allied armies of the five great coalitions of Great Britain, Holland, Russia and Spain invaded France and were overthrown. Napoleon completed the conquest of Italy, compelled Austria to acknowledge the French conquests in the Netherlands, and took possession of the Delta and of Cairo. In 1798, the French fleet was defeated by the English under Nelson in the Bay of Aboukir. The second coalition was formed between England and Russia, which other powers later joined, and the Allies gained some important victories. Napoleon returned to France and became First Consul. He crossed the Alps at the head of his army and defeated the Austrians at Marengo, gaining other victories which resulted in peace for a time. In 1804 he was crowned Emperor of France by the Pope, upon which a third coalition was formed against him, between England, Austria, Russia and Sweden, followed by Prussia. At Austerlitz he defeated the combined forces of Russia and Austria, but Nelson at the cost of his life defeated the fleet of France and Spain off Trafalgar, after which the peace of Presburg was signed. When Napoleon had broken the peace in 1806, a fourth coalition was formed in which England, Austria, Russia, Prussia and Sweden were arraigned against France. Napoleon broke the Prussian power at Jena and Auerstädt, and declared the British Islands in a state of blockade, ordering all ports closed against them. He placed his relatives and friends on the thrones of Europe, and found no end to his growing ambitions. Murat, his brother-in-law, was placed on the throne of Naples, and Joseph Bonaparte on the throne of Spain. The peninsular war was waged from 1808 till 1813, and the Emperor of Austria was compelled to give his daughter, Maria Louisa, to Napoleon as his wife. Then Napoleon determined upon the invasion of Russia—the beginning of his undoing. It was his march from and not to Moscow that has become famous, for the Russians had destroyed all the shelter and provisions by fire and left the French troops at the mercy of a Russian winter. Only 30,000 survived to cross the Niemen on the return home. The fifth coalition was formed between Russia, Prussia, Austria, and Sweden. The Emperor was beaten at Leipzig, after which he fled to Paris, abdicating the throne of France and involuntarily retiring to the Island of Elba. Louis XVIII. ascended the throne. While the Allies were yet holding the Congress of Vienna, Napoleon made his escape and landed at Frejus, where he gathered an army of but 1,140 men, marched to Paris and in twenty days was again seated upon his throne. Upon this, nearly all the powers of Europe made an alignment and the defeat at Waterloo sealed the fate of Napoleon.

Throughout the entire nineteenth century France suffered from revolutions and foreign invasions. In 1852 the second French Empire was proclaimed, and Louis Napoleon made emperor, as Napoleon III. Between 1853 and 1856 occurred the Crimean War, in which England, France, Sardinia and Turkey united against Russia, and succeeded in guaranteeing the independence of the Ottoman Empire, preventing Russia from gaining territory from the Turks. War between Austria and France followed (1859), in which France was victorious, annexing Savoy and Nice, after a plebiscite of the inhabitants. Outwitted by Count von Bismarck of Prussia, who failed to live up to his promises to Napoleon III., and exasperated by Prussia's jealousy, France declared war on July 15, 1870, and there followed a struggle for which Prussia had been preparing for



years. All Germany gave aid in this Franco-Prussian War, and as a result, France was crushed, Napoleon III. surrendering his sword to King William at Sedan. In Paris a frenzied mob seized the government, deposed the Emperor and proclaimed the Republic. Paris was besieged and forced to surrender (1871); the German Empire was proclaimed in the palace of Versailles, and by the Treaty of Frankfort, France was forced to pay Prussia an indemnity of a billion dollars in the space of three years and to give up all of Alsace, except Belfort, and one-fifth of Lorraine, including Metz. As the indemnity was paid evacuation of the Prussians would take place.

Thiers, who had shown his statesmanship in dealing with Prussian demands, was made president of the new (third) French Republic, and to him fell the task not only of raising the indemnity so that the country would be free from the Prussian army of occupation, but also of putting down civil war. This "Liberator of the Territory," although a liberal monarchist, believed that a republican form of government was the only possible one for France, and thus he incurred the enmity of the majority made up of legitimists, Orleanists and imperialists. At the age of 76 he resigned, and Marshal MacMahon, Duke of Magenta, was elected for seven years by the Assembly. On January 30, 1875, the Republic was officially recognized.

War with China and in Africa occupied considerable attention for the next few years. Political struggles continued, with a marked progress in Socialism. In 1894 President Carnot was killed in the streets of Lyons by an anarchist. In spite of the fact that since 1824 nearly every ruler in France has been driven from his position by revolution or assassination or the force of public opinion, and though the political struggles have been long and severe, the Republic has consolidated and strengthened itself. The condition of the peasant class improved, the country prospered, and signs of contentment were apparent until Germany's military machine again tore and devastated the land. The destruction of industries in France's industrial region, carried out deliberately by the German invaders in the Great War, to destroy her economic importance, can scarcely be estimated, but it will require more than 2,000,000 tons of pig iron and about 4,000,000 of steel to replace what was ruined in these regions, at an estimated cost of 25,000,000,000 francs. For four years these modern Huns laid waste the land destroying personal property to the value of 4,000,000,000 francs, and 350,000 homes, the cost of rebuilding of which is estimated at 10,000,000,000 francs. (See Germany and Great War.)

French and Indian War (1754-1760).—A war between the French and English in North America over their disputed possessions on that continent. The French were assisted by numerous Indian tribes and from 1754 to 1758 held unbroken a line of defense barring the English from their territory. The English generals, who led a mixed army of British regulars, colonist volunteers and Iroquois Indians, were ill suited to the hardships of an American campaign. The British organization was also inferior to the French.

After the severe British defeat at Ticonderoga, 1758, new vim was put into the English campaign through the influence of William Pitt, English Prime Minister, and a new general was put in charge. Within the next year the French defense was broken by the capture of six important forts. In September 1759 General Wolfe marched the English forces on Quebec and defeated the French under Montcalm. This opened Canada to the British and led to the conquest of Montreal. In 1760 the fighting on the continent ceased.

A war had at the same time been waging between France and England in Europe, the Seven Years War, which ended in 1763. By the Treaty of Paris in 1763 the French gave up all their possessions in North America. Canada and the territory west of the Mississippi became England's. Spain ceded Florida to England and received Louisiana from France.

The French Revolution.—In the latter part of the 18th century the people of France revolted against the evils imposed on them by an all-powerful king and an idle nobility who owned the land. Two very different classes made up this revolt:

(1) The educated class, with high ideals strove for reform through better laws.

(2) The lower class (peasants), overtaxed and starved, expressed their discontent by violence.

From 1789 to 1792 the educated class brought about peaceable reform through national assemblies, until France was

practically a republic. But as France became engaged in active warfare with Austria (who opposed the republic), the mob violence of the peasants began to dominate the revolution. The king, who had shown himself in league with foreign powers for the defeat of his country, was beheaded in 1793.

Under the pressure of war the Committee of Public Safety was put in power in Paris. This committee ordered some 2,800 persons, suspected of disloyalty to the government, to be beheaded. This became known as the "Reign of Terror," which ended with the execution of the man who had started it in July 1794, and a more moderate government was then established.

Other neighboring countries continued to make war on France until in 1799 these wars became such a menace that it was necessary to place the power of government in the hands of the ablest general, Napoleon. Napoleon gradually changed France from a republic to an empire, with himself as emperor, and thus ended the revolution.

Gallic Wars.—Cæsar's Gallic Wars came at that point in his career when the intrigues by which he had climbed to power were likely to cause him trouble in Rome, while a successful military campaign abroad would glorify him in the eyes of the people. His first move was in 58 B. C., against a Swiss tribe, the Helvetii, who seemed about to invade the Roman Empire. He next entered the territory now known as France to aid a friendly Gallic tribe, the Ædui, in driving off the Germanic invader Ariovistus. He then undertook to subdue all parts of Gaul which did not yet pay homage to Rome. He spent eight years thus, assisted by Crassus and Sabinus. His most difficult task was the conquering of the rebellious Veneti, who had so powerful a fleet that Cæsar was forced to build a fleet likewise. The Senate of the Veneti were executed for treachery and all their people sold into slavery. Among other tribes conquered were: the Belgæ, the Nervi, the Aduatici, the Morini and the Menapii.

Garfield and Arthur's Administration

I. The Stalwarts.—Garfield's nomination and election had split the Republican party, especially in New York. The opposition was led by Senator Conkling. President Garfield ignored Conkling in making appointments to office. Conkling resigned as Senator from New York and asked justification in the form of re-election. The New York legislature defeated him, thus supporting President Garfield. The opponents of Garfield were known as "Stalwarts" and included U. S. Senator Thomas C. Platt.

II. Garfield's Assassination.—Garfield had been elected President largely through the efforts of Roscoe Conkling, a shrewd political boss among the Republicans. But Garfield was not himself a politician and did not repay Conkling or Conkling's friends with any important political offices. This "ingratitude" so enraged Conkling that he agitated with his usual skill against Garfield and created a faction of opposition in the Republican party known as the "Stalwarts."

Among the "Stalwarts" was a fanatic named Guiteau. He had had a varied career—politician, lawyer, lecturer, evangelist. He had felt assured of a political appointment from Garfield and his disappointment made him ready fuel for the fire of Conkling's oratory.

Garfield had been warned of plans for his assassination but he paid no heed. On July 2, 1881, as he entered the railway station at Washington, Guiteau crept up from behind and shot him twice in the back. The President lived through a summer of dreadful suffering and died on September 19th.

Guiteau, when arrested, throughout his trial and up to the moment of his execution, showed a firm religious conviction that he had fulfilled his duty in ridding the country of Garfield, in making it possible for Vice-President Arthur (who sided with the "Stalwarts") to become President and thus to re-unite the Republican party.

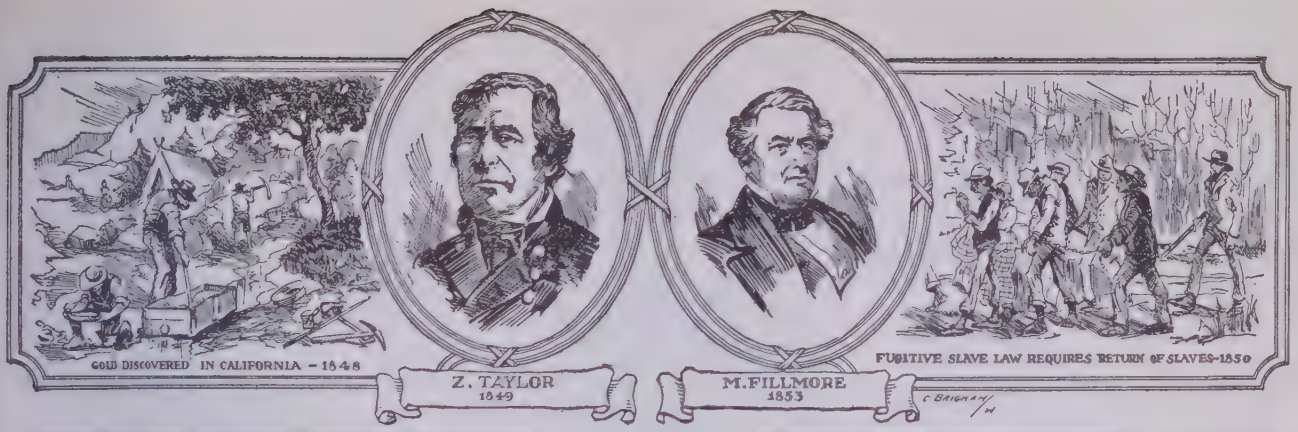
The horror of the country at this insane deed was great; Conkling and the "Stalwarts" were despised and a movement for Civil Service Reform was set on foot to lessen the corruption of political appointment to office.

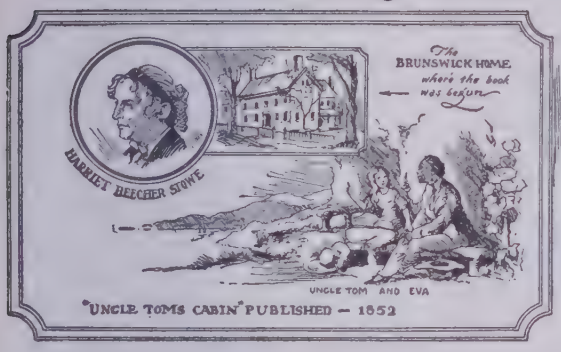
III. American Federation of Labor.—In 1881 a number of separate labor unions met in Pittsburgh, Pa., and organized the Federation of Organized Trades and Labor. Their first purpose was to oppose the Knights of Labor. In 1886 other organizations joined the new federation which then became the American Federation of Labor. It is now the largest and most influential labor organization in the world with a membership of more than 3,000,000.

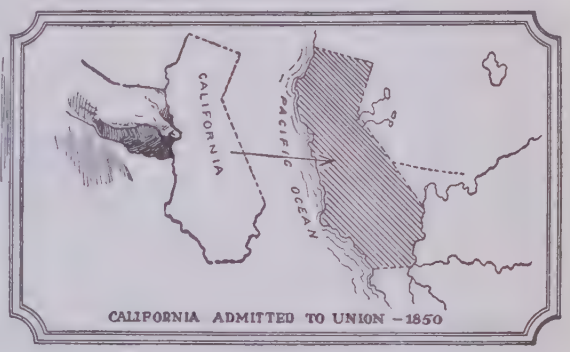
IV. Brooklyn Bridge.—This bridge was completed in 1883. It had been begun in 1870. Its span is 1,595½ feet; each land span is 930 feet. Total length, including the approaches, 5,989 feet. It is 85 feet wide. It has four cables, each consisting of 6,300 parallel steel wires in a solid cylinder 15½ inches in diameter, with a total strength of 11,200 tons. The bridge cost $17,900,000.

Germany.—The ancient Germans are supposed to have migrated from upper Asia, in non-historic times, passing by the Caucasus and north of the Caspian Sea to central Europe. Like the Celts, they were tall, fair, with blue, fierce-looking eyes, and light or red hair. Gradually they worked their way into the Roman Empire, sometimes, as under Marcus Aurelius (161-180 A. D.,) being granted the right of settling within its borders, and sometimes pushing their way in with fire and sword. Behind them came other and fiercer tribes, forcing those on the borders farther within Roman boundaries. The empire had declined and broken up into a western and an eastern section, with the emperor at Constantinople quite powerless in the West. Romulus Augustulus, ruler at Rome, was succeeded by Odoacer, a German, who, deposing the former, sent his acknowledgment of submission to Zeno, Emperor at Constantinople, in 476. From that time on, the Germans ruled in the West, which, though nominally under the central power at Constantinople, really consisted of separate, independent kingdoms. Charlemagne, a German and a Christian, king in the West (768-814), was crowned emperor at Rome by the Pope in 800. Throughout many years following, this united German Christian Empire was little more than an ideal, but as an ideal it persisted in the minds of German kings down to the present. Notwithstanding its disunited condition, Germany began to trade with the East; the merchant class grew strong and wealthy and unscrupulous, a few monopolizing all the trade, while the majority of the population, the peasants, lived a monotonous, oppressed existence, relieved only by village brawls and revelries. The peasants' revolt in the sixteenth century, an uprising against the evils of serfdom, was quelled by the autocratic lords in the bloodiest possible manner. At least 100,000 peasants were killed, and German peasantry sank into a wretched condition from which it did not emerge until the nineteenth century. Even Martin Luther, of peasant stock himself, condemned their rebellion, saying that "to rebel against the princes was to rebel against God." From this time on, the movement of Luther for Protestantism was in the hands of the nobles, who for political or conscientious reasons preferred his beliefs to those of the Catholic church at Rome. Most powerful of these princes was Charles V., son of the archduke of Austria, who had fallen heir to the Netherlands, the crown of Spain and Naples, the sovereignty of vast possessions in the New World, and the duchy of Austria and its dependencies—an inheritance of larger dominion than of any lord since Charlemagne. Added to these was the sovereignty of the Holy Roman Empire, voted to him by the electors of Germany. Charles, a Catholic, was successful in driving back the Turks from the borders of Germany and defeating them in the Mediterranean, but in the end he was unsuccessful in his wars with the Protestant German princes. The Religious Peace of Augsburg (1555), meant victory for the Protestants only in that the church was freed from the control of Rome and the Pope. Feudal princes were free to choose either Catholicism or Lutheranism. The Thirty Years' War, (1618-1648), originally a struggle between Catholic and Protestant princes of Germany, eventually became a political struggle, involving nearly all of Europe and dragging civilization down to a low plane. The political provisions of the Treaty of Westphalia (1648), which marked the close of the religious wars, were important in that they remained practically unchanged for two centuries. Switzerland and Holland became independent; France was now the strongest power on the continent; Spain lost her leadership, and the Holy Roman Empire declined to a mere name.

Of all the duchies of German origin, Prussia and Austria became the mightiest. Brandenburg, one of the many states of the Holy Roman Empire, absorbed the neighboring duchy of Prussia. Frederick the Great (1740-1786), crowned King of Prussia, succeeded in extending and strengthening his kingdom, rivalling Austria, which in 1438 had recovered the imperial crown through the House of Austria. Napoleon, Emperor of France, hoped to extend his own power by placing his relatives in reigning positions throughout the Rhine duchies. The Congress of Vienna which sought to regulate European affairs, in 1814, had before it the problem of these petty kingdoms. The advocates of German union, including Prussia, wished to re-establish the old empire, but it was agreed that this should not be done. Fearing Napoleon, however, a confederation of thirty-nine states agreed to send deputies to a Diet at Frankfort, over which Austria was always to preside. Thus the Germany of 1815 was only a collection of independent states, each retaining its sovereign power. Following the over-







throw of Louis Napoleon, nephew of the great Napoleon, elected in 1848, Russia, Prussia and Austria, absolute monarchies, attempted to quell the spirit of revolution in Europe and checked for a time the efforts of the weaker nations to obtain freedom of government. Thus the iron heel of Austria crushed Italy's efforts at uniting itself until France and England gave aid, resulting in the union of Italy, Sicily and Sardinia, thanks also to the brains and courage of Cavour and Garibaldi. Meanwhile Prussia was advancing rapidly in all lines of industry and learning and drawing other states into economic co-operation. King William, of Prussia, (1861), with his chief adviser, Otto von Bismarck, set about to organize a military machine which would make Prussia the mightiest power in Europe. With this behind him, Bismarck succeeded in weakening Austria, excluding that state from the German political system, organizing the northern states into a union under Prussian control, and crushing France in the Franco-Prussian War (1870). France was forced to pay a large indemnity and cede to the victors the two provinces Alsace and Lorraine, while the southern German states joined the northern in proclaiming William Emperor (kaiser), of a united Germany. In the years following 1876, Germany not only had begun to develop within her own borders to a remarkable degree industrially, but she had extended her commerce and founded colonies in all parts of the world. Thousands of her inhabitants migrated to America, hating the imperial system which compelled military service and submission to autocratic rule. Lust for power and conquest led the rulers to lay schemes whereby Germany would surpass every other nation of the world. Colonies were strengthened throughout the East, especially in Africa, where trade with coast cities became most important. William I., who lived to be ninety years old, was succeeded by Frederick I. (1888), who had fought in the Austro-Prussian and Franco-Prussian wars, and who had shown liberal tendencies, marrying the crown princess of Great Britain, eldest daughter of Queen Victoria. During his three months' reign, he protested against the despotic Army Bill of 1862. William II. (1888-1918), became emperor at Frederick's death and reigned until he was forced to flee the country when the fate of autocrats was sealed by the Great War. From the beginning of his reign at the age of twenty-nine, he manifested his love of military power and glory, his absolutist policy, and his belief in himself as the "anointed elector of the Divine Will." In the first year of his reign the free cities of Hamburg and Bremen merged themselves into the "Fatherland". At the outbreak of the Great War, in 1914, the German Empire was a constitutional monarchy of twenty-five states and an imperial territory, Reichsland in central Europe. About 64.5 per cent of the area of the empire and 61.9 per cent of the population was that of Prussia. Under the imperial constitution, the King of Prussia was the Emperor of united Germany, though it must be remembered that the twenty-five states were scattered about in more or less detached fragments. The kaiser's aim was German conquest and dominance. The Pan-Germans and extreme Socialists differed, but the general war aims of the country were clearly enough shown when many statements were published in regard to the minimum which the German Empire would accept, how German power would be extended and the British Empire destroyed by an ultimate coalition between Germany, Russia, and Japan. "The development of a national militarism, based on a spirit of national patriotism," has been stated as a cause of the war in Europe. According to the principle of nationalism, Austria-Hungary should have been divided as the sympathies and tastes of the population might suggest. Thus, obeying the principle, she should have surrendered to Germany her German provinces, granted the Trentino and Trieste to Italy, Transylvania to Roumania, and Bosnia and Herzegovina to Servia. When in June, 1914, the Austrian heir-apparent, Archduke Francis Ferdinand, and his wife were assassinated at Sarajevo, the Austrian-Hungarian government feared that Servian patriots and their ideas of nationalism threatened the Hapsburg empire. They feared this all the more because the Russian orthodox Slavs were in sympathy with the Servian orthodox Slavs. Germany was prepared for the break between Austria and Servia, which served only as an excuse for pushing ambitious designs, long and carefully laid by the German militarists. To understand fully Germany's ideals, one must refer back for a moment to the beginnings of the empire. The democratic and liberal plans of the Frankfort Assembly in 1848 for a national government over a united Germany had failed. Bismarck with his "blood and iron" policy, had succeeded in establishing an empire which was unified, despotic though it was. Henceforth, Germans associated national patriotism with military power, represented by large armies, autocratic officers, and obedient subjects, the last named always to be taught and impressed with the doctrine from the cradle to the battlefield that the strong survive and that Might makes Right. In 1913 the Army Bill of Germany aroused Europe. It was evident that the millions of trained men and the stores of supplies and ammunition were for a purpose. In Africa German colonies and capitalists were contending for control. Vast industrial schemes were under way: the Krupp

munition makers were said by Karl Liebknecht, a German socialist, to be using their financial influence everywhere to stir up hatred which would lead to war. After Austria had declared war on Servia, it took only reports of Russian mobilization to bring a declaration of war by Germany against Russia. War between Germany and France began immediately, and when German troops occupied the neutral duchy of Luxemburg and entered neutral Belgium, England saw fit to declare war on Germany. Montenegro joined Servia against Austria-Hungary, and Japan declared war on Germany. Russia and Turkey declared war on each other and France and Great Britain on Turkey. German submarine warfare and outrages finally brought the United States into the conflict on the side of the Allies, (April 6, 1917). The conquest of German East Africa by the Allies was completed in December, 1917, and that of the protectorate of southwest Africa in July, 1915. German rule in these provinces was no longer to be tolerated, the war having revealed her autocratic aims and methods.

Popular discontent with the war and its burdens during the year 1918, led to revolution in Germany, though it was probably fabulously reported at first that the people were rebelling against military rule in order to cause the Allies to relax their efforts. The attitude of Maximilian Harden is a revelation of a type of German mind of the present. In 1918 he said Germany's cause was hopeless, and he bitterly criticised the kaiser, though in 1914 he had said that the Allies were like the decadent Romans and the Germans like the barbarians who had conquered them. "Your culture, gentlemen," he had said, "has not a healthy smell. Accustom yourselves as soon as possible to the fact that barbarians and warriors inhabit the German land. When Tangiers, Toulon, Antwerp and Calais are under the yoke of these barbarians, they will be glad of the occasion to talk pleasantly with you." By October, 1916, Herr Ebert and the socialists were demanding peace, popular government and the abdication of the kaiser. William's abdication took place in 1918. He fled to the Netherlands, and the revolution went on in earnest. Liebknecht became leader of the radicals or Spartacides, and for a time it seemed that Bolshevism would rule. Several German states seceded and declared themselves independent republics. The Bavarian republic was established and the German fleet fell into the hands of the revolutionists. Heligoland, Kiel, Aix-haven, Wilhelmshaven and Borkum were seized, and Berlin was disrupted by revolutionists. Laborers went on strikes, and peace was far from Germany, though the Armistice with the Allies had been signed November 11,1918. Herr Ebert became the new chancellor and promised popular government, and a new government was set up in Berlin. Each of the separate states continued to be in the throes of internal political strife, twelve governments being overthrown during the week following November 8, 1918. Saxony and Baden declared themselves republics, and Hamburg, Bremen, Ostfriesland and Schleswig-Holstein united in a North Sea Republic, with Hamburg as capital. In 1934, Hitler became Reichsfuehrer and the Nazi regime was established; this system of government won an almost instantaneous popularity in Germany.

Gettysburg.—A town in Pennsylvania, the site of the most decisive battle of the Civil War, on July 1-3, 1863, when Lee's last attempt to invade northern territory was vigorously repulsed by the Union army under General Meade. Both sides showed unusual valor, but the greater determination of the Federal troops gave them the victory. 2,500 of the 73,000 Confederates perished and 3,000 of the 82,000 Unionists. New courage was instilled into the northern army after this victory and their success prevailed from that day until the end of the conflict.

Goths, Ostrogoths, and Visigoths.—The Goths were one of the most powerful of the Germanic nations of antiquity, supposed to be of Scandinavian origin. The oldest extant record of them is in the writings of a contemporary of Alexander the Great, Pytheas, of Marseilles. They appear first in history on the Baltic, selling amber to the Teutons. Tacitus describes them as living under a regal government, enjoying considerable liberty. We next hear of them on the Black Sea about the mouth of the Danube in the third century. They increased rapidly in strength and numbers and in the reign of Philip (244-249 A. D.), ravaged Dacia.

In 402 A. D. Alaric, king of the Visigoths, invaded Italy, pillaged Rome in 410, and died on an expedition to conquer Sicily. The successor of Alaric, Athwulf (410-415), married a sister of Honorius (Placidia), entered Gaul, and in 412 crossed the Pyrenees and invaded Spain. He was assassinated at Barcelona (415 A. D.). His successor, Wallia, ruled over southern Gaul and Spain, and assisted Rome against the Vandals.

The Ostrogoths were conquered by the Huns, and under compulsion joined Attila on his invasion of Gaul. Thousands were cut down by their kinsmen, the Visigoths, at the battle of Chalons, 461 A. D. Theodoric was the greatest of Ostrogothic kings. He won from Zeno, the eastern emperor, a part of his empire and became chief of the Imperial Guard and Consul in 484 A. D., and dethroned Romulus Augustulus, the last of the western emperors, reigning over Italy until his death in 526 A. D. On the whole he ruled wisely and justly. When Theodoric died, Justinian, emperor in the East, sent Belisarius to Rome to hold it for him, but he was unable to subdue the Goths.

Grant's Administration

I. The Centennial Exposition.—The One Hundredth Anniversary of the signing of the Declaration of Independence was celebrated by a great international exposition in Philadelphia in the summer of 1876. It continued five months and was visited by hundreds of thousands of Americans and by people representing 33 different foreign nations. The exposition had excellent results in the industrial growth of the nation.

II. Custer Massacre.—In 1876 General Custer attacked the Sioux Indians commanded by Chief Sitting Bull. Custer's troops were led into ambush and being greatly outnumbered by the Indians, were defeated and all massacred. General Custer was among those killed. Sitting Bull was killed Dec. 15, 1890.

III. The Telephone.—Alexander Graham Bell completed the invention of the telephone and secured patents on his invention in 1876. His invention attracted much attention at the Centennial Exposition.

VI. The Canadian Boundary.—In a treaty with Great Britian, in 1871, the present boundary line between Canada and the United States was fixed. It was then the Oregon territory which had been explored by Lewis and Clark. The United States-Canada boundary line, more than 3,000 miles in length, and the subject of long and continuous dispute, was settled without resort to war, and peace has prevailed for more than 100 years as a result of treaty negotiations. This boundary line history is a model for all the nations of the earth.

Greece.—Greece is a peninsula of Europe as Europe is a peninsula of Asia. The home of the Hellenes, as the Greeks called themselves, was about the size of the state of Maine, but its surface was so mountainous and its coast line so complex, that there was no spot more than ten miles from some high summit or more than forty miles from salt water. Geographically, Greece faced Asia. The most and the best of her harbours opened to the south and east, in close touch with all that was known of the ancient cultures. The three great divisions of Greece were the Peloponnese (present Morea), containing six states; Hellas, north of this peninsula with nine states, the third being composed of the two states of Thessaly and Epirus. Greek history was reckoned by Olympiads, periods of four years, because every four years, as we have presidential elections, the Greeks held their Olympic Games, as far back as 776 B. C. The Greeks had a common language, religion and culture. These tended to keep them together and at peace. But they were always ready to fight each other through jealousy, rivalry or pride, because temperamentally they leaned to the philosophy of individualism, that is, pure selfishness. It is a theory of "Myself", and where that is strong, the national spirit is weak. Thucydides, who wrote the first great real history, took for his subject the Peloponnesian War, in which Greece committed suicide. In this book he writes the greatest of all Greek tragedies, the destruction of the most gifted people that have ever lived. In one of the first chapters he says: "It is one of the marks of the imbecility of ancient times that the Greeks never held anything in common."

The community of language, culture and religion was more than anything else due to Homer, who has given us the first and greatest epic poem ever written. In some ways it was a great thing for Greece that her life and thought could have been interpreted through such a mind. Although many of the ideals were those of battle and carnage which have not ceased to affect the minds of men on the whole the *Iliad* and the *Odyssey* were so far ahead of the standards of the rest of the world as to have been a real revelation. Moreover, Homer shows us many pictures of the daily life and customs of the people.

About 1000 B. C., barbarous and heavily armed tribes from the North called the Dorians, conquered the people of the Peloponnesus in many battles, after which for some centuries we have no record. When the curtain rises again upon Greece there is a new race consciousness; great migrations have taken place; kings have given way to oligarchies; these to tyrants and to some degree democracies up to 500 B. C. Fugitives and traders carried the Greek blood to the islands of the Ægean, and the Asiatic coasts, while about sixty settlements were made on the shores of the Black Sea. In Asia Minor where Miletus and Ephesus were the principal cities, the district



became known as Ionia. About the time of Homer began the rise of Sparta with the legislation of Lycurgus, who ordained two kings, a senate of thirty members and arranged for the people to meet from time to time in open-air assembly to hear and decide all laws.

An anecdote of Lycurgus will show the spirit of his educational system. He brought up two young hounds from the same litter upon two different systems. One dog was fed on choice foods, was pampered and left to follow his own instincts, while the other was allowed a spare diet and trained daily for the chase. One day in assembly the two hounds were brought out before the people. Before them a dish of meat was set on the ground and a hare let loose, and the two dogs were unleashed, The trained dog made at once for the hare, while the mollycoddle brother set upon the dish of meat. "O Spartans," said Lycurgus. "These two hounds are of the same noble breed, come from the same litter; behold how different their tastes! So be it with your children; train them early and they will become useful citizens; but let them grow up in idleness and luxury, and they will become the degenerate victims of vice." The system of Lycurgus was carried to its logical extreme, almost always a bad principle, for in some ways it became harsh and brutalizing. At seven boys were taken from home and put in barracks; their bodies were hardened and their wills educated to obedience. They were whipped on festival days to test their endurance, and they often died without a cry. "The Spartan life is so unendurable," said an Athenian, "that it is no wonder he throws it away in battle." But their austerity and dignity and the enduring character of their constitution, lasting for a half millennium amidst the chaotic conditions of revolutionary states, made them a political refuge and a moral force in all Greece. They were hard and narrow. They did nothing in art, literature or philosophy, but Greece lasted longer for their defences and "they helped to save something better than themselves." The issue was Thermopylæ in 480 B. C., when Xerxes, the Persian, had crossed the Hellespont with an immense host, meeting no resistance till he reached the pass of Thermopylæ, where the Greeks, under Leonidas, devoted themselves to certain death because it did not become a Spartan to desert his post. There they died, betrayed by a Greek, Ephialtes, and above their graves was placed the epitaph: "Strangers tell at Sparta that we lie here in obedience to her laws."

For a long time the "Tyrants" ruled the Sicilian and Asiatic colonies of Greece, always unconstitutionally, and sometimes over unwilling subjects. Greek literature is unfriendly to the tyrant, but he did one good thing in breaking down the power of the aristocracy; he laid the foundations for Greek democracy and helped remove some of those petty political barriers which were always the curse of Greece and finally resulted in the downfall of her civilization. The tyrant was much like the modern "Boss". He rode into power generally in the espousal of the cause of the poor and made officers of his relatives and friends who did his "collections" for him; but he differed from the modern "Boss" in that he encouraged intelligence and patronized the sciences and the arts. During this age the rudiments of democracy appeared in that long warfare not yet ended between the few and the many; literature was developed beyond epic poetry to lyric and elegiac; sculpture made a beginning, and architecture became supreme, while the sixth century B. C. produced some profound philosophers. Intellectual supremacy was in Miletus, then the wealthiest and most populous city in Greece, which also boasted some of the greatest of Greek colonizers, traders, navigators and discoverers. Later supremacy moved from Asia to the European cities of Greece, Sparta, and Athens, the latter the first successful republic and the former the first successful democracy in history. Sparta endured longer than Athens, and both degenerated through their own peculiar vices.

With modifications these two forms of government were continued till absorption in the Roman Empire in 146 B. C. The first break in Athens was the seizure of the government by Peisistratos, who with his family ruled for a half century. It was his son, Hippias, having fled to Persia and taken refuge with Darius, who persuaded that king to war on Greece. Hippias, a Greek, was therefore the occasion if not the cause of the Persian Wars—the first great conflict between East and West—Asu and Ereb— as the Assyrian monuments would have it— Asia and Europe. Meanwhile

Athens had assisted the Asiatic colonies in their revolt against Persia, and Darius landed in Attica with 110,000 men to attack Athens. Out of all Greece there were but one thousand Platean hoplites ready to succor the Athenians, and these joined Miltiades with his immortal ten thousand. Athens defeated the Persians at Marathon, 490 B. C., and ten years later the Greek forces destroyed the Persian fleet at Salamis and their armies at Platea and Mycale, (479 B. C.).

In the age of Pericles, Athens, that is, all of Attica, had a population of about 350,000, of which nearly half were citizens and the rest foreigners and slaves. The latter were often men of culture and of the same color, captives of war, and it was one of these, Æsop, who lived at Samos about 550 B. C., and who made even the frogs "croak wisdom." It is the great distinction of this city, which is Greece to the modern world, that in its brief supremacy it created the first democracy of antiquity, founded the beginnings of science, and produced those philosophers who have never yet been excelled and who will probably determine the course of human thought very largely to the end of time. There is something fitting in the mythical origin of the name of Athens. It is said that during the reign of the first king, Cecrops, of Egypt, two deities, Poseidon and Athena, contended for possession, whereupon the gods decreed that it should go to the one who made the most useful gift to mortals. Poseidon gave the horse; and Athena planted the olive tree and won—hence the name of Athens. The emblem of peace won over that of war. Is it a prophecy of the great democracy?

Pericles in his youth came under the influence of Anaxagoras, the first Greek thinker to declare that mind and not matter rules the universe, and such was the loftiness of his moral tone that friends and enemies declared him the Zeus of Athens, while Aristophanes speaks of him in one of his satires as the Olympian Pericles. He was a greater statesman than Themistocles, as just as Aristides; as ambitious for Athens as Cimon; and he was the greatest orator in Athens. Says one writer: "Persuasion sat on his lips, such was his charm." What Isocrates said of his city at a later time, was especially true of Athens in the age of Pericles: "Athens was the champion of the masses, the enemy of dynasties, denying the right of the many to be at the mercy of the few." There was nothing in this noble ideal to prevent Pericles from marking out his policy to make such a state the foremost in the world, and he succeeded. The first scheme of his policy was in the perfection of the Athenian defences, not forgetting that the world (then as now), was overrun by hordes of predatory savages whose law is that Might is Right. It was not till Athens forgot her ideals and her defences and, it is to be added, not till Sparta arose in jealous fury before the superiority of her neighbor, that the latter projected the Peloponnesian Wars which brought them both to ruin.

A short time after this war was begun, the plague broke out in Athens, having been brought back from Asia, and killed a fourth of the population, Pericles dying of it. The Spartans, who had started the war, sold out the liberties of the Asiatic colonies of Greece for Persian gold with which to destroy Greece, including herself; and it may be said that until the same kind of thing was perpetrated by the German Spartans of modern times, there was never so great a tragedy in the annals of men. These long fratricidal wars so weakened all of Greece that it was but awaiting the pretext of Philip of Macedon, who took advantage of the call for help of a foreigner against blood brothers, to move into Greece to assist the Phocians. From this foothold Philip steadily increased his influence and power, Demosthenes alone seeing through his plans, but with all of his eloquence he was unable to break through the reckless complacencies of the people of Greece who had been blinded by Macedonian propaganda. The empire of Philip grew from small beginnings to rule as far as the Danube and the Black Sea, when his son, Alexander the Great, came to the throne. In 334 B. C., he set out with a great army, conquering Persia and invading India, and died at Babylon at the age of thirty-six. His great empire was soon dismembered and finally fell to Rome.

The Greeks were the first to make the attempt to see the world whole and find the causes which connect things in the great unity. The poets, especially Homer and Hesiod, referred things to the gods. Thales, of Miletus, was the first to try to explain things in some natural order, assuming water as the fundamental principle, while Anaximander, his pupil, substituted the air. Anaximander taught that the earth is round, invented the sundial and made astronomical calculations, while Xenophanes, living in Italy, taught the existence of one changeless God. The followers of Pythagoras taught that philosophy must be a guide to life, while Democritus advocated a system of atomism, teaching the very opposite of a rational unity, the atom being the last reality. Anaxagoras was the first to teach that the ruling principle in the Universe is mind. "In the beginning," he said, "all things were chaos; then came Intelligence and set all in order."

Here one of the noblest characters in history appears — Socrates — with the dictum: "Know thyself." His personal habits and appearance made him the butt of ridicule of the comic poets. He wandered bare-footed in the market place trapping the unwary in argument, and showed himself one of the greatest of geniuses of all time. His principal disciple was Plato, teacher of Aristotle, who was the teacher of Alexander the Great. How much of the thinking of Plato and Aristotle was the work of Socrates we shall never know; but these three men, all contemporaries, in the field of pure thinking have never been excelled. The central point of the doctrine of Socrates was the soul and the moral life. He taught absolute loyalty to conscience; was accused by the bigots of his day and condemned to death for teaching false doctrines. Although opportunity was offered for his escape, he said that he had always taught obedience to the laws and he would obey them—and then he drank the hemlock. Plato, the most distinguished disciple of Socrates, taught that our ideas must have come from God, that they are spiritual realities of which material things are but the shadows. Virtue is resemblance to God, and men used to say that if Zeus had spoken, it would have been as Plato spoke. Plato's school was the forerunner of the modern university, teaching mathematics, science, music and philosophy, with a president and lecture staff, the students including men and women. This school lasted nearly a thousand years, being abolished by Justinian in 529 A. D., because its teachings were not supposed to be in consonance with Christian doctrines.

The battle of Salamis (480 B. C.), connects three of the greatest names in Greek literature. In that battle (as at Thermopylæ), fought Æschylus as a hoplite at the age of forty-five, the first and one of the greatest of all tragic dramatists; Sophocles at the age of fifteen, took part in the celebration of the victory; and Euripides was born on the day the battle was fought. Æschylus produced seventy tragedies of which but seven remain; Sophocles wrote more than a hundred, with the same number remaining; Euripides, the dramatist of the common people, has extant eighteen out of his ninety-two plays. The greatest of all comic poets was Aristophanes, also a contemporary, eleven of whose fifty-four comedies remain.

Hanseatic League.—The old Teutonic word "Hansa" means "league" or "confederacy". It was used to denote a movement among the awakening commercial powers of Europe, arising with the growing towns which sprang up after the disintegration of Feudalism began. It is pretty certain that its first motive was the mutual protection of the cities engaged, against the inroads of the pirates which infested the seas. (See Northmen). While these new trading towns held aloof from each other, they were the prey of the pirates. Hamburg, which had been founded by Charlemagne, made an alliance with Lubeck, which later became the center of the Hanseatic League. Soon other towns joined from the interior as well as on the coast, and by 1370 there were seventy cities in the League. Congresses were held at Lubeck, and their deliberations had great weight. Severe penalties followed the failure to obey these decrees. With growing commerce followed growing ambition, and the League no longer stood for defence alone, but for trade monopoly of the commerce of the North Sea like that of Venice on the Adriatic. These Congresses secured certain privileges and immunities from the Northern kings, as, for example, the use of the herring fisheries of the Sound. They repressed piracy and land robbery and established constitutional government. Their measures fostered the spirit of freedom and the sense of law and order, in those days so feeble. They drew in from the outer places of the earth many of the comforts of life hitherto unknown, raised the standards of living, developed architecture, encouraged agriculture and industry, and in many ways hastened the development of modern civilization, including the arts of navigation and shipbuilding, which they exercised in war and peace. The Hansa towns established agencies which they called "factories". This is a term used by the Hudson's Bay Company to this day in Canada, where the manager is called the Factor. Here the natural productions of the country were gathered and exchanged for the imports of the Hansa towns. They were exempt from taxes and from the laws of the land, being a power to themselves, the principal factories being in London, Bergen, Bruges and Novgorod. Jealousies grew out of the prosperity of the English Hansards, as the merchants resident were called, leading to frictions that were settled at the Treaty of Utrecht, which the Hansa League dictated. The League stretched from England to Russia, a commercial League of Nations which monopolized the trade of northern

Europe. But its very prosperity encouraged competition in other countries. Many towns withdrew from the League, setting up for themselves, and trade began to take the form of the political divisions of Europe. Then the era of discovery set in with the establishment of new trade routes, and the League finally fell in the Thirty Years' War with the ruin of Germany.

Harding's Election (1920). — President Wilson had been re-elected on the record of his Domestic Policies in 1916, but his Foreign Policies and especially his management of affairs at Paris reacted in 1920, in the election of Warren G. Harding as President of the United States by the most significant majority ever given to a Presidential candidate.

Harding's Administration

I. The Washington Conference.—The new administration invited Great Britian, France, Italy and Japan into a major conference on international affairs in 1921. Other nations participated. Disarmament was sought and international questions were settled, partly or wholly. Naval armaments were reduced by agreement on the basis of a 5 - 5 - 3 - 1¾ - 1¾ ratio for the United States, Great Britain, Japan, France and Italy, respectively. Japan agreed to withdraw from China. Most of the vexed questions in the Pacific were amicably settled. The reduction of Naval armaments on the ratios named is to continue ten years. No land armament reductions were agreed upon because France, by common agreement needed her army intact during the period of reconstruction.

II. The Coal and Rail Strikes.—During the summer of 1922 both bituminous and anthracite coal miners went out on strike. No coal was mined for a period of four months. At the same time the railroad shopmen went on strike, badly crippling freight service and interfering somewhat with the mails and the passenger service. The strikes were the result of various grievances, but mostly against wage reductions. The administration made numerous efforts to end the strikes but without definite results. Compromise finally prevailed at the end of September. But a severe coal shortage resulted and there was much real suffering during the following winter.

III. Treaty of Peace With Germany.—The Senate of the United States had refused to ratify the Versailles Treaty under the Wilson administration. War with Germany was not yet technically ended. A separate treaty of peace was therefore concluded between the United States and Germany and was signed by President Harding in July, 1921.

Benjamin Harrison's Administration

I. Oklahoma Opened.—Oklahoma was carved out of Indian Territory, having been purchased from the Indians for $4,000,000. In 1889, April 22, by edict of Congress, settlers were admitted. A rush was made by thousands of prospective settlers who had camped on the border waiting for the signal to go forward to possess the land. Cities grew in a single day; in a few months the new territory had more than 60,000 people.

II. Johnstown Flood.—In May, 1889, unusually heavy rains caused a reservoir above the city of Johnstown, Pa., to break and flood the country below. A high flood hurled itself down on the thriving city as a wall of water fifty feet high advanced rapidly and engulfed houses and people. 2,235 lives were lost; $10,000,000 damage was done.

III. Bureau of American Republics.—President Harrison and Secretary of State Blaine called the first Pan-American Congress to meet in Washington in 1889. An effort was made to unite the various Republics in friendship. Mutual understanding was the first necessity. To secure reliable information and spread it among the people of the various countries was the first endeavor. For this purpose, the Bureau of American Republics was organized, with headquarters in the city of Washington. Out of its work has grown amity among all American Republics. War is each year more remote, while peace and mutual good will and respect are growing more secure.

IV. New States.—During the Harrison Administration, six new states were admitted into the Union—North Dakota, South Dakota, Montana, Idaho, Washington, Wyoming.

Harrison-Tyler Administration (1841-1845).

I. Ashburton Treaty (1842).—Harrison accomplished little before he died a month after his election, but the appointment of Daniel Webster as Secretary of State. Immediately Tyler repudiated the party that had elected him, being a states right Jeffersonian instead of a Jacksonian nationalist. Webster at once opened negotiations with Lord Ashburton, Minister of England, at Washington, for the settlement of the northeastern boundary dispute. There was a large disputed territory claimed by both parties, but a compromise was reached with the present boundaries of Maine. The extradition of certain classes of criminals was agreed upon, a principle but partly held before; also the right of search, Webster managed to get into the treaty a declaration that sailors in American ships would "find their protection in the flag which is over them." Each nation agreed to keep vessels coasting off Africa and work in harmony for the cessation of the slave traffic. War was again averted with Great Britain.

II. Mormons. (1830).—A religious organization composed of followers of Joseph Smith, who organized the Church of Jesus Christ of Latter-Day Saints, at Fayette, New York, April 6, 1830. Smith claimed to have received from an angel an ancient history of the inhabitants of the American Continent from about 2200 B.C. to 420 A.D. This history, it is alleged, was an abridgement made by Mormon the last of their historians. It is claimed that this history, on plates of gold, was hid in a hill near Palmyra, New York, by Moroni, son of Mormon, about 420 A. D. Moroni revealed the record to Joseph Smith who was given divine power to translate it. There were three special witnesses who testified that the angel showed them the "plates" and said they were to bear witness to all the world. There were also eight other witnesses who testified that they beheld the "plates." The testimonies of these witnesses appear in each copy of the Book. Joseph and Hyrum Smith, brothers, were killed by a mob June 27, 1844. Brigham Young led the people west founding Salt Lake City and other settlements in Utah. Because of their industry they became a prosperous people, making the desert to blossom as the rose. About 2,000 missionaries who pay their own expenses are kept in the world by the Church.

III. Texas and the Extension of Slave Territory.—The South considered Texas a promising field for the extension of slave territory. Many emigrants went there from the South with their slaves. In 1836 they revolted from Mexico and of the 57 signers of the Texan Declaration of Independence, 50 were Southerners. The Texans, under General Sam Houston, defeated the Mexicans, led by Santa Anna, who was forced to recognize their independence. In 1837, the United States, and later England, France and Belgium, recognized Texas as an independent power, and the matter of annexation became a political issue. The Whigs and Democrats of the North were opposed to it, but finally in the last hours of Tyler's administration the state was admitted.

Hastings, Battle of.—The battle of Hastings was fought on the 14th of October, 1066, by the English against the invading Normans. King Harold of England was slain and William the Conqueror of Normandy became king in his place. It is said that on the eve of the battle the English feasted and sang while the invaders occupied their time in the confession of their sins. Harold's eye was pierced by an arrow and he was denied Christian burial. On Christmas Day, William was crowned at Westminster.

Hayes' Administration

I. The Disputed Election.—The election of Rutherford B. Hayes was disputed by his opponent, Samuel J. Tilden. Congress finally made the decision through the Electoral Commission which decided all the contested electoral votes in favor of Hayes and gave him a majority of one electoral vote, 186 to 185. This led to a bitter political situation in the early part of the new administration, but the President won the respect of his opponents and his administration was regarded as pure and honorable.

II. Electric Railway.—Thomas A. Edison perfected inventions by which he constructed an electric railway at Menlo Park, N. J., in 1881.

III. Railway Strike.—In 1877 the railroad workers of the Baltimore and Ohio went on strike against a reduction of wages. All freight traffic was stopped and the mails and passenger traffic were interrupted. Damage estimated at more than $10,000,000 was done, to property. Federal troops succeeded in ending the violence.

IV. Life Saving Service.—The United States Life Saving Service was organized in 1871 by act of Congress. This service extends over a coast line of about 10,000 miles, including the Atlantic, Pacific and Great Lakes. It is in operation throughout the year and saves many lives and much property annually.

The Hebrews.—Of all the Semetic peoples—Assyrians, Babylonians, Phoenicians and others—the Hebrews stand out pre-eminent. Their authentic records indeed scarcely go back further than 200 years before the birth of Christ. Their real history begins with Abraham, who came from Chaldea, and settled in the land of Canaan with his sons and their descendants, the twelve sons of Jacob afterwards giving rise to the twelve tribes. It is a moving story we are told of Jacob's favorite son, Joseph, sold by his brethern into slavery to the Egyptians. Joseph rose to power and became the mighty minister of the Pharaoh, one of the Hyksos rulers of Egypt. The tale goes on to say how Joseph forgave his cruel brothers and how he summoned them and

theirs to settle in a fertile district of Egypt—the "land of Goshen"—where they multiplied and grew very prosperous. But after many years had passed, the Egyptians were wroth at their own liberality, and little by little made bond slaves of these foreigners, who cherished their own religion, so much simpler and superior to the superstitions of the Nile dwellers; who kept themselves separate and neither intermarried nor intimately mingled with the native population. Untold hardships the Hebrews had to endure until Moses, about 1400 or 1350 B. C., arose among them and finally induced his kin to emigrate from Egypt. The exodus of the Israelites forms one of the most stirring accounts in the ancient parts of the Bible. The facts about the earlier life of Moses himself are not established. However, the main fact, i. e., that the Hebrews did leave Egypt and after long wandering about through the deserts of Arabia, effected the conquest of Canaan, seems unquestioned. So, too, is the giving of the grand moral code, the decalogue, through Moses and those who came after him. The laws framed and accepted by the Jews were immeasurably superior to those of any other people, recognizing no castes, (as in India), but equality before God. The institution of the Sabbath as a day of rest and reflection alone stamps the Hebrew code as a blessing to the whole world. Charity and forbearance, things unknown to the ancient world, are taught in the sacred scriptures of the Jews. Joshua continued the work of Moses, and the land of Canaan was divided between the twelve tribes. There remained, though, scattering numbers of the native population, heathens given to all the abominations of their sensual religions, who grew in number and rose frequently in rebellion. The period when judges, successors of Joshua administered the land, was an unquiet and unsafe one, and although heroic figures stand out, such as those of Gideon and Deborah, Ehud and Shamgar, Jephtha and Samson, the need of regular kingly rulers became urgent. Therefore, the last of the judges, Samuel, anointed Saul as the first king, and after Saul had proved recreant, chose David (1097 B. C.), from the great tribe of Judah, for king. During the reigns of David and his brilliant son, Solomon, the Hebrew people saw their days of greatest splendor and strength, and Palestine became quite renowned for a time for her military prowess, her wealth and civilization. Jerusalem was taken and made the capital; the power of the Philistines and Moabites was broken; the country was ruled as far as the Euphrates; the Phoenicians became the friends and allies of the conquerors, and Hiram, their prince, aided in building the great temple of Jehovah at Sion. Solomon, however, had already shown signs of unfaithfulness to the God of the Hebrews, and became idolatrous under the influence of his pagan wives. Unwittingly he had thereby begun to destroy the very foundations on which his power rested, and after his death (978) the stately structure began to topple.

The time of the schism and of subsequent captivity drew near. The Hebrew people split into two unequal parts, and their dominions became the kingdoms of Judah and Israel. Only two out of the twelve tribes remained faithful to the house of David, although Jerusalem continued wealthy and respected. In Jerusalem all the Jews sacrificed at least once a year. Israel, the larger half, grew more and more idolatrous and began to admit heathens to their fold. The prophets thundered their laments and their curses against the backsliders; Elijah, Elisha, Amos, Micah, Hosea, Isaiah, Jeremiah emptied the vessels of their wrath over the heads of the culprits, who paid no heed. Not only the moral power declined, but also the temporal. After the schism only Palestine remained in the hands of the Jews. A long and turbid time ensued, both in Judah and in Israel, and this was capped in 721 B. C., by the fall of Israel. The Babylonian king, Sargon, captured Samaria and carried King Hosea off to Nineveh in triumph. Judah, after escaping several previous times, feared even worse in 586, when Nebuchadnezzar, the Assyrian, took Jerusalem and the whole of Judah, and Zedekiah, loaded with chains and rendered blind, was taken to Babylon. The leaders of the nations were massacred most cruelly, and the remnant was sent into captivity.

Under the rule of Cyrus, the Persian, when Jewish captivity "by the weeping willows" had lasted seventy years, the Jews were allowed to return to Jerusalem and to rebuild it and the temple. Alexander the Great, two centuries later, invaded Palestine again, and offered sacrifice in the temple at Jerusalem, showing the Jews leniency. After Alexander's death, however, the Egyptians made themselves overlords of the country for about a hundred years. One of the Hellenistic rulers of Egypt, Ptolemy II., Philadelphus, placed the sacred books of the Jews in the famous library of Alexandria and had them translated into Greek, the so-called Septuagint. After the Egyptians came the Syrians as oppressors, and one of the Seleucides, Seleucus IV., plundered the great temple of its riches, while one of his successors, Antigonus IV., sacrilegiously caused the statue of Jove to be placed upon the very altar of Jehovah.

Against such desecration of their holiest, the Jews rose under the great fighting family of the Maccabees, Judas Maccabeus in the forefront. They freed themselves from the yoke of the Syrians, only to fall under that of the Romans. For almost two centuries they underwent the most cruel reverses; sometimes, for a short period, achieving their independence, and in the time when Jesus of Nazareth was born their lot was bearable. The bitter and lasting strife between the Pharisees (interpreters of the severe code of Moses) and Sadducees (latitudinarians) often disturbed the internal peace. Having become again Roman subjects, the Jews revolted in the days of Nero, the Emperor, the rising becoming more and more bitter under the following Roman rulers. Altogether, it is said, considerably over a million Jews perished during this, the most desperate rising of the Hebrews in History, until in the year 70 A. D., Titus, the son of Vespasian, utterly destroyed Jerusalem. A new town—lia Capitolina—was erected on the site, and the dispersion of the Hebrews began.

Holland.—(Netherlands). The kingdom of the Netherlands (Holland), became an independent state in 1815. The people belong to the Teutonic stock, most of them having descended from the old Batavians. The country had been first subject to the Caesars, then to Charlemagne, but after many vicissitudes assumed international importance in the sixteenth century under Charles V., who had not only inherited the Netherlands, but had been crowned Emperor of the Holy Roman Empire. Under his son Philip II., religious wars with the Protestants were conducted with brutal tyrany and cruelty. In 1581 the Dutch Republic was established as an independent state under William of Orange (the Silent), the wars continuing till 1648. During this period the Dutch achieved distinction in science, art, literature, scholarship and commerce. William II. of Orange, came to the Stadtholdership in 1672 and defeated the ambitions of France. Ten years later he was crowned king of Great Britain and Ireland. Cut off from European commerce, Dutch merchants sought the Indies, where their honest dealings established them in the confidence of the natives. From their first trading post in Java (1603), they extended control over the Spice and Banda Islands, crowding out the Spanish and Portuguese and gaining monopoly of trade in Sumatra, Borneo and neighboring islands. Holland threatened to control the trade of the world, when Cromwell (1651), passed the Navigation Acts, forbidding the carrying of goods to and from England except in ships built and owned in England or her colonies and manned with English or colonial crews. War followed. For a quarter of a century in the English channel Dutch and British natives contended for supremacy of trade in the East, until finally the issue was decided by sea power. The result was that Holland was shut off, though she kept the trade of Java and Ceylon; while the English laid the foundations of their Indian Empire, founding Madras, Bombay and Calcutta. After the French Revolution, the French armies overran Holland and Napoleon made his brother, Louis Bonaparte, King of Holland. Waterloo and the Congress of Vienna led to the proclamation of William V., as William I., King of the Netherlands, in March, 1815. He was recognized as an independent sovereign by all the powers of Europe. Under William II., his son, a better constitution was granted than had been in effect. He died in 1849 and William III. reigned till 1890. In 1898 Queen Wilhelmina, descended from William the Silent, became sovereign in reality as well as in name on her eighteenth birthday, and she still reigns. Holland retains vast colonial possessions in the East, covering 783,000 square miles with a posulation of 38,000,000. These islands are Java and Madura, with the outposts Sumatra, Borneo, Riou Linga Archipelago, Banca, Billiton, Celebes, Molucca Archipelago, the Sunda Islands and a part of New Guinea.

Holy Alliance (1815).—The French Revolution had begun in an attack upon the Bourbons, and it ended in their restoration, with the Red Revolution and the Napoleonic cycle between. The Congress of Vienna was a reaction against revolution and all it stands for, followed by a further arrangement entered into by the rulers of Russia, Prussia and Austria, with the ulterior motive of fighting revolution or even reform in any guise in which it might present itself. After the defeat of Napoleon at Waterloo, Alexander I., of Russia, drew up in his own handwriting a pact which was signed by him, Francis of Austria and Frederick William of Prussia, declaring in the name and according to the principles of Jesus Christ that they would coerce the principles of charity, justice and peace in their internal administration, and in their foreign relations, they would hold the welfare of their subjects to be their greatest object. These three nations would form one Christian nation which should have for its sovereign "Him to Whom alone

power belongs as His possession, because in Him are found all the treasures of love, of knowledge and of infinite wisdom." No kings of constitutional countries could sign this precious "Christian" document, which became an instrument of tyranny and usurpation.

Hoover's Administration (1929-1933).—One of the first official acts of President Hoover was calling into special session the 71st Congress to consider legislation for agricultural relief. March 22nd, the British Schooner "I'm Alone," suspected of being a contraband carrier, was sunk off the Louisiana Coast by the U. S. Cutter "Dexter." On April 25th the two governments agreed to arbitrate the case.

On May 20th, a National Commission on Law Observance and Enforcement was appointed by President Hoover headed by former Attorney-general Wickersham.

In the celebration of the completion of the canalization of the Ohio river from Pittsburgh, Pa., to Cairo, Ill., in October, 1929, President Hoover was the principal figure. He delivered a speech on the waterway policy of his administration and outlined plans for a ten-year program. Thomas A. Edison received a world-wide tribute on October 21st on the fiftieth anniversary of his invention of the incandescent lamp.

The Kellogg-Briand antiwar treaty was officially declared in full force and effect on July 24th, by President Hoover in the presence of an assembly of diplomats and distinguished persons in the White House in Washington. The closing of the year 1929 marked a great collapse in the stock market which proved one of the most disastrous in its history. Commander Richard Evelyn Byrd made a flight over the south pole on November 28-29.

The *Graf Zeppelin*, German airship, made the trip around the world in August. The World Protocol was signed in Geneva on authorization of President Hoover and on behalf of the United States. A five power naval conference in London was held in January, 1930, to discuss the limitation or reduction of naval armaments. The death of Chief Justice Taft of the United States Supreme Court occurred in January, 1930, and Charles Evans Hughes was appointed in his stead to the Supreme Court bench. 1932, 1 year moratorium granted debtor nations.

Hundred Years' War.—On the death of Charles IV., king of France, King Edward III., of England, put forth a claim to the French throne, for his mother had been queen of France. But the French law held that no such right could descend through a woman. Edward's claim resulted in a century of war between France and England.

Hyksos, Invasion of Egypt by.—About the year 2000 B. C. Egypt was conquered by the Hyksos, or Shepherd Kings. The word is derived from Hyk, King, and Schaeu, shepherd. Their conquest put a stop to progress in Egypt for about two hundred years.

India.—Ancient India lay in the valleys of the Indus and the Ganges. To the former belonged the Punjab, the land of the Five Rivers. The head waters of these two systems overlap at the base of the Himalayas, the Indus flowing to the Arabian Sea, while the Ganges and the Brahmaputra mingle their waters and empty into the Bay of Bengal. The plains watered by these river systems cover an enormous extent of territory. They are guarded on the north by the loftiest of all mountain ranges, a most effective barrier between the two great ancient Asiatic civilizations which have developed on such different principles.

The India of today contains about one-fifth of all mankind, who speak 147 languages, recorded as vernacular in India, in an area as large as Europe, outside Russia. Among them modern scientists have discovered a lingual if not a race kinship with the people of the West. It is known that these tribes which came from the Northwest in Central Asia into the Punjab, conquering and driving out the black peoples and singing the hymns of the Vedas, told their children the same stories that are told by the peasants of Thuringia and Abruzzi to this day. The Indian people had developed a philosophy and a literature a half millennium before the Christian era, but their early history lies in the dark for a long period after the native races had been overcome by the Aryan invaders and had acquired a considerable civilization of their own. How an Aryan civilization (one can speak with no certainty of an Aryan race), came to differ so fundamentally from that of Greece is one of the most interesting of historical problems; but there are two influences that must have counted: their geography and the influence of the native hordes.

Almost no historic documents come down from antiquity till we find the edicts of Asoka engraved on rocks and pillars throughout the land, but these were mainly concerned with the duties of the Buddhists, whose religion has now disappeared from India, though it still probably has the largest number of worshippers of any religion in the world.

The Rig-Veda, which was composed after the invasion of the Indus, is very different from the system which followed in the Ganges territory. It is cheerful in its religious teachings, polytheistic but devoid of the dreamy pantheism and gloomy asceticism that grew in the East. The deities are the powers of nature. Indra was the god of thunder and rain; Varuna the encompassing day, and Agni the god of fire. There were thirty-three gods, but all sovereign power was to be found in Varuna, the upholder of order.

Earlier than 1000 B. C., migrations had taken place to the Ganges where the caste system sprang up, of which we find nothing in the earlier Vedic system. The priests are the Brahmins; the Brahmin in the Vedic is but a worshipper. But the priests composed the literary caste, and mind ruled matter, for they were the only ones who understood the language of the hymns and ritual. Brahma is the supreme being, the eternal source, out of which are evolved, not created, all things which come into being. All life, animal and vegetable, partakes of the universal life, and the doctrine of transmigration appears. The development of individuality is evil; hence to get back to Brahma by absorption is good. The laws of Manu make the Brahminical code, all directed towards the emancipation of the soul from matter.

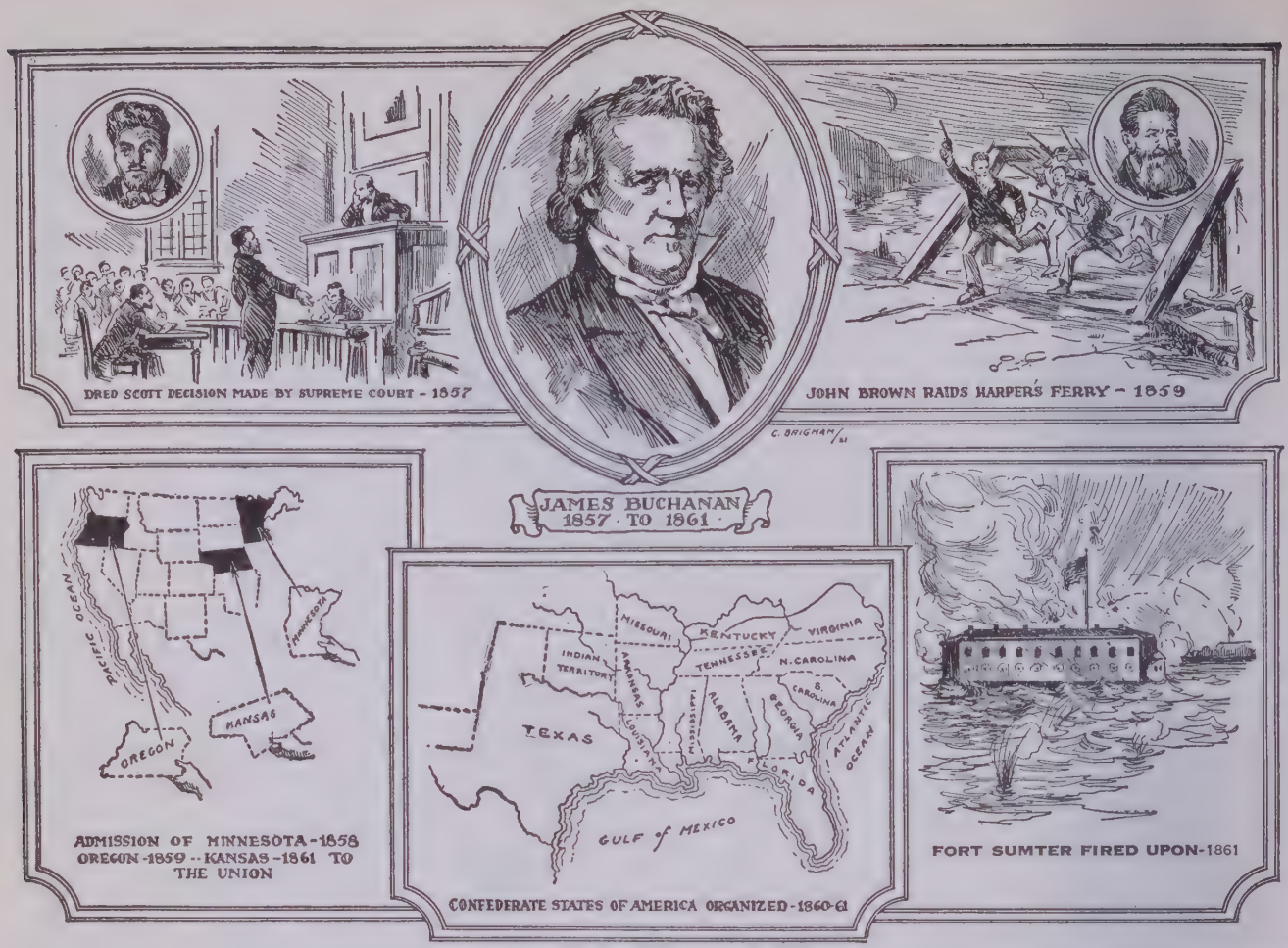
Against this system came the reaction of Buddha, the Enlightened. Prince Sarvathasiddha (Siddartha), son of the king of Kapilavastu, whose ancestors had come from the delta of the Indus, was born about 500 B. C. It is interesting to note that Cyrus, the Persian, reached the Indus about 540. Eight years later Prince Siddartha renounced the world and retired for some years for contemplation in the desert, returning to preach the faith of Buddha, that the world is a vain illusion and that the solution of life's riddles is to get out of the universe in which he can find no god. Actual records of the monuments show that later Buddhism, at least, was not an atheistic belief but a polytheism, Buddha himself taking the place as an incarnation of Vishnu. For a thousand years Buddha was worshipped as a god. Buddhism has been utterly swept away from India, except in Ceylon in the South and Nepal in the North, although it has permeated China, Japan, Russian Tartary and is today the religion of a fifth of mankind.

There is little authentic history between the invasion of Alexander the Great and the Mohammedan invasion in the eighth century and for two centuries the Moslem power gradually advanced into southern India. In 1398 Tamourlane sacked Delhi and returned to Central Asia. A descendant of his, Sultan Akbar, founded the Mogul Empire and his grandson, Akbar, extended Moslem dominion to the south of the peninsula, reigning for nearly a half century with some religious tolerance. In 1675, the Sikhs, a Hindu sect, established a religious and military commonwealth in the Punjab. The Dutch, French, Portuguese and English established themselves in India, but the British East India Company, a trading power, laid the foundations of British rule which was founded in 1858, and which has served to preserve law and order amongst the various peoples and interest, together with enormous improvements in the material civilization of the country. If Great Britain had done nothing more than keep the peace, that alone would have been a sufficient contribution to the cause of humanity, but the vast extent to which this power has contributed to education and general improvement must be reckoned as among the great services to the human race.

Ireland.—In prehistoric times Ireland seems, like Britain, to have been inhabited by peoples of the Iberian stock, who were successively invaded and subdued by Nemedians, Firbolgs, Tuatha Dé Danann, and Scots or Milesians. Most of these invaders seem to have been Celtic, some of the Cymric (British), and some of the Goidelic branch. The Scots were distinctly Goidelic. Ultimately the resulting races, Iberian at base but Celticized by degrees, had assumed the Celtic type of civilization and the Erse (Goidelic) language. The septs, tribes, or kingdoms were numerous, and constantly at war; though with curious permutations and combinations, some, or many of them, at times accepting the over-lordship of an ard-righ or chief king.

Irish history really begins with the Christianization of Ireland by St. Patrick, a Briton of Strathclyde, early in the fifth century. In the eighth century came Danish or Norse sea rovers, who established themselves in the east of Ireland, and, weakened by Brian Boru, and utterly defeated by him at Clontarf in 1014, were ultimately absorbed in the mass of the population. The intestinal strifes of the Irish potentates still went on as before, and led in 1167-72 to the Norman invasion.

Ireland had to undergo just 100 years later, and under Henry II., the fate England underwent under Henry's great-grandfather, William the Conqueror. Much of the Irish soil was parceled out, as England had been, among Norman nobles; but this change, so far from tending to consolidate Ireland into one kingdom, or into an organized province of the English mon-



archy, seemed but to have introduced additional elements of faction, feud, and warfare. The Norman chiefs fought with the Irish ones, and with one another; and became, as was said, "more Irish than the Irish themselves."

Henry VII. made an effort to reduce Ireland to order on Tudor lines; rebellions, expeditions, slaughterings, and confiscations went on in the reign of Henry VIII. and Elizabeth, the Reformation providing a new element of hostility between the English government and the Irish people. Under James I. vast confiscations took place, and great settlements, especially in Ulster, of English and Scottish immigrants. "The massacre of 1641" was directed against these aliens. Cromwell made a resettlement with a vengeance. The adhesion of the Irish to James II. brought William III. on them; and after the battle of the Boyne and the surrender of Limerick (1691) came the penal laws, which with many vastly more cruel provisions, debarred Catholics from all share in the Irish parliament.

In 1782 the Irish Protestant parliament had greater powers and dignities conferred on it; and under Grattan's influence, the emancipation of the Catholics seemed near. But Irish hopes were blighted by the obstinacy of George III. Hereupon the society of the United Irishmen became a distinctly rebellious organization, and fomented the short and futile rebellion of 1798. The union of the parliaments came into force in 1801.

The next great events in Irish history are Roman Catholic emancipation in 1829; O'Connell's agitation for the repeal of the union, begun in 1842; the potato famine of 1846; the fenian movement of 1867; the disestablishment of the Irish church (1871); Mr. Gladstone's land act (1881); the Home rule movement under Parnell; the home rule bill of 1886, defeated in the House of Commons; and that of 1893, defeated in the House of Lords.

The most important recent events in Irish history have been the visit of the king and queen to Dublin (1903); the Irish land purchase bill of 1903; and the resignation of Mr. George Wyndham, chief secretary for Ireland, over the incident connected with Sir Anthony MacDonnell. On January 7, 1921, the treaty was ratified, establishing the Irish Free State. By this treaty Ireland became a dominion of the British Empire, on the same general basis as Canada. It has its own parliament with a governor-general appointed by the King. Arthur Griffith was the first president of the provisional government. A constitution was adopted October 25, 1921. William T. Cosgrade became the first president under the new constitution. On December 5, 1921, King George gave royal sanction to the new legislation which made Ireland a dominion of the Empire and Timothy Healy was appointed the first governor-general. Ulster, the north of Ireland, remains separate from the Irish Free State, and enjoys its old status in the British Empire, with its own local government under its own premier. A new era of peace now prevails on the island.

Italy.—The area of Italy, 110,646 square miles, contains about 32½ million people, including the Islands of Sicily and Sardinia. Her colonial possessions are nearly half as large again as the mother country. The constitution of the kingdom is that of a limited monarchy, ruled by the hereditary monarchs of the house of Savoy, but only in conjunction with the National Parliament, consisting of two houses. The Senate is composed of the princes of the blood and a number of members appointed by the king for life, numbering in all just now, 334 members. The Chamber of Deputies of 508 members are elected by a majority of citizens above 21 years of age, who are literate and pay certain taxes. By the law of June 7, 1875, all men capable of bearing arms between the ages of 20 and 39 are liable to military duty. Compulsory education is also enforced.

The history of Italy as a nation begins late. It was never so dark for the national ideal as in 1850, after the revolutions of 1848, which after all were but rebellions since they were unsuccessful. At the time Italy comprised the Kingdom of the Two Sicilies, the Grand Duchy of Tuscany, the Duchies of Parma and Modena, the Lombardo-Venetian territory, the Kingdom of Sardinia, or Piedmont, and the States of the Church. In these, as usual in the history of the church, stretching across Italy from the Tuscan sea to the Po, Pope Pius IX. threw the weight of his power to the side of despotism. The bayonets of the Cardinal Antonelli were on the side of what aggressive bayonets generally stand for, while a Catholic Austrian garrison was maintained

in Florence. Piedmont had but 4,000,000 people, but there was a "Fundamental Statute" still in force, with a national army and flag and dynasty. In the struggles of this petty power the young son of Charles Albert, namely, Victor Emmanuel, bore himself well in battle in those struggles which preceded Italian Unity, in which Czvour played the part later essayed by Bismarck in Germany, in expelling Austria and creating a national unity. In the Crimean War Cavour declined the British subsidy and entered the Franco-British alliance as an equal. His army made a fine record while Austria dodged, exasperating her allies. This prepared the minds of the French and English at the Congress of Paris to listen to Cavour on the atrocities of Austrian rule in the peninsula. In 1859 Austria again took the initiative upon which Victor Emmanuel appealed to his compatriots over the whole of Italy and a popular uprising took place in which the Austrian Dukes and the papal tryants were alike expelled. But the victory of Solferino was immediately followed by the peace of Villafranca, between Napoleon the Little and Francis Joseph of Austria, giving the Italians some small gains, but betraying the great cause of Italy, causing Cavour to leave the Ministry.

But the assemblies of Modena, Parma and Tuscany declared alliance to Victor Emmanuel and asked for annexation to Piedmont, followed by the Romagna. Plebiscites by almost unanimous vote backed the assemblies, and Cavour again became Prime Minister over 11,000,000 people. Sicily rebelled against her tyrants, and Garibaldi, with an army of but 1,000 men sailed from Genoa on May 5, 1860, where in his red shirt, he took Sicily and marched on Naples. Here he was hailed as a liberator and dictator of the Two Sicilies. Mazzini, the purest patriot Italy had produced for many a weary century, was not favorable to the house of Piedmont, nor was Garibaldi, to whom all Europe was hostile, Cavour himself being held responsible for the revolutionary movement. Cavour was in a difficult position. His problem was whether he should hold with the powers of Europe or join in the party of progress. After asking the Pope to disband his foreign army and being refused, Cavour took the remaining papal territory in the north and, as he said in a speech, he left Rome and Venetia to the "arbitrament of time."

The Two Sicilies declared for Victor Emmanuel and an emancipated Italy, his troops and those of Garibaldi falling into each other's arms. All the Italian territories except Venetia and the papal territories on the Tuscan seas were now united under the tri-color of red, white and green. and on February 18, 1861, the first National Parliament assembled to enact laws for 22,000,000 people. Rome was as usual reactionary, but Venetia was added to Italy in an almost unanimous plebiscite on November 7, 1866. The French Premier, Rouher declared, "Italy shall never enter Rome," and France united with the Pope against Italy, but after the disasters of the Franco-Prussian War, French troops were withdrawn from Rome and the Italians occupied the city, and the ancient capital of the great Empire became that of New Italy. The Pope was bitterly opposed to all progress, tolerated no compromise or agreement and sought the Catholic powers of Europe. The land was covered with rich monasteries, glutted with wealth, while the people were perishing in their poverty. There were few roads or bridges or other public improvements—the wealth of the country had gone to the dukes and the church. They had neither schools, courts, police, nor a system of raising revenue, but the new king and his advisers began the organization of the kingdom. Shortly after the World War, in which Italy participated on the side of the Allies, Benito Mussolini organized the Fascist party which he led in a triumphant march from Naples to Rome. Victor Emmanuel III was forced to transfer the reins of government to Mussolini who became Il Duce. The latter put through a number of radical reforms and in 1935-'36 warred against Ethiopia which became part of Italian Empire.

Jackson's Administration (1829-1837).—

I. New Era, The.—Washington, Jefferson, Jackson and Lincoln ushered in new eras in American history. Under Jackson came the strange mixture of personal politics coupled with the aim for a national democracy. Jackson never forgot a friend nor forgave an enemy, and he carried this intense personal bias into the White House. Before him, John Quincy Adams had never even removed an enemy unfriendly to him nor his administration; but Jackson made of his advent a house-cleaning under the slogan: "To the Victor belongs the spoils." There never has been a purer "rule" than that of the younger Adams, and within his lights there never has been a President with purer motives than those of Jackson's. It was he, a democrat of the democrats, who struck terror to the hearts of the southerners, when he met the sedition of the South, responding to the toast on Jefferson's birthday: "Our Federal Union: it must be preserved." He also said to a South Carolinian that "if a single drop of blood shall be shed there (South Carolina) in opposition to the laws of the United States, I will hang the first man I can lay my hands on to the first tree I can reach."

II. Spoils System, The.—Up to 1829 there had been in all 74 removals from office and most "for cause." Washington had made 9, J. Adams 10, Jefferson 39, Madison 5, Monroe 9, J. Q. Adams 2. Jackson made a clean sweep of everything worth anything, it being estimated that during his first year he had made 2,000 new appointments. He was the first President who distinctly made public office a reward for party service, and especially personal service to himself.

III. Kitchen Cabinet, The.—Jackson's abilities were those of war more than peace. He knew a smattering of law, had taken a prominent part in frontier disputes and development, had been a country storekeeper, lawyer, district attorney, judge, congressman and senator, before he was thirty-two years old. Jefferson says of him that he never could speak in the Senate "on account of the rashness of his feelings. . .he would choke with rage." Jackson rarely held a Cabinet meeting, but advised with his personal favorites, some of whom held positions in the departments and it became known that the road to favor led through these men who came to be known as "The Kitchen Cabinet."

IV. United States Bank (1816-1832).— The United States Bank had been chartered in 1816 for twenty years. In 1832 the directors asked for a renewal of the charter, although it was still four years before the old one expired. At first, Jackson was not unfriendly to the institution. but he became its inveterate enemy. Although Congress granted the request for renewal, it failed to pass over the President's veto.

V. Nullification (1831-1832).—Jackson persisted in enforcing the tariff law although he never liked it. It was enough that it was a law of the land. Opposing his national policy were many who believed that the Union was a confederacy of states, not a union of the people. Calhoun, the leader of the former party, claimed that the states had never given the Congress power to pass a tariff law. A convention was held in South Carolina declaring the tariff law null and void and that it ought to be resisted. The legislature confirmed the action of the convention and prepared for armed resistance. Jackson sent out his Nullification Proclamation and sent a naval force to collect the duties in the harbor of Charlestown, upon which, the leaders undertook to "nullify" the action of the convention and legislature. Henry Clay introduced a compromise bill which by 1842, made a tariff for revenue only.

Johnson's Administration

I. Negro Citizenship—The Fourteenth Amendment.—The Thirteenth Amendment had made the Negro free but it left him without the franchise. His civil rights were entirely denied by the former slave states. The sympathies of the President, Andrew Johnson, were largely with the southern states while Congress was still vindictive. The Civil Rights Law sought to secure the Freedman's civil status but President Johnson vetoed it. Congress promptly passed it over his veto. The Fourteenth Amendment was enacted to give the ballot to the freedmen. The ratification of this amendment by the southern states was slow, but Congress made ratification the condition on which the seceded states could win recognition as fully readmitted members of the Union. The last ratification was made July 28, 1868.

II. The Ku Klux Klan.—Great disorder prevailed throughout the slave territory after the negro had been freed. The relations between former master and the freedman were not clearly defined. A new social condition had to be established. The trouble was aggravated by the northerners, who came in as temporary government officials. Lawlessness was everywhere. The negro was inclined to be insolent and indolent. A secret association of southern gentlemen was therefore made to overawe the former slaves. The Klan appeared only at night, was always hooded and clad in grave clothes. Much cruelty was exercised. The lawless negro was overcome by more lawless white men. Murder and robbery were committed in the name of the Klan. Congress finally passed special laws by which the Klan was suppressed in 1871.

III.—Alaska was purchased from Russia in 1867 for the sum of $7,200,000. Secretary of State, William H. Seward, was chiefly instrumental in negotiating the purchase.

IV. Nebraska Admitted to Statehood.— Events leading up to the civil war had included the territory of Kansas and Nebraska. The John Brown raid and other conflicts had made this bloody ground. Both slave and free interests tried to get the territory admitted under their own conditions. After the war, admission as a state without slavery was prompt, taking place in 1867.

V. Impeachment.—The conflict between the congress and the President over the reconstruction of the south after the war

finally came to a head in the impeachment of President Johnson. The charges included high crimes and misdemeanors and the trial continued several months. The impeachment failed although the vote in the Senate stood 35 to 19 against the President, a two-thirds vote being required. Andrew Johnson, therefore, completed his term of office for which he had been elected with Abraham Lincoln, 1865-1869.

Japan.—Japan appears in authentic history very late, her past shrouded in the clouds of myths and legends. The Japanese race is largely Turinian, or Mongol, with probably some admixture of Malay. Originally an island people, they have gained large possessions on the mainland of Asia. Out of 4,000 islands, there are 5 which constitute Japan proper, without counting the areas wrested from other nations under a predatory war policy. A few drunken remnants of the degenerate Ainu race inhabit the northern islands, but there are now about 70,000,000 Japanese, increasing at the rate of three-quarters of a million a year. The people have mostly forsaken their religions without taking on new ones, but perhaps the Shinto religion, so called, is the form most in vogue, consisting of elaborate ceremonies and no morals, but blind obedience to the Mikado. There are debased forms of Buddhism in vogue and many other beliefs.

Jimmu Tenno is supposed to be the ancestor of the present dynasty, making a line from about 600 B. C. Sujin, the tenth Mikado, 97-30 B. C., reorganized the government upon an economic basis and opened intercourse with Korea. Little that is definite is known of Japanese history. Christianity was preached there by Xavier, a Jesuit missionary, in 1583, but on account of the fear of foreign domination, the government persecuted the Christians, proscribing Christianity and massacring all the Christians in the realm. In 1853 Commodore Perry, of the United States navy, entered the harbor of Yeddo, and later negotiated a treaty which opened certain ports for trade.

Up to 60 years ago Japan was intensely pacifist and exclusive; since that time it has been intensely militarist and exclusive, demanding of other nations, including the United States, privileges that it will not allow to us. The Revolution of 1868 destroyed the Shogun Dictatorship of Tokugowa and restored autocratic rule to the Emperor, in a reaction against pacifism to the most violent forms of militarism which has been the policy of Japan to this day. Japan has become a military adventurer. Some time ago, Yoshida Shion (who was executed at the age of twenty-nine for a fanatical murder), foretold a new order leading to Greater Japan. The Japanese were to conquer the Kurile Islands to the north and Saghalien, Kanchatka, Formosa, Korea, Manchuria and Eastern Siberia and become the leading power in Asia. Against the protests of Count Ito, one of the most enlightened statesmen of modern times, Japan declared war upon China (finding her totally unprepared), and by her unexpected success secured a recognition from Europe which years of peaceful progress had failed to obtain. This lesson was not lost on Japan. From the Chinese war onward the baleful influences of militarism have been uppermost in that country, and its policy has had scarcely a check. The Kurile Islands were acquired in 1875; the Loochoo Islands to the south in 1876; Formosa in 1895. The Russian war gave South Saghalien and made Japan absolutely predominant economically and politically in Korea, South Manchuria and Mongolia; while under the provisions of the Anglo-Japanese treaty, Korea was definitely annexed in 1910, and half the dream of Shion had been realized. Japan took Tsingtao from Germany at the opening of the Great War, and the Paris Treaty gave Shantung to Japan, throwing China into her arms and that after her aggressions under the "twenty-one points" gained under threat of war. The collapse of Russia gave her North Saghalien and Kamahatka, a free hand in the back country of Asia and Eastern Siberia, which she dominates today. Since the war she has doubled her mercantile marine and is doubling her navy, guaranteeing the control of the Pacific Ocean, which means eventually the islands of the Pacific and their vast resources. Already more than Shion dared to dream for Japan, that nation has won by wielding the sword or rattling the sabre.

The great question for western nations to solve just now is whether Japan is the "last stronghold of militarism or the bulwark of peace in the Far East." Japan now holds third place instead of seventh in the carrying trade of the world; she has doubled and trebled her capital since the war began; she has become a creditor instead of a debtor nation and made extensive investments abroad, especially in war materials left over from the war; has invested $125,000,000 in aerial experiment and turned the Island of Formosa into aerial training grounds; she has doubled her trade with China and quadrupled it with the United States. In 1935, Japan annexed the entire Chinese province, Manchu-kuo.

Jefferson's Administration (1801-1809).

I. The Growth of the National Domain.—The new century beginning with 1801, mark a new era in the history of the United States. In that year Jefferson began his administration and justified the prophecy of his greatest opponent, Hamilton, that it would be cautious and moderate, since in most of the great issues that he met, he acted as would the staunchest of Federals; as for example, in the acquisition of Louisiana Territory, which had just been ceded back to France by Spain. Jefferson saw the significance of the fact of this realm belonging to so powerful a country, and he wrote to Livingston, our representative at Paris, of the dangers of such a neighbor, adding, that from that moment "we must marry ourselves to the British fleet and nation." Livingston was directed to buy the strip of coast extending eastward from the Mississippi and including New Orleans, and at the moment Monroe reached Paris, Tallyrand asked if we did not want to buy the whole of Louisana. Napoleon took the position that such a purchase would establish the power of the United States and weaken England. Jefferson had for years held that under the Constitution, the Federal government possessed only such powers as were expressly delegated to it in that instrument, but Napoleon might change his mind before an amendment could be secured. Louisiana was purchased for $15,000,000, in spite of all his theories, concluding the greatest real estate transaction in the history of the world, consummating one of the most fortunate events in our own history. The character of Jefferson was larger than his doctrinaire theories.

II. Adoption of the Twelfth Amendment (1804).—The Presidential election of 1800 developed a situation which resulted in the adoption of the Twelfth Amendment to the Constitution. Of the electoral votes, Adams received 65 and Jefferson and Aaron Burr each 73, although Burr was candidate for Vice-President. The election was thrown to the House of Representatives, where each state voted one, giving the Presidency to Jefferson and the Vice-Presidency to Burr. The new amendment provided for the vote of the electors for President and Vice-President to be on distinct and separate ballots. It was then no longer uncertain which of the party's candidates would be elected President.

III. The First Successful Steamboat (1807).—Before the end of the year 1787, Fitch at Philadelphia and Rumsey at Shepherdstown, Virginia, had both moved vessels by steam. By 1790 a Philadelphia steamboat company had plied a Fitch boat up and down the Delaware, while Samuel Morey of Connecticut and Elijah Ormsby of Rhode Island had made trips in vessels driven by steam. But it was not till 1807 that Robert Fulton made his trip to Albany on the Clermont, after Stevens had run a boat with a Watt engine on the Hudson and Oliver Evans had navigated a paddle-wheeled steamer on the Delaware and Schuylkill. But people said that no man in his senses would risk his life in a fire boat like the Clermont when there were good packets on the Hudson. By 1820 the Atlantic Ocean had been crossed by the Savannah and the Lakes and the Mississippi had been navigated.

Korea.—Korea is a peninsula lying between the Yellow Sea and the Sea of Japan, separated from Japan only by the Straits of Korea. The coast line of Korea is 1,740 miles, while the area is about 90,000 square miles. The climate is temperate and the soil fertile.

The earliest records of Korea go back to 1122 B. C., when the Chinese immigration took place with Ki-tse, who brought 5,000 Celestials with the Chinese arts and politics. Korea has been isolated to the degree that there is little if any authentic record of historic events. But Japan in 1876, gained a footing through a treaty, China following with the United States in 1882. Germany and Great Britain made their treaties in the next year, and France in 1886, two years after Italy and Russia signed, in 1884.

In 1888 it was rumoured that Russia was about to be placed in control over Korea. Since ancient times the suzerainty of China had been acknowledged, and one of the causes of the Japanese-Chinese war in 1894 was that Japan disputed it. When China renounced her right, Japan began to play an important part in Korean affairs. Russia again openly asserted her right to a voice in Korean affairs, which led to friction with Japan, resulting in 1904 in the Russo-Japanese war, after which Russia recognized Japan's paramount interest in Korea and transferred to Japan the lease to Port Arthur and the railroad to Chang-Chung. Japan denied any thought or wish for territorial rights on the Korean peninsula, and agreed to restore Manchuria. On July 19, 1909, Japan forced the abdication of the Emperor of Korea and on July 25th obtained by a treaty with her own nominees practically sovereign rights in the form of a "protectorate". On April 22, 1910, Japan annexed Korea.



Life-Saving Service of the United States.—Great are the dangers to the sailor off the eastern coast of North America. The prevalence of shipwrecks in this region aroused the anxiety of the American people who felt that something must be done to lessen these dangers. In 1848 eight life-saving stations were established along the New Jersey coast, each equipped with a trained crew. In 1871 the public demand caused Congress to establish the United States Life-Saving Service under the Treasury Department. Under the leadership of Summer I. Kimball this service safeguarded, not only the Atlantic shores, but all the 10,000 miles of United States coastline. From Maine to Florida, along the Great Lakes, along the Gulf of Mexico, along the Pacific Coast, life-saving stations were erected, so that by 1910 these numbered 281. Between 1871 and 1910 the Life-Saving Service dealt with 21,250 disasters; they saved $234,985,892 worth of property out of $293,033,154 involved and out of 146,095 persons whose lives were endangered only 1,277 were lost.

Today a ship within sight of the coast cannot go down unnoticed. All through the year, even in the bitterest winter days, patrolmen watch from the shore, leaving no part untouched, and the men in the stations are ready at a signal to launch their surf boats into the foaming water, or to shoot the stalwart rope from the mouth of their cannon to haul in a stricken vessel

LINCOLN'S ADMINISTRATION

I. Firing on Fort Sumter.—The Confederate States moved promptly to occupy strategic places in their territory. A few forts within their territory continued in the hands of the U. S. Army when Lincoln was inaugurated. Sumter was one of them. It became clear at once that it must be surrendered or reinforced. Lincoln decided on the latter. The Confederate troops fired on the Fort and on the U. S. flag, on April 12, 1861, and thus precipitated the Civil War.

II. Declaration of War.—President Lincoln asked Congress for 75,000 volunteers to put down the rebellion which existed in the South as shown especially by the attack on Fort Sumter Congress approved the President's request on July 4, 1861, voting 500,000 men and $500,000,000

III. Emancipation Proclamation.—President Lincoln issued the Emancipation Proclamation, January 1, 1863. On September 22, 1862, he had issued a proclamation that he would free the slaves in all states that remained in rebellion on January 1, 1863. As not a single state returned to the Union, the final decree was issued as promised. The Border States were not included nor those parts of the seceded territory where secession was opposed.

IV. Reelection of Lincoln.—In November of 1864, Lincoln and Johnson were re-elected. The events of the war had become more and more favorable to the Union cause The reelection of Lincoln was early assured, and showed a strong determination in the North and West to bring the war to a victorious close.

V. Appomattox—Lee's Surrender.—General Grant carried on his campaign with great vigor The South had been weakened by Sherman's raid in the rear of Lee's armies; a series of successes for the Union armies had finally concentrated the conflict in and around Richmond. Finally, on April 9, 1865, a little more than a month after Lincoln's second inauguration, Lee surrendered to Grant at Appomattox Court House. This brought all resistance to an end and promised peace and a reunited country.

VI. Thirteenth Amendment.—By the thirteenth amendment, enacted in February 1865, slavery was abolished from the U. S. as a whole. The Emancipation

Proclamation had affected only the seceded states. The amendment became operative on December 18, 1865 when the necessary number of states — 27 — had ratified it.

Admission of Other New States.—In 1863, West Virginia, the loyal part of Virginia, was erected into a separate state and admitted into the Union. In 1864 Nevada was admitted; and in 1867, Nebraska was admitted, after Vice-President Johnson had succeeded to the presidency.

Lincoln, Assassination of.—The surrender of the Confederacy had ended the Civil War. The tremendous weight of that conflict was lifted from the shoulders of the President, while all over the north re-echoed the joy of victory. Lincoln had entered Richmond, the capital of the south, and on April 14, 1865, conferred with General Grant in Washington over the problems of the surrender. That evening he attended a play at Ford's Theater in Washington, sitting in the foremost box. During the last act a young southerner named Booth, insane in his violent sympathy for the south, entered the box unobserved and shot the President in the back of the head, wounding him fatally. Major Rathborne seized Booth, but Booth cut the major's hand with a dagger, jumped onto the stage and escaped through the rear door. The President lived in a state of unconsciousness for nine hours. The murderer was pursued and on the following day was taken prisoner.

The joy of the north was turned into mourning for the great leader whose wisdom and determination had saved the nation, and whose large sympathy had won the love of the people. And later, as the problem of restoring the shattered south faced the nation, together with the problem of adjusting the negroes to their freedom, it was seen how greatly was needed the guiding hand of him who had been taken away before his task was complete.

Lydia.—Lydia is remembered mostly today as the land over which Croesus reigned, so rich, especially in the gold from the River Pactolus which ran through his territory, that the very name of Croesus has been the synonym of wealth to this day. In his time the soldiers of his realm were among the best in the world, and they carried on successful war with the Phrygians, Mysians and Medes. The religion of the Lydians was a sun worship, after that of Babylonia, but it degenerated into a perversion of the sex principle reduced to a cult. Under the rule of the Mermadaean dynasty they carried war to Artaxerxes of the Medes, their capital, Sardis, being "filled" with gold from the River Pactolus, and from booty gained in battles. Croesus reigned from 563 to 548, B. C., when he formed a league of the Grecian coast towns against Cyrus, the Persian king who defeated him, taking him prisoner, and destroying Sardis. Thereupon Lydia became a satrapy of Persia.

Madison's Administration (1809-1817)

I. War of 1812 (1812-1814). — For more than two-and-a-half years the war of 1812 was carried on from the Gulf of Mexico and the Atlantic to the Great Lakes and under circumstances of which Americans are not proud. The whole period seems to have been filled with cowardice and defeat, and this because of unpreparedness and inefficiency. General Ross captured Washington in 1814 and the President's house and other public buildings were burned. After the treaty of Ghent was signed Andrew Jackson defeated the British at New Orleans and the country once more entered a period of internal prosperity.



Lincoln Memorial, Washington, D. C.

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II. States Admitted.—Louisiana was admitted to the Union in 1812, Indiana in 1816 and Florida was invaded by the United States troops under Jackson in 1818, pursuing the Seminoles, who had been protected by the Spanish inhabitants of St. Marks and Pensacola, which places he seized. While there he executed two British subjects, Arbuthnot and Ambrister, who seemed to be intriguing against the United States.

III. Star Spangled Banner Written.—The Star Spangled Banner was written by Francis Scott Key in 1814.

IV. Tariff of 1816.—The North and South united in a Tariff Act in 1816, Calhoun favouring a strong national policy and a protective tariff for domestic industry, even Jefferson advocating that the farmer and manufacturer stand side by side.

McKinley's Administration (1897-1901). Hawaii Annexed (1898).—For five years Hawaii had been a Republic seeking annexation to the United States, and in vain. But the Spanish war had changed the feelings of the American people, and the spirit of expansion of a half century before was again revived in a measure when the Hawaiian Islands were annexed by joint resolution of Congress signed by the President July 7, 1898. Formal transfer of sovereignty took place on August 12th, the islands remaining for a time under the existing form of government with a few changes, till June 14, 1900, when they were organized as a territory.

McKinley, Assassination of (1901).—On September 5, 1901 a large Pan-American Exposition was opened at Buffalo. President McKinley delivered an impressive address on the opening day and on the afternoon of the second day he stood on the Fair Grounds, shaking hands with the people who thronged by. Rather inconspicuous in the crowd was a young workman whose right hand was tied in a bandage. As he approached, McKinley took hold of the youth's left hand. Instantly the right hand was released from its bandage, a pistol raised and two shots rang through the air. The President fell back into the arms of the standers-by. Before losing consciousness he made two requests, that the news be broken gently to Mrs. McKinley and that the assassin receive no injury. For a time it was hoped he might recover, but the shots had proved fatal and early in the morning of September 14th he died. On the day of McKinley's funeral there was a hush over all the land. Work was suspended, few appeared on the streets. The mourning was universal.

The assassin, Czolgosz, was a German Pole, who had been incited to the deed by anarchist propaganda.

Manchuria.—Manchuria lies in the northeast part of the Chinese Empire, although to all intents and purposes it belongs no longer to China but to Japan. Like Korea, Manchuria, as well as Mongolia is on the way to being incorporated into the Japanese Empire. It is a very fertile country, lying in the temperate zone and inhabited by a thrifty people. The area is about 362,000 square miles, with many mountain regions full of mineral resources of the greatest value. The northern reaches are filled with vast forests of all kinds of wood known in similar climates.

In 1891 the first sod was turned by the Russian Government in the construction of the Siberian Railroad, while just ten years later the Russian Minister of Finance announced the completion of the railroad from the Transbaikal territory to Port Arthur and Vladivostock. A year before, in 1900, during the Boxer Rebellion, while the allied armies were engaged, the Russians occupied the right bank of the Amur and set up a provisional administration, declaring from St. Petersburg that the rumours that Russia had intentions of incorporating Manchuria were groundless. Upon Russia's failure to evacuate Manchuria in 1903, Japan began military preparations, resulting in the Russo-Japanese War. In spite of the Japanese promises under the sacred provisions of the Treaty of Portsmouth that she would faithfully observe the integrity of Manchuria and the Open Door, she has violated both of these treaty obligations and now seems to be in control of the whole Asiatic situation.

Manila Bay, Battle of.—The Battle of Manila Bay was fought by Admiral Dewey on the 1st of May, 1898, in Manila Harbor in the Philippines, against Admiral Montojo, whose fleet was supported by land batteries. Admiral Dewey had begun to mobilize the vessels of the American fleet at Hong Kong, when it became apparent that war with Spain was inevitable. It was thought that Manila Harbour had been planted with torpedoes, but the United States Squadron entered it on the night of April 30th and on the morning of May 1st opened fire. The men of the fleet breakfasted between the two engagements, which lasted less than two hours. The Spanish Flag-Ship, "Reina Christina" and the "Castilla" were burned; the "Don Juan de Austria" was blown up, and the entire Spanish fleet was destroyed. Dewey destroyed the water battery at Cavite and anchored off the city of Manila, sending word to the Governor General that if a shot was fired at his fleet from the city, he would lay the whole of Manila in ashes. The Spanish lost in officers and men about 2,000, while the Americans lost neither a ship nor a man.

Mexican War.—The Mexican War grew out of the annexation of Texas to the United States in 1845. Texas claimed the Rio Grande as her frontier, while Mexico insisted upon the Nueces River. The United States supported Texas and war was declared in 1846. General Zachary Taylor won the battles of Palo Alto and Resaca de la Palma, forcing Monterey to surrender. In July of the same year, General Winfield Scott won Vera Cruz and marched on the City of Mexico, fighting the battles of Cerro Gordo, Contreras, Churubusco, Molino del Rey and Chapultepec on the way. Upon the capture of the City of Mexico on September 14, 1847, the Treaty of Guadaloupe Hidalgo was signed, February 12, 1848.

Mexico.—Mexico was the land of the Aztecs and was conquered by Cortes, 1485-1547. Montezuma, the king, reigned over a large territory with many cities, and the people had made considerable advancement in the arts and industries. Cortes founded Vera Cruz with an expedition of 700 men taken from Santiago. He rewarded the hospitality of Montezuma, who received him in the City of Mexico, by making the king his prisoner and seizing the capital. The Aztecs were dismayed by the firearms and the horses of the strangers, but they made a good fight, although with the battle of Otumba, in 1520, Cortes put an end to the horrible religious rites of the Mexicans which were attended by human sacrifices. But his growing power aroused envy at home and he was recalled in 1528, first having visited the peninsula of Lower California.

Mexico remained under Spanish rule till 1821, when independence was achieved under Iturbide, a native of Mexico, after many attempts at revolution since 1808. Iturbide failed in making himself Emperor and the Mexican Republic was organized in 1824, and recognized by the United States in 1829. In 1835 Texas declared itself independent of Mexico, the revolt being led by Colonel Sam Houston of Tennessee, and in 1845 it was annexed to the United States, the leaders of the South wishing to add to the slave-holding territory. This led to the war with Mexico in which General Zachary Taylor and General Winfield Scott distinguished themselves, and the Treaty of Guadaloupe Hidalgo was signed in 1848, under the stipulations of which all claim to Texas was given up by Mexico to the Rio Grande, including New Mexico and Upper California.

Two parties were formed in Mexico after the war in which the church opposed the democratic movement. The church and clergy were possessed of nearly one-half of the landed property in the country. To retain this the church precipitated civil war, and Benito Juarez, was recognized as lawful President by the United States. France, Spain and England demanded reparation for injuries to their subjects during the war, and landed troops at Vera Cruz to enforce their demands, which in the case of England and Spain were met and their forces were withdrawn. But Louis Napoleon had failed to recognize Juarez, meaning to overthrow the government and establish a monarchy instead. Taking advantage of the civil war in America he sought to limit the power of the United States. He persuaded Archduke Maximilian, the brother of Francis Joseph of Austria to accept the throne and promised to support him. But at the close of the civil war the American people were well seasoned and equipped and in no pacifist frame of mind and they demanded the withdrawal of the French troops, whereupon he violated his promises to Maximilian, who was captured and shot. The years of 1868 and 1869 were full of insurrection, but in 1871 Juarez was re-elected but died next year.

Porfirio Diaz was raised to the office of the chief executive in 1876, and although he made of his office a dictatorship, he developed the country with its resources and transportation facilities and more than any other ruler before or since kept the peace.

The Middle Ages.—The term Middle Ages has been applied to that thousand-year lapse of the human mind when the cultivation of literature and the arts was suspended, interest in uplifting things was replaced by warfare, which arose at about the time of the great invasions of Rome, and ended with the taking of Constantinople—roughly speaking—from the downfall of Rome to the discovery of America. This dark and stormy period lies between ancient and modern times. During the greater part of it military and ecclesiastical chiefs ruled. The democracies

The CIVIL WAR



of antiquity were gone; the monarchies of modern times were in process of formation. The great wars were religious wars, or the struggle between the Empire and Papacy. It was preceded by the arrival of the Huns. It was succeeded by the establishment of the Huns in Europe. The invasion of the Germanic barbarians resulted in a mixture of Latin and Teutonic blood, the latter furnishing new blood and the former reacting upon the contact of Roman civilization. "The conquered became the civilizers and teachers of the conquerors." This was the first significant fact of the development of the Middle Ages; the second was that the church became about the only bond of unity, social or political, and welded the Roman and the Teutonic elements into something like a whole. The modern political units, later called nations, began to take form, and the Renaissance burst upon the world.

Monroe's Administration (1817 - 1825).

I. Foreign Relations.—James Monroe of Virginia had put his name to a treaty in 1806, while our representative at London, which Jefferson would not even submit to the Senate, but he had risen above the lines of party strife and shown elements of strength. He negotiated the commercial convention of 1815 with Great Britain, opening trade with the British West Indies and the Treaty of 1818 settling the Fisherics question, the northern boundary of the United States and the navigation of the Mississippi. He also acquired Florida from Spain. The Treaty was signed in 1819 and ratified in 1821. The Spanish-American Colonies south of us had thrown off the yoke of Spain and by 1822 revolutionary governments had been established in every Spanish colony on the American Hemisphere. Our interest in this matter led to the adoption of the famous Monroe Doctrine. (See Monroe Doctrine.)

II. Expansion.—Mississippi (1817), Illinois (1818), Alabama (1819), Maine (1820) and Missouri in 1821 were admitted to the United States, the last state as an offset to Maine, being slave territory, but all of Louisiana Territory north of Arkansas being free. The Missouri Compromise delayed the slavery issue for a generation and gave the North time to consolidate its strength for the final struggle.

III. Lafayette Visits Us.—In 1824 Lafayette, an old man then, visited the United States to wonder at the growth and prosperity of the land he had helped to save.

Monroe Doctrine.—The Monroe Doctrine was a compromise, which, through Clay and John Quincy Adams, defeated the opportunity, offered by George Canning, the British Minister, and supported by Monroe, Madison and Jefferson, of establishing a world-wide principle against the intervention of powerful states in the domestic affairs of small ones, especially with reference to the prevention of any despotism, European or Asiatic, from gaining a foothold on the American Hemisphere.

It arose out of the Holy Alliance. (See Holy Alliance.) This arch hypocrisy of modern history presented an unparalleled situation in Europe, which grew out of the Napoleonic wars and the Congress of Vienna. It arose in the visionary mind of Alexander I. of Russia, who was influenced by one Madame de Krudener, an attractive and discredited divorcee with whom he was used to pray privately. In the first instance England was party to the Holy Alliance so long as she could influence its decrees in favour of representative government. But when this was no longer possible, England withdrew, holding aloof from all part in the Conferences of Troppau and Laybach, although she had her representatives there to watch proceedings. Before this time, Lord Liverpool had said to Castlereagh as he was departing for Aix-la-Chapelle: "The Russians must be made to feel that we have a parliament and a public, to which we are responsible, and that we cannot permit ourselves to be drawn into views of policy which are wholly incompatible with the spirit of our government." This was in 1818. The revolutions followed in Spain, Portugal and Naples, and the year after in Greece, and measures were taken at Troppau and Laybach to suppress the movements for free government. At the meeting at Verona in October, 1822, all five powers were present, England being represented by Wellington. But the Treaty of Verona was avowedly a revision of the Holy Alliance.

Among the declarations of these Holy Allies, as they called themselves, were those to the effect, first, that the maxim of the sovereignty of the people is incompatible with the doctrine of the divine right, etc., and that the high contracting parties engage mutually in the most solemn manner, to use all their efforts to put an end to representative government in whatever countries it may exist in Europe, "and to prevent its being introduced in those countries where it is not yet known."

Article second undertook to declare the suppression of the liberty of the press; article third, to sustain the offices of religion, which contributes "most powerfully to keep nations in the state of obedience which they owe to their princes. . . . and the contracting powers join in offering thanks to the Pope, for what he has already done for them, and solicit his constant cooperation in their views of submitting the nations."

Article fourth made France their policemen, with a subsidy of 20,000,000 francs from each nation, Russia and Austria, "to the end of the war."

Wellington protested and withdrew from Verona, making the final break in the interests of democracy as against autocracy, and England turned to the United States. The South American colonies had drifted into something like independence while Napoleon's brother, Joseph, was on the throne of Spain, and Ferdinand, upon his restoration attempted again to fasten upon them the ancient yoke of tyranny. George Canning, Foreign Secretary of Great Britain, through Mr. Rush, the American Minister at London, urged the United States to take joint action against the Schemes of the Holy Alliance. In other words he proposed an Anglo-American Alliance. This, upon being communicated to President Monroe was favourably considered by him and he asked the advice of Madison and Jefferson, who also were much in favour of it. But it was opposed by John Quincy Adams and Henry Clay, and America took the stand alone in the introduction of the American System: to the effect that the American Hemisphere is no longer subject to European colonization, and a declaration against the extension of the system of the Holy Alliance.

Montenegro.—Montenegro is a little mountainous country with an area of but 3,630 square miles. The valleys are tolerably fertile and the climate is good, the mountain sides being covered with timber of many kinds. Farming is in a crude state, the peasants being ignorant, but sheep and cattle and goats are raised in large numbers. There are no manufactures and trade is left to foreigners.

The Montenegrins are Serbs, worshipping according to the rites of the Greek church, and are generally an athletic people. Their history is that of a struggle with the Turks. Sometimes they fought guerrilla warfare in the mountain fastnesses and sometimes they were the allies of other nations, as in 1877-78, when they joined Russia against the hereditary foe.

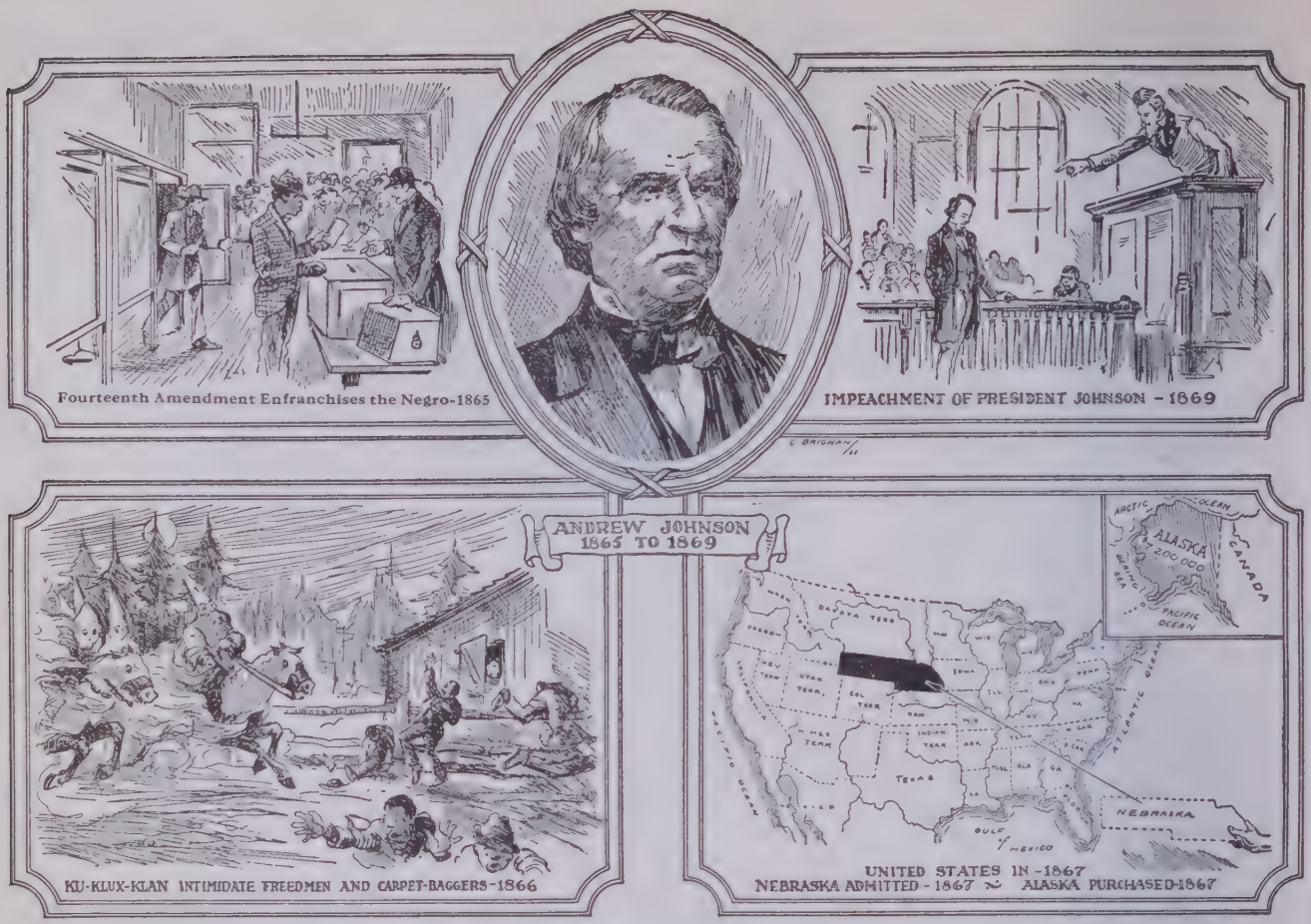
In 1848 the name of Montenegro was first applied to the mass of mountains then but about 1,500 square miles in area, and with a population of 107,000 people, scarcely larger than a second rate city of modern times. These people have been heroic to the last degree in maintaining their liberties, but their independence was not recognized by the Sultan until 1878.

Morocco.—Morocco, known to the natives as "The Farthest West" (Maghreb-el-Aksa), is an empire or sultanate with an area of about 219,000 square miles, lying west of Algeria on the continent of Africa to the south of Spain. The land produces crops known to the temperate and tropical zones, and while cattle are exported, no animals can be sent out of the country without a royal permit.

There are about 5,000,000 inhabitants divided into six divisions; many Jews whose ancestors were driven from Spain by the persecutions; the Arabs who are descended from the invaders of the seventh century; the Berbers who are still unsubdued; a few Europeans, mostly Spaniards; the Moors, who are the Mohammedans and large numbers of negroes who were brought in from the Sudan as slaves.

The Sultan receives and disburses the entire revenue; justice as it is sometimes called, is bought or sold, so far has commercialism invaded the land. The French have taken advantage of this spirit and have won their way into the graces of the sultan with soaps, phonographs and pianolas, establishing their civilized status, and finally establishing a protectorate in 1913.

Napoleonic Wars.—On October 4, 1795, Napoleon was made Commander-in-Chief of the troops provided for the defence of France. After he had quelled a mutiny among the National Guard, he was appointed commander of the forces of the Interior. The next year he conducted the victorious Italian campaign, which ended in the treaty of Campo-Formio, April 16, 1797. In 1798 he won the battles of Aboukir and the Pyramids and after he had taken Malta and Alexandria he returned to Paris to overthrow the existing government and become First Consul. In 1800 he raised an army of 36,000 men and crossed the Alps, gaining the victories of Montebello and Marengo. He signed the treaty of Luneville with Austria in 1801 and that of Amiens with England in 1802. He gained the battle of Austerlitz on December 2, 1805, signing the treaty of Presburg on December 26th of that year. In 1809 another war with Austria ended with the battle of Wagram, July 5th and 6th. In the beginning of winter 1812 he entered Moscow, but the city was burned to the ground by the inhabitants and he was forced to retreat through the snow



reaching France with but a remnant of his army. That year Prussia, Russia, Austria and Great Britain formed an alliance against Napoleon, which resulted in the invasion of Paris by the Allies and the abdication of Napoleon on April 11, 1814. He was banished to the Island of Elba, from which he escaped in ten months, returned to Paris and gathered together an army. He was finally defeated at the battle of Waterloo on June 18, 1815, and sent to the Island of St. Helena, where he died on May 5, 1821.

Code, Napoleon (1800-1804).—Napoleon gave to France a single legal code which took the place of the confusion of Frankish, Roman, royal, revolutionary, provincial and seigneurial laws and customs, which had made justice in France so dear and precarious. Napoleon himself took a personal part in the councils of the commission of jurists who had undertaken the task, and in 2,281 articles, French life became subject to a fair and uniform code of laws. They covered civil rights and duties; marriage and divorce with the powers and duties of guardians and wards; they modified the equal division of property among children. Other codes of the criminal law with penal codes followed, and Napoleon built frankly upon the principles of social equality and personal liberty, basing his work on the best of revolutonary jurisprudence. Thus the revolution has had its influence over the peoples of half the continent of Europe, for the code was substantially adopted by Switzerland, Holland, Spain, Prussia and the Illyrian provinces.

New Orleans, Battle of.—The battle of New Orleans was fought at the close of the War of 1812 after the peace treaty between the American and British Commissioners had been signed at Ghent. Communication was so slow then, that news of the peace could not reach the armies in time to prevent the battle. Sir Edward Pakenham and his English troops were rowed ashore near New Orleans in the midst of a storm and bitter cold weather, to be met by the American army under Andrew Jackson. 6,000 English troops attacked on the 8th of January, 1815, but the destruction of one-third of their number caused their surrender while the Americans, behind cotton breastworks, lost but seven men killed and the same number wounded.

Northmen.—The Northmen, hemmed in by the Carlovingian Empire and that of the Slavs, betook themselves to the sea. "The hurricane bears us on," they said, "wherever we wish to go." They set out on a career of pillage and slaughter and established themselves at the mouths of the Rhine, Seine and Loire, burning the cities of France and plundering the homes of the inhabitants. It was their devastations which prepared the way for Feudalism. After they had occupied France and the Netherlands, they invaded England and conquered it. Canute married the widow of Ethelred and paved the way for the union of the invaders with the conquered peoples, preventing the Danes from oppressing the English. In 861 A. D., they took the Faroe Islands and in 870 they took Iceland; while a number of years later they sailed as far as Greenland and Labrador, discovering America nearly a half millennium before Columbus. The Northmen were the Scandinavians, a Teutonic people, from whom later were formed the kingdoms of Norway, Sweden and Denmark. It was through the aid of the Northmen that the Duchy of France was raised to the rank of a kingdom, and Hugh Capet became the ancestor of a race of kings.

From time to time the English did as the Carlovingians' kings—bought off the Northmen, with the same final results, that they did not 'stay bought." But the Northmen, mostly Danes, who came to England, became English, as those who settled in France became French. This happened more quickly in Gaul than in Britain, because there were not as many of them and they were assimilated more easily. They adopted the manners and customs of the French till they came to be called Normans. The number of Danes who settled in England was very large. Being of close kin to the English of the Teutonic stock, they were rapidly assimilated and grafted upon the half-Romanized peoples a vitality which has endured.

Norway.—Norway with Sweden forms the Scandinavian peninsula, over a thousand miles long and at its broadest point 275 miles across. It has an area of 124,445 square miles, very mountainous. The people own their farms and have pastures back from the sea many miles, where they put out their stock for the summer. The horses are small but sure-footed, while in the extreme north is the reindeer. The

fisheries of Norway are of great value, including the herring, cod, mackerel, salmon, shark, seal, walrus and lobster. The Lutheran church is the state religion, to members of which alone are the offices open. Elementary schooling is compulsory, and there is a University at Christiania, the capital and chief port, Bergen and Trondhjem being the two other important seaports. (See Northmen.)

Oklahoma, Opening of (1889). — The territory now included in the State of Oklahoma was originally purchased by the United States from the Seminole Indians with the understanding that it would be reserved for Indians and negro freedmen. In the latter part of the nineteenth century the flood of migration westward created the demand that Oklahoma be opened to white settlers. The great cattle kings paid no attention to the law and took possession of certain tracts within the Indians' territory. Other white men made raids into the forbidden land, but were driven off by the Indians.

In 1889 Congress paid the Seminole Indians $4,000,000 with the understanding that there should be no more restrictions on Oklahoma, and on April 22, 1889, it was opened to settlers. Crowds camped outside the boundary awaiting the exact day and hour of opening and as the gates were thrown back, exactly at noon, there was a great cloud of dust and a beating of many hoofs as the pioneers rushed in to choose their homes. By nightfall a city of 10,000 inhabitants had grown up, Guthrie. By June Oklahoma City contained a business block and a number of residents. The scarcity of food, the arid heat and other hardships discouraged many of the eager settlers and large hordes departed. By December, nevertheless, Oklahoma boasted a population of 60,000 people, eleven schools and nine churches.

A movement was started among the neighboring Indians to drive off the white invaders which seemed for a time a real danger but came to naught.

In 1907 Oklahoma was admitted to the Union.

Open Door.—From time immemorial the distinctive policy of Japan has been one of exclusion. An impression prevails that the expedition of Commodore Perry to Japan in 1852-4, was a radical departure from our own exclusive policies and an interference with the hermetically sealed insularity with which Japan had surrounded herself. There were other reasons for this expedition, but the main factor was not only in closing her ports to the civilized world to which she had denied the obligations of a civilized nation, but in that when certain American sailors had been shipwrecked on the shores of Japan, they had failed to receive civilized treatment.

When, later, the Philippine Islands were retained by McKinley after the Spanish war, the Powers of Europe were well under way in what is known as the partition of China. We were next to England in the bulk of our commerce with China and this European policy was inimical to our trade there, to say nothing of the moral aspect of the case. This partition, of course, was concealed under the euphonious title of a "sphere of influence," but it was still effective in the monopoly of trade. It is now known, also, that Germany was preparing to take over the Philippines if the United States withdrew, and that the only thing that would prevent a world war was to take them ourselves.

On September 6, 1899, John Hay, Secretary of State, addressed his famous notes to Great Britain, Germany and Russia, each of which was asked to give the proper assurances, first, that it would not interfere with any treaty, port or vested interests in its so-called "sphere of influence;" second that the Chinese customs should not be interfered with, but should be collected by Chinese officials; and third, that it would not discriminate against other powers in matters of port dues or railroad rates.

Notes to the same effect were later sent to Japan, Italy and France. The only power addressed willing to sign such a declaration was England. All the other nations dodged the issue. A little later Lord Charles Beresford, returning from China by way of this country, asked the United States in an address before the San Francisco Chamber of Commerce to join with England and Japan in the policy of the Open Door. Our own insularity at that time prevented us from making good the policy that later came to be known as an American policy, but which, like the Monroe Doctrine, was first suggested by England and offered by England, but we fell back upon the blessed shibboleth of "no entangling alliances." John Hay favoured an alliance with England and Japan, both of which powers being ready for such an alliance, but we fell back upon the proposition that while we favoured it we would not fight for it, and the scheme fell through. That was doubtless the wish of McKinley instead of John Hay, but our feebleness prevented the making of a policy, which, to be a policy, must be good enough to fight for. Our responsible statesmen failed to realize that the "Open Door Policy" contained a sacred principle. Had we not failed the cause of civilization at that time, the powers might never have made their aggressions, the Boxer Rebellion might not have taken place and the Russo-Japanese War would have been prevented. More: all the terrible forces let loose by that war might have been held in leash and all subsequent history might have been not only different, but the Far-Eastern Question would not be as it is now—the most sinister thing that hovers over the future of the world. During the momentous days that preceded, accompanied and followed the Boxer Rebellion, John Hay stands out as the only living statesman in the world who combined vision with an adequate capacity of thought, but he realized the utter futility of his efforts. In a letter to John W. Foster he wrote the following significant words: (quoted from Litane). "What can be done in the present diseased state of mind? There is such a mad-dog hatred of England prevalent among the newspapers and politicians that anything we should do in China to take care of our imperilled interests would be set down to 'subservience to Great Britain'. How can I make bricks without straw? That we should be compelled to refuse the assistance of the greatest power of the world in carrying out our own policy, because all Irishmen are democrats and some Germans are fools—is enough to drive a man mad."

The upshot of the whole thing was that the "Open Door Policy" was ignored and has since been flouted and this has led to the Anglo-Japanese Alliance. The main opposition at that time came from Russia, later from Japan. Little by little the Policy has been whittled away till now there is not a shred left and Japan is mistress of China and therefore of Asia.

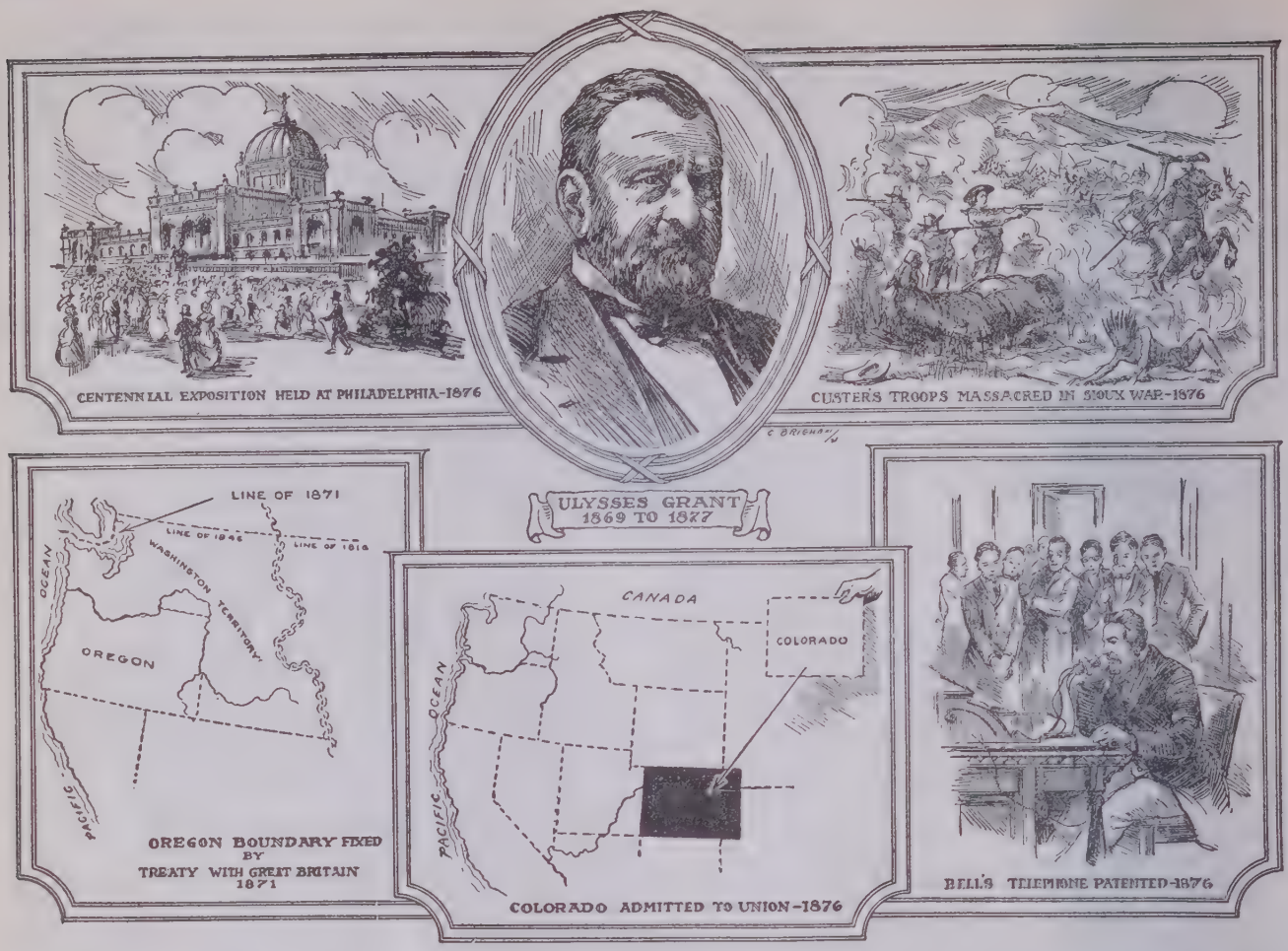
Panama.—Panama is a Republic occupying what was once the Isthmus of Darien and a department of Colombia. It asserted its independence in 1903, and was at once recognized by the United States and later by the principal powers of Europe. Under Spanish rule it had been a part of the Province of New Granada, which in 1718 became a viceroyalty, and encountered many vicissitudes after the war of independence, in successive revolutions. On November 18, 1903, a treaty was signed with the United States providing facilities for the construction and maintenance of the Panama Canal, in which treaty Panama grants a zone five miles wide on each side of the canal with exclusive control for police, sanitary, judicial and other purposes. Panama and Colon remain under Panaman control, but for defence the coast line and the Islands in the zone are controlled by the United States, together with jurisdiction for sanitation and quarantine over both cities and harbours. For this the United States paid $10,000,000 and after nine years will pay annually the sum of $250,000. The canal which has been built is now recognized as one of the greatest and most useful engineering achievements ever accomplished by man.

Panama Canal (1902-1914).—Ever since Balboa, in the sixteenth century, discovered the shortest route from the Atlantic to the Pacific across the Isthmus of Panama, it has been a world-wide dream to connect these two mighty oceans by a water-route through that territory and so increase tenfold the commerce between the East and the West. In the nineteenth century England, France, the United States and the republics of South America all considered projects for the building of a Panama Canal. France actually undertook the work in 1881 but failed to achieve more than a fraction of the excavation, due to the mismanagement of de Lesseps who made it a financial disaster.

In 1902, through the influence of President Roosevelt, the United States purchased the rights to the canal territory from France for $40,000,000 and offered to pay Colombia, in whose domain Panama lay, a sum of $10,000,000. Colombia's refusal to accept these terms might have foiled the entire scheme had not Panama, at this critical moment, shaken off the rule of Colombia and established an independent government. The United States recognized the Republic of Panama and Panama sold the desired region for $10,000,000, by the treaty of 1904.

The building of the canal was at first placed in charge of a commission, by decree of Congress, but there was unavoidable graft and inefficiency in this method and in 1907 Roosevelt transferred the management into the hands of the army engineers with Colonel Goethals at the head given supreme power. Goethals proved to be a master executive. He quelled all labor uprisings and brought about the completion of the gigantic task in 1913. This success would have been impossible without the services of Colonel Gorgas, chief sanitary officer, who wiped out the contagion of malaria and yellow fever, so prevalent on the Isthmus of Panama, and made the canal zone a safe and healthy region.

On August 15, 1914, the Panama Canal was officially opened for commerce and the neutrality of that zone proclaimed. The total cost of the undertaking has been estimated at $361,874,861.



Parthia.—The Parthian Empire flourished for about 500 years (250 B. C. to 226 A. D.). It was built upon the ruins of the Persian Empire of Darius and Xerxes. The Parthians were a branch of that Mongol tribe known as the Scythians who inhabited southeastern Europe and were among the lowest and most ferocious of the wild men of the times. While Cæsar was subduing Gaul, Crassus made war on these Parthians who outmaneuvered and outfought the Romans. Crassus was killed and but a remnant of his army escaped. In 250 B. C., Arsaces I. had defeated the Romans, being the chief of the Dahæ tribe and had become the first king of the Parthians. His son, Arsaces II., cemented the family power, while his son, Arsaces III., twice defeated Antiochus the Great of Syria. Mithridates I. reigned from 174 to 136 B. C., during which long period the Parthians extended their rule over the whole of Media, Bactria, Babylonia, Susiana and Persia. From 136 to 127 B. C., Arsaces VII. was attacked by many hordes of Mongolians, some of them the Scythians, and he and some of his successors fell in fighting them, but they were checked by Mithridates II. (124-87 B. C.), to be defeated by Tigranes of Armenia.

Peloponnesian War.—The Peloponnesian War was a long civil strife in Greece (431-404 B. C.), between Athens and Sparta with their respective allies, resulting in the destruction of Athens. This. one of the most useless tragedies and one of the most startling lessons in all history, had its roots in the growing individualism of the time, the "every-fellow-for-himself" theory of life. During the Golden Age of Pericles' "reign" the Athenians grew to love pleasure and luxury and peace, but they lost the lessons of discipline (on which the Spartan Republic was founded) and they forgot the kind of world they were living in. They lost sight of preparedness and neglected their defences. Men no longer strove for public welfare—they sought their own pleasure.

The conflict was brought on by the Corinthian jealousy of Athens' commercial superiority. Sparta came to the aid of Corinth, and, in the ensuing conflict, Pericles played a waiting game which might have been successful but for the plague which at that time was sweeping Asia Minor and had spread to Athens. Pericles died—half the population of Athens died and the rest were disabled. The war was marked by the utmost cruelty and brutality on the part of Sparta and her allies and Sparta showed a treachery scarcely equalled by allying with Persia for the destruction of Greek civilization. In return for Persian gold, Sparta allowed Persia to rule over all the Greeks of Asia Minor, and with this money the Spartans built fleets with which they destroyed Athens. Spartan supremacy was short-lived, that of Thebes was shorter, and all paved the way for Macedonian rule under Philip of Macedon and Alexander the Great.

Persia.—Early in prehistoric days two Aryan peoples, the Medes and the Persians, migrated from their home at the head-waters of the Oxus, in Central Asia, to the western part of the plains of Iran. Here the Medes settled, but the Persians moved on to the southern border of the Persian Gulf. The Medes and the Persians were fire worshippers. They believed in the age-long conflict between the powers of light and those of darkness: Ormuzd and Ahriman. Once neighbors of the Indian peoples and of blood kin, their religion became a dualism. The one deity made the world good, the other put in it all that is evil; so in man vice and virtue are struggling for the mastery. This is the religion of the Magi who grafted their dualism upon the monotheism of the ancient Iranians, got from the more ancient tribes of Media. We first find the Medes under Shalmaneser II., about 840 B. C., under the Assyrian power. Cyaxares, about 600 B. C., delivered the Medes from the Scythians. Under Cyrus the Great, the Persians gained the Iranian supremacy and founded an Empire that comprised nearly all the civilized nations of Asia. The conquest of Lydia and Babylon by Cyrus, of Egypt by Cambyses, and the victories of Darius, brought the best of the known world under Persian control.

At the time of Solon and Cyrus lived Crœsus, king of Lydia, a country lying on the Black and Mediterranean Seas, as far east as the Halys River. It was a country rich in minerals, and Crœsus became the

wealthiest king of antiquity. He subdued and ruled all the Greek cities of Asia Minor. But he was last and most famous of his line, for he was a contemporary of Cyrus the Great, who coveted his possessions. One of the search-lights of history comes here to enlighten us in a little story of a visit of Solon to Crœsus, who showed him all his gold and precious stones, upon which Solon replied: "When one cometh who hath more iron, he will become master of all this gold." We are told that when Cyrus had dragged Crœsus as a captive behind his chariot to the funeral pyre already lighted for his death, he spoke of Solon, whereupon Cyrus delivered him from death.

Cambyses conquered Egypt in his short reign of seven years and would have attacked Carthage, but for the fact that the Phœnician soldiers who manned his fleets refused to fight against their brethren.

Darius (521-485 B. C.), reconquered countries which had revolted and spread dominion as far as India and North Africa, and on to the borders of Macedonia. He organized his Imperial system into large districts called Satrapies and introduced order into his Empire and among those people whom he had overcome.

The Persian Empire stretched from east to west for 3,000 miles and was from 5 to 1,500 miles in width, covering nearly 2,000,000 square miles. Great roads and postal communications connected the cities and most distant provinces. From Susa to Sardis for 1,700 miles was one road with convenient stations over which couriers of the king rode in six or seven days. The Romans copied the Persian system of communications, which was one of the contributing causes of Roman power.

In 334 B. C., Alexander the Great crossed the Hellespont with 30,000 foot and 4,500 horse and defeated the Persians with 110,000 men. The next year he vanquished Darius at Issus, overran the whole Persian Empire, burning Persepolis, thus announcing that a new conqueror had arisen in Persia which from that time until the conqueror's death became the eastern part of the Macedonian Empire.

About two centuries before Christ, Arsaces founded the Parthian monarchy, while a century later arose the Sassanidæ, who restored the empir of the ancient Persians with its religion and institutions. This empire was overrun by the Mohammedans, who in turn suffered from the invasions of Ghengis and the Turks, followed by the Afghans, who carried destruction everywhere. Nadir Shah, a Persian, avenged the Afghan outrages, but civil war followed till the country was cut to pieces. In 1793 A. D., Aga Mohammed, a eunuch, raised himself to the throne and reigned during his lifetime, founding the present dynasty. In his lifetime war was carried on with Russia in 1813 and 1828, and with England in 1856-7. In 1896 the Shah Nasr-ed-Din was assassinated at Teheran. Muhammed Ali granted a constitution in 1907, but broke faith with the people and a revolution followed, causing his abdication in 1909. In 1935 Persia changed its name to Iran.

Persian Wars.—Darius, of Persia, after he had crushed the rebellious province of Miletus, sent his fleet against the Greeks, but the fleet was lost in a storm off Mt. Athos. In 490 B. C., a second expedition was sent, landing 100,000 Persian soldiers at Marathon. Here they were defeated by 10,000 Athenians and 1,000 Plateans. This glorious battle for a time saved the Greek civilization and made possible its full development during the Age of Pericles.

Themistocles of Athens, realizing that it was but a question of time before the Persians would come again, prepared an Athenian fleet in the face of much opposition by the people. In 480 B. C., Xerxes succeeded Darius as king of Persia and, after reducing Egypt, gathered the vast resources of his empire and sailed against Greece with 1,000,000 men and 1,200 ships. He bridged the Dardanelles and subdued Thrace, Macedonia and Thessaly. At the pass of Thermopylæ he was opposed by King Leonidas with 300 men, who died to a man, having been betrayed by a Greek traitor. The Athenian fleet retreated to Salamis, leaving Athens and Central Greece at the mercy of the Persians. Xerxes burned Athens. Themistocles, by strategy, forced a naval battle in which the Persian king saw the destruction of his fleet before his eyes. On the same day Pausanias, king of Sparta, with 100,000 men defeated the Persians at Mycale on the Asiatic coast. Athens now sought to free the Asiatic Greeks from Persian rule, which was accomplished when Cimon gained two great victories over the Persians off the coast of Asia and one near Cyprus, thus ending the Persian Wars.

Phœnicia.—The Phœnicians, like their neighbors, the Hebrews, were Semites. Both nations were possessed of a strong commercial sense, but while the former excelled as traders and explorers, the latter were pre-eminent in spiritual insight and, for their day, in moral character. The Phœnicians were inventors and cunning, tireless merchants, but their religious ideas were among the most depraved of all ancient times. They invented glassware, purple dyes, many improvements in building ships and in navigation; they were skillful weavers, deft artificers in gold, silver and precious stones. They carried their trade as far as the shores of Britain and the Baltic seas and to the confines of India, but they made no maps, left no records of their travels, and much they might have done for the world has been lost through their secrecy in matters of trade.

The home land of the Phœnicians was a narrow strip of sandy, and for the most part, sterile soil, yielding little to agriculture, but they owned the forests of Lebanon where they got the timbers for their shipwrights, and their main occupation was not in acquiring property, but in making posts for trading purposes, and in the development of colonies at the most advantageous points suitable for their commercial aims. One of their earliest settlements was in the Island of Cyprus in the Eastern Mediterranean which became the shrine of their goddess Astarte (or the Aphrodite of the Greeks), and Crete became another center of commerce. They founded Massalia in Gaul, now Marseilles; Cadiz in Spain, where they found mercury and silver and worked the mines; they got tin from England, amber from the Baltic, and pearls from the Persian Gulf; started caravans overland to India and settled many cities in Sicily, Malta, Leptis, Adrumentum, Utica, on the coasts of Africa, also Carthage, not far from the present city of Tunis. This settlement finally outstripped all other Phœnician cities and became so great as to arouse all the fear and envy of Rome. Tyre and Sidon were their two principal cities and became known the world over.

The Phœnicians were essentially city people and in their cities developed their so-called religion, worshipping the goddess Astarte, representative of the female generative principle, while Moloch was the god of destruction, and therefore of war. To these they made frightful and bloody sacrifices, the mothers sometimes throwing their own children into the flames to propitiate the deities, their religious festivities being grosly sensual. The Phœnicians were a nation of pacifists. They were opposed to war—hated it—and loved trade, and the consequence was that Tyre and Sidon were often sacked and plundered by the more virile races. Tyre alone was plundered fourteen times, to be destroyed finally by Alexander the Great; Sidon meeting a similar fate later on. Phœnicia was at the height of its power at about 1000 B. C., for centuries being subject in turn to Babylon, Egypt and Persia. To the Phœnicians is given the credit of introducing a written alphabet, later adopted by the Greeks and from and through them by the civilized world.

Pierce's Administration (1853-1857).

I. Kansas-Nebraska Law, The.—In January, 1854, Stephen A. Douglas of Illinois introduced the Nebraska Bill, flouting the Missouri Compromise, and providing that all the territory between the Missouri River and the Rocky Mountains, then a wilderness, should be admitted as Nebraska under squatter sovereignty rule. The Bill was recalled and the Kansas and Nebraska Bill was introduced, repealing the Missouri Compromise and making territory north of 36°-30′ open to slavery. The Bill was passed and Pierce signed it, upon which began the seven years' struggle in Kansas. Missouri organized the migration of slave men, calling on the people of the South to hurry in to the new state. Northerners also flocked in and settled. In November of the same year there was an election of a territorial delegate to represent Kansas in Congress, and armed bands flocked over the border from Missouri, took possession of the polls and illegally elected a pro-slavery delegate. The same thing happened substantially in March of the next year, when the legislature was to be elected to determine whether Kansas should be slave or free. As election day drew near armed forces came from Missouri like an invading army and after they had voted, returned to Missouri, "electing" every member but one, who enacted the slave laws of Missouri and slavery was adopted in Kansas. The Free state men repudiated the illegal legislature and held a convention at Topeka, elected a governor and legislature and Senators were elected to Congress to ask admission of Kansas as a state.

II. Underground Railroad, The.—Vermont, in 1850, had passed a Personal Liberty Law which was followed in 1854 by Rhode Island, Connecticut and Michigan, and the next year by Maine and Massachusetts to prevent negroes from being carried back to slavery from their boundaries. Such an attempt was made a crime. An organization through the whole North was effected to aid negroes escaping from their masters to flee to Canada. This was called "The Underground Railroad."

III. Know-Nothing Party.—The death of Clay, in 1852 (June 29th), and of Webster in October of the same year, was a great loss to the Whigs. The Kansas and



Nebraska Bill had alienated every northern Whig and the party began to fall to pieces. The same considerations deprived the Democratic party of thousands who formed an organization known as "Anti-Nebraska Men." The Whigs who could not join the Democrats formed the American or Know-Nothing Party. Large numbers of foreigners had penetrated the Mississippi valley, half of the inhabitants of Cincinnati being foreigners, great numbers over the entire country not being able to speak English. The people of Louisiana in 1841 founded the American Republican or Native American Party. It was a sort of secret cult whose members answered "I don't know" to questions of policy; hence the epithet: The Know-Nothing Party. In New York secret passwords were adopted in an oath bound organization and it spread so rapidly that it carried the elections in Massachusetts, Delaware and New York in 1854 and the next year carried six states and nearly carried six more.

IV. Republican Party, Formation of (1854).—Before the passage of the Kansas and Nebraska Bill (1854), a meeting of citizens was held at Ripon, Wisconsin, recommending the formation of a new party to be called the Republican party. When the obnoxious Kansas and Nebraska Bill had been passed, a thousand citizens of Michigan signed a call and met at Jackson to form a new party to be called Republican. They nominated a fusion ticket on which were Whigs, Free-Soilers and Anti-Nebraska Democrats. The same thing was done in Wisconsin, Vermont, Iowa, Illinois, Indiana, Ohio, New Hampshire and Connecticut, leading to a call for an informal convention at Pittsburgh on February 22, 1856. Here the national Republican party was formed and the Whigs and Know-Nothings ceased to exist.

Poland.—Poland was a former kingdom of Europe, with an area, previous to 1660, of 375,000 square miles and a population of 15,000,000. At the outbreak of the war in 1914, six-sevenths of the old Polish kingdom's area belonged to Russia. Previous to the tenth century the history of the country is purely legendary, but in the days of its power the land was ruled by a military aristocracy as despotic and arrogant as any in Europe. For centuries before and after the historic period begins, Poland resembles a shambles, rent by wars over rival claims of kings and nobles from within and from predatory aggressors from without. In 1240 the Mongols swept over the land, laying it waste and defeating the Poles, Silesians and Teutonic Knights, who in their turn had subdued the heathen Prussians. After the Mongol invasion, Poland split into a number of independent principalities, whose dissensions led to the loss of large districts, which began to be colonized by Germans who developed industries and municipalities, and with these, by large numbers of Jews driven out of western Europe by the persecutions.

In 1333-1370 lived Casimir the Great (III). He amended the laws, consolidated his territories and cultivated the arts of peace. Under his successor Poland became a dependency of Hungary. The greatest prosperity of Poland was under Sigismund I., the Great, who was beloved by the masses. Under his successor Lithuania was joined to Poland in a United realm which extended across Central Europe from the Baltic to the Dniester, with the western boundary within ninety miles of Berlin and the eastern frontier 150 miles from Moscow.

In 1674 John Sobieski came to the throne. In 1683 the Turks laid siege to Vienna with a great army. Sobieski went to the relief of the besieged city and with the German forces defeated the Moslems in one of the most decisive battles of the world's history, finally checking the advance of the Turk in his aim of world domination. This point marks the furthermost advance of the Turk in Europe, and this battle stopped it as that of Charles Martel halted the advance of the Saracen near the plains of Tours a thousand years before. This incomparable service of the Poles stands in vivid contrast with the base ingratitude of the Austrians who later participated in the partition of Poland and the annihilation of her political existence.

With the persecution of the protestants and the interference of Russia, began Poland's decline. Catherine of Russia joined Frederick of Prussia, and, Russia being attacked by Turkey, the first treaty of partition was concluded at St. Petersburg, August 15, 1772. Kosciusko organized a resistance, but dissensions between the Poles defeated the national hope at the moment it was about to triumph. The third and last partition was made October 24, 1795, between Russia, Prussia and Austria. Napoleon promised Poland her sovereignty, but his disastrous defeat in Russia made impossible for him anything more than the establishment of

the Duchy of Warsaw, formed out of the states taken by Prussia in 1793-1795. The partition of Poland was reaffirmed by the Congress of Vienna in 1815, another of the infamies conducted by the "Holy Alliance". By the beginning of the nineteenth century Poland had been reduced to a Russian province. After the rebellion of 1831, the army had been merged in the Russian forces; the university was suppressed; it is estimated that 80,000 Poles were sent to Siberia; and in the Russian official documents Poland was called the government of the Vistula. Independence regained 1919.

Polk's Administration (1845-1849). Whitman's Expedition to Oregon (1832-1843).—In the summer of 1832 four Flathead Indians from the territory now known as Washington came to General Clark at St. Louis asking for a white man's Bible. They were treated with the greatest hospitality, but given no Bible, whereupon a young clerk wrote an account of it to Pittsburgh which resulted in the sending of four missionaries to Oregon, among whom was Marcus Whitman. On a second trip he returned with H. H. Spaulding and their wives, the first white women to cross the Rocky Mountains into the Northwest. Hearing that the English were settling in Oregon, and knowing that the majorities of settlers would end the joint occupancy as agreed to by Great Britain and the United States in 1818, to save the country for America, Whitman made one of the most heroic journeys in the annals of men. He started for Washington at the beginning of winter, 1842, with the passes full of snow, making it necessary to cross Idaho, Utah soon to be the home of the Mormons, and thence to Santa Fe and the trail to St. Louis. Encountering swollen streams, prairie storms, blizzards and wolves, eating the bark of cottonwood trees, he reached Santa Fe February 3, 1843. In five months from the day he left the Columbia River he interviewed the Secretary of State, returning with 200 wagon-loads of emigrants. During the summer of 1846, 558 wagons rolled westward to Oregon and by the end of the year there were 12,000 people in the land and Oregon was saved to the United States.

II. California and New Mexico, Conquest of (1846).—During the Mexican War (see Mexican War), Col. Stephen W. Kearney was ordered into New Mexico. He left Fort Leavenworth in 1846 through what is now Colorado and took Santa Fe declaring the whole of New Mexico as territory of the United States. Thence he proceeded to California to find that it had been occupied by Fremont and Stockton. Daniel Webster opposed the acquisition of California on the ground that it would never be the home of anything but the sage brush and the rattlesnake. Others opposed the acquisition of Oregon, saying that it would never be a state of the Union. The maps of 1820-1850 represented the territory now known as Nebraska, Kansas, Colorado, Wyoming, Oklahoma and Texas as "The Great American Desert," and many believed it like the Desert of Sahara, and useless while there was so much good land to the eastward. But fortunately wiser counsels prevailed and American expansion proceeded apace. Lewis and Clark had penetrated the country to the mouth of the Columbia in 1804-1805, Zebulon H. Pike in 1806, giving his name to Pike's Peak, and Major Long, after whom Long's Peak is named, followed in 1820, and in 1832, Nathaniel Wyeth led a New England party to Oregon settling Idaho, and later came Whitman. In 1842, Lieut. Fremont was ordered by Congress to find a suitable pass for increasing emigration, pushing on to Walla Walla and Vancouver, thence southward to Sutter's Fort, now Sacramento. On a third trip he reached Monterey and was ordered out by the Mexicans. The American settlers, hearing of the war with Mexico raised the flag of The Bear State Republic, and Fremont with Commodore Stockton helped them to hold on till the arrival of Kearney. The matter of boundaries was settled in the treaty of Guadaloupe-Hidalgo, February, 1848.

III. Free-Soil Party, The (1848).—With another election coming on, both parties hedged on the question of slavery in New Mexico and California, and since neither party met the issue in its platform, several elements got together at Buffalo and organized the Free-Soil party, which became the precursor of the Republican party. They nominated Martin Van Buren for the Presidency on a platform containing some important declarations: that Congress had no more right to make a slave than a king; that there must be a free soil for a free people; that there should be no more slave states or territories; and that there be inscribed on their banners "Free soil, free speech, free labour and free men." The Whigs won and elected the hero of the Mexican War, General Zachary Taylor.

Porto Rico and Cuba.—At the close of the Spanish War, Cuba and Porto Rico passed under the military control of the United States. In a few months a government was organized for Porto Rico, which had been ceded to us, and the civil government provided by Congress became effective May 1, 1900. Cuba had not been ceded, Congress, under resolution of April 19, 1898, having signified its determination "to leave the government and control of the island to its people." In June, 1900, city governments were turned over to local officers who had been elected by the people and the War Department of the United States set the date of September 15th for a constitutional convention which met on November 5th and organized a government.

Portugal.—Portugal became a Roman province under Augustus. It was overwhelmed by the Visigoths in the fifth century and under barbarian domination until the Saracens and Moors seized the government in the eighth century. In 1143 Alfonso I. made Portugal an independent kingdom. The House of Burgundy ruled for 440 years. Napoleon deposed the ruling family of Braganza in 1807. After the fall of Napoleon political disturbances followed with a climax in the assassination of Carlos I. and his eldest son in 1908. The second son of Carlos, Manuel II. was driven from the throne and a Republic was established in 1911, with Manuel de Arriaga the first president. Portugal was on the side of the Allies in the world war. In 1921 the prime minister was assassinated and political insecurity was marked by Bolshevistic disturbances. On Dec. 30, 1923, serious bomb outrages occurred.

Punic Wars.—The first Punic War was a contest over Sicily, resulting from the rivalry of Rome and Carthage. Rome was at that time the greatest land power and Carthage the greatest sea power in the world. Upon request of the Messinians, whose whole male population had been put to death, Rome intervened in Sicily. A Roman garrison was besieged at Messina by the Carthaginian fleet in 264 B. C. There was also an unsuccessful attempt to take Syracuse, during which King Hiero deserted the Carthaginians and joined the Romans, who captured Agrigentum. The Romans, who had been endeavoring since 311 B. C., to form a fleet, gained their first naval victory west of Messina in 260 B. C. In 257 the Roman Senate decided to attempt a landing on the shores of Africa and sent a fleet of 330 ships to Sicily, where they took on board the troops. They were met by a Carthaginian fleet of 350 ships, which they defeated. Carthage rallied and defeated the Romans under Regulus at Tunis, two-thirds of the Roman fleet being destroyed in a storm upon their return. The Romans built a new fleet and captured Panormus, defeating Hasdrubal, and later exhibited a hundred captured elephants in Rome. The Romans were defeated at Drepanum and lost a large number of ships. After two more fleets had been destroyed by storms at sea, Rome for a time abandoned naval warfare. Hamilcar defended himself successfully against the Romans for six years, until the rich patriots of Rome built a new fleet privately with which they won the decisive victory at the Ægatian Islands, whereupon the larger part of Sicily became a Roman province.

The second Punic War resulted from the increasing prosperity of the Carthaginians in Spain and the determination of the Barcæ to revenge themselves on Rome. Hannibal's famous expedition to Italy took place during this war. He crossed the Pyrenees with 50,000 men and 9,000 horse and 37 elephants. Scipio failed to stop him and Hannibal crossed the Alps at the pass of the Little St. Bernard and reached the valley of the Dora Baltea with 27,000 men and a few elephants, with which he defeated the consul Scipio. He was reinforced by the Gauls and defeated the Romans at Trebia, over 60,000 Gauls having joined the army. Hannibal released all the prisoners of the Roman allies and thus incited nearly all Italy to desert Roman rule. Hannibal now conducted one of the most brilliant campaigns in history. 70,000 Romans fell in the battle of Cannæ and the rest were captured or dispersed, making the most dreadful defeat in the annals of Rome. But, meanwhile, Carthage had neglected her sea power while Rome had strengthened hers. Philip of Macedon, allied himself with Hannibal, but it was too late, for Rome was again able to transport her troops at will and she began to make war abroad. Carthage failed to support Hannibal in the field. For thirteen years he maintained himself in Italy without reinforcements from home, wherein he earned the name "Father of Strategy" from whom the Romans learned new arts of war. Scipio entered Africa where Hannibal came to oppose him. Here Hannibal was at last defeated and Scipio



earned the title of "Africanus". Carthage sued for peace and Rome, which had been fighting for existence, now won the World Empire.

The third Punic War arose out of the desire of Rome to destroy Carthage. Rome was perfidious, Carthage heroic, and Carthage was treacherously disarmed. In their desperation the Carthaginians raided their temples for arms; women gave their hair for strings for catapults; public buildings were torn down for building materials and metals. But the Roman legions forced their way over the walls and Carthage was utterly destroyed.

Rome.—Owing to their geographical configuration, Greece and Rome seem to have set their faces in different directions. The Greek rivers and harbours open to the Orient, those of Rome to western seas. Back to back they face two worlds, one the past, the other the future. So the two nations stand for the two great opposites of thought and character: individualism and nationalism; versatility and virility, the centrifugal and the centripetal forces in life. This great historic fact lies at the basis of all statesmanship. Rome grew from a village community to a World Empire because she placed order above culture, law above anarchy, and organization above inefficiency.

Rome caught up within itself all the past had done and disseminated itself throughout all the world, for modern Europe has been made out of the remnants of Rome. It has been said that all roads lead to Rome; so all roads lead from it—in the history of civilization. The secret of Rome's greatness is in that she solved the problem of combining the strength of organization with the elasticity of local independence. The Italian peninsula was inhabited by many peoples long before the Romans became an entity. Rome was at first a city state like Athens and Sparta, but her people, while less clever, were more stable, and more highly socialized. They developed the power of doing "team work".

Up to the age of the Republic, 509 B. C., there is little authentic history of Rome, but at this time we find about 60,000 people scattered over about 350 square miles, and caring little for art or literature, for two hundred years without schools, few of course, being able to read or write. Up to this date Rome was ruled by kings in a society divided into the family, the Curia, or brotherhood, and the tribe, divided again between plebeians and patricians. Laws were unwritten and known only to nobles. When the king wished to consult the people on questions of public interest criers went about with ox horns, calling them to the Assembly where a majority of the Curiæ decided whether there should be peace or war or whether some old custom should be changed. New kings were elected upon nomination by the senate, who in turn acted as interrex, during the interregnum.

Rome was built upon seven hills on the left bank of the Tiber, about fourteen miles from its mouth. As the population outgrew the Palatine Hill, it became necessary to drain the swamps lying nearby, and the last of the kings, the Tarquins, built the cloaca maxima and other great sewers through which an ox cart could be driven loaded with hay. In the center of Rome was the market place (Forum), about which centered the industrial life. The Romans seized the lands of their neighbors, made the people slaves, and built public places for religious worship and public administration. Many interesting traditions must be overlooked before we come to the real history of the Republic, about dictatorships, senators, popular assemblies, struggles for popular rights, the demand for a written code which resulted in the Decemvirs and Twelve Tables in 450 B. C., under which the plebeians gained the rights of property and contract and trade, of marriage with patricians, of voting in the assemblies and of holding the lower offices. The Romans adopted many military ideas and customs from the Greeks, and, unlike the Oriental peoples who fought under the lash, the Roman citizens became the most formidable soldiers of antiquity. Subject states were organized into provinces, governed by an officer sent out from Rome, who had little to do with their internal affairs, but who farmed out the collection of taxes to the highest bidders. The Romans exploited the provincials who were kept in a state of serfdom; great estates were built up to the detriment of the small farmers, and many prosperous towns fell into ruins, the traders and artisans flocking to Rome. Thus grew up a class of idlers depending upon the rich for food and circuses, and the morale of the population declined.

In 390 B. C., the Gauls under Brennus sacked and burned Rome, which Camillus

helped rebuild. The Latins (of Latium), were subdued, and after them followed the Samnite wars in which they were subjugated in 292 B. C. The next year the Calabrians fell to the Romans, with which victory the Romans completed their first half-millennium. They founded a navy and sailed against Carthage in the first Punic War, then sent troops under Regulus, to Africa where he defeated the Carthaginian army, but was in turn overcome. The first Punic War lasted twenty-three years, till 241 B. C. Meanwhile Hannibal was overrunning Spain and the African states, advancing into Italy, defeating the Romans at Cannæ and conducting one of the most brilliant campaigns in history. Hannibal was defeated at Zama in 201 B. C., and the second Punic War ended. Hostilities arose between Rome and Syria under Antiochus the Great, who was beaten in the battle which gave Scipio Asiaticus his name. Hannibal, while assisting the King of Bythinia, heard of a plot on the part of his ungrateful host to deliver him to the Romans and committed suicide by taking poison. Next Macedonia passed under the sway of Rome, when Scipio Æmilius destroyed Carthage after it had existed for seven hundred years. Corinth was destroyed and Greece became a province of the Roman Empire under the name of Achaia in 146 B. C.

Tiberius Gracchus, in the interests of the poorer classes, endeavored to revive an old statute called the Agrarian law to diminish the estates of the great land owners, and twelve years later his brother made a similar attempt, but there was much tumult and disorder and both the Gracchi lost their lives.

Barbarian tribes from the North defeated five Roman armies from 113 to 105 B. C., ravaged Gaul and Spain and threatened Rome, when Marius, a Consul of the people, raised an army of volunteers from the poorest class, and led it against the enemy, defeating them decisively. His successors used their armies for political preferment, and civil war ensued. Catiline became the champion of the increasing numbers of the poor, seeking to seize the property of the rich to divide it among them. Cicero was elected as Consul in 63 B. C., and he was able to detect the plot of Catiline and thwart it, delivering his four famous orations against Catiline. Catiline was overcome and killed in battle. Cicero had saved a republic which had existed for the benefit of the aristocrats and those proletarians who sold their votes for any cause. The vast majorities of the population toiled as veritable slaves, to enable the few to live in the most unjust extravagance, when Julius Cæsar arose, a young patrician of transcendent abilities, and as a champion of the commons, became Consul in 59 B. C. Cæsar carried a law for the distribution of the government-owned lands in small holdings among the needy, and through this he built up his own political power. By the year 50 B. C., he had conquered Gaul (France, Belgium and Holland), and through just measures made the people his friends, who kept some measure of self-government. Some of these took service in the Roman army, while others settled down to agriculture and industry and other civilized pursuits. Gaul became a buffer state between the Romans and the Germans. Pompey organized the populace at home and abroad to start another civil war, but they were overcome by Cæsar's trained veterans and the power of the aristocracy was annihilated, their estates were confiscated, and Cæsar became master of the whole Roman Empire. The new Dictator instituted many reforms. He abolished the custom of farming out the collection of taxes to bidders; he built public edifices; he granted citizenship to many of the provincial cities and defended the people against the official class. But his assassination plunged the Empire again into civil war which in the end brought the Roman Republic to an end.

Meanwhile the Greek religion had taken deep root; a notable literature had grown up; aqueducts and public roads had been built, and in the second century Greek architecture had been introduced while the Greek school system had taken root. The Roman children were taught reading, writing and arithmetic, committing to memory the Twelve Tables of the Law. In the grammar schools the pupils studied Greek literature till they had a literature of their own, the teachers being mostly Greeks. With the increase of learning was the growth of slavery and of great fortunes; and with the diminishing of the population came a moral degeneracy with civil wars and class hatred. Rome grew into an absolutism and the institution of Divus Cæsar appeared in which the Imperator was worshipped as a god when he was least godlike of all men. Roman policy was to Romanize Africa, Britain, Gaul, Spain and the whole West, and to this end a vast system of roadways was built through every town and city and to every province in the Empire. These roads were built upon beds of rock through hills and over stone bridges and causeways. They became the highways for armies and messengers of state. Rulers were careful to establish the laws, customs and language of Rome among the provincials, who were given citizenship when they were ready for it, and for the most part they became loyal Roman citizens.

Octavius, who conquered Anthony and Cleopatra, was named Augustus and reigned when Jesus was born at Bethlehem, in Judea. Rome fell to weak and cruel men, the most indecent moral maniac of them all being Nero, who began the Christian persecutions in 64-67 A. D., when Peter and Paul were put to death in Rome, the former being crucified and the latter beheaded. Under Vespasian (68-79), the rebelling Jews were conquered by Titus, who destroyed Jerusalem. Domitian, in A. D. 81-96, instituted the second great Christian persecution, but he was followed by four good Emperors, Trajan, 98-117, Hadrian, 117-138, Antoninus Pius, 138-161, and best of all, Marcus Aurelius, 161-180. A. D. Yet under Trajan and Marcus Aurelius were the third and fourth persecutions of the Christians. The Empire began to sink rapidly under the most infamous rulers known to "civilized" history, the last and most infamous persecution being under Diocletian in 303. A D., the son of whose successor was Constantine the Great, the first Christian Emperor. In 312 A. D., Constantine gave liberty to the Christians and ten years later made Christianity the religion of the Empire, in 330, making Constantinople (Byzantium), the capital.

With the division of the Empire between the East and the West, the seeds of dissolution, which had been nourished for long, began to grow rank weeds and finally smothered the life of the Empire. The people had everywhere been oppressed and robbed, not only by the governors who had to make three fortunes (to pay his bribing debts, to provide for his judge's bribes, and to keep him in plenty for the rest of his life), but the whole economic life of the people had been ruined by money lenders and speculators who had eaten their property and reduced them to debt and starvation. Rome fell through economic causes. She had become rotten. Luxury had degenerated the upper classes; want had weakened her lower classes; the uneven distribution of wealth had caused the scum of Roman society to rise to the top and the dregs to settle at the bottom—and there was little left between. Rome fell because she could no longer hold together.

Roosevelt's Administration (1901-1909). Roosevelt Policies.—President McKinley had been assassinated at the Pan-American Congress at Buffalo in the summer of 1901, and Theodore Roosevelt as Vice-President became the President of the United States. Trusts had been organized under McKinley at an alarming rate. Up to the year 1898 there were but about sixty of these combinations ranging in capitalization from $1,000,000 to $5,000,000, but in the next two years 183 new trusts were organized with a capitalization totalling $4,000,000,000—in two years three times the number and many times the capitalization of all hitherto in the history of the nation. President Roosevelt openly declared that no honest business need fear his administration, but he made war on illegal privileges and the bribery of legislatures, and declared that monopolies should have proper government regulation. During his administration over forty suits were ordered by him and started by the Attorney General.

Roosevelt, F. D. (1933-) Became President after three years of constantly increasing depression. He courageously assumed leadership over Congress and the Government. All banks were closed. The sound ones reopened with renewed public confidence. 18th amendment was repealed. Controlled inflation started. Instituted farm relief. Instituted unemployment relief putting 250,000 men to work on reforestation project. Instituted aid for railroads, banks, industry and small home owners. Law passed making the hoarding of gold a criminal offense. Congress gave almost dictatorial power to President Roosevelt. U. S. abandoned Gold Standard.

1935, $4,800,000,000 spent for recovery and relief. Social Security Act passed. 1936, Roosevelt reëlected. Proposed (1937) wide reorganization in executive departments and Federal Court reform. Sit-down strikes. Minimum wage law for women and Wagner Labor Relations Act declared constitutional.

Rural Free Delivery (1896).—The Free Rural Delivery of mails was inaugurated in 1896, and on January 1, 1913, the parcel post system was instituted in the United States. These two institutions have done more than all other things to destroy that isolation which was so characteristic of the American farmer, especially in those districts where holdings are large and distances from supplies and neighbors are great.

Russia.—Russia in Europe comprises over half of Europe, and Russia in Asia equals a territory about twice as large as the whole of Europe. There is little sea coast; the mountains are mostly along the borders; the rest of the country in both Asia and



Europe is mostly a vast plain; while the three principal rivers, the Dnieper, Volga, and Neva, have largely shaped the whole history of the country.

The Varangians who were exiles of the Northmen found their way through the Baltic and sold their services to the City of Novgorod. This was later subjugated by Rurik in 862, A. D., who assumed the title of grand prince. Thus began the state which later became the Russian Empire. The Scandinavians were blended with the Slavic peoples in course of time. Under Vladimir I. (980-1015), the people were converted to the Greek faith, which is a branch of Christianity. The country came to be divided into many weak and discordant and petty principalities, chiefly because the sovereigns divided their rule among their sons. A ghastly series of petty but bloody wars without result bled the country white. Finally came the invasion of the Mongols who destroyed the principality of Kiev and made the land of Vladimir tributary. For two hundred years, these predecessors of the "Reds," the Golden Horde, kept the yoke on the Volga. Towards the end of the thirteenth century Moscow became the seat of Russian power, from which Muscovy was named. Ivan III., or Ivan the Great (1462-1505), conquered Novgorod which submitted to Moscow and the rule of the Mongols was done. Ivan abolished the law of appanage in his own family, thereby establishing the unity of Royal authority and the unity of the state; but he retained it among the nobility which divided and enfeebled them. Ivan, the Terrible (Ivan IV.), spent fifteen years in breaking the Boyars and in a ukase in 1593, he reduced all peasants to servitude, forbidding them to change masters or land. But the real creator of Russia was Peter the Great, who at ten years of age (1682), became Czar. In 1697 he went to Holland to learn the arts of ship-building, in England he studied her manufactures and in Germany her military machine. The Japanese have evidently taken a lesson from his book. Upon news received at Vienna of a revolt, he hastened back and beheaded 5,000 and broke on the wheel or hung 2,000 more. He organized an army, founded schools including a naval academy, and only a great war prevented the union of the Don and Volga by a canal. He founded St. Petersburg and added to his territory. Later he visited France and engaged engineers and skilled workmen with foundries and manufactories. He established uniformity of weights and measures, built ship yards and canals, founded a commercial tribunal, opened the mines of Siberia, looking as far afield as the Amur in Eastern Asia, and applied the military hierarchy to the administration of the whole empire. He died in 1725, and Frederick II. said of him: "The Czar Peter is the nitric acid which eats into iron."

Russia won a war against Turkey, divided Poland, gave Galicia to Austria. By the 1774 and 1792 treaties, Russia navigates the Black Sea, gained protectorate over Wallachie and Moldavia, absorbed Kouban and Crimea.

The Romanoffs ruled Russia throughout the eighteenth and nineteenth centuries according to the lavish regime of sovereigns who claimed power by divine right. The extravagance of this system aroused the fury of the downtrodden peasantry who took advantage of the situation the World War offered and who overthrew the monarchy by the revolution of 1917, assassinating Czar Nicholas and his family.

After successful economic planning, the Union of the Socialist Soviet Republic (Russia) reached a definite status among world powers under the dictatorship of Stalin in 1935.

Russo-Japanese War.—Japan's pretext for declaring war on Russia was the refusal of Russia to withdraw from Manchuria (a province of China). Japan claimed to uphold the independence of China and Korea and to defend the Open Door, or unrestricted trade, in China. But when, after the war, Japan openly annexed Korea and secretly extended her power over Manchuria, and also ignored the Open Door, it was evident that the underlying motive of the war had been the Japanization of Asia.

The Japanese gained a great advantage before the war was declared. The Japanese Ambassador drank a toast with the Russian Ambassador at Seoul after hostilities had begun. The Siberian railroad had just been finished by the Russians, but it was a single-track road and unable to meet the demands of transportation so far away. The Japanese were nearby and had untold advantages, but in spite of these, they were at their last extremity when President Roosevelt intervened and arrang-

ed a meeting at Portsmouth where a treaty was signed September 5, 1905. This treaty recognized Japan's paramount interest in Korea, which later developed into the absorption of that unhappy country into Japan through cruel and harsh measures. Manchuria was to be evacuated by both countries, but Manchuria is now practically an adjunct of the Japanese Empire. This war has had far-reaching effects in the awakening of the whole of Asia and the raising of many new questions and problems still unsolved, all of which must be reckoned with by the statesmen of the world.

Saracens.—The Saracens were the *Sarak hein*, men of the East. With the rise of Mohammed in the seventh century, a man who could neither read nor write, and who turned his epilepsy to account as inspirational visits from the angel Gabriel whose presence he could not endure, the Saracens developed a religious fanaticism which soon took over the character of brigandage, and aggressive war which is brigandage writ large. One of the successors of Mohammed, Omar, during a reign of ten years, reduced 30,000 towns and cities to his dominion; demolished 4,000 Christian temples; erected 1,400 Mohammedan mosques; destroyed the library of Alexandria with its 500,000 volumes, every book carefully written by hand, and distributed them over the city to keep warm the public baths for six months. Here perished those records of the best thought of antiquity, whose illustrious fragments remain in the few monuments of human genius mostly given us by the Greeks. In less than a half century the Saracenic Empire was more extensive than what remained of the Roman possessions, and in a hundred years from the death of Mohammed his rule and his religion had spread from India to the Atlantic Ocean, comprehending Persia, Syria, Asia Minor, Arabia, Egypt, North Africa and Spain, and threatened to engulf Europe, when the tide of Islam was finally stopped by Charles Martel. Cufa on the Euphrates succeeded Mecca as the seat of the Mussulman Empire, when it was removed by Almansur to Bagdad, the most illustrious Caliphate, the next being Cordova. Haroun al Raschid, the twenty-fifth Caliph, who was the contemporary and friend of Charlemagne, appeared in "The Arabian Nights," and this wise and humane ruler established schools and patronized learned men, becoming the most illustrious of the whole dynasty which is contemporaneous with what is called the Augustan Age of Arabic literature. Bagdad remained the seat of the Saracen Empire for 490 years, until in the six hundred and fifty-sixth year of the Hegira, (A. D. 1258), an irruption from the heart of Asia under Halaku, the grandson of Zhengis Khan, brought the Saracen Empire to an end, abolished the Caliphate, and the conqueror dragged the last of the Caliphs, in a leather bag through the streets till he expired. The Saracens are now the Arabs. (See Arabia.)

Bagdad was called the city of peace. There fell the Saracen Empire. It fell because it had grown rich and rotten. It had departed from the stern discipline of the founders of the faith. Almansur left at his death about $150,000,000 in gold and silver, which treasure was exhausted in a few years by the vices of his children. In a single pilgrimage to Mecca, his son, Mahadi, spent 6,000,000 dinars in gold. In his train were camels laden with snow to cool the fruits and liquors of the imperial table. His grandson gave away about two and a half million dinars of gold before he took his feet from the stirrup. At his marriage a thousand pearls of largest size were showered upon the head of the bride. Gibbon, in giving a vivid picture of this ostentatious magnificence, quotes an authentic memorial found in the cabinet of the dead Caliph: "I have now reigned about fifty years.... Riches and honour, power and pleasure have awaited my call.... In this situation I have diligently numbered the days of pure and genuine happiness, which have fallen to my lot: they amount to *fourteen*: O man, place not thy confidence in the present world." *The luxury of the Caliphs, so useless to their private happiness, relaxed the nerves, and terminated the progress of the Arabian Empire.*

Scandinavian Peninsula (Sweden and Norway).—This peninsula covers an area (Sweden), of 170,516 square miles, and (Norway), 121,779. It is almost surrounded by water, being connected with the main land by Finland and Lapland. The greater part of the land in both countries is mountainous, and lying far north, has a cold climate. The coasts are indented by deep fjords or rocky inlets, but there are some well watered valleys and plains. Nearly one-tenth of the area of Sweden is occupied by lakes, and there are many small rivers abounding in fish. The very rich mineral deposits are mostly in the central districts, including copper, an iron which produces the finest steel, lead, nickel, zinc, cobalt, sulphur, alum, porphyry, marble and coal. Agriculture is mostly confined to the southern districts, which produce enough for local needs, while the forests covering about half of the surface of the country produce the best of fir, birch and pine.

Christianity was introduced into Sweden and Norway in the ninth century by German missionaries, and the people responded to the teachings of the Reformation with the result that the prevailing religion is Lutheran. At the beginning of the seventeenth century Sweden had her most famous monarch and her ablest statesman. Gustavus Adolphus was one of the world's most able soldiers and Axel Oxenstjerna reorganized the administration of the country and promoted industry, commerce and education, while strengthening the army and navy. Gustavus Adolphus was a great champion of Protestantism during the Thirty Years' War, meeting his death at the battle of Lutzen in 1632. The Peace of Westphalia added largely to the possessions of Sweden, but subsequent events whittled away her continental holdings. In 1810 Bernadette was elected crown prince by the states, and by the treaty of Kiel, Norway was ceded to Sweden, that country having been with the allies against Napoleon. Bernadotte succeeded to the crown in 1818, under the title of Charles XIV.

Scotland.—Scotland was known in Roman times as Caledonia and was inhabited by Celtic tribes known as Picts, speaking a Gælic language. The Scots came from Ireland in the fifth century and in 843 A. D., crowned Kenneth as king. Columba was their great missionary, and through him they converted the Picts, Cymri and the English of the northern districts to Christianity. The country was known as Ireland until the tenth century, when the land of the Picts and Scots was called Scotia, or Scotland. The last half of the eleventh century, under Malcolm Canmore (1057-93), was a period of revolution. The English customs were encouraged through his wife the sister of Edgar Atheling, and the English language was encouraged with the advent of English settlers. The southeast was almost purely English, while the Anglo-Saxons moved north, and the Normans came in with the French culture.

The area of Scotland of 30,328 square miles is divided between the Highlands and Lowlands, which are natural geographical divisions, separated by the Rivers Clyde and Forth. To the north the country is almost altogether mountainous with many fertile tracts well watered by rivers and lakes, while to the south the land is more level and richer in minerals and agriculture, yielding immense quantities of coal and iron. The country takes high rank in manufacture, the ship-building enterprises on the Clyde being among the first in the world. Education is universal and the average intelligence is very high. The people, as a whole, are very moral. The Presbyterian religion is the prevailing one.

We have the vivid pictures of the invasions of Agricola by his son-in-law, Tacitus, than whom antiquity produced no abler historian, and it was he who invaded Scotland as far as the Grampians and called the country Caledonia. Followed centuries of warfare, during which the people suffered from the invasions of the Danes, Norsemen and English, when Robert Bruce won the independence of the country at the battle of Bannockburn in 1314. The history of Scotland from that time on is one of continuous warfare with England until the union of the two countries was consummated by the legislative act of union in 1701. From that day there has been peace with prosperity, and Scotland is as truly and devotedly a part of Great Britain with England as is Massachusetts with New York a part of the United States.

Seven Years' War.—The Seven Years' War was a commercial struggle of England and Prussia against France and Austria (1754-1763). Frederick II. (the Great), of Prussia invaded Saxony and took its troops into his army, while France sent two armies into Germany, the one defending the Anglo-Hanoverians while the other was defeated at Rosbach. Without any help save English gold, Frederick for years fought against Austria, Russia, France and Sweden. The withdrawal of the Russian forces after the death of the Czarina alone saved him from defeat. Rallying, he again took possession of Silesia, and Austria sued for peace. Meanwhile the English had defeated the French troops in America (see French and Indian War), and France had lost, besides her Canadian territory, all of her navy. She signed the Treaty of Paris with England in 1763.

Siam.—Siam has no authentic records till A. D. 1350, when the old capital was founded. The Portuguese began to trade there in 1511, but in the next century were supplanted by the Dutch. The trade with Europe was unimportant until Sir John Bowring's treaty opened up the country to the Europeans. A few Siamese youths have been sent to Europe to be educated. France acquired some territory under the treaty of 1807, and two years afterwards Great Britain obtained important rights in the Malay states.



Siam has an area of a quarter of a million square miles of mountainous country, covered in places with swamps and jungles, covered with forests of many valuable woods, such as teak, sandal, rose and other hard woods which are exported from the ports of Bangkok, Meeklong, Puknam and Paklat. The available soil is rich and yields rice, pepper, tobacco, sugar, coffee, sago, gums and fruits. The monarchy is absolute and Buddhism is the prevailing religion. The present dynasty was founded in 1782, and in 1855-6 treaties were made between Siam and England, France and the United States, resulting in the introduction of many of the arts of civilized peoples to those of Siam.

Siberia.—Siberia, with nearly 5,000,000 square miles of territory, is about as large as the United States and Canada, exclusive of the Yukon and Alaska, from the Rio Grande to the Arctic Ocean. Before the war it was divided into four provinces under Russian dominion: Irkutsk, Tomsk, Tobolsk and Yeniseisk. Ninety per cent of the population of 6,470,600 (census 1906), are Russians, the most of the Mongolians living in the Amur district and on the Pacific coast which was not detached from China until 1858. Except in this region near to the Pacific Ocean, practically the whole of Siberia drains into the Arctic Ocean. There are four great rivers, which, until the building of the Trans-Siberian Railroad, were the chief arteries of civilization, affording, with their tributaries about 30,000 miles of navigation. There were 410 steamers plying on these rivers and their tributaries in 1910, 200 operating on the Amur, 140 on the Yenesei and the others on the Lena and Obi. A canal, 586 miles long connects the Obi with the Yenesei.

The Trans-Siberian Railway was begun in 1891 and finished by 1902. The route from Petrograd to Vladivostock is 5,481 miles long. This road cost $172,525,000, but being a single-track road, it offered insufficient means of communication to enable Russia to defeat Japan in 1904, so far from the bases of supply.

The mineral and agricultural resources of Siberia are very great. How great indeed will not be known in many centuries, perhaps, but enough is known of the natural resources of Siberia today, to enable us to grasp some idea of the significance of Russia in the future economic equilibrium of the world. For example, 100,000,000 poods of coal were mined in 1912. Siberia already produces two-thirds of Russia's gold, the same year having yielded 1,014,094 troy ounces, and of silver 134,465 ounces with 3,780 tons of copper. There are immense deposits of iron already known and large quantities in easy reach of tide water, but little attention is being paid to this for lack of development of the country before the Great War and now, of course, because of the resulting chaos. The Urals furnish the most of the world's supply of platinum. There are known to be over 300,000,000 acres of good farming land of which the Amur and the coast furnish 60,000,000 acres.

Russian chronicles show an expedition to have gone to the "land of Siberia." before Columbus discovered America, (1483). Since that time it has been developed and settled, and there have been wars and usurpations. In 1651 Russia came in contact with the Manchus who had just conquered China. The first treaty made with a western power was with Russia in 1689. In 1860 under the treaty of Pekin, Russia secured the country from Ussuri to Vladivostock which was founded in that year. Later the Russians advanced to Port Arthur and Dalny which were taken by the Japanese, first in the Chino-Japanese war and forced to be returned by the powers of Europe and later in the Russo-Japanese war since which they have been held by Japan. Until 1900, convicts were exiled to Siberia by Russia under circumstances of great cruelty, but the system was abolished at the outbreak of the Great War.

Sixteenth Amendment (1913).—The Sixteenth Amendment to the Constitution of the United States was declared in force on February 25, 1913, empowering Congress to lay and collect taxes on private incomes after having been ratified by a sufficient number of states to make the Amendment valid.

Spain.—Cadiz in Spain is the oldest town in Europe having been founded by the Phœnicians about 1100 B. C. Through Tyre their merchandise was sent out to Egypt and to Nineveh and Babylon. Spain was conquered by the Carthaginians nearly a thousand years later because of the tribal feuds of the Celtiberians and Lusitanians

in the western and central districts and the Cantabrians and Basques at the north. They took Saguntum from the Romans. This provoked the following war. The Romans under Scipio expelled the Carthaginians in 205 B. C. Cæsar gave full citizenship to the Trans-alpine Gauls in Spain but in 409 A. D., Spain was overrun by the Suevi, the Alans and the Vandals, but they were checked by the Visigoths who absorbed the Suevi, and were dominant in the peninsula till the Arabian conquest in 711. The amalgamation of the Berbers with the Arabs and North Africans resulted in the race called the Moors. By this time Spain had become enfeebled by discord, and in the great battle of Xeres de la Frontera, near the Guadalquiver, the Visigothic kingdom was destroyed and in the next eight years the Moors conquered the whole of Spain. They even occupied a province north of the Pyrenees, threatening to encompass the whole of Christendom but were finally defeated in one of the mightiest battles of the world in the plains between Tours and Poitiers by Charles Martel, the grandfather of Charlemagne. It was in the north in the mountainous regions of Cantabria and Asturia that the first successful resistance to the Arabs began, near which grew up the kingdom of Navarre, Castile growing out of Leon which developed from Asturia a Christian country. In the beginning of the eleventh century also starts the kingdom of Aragon. Ultimately through the union of Castile and Aragon arose the Spanish monarchy of the fifteenth and sixteenth centuries. Portugal joined Castile and Aragon in their opposition to Moslem rule, Portugal on the Atlantic, Aragon on the Mediterranean, and Castile in the interior. The two Spanish kingdoms were united with the marriage of Ferdinand and Isabella in 1506, and it is interesting to note that the Moslem kingdom of Granada in the South, the last stronghold of Islam in Spain, was conquered by these two kingdoms in 1492. The union of these two states developed a national character. John II., second son of Ferdinand, poisoned his own son, the Prince of Vianne. He was also the father of Ferdinand "the Catholic," under whose crown the kingdoms of Aragon, Castile and Navarre were brought together.

The cities of Castile were the richest and most flourishing of any in Europe outside those of Italy, and the people had more power, compared with that of their sovereign, than those of any other European country. Christopher Columbus, a Genoese, with the conviction that India could be reached by sailing in a westerly direction, and having applied in vain to other European Courts for assistance, was given three ships by Isabella of Castile. In these he and his little party sailed west and discovered the Island of San Salvador, which he so named in honour of Jesus. Columbus built a fort on Cuba, and founded a colony. Of the continent and ocean that lay between him and India he did not dream; he thought he had found India till he died. He suffered from the plots of the envious; was sent home from one of his voyages by the agent of Ferdinand, in chains, spending the last two years of his life in sadness till in 1506 he died. Cortes conquered Mexico and Pizarro, Peru, whose peoples they treated with the most ferocious and perfidious cruelty in the annals of men. One incident of Pizarro is to the effect that after Atahualpa had provided the ransom of $17,500,000 in gold, he was basely put to death. In 1587, Drake destroyed the Spanish fleet in the harbour of Cadiz, whereupon, Philip fitted out the "Invincible Armada," to chastise England, the army of Parma in the Netherlands, co-operating. But a storm at sea helped the English and but fifty-four out of one hundred and fifty vessels got back to Spain. Explorations of Florida and the Mississippi followed, and the war of the Spanish Succession with the opening of the seventeenth century, resulting in the peace of Utrecht.

Spain began to decline in the sixteenth century, for many reasons; principally that the deluge of gold and silver from America placed a premium on idleness, through which industry declined and money was spent to keep up expensive wars and an expensive Court. Gold was spent abroad for what should have been made at home and Spanish commerce declined with the morale of the people, while in religion and politics grew up an absolutism which has made the history of the Inquisition as infamous as that of Mexico and Peru, under Spanish rule. Under this regime the South American colonies broke away from the mother country and became independent Republics. After a long series of insurrections, and after the intervention of the United States, Cuba became a free country. In the Spanish-American War of 1898 Spain lost Porto Rico, the Philippines and Guam to the United States. Instead of asking an indemnity from a vanquished nation, the United States paid $20,000,000 for the Philippines.

In 1931 came the end of the kingdom of Spain. The king, Alfonso XIII, withdrew from his throne and from Spain, leaving the newly born Republic in the hands of a provisional president, Alcala Zamora. The transition from a monarchy to a republic was accomplished without revolution. In 1936 Miguel Agaña was peacefully inaugurated president. Civil War 1936-7.

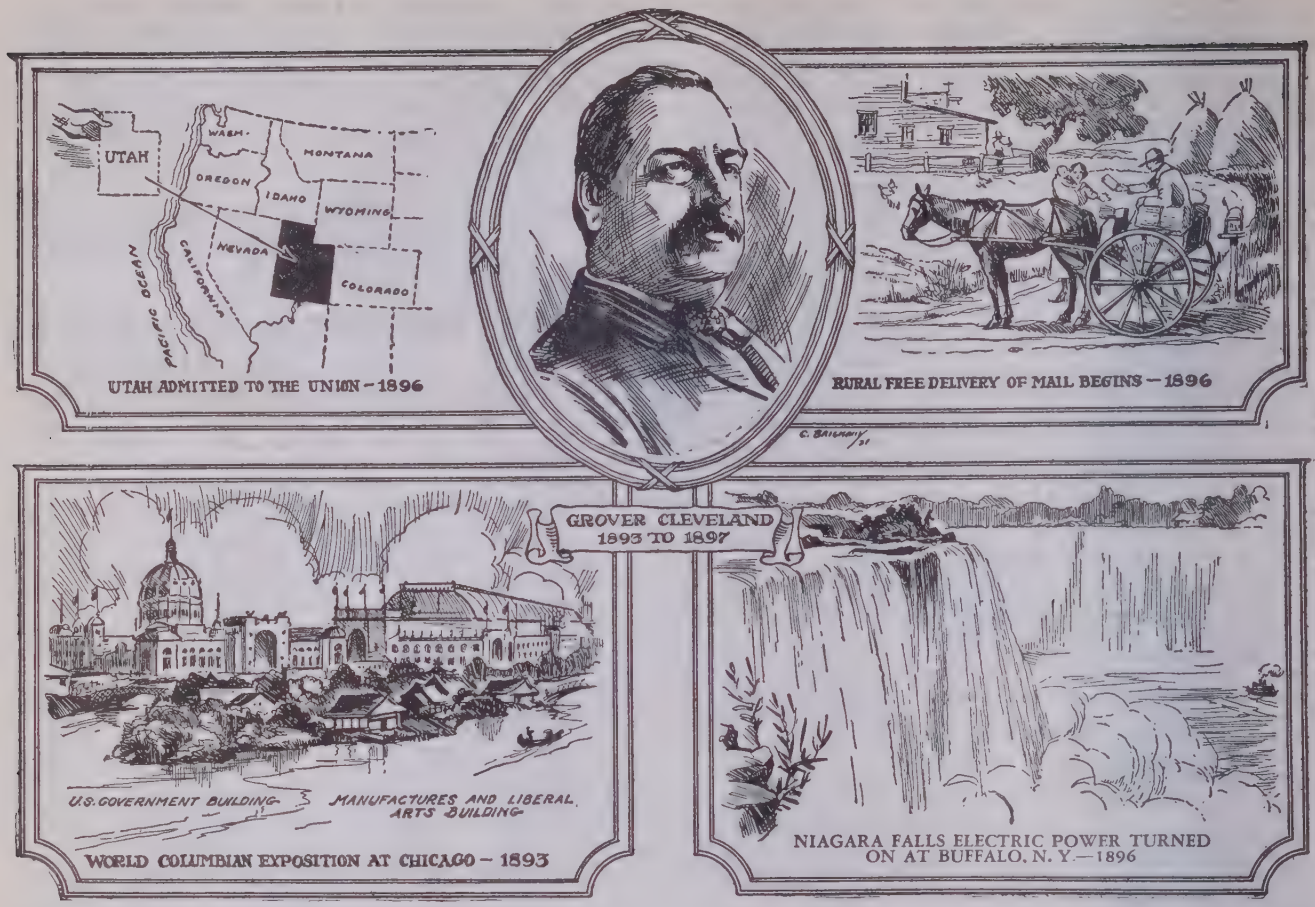
Spanish-American War.—During the latter part of the nineteenth century, Cuba was the only remaining possession of Spain in the American Hemisphere, and here Spain ruled with such rigid cruelty that the natives were constantly in rebellion. During the last insurrection the administrations of Cleveland and McKinley maintained strict neutrality while the American people sympathized keenly with the maltreated Cubans. Neither civil, political nor religious liberty existed on the island. Power was exclusively in the hands of the Spaniards who extorted taxes from the natives to pay for the army that enslaved them. General Weyler replaced Marshal Campos, who had failed to pacify the island, and the former's policy of terrorism was denounced even by many of the Spaniards. The American battleship, *The Maine*, was blown up in the harbour of Havana on February 15, 1898, with the loss of 250 seamen and two officers. This disaster fanned the flame of American anger. On April 20, 1898, President McKinley signed a resolution of Congress recognizing the independence of Cuba, whereupon Spain declared war. On land and sea the American forces were victorious—in Cuba, Porto Rico and the Philippines—and by the peace of August 12, 1898, the United States was granted a protectorate over Cuba, Porto Rico and the Philippines with the understanding that these territories were to be released as soon as they had established satisfactory governments. The Spanish-American War ended America's isolation in world politics.

Statue of Liberty Unveiled (1886).—In 1886 the Statue of Liberty was completed and set up in New York Harbour and there dedicated in memory of the old-time friendship between the French Republic, that gave it, and the United States in whose free institutions the French people thus happily testified to their faith. The expense of the pedestal was met by contributions from the people of the United States. The bronze statue itself is 150 feet high but the whole structure rises 300 feet above water. It is now illuminated at night by electricity.

Sumter, Firing on.—When the first group of southern states seceded from the Union in December, 1860, and formed a Confederacy (see Civil War), they began at once drilling soldiers, taking possession of the forts in their territory and seizing the military supplies of the United States. President Buchanan's cabinet was made up of northern and southern men and so could come to no decision to stop these ominous events. Major Robert Anderson, a loyal Unionist in charge of Fort Moultrie, Charleston, S. C., moved his troops to Fort Sumter, where his defence was stronger and there refused to evacuate. A steamer bearing supplies to Major Anderson was fired on by the Confederates and returned without delivering her cargo. Before March, 1861, all the southern forts except Sumter, Pickens and Key West had surrendered to the Confederated States, and seven states had seceded. When Lincoln became President, a fleet was sent to the relief of Sumter, but before it reached its destination the Confederates had fired on the fort. A bombardment of twenty-four hours resulted in the exhaustion of all Anderson's ammunition and he surrendered. No one had been killed on either side. Anderson and his troops returned to New York; Lincoln called for volunteers. Thus began the Civil War.

Switzerland.—Switzerland is a small Republic in Central Europe without a sea port. It is the most mountainous country in Europe in the small area of 15,722 square miles Here are the Alps. The most level tracts are in the cantons of Bern, Basel and Zurich, backed by the Jura Mountains on the French border, while the chief valley is that of the Rhine in the south. Neither are there navigable rivers, but there are many deep and beautiful lakes. Forests cover about one-sixth of the entire area, while agriculture is pursued in the valleys, yielding cereals, flax, hemp and tobacco. The mountain slopes occupying two-fifths of the whole area are good for pasturage, and these yield diary products, hides, tallow, enough for export. There are many factories in the 22 states or cantons which constitute this Republic.

The original inhabitants were the Helvetii and Rhetii (Celts), who were conquered by Cæsar and Romanized. They were overrun in turn by the Burgundians, Germans, Alemannians and Frankish kings and were Christianized in the seventh century. During the Reformation the cantons took opposite sides, but by the treaty of Westphalia, Switzerland was recognized as an independent state. The present constitution was adopted in 1848, revised in 1874, and the railroads were nationalized in 1898. There are large elements of French and German people in the land, but the state was neutral during the war.



Syria.—Syria of old, like Belgium of modern times had the misfortune of being an easily accessible land, lying open to Egypt and Babylon, as well as to the Mediterranean; and thus it became the great highway of the ancient world, as well as one of the chief battlegrounds. The Egyptians and the Babylonians in turn vied with the Hittites to the North for possession, and the small states of Syria were politically helpless between their more powerful neighbors. The most powerful Syrian state was that of the Hittites, who fought alone for two centuries with both Egypt and Assyria, from 1300 to 1100 B. C., but did little except prepare the way for the rise of the Jewish nation.

The two important Syrian peoples were the Phœnicians and the Hebrews, the former living in a narrow strip of country between the Mediterranean and the Mountains of Lebanon, about twelve miles back from the coast. This strip of land, about 120 miles long, was the home of the first great commercial nation in the world. Having found no room for expansion on land, the Phœnicians made themselves ships from the firs and cedars on the mountains of Lebanon, in which ships they crept from port to port, from island to island, trading, plundering, enslaving the inhabitants.

About 1300 B. C., it is recorded that Phœnician ships swarmed the waters of the Mediterranean. So it was that in the ancient world one of the smallest nations became one of the wealthiest.

The Phœnicians developed many industries in fine glass and metal work, pottery and textile fabrics. The famous Syrian purple dye, which had been discovered when a hungry dog, eating a sea snail, was seen to have purpled his teeth, gave them the purple fabrics with which they made one of their great monopolies in trade. Unable to seek land dominion, they paid tribute at home and sought dominion at sea. They had intercourse with Europe, Asia and Africa, discovering Spain in the days of Homer. In Spain they found silver, lead, iron, tin, gold, corn, wool, oil, wax, fruit and wine, and established a trade through which they brought the raw materials back home and took the finished products again to these and further countries, even to the shores of the Baltic, where in turn they got corn, wool, hides, furs and amber in exchange for their manufactured products. They set up caravan trains which went into Syria, Palestine, Egypt, Babylon and to the Indian Ocean, and in 620 B. C., they circumnavigated Africa at the behest of an Egyptian king. To aid in the extension of commerce they established trading posts or colonies wherever they sailed, not only for trading with the civilized peoples of the East, but for developing the raw materials of the West. Gold and pearls came from the Far East; slaves, ivory, lion and tiger skins from the interior of Africa; frankincense from Arabia; linen from Egypt; "tin from England, and iron from Elba." Tyre and Sidon were among the richest cities of antiquity. "What city is like Tyre?" asks Ezekiel (XXVII, 32, 33). "When thy wares went forth out of the seas, thou filledst many people; thou didst enrich the kings of the earth with the multitude of thy riches and of thy merchandise."

Taft's Administration (1909-1913).

I. Payne-Aldrich Bill (1897).—Immediately upon the election of President Taft, the Republican party, pledged in its platform to reform the tariff downward, passed the Payne-Aldrich Bill which was substantially the same as the old Dingley Bill, so obnoxious to the people of the country who were not "stand-pat" Republicans. The Bill was not only signed by the President, but defended by him on the public platform as the best in our history. Many Republican leaders accused him and the party of breaking the election pledges.

II. Titanic Disaster (1912).—The New Steamship, *Titanic*, of the White Star Line, was sunk in mid-ocean on its maiden trip, through striking an iceberg late in the evening of April 14, 1912. 1,503 persons, many of them eminent, in Great Britain and the United States, being drowned, with but 703 saved.

III. Polar Discoveries.—R. E. Peary, U. S. N., reached the North Pole on August 6, 1909, after many unsuccessful attempts made by him and others, while two years later, Captain Roald Amundsen, a Norwegian, reached the South Pole, on December 14, 1911. Captain R. F. Scott, of the British Navy reached the South Pole a few days later, January 18, 1912, and perished there with the remainder of his party on March 29th, of the same year.

Taylor-Fillmore Administration (1849-1853).

I. Slave or Free.—The great conflict was more and more over slavery, which was ever the burning question. The South made an effort to anticipate the action of the North to keep the new territory free soil. Missouri sided with the South and Virginia adopted resolutions to the effect that an attempt to enforce the Wilmot proviso would be met with determined resistance "at all hazards and to the last extremity," and at a dinner, a Senator from South Carolina offered the toast: "A Southern Confederacy." In the North the tension was as great, where the legislatures of every state except Iowa passed resolutions to the effect that Congress had the power and was in duty bound to prohibit slavery in the territories. Suddenly it was found that California was bound to be the home of something besides "the sage brush and the rattlesnake", for gold had been discovered in that territory.

II. Discovery of Gold in California (1848).—In January, 1848, a man named Marshall came into Sutter's Fort (now Sacramento), with particles of a yellow substance which he had found in the sand of the American River while digging a mill race for a Swiss emigrant, named Sutter who ran a mill at that point. A conference was held at midnight behind locked doors, but the news leaked, and the people went wild. Sailors left their ships. Business was stopped. Stores were shut. Everybody flocked to the diggings, and when the news came east, the rush began and people crowded towards California by way of Panama, Cape Horn and across the prairies in wagons, filling up the country with pioneers, known later as Forty-Niners. These men made a free state constitution and applied for admission to the Union.

III. Clay's Compromise and Squatter Sovereignty.—General Taylor died on July 9, 1850, and Fillmore was inaugurated as President of the United States. So bitter had been the controversy which was waged over the extension of slavery, that there seemed little hope of an adjustment. The South demanded the right to take their slaves with them or go after them when they got away. The North wanted California admitted as a free state and the Free Soilers insisted on having no more slave states nor territories. It looked as if the Union were to be split into two republics when Clay came forward with his famous compromise: that California be admitted as a free state; that the slave trade be abolished in the District of Columbia; that there should be a new Fugitive Slave Law; and that the people of Utah and New Mexico should make their states what they pleased. This plan was called Squatter Sovereignty. Clay defended his measure eloquently; Webster denounced the abolitionists and advocated the compromise; Willian H. Seward spoke for the Free Soilers, declaring that all the territories were free, not only under the constitution but by the "higher law" of Justice and humanity.

IV. Fugitive Slave Law, The (1850).—The New Fugitive Slave Law provided that any colored man or woman might be turned over by the U. S. Commissioners to anyone who claimed the negro as an escaped slave, and that he be deprived of the right of giving testimony. It commanded all good citizens to aid in the capture and delivery of slaves to owners and prescribed fine and imprisonment for anyone who harboured a slave or prevented his capture. Immediately "man hunters" invaded the North and dragged back to captivity free negroes who had lived in contentment for thirty years. In spite of all this a few slaves were rescued and freed. Uncle Tom's Cabin appeared and crystallized the growing sentiment of the North against the infamy and the result of this wicked law was that great numbers became abolitionists.

Ten Thousand, The Retreat of the.—The Persian Empire had become enfeebled through luxury and lack of discipline and Xenophon, who had been a Greek mercenary captain in Persian service, speaks of them as "reclining on tapestries wearing gloves and furs".....They no longer dared fight....They had for their maxim "never to fight the Greeks without Greek auxiliaries on their side." In the year 400 B. C., Cyrus marched against his brother, the Great King Artaxerxes, in the hope of securing the Persian throne. He had in his army 10,000 Greek auxiliaries, of whom Xenophon, the historian, was one. This army marched across Asia Minor to the Euphrates without resistance and offered battle at Babylon. The Greeks charged with their war-cry and the Persians ran before they came within bowshot. Only one Greek received a wound from an arrow; but Cyrus was killed and his army disbanded. The Persians treacherously killed five generals, twenty captains and 200 soldiers of the enemy and the Greeks burned their tents and chariots and began retreat. Through snow and famine they marched, through Armenia to the Black Sea and then to Greece. Xenophon was general of the 8,000 retreating soldiers.

Thirteenth Amendment.—Toward the close of the Civil War, on February 1, 1865, Congress passed the Thirteenth Amendment to the Constitution, by which slavery was to be abolished forever in all parts of the United States. Thus the Emancipation Proclamation of 1863 would be extended over all the country and incorporated into the Constitution. The President signed the amendment and during the next two months the majority of the northern states had approved it. It is necessary to have the approval of three-fourths of the states to ratify an amendment and therefore, at the close of the Civil War, in April, 1865, it was submitted to the southern states. Texas had not yet reorganized her government and took no action, Alabama and Mississippi would not accept it without changes, but the rest of the vanquished states, having already lost their slaves, voted approval. Of the five slave states which had taken no part in the war, Delaware and Kentucky opposed the amendment while West Virginia, Maryland and Missouri, who had voluntarily begun the freeing of their own slaves, took no interest.

By December 18, 1865, twenty-seven out of the thirty-six states of the Union had accepted the amendment and it became law.

Thirty Years' War.—The Thirty Years' War (1618-1648), was a religious war among the peoples of northern and central Europe. In the course of the conflict many other motives than the religious were of importance. The Catholics were at that time angered by the growth of Protestantism, which then had been in existence for about a century. The Catholics were united, but the Protestants were split into many sects, the strongest of which were the Lutherans and the Calvinists. The schism between these two sects was brought about largely through the intrigues of the Jesuits (Catholic monks), who recognized the weakness of dissension. The Lutherans deserted Frederick, one of their strongest leaders, because he was a Calvinist.

The fighting was mainly in Germany, which suffered disastrously from the ravages. Wallenstein, a mercenary pillager for a time maintained a large army by murder and robbery, but was prevented by Cardinal Richelieu of France from establishing the unification of Germany under one Catholic king. King Gustavus Adolphus, of Sweden, joined the forces of the Reformation with his veterans and was killed at his great victory at Lutzen (1632). When Europe was exhausted war was concluded with the Treaty of Westphalia (1648). The Protestants won the independence of the German states in the matter of religious faith. So far had the motives of religion vanished from the strife that it was two Catholic princes, Richelieu and Mazarin, who defeated the interests of the papacy.

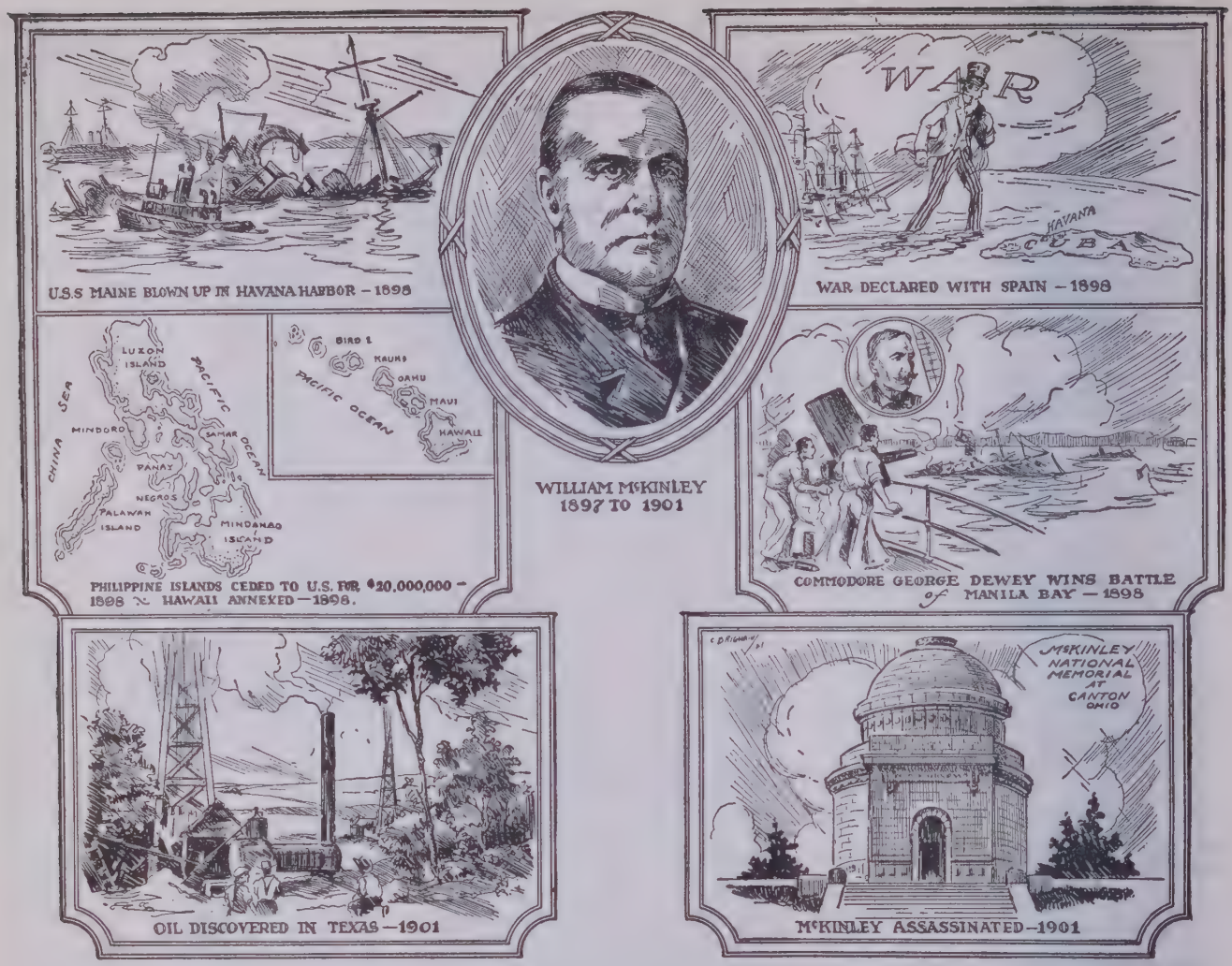
Half the population of Germany and two-thirds of the personal property had been destroyed. Farmers had ceased to labor in the fields and the effects of the war on industry, trade, culture and morals were even worse. Education and the moral law were neglected and the peasantry did not recover for two hundred years. Such were the results of this one era of religious strife.

Trent Affair.—In the first part of the American Civil War (1861), Jefferson Davis, President of the Confederacy, sent two representatives, Mason and Slidell, to solicit aid from England. They embarked as missionaries at Havana on the English Steamer *Trent*. The *Trent* was stopped by an American Warship and Captain Wilkes, in command, seized the two Confederates and took them as prisoners to Boston. The British government, which had hitherto been neutral in the conflict, protested against this abuse of her naval rights and sent troops to Canada, prepared to cross the border to attack the United States. After Seward, Secretary of State, had negotiated with Great Britain, Mason and Slidell were released and allowed to continue their voyage to England, where, however, they failed to secure support for their cause.

Tweed Ring.—During Grant's administration a hotbed of political corruption was brought to light, known as the Tweed Ring. This society of political crooks under the leadership of "Boss Tweed" ruled the elections of New York State and influenced those of the nation. Their headquarters was Tammany Hall. Their strength lay in their control over the ignorant foreign vote and in the band of thugs which they employed to cast many times their given number of votes. They influenced the law making of the state by bribing the legislators and they amassed great fortunes by appropriating public funds.

For some time New York tolerated their tyranny—but the New York Times conducted a vigorous campaign against them, Thomas Nast ridiculed them in cartoons and at length the more honorable citizens drove them out of power.

Coincident with the disclosure of the Tweed Ring's activities came the disclosure of the Whiskey Ring. This was an agreement between distillers of whiskey and internal revenue officers to rob the government of the tax on whiskey. Suspicion



centered about Grant's secretary as one of the leaders of this ring, but his guilt was never proved.

Turkestan.—Turkestan is that region in Central Asia which is bounded on the north by Russia and the Caspian Sea, on the west by the Mongolian Desert, on the south by Afghanistan, and on the east by Thibet, India and Persia. It is divided politically into Russian and Chinese Turkestan, the former having an area of nearly a half million square miles. The climate is very severe and dry, the river countries being irrigated by canals connected with the streams and these areas produce, in addition to live stock, considerable wheat, rice, millet, oats and cotton.

The Russians invaded Turkestan soon after the conquest of Siberia. Peter the Great's expedition ending in disaster, but by the middle of the nineteenth century a chain of Russian forts began to appear across the southern frontier. In 1867 the Governor-Generalship of Turkestan was established with the capital at Tashkent. Later Bokhara was taken, then the khanates of Khiva and Khokand. In 1887 the Afghan boundary was laid out by an Anglo-Russian commission. During the whole nineteenth century the Mohammedans made repeated efforts to wrest control from China.

Turkey and the Turks.—Turkey in Europe has represented, since 1483, when Mohammed II. entered Constantinople, the most significant, the most far-reaching and the most terrible encroachment of the spirit of Asia upon that of Christendom which more or less has dominated Western Civilization. There have been many invasions of the denizens of the largest of all the continents which knows nothing of the spirit of human liberty, but the descent of the Turks upon Europe resulted in the establishment of an anomaly unknown to history. This thorn has been in the side of Europe, and at one time well toward the heart, since before Columbus discovered America. It has been held there by civilized European nations which have been played like the men on a chess board by the Sultan—for his own purposes—and through holding and upholding here this nation which has by sheer force of character earned for itself the sobriquet of the "Unspeakable Turk," doubtless these nations have enhanced their commercial relations and laid by many ducats.

At the beginning of the Great War Turkey in Asia covered about 700,000 square miles, while that of Turkey in Europe in 1916 was but 10,882 square miles. Besides Asia Minor the dominion included Armenia, Kurdistan, Mesopotamia, Syria and a part of Arabia. The people of Turkey have few industries and these are feeble. They are supported by farming and sheep raising done in the most primitive manner. They raise cereals and fruits, olives, coffee, tobacco, opium, flax and hemp and export annually 200,000 bales of cotton. In 1914, Turkey had a population of 21,273,900, the ruling element being the Osmanli Turks although they are in a numerical minority, except in the interior of Asia Minor, where their blood is mixed with that of Slavs, Greeks and Albanians.

During the Mongol invasions of Ghengis Khan early in the 13th century, a small group of Mohammedan Turks from Iran went into Asia Minor under Ertogrul, entering the service of the Sultan of Rum, the last remnant of the Seljukian Turks in western Asia. His son, Osman or Othman laid the foundations of the Ottoman Empire to which he gave his own name, on the ruins of that of his host and he destroyed the Seljukians in return for their hospitality. Orkhan, the son of Othman, made Brusa his capital in Bythinia, which with Gallipoli he took from the Byzantines, the latter giving him his first foothold in Europe. Orkhan was the organizer of the Ottoman Empire and the founder of the Janizaries, that devilish institution made up of the children of Christians who had been destroyed and their seed turned into an engine with which to destroy Christianity. The Janizaries were as efficient a fighting force as is known to history, and this force was turned against its own race and religion. Under Amurath, his successor, the Ottoman Empire became a European as well as an Asiatic power with Adrianople

as the Turkish capital. One by one the Byzantine dependencies were taken away until the Turks had surrounded Constantinople. Bajazet was defeated by Tamourlane, upon which his son, Mohammed I. ruled Islam and subdued Macedonia, Hungary and a part of Greece. At last Constantinople fell, in 1453, ending the Byzantine Empire. Servia, the Crimea and a part of Venetian territory in turn fell to the Turks who forged ahead under Selim I. (1512-20), who conquered Syria in 1516, annexed Egypt in 1517 and assumed guardianship of the sanctuary of Mecca proclaiming himself the successor of the Caliphs. Under Solyman, the Magnificent, (1520-66), the Empire rose to the height of its power, having taken much additional territory and acquired control of the Eastern Mediterranean. This shut off the trade with the Orient and destroyed Venice. Under Selim II., a Holy League was formed between Venice, Spain and the Pope, and their combined fleet defeated that of the Turks at the battle of Lepanto, which was the first great setback for the Moslem. But Cyprus, and Yemen and Spain fell to the Turks. With the disaster of Lepanto, Turkish power began to wane. The tides of Moslem swept up to the gates of Vienna and the fate of Europe and of human civilization hung in the balance, when John Sobieski, king of Poland came to the aid of the Germans and stopped the tidal wave of Ottoman power. Since that day the history of Turkey has been the record of the bloody struggle between East and West, smeared with the gore of assassination and murder and pillage. There is probably no lesson in human history more needed today, facing the problems of new Asia as we do, than the lesson of Asia in Europe during these four hundred years. Little by little the European Empire of the Oriental despot has been whittled down, in this tragic struggle of two unassimilable civilizations, the one that of Christian civilization, the other that of a people of very different ideals, fighting under the banners of Mohammedanism.

The United States of America.—In 1787 the thirteen colonies of America, which had revolted from England in the War for Independence (see American Revolution), found themselves in so weak and helpless a condition that they were in danger of falling again under the yoke of a foreign nation. To protect the freedom they had fought valiantly to win, they decided to join together under a strong national government and to call themselves the United States of America. A conference of delegates from the different colonies drew up a Constitution for the new government.

Under this Constitution the power of making laws was given to a Congress chosen by the people, the power of enforcing these laws to an elected President and his chosen cabinet, the task of administering national justice to a Supreme Court appointed by the President.

The new order of things went into effect on March 4, 1789, with George Washington as President. The eight years of his administration might be called the building of the American Nation.

Alexander Hamilton, Secretary of the Treasury, established a sound financial system throughout the country, undertook the payment of state and national debts and made good the credit of the United States with foreign nations. John Jay, ambassador to England, with much difficulty placed us on friendly relations with that country through Jay's Treaty. A national standing army was formed as a result of skirmishes with the Indians in the western territory. Washington, realizing the weakness of the new nation, wisely resisted the pleas of France for military aid in her war against England and Holland.

The strongest believers in individual freedom opposed the power taken over by the national government and held that all matters should be decided by the states separately. These people formed a political party called Republican. Those who upheld the national government were called Federalists.

During the Presidency of John Adams, (1797-1801), the French government, enraged at our refusals of aid, declared war on the United States. The peril seemed so real that Washington was called to prepare an army. When Napoleon came into power in 1799, however, a friendly agreement was reached.

The country suffered so at this time from treason and disloyalty among its own citizens that the Alien and Sedition Laws were passed, inflicting a heavy penalty on anyone who spoke or acted against the government.

The first Republican President, Thomas Jefferson, was elected in 1801. In 1803 he effected the Louisiana Purchase, by which the United States bought from Napoleon, not only the State of Louisiana, but all the territory stretching west of the Mississippi to the Rocky Mountains.

Had Jefferson not been a pacifist, the United States would surely have been drawn into war during his second term (1805-1809). France and England were engaged in a bitter struggle on the sea and, in their desperation, they made use of American ships in a way that utterly disregarded our rights as a nation. French and British warships robbed American merchant vessels of their cargoes and the British captured American seamen as well, forcing them to fight in her battles.

Jefferson issued protests to both nations in vain and in 1807 he put through Congress the Embargo Act, which forbade American ships to leave their harbours and shut the United States off from foreign commerce for more than a year. The Embargo Act was repealed in 1809 and trading forbidden only with France and England—yet the pillage continued.

Madison became President in 1809. He tried to follow Jefferson's policy of peace, until the anger of the American people at foreign outrages demanded war.

It was impossible to fight both England and France; France had showed less offence and some recent inclination to friendliness. Therefore, in 1812, the United States declared war on England as an ally of France. (For particulars see War of 1812.)

On land the American army suffered considerable defeat, but in naval encounters the American warships startled all with their victories. At the battle of New Orleans in 1815 the British troops surrendered and following this a treaty of peace was signed

No territorial gains were made by either side; but the rights of the United States were thereafter respected on land and sea.

Acknowledged by all as a nation, the United States now entered on a period of great internal development and growth.

In 1807 Robert Fulton had launched the first steamboat, a tiny craft which crawled up the Hudson at the rate of four miles an hour. New and better steamboats were being built and began to navigate the inland lakes and rivers. In 1825 was completed the Erie Canal, connecting Lake Erie with the Hudson River and thus making a direct route between the Great Lakes and the Atlantic Ocean. The steam railroad, started on a small scale in 1829, began rapidly to spread its network of tracks over the country. It was due to these new methods of transportation that the middle western territory now became populated; between 1815 and 1845 ten middle western states were admitted to the Union.

When Missouri sought admission in 1820, a dispute arose between northerners and southerners in Congress as to whether slavery should be allowed in the new territory. An agreement known as the Missouri Compromise was reached, stating that Missouri should be a slave state, but that thereafter slavery would be prohibited in all states admitted from the new western territory.

In 1823 President Monroe sent out a proclamation known as the Monroe Doctrine, which has influenced America's foreign policy ever since. In this the President aimed to protect the new republics of South and Central America from the designs of the European powers and stated that any attempt of a foreign nation to establish colonies on the American Continent would be opposed by the United States.

Under the Presidency of Monroe, the old Federalist party gradually disappeared and the Whig party grew up under the leadership of Henry Clay.

The first victory for the Whigs came with the election of John Quincy Adams in 1824. Party strife between the Whigs and the Republicans (then called Democrats), was so high that Adams was opposed by a Democratic Congress in everything he attempted.

In Georgia trouble arose with the Cherokee Indians in which Adams tried to secure justice for the Indians, but the Georgians, disobeying the President, drove the Cherokees from their territory and annexed the new land to the state of Georgia.

Andrew Jackson, a Democrat, who became President in 1829, started the "Spoils System," in which most Presidents have followed him since. He discharged all government officials who had been Whigs and replaced them with his supporters, Democrats.

In 1832 South Carolina, which had suffered under the heavy taxes imposed by the national tariff, threatened to withdraw from the Union to avoid these taxes. Her withdrawal was prevented both by the firmness of Jackson and the conciliation of Henry Clay, who brought about a reduction of the tariff.

In his headstrong fashion, Jackson abolished the National Bank and divided the government funds among State banks, causing heavy financial disasters. When Van Buren became President, in 1837, he established a National Treasury which should keep the funds of the government apart from the risks of bank transactions.

The territory of Texas had revolted from the rest of Mexico and now asked to be admitted to the United States. Admission was granted in 1845.

In the same year, under Polk's Presidency, a dispute arose with Mexico over the boundary line of Texas, a dispute which resulted in the Mexican War. The United States was victorious and, by the peace treaty, obtained the territory now



covered by California, New Mexico and Utah. (See Mexican War.)

Meanwhile beneath the surface of these events, the current of anti-slavery feeling, first observed in the Missouri Compromise (see above), was gaining greater strength.

In 1831, in Boston, William Lloyd Garrison had begun to publish a paper called The Liberator, in which he violently denounced slavery. At the same time groups of northerners called abolitionists were working for the freeing of the slaves. So troubled was Congress with petitions demanding the freedom of the slaves, that in 1836 the Gag Resolution was passed, decreeing that all such petitions be ignored. Protesting against the injustice of the Gag Resolution, many freedom-loving northerners, hitherto unconcerned, began to side with the abolitionists.

When the Mexican territory was annexed in 1846 a Congressman named Wilmot moved that slavery be prohibited in this territory, but his resolution (the Wilmot Proviso), did not pass the Senate. Those who had sided with Wilmot formed the Free Soil party and continued to fight for freedom in new states and territories. The Democrats took their stand for slavery; the Whig party gave way to the Free Soilers.

The strife between the southerners (mostly Democrats), and the northerners (largely Free Soilers), became so bitter in 1850 that a compromise seemed necessary to preserve the Union. The Compromise of 1850 abolished slavery in the District of Columbia, but made more strict the rules about the return of the runaway slave to his master. It also deprived Congress of the right to regulate slavery in the new western territory.

So evenly divided was the feeling in Congress on the slavery question that the attitude of any new state admitted to the Union might determine which way the vote would turn. Therefore, when, by the Kansas-Nebraska Act of 1854, Kansas was given the right to decide for herself whether she should be slave or free, both sides determined to force their way of thinking on the new state. Northerners and southerners moved rapidly into this thinly populated area in the hope of winning a majority in the first state election. So fiercely did the two groups of newcomers hate each other that a barbaric sort of warfare existed between them in Kansas for more than a year, in which over 200 lives were lost.

The old Whig party now disappeared entirely and the Free Soilers, calling themselves Republicans, held their first national convention in 1856. In spite of their efforts, a Democrat, James Buchanan, was elected President.

In 1857 the Supreme Court made the famous Dred Scott decision, forcing a slave who had escaped to free territory to be returned to his master. According to this decision a negro was a piece of property, not a person.

In 1859 an ardent abolitionist, John Brown, captured a national arsenal in Virginia and used this vantage point for freeing the slaves in the neighborhood. He was arrested by Federal troops, accused of treason and shot.

In the Fall of 1859 the Republicans elected Abraham Lincoln President. With the admission of Kansas as a free state, the southerners had felt that they were losing ground; and now, with the Republican party in power, they were certain that their right to own slaves would soon be denied them. They resolved to withdraw from a Union in which their best interests would not be preserved. In December, 1860, South Carolina declared herself separate from the Union. Georgia, Alabama, Florida, Mississippi, Louisiana and Texas followed her example.

No decisive action was taken by President Buchanan.

In February, 1861, six of the seceded states joined together as the Confederate States of America, with Jefferson Davis as President, and proceeded to take over the fortifications within their territory.

In South Carolina Major Anderson refused to give up Fort Sumter to the Confederates. A long siege followed which resulted in the firing on Fort Sumter by the southerners. (See Fort Sumter.) Lincoln, who had then just become President, now called for volunteers to fight the Confederacy and thus the Civil War began. (For particulars see Civil War.)

The Civil War started only as a struggle to preserve the Union, but in 1863 Lincoln issued the Emancipation Proclamation, declaring all slaves free, and from then on it was a war for freedom.

When the Confederacy surrendered in 1865, the seceded states returned to the Union and all slaves were released.

Soon after the northern victory, President Lincoln was shot by a half-insane southern sympathizer.

Vice-President Johnson, who then became President, wished at once to readmit the southern states to all their former privileges. Congress, on the other hand, wished first to make these states alter their constitutions so as to assure the negro full rights. The President and Congress fought each other at every step. Congress succeeded in passing the Fourteenth Amendment, making the negro a citi en, but leaving the question of his vote to individual states to decide. When the southern states rejected the Fourteenth Amendment, Congress ordered troops to be stationed in the South to supervise the lawmaking. Under this supervision the state legislatures passed such measures as Congress wished and were gradually readmitted to the Union.

In 1867 the United States purchased Alaska from Russia.

In 1868 President Johnson, accused of disobeying a law of the land, was impeached, i. e., ordered for trial by the the Senate. The Senate did not find him guilty.

In 1869 Grant, the renowned general of the Civil War, became President. At that time there was a serious dispute with England over the aid and protection given by that country to the southern states during the Civil War. The United States demanded that England should pay for the losses thus caused our government. The question was submitted to a tribunal of five nations, which decreed that England should pay the United States $15,500,000.

In the South had arisen the Ku-Klux-Klan, a band of southern gentlemen who had resolved to put down the disorder resulting from the negroes' freedom. They met in secret and acted in secret, punishing where they thought punishment was needed. By the "Force Bills" (1870-2), U. S. troops were ordered to suppress the Ku-Klux-Klan.

During Grant's administration a vast amount of political graft was revealed and the Liberal Republican party was formed to fight political graft.

When Rutherford Hayes became President in 1877, his first act was to withdraw the Federal troops from the South and after this the uprisings there gradually subsided.

The period of rebuilding the Union after the destruction of the Civil War was now ended.

A nation-wide railroad strike in 1877 marked the beginning of a new era—the era of modern industrialism.

It was now a very different United States from that which had drawn together under the Constitution in 1789. Not only had its area more than doubled, its population also had been increased many times by the immigration of vast hordes of foreign laborers—Irish, Germans, Italians, Swedes, Chinese—who came to do the work needed in the large factories, recently sprung up, on the new railroads, or in the newly discovered mines. The inferiority of this large part of the population to those for whom they worked made impossible the same sense of equality which had existed in the early Republic.

In 1881 the American Federation of Labor was formed, an organization of workmen for the purpose of bettering their conditions.

In 1882 Congress forbade the immigration of Chinese workmen to this country for ten years to come. In 1885 a law was passed prohibiting employers from bringing any foreign workmen to this country by contract.

The injustices of the large groups of manufacturers (or trusts) in ruining the business of the small manufacturer led to the establishment of the Interstate Commerce Commission in 1887, the aim of which was to prevent the trusts from taking unfair advantage of the small merchant in the transportation of their goods from state to state.

During the Presidency of Cleveland (1885-9), the Department of Agriculture first became a part of the National government.

The growth of industry had caused an increase in World Trade. During the Presidency of Harrison (1889-93), representatives from the South American Republics met with representatives of our government at Washington in the first Pan-American Congress—for the purpose of establishing better trade relations between American nations.

In 1893 the World Columbian Exposition was held at Chicago.

In 1898, under McKinley's Presidency, the United States was involved in a war with Spain (see Spanish War). As a result of the American victory, the Philippine Islands, Porto Rico and Cuba were ceded to the United States. In the same year the request of the Hawaiian Islands for annexation was granted.

President Roosevelt (1901-9), did more than any President before him to reform the industrial situation. He established a Department of Commerce and Labor, as well as a Bureau of Immigration. He conducted vigorous investigations into the affairs of the large trusts, with the result that two of these trusts were later broken up. During his administration the railroad rates were equalized and the Pure Food Bill became law. He set on foot a movement for the conservation of forests and other natural resources of the country.

He was active in world affairs as well and brought about peace in 1905 between the warring parties in the Russo-Japanese War. He also secured the rights to, and began the work on, the Panama Canal, which was completed by President Taft (1909-13), who was expected to carry on Roosevelt's work, but who was interfered with by the conservative element in power and could accomplish little. A Commerce Court was established to act with the Interstate Commerce Commission, the tariff was slightly reduced, and a literacy test was required for immigrants.

A series of revolutions in Mexico seemed to endanger the American citizens on the border. Taft refused to recognize President Huerta, a murderer and a brigand, and for a time forbade the sale of weapons to the Mexicans.

On Wilson's accession to the Presidency in 1913, Congress held the longest session in its history, and many reform measures were passed under the leadership of the new President. In April, 1917, the United States joined Great Britain, France, Italy, and Russia against Germany and was a deciding factor in winning the World War. The Armistice was signed Nov. 11, 1918. President Wilson attended the Paris Peace Conference, and played a large part in drawing up the Covenant of the League of Nations. The U. S. did not join.

Warren G. Harding was elected President in 1920, largely as a protest against Wilson's foreign policy. After a short post-war depression the nation entered upon a period of great prosperity. At the Washington Conference in 1921 naval armaments were limited for ten years. Coal and rail strikes became serious. The administration of Calvin Coolidge (1923-29) brought governmental economy.

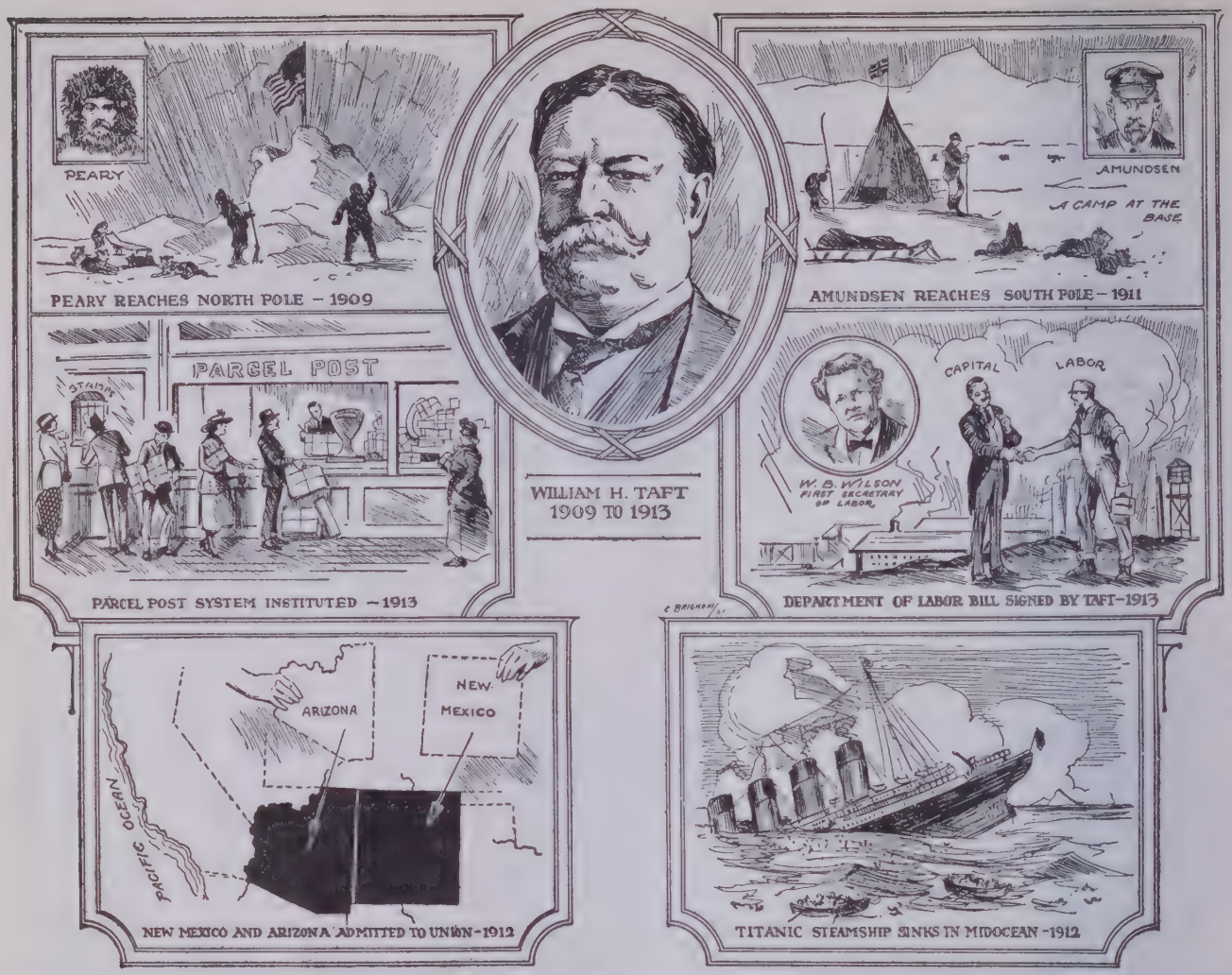
Herbert C. Hoover's inauguration was followed late in 1929 by a stock-market crash and business depression. His attempts at checking the depression were unsuccessful, and Franklin D. Roosevelt, Democrat, was elected in 1932. The new President tried to ease conditions and raise prices by regulating industry, abandoning the gold standard, carrying on extensive public works, and appropriating huge sums for relief. Foreign trade was stimulated by reciprocal treaties. Re-elected in 1936, Roosevelt announced plans for wide reform.

United States and World Power.—The close of the nineteenth century marked the close of an era in United States History. The Spanish War had broken down the "Chinese Wall" of American exclusion with what the French call "Village spire patriotism," and the United States emerged with a foothold outside the main continental domain, ready to reach out for the world trade her growing industries had been preparing for. Some glimpses of the conception began to appear that political and commercial policies must coincide, and that if this country is to be a commercial world power, it must be a political world power. This conception was forced upon us by events; it did not guide events. The general upheaval of war and foreign acquisition started the awakening which on the part of the masses had been very slow, and is even to this day, after the Great War has been fought. There are a few men of affairs who realize that the planet is one place, and the United States is but a part of it, and related to all of it. Henceforth we must reckon with this fact.

Van Buren's Administration (1837-1841).

I. Panic of 1837.—When Jackson had ordered the cessation of deposits of the national funds in the United States Bank, certain other banks were chosen which were called "pet banks". Large amounts were put into circulation, fostering speculation, to the extent that soon there was no money for anything. These banks began to issue bills payable in gold and silver without the specie with which to meet the obligations. "Wild Cat" banks were formed with little or no capital and this was the legacy left over from "Jackson's Reign" to the Van Buren incumbency. Since the greater part of the speculaton was in public lands, Jackson's order that agents should receive nothing but gold for land precipitated the panic which extended to all branches of trade. Everywhere banks failed—even the national banks, and the Treasury suspended payment upon its obligations and was compelled to issue notes to the amount of $10,000,000.

II. Repudiation (1837).—During the period of speculation states had undertaken the construction of railroads, canals and other public works, issuing bonds, whose obligations they could not pay. In some cases the money had been squandered, in others



plundered, and some of the states refused to pay their debts, taking refuge behind the clause of the Constitution which forbids a state to be sued by an individual. Later some states paid up, as for example Pennsylvania, but some never did. Since much of this money had been invested in Europe, American honour received a deadly blow and American credit fell so low that even the United States government was unable for years afterwards to place a loan in Europe.

III. Subtreasury Established (1840).—Van Buren, who had run for office on the platform of walking in the footsteps of his illustrious predecessor, hurried to find a way to remedy his mistakes and proposed the Subtreasury System which severed all connection between the government and banks of issue and allowed the government to do its own banking. Vaults were built and government monies deposited, to be paid out by government agents under heavy bonds, but this scheme had the disadvantage of holding such money out of circulation, except through the payment of salaries and interest and the purchase of its own bonds. This also worked much hardship.

IV. Abolition Movement (1834-1840).—For some years the Abolition Movement had been in progress, resulting in riots and sometimes in bloodshed. In 1835 a mob broke up a meeting in Boston and dragged Garrison through the streets with a rope around his body and in 1837, Elijah P. Lovejoy was murdered in front of the office of his own paper at Alton, Illinois. Whittier, the poet, lost his books and papers through a mob in Philadelphia, and large rewards were offered in the South for the miscreants who opposed slavery. The feeling grew in depth and power both North and South and was hastening the day of reckoning, which even then seemed to be inevitable—as J. Q. Adams had said long before: that the Union would ultimately split on the slavery issue.

Washington's Administration (1789-1797).

I. The Constitution of the United States, Effective (1789).—The consolidation of the national life under the Constitution is in both time and importance the first element of the history of the United States. The alternative had been the Constitution or anarchy and civil war. Patrick Henry voiced the sentiments of the opposition in that it would establish "one great, consolidated, national government of all the people of the states." The report of the Framers to Congress stated that they had kept forward the greatest interest of every true American: "the consolidation of our Union, in which is involved our prosperity, felicity, safety, perhaps our national existence." It is probable that the Union would not have lasted till the year 1800 if the opponents of liberalism had had their way.

II. Cotton Gin, Invention of the (1793).—"If the Cotton Gin had never been invented, it is probable that slavery would have been abolished in the South before 1825." (Channing, Student's History of the United States, p. 2.) Eli Whitney, the inventor was a Connecticut schoolmaster, resident in Georgia, and by conceiving a device by which cotton fibre could be drawn by saw teeth through openings too small to admit of the passage of the seed, he multiplied the capacity of a slave in cleaning cotton about three hundredfold. His invention made billions of dollars for the South, but he was mobbed when he sought to enforce his rights in his own invention. The year before the appearance of the Cotton Gin, the South exported 189,000 pounds of cotton; by 1824 the amount had been increased to 142,000,000 pounds exported. It is probable that if the states north of the Ohio River had been cotton states, slavery would be flourishing yet.

III. Mint, Establishment of the United States.—The first institution for the coining of money was established through the efforts of Robert Morris in Philadelphia, in 1792. In 1854 a second mint was erected at New Orleans. The country had been filled with base coin which made an alarming situation Counterfeiters were busy imitating paper money and coin ano

the finances of the country were in a state of anarchy. The Act creating the United States Mint was passed April 2, 1792, and the same year three pieces were struck, the Dime, the Half-Dime, and a trial Cent with a silver center. But the first regular issue of money was the copper cent of 1793, of which there are now extant eleven varieties. A local wit published a skit: "Alexander the coppersmith has done me much harm (Alexander being Hamilton, the first Secretary of the Treasury), the Lord reward him, according to his works." (Paul.)

IV. Jay's Treaty.—Neither England nor the United States had complied with all of the stipulations of the Treaty made at the close of the Revolution and the tension was so great that but little would have precipitated another war. Added to this was the new war between France and Great Britain, in which both nations bore down heavily upon American shipping. To settle the mooted questions Washington sent John Jay, Chief Justice of the United States, as Minister to Great Britain to negotiate a new treaty. Jay was one of the ablest of American statesmen and one of the most unselfish, but the treaty he negotiated in 1794, notwithstanding, aroused fierce opposition. Britain agreed to evacuate the posts held by her by June 1, 1796; joint commissions were to settle the matter of debts; also the indemnity for negroes taken away and the boundary disputes on the northwestern frontier were to be settled, but the British government would not yield on the matter of impressment and neutral trade. Jay was burned in effigy and Washington was abused, but it postponed the second war with Great Britain for many years.

V. Addition of New States.—Acts were passed by the First Congress, third session, admitting Vermont (1791), and Kentucky (1792), and Tennessee in 1796. Already the slavery question had entered American political life and it became bound up with the admission of states. There were also anti-slavery petitions and a Fugitive Slave Act, delivering slaves escaped from one state to another.

Waterloo, Battle of.—The battle of Waterloo was fought at the little village of that name in Belgium, eleven miles south of Brussels, on June 18, 1815. Preliminary battles had been fought at Ligny two days before, where Napoleon had defeated the Prussians under Blucher, and at Quatre-Bras, on the same day, where Wellington compelled Marshal Ney to retreat. Wellington had 67,000 men and Napoleon had about 72,000. The most of the day's battle consisted of attacks by the French which were met by a dogged resistance by Wellington's army. Meanwhile Napoleon sent troops to stop Blucher, who was advancing with 50,000 men. At seven o'clock in the evening Napoleon decided to make a last stroke for victory, Wellington having used up nearly all of his cavalry, and he stormed the whole line. The famous French Guard in four divisions was defeated one by one by British troops who had been hidden, and the French army began to disappear in a rout, Blucher joining just in time. The losses of Blucher and Wellington were about 20,000 men, while the French army was well nigh annihilated, losing 35,000 men killed and many wounded and captured. This battle ended the menace of Napoleon, who was soon retired to St. Helena, where he died May 5, 1821.

White Leagues.—After the Ku-Klux-Klan and other mysterious brotherhoods of southern gentlemen had been disbanded by the Force Acts of 1870 and 1871 (see Ku-Klux-Klan), the same groups of southerners formed White Leagues, through which they strove to deprive the negro of political power and restore order. These leagues did not employ the supernatural trickery of the Ku-Klux-Klan; they worked with as much openness as any political party, but with the military methods of a police force.

The White League was strongest in Louisiana, where the white people were least sundered by class distinctions. Here in 1872 they protested that Governor Kellogg, a Republican, had been unlawfully elected by keeping white citizens from the polls and they set up McEnery, the Democratic candidate, as rightful governor. Two opposing state governments existed side by side until Grant recognized Governor Kellogg. In September, 1874, Governor Kellogg ordered the White League to give up their firearms and so started an uprising of the white citizens of New Orleans headed by the White League, which ended in Kellogg's flight, the defeat of the Federal troops and the establishment of a new state government under McEnery. Grant condemned the action of the White League and sent fresh troops to replace Kellogg in power. However, another election soon followed, with victory for the White League.

Wilson's Election (1912).—The split in the Republican party owing to the repudiation of the Taft Administration by many republicans principally on account of his attitude towards Big Business, resulted in the election of Woodrow Wilson as President of the United States, receiving on a popular vote, 2,000,000 less than his combined opponents. Nevertheless, the Democrats got control of the Senate (51 to 45), and of the House (291 to 144), something that had not occurred before excepting in the session of 1893 to 1895, since the Presidency of James Buchanan.

Wilson's Administration (1913-1921).

I. Seventeenth Amendment (1913).—On May 31, 1913, the Seventeenth Amendment of the Constitution of the United States, providing for the direct election of Senators by the people, having been duly ratified by a sufficient number of states, was declared in force. To make that body truly representative, there remains another Amendment to be submitted and declared, to make Senators elected according to populations, so that Rhode Island, for example, cannot pair with New York or Texas.

II. Panama Canal Opened (1914).—The Panama Canal was opened for world traffic in August, 1914, the American steamer *Ancon* going through the locks crowded with officials and guests. In January, 1914, Colonel Goethals, the engineer who had completed the great task, was made the first governor of the Panama Canal Zone. The tonnage passing through the canal increased from nearly five million tons in 1916, to eight million tons in 1919.

III. League of Nations.—Incorporated in the Peace Treaty, President Wilson being at Paris, was a Covenant of a League of Nations with 26 articles. When the matter became known in the United States enough Senators to defeat it signed a round robin declaring their opposition. When it became known that our Allies had, unknown to us, made secret treaties with each other and against those principles for which Americans contended, there was a strong revulsion which was given a great impluse when the American representatives among other things deliberately betrayed China to Japan, which had done little in the war without careful reference to her own selfish interests. The consequence was, that after much opposition in the senate and elsewhere, the whole treaty was rejected, November 19, 1919, by a vote of 55 to 39.

World War.—Open wars for conquest, such as Cyrus the Persian and Alexander the Great had waged in centuries past, were not the practice among civilized nations of the twentieth century, and hence it was thought that the modern world had grown beyond warfare. But, among the great European powers, the same desire for conquest existed as in earlier days and, hidden beneath the cloak of diplomacy, the rulers wrestled with each other more fiercely than ever for territorial gains. Nationalism, Militarism, Imperialism, were the watchwords of the times. In some quarters, to maintain peace it was thought necessary for each nation to terrify its neighbors by the size of its army or navy, and if any one nation seeemd acquiring dangerous power, the others allied against it. In 1900 two great alliances dominated Europe:

(1) The Triple Entente—an agreement between France, Russia and England for mutual help in case of attack.

(2) The Triple Alliance—a similar agreement between Germany, Austria and Italy.

The strength of these two alliances was so nearly equal that each of the six nations involved felt able to hold its own in case of war, while neither group was enough stronger to dare make war on the other. Thus a perfect balance of power kept the peace of Europe for the first decade of the twentieth century.

In 1912 and 1913 a few of the Balkan states rebelled from the rule of Austria and sought independence under the protection of Russia. The weakening of Austria and the strengthening of Russia which resulted upset the equilibrium between the two alliances—the Triple Entente was now undoubtedly the stronger. Austria prepared for war to regain her Balkan provinces and Germany followed her in order to prevent the aggrandizement of Russia. The other nations of Europe, scenting the danger, plunged likewise into an orgy of preparedness. England attempted conciliation with Germany, in the desperate hope of averting a European war.

On June 28, 1914, the Archduke Francis Ferdinand of Austria and his wife were murdered by a Serbian anarchist while they were visiting in Bosnia, a Serbian territory which the Austrians had subjugated. This gave the provocation for which Austria had been waiting. Without real ground for suspicion, she accused the Serbian government of causing the murder and sent to Serbia an ultimatum with the following demands:

(1) That she suppress all anti-Austrian propaganda.

(2) That she dismiss from the army and from civil service anyone obnoxious to Austria.

(3) That she allow Austrian officials to sit in Serbian Courts.

To the last of these humiliating demands Serbia refused to submit and offered to settle the dispute at the Hague Tribunal, but Austria wanted absolute submission and declared war on Serbia. Russia, the avowed protector of Balkan freedom, began to mobilize her army to protect the

tiny Balkan nation from so formidable a foe. Germany at once declared war on Russia, on August 1st, saying that she was required to defend her ally, Austria. France, as an ally of Russia, began to mobilize, whereupon Germany declared war on France August 3rd.

Germany's first move was the sending of three military expeditions against France —one to the southeast through Luxemburg, one from Metz across the Franco-German borderline and one through Belgium. The troops passed through Luxemburg without armed resistance but Belgium forbade their entrance, and when the Germans forced their way in on August 4th, rose in arms to oppose them. England, among other European nations, had guaranteed the neutrality of Belgium, that is, had promised that there should be no fighting on her territory. She now threatened war if Germany would not withdraw her troops from Belgium. Germany replied that entrance through Belgium was a military necessity and that "necessity knows no law." England declared war on Germany on August 5th. Soon afterward Japan, as an ally of England, joined the war and in November Turkey allied herself with Austria and Germany, who were known as the Central Powers. The Triple Entente and its supporters were called the Allies. Italy, although bound by the Triple Alliance, would not join the Central Powers as she believed them unjustified in causing the war. In 1914 the opposing sides in the conflict were as follows:

The Allies	The Central Powers
Russia	Austria
France	Germany
England	Turkey
Belgium	
Serbia	
Montenegro	
Japan	

"Paris within a month" had been the boast of the Germans as they began their French campaign, but the small Belgian army halted them for ten days on their first advance and laid low their hopes. By the time the Germans had rallied sufficiently to crush the Belgian forces, destroy the town of Liege and take possession of Brussels, the French had been able to strengthen their defence and guarded the Belgian border.

Elsewhere the danger seemed greater.

The German division which had entered through Luxemburg stood within twenty-five miles of Paris on September 1st and, joined with the division which had taken the fortress at Namur, formed a line of attack one hundred miles long. At that moment Von Kluck moved the joined forces eastward with the intention of surrounding the enemy, but he had miscalculated and walked his men into a trap surrounded by French and English. The battle of the Marne ensued (Sept. 5-10), in which the Germans were driven back to the River Aisne.

After their defeat at the Marne the Germans wreaked their anger on Belgium. They destroyed great cathedrals and other works of art; they extracted large tribute from the people; they confiscated machinery and other supplies; they burned a great part of the city of Louvain. But that which brought upon them the violent hatred of all the world was the brutality with which they maimed and murdered unarmed civilians. By October 10th the German army had occupied all but the small southwestern corner of Belgium.

The opposing armies along the Aisne, unable to break through each other's defences, tried to outdo each other by extending their trenches to the north and to the south. By the end of October the line of entrenchment reached from Switzerland to the coast of Belgium and for the next three years the French and British opposed the Germans along this line without important gains on either side. In the Fall of 1915 the British centered their effort on a drive to the northeast of Arras, but in spite of their fresh supply of men and munitions they only succeeded in forcing back the Germans two or three miles on a twenty-mile front. Between February and July, 1916, the German attack on the French fortress Verdun threatened to bring about a collapse of the Allied armies; but when defeat seemed most certain the French forces rallied in accord with General Joffre's words "They shall not pass," and drove back the army of the German Crown Prince. From July to November, 1916, the battle of the Somme raged, east and northeast of Amiens. Here the British tanks were first used. The Germans retreated a few miles, each side having lost from 600,000 to 700,000. In 1917 the British held the enemy at Arras, where the battle of Vimy Ridge occurred and the French fighting was fiercest along the Aisne, about the Chemin des Dames. During the course of the year the Germans shortened their line to a direct route from Noyon to Arras, thus cutting off one-eighth of their French gains.

Meanwhile in eastern Europe the Russians fluctuated between success and disaster. In 1914 they forced their way into East Prussia, but after the battle of Tannenberg were driven back. They invaded victoriously the Austrian province of Galicia, but had to abandon all they had gained when they withdrew their troops to combat the Germans in Poland. Here they were ineffective and in the summer of 1915 surrendered the important Polish towns to Germany. In 1916 Russia held her ground against the enemy and for a time threatened to invade Hungary, but the ever-watchful Germans and Austrians halted her advance. Early in 1917 revolution seized the ancient empire—the Czar abdicated and a republic was established in which Kerensky became military and political leader. The lapse in discipline resulting from the new freedom steadily weakened the Russian army. When the Bolsheviki took hold of the government in November, the new leaders, Lenine and Trotzky, offered to make peace with Germany, but the German demands for territory were so preposterous that the treaty was not signed. Germany then advanced her army on a five-hundred-mile front into the heart of revolution-torn Russia and forced her terms of peace. By the Treaty of Brest-Litovsk, March, 1918, Russia ceded to Germany one-half million square miles of territory, including Poland, the Ukraine, Lithuania, Courland, Livonia. Thus the strength of Russia, with her vast population and wealth of resources, was wrenched from the Allies to the profit of the Germans.

The first marked activity in southern Europe was the fatal expedition of French and English against Constantinople. They landed at Gallipoli on the Dardanelles in April, 1915, but the Turks and Germans lay in waiting and would not allow them to gain a footing. The Allies withdrew after heavy losses of men and battleships.

In May, 1915, Italy joined the Allies. It is believed that she hoped through victory to regain her territory along the Adriatic, where Austria then ruled.

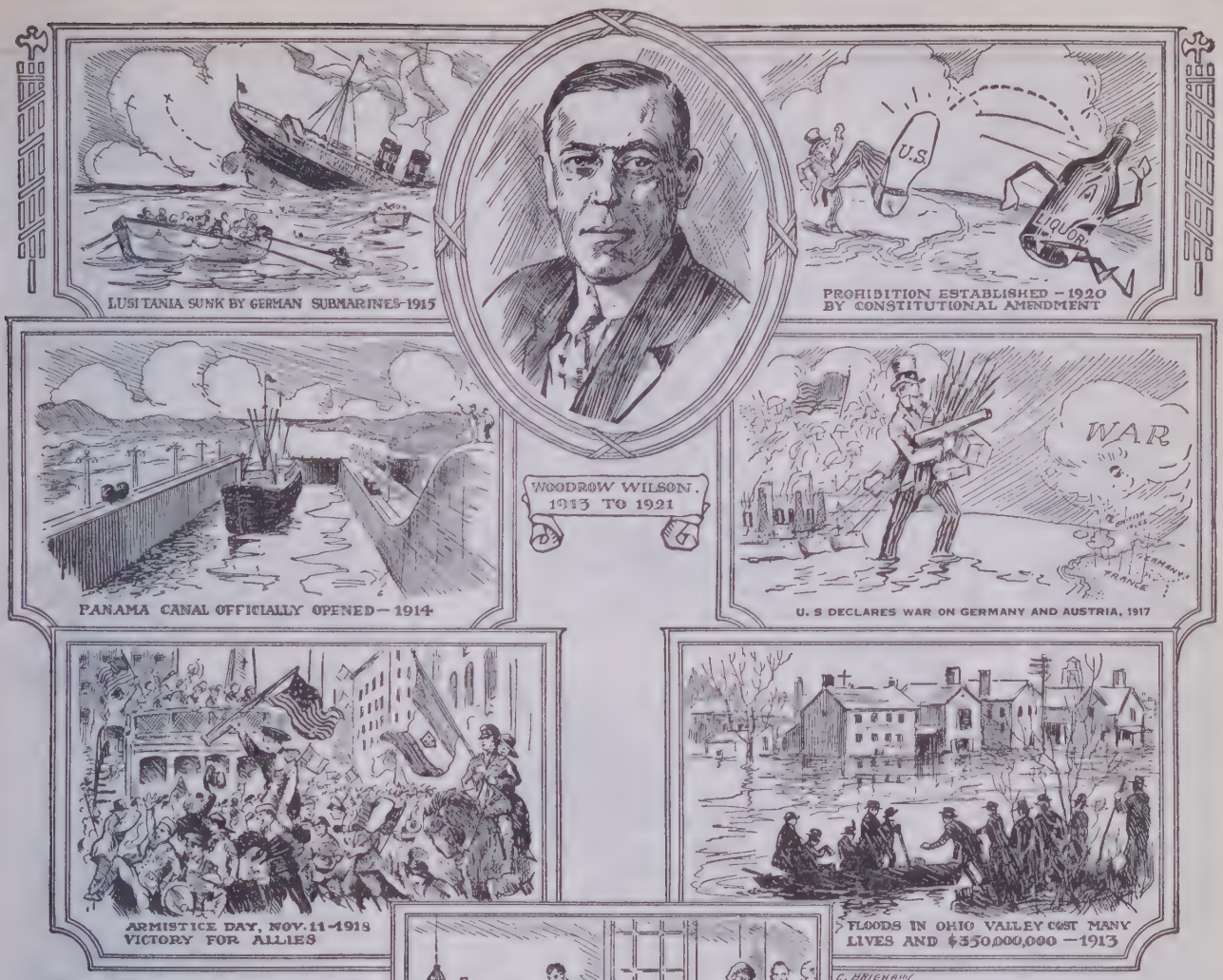
In October the Germans invaded Serbia with the aid of Bulgaria who, seeing a fair prospect for booty in the project, at this moment joined the Central Powers. The British and French sent troops to Salonika to protect Serbia, but before these arrived the small nation had surrendered to the overpowering numbers of her enemy.

In May, 1916, the Italians, who had made slight gains along the Dalmatian Coast, were suddenly pushed back into their own territory by an Austrian drive. Just then the Russians became a menace in Hungary, the Austrian troops were dispatched thither and the Italians once more advanced, this time as far as the important city of Göritz. Encouraged by Russia's temporary success, Roumania now joined the Allies and began an invasion of Transylvania. At once a German army was sent which drove the Roumanians back into their own country and took from them their capital. Before long Germany was in possession of two-thirds of Roumania, exploiting her grain fields and oil wells.

Through the summer of 1917 Italy's advance on the Austrian front continued. But in the autumn, after the breakdown of Russia, the German forces released from that region joined the Austrian defence and caused a disastrous retreat of the Italians far beyond their gains. Once more in Italy they took their stand along the Tagliamento and were driven from there to the Piave. Had not the French and British at this moment reinforced the Italians and halted the Austro-German advance it is probable that the city of Venice would have fallen and all Italy surrendered.

Meanwhile in remote regions decisive events were occurring. It was not alone the capture of Kiao-Chou and all other German strongholds in the Pacific by Japan, Australia and New Zealand, nor the conquest of German South Africa by British subjects. The war in the air, the war beneath the sea had far-reaching effects. The German Zeppelins, hovering over England at the dead of night, dropped bombs which killed many thousands and shook the morale of the country. The German battleships never encountered the British navy in open fight, but German submarines, unseen, destroyed English warships and merchant vessels. England's position had made it possible for her to cut off all German commerce at the beginning of the war by blockading the harbours of Hamburg and Bremen. She also searched all vessels bound for Holland, Norway or Sweden to see if these contained any contraband of war, destined for German use. Germany argued that submarine warfare was her only weapon against these English injustices. In February, 1915, Germany confiscated all grain in her territory, that she might better feed her army. England then declared that all foodstuffs sent to Germany should be considered contraband of war and as such removed from the ships bearing them to German destinations. Germany claimed that England was trying to conquer her through starvation and struck back by declaring a zone of war in the waters about the British Isles. Within this zone enemy merchant vessels would be sunk by submarines with or without warning and neutral ships passing through would be in danger of destruction.

In May, 1915, the British ship the *Lusitania* was sunk without warning and 1,200 of its passengers, among whom were 100



Americans, perished. President Wilson's note of protest to Germany was ignored. Other such disasters occurred and the notes of protest continued.

In January, 1917, England extended the area of her German blockade and Germany so extended her war zone that commerce between Europe and America would not be safe for any neutral vessel. Unable to make her repeal this drastic measure, the United States declared war on Germany April 6, 1917, and planned to fight in co-operation with the Allies on the French front.

Only a fraction of the American forces reached France in 1917, and fought bravely without making any change in the course of events.

Following the United States, seven other countries declared war on Germany, namely: Cuba, Panama, Greece, Siam, Liberia, China and Brazil.

In March, 1918, the Germans braced themselves to their greatest drive against the Allied front. Attacking the British on March 21st, at a point of weakness, along the Somme they pushed through the line of defence and on to Amiens. Within a week the Germans captured six French towns. On April 12th the English retreated from the Flanders front, but took a firm stand at Ypres, beyond which they could not be moved. On May 19th Soissons fell into alien hands and on May 31st the Germans were at the Marne, within forty miles of Paris. They had with them a tremendous machine gun by which they bombarded Paris from afar.

The Americans were now winning glory by their advance into Belleau Wood.

After the fall of Chateau-Thierry on July 15th General Foch, as Commander-in-Chief of the Allied forces, undertook an offensive along the Marne that completely reversed the fortune of war. From Chateau-Thierry to the Aisne the French advanced six miles and reclaimed twenty villages. With steady pressure all along the front and daring thrusts at important points, the Allies pushed back the Germans beyond their recent gains. General Pershing's troops wrecked the St. Mihiel salient on September 12th and 13th. By the end of September the Germans were back on the Hindenburg line where they waged a fierce battle of defence. In Belgium the British broke through the German line and drove the Germans back from the coast, while in France the Americans advanced along the Meuse. German retreat continued steadily and surrender was only a question of time.

The success of the Allies was strengthened by the triumphs of the British General Allenby in Asia Minor. By October, 1918, he had freed Mesopotamia, Syria, Palestine and Arabia from Turkish rule. In September of the same year Bulgaria surrendered to an army of French, British, Greeks, Serbians and Italians. Serbia's independence was restored.

In October Italy again advanced against the Austrians, who now retreated with heavy losses.

On October 31st Turkey signed an armistice of unconditional surrender, opening the Dardanelles and the Bosphorus to the Allies.

On November 4th Austria surrendered, abandoning all territory gained in the war and relinquishing certain regions along the coast of Italy.

The German Emperor, now facing more bitter defeat every hour, asked for a peace conference. But before the terms of an armistice had been presented a mutiny among the army and navy and a revolution among the population of Germany had broken out. On November 9th the Emperor abdicated and fled to Holland and on November 11th the Allies signed an armistice with the provisional German government.

The WORLD WAR



(1) Archduke Franz Ferdinand, heir apparent of Austria-Hungary, was assassinated by a Serbian student at Sarajevo, Bosnia, on June 28, 1914 —— a direct cause of the war.



(2) War actually began on Sunday, August 2, 1914, when German troops invaded Luxemburg.



(3) On August 4th, 1914 Germany invaded Belgium—a pitiless destruction of homes, churches, cemeteries etc. —



The German War Cloud advancing under General von Kluck in 1914 — an indirect cause of the World War.



(4) German invaders hurled back across the Marne by French and British in the First Battle of the Marne - September 1914



(6) Belleau Woods - where the Marines stopped the Kaiser on his way to Paris.



(5) American Army swarms across the Ocean 1917-18 —— the Convoy shown above.



(7) Gallantry of our soldiers at Chateau Thierry turned fighting in favor of the Allies — 1918



(9) Bagdad Railway Line and German world empire broken by gallant Italians at the Piave River, 300,000 prisoners and 5000 guns captured October 1918



(8) The greatest battle of the war. The Argonne Sept 26-1918 American troops with superhuman persistence push on to a glorious victory.



(10) First great naval battle of the war was fought by German and British Fleets off Jutland, Denmark, May 31, 1916. Both sides claim victory.

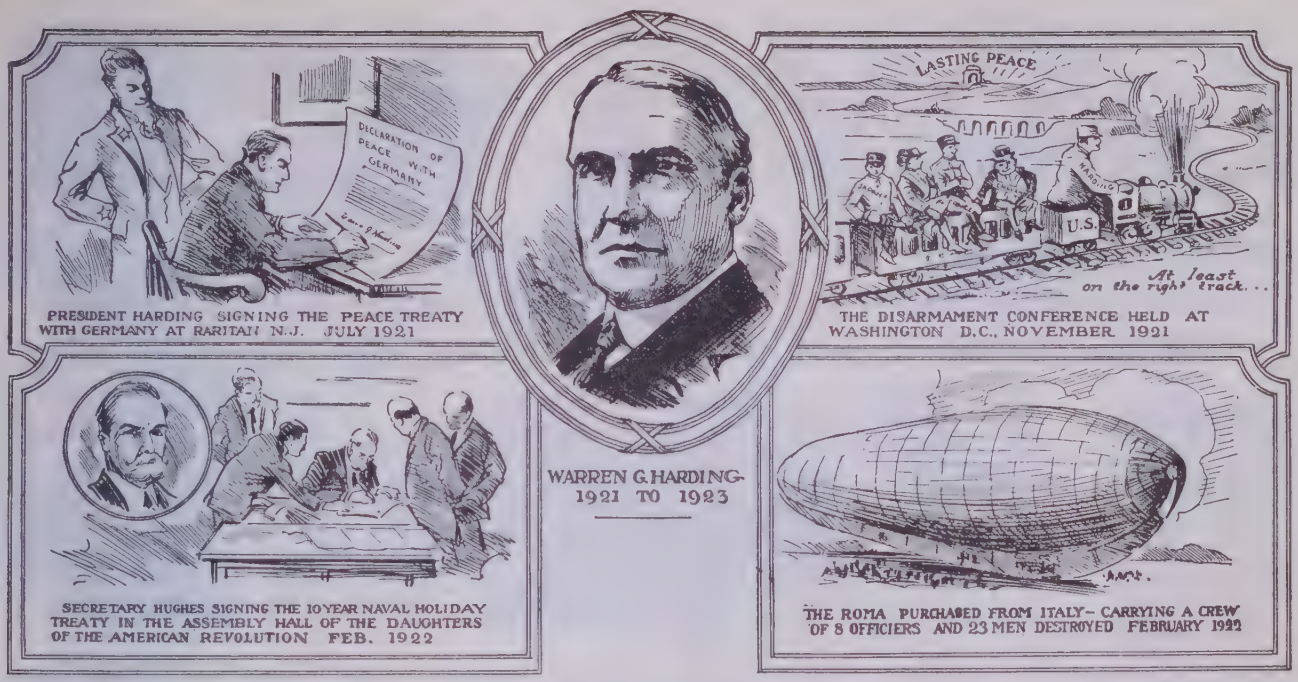


(11) American and British troops force their way through twelve miles of defense between Cambrai and St. Quentin, Oct 1918



(12) Under the White Flag—
Preceded by a trumpeter and carrying white flags. German plenipotentiaries present themselves to French outposts on the night of Nov. 7, 1918. The beginning of the end of the world's great war—Armistice signed November 11-1918 Germany conquered. Treaty of Versailles signed - 1919 & League of Nations formed.

Brighaus



THE LEAGUE OF NATIONS

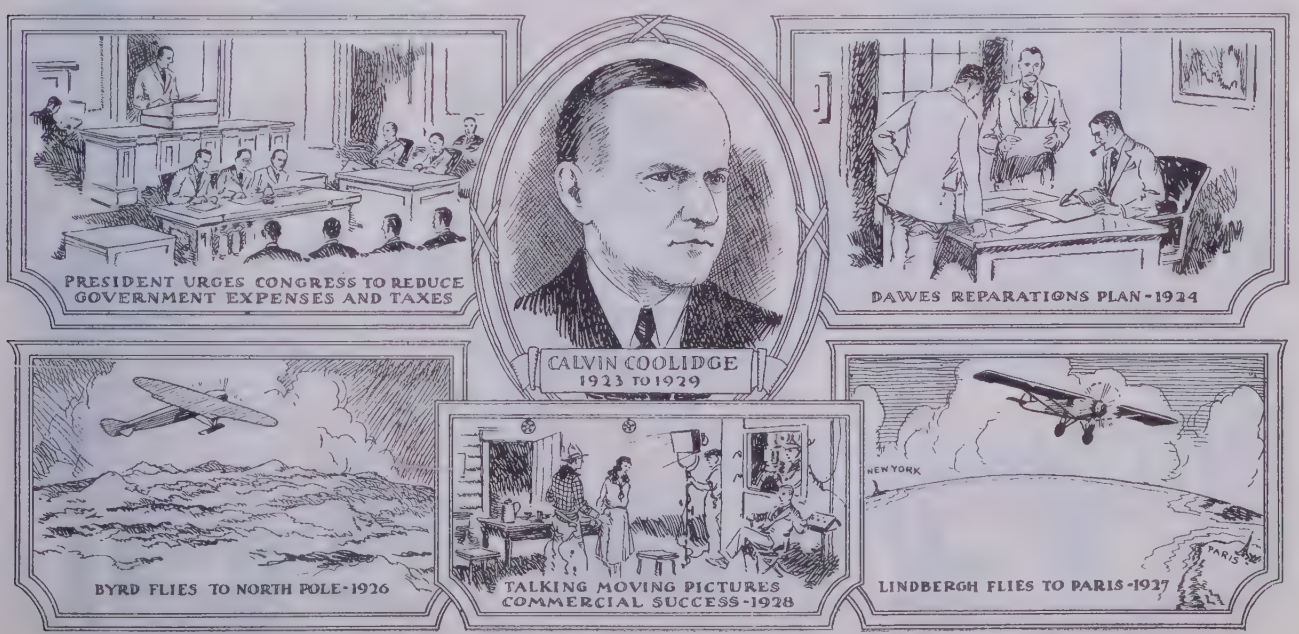
The League of Nations was organized at the Paris Peace Conference, 1919, and came into operation January 10, 1920. During the World War the centuries-old plan of organizing the nations into an association for the preservation of peace and the supervision of international affairs was actively discussed. In the United States various organizations were formed (League to Enforce Peace, League of Free Nations Association) to familiarize the public with the idea, which was warmly advocated in America by ex-President Taft, in England by Sir Edward Grey and Lord Robert Cecil, in France by Léon Bourgeois, and in South Africa by General Smuts. It received the approval, in 1916, of President Wilson, who ultimately made it the cornerstone of his foreign policy. Government commissions in the United States, Great Britain and France studied alternative plans. At Paris, the principle of a League was approved by the Peace Conference on January 25, 1919, and a draft Covenant of the League on February 14. The final draft of the Covenant was approved April 28 and, largely because of the insistence of President Wilson, was embodied in the Treaties of Peace.

The basic machinery provided by the Covenant consists of the Assembly, the Council, and the Secretariat. The Assembly is representative of all the member states, each of which, with three delegates, has a single vote. The Council is composed of delegates of the five principal powers, and of delegates of nine other powers elected by the Assembly. The permanent Secretariat established at the seat of the League, (Geneva) is headed by a Secretary-General, to be appointed by the Council with the approval of the majority of the Assembly. The first Secretary-General named was Sir Eric Drummond.

No specific duties are assigned at the Assembly by the Covenant. It "shall meet at stated intervals and from time to time as occasion may require," and may deal "with any matter within the sphere of action of the League or affecting the peace of the world" (Article 3). The approval of two-thirds of the Assembly is necessary to the admission of a new state to membership in the League (Article 1). The Council must meet at least once a year. Aside from certain specific duties such as responsibility for the territorial regions entrusted to the League (the Saar, Danzig, mandated territories), the formulation of plans for the reduction of armaments and for a Court of International Justice, it is given general duties connected with the settlement of international disputes. The Covenant provides that in case of war or threat of war, upon the request of any member of the League, the Secretary-General shall summon a meeting of the Council. Any dispute likely to lead to a rupture which is not submitted to arbitration, is to be investigated by the Council, which shall endeavor to effect a settlement; if unsuccessful the Council is to publish a report containing its recommendations. It may refer the case to the Assembly and must so do if demanded by either party to the dispute (Articles 12, 15). Should any member of the League resort to war in disregard of its Covenants, it is the duty of the Council to recommend what effective military, naval, or air force should be contributed by the several governments to protect the Covenants of the League (Article 16). Except where expressly provided, decisions of the Council as of the Assembly, must be unanimous (Article 5). They take the form, furthermore, not of instructions to the several governments, but merely of recommendations.

The Secretariat is a permanent expert body, providing the information and arranging for the organization necessary to the functioning of the Assembly and Council.

Although the functions of the League in the organization of international activities in time of peace may ultimately become of chief significance, its more obvious functions lie in the field of international disputes. The Covenant provides in the first place against wars of aggression by requiring each mem-





ber-state "to respect and preserve as against external aggression the territorial integrity and existing political independence of all members of the League" (Article 10). In the second place the Covenant provides (Article 12, 13), for the continuation of arbitration as a method of settling disputes. The members agree that whenever any dispute shall arise between them which they recognize to be suitable for submission to arbitration and which cannot be satisfactorily settled by diplomacy, they will submit the whole subject matter to arbitration." If the dispute cannot be submitted to arbitration the members agree before going to war, to submit the matter to the Council, which shall initiate he processes of conciliation, as stated above (Article 15). Should any member resort to war in disregard of these Covenants it is regarded as having committed an act of warfare against all members of the League which agree to institute an immediate economic boycott (Article 16). Furthermore, any war or threat of war is declared a matter of concern to the whole League which "shall take any action that may be deemed wise and effectual to safeguard the peace of the nations" (Article 11).

The membership of the League includes most of the sixty-three nations of the world, the German Republic being admitted in 1926 as the fifty-sixth member. The United States, though not a member, participates officially and unofficially in various committees and activities, and registers its treaties in the Geneva office. In addition to unofficial relations, the work in which this government took active official part during 1927 included the International Economic Conference, the Special Commission on the Private Manufacture of Arms, the Ninth Session of the Advisory Committee on Traffic in Opium and Other Dangerous Drugs, the Meeting of Government Experts on Double Taxation and Fiscal Evasion, the Advisory Committee for the Protection of Children and Young People, the Joint Conference on Communications and Transit, and the Conference on Import and Export Prohibitions and Restrictions.

The Council of the League meets four times a year and upon special occasions. The Assembly convenes each year in September

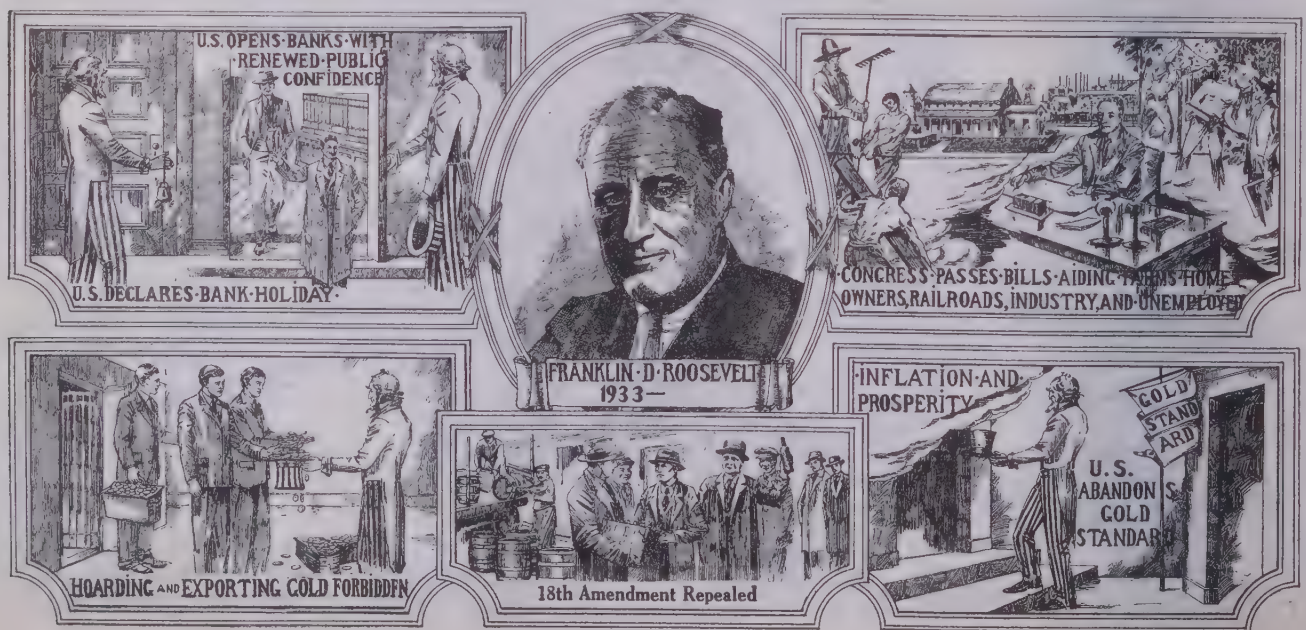
The work of the League is described in its numerous reports. Threatened wars regarding the AAland Islands, Upper Silesia, Vilna, Albania, Greece, Mosul, etc., were averted. The Outlawry of war, by means of the "Protocol for Pacific Settlement of International Disputes," approved by the Fifth Assembly, though not accepted in practice, paved the way for the famous Locarno pact. Disarmament remains a subject for intensive study in conference.

Reconstruction has been furthered by the economic restoration of Austria and Hungary by means of commissions of the League. War prisoners, numbering half a million were restored to twenty-six different nations. The Refugee Settlement Commission has aided in the settlement of homeless millions. There are commissions to safeguard the rights of backward peoples and of the racial, religious and linguistic minorities whose status was changed as a result of the war. The International Labor Organization has been established as a central ageney to study and improve the condition of labor. The protection of children is a subject of international inquiry. The Public Health Organization exchanges information with the health authorities of all countries and maintains a warfare against epidemic diseases in danger zones. The control or suppression of traffic in opium, in women and children; and the complete abolition of slavery are subjects proposed for international agreement.

Intellectual Cooperation is the object of one of its commissions, and one of the chief aims of the League which provides an international center for information, discussion and agreement.

The Permanent Court of International Justice was established in 1921. Its judges are elected by the Assembly and Council of the League, meeting simultaneously; its budget is part of that of the League; the Council of the League may ask the Court for advisory opinions. The Court sits at The Hague. Its competence is determined by any two states agreeing to submit any dispute to it; by those states which recognize its compulsory jurisdiction; and by a mass of treaties and international agreements which provide for the submission of any dispute arising under them to be submitted to the Court.

In 1932 and 1933 The League unsuccessfully attempted to stop Japan from warring with China. Japan resigned from the League.





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FLAGS OF THE NATIONS

The merchant flags are shown except where the mark (N) indicates the national flag. (*International Code of Signals*, published by the Hydrographic Office, U. S. Navy, has been followed, except for the flag of Russia, where *Seagoing Vessels of the United States*, U. S. Department of Commerce, has been used.)

Chronological History of the World

HISTORY. Universal history is usually treated in three principal divisions:

I. Ancient History, which begins with the earliest written records and terminates A. D. 476, with the destruction of the Roman empire.

II. The Middle Ages, which extend from the fall of Rome, A. D. 476, to the discovery of America, A. D. 1492.

III. Modern History, which commences at the latter epoch, and continues to the present time.

The events which mark the separation between the *first* and *second* periods, are the irruption of the Teutonic tribes, the consequent fall of the western Roman empire, and the foundation of the modern European states; between the *second* and *third*, are the extension of learning by the invention of printing, the taking of Constantinople, the maritime discoveries of Spain, Portugal, and other European countries, with the more extensive use of firearms.

I. Ancient History may be subdivided into six periods:

1. The nebulous period, comprising the fragmentary accounts of the early Assyrians, Babylonians, Egyptians, Chinese, Hindus and Hebrews, down to 2000 B. C.

2. The Mosaic period, from the time of Abraham to 1200 B. C., during which Moses promulgated his great code of moral and political laws.

3. The Assyrian-Babylonian period, which witnessed a long series of Assyrian conquests, the zenith of Babylonia, the rise of Greece and Rome, and the foundation of the Persian empire,—1200 to 529 B. C.

4. The Persian-Macedonian period, from 529 to 323 B. C., during which both the Persians and the Greeks reached their greatest achievements.

5. The Greek-Roman period, from 323 B. C. to the Christian era, saw the decline of the Greeks and the coming universal power of the Romans.

6. The period of the Roman empire, from the time of Christ to 476 A. D., was notable for the foundation of Christianity, Christian persecutions, the division of the empire, Roman luxury and corruptions, and the incursion of the Teutonic hordes.

II. The Middle Ages may be treated in the following six periods:

1. *First*, the foundation of the modern states of western Europe, A. D. 476–622, when the Saxons invaded Britain, A. D. 449; the Visigoths settled in Spain, A. D. 507; the Ostrogoths in Italy, A. D. 489; and the Franks began the formation of the French monarchy, A. D. 481.

2. The *second* comprehends the age of Mohammed, with the propagation of his creed, and the establishment of the states which embraced his religion, to the treaty of Verdun, A. D. 622–843.

3. The *third* embraces the period from the treaty of Verdun, when the empire of the West was divided, to the Dark Ages, 843-936.

4. The *fourth* is the interesting period of the Dark Ages, A. D. 936-1096, during which the monarchy of Charlemagne fell to ruin, the Capetian dynasty began to reign in France, Italy was parceled out among a number of petty princes, while in Germany, Otho commenced the long-continued struggle against feudalism.

5. The *fifth* is the romantic or heroic period of the Crusades, A. D. 1096-1273, in which the Roman legal code, the foundation of modern jurisprudence, began to be studied.

6. The *sixth*, from 1273 to 1492, beheld the revival of the fine arts in Italy, the taking of Constantinople and diffusion of its learned men, the revival of letters, the discovery of America, A. D. 1492.

III. Modern History falls conveniently into five periods:

1. The period of the Reformation, including its commencement by Luther, A. D. 1517, till the termination of the long series of religious wars, by the treaty of Westphalia in 1648. This period produced many important changes in Europe.

2. The period from 1648 to the death of Louis XIV., in 1715, during which Russia entered European politics, and Great Britain began to assume large influence on the Continent.

3. The period from the death of Louis XIV. to the Congress of Vienna, 1815, which marked the fall of Napoleon. In this period was established the independence of the United States, Prussia advanced to the front rank of European powers, the French Revolution occurred, and the world witnessed the rise and fall of Napoleon.

4. From the Congress of Vienna, 1815, to the American Civil war, the most momentous period in American history.

5. From the close of the American Civil war to the present time, a period of unprecedented development and expansion.

PARALLEL OUTLINES OF UNIVERSAL HISTORY

FROM THE DAWN OF HISTORY TO THE TIME OF ABRAHAM, B. C. X-2000 (?)

Characteristics of the Centuries	Babylonia—Assyria	Egypt	Arts and Sciences	Literature
B. C. 5000—4000 Modern research shows the existence of flourishing city states in the Mesopotamian region, whose origin and growth far antedate this period. Early Babylonian and Egyptian civilization.	5000 (?) Kengi, or Sumerians, seem to be the advance guard of Babylonian civilization. 4500 (?) Struggles for mastery among petty Babylonian Kings. Kingdom of Shirpurla dominates, with Sungir (Shinar) as its capital. 4100 (?) Dynasty of Erech begins about this time.	5000 (?) Tombs of pre-dynastic Kings at Abydos reveal an advanced state of civilization. 4400 (?) Menes founds the old Egyptian empire, Memphis, the capital. Animal worship becomes prominent in Egyptian life.	5000 (?) At this date many of the industrial arts had made considerable advancement both in Babylonia and Egypt. 4100 (?) Architecture in stone begun in Egypt; copper tools introduced, and artisanship fostered.	
B. C. 4000—3000 Period of the pyramid builders. The Accadians flourish in the Euphrates valley.	4000 (?) Nippur becomes the religious center. 3900 (?) Agade becomes the chief center of Northern Babylonia. 3800 (?) Sargon I., of Accad, reached the Mediterranean, and conquered Elam, a kingdom east of Babylonia. 3700 (?) Babylon made capital. 3200 (?) End of the dynasty of Sargon.	4000 (?) Athothis, King. 3733 (?) Khufu (Cheops) builder of the great pyramid, reigns. 3666 (?) Khafra (Chefren), pyramid builder, reigns. 3633 (?) Menkaura (Mykerinos), pyramid builder, reigns. (Egyptian history almost a blank until the 11th dynasty.)	3900 (?) Great Pyramid at Gizeh. The Sphinx carved. 3750 (?) Temples to the gods built by Sargon I. at Nippur and Agade. 3300 (?) Canals and irrigation in Egypt begun.	"Moral Precepts" of Ptah-hotep.

FROM THE DAWN OF HISTORY TO THE TIME OF ABRAHAM, B. C. X-2000 (?)—Continued

Characteristics of the Centuries	Babylonia—Assyria	Egypt	Arts and Sciences	Literature
B. C. 3000—2000 Invasions of Accad and Babylonia by the Kings of Ur and the Elamites, respectively. Babylonian dominions extended. First migrations from the Aryan center; Celts move westward; Indo-Persic tribes, south. Chinese civilization evident. Flood narratives accepted, and Sabbath observed among Semites.	3000 (?) Accad under Kings of Ur. 2500 (?) Isin takes high rank among Babylonian cities, and a dynasty is founded there. 2450 (?) Arabians and Elamites irrupt into Babylonia. 2400 (?) City of Babylon first rises into prominence. 2300 (?) Elam supreme in Babylonia. 2300-2250 (?) Hammurabi unites Babylonia.	3000 (?) Herakleopolis becomes the seat of government. 2800 (?) Amenemhat I., first of the 12th dynasty. 2650 (?) Usertesen III., King, conducts expedition against Ethiopia. 2400 (?) Government moved to Thebes. 2100. Egypt conquered by the Hyksos, or Shepherd Kings.	3000 (?) Era of palace and temple building renewed in Babylonia; statues of Gudea. 2750 (?) Temple at Heliopolis built; also temple of Osiris at Abydos. 2371-25. Egyptian obelisks erected. 2300 (?) Amenemhat III. constructs Lake Mœris, and the labyrinth near it. 2200. Astronomy known in Chaldea.	Inscription of Una, found at Abydos. Egyptian *Book of the Dead.* *Code of Hammurabi.*

FROM ABRAHAM TO THE PERIOD OF ASSYRIAN ASCENDENCY, B. C. 2000–1200.

Characteristics of the Centuries	Hebrews	Babylonia-Assyria	Egypt	Europe	Arts and Sciences	Literature
B. C. 2000—1200 Egyptian revolt from the Shepherd Kings. New Egyptian empire. Rise of Assyria—originally settled by emigrants from Babylonia. Wars with Babylonia. Sidon, a Phenician city, at its zenith. Phenician colonies established round the Mediterranean. Advanced civilization in Crete. Exodus of the Hebrews from Egypt under Moses. Hittites rise to great power, contending equally with Egypt and Assyria.	2000(?). Abraham, Hebrew patriarch. 1728 (?). Joseph. Migration of the Hebrews into Egypt. 1491 (?). Moses; Exodus from Egypt. 1451 (?) Hebrews conquer the promised land, Canaan. Hebrew theocracy established.	2000 (?). Kassites (Arabians) conquer Babylonia. 1900. Assyria settled by Babylonian emigrants, Nineveh made the capital. 1700. Phenicia conquered by Egypt. 1500. Long series of wars begun between Babylonia and Assyria. 1310. Tiglath-Adar I. conquers Babylonia. 1300 (?). Shalmaneser I. rules in Assyria. 1220. Assyria again independent.	(Period of great obscurity.) 1800 (?). Revolt of Thebes against the Hyksos. 1670. New Empire expands under Thothmes III.; Palestine, Phenicia and part of Asia Minor conquered. 1524-1488. Expeditions against Syrians and Ethiopians, under Seti I. 1500. Egyptus reigns, and gives his name to the country. 1333. Rameses II. wages war against the Hittites; oppresses the Hebrews. 1322. Menephthah, the supposed Pharoah of the Exodus. 1269. Rameses III. 1244-1091. Decay of the Empire under the Rameses Pharaohs.	2000. Celts reached western Europe. Principal settlements made in central France. 1700. Arcadians migrate to Italy. 1582. Earliest date in the Parian chronicles of Greece, preserved in the Arundelian marbles. 1504. Areopagus established. 1457. Kingdom of Mycenæ founded. 1453. First Olympic games at Elis. 1400. Minos reigns in Crete. 1384. Founding of Corinth. 1356. Eleusinian mysteries instituted by Eumolpus. 1266. Œdipus, King of Thebes. 1263. Argonautic expedition of Jason. 1239. Latinus reigns in Italy. 1235. Theseus reigns in Athens for 30 years. 1233. Carthage founded by the Tyrians. 1225. First Theban war. 1220. Priam, King of Troy. 1216. Second Theban war. 1213. Helen (later of Troy), carried off by Theseus, afterward marries Menelaus.	2000. Babylonian industry flourishes under the Kassite kings. Phenicians skilled artisans. 1650. Library founded at Thebes; manuscripts transcribed. 1524-1488. Magnificent palaces and temples erected at Thebes. 1400. Babylonian language in commercial use among eastern Mediterranean countries. 1388-1322. Rameses II. builds many palaces and temples in Egypt. 1370. Bucklers used in single combat. Music and poetry cultivated in Greece. 1263. Temple of Apollo at Delphi built. Jason leads first naval expedition on record. 1240. The ax, wedge, wimble, and lever, also masts and sails for ships, invented by Dædalus of Athens. 1224. Game of backgammon invented by Palamedes, of Greece.	*Pentaur*, a descriptive poem, in epic form. Thothmes III. causes chronology of Egyptian kings to be made. *Papyrus Ebers.* The *Vedas* of India. The *Amarna Letters.* Chinese *Book of Changes.*

THE ASSYRIAN-BABYLONIAN PERIOD, B. C. 1200-529

Characteristics of the Centuries	The Hebrews		Asia and Africa	Europe	Arts and Sciences	Literature
B. C. 1200—1000			1194. Trojan war. 1184. Troy taken.			
Heroic age of Greece; Hebrews reach their highest point of national power. Beginning of the Medo-Persian nations. Celts disperse over western Europe and into British Isles.	1161. Israel enslaved by the Philistines. Samson born. 1136. Samson slays 1,000 Philistines. 1116. Samuel, last Judge of Israel. 1095. Saul becomes King of Israel. 1085. David born. 1055. Death of Saul; accession of David. 1048. David, King of all Israel. 1042. The Ark removed to Jerusalem. 1036. Revolt of Absalom. 1033. Solomon born. 1016. Death of David. 1015. Solomon anointed King. 1012. Solomon begins the Temple. 1004. Dedication of Temple.		1140. Tiglath-Pileser real founder of the Assyrian empire. 1123. Chow dynasty begins in China. 1044. Ionian emigrants settle in Asia Minor.	1152. Alba Longa built by Ascanius. 1124. Æolian migration. Thebes, capital of Bœotia, founded. 1104. Return of the Heraclidæ. End of the Kingdom of Mycenæ. 1070. Heremon, of Galicia, conquers Ireland. 1060. Athens governed by Archons.	1115. Mariner's compass known in China.	Dictionary of Chinese completed by Pa-out-she.
B. C. 1000—900	975. Death of Solomon. Revolt of the Ten Tribes. Two kingdoms formed.		1000. Solomon and Hiram, King of Tyre, form an alliance; also Solomon and Pharaoh. 986. Utica built. Samos built.	976. Capys reigns in Alba Longa.	1015. Minos gives Crete his code of laws. 1000. Solomon extends his commerce to India; builds Palmyra, Baalbec, and other cities.	The *Zend-Avesta* of Zoroaster.
Homeric age. Celts already in Britain, with bronze in use. Phenician trade extended from Senegal to India. Temporary decline of Assyria.	Judah	Israel				
	971. Shishak, King of Egypt, takes Jerusalem.	975. Jeroboam establishes idolatry.	971. Shishak, of Egypt, plunders Jerusalem.			Homer, Greek poet.
B. C. 900—800		918. Ahab and Jezebel. 901. The Syrians besiege Samaria. 896. Elijah translated to heaven.		935. Bacchus, King of Corinth. 895. Tiberinus, King of Alba, drowned in the river Albula, which is thenceforward called the Tiber.	916. The Rhodians begin navigation laws.	
Accurate Assyrian chronology begins. Decline of Phenician cities.	888. Philistines plunder Jerusalem. 884. Usurpation and death of Athaliah.	884. Jehu, King. 840. Jehoash defeats King Benhadad of Syria.	825. Dynasty of the Tanites in Egypt. 820. Arbaces, King of Assyria.	864. Romulus, King of Alba Longa.	884. Lycurgus reforms the constitution of Sparta. 869. Gold and silver coined by Phidon, ruler of Argos.	Homer's poems brought into Greece.
B. C. 800—700			797. Ardyssus, first King of Lydia.	814. The Kingdom of Macedon founded by Caranus.	786. Corinthians employ triremes, or vessels with three banks of oars.	Hindu "Brahmanas."
Ethiopian supremacy in Egypt. Assyrian conquests continue; Tiglath-Pileser III.; Sargon; Babylonia rises to height of its power.	741. Pekah, King of Israel, besieges Jerusalem; 120,000 of his men slain. 726. Hezekiah abolishes idolatry.	770. Pul invades Israel, and is bribed to depart. 721. Samaria taken by the Assyrians; Ten Tribes carried into captivity.	767. Sardanapalus, King of Assyria. Media subjected to Assyria. 747. Era of Tiglath-Pileser III.; old Assyrian dynasty destroyed. 736. Tiglath-Pileser III. conquers Syria and part of Israel. 721. Shalmaneser, King of Assyria, takes Samaria; Sargon II. carries the Ten Tribes into captivity.	769. Syracuse founded by Archias of Corinth. 753. Building of Rome. 750. Sabine war. 747. Union of Romans and Sabines. 743. First Messinian war.	772. Sculpture first mentioned among the Egyptian arts. 721. First eclipse of the moon observed by the Chaldeans at Babylon. Religion of Buddha introduced in India.	
	Hebrews					
	717. Hezekiah, King. 712. Sennacherib invades Judah. 711. His army (185,000) destroyed by pestilence. 696. Manasseh, King.	717. Sennacherib, King of Assyria. 710. Media becomes a kingdom.		716. Romulus reputed murdered.	710. Roman calendar reformed; year divided into 12 months instead of 10, as before.	Greek lyric poetry flourishes.

THE ASSYRIAN-BABYLONIAN PERIOD, B. C. 1200-529—Continued

Characteristics of the Centuries	Hebrews	Babylonia	Egypt	Europe	Arts, Sciences, Etc.	Literature
B. C. 700—600 Zenith and fall of Nineveh, and Assyrian empire. Media rises to power. Perhaps last migrations from the Aryan center—Teutonic and Slav races.	677. Manasseh, carried to Babylon, is afterward restored. 606. Conquest of Jerusalem by Nebuchadnezzar.	680. Babylon and Nineveh are united under Esarhaddon. 660. Assyria at height of power. 648. Saracus, King of Babylon and Nineveh. 612. Nineveh a second time destroyed. 606. Nebuchadnezzar defeats Necho of Egypt, invades Judea and takes Jerusalem. 604. Nebuchadnezzar, King of Babylon. 599. Birth of Cyrus.	660. Psammetichus, King of Egypt. Memphis becomes the capital. 610. Pharaoh-Necho, King of Egypt.	685. Second Messinian War. 678. Argæus, first King of Macedon. 672. Tullius Hostilius, King of Rome. 664. First sea-fight on record—between the Corinthians and Corcyreans. 658. Byzantium founded. 640. Latins conquered by the Romans. Philip I., King of Macedon. 616. Tarquinius Priscus, King of Rome.	680. Chess invented. 640. Spherical form of the earth and true cause of lunar eclipses taught by Thales. 621. Draconian code formulated. 610. Pharaoh-Necho begins a canal between the Mediterranean and Red Sea. Many lives lost in the attempt. He also sent out a Phenician fleet which circumnavigated Africa.	Iambic verse introduced. Attempt to discover the primitive language of mankind. Alcæus and Sappho, Greek poets.
B. C. 600—500 Zenith and fall of Babylon. Long reign of Nebuchadnezzar; he ravages Egypt. The seventy years' captivity of Judah. Rise of Persia.	591. Ezekiel prophesies in Chaldea. 586. Captivity of Judah completed, Jerusalem destroyed, Temple burnt. 579. Jews carried to Babylon. **Persia** 560. Cyrus, King of Persia. 548. Cyrus conquers Lydia. 538. Takes Babylon. 536. Persian empire founded by Cyrus, composed of Assyria, Media, and Persia. Captivity of the Jews ended. 535. Temple rebuilt at Jerusalem. 529. Death of Cyrus; Cambyses, King of Persia.	589. Invades Phœnicia. 572. Takes Tyre. 562. Crœsus, King of Lydia, subjects Asia Minor. 538. Babylon taken by Cyrus the Persian.	600. Psammis, King of Egypt. 594. Pharaoh-Hophra (Apries), King of Egypt. 581. Egypt invaded by Nebuchadnezzar. 569. Amasis, King of Egypt, makes alliance with Greece. 536. Pythagoras visits Egypt. 535. Made tributary by Cyrus.	602. Illyria conquered by Macedon. 594. Solon, Archon of Athens. 578. Servius Tullius, King of Rome. 567. Conquest of Etrurians by Rome. 565. First census of Rome: 84,700 citizens. 539 The Phœnicians emigrate to Gaul and build Massilia (now Marseilles). 528. Thrace comes into view.	594. Solon's code supersedes that of Draco in Athens. 578. Money coined at Rome by Servius Tullius.	Gautama, Founder of Buddhism. Poems of Anacreon.

THE PERSIAN-MACEDONIAN PERIOD, B. C. 529-323

Characteristics of the Centuries	Persia	Greece	Macedonia	Rome, Etc.	Arts, Sciences, Etc.	Literature
B. C. 600—500 Continued	525. Cambyses conquers Egypt and makes it a Persian province. Psammenitus, last King of Egypt. 521. Darius I., King of Persia. 508. Darius extends his rule to the Indus.	527. Pisistratus dies, after seizing Athens. 510. Followers of Pisistratus expelled; Democracy established at Athens.		530. Cadiz built by the Carthaginians. 509. The Tarquins expelled from Rome. Brutus and Collatinus first Consuls. 507. The Capitol finished.	First public library founded at Athens. Abolition of regal government at Rome, and establishment of a republic. Phœnician letters carried to Ireland from Spain.	Confucius, the Chinese philosopher.
B. C. 500—400 Zenith of Persia; and the glorious century of Greece. Struggles of Patricians and Plebeians at Rome.	500. The Ionians revolt and burn Sardis. 490. Darius sends an army of 500,000 into Greece. 487. Egypt revolts, and is subdued by Xerxes. 483. Xerxes, King of Persia.	490. Battle of Marathon. 483. Aristides banished.	497. Alexander I., King.	494. Tribunes of the people chosen. 491. Coriolanus banished.	The Temple of Minerva built. Etrurians excel in music, drama, and architecture.	Pindar, the greatest of the Greek lyric poets. Æschylus, Sophocles.

THE PERSIAN-MACEDONIAN PERIOD—Continued

Characteristics of the Centuries	Persia, Etc.	Greece	Macedonia	Rome, Etc.	Arts, Sciences, Etc.	Literature
B. C. 500—400 Continued	481. Expedition of Xerxes into Greece; destroys Athens. 479. Returns defeated.	480. Battle of Thermopylæ. Battle of Salamis and defeat of Persians. 479. Battle of Platæa; Persian fleet destroyed at Mycale. 476. Themistocles rebuilds Athens. 465. Third Messinian War.		480. Carthaginians defeated. Hamilcar killed in battle.		Euripides, writer of tragedies.
	465. Xerxes assassinated. Artaxerxes I., King.	461. Pericles impresses himself upon Grecian affairs. 457. Long walls of Athens begun.		460. Cincinnatus, Consul. 456. Cincinnatus, Dictator.	Voyage of the Carthaginians to Britain for tin.	
	456. Esther. 449. Persians defeated at Salamis. 445. Jerusalem rebuilt by Nehemiah. 440. Siege of Samos by Pericles.	431. Peloponnesian War. 429. Death of Pericles, having governed Athens 40 years. 416. War with Sicily.		451. Laws of the 12 tables.	441. The battering ram invented.	Aristophanes, the ablest writer of Greek comedy. Plato, the greatest of the Athenian philosophers.
			413. Archelaus, "Patron of Learning," seizes the throne.	413. Egypt regains independence. 411. Roman famine.		
		411. Athens governed by the "400." Alliance of Sparta with Persia 408. Capture of Byzantium.		407. Carthaginians war on Sicily.		
B. C. 400—300	401. Cyrus the Younger defeated. Retreat of the 10,000 under Xenophon.					
Decline and fall of Persia before Alexander the Great; Greek language and Greek civilization extended all through the Levant. Roman wars with the Samnites. Internal quarrels of the Romans diminish.	400. Delhi founded. 387. Greek cities of Asia made tributary to Persia.	400. Return of the 10,000. 370. Predominance of Thebes.	399. Archelaus murdered. 392. The Illyrians invade Macedonia, and possess the throne.	390. Rome destroyed by the Gauls. 376. War between patricians and plebeians. Lucius Sextus, first plebeian Consul. 371. Curule magistrates appointed. 369. Military tribunes abolished.	399. Catapults invented by Dionysius. 380. Treatise on conic sections by Aristæus. 368. A celestial globe brought into Greece from Egypt.	Sanskrit grammar, *Panini*. Aristotle, the founder of the Peripatetic school of philosophy. Mencius, Chinese philosopher.
		360. War of the Allies against Athens. Decline of Grecian republics. 356. Second Sacred War. 344. Philip subdues Sparta. Aristotle visits Mitylene.	360. Philip II., King; institutes the Macedonian phalanx; defeats Athenians. 356. Philip II. conquers Thrace and Illyria. Birth of Alexander the Great. 341. War against the Athenians. Siege of Byzantium.	343. Samnian war, continued 53 years. 340. War with the Latins.	360. Philippics of Demosthenes delivered.	Xenophon, an Athenian historian. Orations of Demosthenes and Æschines delivered.
	338. Royal family destroyed with poison.	339. War with Macedonia.	338. Athenians and Thebans defeated at Chæronea. Philip master of Greece.	337. First plebeian Prætor.		Aristotle begins his philosophical works.
	336. Darius III., King.		336. Philip assassinated by Pausanias; Alexander III., surnamed the Great, succeeds to the throne.		336. Eclipses calculated by Calippus the Athenian.	
		335. Greeks conquered by Alexander the Great. Thebes destroyed.	335. Enters Greece, conquers Greeks, and succeeds to head of army against Persians.		335. Caustic art invented.	
	334. Alexander the Great invades Persia. (See under Macedonia.)		334. Invades Persia. Defeats Persians at the Granicus. 333. Battle of Issus.			
		332. Egypt conquered by Alexander, and Alexandria built.		332. Caledonian monarchy (Scotland) founded by Fergus I. Roman treaty with Alexander the Great.		
	331. Battle of Arbela. Darius III. murdered. Alexander founds the Grecian or Macedonian monarchy.	330. Æschines, the orator, banished.			328. Voyage of Nearchus from the Indus to the Euphrates.	
		327. Alexander invades India. 325. Demosthenes banished. 323. Ptolemy I. restores the independence of Egypt.		327. Second Samnite war.		

Alexander the Great dies in Babylonia. The Grecian cities revolt from Macedonia, and in 321 Antipater becomes Regent of Greece. Persia was reconquered from the Greeks, and remained tributary to Parthia till about A. D. 250.

THE GREEK-ROMAN PERIOD, B. C. 323-1 A. D.

Characteristics of the Centuries	Rome, Etc.	Macedonia	Greece	Syria, Judea	Egypt, Carthage	Arts, Sciences, Etc.	Literature
B. C. 400—300 Continued	321. Roman army surrenders to the Samnites. 320. Samnites defeated at Luceria.		319. Polysperchon succeeds Antipater, and proclaims liberty to the Grecian cities.		320. Ptolemy I. (Soter) carries 100,000 Jews into Egypt.		First work on mechanics written by Aristotle.
	317. Syracuse and Sicily usurped by Agathocles.	317. Cassander assumes the throne of Macedon.	317. Demetrius Phalerius governs Athens. 315. Cassander rebuilds Thebes.			317. Commerce of Macedon with India through Egypt.	
	312 War with the Etruscans.		312. Pyrrhus II. greatest hero of his time. 306. Democracy established at Athens by Demetrius.	312. Seleucus I. retakes Babylon. 301. Battle of Issus. Alexander's empire divided anew, into four parts: Syria, Macedon, Greece, Egypt.	301. Phenicia united to Egypt.	312. The Appian Way constructed. 310. Aqueducts and baths in Rome.	
B. C. 300—200					300. Golden Age of the Ptolemies.		
Semi-Greek kingdoms built on the ruins of the Persian empire; in Egypt the Ptolemies; in Syria, the Antiochi.		296. Philip IV.	294. Demetrius murders Alexander, and seizes throne of Macedon.	291. Seleucus founds Antioch, Edessa, and Laodicea.		293. Sun-dial erected at Rome, and time divided into hours. 290. Fabius introduces painting at Rome. The Colossus of Rhodes built by Chares.	Euclid, the celebrated mathematician.
Many Jews at Alexandria.	286. Law of Hortensius, by which the decrees of the people had force of those of the senate.	286. Lysimachus, King of Thrace, subjects Macedonia.		285. The Scythians invade Bosporus.		285. Dionysius founds the solar year, to consist of 365 days 5 hours 49 minutes.	
Rome mistress of Italy; then, victorious over Carthage, extends her influence to Greece and Spain. Peasant proprietors replaced by slaves in Italy.			284. Achæan republic.				The Septuagint begun at Alexandria.
	281. The Tarentine war.	279. Irruption of the Gauls. 277. Reign of Antigonus. 272. Antigonus restored.		281. Antiochus Soter succeeds Seleucus.	283. Death of Ptolemy Soter. Ptolemy Philadelphus, King of Egypt.	283. The Pharos built at Alexandria, first lighthouse on record.	
		268. Second incursion of the Gauls.	268. Athens taken by Antigonus.		269. Egypt first sends ambassadors to Rome.	267. Ptolemy makes a canal from the Nile to Red Sea.	Persian Chronicle written.
	266. Rome mistress of all Italy.					266. Silver money first coined.	Berosus, Babylonian historian.
	264. First Punic war.		255. Athens joins the Achæan League.	262. Invasion of the Gauls.			
	241. End of first Punic war.	250. Parthia revolts from Macedon.		246. Antiochus II. poisoned by his wife.	246. Ptolemy Euergetes subdues Syria.		
	225. The Gauls repulsed in Italy.			226. Seleucus III., King of Syria.		224. Archimedes makes known his discoveries in mechanics.	
	219. Hannibal takes Saguntum, and crosses the Alps.	220. Philip assists the Achæans.	220. The Social war begins.	219. War with Ptolemy.	221. Ptolemy Philopator, King.	219. Art of surgery introduced.	Plautus, Latin poet.
	218. Second Punic war. Hannibal defeats the Romans at Ticinus and Trebia.						
	216. Varro at Cannæ totally defeated by Hannibal.	211. Alliance of Philip and Hannibal.		211. Antiochus the Great, King of Syria.			
	206. Carthaginians driven out of Spain.		206. Spartans defeated at Mantinea.		205. Ptolemy Epiphanes, King.	206. Gold coined at Rome.	
	204. Scipio carries the war into Africa.			203. Judea conquered by Antiochus.	204. Roman general Scipio defeats Asdrubal and Syphax, an ally of Carthage.		Ennius, Roman poet.
	202. Hannibal defeated at battle of Zama. End of war.				202. End of second Punic war.	202. Art of printing known in China.	Moschus, bucolic poet.

THE GREEK-ROMAN PERIOD—Continued

Characteristics of the Centuries	Rome, Etc.	Macedonia	Greece	Syria, Judea	Egypt Carthage	Arts, Sciences, Etc.	Literature
B. C. 200—100 Greece, Macedonia, Carthage, and Spain under Roman rule; decline of the Roman oligarchy; the Gracchi begin the democratic revolution which ends in the empire. Eastern luxury introduced among the Romans.	200. Second Macedonian war. 188. Syria is made a Roman province. 181. Plague at Rome. 170. Tiberius and Caius Gracchus. 167. Census of Rome, 327,000 citizens. 155 Romans unsuccessful in Spain. 149. Third Punic war. Conquest of Carthage and of Corinth. Greece annexed to the Roman empire. 133. Spain becomes a Roman province. 123. Caius Gracchus, Tribune. 113. First great migration of the German nations. 104. Teutoni defeat 80,000 Romans on banks of the Rhone. 99. Birth of Julius Cæsar. 91. Social war in Italy. 88. War with Pontus. 82. Sylla defeats Marius, and is created perpetual dictator. Plunder of the temple of Delphi. 75. Bithynia a Roman province. 65. Syria becomes a Roman province. 63. Catiline's conspiracy detected and suppressed by Cicero. 60. First triumvirate—Pompey, Crassus, and Cæsar.	199. Second war with Rome. 179. Reign of Perseus. 171. Third War with Rome. 168. Macedon becomes a Roman province.	198. Achæans and Spartans join the Romans against Macedon. 165. Romans enter Achaia. 146 Corinth destroyed by the Romans. Greece becomes a Roman province under the name Achaia.	198. Jews assist Antiochus in expelling the Egyptian troops from Jerusalem. 196. Hannibal joins Antiochus. 190. Scipio Asiaticus defeats Antiochus at Magnesia. 188. Antiochus killed. Syria becomes temporarily a Roman province. 185. Seleucus I V., King. 172. Antiochus IV., King. Greatly hated by the Jews. 170. Jerusalem plundered by Antiochus Epiphanes. 165. Judas Maccabeus expels the Syrians. 161. Treaty with the Romans. 142. Antiochus VI., King. 134. Invasion of Judea. 130. John Hyrcanus delivers Judea from Syria. 130. Conquered by Parthia. 105. War with Egypt. 97. Alexandra, Queen of Janneus, governs Judea. Mithridates conquers Cappadocia. 86. Takes Bithynia. 66. Defeated by Pompey, Syria passes under Rome. 63. Judea a Roman province.	198. Egypt loses her Syrian possessions. 180. Ptolemy Philometer, King. 174. Cato's embassy to Carthage. 152. Masinissa defeats the Carthaginians. 151. Joint reign of Philometer and Physcon in Egypt. 146. Carthage taken and destroyed by the Romans. 145. Ptolemy Physcon becomes sole King of Egypt. 129. Physcon driven from his throne for cruelty. 128. Pestilence in Egypt. 123. Carthage rebuilt. 116. Ptolemy Lathyrus, King of Egypt. 107. Alexander I., King of Egypt. 82. Revolt in Upper Egypt. Thebes destroyed. 81. Alexander II., King of Egypt. 65. Ptolemy Auletes, King.	198. Books, with leaves of vellum, introduced by Attalus, King of Pergamus. 170. Paper invented in China. 162. Hipparchus fixes the first degree of longitude and latitude; founds trigonometry. 159. Clepsydra invented by Scipio Nascia. 146. Alexandria the center of commerce. 140. Clock wheels invented by Ctesibius. 133. Equestrian order a distinct class. 130. Revival of learning in China. 120. Theory of eclipses known to Chinese. 110. First sumptuary law at Rome. 98. Roman schools of oratory on Greek models instituted. 79. Posidonius calculates the height of the atmosphere. 74. The Romans possess gold mines in Asia Minor, Macedonia, Sardinia and Gaul; and silver mines in Spain.	Polybius, one of the most important Greek historians. Plautus, *Comedies: Aulularia, Captivi, Pseudolus*, etc. First library opened in Rome. Terence, *Comedies: Andria, Phormio*, etc. Aristarchus, greatest of Greek scholars. Lucilius, first Roman satirist. Plutarch's *Lives*. Libraries of Athens sent to Rome by Sylla. Cæsar, Julius, *Commentaries*.
B. C. 100—1 A. D. The Romans govern all the countries around the Mediterranean. Corrupt rule of the Roman oligarchy is followed by civil wars, and establishment of the empire.							

THE GREEK-ROMAN PERIOD—Continued

Characteristics of the Centuries	The Roman Empire	Egypt, Carthage	Arts, Sciences, Etc.	Literature
B. C. 100—1 A. D. Continued			62. Magnificent houses for Roman nobles erected. Also marble theater of Scaurus to hold 30,000 spectators.	Cicero, *Orations, Essays, Letters.*
	55. Cæsar passes the Rhine, defeats the Germans and Gauls, and invades Britain. 53. Crassus defeated and killed in Parthia. 51. Cæsar completes conquest of Gaul, which becomes a Roman province.	55. Auletes restored.	55. Iron chain cables used by the Venetians.	
	49. Civil war between Cæsar and Pompey. Pompey defeated; Cæsar, Dictator. 48. Battle of Pharsalia—Pompey defeated by Cæsar. Death of Pompey in Egypt. 47. Cæsar takes Alexandria, and conquers Egypt.		50. A water mill erected on the Tiber at Rome.	Sallust, *Histories: Catiline's Conspiracy, War with Jugurtha, Memoirs.*
		46. The African war.		
	44. Cæsar assassinated in Roman Senate. Antony master of Rome.	45. Cæsar rebuilds Carthage.	45. Cæsar reforms the calendar by introducing the solar for the lunar year.	The Alexandrian library burnt—400,000 volumes.
	43. Second triumvirate—Octavius Cæsar, Marc Antony, and Lepidus. 42. Battle of Philippi; defeat and death of Brutus and Cassius.	43. Cleopatra poisons her brother, and rules alone.		
		36. Cleopatra obtains from Antony a grant of Phenicia, Cyrene, and Cyprus.		Vergil, *Georgics, Æneid.*
	32-31. War between Antony and Octavius. By the battle of Actium (31), Octavius acquires the empire.	31. Defeat at Actium		
	30. Republic of Rome becomes a monarchy. Population of Rome 4,100,000 citizens.	30. Suicide of Antony and Cleopatra; Egypt passes to Rome.	30. Direct trade of Rome with India. Silk and linen factories in the empire.	Horace, *Odes, Satires, Letters.*
	27. Titles of Augustus and Emperor conferred on Octavius for ten years.		27. Treasures of Egyptian art brought to Rome. The Pantheon built.	
	23. Agrippa subdues all Spain.			
	21. Athens finally subjected to Rome.		22. Pantomimic dances introduced on the Roman stage.	Golden age of Roman literature begins.
	19. Death of Vergil. 18. Parthians defeated. 15. Cantabria, Austria, and other territory conquered by Drusus, is added to the empire. 13. Augustus assumes the title of Pontifex Maximus.		19. Aqueducts constructed by Agrippa.	
	11. Germany subdued by Germanicus. 10. Egyptian religion displaces national religion.		12. Roman legions distributed over the provinces in fixed camps, which soon grew into cities—among them were Bonn and Mayence.	Livy, *History of Rome.*
	5. Varrus appointed Governor of Syria, and Cyrenius Governor of Judea. 4. Cymbeline, King of Britain. Advent of Christ, four years before the so-called Christian era. Death of Herod. 2. Cæsar confirms the will of Herod.		8. Calendar corrected by Augustus.	

PERIOD OF THE ROMAN EMPIRE, A. D. 1-476

Characteristics of the Centuries	Development of Christianity	The Roman Empire	Arts, Sciences, Etc.	Literature
1—100 A. D.		1. Caius Cæsar makes peace with the Parthians. Tiberius returns to Rome. 6. Varrus, encamped on the Weser, governs lower Germany like a Roman province.		Ovid *Metamorphoses, Heroides,* etc.
Christianity founded amid persecutions.	8. Jesus reasons with the doctors.	14. Augustus dies at Nola; is succeeded by Tiberius as Emperor. 19. The Jews are banished from Rome.	9. Celsus advances the science of medicine.	Appion of Alexandria writes on grammar.
	25. Pontius Pilate, Governor of Judea. 26. John the Baptist begins his ministry. 27. Jesus baptized by John. 29. Twelve Apostles sent abroad.	26. Thrace becomes a Roman province.	26. The Druids in Germany.	
	30. Crucifixion of the Saviour, Friday, April 3, at 3 p. m.	30. Agrippina banished.		
	34. St. Paul converted to Christianity. 40. Disciples first called Christians at Antioch. 41. Herod's persecutions.	37. Tiberius succeeded by Caligula, noted for his profligacy.		
	50. Paul preaches at Athens.	48. Census of the city, 6,900,000. 54. Nero, Emperor; a profligate and tyrant.	50. Columella, born in Spain, writes on husbandry.	Plutarch *Lives, Morals, Table Talk.*
	59. Paul appeals to Cæsar. 60. Paul imprisoned in Rome.	61. Revolt of the Britons under Queen Boadicea.		

PERIOD OF THE ROMAN EMPIRE—Continued

Characteristics of the Centuries	Development of Christianity	The Roman Empire	Arts, Sciences, Etc.	Literature
1—100 A. D. Continued	64. First persecution of Christians by Nero. Paul visits Jerusalem. 66. Jews at war with Romans; Paul beheaded. 70. Destruction of Jerusalem, by Titus.	64. Nero sets fire to Rome; accuses Christians. 77. A great plague at Rome, 10,000 dying in one day. 79. Pompeii and Herculaneum destroyed by Vesuvius.	64. Nero's golden palace built—of great extent. 78. The Capitol at Rome rebuilt. Circumnavigation of Scotland.	Epictetus *Discourses.* Tacitus *Germania, History, Annals,* etc.
	95. Second persecution of the Christians by Domitian.	80. Agricola governs Britain, reduces Wales and enters Caledonia.	80. Paintings executed for the baths of Titus; the group of the Laocoon.	
100—200 A. D. Zenith of Roman empire. The good emperors. Persecutions of the Christians continued.	107. Third persecution by Trajan. 118. Fourth persecution by Adrian.	98. Trajan, Emperor; Roman empire at its greatest extent. 100. The Huns migrate westward. 117. Hadrian, Emperor; makes a journey through the provinces; visits Britain, and builds there a wall from the Tyne to Solway Firth; builds a wall from the Rhine to the Danube.	98. The Ulpian library. Jurisprudence flourishes. Forum built. Pillar of Trajan, and Baths. Bridge built over the Danube. 120. Great buildings of Palmyra. The Roman mosaics.	Quintilian *Rhetoric and Criticism.* Galen, a celebrated physician and prolific writer.
	134. Heresy of Marcion. 150. Canon of Scriptures fixed about this time.	138. Antoninus, Emperor; 145-152 defeats the Moors, Germans, and Dacians; stops the persecution of the Christians. 161. Marcus Aurelius, Emperor; 169, war with Marcomanni. 189. The Capitol at Rome destroyed by lightning. The Saracens defeat the Romans. 193. Septimus Severus, Emperor. A vigorous ruler. 194. Besieges Byzantium.	132. Ptolemy, celebrated Egyptian astronomer and geographer. 180. Equestrian statue of Marcus Aurelius.	Kalidasa (In.) *Dramas.*
200—300 A. D. Emperors chosen by the army. Frontier tribes troublesome. Persecutions continue.	202. Fifth persecution under Severus. 235. Sixth persecution under Maximinus. 250. Seventh persecution of the Christians. 262. Paul, bishop of Samosatia, denies the divinity of Jesus Christ. 272. Persecution of Christians under Aurelian. 283. The Jewish Talmud composed. Religious ceremonies multiplied. Pagan rites imitated by the Christians.	202. Persecutes the Christians; builds the wall of Severus in Britain. 211. Dies at York, in Britain. 223. Artaxerxes begins the new kingdom of Persia. 232. Persian war. 241. The Franks first mentioned in history. 251. Confederacy of the Franks established between the Rhine and Elbe. The Persians victorious in Asia Minor. 256–69. Goths conduct expeditions into Asia Minor and Greece. 261. Sapor, the Persian, takes Antioch, Tarsus, and Cæsarea. 264. Alliance with Odenatus, King of Palmyra, who is succeeded by his wife Zenobia, who reigns with the titles of "Augusta" and "Queen of the East." 268. Claudius II. defeats an army of 320,000 Goths. 270. Aurelian, a great warrior, becomes Emperor; 271, defeats the Goths and Alemanni; 273, reduces Palmyra, and takes Queen Zenobia prisoner; 274, Franks, Spain, and Britain reduced to obedience; 275, Aurelian killed near Byzantium. 277. Probus, Emperor; 280, defeats the Persians. 284. Diocletian, Emperor.	215. Caracalla grants right of Roman citizenship to all the provinces. 235. Alexandrian School of Philosophy founded. 274. Rome surrounded with a wall. 284. Diocletian's Oriental form of government. Diocletian's Baths.	Tertullian *Apology, Tracts.* Origen, theologian.
300—400 A. D. Constantine moves the capital of the empire to Constantinople, and professes Christianity. Rise of Christian Monasticism. Great church disputes and growing corruptions. Increasing frontier troubles.	296. Monks in Spain and Egypt. 303. Persecution under Diocletian. 306. Persecution of Christians stopped by Constantius. 325. Council of Nice. 337. Eleventh persecution.	291. The Franks master Batavia and Flanders. 296. Diocletian sends ambassadors to China. 304. Diocletian and Maximian resign the empire to Constantius and Galerius. 306. Constantine the Great, first Christian Emperor, defeats the Franks. 331. Constantine orders that all the heathen temples be destroyed. 337. Death of Constantine, and the accession of his three sons to the empire. 364. Death of Jovian, and the accession of Valentinian and Valens, under whom the empire is divided.	290. The Gregorian Code. 323. Church of St. Sophia erected at Constantinople. 330. Constantinople seat of art and literature.	
		Western Empire 364. Valentinian, Emperor.	**Eastern Empire** 364. Valens, Emperor.	
	373. Bible translated into the Gothic language. Death of Athanasius.	368. The Saxons invade Britain, but are defeated by Theodosius. 375. Valentinian gains victory over the Germans; succeeds to the Eastern Empire on the death of Valens.	376. Hungary (ancient Pannonia) invaded by the Huns, from whom it is named.	366. Forts built on the Rhine. Gothic Bible of Ulfilas.
	379. Prerogatives of the Roman See much enlarged. 381. Second General Council of Constantinople. 384. Symmachus pleads in the Roman Senate for Paganism against St. Ambrose.	379. The Lombards first leave Scandinavia, and defeat the Vandals.	379. Theodosius the Great becomes a zealous supporter of Christianity. 388. Theodosius defeats Maximus, Tyrant of the Western empire.	Latin Bible of Jerome.

THE GREEK-ROMAN PERIOD—Continued

Characteristics of the Centuries	Development of Christianity	Western Empire	Eastern Empire	Arts, Sciences, Etc.	Literature
400—500 A. D. Continued	392. St. Chrysostom, Patriarch of Constantinople.	392. Theodosius becomes sole Emperor of the East and West. Complete downfall of Paganism. 394. Final division of empire between the sons of Theodosius. 401. Europe overrun by the Visigoths. 406. Vandals allowed to settle in Spain and Gaul. 410. The Goths under Alaric sack and burn Rome. 412. Rise of the Vandal power in Spain. 413. Burgundian kingdom begun in Alsace.	408. Theodosius II., a child, Emperor. 414. Regency of the emperor's sister, Pulcheria.	392. Impulse given to the development of mathematics at Alexandria.	Chrysostom, *Homilies, Commentaries, Epistles.*
	416. The Pelagian heresy condemned.	420. The Franks form a kingdom, under Pharamond, on the lower Rhine. 424. Valentinian III., Emperor. 426. Britain evacuated by the Romans.	420. Persian war.	425. Theodosius establishes public schools and attempts the restoration of learning.	
	431. Third General Council at Ephesus. 432. St. Patrick preaches the gospel in Ireland. 435. Nestorianism prevails in the East.	428. Romans defeated by the Franks and Goths. Franks, under Clodion, extend their conquests. 433. Attila forms an immense empire from China to the Atlantic. 439. The Vandals, under Genseric, form Kingdom of Africa, take Carthage and plunder Italy. 441. Roman territories invaded by the Huns, Persians, and Saxons.	431. Armenia divided by the Persians and Romans. 433. A great part of Constantinople destroyed by fire. 437. Pannonia, Dalmatia, and Noricum gained from the Western empire.	435. Theodosian Code published.	Epic of Musæus, *Hero and Leander.*
	443. The Manichæan books burned in Rome. 447. Eutyches asserts the existence of only one nature in Jesus Christ.	445. Famous embassy from Britain soliciting aid against the Picts. 448. Merovæus I., first King of the Merovingians.			
	451. Fourth General Council at Chalcedon.	451. Arrival of Saxons in Britain under Hengist and Horsa. 452. City of Venice founded. 458. Franks, under Childeric I., conquer as far as the Loire and take Paris.	450. Marcian, Emperor, refuses to pay tribute to the Huns. 457. War with the Goths. 461. Peace with the Goths.		
	465-476. Oligarchy of the bishops of Rome, Constantinople, Alexandria, Antioch, and Jerusalem. The church now begins to assume a political aspect.	468. The Visigoths under Eric establish their kingdom in Spain. 476. Odoacer, King of the Herulii, takes Rome, and the Western empire ends 1228 years after the founding of the city. Commencement of the Kingdom of Italy under Odoacer.	474. Zeno, Emperor; a turbulent reign marked by debauchery and conspiracies. 475. Theodoric becomes chief of the Ostrogoths and invades the empire.	468. The principle of law established that the accused shall be tried by his peers, or equals. 476. Odoacer's sack of Rome changed the course of events in Europe. The form of the old Roman government remained, but Italy, ravaged by a succession of wars, plagues, famines, and every form of public tyranny, was almost a desert.	

FROM THE FALL OF ROME TO THE AGE OF MOHAMMED, A. D. 476-622

Characteristics of the Centuries	The Eastern Empire	Great Britain and Ireland	Italy and the Church	France	Arts, Sciences, Etc.	Literature
400—500 A. D. Continued	480. An earthquake destroys greater part of Constantinople.		484. Christians persecuted by the Vandals.	481. Clovis I., founder of the French monarchy. 485. Battle of Soissons gained by Clovis.	486. Rise of the feudal system in France under Clovis.	
		487. The Saxons defeated by Prince Arthur. 490. Sussex becomes a kingdom.				
	491. The Green and Blue factions.		493. Italy conquered by Theodoric. Odoacer put to death. 494. The Roman Pontiff asserts his supremacy. 496. Christianity introduced into France.	491. Clovis subdues Thuringia.	493. Theodoric introduces Greek architecture into Italy.	Boethius' *Consolation of Philosophy.*
500—600 A. D. Great disorders in the West. Beginnings of Feudalism; power of the clergy increases. In the East, the great reign of Justinian.	502. Invasions by the Persians. 511. Great insurrection in Constantinople.			510. Clovis makes Paris his capital.	511. The Salic law in France.	

FROM THE FALL OF ROME TO THE AGE OF MOHAMMED, A. D. 476-622—Continued

Characteristics of the Centuries	The Eastern Empire	Great Britain and Ireland	Italy and the Church	France	Arts, Sciences, Etc.	Literature
500—600 A. D. Continued	514. Constantinople besieged by Vitalianus, whose fleet is consumed by the burning glass of Procius. 518. Justinian I. begins a brilliant reign over the Eastern or Byzantine empire. 527. Celebrated Justinian code of laws. 529. Belisarius, the famous general, defeats the Persians. 534. Defeats the Vandals in Africa. 535. Subdues Italy. 536. Takes Naples. 537. Takes Rome. 540. North Africa, Corsica, and Sardinia annexed to the Eastern empire. 548. The Turkish monarchy founded in Asia. 554. Italy governed by Greek exarchs. 558. A plague extends over Europe and Asia and lasts about 50 years. 569. The Turks first mentioned in history. They send an embassy to Justin II., and form an alliance. 600. Eastern empire spread over Hungary, Poland, and Prussia, under Tiberius II.	519. Prince Arthur defeated by Cedric, who begins the third Saxon Kingdom of Wessex. 530. Kingdom of Essex. 542. Prince Arthur murdered in Cornwall. 559. Saxon heptarchy begins. 575. East Anglia formed into a kingdom, whence the origin of the name England.	529. Order of the Benedictine Monks instituted at Monte Cassino, near Naples. 537. Italy conquered by Belisarius, for Justinian. 539. War, famine, and pestilence. Milan ravaged by the Goths. 568. Italy conquered by the Lombards. 575. First monastery built in Bavaria. 598. St. Augustine, first archbishop of Canterbury, introduces Christianity into Britain.	532. Burgundy conquered by Childebert. 536. Ostrogoths surrender their possessions in Gaul to the French king. 557. Church of St. Germain de Pres built at Paris. 558. Clotaire I., King.	514. Use of the burning glass in warfare. 516. The Christian era proposed and introduced by Dionysius, a monk. 529. The schools of Athens suppressed. 551. Manufacture of silk introduced from China into Europe by monks. 559. The Saxon laws promulgated. The king's authority limited by the Witten agemot. Three orders: the noble, the free, and the servile. 568. The feudal system established in Italy by the Lombards. Written laws compiled by the Visigoths in Spain. The aristocracy acquire great power in France. Rites and superstitions increase all over Europe.	Writings of Gregory the Great. *Beowulf*, epic poem.
600—700 A. D. Rise and wonderful spread of Mohammedanism from Arabia to Siude on the east, and Carthage on the west. Christianizing of Germany.	602. Invasion of the Persians. 610. Heraclius takes Constantinople, kills Phocas, the emperor, and makes himself ruler. 612. Mohammed publishes the Koran. Syria ravaged by the Arabs. 614. Jerusalem taken by the Persians.	604. St. Paul's church founded by Ethelbert of Kent. 607. Supremacy of the pope acknowledged. 617. St. Peter's (now Westminster Abbey) founded by Sabert, King of Kent.	607. The Pantheon of Rome dedicated to Christianity.		617. Ethelbert publishes the first code of laws in England.	The *Koran*.

THE AGE OF MOHAMMED TO THE TREATY OF VERDUN, A. D. 622-843

Characteristics of the Centuries	The Eastern Empire	Great Britain and Ireland	Italy and the Church	France	Arts, Sciences, Etc.	Literature
600—700 A. D. Continued	622. The Hegira, or Mohammed's flight from Mecca to Medina. 632. Death of Mohammed. 633. Omar, Caliph, takes Jerusalem, which is held by the Saracens 463 years. 673. Siege of Constantinople by the Saracens, whose fleet is destroyed by the Greek fire of Callinicus. 680. Kingdom of Bulgaria founded.	633. Bretwold V. embraces Christianity. 690. The name England first used.	625-640. Churches of Jerusalem, Antioch and Alexandria lost to the Christian world by the sweep of Mohammedanism. 680. The Sixth General Council called at Constantinople.	628. Dagobert I. builds the Church of St. Denis, the sepulture of the French kings. 638. Kingdom divided by Clovis II. and Sigebert, the latter King of Austrasia. 690. Pepin d'Heristal, King.	632. Islamism and the power of the caliphs established in the East. In the caliphs were united the highest spiritual and regal authority. 674. Stone buildings and glass come into use in England. The Anglo-Saxons advance in civilization and power by the introduction of Christianity.	Cædmon's *Paraphrase of Scripture*.

THE AGE OF MOHAMMED TO THE TREATY OF VERDUN—Continued

Characteristics of the Centuries	The Eastern Empire	Great Britain and Ireland	Italy and the Church	France	Arts, Sciences, Etc.	Literature
700-800 A. D. Christianizing of Germany continues. Hostile caliphates of Bagdad and Cordova. Mohammedan advance in the West checked by Charlemagne, who nominally restores the Western Roman empire. Norse ravages begin.	698. Carthage destroyed by the Saracens, and the north coast of Africa subjugated. 709. All Africa subdued by the Saracens. 716. Leo III., Emperor. The Saracens invest Constantinople, by land and sea. City saved by Greek fire. 746. Saracens defeated by Constantine V. 762. Caliph Almanzor builds Bagdad and makes it his capital. 766. Asia Minor ravaged by the Turks. 785. Empire invaded by Haroun-al-Raschid, caliph of Bagdad.	700. Anglo-Saxon octarchy. 705. Alfred the Wise in Northumbria. 727. Ina, King of Wessex, begins collection of Peter's pence to support a college at Rome. 735. Death of the Venerable Bede. 787. First recorded invasion of the Danes, the sea kings and vikings.	698. Picts adopt Christianity. 704. The first province given to the pope, John VI. 726. The Emperor Leo forbids image worship. 752. The pope dethrones Childeric, King of France, by a papal decree. 755. Beginning of the pope's temporal power. 787. Seventh General Council of Nice.	700. Aquitaine, Burgundy, and Provence become separate dukedoms. 714. Charles Martel, duke of Austrasia. 725. Charles Martel subdues Bavaria. 732. Defeats the Saracens at Tours. 752. End of Merovingian line of French kings. Pepin the Short, first of the Carlovingian line. 764. Extirpates the Huns. 791-6. Establishes the margravate of Austria.	698. Christianity greatly extended among the German nations in the north of Europe, but almost exterminated in Africa by the progress of Mohammedanism. 716. The art of making paper introduced by the Arabs. 740. Saracens encourage learning. Ignorance, profligacy, and misery characterized the age preceding Charlemagne. 785. Golden period of learning in Arabia under the Caliph Haroun-al-Raschid. 788. Pleadings in courts of justice first practiced. 793. Foundation of schools in monasteries and cathedrals by Charlemagne.	Golden age of Saracen literature begins. *Romance of Antar.* Alcuin's letters and biographies.
800-900 A. D. Norse ravages continue. Private wars. Charlemagne's empire falls to pieces.	803. The Saracens ravage Asia Minor. 822. Constantinople besieged by the Saracens. The Bulgarians raise the siege. 829. Theophilus, Emperor.	813. Egbert, King of Wessex, defeats the Britons. 827. The seven kingdoms of heptarchy united by Egbert under the name of England, or the land of the Angles. Invasion of the Danes. 838. Ethelwolf, King. Kenneth, King of the Scots, defeats and extirpates the Picts, and becomes sole monarch of Scotland.	800. The pope separates from the Eastern empire and becomes supreme bishop of the Western. Charlemagne reforms the church. Many bishoprics founded. 817. College of Cardinals founded. 824. Christianity carried to Denmark and Sweden.	800. Charlemagne founds the new Western empire and is crowned at Rome. 802. Receives an embassy from Haroun-al-Raschid. 806. Charlemagne divides the empire among his sons, only one of whom survived him—Louis I. 817. Louis I. divides the empire. 841. Another division of the empire. Charles I., King of France; Louis I., King of Germany; Lothaire, King of Italy.	800. Agriculture and horticulture encouraged by Charlemagne; both flourish in Spain under the caliphs. 802. Arabian horses introduced into Spain. 813. Transient revival of learning under Charlemagne. The reign of Caliph Mamun the golden epoch of Arabian literature. 828. St. Mark's church at Venice built. 840. Feudal system in its power.	Beginning of the Icelandic skalds. Arabian histories of Mecca and Medina.

FROM THE TREATY OF VERDUN TO THE DARK AGES, 843-936 A. D.

Characteristics of the Centuries	Eastern Empire	The British Isles	Italy and the Church	France and Germany	Spain, Russia and Lesser Countries	Arts, Sciences, Etc.	Literature
800-900 A. D. Continued	844. Decline of the caliphate begins. Frequent wars between the Greeks and the Saracens.	849. Alfred the Great born.	844. Ignatius, patriarch of Constantinople. Persecution of the Christians in Spain. 846. The Saracens destroy the Venetian fleet and besiege Rome.	841. Louis I., King of Germany. 843. Treaty of Verdun, Charles I. (the Bald), King of France.	843. Ramiro I. elected king of Oviedo. 846. The Saracens destroy the Venetian fleet and besiege Rome.	841. Hereditary nobility and the clergy dominant in matters of state. 850. Roman and common law introduced.	Orfrid's *Gospel Book.*

FROM THE TREATY OF VERDUN TO THE DARK AGES—Continued

Characteristics of the Centuries	Eastern Empire	The British Isles	Italy and the Church	France and Germany	Spain, Russia and Lesser Countries	Arts, Sciences, Etc.	Literature
			856. Louis II. establishes his court at Pavia, and rules Italy.		857. Garcia Ximines founds the kingdom of Navarre.		
			860. Schism of the Greeks begins.	858. Invasion of France by Louis the German who is defeated.	860. Gorm unites Jutland and the Danish isles.		
			864. Bible translated into Slavonian.		862. Ruric the Norman, grand duke of Novgorod.		
	867. Basil inaugurates the Macedonian dynasty.	867. The Danes conquer Northumberland.	867. Eighth Council at Constantinople.	868. Lorraine annexed to France.			*Translations* of Alfred the Great.
		872. Alfred the Great defeats the Danes.			873. Sancho Inigo, count of Navarre.	872. Clocks exported from Venice.	
				879. Louis III. and Carloman reign jointly.	875. Harold, first king of Norway.		
900-1000 A. D.	886. Leo VI., Emperor.			885. Paris besieged by the Normans.			
				887. Arnold, Emperor.			
Norse ravages and conquests continue; also private wars.	890. Southern Italy subject to the Greek empire.	891. Renewed invasion of the Danes.		890. Arnold takes Rome.	889. Arpad lays the foundation of Hungary.	890. Oxford University founded by Alfred the Great.	
The people in terrible suffering.				898. Charles III., King.		Trial by jury; fairs and markets in England.	
				899. Invasion of the Hungarians.			
		901. Edward the Elder the first to take the title of "Rex Anglorum."				900. England divided into counties, hundreds, and tithings.	
	904. Russian expedition against Constantinople.		912. The Normans in France embrace Christianity.	912. Conrad I., Emperor.	901. Republics of Venice and Genoa founded.		
					914. Beginning of the heroic age in Spain.	915. University of Cambridge founded.	The *Elder Edda.*

PERIOD OF THE DARK AGES, 936-1096 A. D.

Characteristics of the Centuries	Eastern Empire	The British Isles	Italy and the Church	France and Germany	Spain, Russia and Lesser Countries	Arts, Sciences, Etc.	Literature
				936. Louis IV., King. Otho the Great, Emperor.		939. Cordova, in Spain, becomes famous as a center of science, learning, industry, and commerce.	
900-1000 A. D. Continued	937. Romanus gains a naval victory over the Russians.				940. Ramiro, King of Leon, defeats the Moors at Simancus.	940. Mints established in England.	
						941. The figures of arithmetic brought into Europe by the Saracens.	
	945. The Empress Helen usurps the throne.	952. Malcolm I., King of Scotland.		950. Bohemia annexed.	945. Swatoslav, King of Russia.	Linens and woolens manufactured in Flanders.	
		955. Dunstan, abbot of Glastonbury, rises to great power.	955. Baptism of Olga, and conversion of Russia to Christianity.	954. Lothaire I. confers the dukedoms of Burgundy and Aquitaine on Hugh the Great.	955. Sancho I., King of Leon.		
	959. Emperor Romanus II.		959. St. Dunstan archbishop of Canterbury, attempts to reform the church.	960. Hugh Capet, duke of France.			
				964. Italy united to the empire of Germany. Tuscany becomes a dukedom.	973. St. Stephen, first hereditary king of Hungary. Gives it written laws.		
					981. Vladimir the Great, the first Christian ruler of Russia.	982. Dublin a trade center.	
		985. Danish invasion under Sweyn.		986. Louis V., last of the Carlovingians.	985. Sweyn I. of Denmark invades England.		Firdusi's *Book of Kings.*
1000-1100 A. D.			989. Greek Christianity propagated in Russia by Vladimir.	988. Hugh Capet, King, and founder of the Capetian line of French kings.			
Increasing and beneficent power of the church exerted in the direction of order.			999. Hungary becomes a fief of the church.			997. Venice and Genoa rise to great importance in commerce.	
Normans in Italy and Sicily.					1015. Russia divided among the 12 sons of Vladimir.		
		1016. Edmund II. fights six battles with Canute, King of the Danes, with whom he divides the kingdom.			1016. Canute II., King of Denmark.		Avicenna's writings on philosophy and science.
The Norman conquest of England; which as regards good government far surpasses all other countries.	1018. Bulgaria again reduced to a Grecian province.				1019. Norway conquered by Canute. Danish ascendancy.		
			1024. John XIX., Pope.	1024. Conrad II., first of the Franconian line.		1024. Musical scale of six notes invented by Guido Aretius.	
Quarrels between popes and emperors begin.		1031. Canute subdues Scotland.		1031. Henry I., King.			

PERIOD OF THE DARK

Characteristics of the Centuries	Italy and the Church	Eastern Empire	The British Isles	France
1000—1100 A. D. Continued				
		1042. First invasion of the Seljuk Turks.	1042. The Saxon line restored under Edward the Confessor.	
		1043 The Russians invade Thrace with 100,000 men and are repulsed by the Greeks.		1046. Dispute between William the Conqueror and William of Arques for the duchy of Normandy.
	1048. Leo IX. the first Pope to keep an army.		1051. William, Duke of Normandy, visits England.	
	1054. Excommunication of the Patriarch of Constantinople and the Greeks.	1054. Theodora, last of the Macedonian dynasty.		
	1059. Quarrel between the popes and the German emperors.			
	1066 Pope Alexander II. deposes Harold, and gives England to William the Conqueror. The papacy at the height of its power.	1067. Emperor Romanus III. defeated and taken prisoner by the Turks.	1066. Harold II., King, killed at the battle of Hastings William the Conqueror, King. End of the Anglo-Saxon line.	1066. William, Duke of Normandy, claims the crown of England and wars on Harold to obtain it.
	1070. Lanfranc, Archbishop of Canterbury.		1070. Feudal system introduced.	1070. Rise of the troubadours in Provence.
	1073 Quarrel of Pope Gregory VII. (Hildebrand) with the Emperor Henry IV.	1074. Syria and Palestine subdued by Melek Shah.		
	1075. The Pope sends legates to the various courts of Europe.			
	1076. Submission of Henry IV. to the Pope.		1076. Rebellion in Normandy.	
				1079. Birth of Abelard.
	1084. Triumph of Henry IV. over Gregory. The order of the Carthusians instituted by Bruno.	1081. Alexius I. (Comnenus), Emperor. Robert Guiscard invades the empire and defeats Alexius.		
			1087. William invades France and is killed at Nantes.	1087. War with England. Robert, Duke of Normandy, opposes William Rufus.
	1095. Peter the Hermit preaches against the Turks.		1093. Malcolm III., of Scotland, invades England and is slain near Alnwick castle.	

PERIOD OF THE CRUSADES,

Characteristics of the Centuries	Italy and the Church	Eastern Empire	The British Isles	France
	1096. The First Crusade.			1096. Many French noblemen take part in the First Crusade.
1100—1200 A. D.	1100. Study of theology receives new impulse.	1099. Invasion by the Crusaders.	1100. Henry I., King of England, unites the Normans and Saxons.	
Quarrels between popes and emperors continue; zenith of papal power; Frederick Barbarossa Criticism revived.		1104. Battle of Acre.	1107. Henry quarrels with Anselm.	1108. Abbe Suger, minister to Louis VII. of France.
Private wars lessen; advance in power of kings and of towns at expense of the feudal baronage.		1109. Tripolis taken by Crusaders.		
The Crusaders.		1118. John I. reforms the manners of his people. Tyre taken by Crusaders.		
Improved judicial arrangements in England.	1123. First Lateran, or Ninth General Council.			1120. Rivalry between England and France begins.
	1127. Pope Honorius II. makes war against Roger, King of Sicily.		1124. David I. promotes civilisation in Scotland.	
	1139. Second Lateran, or Tenth General Council.			
		1143. Manuel Comnenus, Emperor.		
	1147. The Second Crusade.			1147. Louis VII. joins the Second Crusade.
	1154. Pope Adrian IV., an Englishman.		1154. Henry II., King of England.	
		1156. Manuel forms the design of conquering Italy and the West but fails.	1158-1164. Ascendancy of Thomas à Becket, Archbishop of Canterbury.	1159. War with the English.
	1160. Albigenses begin to appear.			
	1167. Rome taken by Frederick Barbarossa.			1170. Rise of the Waldenses.
			1172. Henry conquers Ireland.	

AGES, 936-1096—Continued

Germany	Spain	Russia	Lesser Countries	Arts, Sciences, Etc.	Literature
	1035. Ramiro I., King of Aragon.	1036. Russia reunited by Jaroslav.			
1039. Henry III. defeats the Bohemians and Hungarians.					
1053. Henry causes his son, Henry, to be proclaimed King of the Romans. This title was applied for several centuries to the emperor's eldest son.		1054. Russia divided a second time. Civil wars and great distress.	1055. The Turks reduce Bagdad and overturn the empire of the caliphs.	1055. First age of scholastic philosophy.	Runic incriptions.
			1059. Ingo I., first Christian King of Sweden.		
			1060. Robert Guiscard, Duke of Apulia.		
	1065. Alphonzo, King of Castile and Leon.		1065. Jerusalem taken by the Saracens.	1062. Surnames first used among the English nobility.	
			1067. Polish conquests in Russia.		
	1068. Flight of Alphonso to Toledo.		1068. Olaf III., King of Norway.	1068. Shoeing horses introduced into England.	
1072. Henry IV. summoned before the Pope for selling the investiture of bishops; treats the mandate with contempt.			1070. Bergen, Norway, built.		
1073. Summoned again.				1073. Booksellers first heard of.	
1076. Henry sends an ambassador to depose the Pope, and is excommunicated. Undergoes penance and submission.	1076. Time of the Cid.				
1080. Henry degrades the Pope and triumphs.					
	1085. Toledo taken from the Moors by the Cid.		1084. Bohemia made a kingdom by Henry IV. of Germany.	1084. Rigid police system established in England.	
	1086. Battle of Zalacca.				*Song of Roland.*
			1090. Sicily taken from the Saracens by Roger the Norman.	1090. Fortresses at Newcastle and Carlisle built.	
1093. The Popes continue their struggle against the empire.	1094. Pedro I., King of Navarre and Aragon.				

A. D. 1096-1273

Germany	Spain	Russia	Lesser Countries	Arts, Sciences, Etc.	Literature
					William of Poitou, first troubadour of note.
	1104. Alphonzo I., King of Navarre and Aragon.		1105. War between Norway and the Wends.		
1109. Henry V. enters Italy, takes the Pope prisoner, and compels him to crown him.					
1114. Henry V. marries Matilda, of England.	1118. Alphonzo captures Saragossa.			1118. Knights Templar instituted.	
			1119. War between Pisa and Genoa.		Scholastic philosophy reaches a high point under Abelard. Aristotle's logic comes into repute.
1125. Lothaire II. opposed by Frederick, and Conrad, Duke of Suabia.		1128. Riga on the Baltic founded.			
	1139. Portugal becomes a kingdom under Henry of Besancon.			1140. Gratian collects the canon law.	
1141. Dissensions of the Guelphs and Ghibelines.		1147. Moscow founded.			*Nibelungenlied.*
				1150. Magnetic needle known in Italy.	
1152. Frederick I., Emperor of Germany and Italy.			1150. Eric X., King of Sweden.		
	1157. Castile and Leon divided.				
1158. The Emperor Frederick receives the title of King of Bohemia.			1158. Venice a great maritime power.	1158. Bank of Venice established. Colleges of theology, philosophy, and law at Paris.	
1167. Rome taken by Frederick.			1167. League of the Italian cities.		
				1168. Colleges of law, philosophy, and theology at Paris.	
			1171. Saladin, Sultan of Egypt, extends his dominions. Conquers Syria, Assyria and Arabia.		

PERIOD OF THE

Characteristics of the Centuries	Italy and the Church	Eastern Empire	The British Isles	France
				1183. The peace of Constance reëstablishes the independence of the Italian republics.
	1190. Third Crusade.	1190. Iconium taken by Frederick Barbarossa but afterward restored.	1189. Richard I. engages in the Third Crusade.	1190. Philip Augustus one of the leaders of the Third Crusade.
	1198. Power of the Pope supreme over temporal matters.		1193. John attempts to seize the crown in the absence of Richard.	
1200—1300 A. D.	1202. The Fourth Crusade. Constantinople taken.	1204. The Crusaders plunder Constantinople.	1200. John, King of England.	1204. Normandy reunited to France.
Rise of Universities, and of Mendicant Friars.	1215. Fourth Lateran Council, against the Albigenses.		1215. Magna Charta signed at Runnymede.	
Quarrels between popes and emperors still continue; Frederick II. of Germany.	1217. Fifth Crusade.		1216. Henry III., King.	
Last Crusades.				1223. Louis VIII. conducts crusade against the Albigenses.
English liberties recognized by the crown.				1226. Louis IX., King.
Hanse League established.				
Great conquests of Tartars in Asia; they overrun Russia and establish a dynasty at Moscow.	1243. Struggle of Pope Innocent IV. with the Emperor Frederick.		1246. Henry marries Eleanor of Provence.	1248. Louis IX. leads the Seventh Crusade.
			1258. Famous parliament at Oxford.	
		1260. Emperor Michael Palaeologus recovers Constantinople.		
	1265. Dominion of Italy passes to the Pope.		1265. First regular parliament. Civil war.	
		1268. The Mongols invade Asia Minor and take Antioch.		1267. Burgundy falls to the crown.
				1270. Louis IX. sets out on the last Crusade.

PERIOD OF THE RENAISSANCE,

Characteristics of the Centuries	Italy and the Church	Eastern Empire	The British Isles	France
	1274. Fourteenth General Council at Lyons.	1281. Othman establishes an independent rule in the north of Asia Minor.	1276. War between England and Wales.	1276. France at war with Castile.
			1283. England and Wales united. Robert Bruce and John Balliol contend for the crown of Scotland.	
	1296. Struggle of the church with France.		1296. Scotland submits to England.	
		1299. Othman invades Nicomedia, and establishes the Ottoman empire.	1297. Scotland rebels. War between England and Scotland follows.	1297. Invasion of Flanders.
1300—1400 A. D.			1300. Silverplate used in England.	
Growth of cities and trade—especially in Italy, where also literature and art, inspired by Dante and Giotto, make progress.	1303. Papal power declines.	1303. Genoese control trade of Black Sea.		1302. First convocation of the states-general in France.
				1304. War with Flanders.
Popes at Avignon; papacy now terribly corrupt.			1306. Robert Bruce proclaimed King of Scotland. War with England continued.	
	1309. Seat of the popes transferred to Avignon.			
Era of Wyclif: his teaching spreads in Bohemia.	1311. General Council at Vienna.			
Invention of gunpowder.				1316. Philip V. succeeds by virtue of the Salic law, now first established.
Mariner's compass comes into use in the West.		1320. Civil war in the eastern empire between the emperor and his son.		
		1326. Orkhan, Sultan of the Turks, makes Prusa his capital.		
			1327. Peace. Independence of Scotland.	
	1339. Struggle in Rome between the Colonna and the Ursini.		1338. Struggle for the French crown begins; lasts 120 years.	1332. Revolt of the Flemings.
				1338. War with England.
	1347. Democracy in Rome under Rienzi, last of the Tribunes.		1346. Battle of Cressy.	1346. Normandy overrun by Edward of England.

CRUSADES—Continued

GERMANY	SPAIN	RUSSIA	LESSER COUNTRIES	ARTS, SCIENCES, ETC.	LITERATURE
1183. Italy independent by treaty of Constance.					
	1188. Alphonso IX., King of Leon.	1186. Incursion of Huns and Poles into Russia.	1186. Saladin directs all his efforts against the Crusaders.		
1190. Henry VI., Emperor and King of Italy.			1193. Battle of Ascalon. Saladin defeated. Death of Saladin.	1190. The Jews become the principal bankers of the world.	*Arabian Nights.*
				1200. University of Bologna has 10,000 students.	Prose *Edda.*
1212. Frederick II., Emperor.	1212. The Christians gain the Battle of Navas de Tolosa.	1213. Jurje II.			Period of the troubadours in France; the minstrels in England; minnesingers in Germany.
	1217. Ferdinand, King of Castile.		1216. Tartary overrun by Genghis Khan.		Poem of *The Cid.*
		1224. Mongolian invasion known as the "Golden Horde."	1222. Hungarian liberty assured by Charter of Andrew II.	1222. University of Padua founded.	
	1230. Castile and Leon united by Ferdinand III., who takes large territory from the Moors.	1236. Second Mongolian invasion. Moscow burned.	1236. Mongolian invasion of Europe under Batu Khan.	1234. China uses gunpowder in cannon.	
1243. The Hanseatic League.		1238. Russian independence overthrown by the Tartars. Khan of Kiptchak, Grand Duke.			Sadi, the Persian poet.
1250. Conrad IV., Emperor.				1247. First war fleet in Spain.	
	1253. The Alhambra founded.		1259. Kublai Khan builds Peking and makes it his capital.		Roger Bacon writes on natural science.
	1266. Henry of Castile a Roman senator.			1261. Parliament in England.	

—A. D. 1273-1492

GERMANY	SPAIN	RUSSIA	LESSER COUNTRIES	ARTS, SCIENCES, ETC.	LITERATURE
1273. Rudolf, Emperor, founds House of Hapsburg.				1273. First patent of nobility granted in France.	Literature and science flourish in Spain under Alphonso the Learned.
	1274. Crown of Navarre passes to France.				
	1291. James II., King of Aragon.	1290. Khan of Kiptchak wields strong rule in Russia.	1290. Wenceslas, King of Bohemia, takes Cracow.	1285. Institution of the three great courts of law in England. Cimabue, the first of modern painters at Florence.	Master Eckart, mystic.
1298. Adolphus, Emperor, deposed, and Albert I. enthroned.			1299. Foundation of the Ottoman Empire.		
	1300. Dissensions in the Moorish state.	1300. Moscow made the capital.		1300. Rapid advances in civilization—revival of ancient learning—improvements in the arts and sciences—and general expansion of liberty.	*Romance of the Rose.*
1304. Rise of the Swiss towns.				1302. Mariners' compass invented at Naples.	
1306. Rudolf of Austria, Emperor.				1303. University Avignon.	
1308. Henry of Luxemburg, Emperor. General insurrection in Switzerland.				1305. University Orleans.	
			1307. Swiss Republic founded.	1307. University Perugia.	
				1308. University Coimbra.	Tauler's *Sermons.*
				1311. Governmental reforms extorted from Edward II. in England.	
1314. Louis of Bavaria and Frederick of Austria contend for the crown.	1312. Alphonso XI., King of Castile and Leon.				
		1318. Finland invaded by Russians.	1319. The Oligarchy of Venice established.		
1322 Frederick of Austria defeated.					
			1326. Tamerlane born at Kesh, Tartary.	1326. Clocks constructed on mathematical principles.	
	1327. Arrival of 200,000 Moors to assist Granada.				Wyclif's *Translation of the Bible.*
	1340. Moors defeated at Tarifa.			1340. Gunpowder used at battle of Cressy.	
			1353. Establishment of the Ottomans in Europe.	1347. Manufactures and commerce improve in England.	

PERIOD OF

Characteristics of the Centuries	Italy and the Church	Eastern Empire	The British Isles	France
	1354. Rienzi killed; papal dominion restored.	1355. John Palæologus, emperor.	1356. Edward, the Black Prince, wins the battle of Poitiers.	1356. King John defeated and taken prisoner at Poitiers. Charles the Dauphin, Regent.
		1373. Treaty with Murad, the Ottoman emperor.	1376. Death of the Black Prince.	1380. Charles VI., King. Defeat of the Flemings at Rosbecq.
	1378. Schism of the west; Pope Urban VI. acknowledged in England; Clement VII. in France, Spain and Scotland.		1384. The Scots, assisted by France, invade England.	1386. Fruitless attempt to invade England.
		1389. Bajazet, Sultan of the Turks.		
1400—1500 A. D.			1399. Henry IV., King. House of Lancaster begins.	
Failure of the Council of Constance to reform the Church.		1402. Bajazet defeated and made prisoner by Tamerlane, at the battle of Angora.		
Turks take Constantinople.		1403. Solyman I., Sultan of the Turks.	1406. James I., King of Scotland.	
Revival of learning and advance of art in the west—especially in Italy.	1409. The Council of Pisa.			1410. Civil war between Orleans and Bergundy.
Consolidation of France and Spain.	1414. Council of Constance.		1414. Henry V. claims the French crown.	
End of Tartar rule in Russia.	1416. Huss and Jerome burned for heresy.		1415. Gains the battle of Agincourt.	1415. Defeat by the English at Agincourt.
Invention of printing.		1425. Emperor John VII. visits Italy to obtain help against the Turks.	1422. Death of Henry V. Ascension of Henry VI. War with France.	1422. Henry VI. proclaimed at Paris King of France and England.
Gunpowder begins to be of great importance.				1427. Orleans besieged by the English.
Formation of modern "middle classes."	1429. Schism of the west ended.			1429. Saved by Joan of Arc. Charles VII. crowned at Rheims.
Maritime discoveries: The cape route to India; The "New World."				1431. Joan of Arc burned.
End of the Middle Ages.		1444. Vladislas, King of Poland, defeated and killed by the Turks.	1444. Truce with France. Marriage of Henry to Margaret of Anjou.	
	1448. Concordat of Aschaffenburg, by which the liberties of the German church are compromised.	1448. Constantine XII., last of the Greek emperors.	1450. Insurrection of Jack Cade. Wars of the Roses. Richard, Duke of York, claims the throne.	1453. End of the French and English wars.
	1454. Struggle between Cosmo de'Medici and the aristocracy.	1453. Siege and capture of Constantinople by the Turks, ending the Eastern Empire.	1455. Wars of the Roses begin.	
	1458. The French rule in Genoa.	Ottoman Empire 1458. Greece subjected to the Turks.	1460. James III., King of Scotland.	
	1463. War of Venice with the Turks.	1464. War with Hungary.	1461. Edward IV., King. House of York.	1461. Louis XI., King.
	1469. Lorenzo de' Medici succeeds Piero at Florence.		1470. Henry VI restored by [Warwick.	
	1471. Increase of the power of the Medici. Rise of learning. Sixtus IV., Pope.		1471. Return of Edward IV. Deaths of Warwick and Henry VI.	
			1475. Edward IV. invades France.	1475. War between France and Bergundy.
				1477. Artois and Burgundy united to France.
		1480. Otranto taken.	1480. War between England and Scotland.	
		1481. Bajazet II., Sultan.		
				1491. Bretagne united to the crown.

PERIOD OF THE REFORMATION AND

Characteristics of the Centuries	Italy and the Church	Great Britain	Germany	Spain and Portugal	France
	1492. Alexander VI., Pope.	1492. Henry VII. invades France.	1493. Maximilian I., Emperor.	1492. Conquest of Granada. Discovery of America by Columbus.	
1500—1600 A. D.				1498. Vasco da Gama reaches India via Cape of Good Hope.	1499. Conquest of Milan.
	1500. Partition of Naples between France and Spain.				

RENAISSANCE—Continued

Germany	Spain	Russia	Lesser Countries	Arts, Sciences, Etc.	Literature
1355. Promulgation of the Golden Bull.					Froissart's *Chronicles.*
			1359. Hungarian conquests on the Danube.		
			1369. Tamerlane makes Samarcand the capital of his new empire.		
1378. Wenceslas (King of Bohemia), Emperor.		1380. Tartar war. Dimitri Ivanovitch checks them at the Don.			
		1382. Moscow burned.			
			1385. War between Austria and Switzerland.	1386. Jan Van Eyck invented oil painting.	
1394. The Emperor imprisoned at Prague.					
		1395. Tamerlane invades Russia.			
1400. Robert, Count of Palatine, Emperor.		Russia under the Mongol Tartars until 1462.	1399. Invasion of India by Tamerlane.		
	1407. John II., King of Castile.				Villena's *Labors of Hercules.*
				1409. University of Leipsic founded.	
1411. Sigismund (King of Hungary), Emperor.					
	1416. Alphonso V., King of Aragon and Sicily.		1419. The Hussite war in Bohemia.		
				1425. Arts promoted in Italy.	
	1430. War between Castile and Granada.				
				1439. Invention of printing at Mainz.	
1438. House of Austria established. Albert II. (King of Bohemia and Hungary), Emperor.		1441. Kiptchak Mongols divide Russia.	1437-1438. Rise of Portugal.		
1446. War with Hungary.				1447. Library of the Vatican founded.	
			1450. Kingdom of Delhi enlarged.	1450. Flourishing period of trade in western Europe, particularly in Flanders, New Netherlands, Belgium, and a portion of France.	Malory's *Morte d'Arthur*
1453. Austria made an hereditary duchy by emperor Frederick III.	1452. Civil war in Navarre, in which Castile and Aragon join.		1453. Poland's independence confirmed by diet of Petrekin.		
	1454. Henry IV. of Castile, King of Spain.		1454. Poland at war with the Teutonic order.		
			1458. Hungary vigorous under Matthias Corvin.	1460. Wood engraving invented.	
1462. The Emperor besieged in court at Vienna.		1462. Ivan the Great takes the title of Czar.			
			1466. Prussia a fief of Poland.	1464. Post-offices in France and England.	
1469. Invasion of the Turks.	1469. Marriage of Ferdinand of Aragon with Isabella of Castile.		1468. Uzun Hassan, master of Persia.		
			1470. Sten Sture, Regent of Sweden.	1470. Beerhard invents the pedal to the organ.	
		1472. Ivan marries Sophia, niece of the Greek emperor.		1473. Printed musical notes. Large library founded at Ofen.	
1477. Marriage of Maximilian and Maria of Burgundy.	1479. Union of Castile and Aragon.	1479. Great invasion of the Tartars.		1477. Watches made at Nuremberg.	Machiavelli's *Prince.*
		1481. Power of the Tartars annihilated.	1481. John, King of Denmark, partially acknowledged in Sweden.		
			1485. Matthias of Hungary takes Vienna.		

RELIGIOUS WARS, A. D. 1492-1648

Russia	Scandinavia	Ottoman Empire	Lesser Countries	Arts, Sciences, Etc.	Literature
		1493. War with Egypt, Hungary and Venice.	1492. America discovered by Columbus.	1493. Printing press at Copenhagen. Era of discovery in the New World begins.	More's *Utopia.*
			1499. Voyage of Amerigo Vespucci.		
			1502. Sufi sole Sovereign of Persia.	1502. St. Peter's and other great churches built.	Luther's *Bible.*

Characteristics of the Centuries	Italy and the Church	Great Britain	Germany	Spain and Portugal	France
1500-1600 A. D.	1503. Naples annexed to the Spanish crown. Julius II., Pope.				
The Reformation. Immense development of new life in Europe.		1509. Henry VIII., King.		1506. Columbus dies at Valladolid.	1510. Council of Tours.
Power of Spain, and her conquests in America.	1511. Council of Pisa.	1512. War with France.	1512. Maximilian divides the empire into 10 circles.		
The monarchy strong in England.	1513. Pope Leo X. patron of literature and the arts.	1513. Battle of Flodden; James IV. killed. 1515. Wolsey, chancellor and cardinal.			1515. Francis I. invades Italy.
			1517. Beginning of the Reformation.	1516. Charles, King of all Spain and the Netherlands.	
			1519. Charles V., King of Spain.	1519. Conquest of Mexico by Cortez.	
			1521. Diet of Worms.		1521. First war with Charles.
	1525. Spanish ascendency by the victory of Pavia.				1525. Francis defeated and taken prisoner at Pavia. 1527. Second war with Charles V.
			1529. Turks invade Germany.		
		1532. The King marries Anne Boleyn. 1535. Henry excommunicated by the Pope.			1532-1544. Struggle for possession of Italy.
	1540. Order of Jesuits founded by Loyola. 1545. Council of Trent.	1543. Invasion of France.	1543. Alliance with England against France.	1540. Lisbon the market of the world.	
		1547. Formal establishment of Protestantism. Edward VI., King.			1547. Henry II., King; Catherine de' Medici, Queen.
	1550. Julius III., Pope.				
			1551. Treaty of Passau secures religious liberty to the Protestants.		1552. Fifth war with Charles V.
		1553. Mary, Queen of England. 1554. Lady Jane Grey executed. 1555. Persecution of the Protestants. 1558. Elizabeth, Queen. Rise of the Puritans.			
	1559. Termination of French wars in Italy.		1556. Charles V. abdicates.		
			1564. Maximilian II., Emperor.	1564. Acquisition of the Philippines. 1567. Duke of Alva, Governor of the Netherlands.	1562. Religious liberty granted to the Huguenots. Huguenot wars.
	1569. Florence a grand duchy.	1568. Mary, Queen of Scots takes refuge in England.			
				1571. Battle of Lepanto.	1572. Massacre of St. Bartholomew.
			1576. Rudolph II., (King of Bohemia and Hungary), Emperor.		1576. The Catholic league. 1577. Sixth religious war.
		1584. Raleigh's colony in Virginia.		1580. Portugal passes under Spanish dominion.	
	1585. Pope Sixtus V. restores the Vatican library.	1585. War with Spain.			
		1588. Spanish Armada destroyed.		1588. Defeat of the Spanish Armada.	1588. Revolt of Paris. 1589. House of Bourbon begins with Henry IV. 1590. Siege of Paris raised by the Spaniards.
	1592. The Rialto and Piazza di San Marco built at Venice.		1594. Union of Protestants at Heilbronn.		1598. Edict of Nantes—toleration granted to the Protestants.
1600-1700 A. D.		1599. Troubles with Ireland.			
The Thirty Years' war, at first a life struggle of Roman Catholics and Protestants, results in downfall of Spain, and the ascendency of France, which reached its zenith under Louis XIV.		1603. Union of England and Scotland.			
		1607. English settlement at Jamestown.			
	1609. Leghorn becomes the emporium of the Levant trade.		1608. Protestant union under Frederick the Elector.	1609. Expulsion of the Moors.	1610. Assassination of Henry IV.
The battle of civil and religious liberty fought out in England under the Stuarts.					1614. Last assembly of the states-general.
		1617. Sir Francis Bacon, lord chancellor.			
Rise of modern science and philosophy.	1618. Conspiracy of De Bedmar to subject Venice to Spain.	1620. Pilgrims sail in Mayflower.	1618. Thirty Years' war begins. 1620. Massacre of Prague.	1621. Dutch war.	

AND RELIGIOUS WARS—Continued

Russia	Scandinavia	Ottoman Empire	Lesser Countries	Arts, Sciences, Etc.	Literature
		1505. War with Persia.	1506. Poland under Sigismund the Great.		*Poems* of Vittoria Colonna.
1510. Renewed Tartar invasions.		1512. Selim I. dethrones and puts to death his father.	1511. Cuba conquered. 1512. Florida discovered.		
	1513. Christian II., King of Norway and Denmark.	1514. Persians defeated; Kurdistan added to the empire. 1516. Cairo taken.	1513. Discoveries of Balboa.		
			1517. First patent granted by Spain for the importation of negroes into America.	1517. Luther and the Protestant Reformation.	Hans-Sachs founds the German drama.
	1520. Christian, King of Sweden. 1521. Gustavus Vasa throws off the Danish yoke.	1520. Soliman the Magnificent, Sultan. 1521. Belgrade taken.	1519. Spaniards, under Cortez, conquer Mexico.		
	1523. Gustavus Vasa, King of Sweden. Union of Calmar dissolved.	1526. Invasion of Hungary.		1522. Circumnavigation of the globe by Magellan. Xavier plants Christianity in India.	
	1532. Union of Norway and Denmark.	1529. Invasion of Germany. Siege of Vienna.		1530. Jorgens invents the spinning wheel for flax.	
1533. Ivan the Terrible, Czar.		1535. Barbarossa seizes Tunis.	1533. Pizarro conquers Peru.		Calvin's *Institutes of Religion.*
	1543. First standing army in Sweden.	1547. Turks invade Persia.	1545. Mines at Potosi discovered.	1545. Vesalius makes important contributions to the study of anatomy. 1548. Orange trees introduced into Europe.	
		1551. Tripoli taken. 1552. Invasion of Hungary.			Vasari's *Lives.*
1554. Siberia discovered.					Camõens' *Lusiad.*
		1559. Military power of the Turks at its greatest height under Soliman.	1556. Akbar raises the Indian empire to its greatest splendor.	1559. Carriages introduced into Paris.	
	1560. Eric XIV., King of Sweden.			1560. Knives first made in England.	Fox's *Book of Martyrs.*
	War between Sweden and Denmark.		1564. Coligny sends a colony of Huguenots to Florida.		Tasso's *Jerusalem Delivered.*
	1570. Peace of Stettin.	1570. War with Venice. 1571. Battle of Lepanto.			Ronsard's *Poems.*
1571. Russia devastated by the Tartars, and Moscow burned.				1573. Titian, colorist painter, at height of fame.	
1578. Alliance of Sweden and Poland against Russia.	1578. Alliance with Poland.		1579. Beginning of the Republic of Holland.		Spenser's *Faërie Queene.*
			1585. Persia acquires great power under Abbas the Great.	1586. Tobacco introduced into Europe.	
	1588. Christian IV., King of Denmark.	1589. Revolt of the Janizaries.		1588. First newspaper in England. 1590. Telescopes invented by Jansen, a German. Napier invents logarithms.	Montaigne's *Essays.*
1598. Boris Godunow begins a new dynasty.		1595. Power in Hungary declines; revolt of Wallachia.			Shakespeare's *Dramas.*
				1602. English East India Company founded.	Bacon's *Essays.*
	1604. Charles IX., King of Sweden.	1605. Revolt in Syria. 1606. Commercial treaty with France and Holland.	1605. Jehangir, Mogul emperor of India.	1606. Gilbert's electrical discoveries.	
	1609. Gustavus Adolphus, King of Sweden. 1611. War between Sweden and Denmark.		1609. First English envoy of the East India Company sent to India.		
1613. Michael Fedorovitz, Czar, founds the house of Romanoff.	1616. Sweden dominates the North.			1615. Coffee in Venice.	Lope de Vega's *Dramas.*
1617. Finland ceded to Sweden.		1618. Great Persian victory at Shibi. 1620. War with Poland.		1618. Harvey discovers the circulation of the blood. 1620. Thermometers said to have been invented by Van Drebbel. Negro slavery begins in Virginia.	

PERIOD OF THE REFORMATION

Characteristics of the Centuries	Italy and the Church	Great Britain	Germany	Spain and Portugal	France
1600—1700 A. D. Continued		1625. Charles I., King.		1625. Naval war with England.	1624. Ministry of Cardinal Richelieu.
	1626. St. Peter's dedicated.	1627. war with France.			1627. War with England over the Huguenots.
	1628. War following death of the Duke of Mantua.		1628. Victories of Wallenstein.		
	1631. Influence of France increases.		1630. Gustavus Adolphus lands in Germany.		
			1632. Battle of Lutzen.		
				1639. Loss of the Japanese trade.	1638. Invasion of Spain.
		1642. Civil war and revolution.	1640. Frederick William of Prussia.	1640. Portugal regains independence.	1640. Turin taken by the French.
					1643. Louis XIV., King.
	1646. Revolt of Naples under Masaniello.		1648. Treaty of Westphalia.		1648. Wars of the Fronde.

FROM THE PEACE OF WESTPHALIA TO

Characteristics of the Centuries	Italy and the Church	Great Britain	Germany	Spain and Portugal	France
		1649. Commonwealth under Cromwell.			1649. Siege of Paris.
1600—1700 A. D. Continued		1652. War with Holland.			
		1653. Cromwell, Lord Protector.		1654. Brazil recovered from the Dutch.	1653. Mazarin enters Paris in triumph.
				1655. War with England.	
			1657. Leopold I., emperor.		1659. Peace of the Pyrenees.
		1660. Charles II., King. Stuarts restored.		1661. Invasion of Portugal.	
		1666. Great fire in London.	1665. Tyrol united to Austria.		
		1668. Triple alliance of England, Sweden and Holland against France.			1667. War with Spain.
	1669. Candia taken from Venice.				
	1670. War between Genoa and Savoy.				
			1673. War of Austria and France.	1673. War with France to protect Holland.	1672. War with Holland.
	1676. Messina blockaded by the Dutch and Spanish fleets.		1676. General revolt of the Hungarians.		1678. Peace with Holland and Spain restores tranquillity to Europe.
		1679. Habeas Corpus act passed.			1680. France the most formidable power in Europe.
			1680. Greater part of Alsace seized by France.		
			1683. Siege of Vienna by the Turks.		
		1685. James II., King. Rise of the Whigs and Tories.	1686. Buda taken after being held by the Turks 145 years.		1685. Revocation of the edict of Nantes.
			1687. Joseph I., King of Hungary.		
1700-1800 A. D.		1688. Revolution.			1688. War of the allies against France.
	1689. Alexander VIII., Pope.	1689. William III., King, and Mary II., Queen. War with France.		1689. Revolt in Catalonia in favor of France.	
Astounding growth of the British empire.		1690. Battle of the Boyne. James defeated, returns to France.	1690. Joseph I., elected King of the Romans.		
Government in England now and henceforth carried on by a Cabinet Ministry more or less representing the will of the people.	1693. Battle of Marsaglia.			1691. Incursion of the French into Aragon.	
Development of manufactures in England. Inventions and discoveries. Immense advance in arts and sciences.		1697. General peace.	1697. Victories of Prince Eugene over the Sultan Mustapha at Zenta.		1697. General peace of Ryswick between France and the allies.
		1701. War of the Spanish succession.	1701. Hague alliance.	1701. Philip V., King.	
	1702. French victory at Luzzara over the Imperialists.	1702. Queen Anne war against France and Spain.			1702. Invasion of Holland. Revolt of the Huguenots
Independence of the United States.		1704. Gibraltar taken by English.			1704. Defeat at Blenheim.
Gross misgovernment of Roman Catholic Ireland by an English Protestant minority.	1706. French driven from Italy by Prince Eugene.			1705. Barcelona taken by the Allies.	
	1707. All Spanish possessions in Italy abandoned.	1707. Act of union of England and Scotland. First united parliament of Great Britain meets.			
The French revolution which powerfully influences social, political, and intellectual progress for the next hundred years.			1711. Charles VI., emperor.		
		1713. Peace of Utrecht. England acquires large American possessions.			1713. Peace of Utrecht—perpetual separation of the crown of France and Spain.
	1715. Siege of Corfu raised.				1715. Death of Louis XIV.; Louis XV., King.

AND RELIGIOUS WARS—Continued

Russia	Scandinavia	Ottoman Empire	Lesser Countries	Arts, Sciences, Etc.	Literature
				1626. Kepler's laws discovered.	Grotius' treatises on law.
				1630. Gazettes first published in Venice.	
1632. War with Poland. Poles advance to Moscow.	1632. Christina, Queen of Sweden; Oxenstiern, Regent.	1634. Murad invades Persia. 1637. Troubles on the Tartar frontier. Bagdad taken by the Turks.	1639. Great naval victory of Van Tromp, of Holland, over the Spanish fleet at the Downs. 1640. Madras, India, founded.	1639. Printing in America. 1640. Manufacturing in Sweden.	
	1645. Peace between Sweden and Denmark.	1645. War with Venice.		1643. Conde and Turenne the greatest generals of the time.	

THE DEATH OF LOUIS XIV. A. D. 1648-1715

Russia	Scandinavian	Ottoman Empire	Lesser Countries	Arts, Sciences, Etc.	Literature
			1653. John de Witt, Grand Pensionary of Holland.		Corneille's *Tragedies.*
1654. Russian victories in Poland.				1654. Air pumps invented.	
	1657. War between Denmark and Sweden.	1657. Alliance with Sweden against Poland.			Milton's *Poems.*
	1660. Arts and sciences flourish.	1661. War with Austria. 1662. Invasion of Hungary.	1660. Sobieski, Polish general, wins great victory over the Tartars.		
				1666. Canal of Languedoc built. 1667. Gobelin tapestry manufactured in Paris.	Molière's *Dramas.*
1671. The Cossacks subjugated.		1672. Invasion of Poland.		1671. Foundation of the Academy of Architecture at Paris.	Bunyan's *Pilgrim's Progress.*
			1674. Sobieski, King of Poland.		
		1678. First war with Russia.			Locke's *Essays.*
	1680. Diet of Stockholm.				Bossuet's *Sermons.*
1682. Ivan and Peter, Czars.		1682. War with Austria. 1683. Defeat at Vienna.		1681. Museum of Natural History founded in London.	Racine's *Tragedies.*
		1686. Russia declares war.	1686. Deccan, India, conquered.	Jardin des Plantes founded at Paris.	
		1687. Revolution in Constantinople, Solyman II., Sultan.		1687. Telegraph invented.	
1689. Peter the Great.					
		1690. Recovery of Belgrade from the Austrians.		1690. White paper first made in England.	
1692. First trade with China.	1693. The King of Sweden declared absolute.		1692. Mogul power at its height in India. Jesuits gain large influence in China. 1695. Brussels bombarded by the French.	1692. First opera in London. 1693. Bank of England founded.	
	1699. Charles XII. begins to reign. Denmark, Poland, and Russia form an alliance against Sweden.	1699. Peace of Carlowitz. The Ottoman power broken.			Newton's *Principia.*
1700. Peter the Great wars with the Northern Powers.	1700. Defeat of the Allies at Narva.				
	1702-1706. Charles XII. sweeps Poland and Russia.				
1703. St. Petersburg founded.		1703. Mustapha II. deposed by the Janizaries.	1704. Stanislaus I., King of Poland.	1703. Russian newspaper established at St. Petersburg. Flourishing period of French literature.	
1707. Revolt of the Cossack Mazeppa.					
1708. Charles XII. of Sweden invades Russia.					Flourishing period of French literature.
1709. Is defeated at Pultowa.				1709. Prussic acid discovered.	
1714. Finland conquered.				1714. Rise of commerce in Austria.	
	1715. Charles returns to Sweden.		1715. Treaty of Antwerp with Austria.		

FROM THE DEATH OF LOUIS XIV. TO

Characteristics of the Centuries	Italy and the Church	Great Britain	Germany	Spain and Portugal	France
1700-1800 A. D. Continued	1719. Sicily invaded by the Spanish.	1718. War with Spain.	1718. Quadruple alliance against Spain.		1718. The Quadruple alliance against Spain.
	1730. Clement XII., Pope.	1727. George II., King of England.	1733. War of the Polish succession.	1734. Conquest of Sicily and Naples by Don Carlos.	1733. The Polish succession involves France in war.
	1744. Italy invaded by the French and Spaniards.	1739. War with Spain.	1740. War of the Austrian succession. Maria Theresa succeeds to the hereditary states.		1740. The Austrian succession. 1744. War with England and Austria.
	1746. French and Spaniards driven from Lombardy.	1745. Troubles in Scotland.	1745. Francis I., husband of Maria Theresa, Emperor.	1746. Ferdinand VI., King.	1747. War with Holland.
		1756. Alliance with Prussia.	1756. Seven years' war—Austria and Prussia.		1760. Loss of all Canada.
		1762. War with Spain. 1763. Peace of Paris.			
				1767. Jesuits expelled from Spain.	
	1773. Jesuits expelled from Rome.		1772. Dismemberment of Poland.		1770. Marriage of the dauphin to Marie Antoinette. 1774. Louis XVI., King.
		1775. War with the American Colonies. 1776. British army takes possession of New York. Hessians hired for service in America. 1781. Surrender of Cornwallis at Yorktown. 1783. Treaty of Versailles. Independence of the United States acknowledged.	1778. War of the Bavarian succession. Bavaria seized by Germany.		1776. Franklin in Paris. 1778. Alliance with America. 1780. Rochambeau sent to aid the Americans.
	1782. Pontine marshes drained.				
			1788. The emperor tries to control the universities.	1788. Charles IV., King.	1789. French revolution begins. Lafayette commander of the national guards.
			1792. War with France.		1792. War with Germany. France declared a republic.
		1793. First coalition against France directed by England.	1793. First coalition against France.		1793. King and Queen beheaded. Reign of Terror.
					1795. Napoleon Bonaparte commands the army.
	1796-1797. Napoleon's Italian campaign.	1797. Nelson destroys French fleet near Alexandria.	1797. Napoleon's Austrian campaign.		1796. War in Italy. 1797. Napoleon in Austria
	1798. Roman republic proclaimed by the French.	1798. Second coalition against France. 1800. Union of England and Ireland.			1798. Expedition to Egypt 1799. Swiss campaign. 1800. Battle of Marengo.
1800-1900 A. D.	1802. Napoleon, President of the Italian Republic.	1803. Successful war in India.			1802. Napoleon, President of the Italian republic. War with England.
Napoleon's colossal power and downfall. Fall of despotisms; great political advance of European people. Continued rapid advancement of science, inventions and discoveries. Increased philanthropic effort and intellectual enlightenlment.			1804. The emperor of Germany assumes the title of emperor of Austria. Battle of Austerlitz. Confederation of the Rhine.		1804. Napoleon I., Emperor of the French.
	1805. Napoleon crowned King of Italy.	1805. Napoleon defeated at Trafalgar. 1806. Fourth coalition against France.		1805. Battle of Trafalgar.	1805. Battle of Austerlitz.
					1807. War with Russia. Invasion of Portugal.
	1808. Rome annexed by Napoleon to the kingdom of Italy.		1809. Peace of Vienna.	1808. Madrid taken by the French. Joseph Bonaparte, King.	1809. Battle of Wagram. 1810. Continental peace except with Spain.
		1812. War with the United States.	1812. Austria in alliance with France against Russia. 1813. War of German independence.	1812. Battle of Salamanca.	1812. Russian campaign.
	1814. Fall of Napoleon. Kingdom ceases.			1814. Ferdinand VII. restored.	1814. Allies enter Paris. House of Bourbon restored.
		1815. British defeated at New Orleans. Wellington victorious at Waterloo. The Allies enter Paris, and Napoleon is banished to St. Helena.	1815. German League. Congress of Vienna.		1815. Napoleon returns from Elba. Hundred days' war. Battle of Waterloo, and defeat of Napoleon. Abdication of Napoleon.

THE FALL OF NAPOLEON, A. D. 1715-1815

Russia	Scandinavia	Ottoman Empire	Lesser Countries	Arts, Sciences, Etc.	Literature
		1717. Turks lose Belgrade.			Pope's *Poems.*
	1718. Charles XII invades Norway and is killed at the siege of Frederickshall.				
	1720. Peace of Stockholm.				
1721. Peter assumes the title "Emperor of all the Russias."		1723. Turks and Russians attempt to dismember Persia.	1723. Christians expelled from China.	1721. Inoculation for smallpox introduced.	
1727. Treaty with China.					
1730. Peter II., last of the Romanoffs.	1730. Christian VI., King of Denmark.			1728. Behring Strait discovered.	
		1734. Turks driven from Persia by Nâdir Shah.	1733. Frederick Augustus II., King of Poland.		
		1740. Renewed invasion of Turkey.	1739. India invaded by Nadir Shah, who takes Delhi.	1740. Irish linen manufactories and English steel and cutlery factories flourish.	
	1741. Swedes driven out of Finland.		1744. Hostilities between the French and English in India.		
		1745. Defeat of Turks at Kars.			Hume's *History.*
				1750. Franklin's discoveries in electricity.	
			1756. Calcutta taken by the Nabob of Bengal.		Voltaire's writings.
1762. Catherine II. reigns.				1761. Potatoes first planted in France.	Franklin's *Poor Richard's Almanac.*
			1765. Establishment of the English in India.		
			1766. Power of the Mamelukes revived in Egypt under Rodyan and Ali Bey.	1767. First spinning machine in England.	Lessing, Burke, Blackstone, Goldsmith, and Adam Smith.
1768. War with the Ottoman Empire.					
	1772. Despotism reestablished in Sweden by Gustavus III.				
1774. Revolt of the Cossacks.			1774. Warren Hastings first governor-general of India.	1774. Spinning-jenny invented by Arkwright. Steam engines improved by Watt and Bolton.	
			1776. Lord Pigot governor-general of the East Indies.		Kant's critical philosophy.
					Gibbon's *History.*
1787. War with the Turks.		1787. Disastrous war with Austria and Russia.			
					Burns' *Poems.*
	1792. Gustavus III. assassinated. Gustavus IV., King.				
			1794. Polish revolt at Cracow.		
1796. Unsuccessful war with Persia.			1797. Swiss revolution. Helvetian republic declared.		Schiller's works.
		1798. War with the French in Egypt.			
1801. Alexander, Czar.	1801. Denmark and Sweden accede to the alliance between England and Russia.			1801. Iron railways in England.	Goethe's *Dramas* and *Poems.*
		1803. Insurrection of Mamelukes at Cairo.			
1804. War with Persia.					
1805. Russia joins the coalition against France.					
1807. Treaty of Tilsit.		1807. War against Russia and England.	1806. Louis Napoleon, King of Holland.	1807. Fulton invents the steamboat.	
	1808. Finland invaded by the Russians.			1808. Lithography invented.	Cuvier's *Natural History.*
	1809. Charles XIII., King of Sweden.	1809. Russians defeated at Silistria.		1810. First steamboat built in Europe.	
1812. Invasion of Napoleon. Moscow burned.			1812. The Poles declared a nation by Napoleon. Diet of Warsaw.		
		1813. Servia invaded by Turkish army.	American war with England.		
	1814. Union of Sweden and Norway as two kingdoms under one monarch.	1814. Malta falls to England.		1814. Steam carriages in England. Gas used for lighting the streets in London.	
1815. The Holy Alliance formed.			1815. William I., King of the Netherlands.	1815. Safety lamp invented by Davy.	Wordsworth's *Poems.*

Characteristics of the Centuries	United States	Great Britain	Prussia	Austria	France
1800-1900 A. D. Continued	1816. U. S. Bank incorporated. 1817. James Monroe, President.	1816. Bombardment of Algiers. The Bey compelled to abolish slavery.		1817. Population, 28,000,000.	
			1818. The Zollverein formed. 1819. Death of Marshal Blucher.	1818. Napoleon's son made Duke of Reichstadt.	1818. France joins in Holy Alliance.
	1821. Monroe reëlected. Missouri compromise bill passed.		1821. Congress of monarchs at Laybach. Insurrection in Moldavia and Wallachia.		1821. Death of Napoleon at St. Helena.
	1824. Visit of Lafayette.	1823. The Canning ministry. The Ashantees in Africa defeated.			1824. Charles X., King.
	1825. Erie Canal opened. Protective tariff enacted. J. Q. Adams, President.				
	1829. Andrew Jackson, President.	1828. Wellington ministry. Irish disturbances. 1830. William IV., King. Difficulties with China.			1830. Algiers taken by the French. Revolution and abdication of Charles X. Louis Philippe, King.
	1831. Northeastern boundary between the U. S. and British provinces established. 1833. President Jackson reëlected. Bank deposits removed from the U. S. Bank.			1831. Austria interferes in Italian affairs.	1831. Abolition of hereditary peerage in France.
				1836. Visit of the Emperor of Russia. Ferdinand I., Emperor.	1836. Insurrection attempted by Louis Napoleon at Strasburg.
	1837. Independence of Texas acknowledged. Martin Van Buren, President.	1837. Victoria, Queen.		1838. Commercial treaty with England.	1838. Death of Talleyrand.
		1840. War with China over the opium trade. War in Syria; Great Britain an ally of Austria and Turkey.	1840. Frederick William, King.		
	1841. W. H. Harrison, President. Death of Harrison, and succession of John Tyler.	1841. Chinese war ended.			
	1845. Texas annexed to the U. S. Treaty with China. James K. Polk, President.	1844. Daniel O'Connell's trial. Sentence reversed by the House of Lords.			1844. War with Morocco.
	1846. War with Mexico. The Oregon treaty with Great Britain, settling the northwestern boundary of the U. S.	1846. Repeal of the English corn-laws. 1847. Severe famine in Ireland.		1847. Austria takes possession of Cracow.	
	1848. Treaty of Guadalupe Hidalgo, ends Mexican war. Gold discovered in California. 300,000 emigrants arrive this year.	1848. Civil war in Ireland. Habeas Corpus Act suspended.	1848. Insurrection in Berlin.	1848. Revolution in Hungary. Francis Joseph, Emperor. Kossuth withdraws his army from Vienna.	1848. Abdication of Louis Philippe, and a republic proclaimed. Louis Napoleon, President. Bloody insurrection in Paris.
	1849. Zachary Taylor, President. Railroad from Boston to New York.	1849. Mooltan in India taken.	1849. The King declines the Imperial crown. Armistice between Prussia and Denmark.	1849. New Constitution promulgated.	
	1850. Attempted invasion of Cuba by filibusters. Death of President Taylor; Millard Fillmore, President. Texas boundary settled. Fugitive Slave Law passed.	1850. The war in Lahore ended. The Punjaub annexed to the British Crown. Death of Sir Robert Peel. English forces defeated in South Africa by the Kafirs.	1850. Hanover withdraws from the Prussian alliance. Hesse-Darmstadt withdraws. Treaty of peace with Denmark. New constitution for Prussia.		1850. Jerome Bonaparte, Field-Marshal.
	1851. Erie railway opened. Charleston Convention. Vigilance committee organized in California. Kossuth arrives in New York.	1851. Continuance of the Kafir war. Kossuth visits England.		1851. Louis Kossuth sentenced to death at Pesth.	
				1852. Emperor of Austria visits Emperor of Prussia.	1852. Louis Napoleon declared Emperor.
	1853. Franklin Pierce, President. Gadsden Purchase.	1853. Kafir war ended. Queen Victoria visits Ireland.	1853. Plot to overthrow the government.		
	1854. Treaty with Japan. Kansas-Nebraska bill passed. Ostend Manifesto issued.	1854. Crimean war. Treaty of alliance with France.	1854. Treaty with Austria offensive and defensive.	1854. Alliance with England and France.	1854. War declared against Russia.

OF THE AMERICAN CIVIL WAR, A. D. 1815-1865

Spain and Portugal	Italy and Greece	Russia	Lesser Countries	Arts, Sciences, Etc.	Literature
1815. Union of Portugal and Brazil under John VI. 1817. Slave trade abolished.	1815 Kingdom of Two Sicilies restored.	1815. Poland united to Russia.	1816. Lord Amherst's unsuccessful mission to China. 1817. The Mahratta power completely overthrown in India by the British.	1815. The abolition of the slave trade by the Congress of Vienna. 1817. Public schools established in Russia.	Scott's *Novels*. Byron and Shelley. Fouque's *Tales*.
	1821. Austrian invasion of Italy. 1822. Greek revolution. Declaration of Independence.	1819. Establishment of military colonies. Liberty of the press in Poland nullified.	1819. Bolivar, President of Colombia, South America. Peru and Guatemala independent. Brazil independent. 1822. Iturbide, Emperor of Mexico.	1819. The steamship "Savannah" makes the first trip across the Atlantic. 1824. Inland navigation stimulated in the United States.	Tegnèr's writings. Hieroglyphics deciphered by Champolion.
1830. Salic law abolished.	1825. Death of Ferdinand, after reign of sixty-six years. 1827. Treaty between Russia and Turkey respecting Greece.	1826. Nicholas I. crowned at Moscow. War against Persia. 1830. War against Poland.	1826. Missolonghi taken by the Turks. 1829. Venezuela independent. 1830. Polish struggles for nationality.	1825. Steam navigation on the Rhine.	Vast increase in periodical literature in England, France, Germany, United States, etc. Balzac's *Novels*. Poe's *Poems and Tales*.
	1832. Kingdom of Greece founded.	1832. Poland made part of empire.	1831. Leopold I., King of the Belgians.	1832. Trades unions in Europe.	Hawthorne's writings.
1833. Isabella II., Queen of Spain. Don Carlos claims the throne. Portugal a constitutional monarchy.			1833. Santa Anna, President of Mexico.		
			1836. Decree to expel all British and other foreigners from China.	1836. Founding of the Smithsonian Institution. Luxor obelisk erected, Paris.	Emerson's *Essays*.
1837. The monasteries in Spain dissolved.		1838. Smuggling carried on extensively.	1839. Turkey at war with Egypt. 1840. William I. abdicates as King of Holland.	1837. Morse patents the telegraph invented by him in 1832. 1840. Wheatstone's telegraph patented in England.	
1842. Insurrection in Barcelona.	1843. King Otho of Greece compelled to accept a constitution.	1845. Emperor visits England.	1842. Insurrection in India.	1845. Lord Rosse's telescope completed. Gutta percha used.	Victor Hugo's works.
1846. Marriage of Isabella to the Duke of Cadiz. Civil war in Portugal.			1847. Soulouque, President of Hayti	1847. Great canal from the Durance to Marseilles completed. Railroad building in Germany. Sewing machine invented and patented.	Longfellow's *Poems*.
	1848. Rising of the great Italian cities in revolution. Italian revolution. Roman republic overthrown.		1848. Holland receives a constitution. Insurrection in Ceylon. Hungary declared independent.	1848. Girard College opened.	
	1849. Catania, Syracuse, and Palermo taken by assault. Mazzini's proclamation of provisional government. Victor Emanuel, King. Rome surrenders to the French; Garibaldi leaves city. Bourbon rule begins.	1849. Aids Austria in subduing Hungary. 1850. Harbor of Sebastopol completed.	1850. Death of Emperor Tau-Kwang of China. Battle of Idstedt, Prussia.	1849. Tubular bridge at Anglesea, England. Magnetic clock invented by Dr. Locke of Cincinnati. 1850. Great agitation on slavery in United States. The Pekin Monitor a new paper, printed in China. Woman's Rights convention at Worcester, Mass.	Darwin, Tennyson, Dickens, and Browning.
1851. Death of Godoy, "Prince of Peace."			1851. Discovery of gold in Australia. Disturbances in south of China.	1851. Daguerre makes important contributions to photography. Railway between Moscow and St. Petersburg opened.	George Eliot, Lowell, and Ruskin.
			1852. Buenos Ayres taken by the liberating army. War between the Turks and Montenegro.	1852. Telegraphs across the English channel.	
		1853. War declared against Turkey.	1853. Turkish-Russian War.	1853. First Norwegian railway opened. Perry's expedition to Japan.	
1854. Military insurrection under O'Donnell.		1854. War with France and England. Siege of Sebastopol. Battle of Balak-lava.		1854. Commercial treaty between United States and Japan. First railway in Brazil.	

FROM THE FALL OF NAPOLEON TO THE END

Characteristics of the Centuries	United States	Great Britain	Prussia	Austria	France
1800-1900 A. D. Continued	1855. Panama Railroad completed. Troubles in Kansas.	1855. British fleet bombards and partially destroys Canton, China.			
				1856. Hungarians granted amnesty.	1856. Peace with Russia.
	1857. Dred Scott decision. James Buchanan, President. Great financial panic.	1857. Rebellion in India begins. King of Delhi proclaimed Sovereign of India. 1858. Completion of the Atlantic telegraph cable.			
	1859. John Brown captures Harpers Ferry. 1860. South Carolina passes ordinance of secession.	1860. Rebellion in India subdued. Neutrality proclaimed during the American Civil war.		1859. War with France and Sardinia. Austrians defeated at Montebello. Peace after Battle of Solferino. Death of Prince Metternich.	1859. War with Austria. 1860. Commercial treaty with England.
	1861. Secession of Southern States, and establishment of the Confederate States under Jefferson Davis. Opening of the Civil war, 1861-1865. Abraham Lincoln, President.		1861. William I., King.	1861. New constitution for the Austrian monarchy. Civil and political rights granted Protestants.	
			1862. Bismarck, Premier.	1862. Amnesty to political offenders in Hungary.	1862. Great distress caused by American Civil war.
			1863. King resolves to govern without parliament.		1863. The French occupy Mexico.
			1864. War with Denmark.	1864. Alliance with Prussia against Denmark.	1864. Maximilian accepts Mexican crown.
	1865. Assassination of President Lincoln; Andrew Johnson, President.	1865. Fenian outbreaks in Ireland.			1865. Death of Proudhon.

FROM THE END OF THE AMERICAN CIVIL

Characteristics of the Centuries	United States	Great Britain	Prussia	Austria	France
1800-1900 A. D. Continued	1866. Civil rights bill passed. Atlantic telegraph completed.	1865. British and French governments rescind their recognition of the Confederate States of America.	1866. Prussia prepares for war with Austria. Battle of Sadowa. Hanover annexed. First parliament of the German Confederation.	1866. War with Prussia and Italy.	
	1867. General amnesty proclamation.		1867. North German Constitution accepted.	1867. Autonomy for Hungary announced. Emperor crowned King of Hungary.	1867. Great exposition in Paris.
	1868. Burlingame treaty with China.				
	1869. U. S. Grant, President. Union Pacific railway opened for traffic.				1869. New constitution promulgated.
		1870. Irish Land Act passed.	1870. War with France. Battle of Sedan.	1870. Concordat with Rome suspended.	1870. War declared against Prussia. Battle of Sedan. Surrender of Metz.
			1871. King of Prussia proclaimed Emperor of Germany.	1871. New German empire recognized.	1871. Capitulation of Paris. Peace ratified.
		1873. Payment of Alabama claims to the United States.	**Germany** 1871. William I., Emperor.		1873. Marshal MacMahon, President.
					1874. Death of Guizot.
		1876. Queen Victoria proclaimed Empress of India.			
	1877. R. B. Hayes, President.		1877. Attempted assassination of emperor.	1878. Occupation of Bosnia.	1879. Jules Grevy, President.
	1881. James A. Garfield, President. President Garfield assassinated, July 2d; Chester A. Arthur, President.	1882. Attempt on life of Queen Victoria.		1882. 600th anniversary of the House of Habsburg.	
	1885. Grover Cleveland, President. Apache Indian War.				
		1887. Queen's Jubilee.		1886. Army put on war footing of 1,500,000 men.	1887. Sadi-Carnot President.
	1889. Benjamin Harrison, President. Johnstown flood.	1889. Great labor strikes.	1888. Accession and death of Frederick III. William II., Emperor.		

OF THE AMERICAN CIVIL WAR—Continued

Spain and Portugal	Italy and Greece	Russia	Lesser Countries	Arts, Sciences, Etc.	Literature
	1855. Important concordat between Italy and Austria.	1855. Death of Nicholas I. Alexander II., Emperor.	1855. Santa Ana abdicates the presidency of Mexico.	1855. Panama Railroad completed. Bessemer's steel process patented.	Spencer's *Philosophy.*
		1856. Destruction of Sebastopol docks. Evacuation of Crimea.		1856. Submarine telegraph laid from Cape Breton to Newfoundland.	
		1858. Partial emancipation of the serfs.	1858. Massacre of Christians in Turkey. Suez Railroad completed.	1858. Great Eastern launched at London. Laying of the Atlantic cable. Boston Public Library opened.	
1859. War with Morocco. 1860. Defeat of the Moors.	1859. War with Austria. 1860. Garibaldi lands in Sicily, and assumes dictatorship. Sicily and Naples liberated.			1859. Telegraphic communication between India and England.	Huxley, Renan, and Dumas.
1861. Annexation of Santo Domingo. Intervention in Mexico.	1861. Victor Emmanuel II., King of Sardinia, first King of Italy.		1861. Canton restored to the Chinese by the French and English.	1861. International exhibition at London.	
	1862. Garibaldi establishes a provisional government. Insurrection in Greece.	1862. Nesselrode, Chancellor.			
		1863. Termination of serfdom.		1863. Abolition of slavery in the United States.	Blackmore's *Lorna Doone.*
1864. Rupture with Peru.	1864. Florence made the capital of Italy.	1864. Emigration of Caucasian tribes into Turkey.	1864. Nankin, China, taken by Gordon for the Imperialists.	1864. Convention between France, Brazil, Italy, Portugal, and Spain for telegraph to America.	
1865. Dispute with Chile.	1865. Ionian Isles made over to Greece.		Valparaiso bombarded by Spanish fleet.		

WAR TO THE PRESENT TIME—A. D. 1865-

Spain and Portugal	Italy and Greece	Russia	Lesser Countries	Arts, Sciences, Etc.	Literature
1866. Military insurrection headed by General Prim.	1866. Austrian war. Venetia proclaimed a part of Italy.	1866. Inauguration of trial by jury. War with Bokhara.		1866. Atlantic telegraph successfully completed.	Meredith, Taine, Arnold, Wallace.
1867. Death of Marshal O'Dónnell.	1867. Garibaldi and the Papal states.	1867. Russian America sold to the United States.	1867. City of Mexico evacuated by French troops. Egypt declared by the Sultan to be a separate sovereignty. Execution of Maximilian in Mexico.	1867. Great exposition at Paris.	
1868. Queen deposed.				1868. Suez canal formally opened.	
	1869. Vatican Council opened at Rome.			1869. French Atlantic telegraph completed.	
1870. Isabella II., abdicates; Amadeus, King.	1870. Rome is annexed to Italy. Declared the capital of Italy.		1870. Fenian raid in Canada.	1870. Railway from Calcutta to Bombay. Mont Cenis tunnel completed.	
1871. Sagasta, Prime Minister.		1871. Electric telegraph between Russia and Japan.	1871. Military revolt in City of Mexico suppressed. 1872. Attempt to assassinate the Mikado of Japan.		
		1873. Khiva captured.		1873. European calendar introduced into Japan.	
1874. Alfonso XII., King. 1875. Civil war.			1874. Insurrection at Nagasaki, Japan.		
				1876. Railway open between Quebec and Halifax. Centennial Exposition at Philadelphia.	
		1877. War against Turkey.		1877. Telephone invented by Bell.	
	1878. Death of Victor Emmanuel II. Humbert, King. Death of Pius IX. Leo XIII., Pope.	1878. Spread of Nihilism in the empire. 1880. Many Nihilists imprisoned and executed. 1881. Alexander II. assassinated.	1878. Montenegro, Servia and Roumania independent.		Ibsen, Tolstoi, Björnson.
1883. Sagasta again Minister.	1882. Death of Garibaldi.	Alexander III., Emperor.	1883. Opening of the St. Gothard Railway from Milan to Lucerne.		
	1885. War with Abyssinia.	1885. Ship canal from St. Petersburg to Cronstadt opened. Trouble with the Afghans.		1885. Revised version of Old Testament published.	
		1886. Russia interferes in Bulgaria.	1886. Upper Burmah annexed to British India.		
	1887. Alliance of Italy with Austro-Hungary and Germany signed.			1887. Great railway bridge at Lachine, Canada, completed.	
		1888. Central Asian railway opened.		1888. Typesetting machines perfected. Pasteur discovers cure for hydrophobia.	
1889. Trial by jury first put in force.	Crispi, Prime Minister.		1889. New constitution promulgated in Japan.		

Characteristics of the Centuries	United States	Great Britain	Germany	Austria	France
1800-1900 A. D. Continued	1890. McKinley tariff bill passed.	1890. Stanley returns from Africa.	1890. Resignation of Bismarck as chancellor. 1891. Triple Alliance renewed.	1891. Renewal of Triple Alliance.	1890. War with Dahomey. 1892. Panama scandals.
	1893. Grover Cleveland, President. Chinese exclusion bill approved. World's Columbian exposition at Chicago.	1893. Behring Sea arbitration. 1894. Manchester ship canal opened.	1893. Anti-Jesuit law repealed. 1894. Commercial treaty with Russia. New parliament house opened.	1894. Commercial treaty with Russia ratified.	1894. President Carnot assassinated at Lyons. M. Casimir-Perier, President. Captain Dreyfus tried and imprisoned.
			1895. North Sea and Baltic canal opened. Restrictions imposed on American insurance companies.	1895. Anti-Semitic agitation.	1895. President Casimir-Perier resigns. M. Felix Faure, President. Death of Pasteur.
	1897. William McKinley, President.	1897. Blackwell tunnel opened. The Queen's Diamond Jubilee celebrated.	1896. New civil code for the empire completed.	1896. Archduke Karl Ludwig, heir to the throne, dies. Millennial exposition at Budapest.	1897. Ten-hour law for railway employes passed.
	1898. Destruction of the *Maine* at Havana. War with Spain. Hawaii annexed.	1898. Death of Gladstone. Irish local government bill passed. Imperial penny-postage goes into effect.	1898. Death of Bismarck. Emperor visits Constantinople and Jerusalem.	1898. Assassination of the Empress by an anarchist at Geneva.	1898. Review of Dreyfus case granted.
	1899. Cuba is relinquished by Spain. Philippines and Porto Rico acquired.	1899. The Boer war in South Africa.			
1900-1928 A. D. Japan becomes a world power. Constitutional and representative government is extended in many parts of the world — notably in Russia, Persia, Turkey, China and Portugal. Renewed impulse given to international peace and arbitration. Great commercial expansion in Germany, France, Japan, Great Britain and the United States. Unprecedented power of the public press. Era of educational and social philanthropies. Decline in creative literature. Development of African resources.	1900. Civil government established in the Philippines. Chinese troubles.	1900. Field-Marshal Roberts takes command in South Africa.	1900. Abolition of the Roman law throughout Germany.	1900. Marriage of the heir apparent, Francis Ferdinand.	
	1901. Assassination of President McKinley by the anarchist Czolgosz. Capture of Aguinaldo. Death of Ex-President Harrison.	1901. Census of the Indian empire taken. Death of Queen Victoria and accession of Edward VII.	1901. Bicentenary of the coronation of the first king of Prussia.		1901. Diplomatic relations with Turkey suspended.
	1902. Cuban independence under Platt amendment. President Roosevelt recommends the purchase of the Panama Canal company.	1902. The British-Japanese alliance signed. Boer war ended. Marquis of Salisbury resigns as premier.	1902. Prince Henry of Prussia visits the United States. England and Germany press their Venezuelan claims.	1902. Triple Alliance renewed. The language question between Germany and Czechs.	1902. M. Combes forms a new French ministry.
	1903. Panama canal treaty signed with Colombia. Commercial treaty with China signed. Independence of Panama recognized.	1903. King Edward visits the King of Italy. Irish land bill passed the House of Parliament.		1903. New tariff bill. Visit of the Czar of Russia.	1903. Dreyfus case reopened. President Loubet visits King Edward.
	1904. Great Baltimore fire. U. S. Senator Burton convicted of malfeasance in office. St. Louis exposition opened.	1904. Col. Younghusband enters Tibet.	1904. German troops defeated in Africa.	1904. Ultimatum to the Sultan issued. Great railway strike.	1904. Arbitration treaties with Holland, Spain, Sweden, Norway, and the United States. Bill for separation of church and state introduced.
	1905. Protocol with Santo Domingo.	1905. Resignation of Lord Curzon as viceroy of India.	1905. Intervention of Germany in Moroccan affairs. The new commercial treaties. Marriage of the crown prince.	1905. Treaty with Germany ratified. Universal suffrage on an educational basis advocated.	1905. The Moroccan situation grows in complexity.
	1906. Riot at Brownsville, Texas. The President visited Panama. Great earthquake at San Francisco.	1906. King Edward visits Paris.	1906. Propaganda against Socialism.	1906. Prince Schillingfurst succeeds Baron Gautch.	1906. M. Falliéres, President. The church controversy. The Pope's encyclical. M. Sarcien, Premier.
	1907. Philippine assembly opened.	1907. King Edward and Emperor Francis Joseph meet at Ischl.	1907. German emperor visited London.	1907. Universal suffrage bill passed.	1907. Wine growers, agitation. French occupation of Morocco.
	1908. Voyage of the Pacific fleet to Asiatic waters. 1909. Tariff revised. 1910. Elections result in great Democratic gains.	1910. Death of King Edward VII. Accession of George V.	1910. Emperor William received Ex-President Roosevelt.	1909. Bosnia and Herzegovina acquired.	1910. Briand cabinet resigned.
	1911. Extra session of Congress called by President Taft. Canadian reciprocity bill passed. 1912. Tariff revision begun by Congress.	1911. King George formally opens the British Parliament. 1912. King George returns from Durbar in India. Steamship "Titanic" sinks with appalling loss of life.	1911. The Emperor urged a policy of reclamation. 1912. Large Socialist gains in German Diet.	1911. Austria strengthens her army and navy. 1912. Death of Premier Aerenthal.	1911. New ministry formed by Premier.

WAR TO THE PRESENT TIME—Continued

Spain and Portugal	Italy and Greece	Russia	Lesser Countries	Arts, Sciences, Etc.	Literature
1890. Castillo, Premier.		1890-1892. Famine through the empire.	1890. First Japanese Parliament opened.	1890. Polygamy abolished in Utah.	Hardy's *Novels.*
	1891. Treaty of Italy with Great Britain relative to East Africa. Triple Alliance renewed.			1891. Canadian Pacific railway completed.	
1893. War with Morocco.	1893. Pope's Jubilee at Rome.	1894. Death of Alexander III. Nicholas II., Czar.	1893. Krüger, President of the Transvaal. 1894. War between China and Japan.	1893. World's parliament of religions at Chicago. Electrical measurements established.	Brandes' *Essays.*
		1895. Diplomatic relations with Abyssinia. Persecution of the Jews.	1895. Cecil Rhodes a power in South Africa. Federation of Australia approved. Kongo State annexed to Belgium.	1895. Great refracting telescope made by Clark for Lick observatory. Discovery of Roentgen rays.	
	1896. (Italy) Peace with Abyssinia.	1896. First official census of the empire. 1897. Judicial reform in Siberia.	1896. Jameson raid in South Africa. 1897. Turko-Grecian war.	1897. Universal postal congress at Washington.	Mitchell's *Novels* and *Poems.*
1897. Assassination of Premier Canovas del Castillo. Scheme of Cuban autonomy approved. 1898. Spanish-American war. Treaty of Paris.	1898. Pope offers to mediate in the Cuban question.	1898. Port Arthur leased from China.	1898. Hawaii annexed to the United States. Switzerla d votes to take over railroads within her borders. Wilhelmina, Queen of Holland.	1898. Reform edict issued in China.	James' *Novels.*
		1899. Czar proposes universal peace.	1899. Venezuela-Guiana boundary line established.	1899. The "open-door" policy for China agreed to. Jubilee of the year 1900 proclaimed by the Pope.	Howell's *Novels.*
	1900. Assassination of King Humbert of Italy, Victor Emmanuel III., King.		1900. Outbreak of the Boxers in China.	1900. Opening of the Elbe and Trave canal, Germany.	
		1901. Count Tolstoi excommunicated.	1901. Submission of China to the allied powers. Inauguration of the federal government of the Commonwealth of Australia.		Kipling's *Stories* and *Poems.*
1902. Alfonso XIII., King.				1902. Marconi wireless system established on Italian warships.	Lagerlöf's *Novels.*
	1903. Death of Pope Leo XIII. Pope Pius X.		1903. Peter I., King of Servia.	1903. Completion of the Pacific cable. Message sent around the world in twelve minutes.	
1904. Death of Ex-Queen Isabella at Paris.	1904. King and Queen of Italy visit England.	1904. War with Japan over Manchuria begun.	1904. President Diaz of Mexico reëlected. Death of Paul Krüger, in Switzerland.	1904. New York subway opened.	Zangwill's *Novels.*
1905. Attempted assassination of the King in Paris.	1905. The railway bills passed in Italy.	1905. Fall of Port Arthur, and end of war. Great railway strike at St. Petersburg, Warsaw, and Moscow. Constitution granted by Czar, and the Duma authorized.		1905. Gigantic power plants erected at Niagara falls.	Sienkiewicz's *Novels.*
1906. King Alfonso married to Princess Victoria of England.	1906. Sennino, Premier. International exhibition at Milan.	1906. The Czar opened the first Russian Duma.	1906. Death of King Christian of Denmark. Norway and Sweden independent kingdoms.	1906. The Simplon tunnel opened. Pan-American conference meets at Rio de Janeiro. Wireless telegraphy conference at Berlin.	Phillips' *Poems.*
1907. King and Queen visit England.	1907. Italy signs arbitration treaty with Argentina.	1907. Third Russian Duma convened.	1907. Abdication of Korean emperor. Death of Oscar II. of Sweden.	1907. The *Lusitania* makes her first voyage.	
				1909. Great progress in aëronautics.	
1910. Spain recalled its envoy to the vatican. Portugal becomes a republic.	1910. Decree issued by the King of Greece for a revision of the constitution.	1910. Death of Count Tolstoi.	1910. Montenegro became a kingdom with Nicholas as king. Revolutionary outbreaks in Mexico. Japan annexed Korea.		Lemaître's *Essays.*
1911. Further creation of religious orders prohibited.	1911. Second parliament assembles.	1911. Russian army mobilized on Chinese frontier.	1911. Insurrections in Mexico. President Diaz forced to resign. Madero elected President.	1911. Andrew Carnegie gives funds for the construction of the most powerful telescope in the world.	
	1911-12. War with Turkey over Tripoli.	Premier Stolypin assassinated.	1912. China a republic; Yuan, president. Death of Mutsuhito; Yoshihito becomes Mikado of Japan.		

FROM THE END OF THE AMERICAN CIVIL

CHARACTERISTICS OF THE CENTURIES	UNITED STATES	GREAT BRITAIN	GERMANY	AUSTRIA	FRANCE
War: Great Britain, France, Russia, Belgium, Servia, Italy, Portugal, Roumania, Montenegro, Japan, the United States, Greece vs. Germany, Austria-Hungary, Turkey and Bulgaria on the other. The war becomes a great struggle between autocracy and democracy. Fall of German military autocracy and the establishment of several republics. Peace of Versailles accepted by all powers except U. S. Economic distress, depreciated currency, shortage of labor and raw materials. Numerous strikes. Most countries in Europe accept League of Nations. Diplomatic problems with Russia. Labor party in power in Great Britain for first time in history. **1925.** Locarno Pact ratified. **1929.** Fifteen nations sign pact for renunciation of war. **1930, '31, '32, '33, '34.** World wide depression. European dictatorships. **1933, '34, '35, '36.** European nations except Finland default in war debt payment to United States. **1935.** Germany renounces Versailles treaty. **1936.** Italian conquest of Ethiopia. **1937.** Labor conditions improved. Nations restrict war supplies to Spanish combatants.	**1914.** Regional Banking System. **1915.** Lusitania torpedoed. **1917.** U. S. enters World War on side of Allies. **1918.** Allies win war. Pres. Wilson formulates peace terms. **1919.** National Prohibition and Woman Suffrage. **1920.** Harding elected President. **1921.** Peace with Germany. International Disarmament Conference called. **1924.** Strict immigration law. **1927.** Devastating Mississippi floods. Lindbergh makes first non-stop flight, N. Y. to Paris. **1929.** Oil conservation policy announced. Byrd flies over South Pole. **1930.** Kellogg made judge of World Court. **1931.** Bank holiday. Hoarding law passed. Sound banks reopen. Gold Standard abandoned. National Recovery Act. **1933.** F. D. Roosevelt, President. **1935.** $4,800,000,000 appropriated for recovery and relief. **1936.** Supreme Court rules T.V.A. constitutional. **1937.** Wagner Labor Relations Act. Sit-down strikes.	**1914.** England declares war on Germany. **1915.** Government takes control of industries. **1917.** Jerusalem surrenders to Britain. **1918.** Woman Suffrage adopted. **1921.** Irish Revolution. **1922.** Irish Free State organized. **1923.** War Debts agreement with the U. S. **1925.** Conservative Party in power. Stanley Baldwin, Prime Minister. Adopts Gold Standard. **1927.** Diplomatic relations with Russia severed. **1928.** Woman suffrage. **1929.** Tea tax abolished. **1930.** Death of Balfour. Naval Arms Conference (United States, England, Japan, France, Italy) met and made a limited agreement. **1931.** Gold Standard abandoned. **1932.** First protective tariff act passed. **1935.** Industrial skies brighten. **1936.** George V. dies. Edward VIII, King. Abdicates Dec. 11. George VI, King. **1937.** Coronation of George VI.	**1914.** Invades Belgium and Northern France. Defeated at the Marne. Government controls industries and food. **1915.** Russians driven back. **1918.** Collapse of German military power. Revolution. German republic. Emperor William flees. **1922.** Republic stabilized by President Ebert. **1923.** The Ruhr invaded by France. Currency inflation and depreciation of the mark. **1924.** New currency. Dawes' Plan accepted. **1925.** Allies still occupy some parts of Germany. Von Hindenburg elected President of Germany. Ruhr evacuated. **1926.** Germany joins League of Nations. **1927.** Interallied control of Germany ceased. **1930.** Young plan adopted. Bruening became chancellor. Rise of German Fascists under Hitler. **1932.** Von Hindenburg re-elected President over Hitler. **1933.** Jews suppressed. **1934.** Von Hindenburg dies. Hitler becomes Reichsfuehrer with power of dictator. **1935.** Saar returned to Germany. Germany abrogates Versailles treaty. Conscription of large army. **1936-37.** Attempt at self-sufficiency. **1937.** German troops in Spain.	**1914.** The Austrian Crown Prince assassinated, June 28. Austria declares war on Serbia. **1916.** Francis Joseph dies and is succeeded by Charles I of Austria and Charles IV of Hungary. **1917.** U. S. declares war against Austria. **1918.** Hungary declares a republic, followed by Austria. Unconditional surrender and the abdication of the Emperor. **1919.** Famine in Vienna. **1920.** Horthy, conservative leader, in control of Austria. General social stagnation. **1923.** Expenditures reduced, revenue increased. **1925.** June, new Shilling currency goes into effect. **1926.** Union of Germany and Austria proposed. **1928.** Industrial conditions improve. **1930.** Signs treaty with Italy. **1931.** Cultivates German friendship. Tariff agreement. **1933.** Treaty of Little Entente; Czecho-Slovakia, Jugo Slavia and Roumania. **1934.** Chancellor Dollfuss assassinated. **1936.** Great political unrest. Schuschnigg, dictator.	**1914.** Resists German invasion. **1916.** Conference of the Allies at Paris plans to paralyze German trade after the war. Verdun defeated. **1917.** Germans driven back to Hindenburg line. **1918.** Five violent offensives of the Germans. Grand allied offensive. Nov. 11 armistice signed at Senlis. Victory. **1919.** Peace Congress at Versailles. **1920.** Deschanel elected president. **1922.** Reconstruction proceeded rapidly and the devastated areas rebuilt. **1923.** Germany ignored and partly repudiated war indemnity and therefore France invaded the Ruhr to levy collection. **1924.** Doumergue elected President. **1925.** War with Riffians in Morocco. **1927.** Treaties signed with Germany and Yugoslavia. **1928.** Treaty signed with United States. **1929.** Death of Marshal Foch. **1930.** Coste and Bellonte fly from Paris to New York. **1931.** Doumer elected president; 1932, killed. **1932.** Lebrun, President. **1936.** "People's Front" majority in Chamber of Deputies. **1937.** Paris Exposition.

PARALLEL OUTLINES OF AMERICAN HISTORY BY F. F. STEPHENS, Ph.D.

Historical events owe much of their importance to their relations with one another. The use of parallel outlines often enables the reader to see these relationships at a glance. It is recommended that when using these Parallel Outlines of American History the reader turn frequently to the preceding Parallels of Universal History for the same periods and turn also to the brief articles in the following pages on the History of Important Nations and their Dependencies as well as to the Dictionary of Biography in the latter part of the volume.

I. PERIOD OF DISCOVERY AND EXPLORATION, 1492-1607

RULERS	SPANISH EXPLORERS
1474-1516. Ferdinand and Isabella	**1492.** Columbus sails from Palos, Friday, Aug. 3, on his first expedition. He discovers a small island of the Bahama group, Oct. 12, Cuba, Oct. 28, and Hispaniola (now Hayti), Dec. 6. He returns to Spain the next year.
	1493-1496. Columbus makes his second expedition, discovers Jamaica, May 3, 1494, and explores various islands.
	1498-1500. Columbus sails on his third expedition, discovers various islands, lands on the mainland without knowing it to be a new continent, but is sent back to Spain in irons, where he is received with honor and the charges against him dismissed.
	1499-1507. Amerigo Vespucci on the coast of South America. He writes letters describing his exploration and an Alsatian geographer suggests that the land be named for him.
	1502-1504. Columbus makes his fourth and last voyage to America, discovers more islands, and explores the coast of the Isthmus.
	1510. Alonso de Ojeda founds San Sebastian, the first colony in South America.
	1513. Ponce de Leon discovers Florida, and takes possession in the name of Spain.
	Balboa crosses the Isthmus and discovers the Pacific.
1516-1556. Charles I.	**1519.** Francis de Garay discovers mouth of Mississippi. Cortes overthrows Aztec power in Mexico.
	1519-1521. Magellan's circumnavigation of the globe.
	1520-1527. Exploration of Atlantic coast of North America by Spanish explorers.
	1528. Explorations of Narvaez from Florida westward.
	1539-1542. De Soto penetrates the Mississippi Valley region as far northward as the later state of Arkansas.
	1540-1542. Coronado's expedition northward from Mexico to the present site of Santa Fe, and to Quivera (Kansas).
1556-1598. Philip II.	**1556.** Pedro Menendez de Aviles discovers and names the harbor of St. Augustine, takes possession of the land in the name of the king of Spain, and destroys the Huguenot settlements.

RULERS	PORTUGUESE EXPLORERS
1495-1521. Emanuel the Great. (Golden age of Portugal).	**1498.** Vasco da Gama reaches India by sailing around Africa.
	1500. Cabral discovers the coast of Brazil. Garper Cortereal, in the service of Portugal, discovers Labrador.

RULERS	FRENCH EXPLORERS
1515-1547. Francis I.	**1524.** Giovanni da Verrazano, in the service of the King of France, coasts between the 28th and 50th degrees of north latitude, and discovers New York harbor.
1547-1559. Henry II.	**1534-1535.** Discovery and exploration of St. Lawrence Bay and River by James Cartier.
1559-1560. Francis II.	**1562.** Jean Ribault establishes a Huguenot settlement at Port Royal.
1560-1574. Charles IX.	**1563.** Laudonniere establishes a Huguenot settlement at the mouth of St. John's river, naming it Fort Caroline.
	1565. The Huguenot settlement destroyed by Menendez.
	1567. De Gourgues avenges the destruction of the Huguenots by destroying the Spanish forts in Florida.
1574-1589. Henry III.	**1603.** Samuel de Champlain explores the St. Lawrence.
1589-1610. Henry IV.	**1604.** Champlain founds a settlement on St. Croix island.
	1605-1606. Champlain explores the coast of New England.

RULERS	ENGLISH EXPLORERS
1485-1509. Henry VII.	**1497.** John Cabot discovers the North American continent.
1509-1547. Henry VIII.	**1527.** Captain John Rut explores the coast of North America.
1547-1553. Edward VI.	**1565.** John Hawkins passes along the coast of Florida.
1553-1558. Mary.	**1566.** Charter is granted to Sir Humphrey Gilbert to open a northwest passage.
1558-1603. Elizabeth.	**1576-1578.** Voyages of Sir Martin Frobisher to discover a northwest passage.
	1577-1580. Circumnavigation of the globe by Sir Francis Drake. He takes possession of New Albion, (California) in 1579 in the name of Queen Elizabeth.
	1578. Attempt of Sir Humphrey Gilbert to plant a colony in Newfoundland.
	1584. Raleigh's expedition, under command of Amadas and Barlowe, takes possession of coast of Virginia in the name of Queen Elizabeth.
	1585. Raleigh's second expedition leaves 107 men on Roanoke Island. They are afterward rescued by Sir Francis Drake.
	1587. Raleigh's third expedition, under John White, lands 120 people. The colony disappears entirely.
	1602. Gosnold's exploration along the coast of New England.
	1603. Martin Pring enters the present harbor of Plymouth.
1603-1625. James I.	**1606.** Charter for colonization granted to the London and Plymouth Companies. The former promptly sends an expedition which founds the colony of Virginia by planting a settlement at Jamestown, May 13, 1607.

II. THE COLONIAL PERIOD, 1607-1775

The Southern Colonies	The Middle Colonies	New England Colonies	English Rulers and Events
1607. The first permanent English settlement at Jamestown. **1612-1616.** Introduction of tobacco culture into Virginia. **1619.** Meeting of the House of Burgesses in Virginia, the first representative body in America.	**1609.** Henry Hudson on the Hudson River. **1614.** Beginnings of settlements on Manhattan Island. **1617-1623.** Beginnings of the settlement of New Jersey by the Dutch.	**1608-1620.** The "Pilgrim Fathers" in Holland.	**1603-1625.** James I. develops the Divine Right of Kings theory. Development of Puritanism.

WAR TO THE PRESENT TIME—A. D. 1865-

Spain and Portugal	Italy and Greece	Russia	Lesser Countries	Arts, Sciences, Etc.	Literature
1915. Revolutionary outbreaks in Portugal. Military clique overthrown by Democrats.	**1912.** Balkan war against Turkey.	**1913.** Serfdom abolished.	**1913.** Peace treaty with Turkey. War among Balkan Allies over spoils.	**1912.** New chemical element discovered—Niton.	Tagore's **Poems.**
1916. Portugal enters war.	**1913.** King George of Greece assassinated.	**1914.** Russia enters war against Teutonic Alliance.	**1914.** Japan, Servia, Belgium enter war on side of Entente.	**1916.** German submarine Deutschland makes voyage to U. S.	Rolland's **Novels.**
1917. Serious strikes in Madrid.	**1915.** War: Italy vs. Austria.	**1917.** Revolution. Czar abdicates. Bolsheviki government set up.	**1915.** Bulgaria enters war on side of Teutons.	**1917.** Invention of "Liberty Motor" and depth bomb.	Heidenstam's **Poems.**
1919. Royalist revolution in Portugal. Peace Treaty signed.	**1917.** Constantine abdicates. Greece joins Entente.	**1918.** "Ukraine Republic" makes peace with Central Powers. Bolsheviki sign peace treaty with Germany. Lenin and Trotsky government gaining strength.	**1916.** Rumania declares war on Austria.	**1918.** First fabricated steel ship launched.	France's **Novels.**
1923. Senhor Teixeira Gomes installed as president of Portuguese Republic.	**1921.** Greece at war with Turkey. The Fascisti under Mussolini put down Syndicalism and seize the government.	**1920.** Defeat of Wrangel.	**1917.** Siam, China and Brazil enter war against Teutonic Allies.	**1919.** Discovery of helium gas, non-explosive.	Yeat's **Poems.**
1925. Direct cable to United States inaugurated.	**1922.** Mussolini becomes Premier. Greek army driven out of Asia Minor by the Turks.	**1921.** Commercial peace with United States. Lenine and Trotsky have stabilized Russian affairs.	**1918.** Rumania makes peace with Central Powers. Bulgaria and Turkey surrender unconditionally.	**1921.** Wireless telephone perfected.	Bergson's **Writings.**
1926. Spanish Criminal Code revised. Spanish Victories in Riffian War.	**1924.** By a plebiscite, Greece becomes a Republic.	**1924.** Death of Lenin. Alexis Ivanovitch Rykoff new head of Soviet government.	**1919.** Independence of Czecho-Slovakia, Jugo - Slavia, Poland, Lithuania.	The Einstein Theory announced.	Wells' Outline of History (1922). The education of Henry Adams.
1927. Revolution in Portugal. Arbitration Treaty signed, between two countries.	**1925.** All Greeks compelled to leave Turkey.	**1925.** Trotsky deposed. Diplomatic relations resumed with Japan.	**1921.** Ireland given freedom.	**1923.** Radio broadcasting perfected. The Tomb of King Tut-Ankh-Amen discovered.	Conrad's **Novels.**
1930. Rivera resigned. Died. Gen. Berenguer mad. premier.	**1928.** Italy returns to gold standard.	**1927.** England severs diplomatic relations.	**1923.** Devastating earthquake in and about Tokio.	**1926.** Aeroplanes used to explore Polar Regions.	Benavente's **Dramas.**
1931. Alfonso XIII relinquishes throne; Zamara becomes provisional president.	**1929.** Italo-Vatican treaty.	**1928.** First 5-Year Plan.	**1926.** Arbitration Treaty, outlawing war, made between Sweden, Norway, Denmark and Finland.	**1927.** Television successful. Radiotelephony between U. S. and England.	Hamsun's **Novels.**
1935. Conditions improve in Portugal under Premier Salazar.	**1933.** Turks adopt Turkish in lieu of Arabian language in Mosques.	**1930.** Drive against the churches. Railroad in Asia.	**1929.** Dictatorship in Jugoslavia.	**1929.** Cascade tunnel opened.	Shaw's **Plays.**
1936. Agaña elected president of Spain. '36-'37. Civil War.	**1935.** Italy declares war on Ethiopia. Greece recalls its former king, George II.	**1931.** Strengthens economic position in Far East.	**1930.** Carol returned as King of Rumania.	**1929.** Einstein publishes new theory identifying gravitation with electro-magnetism. Dirigible **Graf Zeppelin** flew around the world.	Undset's **Novels.**
	1936. Ethiopia conquered.	**1932.** Treaty with France.	**1932.** Japan and China at war. League of Nation orders Japan to evacuate Manchuria.	**1930.** Ninth planet, Pluto, discovered at Flagstaff, Arizona.	**1933.** Noel Coward's "Design for Living." Sinclair Lewis' "Ann Vickers."
	1937. Italian troops in Spain.	**1935.** Dictator Stalin controls Russia.	**1933.** Japan refuses, resigns from League. Paraguay and Bolivia at war.	**1932.** Vitamin C isolated.	**1934.** Allen's "Anthony Adverse."
		1937. Political unrest.	**1935.** Japan denounces Washington Naval Treaty.	**1936.** Dirigible Von Hindenburg establishes trans-Atlantic air-service.	**1935.** Proletarian tendency arises, e.g. Halper's "Union Square."
			1936. King Fuad dies. Farouk I, King of Egypt.	**1937.** The Hindenburg burns at Lakehurst, N. J.	**1936.** Anne Lindberg's "North to the Orient." Robert Sherwood's "Idiot's Delight."
			1937. China attempts unification against Japanese aggression.		**1937.** Rudyard Kipling's "Something of Myself."

PARALLEL OUTLINES OF AMERICAN HISTORY—Continued

II. THE COLONIAL PERIOD, 1607-1775—Continued

The Southern Colonies	The Middle Colonies	New England Colonies	English Rulers and Events
1610. Negro slaves first imported into Virginia. Coming of the "ninety maidens" to Virginia, resulting in the introduction of family life.	**1621.** The Dutch West India Company chartered.	**1620.** Landing of the Pilgrims at Plymouth, Dec. 21.	
1622. Indian massacre in Virginia.		**1622.** First settlement in New Hampshire, at Piscataqua.	
1624. Virginia becomes a royal province.			**1625-1649.** Charles I.
	1626. Founding of New Amsterdam (later New York City).		**1628.** Petition of Right.
	1629. Establishment of the patroon system to encourage settlement in New Netherland.	**1629.** Charter granted to the Massachusetts Bay Company.	
		1629-1640. The "Great Migration" of Puritans to Massachusetts.	
1634. Maryland founded by Lord Baltimore.		**1633-1636.** Colonization of Connecticut River valley.	
	1638. Swedish settlement on the Delaware River.	**1636.** First college in America founded by Massachusetts. Two years later it is named Harvard, in honor of John Harvard. Roger Williams settles Rhode Island.	
		1639. The "Fundamental Orders" of Connecticut. First printing press in America set up at Cambridge.	**1640.** Meeting of the Long Parliament.
1642-1652. Governor William Berkeley's first ministration in Virginia.			**1642.** Civil war begins.
1649. The Maryland Toleration Act.	**1647-1664.** Peter Stuyvesant governor of New Netherland.	**1643.** Organization of the New England Confederation.	**1649.** Execution of Charles I.
	1655. The Swedish settlements on the Delaware conquered by the Dutch.		**1649-1660.** The Commonwealth.
. Governor Berkeley's second administration in Virginia.			**1660.** Restoration of the Stuarts.
		1662. Charter granted to Connecticut.	**1660-1685.** Charles II. The Navigation Acts (1651, 1660, 1663, 1672, 1696.)
1663. Carolina granted to eight proprietors.	**1664.** New Netherland, conquered by the English, becomes New York.	**1663.** Charter granted to Rhode Island.	
	1664. New Jersey granted to Berkeley and Carteret.		
1669. Lock's Fundamental Constitutions for the Carolinas drawn up.			
1670. Charleston, S. C., founded.			
1676-1677. Bacon's Rebellion in Virginia.		**1675-1676.** King Phillip's war in New England.	
	1681. Grant of Pennsylvania to William Penn.		
	1682. Philadelphia laid out by Penn.		
	1683. First Assembly in New York under English rule.		
		1684. Massachusetts becomes a royal colony.	
		1686-1689. Andros, governor of New England.	**1685-1689.** James II.
	1689-1690. Leisler's rebellion in New York.		**1688-1689.** The "Glorious Revolution."
			1689-1702. William III and Mary.
		1691. Incorporation of Plymouth and Maine with Massachusetts.	
	1702. New Jersey becomes a royal province.	**1691-1693.** Salem witchcraft episode.	
1692. William and Mary College founded.		**1700.** Yale College founded.	
		1704. Appearance of "The Boston News Letter," the first newspaper in America.	**1702-1714.** Queen Anne.
			1714-1727. George I.
	1732. Zenger's trial and acquittal in New York, establishes freedom of the press.		**1727-1760.** George II.
1721-1729. The Carolinas become royal colonies.			
1732. Organization of the Georgia Trustees to assist poor debtors and to form a military outpost against Spain.			
1733. Savannah founded.	**1752.** Franklin experiments with electricity.		**1733.** Molasses Act.
1736. Appearance of "The Virginia Gazette," first newspaper in the South.	**1765.** First medical school in America at the University of Pennsylvania.		

II. THE COLONIAL PERIOD, 1607-1775—Continued

French Rulers	French Colonies	Spanish Rulers	Spanish Colonies
1589-1610. Henry IV.	1608. Champlain founds Quebec.	1598-1621. Philip III.	1610. Leon, Central America, is founded.
1610-1643. Louis XIII.	1611. French Jesuits settle at Port Royal.		1611. Talamanca Indians of Central America massacred by the Spanish.
	1615. Champlain explores Lake Huron, and establishes Indian missions.		1617. Separation of Rio de la Plata (modern Argentina) from Paraguay.
	1620-1635. Champlain governor of (New France) Canada.		
	1629-1632. English capture and restore the French settlements in New France.	1621-1665. Philip IV.	1630. Alvarado subdues Central American Indians.
	1634. Jean Nicolet explores Lake Michigan.		Hayti seized by French buccaneers.
1643-1715. Louis XIV.	1641. Montreal founded.		1630-1644. The Dutch get control of Brazil.
	1659. French fur traders explore Lake Superior.		1638. Discovery of the use of quinine in Peru.
	1668. Marquette establishes mission at Sault Ste. Marie.		1644-1655. Portuguese expel the Dutch from Brazil.
	1669. La Salle explores the Ohio River.	1665-1700. Charles II.	1665. St. Augustine pillaged by English buccaneers.
	1671. The French take formal possession of the Northwest.		1671. The Danes occupy St. Thomas.
	1673. Marquette and Joliet discover the Upper Mississippi.		1685. Dampier, an English buccaneer, sacks Leon.
	1681-1682. La Salle descends the Mississippi to its mouth.		1693. Gold mining begins in Brazil.
	1685-1687. La Salle attempts to colonize the lower Mississippi, fails to find its mouth, plants a short-lived settlement at Matagorda Bay, Texas, and is killed by his own men while journeying overland to Canada.		1695. Capture of Cartagena by the French.
		1700-1746. Philip V.	1698. The Darien scheme; 1,200 Scotchmen attempt to settle on the Isthmus but fail.
			1711. French capture Rio de Janerio, but restore it.
			1713. By the Treaty of Utrecht, England gains right of supplying Spanish colonies with African slaves.
	1699. Biloxi founded by Iberville and Bienville.		1726. Founding of Montevideo.
	1702. Settlement in Alabama on the Mobile river.		1740. Oglethorpe attacks St. Augustine, Florida, but is repulsed.
	1710. Port Royal captured by an English fleet.		1742. The Spanish invade Georgia unsuccessfully.
1715-1774. Louis XV.	1718. New Orleans founded.		
	1729. Massacre of French at Natchez by Indians.	1746-1759. Ferdinand VI.	1746. Lima destroyed by an earthquake.
	1749. French take possession of Ohio Valley. Fort Rouille (Toronto) built.		1759. Expulsion of Jesuits from Brazil.

STRUGGLE OF FRANCE AND ENGLAND FOR NORTH AMERICA: THE INTERCOLONIAL WARS.

Causes	Events	Results
General:	**1689-1697. King William's war.**	1697. Peace of Ryswick.
Historical rivalry between the French and English nations.	1690. Destruction of Schenectady and other towns by the French and Indians. Seizure of Port Royal by the English.	Restoration of conquests by both nations.
Opposite tendencies and characteristics of their colonists.	**1702-1713. Queen Anne's war.**	1713. Treaty of Utrecht.
Simply the American phase of European wars.	1704. Deerfield destroyed by French and Indians.	France ceded to England the Hudson Bay region, Nova Scotia (Acadia), Newfoundland, and St. Christopher island (in the West Indies).
Special:	1706. Invasion of Carolina by French and Spanish. Their repulse by William Rhett.	
Conflicting claims regarding Acadia and New France.	1710. Capture of Port Royal, Acadia, by an English fleet, and change of name to Annapolis.	
Conflicting claims for the Ohio Valley.	**1744-1748. King George's war.**	1748. Treaty of Aix-la-Chapelle.
Disputes over boundaries.	1745. Siege and capture of Louisburg, Cape Breton Island, by colonial troops.	Mutual restoration of conquered territory.
Clashes between the frontiersmen of the two nations.	**1754-1763. Old French and Indian war.**	1763. Treaty of Paris.
The Indian policies of the two nations, resulting in incessant Indian troubles.	1754. Congress of Albany. The Albany Plan of Union.	France ceded to England all Canada (except two unfortified islands in the Gulf of St. Lawrence), and all her territory east of the Mississippi except New Orleans; and to Spain all her territory west of the Mississippi, and New Orleans.
	1755. Banishment of Acadians (French) from Nova Scotia.	Spain ceded to England Florida in exchange for Havana.
	1755. Braddock's defeat.	The war created a bond of union among the colonists and gave the colonists some experience in warfare.
	1757. Capture of Fort William Henry by the French.	
	1758. Capture by the English of Louisburg, and of Fort du Quesne. The latter place is renamed Fort Pitt (Pittsburg).	
	1759. Capture of Quebec by General Wolf, Sept. 13.	
	1760. Capture of Montreal by the English.	
	1761. Capture of Havana by the English.	

III. PERIOD OF UNION AND INDEPENDENCE, 1761-1783

Spanish Colonies	Causes of the Revolution	British Colonies
	Increasing divergence of English and American institutions.	1761. James Otis argues against the legality of the issuance of Writs of Assistance.
	The colonial policy of England (the "mercantile system"), by which the colonies were arbitrarily governed.	1763. Patrick Henry, in the "Parson's Cause," attacks the king's veto power.
	Restrictions on external and internal trade through the Navigation acts.	1765. Passage of the Stamp act by the English Parliament. The Stamp Act Congress, representing nine colonies, meets in New York, October 7, to protest against the Stamp act.
	Restrictions on manufactures.	Adoption of resolutions by the Virginia House of Burgesses, proposed by Patrick Henry, against the exercise of the taxing power by England.
	Arbitrary methods of enforcing the trade laws.	Organization of the Sons of Liberty.
	Insistence of the colonists upon their rights as Englishmen.	1766. The Stamp act is repealed, but the Declaratory act passed by the English Parliament.
	Contests between the royal governors and the popular assemblies.	1767. Passage of the Townshend acts, levying new duties, providing for the reorganization of the Colonial Customs Service, and providing for the coercion of the New York Assembly.
1765-1778. Abrogation of restrictions upon Spanish colonial trade.	Fear that the crown would appoint a bishop to control the colonial church.	1768. The circular letter of Massachusetts sent to the other colonies. Troops sent to Boston.
	Taxation of the colonists without representation.	1769. The second set of Virginia resolutions adopted.
	Maintenance of a standing army in the colonies.	1770. The "Boston Massacre," March 5.
	(See the Declaration of Independence for an American statement of the causes of the war.)	Repeal of duties, except on tea.
1768. Unsuccessful revolt of the French against Spanish rule in Louisiana; severely punished.		1772. Organization of local Committees of Correspondence.
		1773. Organization of colonial Committees of Correspondence.
		The Boston Tea Party.
		Daniel Boone in Kentucky.
1773-1774. Earthquakes and volcanic eruptions in Central America destroy Santiago and Old Guatemala.		1774. Passage of the "Intolerable Acts" by Parliament to punish Massachusetts.
		Meeting of the First Continental Congress at Philadelphia, September 5.
1776. Creation of the viceroyalty of Buenos Ayres, including also Uruguay, Paraguay, and Bolivia.		1775. Passage of the New England Restraining Act by Parliament.
		The beginning of war between England and her colonies at Lexington, April 19.
		Meeting of the Second Continental Congress, May 10.
		1776. Appointment of committees in Congress to draft a form of confederation for the colonies, to draft a Declaration of Independence, and to form foreign alliances.

Results of the Revolution

By Treaty of Paris:
- England acknowledges the independence of the United States.
- The boundaries of the United States are fixed.
- Free navigation of the Mississippi and the Great Lakes is given the United States.
- Certain rights in the fisheries are given the United States.
- England cedes Florida to Spain.

PRINCIPAL CAMPAIGNS AND BATTLES OF THE AMERICAN REVOLUTION.

The leading battles are indicated in **bold-face**; successful commanders in *italics*

Date	Names and Places of Battles	Commanders		Engaged	
		American	British	Amer	British
1775-1776	**Campaign in New England.**				
April 19, 1775	**Lexington, Concord**	Barret and Buttrick.	*Smith* and *Lord Percy*	.....	1700
May 10, 1775	Ticonderoga	Ethan Allen and *Eaton*.	Delaplace.	83	48
June 17, 1775	**Bunker Hill**	Warren, Prescott and Putnam.	*Howe* and *Pigot*.	3000	4500
Dec. 6-31, 1775	Quebec	Schuyler, Montgomery and Arnold.	*M'Lean* and *Carleton*.	900	1200
Dec. 9, 1775	Norfolk, Va.	Woodford.	Lord Dunmore.	.....	.....
Mar. 17, 1776	Boston	The British evacuate the city and harbor.			
June 28, 1776	Charleston (Ft. Moultrie).	*Moultrie, Lee* and Armstrong.	Clinton.	400	4000
1776-1778.	**Campaign in Middle States.**				
Aug. 26, 1776	Brooklyn, L. I.	Green and Sullivan.	*Howe, Clinton* and *Cornwallis*.	10000	20000
Sept. 16, 1776	Harlem Plains, N. Y.	Washington.		.....	.....
Oct. 28, 1776	**White Plains, N. Y.**	Washington.	*Howe*.	1600	2000
Nov. 16, 1776	Fort Washington, N. Y.	Magaw.	*Howe*.	3000	5000
Dec. 26, 1776	**Trenton, N. J.**	*Washington*.	Lord Cornwallis and Rahl.	2400	1000
Jan. 3, 1777	**Princeton, N. J.**	*Washington*.	Mawhood.	3000	1800
Aug. 15, 16, 1777	**Bennington, Vt.**	*Stark* and *Warner*.	Baum and Beyman.	.....	1200
Sept. 11, 1777	Brandywine, Pa.	Washington.	*Howe*.	11000	18000
Sept. 19, 1777	**Bemis Heights, N. Y.**	*Gates*.	Burgoyne.	2500	3000
Oct. 4, 1777	Germantown, Pa.	Washington.	*Howe*.	11000	15000
Oct. 7, 1777	**Stillwater** (Saratoga).	*Gates*.	Burgoyne.	8000	6000
June 28, 1778	**Monmouth, N. J.**	*Washington*.	Sir Henry Clinton.	12000	11000
1778-1781.	**Campaign in the South.**				
Dec. 29, 1778	Savannah, Ga.	Robert Howe.	*Campbell*.	900	2000
Mar. 3, 1779	Brier Creek, Ga.	Ashe.	*Prevost*.	1200	1800
July 16, 1779	Stony Point, N. Y.	*Wayne*.	Clinton.	1200	600
Aug. 29, 1779	Chemung, N. Y.	*Sullivan*.	Brant.	4000	1500
Oct. 9, 1779	Savannah, Ga.	Lincoln.	*Prevost*.	4500	2900
May 12, 1780	Charleston, S. C.	Lincoln.	*Clinton*.	3700	9000
Aug. 15, 1780	Camden, S. C. (Sanders Creek).	Gates.	*Cornwallis*.	3000	2200
Oct. 7, 1780	**Kings Mountain, N. C.**	*Campbell*.	Ferguson.	900	1100
Jan. 17, 1781	**Cowpens, S. C.**	*Morgan*.	Cornwallis and Tarleton.	900	1100
Mar. 15, 1781	Guilford C. H., N. C.	Greene.	*Cornwallis*.	4400	2400
April 25, 1781	Hobkirk's Hill, S. C.	Greene.	*Rawdon*.	1200	900
Sept. 6, 1781	New London, Conn., Fort Griswold.	Ledyard.	*Benedict Arnold* and *Eyre*.	150	800
Sept. 8, 1781	**Eutaw Springs, S. C.**	*Greene*.	Lord Rawdon.	2000	2800
Oct. 17-19, 1781	**Yorktown, Va.**	*Washington*.	Cornwallis.	16000	7500

THE UNITED STATES

1776. Adoption of the Declaration of Independence, July 4. It is signed August 2.
Delaware forbids the further importation of slaves.

1777. The Articles of Confederation are sent to the states for ratification.

1778. An offensive and defensive alliance is concluded with France (the first and only such alliance concluded in the history of the United States). A commercial treaty is also signed with France.

1779. Sept. 23. Victory of the *Bon Homme Richard*, John Paul Jones, commander, over the *Serapis*, Captain Pearson, commander. The most daring naval exploit of the war.

1780. Massachusetts adopts a state constitution containing a clause in the bill of rights which in 1784 was interpreted to prohibit slavery.
Pennsylvania provides for gradual emancipation.
The treason of Benedict Arnold at West Point and the capture and execution of Major André.

1781. Articles of Confederation go into effect.

IV. PERIOD OF THE CONFEDERATION, 1781-1788

THE UNITED STATES

Foreign and Commercial Affairs	Domestic Affairs
	1781. The "Five per cent. Amendment" to the Articles of Confederation is proposed but is later defeated by Rhode Island. 1781-1802. Cession to Congress of the claims of various states to western lands.
1782. Holland recognizes the independence of the United States. 1783. Denmark, Sweden, Spain and Russia recognize American independence. Peace signed with Great Britain, Sept. 3. 1784. Congress adopts the decimal system of coinage.	1783. The revenue amendment is proposed. Is defeated later by New York. Washington resigns his command December 23. 1784. Congress passes the Jefferson ordinance for the government of the West. Dispute between Connecticut and Pennsylvania over the Wyoming Valley. Organization of the Methodist Episcopal church in America.
1785. Benjamin Franklin returns from his post in France, and is succeeded by Thomas Jefferson. John Adams is appointed minister to England. 1785-1787. Commercial disputes between various ones of the States.	1785. Passage of the ordinance for the survey and administration of the Western territory. Disestablishment of the Anglican Church in Virginia by the passage of the Religious Freedom Act.
1786. A convention at Annapolis to adjust the commercial difficulties between the states leads to the call for the Philadelphia Convention of 1787. Commercial treaty is concluded with Prussia.	1786. Shays's rebellion in Massachusetts. The craze for paper money results in its issue in seven states. Culture of sea-island cotton introduced into Georgia and South Carolina. 1787. The "Ordinance of 1787" guarantees to the Northwest religious freedom, freedom from slavery, encouragement of education, civil liberty, and the admission into the Union of new states from that section. The Philadelphia Convention, in session from May 25 to Sept. 17, formulates a new Constitution and sends it to the states for ratification. 1788. The new Constitution is ratified by a sufficient number of states to put it into force.

British North America	Latin America and the West Indies
	1780. Peruvian insurrection led by Amaru.
1783. Treaty of Paris leaves Canadian boundaries and fishing rights ambiguous.	
1784. About 40,000 Loyalists from U. S. settle in Nova Scotia and Upper Canada (west of Ottawa river). Province of New Brunswick, with Loyalist population, separated from Nova Scotia. 1785. Lieut-Gov. Hope reports dissensions regarding laws, land tenure, religion and education between French Canadians, (200,000) on lower St. Lawrence river, and "United Empire Loyalists" (some 10,000) settled between Montreal and Kingston. 1786. Sir Guy Carleton, soon afterward made Lord Dorchester, appointed Gov.-Gen. over whole of British North America.	1786. Pacification of the negroes and Indian tribes in Dutch Guiana.
1788. Lord Dorchester, in spite of racial disputes, advises against dividing province of Canada into two. But British Government, in response to popular demand, prepares to divide the province and provide for representative government.	

V. FROM THE ADOPTION OF THE CONSTITUTION TO THE CIVIL WAR, 1789-1861

THE UNITED STATES

Political Events	Presidents and Cabinet Officials	Social and Industrial Progress	British North America	Latin America and the West Indies
1789. Organization of the executive, legislative, and judicial departments of the new government. The first Congress meets in New York. 1790. First decennial census is taken. Congress decides to locate the national capital on the banks of the Potomac. Assumption of the public debts previously contracted by the several states. Passage of the first excise law. 1790-1795. War with the Indians north of the Ohio. 1791. Organization of the First National Bank. Ratification of the first ten amendments to the Constitution. Admission of Vermont into the Union.	**George Washington.** *President.* John Adams, *Vice-President.* Thomas Jefferson, *Secretary of State.* Alexander Hamilton, *Secretary of Treasury.* Henry Knox. *Secretary of War,* Edmund Randolph, *Attorney-General.*	1789. Control over foreign commerce passes from the states to the federal government. North Carolina establishes the first of the state universities. 1790. Samuel Slater sets up first complete cotton machinery at Pawtucket, Rhode Island. First patent law is passed. Organization of the "Pennsylvania penal system." 1790-1799. Rapidly increasing demand for cotton. 1791. Alexander Hamilton's Report on Manufactures. Formation of the New York Society for promoting Agriculture.	1789 and 1793. Sir Alexander Mackenzie explores the Athabasca region. 1790. British Parliament appropriates £3,110,000 to reimburse the Loyalists for their losses in the American Revolution. 1791. "Constitutional Act" passed by British Parliament separating Canada into Upper and Lower provinces, with Ottawa river as boundary. Each province was granted a legislature comprising an appointed upper house and an elected lower house. Accordingly French law was continued in Lower while English law was established in Upper Canada. Protests came only from the small British element in Lower Canada.	1791. Beginning of the negro insurrection in Hayti, prompted by French revolutionary doctrines.
1792. Admission of Kentucky. Formation of the first political parties under the Constitution.		1792. Founding of Williams College. Formation of the Massachusetts Society for promoting Agriculture.	1792. 1200 negroes previously carried from U. S. by Loyalists and emancipated, deported from Nova Scotia to Sierra Leone in West Africa as colonists.	
1793. The first proclamation of neutrality as to the war in Europe issued, April 22. First fugitive slave act passed. Cornerstone of national capitol laid by Washington. Case of Chisholm *vs.* Georgia decided. Genet's meteoric career as minister from France.	**George Washington,** *Reëlected President.* John Adams, *Reëlected Vice-Pres.* Thomas Jefferson, E. Randolph, T. Pickering, *Secretaries of State.* Alexander Hamilton, O. Wolcott, *Secretaries of Treasury.* Henry Knox, T. Pickering, J. McHenry, *Secretaries of War.* E. Randolph, W. Bradford, C. Lee, *Attorney-Generals.*	1793. Whitney invents the cotton gin; cotton production greatly stimulated. Establishment of a mint at Philadelphia. Appearance at Cincinnati of the first newspaper north of the Ohio, *The Sentinel of the Northwestern Territory.* Rapid expansion of American carrying-trade, resulting from American neutrality.	1793. Legislature of Upper Canada provides for gradual abolition of slavery.	
1794. Whisky insurrection in Western Pennsylvania. Jay treaty concluded with England. Ratified the next year. Wayne defeats the Indians at Maumee Rapids. 1795. Treaty of the Escurial with Spain. Treaty at Greenville with the Indians north of the Ohio. 1796. Admission of Tennessee. Washington issues his farewell address, September 17. The French Directory issues a decree against American commerce.		1794. Mail boats and passenger boats are established on the Ohio from Wheeling to Limestone (Maysville). Founding of Bowdoin College. 1795. Jacob Perkins patents a machine for cutting and heading nails. 1796. The first permanent type-foundry is established at Philadelphia. The New York Insurance company is incorporated. 1797. The first patent for a cast-iron plow is granted Charles Newbold of New Jersey. A financial panic. 1798. "Hail Columbia" is composed by Joseph Hopkinson. First salt manufactory established in Ohio. Merino sheep are introduced from Spain.	1794. Toronto, previously called York, made capital of Upper Canada. Jay Treaty affects Canadian Commerce. 1794-1795. Political disputes in Lower Canada over liquor licenses and fees. 1796. Resignation of Lord Dorchester after a decade of splendid service as Governor-General. Surrender by Great Britain of military posts in United States Northwest Territory. 1797. Beginning of construction of Sault Ste. Marie Canal.	1794. Toussaint L'Ouverture becomes leader of the Haytian revolt. 1795. Subjugation and deportation of Jamaican Maroons (descendants of runaway slaves dwelling in mountain fastnesses). Etienne Boré founds the sugar industry in Louisiana.
1797. Special session of Congress to consider relations with France. The X. Y. Z. overtures. 1798. Adoption of the Eleventh amendment. Passage of the Alien and Sedition laws. The Virginia and Kentucky Resolutions. The navy department is established. Naval quasi-war with France. 1799. Second set of Kentucky Resolutions. Death of Washington. 1800. The capital is removed from Philadelphia to Washington. Treaty with France abrogates the treaty of alliance of 1778.	**John Adams,** *President.* Thomas Jefferson, *Vice-President.* T. Pickering, John Marshall, *Secretaries of State.* O. Wolcott, Samuel Dexter, *Secretaries of Treasury.* J. McHenry, Samuel Dexter, R. Griswold, *Secretaries of War.* Chas. Lee, *Attorney-General.* Benjamin Stoddert, *Secretary of Navy,*	1799-1800. The "Great Revival" of evangelical religion. 1800. An act passed to permit the sale of small tracts of public land on credit. India rubber is first imported into the United States. 1800-1825. Beginning of labor organizations.	1800-1812. Many Americans and Scotch immigrate into Upper Canada.	1800. Transfer of Louisiana from Spain to France.
1801. John Marshall is appointed Chief Justice. The "party revolution" by which the Republicans displace the Federalists. 1801-1805. War with Tripoli. 1802. Spain withdraws the right of deposit at New Orleans.	**Thomas Jefferson,** *President.* Aaron Burr, *Vice-President.* James Madison, *Secretary of State.* Samuel Dexter, Albert Gallatin, *Secretaries of Treasury.* Henry Dearborn, *Secretary of War.* Levi Lincoln, *Attorney-General.*	1801. New York *Evening Post* is founded by Alexander Hamilton. Beginning of sheet-copper manufacturing at Canton, Mass. 1802. The Du Pont powder works established.		1801. Toussaint L'Ouverture declares Haytian independence and is made president of the "Black Republic" for life. 1802. Toussaint, after capitulation to a French Army, is imprisoned in France, where he dies in 1803. 1802. Dutch recapture British Guiana.

V. FROM THE ADOPTION OF THE CONSTITUTION TO THE CIVIL WAR—Continued

THE UNITED STATES

Political Events	Presidents and Cabinet Officials	Social and Industrial Progress	British North America	Latin America and the West Indies
1803. Louisiana is purchased from France for $15,000,000. Admission of Ohio. Case of Marbury *vs.* Madison is decided.	Benjamin Stoddert, Robert Smith, *Secretaries of Navy.*	1803. Tobacco is exceeded by cotton as an export crop. South Carolina opens her ports to the foreign slave trade. First shipment of anthracite coal from Lehigh to Philadelphia. Grain-cradle is patented.	1803. Slavery made illegal in Lower Canada.	1803. Great Britain reacquires British Guiana by treaty. France abandons effort to subjugate Hayti.
1804. Adoption of the twelfth amendment. Hamilton killed in a duel by Aaron Burr.				
1804-1806. Lewis and Clark expedition.				1804-1806. Dessalines Emperor of Hayti; Massacre of White population.
1805. Failure of the Chase impeachment.	**Thomas Jefferson,** *Reëlected President.*	1805. Robert Fulton originates the marine torpedo.		
1805-1807. Conspiracy of Aaron Burr.	George Clinton, *Vice-President.*			
1806-1808. The European "Continental System" brings distress on American shippers.	James Madison, *Secretary of State.* Albert Gallatin, *Secretary of Treasury.* Henry Dearborn, *Secretary of War.*	1806. Passage of a bill for the construction of the Cumberland Road. Gas for lighting is first used by David Melville, Newport, R. I.	1806. Quarrels in Lower Canada between French and English over taxation system. First French-Canadian newspaper, *La Canadian*, established to lead crusade against English element as alien intruders.	1806. British Parliament prohibits slave-trading in British ships and the importation of slaves into British colonies.
1807. The Embargo act passed. Chesapeake-Leopard affair. Congress prohibits foreign slave-trade after January 1, 1808.	Levi Lincoln, Robert Smith, J. Breckenridge, C. A. Rodney, *Attorney-Generals.* Robert Smith, J. Crowninshield, *Secretaries of Navy.*	1807. Gallatin's famous report on Roads, Canals, Harbors, and Rivers. Successful trip of Fulton's steamboat, the *Clermont*, from New York to Albany.	1807. Governor Sir James Craig suppresses *Le Canadian* temporarily. 1807-1812. Struggle between Craig, supported by an English clique, and the French majority in the assembly.	1806-1811. Christopher President (King 1811-1820) of Hayti.
1809. The Embargo act is repealed and a non-importation act passed.	**James Madison,** *President.* George Clinton, *Reëlected Vice-Pres.* Robert Smith,	1808. American Fur Company founded by J. J. Astor. 1810. Exhibition at Pittsfield, Massachusetts, of Merino sheep; is called the first county fair. Metallic pens first made by Peregrine Williamson of Baltimore.		1808. Royal family of Portugal emigrates to Brazil. 1810. Revolutionary movements begin in Argentina and Chile.
1810-1814. The United States takes possession of West Florida.	James Monroe, *Secretaries of State.* Albert Gallatin, *Secretary of Treasury.*			1810-1815. Revolt led by Hidalgo in Mexico unsuccessful.
1811. Battle of Tippecanoe with the Indians. Henry Clay and John C. Calhoun first appear in the House of Representatives.	William Eustis, J. Armstrong, *Secretaries of War.* C. A. Rodney, Wm. Pinkney, *Attorney-Generals.*	1811. The first steamboat leaves Pittsburgh for New Orleans via the Ohio and Mississippi Rivers. Wooden shoe pegs invented. Beginning of an era of state banking activity.		1811. Paraguay declares independence. Revolution begins in Columbia and Venezuela.
1812. War declared against Great Britain. Admission of Louisiana.	Paul Hamilton, William Jones, *Secretaries of Navy.*	1812. First metallic pen factory is established in New York. Invention of stoves built with grates to secure draft.	1812-1814. War between United States and Great Britain evokes Canadian loyalty to British Empire. American attempts to invade Canada repulsed.	1811-1812. Francisco Miranda, Dictator of Venezuela.

THE WAR OF 1812, 1812-1815

Causes	Results	New England Opposition
Violation of the American flag on the high seas.	Treaty of Ghent, Dec. 24, 1814, provided:	Caused by the destruction of New England commerce through the commercial policy of the "Virginia dynasty," the declaration of war being regarded as the culmination of this policy.
The blockade of American ports.	For the cessation of hostilities.	The Opposition was shown:
Impressment of American seamen.	For the appointment of commissioners to settle boundaries.	By the vote of New England Congressmen against the war.
The destruction of American commerce by the Orders in Council.	Restoration of conquests.	By the refusal of New England states to furnish their military quota.
Aid given by the British traders to the Indians of the Northwest, thus inciting them to war.	The war developed a consciousness of nationality.	By the refusal of their financiers to make loans to the government.
The desire on the part of the westerners to get possession of Canada.	It gained fame for Jackson and Harrison, thus affecting our later political history.	By the sale of provisions to the English armies.
	It promoted the growth of American manufactures.	By the Hartford Convention.

PRINCIPAL LAND BATTLES

1812. Aug. 15, Surrender of Hull to Brock at Detroit.
Oct. 13, defeat of Van Rensselaer by Brock at Queenstown.

1813. April 27, York is taken by Gen. Dearborn and the Parliament House burned.
Oct. 5. Harrison defeats Proctor at Thames, Canada.
Nov. 11, at Chrysler's Farm, near Montreal, the Americans are defeated and driven from Canada.

1814. July 25, Battle of Lundy's Lane, claimed by both sides as a victory.
Aug. 24, capture of Washington and burning of public buildings.

1815. Jan. 8, Battle of New Orleans.

PRINCIPAL NAVAL BATTLES

1812. Aug. 19, The *Constitution* destroys the *Guerriere.*
Oct. 18, the *Wasp* captures the *Frolic.* Both are afterwards captured by the British frigate *Poictiers.*
Oct. 25, the *United States* captures the *Macedonia.*
Dec. 29, the *Constitution* captures the *Java.*

1813. Feb. 24, the *Hornet* captures the *Peacock.*
June 1, the *Chesapeake* is captured by the *Shannon.*
Sept. 10, Commodore Perry with a fleet of nine vessels destroys the British squadron of six vessels on Lake Erie.

1814. Sept. 3, naval attack on Fort McHenry by the British fails.
Sept. 11, Captain Macdonough destroys a British fleet on Lake Champlain, resulting in retreat of British from the U. S.

THE UNITED STATES

Political Events	Presidents and Cabinet Officials	Social and Industrial Progress	British North America	Latin America and the West Indies
1812-1815. Algerine War.	**James Madison,** *Reëlected President.*		1813. Lord Selkirk plants an agricultural colony on Red River, which survives in spite of litigation and violence by the North-West Company and suffering from cold, hunger and poverty.	1814. Simon Bolivar made revolutionary dictator of Venezuela, but is driven out by royalist army.
1813-1814. War with the Creeks.				
1814. The Hartford Convention proposes seven amendments to the Constitution.	Elbridge Gerry, *Vice-President.* James Monroe, *Secretary of State.* Albert Gallatin, G. W. Campbell,	1814. "First complete factory in the world" established at Waltham, Massachusetts, by Francis Cabot Lowell. Francis Scott Key composes "Star Spangled Banner."		

V. FROM THE ADOPTION OF THE CONSTITUTION TO THE CIVIL WAR—Continued

THE UNITED STATES			BRITISH NORTH AMERICA	LATIN AMERICA AND THE WEST INDIES
POLITICAL EVENTS	PRESIDENTS AND CABINET OFFICIALS	SOCIAL AND INDUSTRIAL PROGRESS		
1815. Captain Decatur forces Dey of Algiers to renounce tribute. Treaty of peace with England ratified.	A. J. Dallas, W. H. Crawford, *Secretaries of Treasury.* J. Armstrong, James Monroe (*Acting*).			1815-1821. Guerrilla warfare in Mexico. 1815. Congress of Vienna unites European powers in prohibition of African slave-trade.
1816. Second Bank of the United States is chartered. Admission of Indiana. American colonization Society formed. It founds Liberia. Increased agitation for internal improvements. First tariff primarily for protection is passed.	A. J. Dallas, W. H. Crawford, *Secretaries of War.* William Pinkney, Richard Rush, *Attorney-Generals.* William Jones, B. W. Crowninshield, *Secretaries of Navy.*	1816. Inception of the "Auburn penal system." Church of the Disciples is formed. The first steamer on Lake Ontario appears. The first savings bank in America is opened at Philadelphia.		
1817. Admission of Mississippi. Congress prohibits foreign vessels engaging in the United States coasting trade. 1817-1818. Seminole war.	**James Monroe,** *Preisdent.* D. D. Thompkins, *Vice-President.* John Q. Adams, *Secretary of State.*	1817. Ground broken for the construction of Erie Canal. First instruction of deaf mutes in America by T. H. Gallaudet, at Hartford, Connecticut.		1817-1823. Bernardo O'Higgins, Director of the Chilian state.
1818. Fisheries and boundary convention with Great Britain. Admission of Illinois.	W. H. Crawford, *Secretary of Treasury.* Isaac Shelby, Geo. Graham,	1818. First steamer on Lake Erie, the "Walk-in-the-Water." Congress grants increased protection to the iron industry.	1818. Agitation in Upper Canada, led by Gourlay, against the reserves of public land for support of Anglican clergy.	1818. Bolivar renews war for Venezuela and Colombian independence.
1819. Admission of Alabama. Florida purchased by the United States. Financial panic. Maine separated from Massachusetts. Dartmouth College case, and case of McCulloch *vs.* Maryland decided by Supreme Court.	John C. Calhoun, *Secretaries of War.* William Wirt, *Attorney-General.* B. W. Crowninshield, S. Thompson, *Secretaries of Navy.*	1819. Combination sail and steamship *Savanah* amde trans-atlantic trip.	1819. In Lower Canada a long deadlock begins between governor and assembly upon financial questions.	1819-1830. Civil war and confusion in Argentina. 1819. Republican of Colombia founded, comprising New Granada, Venezuela and Ecuador.
1820. African slave-trade made piracy. Admission of Maine. Tenure of Office Act passed. The Missouri Compromise adopted.			1820. Gourlay is crushed, but the agitation in Upper Canada is continued by the Bidwells, father and son. Dalhousie College founded at Halifax.	
1821. Case of Cohens *vs.* Virginia decided. The second Missouri Compromise and the admission of Missouri.	**James Monroe,** *Reëlected President.* D. D. Tompkins, *Reëlected Vice-Pres.* John Q. Adams, *Secretary of State.* W. H. Crawford, *Secretary of Treasury.* J. C. Calhoun, *Secretary of War.* William Wirt, *Attorney-General.*	1821. Credit sales of public lands stopped. Statistics of immigration first kept. Daily meeting with regular call of stocks begun on "Change" in New York. First public high school in United States opened in Boston. Publication of Edward Livingston's reformed code of laws for New York.		1821. Independence proclaimed in Peru, Nicaragua, Salvador and Costa Rica. John VI. returns from Brazil to Portugal, leaving his eldest son, Dom Pedro as regent. Iturbide revolution in Mexico. 1821-1830 Blivar president and dictator of Colombia.
1822. The independence of South American republics recognized. Reciprocity treaty with France concluded.	S. Thompason, J. E. Rogers, S. L. Southard, *Secretaries of Navy.*	1822. Gaslight introduced into Boston.	1822. Proposal is made in British House of Commons for a reunion of Upper and Lower Canada. In response to protest from French Canadians the bill is withdrawn.	1822. Brazil declares independence and makes Dom Pedro its Emperor. 1822. Iturbide declared Emperor of Mexico. 1822-1843. Boyer, President of Haytai.
1823. President Monroe states the "Monroe Doctrine" in his annual message to Congress.		1823. Champlain canal, connecting the Hudson at Albany with Lake Champlain, opened.		1823. Revolt led by Santa Anna overthrows Iturbide, who is executed, 1824.
1824. Protective policy greatly extended by an act of Congress. Case of Gibbons *vs.* Ogden decided. Visit of La Fayette to the United States.		1824. Glazed-ground wall-papers are first made. Hemlock tanning factory established in Green County, New York.	1824. Founding of the Canada Co. to promote colonization in the district about Lake Huron. W. L. McKenzie founds the *Colonial Advocate* to attack the administration in Upper Canada. A mob wrecks the printing office, but this increases the influence of the paper. McKenzie is repeatedly expelled from the legislature.	1824. Mexico adopts federal republican constitution. Bolivar establishes Peruvian independence and is made dictator. 1824-1839. Federal republic of Central America. Chronic disorder.
1825. Presidential election is thrown into the House of Representatives and results in the choice of Adams. Treaty of 1824 with Russia regulating navigation and fisheries in the Pacific is ratified. 1825-1831. Dispute with Georgia over Indian land cessions.	**John Q. Adams,** *Presidnet.* J. C. Calhoun, *Vice-President.* Henry Clay, *Secretary of State.* Richard Rush, *Secretary of Treasury.* James Barbour, P. B. Porter, *Secretaries of War.* William Wirt, *Attorney-General.*	1825. Erie canal is completed. Appearance of *The Workingman's Advocate*, the first representative of the labor press in the U. S. Isaac Babbitt of Taunton, Mass., invents babbitt metal.		1825. Portugal recognizes Brazilian independence. Uruguay revolts from Brazil, achieving independence in 1828. Upper Peru separates from Peru, taking name of Bolivia and adopting curious constitution framed by Bolivar.
1826. Death of Thomas Jefferson and John Adams, July 4th.	S. L. Southard, *Secretary of Navy.*	1826. The Quincy tramway, sometimes wrongly called the first railroad in the U. S., is built from Quincy to tidewater, three miles away.		1826. Panama Congress called by Bolivar, with a view to general Latin-American federation. Various treaties are arranged; but the main purpose is defeated by non-participation of Chile and Argentina.
1827. Convention between U. S. and Great Britain to settle northeastern boundary. Anti-Masonry has its rise.		1827. Baltimore and Ohio railroad is chartered. First rail laid July 4, 1828.	1827. French malcontent majority in Lower Canada assembly elect the agitator, Papineau, as speaker. Gov. Lord Dalhousie refuses his sanction on ground of Papineau's unfitness.	

V. FROM THE ADOPTION OF THE CONSTITUTION TO THE CIVIL WAR—Continued

THE UNITED STATES			BRITISH NORTH AMERICA	LATIN AMERICA AND THE WEST INDIES
POLITICAL EVENTS	PRESIDENTS AND CABINET OFFICIALS	SOCIAL AND INDUSTRIAL PROGRESS		
1828. Tariff of Abominations passed. Publication of Calhoun's "Exposition" in protest.			1828. British Parliament appoints committee of investigation, but its report offers no solution of the Lower Canadian problem. Beginning of demand for responsible government in Upper Canada.	1828. Mexican presidential election produces civil war.
1829. The Postmaster General made a member of the President's Cabinet. Sweeping changes in the civil service.	**Andrew Jackson,** *President.* John C. Calhoun, *Reëlected Vice-Pres.* M. Van Buren. Edw. Livingston, *Secretaries of State.*	1829. The steam locomotive is first successfully used. Process of manufacturing galvanized iron is perfected.	1829. Opening of Welland Canal. 1829-1830. Quarrel in Nova Scotia over quit-rents, and popular discontent at the dominion of an oligarchy. Discontent also in New Brunswick, Prince Edward's Island and Cape Breton.	1829. Venezula withdraws from Republic of Colombia. Slavery abolished in Mexico. 1829-1833. Santa Anna dictator in Mexico.
1830. First general pre-emption law passes. West Indian trade is opened to American vessels. The famous Webster-Hayne debate in the U. S. Senate.	S. D. Ingham, Louis McLane, *Secretaries of Treasury.* J. H. Eaton, Lewis Cass, *Secretaries of War.* J. McP. Berrien, R. B. Taney, *Attorney-General.* John Branch, Levi Woodbury, *Secretaries of Navy.* W. T. Barry, *Postmaster-General.*	1830. Organization of the Church of Latter Day Saints (Mormons). Baldwin Locomotive works established in Philadelphia. Chloroform discovered by Samuel Guthrie.	1830-1831. Efforts at conciliation in Lower Canada thwarted by Papineau.	1830. Ecuador separates herself from Colombia.
1831. The Anti-Masonic party holds the first national nominating convention. Rise of the Abolitionists. Garrison publishes the *Liberator*. Treaty with France for the payment of claims.		1831. Wm. Manning patents the first mowing machine. Opening of the first school for the blind. McCormick invents (but does not patent) the first successful reaper.		1831. Upon abdication of Dom Pedro I., his son, Dom Pedro II., becomes Emperor of Brazil.
1832. National Republican party frames the first party platform with Henry Clay as its presidential candidate. Black Hawk War. New tariff law enacted. Nullification in South Carolina. Jackson vetoes the U. S. Bank bill.		1832. The Ohio river joined to Lake Erie by the Ohio canal. First street railway in the U. S. commences running in New York. Pork packing industry begins in Chicago.	1832. Opening of Rideau canal.	1832. Residue of Republic of Colombia adopts name of New Granada, with new constitution. Santa Anna elected President of Mexico. Continues, with occasional vicissitudes, to be virtual dictator during remainder of his long life. 1832-1836. Santander, President of New Granada. Interlude of peace.
1833. U. S. bank deposits removed from the National Bank and placed in "pet" banks. Compromise tariff is passed, providing a gradual reduction of duties.	**Andrew Jackson,** *Reëlected President.* Martin VanBuren, *Vice-Pres.* Edw. Livingston, Louis McLane, John Forsyth, *Secretaries of State.* Louis McLane, Wm. J. Duane, Roger B. Taney, Levi Woodbury, *Secretaries of Treasury.* Lewis Cass, B. F. Butler, *Secretaries of War.* Roger B. Taney, B. F. Butler, *Attorney-Generals.* Levi Woodbury, M. Dikerson, *Secretaries of Navy.* Wm. T. Barry, Amos Kendall, *Postmaster-Generals.*	1833. Railroad from Charleston, S. C., to Augusta, Ga., completed. The first patent for a successful reaper is granted Obed Hussey of Ohio. Ross Winans builds the first typical American passenger cars.		1833. British Parliament enacts law for emancipation of all slaves in British colonies, to be completed in 4 to 6 years; appropriates £20,000,000 in compensation to owners.
1834. Congress creates the Indian Territory. Resolution of Censure of Jackson passes the Senate. National debt is extinguished. Whig party first takes its name.		1834. McCormick patents an improved reaper. 1834 and 1837. Congressional acts change ratio of gold and silver from 15 to 1 to 16 to 1.	1834. The Ninety-two Resolutions, a French Canadian declaration of rights, claiming exaggerated powers for the provincial legislature.	1834-1839. Confederation of Peru and Bolivia.
1835-1836. Controversy over the dissemination of abolition literature through the U. S. mails. 1835-1842. Second Seminole War.		1835. Morse invents magnetic telegraph. Steam first applied to printing press. J. G. Bennett begins publication of New York *Herald*.	1835. A royal commission investigates but fails to relieve the deadlock by which the governor and assembly of Lower Canada keep each other impotent.	1835. Anglo-American settlers in Texas declare Texas independent of Mexico. 1835-1852. Rosas dictator in Argentina.
1836. Admission of Arkansas. Bill passes Congress for the distribution of the surplus revenue among the states. Jackson issues the "Specie Circular." 1836. Roger B. Taney is made Chief Justice. 1836-1844. J. Q. Adams fights the "gag resolution" excluding anti-slavery petitions from Congress.		1836. Friction match is patented. First American patent for a typewriting machine. Over 20,000,000 acres of public land sold in one year. 1836-1838. Invention of the screw propeller.		1836. Massacre of captives by Mexican troops at Alamo, Texas. Samuel Houston, President of Texan Republic, defeats Mexican army at San Jacinto, and captures Santa Anna.
1837. Admission of Michigan. Formation of the Liberty party. The Caroline Affair. Passage of the "expunging resolution." Great financial panic.	**Martin Van Buren,** *President.* R. M. Johnson, *Vice-President.* John Forsyth, *Secretary of State.* Levi Woodbury, *Secretary of Treasury.* J. R. Poinsett, *Secretary of War.*	1837. Massachusetts State Board of Education is organized with Horace Mann as its first secretary. Invention of the hot-air blast in iron smelting.	1837. French and British factions in Lower Canada take arms. Clash at Montreal, November 6. Insurrection by French on Richelieu river quickly crushed by British army. Insurrection of radicals in Upper Canada, led by McKenzie and M. S. Bidwell, promptly put down by Lieut-Gov. Head.	1836-1848. The New Granada "twelve years" of clerical and oligarchial oppression.

V. FROM THE ADOPTION OF THE CONSTITUTION TO THE CIVIL WAR—Continued

THE UNITED STATES			BRITISH NORTH AMERICA	LATIN AMERICA AND THE WEST INDIES
POLITICAL EVENTS	PRESIDENTS AND CABINET OFFICIALS	SOCIAL AND INDUSTRIAL PROGRESS		
1838. "Underground railroad" begins aiding fugitive slaves to escape from the South. 1838-1839. "Aroostook War" between Maine and New Brunswick.	B. F. Butler, Felix Grundy, Henry D. Gilpin, *Attorney-Generals.* M. Dickerson, J. K. Paulding, *Secretaries of Navy.* Amos Kendall, John M. Niles, *Postmaster-Generals.*	1838. First shipment of grain from Chicago. *Great Western* and *Sirius* cross the Atlantic.	1838, May. Earl of Durham, a liberal imperialist, appointed governor. Proclaims amnesty and investigates conditions in both Canadas. Resigns in November to present his views in the British Parliament.	1838. Revolt of Carrera in Guatemala overthrows Central American Union. Emancipation of slaves completed in British colonies, Jamaica, Barbadoes, Bahama, Bermuda, Guiana, etc. 1838-1841. Mirabeau B. Lamar, President of Texas.
1839-1847. "Anti-Rent" agitation in New York.		1839. Vulcanized rubber patented by Goodyear. J. W. Draper takes the first photograph from life.	1839. Lord Durham's famous report, advising reunion of two Canadas into single province to overcome French majority in Lower Canada and advocating responsible government. With consent of legislatures of both Canadas, Parliament passes Union Act on the Durham plan. Upper and Lower Canada, in spite of latter's much larger population, given equal representation in Union Legislature.	1839-1841. War between Peru and Chile.
1840. Passage of Sub-Treasury bill.		1840. Van Buren introduces the ten-hour system into the public establishments. Adams Express Company begins operation between New York and Boston.	1840-1847. In Nova Scotia agitation, led by Joseph Howe, for responsible government. Similar movement in New Brunswick.	
1841. The Sub-Treasury act repealed. Death of President Harrison, April 4. 1841-1842. Quarrel between President Tyler and the Whigs. Friction with England over the McLeod affair.	**Wm. H. Harrison,** *President.* John Tyler, *Vice-President.* (Harrison dies April 4, 1841, and is succeeded by **Tyler**). Daniel Webster,	1841. Dorothy Dix begins her forty years' crusade for the better treatment of the insane. Horace Greeley establishes the New York *Tribune*. First steam fire-engine built and used in New York.	1841. First parliament of the United Canadas opens, June 14.	1841-1845. Samuel Houston again President of Texas.
1842. Decision in case of Prigg *vs.* Pennsylvania renders ineffective the old fugitive slave law. A new tariff act raises the existing rates. Webster-Ashburton treaty with England. Dorr's rebellion in Rhode Island. 1842-1848. Fremont's explorations of the West.	H. S. Legaré, A. P. Upshur, J. C. Calhoun, *Secretaries of State.* Thos. Ewing, Walter Forward, J. C. Spencer, Geo. M. Bibb, *Secretaries of Treasury.* John Bell, John McLean, John C. Spencer,	1842. Buffalo connected with the East by railway. Nasmyth steam-hammer invented. First factory for pocket knives established in Connecticut. First use of anaesthesia in a surgical operation by Dr. Crawford W. Long, of Athens, Ga., who failed to announce his discovery.	1842. Webster-Ashburton treaty adjusts boundary between Maine and New Brunswick.	1842. Second federation of Central America established; had little success.
1843. Bunker Hill monument dedicated.	Jas. M. Porter, Wm. Wilkins, *Secretaries of War.* J. J. Crittenden, H. S. Legaré, John Nelson, *Attorney-Generals.* Geo. E. Badger, A. P. Upshur, David Henshaw, T. W. Gilmer,	1843. The manufacture of manila paper is begun in Boston.	1843. Opening of McGill University (chartered 1821) at Montreal. Opening of King's College at Toronto; renamed the University of Toronto, 1850. 1843-1845. Quarrel between Gov. Metcalf and Canadian Ministry, controlled by the French, over governor's prerogative.	1843. Eastern (Spanish) port of Island of Hayti, taking name Dominican Republic, separates from Haytian Republic; former dominated by negroes, latter by mulattoes.
1844. First treaty with China secures commercial rights for U. S. Treaty for the annexation of Texas rejected by the Senate.	John Y. Mason, *Secretaries of Navy.* Francis Granger, C. A. Wickliffe, *Postmaster-Generals.*	1844. Manufacture of iron rails in this country begins. First successful use of the telegraph. Independent discoveries of anaesthesia claimed to have been made by W. T. G. Morton, C. T. Jackson and Horace Wells, New England dentists.		
1845. Admission of Florida. Annexation of Texas by joint resolution and admission of Texas as a state. 1845-1846. The Slidell mission to Mexico. U. S. Naval Academy established at Annapolis.	**Jas. K. Polk,** *President.* Geo. M. Dallas, *Vice-President.* Jas. Buchanan, *Secretary of State.* R. J. Walker, *Secretary of Treasury.* Wm. L. Marcy, *Secretary of War.*	1845. Petroleum discovered near Pittsburg. Separation of Southern from Northern Methodist and Baptist churches, resulting from quarrels over slavery. Invention of a leather rolling machine used in shoe-making.		
1846. Oregon Treaty with Great Britain. Admission of Iowa. The Walker tariff reduces rates. Independent treasury reëstablished. 1846-1848. War between Mexico and the U. S.	John Y. Mason, Nathan Clifford, Isaac Toucey, *Attorney-Generals.* Geo. Bancroft, J. Y. Mason, *Secretaries of Navy.* Cave Johnson, *Postmaster-General.*	1846. The sewing machine is invented by Elias Howe. Anaesthesia begins to enter general use. First slate quarry in Vermont is opened. 1846-1848. Great wave of immigration from Ireland.		1846. Treaty between New Granada and U. S., giving U. S. right of way across Isthmus of Panama.

V. FROM THE ADOPTION OF THE CONSTITUTION TO THE CIVIL WAR—Continued

THE MEXICAN WAR

PRINCIPAL BATTLES

The Americans were victorious in every conflict.

Place of Battle	Dates	Commanders		Engaged	
		American	Mexican	Amer.	Mexican
Bracite.	Dec. 25, 1846	Doniphan.	Ponce de Leon.	500	1200
Buena Vista.	Feb. 23, 1847	Taylor.	Santa Anna	4700	17000
Cerro Gordo.	April 18, 1847	Scott.	Santa Anna.	8500	12000
Chapultepec.	Sept. 13, 1847	Scott.	Santa Anna.	7200	25000
Contreras.	Aug. 20, 1847	Scott.	Valencia.	4000	7000
Churubusco.	Aug. 20, 1847	Scott.	Santa Anna.	8000	25000
Huamantla.	Oct. 9, 1847	Lane.	Santa Anna.	500	1000
Mexico.	Sept. 14, 1847	Scott.	Santa Anna.	6000	.....
Molino del Rey.	Sept. 8, 1847	Worth.	Alvarez.	3500	14000
Monterey.	Sept. 24, 1846	Taylor.	Ampudia.	6600	10000
Palo Alto.	May 8, 1846	Taylor.	Arista.	2300	6000
Resaca de la Palma.	May 9, 1846	Taylor.	Arista.	2000	5000
Sacramento.	Feb. 28, 1847	Doniphan.	Trias.	900	4000
Vera Cruz.	Mar. 27, 1847	Scott.	Landero.	12000	6000

The only naval engagements of importance during the war with Mexico were the bombardment of Vera Cruz, by Commodore Conner, which lasted four days, and the bombardment of Monterey, Commodore Sloat, both cities being forced to surrender.

Causes of the War

Long-standing irritation over claims of American citizens upon Mexico, which the latter refused to pay.
The annexation by the U. S. of Texas which Mexico claimed as still a part of her territory.
Disputes as to whether the Rio Grande or Nueces River was the boundary of Texas.

Results of the War

The Treaty of Guadalupe Hidalgo.
a. The Rio Grande was made the boundary between Texas and Mexico.
b. California and New Mexico were ceded to the United States.
c. The United States paid Mexico $15,000,000, and assumed $3,500,000 due American citizens.
It intensified the slavery question in American politics.

THE UNITED STATES

Political Events	Presidents and Cabinet Officials	Social and Industrial Progress
1846-1847. Attempt to pass the Wilmot Proviso fails.		1847. Richard M. Hoe invents the rotary printing press. Use of adhesive postage stamps authorized.
1848. Organization of the Free-Soil party. Admission of Wisconsin. Organization of Oregon without slavery.		1848. The Associated Press first organized. First school for the feeble-minded opened. Discovery of gold in California.
1849. Creation of the Department of Interior. California applies for statehood. Angry debates in Congress over the status of California, New Mexico and Utah, the Texas boundary, fugitive slave rendition, the inter-state slave trade, and slavery and the slave trade in the District of Columbia.	**Zachary Taylor,** *President.* Millard Fillmore, *Vice-President.* John M. Clayton, *Secretary of State.* Wm. M. Meredith, *Secretary of Treasury.* Geo. W. Crawford. *Secretary of War.* R. Johnson, *Attorney-General.* Wm. B. Preston, *Secretary of Navy.* Jacob Collamer. *Postmaster-General.* Thomas Ewing, *Secretary of Interior.*	1849. Rush of gold-seekers to California.
1850. "Compromise of 1850" admits California and adjusts other slavery questions. Death of Calhoun. Nashville Convention to consider Southern situation and policies. The Hulsemann letter. Clayton-Bulwer treaty with Great Britain ratified. Death of President Taylor.	(Death of President Taylor July 9, 1850. **Fillmore** becomes *President.*) Daniel Webster, Edw. Everett, *Secretaries of State.* Thos. Corwin, *Secretary of Treasury.* Chas. M. Conrad, *Secretary of War.* J. J. Crittenden, *Attorney-General.* Wm. A. Graham, J. P. Kennedy, *Secretaries of Navy.*	1850. First national labor organization, that of the printers, formed. Government grant of land to the Illinois Central Railroad, inaugurating a new plan for stimulating railroad building. First census of manufactures made by federal government.
1850-1856. Passage of Personal Library laws in Northern states. 1851-1852. Visit of Louis Kossuth to the United States. "Finality Resolutions" adopted by Congress.		1850-1860. Period of railroad consolidation. 1851. H. J. Raymond founds the New York *Times*. The B. and O. railroad reaches the Ohio. Western Union Telegraph Company established. Hudson River railroad reaches Albany.
1852. Death of Clay and Webster.	Nathan K. Hall, S. D. Hubbard, *Postmaster-Generals.*	1852. Publication of "Uncle Tom's Cabin."
1853. The Gadsden Purchase from Mexico.	A. H. H. Stuart, *Secretary of Interior.*	1853. N. Y. clearing house established. Chicago is reached by rail.
1854. Commodore Perry secures favorable commercial treaty from Japan. Native American party (the "Know-Nothings") becomes prominent. Black Warrior affair. Ostend manifesto. Kansas-Nebraska Act. Organization of the Republican party.	**Franklin Pierce,** *President.* Rufus King, *Vice-President.* Wm. L. Marcy, *Secretary of State.* James Guthrie, *Secretary of Treasury.* Jefferson Davis, *Secretary of War.* Caleb Cushing, *Attorney-General.*	1854. The Mississippi river is reached by rail from the East. Hotel elevator patented by Otis. First marble soda fountain erected in Boston.
1855. Troubles in Kansas. First Agricultural college in U. S. opened at Cleveland, Ohio.	J. C. Dobbin, *Secretary of Navy.* Jas. Campbell, *Postmaster-General.* R. McClelland, *Secretary of Interior.*	1855. St. Louis is reached by rail. Bessemer process patented.

British North America	Latin America and the West Indies
1847-1854. Earl of Elgin, governor of Canada, pursues policy of pacification. Industrial depression resulting from British free-trade legislation.	1847. Faustin Soulouque, a negro, elected President of Hayti. Third Central American federation established. 1848. Peace between Mexico and U. S.
1849. Rebellion Losses Bill, to pay both loyal and disloyal for property destroyed in rebellion of 1837, passed by Canadian legislature and approved by Elgin on ground of popular demand. In protest rioters burn the Parliament House at Montreal. University of Toronto founded.	1849. Soulouque proclaimed Emperor of Hayti; establishes a grotesque imperial court. Liberal success in New Granada; Jesuits expelled. War of Central American Federation against Guatemala. Confederation defeated and virtually destroyed. 1850. Cuba invaded by American filibusters under Lopez. African slave-trade abolished in Brazil.
1851. Renewed agitation over clergy reserves. Parties split into factions.	1851. Second filibustering expedition against Cuba; Lopez captured and shot.
	1853. Republican constitution framed for Argentine Confederation; civil war prevents its use until 1862.
1854. Led by John A. McDonald, Conservatives of Upper Canada fuse with Liberals (French) of Lower Canada, establishing an effective ministry which settles the clergy reserves question, abolishes seigniorial tenure, and makes a reciprocity treaty with U. S.	1854. Castilla revolution in Peru; slavery abolished. Gradual abolition of slavery, initiated by law of 1821, completed in New Granada, Venezuela and Ecuador.
	1855. Completion of railroad across Isthmus of Panama. William Walker, filibuster from U. S., invades Nicaragua.

V. FROM THE ADOPTION OF THE CONSTITUTION TO THE CIVIL WAR—Continued

THE UNITED STATES

Political Events	Presidents and Cabinet Officials	Social and Industrial Progress	British North America	Latin America and the West Indies
1856. First Republican national convention. Assault of Brooks upon Sumner. Civil strife in Kansas.		1856. First bridge across the Mississippi built at Rock Island, Illinois. University of Iowa admits women to various departments.	1856. Legislature for Vancouver Island established. Gold discovered on Fraser river, British Columbia.	1856-1857. Walker, president of Nicaragua; driven out in 1857 but returns for another attempt at end of year.
1857. The Dred Scott Decision. Mormon rebellion in Utah. Great financial panic.	**James Buchanan,** *President.* J. C. Breckenridge, *Vice-President.* Lewis Cass, J. S. Black, *Secretaries of State.*	1857. Attempt to lay first telegraphic cable across the Atlantic fails. New York organizes a system of metropolitan police.	1857. Ottawa selected as capital of Canada. Confusion in politics; ministries feeble and short-lived.	1857. Mexico adopts a new constitution. 1857-1863. Civil war in New Granada; victory of revolutionists under Mosquera.
1858. Lincoln-Douglas debates in Illinois. Admission of Minnesota. Second treaty with China ratified.	Howell Cobb, P. F. Thomas, John A. Dix, *Secretaries of Treasury.* John B. Floyd, Joseph Holt, *Secretaries of War.* J. S. Black, E. M. Stanton, *Attorney-Generals.*	1858. Second attempt to lay cable successful temporarily. First transatlantic message. Gold discovered near Pike's Peak. 1858-1861. Division of Presbyterian church over slavery.	1858. Canadian delegation visits England to ask for changes in system of government. Governor is appointed for British Columbia, but no legislature provided.	1858. Soulouque dethroned, Haytian Republic reëstablished; regime of chronic disorder ensues.
1859. Admission of Oregon. John Brown's raid on Harper's Ferry.	Isaac Toucey, *Secretary of Navy.* A. V. Brown, J. Holt, H. King, *Postmaster-Generals.* Jacob Thompson, *Secretary of Interior.*	1859. First petroleum well dug. Photolithography for maps in colors introduced.	1859. Convention of reformers at Toronto demands separation of Upper from Lower Canada in matters of local government.	
1860. Democratic Party splits asunder on slavery question. Constitutional Union party formed. Lincoln elected over Breckenridge, Bell and Douglas. South Carolina secedes, Dec. 20.		1860. Salt first attains commercial importance in Michigan. Oil fever in the Allegheny river valley.	1860-1864. George Brown urges a federation of all British North American provinces.	1860. William Walker, on a filibustering expedition against Honduras, is captured and shot.

VI. PERIOD OF THE CIVIL WAR AND RECONSTRUCTION, 1861-1876

THE CIVIL WAR, 1861-1865

Causes	Executive of the Confederacy	The Southern Confederacy	CAMPAIGNS AND BATTLES (See American Battles for further details)
The underlying causes of the war were: (a) Conflict between the doctrines of state sovereignty and nationalism. (b) Sectional antagonism over numerous issues concerning negro slavery. The immediate cause was the secession of southern states. The reasons for secession, as given by southern leaders, were: (a) Northern hatred of slavery and slander of slaveholders; the political campaign against the slave holding interest, and the endorsement of such exploits as the John Brown raid. (b) The misinterpretation of the Constitution by the North in its refusal to admit the doctrine of state sovereignty, the repudiation of the Dred Scott Decision, and the enactment by Northern states of "personal liberty laws." (c) The sectional election of Lincoln. The purpose of the North was to maintain the supremacy of the federal government under the Constitution and to preserve the Union. The purpose of the South was to set up an independent slave-holding Confederacy.	**Jefferson Davis,** *President.* A. H. Stephens, *Vice-President.* Robt. Toombs, R. M. T. Hunter, Judah P. Benjamin, *Secretaries of State.* C. G. Memminger, G. A. Trenholm, *Secretaries of Treasury.* L. P. Walker, Judah P. Benjamin, G. W. Randolph, Jas. A. Seddon, J. C. Breckenridge, *Secretaries of War.* S. R. Mallory, *Secretary of Navy.* J. P. Benjamin, Thos. Bragg, Thos. H. Watts, George Davis, *Attorney-Generals.* John H. Reagan, *Postmaster-General.*	The Confederacy comprised the states of Va., N. C., S. C., Ga., Fla., Tenn., Ala., Miss., Ark., La. and Tex. 1861. Feb. 4. Convention of seceded states at Montgomery, Ala., which established a provisional government and framed a constitution. May 13. Recognition of the belligerency of the Confederacy by England, followed by other nations. April-June. Provision made by the Confederate Congress for establishing a larger army and floating loans. 1862. Feb. 22. Permanent constitution goes into effect. Military conscription act. Beginning of huge issues of bonds and paper money. 1863. Provision for seizure of food supplies at rates fixed by Confederate commissioners. 1864. Drastic military conscription act. Controversies of President Davis with Vice-President Stephens, Governor Vance of N. C. and Governor Brown of Ga. 1865. April. The Confederacy collapses. May 11. Davis is captured.	(Note: "F" indicates Federal victory, "C" Confederate, and "Ind." Indecisive.) 1861. April 13-14, bombardment of Fort Sumter (C). July 21, first battle of Bull Run (C). Aug. 10, battle of Wilson Creek (C). 1862. **In the East:** March 9, naval battle of the *Monitor* and *Merrimac* (Ind.) May-July, the Peninsular Campaign (C). Lee's first invasion of the North, resulting in the capture of Harper's Ferry, Sept. 15 (C), and the battle of Antietam, Sept. 17 (F). **In the West:** Feb.-April, Grant's West Tennessee campaign (F). April 6-7, Battle of Shiloh (F). April 25, capture of New Orleans (F). Dec. 31-Jan. 2, battle of Murfreesboro (F). 1863. **In the East:** May 2 and 3, battle of Chancellorsville (C). June-July, Lee's second invasion of the North. Gettysburg, July 1-3 (F). **In the West:** July, opening of the Mississippi by the capture of Vicksburg, July 4 (F), and Port Hudson, July 9 (F). Sept. 19-20, battle of Chickamauga (C). November, Chattanooga campaign (F). 1864. **In the East:** May 5-7, battles of the Wilderness (Ind.); this was the beginning of Grant's campaign for Richmond. June 19, naval battle of the *Alabama* and *Kearsarge* off the coast of France (F). Oct. 19, battle of Cedar Creek (F). **In the West:** May-Sept., Sherman's campaign before Atlanta (F). Aug. 5, battle of Mobile Bay (F). Nov. Dec., Sherman's march to the sea. Dec. 15-16, battle of Nashville (F). 1865. **In the East:** End of the Richmond campaign by the surrender of Lee at Appomatox Court House, Virginia, Aptil 9 (F). April 26, surrender of Johnston (F). **In the West:** May 4, surrender of Gen. Taylor (F). May 26, surrender of all the remaining Confederate troops west of the Mississippi by Gen. Kirby Smith, and end of the war.

Results

The Union was preserved.
Slavery was abolished.
Secession as a working program was shown to be impracticable.
The war cost the lives of nearly one million able-bodied men.
The national debt was increased to $2,750,000,000.
An incalculable amount of property was destroyed.

VI. PERIOD OF THE CIVIL WAR AND RECONSTRUCTION, 1861-1876—Continued

THE UNITED STATES

Political Events	Presidents and Cabinet Officials	Social and Industrial Progress	British North America	Latin America and the West Indies
1861. Admission of Kansas. Peace convention at Washington fails. Morrill high tariff bill enacted. Trouble with England over the *Trent* affair. Southern states form a confederacy. 1862. Slavery abolished in the District of Columbia. Legal tender notes, "greenbacks," issued. Slavery abolished in the territories. Preliminary proclamation of emancipation, Sept. 22. Treaty with Great Britain for the suppression of the slave-trade. 1863. Proclamation of Emancipation, Jan. 1. Draft riots in New York. Admission of West Virginia. National banking act passed.	**Abraham Lincoln,** *President* Hannibal Hamlin, *Vice-President* Wm. H. Seward, *Secretary of State.* Salmon P. Chase, W. P. Fessenden, *Secretaries of Treasury.* Simon Cameron, E. M. Stanton, *Secretaries of War.* Edward Bates, James Speed, *Attorney-Generals.* Gideon Welles, *Secretary of Navy.* M. Blair, Wm. Dennison, *Postmaster-Generals.* Caleb B. Smith, John P. Usher, *Secretaries of Interior.*	1861. McKay invention for sewing soles on uppers. Invention of the stereotyping process and its adoption by New York papers. First message sent over transcontinental telegraph line. 1862. Passage of the Morrill Act to found agricultural colleges. Passage of the Homestead Act. Union Pacific railroad chartered. Chicago becomes the recognized center of the packing industry. 1863. Organization of the Brotherhood of Locomotive Engineers. Delivery of mail by carriers begins.	1861. Nova Scotia legislature asks for a general federation.	1861-1864. Hayti temporarily subject to Spain. 1862. Napoleon III. plans to erect Mexican Empire for Archduke Maxmilian. 1863. New Granada renames itself the United States of Colombia and adopts a federal constitution, comprising eight states including Panama. Mexico occupied by French army under Bazaine.
1864. Fugitive Slave act (of 1850) repealed. Admission of Nevada. Very high tariff act. Grade of vice-admiral in the navy provided.		1864. Postal money orders first issued. First sleeping-car is built. Northern Pacific railroad chartered.	1864. June. Canadian ministry is forced by Brown to endorse federation. Oct. 10 to 28. Delegates from Canada, Nova Scotia, New Brunswick and Prince Edward Island meet at Quebec and adopt 72 resolutions presenting a plan for federation.	1864. Maximilian crowned Emperor of Mexico.
1865. Thirteenth amendment ratified. President Lincoln shot at Ford's theatre Washington, April 14th; dies next day. General amnesty is proclaimed, following the end of the war.	**Abraham Lincoln,** *Reëlected President.* Andrew Johnson, *Vice-President.* (On death of Lincoln **Johnson** becomes president and keeps Lincoln's cabinet.) Wm. H. Seward, *Secretary of State.* Hugh McCulloch, *Secretary of Treasury.* E. M. Stanton, U. S. Grant, L. Thomas, J. M. Schofield, *Secretaries of War.* James Speed, Henry Stanberry, Wm. M. Evarts, *Attorney-Generals.* Gideon Welles, *Secretary of Navy.* Wm. Dennison, A. W. Randall, *Postmaster-Generals.* John P. Usher, James Harlan, O. H. Browning, *Secretaries of Interior.*	1865. First organization of the Standard Oil Company.	1865. Canadian legislature endorses Union Resolutions.	1865. Insurrection in Jamaica led by Gordon, a mulatto, quickly suppressed by Gov. Eyre. U. S. protests against French interference in Mexico.
1866. Civil rights bill passed over the president's veto. Organization of the Ku-Klux-Klan. Fenian raid into Canada.		1866. Formation of the National Labor Union. First permanently successful cable laid. Salmon-canning on the Columbia river begins. Massachusetts passes an eight-hour law for children.	1866. Union Resolutions endorsed by Nova Scotia and New Brunswick, rejected in Prince Edward Island and Newfoundland. Reciprocity treaty with U. S. expires; not renewed. Fenian raid from U. S. into Canada fruitless. Vancouver and British Columbia united by Imperial Act.	1865-1870. Brazil and Argentina in alliance at war with Paraguay.
1867. Plan of military reconstruction of the South adopted by Congress. Admission of Nebraska. Purchase of Alaska from Russia. Passage of the Tenure of Office act. Organization of the Grangers.		1867. Introduction of the Bessemer process in making steel. Beginning of the manufacture of steel rails in the U. S. Ground wood-pulp first used for making paper.	1867. Canadian Union Act passed by Imperial Parliament, approved Mch. 28, providing federation of all British North American provinces ratifying. Created central government of a royally appointed Governor-General, a Senate of 78 appointed life members, a House of Commons of elected members apportioned to population, and a Cabinet responsible to the House of Commons. Term of House five years maximum, and subject to dissolution by Gov.-Gen. Each province to have a Lieut.-Gov., a legislature and a responsible ministry. Upper Canada, renamed Ontario, separated from Lower Canada, renamed Quebec. Specified local powers assigned to provincial governments; general and residuary powers entrusted to Dominion Parliament. 1867-1868. Lord Monck, Gov.-Gen. 1867-1873. Sir John A. McDonald, Dominion Premier.	1867. French troops withdraws from Mexico. Native forces overthrow Maximilian's government and put him to death. Republic reëstablished.
1868. President Johnson impeached, tried and acquitted. Six southern states readmitted to representation in Congress. Fourteenth amendment ratified. Burlingame treaty with China signed. 1868-1874. "Carpet-bag" rule in the South.		1868. Westinghouse airbrake first successfully applied. First Siemens-Martin open-hearth furnace built. Founding of Cornell University.	1868-1872. Sir John Young, afterward Lord Lisgar, Gov.-Gen.	1868-1878. Cespedes insurrection in Cuba.
1869. Attempt to annex Santo Domingo. Organization of National Prohibition Party. Disbandment of the Ku-Klux-Klan. Decision in the case of Texas *vs.* White. Soldiers' monument at Gettysburg dedicated. Woman suffrage, upon equal terms with men, established in Wyoming.	**U. S. Grant,** *President.* Schuyler Colfax, *Vice-President.* E. B. Washburne, Hamilton Fish, *Secretaries of State.* Geo. S. Boutwell, *Secretary of Treasury.* J. A. Rawlins, W. W. Belknap, *Secretaries of War.*	1869. Passage of eight-hour law for federal employees. First provision made for bureau of statistics of labor. Formation of the Knights of Labor. Institution of the "Elmira penal system." Invention of the refrigerator car. First transcontinental railroad completed.	1869. Dominion purchases the vast territory of the Hudson Bay Co. 1869-1870. Rebellion of half-breeds led by Louis Riel in Red river valley; crushed by troops under Col. (afterward Lord) Wolseley.	1869. Negotiations by President Grant for acquisition of Santo Domingo by U. S.; project failed of support in U. S. Senate.

VI. PERIOD OF THE CIVIL WAR AND RECONSTRUCTION, 1861-1876—Continued

THE UNITED STATES			BRITISH NORTH AMERICA	LATIN AMERICA AND THE WEST INDIES
POLITICAL EVENTS	PRESIDENTS AND CABINET OFFICIALS	SOCIAL AND INDUSTRIAL PROGRESS		
1870. Fifteenth amendment ratified. 1870-1872. Organization of the Liberal Republican party.	E. R. Hoar, A. T. Akerman, G. H. Williams, *Attorney-Generals.* A. E. Borie, G. M. Robeson, *Secretaries of Navy.*	1870. Opening at Boston of first kindergarten in the U. S. Steel rails first used on railroads. 1870-1871. First war correspondence by cable appears in the New York *Tribune.*	1870. Manitoba enters Dominion as a province. 1870-1871. Fisheries dispute with U. S. adjusted by treaty of Washington, 1871, which also refers western boundary dispute to arbitration.	
1871. First Civil Service Reform bill enacted. Legal Tender act is decided to be constitutional. "Tweed Ring" in New York is exposed. Treaty of Washington with Great Britain.	J. A. J. Creswell, *Postmaster-General.* J. D. Cox, C. Delano, *Secretaries of Interior.*	1871. Hoe perfecting press completed. Texas Pacific railroad incorporated.		1871. Brazil provides for gradual abolition of slavery.
1872. Act for removing political disabilities passes Congress. Geneva award of $15,000,000 to U. S. Modoc Indian war in California. First nominating convention of the Prohibition party held.		1872. Invention of duplex telegraphy. Import duties on tea and coffee abolished. Water-gas process patented by Lowe. Bonanza mines on the Comstock lode discovered.	1872. Dominion Parliament offers subsidy to promote building of Canadian Pacific R. R. Rival companies contend for the grant. Scandals investigated, 1873. 1872-1878. Earl of Dufferin, Gov.-Gen.	
1873. Crédit Mobilier investigation by Congress. One-cent postal cards issued. The demonetization of silver. "Salary Grab" act. The *Virginius* affair.	**U. S. Grant,** *Reëlected President.* Henry Wilson, *Vice-President.* Hamilton Fish, *Secretary of State.* W. A. Richardson, B. H. Bristow, Lot M. Morrill, *Secretaries of Treasury.* Wm. W. Belknap, Alphonso Taft, J. D. Cameron, *Secretaries of War.*	1873. Great financial panic throughout the country. The Westinghouse automatic air-brake is introduced.	1873. Prince Edward Island enters Dominion. 1873-1878. Alexander McKenzie, Premier, with Liberal ministry.	1873. Slavery abolished in Porto Rico.
1874. Organization of the Greenback party. Democrats control the House of Representatives for first time since 1856.		1874. The Eads bridge across the Mississippi at St. Louis completed. First trunk pipe-line from oil regions to Pittsburg. Barbed-wire manufacture begins.	1874. Dominion Parliament votes to construct Canadian Pacific by public contracts. Friction between Dominion government and British Columbia, relieved by mediation of Dufferin, 1876.	1874. Religious orders suppressed in Mexico.
1875. Exposure of the Whisky ring. Act authorizing the resumption of specie payments.	G. H. Williams, Edw. Pierrepont, Alphonso Taft, *Attorney-Generals.*	1875. Hoosac tunnel is completed. Founding of Smith and Vassar colleges for women.	1875. Dominion Court of Appeals (Supreme Court) established. Mounted police organized in western territories.	1876. Venezuela repudiates Papal authority.
1876. Sioux War. Massacre of Custer's troops by Sitting Bull. Admission of Colorado. Great corruption found in War Department. Formation of the National Greenback party.	G. M. Robeson, *Secretary of Navy.* J. A. J. Creswell, J. W. Marshall, M. Jewell, J. N. Tyner, *Postmaster-Generals.* C. Delano, Zach. Chandler, *Secretaries of Interior.*	1876. Export of dressed beef begins. Great centennial exposition at Philadelphia. Bell secures his first patent for the telephone. Founding of Johns Hopkins University.		

VII. PERIOD OF ECONOMIC DEVELOPMENT, 1877-1896

THE UNITED STATES			BRITISH NORTH AMERICA	LATIN AMERICA AND THE WEST INDIES
POLITICAL EVENTS	PRESIDENTS AND CABINET OFFICIALS	SOCIAL AND INDUSTRIAL PROGRESS		
1877. The Electoral Commission decides the contested election in favor of Hayes. Withdrawal of troops from the South. "Molly Maguires" hanged in Pennsylvania. War with the Nez Perce Indians.	**R. B. Hayes,** *President.* W. A. Wheeler, *Vice-President.* Wm. M. Evarts, *Secretary of State.* John Sherman, *Secretary of Treasury.*	1877. Bell's improved telephone put into general use. Great railroad strike at Pittsburg. Col. A. A. Pope has the first bicycle built in this country. Goodyear welt machine brought into use.		1877. Porfirio Diaz leads a Mexican revolution and becomes President; term expires 1880.
1878. Bland-Allison silver bill passed over the President's veto.	G. W. McCrary, Alex Ramsey, *Secretaries of War.* Charles Devens, *Attorney-General.*	1878. Introduction of the probation system for criminal offenders. Introduction of incandescent lights.	1878. Election endorses Conservative "national policy" of protective tariffs. 1878-1883. Marquis of Lorne, Gov.-Gen.	1878. Argentine and Paraguay boundary arbitrated.
1879. United States government resumes specie payment. Women permitted to practice before United States courts.	R. W. Thompson, Nathan Goff, Jr., *Secretaries of Navy.* D. M. Key, H. Maynard, *Postmaster-Generals.*	1879. French Atlantic cable laid. Steamboat traffic on the Mississippi reaches maximum. Organization of First Christian Scientist Church.	1878-1891. Sir John A. McDonald, Premier, with Conservative ministry.	1879-1884. Chile makes war on Peru to acquire region of nitrate deposits. Chile victorious, Peru exhausted.
1880. National Civil Service league formed. The Kearney agitation in California.	Carl Schurz, *Secretary of Interior.*	1880. Edison builds the first electric railroad at Menlo Park. U. S. takes first rank among the nations in agricultural products. 1880-1890. Decade of great railroad building.	1880-1881. Commission investigates Canadian Pacific R. R., and censures system of public contracts.	1880-1884. Gonzalez, a lieutenant of Diaz, President of Mexico.
1881. President Garfield is shot by Charles J. Guiteau, July 2; dies September 19.	**J. A. Garfield,** *President.* C. A. Arthur, *Vice-President.*	1881. Organization of the American Federation of Labor. International Cotton Exposition at Atlanta, Georgia.		1881. Treaty between Chile and Argentina divides Patagonia between them.
1881-1884. Lieutenant Greeley's Arctic explorations.	J. G. Blaine, *Secretary of State.* Wm. Windom, *Secretary of Treasury.*		1881. Contract made with new Canadian Pacific R. R. Co. for completion and operation of the transcontinental road. Company receives heavy subsidies for construction.	
1882. Congress passes act to exclude Chinese laborers for ten years. Edwards law for the suppression of polygamy. "Star Route" trials begin. Apache Indian War.	R. T. Lincoln, *Secretary of War.* Wayne MacVeagh, *Attorney-General.*	1882. Reorganization of the Standard Oil Company as a trust. Tolls abolished on the Erie Canal. District school system abolished by Massachusetts.		
1883. Pendleton Civil Service Act passed. Tariff lowers slightly the average rate of duties.	W. H. Hunt, *Secretary of Navy.* T. L. James, *Postmaster-General.* S. J. Kirkwood, *Secretary of Interior.*	1883. Brooklyn suspension bridge opened. First canneries for Alaska salmon established. Northern Pacific railroad completed.	1883-1888. Marquis of Lansdowne, Gov.-Gen.	

VII. PERIOD OF ECONOMIC DEVELOPMENT, 1877-1896—Continued

THE UNITED STATES			BRITISH NORTH AMERICA	LATIN AMERICA AND THE WEST INDIES
POLITICAL EVENTS	PRESIDENTS AND CABINET OFFICIALS	SOCIAL AND INDUSTRIAL PROGRESS		
1884. Creation by Congress of the Bureau of Labor in the Department of the Interior.	**C. A. Arthur,** *President.* J. G. Blaine, F. T. Frelinghuysen, *Secretaries of State.* Wm. Windom, C. J. Folger, W. Q. Gresham, Hugh McCulloch, *Secretaries of Treasury.* R. T. Lincoln, *Secretary of War.* Wayne MacVeagh, B. H. Brewster, *Attorney-Generals.* W. H. Hunt, W. E. Chandler, *Secretaries of Navy.* T. L. James, T. O. Howe, W. Q. Gresham, Frank Hatton, *Postmaster-Generals.* S. J. Kirkwood, H. M. Teller, *Secretaries of Interior.*	1884. Great floods in the Ohio Valley. Telephone wires first put underground.		1884-1911. Diaz, president of Mexico.
1885. Apache war in New Mexico.	**Grover Cleveland,** *President.* T. A. Hendricks, *Vice-President.*	1885. International exposition at New Orleans. Long-distance telephone introduced.	1885. Canadian Pacific R. R. completed.	
1886. Repeal of the Tenure of Office Act of 1867. Passage of the Presidential Succession law. Silver certificates authorized.	T. F. Bayard, *Secretary of State.* Daniel Manning, C. S. Fairchild, *Secretaries of Treasury.* W. C. Endicott, *Secretary of War.* A. H. Garland, *Attorney-General.*	1886. Railroad strikes and anarchistic riots in Chicago. Wire nails first manufactured. Formation of Stove Founders' National Defence Association, first national association of employers. Bartholdi's Statue of Liberty unveiled.	1886. Dispute with U. S. as to jurisdiction and fishing rights in Behring Sea referred to arbitration and settled in Canada's favor (concluded in 1897).	1886. Colombia adopts new constitution. Slavery abolished in Cuba.
1887. Passage of the Interstate Commerce bill. Edmunds-Tucker Act dissolves corporation of the Mormon church. Dawes Indian Bill.	W. C. Whitney, *Secretary of Navy.* Wm. F. Vilas, D. M. Dickinson, *Postmaster-Generals.* L. Q. C. Lamar,	1887. First vestibuled Pullman train in service. Beet sugar first successfully produced in U. S. at Alvarado, Cal.	1887. Liberal party agitates for reciprocity with U. S.; Conservatives oppose it.	
1888. The states begin the introduction of the Australian ballot. New Chinese exclusion bill enacted by Congress.	Wm. F. Vilas, *Secretaries of Interior.* N. J. Colman, *Secretary of Agriculture.*	1888. First electric street railway built by F. J. Sprague at Richmond, Va.	1888. Quebec legislature appropriates $400,000 to quiet Catholic claims to former Jesuits' estates. 1888-1893. Lord Stanley of Preston Gov.-Gen.	1888. Final act of Brazil abolishing slavery immediately.
1889. Admission of North Dakota, South Dakota, Washington and Montana. Head of Department of Agriculture, established in 1862, is given cabinet rank. Pan-American Congress meets in Washington.	**Benj. Harrison,** *President.* Levi P. Morton, *Vice-President.* Jas. G. Blaine, John W. Foster, *Secretaries of State.* Wm. Windom, Chas. Foster, *Secretaries of Treasury.* R. Proctor, S. B. Elkins, *Secretaries of War.* W. H. H. Miller, *Attorney-General.* Benj. F. Tracy, *Secretary of Navy.* John Wanamaker, *Postmaster-General.* John W. Noble, *Secretary of Interior.* J. M. Rusk, *Secretary of Agriculture.*	1889. Oklahoma is opened for settlement.		1889. Revolution in Brazil expels Emperor and establishes republic.
1890. Admission of Idaho and Wyoming. McKinley Tariff act. Sherman silver purchase act. Sioux War; Sitting Bull killed. Passage of Dependent Pension Bill.		1890. The United States takes first place among the nations in the production of iron. Passage of the Sherman Anti-Trust Law.		1890. Revolution and financial revulsion in Argentina.
1891. Formation of the People's Party. Massacre of Italians in New Orleans.		1891. Opening of the cog railroad to the top of Pike's Peak.	1891-1892. Sir John Abbot, Premier.	1891. Civil war in Chile.
1892. Passage of the Geary Anti-Chinese Act. Behring sea dispute referred to arbitration.		1892. Great strike at Homestead Iron Works. Long distance telephone line between New York and Chicago formally opened.	1892-1894. Sir John Thompson, Premier.	
1893. Equal suffrage granted to women in Colorado. Intervention in Hawaii by the United States. Settlement of the Behring Sea dispute. Repeal of law requiring purchases of silver.	**Grover Cleveland,** *President.* A. E. Stevenson, *Vice-President.* W. Q. Gresham, Richard Olney, *Secretaries of State.* J. G. Carlisle, *Secretary of Treasury.* D. S. Lamont, *Secretary of War.*	1893. Great financial depression. World's Columbian Exposition at Chicago. World's parliament of religions at Chicago. Edison patents the kinetoscope.	1893. Liberal party platform demands tariff reform, reciprocity with U. S. restriction of public land sales, senate reforms, investigation of ministerial misconduct, and the submission of the prohibition question to popular vote. 1893-1898. Earl of Aberdeen, Gov.-Gen.	1893. Naval revolt in Brazil. Insurrections in Argentina.
1894. New treaty with Japan. Passage of the Wilson tariff act. Republic of Hawaii is recognized. "Coxey's army" marches on Washington.	Richard Olney, Judson Harmon, *Attorney-Generals.* H. A. Herbert, *Secretary of Navy.* W. S. Bissell, W. L. Wilson, *Postmaster-Generals.*	1894. The U. S. attains first rank among nations in the volume of its manufactures. Great railroad strike from Ohio to the Pacific coast. Also miners' strike and "Debs insurrection."	1894. Imperial Conference at Ottawa of delegates from eight self-governing British dependencies in Australasia, South Africa and America, to discuss imperial problems and promote colonial interests. 1894-1896. Sir McKenzie Boswell, Premier.	
1895. Income tax declared unconstitutional by the Supreme Court. Special message of the president on the Venezuelan question.	Hoke Smith, D. R. Francis, *Secretaries of Interior.* J. S. Morton, *Secretary of Agriculture.*	1895. Harlem ship canal opened. Formation of the National Association of Manufacturers. The name "yellow journalism" first applied to sensational papers.		1895. Boundary dispute between Venezuela and Great Britain becomes critical. Cuban insurrection.

VII. PERIOD OF ECONOMIC DEVELOPMENT, 1877-1896—Continued

THE UNITED STATES			British North America	Latin America and the West Indies
Political Events	Presidents and Cabinet Officials	Social and Industrial Progress		
1896. Equal suffrage granted to women in Utah and in Idaho. Admission of Utah. Great agitation for the free coinage of silver.		1896. Sault Ste Marie canal completed. Niagara Falls electric power turned on in Buffalo, N. Y.	1896. April-July, Sir Charles Tupper, Premier. 1896. Dispute between Manitoba legislature and Dominion courts and ministry over Catholic school rights in Manitoba deadlocks the Dominion Parliament. General election gives great victory to Liberals. 1896-1911. Sir Wilfred Laurier, Premier.	1896. Gen. Weyler administers Spanish reconcentrado policy in Cuba.

VIII. PERIOD OF NATIONAL EXPANSION, 1897-1930

THE UNITED STATES			British North America	Latin America and the West Indies
Political Events	Presidents and Cabinet Officials	Social and Industrial Progress		
1897. Treaty for the annexation of Hawaii signed. Dingley tariff law goes into operation. 1897-1898. Decisions of the Supreme Court that railroad rate agreements violate the Anti-Trust Law.	**Wm. McKinley,** *President.* G. A. Hobart, *Vice-President.* John Sherman, Wm. R. Day, John Hay, *Secretaries of State.* R. A. Alger, Elihu Root, *Secretaries of War.*	1897. The steel rail pool collapses. Sextuplex telegraphy invented. Universal postal congress meets in Washington. Union Pacific Railroad sold to the reorganization committee.	1897. Laurier persuades Manitoba legislature to make concessions to Catholic schools. Dominion Parliament gives British imports a preferential tariff reduction of 33 1-3%. Discovery of gold in the Klondike. Rush of miners thither necessitates adjustment of ambiguous Alaskan boundary.	1897. Venezuelan boundary adjusted by arbitration.
1898. South Dakota adopts initiative and referendum. Annexation of Hawaii by joint resolution. Destruction of the *Maine* in Havana harbor, Feb. 15. Congress orders forcible intervention in Cuba; war with Spain follows.	Lyman J. Gage, *Secretary of Treasury.* Jos. McKenna, J. W. Griggs, *Attorney-Generals.* John D. Long, *Secretary of Navy.* James A. Gary, C. E. Smith, *Postmaster-Generals.* C. N. Bliss, E. A. Hitchcock, *Secretaries of Interior.* James Wilson, *Secretary of Agriculture.*	1898. Commercial treaty with France signed. Boston builds a subway. Method of mercerizing cloth under tension to make it silky is patented.	1898. Joint high commission to adjust various questions between Canada and U. S. disrupted by disagreement over Alaskan boundary. 1898-1904. Earl of Minto, Gov.-Gen.	1898. U. S. battleship Maine destroyed by explosion in Havana harbor.

SPANISH AMERICAN WAR, 1898

Causes	Results
Sympathy for the oppressed Cubans. The "reconcentrados," people driven into the towns by Weyler, die by thousands, and Americans who aided them are arrested and their property destroyed. The proximity of Cuba and its geographical position make its situation of great importance to the United States. Destruction of American property. Publication of a letter of the Spanish Minister, in which he speaks slightingly of President McKinley. The blowing up of the battleship *Maine*.	The Treaty of Paris: Spain gives up title to Cuba. Spain cedes Porto Rico, Guam and the Philippines to the United States. The United States gives Spain $20,000,000. The direct cost of the war to the United States is about $130,000,000. Soldiers killed, 430. A larger number die of disease. The United States becomes the guardian of Cuba. An increase in our navy and standing army. The war in the Philippines. The question of territorial expansion in our politics.

THE ARMY

Engagements—The Army	Our Losses	
	Killed	Wounded
Bombardment of Cienfuegos, May 11, 1898	1	11
Bombardment of San Juan, May 12, 1898	1	7
Guantanamo, June 11-20, 1898	6	16
Bombardment of Santiago, June 22, 1898	1	9
Santiago campaign, June 21-July 17, 1898	260	1341
Porto Rico campaign, July 25-28, 1898	3	40
The reduction of Manila, August 13, 1898	17	106

THE NAVY

Manila Bay, Philippine Islands. May 1, 1898.	American Vessels: *Olympia, Baltimore, Raleigh, Boston, Concord, Petrel.* American Commander: Geo. Dewey.	Spanish Vessels: *Reina Cristina, Castella, Don Antonio de Ulloa, Isla de Luzon, Isla de Cuba, General Lezo, Marquis de Duero, Cano Velasco, Isla de Mindanao, Sandoval, José Garcia, Leyte* and torpedo boat *Barcelona.* Spanish Commander: Admiral Montijo.
American Casualties: Seven men slightly injured. No damage to ships.	Spanish Casualties: All ships destroyed, 450 men killed and wounded.	
Before Santiago, July 3, 1898.	Amercian Vessels: *Brooklyn, Texas, Oregon, Iowa, Gloucester.* American Commander: Winfield Schley.	Spanish Vessels: *Almirante, Oquendo, Christobal Colon, Vizcaya, Infanta Maria Teresa,* and torpedo boats *Pluton* and *Furor.*
American Casualties: One man killed. *Brooklyn* struck thirteen times, *Texas* once, but neither badly damaged.	Spanish Casualties: All ships destroyed, more than 600 men killed and wounded, and rest surrendered.	Spanish Commander: Admiral Cervera.

The total number of vessels captured from Spain during the war of 1898 was 58.

VIII. PERIOD OF NATIONAL EXPANSION, 1897-1930—Continued

THE UNITED STATES

Political Events	Presidents and Cabinet Officials	Social and Industrial Progress	British North America	Latin America and the West Indies
1899. War in the Philippine Islands, led by Aguinaldo, against American domination. Appointment of the first Philippine commission.		1899. Great commercial and financial prosperity. American Steel and Wire Company is incorporated. First juvenile courts organized in Chicago.		1899. Cuban independence established under protectorate of U. S. Porto Rico acquired by U. S. from Spain.
1900. Congress passes act providing civil government for the Philippines. Commercial treaty with Italy ratified. Currency bill approved. Civil government established in Alaska. American forces sent to China under General Chaffee.			1900. Rapid colonization of Canadian Northwest, largely by emigrants from U. S.	1900. Civil war in Colombia.
1901. Passage of Platt amendment relating to Cuban independence. "Open door policy" for China announced. Hay-Pauncefote treaty. Commission form of government adopted by the city of Galveston. "Insular Cases" decisions. President McKinley shot by assassin, Sept. 6; dies Sept. 14.	**Wm. McKinley,** *Reëlected President.* Theo. Roosevelt, *Vice-President.* (On death of McKinley, Sept. 14, **Roosevelt** becomes president). John Hay, *Secretary of State.*	1901. Formation of the United States Steel Corporation. Pan-American Exposition held at Buffalo. Northern Securities company organized. Discovery of the Texas oil-field.		1901. War between Venezuela and Colombia. Pan-American Congress at City of Mexico. Isthmian canal treaty between Colombia and the United States signed, but not ratified.
1902. Civil government established in the Philippines and amnesty granted to political prisoners.	L. J. Gage, L. M. Shaw, *Secretaries of Treasury.* Elihu Root, W. H. Taft, *Secretaries of War.* P. C. Knox, W. H. Moody, *Attorney-Generals.*	1902. Great strike of anthracite coal miners; President Roosevelt appoints a commission for arbitration. The Carnegie Institution of Washington is established.	1902. Canadian-Australian cable laid.	1902. Revolution in San Domingo.
1903. Alaskan boundary tribunal in London decides in favor of the United States. Creation of the Department of Commerce and Labor. Reciprocity treaty with Cuba, commercial treaty with China, and canal treaty with Panama are ratified.	J. D. Long, W. H. Moody, Paul Morton, *Secretaries of Navy.* C. E. Smith, H. C. Payne, R. J. Wynne, *Postmaster-Generals.*	1903. Formation of the "Citizens Industrial Association of America."	1903. Joint commission of jurists on Alaskan boundary decides favorably to claims of U. S.	1903. Independence of Panama declared under guardianship of U. S. Treaty between Panama and U. S., ceding Canal Zone for $10,000,000.
1904. Arbitration treaty with France signed. Payment of $40,000,000 made to Panama Coal company.	E. A. Hitchcock, *Secretary of Interior.* James Wilson, *Secretary of Agriculture.* G. B. Cortelyou, V. H. Metcalf, *Sec. of Com. and Labor.*	1904. Louisiana Purchase Exposition at St. Louis. Work on Panama canal commences. Northern Securities Co. dissolved by U. S. Supreme Court.	1904-1911. Earl Grey, Gov.-Gen.	1904. Strained relations between Venezuela and U. S.
1905. President Roosevelt acts as mediator between Japan and Russia. Arbitration treaties concluded with Great Britain, Germany, Italy and other powers. Beef Trust declared illegal by U. S. Supreme Court.	**Theo. Roosevelt,** *Reëlected President.* C. W. Fairbanks, *Vice-President.* John Hay, Elihu Root, Robert Bacon, *Secretaries of State.*	1905. Investigation of insurance companies in New York begins. United States becomes greatest silk manufacturing nation in the world.	1905. Saskatchewan and Alberta become members of the Dominion.	1905. Movement to establish confederation of Canada and British West Indies.
1906. Riot at Brownsville, Texas. Dismissal of negro troops. Military occupation of Cuba. Passage of pure food and drug inspection law.	L. M. Shaw, G. B. Cortelyou, *Secretaries of Treasury.* W. H. Taft, L. E. Wright, *Secretaries of War.* W. H. Moody, C. J. Bonaparte, *Attorney-Generals.*	1906. Incorporation of the Carnegie Foundation for the Advancement of Teaching.	1906. Life-insurance investigation in Canada.	1906. Pan-American Congress at Rio de Janeiro. Destructive earthquake at Valparaiso, Chile.
1907. Admission of Oklahoma. Standard Oil Co. fined $29,240,000; decision afterwards reversed.	Paul Morton, C. J. Bonaparte, V. H. Metcalf, T. H. Newberry, *Secretaries of Navy.* G. B. Cortelyou,	1907. Jamestown exposition. Commercial agreement with Germany.	1907. Demonstration against Japanese at Vancouver.	1907. Finances of San Domingo reorganized and put under supervision of U. S.
1907-1909. United States fleet makes a round-the-world cruise. 1908. Conference of governors at the White House. The United States remits the Chinese Bozer indemnity of $11,000,000.	G. von L. Meyer, *Postmaster-Generals.* E. A. Hitchcock, J. R. Garfield, *Secretaries of Interior.* James Wilson, *Secretary of Agriculture.* V. H. Metcalf, O. S. Straus, *Sec. of Com. and Labor.*	1908. Tunnels opened under East river and Hudson river, connecting Manhattan with Brooklyn and Jersey City. National Conservation Congress meets at Washington. Great strike of coal miners in Pennsylvania.	1908. Quebec tercentenary celebration.	
1909. Payne-Aldrich tariff law enacted. Congress proposes income tax amendment.	**Wm. H. Taft,** *President.* J. S. Sherman, *Vice-President.* P. C. Knox, *Secretary of State.* F. MacVeagh, *Secretary of Treasury.*	1909. Alaska-Yukon-Pacific Exposition at Seattle. Hudson-Fulton celebration at New York. Commander Peary reaches the North Pole.		1909. U. S. withdraws army from Cuba.
1910. Equal suffrage granted to women in the state of Washington. Passage of postal savings bank law. Tariff board is established. Telegraph and telephone companies put under the jurisdiction of the interstate commerce commission.	J. M. Dickson, H. L. Stimson, *Secretaries of War.* G. W. Wickersham, *Attorney-General.* G. von L. Meyer, *Secretary of Navy.* F. H. Hitchcock, *Postmaster-General.* R. A. Ballinger, W. L. Fisher, *Secretaries of Interior.*			1910. Pan-American Congress at Buenos Ayres.

VIII. PERIOD OF NATIONAL EXPANSION, 1897 TO THE PRESENT TIME—Continued

THE UNITED STATES

Political Events

1912. Admission of New Mexico and Arizona.

1913. Sixteenth and seventeenth amendments to Constitution ratified.
Department of Labor added to Cabinet Portfolios.

1915. British liner Lusitania torpedoed and sunk. American lives lost.

1916. Germany torpedoes Sussex and other steamers carrying Americans.

1917. U. S. declares (April 6) that state of war exists with Germany, and later, Austria-Hungary.
Danish West Indies pass under sovereignty of U. S.

1918. Army of 2,500,000 Americans operating in France.
British steamer Tuscania, bearing 2,179 American troops, torpedoed and sunk. Over 100 Americans lost.
Nov. 11. Armistice signed. Victory for U. S. and allies. President Wilson goes to Paris Peace Conference.

1920. Senate rejects Peace Treaty and League of Nations.
Woman Suffrage Amendment ratified.
National Prohibition becomes effective.

1921. Peace made with Germany.

1922. Disarmament Conference held in Washington.

1925. Harlan F. Stone succeeds Joseph McKenna in U. S. Supreme Court.
Crown Prince of England visits United States.
Coolidge inaugurated President, and Chas. G. Dawes Vice-President.
Italy and Belgium reach debt agreement with U. S.

1926. U. S. conditionally accepts World Court protocol.
Queen Marie of Roumania visits U. S.

1927. Coolidge reviews greatest American fleet.
Arbitration treaty signed with France.

1928. Good-will flight from U. S. through Mexico, Central and South Americas by Col. Lindbergh.
Treaty signed with France.
Pres. Coolidge attends Pan-American Congress in Cuba.
Fifteen nations signed anti-war treaty.

1929. Oil conservation policy enunciated.

1930. Hughes made Chief Justice.
Sign Naval Arms Agreement.

1931. Veteran's Bonus Bill passed.

1932-3-4-5. European nations, except Finland, default in payment of war debts.

1933. U. S. abandons Gold Standard.
National Recovery Act.
18th Amendment Repealed.

1934-5-6. Many billions of dollars appropriated for relief and recovery.
Presidential campaign.

1937. Franklin D. Roosevelt begins second term. Proposes executive and judicial reform in the national gov't.

President and Cabinet Officials

Secretaries, Of Agriculture: J. Wilson—Of Commerce and Labor: C. Nagel.

Woodrow Wilson, Pres. Thomas R. Marshall, V.P. —Secretaries, Of State: W. J. Bryan, R. Lansing, B. Colby—Of Treasury: W. G. McAdoo, C. Glass, D. F. Houston—Of War: L. M. Garrison, N. D. Baker—Of Navy: J. Daniels—Of Interior: F. K. Lane, J. B. Payne—Of Agriculture: D. F. Houston, E. T. Meredith—Of Commerce: W. C. Redfield, J. W. Alexander—Of Labor: W. B. Wilson —Atty. Gen'ls: J. C. McReynolds, T. W. Gregory, A. M. Palmer—Postmaster Gen'l: A. S. Burleson.

Warren G. Harding, Pres., 1921-23. **Calvin Coolidge,** V. P., 1921-23, Pres. 1923-29. Chas. G. Dawes, V. P., 1925-29— Secretaries, Of State: C. E. Hughes, F. B. Kellogg —Of Treasury: A. W. Mellon—Of War: J. W. Weeks, D. F. Davis—Of Navy: E. Denby, C. D. Wilbur—Of Interior: A. Fall, R. O. West—Of Agriculture: H. C. Wallace, W. M. Jardine—Of Commerce: H. C. Hoover, W. F. Whiting—Of Labor: J. J. Davis—Atty. Gen'ls: H. M. Daugherty, H. F. Stone, J. G. Sargent—Postmasters Gen'l: W. H. Hays, H. Work, H. S. New.

Herbert C. Hoover, Pres. 1929-33. Charles Curtis, V. P.—Secretaries, Of State: H. L. Stimson—Of Treasury: A. W. Mellon, O. Mills—Of War: J. W. Good, P. J. Hurley—Of Navy: C. F. Adams—Of Interior: R. L. Wilbur—Of Commerce: R. P. Lamont—Of Agriculture: A. M. Hyde—Of Labor, J. J. Davis, W. N. Doak—Atty. Gen'l: W. P. Mitchell—Postmaster Gen'l: W. Brown.

Franklin D. Roosevelt Pres. 1933—. John Nance Garner, V. P.—Secretaries, Of State: Cordell Hull—Of Treasury: William H. Woodin, Henry Morgenthau — Of War: George H. Dern, Harry H. Woodring—Of Navy: Claude A. Swanson—Of Interior: Harold L. Ickes —Of Commerce: Daniel C. Roper—Of Agriculture: H. A. Wallace—Of Labor: Frances Perkins — Postmaster Gen'l: James A. Farley — Attorney Gen'l: Homer S. Cummings.

Social and Industrial Progress

1911. Western Union inaugurates night, day and cable letter service.

1913. Parcels Post System inaugurated.
Great floods in the Ohio and Mississippi Valleys.

1915. Transcontinental telephone service inaugurated by Bell lines.
Panama Expositions in San Francisco and San Diego, California.

1916. President Wilson appoints an Industrial Preparedness committee, composed of the heads of large manufacturing establishments.

1918. Railroads placed under Government control for duration of war, vast reduction in number of trains and fare raised.

1919. National Woman Suffrage.
Lieut. Reed was first to cross Atlantic in aircraft.
Non-explosive helium gas discovered by Prof. Cody of Kansas University.

1920. Nationwide prohibition went into effect.

1921. Prices drop. General decline.
Federal Reserve Banking system averts panic.

1924. Immigration limited to 2 per cent of 1890 population.
U. S. Aviators first to encircle the world.

1925. Severe tornado in Middle West.
Henry Ford starts airplane freight line between Detroit and Chicago.
Airship Shenandoah wrecked.

1926. Anthracite coal strike ended.
Disastrous hurricane in Southern Florida.

1927. Charles A. Lindbergh makes first non-stop flight from New York to Paris.
Greatest Mississippi flood.

1929. Tornadoes in Arkansas and Mississippi.

1930. Report of law enforcement commission.
Boulder (Hoover) Dam construction started.

1931. Commodity prices continue decline.

1932. Reconstruction Finance Corporation.

1933. Nation-wide run on banks. President declares bank holiday. Law declares criminal the hoarding or transporting of gold to foreign countries. Sound banks reopen with renewed public confidence.
Naval Dirigible Akron destroyed in storm at sea. 73 perish.
Congress passes bills aiding farmers, home owners, railroads, industry and unemployed.
Chicago World's Fair, a Century of Progress.

1936. Supreme Court upholds T.V.A.

1937. Supreme Court upholds minimum wage law for women and Wagner Labor Relations Act. Sit-down strikes prevalent. Social Security Act in force. Transatlantic airship, Von Hindenburg, burns at Lakehurst, N. J.

British North America

1911. April Preferential trade agreement made with British West Indies.
1911. H. R. H., the Duke of Connaught, Governor-General.
Robert L. Borden, Premier.

1914. Canada establishes a Parcels Post service.
Extends hearty support to the Mother country in the European war by training and sending overseas large numbers of soldiers.

1915. Winnipeg post office institutes monthly rural free mail delivery to points within Arctic Circle.

1917. Canada adopts conscription.
Unionist Government of Sir Robert Borden defeats liberals, headed by Sir Wilfred Laurier. Conscription law confirmed by heavy vote.

1918. Grim war activities.
Draft riots in Quebec.

1919. Peace celebrated.
Great progress in reconstruction.

1922. President Harding signed postal treaty between U. S. and Canada.

1926. Gold Rush in Ontario.
Canada protests against Chicago drainage canal diverting water from Great Lakes.

1927. New diplomatic policy established. Canada sends minister to U. S.; and U. S. sends minister to Canada.
120,000 square miles of Labrador added to Newfoundland.
Ontario discards Prohibition.
Peace Bridge opened between Buffalo and Fort Erie, Canada.

1930. R. B. Bennett, premier.

1931. Earl of Bessborough appointed governor-general.

1932. Canadian taxes increased.

1934. Newfoundland abandons dominion form of government.

1935. Bank of Canada opens. Lord Tweedsmuir, Governor-General.

1937. Forceful suppression of sit-down strike in Oshawa, Ont.

Latin America and the West Indies

1911. Revolution in Mexico expels Diaz and makes Francisco I. Madero President.
Ramon Caceres, President of San Domingo since 1906, assassinated.

1913. Madero government overthrown; Gen. Huerta made provisional President.

1914. Huerta regime is overthrown. United States troops occupy Vera Cruz in an effort to enforce respect for the American flag and American rights.

1915. U. S. government assumes control of Haitian financial affairs, including administration of customs and police, for a period of ten years.
U. S., followed by European and South American nations, formally recognizes Carranza as chief executive of the Mexican de facto government, after two years and eight months' cessation of diplomatic intercourse. Permission is given for the importation of arms to defeat Villa, the revolutionist.

1920. Military revolution in Bolivia. Chile mobilizes army. Bolivia and Peru draw together.

1921. War averted.

1923. Pan-American Conference unites in new peace assurance for all Central and South American Governments.

1925. Gerardo Machado becomes President of Cuba.
1925. Coolidge as arbitrator orders plebiscite in deciding Chile and Peru's dispute over Tacan and Arica.

1926. U. S. protests confiscation of alien lands by Mexico.
Mexico expels foreign clergy.
Conditions greatly improved in South America.

1927. Great unrest in Mexico.
Revolution in Nicaragua.

1928. Sandino causes uprising in Nicaragua.
Pres.-elect Obregon assassinated.

1930. Revolts in Argentina, Bolivia, Brazil, Panama and Peru.

1931. Revolts in Venezuela and Honduras.
President Machado of Cuba given dictatorial powers.

1931. Mexico repudiates gold standard.

1932. Rodrigues President of Mexico. Revolt in Chile. War between Peru and Bolivia.

1933. Revolt in Cuba against Machado government. He fled to U. S.

1934. War between Bolivia and Paraguay.

1935. Revolution in Uruguay.
Religious persecution in Mexico.

1936. Bolivia and Paraguay at peace. Inter-American Conference for the Maintenance of Peace at Buenos Aires.

1937. Many churches reopened in Mexico.

NOTABLE WARS OF HISTORY

The figures prefixed to the names of leaders and battles, *etc.*, indicate to which of the two contesting parties the leader belonged, or by which the victory was won; they correspond to the numbers used in the column giving the names of the contesting parties. **D. B.** = Decisive Battles of the world as given by Creasy.

Name of War, Contestants and Dates	Cause of Conflict	Leaders	Chief Battles and Incidents	Results and Comments
1. TROJAN WAR. (Mythical—circa 1200 B. C.) (1) Greeks vs. (2) Trojans	Greeks avenge the abduction of Helen of Troy by Paris.	(1) **Agamemnon, Achilles, Ulysses.** (2) Hector.	(1) **Siege of Troy.**	Capture and destruction of Troy. Schliemann's excavations identify Ilium on the Hellespont as the site of ancient Troy.
2. FIRST MESSENIAN WAR— 8th Century B. C. (1) **Spartans** vs. (2) Messenians.	Spartans covet Messenian land.	(2) Aristodemus.	(1) **Siege of Mount Ithome.**	Messenians become tributary of Sparta and their land is, in part, confiscated.
3. SECOND MESSENIAN WAR— c. 630-600 B. C. (1) **Spartans** vs. (2) Messenians.	Spartan oppression causes Messenian revolt.	(1) Tyrtaeus (poet). (2) Aristomenes.	(1) **Eira.**	Greater part of Messenians flee to Sicily. Those remaining become Helots (Spartan serfs).

NOTABLE WARS OF HISTORY—Continued

Name of War, Contestants and Dates	Cause of Conflict	Leaders	Chief Battles and Incidents	Results and Comments
4. FIRST SACRED WAR—c.590-589 B.C. (1) **Amphictyonic League** vs. (2) Crisæans.	People of the city of Crisa (port of Delphi) oppress pilgrims to the oracle.	(1) **Cleisthenes of Sicyon.**	(1) **Siege of Crisa.**	For the first time Greek cities join in an effective league. Crisa destroyed.
5. PERSIAN WARS—500-579 B.C. (1) **Persians** vs. (2) Greeks.	Aid given by Athens and Eretria to revolting Ionic Greek cities, leading to burning of Sardis, C. 497.			
a. First Persian Expedition—493 B.C.	Continued plans of Darius for subjugating Greece.	(1) **Mardonius.**	(1) **300 ships lost by storm off Mt. Athos.**	Partial success against Macedonians and Thracians.
b. Second Persian Expedition—490 B.C.		(1) **Datis, Artaphernes.** (2) Miltiades.	(1) **Naxos, Eretria.** (2) Marathon (490).	The Athenians are victorious and the Persians retreat to Asia Minor.
c. Third Persian Expedition—481-480 B.C.	Xerxes desires to avenge his father's defeat.	(1) **Xerxes.** (2) Leonidas, Eurybiades, Themistocles	(1) **Thermopylæ, Artemisium, Athens burned.**	Xerxes retreats to Persia after his defeat at Salamis.
d. Fourth Persian Expedition—479 B.C.	War continued by troops which Xerxes left behind.	(1) **Mardonius.** (2) Pausanias, Aristides.	(2) Athens laid waste. (2) **Platæa, Mycale.**	All Persian invasions and attempts to subjugate Greece cease.
3. THIRD MESSENIAN WAR—464-456 B.C. (1) **Helots of Messenian descent** vs. (2) Spartans.	Confusion following earthquake gives Helots courage to revolt.		(2) Mt. Ithome besieged. Sparta sent home her Athenian allies.	Messenians capitulate and are allowed to leave the Peloponnesus never to return. Athens retaliates by settling them at Naupactus.
7. PELOPONNESIAN WAR—431-404 B.C. (1) **Sparta and Allies** vs. (2) Athens and Allies.	Envy of Sparta and her allies at Athens' growing power and influence. Discontent among some of the Athenian subject states.	(1) **Archidamus, Agis, Brasidas.** (2) Demosthenes, Cleon, Nicias.	(1) **Invasion of Attica, Plague in Attica, Siege of Platæa, Delium, Amphipolis.** (2) Mitylene, Sphacteria.	By the peace of Nicias (421) both sides are to restore conquests and prisoners but terms are imperfectly carried out.
a. First Period—431-421 B.C. b. Second Period or Decelean War—413-404 B. C.	Sparta takes advantage of Athens' weakness, resulting from the failure of the expedition to Syracuse, to renew the war.	Alcibiades serves Athens, Sparta and Athens in turn. (1) **Lysander.** (2) Conon.	(1) **Decelea occupied. Attica ravaged. Many subject states of Athens revolt. Notium, Ægospotami, Surrender of Athens.** (2) Abydos, Cyzicus, Arginusæ.	The Spartans tear down the walls of Piræus and Athens. Athens loses her foreign possessions and fleet but becomes an independent ally of Sparta. Sparta is now supreme in Greece.
8. GAULS' INVASION OF ITALY—390 B.C. (1) **Gauls** vs. (2) Romans.	Roman people refuse to surrender Roman ambassadors who had aided the Etruscans against the Gauls.	(2) M. Manlius, Capitolinus, Camillus.	(1) **Battle of the Allia. Sack of Rome.**	Gauls retire on payment of ransom. The overthrow of Rome had no permanent effect on her fortunes.
9. SECOND SACRED WAR—c. 356-346 B.C. (1) **Phocians** vs. (2) Amphictyons.	Phocians seize and plunder Delphi because of fine imposed by Amphictyonic Council.	(1) **Onomarchus.** (2) Philip of Macedon.		Thebans and Thessalians invite aid of Philip against Phocians and he takes their place in the Amphictyonic Council.
10. THIRD SACRED WAR—339-338 B.C. (1) **Macedonians** vs. (2) Athenians, Thebans.	Amphictyons call in Philip to punish Amphissa, whereupon he seizes Elatea, thereby threatening Athens. Athenians aroused by Demosthenes.	(1) **Philip of Macedon.**	(1) **Chæronea.**	Philip gains leadership of Greece. Henceforth Greece is under the control of Macedonia.
11. SAMNITE WARS—343-290 B.C. (1) **Romans** vs. (2) Samnites.	A duel between two rival races for supremacy in Italy.	(1) **Marcus Valerius Corvus, P. Decius Mus.**		Capua is retained by the Romans and Teanum surrendered to Samnites.
a. First Samnite War—343-341 B.C.	Campanians implore aid of Romans against Samnites who are laying waste their territories in revenge for aid given the Sidicini of Teanum.			
b. Second or Great Samnite War—327-304 B.C.	The occupation of Palaeopolis by the Samnites. In 311 the Etruscan cities joined in the war against Rome.	(1) **Papirius Cursor.** (2) Fabius Rullianus Gavius Pontius.	(1) **Fregellæ, Sutrium, Lake Vadimonis, Bovianum.** (2) Caudine Forks.	Samnites sue for peace. They resign all their conquests but retain their independence within their native mountains.
c. Third Samnite War—298-290 B.C.	While Romans are engaged with the Gauls the Samnites enter Lucania and refuse to withdraw.	(1) **Q. Fabius Rullianus, P. Decius Mus (son).** (2) Gellius Egnatius, Gavius Pontius.	(1) **Sentinum.**	Samnites defeated but not crushed.
12. WARS OF ALEXANDER THE GREAT IN ASIA—334-328 B.C. (1) **Greeks** vs, (2) Persians, Egyptians, Bactrians, Indians.	A war of conquest, a scientific expedition and a journey of discovery.	(1) **Alexander the Great, Nearchus.** (2) Darius III., Memnon.	(1) **Granicus, Issus, Siege of Tyre, Arbela.**	Alexander conquers Asia from the Mediterranean Sea to the Indus R. and from the Arabian Sea to the Jaxartes R. and begins the Helenizing of the East. Founds Alexandria in Egypt. The empire breaks up after Alexander's death 323.
13. ROMAN WAR WITH TARENTUM AND EPIRUS—282-272 B.C. (1) **Romans vs.** (2) Tarentum and King Pyrrhus.	The people of Tarentum capture Roman ships and insult Roman embassy. They call in King Pyrrhus of Epirus.	(1) **Manius Curius.** (2) Pyrrhus.	(1) **Beneventum, Tarentum.** (2) Heraclea, Asculum.	Pyrrhus returns to Epirus and his allies one by one submit to Rome, which is left supreme from Straits of Messina to the River Arno and the headland of Ancona.
14. FIRST PUNIC WAR—264-241 B.C. (1) **Romans** vs. (2) Carthaginians.	A struggle for supremacy in Sicily. Pretext, Campanian mercenaries, having seized Messina, appeal to Rome for aid.	(1) **C. Duilius. M. Atilius Regulus. P. Claudius Pulcher. C. Lutatius Catulus.** (2) Hamilcar Barca, Himilco, Hanno.	(1) **Agrigentum, †Mylæ, Ecnomus, †Panormus, †Ægadian Islands,** (2) Siege of Lilybæum, (2) Drepana.	Carthaginians surrender Sicily and pay a war indemnity. Carthage retains the Western Mediterranean and Rome is launched on her career of conquest.
15. SECOND PUNIC WAR—218-201 B.C. (1) **Romans** vs. (2) Carthaginians.	A duel to the death between East and West. Pretext, Hannibal's attacks on Saguntum in Spain.	(1) **Q. Fabius Maximus, Publius Scipio. P. Cornelius Scipio Africanus.** (2) Hannibal, Hasdrubal.	(1) **Syracuse, Capua, Metaurus, Zama.** (2) Ticinus, Trebia, Trasimene, Cannæ.	Hannibal succumbs as a result of the loyalty of Italy. Carthage forced to give up Spain, to pay an annual tribute, to surrender her fleet, and to agree not to go to war without the permission of Rome.
16. FOUR MACEDONIAN WARS—214-146 B.C. (1) **Romans** vs. (2) Greeks.	Alliance of Philip, King of Macedon, with Carthage.	(1) **T. Quinctius Flaminius. L. Aemilius Paulus.** (2) Philip of Macedon, Perseus.	(1) **Cynoscephalæ, Pydna**	Macedonia becomes a Roman province.

NOTABLE WARS OF HISTORY—Continued

Name of War, Contestants and Dates	Cause of Conflict	Leaders	Chief Battles and Incidents	Results and Comments
17. THIRD PUNIC WAR—149–146 B.C. (1) **Romans** vs. (2) Carthaginians.	War of Carthage with Massinissa gives Rome the pretext for completing the destruction of Carthage.	(1) **Scipio. Æmilianus. Africanus.**	(1) **Siege of Carthage.**	Carthage destroyed. Most of her territory becomes a Roman province of Africa.
18. JUGURTHINE WAR—111–105 B.C. (1) **Romans** vs. (2) Jugurtha of Numidia.	Jugurtha, disregarding intervention of Rome, captures Citra and massacres male population.	(1) **C. Marius.** (2) Jugurtha.	(1) **Muthul, Citra.**	Numidia divided. The war reveals the corruption and incapacity of the Senatorial government of Rome.
19. MARSIAN OR SOCIAL WAR—90–88 B.C. (1) **Romans** vs. (2) Italian Allies.	Italian socii (allies) are denied the right of Roman citizenship.	(1) **C. Marius. Sulla.**	(1) **Asculum.** Italians form a Federal republic, Italia, with capital at Corfinium.	Roman citizenship granted to all Italian residents.
20. FIRST ROMAN CIVIL WAR—88–82 B.C. (1) **Optimates** vs. (2) Democrats.	Reform measures of Sulpicius are carried by means of violence. Command of army of Asia is transferred from Sulla to Marius.	(1) **Sulla, Pompey.** (2) Marius, Cinna, Sertorius. Carbo.	(1) **Sacriportis, Colline Gate, Sulla's proscription.** (2) Marius's Reign of Terror.	Sulla is appointed dictator.
21. THREE MITHRIDATIC WARS—88–63 B.C. (1) **Romans** vs. (2) Pontines and Armenians.	Ambition of Mithridates VI. and Roman interference.	(1) **Sulla, Lucullus. Pompey.** (2) Mithridates. (Pontus). Tigranus. (Armenia).	(1) **Chæronea, Orchomenus, Cabira, Tigranocerta.** (2) Massacre of Italians in Asia.	Reorganization of the East, Pontus, Syria and Cilicia become Roman provinces.
22. GLADIATORIAL AND THIRD SERVILE WAR—73–71 B.C. (1) **Romans** vs. (2) Revolted Gladiators and Slaves.	Uprising of a band of gladiators, escaped from Capua and joined by many slaves of southern Italy.	(1) **Crassus, Pompey.** (2) Spartacus.	(1) **Silarus.** (2) Mt. Vesuvius.	Revolt put down with cruelty, 6,000 crucified.
23. GALLIC WAR—58–51 B.C. (1) **Romans** vs. (2) Tribes of Gaul.	Deisre to extend the Roman empire.	(1) **Julius Cæsar.** (2) Vercingetorix. Ariovistus.	(1) **Siege of Alesia.**	Conquest and organization of Gaul by Cæsar. Gauls Romanized; boundaries of the old world enlarged (Cæsar's expedition to British 55–54 B. C.); means acquired for changing Rome into a monarchy.
24. SECOND ROMAN CIVIL WAR—49–31 B.C. First Period, 49–45 B.C. (1) **Followers of Cæsar (democrats)** vs. (2) Followers of Pompey (republican aristocrats).	Struggle for mastery between Cæsar, conqueror of Gaul, and Pompey, conqueror of the East.	(1) **Cæsar.** (2) Pompey and his sons.	(1) **"Crossing the Rubicon." Pharsalus, Thapsus, Munda.**	Cæsar is appointed dictator for life. He is the founder of the new monarchy at Rome.
Second Period, 43–42 B.C. (1) **Friends of Cæsar (Second Triumvirate)** vs. (2) Cæsar's Assassins.	Assassination of Cæsar, 44 B. C.	(1) **Antony, Octavius, Lepidus.** (2) Brutus, Cassius, Sextus Pompey.	(1) **New proscription (Murder of Cicero). Philippi.**	Brutus and Cassius, defeated, commit suicide.
Third Period—31–30 B.C. (1) **Octavius** vs. (2) Antony.	A continued struggle for supreme power.	(1) **Octavius.** (2) Antony. Cleopatra.	(1) **Actium.** (A. D. 9.) Arminius. **5th D. B.**	Triumph of Octavius, grand nephew of Julius Cæsar. End of the republic and beginning of the empire.
25. JEWISH WAR—A.D. 66–70. (1) **Romans** vs. (2) Jews.	Revolt of the Jews against Rome.	(1) **Titus, son of Emperor Vespasian.**	(1) **Siege of Jerusalem.**	Destruction of Jerusalem and the temple.
26. DACIAN WARS—86–90, 101–102, 105–107. (1) **Romans** vs. (2) Dacians.	Rome desire to extend her conquests.	(1) **Domitian, Trajan.** (2) Decebalus.		Dacia is made a Roman province. Roman conquest and empire reaches its highest point.
27. CIVIL WARS OF THE ROMAN EMPIRE—193–284.	Contests for the throne among rival generals (barrack emperors).			Reorganization of empire by Diocletian (284–305).
28. WARS OF CONSTANTINE THE GREAT FOR THE EMPIRE—310–323. (1) **Constantine** vs. (2) Others. Augusti.	Confusion following abdication of Diocletian.	(1) **Constantine.** (2) Maxentius, Maximinus. Licinius.	(1) **Turin.**	Constantine becomes sole ruler of Roman Empire. He redistricts the empire, moves the capital to Constantinople and recognizes Christianity.
29. INVASION OF ROMAN EMPIRE BY NORTHERN BARBARIANS—375–493. (1) **Romans** vs. (2) Teutons and (Huns) Teutonic Tribes; Visigoths, Vandals, Suevi, Franks, Burgundians, Ostrogoths, Alemanni, Jutes, Saxons, Angles, Lombards.	The Huns (Mongolians) press upon the Teutons, who are forced to seek new lands within the boundaries of the Roman empire.	(1) **Valens, Stilicho Ætius, Leo (bishop of Rome)** (2) Alaric, Walja (Visigoth); Genseric (Vandal); Hengist and Horsa (Saxons); Attila (Hun); Theodoric the Great (Ostrogoth).	(1) **Battle near Chalons (451). 6th D. B.** (2) Adrianople, Sack of Rome. Visigothic kingdom of Tolosa (Toulouse), (415–507). Vandals settle in Africa (429–534). Carthage (439). Burgundians occupy Rhone Valley (443). Angles, Saxons and Jutes invade England (449), Huns and Ostrogoths ravage Gaul. Huns destroy Aquiliea and Venice founded (452). Vandals plunder Rome (455). Odoacer gains ascendency in Rome. The fall of the Roman empire (476). Ostrogothic kingdom in Italy (493–555).	Overthrow of the Roman empire in the west, though it continued in the east until 1453. This blending of Roman and Teutonic elements under the influence of the Christian religion and what remained of classic civilization formed the civilization of the middle ages.
30. WARS OF JUSTINIAN,—533–534. (1) **Eastern Empire** vs.— (2) Vandals in Africa and (3) Ostrogoths in Italy—535–555.	Desire to restore west to eastern empire.	(1) **Belisarius, Narses.** (3) Vitiges, Totila.	(1) **Battle of Taginae (552).**	Destruction of Vandal power in Africa and of the Ostrogothic kingdom in Italy. Exarchat established at Ravenna.

NOTABLE WARS OF HISTORY—Continued

Name of War, Contestants and Dates	Cause of Conflict	Leaders	Chief Battles and Incidents	Results and Comments
31. WARS OF THE FRANKS—486–814. (1) **Franks** vs. (2) Neighboring Peoples.	Desire to extend the limits of Frankish territory and to ward off attacks from without.	(1) **Clovis (486-511), Charles Martel (714-741), Pepin the Short (751-768). Charlemagne (768-814).**	(1) **Soissons (486), Clovis conquers Alemanni and becomes a Catholic Christian (496); Battle of Tours (732). 7th D. B. Conquest of Bergundy (534), Charlemagne conquers Lombards (774-776), Saxons (772-804), Bavarians (788), Avars (791), Northern Spain (778).**	Franks becomes leading power in the west and revive the western empire. (Christmas day, 800.)
32. HEPTARCHIC WARS IN ENGLAND—588–828.	Struggle for supremacy among the seven Teutonic kingdoms.	Ethelbert (Kent). Edwin (Northumbria). Offa (Mercia). Egbert (Wessex).	The supremacy was successively held by kings of Kent, Northumbria, Mercia, and Wessex. Maserfield (642), Ellandun (825).	"The indistinct noise of many battles and devastations of many kingdoms overrun and lost." (Milton.) All England at last united under Egbert, king of Wessex (802-837).
33. NORTHMEN INVASIONS—ninth and tenth Centuries. (1) **Northmen** vs. (2) People of Western and Southern Europe.	Opportunity for plunder and conquest and later the driving out of adventurous spirits by the organization of settled kingdoms of the north.	(1) **Hastings, Rolf, Sweyn, Canute.** (2) Alfred (England). Odo (France).	*In England.* Treaty of Wedmore. Massacre of Danes (1002). *In France.* (2) Siege of Paris. Grant of Normandy to Rolf (977).	The Northmen are the last swarm of Teutonic conquerors. They readily assimilate civilization and infuse new energy into western Europe.
34. SARACEN OR MOHAMMEDAN WARS—632–1492.	Saracens are ambitious to found a world wide Mohammedan empire.	(1) **Omar, Amru, Hassan, Mousa, Tarik, Abderrahman, Mohammed II. Abdallah.** (2) Yezdegerd (Persia), Leo the Isaurian, Charles Martel, Constantine, Palæologus, Ferdinand of Aragon.	(1) **Yarmouk (Syria). Damascus, Jerusalem Cadesia (Persia), Alexandria, Carthage, (697), Xeres (Spain), Granada, Toledo.** (2) Constantinople (716), Tours, Jerusalem, Las Navas de Tolosa (1212). (1) **Constantinople** (1453). (2) Granada (1492).	The Saracens attempted to conquer and convert Europe at three different times between 710 and 1492. Their power began to wane from the latter date.
35. NORMAN CONQUEST—1066. (1) **Normans** vs. (2) English.	William, duke of Normandy wishes to increase his territory and his power.	(1) **William the Conqueror.** (2) Harold, king of England.	(1) **Hastings. (A. D. 1066.) 8th D. B.**	The king received added power and a modified feudalism introduced into England. Southern Italy and Sicily were also conquered by bands of Normans in the eleventh century and the kingdom of Naples founded.
36. CRUSADES—1096–1270. (1) **European Christians** vs. (2) Turks and Moslems. First Crusade—1096–1099.	The appeal of the eastern emperor for aid, the desire to recover the Holy Sepulcher from the infidels, the love of adventure, and hope of gain.	(1) **Peter the Hermit, Godfrey of Bouillon, Bohemond of Tarentum. Robert of Normandy.**	(1) **Nicæa, Antioch, Jerusalem.**	Jerusalem is subdued and a transient kingdom is founded at Jerusalem.
Second Crusade—1147–1149.	The Conquest of Edessa by the Moslems threatens Jerusalem. Preaching of Saint Bernard.	(1) **Conrad III. of Germany, Louis VII, of France.**	Unsuccessful attack on Damascus.	Armies almost annihilated by hunger, disease and the enemy.
Third Crusade—1189–1192.	Capture of Jerusalem by Saladin.	(1) **Richard I. of England, Philip Augustus of France. Frederick Barbarossa of Germany.** (2) Saladin.	(1) **Acre.**	The Latin Christians secure by treaty the privilege of visiting the tomb of Christ for three years without molestation.
Fourth Crusade—1201–1204. (1) **Crusaders** vs. (2) Eastern Empire.	Appeals of Innocent III. Through influence of the Venetians the Crusaders turn aside to attack Constantinople.	(1) **Dandolo, Doge of Venice, Baldwin of Flanders.**	(1) **Sack of Constantinople.**	Division of eastern empire. The Venetians get the monoply of trade and most of the islands and coast lands of the Ægean and Ionians seas. The remainder is erected into a feudal state, the Latin empire.
Children's Crusade (legendary)—1212.	Ignorant enthusiasm aroused by visions and miraculous tales.	A shepherd lad, Stephen of Vendome.	Thousands of children, women and peasants march from France and Germany to the Mediterranean.	Only a small number return home; the others perish on the way or are sold into slavery by French merchants.
Fifth Crusade—1228–1229.	Vow of Frederick II. of Germany. He goes under pope's excommunication.	(1) **Frederick II.**		Frederick, by treaty with the sultan, secures a truce for ten years and the restoration of Bethlehem, Nazareth and Jerusalem to the Christians. Jerusalem is finally lost in 1244.
Sixth Crusade—1248–1254.	Louis IX. of France starts on a crusade via Egypt.	(1) **Louis IX., later St. Louis.**	(1) **Damietta.** (2) Expedition to Cairo.	Louis is captured in battle and released on payment of heavy ransom and evacuation of Damietta.
Last, Seventh Crusade—1270–1291.	Louis IX goes against Mohammedans of Tunis, Prince Edward of England to Syria.	(1) **Louis IX. Prince Edward.**	Death of Louis by the plague. (2) Acre, last Christian stronghold in Syria, falls (1291).	The results of the crusades were development of commerce, introduction of new customs, products and manufactures, increase in freedom of lower classes, especially townsmen, and the power of the crown.
37. WAR OF THE (1) **Empire** vs. (2) Italian Communes—1158–1183.	Frederick Barbarossa's attempt to restore imperial rights over the cities of northern Italy.	(1) **Frederick I. Barbarossa.** (2) Pope Alexander III.	(1) **Milan (1162).** (2) Legnano (1176).	By treaty of Constance (1183) the cities of Lombardy are recognized as practically self-governing republics, the barest overlordship remaining to the emperor.
38. WARS OF THE BARONS IN ENGLAND—1215–1265. (1) **Barons** vs. (2) Kings John and Henry III.	Misgovernment of John and Henry III.	(1) **Stephen Langton, Simon de Montfort.** (2) King John, Prince Edward, later Edward I.	(1) **Signing of Magna Charta. Lewes, Simon de Montfort's Parliament.** (2) Evesham.	The beginning of constitutional monarchy—henceforth the king is below the law, not above it.

NOTABLE WARS OF HISTORY—Continued

Name of War, Contestants and Dates	Cause of Conflict	Leaders	Chief Battles and Incidents	Results and Comments
39. HUNDRED YEARS' WAR 1337–1453. (1) **English** vs. (2) French.	The conflict of interests of the French and English kings in Guienne, Flanders and Scotland. Edward III. advances claim by descent to the throne of France.	(1) **Edward III. Edward the Black Prince. Prince Henry V. Duke of Bedford.** (2) Du Guesclin, Charles V., Joan of Arc.	(1) **Crécy, Calais, Poitiers, Peace of Bretigny, Agincourt. Treaty of Troyes.** (2) Orleans (1429). Castillon (1453).	England loses all her land in France except Calais. During the earlier stage of this war about one-third of the population of western Europe perished from the Black Death.
40. AUSTRO-SWISS WAR— 1315–1388. (1) **House of Hapsburg** vs. (2) Swiss Confederation.	Hapsburgs assert feudal rights over the peasants of the Swiss cantons.	(1) **Leopold III. of Austria.** (2) Arnold von Winkelried.	(2) Morgarten, Sempach, Näfels.	Independence of Swiss secured.
41. HUSSITE WAR–1419–1436. (1) **Bohemian followers of John Huss** vs. (2) Catholic Europe.	Execution of John Huss, the Bohemian religious reformer by the council of Constance.	(1) **Ziska, Procopius the Great.** (2) Emperor Sigismund, Cardinal Cesarini, Frederick of Brandenburg.	Revolt of Prague. Four crusades repulsed.	After the overthrow of the radical Hussites (Taborites) by the conservative Hussites (Calixtines) in the battle of Lipan a Catholic reaction set in which culminated in 1462 with the revocation of the compacts made by the Council of Basel with the Hussites.
42. WARS OF THE ROSES— 1455–1485. (1) **Yorkists (White Rose)** vs. (2) Lancastrians(Red Rose).	Misgovernment under Henry VI. encourages Richard, duke of York, representing the second line of descent from Edward III. to claim the throne against Henry VII. (third line).	(1) **Richard, duke of York. Edward IV. Richard III.** (2) Duke of Somerset. Queen Margaret. Earl of Warwick ("Kingmaker"). first a Yorkist and then a Lancastrian. Henry VII.	(1) **St. Albans, Northampton, Mortimer's Cross, Towton, Barnet, Tewkesbury.** (2) Wakefield, Bosworth Field.	Henry Tudor (Lancastrian in the female line) secures throne as Henry VII. By his marriage with Elizabeth of York he unites the warring factions and establishes an almost despotic rule in England.
43. WARS FOR CONTROL OF ITALY—1494–1529. (1) **French** vs. (2) Spanish.	Conflicting claims to the throne of Naples and to the duchy of Milan.	(1) **Charles VIII. Louis XII., Bayard ("Chevalier sans peur et sans reproche"), Francis I.** (2) Ferdinand of Aragon, Charles V., duke of Bourbon, Fürstenburg.	Invasion of Italy by Charles VIII. (1494). League Cambray (1508). Holy League (1511). (1) **Marignano.** (2) Pavia.	All the leading powers of western Europe were drawn into this struggle. By the peace of Cambraes (1529) France renounced her claims to Italy. One effect of these wars was to tie the hands of Charles V. so as to prevent his putting down Lutheranism in Germany.
44. SCHMALKALDIC WAR— 1546–1547. (1) **Charles V.** vs. (2) League of Schmalkalden.	Charles V. attempts to crush Protestantism in Germany.	(1) **Emperor Charles V., Duke Maurice of Saxony.** (2) John Frederic, Elector of Saxony; Philip, Landgrave of Hesse.	(1) **Mühlberg.**	Protestantism temporarily crushed. Its recovery in 1552 was followed by the religious peace of Augsburg 1555.
45. RELIGIOUS WARS IN FRANCE—1562–1598. (1) **Catholics** vs. (2) Huguenots (Protestants).	Massacre of Huguenots at Vassy is a signal for uprising.	(1) **Duke of Guise, Henry III.** (2) Catherine de Medici. Conde, Coligny, Henry of Navarre (Henry IV.)	(1) **Massacre of St. Bartholomew (1572).** (2) Siege of Paris, Ivry (1590), Henry of Navarre becomes a Catholic (1593). Riots of Image Breakers. Council of Blood.	By the edict of Nantes (1598) the Huguenots are given equal political rights with Catholics, limited freedom of worship, the possession of La Rochelle and other strong places as cities of refuge.
46. WAR OF LIBERATION IN THE NETHERLANDS— 1568–1648. (1) **Spain** vs. (2) Revolted provinces in the Netherlands.	Political and religious tyranny of Spain. Duke of Alva enforces the Inquisition.	(1) **Duke of Alva. Alexander of Parma.** (2) William of Orange, Jan van Olden, Barneveldt, Maurice of Nassau.	(1) **Mechlin, Haarlem.** (2) Brill, Siege of Leyden, "Spanish Fury" at Antwerp. Pacification of Ghent (1576). Union of Utrecht (1579). Declaration of Independence (1581).	By the Peace of Westphalia (1648) the independence of the seven northern provinces, the United Netherlands, is recognized. The ten southern provinces continue under Spanish rule until 1713.
47. THIRTY YEARS' WAR— 1618–1648. (1) **German Protestants and their Allies, England, Holland, Sweden and France** vs. (2) Imperial German Catholics and their allies, Spain, Italy.	Disputes over interpretation of peace of Augsburg (religious and political disputes leading to the revolt of Bohemia). The war passes through four phases—(1) Bohemian–Palatinate. (2) Danish. (3) Swedish. (4) Swedish–French.	(1) **Frederick, Elector Palatine, Mansfield, Gustavus Adolphus, (Sweden) Turenne and Conde (France).** (2) Emperor Ferdinand II., Maximilian of Bavaria, Tilly, Wallenstein.	(1) **Stralsund, Edict of Restitution, Breitenfeld, Lützen.** (2) White Hill, Magdeburg, Nördlingen.	This war is closed by the peace of Westphalia. Alsace thereby goes to France, Switzerland is separated from the empire and the Palatinate is divided. The secularized lands of northern Germany are secured to Protestanism while leaving to Catholicism, Austria, Bohemia and Bavaria. Germany is left desolate.
48. CIVIL WAR IN ENGLAND—1642–1649. (1) **Royalists (Cavaliers)** vs. (2) Parliamentarians(Roundheads) allied with Scots (to 1647).	Charles I. attempts to force a personal government on England. His disputes with Parliament covered (1) taxation, (2) privileges of Parliament, (3) religion, (4) control of the militia.	(1) **Charles I., Prince Rupert, Montrose.** (2) Cromwell, Essex, Fairfax, Leslie.	(2) Marston Moor, Naseby, Preston.	The second civil war (1648) determines the army leaders to bring Charles I. to trial and execution (1649). A Commonwealth was then established without King or House of Lords but with Oliver Cromwell as Protector (1653 to 1659). The son of Charles I. restored in 1660 as Charles II.
49. FIRST THREE WARS OF LOUIS XIV.—1667–1697. (1) **France** vs. (2) a. Spanish Netherlands. b. Dutch republic. c. Grand Alliance (German states, England, Holland).	Louis XIV.'s passion for fame and desire to increase French territory in Europe.	(1) **Turenne, Conde, Luxembourg.** (2) William III., De Ruyter.	Chambers of Reunion. (1) **Ravaging of Palatinate, Steenkirke, Neerwinden.** (2) Sasbach, La Hogue, Namur.	Extension of boundaries of France to the northeast.
50. SPANISH SUCCESSION in America, **QUEEN ANNE'S WAR**—1701–1714. (1) **France, Spain and Bavaria** vs. (2) Austria, England, Holland, Portugal, Savoy.	Acceptance by Louis XIV. of the bequest of the Spanish dominion to his grandson, Philip of Anjou, in violation of the partition treaty to which he had consented.	(1) **Vendome Villars, Leopold of Dessau.** (2) Duke of Marlborough, Eugene of Savoy, Heinsius.	(2) Gibraltar, Blenheim, Ramillies, Turin, Oudenarde, Malplaquet.	By the peace of Utrecht in 1713 and that of Rastadt in 1714 Spain and the Indies go to Philip of Anjou; Naples, Milan, Sardinia and former Spanish Netherlands to the Austrians. England receives Newfoundland, Acadia and Hudson Bay Territory from France and Gibraltar from Spain.

NOTABLE WARS OF HISTORY—Continued

Name of War, Contestants and Dates	Cause of Conflict	Leaders	Chief Battles and Incidents	Results and Comments
51. NORTHERN WAR—1700–1721 (1) **Sweden** vs. (2) Russia, Poland, Denmark, Saxony.	Peter the Great joins Poland, Denmark and Saxony for the purpose of despoiling Sweden, the first power of the north, of her Baltic ports.	(1) **Charles XII.** (2) Peter the Great (Russia), Augustus II. of Saxony.	(1) **Invasion of Denmark. Narva, Invasion of Saxony.** (2) Pultava.	By the peace of Nystadt (1721) Sweden cedes large territories to Russia. Russia takes the place of Sweden as the foremost power of the north.
52. WAR OF THE AUSTRIAN SUCCESSION—1740–1748. (1) **Austria, supported by Hungary, Bohemia, England, Holland and Saxony** vs. (2) Prussia, France, Spain, Bavaria.	When Maria Theresa succeeded her father, Charles IV. of Austria, Frederick the Great of Prussia seized Silesia. This precipitated a struggle for Austrian territories. At the death of Charles VI. of Austria the right of Maria Theresa to the throne is contested chiefly by Frederick the Great of Prussia who seizes Silesia.	(1) **Maria Theresa, George II of England, Charles of Lorraine.** (2) Frederick the Great of Prussia, Emperor Charles VII, Schwerin.	(1) **Dettingen.** (2) Mollwitz, Chotusitz, Prague, Fontenoy, Hohenfriedburg, Soor. Peace of Dresden.	By the treaty of Aix-la-Chapelle Silesia is secured to Prussia, which state now becomes a great European power. This war is one phase of the long rivalry between France and Great Britain for seapower and dominion in America and India.
53. SEVEN YEAR'S WAR, OR THIRD SILESIAN WAR; in America, FRENCH AND INDIAN WAR—1756–1763. (1) **England, Prussia** vs. France, Austria, Russia Spain, Sweden.	Maria Theresa wishes to regain Silesia. Hostilities between French and English in America and India. George II's concern for his ancestral territory of Hanover.	(1) **Frederick the Great, Duke of Cumberland. Wolfe (America) Robert Clive, (India).** (2) Daun (Austria) Charles of Lorraine, Montcalm (America).	(1) **Dresden, Rossbach, Leuthen, Zorndorf, Minden.** (2) Kolin, Hohkirchen, Kunersdorf. *In America:* (1) **Louisburg, Fort Duquesne, Quebec.** *In India:* (1) **Plassey, Wandewash.**	The peace of Paris (1763) gives England, Canada, the supremacy in India and certain islands, especially in the West Indies. Prussia retains Silesia. This war really founded the British empire which is based on sea-power and colonial dominion.
54. AMERICAN REVOLUTIONARY WAR—1775-1783. (1) **English Colonies in America aided by France** vs. (2) England.	The revolt of the colonies against England was caused by infringements upon what they considered their rights of government, especially local self government and taxation.	See page 135.	See page 135.	Recognition of the independence of the United States in the peace of Paris (1783). The Mississippi river becomes the western boundary of the United States.
55. WARS OF THE FRENCH REVOLUTION—1792-1802. (1) **Revolutionary France** vs. (2) Coalitions of England, Austria, Prussia, Holland, and Spain. The Empire, Russia. a. First Coalition—1792–1797.	Intrigues of emigrés; horror of Europe at the execution of the king; French offer of aid to revolutionists in other countries.	(1) **Dumouriez, Kellermann, Jourdan, Hoche, Pichegru, Napoleon Bonaparte, Moreau.** (2) Duke of Brunswick, Coburg, Charles of Austria.	(1) **Valmy, Occupation of Nice and Savoy, Jemmapes. Execution of king (1793). Annexation of Belgium, Fleurus, Lodi, Siege of Mantua.** (2) Mainz, Neerwinden, Kaiserslautern, Wurzburg.	By peace of Campo Formio (1797) the French frontier is advanced to the Rhine, Venice is given to Austria and the Cisalpine and Ligurian republics founded in Italy under French control.
b. Bonaparte's Egyptian Expedition—1798–1799.	Bonaparte aims to prepare the way to attack Great Britain's power in India and dreams of rivaling early conquerors of the east.	(1) **Napoleon Bonaparte.** (2) Nelson (England).	(1) **Battle of the Pyramids.** (2) Battle of the Nile at Aboukir, Acre.	Nelson's victory removes a serious menace to British power in India, cuts off the French in Egypt and deprives France of communication with its best troops and ablest general.
c. Second Coalition.—1799–1802.	The mistakes of the government of the Directory and the prestige of Nelson's victory enable Great Britain to form the Second Coalition.	(1) **Napoleon, Joubert, Moreau.** (2) Suvarcff, Melas, Archduke John.	(1) **Marengo, Hohenlinden.** Napoleon's passage of the Alps (Great St. Bernard). (2) Novi.	The Peace of Presburg ends the contest between France and Austria. Much harsher terms are imposed on Austria. Peace of Luneville with Austria (1801); peace of Amiens with England (1802); Surrender of England's conquests except Trinidad and Ceylon; Malta to be restored to Knights of Malta.
56. NAPOLEONIC WARS—1802–1815. (1) **France under Napoleon** vs. (2) European Powers led by England. a. Third Coalition—1805.	Neither England nor France regarded the peace of Amiens as more than a truce. Among the many causes of friction leading to renewal of war chief place was given to England's refusal to restore Malta.	(1) **Napoleon.** (2) Nelson, Mack, Alexander I. (Russia), Kutusoff.	(1) **Ulm, Austerlitz.** (2) Tratalgar.	As a result of his brilliant successes Napoleon in 1802 becomes consul for life and in 1804 took the title emperor of the French. Confirmation of treaty of Campo Formio, with the recognition of Batavian, Helvetian, Cisalpine and Ligurian republics.
b. (Fourth) War with Prussia and Russia.—1806–1807.			(1) **Double battle of Jena and Auerstadt. Berlin decree. Eylau (indecisive). Friedland.**	By the treaties of Tilsit (1807) Russia recognizes Napoleon's relatives as kings of Naples, Holland and Westphalia and consents to the creation of the Confederation of the Rhine and the grand duchy of Warsaw under Napoleon's control. Alexander and Napoleon combine to dominate Europe. Prussia cedes territories containing half her population.
c. Peninsular War—1808–1814.	Rebellion of Spain against Joseph Bonaparte, whom Napoleon had placed on the throne.	(1) **Soult, Massena.** (2) Duke of Wellington.	(1) **Corunna.** (2) Talavera, Lines of Torres Vedras, Albuera, Salamanca, Vittoria, Toulouse.	French expelled from the peninsula.
d. Fifth War with Austria—1809.		(1) **Napoleon.** (2) Archduke Charles.	(1) **Aspern, Wagram.**	Austria cedes 32,000 square miles of territory, containing 3½ million inhabitants.
e. Invasion of Russia—1812.	Alexander's refusal to enforce Napoleon's continental system, and other causes of dispute.	(1) **Napoleon, Marshal Ney.** (2) Kutusoff, Barclay de Tolly.	(1) **Smolensk, Borodino.** Burning of Moscow. Retreat from Moscow. Passage of the Beresina.	Less than 20,000 of the half million men in Napoleon's army recrossed the Russian frontier.
f. War of Liberation—1813–1814.	The disastrous Russian campaign, together with the steady progress of the British in the peninsular war encourages the oppressed states of Germany to rise against Napoleon's tyranny, Prussia taking the lead.	(1) **Napoleon, Ney, Macdonald.** (2) Frederick, William III., Francis I. Alexander I, Schwarzenberg Blücher, Bernadotte.	(1) **Lützen, Bautzen, Dresden,** (2) Dennewitz, Leipzig, (Battle of the Nations.) Allies enter Paris.	Driven from Russia in 1812, from Germany in 1813, Napoleon in 1814 was forced to surrender France itself. By the treaty of Fontainebleau he was given the Island of Elba and an annual revenue of 2,000,000 francs.
g. Waterloo Campaign—1815.	Quarrels among the allies and dissatisfaction of French with Louis XVIII. tempt Napoleon to return from Elba.	(1) **Napoleon, Ney.** (2) Wellington, Blücher.	Napoleon lands at Cannes (March 1); enters Paris March 20. (1) **Ligny.** (2) Quatre Bras, Waterloo, (June 18).	Waterloo marks the final downfall of Napoleon. He is transported to the island of St. Helena, where he died in 1821. In the Congress of Vienna the allies reconstructed Europe, restoring in general the legitimate rulers and erecting barriers against democratic movements and liberal ideas.

NOTABLE WARS OF HISTORY—Continued

Name of War, Contestants and Dates	Cause of Conflict	Leaders	Chief Battles and Incidents	Results and Comments
57. WAR OF 1812—1812–1814. (1) **United States** vs. (2) Great Britain.	Controversies over aggressions on neutral trade and British impressment of American seamen.	See page 285.	See page 285.	Peace of Ghent in 1814 led to the settlement of the northern boundary of the United States.
58. WAR OF GRECIAN INDEPENDENCE—1821–1829. (1) **Greeks, aided by England, Russia and France** vs. (2) Turks.	Revived feeling of Greek nationality, stimulated by a widespread secret society working for a restoration of a Greek empire at Constantinople.	(1) **Ypsilanti, Diebitsch** (Russia) **Codrington,** (England), **Byron,** (England). (2) Ibrahim, Pasha.	Massacre of Greeks at Chios. (1) **Navarino, Adrianople.** (2) Missolonghi.	The treaty of Adrianople, 1829, compelled Turkey to acknowledge the independence of Greece, which chose as king the Bavarian prince Otto I.
59. MEXICAN WAR—1846–1848. (1) **United States** vs. (2) Mexico.	Boundary disputes occasioned by the annexation of Texas.	See page 140.	See page 140.	By the treaty of Guadalupe Hidalgo, Mexico gives up to the United States all territory north of the Rio Grande and Gila rivers, comprising Texas, New Mexico, California, Nevada, Utah, Arizona and part of Colorado and Wyoming.
60. CRIMEAN WAR—1854–1856. (1) **Russia** vs. (2) Turkey aided by Great Britain, France and Sardinia.	The question of the political status and future of the lands of the Turkish empire. Immediate cause, the claim of Russia to a protectorate over all Greek Christians living under the sultan's rule.	(1) **Mentchikoff, Gortchakoff.** (2) Canrobert, Pelissier (France), Raglan, Simpson (England).	(1) **Balaclava.** (2) Alma, Siege of Sebastopol, Inkermann.	In the peace of Paris (1856) Russia's claim to a protectorate is disallowed, the Danube is opened to navigation and the Black Sea is closed to war vessels of all powers.
61. SEPOY MUTINY—1857–1858. (1) **Sepoys** vs. (2) English.	Uneasiness created by the rapid progress of British ways and rule causes a revolt of native Sepoy troops of India. Immediate cause the rumor that cartridges furnished troops were greased with a mixture of hog and beef fat—the one animal an object of loathing to Mohammedans, the other of religious worship to the Hindu.	(1) **Nana Sahib.** (2) Nicholson, Havelock, Campbell.	Mutiny of Sepoys at Meerut. (1) **Massacre at Cawnpore.** (2) Delhi, Relief of Lucknow.	Following the suppression of the mutiny the charter of the East India company is revoked and India passes directly under the crown, a secretary of state for India being added to the British ministry.
62. WAR OF ITALIAN LIBERATION—1859. (1) **Sardinia-Piedmont and France** vs. (2) Austria.	Since 1848 Sardinia-Piedmont had been the center of the movement for Italian unity. Following promises of aid from Napoleon III. Cavour traps Austria into declaring war over the question of disarmament.	(1) **Victor Emmanuel, Napoleon III., Garibaldi.** (2) Francis Joseph II., Gyulay.	(1) **Montebello, Magenta, Solferino.** Peace signed at Zurich, Nov. 10, 1859.	By this war Victor Emmanuel gained Lombardy. In 1860 Tuscany, Parma, Modena and the papal legations were added. In 1861 he gained Sicily and Naples, together with the title King of Italy. Venetia followed as a result of alliance with Prussia in 1866 and the addition of Rome in 1871 completed the unification of Italy.
63. AMERICAN CIVIL WAR—1861–1865. (1) **Federal Government of United States** vs. (2) Southern Confederacy.	The election of Lincoln, which marked the triumph of the Free-Soil Republican party, was made the pretext for secession and the formation of the Southern Confederacy. War followed upon the attempt of President Lincoln to supply Fort Sumter.	See page 290.	See page 290.	Resulted in the abolition of slavery and the preservation of the union.
64. DANISH WAR—1864. (1) **Austria and Prussia** vs. (2) Denmark.	Incorporation of the duchy of Schleswig with Denmark in violation of treaty of 1852.	(1) **Gablenz (Aus), Prince Frederic Charles (Prus.)** (2) Dermeza, Gerlach.	(1) **Invasion of Jutland** (1) **Storming of Düppel.**	Denmark gives up Schleswig-Holstein, which is jointly administered by Austria and Prussia.
65. AUSTRO-PRUSSIAN WAR—1866. **Prussia with smaller North German States, and Italy** vs. (2) Austria, Hanover, Saxony, and South German States.	Friction over Schleswig-Holstein enables Bismarck to force Austria into a war for suppremacy in Germany.	(1) **William I., Prince Frederic Charles, Moltke, Victor Emmanuel.** (2) Benedek, Archduke Albert, Gablenz, Prince Charles of Bavaria.	*In Bohemia:* (1) **Soor, Koniggrätz or Sadowa.** (2) Trautenau. *In the West:* (1) **Aschaffenburg.** (2) Langensala. *In Italy:* (2) Custozza, Lissa.	Closed with the peace of Prague, Aug. 23, 1866, which authorized the re-establishment of the federated German states, excluding Austria; Austria ceded Venetia to Italy, and her rights in Scleswig-Holstein to Prussia. Hanover, Hesse, Nassau are also annexed to Prussia.
66. FRANCO-PRUSSIAN WAR—1870–1871. (1) **France** vs. (2) Prussia supported by all German States including South.	Jealousy of France at Prussian gains and friction over Hohenzollern candidacy for the throne of Spain. Bismarck's falsification of the "Ems dispatch" tricked France into a declaration of war.	(1) **Napoleon, Mac Mahon, Bazaine.** (2) William I. Moltke, Prince Frederic Charles, Crown Prince Frederic William.	(1) **Saarbrucken.** (2) Weissenberg, Wörth, Vionville, Gravelotte, Sedan, Capitulation of Metz, Orleans, Capitulation of Paris.	Closed in 1871 with the treaty of Versailles with the following results: (1) The French military power was destroyed; (2) the western frontier of Germany was rendered secure; (3) The German empire was established; (4) Germany acquired Alsace and Lorraine. In France Napoleon III. is deposed and the Third republic established, 1870.
67. RUSSO-TURKISH WAR—1877–1878. (1) **Russia** vs. (2) Turkey.	Turkish misgovernment and revolts in her Christian subject provinces, which were barbarously put down ("Bulgarian atrocities") arouse all Europe but Russia alone declares war.	(1) **Grand Duke Nicholas, Gurka, Grand Duke Michael, Alexander II.** (2) Suleiman Pasha, Osman Pasha, Mukhitar Pasha.	(1) **Passages of the Danube at Shitova. Shipka Pass, Plevna, Storm of Kars.**	By the peace of San Stefano as revised in the congress of the powers at Berlin, Montenegro, Servia and Roumania become independent; Bulgaria remains tributary but receives a Christian prince; Russia obtains large indemnity and part of Armenia and also Bessarabia.
68. CHINESE-JAPANESE WAR—1894–1895 (1) **Japan** vs. (2) China.	Rival claims to suzerainty over Korea.	(1) **Ito, Yamagata, Oyama, Nogi.** (2) Tso, Yeh, Wei.	(1) **Yalu River, Port Arthur, Wei-hai-wei, Niuchwang.**	Treaty of Shimonoseki, signed April 17, 1895, removed Korea from Chinese influence; ceded Formosa and the Pescadores to Japan, and awarded to the latter an indemnity of $180,000,000.

NOTABLE WARS OF HISTORY—Continued

NAME OF WAR, CONTESTANTS AND DATES	CAUSE OF CONFLICT	LEADERS	CHIEF BATTLES AND INCIDENTS	RESULTS AND COMMENTS
69. SPANISH WAR—1898. (1) **United States** vs. (2) Spain.	Interference of the United States on account of the inhuman warfare waged by Spain in an attempt to suppress Cuban independence.	See Spanish-American War, page 294 (1) **Sir George White Buller, Methuen, Roberts, Kitchener, French.** (2) Cronje, Botha, De Wet, Delarey.	See page 294. (1) **Siege of Ladysmith, Paardeberg.** (2) Colenso, Spion, Kop, Vaal, Krantz, Magersfontein.	By the treaty of Paris, Dec. 10, 1898, recognized the sovereignty of the United States in Cuba, and ceded to this country the Philippines, Porto Rico and Guam, in consideration of $20,000,000.
70. SOUTH AFRICAN or BOER WAR—1899-1902. (1) **Great Britain** vs. (2) Transvaal, Orange Free State.	Resistance by the Boers to the British form of government in the Transvaal.	(1) **Togo, Kuroki, Oku, Nodzu, Oyama, Nogi.** (2) Kuropatkin, Alexieff, Makaroff, Stoessel, Stakelberg, Linievitch.	(1) **Port Arthur and Chemulpo, Vladivostok, Yalu River, Dalny, Siege of Port Arthur, Mukden, Sea of Japan.**	Boers surrendered May 31, 1902; are granted the right of self-government under British Sovereignty, and united with other self-governing British colonies in South Africa, in 1910, to form the Union of South Africa.
71. RUSSO-JAPANESE WAR—1904-1905. (1) **Japan** vs. (2) Russia.	Russian encroachments in Manchuria and their fortification of Port Arthur.	(1) **Czar Ferdinand, Crown Prince Constantine, Gen. Savoff, King Peter.** (2) Nazim Pasha, Muktor Pasha. Leaders Same as above.	(1) **Lule Burgas, Adrianople, Janina, Scutari, Kirk, Kilissa.**	Closed Sept. 5, 1905, by treaty of Portsmouth by which Korea passes under control of Japan, China regains Manchuria, and Japan is granted important railroad rights.
72. THE BALKAN WAR—1912-1913. (1) **Balkan Allies; Bulgaria, Greece, Servia and Montenegro** vs. (2) Turkey.	Turkish misrule and atrocities, combined with racial and religious hatred.	(1) **Lloyd George, Haig; Joffre, Foch, Clemenceau; King Albert; Orlando, Cadorna, Diaz; Wilson, Pershing, Sims; Venezelos; Brusiloff, Rennenkampf.** (2) William II, Hindenberg, Ludendorf, Tirpitz, Hollweg; Charles II.	Roumania attacks Bulgaria from the north. Turkey recaptures Adrianople. (1) **Invasion of Belgium; First Battle of the Marne; Battle of Verdun; Second Battle of the Marne; Battle of Caporetto; Battle of the Piave; Siege of Gallipoli; Allenby takes Palestine; Battle of Jutland; Submarine Warfare; Bombardment of Paris; Fall of the Hindenberg line; The American army in Battles of Argonne Forest; Aerial combats; Armistice at request of German Great Headquarters.**	By treaty of Bucharest, most of land conquered in First Balkan war divided among the Allies. Roumania gets a slice in the north. Albania created a state.
73. Second Balkan War—**1913.** (June 30 to July 29.) (1) Greece, Serbia, Montenegro, Roumania, Turkey vs. (2) Bulgaria.	Bulgaria, dissatisfied with her portion, makes war on her allies.			Germany lost her commercial position; surrendered her fleet; her military autocracy fell; her colonies passed to her opponents; Alsace-Lorraine and parts of Schleswig and of Silesia seceded. The map of Europe was made over; Poland, Czecho-Slovakia, Jugo-Slavia, Hungary and small states on the Russian frontier became independent. Italy recovered and redeemed her lost provinces. Europe became industrially stagnant; Russia starved and Germany, Austria and Italy were torn with internal disorders. Republics were established and monarchies fell.
74. THE WORLD WAR—(1914-1919). (1) **France, England, Belgium, Italy, Serbia, Russia, Roumania, America, Greece Japan, (China, Brazil, Portugal, Montenegro)** vs. (2) Germany, Austro-Hungary, Bulgaria and Turkey.	The assassination of Archduke Francis Ferdinand of Austria-Hungary by a Serbian peasant destroyed the equilibrium of Europe and loosed the pent up jealousies among nations, especially Germany's lust for world empire and commercial primacy.	(2) William II, Hindenberg, Ludendorf, Tirpitz, Hollweg; Charles II.	Russian Revolution; Emperor William's abdication; Communism in Russia; The Peace of Versailles.	Naval disarmament was begun and reduction of land armaments became a necessity because of crushing European National debts. The Turk was discredited but retains his hold on Constantinople.

THE WORLD WAR

TABLE OF RESOURCES OF THE BELLIGERENTS.

	AREA	POPULATION	MILITARY STRENGTH (1915)			TOTAL AVAILABLE	NAVAL RESOURCES, LATEST AVAILABLE FIGURES									
							BATTLESHIPS			CRUISERS						
			PEACE STRENGTH	RESERVES	TOTAL WAR STRENGTH	MILITARY STRENGTH	MODERN	CRUISER	OLD	1ST CLASS	2ND CLASS	3RD CLASS	GUNBOATS	DESTROYERS	TORPEDO BOATS	SUBMARINES	PERSONNEL
France	207,054	39,601,509	790,000	4,516,507	5,300,000	2,620,302	17	0	15	18	4	9	6	87	173	90	60,621
Russia	8,647,657	175,137,000	1,384,000	4,016,000	29,419,920	29,419,920	9	44	8	6	6	3	8	105	23	48	52,463
British Empire	13,153,712	437,447,932	138,497	2,743,986	3,000,000	7,427,000	29	10	38	42	37	33	10	227	58	85	137,500
Italy	101,623	35,598,000	306,000	2,994,200	3,380,200	3,739,357	8	0	8	7	3	10	5	35	73	20	33,095
Japan	747,655	53,696,858	250,000	1,250,000	1,500,000	3,239,372	9	5	13	12	10	9	5	60	54	15	51,054
Belgium	11,373	7,571,381	58,033	291,967	350,000	1,164,277	..	..	..	..	..	..	..	..	..	..	.....
Portugal	35,000	5,957,985	30,490	230,000	260,000	871,476	..	..	1	..	..	6	19	2	7	2	600
Serbia	34,000	4,600,000	38,316	317,139	355,455	554,143	..	..	..	..	..	..	..	..	..	..	.....
Roumania	54,000	7,000,000	113,000	466,743	580,000	921,602	..	..	..	..	..	..	8	..	..	..	.....
Greece	46,522	5,000,000	60,000	590,000	460,000	514,260	0	1	3	0	0	0	..	12	10	2	4,000
China	1,861,000	413,000,000	400,000	300,000	770,000	63,430,000	..	..	..	..	..	..	19	..	..	..	.....
Brazil	3,292,000	24,300,000	33,000	527,000	560,000	4,301,643	2	0	1	0	0	2	28	10	4	3	8,000
United States	3,616,484	102,826,309	.....	.....	(1918)3,725,000	13,500,000	14	0	25	5	5	13	..	62	27	50	64,780
Montenegro	5,650	520,000	35,000	.....	35,000	68,200											.....
Germany	208,780	66,715,000	870,000	4,530,000	5,400,000	8,162,400	19	7	20	0	6	39	7	141	47	30	.....
Austria	264,034	40,000,000	436,035	3,163,965	3,600,000	6,376,466	4	0	9	3	2	7	3	18	53	15	66,783
Bulgaria	43,000	9,755,000	66,583	433,417	500,000	377,503	..	..	..	..	..	..	..	..	..	..	17,581
Turkey	710,224	21,274,000	210,000	890,000	1,100,000	3,174,780	2	1	3	2	2	1	2	10	8	..	30,000

Outline of Military Events

1914 WEST FRONT

Aug. 1. Germany invades Luxemburg.
2. Demands passage through Belgium, refused.
3. Ultimatum to France.
4. Belgium invaded. British ultimatum to Germany.

Battles for Liege forts till Aug. 15, delaying Germans 11 days. Brussels falls Aug. 20, Namur Aug. 22. Louvain library burned.

8. English expeditionary force under Gen. French arrives.
21-23. Battle of Mons-Charleroi. English and French retreat from Belgium. Germans advance within 25 miles of Paris.

Sept. 6-10. Battle of the Marne, won by French under Foch and Joffre. The Germans, beaten, retreat to the Aisne.
12-17. Allies fail to break the German lines.

By Oct. 8 the trench system extended from the sea to Switzerland—300 miles.
Oct. 8. Fall of Antwerp.
16-28. Battle of the Yser; Belgians cut the dykes in Flanders.

Oct. 22-Nov. 15. Battle of Ypres. The German losses at the Yser and Ypres 150,000. They occupy industrial France and Belgium.

EAST FRONT

Aug. 1. Germany declares war on Russia.

6. Austria declares war on Russia.
18. Russians invade East Prussia. This causes withdrawal of troops from the west. Battle of Tennenberg destroys first Russian army.

Aug. 27-Sept. 3. Russians invade Galicia, almost destroy Austria's army. Capture of Halicz, Tarnow, Lemburg.

Sept. 6-10. Russians under Gen. Rennenkampf annihilated at Mazurian lakes by von Hindenberg.

Nov. 5. Russians take Jaroslav. The Germans attempt invasion of Poland, but fail in three offensives and narrowly avert disaster in the Battle of Lodz (Nov. and Dec.).

1914 ITALY, BALKANS, TURKEY

June 28. Murder of the Austrian archduke at Serajevo.
July 23. Austrian ultimatum to Serbia.
29-30. Austrians bombard Belgrade.

Aug. 4. Turkey forms alliance with Germany.
7. Montenegro declares war on Austria.

Oct. Turkey violates her neutrality by protecting two German battleships and shelling Russian cities on the Black Sea (Oct. 29).
Nov. 3. Russia declares war on Turkey.
Nov. 5. Great Britain declares war on Turkey and annexes Cyprus.
Nov. 10. Austrians invade Serbia.

Dec. 14. Serbia expels the Austrian army from her soil.

NAVAL AND MINOR EVENTS

Aug. 2. Great Britain promises France that her navy will oppose any attempt of Germany to attack from the Channel.
4. United States declares her neutrality.
5. President Wilson offers to mediate between belligerent nations; appeals for peace.
18. Pres. Wilson appeals for neutrality of sentiment.
23. Japan declares war on Germany.
26. British capture Togoland.
28. British naval victory off Helgoland.

Sept. 3. French government moved to Bordeaux (temporarily). German colonies, New Guinea, Bismarck Archipelago, and other East Indian islands taken by the Australians.

Oct. 13. Belgian government retires to Havre, France. Germans capture Ghent.

Nov. 1. German naval victory off Chile.
7. Japan captures Tsingtau and a number of islands in the Pacific.
10. Embden, German raider, sunk in the East Indies.

13. United States proclaims neutrality of Panama Canal Zone.
21. British take Basra on Persian Gulf.

Dec. 8. British naval victory off the Falkland Islands.
17. Khedive of Egypt deposed as a German sympathizer and a protectorate proclaimed. The British navy controls the seas.

THE WORLD WAR—Continued

1915 West Front

March-April. French and English offensive in the Champagne.
March 10. Battle of Neuve Chapelle.

April 22-26. Second battle of Ypres. Germans use poison gas for the first time.

May 9-June. Battle of Arras.
Sept. 25.-Oct. Failure of the Champagne offensive.

Dec. 15. Sir John French retired from command, succeeded by Sir Douglas Haig.

East Front

Jan.-Feb. Second Russian invasion of East Prussia crushed by Hindenburg in the Mazurian Lakes (4-13 Feb.).
March 17. Russians capture Przemysl.
April-Aug. Great German offensive in Poland and Galicia under Hindenburg and Mackensen.

May 2. Battle of the Dunajec River. The Germans break the Russian lines.

June 2. Fall of Prsemysl.
22. Fall of Lemburg.

Aug. 5. Fall of Warsaw. All Poland is overrun. Capture of Courland.

Sept. 8. Grand Duke Nicholas removed from command and transferred to the Caucasian Front.

The Russian losses in the campaign: 1,200,000 killed and wounded, 900,000 captured, 65,000 sq. miles territory taken. The Russian line now runs from Riga to East Galicia.

1915 Italy, Balkans and Turkey

Feb.-March. Failure of British and French fleets to force the Dardanelles.

April 26. Allied troops landed on the Gallipoli peninsula.
30. Germans invade the Russian Baltic provinces.

May 23. Italy declares war on Austria.

Aug. 20. Italy declares war on Turkey.

Oct. 5. Russian ultimatum to Bulgaria.
13. Bulgaria joins the Central Allies. Germans, Austrians, Bulgars in a combined offensive crush Serbia.
Sept. 18. Fall of Vilna.
Nov. 5. Fall of Nish.
Dec. 2. Monastir taken. Serbia completely crushed.
19. Gallipoli expedition abandoned.

Naval and Minor Events

Jan. 24. An English patrolling squadron defeats a number of German raiders on the Dogger Banks.
28. American merchantman, "Wm. P. Frye," sunk by the "Prinz Eitel Friedrich."
Feb. 10. U. S. notifies Germany that she will hold her strictly accountable for the loss of American vessels.
18. German "war zone" established around the British Islands—a so-called blockade.
20. U. S. sends identical notes to Great Britain and Germany suggesting agreement on naval warfare.
April 28. American merchantman "Cushing" attacked by a submarine.
May 1. American vessel "Gulflight" sunk, two Americans lost. Bernstorff, German ambassador, publishes warning in American papers for passengers to keep off the liners crossing the "war zone."
7. Lusitania sunk off Ireland, 1,154 dead, of whom 114 are Americans.
10. Germany expresses sympathy for lives lost on the Lusitania.
13. First Lusitania note.
25. American ship "Nebraska" attacked by a submarine.
June 8. Bryan resigns as Secretary of State.
9. Second Lusitania note.
July 21. Third Lusitania note. The U. S. complains of unsatisfactory replies.
Aug. 19. The "Arabic" sunk. Two Americans lost.
Sept. 1. Germany promises that her submarines will sink no more liners "without warning."
8. U. S. demands recall of Austrian ambassador, Dr. Dumba.
Dec. 4. U. S. demands recall of German attaches Boy-Ed and von Papen.

1916 West and East Fronts

Feb. 21. Battle of Verdun begins. The French resist heroically under Petain.
25. Fort Douaumont taken.

March 8. Germany declares war on Portugal.

July. The effort to take Verdun and open the way to Paris fails. Great losses (Germans at least 500,000 men) bring little gains.
1. British begin battle on the Somme to relieve pressure upon Verdun.

Sept. 26. Combles taken. The allies fail to break German lines. The losses on the Somme are estimated at 700,000 for the Germans and 800,000 for the French and English.

Balkans, Italy and Turkey

Jan. 8. Gallipoli evacuated.
13. Cettinje falls to the Austrians.
Feb. General Townshend besieged at Kut-el-Amara.
Grand Duke Nicholas starts a successful offensive in Armenia.
16. Capture of Erzerum.
27. Russians take Kermanshah.
April 17. Trebizond taken.
29. Relief expedition to Gen. Townshend forced back. The British in Kut surrender (13,000 men and all supplies).

May 16. Austrians start successful drive from the Trentino, but Brusiloff's drive compels them to give it up (June 7).
June. Russians under Brusiloff begin offensive in Volhynia and Bukovina.
17. Czernowitz captured and all Bukovina overrun.

Aug. 6. Italy begins offensive.

9. Garizia taken, advance upon Trieste.

27. Roumania declares war on Austria and Italy on Germany.
Sept. Roumanians invade Transylvania, unsupported by the Russians; Germans and Austrians under Mackensen and Falkenhayn drive them back. Bulgarians attack from the south and thus crush Roumania's armies. Valuable grain and oil supplies lost.

Dec. 6. Bucharest falls.

1916 Naval, Submarine and Other Events

Feb. 10. Germany sends note to neutrals that armed merchantmen will be sunk as warships without warning.
15. Secretary Lansing states that such ships have right to carry arms in self-defense.

March 24. "Sussex" sunk without warning in violation of pledge.

April 8. U. S. states that unless submarine warfare is given up, she will sever diplomatic relations.
25-28. Sinn Fein rebellion, led by Sir Roger Casement, supported by Germany.

May 4. Germany acknowledges sinking of the "Sussex," and in the main meets demands of the U. S.

25. Compulsory military service adopted in Great Britain. Basis laid for an army of 5,000,000.

27. Pres. Wilson before League to Enforce Peace states that the U. S. is ready to join any practical league to preserve peace.
31. Battle off Jutland.

June 5. Lord Kitchener drowned.
21. U. S. demands apology and reparation for the sinking of the "Petrolite."

Sept. 7. Denmark sells the Virgin Islands to the U. S. for $25,000,000.

Oct. 28. English ship "Mariana" sunk without warning. Six Americans lost.
Nov. 6. English ship "Arabic" torpedoed.
Dec. 5-7. Lloyd George displaces Asquith as head of Cabinet to infuse new energy into the war.
12. Germany offers peace, refused by the allies as empty and insincere.
14. English horse transport sunk. Seventeen Americans lost.
18. Pres. Wilson sends peace note to the belligerents to which Germany replies on Dec. 26.

1917 West and East Fronts

March 17-19. Germans retreat on a front of 100 miles to the Hindenburg Line, destroying everything, and evacuate 1,300 square miles.

19. Abdication of the Czar.

April 9. Battle of Arras. Vimy Ridge taken.

April 16. French successes about the Aisne between Soissons and Rheims.

May 15. Petain succeeds Nivelle as head of the French forces.

17. Russian Provisional Government reconstructed, Kerensky becomes minister of war.

June 7. Capture of Messines Ridge, 7,500 German prisoners.

26. First American troops reach France.

July 19. Russian army, raised by Kerensky, begins offensive in Galicia but is easily stopped.

31. Battle of Flanders (Paeschendaele Ridge).

Aug. 15. Canadians capture Hill 70 commanding Lens.

Sept. 3. Germans occupy Riga.

Nov. 22-Dec. 13. Battle of Cambrai. Great success under Gen. Byng. Battle of Bourlon Wood.

6-7. Kerensky overthrown by the Bolsheviki.

Dec. 13. Germans drive British back from Cambrai.

15. Bolsheviki government concludes armistice with Germany.

23. Peace negotiations begun at Brest Litovsk.

Italy, Balkans and Turkey

Jan. 2. Dobrudja captured by the Bulgarians.
5. Foscani falls.

Feb. 24. Gen. Maude recaptures Kut-el-Amara.

March 11. British take Bagdad and advance into Palestine.

May 15. Italians begin offensive on the Isonzo front.

June 12. Constantine, king of Greece, compelled to abdicate.

29. Greece joins in the war on the Central allies.

Aug. 9. Italians capture Gorizia.
29. Fall of Monte Santo.

Sept. 14. Capture of Monte San Gabriele.

Oct. Battle of Caporetto, beginning of the retreat to the Piave River.

Nov. 18. British capture Ascalon and Jappa.

Dec. 9. Fall of Jerusalem.

1917 United States Naval and Minor Events

Jan. 10. Allies state their terms. Germany has sunk 5,034,000 tons of shipping.
19. "Harrowdale" sunk, 72 American seamen taken prisoners to Germany.
Feb. 1. Germany declares unrestricted submarine warfare and breaks her pledge.
3. U. S. severs diplomatic relations with Germany and dismisses Bernstorff.
5. By this time the Germans had killed 14,120 non-combatant English people through their submarines.
12. U. S. informs Swiss minister she will not negotiate with Germany until submarine warfare is discontinued.
26. Pres. Wilson asks authority to arm merchant ships.
28. Disclosure of Zimmerman note to Mexico promising her New Mexico, Arizona, etc., if she would go to war with the U. S.
March 14. China breaks diplomatic relations with Germany.
March 27. Brand Whitlock, minister to Belgium, withdrawn.

April 6. U. S. declares war on Germany.
8. Relations with Austria severed.
20. U. S. breaks diplomatic relations with Turkey.

May 4. First American destroyers join British fleet.
18. Pres. Wilson signs Selective Service Act.

June 15. First Liberty Loan, $3,035,226,850, subscribed.

July 4. Dr. von Bethmann-Hollweg resigns as German Chancellor.
14. Dr. Georg Michaelis becomes Chancellor.
20. Drawing of numbers for the first draft.
30. Mutiny in German fleet in Wilhelmshaven and Kiel.

Aug. 10. Food and Fuel Control bill passed.

Sept. 8. Luxburg dispatches revealed in the U. S.

Oct. 27. Second Liberty Loan, $4,617,532,300, subscribed.
30. Count von Hertling succeeds Michaelis as Chancellor.

Nov. 13. Clemenceau succeeds Ribot as Premier of France.
29. First session of the Interallied Conference in Paris. Col. E. M. House chairman of American delegation. Sixteen nations represented.

Dec. 7. U. S. declares war on Austria.
6. U. S. destroyer "Jacob Jones" sunk by submarine. Forty men lost.
26. Proclamation issued taking over the railroads by the government. W. G. McAdoo appointed director general.

THE WORLD WAR—Continued

1918 WEST FRONT

March 21. Central Allies begin unexampled drive between Arras and La Fere. First and second British lines broken and fifth British army annihilated. By the 3rd of April Allies are driven back 35 miles on a front of 60 miles. Gains of 1916-17 are lost and Germans are eight miles from Amiens.

April 9. Germans start drive for the Channel ports. Fall of Bailleul. The Kemmelberg taken.

May 27. Third offensive begins. Attack from Ailette River to Berry-au-Bac, a front of 33 miles. The Aisne Heights swept and the Vesle River crossed. The Germans break through the lines on the Ourcq and march towards Paris. Soissons, Chateau-Thierry, Dormans fall. The Germans advance 34 miles. The first American troops stop them at Cantigny and Chateau-Thierry.

June 9. The Germans strike between Montdidier and Noyon, intending to capture Compiegne and open way to Paris. Checked by French.

July 15. Fifth drive from Chateau-Thierry to Main de Massiges, the Marne crossed. Americans driven back, Rheims menaced. Foch launches counter attack.

July-Nov. The Great Allied Offensive. German reserves exhausted. Retreat to the Vesle. British drive from Amiens under Rawlinson. Evacuation of the Montdidier sector. Foch next drives for the Hindenburg Line. Mangin crosses the Ailette. Byng in the north takes 30,000 prisoners. Evacuation of the Lys River section. Horne attacks from Arras, takes 20,000 Germans. Sept. 12-13, Pershing takes the salient of St. Mihiel. Next drives north from Verdun, takes Montfaucon, Varennes, and moves up the Meuse. The Belgians and Gen. Plumer advance to take Roulers, Menin, and threaten Ostend and Bruges. On Oct. 8 the decisive thrust occurs. Cambrai and Douai fall. Valenciennes captured, thus outflanking the whole German positions west of the Dutch frontier, Maubeuge and Mons fall. Final American effort at Argonne and Sedan.

Nov. 11. Germany, totally defeated in the West, signs armistice at Senlis. She promises to evacuate all territory held, including Alsace and Lorraine, return all people deported therefrom, surrender of large quantities of war material, evacuate all land west of the Rhine, return all prisoners of war, abandon treaties of Brest-Litovsk and Bucharest, surrender most of the German navy, allow occupation of Rhine valley by the Allies.

1918 MISCELLANEOUS

April-May. Third Liberty Loan. $4,176,516,850 subscribed.

June 12. Austrian offensive on the Piavo defeated by Diaz.

Aug.-Sept. English advance under Allenby in Palestine north of Jerusalem with the help of the King of Hedjaz.

Sept. 25. Serbian-Greek offensive destroys Bulgarian armies, which flee and retire up the Vardar valley. Battle of Samaria. Allenby envelopes the Turks, captures 40,000 prisoners, 700 guns and all their supplies. Uskib falls.

30. Prince Max of Baden succeeds Hertling as Chancellor.

Oct. 1. Allenby captures Damascus.

2. Serbians enter Nisn. Bulgaria makes complete surrender.

31. Unconditional surrender of Turkey.

Oct.-Nov. Fourth Liberty Loan, $6,989,047,000 subscribed.

Nov. 4. Austria surrenders without terms.

1919. June 28. Peace treaty between Germany and the Allies signed at Versailles.

CHRONOLOGICAL TABLES OF RULERS

KINGS OF ASSYRIA BEFORE THE DIVISION

B. C.	
2017	Semiramis (?)
1937	Arabs seize Nineveh
1446	Belochus
1433	Artossa
1421	Belatores
1183	Tuaeus
1139	Thinaeus
840	Sardanapalus
820	Burned in his palace
790	Pul (?)
	After death of Sardanapalus Assyrian Empire ends, being divided into Assyrian, Babylonian and Median kingdoms.

KINGS OF SMALLER ASSYRIA

747	Tiglath-Pileser, called Arbaces
728	Shalmaneser
717	Sennacherib
712	Esarhaddon
680	Esarhaddon takes Babylon.

KINGS OF SMALLER BABYLON

747	Nabonassar
734	Merodach Baladan
680	Esarhaddon
667	Saosduchinus
647	Chiniladon
626	Nabopolassar
605	Nebuchadnezzar
571	Meordach
559	Neriglissar
556	Laborosoarchod
555	Belshazzar
538	Babylon taken by Cyrus

KINGS OF DENMARK

714	Gorm I.
750	Ragnar Lodbrog
770	Sigfrid
809	Godefrid
809	Olaus I.
811	Hemming
812	Siward and Ringon
814	Harold and Regnar
849	Siward II.
856	Eric
858	Eric II.
863	Gorm the Old
873	Canute I.
915	Frothon
920	Gorm II.
925	Harold
928	Hardicanute
930	Gorm III.
935	Harold III.
980	Suenon
1014	Canute II. the Great
1036	Hardicanute
1041	Magnus I.
1048	Suenon II.
1079	Harold IV.
1080	Canute III.
1086	Olaus II.
1097	Eric III.
1106	Nicholas
1135	Eric IV.
1138	Eric V.
1147	Suenon III.
1157	Waldemar the Great
1182	Canute V.
1202	Waldemar II.
1240	Eric VI.
1250	Abel I.
1252	Christopher I.
1259	Eric VII.
1286	Eric VIII.
1319	Christopher II.
1340	Waldemar III.

KINGS OF DENMARK—Continued

1375	Olaus III.
1375	Margaret I., Queen of Denmark and Norway.
1411	Eric IX.
1439	Christopher III.
1448	Christian I.
1481	John
1513	Christian II.
1523	Frederic I.
1534	Christian III.
1559	Frederic II.
1588	Christian IV.
1648	Frederic III.
1670	Christian V.
1699	Frederic IV.
1730	Christian VI.
1746	Frederic V.
1766	Christian VII.
1808	Frederic VI.
1839	Christian VIII.
1849	Frederic VII.
1863	Christian IX.
1906	Frederick VIII.
1912	Christian X.

KINGS OF EGYPT

B. C.	
2700	Mena or Menes
2650	Khufu
2615	Khafra
2580	Menkaura
2390	Amenemhat
2371	Usartasen I.
2325	Amenemhat II.
2276	Usurtasen II.
2254	Usurtasen III.
2221	Amenemhat III.
2100	Hyksos or Shepherd dynasty
1670	Hyksos, driven out by Aahmes
1590	Thutmosis III.
1488	Amenhotep III.
1407	Seti I.
1365	Rameses II., the Great
1322	Mineptah
1269	Rameses III.
1093	Hirhor or Smendes
961	Shashang I. (Shisak)
825	Petubastes
737	Shabak or Sebacon
725	So
670	Psammetikh
616	Nekho
600	Psammis
594	Hophra
571	Aprics, strangled
571	Amasis
525	Psammenit
525	Cambyses conquers Egypt
414	Amyrtaeus
408	Psammetikh II.
396	Nephnren
389	Acoris
376	Psammetis
375	Nectanebis
363	Tachos
362	Nectanebis II.
350	Ochus of Persia conquers
323	Ptolemy Sotcr
285	Ptolemy Philadelphus
247	Ptolemy Evergetes
221	Ptolemy Philopator
204	Ptolemy Epiphanes
180	Ptolemy Philometer
145	Physcon or Evergetes II.
117	Lathyrus Soter and Cleopatra
107	Alexander and Cleopatra
83	Lathyrus
81	Alexander
65	Ptolemy Auletes
51	Ptolemy Dionysius and Cleopatra
47	Ptolemy the Younger and Cleopatra
43	Cleopatra alone
30	Egypt becomes Roman province.

KINGS AND RULERS OF ENGLAND

B. C.	
55	Julius Caesar conquers
4	Cymbeline king
A. D.	
43	Claudius Caesar conquers
51	Caractacus
61	Boadicea
61	Suetonius Paulinus rules
85	Julius Agricola rules
179	St. Lucius rules
209	Severus rules
306	Constantius
449	Vortigern rules
449	Saxon Heptarchy established
457	Hewgist founds Kent
490	Ella founds Sussex
508	Prince Arthur rules
519	Cedric founds Wessex
527	Ercenwin founds Essex
547	Ida founds Northumbria
575	Uffa founds East Anglia
586	Cridda founds Mercia
678	Cadwallador
688	Ina, king of Wessex
758	Offa, king of Mercia
827	Saxon Heptarchy ends and seven kingdoms unite as England
827	Egbert
838	Ethelwolf
854	Ethelbald
860	Ethelbert
866	Ethelred I.
872	Alfred
901	Edward the Elder
925	Athelstan
940	Edmund I.
946	Edred
955	Edwy
959	Edgar
975	Edward II., the Martyr
978	Ethelred II.
1016	Edmund II., Ironside
1013	Sweyn
1016	Canute
1035	Harold I., Harefoot
1039	Hardicanute
1041	Edward III., the Confessor
1066	Harold II.
1066	William the Conqueror
1087	William II., Rufus
1100	Henry I., the Scholar
1135	Stephen (of Blois)
1141	Matilda (or Maud)
1141	Stephen restored
1154	Henry II., Plantagenet
1189	Richard the Lion-hearted
1199	John Lackland
1216	Henry III.
1272	Edward I.
1307	Edward II.
1327	Edward III.
1377	Richard II.
1399	Henry IV. of Lancaster
1413	Henry V.
1422	Henry VI.
1461	Edward IV.
1483	Edward V.
1483	Richard III.
1485	Henry VII. Tudor
1509	Henry VIII.
1547	Edward VI.
1553	Mary I.
1554	Philip and Mary
1558	Elizabeth
1603	James I., Stuart
1625	Charles I.
1653	Oliver Cromwell
1658	Richard Cromwell
1660	Charles II.
1685	James II.
1689	William III. and Mary II.
1694	William alone
1702	Anne
1714	George I.

KINGS AND RULERS OF ENGLAND—Continued

A. D.	
1727	George II.
1760	George III.
1820	George IV.
1830	William IV.
1887	Victoria
1901	Edward VII.
1910	George V.
1936	Edward VIII. George VI.

KINGS OF FRANCE

A. D.	
481	Clovis, grandson of Merovius
511	Thierry, Childebert, Clodomer and Clotaire I.
558	Clotaire alone
561	Charibert, Gontran, Sigebert and Chilperic
583	Clotaire II. of Soissons
596	Thierry II. and Theodobert II., kings of Austrasia
614	Interregnum
628	Dagobert and Charibert
638	Sicgebert II. and Clovis II.
655	Clotaire II.
660	Childeric II.
679	Thierry III.
690	Pepin Heristal, Mayor of the Palace
692	Clovis III.
695	Childebert III.
711	Dagobert III.
714	Charles Martel
715	Childeric II.
720	Thierry IV.
742	Childeric III.
752	Pepin the Short
768	Charlemagne and Carloman
814	Louis the Gentle
840	Charles the Bald
877	Louis the Second the Stammerer
879	Louis III. and Carloman
884	Charles the Gross
888	Eudes
898	Charles III. the Simple
922	Robert, Usurper
923	Rodolph
936	Louis IV. the Stranger
954	Lothaire
986	Louis V. the Lazy
987	Hugh Capet, Usurper
996	Robert
1031	Henry I.
1060	Philip I.
1108	Louis the VI. the Gross
1137	Louis VII.
1180	Philip II. Augustus
1223	Louis VIII. the Lion
1226	Louis IX. called St. Louis
1270	Philip III. the Bold
1285	Philip IV. the Fair
1314	Louis X. Hutin
1316	John I., eight days
1316	Philip V. the Long
1322	Charles IV. the Fair
1328	Philip VI. of Valois
1350	John II., the Good
1364	Charles V. the Wise
1380	Charles VI. the Beloved
1422	Charles VII. the Victorious
1461	Louis XI.
1483	Charles VIII.
1498	Louis XII.
1515	Francis I. the Gentleman
1547	Henry II.
1559	Francis II.
1560	Charles IX.
1574	Henry III.
1589	Henry IV. the Great
1610	Louis XIII. the Just
1643	Louis XIV. the Great
1715	Louis XV.
1774	Louis XVI.

KINGS OF FRANCE—Continued

A. D.	
1792	Louis XVI., deposed.
1793	Executed.
1804	Napoleon Bonaparte, Emp.
1814	Louis XVIII.
1824	Charles X.
1830	Louis Philip.
1848	Louis Napoleon, President.
1852	Napoleon III., Emperor of the French.

EMPERORS OF GERMANY

800	Charlemagne or Charles the Great.
814	Louis the Gentle.
840	Lothaire I.
855	Louis II.
875	Charles II. the Bald.
877	Interregnum.
878	Louis III.
879	Charles III. the Fat.
887	Arnulf.
899	Louis IV.
912	Conrad I.
919	Henry I. the Fowler.
936	Otho the Great.
973	Otho II.
983	Otho III.
1002	Henry II. the Lame.
1024	Conrad II.
1039	Henry III.
1055	Henry IV.
1077	Rodolphus, killed in battle.
1080	Henry IV., reinstated.
1106	Henry V.
1125	Lothaire II.
1138	Conrad III.
1152	Frederick I. Barbarossa.
1190	Henry VI.
1198	Philip.
1208	Otho IV.
1212	Frederick II.
1250	Conrad IV.
1273	Rodolph of Hapsburg.
1291	Adolphus of Nassau.
1298	Albert of Austria.
1308	Henry VII. of Luxemburg.
1314	Louis IV.
1347	Charles IV.
1378	Venceslas.
1400	Robert, Count Palatine.
1410	Sigismund.
1438	Albert II. of Austria.
1440	Frederick III.
1493	Maximilian I.
1519	Charles V.
1556	Ferdinand I.
1564	Maximilian II.
1576	Rodolph II.
1612	Matthias.
1619	Ferdinand II.
1637	Ferdinand III.
1658	Leopold I.
1705	Joseph I.
1711	Charles VI.
1742	Charles VII.
1745	Francis I.
1765	Joseph II.
1790	Leopold II.
1792	Francis II., till 1806.
1806	Confederation of the Rhine, Francis II. takes the title of Emperor of Austria.
1815	German Confederation.
1866	North German Confederation
1871	William I
1888	Frederick III
1888	William II

EARLY KINGS OF ITALY

476	Odoacer.
493	Theodoric.
526	Amalasunta and Athalric.
534	Theodotus.
536	Vitiges.
540	Interregnum.
541	Totila.
552	Interregnum.
553	Tejas. End of Gothic Kingdom in Italy.

KINGS OF MACEDON

B. C.	
814	Caranus.
786	Coenus.
774	Thurimas.
728	Perdiccas I.
678	Argaeus I.
640	Philip I.
ÆRH	Aeropas.
576	Alcetas.
547	Amyntas II.
497	Alexander I.
454	Perdiccas II.
413	Arechelaos.
399	Amyntas II.

KINGS OF MACEDON—Continued

B. C.	
390	Argaeus.
390	Amyntas II.
371	Alexander II.
370	Ptolemy Alorites.
366	Perdiccas III.
360	Philip II.
336	Alexander III., the Great.
323	Philip Aridaeus.
317	Cassander.
298	Alexander and Antipater.
294	Demetrius Poliorcetes.
287	Pyrrhus.
286	Lysimachus.
280	Ptolemy Ceraunus.
278	Sosthenes.
277	Antigonus Gonatus.
242	Demetrius.
232	Antigonus Doson.
220	Philip III.
179	Perseus.
168	End of Kingdom of Macedon.
148	Macedon becomes a Roman province.

KINGS OF MEDIA

B. C.	
747	Arbaces.
709	Dejoces (?).
657	Phraortes.
634	Cyaxares I.
596	Scythians expelled.
595	Astyages.
559	Cyaxares II. or Darius.
536	Cyrus the Great, who forms the Medo-Persian Empire.

KINGS OF THE PERSIANS

B. C.	
559	Cyrus the Great.
529	Cambyses or Ahasuerus.
522	Smerdis or Artaxerxes.
521	Darius or Hystaspes.
486	Xerxes the Great.
465	Artaxerxes Longimanus.
425	Xerxes II.
425	Sogdianus.
424	Ochus or Darius Nothus.
404	Artexerxes Mnemon.
361	Artaxerxes Ochus.
338	Arses.
336	Darius Codomanus.
330	Alexander the Great conquers Darius. End of Persian Empire.

THE PATRIARCHS

B. C.	
4004	Creation of Adam and Eve.
3874	Birth of Seth.
3769	Birth of Enos.
3679	Birth of Cainan.
3609	Birth of Mahalaleel.
3544	Birth of Jarel.
3382	Birth of Enoch.
3130	Birth of Methuselah.
3130	Birth of Lamech.
2948	Birth of Noah.
2448	Birth of Japhet.
2445	Birth of Shem.
2348	The Flood.
2346	Birth of Arphaxad.
2311	Birth of Salah.
2281	Birth of Eber.
HHAN	Birth of Peleg.
2217	Birth of Reu.
2185	Birth of Serug.
2155	Birth of Nahor.
2126	Birth of Terah.
1996	Birth of Abram.
1921	Call of Abram.
1896	Birth of Isaac.
1836	Birth of Jacob.
1745	Birth of Joseph.
1574	Birth of Aaron.
1571	Birth of Moses.

GOVERNORS AND JUDGES OF THE ISRAELITES

B. C.	
1491	Moses.
1451	Joshuah.
1405	Othniel.
1323	Ehud.
1305	Shamgar.
1285	Deborah and Barak.
1255	Gideon.
1236	Abimelech.
1232	Tola.
1210	Jair.
1188	Jephthah.
1182	Ibzan.
1175	Elon.
1165	Abdon.
1157	Eli.
1137	Samson.
1116	Samuel.

KINGS OF THE JEWS

B. C.	
1095	Saul.
1055	David and Ishbosheth.
1048	David.
1015	Solomon.
975	Division of the Kingdom.

KINGS OF JUDAH

B. C.	
975	Rehoboam.
958	Abijam.
955	Asa.
914	Jehoshaphat.
889	Jehoram.
885	Ahaziah.
884	Athaliah.
878	Jehoash.
839	Amaziah.
810	Azariah.
742	Ahaz.
727	Hezekiah.
698	Manasseh.
643	Amon.
641	Josiah.
610	Jehoahaz.
610	Jehoiakim.
610	Jehoiachin.
598	Zedekiah.
588	Nebuchadnezzar destroys Jerusalem.

KINGS OF ISRAEL

B. C.	
975	Jeroboam.
954	Nadab.
953	Baasha.
930	Ela.
929	Zimri.
929	Omri.
917	Ahab.
897	Ahaziah.
896	Jehoram.
884	Jehu.
856	Jehoahaz.
841	Jehoash.
826	Jeroboam II.
773	Zachariah.
772	Shallum.
772	Menahem.
761	Pekahiah.
759	Pekah.
730	Hosheah.
721	Shalmanezer, king of Assyria, takes Samaria. End of the Kingdom of Israel.

ASSYRIA *

B. C.	
2245	Nimrod founded Babylon.
2059	Ninus united Nineveh and Babylon, forming the Assyrian Empire.

* Ancient Assyrian history defective and uncertain.

PRINCES OF JUDEA

(Called the Maccabees)

B. C.	
166	Judas Maccabeus, great-great-grandson of Asmoneus.
161	Jonathan.
143	Simon.
135	John Hyrcanus.

KINGS OF JUDEA

B. C.	
107	Aristobulus.
106	Alexander Jannaeus.
79	Alexandra.
70	Hyrcanus.
70	Aristobulus.
63	Hyrcanus restored.
40	Antigonus.
37	Herod the Great.
3	Archelaus.
A. D.	
8	Judea becomes a Roman province.

KINGS OF ROME

753	Romulus builds Rome.
716	Interregnum of one year.
715	Numa Pompilius.
672	Tullus Hostilius.
640	Ancus Martius.
616	Tarquinius Priscus.
578	Servius Tullius.
534	Tarquinius Superbus.
509	The Tarquins expelled. Consular government begins and continues 461 years, till the battle of Pharsalus.

KINGS OF PORTUGAL

A. D.	
1093	King of Lorraine, Count of Portugal.
1139	Alphonsus I. proclaimed king.
1185	Sancho I.
1212	Alphonsus II.
1224	Sancho II.
1247	Alphonsus III.
1279	Dennis.
1325	Alphonsus IV.
1357	Peter the Severe.
1367	Ferdinand I.
1385	John I.
1433	Edward.
1438	Alphonsus V.
1481	John II.
1495	Emanuel.
1521	John III.
1557	Sebastian.
1578	Henry.
1580	Anthony.
1640	John IV.
1656	Alphonsus VI.
1668	Peter II.
1707	John V.
1750	Joseph.
1777	Mary Frances Isabella.
1799	John VI.
1826	Don Pedro.
1828	Don Miguel.
1834	Maria II.
1853	Nov. 15. Death of Maria. Peter V. king. Dec. 19. King-Consort.
1861	Louis Philip.
1875	Don Luis.
1888	Don Carlos I. 1908 Manuel II.

EMPERORS OF ROME

B. C.	
45	Julius Cæsar.
44	Slain in the Senate House. Anarchy.
27	Augustine Cæsar.
A. D.	
14	Tiberius.
37	Caligula.
41	Claudius.
54	Nero.
68	Galba.
69	Otho.
69	Vitellius.
70	Vespasian.
79	Titus.
81	Domitian.
96	Nerva.
117	Hadrian.
138	Antoninus Pius.
161	Marcus A. Antoninus and Lucius Verus.
170	Marcus Aurelius alone.
180	Commodus.
193	Pertinax.
193	Julian, 66 Days.
193	Septimius Severus.
218	Heliogabalus.
222	Alexander Severus.
235	Maximinus.
236	Gordian the Elder.
236	Pupienus and Balbinus.
238	Gordian the Younger.
244	Philip.
249	Decius.
251	Gallus.
253	Emilianus.
254	Valerian and Gallienus, his son
260	Gallienus alone.
268	Claudius II.
270	Aurelian.
275	Tacitus.
275	Florianus.
276	Probus.
282	Carus.
283	Carinus and Numerianus.
284	Diocletian.
304	Constantius and Galerius.
211	Caracalla and Geta.
217	Marcinus.
306	Constantine the Great.
337	Constantine II., Constantius and Constans.
361	Julian.
363	Jovian.
364	Empire is divided.

ROMAN EMPERORS OF THE WEST

A. D.	
364	Valentinian.
367	Valentinian and Gratian.
375	Valentinian II. and Gratian.
383	Valentinian II. alone.
392	Eugenius.
394	Theodosius master of the whole Roman Empire, which is divided between his sons at his death, Jan. 17, 395.

ROMAN EMPERORS OF THE WEST—Continued

A. D.	
395	Honorius
423	Valentinian III.
454	Petronius Maximus
454	Avitus
455	Interregnum
456	Majorian
461	Severus
467	Anthemius
472	Olybius
473	Glycerius
474	Julius Nepos
476	Augustulus
476	Rome taken by Odoacer, at which event Western Empire ends.

ROMAN EMPERORS OF THE EAST

A. D.	
364	Valens
378	Interregnum of 5 months
379	Theodosius the Great
395	Arcadius
408	Theodosius II.
450	Marcianus
457	Leo the Great
474	Leo II.
474	Zeno
491	Anastasius I.
518	Justin I.
527	Justinian I.
565	Justin II.
578	Tiberius II.
582	Mauritius
602	Phocas
610	Heraclius
641	Constantine III.
641	Constans II.
668	Constantine IV.
685	Justinian II.
695	Leontinus
698	Tiberius III.
705	Justinian II. restored
711	Philip Bardanes
713	Anastasius II.
716	Theodosius III.
718	Leo III. the Isaurian
741	Constantine V. Copronymus
775	Leo IV.
780	Constantine VI. and Irene
797	Irene alone
802	Nicephorus I.
811	Michael I.
813	Leo III.
821	Michael II. the Stammerer
829	Theophilus
842	Michael III.

ROMAN EMPERORS OF THE EAST—Continued

A. D.	
867	Basil I. the Macedonian
886	Leo VI. the Philosopher
911	Alexander and Constantine VII. Porphyrogenitus.
919	Romanus I., Lecapenes, Christopher, Stephen and Constantine VIII.
945	Restoration of Constantine VII.
959	Romanus II.
961	Nicephorus Phocas II.
969	John Zimisces
975	Basil II. and Constantine IX.
1025	Constantine alone
1028	Romanus III. Argyrus
1034	Michael IV. the Paphlagonian
1041	Michael V. Calaphates
1042	Zoe and Theodora
1042	Constantine X. Monomachus
1054	Theodora restored
1056	Michael Stratioticus
1057	Isaac Comnenus I.
1059	Constantine XI. Ducas
1067	Eudocia
1067	Romanus III. Diogenes
1071	Michael VII. Parapinaces, Andronicus I., Constantine XII.
1078	Nicephorus Botaniates III.
1081	Alexius Comnenus I.
1118	John Comnenus I.
1143	Manuel Comnenus
1180	Alexius Comnenus II.
1183	Andronicus
1185	Isaac Angelus
1195	Alexius Angelus
1203	Isaac Angelus restored
1204	Alexius Mourzoufle
1204	Baldwin I.
1206	Henry
1217	Peter de Courtenay
1220	Robert de Courtenay
1228	John de Brienne and Baldwin II.
1237	Baldwin alone
1261	Michael Paleologue
1283	Andronicus II.
1328	Andronicus III.
1341	John Cantacuzene
1355	John Paleologue
1391	Manuel
1425	John Paleologue II.
1448	Constantine XIII.
1453	Constantinople taken by Turks, and end of Empire.

KINGS OF SCOTLAND

A. D.	
503	Fergus
843	Kenneth Mac Alpine
943	Malcolm I.
953	Indulf
959	Duff
963	Culen
970	Kenneth II.
987	Constantine III.
995	Kenneth III.
1002	Malcolm II.
1033	Duncan I.
1039	Macbeth
1057	Malcolm III.
1093	Donald III.
1094	Duncan II.
1098	Edgar
1107	Alexander I.
1127	David I.
1153	Malcolm IV.
1165	William
1214	Alexander II.
1249	Alexander III.
1286	Margaret
1292	John Baliol
1306	Robert I.
1329	David II.
1371	Robert II.
1390	Robert III.
1406	James I.
1437	James II.
1460	James III.
1488	James IV.
1513	James V.
1542	Mary Stuart
1567	James VI. who in
1603	became James I. of England

KINGS OF SYRIA

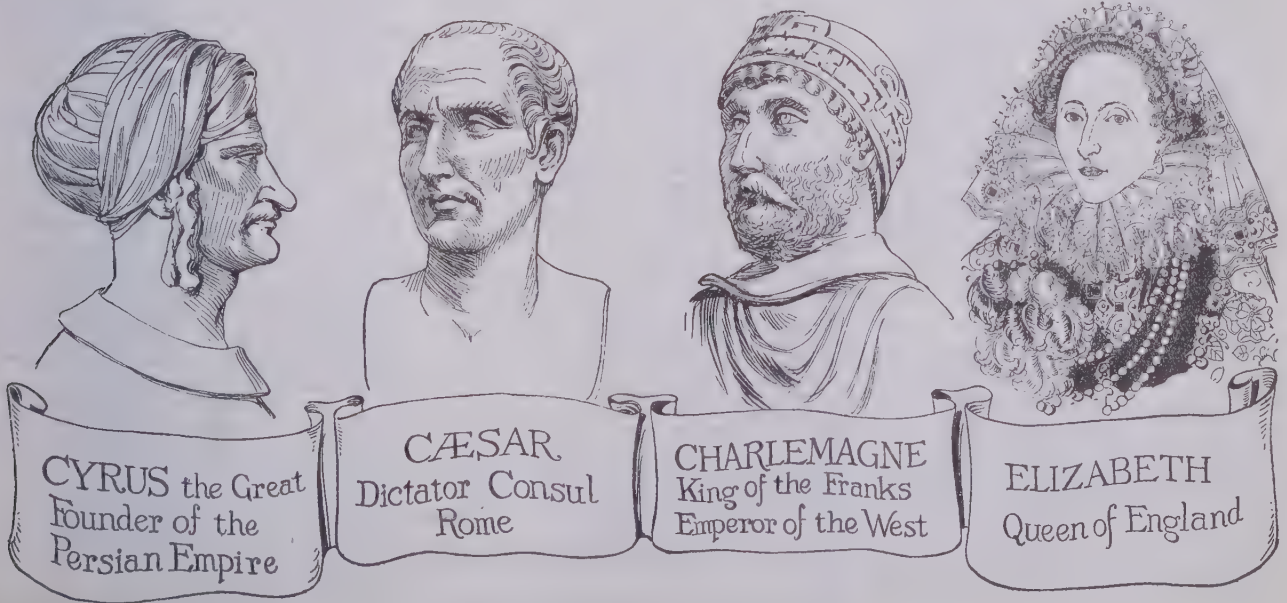
B. C.	
312	Seleucus I. Nicanor
281	Antiochus I. Soter
261	Antiochus II. Theus
246	Seleucus II. Callinicus
226	Seleucus III. Ceraunus
223	Antiochus III. the Great
187	Seleucus IV. Philopater
175	Antiochus IV. Epiphanes
164	Antiochus V. Eupator
162	Demetrius I. Soter
150	Alexander I. Balas
145	Demetrius II. Nicanor
144	Antiochus VI. Theus
143	Diodotus or Tryphon
139	Antiochus VII. Sidetes
130	Demetrius II. Nicanor
126	Alexander II. Zebina
124	Seleucus V.
123	Antiochus VIII. Grypus
97	Seleucus VI. Nicanor
93	Antiochus Eusebes
92	Antiochus IX. Grypus
91	Philip
90	Demetrius Euchares

KINGS OF SYRIA—Continued

B. C.	
85	Antiochus Dionysius
83	Tigranes
69	Antiochus Asiaticus
65	Syria becomes a Roman province

KINGS OF SWEDEN

A. D.	
825	Regnar Lodrock
	Reigns uncertain
966	Eric the Victor
994	Olaf
1026	Edmund Jacobson
1035	Edmund or Amand III.
1041	Haakon
1056	Stenkell
1060	Ingo I.
1054	Halstan
1080	Philip
1100	Ingo II.
1130	Ragwald
1133	Magnus I.
1144	Suercher II.
1150	Eric X.
1162	Charles VII.
1168	Canute
1192	Suercher III.
1211	Eric XI.
1220	John I.
1223	Eric XII.
1250	Waldemar
1276	Magnus II.
1290	Birger II.
1318	Magnus III.
1365	Albert
1397	Margaret
1411	Eric XIII.
1441	Christopher
1448	Charles VIII.
1458	Christian I.
1520	Christain II.
1528	Gustavus I. Vasa
1556	Eric XIV.
1569	John III.
1592	Sigismond I.
1606	Charles IX.
1611	Gustavus Adolphus II.
1632	Christina
1654	Charles X.
1660	Charles XI.
1697	Charles XII.
1718	Ulrica Eleonore
1720	Frederic
1750	Adolphus Frederic
1771	Gustavus Adolphus III.
1792	Gustavus Adolphus IV.
1809	Charles XIII.
1818	Charles John XIV.
1844	Oscar Frederic
1859	Charles XV.
1882	Oscar II.
1907	Gustaf V



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GEOGRAPHY

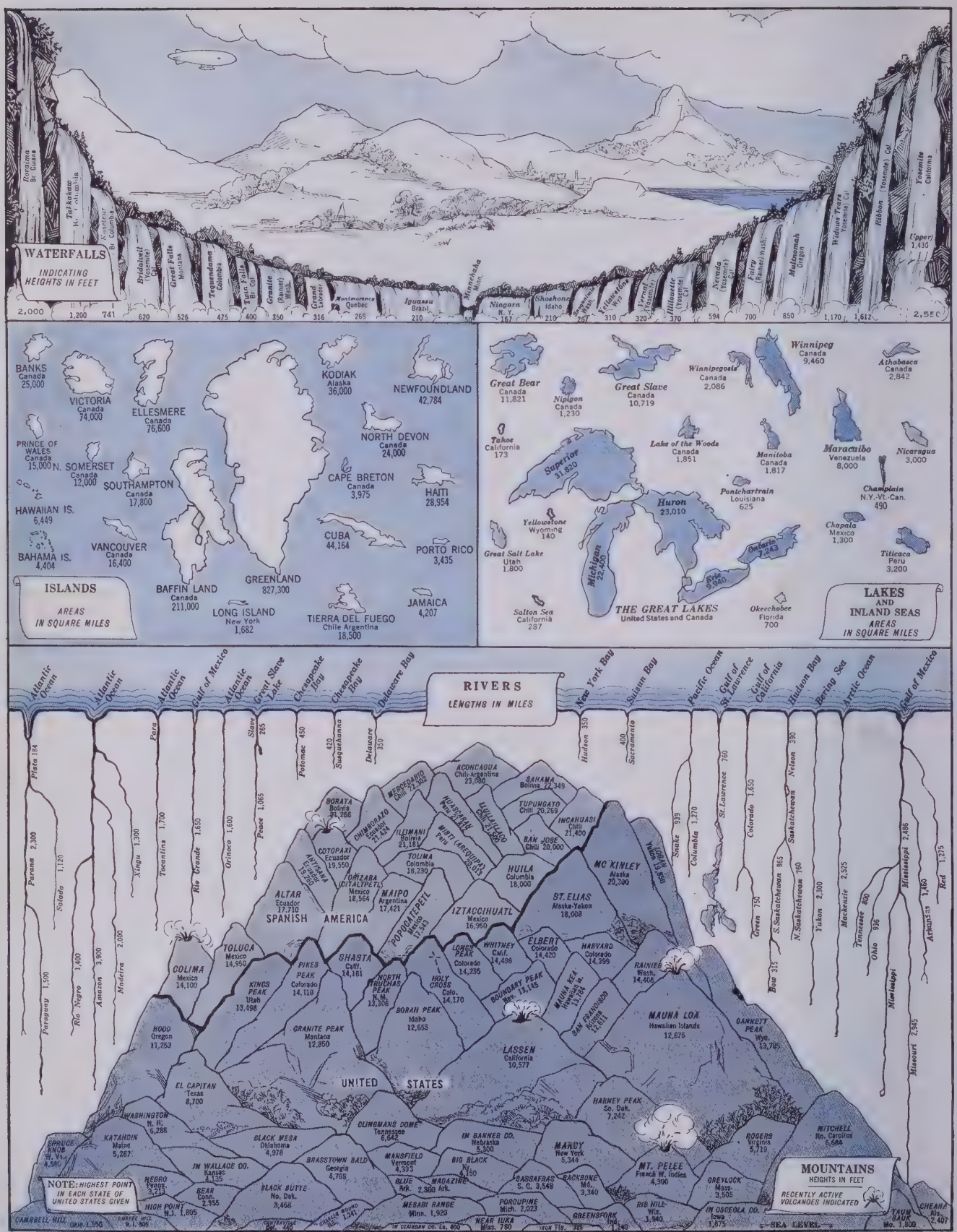
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WESTERN HEMISPHERE

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BOOK V

GEOGRAPHY

What Is Geography?—The Greek word "geography" means, literally, "description of the earth." It is plain, at the outset, that the term cannot merely refer to a knowledge of boundary lines between states and countries. If we imagine a child knows geography when he has learned to give the names of the continents, of the different empires or common wealths contained therein; if he can enumerate the states of the Union and bound them glibly—we are mistaken. It is helpful, especially for traveling, for letter communications, for commercial intercourse, for an understanding of political history, to know these things, but it is not geography, at least, not all of it, by far.

In common practice, geography includes teaching of the configuration of land and seas, of lakes and rivers and streams of all kinds; of mountain ranges and plateaus. Names of cities and hamlets, the number of inhabitants and other statistical material, are added. Some children learn to be quite proficient in this knowledge, especially those who are blessed with a good mechanical memory. Again, knowledge of this kind is helpful. It is, indeed, a description of the earth's surface.

Children so taught will even learn the definitions of various kinds of land and sea formation, such as islands, peninsulas bays, straits, and the like. Sad to say, often enough these definitions, ever so glibly recited, carry no definite meaning to the child. At one time, when a child was examined for admission to a certain school in Manhattan Borough, New York City, he was able to give the definition of an island perfectly, as being "a body of land entirely surrounded by water;" but when he was asked whether he had ever been on an island, he answered in the negative, not connecting the fact that he was standing on Manhattan Island with his word knowledge of what an island is.

Again, children may learn to "read maps" as it is called. They will find, with comparative ease, foreign countries on the map, locate the various states and provinces, rivers and mountains, oceans, lakes and watersheds, etc. They will point out the routes of travel from New York to Yokohama, and from there to the Sahara Desert. They will tell you about the vegetable and mineral staples to be obtained from these various regions.

Just the same, they may not find the way to the nearest postoffice, nor distinguish between north and south when lost in the woods, near their home.

Indeed, they would be even confused in reading their maps if you should happen to lay the atlas upside down before them so that "north" is at the bottom of the sheet, and "south" at the top, or at some other angle. For to them, "north" is "up," and "south" is "down," in accordance with the manner in which maps are usually drawn for school consumption. Thus, we speak of "up north" and "down south," as if one were really higher, and the other lower. As a matter of fact, considering the actual elevation, the distance from the center of the earth, north is lower than south, the earth's circumference being larger at the equator than at the poles, as the earth is "flattened" at the poles. In the southern hemisphere, everything is reversed.

Purpose of Geography Study.—If we were to remain stationary at any one place on this earth, or if we were entirely independent of other parts of the world for our individual or collective existence, there would be no need for us to study geography. But even Robinson Cruso, on his desert island, had to explore his surroundings, to learn about the possibilities of his exile for human existence, for making the island a home for himself, for eventual communication with the outside world.

Geography implies the exploration of our environment so that we may first of all locate ourselves within it. We must know where we are, what our immediate and more distant surroundings are, how we may get from one place to another, how we can communicate with our neighbors, how we can obtain shelter and food under the conditions under which we live, how we can protect ourselves against harmful influences in our environment, how we can adjust ourselves to it and use it for self-improvement, how we can widen our physical horizon, and so forth.

From time immemorial, when first man lived on this earth, he undertook to explore the territory in which he was placed. The instinct driving him to do so was, of course, primarily that of self-protection, and of exploiting his environment for his own maintenance. But an element of curiosity was perhaps always more or less associated with his primary instincts. From his aboriginal cave, as a center, he widened his circle of knowledge evermore; he learned all he could about the forest in which it was located, the mountain side in which it was hollowed out; the stream with its fish that flowed at its base, towards the lake, or sea, beyond; the animals inhabiting the woods, and their beneficial or dangerous qualities; the character of the vegetation, as to food value or treacherous poison; the view towards the nearest mountain tops with their possibilities of harboring an enemy tribe—and so there was an endless chain of environmental lore which the primitive gradually stored up in his mind, to transform the spot where he was placed by nature into a human habitation.

Much later, even, when tribes and races had been formed, when peoples had grown in number, when primitive nomads had to find fresh pastures for their herds of domesticated cattle, and more fertile lands for themselves, at the beginning of agriculture, this exploration of an extending environment went on. The migration of peoples opened up new concepts of the earth's surface and new possibilities, until the globe was spanned by the human race along all its perimeters.

When we study the history of the development of geographical knowledge, we shall find that it broadened with the voyages of exploration and, perhaps, conquest, which were undertaken by courageous adventurers. Courage went with military prowess, and a conquest of new territories often implied a conquest and subjugation of the native population. Nevertheless, the more important result was invariably the establishment of communication, largely of a commercial character, with the distant representatives of the human race, and an exploitation of the raw material and staples of the foreign countries.

The old military and trade routes of the Egyptians, Assyrians, Phoenicians, and later the discoveries made by the Spaniards, Portuguese, French, English, and others, opened up the world to the human race. The first maps drawn showed curious limitations. From the Babylonian map, engraved in cuneiform inscription upon a brick about eight centuries before the Christian era; the map drawn by Ptolemy, in the year 150 A. D., and which shows the eternal ocean surrounding the flat earth; and from them through the fanciful geography of the middle ages, to our own maps of the world, there has been a long, tedious and ardous development, all based upon the discoveries of intrepid explorers.

Our own knowledge is, naturally, not based altogether upon personal experience and exploration. We must rely in a large measure upon the tales brought back to us by those who have actually seen. Even now, when international travel is universal, when man has penetrated into most of the "dark continents," the great majority of us cannot see with our own eyes. We must read books of travel, study reports on explorations, commerce, and the like, and fill the gaps of our actual knowledge with material from these sources. When we go back in the history of travel and investigation, we shall soon realize how fanciful these reports used to be in the olden times. Remember the wanderings of Ulysses, the travels of Marco Polo—their stories of strange beings, animals, and plants—and even in our days the fascinating and fantastic tales about the Juju—man in darkest Africa, and the juggling fakirs of Hindustan, and you will admit that even geography has its fairy tales.

But unless we have a basis in our own mind, by personal experience and exploration within the limits of our individual possibilities of cities and their peoples, of rivers, seas, and oceans, of mountains and plateaus, and what not, we would be unable to follow the description of travelers and explorers, to understand the geographical knowledge which is mediated to us by specialists in this field, and to discount with our judgment the impossible tales of romancers. Yet, at best, our knowledge of those lands and peoples regarding which we have to rely upon "vicarious experience" that is to say, the experience of others, will always remain a bit hazy.

Geography and Astronomy.—"Locating" one's self, however, means more than merely to find our place on the surface of the earth. From the early dawn of civilization man has related himself to the stars. The sun, the moon, the constellations of the starry heavens, have played a great part in his conceptions of his place in the universe. Sun and moon were his early divinities, no less than the giant powers of

mundane forces, in ice and darkness, in mountains and seas, in electric storms and floods, and even in the whisperings of the leaves of the trees, or the babblings of a brook or cascade. More powerful than all his earthly divinities were to him the heavenly bodies from whom he felt he depended for his early existence, even though he knew not in what manner, or by what laws. Morning and evening stars, the planets and mysterious voyages across the firmament, appealed to the primitive mind strongly, and ancient observers connected them with individual human fate. Astrology, the precursor of real astronomy, read the destiny of human life in the stars, and to this day, credulous people believe in the superstition of the "horoscope." The underlying fundamental fact is that we are actually "located" in a larger world than merely our globe, which is an insignificant speck in the universe; that our "home" is this gigantic universe with the life of which our life is intimately related—not alone the change of seasons and climates, and sun radiation and moon—caused tides and tidal waves, but probably in much more complicated forms, through the interaction of solar systems upon one another, so that our outlook upon our "environment" is infinite.

Thus, the study of geography is incomplete, without a goodly admixture of astronomical knowledge.

Geography and Human Evolution.—A knowledge of the surface of the earth, in the sense of a description of the earth's opportunities, would, however, be equally incomplete if we left out the human element.

That the evolution of man has been largely determined by geographical conditions, is an established fact. Thus, we must know these conditions to understand and control them, as far as finite human powers can, in the shaping of our own national and individual history.

But the study of our environment does not mean only the study of the physical environment, it includes the study of our human surroundings—of our neighbors in space, in opportunity, and of distant people with whom the common bond of interchange associates us. We want to be—we must be—in touch with all humanity. It is the basis of human intercourse and existence.

To locate ourselves in our environment means, in a measure, to know where we may buy our bread, or find the man who can build our house. We must know something about the flour that comes from the distant city, and wherewith our bread is baked; about the men that raise the wheat, that grind the flour, that ship the bags; about the far-away forests from whence our lumber comes—the iron mines which furnish the nails, with which our dwellings are fastened together, etc.

There is the story, often told in the nursery, of the pie made by a thousand men. When the eager children came to grandfather's house, invited to see and consume that wonderful pie, they were first disappointed seeing only an ordinary apple pie. But when grandfather began to tell where the apples and the crust came from: about the orchards in the West, the wheat fields in the prairies, the flour mills, etc.; how many people had been busy to till the ground, plant the trees, harvest the apples, ship the barrels, raise the grain, make the flour, sell the fruit and the flour, prepare the apples, bake the pie; how many more were needed to make the implements with which the ground was tilled, to run the factories in which the tools were made, man the mines from which the iron for these tools was obtained, gaining the metal from the ore in blast furnaces, build the mills and furnish the machinery, build the stove in which the pie was baked, the house in which the stove stood, lumber the wood which furnished the timber of which the house was built, make the china plate upon which the pie was served, the cutlery with which it was cut and eaten, etc.; not to speak of the building of means of transportation: wagons, trucks, railroads, and of their crews—when grandfather began to open their eyes to the wonder of the thing, to the complex system of human co-operation all over the world in the production of "just a pie," they began to understand. For all they knew, many more than a thousand human beings had been instrumental in bringing it about that they could eat that particular pie at that particular day in that particular place.

The study of geography, meaning the study of how to locate ourselves, is a study of the complexity of human relationship.

How the Young Child Begins to Study Geography.—If we follow the lead of the young child, understanding his natural instincts, we shall find that he sets out precisely as his hoary ancestors did in the exploration of his environment, as soon as he can crawl. Indeed, the curiosity of children antedates their ability to move from place to place. From their crib-cave and in their mother's arms, they explore their surroundings in earliest infancy with eyes, ears and hands. They perceive light, and discover the source of light—a window, a candle, a chandelier. They notice noises and investigate their cause and nature. They grasp what they can lay their tiny fingers on, and will reach for objects on tables, chairs, walls. They will make the acquaintance of their human companions, and learn to "size them up." They will enjoy the sight, fragrance, and feel of flowers and sometimes mistake the painted flowers on the wall-paper for real ones.

But their more actual experience begins when they have the power of locomotion. They are quite fearless and adventuresome in their voyages about the nursery and the other rooms of their home. They locate and identify the pieces of furniture, playthings, windows, and doors. They will soon be dissatisfied to be shut in, and will wish to explore the great world beyond. Apart from their manifold experiments by which they wish to understand the nature of things—experiments which are as often destructive to objects, as they are constructive in mental development—they wish to locate themselves in their wider sphere of environment. Stairs and open places have no horror for them, for they do not know the dangers lurking there. It is a wise parent who knows how far a child should be allowed to extend his voyage of exploration without danger to himself, and without the restriction which would prevent him from learning what he ought to learn.

Some children develop the judgment which warns them of danger quite early. They will never need the protection of gates at the top of stairs, or guards on windows. Others will be reckless. But we must try to check them as little as possible and let them go as far as they can without actual peril. It is a child's birthright to gather experience through hard knocks—he will soon forget the knocks. And if the danger is not to the child but to cherished objects, we may well remember that useless ornaments and gimcracks are not suited to the immediate environment of a young explorer. The articles of actual use, toys and such things, should be of a nature which will make them safe against the exploits of the young vandal. But if many of them should soon become the worse for wear, we ought not to mourn: that is part of their function in the training of a child's experience. The destructive method, if we may call it so, which the child employs is analogous to the analytic method of his elder; construction, synthesis, come later.

From the house, the child will stroll forth, as soon as his legs will carry him, into the yard, the garden, the field, the street. His territory enlarges steadily, and with it his experiences and his eventual dangers. But all this will contribute to the fundamentals of his geographical knowledge.

The educator's function should become a constructive one as soon as the child stores up these early impressions and concepts. Even in the confines of the home, father and mother have endless opportunities for discreet directions and suggestions. But outside of the house, the real task begins.

It is a matter of common practice for parents, especially for mothers, to take their children with them on errands, walks, excursions. Even the child in arms or in his baby-carriage is made to undertake these journeyings. Then the child should not be considered merely as an encumbrance, or an appendage, but as a vital element in the undertaking. Each such trip, more or less extended as it may be, offers chances for new experiences, and for the re-enforcement of old ones, with opportunities for association of one with the other, and a parent should never fail to improve these chances. Trips to the grocer and the butcher, to department stores and restaurants, to resorts and friends, are full of astonishing revelations to the budding mind of the child. Each one of them will assist the child in locating himself in his environment.

Of course, few of these adventures will at once organize themselves into a systematic concept of geographical elements. They will be fragments which the child will gradually learn to piece together to construct a harmonious whole. But he needs a wealth of these fragments, for the world he lives in is a big thing, made up of innumerable single factors. If he has not the material with which to construct his inner world he will never understand his place in life.

He knows only so much of the outside world, he understands only so much of his place in it, as his senses and experiences have communicated to him. His whole world lives exclusively *in his mind*. And if his early impressions lack extent, proportion and accuracy, he will be confined to a world of unreality, of self-deception, and never be able to put himself in proper touch with his environment.

Walks, Hikes and Trips.—Few things have helped children so much in understanding the world about them as the old-fashioned walks which mothers and fathers used to undertake with them, cross-country hikes, and well-planned trips to the woods, mountains, rivers and the shore. Botanizing excursions, fishing trips, observing and gathering butterflies, making mineral collections, and the like, while they add to the

store of nature knowledge in the child's mind, also teach him much about his resources as a geographical center. For each child is the center of his little world. Everything has value only as far as it concerns him—at least in the beginning of his career as a thinking individual. Likewise, ancient nations placed their own homeland in the center of the earth, striking out along various radii towards a periphery encircling this homeland. And the nature lore thus obtained is only part of his geographical outfit.

Eyes That Do Not See.—We must guard ourselves against overrating a child's ability to derive the full benefit of observations without our guidance and direction. While it is true enough that they will observe things in spite of us, they may not always perceive the essential things for the sake of which we have started out. They have "eyes that do not see, and ears that do not hear."

The reason is simply this, that they do not possess a foundation of knowledge which can make them aware of the presence of objects, or phenomena, for which they are not prepared, for which they do not look, which have no meaning to them because they cannot connect them with previous experiences. We understand a thing only when we can link it up with some previous concept.

One of the questions asked of a child in testing his "intelligence" is this:

An Indian visited a western village and saw something which he described to his tribe on coming home as follows: "I saw a man walking along the street sitting down." What did he see? The answer is: a man riding on a bicycle. To the Indian who had no experience of a wheel propelled by a man's feet, the action he observed linked up with "walking," while the seat of the machine suggested a chair. He did *not* observe, in spite of his good eyes, the actual method of locomotion, namely, by turning the front wheel of the machine by means of pedals.

In calling our children's attention to the things we desire them to observe, we shall therefore have to make an effort immediately to connect the new impressions with previous experiences. This alone will give them an interest in the new things; an unrelated new experience makes no appeal to the child at all.

The method of the Boy Scouts, of exploring the country on hikes, might well be copied by the home forces.

The roads traveled, and the geographical facts noted, may well be plotted for future reference, and for the sake of initiating the child into the mysteries of map drawing.

Map Drawing.—This can be commenced, of course, only when the child has learned to use his hands for drawing and modeling. But there are many initial steps which can be encouraged in the home. Anyway, the more formal instruction must be left to the school, even when we are not altogether in harmony with traditional school methods.

The earliest records a child constructs of geographical facts will be merely stored up in his memory. They may be quite disconnected, and refer only to one route of exploration at a time, without connecting by-ways. The network of geographical concepts which can lead up to the formation of the complex picture of the earth's surface will be woven very slowly, out of a mass of isolated threads.

But the child will learn to locate himself, to go to particular places for particular purposes; he will run errands and follow directions given him. What he must develop is the *sense of locality*. Some children have the "bump of locality" as a special endowment; others are slow in making themselves at home in their surroundings. But all, except defective children, can be taught to find places.

One of the earliest and most attractive forms of reproduction of geographical experiences and concepts is found in *sand-pile work*. The seashore, with its great stretches of sand beaches, gives the wider opportunity, and the time may come when our schools and communities will make a systematic use of the vast expanses of beach which our coasts afford, for constructive work along these lines, in what we may foreshadow as "summer play schools" by the sea.

But with the help of building blocks, ordinary rocks and stones, and toys of all kinds, the child will reconstruct his environment. He will place his house and garden, build roads and rivers, span them with bridges and viaducts. He will raise mountains towering over the valleys between them, tunnel them with engineering skill, and lead his teams and railroads through the variegated highroads of his country. He will populate his creations with people—be they mere sticks endowed with imaginary life, or dolls dressed up by him or sister to represent various occupations and different nationalities.

The wonders of the sandtable, or the sandpile, which is better, can hardly be exhausted. No backyard ought to be without its community sandpile, hygienically kept, of course. Incidentally we may be reminded that there is a great and valuable element in the solution of our housing problem. When once our communities will wake up to a full realization of their responsibilities towards their child population, our homes and their backyards will be of a very different kind.

We shall speak later of the *home garden* as another adjunct in geographical teaching.

At first, all these reproductions will be of a more or less fanciful kind, rather unlike the real space relationship of the objects represented. But even on the sand pile, real "maps" can be constructed as soon as a child will understand what is meant by accurate representation.

However, we may not forget that the relative size of objects will be difficult, even impossible, of actual representation. This is realized by the manufacturers of so-called relief maps; on these, mountains and rivers appear on a much larger scale than actualities would justify. This is due to the fact that the actual height of mountains, and the width of rivers, in proportion to the size of the globe, are so very small that they would be hardly noticed at all if we would try to model them to actual scale. Thus we may not criticise the child when he builds his houses and mountains altogether out of proportion to relative size.

This making of *relief maps*, using clay, or putty, or papier mache (mashed paper), with the application of paint to bring out the different parts, is also a fitting transition from sand pile or sand table work to drawing with crayon, chalk, or pencil.

Whatever medium be used, we need not, at first, pay particular attention to the placing of geographical elements, like roads, houses, bridges, etc., according to their actual place in relation to the points of the compass. We shall not even be able to restrict the child to proper measurements. The young child has no idea of scale; besides, we might prevent him from attempting to do anything if we impose upon him adult standards of accuracy. This is

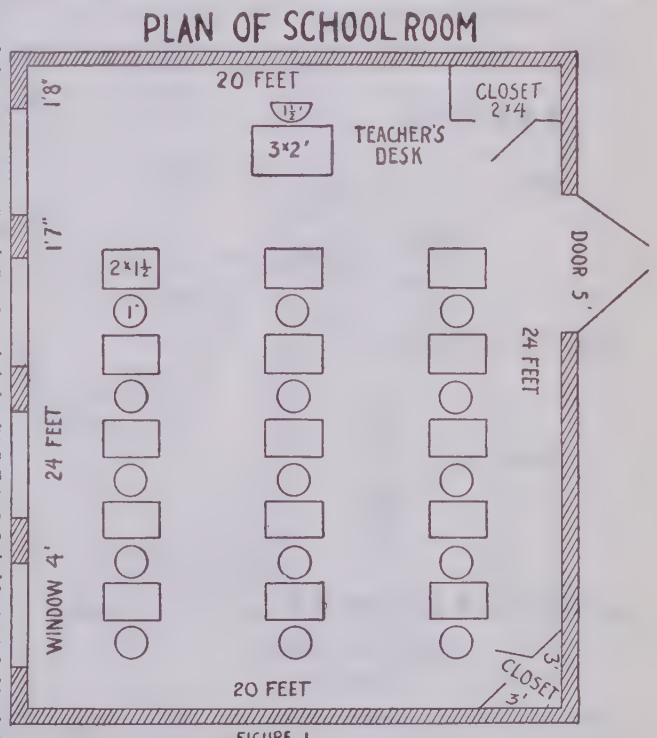


FIGURE 1

play to him, not engineering or surveying. Again, his meagre space allowance might not give him a chance of crowding as many objects in well-balanced scale arrangement as he is interested in.

What we must try to insist on, however, is that the *directions* represented are fairly accurate. That is to say, that the directions of the roads leading away from his house, the cross streets, the store, the butcher shop, the river, the bridge, etc., are so located that they reconstruct his experience in traveling over and to these geographical units.

Map construction, proper, be it by way of the sand pile, or relief maps, or drawing (on blackboard, with crayon, on paper, etc.) should begin with a representation of the immediate surroundings. The suggestion has been made, and is carried out in many schools, that the first map should be that of a room, the nursery, or living room, or school room. There is no grave objection

to that, though it may be less interesting to a child than to represent a larger outlook. When, however, actual measurements are introduced, such a method may be well employed. The map of a school room will then look something like that shown in fig. 1.

On the other hand, a map of a farm home, at first attempt at map drawing, may present an appearance such as is shown in fig. 2.

And the immediate surroundings of a city home may look like that shown in fig. 3.

Naturally, the sand pile construction is not confined to immediate surroundings. Neither is map drawing. But it is the sand pile which lends itself more readily to the representation of distant scenes. Here, it is entirely unnecessary to restrict the child to actual measurements or geographical relationship. His constructions must give rein to his imagination. It is enough if he constructs scenes which picture the characteristic essentials of distant and foreign conditions.

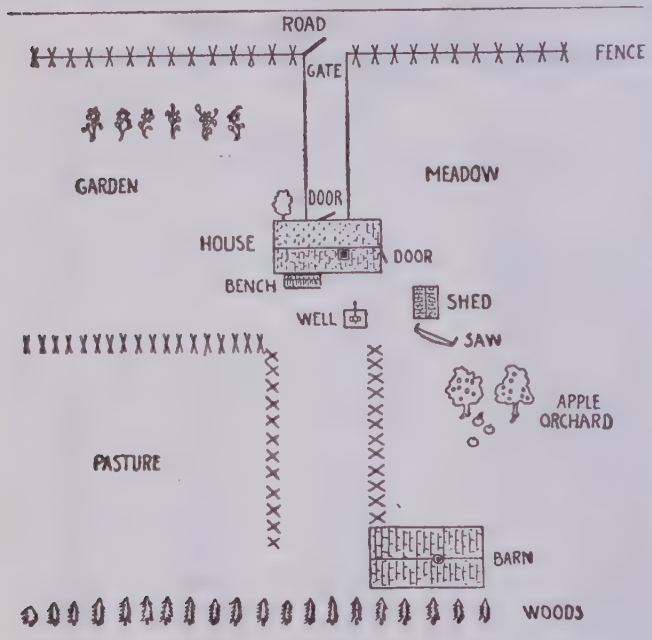
motion—there is no end to the fanciful development of such a landscape. In his destructive mood, the child may take the whole thing to pieces, only to build up a scene of Indian life, or of Oriental splendor, of ancient Egypt with its pyramids, or any other scenery which his imagination will suggest.

Map drawing proper is taught in schools so perhaps the home need not consider it. Yet the school has little opportunity of giving the preparatory steps for which the home can so amply provide.

The first maps which were drawn by man were those which travelers made when they explored strange lands. Rough enough they were, and nobody cared as long as they gave the needed information. In this manner even modern African explorers first gave the knowledge they had obtained to the world; the surveyor with his actual measurements came later. But it is not at all out of the way to teach it merely a trip on a trolley car, making the children conscious of the directions and distances traveled, using eventually maps of their home city or district for comparison, explaining every twist and turn in the road.

The Apperceptive Basis.—As said in a previous paragraph, the child cannot understand a new impression without linking it up with a previous one. This linking up process, which leads to real concepts, or ideas, is called "apperception." To apply this principle to geography teaching, I will quote from a previous treatise of mine:*

"From the concrete material in the immediate environment of the child, from the images of his own house and lawn, the trees, hills, rocks, valleys, creeks, rivers,



Map of Farm Home

Figure 2

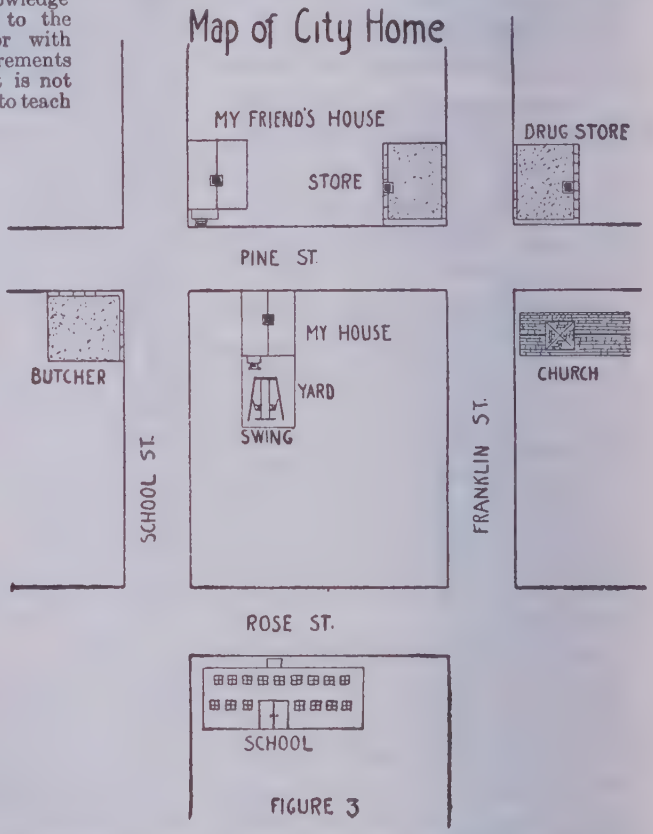


FIGURE 3

During many years of childhood, there is another form of construction which will strongly appeal to the growing imagination of the child. It is a modification of the sand table, where sand may be used to some extent, but where rocks, paper constructions in imitation of rocks, building blocks and "modeling sheets" (for the construction of houses, castles, bridges, windmills, etc.), will predominate. A large, ordinary kitchen table, or boards placed on solid "horses," may be the foundation. On this, landscapes of various kinds may be constructed in the way described. On towering mountain tops may be placed threatening castles; cardboard cities and villages may dot the plains below; a wooden bridge may be swung across an abyss of paper or real rocks, covered with moss; underneath, there may roar a torrent of sand, or of real water, with a fountain in the garden of a villa in the valley; across the bridge, may march a regiment of paper soldiers, carried along by a simple mechanism; water wheels, driven by sand, set mills in

even a young child the rudiments of surveying, with simple, home-made instruments; it will be found quite an attractive game to the child—boy or girl.

The rude sketch maps drawn by legendary pirates to remind them where they had buried their blood-bought treasures (compare the map in "Treasure Island") are examples of the kind of graphic records which represent this stage in the development of map construction. The child's ability to sketch locations is about on the same level, and we should be satisfied with production of this kind.

But all these productions must first be based upon actual experiences. The child must have voyaged through sufficient stretches of land and have charted them, at least crudely, to appreciate geographical symbols in maps and to be able to read, and reproduce maps of distant places. Parents can essentially help their children in acquiring correct concepts by taking them around systematically, giving them opportunities for trips of all kinds, and were

ponds, etc.; of people he knows and occupations he sees carried on; of natural processes like water running down his own hill, of dirt washed down the watersheds of of his own road, of toy boats floating in his gutter, etc., etc.,—from all this he must learn to construct in his mind concepts of things remote, of the Himalayas, the oceans, foreign people, and all the wonderful things that make up the life of nature and man. Words, names, pictures, samples of materials even, maps, and the like, are nothing but symbols, meaningless to him unless he can connect them with real experiences of his own."

(*) "The Career of the Child," The Gorham Press, p. 84.

And he must have these experiences of his own translated into the symbolism of map representations, by charting them, constructing maps of his own, before he will gain the real value of map reading and map drawing as he needs it, in his later, more serious scientific study of geography.

Space and Time.—Geographical relations are, in their essence, space relations, that is to say, geographical units are at different distances from one another, and locating one's self in his geographical setting means to locate one's self in space. Geography implies, therefore, space measurements, such as appear in map drawing, to a scale. But to a child, and for that matter, to the average adult, miles and leagues have very little real meaning. The wild guesses of those who are not used to making such measurements, as to familiar distances, are proof of this. To the child even a yard or a rod,—in his youngest years even a foot or an inch—means as little as a mile does to his elders.

Those who can estimate distances, without actual measurements, have learned to do so by comparing their visual impressions with memories of previous measurements of frequent occurrence. The ability to estimate geographical spaces, not only distances but areas as well, is almost in the nature of a special trade, if it is not a gift of nature. In most instances, space is measured by the experience connected with *traveling* in space—by trying it out through the element of locomotion *through* space: walking, horseback-riding, driving. The effort required and the time consumed in covering distances give the basis for appreciating space. Mere mechanical measurement helps as little as it helps a child to appreciate quantity by merely counting, although the *time* it takes him to count up to a certain number may give him an inkling of the complete quantity.

Thus the child will learn to understand space, distances, and their measurements by actually walking, or traveling in some way. It is therefore quite important to make him conscious of the time and effort he needs to go to a certain place, in comparison with the time and effort it requires to go farther, or less far, to enable him to realize the difference in length of line. It is not so long ago we counted distances, in popular parlance, by "hours" rather than "miles." The very word "mile" is derived from the Latin "mille" (passuum) meaning a thousand steps—plainly a walking method of determining distance.

Young children have very hazy conceptions of space and time. The vast extent of a country like the United States is difficult for them to grasp. What to us are small sizes and spaces, to them appear big. It is a well known fact that the rooms and houses in which we lived in our childhood, if we visit them after a lapse of time, impress us disappointingly, appearing so much smaller and insignificant than when we lived there. The stories of "Alice in Wonderland" and "Through the Looking Glass," among many others, fairy tales with the rest, illustrate the inability of the child to appreciate the true relation of space and time very clearly.

Plays and Games.—There are many so-called geographical games in the market. Some are interesting, others are valueless.

One type represents *cut-up geographical maps*. If these are in the nature of the usual cut-up pictures, they convey little information and inspiration. If they are so cut that the different states of the Union, for instance, appear in their individual shapes, or if the pieces represent mountain ranges, river systems, and the like, they can be put to good use under the suggestions of skillful teachers and parents. The individual shapes of states, or countries, lend themselves to interesting games of imagination. Many of these shapes suggest the shapes of geometric figures (Wyoming, Colorado, Nevada, etc.), others like the Appenine peninsula, which has the form of a boot with spur; suggest the shapes of objects, or animals, or plants. Florida looks somewhat like a thumb pointing downward, on the ordinary map. Mountain ranges call up the serpentine outlines of crawling things; river systems give the impression of branching trees. Innumerable fanciful games can be thus introduced.

There are games which re-enforce the remembering of geographical facts, similar to the game of authors. We must not neglect the memory element in geographical teaching. It is often quite necessary that we should have geographical facts at our fingers ends. While it is well enough to learn how to look up on our atlas the things we have forgotten, we may not always have a map conveniently near, and must rely upon our memory for locating ourselves.

Of course, the sand table, sand pile and landscape table games, described before belong in this class. But they can be much enlarged. The *bathtub* is a not-to-be underestimated place for geographical play. Children will play for hours in the water, swimming their boats, building docks with their wooden blocks, etc. They may imagine at one time that the water in the tub is the Atlantic Ocean, or the Mississippi River, or what not, and organize imaginary journeys from continent to continent, or from city to city. Such *imaginary journeys* may be organized on the *playground*, or in the *woods*, or by the *brook* and *lake*, calling the various units of observation by different names. Even the house itself will give sufficient opportunity, using different rooms for different geographical localities. Many a child has constructed a very satisfactory railroad out of chairs and a stove-pipe. We must not mind it if the children "muss" up things a little once in a while—their happiness is great, and their enjoyment is no less valuable than the lessons they learn in this manner.

Young children may, in the very act of taking a bath, find a stimulation for imaginative play. Dropping their beads in the water they will play they are pearl fishers, or, with their sponges, re-enact an exciting expedition to the strange land where sponges grow in the depths of the sea.

Girls will gladly enter their *dolls* into this sport practice. They are always anxious to make new clothes for them, and to dress and undress them without ever getting tired. They may dress them up in the fashion of a distant peoples, as Indians, Arabs, Hollanders, etc., and make an imaginary setting for them on their *playhouses*. They may construct, with their brothers and boy friends, wigwams, lake dwellings, Bedouin tents, and grass huts, birch-bark boats, and the like. Boys will never tire making ships of all kinds, docks, bridges, windmills and an endless number of similar things, to illustrate foreign lands, or even the near-at-hand geographical facts—the life of the people under various conditions of environment.

Their *dramatic instinct* will furnish another valuable element of constructive imagination. They will play they are Indians and build their wigwams more or less realistically in the woods nearby; or they will be railroad conductors, bakers, firemen, knights rescuing ladies from danger, etc. The *kindergarten games* give a variety of such pastimes for the youngest ones. *Folk dances* will have their part. Gymnastic games, including *archery*, *stone throwing*, *disc throwing*, exercises with the *boomerang*, will bring home to them conditions of the life of people in other lands. There are numerous *songs* which will inspire them with the emotional elements contained in the material which composes their immediate and more distant environment. The Neidlinger songs alone (cf. Collection of Poems and Songs in another part of their book) will furnish abundant selections.

Collections.—Each child is a born collector. At first he will gather things up indiscriminately, and a young boy's pockets will treasure a number of odds and ends, things cast off by original owners, yet having significance of their own to the youthful collector.

This instinct (which almost reminds one of the fetish worship of antiquity) can be put to good account in education. For geographical purposes, there are innumerable ways of utilizing it.

A common desire of children, especially boys, is to collect postage stamps from various countries. If properly organized, this type of collection can be made very helpful in stimulating interest in geography. Of course, here as in all other collections one must guard the child against overstressing—against becoming a collection fiend, as this would defeat the educational purpose of the pursuit. A collection fiend places higher value on the *possession* of a coveted stamp, or whatever the collection may consist of, than on its meaning as a help to broaden his mind. Yet, a mild craze on the part of a child should not disconcert us: no harm need be done by an enthusiasm which steps over bounds occasionally.

It is curious to note how many different things a child *will* discover in all sorts of unthought-of places when once his desire is awakened to make geographical (or any other kind of) collections. He will find samples of raw materials produced by different countries and manufactured goods; curious pipes, knives, and other implements made in foriegn lands; pictures and photographs of scenery, strangely attired people, houses and tree dwellings, boats, etc. Catalogs of dealers, advertisements in magazines, illustrated articles, knick-knacks and curios picked up here and there, will furnish ample opportunities.

He may build little cabinets of his own to store his treasures; and he will start *scrapbooks*, more or less systematically arranged, for his pictures and bits of foreign lore. For he may also pick up pieces of *poetry* and description, to paste in his scrapbooks—girls may indulge in this kind of thing more readily than boys, perhaps. They will collect songs and games, quaint sayings and proverbs, and the like. *Folk songs* of all nations will have at times a singular attraction to growing children, and so have games representing the national spirit of foreign people. Our own country is placed in the position—its population being composed of representatives of all nations on the globe—of offering material of this kind right at hand. The very schoolmates and playfellows of our children are a collection of many nationalities. There are about fifty different languages spoken in this country, each representing a different national spirit, all of them to be blended together in a new national unity.

It is quite well that our children

should make a collection of *languages*, so to speak, in addition to the rest. By that is meant that it would be instructive as well as entertaining—it has been proved to be both—for a child to study and memorize samples of those languages which are the native tongues of his immediate neighbors, and certainly of the languages of the leading nations like French, German, Italian, Spanish, Portuguese. Bits of poetry and child rhymes, simple conversation, etc., will usually suffice, although there is virtue in extended language study where that can be had. This will not only convey to the child a flavor of geographically *distant* people, make him conscious of the human element in this study, mediate to him concepts of the conditions of human intercourse and commerce, but will give him an early training of his speech organs which will stand him in good stead for future possibilities and chances. During the early period of childhood, the "language making" period, when his speech organs are pliable, a child learns half a dozen or more different languages with ease.

Museums.—The collective instinct of the child will make him appreciate the wonderful opportunities which the collections in museums of different kinds offer. Although only the larger cities may afford these opportunities, *in the fullest measure*, organized efforts are being made to establish traveling collections for the smaller towns and rural districts to bring the treasures of the larger museums into distant places, just as traveling libraries have been provided.

But few things will so thoroughly fascinate the normally wide-awake child, or will even stimulate the slower faculties of the sluggard, as a visit to places like the National Museum and the Smithsonian Institution in Washington. The Corcoran Art Gallery there; the Boston Art Galleries; the Metropolitan Museum of Art and the American Museum of Natural History in New York, and similar places.

In the *art museums* the child will not only be impressed by the art spirit manifested through the ages as a civilizing and elevating factor, but he will see human life and its natural setting in foreign lands through the exhibited masterpieces of painting and sculpture. Even the *architecture* of modern and ancient peoples in different parts of the world is represented, often by bits of the originals, or by artificial reconstructions of characteristic types.

The museums of natural history add to this information vast stores of facts about the actual life everywhere on this globe. The flora and fauna of different countries, in different climes and latitudes; the flight of fowl and the singular life in the depths of fathomless oceans, and numerous other things are depicted and exhibited in life-like models. We can study the products of forest and lake, of mountain and valley, the treasures dug from the very bowels of the earth, and the harvests which the waters of the seven seas yield to man's ingenuity, portrayed in convincing representation. More than that: we see man, the man of different color and different race, of different ages and different homelands, at work in his effort to wring the means of existence from the conquered earth. We study his inventions, his implements, his dwellings, his war and peace maneuvers, his domestic life, his hunt, his tilling of the soil, and what not. We circle the globe in a few hours, wandering from exhibit to exhibit, and carry home with us a better knowledge of geographical elements than many a wearisome lesson could have conveyed.

Botanical and zoological gardens are but another form of this museum opportunity. There we see the plants and animals which populate the various places on this earth, in their natural setting, as *living things*. We meet the bison of the western American plains; the elephant of the African jungle; the tiger of India; the deer of the mountain ranges. We see the rice plant growing in submerged fields; we observe the the cocoanut palm bearing its rich fruit. We laugh at the antics of funny monkeys who so look like human caricatures; and we watch the tailor-bird of Java sew together his nest made of the leaves of a strange tree. We get a breath of the icy North when we watch the polar bear, and the heavy fragrance of the sunny lands of the South is wafted to our gratified nostrils when we pass through the vistas of open air gardens or through the sheltered aisles of hot houses.

Another place where children like to visit, for amusement and instruction, is the *Aquarium*, such as the one in Battery Park in New York, where they can see the fish and other animals living in or near the water—like seals, tortoises, alligators—sporting in their native element.

None of these opportunities to make geography a live thing to the growing child shoud be neglected by the parents. They will only add to their own happiness if they lead their children through the treasures thus offered for observation and study, watching their growing interest and delight, and their keen and often unexpected discoveries and remarks.

In a small way, the child can have his own museums and gardens. The collections mentioned before point the way. He may have his own cherished plants *in the home* and takes personal care of them; among them may be exotic ones, like the dwarf plants of China, a lemon tree, orchids. He may have his own little greenhouse; his own botanical garden in the back yard. He may have his pet animals, including perhaps a parrot, he may build his own terrarium and aquarium. All this will stimulate his interest in the various aspects of the world on which he has to locate himself.

Even the most ordinary plants, spices, etc., of which he knows, may be made in-



The Sphinx of Memphis, carved from alabaster and weighing over one hundred tons.
© Publishers Photo Service

teresting to him by tracing their original homes, in the present and past: the history of wheat, of tea, of cocoa, of coffee, and what not.

Stories and Literature.—Even the young child delights in stories which describe strange and foreign lands and things. Of course, all this appeals to him at first in a fairy-tale manner. He does not particularly care whether the story is true or not. But he delights in the strange coloring, the foreign flavor, which introduces him into a mysterious world different from the one he lives in. This is why stories about Indians, adventure, discovery, the Arabian Fables of Sindbad the Sailor and Aladdin, delight him. The child's ability to appreciate and love these stories antedates by far his ability to read them. Thus *story telling* is an important element in teaching geography at home.

Later on, when he can read, *books of travel and adventure*, the *stories of exploration* and *discovery*, will fascinate him. The literature of all nations is full of these, and it is well for the child to have access not only to books of his own literature, but to classic works of other peoples. Some he may learn to read in the original, others he should have in good translations.

Juvenile books there are in abundance which will satisfy this craving. It is merely a matter of wise selection. And he loves foreign adventures, and the facts of geography when presented to him in story form, linked up with human interests and human lives, will be much more palatable to the child mind than when presented in dry scholastic manner. The historical novel plays its part in geography as it does in history teaching, as it depends invariably upon the geographical setting for its progress.

Reference has already been made to *poetry*. It affords much suggestion and help. Rhymes, usually in jingle form, will assist in impressing geographical facts upon the memory. Winifred Sackville Stoner Jr.'s jingle of "India" ("To India we now will go. To see a monkey show", to the air of "We Won't Go Home Till Morning") is an example. Byron's famous lines:

"Mont Blanc is the monarch of mountains,
They crowned him long ago
On a throne of ice, in a robe of clouds,
And a diadem of snow," etc.,

is an illustration of the serious type of geographical poetry.

Motion Pictures.—It is almost unnecessary to refer parents to the great value of motion pictures in the home-teaching of geography. "Still pictures" have long been used in connection with "travelogues" and home and school lessons of all kinds. Especially when these are colored their value is high, and they will never be altogether replaced by the motion picture. The grandeur of the majestic mountain for instance, in its grand perspective and august repose, will gain little, and may lose much, when presented to the eye as seen from a flying aeroplane.

Nevertheless, it is the moving picture alone which can represent to the student of geography the **LIFE** of nature in different lands, and the life and life conditions of the people who have their being in them. Details as well as the large perspectives can be shown to advantage, and the human appeal can be made irresistible. If we only consider a feat like mountain climbing, if caught by the movie camera and thrown on the screen, we shall realize the untold possibilities of the motion picture show.

Parents will do wisely by following up the program of their nearby theatres to let no opportunity slip for giving their children the benefit of these pictures. These and the still pictures, together with the material gathered together in collections, and visits to museums and botanical and zoological gardens, including attendance at the much beloved circus and its menagerie, are all comprised in the one collective term of *"visual instruction"* which plays a great role in geography teaching.

Earth and Heavens.—The earth is only a part, even though it be the human part, of the child's environment. Whether there is human life elsewhere in the universe we can not even guess. And yet, our lives are intimately interwoven with the life of the cosmos. The child must learn to locate himself in celestial space.

Naturally, this can be done only in an elementary manner, and the child will pass, in a certain measure, through the same stages of mental grasp of the universe as did his forebears through the centuries from dim antiquity.

The first cosmic phenomenon which he will observe, even in his crib, is the change of *day* and *night*. When he grows older, the child will recognize the sun as the spender of light in the day, and the darkness will come to him when the sun hides his face behind the western horizon.

When his age will permit him to think beyond "dividing the light from darkness," when he can be out to watch the firmament and to discover "the lesser light" that "rules the night," his mental horizon will at once be widened. He has no idea of the distance and size of the newly perceived heavenly body, he may stretch out his tiny arms to grasp the moon with his groping fingers. But a new experience is born. And when he discovers his first *star*, and can locate it, perhaps, the following night in the same place, at the same approximate time, there will come to him a new mental light, a new pleasure, which will liberate within his soul strange and but dimly conscious longings. If we only knew it, we might find that the germ of *religious concepts and emotions* was born at that time.

Of course, he has no way of knowing that these heavenly bodies are large; that the sun is many, many times as large as the earth on which he stands. His notions are like the ancients', "geocentric:" his own earth is the center of the universe, and he the center of the earth.

That the earth revolves around the sun, and the moon around the earth; that the stars are either planets somewhat like his own earth, or suns of enormous magnitudes, would of course be entirely unintelligible to him at this stage.

To him the earth will appear as a flat body, as it appeared to the ancients, and it will require quite advanced maturity on his part to wean himself from this notion. It is the experience of those who have carefully tested children's minds that even after a teacher had thought the child had been properly instructed in the nature of the earth as a globe, and of the relation of sun, moon and stars to it, a child would have a mental reservation retaining the old conceptions.

It is very necessary that the child be given ample and early opportunity to observe the *heavenly bodies* in their course. This will be the foundation of his further understanding. There are too many children who have never seen the sun rise. The child should also become familiar with the most prominent *constellations* and watch their revolution in the course of a night and through the months. All this will be basic.

By learning the place where the sun rises, and where it sets, seeing that the moon follows this example, he will become acquainted with the *points of the compass*, and also learn to use the compass itself. This knowledge must be impressed fully, so that the child can locate himself in space, when lost. He may learn, Boy-Scout-wise, to use a pocket watch for determining direction, or, in the woods, the guidance of the moss and lichens which usually grow on the cool or northern side of a tree.

He will now be able to make his map drawing more reliable by doing it in true fashion, placing particulars in the right direction. It is, however, by no means necessary to force him to place "north" invariably at the top of the page. Indeed, he should make the main direction of his plotting, be that north, or south, or west, or east, the basis of his arrangement. This will free him from the bondage of geographic convention without depriving him of the knowledge of how to read the conventional maps.

To make the child conscious of the roundness, or ball-like shape of the earth, is not easy. Not everyone can undertake a trip around the earth to come back to his starting point. One of the best ways is to take him to the seashore where he can observe ships coming "up" from beyond the horizon, and passing "down" it when they recede. Or taking him to wide open prairies where he may observe wagons or horses or trains appear and disappear in the same way, you can give him the same realization of fact which he may compare with the "rising" and "setting" of the sun and moon. He will discover that the top part of a vessel, or wagon, or whatever he observes, always appears first and disappears last.

He may now be led to discover the "North Star" as his guide in the night. It may be easily located as half way between the great constellations of the "Big Dipper" and "Cassiopeia" (the big W). He will observe that these two revolve around the North Star in the course of a day, and rise in different places on consecutive days. This will introduce him to a study of astronomical phenomena.

It requires no emphasis that these observations will open up to him the glory of the universe with all its infinite and divine mysteries. It is not a mere mechanical mastery of "facts" which we must strive to produce in him, but longing for the discovery of the eternal truth behind these facts.

This naturally cannot be accomplished without the parents themselves being fully familiar with the facts of geographical knowledge, so that they may be competent guides to their children; and without their being aware of the spiritual truths behind them. They themselves must have the consciousness of the divine.

NATURE STUDY

Nature Study and Geography.—Nature study is really only an element of the larger interest in the study of geography. In one sense, it is but another name for geography. For it deals with the things which make our earth a living organism, fit to be the abiding place of living beings. More than that, it deals with the very life

conditions of the human race, with our own human organism. It treats of our own human anatomy and physiology no less than of that of animals and plants; botany and zoology are nothing but studies of the structure and biology of living beings closely related to our own structure and biology. It deals with the composition of the soil in which and on which living organisms live—this soil and its mineral constituents, however, are but mutations of living things, life in a state of transformation. Life itself is greatly dependent upon the actions and reactions of elements which we study in chemistry, and upon the force revealed by the science of physics. Human society and intercourse would be impossible without the tremendous development of these sciences: the steam-engine, the railroads and ocean-crossing greyhounds, the telegraph and telephone, aircraft and submarine—all these modern fundamentals of civilization are gifts of nature study.

Nature study, consequently, is a part, and an important part, of the study of our environment. It simply concentrates our attention upon the various single elements of this study, now on our physical environment, then on the flora, and again on fauna of this environment. By thus singling out part after part, it allows greater intensity and singlemindedness—it leads, in the larger sense of scientific pursuit, to a division of labor among scientific men. But we must recognize the essential coherence of the subject matter, and must insist upon the interdependence of even one factor upon the other. There is no plant life possible without chemical and physical interaction; animals need plants for sustenance; and human existence is closely linked up with all manifestations of natural forces.

Nature and the Young Child.—It may seem preposterous to give this all-embracing outlook upon nature study when we are dealing with the young child. As a rule, nature study for the child is a very circumscribed thing. It deals with a few plants and animals, perhaps some special minerals; in later school grades there is added a smattering of physiology and hygiene and some chemical and physical experiments. It is only in the high school, so-called, that some real science is introduced, that biological experiments are being conducted, and that a larger view is obtained.

Nature study is still considered by many old-fashioned teachers and by many "practical-minded" parents as one of the unnecessary frills of school education. This is unfortunate.

For nature study furnishes the basis for a real understanding of human life and its problems. It appeals to fundamental instincts in the child. He is much more interested in bugs and flowers, in the moon and stars, in dogs and cats, in horses and cows, in pumps and waterworks, in rain and snow, in brooks and ponds, in frogs and fishes, in lightning and thunder, and in the thousand and one phenomena of nature about him than he is in reading that "a cat sits on the mat" or in writing laboriously a letter to a spurious "friend" or making out a "bill" for groceries.

The arts of the "three R's" have their place, as valuable tools for the management of knowledge and human intercourse. But they are not the fundamental things. The child is first interested in, and needs to know about, the world of facts and truths around him, the things he may later read and write about, and the numerical qualities of which he may later determine for the purpose of "precise" cognition.

As long as the schools employ the child's time in the lower grades for the teaching of formal arts to the practical exclusion of real life experiences in field and forest, in street and factory, in the star-lit night and the natural laboratory of day light life—or wherever and however Nature can speak to the child her own language—parents should utilize their various opportunities to give their children this knowledge and inspiration.

That means that they must themselves be students and lovers of nature. In hardly any other branch of human knowledge will the child ask so many questions as in this. Nature is full of riddles and mysteries to the child before he finds his place in life, and the thoughtful child will never outgrow this thirst for knowledge about the vast expanse of the unknown. For Nature does not give only knowledge, it gives a longing for knowledge. It gives the inspiration to fathom the depths of the mysteries of the universe, to explore infinity, to find the mainsprings of life and existence—to go even beyond the limits of the knowledge and to speculate about the unknowable, the divine.

True, to the young child this great mystery will not come as a complete revelation. He will see only bits and fragments of the universe, and it will require many experiences and many years before he can piece them together into something like a harmonious whole. But, nevertheless, it is in childhood that the right attitude towards these riddles is built in the child's soul. It is the parent's privilege to cherish this attitude, to express it in his or her own reverential conduct towards human life and the hidden forces of the universe.

Even the young child will understand that there are forces beyond human conception, and he will personify them under the name of God. He will gladly accept the statement by those who teach him that the unexplainable—at least to him unexplainable—phenomena are the work of God, the supreme, mysterious force, more than human. Life in all its forms will hardly ever be understood, or conceived, in any other manner. Even when the child learns, in subsequent studies, to appreciate the medianism of natural phenomena, and to reduce it to "laws," so that he will rationalize and follow up the complex manifestations in a truly scientific sense, he will approach the problem of life itself with reverence.

A little boy of three who had lived much in the open and had, in his own way, looked upon the flowers and rocks and sunsets and stars as wonderful things which appealed to his heart, was once confined to his room in a sea-side hotel for several days on account of continuous rain. When the sun shone again one morning, he rushed to the porch, opened his little arms wide, and, lifting his eyes and face to the glorious light, called out: "I thank you, dear God, for the sunshine!" He had not been taught religion in any set form—with the worshipful attitude his parents had towards the forces of the universe, religion had come to him in a natural way.

Nature, Symbolism and Religion.—As the child repeats, in his individual experience and consciousness, the mental stages through which the human race has passed, it is natural that his first conception of nature should be unscientific, if we may call it so, and more or less poetic, or mythopoetic, as the term is applied. That is to say, strict facts, in close organization of cause and effect, do not appeal to him; he can hardly differentiate between possibilities and impossibilities. This is the reason why our forefathers have indulged in so many myths and legends, so many superstitions in connection with the phenomena of nature. Many do still, and we have almost a revival of the ancient belief in the influence of the stars upon human destiny—just look at the books which are sold over the counter of numerous stores; birthday books, individual horoscopes, etc. Should we wonder that children have similiar inclinations!

To tell them fairy tales, which are nothing but the last chords of ancient melodies—the final form in which the folk mind has preserved the legends of the gods of nature—is perfectly legitimate. They represent the symbolism of the race; the abstract truths had to be personified; the events in the life of the earth and the heavens were to the ancients but events in the life history of their gods.

It is the Sungod who, when the mild spring zephyrs drive away the cold blasts of winter, fights the giants of Niflheim, girt in their armour of ice, and slays them with his invincible sword, the ray of sunlight, awakening the earth with his kiss and freeing her from bondage. As the spring showers descend, so he gives to his bride the new motherhood of flowers and fruit. The stories of Wodan, and of Siegfried, Bruenhild and the Walkyries, reappear in the tales of Thornrose, the Sleeping Beauty and many others. There is a wealth of poetic charm in these tales, and they are deeply significant. The skilful parent will turn them to good account in the teaching of nature to his children.

All folk literature is replete with stories of this kind. Greek and Roman literature, and the Norse legends, are hardly superior to the tales of ancient India or of the North American Indians. The likeness of so many of them has been proof to the research worker that the human race, in its earliest beginnings, has sprung from a common stock; or, if there were different human families, rising from the darkness of prehistoric times, that the human mind conceived nature in the same manner everywhere and at all times.

Even in minor matters, the personifying spirit of childhood may be satisfied. There is an Indian legend of the Hobyas, a strange little people, living in caves and dark places, and trying to capture children and grown-ups for evil purpose. They represent the powers of illness, spread by darkness and dirt. Children will be quite ready to keep themselves clean, brush their teeth, wash their faces, if they feel then that the Hobyas, lovers of dirt, will not come near them. Crude fancy, perhaps, but childhood's fancies cannot represent the highest form of poetic imagination. Just the same our disease germs are rather well symbolized by these Hobyas, and the latter are more intelligible to the young mind than microscopic cells.

In the same way, the seasonal changes are well illustrated by the tales of Proserpina, Ostara, Old Mother Frost, the Christ Child and Santa Claus; these will have their share in the emotional education of our children. Nature interest in its primitive stages is nature worship, and out of a true nature concept will later arise a new form of worship, that of the divine in nature.

Not that the young child objects to experiments and concrete experiences. His powers of observation need training from his first years of life, and he will delight in the discoveries he makes. Gradually he will build up a concrete apperceptive basis, a knowledge of actualities which will lead him to later rational understanding. But the symbolic mythical elements precede the strictly rational. We must not impose adult standards upon the immature child. What appears a superstition to us is a mythopoetic conception from the standpoint of the undeveloped, primitive mind—in the race and in the child. Such a view degenerates into a superstition only when it persists in defiance of maturer knowledge. It is doubtful whether a child whose attitude is rationalizing from the start can be considered a pleasing and wholesome creature. There is danger that such a child will never grow to have idealism, or, for that matter, genuine science and philosophy Without imagination, there can be no science or philosophy. As a matter of fact, it can be shown that those people who had least of this mythopoetic conception of nature in their early history, have never developed higher standards in science and thought, have never become leaders in mental progress.

Sentimentalism in Nature Study.—We should not confuse a wholesome symbolism with the spurious kind so often met with in some primary work. In the older practice of the kindergarten, not altogether outgrown, there is a symbolism rampant which must be considered objectionable. I refer mainly to the geometric symbolism based upon the three fundamental forms of the sphere, cube and cylinder which to Froebel and his followers meant to represent the principal forms of life: the sphere as the prototype of all bodies and all forms, from the cell to the universe; the cube an embodiment of all resting, immovable things, like the minerals; and the cylinder as a mediate form, in which all growing things, like plants are symbolized. The abstruse philosophy which, through these three forms, is taught the pre-school child, is so foreign to the child mind that it can only injure, not favor, the natural, mythopoetic symbolism which is characteristic of this period.

Again, the songs and poems presented in the kindergarten and primary school often breathe such a sentimental spirit that they have a weakening effect upon sturdy childhood. Fortunately not all of them can be so characterized. Those games and songs that dramatize as well as symbolize Nature and personify her forces, will establish a personal, sympathetic relation between the child and the so-called dumb creation. This corresponds with a natural instinct. Thus, the rain comes down to the great brown house where the flowers dwell; or the alder by the river shakes out her powd'ry curls; the pretty little violets are waking from their sleep; the child asks of pussy-willow, the pretty little thing, where it comes from, how it grows; he sympathizes with the chilly little chickadees buried in the snow; and after an imaginary walk through field and lane, the little boy runs home to mamma to tell her: I saw so many things!

Likewise, the children will play that they are animals, and by personifying them, will learn much more about them than by merely "studying" about them. Profs. Hall and Allin wrote this in the "American Journal of Psychology," IX, 1: "The antics of animals are a source of great amusement to children . . . . .They pull down the corners of the eyes and pull the mouth open, put their hands to their ears, crawl like snakes, root like pigs, fly like birds, swim like fish, catch and devour prey, make faces, wear animal masks, form shadow pictures, watch animals and laugh at and perhaps imitate their every movement, personate trick animals . . .Some children desired to be, and others thought they were becoming some favorite animal. They play that they have claws, trunks, tails, tusks, big teeth and eyes, drink or sleep, walk, play like animals. Games that involve catching or grabbing are often very mimetic of animals, and are always hilarious . . . The wearing of animal masks of great variety has always been a source of great pleasure for children, and even plays a very important part in the games and ceremonials of the Chinese, in most European folk-lore and amusements, in medieval revels, and in savage dances. Pinning on tails, ears, horns, feathers, manes, wings, going on all fours, enacting the animal poses that have come down to us . . . .from remote antiquity, with the aid of these accoutrements suggest . . . . that children must approximate the animal consciousness by these devices. On the other hand, the long struggle of man with the other animals for survival and supremacy, the history of domestication, the folk-lore and religion of totemism show us what a role animals have played in human fear, reverence, and even love in the past."

This reflection shows that the child at this stage represents a particular stage in mental development which corresponds to an epoch in the history of civilization when our race was just emerging into the light of civilization.

But there is an over-sentimentalism and a sickening mushiness in some forms of symbolistic nature study. From this we must save our children. Personification can be carried too far, and to ascribe without qualification human feelings and emotions to plants and animals leads to a misconception of man's place in the world.

The objectionable process can be best illustrated by a story which Horace H. Cummings tells in the Preface to his valuable books, "Nature Study by Grades." He says:

"While trimming a young orchard at his home, the author was once accompanied by his six-year-old daughter. With evident uneasiness she watched the clipping off of the small branches for a time and finally asked, 'Papa, why do you cut off these limbs?' 'So the tree will have a proper shape and grow to give us fine fruit,' was the answer 'Well, you ought not to do that, for it hurts the tree. How would you like your arm cut off?' Suspecting the source of this error, the father asked, 'Who told you that it hurts a tree to cut off one of its branches?' 'My teacher said so,' she replied confidently. 'I think you must have misunderstood your teacher. It hurts the tree no more than it hurts you to have your hair or nails trimmed.'

"Two years later the father was trimming the same orchard, and again the little girl was with him.

"Recalling the former incident, and to test the effect of the child's wrong teaching and his effort to set it right, he asked: 'Norma, do you think it hurts the trees to cut off these limbs?' 'Yes, papa,' she replied promptly. 'Who told you so?' asked the father. 'I don't know, but it hurts them,' she emphasized with unshakable credulity. 'Did your teacher tell you so?' 'No,' she answered.

"It was evident that the source of this error had been forgotten, but the *effect* remainded undimmed by the lapse of time or by the father's original effort to explain it away. Who can say how long this error will cling to that child and unnecessarily disturb her sensibilities? This pernicious result no doubt came from a constant use of personification and allegory, without leading the child to differentiate in thought or feeling between figures and the reality."

This story is very significant—that is the reason why I quoted it extensively. It is particularly significant as it is told by a father who is himself a teacher of nature. If he had such an experience, what can we expect of those among us who have not his equipment?

Everything at the right time, and in the right manner. As the race, with its horizon growing in extent, and its mind clearing away the cobwebs of error, mastered the riddles of the universe one by one, rising in its consciousness far above the aboriginal superstitions, without losing in this process altogether a sincere reverence for the inscrutable mysteries of creation—so we must (in due time) lead the child out of the far light of a mythopoetic fairyland into the sunshine of truth. Just the same, the child may remember the beauties of his early dreams, and he may, and must, recognize the truth behind the facts—such a truth as is expressed in the immortal lines of Tennyson:

"Flower in the crannied wall,
I pluck you out of the crannies,
I hold you here, root and all, in my hand,
Little flower—but *if* I could understand
What you are, root and all, and all in all,
I should know what God and man is."

The Wonders of Nature.—Among the less known stories from the pen of Edgar Allen Poe there are two which may not only be read to, or by young children, to stimulate their interest in nature, and give them valuable knowledge, but which prettily illustrate a manner of presentation quite fascinating, and rather fit for the home fireside. One is entitled, "The Thousand-and-Second Tale of Scheherazade," the other, "The Sphinx." Under the title of the first the whimsical author has quoted the old saying, "Truth is stranger than fiction." He tells in his inimitable, humorous way how the Sultan's Queen tells him another story of Sindbad the Sailor, introducing the most astounding adventures and observations. As a matter of fact the wonders which she describes are actualities in nature, only so disguised that they seem like fiction; what she tells as pure inventions, absurd as these incidents are on their face, is readily believed by the Sultan, who scorns the tales of fact. Sindbad tells of an island in the middle of the sea, many hundreds of miles in circumference, but which had been built by a colony of little things like caterpillars. Also of another island where the forests were of solid stone, so hard that they shivered to pieces the finest tempered axes with which the voyagers endeavored to cut them down. Then he describes a cave that ran to the distance of thirty or forty miles within the bowels of the earth, and that contained a greater number of far more spacious and more magnificent palaces than were to be found in all Damascus and Bagdad. From the roofs of these palaces, there hung myriads of gems, like diamonds, but larger than men; and in among the

streets of towers and pyramids and temples, there flowed immense rivers as black as ebony, and swarming with fish that were blind. "We then swam into a region of the sea where we found a lofty mountain, down whose sides there streamed torrents of melted metal, some of which were twelve miles wide and sixty miles long, while from an abyss on the summit issued so vast a quantity of ashes that the sun was entirely blotted out from the heavens, and it became darker than the darkest midnight." He also tells of a terrible bird, bigger than the caliph's biggest domes. This bird had no head that the voyagers could perceive, but was fashioned entirely of belly, which was of prodigious fatness and roundness, of a soft-looking substance, smooth, shining, and striped with various colors. In its talons, the monster was bearing away to his eyrie in the heavens a house from which it had knocked off the roof, and in the interior of which they saw distinctly human beings, who, beyond doubt, were in a state of frightful despair . . . . . .Of course, Poe describes some of the wonders of the world as he knew it: a coral island, the petrified forests in the south of the United States, the Mammoth Cave in Kentucky, the eruption of the volcano, Hecla, in 1766, and of the other volcanoes, and finally the latest wonder of the time, a flying balloon with its gondola.

In "The Sphinx", Poe tells of himself as visiting a friend who has a summer house on the east side of the Hudson, near the mountains. He sits by the window, looking idly across the river at a mountain on the opposite bank, when all of a sudden he is startled by seeing a prodigious monster crawling up the mountainside. Frightened, he tells his friend, who can see nothing. The next time the apparition is repeated, he calls his friend, who discovers that right before his visitor's eyes, on the window itself, there was a harmless moth capering about, a "sphinx", "of the family Crepuscularia, of the order Lepidoptera, of the class of Insecta"—a schoolboy's account of which he reads. The nearness of the little object had made it appear to be of gigantic proportions, as projected by the unsuspecting eyes of the visitor upon the distant mountain.

This is a lesson in proportion. What is small and what is big? A child will be fascinated by imagining the insect world enlarged a thousand times, and himself reduced in size correspondingly. What a new world he would discover! The life about him, in all its forms, will take on a new significance to the searching mind. In the stories of "Alice in Wonderland" and "Through the Looking Glass," this play of fancy is employed to produce a charming tale, one which is suited most admirably to the mind of the young child.

If parents would see the wonderful perspective of nature's creations in the manner of Poe, if they would introduce them to the eager child in a similar fashion, would not the interest of the child be aroused to fever heat? This way of teaching nature is different from the type of routine instruction, when the child is asked: What is the size of an apple? What is its form? Its color? With what is it covered? etc., etc., ad nauseam.

The Seven Wonders of the World.—The seven wonders of the world, which were praised in classical antiquity as the most astounding and magnificent of man's power, skill and perseverance, were the Pyramids of Egypt, the Hanging Gardens of Babylon, Temple of Artemis at Ephesus, the Statue of Zeus (Jupiter) at Olympia, the Mausoleum at Halicarnassus, the Colossus at Rhodes, and the Lighthouse on the island of Pharos, near Alexandria. For their time they showed indeed man's progress in science and art. It is interesting to note, however, that they were all products of constructive art.

If we would wish to compare modern wonders of this kind with the creations of the ancients, we could point not only to a much larger number but to much more gigantic proportions. Modern man has mastered nature and her forces to such an extent that the wonders of the old world are like a child's dreams. It is well to introduce children to such contemplations. Every handbook or encyclopedia, even ordinary yearbooks and almanacs, give lists and descriptions of our great creations, like the Brooklyn Bridge, the skyscrapers, the mountain tunnels,—really so countless that there is no place here for even a scanty record.

What must be pointed out is that this progress, this perfection has been made possible only by the astounding steps the race has taken in studying nature and in applying scientific facts to the development of technical sciences. A number of discoveries and inventions, which sharpened the service of the human senses to an extraordinary degree, led the way. It is these inventions and discoveries the value of which the child ought to learn about, quite apart from any logically organized course in nature study. It is well to remember that children do not learn in a logical way, as we understand it, but along the road of interest which twists and bends unexpectedly in all directions.

The first of these important inventions is the watch or *clock*. Its perfection has enabled scientists to measure the most minute fractions of time, and consequently the most infinitesimal fractions of space in astronomical calculations. Incidentally, the watch can be used for determining the points of the compass. The invention of the *compass* itself was the next step in using science to benefit man in his conquest of the earth. Almost at the same time as the compass (1300), the *glass lens* was invented, first merely for use in spectacles. Two hundred years later, this invention led to the construction of the first *telescope* and of the *miscroscope*. It is unnecessary to dwell upon the vast significance of these two inventions in the furtherance of science; indeed, our knowledge in astronomy, biology, and kindred sciences would have remained very fragmentary without them. More than that, they gave so tremendous an impetus to nature study that we may date from them the beginnings of modern science.

Other inventions of a scientific character which made human civilization something essentially different from that of antiquity, were the *barometer* and the *airpump*; the *thermometer;* the discovery of *chemical elements*, of the laws of *magnetism* and *electricity*, of the power of *steam*, and other physical forces. What a great change in the daily life of all of us has been wrought by the invention of so small a thing as the *match* for starting fire and light, and by the introduction of modern methods of *illumination* and *heating*! When we compare the enormous aqueducts of ancient Rome with our modern pipe lines and reservoirs, we shall also see at once what transformation has taken place in the supply of drinking *water* to the huge populations of our big cities.

An ancient visiting a city of sky scrapers like New York, with its subways and elevated railroads, its bridges and tunnels, its telephone systems and wireless connections, its electric signs and its home comforts, would find in it all his own "seven wonders", surpassed to an incredible degree. It is well to make our children conscious of this fact. They have been born and are growing up in a world of wonders which they take as matters of fact, without much wonderment. It is one of the purposes and objects of nature study to arouse in them a proper estimate of the civilization they live in, which has been created out of a better knowledge and mastery of nature and her forces.

Nature Games and Occupations.—A systematic study of nature in its various aspects may be left to the school. That does not mean that parents should be indifferent to the method of school teaching and the subject matter offered in the school. Much of what is being done there is fragmentary and psychologically questionable. But that is another matter.

With even the youngest child *games* will introduce nature study proper. The kindergarten games offer some material, as has been pointed out before. But many of the ordinary games of childhood can be utilized for a better appreciation of nature facts. These may be mentioned, among many others: "Fox and Geese", "Bull in the Ring", "Cat and Mice", "Moon and Morning Stars", "Beast, Bird or Fish", "Flower Match", "Leaf by Leaf", "Planting a Garden", "Farmer in the Dell." Various song books for children contain such an abundance of material that parents will never be embarrassed by lack of it. While we must not spoil the children's interest in these games by trying to make them too conscious of the didactic element therein contained, parents would lose valuable opportunities if they would not introduce the real things of nature—flowers, animals, etc., as far as that is feasible, as factual counterparts of the symbolic elements of the games.

As Jessie H. Bancroft, in her book, "Games for the Playground, Home, School, and Gymnasium" (The Macmillan Co.) puts it:

"Games have a positive educational influence that no one can appreciate who has not observed their effects. Children who are slow, dull and lethargic; who observe but little of what goes on around them; who react slowly to external stimuli; who are, in short, slow to see, to hear, to observe, to think, and to do, may be completely transformed in these ways by the playing of games. The sense perceptions are quickened; a player comes to see more quickly that the ball is coming towards him; that he is in danger of being tagged; that it is his turn; he hears the footsteps behind him, or his name or number called; he feels the touch on his shoulder; or in innumberable other ways is aroused to quick and direct recognition of, and response to, things that go on around him."

This is true of all games; it is particularly true of nature games. *Training in sense perception* is indeed one of the objects of nature study—without the stimulating power of quick and correct observation nature study would be defeated of its purpose.

We may therefore include in this part of our study all those *games and occupations* which train the child's senses. Here again, the kindergarten games and occupations, and some of the Montessori materials have

their value. In the "Timely Games and Songs for the Kindergarten", by Reed-Brockunier, there are some good song-plays, like "The Bell-Ringer" (sense of hearing); "Two Little Windows" (vision); "The Mystery Man" (touch); "The Wonderful Bag" (taste); and "The Surprise" (smell).

In connection with this work, there must be a careful training in the perception of *color* and *form*, with parquetry, colored papers, paper-cutting and pasting, painting, etc. This will lead to an early discovery of eventual color-blindness which is capable of partial correction, to avoid observational mistakes. Recognition of different *temperatures* and of *weights* is an important part of sense training. Objects and materials must be recongized by direct, or by indirect touch; the differences between rough, smooth, silky, woolen, velvety, etc., should be marked. Special training is needed in developing the sense of *location* and *self-direction*. Motor impulses must be controlled; manual exercises of all kinds will be in the nature of experiments with natural material and its yielding to manipulation with hands and tools, preparing the child for an understanding of the development of the technical sciences out of nature knowledge.

Even primitive folks had a sort of geometric symbolism in nature representation. They "conventionalized" leaves, flowers, even animal forms, like snakes. Such designs are common among the ancient Greeks and Romans as well as they are among the relics that have come down to us from Babylonian and Egyptian antiquity, and from our North American Indians. So *art work*, connected with nature work, can well introduce such geometrically conventionalized nature forms. But a great deal should be done in free color representation, with washes and paints. Also free hand cutting of leaves, grasses and flowers. Modeling offers many varieties of representation, naturalistic and conventional, in designs, borders, etc. Leaves can be traced on paper, and colored. Artificial flowers can be made from tissue paper. Animal forms may be cut, painted, modeled.

Grasses and leaves may be arranged in pretty designs and used in blue printing. Or leaves may be lightly fastened to some background, paper or other material, as a pattern, to be painted around, so that the leaf design remains when the leaf itself is removed. This may then be filled in with other colors, or by drawing in the veins, etc. If this work is done on wood, very pretty effects can be produced by using a toothbrush instead of a paintbrush, squirting the water color on the wooden background by holding the toothbrush in the left hand, and scratching the bristles with a small stick of wood held in the other. Groups of leaves and grasses can be used in this way, first removing one layer, and then another; thus various grades of shading can be effected, making the design stand out in relief.

All this work will strengthen the child's interest in nature forms.

Riddles and Puzzles.—A child's interest can always be aroused by puzzles and riddles. They can therefore be pressed into service for the fixing of nature knowledge. Of the ordinary riddles which ask for nature objects by description, syllabication or letter combination, every magazine is so full that it is unnecessary to give examples.

To illustrate some forms of these puzzles, the follwing may be introduced:

Chaotic Words

These puzzles are in groups. Each has 5 horizontal lines of letters, and contains 5 words. The letters are also arranged in vertical rows. Group A has the word "antelope" in marked letters to show how to do them.

A. The Happy Family; Animals.—

J A O P A R
A E C **E** H **O P** T
K L E K **L** R O O
E A **T** P A A N
L **N** N G A L D **E**

Other words: Jackal, Kangaroo, Elephant, Leopard.

B. A Bouquet of Flowers.—

S Y R I T H T M
H O E L I O O A K
G A A A N P U D
M E L C Y I L C S
H W R E G N E H

Words: Sweet peas. Hollyhock, Geranium, Marigold, Hyacinth.

C. A Cage of Birds.—

S I T T C R
W I O E O O D
B O G L A R C
P U Y D E N N
B K S T A R R K

Words: Skylark, Woodcock, Bittern Pigeon, Bustard.

For somewhat more advanced children, the puzzles of hidden words may be suggested.

Hidden words in words.—Find a mineral in a small country of eastern Asia. C (ore) a.

Hidden Trees.—Example: "That *opal* must have been stolen." (Palm.)

Since Darius returned he has grown.
Mamma, please, may I go?
Ethel may go to school.
The fashions often change.

Hidden Insects.—

The rifle and dog are mine.
He briefly replied.
State your wants.
It was papa.

It goes without saying that one of the greatest delights of children will be to invent their own puzzles of this nature which will stimulate their interest in study most decidedly.

Dropped-letter sentences, dropped-words sentences and paragraphs, and similar puzzles will have their share in these games.

The toy stores also offer a great number of dissected pictures and other nature toys and games which can be used to advantage in the nursery and around the family table.

Scientific Tricks.—In line with the puzzle interest of children is their great pleasure in magic tricks. This is perhaps a reverberation of the emotional state of man in witnessing the performances of the ancient conjurer, magician and necromancer. The fear of these, the great awe inspired by them, was at one time in the dim past among the most influential elements of religious worship and mythical lore. The child shares with primitive man this state of mind. But what was once a fearfully solemn ritual, has become a pleasant entertainment.

Magi were the priests of the Babylonians; the priests of all ancient religions practiced "sorcery" of some kind at all times; they were skilled in secret knowledge, as it was called—and quite able to perform what seemed to be miracles to the awe-stricken populace. They made speech come from the mouth of their monstrous deities as represented in stone or bronze images of huge size; they made them appear as bleeding from imaginary wounds, etc. The Hindoo fakirs and the medicine men of the North American Indians belonged to the same class. During the middle ages, witchcraft and sorcery were firmly believed in; the faith in magic, conjuring, enchantments, the black arts, exorcisms and soothsaying was common, even among the so-called educated. These old notions and superstitions have not died out altogether in the modern world.

No wonder that our young have a deep interest in all conjuring and that, while it inspires them at times with a strange feeling of fear and misgivings, especially when they see the performances of our modern "magicians," they take an almost inordinate delight in all matters of magic.

Many of the medieval magicians, like their ancient predecessors, were not merely jugglers and deceivers. They were advanced scientists. Indeed it was their premature knowledge of scientific facts—far in advance of their times—and their serious scientific researches which gave them the power to impress the multitude in which the scientific sense was wanting. Both the great Nostradamus and Paracelsus were physicians and alchemists, as well as necromancers; the latter is important in the history of medicine on account of the impetus he gave to pharmaceutical chemistry.

Likewise, in the harmless tricks which our children may learn to play there is often hidden a great deal of real science—in chemistry and physics. A few of these may be here described to make our meaning clearer.

Put some snow, mixed with salt, on a plate; on top of this set another plate in which there is a mixture of cold water and snow. When both are set upon the warm stove, the salted snow in the lower plate will melt, causing so much abstraction of heat from the upper plate that the water in it will form ice.

A magic lantern will give not only a great deal of amusement to children, but will illustrate to them the principle of the refraction of light. A much simpler form can be made at home without a lens, using a mirror, so that inverted pictures of the bright scenes outside can be observed in daylight (Camera obscura).

Refraction of light is also demonstrated by the simple trick of holding a stick slantwise in a bowl of water.

Another trick with heated and consequently rarified air is performed with a soup plate and an empty glass. Pour some water into the soup plate. Then heat the air in the tumbler by holding a candle under it, the tumbler being held in an inverted position. As soon as the air in the glass is sufficiently heated (and thinned out), set it quickly into the water in the plate—the water will rise immediately in the glass occupying the space left empty by the cooling and therefore contracting air. The opposite phenomenon can be illustrated by the following experiment: When you place an empty glass into water, face down, it will be noticed that the level of the water within the tumbler is lower than that of the water surrounding it, owing to the presence of air in the glass. This fact can be utilized to demonstrate the principle of the diver's bell. Place a cube of sugar in the centre of a large enough

and flat disk of cork, floating in the water contained in a deep soup plate. If now you place an empty glass, bottom side up, quickly over the float until it touches the bottom of the plate, the float will be seen swimming on the lower level of the water inside the glass, the lump of sugar being untouched. If you remove the glass carefully you will find the sugar absolutely dry.

Tricks with magnets are numberless. The blowing of soap bubbles is really a scientific experiment. There are numerous balancing tricks, exhibiting principles of statics.

There are hundreds of other tricks affording entertainment and instruction to the children. Care must be taken, on the one hand, not to introduce them in too dry and didactic a manner; on the other, to impress upon the children the wonderful laws of nature which are demonstrated by these tricks—which are not tricks at all, but real experiments, leading over to more serious and orderly work with the forces of nature.

Many children will delight in organizing these tricks into the form of "public performances" given for the benefit of their friends; this also satisfies their dramatic instinct and should be encouraged. Parents ought to take themselves a lively interest in these activities, and be helpers and advisors, without attempts at dictation.

Outfits for young magicians can now be bought for small sums in the toy stores.

Cooking and Domestic Work.—Still on the order of more or less unsystematic work—and of a kind which can most easily and attractively be done at home—are cooking and other domestic work. Lessons in this field, when given in school, partake of the nature of school routine and often lose much of their spontaneity and interest.

Not only the little girl but even the young male scion of the house will be greatly attracted by mother's preparation of meals. There is first the multiplicity of supplies—the meats, the vegetables, the spices, the fruits, the nuts, the milk, cream, and butter, tea, coffee, etc. To the mother who understands her educational functions these supplies alone will afford an endless opportunity for imparting nature knowledge to her children in an entertaining as well as instructive manner. Where does the meat come from? What kind of meat is it? What cuts? Meat, fish, or fowl? The entrails and general anatomy; kinds of fruits and where they grow—is it necessary to enlarge upon this vast field of information of the most fascinating kind?

There was a little book published years ago which illustrates precisely the kind of information which can thus be imparted: "Aunt Martha's Corner Cupboard," by Mary and Elizabeth Kirby. It introduces two lively, mischievous boys who spent their vacation with an elderly aunt in whose old-fashioned house there was a corner cupboard of the old English type. "It seemed to Aunt Martha" (for she was a lady of a lively imagination) "as if everything in that cupboard—her china, her tea, her coffee, her sugar, even her needle,—had a story to tell, and a most entertaining one, too. Had not many of the things been in foreign parts where are great palm-trees, and monkeys, and black men, and lions, and tigers?" And so she tells about tea-cups and pottery, tea and botany, as well as gardening and agriculture, sugar and sugar-mills, coffee, salt, caravans, birds, and what not.

Modern parents might well make their *kitchen cabinets* and *pantries* inexhaustible mines of material for nature study to their children.

Then there is the *cooking* itself. The boiling of water in the tea-kettle alone will furnish inspiration for many a home lesson in science. Did it not give James Watt his first idea of the steam engine? And has not steam changed the face of the earth and made modern civilization possible?

In the boiling of milk or eggs other natural laws are impressed. Really, every dish made in the home kitchen by baking, boiling, broiling, roasting—whatever it be—is full of suggestions. Chemical and physical facts, even anatomy, physiology, and biological conditions, can be brought forth. Chickens and their eggs may be made to serve the need of a practical knowledge of embryonic life. *Carving* is dissection.

In the caring for the home there are many other occasions for nature study. *Cleaning* and *dusting* suggest proper methods of cleanliness and the learning about the meaning of sanitation, personal and household habits, health and disease.

The study of the composition of dust brings to the child's consciousness many microsocopical facts of organic and inorganic matter. There is the problem and meaning of *fresh air* and *sunshine*, of proper methods of *ventilation*—much of chemistry and physics can be introduced in this manner, quite informally. The chemistry of *soap* and *hot water*, of dirt and washing, of drying and bleaching, is another interesting topic. The hygiene of *dress*, and the various *dress fabrics* form other themes of discussion.

Further comes the *supply of water;* the hydraulic principles of supplying each household with running water, and the hygienic principles of purity of the supply. Even very young children will be fascinated to follow up the water-pipes in the plumbing arrangements and in the disposition of sewerage. Likewise, they will wish to know about the method of *lighting* and *heating*. There is the gas supply, and the chemistry of gas manufacture and gas light and heat. A study of the composition of the flames will absorb a child's attention. Then we have the modern installation of electric light, with all its ramifications. The electric current is a most important subject of study. A child will be interested in father's attempts to detect the cause of the electric doorbell not ringing, or of its persistence in ringing without stop. The distribution of light in the room, the proper position of the light for reading, writing, and working, matters of kerosene lamps and candles will suggest further lessons in principles of vision, the care of the eyes, the manufacture of candles, the science of petroleum.

The *kitchen stove* and the *furnace* open up another chapter. The lighting of fire, the history of the hearth, the invention of matches, the proper use of coal and wood, the origin of fuel, the trick of draughts, etc., give occasion for another long series of observations and practical experiments.

One point in the preparation of foods may be added: the matter of *diet*. It is quite feasible to give even a young child some ideas of the relative values of different foods, of their digestion, and of their effects on health and disease.

It is not intended to make any of these lessons, if we may be justified in calling them so, cumbersome and technical, or to shoot beyond the mark. While all of these opportunities make for nature study they need not be given in the pedantic way of science teaching. They will be incidental and informal, amusements rather than lessons, tricks rather than experiments, spontaneous rather than set. But we must give the mind of even a young normal child credit for being able to absorb and understand many more things than are usually placed within his reach. Most child minds are actually starved from lack of opportunity.

Gardening Outdoors and Indoors.—One of the primitive occupations is digging, planting, harvesting. A child revels in such work. Only one caution is needed: it is natural to the child to be easily tired, not so much physically as mentally. To force him to sustain attention and effort beyond his fatigue point is a great error. Such forcing will inevitably make him unwilling for, and incapable of further effort.

But within his limits the child is very happy when he can dig and plant. His garden beds may not look very orderly, and we may have to refrain from forcing him to comply with adult standards; his results may be questionable as far as crops are concerned—yet the mental crop may be abundant. When the play spirit enters into his gardening, the child may be found to be absorbed in his horticultural and agricultural pursuits. School gardens are now a recognized part of the curriculum in many places; there are also community gardens. Every backyard can be utilized for some work of this kind.

The child will learn much of the nature of the soil when he works it and when he discovers its yield. He will learn about the weather, about sunshine and rain, and wind and seasons. He will understand better what growth means and the difference between living and inorganic things. He will learn more about seeds, fertilization, germination, and flowers—wild and garden varieties—about vegetables and grains. He will appreciate the work of the farmer and truck gardener, and the influence of climate and temperature, drainage and irrigation. All these things will in the early stages be somewhat hazy and indefinite, perhaps, but his practical experience will give him a basis upon which he can build his later, better organized and more clear-cut knowledge. What he needs to develop now is his faculty of observation, the ability to see with his own eyes, to draw conclusions, to store up facts, such as later will be woven into the fabric of his world conception.

In the house, there can be much work of a similar nature. He may learn to rejoice in the gift of a flowering plant, or a dwarf shrub, to be taken care of in his room; or he may be appointed guardian of the home conservatory. There is the watering, and the removal of dry twigs and leaves; the care of the soil in which the plants grow, the temperature which must be maintained to preserve them, their place in the sun. He can build his own miniature greenhouse, to grow mosses and ferns, and populate the little world with insects, frogs, and lizards, studying their habits and life conditions.

Outdoor Studies.—Professor Preyer, in his studies of the development of the child mind, said that "a child in the first three or four years of his life learns as much as the student in his entire university career." If this is true we need not fear that the suggestions made in these lines are exaggerated demands. What is pleaded for is merely opportunity for the child from in-

fancy up. That is why he should not be imprisoned between home and school walls, but needs the freedom of field and forest to develop the health of his body and the sanity of his mind. The fettered child is the one who is more apt to play truant, to become disgusted with "learning" and "book study", than the one who roams in the open as his birthright. The "wanderlust" of the race is inborn in the normal child, and unless it is satisfied in a normal manner, will tempt the active child to find an outlet for his cravings in an "illegitimate" way by playing truant. Well may Whittier's "Barefoot Boy" be quoted who gains—

"Knowledge never learnt of schools,
Of the wild bee's morning chase,
Of the wild flower's time and place,
Flight of fowl and habitude
Of the tenants of the wood;
How the tortoise bears his shell,
How the woodchuck digs his well;
How the robin feeds her young,
How the oriole's nest is hung;
Where the whitest lilies blow,
Where the freshest berries grow,
Where the groundnut trails its vine,
Where the woodgrape's clusters shine;
Of the black wasp's cunning way,—
Mason of his walls of clay,—
And the architectural plans
Of gray hornet artisans!
For, eschewing books and tasks,
Nature answers all he asks;
Hand in hand with her he walks,
Face to face with her he talks,
Part and parcel of her joy,—
Blessings on the barefoot boy!"

It is obvious that this craving of the boy—and the girl—must be gratified if we wish to avoid mischief. And it is good nature work if we yield to these natural promptings. The old-fashioned walks of parents and children, their hikes through country and woods, have fallen into disuse in the large cities with their magnificent distances. Yet, it is being demonstrated by the Boy Scouts and the Camp Fire Girls movements that it is perfectly feasible to adapt the needs of children to modern life conditions. It should not be necessary for parents to leave all this rich life of childhood to strangers; they should take some of their own deepest joy in sharing it, in organizing those expeditions which will acquaint their sons and daughters with life in the open—with woodcraft, wild life and tentcraft.

If parents are at a loss as to where to find instruction for themselves, let them study the handbook of the Boy Scouts of America. There they will find most of what they need.

The essential point is to make the children conscious of the natural conditions of life; to have them learn to adjust themselves to nature in the rough, to re-experience the experience of the race in developing civilization from the first primitive attempts to differentiate the human from the lower creation to modern time. In other words, to reconstruct the world in which they live from its rudiments and fundamentals. They must learn to understand the world they live in, to locate themselves in their natural setting.

Just to give a brief survey of what children may learn in this manner, I will suggest some of the things which may be imparted to them:

How to use the compass, or how to find the directions with the use of an ordinary pocket watch.
How to measure heights and distances.
How to find your latitude by the stars.
How to make fire.
How to know the stars.
How to know the birds.
How to know shells, reptiles, insects, butterflies, beetles, fishes.
How to know rocks and minerals.
How to know mushrooms from toadstools.
How to know trees, shrubs, wild flowers.
How to know about the wild animals in the woods and fields.

These are only a few of the many valuable lessons the children will learn on their hikes and camping expeditions.

To send children to camps in the summer has become a habit with many of the well-to-do parents, and for the less favored there are community camps and other provisions. At least a beginning of this practice has been made. But the question arises whether it would not commend itself to have the parents themselves get into the habit of camping out with their children at different times of the year, not merely in summer, but also during the winter months, whenever occasion arises. Fathers will go on hunting or fishing trips; mothers will spend their time at fashionable hotels in so-called resorts, either sending their children away among strangers or taking them with them into the strenuous life at such resorts. The natural and most helpful arrangement would be to organize opportunities for a healthy outdoor life in which the entire family can partake.

Collections.—From these hikes, walks and camping expeditions, children may bring a number of things back home with them which will not only be souvenirs of pleasant times spent in communion with nature, but which may be further objects of study.

They may make for themselves *herbaria*, that is to say, collections of dried and well-preserved leaves, seeds, samples of bark and wood, and other botanical material. These specimens they will learn to identify and classify, adding notes as to where they found them and what their life conditions are.

In connection with these actual specimens they may collect *pictures* of trees, shrubs, weeds, wild flowers, for comparison. A knowledge of the most common trees is unfortunately so rare at the present time that such studies should be distinctly encouraged.

To this kind of collection should be added specimens of the life among the plants that grow on the ground and among the branches of the trees that reach up into the air. Collections of *beetles*, *butterflies*, and other *insects* should be made. Here is also an excellent opportunity for teaching the young proper consideration for life. No wanton distruction, without a real object of study, should be allowed, and in preparing beetles, bugs and butterflies for the preserving box, cruel killing should be avoided, chloroform or other painless methods being employed. Respect for LIFE and its sacredness must be inculcated in the young; their natural recklessness and their desire for mastership over the dumb creation—quite a primitive trait—can thus be turned into constructive channels. For when they learn to connect their collecing instinct with the study of life, and with scientific knowledge, they will assume a different attitude towards the helpless creatures they catch with net and cunning.

Some living things—like turtles, lizards, small snakes, frogs and fishes,—may be among the results of their hunting. These they may place in *terrariums* and *aquariums*, with sand and soil, rocks and plants so arranged that they will represent an imitation of the natural environment.

To catch wild birds for the purpose of keeping them in cages should be discouraged. There are many birds to be bought in the bird stores, like canaries, parrots and the like, that were born in captivity and may serve to teach children the care of our feathered friends, as far as that is necessary. Our zoological gardens exhibit a sufficient number of birds, placed in an environment which most nearly resembles the natural conditions, so that it would seem superfluous to subject birds to the tender mercies of our immature children. But it is well for children to know birds and to distinguish their various songs, also to study their habitations. It is equally well to inform them of the vast service they render man by the destruction of harmful insects. Collections of *bird pictures* will be welcome.

Of living animals, again we must discourage the catching of jolly wild fellows like squirrels. Dogs and cats offer much opportunity for the study of animal life. To those children who have occasion to raise guinea pigs and rabbits, these animals may soon become great pets. Then we have in many instances horses and cows, eventually goats and kids for the home menagerie.

Collections of *grains*, of *seeds*, of *mineral*, of *shells*, and what not, may complete the home museum.

Museums and Public Collections.—It needs to be said only in passing that children take great delight in visits to museums of natural history, to botanical gardens and zoological collections in aquaria and menageries. While these may be found only in the larger cities, the circus brings at least some of the strange animals in which children are interested, like elephants, lions, tigers, foxes, giraffes, to the smallest village.

For the little ones, *picture books* representing the treasures of nature will be most valuable.

Advanced Work.—All these things can be made of interest even to little tots and can be adjusted to the needs of the growing mind.

But there is a great deal that children will like to do at home even after they have begun to study science in earnest in school.

Attention may be called to the sets of *chemical* and *physical* apparatus which can be had for little money in the toy stores. Children may learn to build aeroplanes, submarines, to arrange electric bells through all the rooms in their homes, to construct telephones and telegraphs, wireless apparatus and other electric appliances. All these efforts afford outlets for their natural activity and inventiveness and will lead their restless minds into constructive channels.

Graphophones, with the wonderful reproduction of tones and voices, are another attraction to the child. While even the youngest child may learn to manipulate them, the older boys and girls may be induced to study the laws of nature which made this great invention possible. They will, of course, connect it with the principle of the telephone.

Then there is *photography*. Cameras are now so cheap that every child may have one. But the children ought to be taught

to take and develop their own pictures. In this wise they will learn much about the chemical action of light.

If you can give your older children a *microscope*, it will arouse their interest in the vast realm of minute life—a new world to them, which, however, will introduce them into the science of the invisible forces, so dominant over the visible world. Such an instrument affords them a great deal of highly instructive entertainment.

What Parents Should Know.—As said in an early paragraph, parents who realize the wonderful opportunities which they have for their children's nature study in the home will feel that they must themselves be properly informed. Or else they should at least study *with* their children—thus inspiring them with the sense of comradeship. The parents' interest will be the greatest incentive to the child's attitude.

There are many publications which will give those parents who had no previous advantages the desired information and suggestions. They will find them if they look for them. It may not be amiss to refer once more to the very helpful three-volume work by Horace H. Cummings, NATURE STUDY BY GRADES, published by the American Book Company, New York.

ECONOMIC GEOGRAPHY

The study of geography was formerly regarded as a description of the earth with special emphasis on the physical features and political divisions of the various countries of the world. To-day geography is more concerned with the effects of physical features of land upon the activities of mankind. In this section we study geography from an economic viewpoint; we study the world as a place for trading, and also the adaptation of man to his environment in using the land for trade and commerce. As in general geography, we study land forms, soils, climate, raw materials, distribution of animals and plants as well as trade routes, countries and cities. Our study, therefore, will consist first of a study of a few of the more important raw materials of commerce, and second of a study of the economic geography of each country will be made.

PART I.

Wheat.—Undoubtedly the greatest need of man is food, and since the very earliest times cereals have been important foodstuffs. Of all the cereals, wheat is by far the most important both as a food and as a commodity for international trade.

Wheat grows in many and widely scattered lands, but does not thrive well in very hot or very cold regions. A double climatic requirement is essential to its best development. It needs a cool moist period for germination and a sunny and preferably dry weather for its maturity. Warm regions of heavy rainfall in summer are not productive of the greatest yield or the best quality.

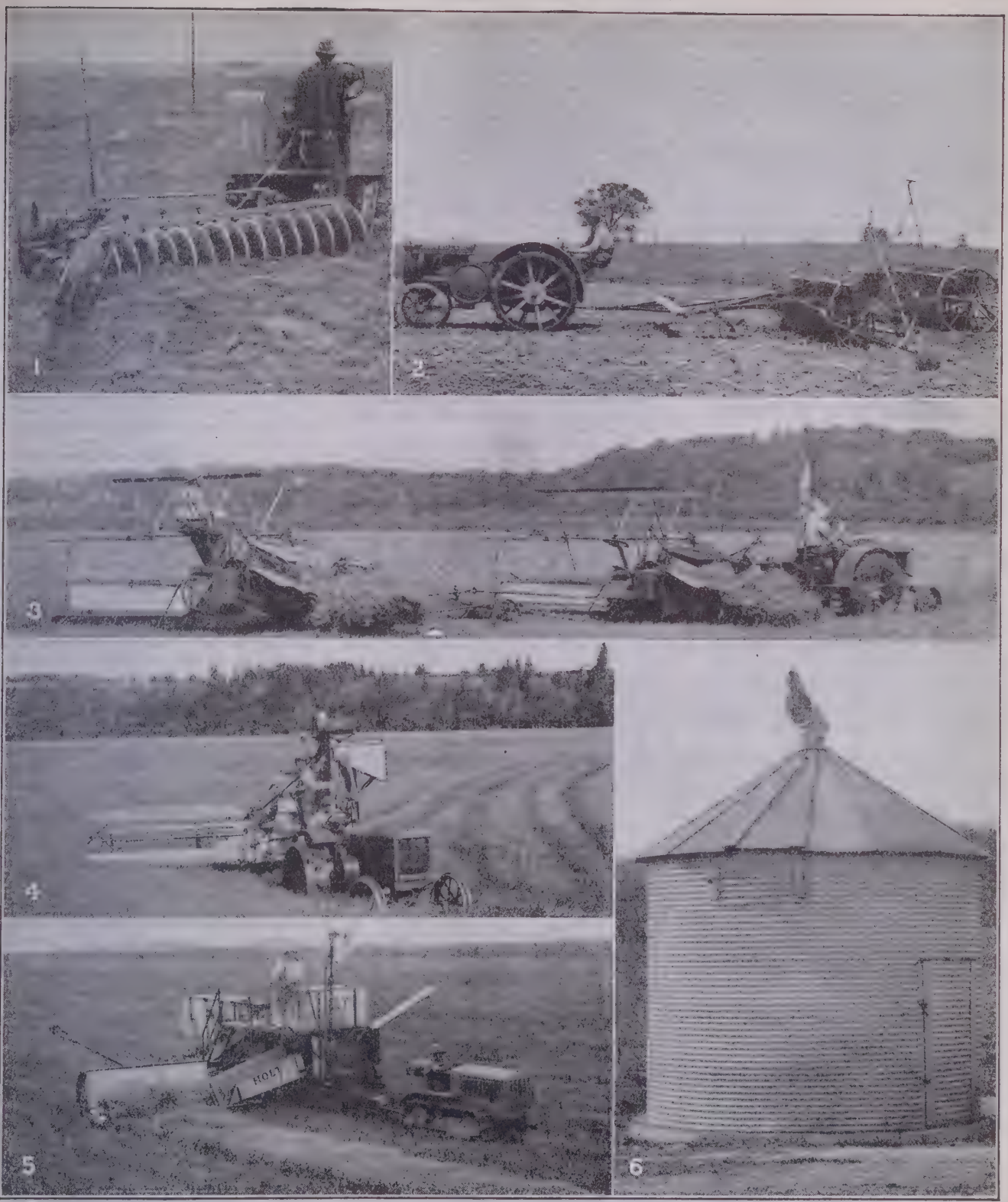
This double requirement of a moist formative period and a sunny ripening period helps us to understand why wheat from Texas, Kansas, Nebraska, the Dakotas, Minnesota and Canada is bright, plump, and valuable.

The soil should neither be too sandy nor too clayey, but loamy and well drained with a surface suited to modern plowing and reaping machines. Most of the best wheat lands of the world are found near the edge of very dry or desert regions. The best wheat lands in the United States, Canada and Argentine are very close to the section of little rainfall. Wheat lands also border on the cooler edges of the deserts in Australia, South Africa, the Nile River, Mediterranean countries, China and India.

Differences in soil and climate tend to produce different kinds of wheat, and are usually classified as spring and winter, hard and soft, red and white. In general the soft kinds contain a large proportion



Courtesy American Museum of Natural History



These views show some important phases of the modern industry of wheat production. 1. The one-way disk plow has nearly replaced the moldboard plow in some sections of the wheat area. The one-way disk plow does not penetrate as deep as the moldboard type but makes a wider cut and leaves the soil in better condition to resist soil blowing. 2. Tractor pulling two wheat drills. This conserves both man and tractor power. 3. Two harvesters (binders) powered by a shaft from the tractor power take-off; this does away with slipping on wet soil. 4. Combined harvester and thresher in operation on a 500-acre farm in Alberta, Canada. 5. Combined harvester and thresher on an Iowa farm, showing operation of pick-up attachment which gathers the cut grain from windrows. 6. Wheat storage bin, of steel construction and ventilated by a suction ventilator attached to tubes which penetrate the wheat. This type of bin holds from 500 to 1000 bushels of wheat. It is recommended by government experiment stations.

of starch and are used for the manufacture of flour. The hard varieties are used more for the manufacture of macaroni. There is no real seasonal classification in the various types of wheat, for a winter wheat may be sown in the spring, and a spring wheat may be sown in the fall, with good results.

Europe as a whole produces more than half the wheat crop of the world, but with the exception of Hungary, Roumania and the black belt of Russia, there is no surplus to export. The density of the population of Europe makes it imperative to keep the grain home for the purpose of food. This density of population causes the European farmer to rotate his crop in order to yield the maximum number of bushels per acre. The average yield of wheat per acre in some of the most densely populated countries of Europe where land rents are high is much greater than that of the less thickly populated cheap lands of newer countries.

AVERAGE YIELD OF WHEAT PER ACRE
1910-1914

Great Britain	33	bushels	per	acre.
Germany	40	"	"	"
Belgium	34	"	"	"
France	21	"	"	"
Hungary	19	"	"	"
Russia	10	"	"	"
Roumania	13	"	"	"
United States	14	"	"	"
Argentine	11	"	"	"
Australia	12	"	"	"

Density of population also affects the yield of wheat per acre in the various states in the United States. Some of the older states, like New York with an average yield of about 22 bushels per acre have, through care, a higher wheat yield than the plain states where the yield averages from eight to ten bushels per acre.

The states in the United States which produce the greatest number of bushels are Kansas, Minnesota, North and South Dakota. The total yield in the United States averages 850,000,000 bushels per year. The countries of Europe which, during normal times produce the greatest number of bushels are Russia, France, Germany, Hungary and Rumania. The Soviet Union (Russia) leads in production, as would be expected from its vast size and favorable geographical location. Other great exporting nations are United States, Canada, Argentine, Australia, British India and Rumania.



GEOGRAPHIC DISTRIBUTION OF WHEAT

Wheat is grown principally for flour, and hence the international trade in this commodity is large. The great milling centers of the world have grown up near the sources of raw materials and power. In Europe the highest fame and skill in the making of flour have been reached by Hungarian millers at Budapest. In this country the greatest flour manufacturing city is Minneapolis. Here the Falls of St. Anthony in the Mississippi River and a location near the great wheat fields afford the double advantage of cheap power and economy of time and expense in the assembling of the wheat from the fields of the United States and Canada.

The world's greatest exporting countries of wheat and flour are the United States, Canada, Argentine, Australia, British India, Roumania and Russia. Most of these nations are new or else agricultural. As the United States fills up with people it will undoubtedly enter into the export trade of these commodities less and less. The center of wheat production has steadily moved westward with the taking up of the cheaper lands by people from the east. As time goes on and population grows most of the wheat grown here will be needed for home consumption. The probable granaries of the future are Argentine, Australia and Siberia, especially the plains to the southeast near the Manchurian border.

The development of long-distance carriage will affect the area of production. The railways of the Northwest and the steamships of the Great Lakes make possible the wheat harvests of that region. The profits give a wide range of desirable things to the grower, and the cheap transportation gives white bread to many among the poor of Europe to whom it was once a luxury. New facilities in transportation will increase the importance of wheat in Canada, Russia and Australia. The wheat lands of Argentine and Russia are nearer the sea than those of the United States, and this will favor them as competing grain producers.

Corn.—Corn is one of America's contributions to the grains of the world. When the first settlers came to this country the Indians presented them with this grain. Owing to the fact that corn will grow on very rough land where other grains will not do as well has caused this grain to be



GEOGRAPHIC DISTRIBUTION OF CORN

cultivated in the back or isolated sections of the country. Hence in that rough section of the Appalachian Plateau, including many thousand square miles of Kentucky, Tennessee and West Virginia, corn as a food and staple of trade is of great importance.

Corn will grow and mature in any section that has a five month growing period. The prime grades of corn thrive best where there are sufficient rains with warm sunny weather during the growing season, and in rich, well drained soils. Hence it does not thrive as well in those countries that have cool summers like England, Scotland and Canada, nor does it thrive to good advantage in sections of intense heat as in our southern states. Corn requires warm nights as well as warm days, and this fact accounts for the reason that corn does not grow to advantage in some of our southern states like Arizona, New Mexico and Nevada. These sections with their very cool nights hinder the full development of the grain.

The chief regions of production of corn are the central Mississippi Valley, the plateau sections of Tropical America, the Black Sea region, the Mediterranean countries, southeastern Asia, and Argentine. Of all these regions the richest and most productive is the central Mississippi Valley. The corn belt here is just south of the wheat belt and includes the states of Iowa, Illinois, Missouri, Indiana, Kansas and Nebraska. Here we have one of the finest farming sections in the world. Indeed, this is often called "the heart of America." The average yield of corn per acre in this section is about 25 bushels, and with careful selection of seed and tillage this can be increased to 50 bushels per acre. The five year average, previous to 1914 was about 2,700 million bushels. The European War making it necessary to increase the food supply in all lines of agriculture, encouraged the farmers of the west to greater tillage and more careful cultivation. The corn crop now averages about 2,750,000,000 bushels per year.

Corn is used largely as a supply crop and hence is not used as an article for export. The relatively low price of the commodity compared to its bulk weight does not make it a profitable article for export. Most of it is used near the place where it is grown, so that most of the American corn is consumed at home in the cattle belt which is very close to the corn growing section. Corn is used also as a breadstuff, in the manufacture of syrup, starch, glucose and other products such as corn flakes, corn oil, soap, alcohol, oil cake and meal.

Cotton.—The most imperative need of civilized man, next to food, is clothing. For many hundreds and thousands of years his clothing consisted largely of the skins of animals. Later as the art of making cloth developed in the silk and flax fibers the wealthy and aristocratic classes could wear garments of cloth. Cotton has of course been used for clothing for many hundreds of years, but until the invention of the cotton gin in 1793 the poor man had to depend on wool, linen and leather for his clothing. The invention of the cotton gin made cotton the leading vegetable fiber, and the trade in cotton and cotton manufactures is perhaps the most important branch of international commerce.



GEOGRAPHIC DISTRIBUTION OF COTTON

The cotton of commerce is the fiber which surrounds the seeds of the cotton plant. The usual height of the cotton plant is from three to five feet and is perennial in regions which are free from frost. The plant is often regarded as a tropical plant but the most important

regions of its growth are in the subtropical regions of both the northern and southern hemispheres. Nearly all the cotton is raised between 40 degrees north latitude and 20 degrees south latitude. The principal cotton growing countries are the United States, India and Egypt, although it is found in considerable quantities in central Asia, Peru, Brazil and many of the South Sea Islands.

Cotton was first grown for the market in this country in Virginia. The leading states today in the production of cotton are Texas, Alabama, Mississippi, Georgia, South Carolina and Arkansas.

The chief varieties of cotton are the ordinary American upland cotton, the Sea Island, the Egyptian and the Peruvian. The value of the fiber and the uses to which it is put depend on its length, strength and fineness. For this reason, Sea Island cotton is by far the most valuable, for it is characterized by a long, fine, silky fiber. This type of cotton thrives best near the ocean, partly because of the high humidity. Sea Island cotton is also grown some distance inland in southern Georgia and northern Florida.

The cotton plant is not cultivated alone for its fiber, but as in other fields of economic activity, the utilization of the by-products obtained from the parent plant has become very important. The cotton seed is used for fertilizer and oil, stock food, paper, soap and cellulose. The stalk is also important commercially in the manufacture of paper and in some sections it is used as a fuel.

As an article for export trade, cotton holds a high rank. Approximately two-thirds of the home crop in the United States is sent abroad. The great industrial countries of England, Belgium and Germany have for the last hundred years been largely dependent on the crop in the United States. How dependent Europe is on American cotton was illustrated during our Civil War in 1861-1865 when many of the mills were closed down and thousands were thrown out of employment because of the blockade of the southern states. Also during the late European war, Germany felt the need of cotton from America. The bulk of our crop goes to England. The three chief cotton ports in the United States are Galveston, New Orleans and Savannah. New Orleans and Galveston are strategically located, the one being the natural outlet of the Mississippi Valley and the other as the end of railway trunk lines connecting with the various plantations in Texas and Oklahoma.

The economic value of cotton is felt everywhere. As an article of international trade it holds a high place. Certain it is that the opening and extension of cotton growing in America and in other sections of the world, together with the invention of the cotton gin and spinning machinery, have been important factors in cheapening clothing for the world. The market for cotton goods is worldwide. The great potential market for the American cotton manufacturer is the great oriental section of Asia bordering on the Pacific Ocean, where more than one-third of the human race resides.

Forest Products.—The forests of the United States throughout the entire history of the country have been one of its great sources of wealth. From the early days of settlement, when the raw material of the forest was used for building the homes of the pioneers, to the present moment, when forest products are the basis of extensive manufacturing, nationwide industry, and domestic and international commerce, the timberlands of the country have contributed largely to both the happiness and the financial well-being of the people.

Of the 26,000,000,000 cubic feet of timber (not including firewood) annually consumed by the world, three-fourths comes from softwood or conifer forests, comprising such species as the pines, spruces, firs, hemlocks, larches, cedars, sequoias and cypresses. With a few exceptions, the softwood forests are confined to the cooler regions of the Northern Hemisphere. The principal softwood or conifer forest regions are (1) North America, including Canada, Alaska, western, northeastern, and southeastern United States, and the Sierras of Mexico; (2) northern Europe; (3) central Europe; (4) Asiatic Russia, Manchuria, and part of Japan. North America has about two-fifths of the world's conifer area, Europe another fifth, and Asia one-third. These three continents of the Northern Hemisphere embrace 95 per cent of all softwood forest land. Of the area of Temperate Zone hardwoods, Asia has nearly one-half, North America one-fourth, and Europe one-sixth, the three continents containing 87.8 per cent of such hardwoods. Of the area of tropical hardwoods, Asia has 17.5 per cent, Africa 21.2 per cent, and North America has 3 per cent. South America contains more than 50 per cent of the world's total.

In the United States, the sections that have successively predominated in lumber production are the Northeast, the Great Lakes section, the South, and the Pacific Coast section.

The lumber production of the United States in 1928 totaled more than 34 billion board feet, more than 28 billion feet of which was softwood. Two western and two southern states led in production in the following order: Washington, Oregon, Mississippi and Louisiana. These four states produced nearly half of the total for the country. Southern yellow pine contributed 31.1 per cent of all lumber and Douglas fir 24.8 per cent.

The forests of the United States support industries giving employment to more than a million people and turning out each year products valued at more than two billion dollars.

The value of exports of forest products in 1929, including logs, hewn timber, railroad ties, piling, poles, firewood, sawmill products, wood manufactures and paper and paper manufactures, totaled $211,000,000. In the same year the value of imports of wood, including logs, railroad ties, sawmill products, wood manufactures, pulpwood and wood pulp, and paper and paper manufactures, amounted to $377,000,000.

The demand for lumber for building purposes, for the manufacture of furniture, agricultural machinery, railroad ties, vehicles, and the amount of wood required for tools, equipment, utensils used in shops and mills and on farms are enormous. An ever-increasing demand is made upon the forest for pulpwood for paper and cellulose products. The value of paper and paper boards manufactured in this country is rapidly approaching the billion dollar mark, and the industry has now entered twenty-three states, with an output of more than 10 million tons, and employs more than 100,000 persons in paper mills and 27,000 persons in pulp mills. Spruce and hemlock still lead as pulpwoods, but southern yellow pine ranks third, and poplar, balsam fir, jack pine, and yellow poplar each furnish more than 100,000 cords to this use. Rayon, much of which is manufactured from wood pulp, increased in domestic production from 320,000 pounds in 1911 to 116,000,000 pounds in 1929.

Turpentine and rosin are also important forest products, derived from certain species of pine native to our southern states. The United States leads the world in the supply of these commodities, valued at many millions every year.

Forestry.—The 469.5 million acres of forest land in the United States, according to estimates made in 1920, was made up as follows:

	Acres	Acres
Virgin forest		138,100,000
Second-growth of saw-timber size	113,800,000	
Second-growth, small	136,400,000	
Not restocking	81,200,000	
		331,400,000
Total		469,500,000

Nearly four-fifths of all forest land in the United States is privately owned. About one-half of this is owned by large operators and holders. One-third is owned by farmers. National forests contain one-sixth of the forest area of the country. A small amount (about one-twentieth) is in national parks, military and Indian reserves, state, county, and municipal parks, and the public domain.

It is significant in its bearing upon a continued supply of raw material in the lumber industry that our estimated present annual forest growth of six billion cubic feet of wood of all sizes and qualities is less than one-fourth of the total drain upon the forest, including loss through insects, diseases and windfall. The enormous waste of the past has been due to several causes, among which may be mentioned the great abundance of virgin forests, which until recent years seemed inexhaustible; the desire to clear the land for agricultural purposes; the low prices of the best grades of lumber, which led to excessive use and overproduction; the tannery industry which led to cutting certain species only for the bark, leaving the timber to rot on the ground and wasting millions of feet of choice timber; wasteful methods of logging and turpentining; and, perhaps most important of all, the waste and retardation of growth due to forest fires.

In 1891 a law was passed providing that national forests could be set aside from public lands covered wholly or in part with timber or undergrowth. Many million acres of land were set aside from the public domain of the West and put under national forest administration by authority of this law.

Under the provisions of an act of March 1, 1911, the Weeks Law, and of an act of June 7, 1924, the Clarke-McNary Law, lands valuable for the protection of the headwaters of navigable streams and for timber-growing are purchased by the government and organized as national forests. More than four million acres have been purchased, chiefly in the White Mountains, the Lake States and the southern Appalachians. Today there are 149 national forests in the United States with an aggregate net area of 160 million acres. The Forest Service of the United States

Department of Agriculture has charge of these forests, which are located in twenty-eight states, Alaska and Porto Rico.

The Federal Government now coöperates with state and private agencies in giving fire protection to private forest lands under the Clarke-McNary Law, contributing proportionate funds for this purpose in addition to the amounts expended directly by the United States Forest Service in protection of the national forests. Many of the states and Hawaii and Porto Rico, receive coöperation from the Federal Government under the Clarke-McNary Law not only in protection of private forest lands from fire, but also in the distribution of trees for farm planting, and in assistance to owners of farms in establishing, improving, and renewing shelter-belts and windbreaks, and in growing and renewing useful woodland timber crops.

Present major activities of the United States Forest Service for perpetuation and improvement of our forests include: (1) leadership in developing forestry principles and practice; (2) coöperation with the states in forest protection, care and management of farm woods, and distribution of forest planting materials; (3) continued acquisition of forest lands for public forest purposes, including watershed protection, demonstration of timber-growing methods, recreation and wild life conservation; (4) administration and protection of the national forests; (5) continued research and investigation in the protection, management and utilization of forest resources and products, including forest-fire studies, naval stores investigations, soil-erosion studies, timber-growing studies, range investigations, forest-taxation studies, forest-insurance studies, regional forest surveys and forest-economic studies.

Thirteen regional forest and range experiment stations, located in various parts of the country and a Forest Products Laboratory at Madison, Wisconsin, are maintained by the United States Forest Service to facilitate forest research.



Geographic Distribution of Coal

Coal.—Coal is the modern genie which man has summoned from the interior of the earth to perform the labors of industry and trade. It has become essential not only for the production of heat, energy and light, but also for our very existence under present conditions. Hardly any modern civilized nation would be able to support its present population without coal. Many of the wonders and even the very existence of our civilization are due to the finding of large stores of potential energy which have been handed down to us from the ages before history began.

The principal coal fields in the United States are located along the great Appalachian Mountain system. In the eastern section, which comprises the state of Pennsylvania, is contained practically all the hard coal in the United States. This territory of a little over 500 square miles supplies the demand for anthracite in the United States, Canada and Europe. The presence of this great coal field in a measure accounts for the fact that the bulk of manufacture, trade and commerce is north of the Potomac and Ohio rivers and east of the Mississippi. Other soft coal fields of various grades exist in Illinois, Indiana, Michigan, Missouri, Oklahoma, Texas and in states of the Rocky Mountain region. In fact the Pacific slope is the only part of the United States that suffers for lack of coal. This reason partially accounts for the lack of manufactures and railroad development on the coast. The importance of coal is shown by the fact that the production in the United States has increased from 240,789,310 gross tons in 1900 to 508,471,300 in 1928. The state of Pennsylvania has held the lead since the beginning, and in the year 1928 produced 124,720,000 tons of soft coal and 74,552,312 tons of anthracite.

A great deal has been written about the large Alaskan coal fields, but owing to lack of transportation facilities, and inaccessibility of the mines no extended development has been made. Valuable coal veins do exist in this territory, and the small sections that have been worked are estimated to be worth millions of dollars.

Coal underlies three different sections of Canada; the eastern in Nova Scotia, the central on the eastern slopes of the Rocky Mountains, and the Pacific coast and islands. Canada is richer in coal than Europe, but her production is very small. The Canadian coal fields cover an area of over 97,000 square miles, but the St. Lawrence Valley, which is in other respects best adapted for manufactures is entirely lacking in coal.

In the old world England is the leading nation in the production of this most valuable mineral. It was English coal, coupled with English inventive genius, that enabled this nation to lead the world in manufactures and commerce after the beginning of the nineteenth century. The principal coal field is that of Newcastle in the northeastern section, while in the middle section and the territory around Manchester another extensive field is found. There are also large fields in southern Wales and Scotland.

Of the other countries in Europe, Germany ranks next to England, although by the terms of the Versailles Treaty much of her valuable coal fields have passed to France, especially along the Saar. France also has extensive coal fields, located in the northern part of the country near the great industrial section of southern Belgium. For the rest of Europe coal deposits are very insignificant. In Asia some coal beds are worked in the Empire of Japan, and it is known that vast coal fields also exist in China. It is, therefore, quite easy to see how the world may be affected when once the Chinese shake off their ancient customs and prejudices and take part in the activities of modern commerce and trade.

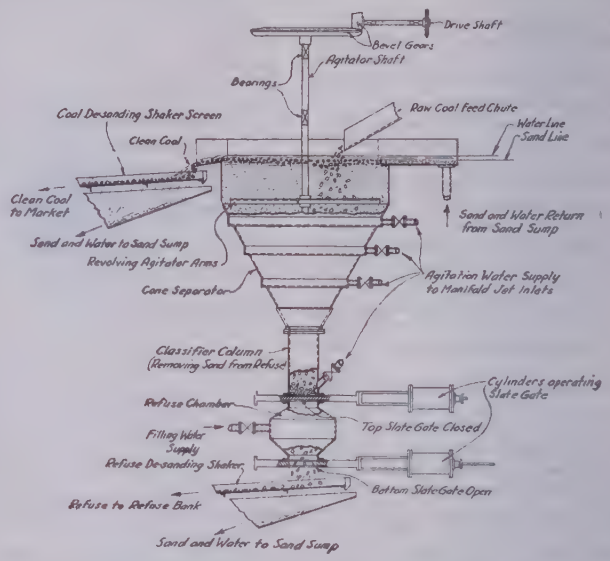
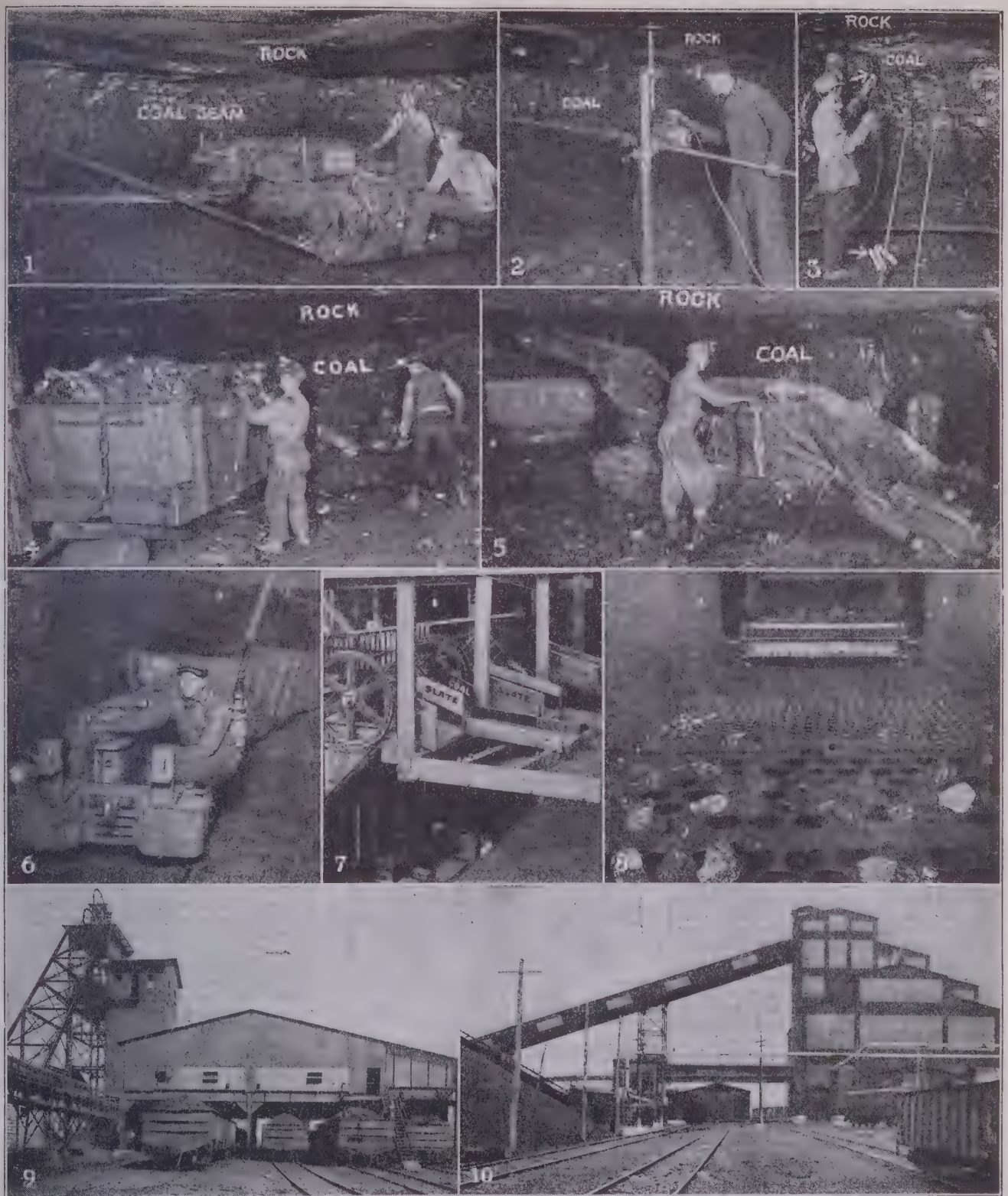


Diagram of Sand Flotation Coal Washing Unit

A modern method for performing the essential work of cleaning coal and separating it from slate is illustrated in the Chance cleaner illustrated above. Size, shape or surface condition of the coal does not affect the efficiency of the separating action. A mixture of sand and water is used, and this mixture when agitated makes a fluid in which the slate sinks while the coal floats at the top thereof. The action in this apparatus is far more positive than in methods depending on hydraulic classification, as in jigs and launders. In the Chance process of direct gravity separation the refuse sinks quickly to the bottom of the separator and the clean coal automatically floats out through a weir upon desanding, dewatering and sizing screens.

The by-products of coal are but of little less value than the mineral itself, and so far as their place in modern economic development is concerned they are of equal importance. The principal products of coal distillation are gas, ammoniacal liquor, coal tar and coke. Coal tar products have become a most important part of the by-products. Coal tar produces naphtha, benzene, aniline dyes, creosote, phenols and pitch, for roofing, as well as many acids.

Coal Mining Methods.—The term "mining method" as used here refers to the manner in which coal is broken down in the mine and not to the system of mining as by room and pillar or long wall. In the mine the coal is either blasted from a solid face—shot from the solid—as in hard-rock mining, or is shot loose or otherwise broken down after a preliminary cut into the coal has been made. This cut may be made by hand or by machine. Underground methods are therefore classified as shooting from the solid, mining by hand, and mining by machine. An increasing quantity of coal is being recovered each year by stripping the



1. Undercutting coal seam with electrically operated machinery which cuts beneath seam and back to a depth of six feet. This is done to assist in blasting, making it possible to loosen the coal with light charges of explosive. 2. Boring hole with electric drill, preparatory to blasting. Holes are drilled about six feet deep. 3. Placing explosive. Arrow indicates roll of powder being inserted. Other rolls lie on the floor. 4. Loading car by hand. 5. Loading car with electrically operated pick-up machine. 6. Electric locomotive hauling cars into mine. 7. Conveyor lines convey the coal and slate up from the jig tank (J) and deliver coal and slate into separate discharge chutes. 8. Screens grade the coal to commercial sizes, as lump, egg, nut and range. 9. Tipple at head of bituminous coal mine shaft. Here the coal is screened and prepared for the market. 10. Anthracite breaker. Coal from the mine enters the breaker through the inclined elevator at the left. (*Photographs by courtesy Peabody Coal Company and Anthracite Bureau of Information.*)

cover from the bed in open pits by steam shovels. The bed thus exposed is for the most part shattered by powder and the coal is shoveled into cars by hand, although in places it is picked up directly by small steam shovels.

Opposition to shooting from the solid has arisen because it is injurious to the mining property in that the heavy charges of powder weaken the roof and pillars, thus increasing the danger of falls of roof and coal—the most prolific cause of fatal accidents to coal miners. Another objection to this method is that the heavy charges of powder required to blow down the coal where it has not been previously undercut result in the production of a much higher proportion of fine coal and render the lump so friable that it disintegrates in handling and transportation. With the growing use of mechanical stokers and of powdered coal the latter objection is losing much of its force, but the danger has been in no wise diminished, and the method is forbidden by law in some of the coal-mining states.

Ages and ages of time were required to produce a bed of coal—some scientists say 20,000,000 years may not be far from a correct estimate. The locations where coal is now found were once in tropical climes, where vegetation grew even more profusely, perhaps, than it does today in our warm parts of the earth. Tree ferns grew to great heights—we know that from microscopic examination of coal; lesser fernlike plants, rushes twenty to thirty feet high, and club mosses in great profusion lived their day and decayed. Water covered them and in time they were buried under later accumulations. The mud in which they lay hardened and became land, and on this other dead vegetable matter was deposited. These processes continued through the ages.

Iron.—Iron is distributed widely over the surface of the earth. About one-twentieth of the earth's crust is iron. Most of it is scattered among the rocks and soils, giving them a reddish color. Iron seldom occurs in a metallic state, but usually in combination with some other element or elements. The important ores in use at the present time are: hematite, magnetite, siderite and limonite.

Next to coal, no other mineral is so important to our modern civilization. In fact it is an essential part of the nation's wealth. It has been said that the standing of an industrial people is exactly registered by the amount of iron it uses. The making of and consumption of iron for each individual in the United States amounted in 1820 to about 40 pounds. This rose to 175 pounds in 1870, 400 pounds in 1900, and to a little over 1,400 pounds per capita now. The graph on the opposite page shows the annual production of iron ore, pig iron and steel in the United States since 1870.

With the exception of Australia, every continent has a good supply. The Ural and Caucasus Mountains of Russia have the best quality of European ores. China is said to have extensive deposits, while smaller quantities are to be found in India and Japan. Africa has large beds of valuable ore, but the greatest amount of iron is produced in the three great industrial countries of the world, the United States, Great Britain and Germany.

In the United States iron ore is now mined in 26 states. Most of these states produced ore for flux only or for blast furnaces. The rank of the three states producing the largest quantity of iron ore is: Minnesota, Michigan and Alabama. The Minnesota ranges are producing more iron than all the rest of the states together, having furnished about 60 per cent of the total for the United States in recent years. The ranges in Minnesota and around Lake Superior are the Marquette, Menominee, Gogebic, Vermillion, Mesabi and Cuyuna ranges. The total quantity of iron ore mined from this Lake Superior district is about 59,000,000 tons per year. The Mesabi range alone produced 65.3 per cent of the entire production of the United States.



GEOGRAPHIC DISTRIBUTION OF IRON ORES

Forty years ago Pennsylvania produced more than any other state, but dropped to sixth place now. It must not be forgotten, however, that while losing rank as a mining state it still holds first place in iron making.

New York State produces over 900,000 annually. Wisconsin, Virginia and Tennessee also produce over 1,000,000 tons every year. Alabama is the chief iron producer in the Appalachian district for both mining and manufacturing. Alabama produces over 5,000,000 gross tons of iron ore each year.

Iron making does not center always in the region of ore production. Fuel has been the great factor that has determined the location of the iron and steel industry. The transportation of ore is much cheaper than the transportation of fuel, hence the lake and river ports located near the great bituminous coal fields have been the scenes of iron industry. Pittsburg is the chief of these as it is near the Lake ports and



GEOGRAPHIC DISTRIBUTION OF GOLD ORES

in the center of great deposits of coal. Allegheny County, in which Pittsburg is located, produces the larger part of iron and steel used in this country. Many ports on Lake Erie and Michigan have developed this industry of late years, particularly Buffalo, Cleveland, Gary, Joliet, South Chicago and Toledo. These cities have the advantage of being at the end of transportation of ore, thus saving the expense of reshipment, and are also but a short distance from coal fields. In the south, Birmingham in Alabama has a most strategic position, being near to both fuel and ore. Other centers in the south are Chattanooga and Knoxville.

The process of making iron as practiced by the ancients was slow and costly, but the principle was essentially the same as that of modern methods. They used a small forge through which air from a bellows was forced. Thus by heating the coal in these primitive forges to a temperature not reached by the ordinary burning of coal they succeeded in reducing the ore so as to obtain metallic iron. The blast furnace, however, worked a revolution in the iron industry; the once precious metal losing its value as its production was increased. The blast furnace is made up of a huge tower with a bulge at the bottom to permit expansion of the molten metal, a hopper at the top through which ore, coal and limestone are admitted, and an outlet at the bottom through which the air or blast enters and and another through which the spongy iron is drawn off. Iron prepared in the blast furnace contains small amounts of carbon, sulphur, silicon and manganese. This type of iron is known as cast iron and has the characteristic of great brittleness.

Another variety of iron is known as wrought iron. It is the purest variety of commercial iron, and is made from cast iron by burning out the impurities which the latter contains. This burning out of impurities is called puddling. Puddling is carried out in a puddling furnace which is lined with an oxide of iron; a flux is added and heat applied. The cast iron is soon melted and the impurities pass off in a gaseous form or in slag. Owing to its higher melting point, the remaining mass becomes pasty and in this state forms small lumps which are raked together into one larger one. The lump is then removed from the furnace and rolled or hammered into bars, the remaining slag being squeezed out in this process.

Closely allied to iron is steel, a product of far greater importance than iron itself. It is prepared chiefly by the Bessemer and open hearth processes, although recently the electric crucible gives a very high yield of the tool steel.

The Bessemer process is usually carried out in connection with the blast furnace since this saves many dollars in labor and fuel. The molten cast iron is run into a huge crucible, which can be tilted to receive the iron. The crucible is lined with silica and at the bottom it is perforated so that an air blast when turned on furnishes the necessary oxygen to combine with the impurities and pass off in a gaseous state. When the impurities have been burned out (and this can be determined by noticing the character of the flame issuing from the mouth of the converter) the desired amount of carbon in the form of high carbon steels or spiegel is added and given a sufficient length of time to dissolve in the molten metal. The steel is then drawn off into molds and the ingots so formed are hammered or rolled into rails and other objects.

But by far the most important process in the United States is the open hearth. It is by this method that the largest amount of steel is produced in this country. This kind of steel is made by putting molten iron in a basin and letting the gas flames beat over it for about ten hours. The flux and lining of the furnace play the same parts as they do in the Bessemer process.

For high grade tools a better quality is needed and this is met by the electric crucible process. Scrap steel usually serves as the raw material, being placed in a large egg shaped vessel. An electric

current is turned on and heat is generated sufficient to melt the scrap. A flux serves to get rid of the dirt. The desired alloy is then added and the steel is run into molds.

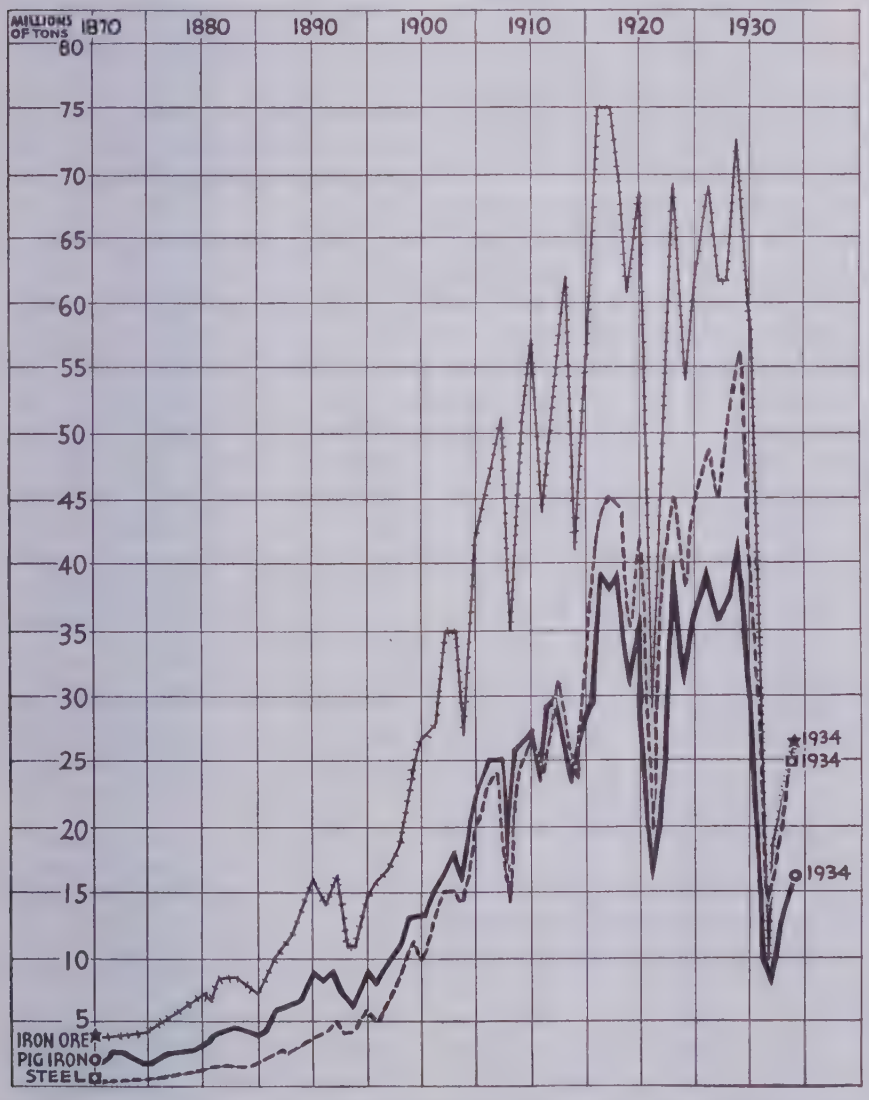
The properties of iron or steel determine its uses. Cast iron is hard and brittle and melts at about 1100 degrees Centigrade. It is rigid but not elastic and its tensile strength is small. It is used in making castings and cheaper grades of tools. Wrought iron has a fibrous structure, being composed of fibers of pure iron separated by slag. It is soft, malleable, and ductile.

While its tensile strength is greater than cast iron, it is less than most steel. Its melting point is much higher than cast iron. This variety is used considerably in the manufacture of horse shoes. It has a wider range of uses than cast iron, but is largely replaced by the cheaper grades of steel.

The properties of steel vary in its composition. A soft steel containing very little carbon and a hard one containing a great deal of that substance. Of course there are intermediate varieties accompanied by the alloyed steels which are almost infinite in number. It seems that whenever there is a need, the ever watchful chemist brings forth a new kind that will fit the particular need.

Steel has a very wide range of uses, but the principal ones are in ship building, bridge making, locomotive construction, and for frame work of large buildings.

What the future has in store for the iron industry is uncertain. It is known that iron ore is everywhere present. Probably the era of cheap iron is past and that only the fullest utilization of resources will keep it within the means of the rich and poor alike. The United States has much larger reserves of both iron and coal than any other country in the world, but the distances of transportation both for raw materials and finished products are usually greater. For example, ore, coal and flux are close at hand in the southern Appalachian district but the greater markets are far distant from this region. Only through the development of the southern states can the fullest utilization of this district be realized.



Annual Production in Long Tons, of Iron Ore, Pig Iron and Steel in the United States since 1870

Iron ore is both exported and imported from and to the United States. The quantity of ore imported into the United States per annum is about triple the amount of iron ore exported by us. As to the source of the imports, Cuba produces about 80 per cent of the ore, Canada nearly 15 per cent and small quantities come from France and the United Kingdom.

Of the iron ore exported by the United States the largest quantity is shipped to Canada and large shipments are made to England and Italy. The following table shows the amount of steel produced by several leading countries in the world in 1934.

	Metric tons
United States	26,055,000
Germany	11,740,000
Russia	9,246,000
United Kingdom	8,860,000
France	4,182,000
Belgium	2,900,000
Alsace-Lorraine	1,895,000

Petroleum.—Of the mineral fuels there is none more important than petroleum. Next to coal and iron it has probably contributed more than any other commercial commodity to the spread of civilization. In the early days it revolutionized the method of making light for the household. To-day the heavier part of this fuel is used for moving the machinery of the world and the lighter part for moving the gasoline automobile.

This important foundation to modern industry and commerce was first discovered in this country in southwestern New York and northwestern Pennsylvania in 1859, but is now found over a wide area throughout the world. For a long time the Pennsylvania fields were the most productive in this country, but oil is now found extensively in Oklahoma, California, Kansas, Texas, Illinois, Ohio, Louisiana, Wyoming and Kentucky. The rank of the various states in production in 1934 is shown by the following table:



GEOGRAPHIC SOURCES OF PETROLEUM

	Barrels
Texas	381,516,000
Oklahoma	180,107,000
California	174,305,000
Kansas	46,482,000
Louisiana	32,869,000
Pennsylvania	14,478,000
Wyoming	12,556,000
Arkansas	11,182,000
Kentucky	4,860,000
Illinois	4,479,000
Ohio	4,234,000
West Virginia	4,095,000
New York	3,804,000

Crude oil is used for fuel and for the prevention of dust on roads. From crude oil various oils are manufactured for lighting and other purposes. The principal products from the distillation of crude oil are naphtha, gasoline, kerosene, paraffin, white oils, gas oil, fuel oil, grease stock, pitch, asphalt and wax.

The United States leads the world in the production of crude petroleum. The countries of the world in order of their

production, according to statistics available recently are: The United States, Russia, Venezuela, Roumania, Iran, Mexico, Dutch East Indies, Colombia, Argentina, Peru, Trinidad, India, Poland, Germany.

Natural Gas.—Natural gas is perhaps the most perfect fuel that can be obtained. The country having the greatest known supply is the United States, and it is found in more than half the states in the Union. This commodity, like petroleum, is rapidly becoming exhausted and by some authorities it is believed that the present supply cannot last more than twenty or thirty years. In spite of this fact many hundreds of thousands dollars worth of gas goes to waste every year. The principal states in the production of natural gas are West Virginia, Oklahoma, Pennsylvania, Ohio, California, Louisiana, Kansas, Texas, New York, Arkansas, Illinois, Kentucky and Colorado. Gas is piped from many of the wells in the interior to many of the great industrial cities like Pittsburg, Toledo, Cleveland, Indianapolis, Detroit, and even to Baltimore.

Copper.—Another mineral which has a large place in commerce and trade is copper. Until the development of electrical work this mineral played a small part in the industrial and commercial world. Copper has been known for many centuries and was used principally for making of coins, but the universal demand for copper in electrical work has caused a greatly increased use of this metal in the past forty years. This great demand has caused the production of copper to be increased about threefold each decade since 1880.

Nearly sixty per cent of the world's supply of copper comes from the United States and is found in considerable quantities in Alaska. The states producing the most copper are Arizona, Montana, Michigan and Utah. Copper is also found in large quantities in California, Colorado, Idaho, Nevada, New Mexico, Oregon and Washington. The total amount produced in the United States is about 1,900,000,000 pounds per annum.

In South America the desert region north of Chile has a number of copper mines, making that country the largest producer on that continent. Peru is also an important copper producer as are Bolivia and Venezuela. These latter countries have not developed along this line to any great extent largely because they have depended so long upon pack trains to carry the raw material to the coast. The building of a railroad into the Andean Plateau will do much for this section.

In the old world Spain led in production of this metal usually producing over 99,000,000 pounds, while that of Germany was estimated to be about 88,000,000 pounds. Other countries that have considerable production in copper are Italy, Norway, Sweden and Russia.

PART II.

In this section discussion will be on the geographical influences of the various nations of the world. An attempt will be made to show that the economic development of nations has been largely affected by their geographical environment. Nations are great from the standpoint of commerce according to their facilities for the production and distribution of commodities. Nations that have productive soil, wealth of territory, favorable climate, raw materials and transportation facilities are most favored when they are populated by an energetic people. In fact, man is a most important factor in the study of economic geography for it is he who must take advantage of the gifts of nature in order to allow for the production and distribution of commodities.

The United States.—Perhaps the most important geographical fact relating to the new world is that it was discovered from the east rather than from the west. The Appalachian Ridge is a relatively low barrier and hence has been much less a hindrance in crossing than the Rocky Mountains would have been if the early settlers had landed on the Pacific coast.

In order to understand properly the geographic causes that have affected the full development of this country a brief study of the dominant surface features of the United States will be made at this time. The settlement and development of these sections have been greatly influenced by the topography of the land as well as this character of the soil.

(1) *The Atlantic Coastal Plain.*—This feature of the United States extends from southern Texas northeastward to Kentucky and then southeastward through Alabama, Georgia, and along the Atlantic coast to New York City and Cape Cod. In the southern portion of this section most of the cotton in the United States is grown, and here also is the densest negro population. The rich soils of this southern section had much to do with the aristocratic type of farming, in that it led to the plantation type of agriculture rather than the small farm type of the more rugged New England. It is not inconceivable that the roots of the Civil War were imbedded in the soil. The genial climate and rich soils of this region allowed slavery to exist here long after it was found to be unprofitable in the hilly and less fertile regions.

Further north along the Atlantic coast this region becomes a sandy plain, where there are extensive marshes and the soil is almost too wet to cultivate. Where the soils are better drained as in Maryland and Delaware we find this section given over to gardening and fruit growing, especially where there is plenty of marl and limestone.

(2) *The New England Hills.*—Here we find a hilly, rugged region sloping gradually from the Canadian border to the sea. The only lowland in this section is the Connecticut Valley where are to be found the richest soils. Most of this region has a thin and poor soil due largely to glacial action. No single staple crop was discovered for export from these parts, and hence the people turned at a very early date to manufactures and fishing in order to make a livelihood.

(3) *The Piedmont Plateau.* — The word "Piedmont" means foothills. This section comprises the hilly section immediately in front of the Appalachian Mountains. The higher lands have a relatively poor soil, and to-day this region is the center of fruit growing and mixed farming. Along its eastern edge many cities have grown up because of the power furnished by water. Cities like Atlanta, Columbia, Raleigh, Richmond, Washington and Trenton mark the passage from the smooth coastal plain to the foothills of the Appalachians. This line is often called the Fall Line and extends in a more or less distinct manner from Atlanta to Haverhill, Mass.

(4) *The Appalachian Mountains.*—This range of mountains extends from the borders of the Hudson Valley, in southern New York, to Georgia and Alabama. It contains many very fertile valleys because of the presence of a large amount of limestone in the soil. During the time of the Civil War, the confederacy depended upon some of these rich valleys for its supply of grain. A peculiar feature of this region is an almost continuous valley from New York State to Alabama. This is called by many geographers the Great Valley. This section was one of the first areas west of the Piedmont region to be settled. Here also are vast forests and much of the future supply of hardwoods come from this region.

(5) *The Cumberland or Alleghany Plateau.*—Just west of the Appalachian Mountains is a hilly and much dissected plateau. It extends from the Helderberg mountains of New York State in a southwesterly direction through southern New York, western Pennsylvania, West Virginia and southern Ohio and the larger part of Kentucky and Tennessee. The eastern section of this plateau is sparsely settled, except where minerals have attracted settlement.

(6) *The Lake and Prairie Plains.*—This region includes most of the area north of the Ohio River and east of the Mississippi River. Here is the most important agricultural territory in the United States. No other region is so rich in soils, or is so splendidly adapted to the needs of commerce. The navigable rivers and generally level country afford excellent facilities for transportation by water and rail, thus making this section one of the most accessible regions in the United States.

(7) *The Great Plains.*—Beginning at a point where the Missouri River turns east towards the Mississippi River there is a gradual rise in the elevation of the country until the Rocky Mountains are reached. This is the area of little rainfall and agriculture in many places has to depend on irrigation or on the cultivation of drought resisting plants like durum wheat or kaffir corn. This section is important as a grazing center.

(8) *The Rocky Mountains.*—This region covers for the most part the states of Idaho, Montana, Wyoming, Utah, Nevada, Colorado and parts of Arizona and New Mexico. Here agriculture does not flourish to any great extent due to the great height and steepness of the slopes. Perhaps it will best be noted for its fruit-bearing possibilities.

(9) *The Pacific Ranges.*—This region like that of the Rocky Mountains contains many rich valleys suitable for fruit growing. All parts, except Oregon and Washington, depend largely on irrigation.

The above divisions of the United States from the standpoint of the distribution of soils, will help us in the study of the various political divisions, for it is these political divisions that enable the student to understand the economic development of the people. The ordinary political divisions are usually classified as (1) North Atlantic States; (2) Southern States; (3) Northern Central States; (4) Western States.

THE NORTH ATLANTIC STATES

This region includes the New England and the Middle Atlantic States of New York, Pennsylvania, New Jersey, Delaware and Maryland. In this region flourish most of the manufacturing, trading and commerce of the United States. They contain about 28 per cent of the population of the entire country and produce about 50 per cent of the manufacturing, while their area is only about 5 per cent of the whole country.

Let us inquire into the reasons why this region is so largely devoted to manufacturing. Before the Revolution all of the thirteen colonies were agricultural, but as the population grew the soil of New England was not sufficient to support its increasing numbers. The fact that not more than one-third of New England is fit for the plow made it imperative that people turn to some other activity than agriculture for a livelihood. The broad continental shelf which reaches out into the Atlantic Ocean from the North Atlantic coast afforded an excellent fishing ground. Here the herring, halibut, lobster and cod thrive in abundance. The necessity for food and the presence of so rich a fishing ground naturally turned the attention of the people to this business. The most important oyster beds are in Long Island Sound and the Chesapeake Bay. The cod and the oyster are the most important fishery products in this section. The cities leading in the commerce and trade of fish are Baltimore, Boston and Gloucester.

Manufactures took root in this section for an economic and a geographic reason. In the first place there are too many people to feed from the products that the soil of this section can produce. The geographic reason for the concentration of manufacturing in this region is the presence of abundant mechanical power. Most of New England slopes from the Canadian border toward the Atlantic, causing its rivers to be swift, forming rapids and waterfalls in many places. The same is true of the streams in the states between the Hudson and Potomac rivers. The most important of these waterfalls is the great falls of Niagara. This great fall will be a potent factor in making Buffalo a great commercial center in the future. The great amount of water power in New York State is one of its most valuable assets. The Hudson, Mohawk, Genesee, Black, Seneca, Chemung, and Alleghany rivers afford a constant supply of water that can be harnessed for industry when coal has become exhausted or becomes too expensive for economic use in industry.

Perhaps the chief reason for manufacturing in this section is the great supply of coal, especially in Pennsylvania.

Types of Manufactures

Textiles.—It was but natural that the cotton and woolen mills should seek out this section because in the early days water power was the most important factor in determining their location. Of special importance in this industry are the cities of Fall River, Manchester, Fitchburg, Lawrence, Lowell, Pawtucket, Woonsocket, Providence and Philadelphia. Also such cities as Cohoes, Amsterdam, Little Falls and Utica in New York State. Fall River has the most advantageous position of any city in the country because it has both water power and ocean transportation which probably goes a great way toward making it the greatest cotton manufacturing city in the country, if not in the world. The center for woolen industries is Lawrence, Mass., but carpets are largely made in Philadelphia, Yonkers, Morristown and Camden, New Jersey.

Silk.—The center for silk manufacturing in the United States is Paterson, New Jersey. This industry centers here because power is derived from the falls of the Passaic and also because it is near to the greatest silk market in America, namely New York City. Another potent reason for this industry locating here is because in the early days some Italian silk workers settled in this district and followed the trade they had learned in the old country. This industry is, however, quite widespread throughout the entire north Atlantic region, and especially near the city of New York. Other cities that manufacture considerable quantities of silk are Hoboken, Jersey City and Philadelphia.

Boots and Shoes.—The presence of so great a forest in the early colonial days furnished bark for tanning leather. The state of Massachusetts leads all other states in the manufacture of boots and shoes. The two cities of Brockton and Lynn together produce as many shoes as any two states outside of Massachusetts. Haverhill and Boston are also important cities in this field. There is a gradual western tendency in this trade and some cities in New York, like Rochester and Binghamton, hold an important place in the manufacture of shoes. The tanning of leather is largely carried out in such cities as Philadelphia, Salem, Peabody, Woburn and Boston. Boston is the greatest leather market in America.

Gloves.—Another important leather industry in this section is that of making gloves. For no other reason than that the industry had an early start in this section, Gloversville and Johnstown in Fulton County, New York hold first place in the United States. From these two cities, lying so close together as to form a unit, is furnished more than fifty percent of the gloves manufactured in the United States. The impetus of an early start due to the fact that some Scotch glovemakers first settled here was the chief factor causing this industry to locate in this section. The fact that skilled labor and capital interested in this industry are settled here, is the main cause for keeping the industry in these cities. In no other manufacturing city is the whole life given over to a single industry as much as in Johnstown and Gloversville. On almost every street in these cities are factories, some large and many small. Every householder who has a barn or outbuilding utilizes it for the manufacture of gloves.

Collars and Cuffs.—In the city of Troy in New York State is another illustration of an extreme concentration of one industry in a city. According to government reports about 75 per cent of the collars, shirts and cuffs manufactured in the United States are made in Troy. There is no geographic reason why this industry should locate here, but the fact that the labor and capital necessary for this industry are here in abundance is the chief factor in keeping Troy supreme in collar making. It is said that detached collars and cuffs were first invented in Troy, and on a house in third street, Troy, is a tablet bearing this legend. "In this house probably before 1827, detachable shirt collars were first made, and the collar industry originated, by Hannah Lord Mantague 1794-1878. (Mrs. Orlando Montague-inventor-manufacturer.)" So prominent is Troy in this line of work that even the names of laundries in other towns are called Troy Laundries. Glens Falls, a little farther north on the Hudson, also manufactures collars and cuffs to some extent.

Clothing.—This industry has centered in the north Atlantic region largely because of the fact that most of the largest cities in the United States are in this section. To be sure, there is a tendency westward in this industry, but New York City will long hold predominance in this article. The presence of a large supply of cheap labor, recently immigrated from Europe and used to a lower standard of living, makes New York a most favored place from the standpoint of the manufacturer. There is also another advantage in locating the clothing industry here, namely, nearness to a market. In the country as a whole New York stands first; Chicago, second; Philadelphia, third and Baltimore, fourth. Another city in the east that holds an important place in this industry is Rochester, N. Y.

Mineral Industries.—New England is the center for much of the building stone used in this section. Granite is quarried to a considerable extent around Quincy, Mass., and marble is found in abundance at Proctor, in Vermont.

Special Manufactures.—New England is sadly lacking in coal, but in many lines of manufacture, she owes her predominance to experience, skill, and the presence of capital. In many of the industries in this section the labor enters into manufacturing more than nearness to raw materials. Hence we find such special machinery as bicycles centering in Hartford, Conn., firearms in New Haven and Springfield, machine tools in Worcester, ammunition in Bridgeport, brassware in Waterbury and Ansonia, plated silverware in Meriden, watches in Waltham and cutlery in Walden, N. Y. These lighter wares are more dependent on skilled labor, needing very little raw material; hence nearness to coal and iron is not so importnat a factor as in the making of steel.

Gas, Oil and Coal.—The supremacy of this region in population, manufacturing and commerce is due for the most part to the fact that they are near to the great natural fields of mineral fuels. A glance at the map of eastern United States will show that the leading cities of this country owe most of their growth to their accessibility to the coal and oil fields of Pennsylvania. The great city of Pittsburg, no doubt, owes its position to the fact of the junction of two rivers, the Alleghany and Monongohela, but its growth is due to the presence of the great field of bituminous coal. As stated elsewhere, this mineral is a potent cause in the making of Pittsburg a great iron and steel manufacturing city. The district including the cities of Alleghany, Newcastle, Youngstown, Buffalo, McKeesport and Wheeling leads in the production of iron and steel in the country. Iron is also an important item of manufacturing in the cities of Trenton, Allentown, South Bethlehem, Harrisburg, Steelton and Reading.

The oil and gas fields of this section have for some time given first place to the wells of the west, but in the early days these important mineral fuels played an important part in the development of the states of New York, Pennsylvania, Ohio and West Virginia.

Seaports.—One of the most important physical features that a country can have is a wealth of coastline. The Atlantic seaboard, expecially that of the northeastern section of the United States is well favored. Here is a broken coastline affording not only excellent harbors, but also opening into the interior through the medium of navigable rivers. The Middle Atlantic states are better favored by nature than New England, in fact this region is more favored than any other in the United States in this respect. Along the New England coast we find innumerable

harbors affording good sites for cities. However, the cities of New England, like Portland, Boston and Providence, do not have the commercial importance of New York, Philadelphia and Baltimore. This is due in no small measure to the fact that the direction of the valleys in New England is north and south rather than east and west. This territory is a natural outlet for much of the region in the St. Lawrence Valley. Portland, Maine, and Providence, Rhode Island, are the natural seaports of Montreal and Quebec, but an artificial international boundary line prevents these cities profiting from a natural geographic location.

Of the cities in New England, Boston is the most important. It is the principal seaport of New England. In the early days there were other cities of more importance in New England than Boston. Salem for some time was considered the more important city, but due to the deep harbor at Boston and the fact that later Boston became the terminus of the railroads running to the west, thus giving this city a share of the western trade, enabled her to surpass other New England cities. This city has now become the financial center for most of the New England mills. It is also a great leather and wool market, and despite the fact that it is located far from the stock raising regions there is considerable slaughtering of meat animals. In the matter of foreign commerce Boston ranks fourth, handling little over five per cent of the foreign commerce of the United States. The barrier of the Berkshire has turned much of the east and west trade from Boston thus limiting the hinterland of this city almost wholly to New England. Fine metallic goods, such as tools, watches and jewelry, are the manufactures appropriate to this old and conservative city. As a business center Boston includes many cities lying close by, such as Somerville, Cambridge, Quincy, Charlestown and Everett. Were these cities to combine into one great city as have the municipalities near New York and Chicago, Boston would without doubt rank as the second city in population in the United States.

The other seaports of this region are not important commercially but are rather given over to industry. The principal ones are Providence, Fall River and New Haven. Portland should also be mentioned in this connection. These cities have excellent harbors and are located at the mouth of large streams, but due to the size of their tributary areas and the northern direction of the valleys their growth and economic importance has been much slower than the more favored cities to the west of the Berkshire Hills.

Crossing the Berkshires we come into the Hudson Valley through which one of the most magnificent rivers in America flows. At the mouth of this river is a site unequalled for the location of a large city by reason of a large, deep harbor offering hundreds of miles of wharfage. It is of easy access to the interior of the continent. Here is the natural focusing point of the commerce of both land and sea. It is but natural then that a great commercial metropolis should grow up in this region and that New York City is the largest city, on this continent. The Hudson-Mohawk depression leading north and west into the heart of the continent gave New York the best natural connections with the interior, and after the opening of the Erie Canal in 1825 added the Great Lakes region to its local hinterland, enabling it thereby to surpass the cities of Philadelphia and Boston, which up to the beginning of the nineteenth century were considered the most important, in size and commercial activities. It is now the greatest commercial port in the western hemisphere if not in the entire world. According to latest reports over fifty per cent of the commerce of the United States passed through New York. The lowest pass in the Appalachian barrier is located on the Hudson-Mohawk route at Rome, New York, which has an elevation of only 445 feet above sea level, thus affording a cheaper route for the construction of railroads and canals to the interior. The supremacy of New York in trade and commerce is due not only to the fact that it has an excellent harbor but also to the economic fact that it is the point located where the cost of shipping from the interior is lower. Comparing the summit elevation of the New York Central route of 445 feet with that of the Pennsylvania and Baltimore & Ohio railroad elevations of over 2,000 feet, the reader can easily visualize the fact that the Hudson-Mohawk route is called the eastern gateway of the continent, affording a line of cheaper cost of transportation.

New York City is a center of general industry. However, because of its varied interest New York is also the leading financial and banking center of the entire country. Its manufactures are many and varied, although clothing manufacture is perhaps the leading one. The output of clothing in New York City amounts to over half a billion dollars yearly. Printing and publishing hold an important place in this city. In fact no other city approaches New York in this respect. New York is also a great retail and wholesale trade center. Geographically New York includes all of the urban population of northeastern New Jersey, Long Island and Westchester County. Tunnels connect the island of Manhattan with New Jersey and Long Island so that now the Pennsylvania Railroad runs its trains into and through New York proper to Long Island. This has enabled the railroad to compete with the New York Central which for many years was the only western trunk line entering into the heart of the great city.

The second seaport of importance in this region is Philadelphia. This city, although located on the Delaware River, is virtually a seaport, and in colonial times was the metropolis of the country. With the coming of the era of railroads, the mountain barriers to the west, cost it its preeminence as a metropolis as well as a leading commercial city. Another factor that has caused this city to be second to New York as a foreign trade center is that the harbor is not always ice free as is the case with New York harbor. The interests of Philadelphia are, therefore, industrial rather than commercial. Here we find large textile industries. This city is now the greatest textile manufacturing city in the country. The refining of sugar and petroleum and the manufacturing of locomotives and shipbuilding also hold a large place, and are characteristic of this city. It has also an advantage in being connected by a great railroad with Pittsburgh and the west thus attracting to it some of the trade of that region. According to the last census reports only a little over four per cent of the commerce of the country passed through Philadelphia.

Baltimore also has the advantage of deep tidal waters and is a seaport of considerable importance. It has the advantage of being the port nearest to the upper Ohio Valley, but mountain barriers lower the value of this proximity. As in the case of Philadelphia, the hinterland of this city is limited to portions of southern Pennsylvania and Maryland. It is a manufacturing city of considerable volume. Typical industries are tobacco, the canning of fruit fruit and vegetables, and oysters.

Transportation Routes.—People, like rivers, seem to search for a way to the sea. Since the very early colonial days the settlers have gradually sought out the best routes for reaching the interior and finally of reaching the western seacoast. The earliest routes were of course the Indian trails which in the main followed the valleys and streams. The building of roads followed somewhat these old trails, although some of the great east and west turnpikes ignored the valleys and easier routes and were built in an almost direct east and west direction over hills and down valleys, with no thought of seeking out a level route. The Mohawk route, though the more level route, was not the one followered by many settlers from New England in the early days. The more popular routes of those days were Cherry Valley and Skaneateles Turnpikes through south central New York. Another route was from the Susquehanna west to Pittsburg at the junction of the Alleghany and Monongahela Rivers. Later came the era of building canals which became important factors in the development of the regions affected. The principal canal today, however, is the Erie Canal through New York State. This has lately been enlarged and though still unused to any extent could play an important part toward the lessening of freight rates in the carrying of such commodities as coal, lumber, wheat and salt. This canal was a potent cause in the growth of many of the now large cities in New York State, especially Schenectady, Utica, Rome, Syracuse, Rochester and Buffalo, although their rapid development and growth is due more to the building of the railroads.

The railway routes of this region present an interesting study of attempts to search out the lowest passes to the west. The New York Central route has the advantage over all the other eastern railways in this respect. This low pass through the Appalachian Mountains enables this road to lead in the carrying of passengers and freight. Also it is freer from curves and grades, which gives it better profits from its carrying trade. A close competitor of the New York Central is the Pennsylvania Railroad system. This great system has branches in nearly all parts of Pennsylvania and western New York. Its main line, however, running from New York, Philadelphia and Pittsburgh to Chicago, enables it to tap the very region sought by the New York Central. Perhaps the third important line of this region is the Baltimore & Ohio which finds its way through the passes near the Potomac River. Other important railroads of this region are: The Delaware & Lackawanna connecting New York and Buffalo, running through New Jersey and northeastern Pennsylvania to Binghamton and the west; the Lehigh Valley, connecting New York and Buffalo in almost a parallel route with the Lackawanna; the Ontario & Western,

running from Weehawken north to Cornwall and then in a northwesterly direction to Oswego on Lake Ontario; while the Erie connecting New York with Chicago, finds its way through the valleys of the Delaware and Susquehanna rivers and then through the Chemung Valley of southern New York. Most of these last named roads are not important as passenger carriers but do play an important part in the carrying of freight. All of them pass through either rich farming sections or through mining sections.

Erie Canal.—The Erie Canal (commonly known as the Barge Canal), extends across the state from Troy to Buffalo. Officially the route commences at Congress Street, Troy, and follows the Hudson River through the United States Government lock to Waterford, where the westward turn is made. A land cut of two miles in length is utilized to the Mohawk River, into a pool created by the construction of a fixed concrete dam. The Mohawk River at the canal channel entrance is at an elevation of 169.5 feet above the surface of the Hudson River at Waterford and is 184 feet higher than sea level at Albany. From this point navigation is carried through the canalized Mohawk River, with short land cuts at intervals, to Frankfort; thence through an artificial channel paralleling the Mohawk River to Rome and, crossing the divide, enters the Oswego watershed, ten miles west of Rome, and following Wood Creek for five miles, reaches the eastern end of Oneida Lake. This lake is the largest natural body of water in the canal system, the channel stretching across it a distance of twenty-one miles to Brewerton at its western end. From Brewerton, the Oneida River is followed to its junction with the Seneca River at Three River Point; thence through the Seneca River to the Clyde River, through the Clyde River to the foot of Lock No. 27 at Lyons. Here the bed of the Ganargua Creek is utilized with frequent land cuts, to Palmyra, from which place the channel lies in the former Erie Canal, widened and deepened, to a point just west of Pittsford.

An artificial channel extends to the Genesee River, which is crossed about two miles south of the Rochester terminal on a pool created by a movable dam, and traffic enters what is locally known as the 60 mile level, consisting of an enlargement of the former Erie Canal to Lockport.

At Lockport, by means of two combined locks, navigation is raised 50 feet to the elevation of the Niagara River, and thence an artificial channel is utilized to Tonawanda Creek. The canalized creek is followed to its junction with the Niagara River at Tonawanda. Through the Niagara River traffic passes to Lake Erie at Buffalo, the vessels being raised to the level of the lake by the United States Government lock at Squaw Island.

The distance from Congress Street, Troy, to Lake Erie at Buffalo is 355 miles, of which 215 miles lie in natural waterways and 140 miles through artificial channels. Sixty municipalities are touched on the line of this improved canal, while forty-four others located on the Hudson below Troy have the benefit of its service.

The canal has been deepened to a depth of twelve feet. The width of the new canal varies according to the section traversed. Through the canalized rivers and lakes the channel is at least 200 feet wide. Through rock cuts in land lines a minimum bottom width of 94 feet has been provided, and through earth sections 75 feet.

No fixed bridges have been constructed over the new canal channel at less than 15 1-2 feet above the level of the water when at its highest ordinary navigable stage.

The dimensions of the new locks on all improved canals have been made identical so far as practicable. The length of the lock chamber from the lower gate to the breast wall is 310 feet, which, considering the operation of the gates, will permit the locking of a barge 300 feet long. The width of the lock chambers has been planned at 45 feet, and this has practically been accomplished. The width of the United States Government lock at the eastern terminus of the canal system at Troy is 44.44 feet, and this must govern.

To maintain an adequate supply of water to support canal navigation many sources are utilized. From Lake Erie and the Niagara River the water finds its way through Tonawanda Creek (whose natural flow has been reversed) into the canal channel, and as far east as Lock No. 29, at Palmyra. Thus, navigation is dependent solely on the Lake Erie supply.

At Palmyra the channel lies in the bed of the Ganargus Creek, whose line is approximately followed to Lyons, where the western feed is supplemented by the discharge from the outlet of Canadaigua Lake.

At Lyons, the Ganargua Creek and the Canandaigua Lake outlet unite to form the Clyde River, which is canalized to its junction with the Seneca River just east of Lock No. 25 at May's Point. Through the Seneca River come the waters from the great natural reservioirs, Cayuga and Seneca Lakes.

The line of the Seneca River is then followed easterly, utilizing Cross Lake, to Three River Point, where it meets the Oneida River to form the Oswego River flowing northly to Lake Ontario at Oswego. Broadly speaking, it may be said that at Three River Point the flow of water used for canal purposes changes from an easterly to a westerly direction, and navigation passes thence through the Oneida River upstream to Oneida Lake, which in itself affords a splendid highway for traffic.

East of Oneida Lake is reached what is known as the summit level, extending from Lock No. 21 to Lock No. 20 at Whitesboro. The channel between the locks named is at an elevation of 420 feet above sea level, as compared with the Niagara River which is at an elevation of 560 feet.

In this section exists the most difficult problem from the standpoint of water supply, and to insure an adequate boating depth in the areas to be served four systems of reservoirs have been created. These are located in Madison, Onondaga and Oneida counties, as well as in the Adirondack Mountains. The enlargment of the canal channels made necessary the construction of two new reservoirs, namely, those at Delta and at Hinckley. The Delta Reservoir, located about four miles north of Rome, covers an area of 4 1-3 square miles and has a storage capacity of over two billion cubic feet of water. The Hinckley Reservoir is situated near the village of Hinckley, in Herkimer County. When the water is at the crest of the dam an area of about 4 1-2 square miles is covered, providing a storage capacity of approximately 3,445,000,000 cubic feet.

From the standpoint of water supply and probable number of lockages which would be required with maximum use, the capacity of the improved canal system is estimated to be sufficient for the transportation of 20,000,000 tons per season. The movement of freight by water is the cheapest method of transportation and it is of the highest interest to trade and commerce that so great a competitive influence as the New York State Canal system should be maintained. Water transportation furnishes trade to the surest regulatory influence on freight rates.

THE SOUTHERN STATES.

South of the Potomac River, extending westward, including the States of Oklahoma and Texas, is the region usually called the the southern states. No other region of the United States has been so little affected by immigration from Europe. Here we find a larger percentage of people who are directly descended from the first settlers than in any other section. This region includes the broad coastal plain stretching from North Carolina around through Texas and even north to the junction of the Ohio and Mississippi Rivers. The early settlers of this region were mainly of the English gentry stock, with sprinklings of Scotch-Irish as well as some Spanish and French. No doubt the racial characteristics of these early settlers have had much to do with the economic development of the southern states. Some other factors that have played an important part in this development are as follows: soil, surface, forests and climate.

Soil and Surface.—The soil of the southern lowlands near the sea is of a sandy variety and is the region of much of the lumber industry of this section. Tobacco has also been an important product. The soil of the Mississippi is very low and has a very high fertility. This great plain is over six hundred miles long and thirty to sixty miles wide. In the uplands we find a soil much less fertile, with the exception of portions of Kentucky and Tennessee. As a consequence, slavery never had the strong hold upon this section that it had in the less fertile regions of the southern states. Hence this lower region became the section of large plantations where the soil's fertility made slavery a possibility, whereas in the higher and less fertile regions it proved to be uneconomic long before the civil war.

Climate.—It is commonly supposed that the southern states have a very warm climate, and in the early days it was thought that no white man could endure toil in such climate. As a matter of fact the south has nearly every variety of climate from the subtropical variety of Flordia and the Gulf Coast to a temperate climate in the uplands. The climate of New York state reaches down into the high lands of Georgia and the grains and fruits of the more northerly states flourish in abundance in this southern upland. This upland south is fast becoming an industrial section, rather than purely agricultural, and it has long been demonstrated that even in the lower south the climate is not as enervating to the white man as was orginally supposed. To-day much of the rice and sugar of Louisiana and Texas is raised by white men. Most of these men, however, are Italians, former residents of a warm, sunny region in Europe.

Forests of the South.—The timber belt of this region shows two distinct divisions. In the first place the yellow pine and cypress trees are found on the sandy plains and the swampy lands along the rivers. On the slopes of the Appalachian ranges is to be found the largest body of merchantable hard wood in the United States. The chief varieties growing here are oak and poplar, chestnut, sycamore, hickory and

black walnut. One would look for some city in the near vicinity to be the chief port for lumber and to a certain extent this is true, for Memphis is now one of the principal centers for hard wood lumber as well as Newport News and New Orleans.

From the distillation of sap of the long leaf pine trees of this region are obtained two valuable by-products, namely turpentine and rosin. These products are very important in the manufacture of paints and varnishes. By a further distillation of the wood there is produced a kind of tar, which when further boiled down produces pitch. Over 63 per cent of the world's supply of turpentine is produced in this country.

Cattle and Swine.—The upland region where corn is raised in large quantities is also the region of swine raising. From this section the variety known as the "razor back" has developed on account of the fact that it has wandered in a semi-wild state, getting its food in the woods and fields.

Two sections of live stock raising are to be noted. The upland valleys of Tennessee and Kentucky raise many cattle, but have long been noted as the favorite breeding place of race horses. The second region is on the plains of Texas where the former long-horned steer has been largely replaced by the better varieties of the short-horned species. The vast grassy plains of this semi-arid region afford an excellent pasturage for cattle. This is another example of how climatic and topographic features affect the activity of a given region.

Tobacco.—The early colonists of the southern states had no staple product which they could export to England in return for other goods. Nor was power to be had in their streams for the development of manufactures which they might export. The mother country wanted nothing that could be raised at home, and as a consequence the Jamestown colony was about to fail because of its inability to secure a money crop. The crop that saved New England was corn which could be grown even on the thin, poor soil of that region. The southern settlers like the New Englanders had to learn from nature how to thrive in the climate and surroundings of the new world. It was early discovered that this region would grow tobacco, which crop was beginning to be in great demand among Europeans. This crop, which is indigenous to America, is one of the three contributions in the agricultural field that America has given to the world. It soon became evident that the growing of tobacco would furnish a valuable money crop, and for almost two hundred years after 1620 tobacco was almost the sole commercial crop of this region. It is still the chief crop of the upper south and the lower boundaries of the south. Tobacco growing is by no means confined to the south, for there are many profitable regions to be found, especially in the Connecticut Valley, southern New York, Pennsylvania, Ohio and Wisconsin. No plant is more affected by the soil and climate than this one. Each district seems to produce a distinct quality and hence we come to know of the various tobaccos as Virginia leaf, Connecticut leaf or Kentucky leaf. The United States is the greatest grower of tobacco in the world. Over one billion pounds were grown in this country yearly. The increase in the use of tobacco has been most surprising. At the present time, next to the Belgians and Dutch, Americans are the greatest consumers of tobacco. As Professor Smith says in his Industrial and Commercial Geography: "Its use has spread faster than any language or religion, and is found throughout the realms of civilization and barbarism."

Despite the fact that this crop has been an important money crop, it has been most injurious to the soil. Because of the large and profitable returns to be obtained, farmers have continuously planted the same field year after year to this crop until the soil has been exhausted. This fact accounts for the poor condition of much of the soil in Virginia and North Carolina. The practice of crop rotation, as is done in regions of mixed farming, would do much to restore the fertility of these worn out tobacco farms. This has been done in some of the northern states, notably in southern Pennsylvania, where splendid crops are grown on small farms. The principal states in the production of tobacco in the southern states are in the order named, Kentucky, Virginia and North Carolina. Louisville in Kentucky, located near the tobacco fields, is the greatest tobacco market in the world. In the eastern section of the southern states markets of considerable note are Richmond in Virginia and Winston-Salem in North Carolina.

Cotton.—The cultivation of cotton was begun in the United States during colonial times, but owing to the slow method of separating the seeds from the fiber the commodity was too high to be used for the manufacturing of cloth for the millions. However, after the invention of the cotton gin by Eli Whitney in this country, and of spinning machinery in the old country this crop began to increase. The work of the cotton fields was simple and required no skilled labor of any kind and almost no tools. This made it adaptable to slave labor and completed what tobacco had started by firmly establishing in the south the plantation system of agriculture and the employment of slave labor. These two factors tended to create an aristocratic type of society based on the land, and also became dominant factors in the economic and political life of the south. It has been said that the causes of the civil war were rooted in the soil and climate which separated the interests of the southern people in many ways from those of the northern people. In an economic way we can note that their ideas are vastly different, for the New England cotton manufacturer demands a tariff on imported goods to protect himself against the European manufacturer, while the southern planter, who buys his manufactured goods, is injured by such tariff and naturally opposes it. The soil, climate and social conditions also have had much to do with the maintenance of the so-called "solid south" in the political field.

The United States is to-day by far the largest producer and exporter of cotton and cotton products of any country in the world. Over 65 per cent of the world's supply of cotton is produced in the United States. Cotton grows in all of the southern states from Texas to Virginia. The leading states in point of production are Texas, Mississippi, Alabama and Georgia. The principal ports for the shipping of cotton are Galveston in Texas and New Orleans in Louisiana.

Cotton is the one crop that is still largely cultivated by hand. Great improvement has been made in the growing and harvesting of such crops as hay, oats, wheat and corn by the aid of mechanical improvements. At the present time man can grow more cotton than he can pick. There have been attempts to invent a cotton picking machine but up to the present it has not proved to be a practical device. If this machine should be perfected its economic effect could be but little less revolutionary than that of the invention of the cotton gin in 1795. In addition to increasing the area of cotton production and the consequent cheapening of clothing, it would drive to the city the negro, who would then be of less use and demand on the cotton plantation. It might perhaps change the complexion of the famous "black belt."

Other Agricultural Products. — Everywhere in the south corn is grown largely as a supply crop. In the uplands this has long been used as a staple food crop, and the term corn-fed has long been applied to the sturdy mountaineers of these sections. Near the coastal plain sweet potatoes grow in abundance especially in those regions in the eastern section that are frost free. Peaches are to be found in abundance in the Piedmont Plateau in Georgia and the Ozark mountain region of Arkansas. Sugar cane is a tropical and subtropical plant. Its cultivation is confined largely to the gulf states, and Georgia and South Carolina. It has been the leading crop in Louisiana for over a hundred years. Louisiana grows almost 90 per cent of the total crop of sugar cane in this country, producing yearly over 700,000,000 pounds.

Peanuts grow over a wide range of country in the southern states. They are found as far west as Texas, but Virginia leads in the amount produced. Norfolk, Virginia, is the leading market for peanuts. Orange growing has been carried on with some success in Florida, though the cultivation of this crop is much more precarious in this state than it is in southern California, where there have been but two frosts in the last twenty years. Florida also produces other sub-tropical fruits in the shape of pineapples and even the cocoanut and banana will mature in the southern section of this peninsula. Perhaps one of the most important commercial products grown in this state is the grapefruit. This has become a most important part of the breakfast menu.

Minerals.—Aside from the coal deposits in the Appalachian Ranges the supply of minerals in the southern states is not very large. Iron is mined and smelted at Birmingham in Alabama. This city has a double advantage over other smelting centers in that it is located in the fields of ore as well as fuel.

There is, however, one important mineral product in the south which is of considerable economic value, namely phosphate. This mineral is one of the three most sought after minerals. Without phosphate, potash and nitrate it would not be long before the soils of the agricultural sections of the world would become exhausted. In the southeastern section of this country is the greatest known deposit of phosphate rock, and because of its vital importance in the fertility of the soil these deposits are one of the most important mineral resources of the country. The states of the south having the greatest deposits of this mineral are South Carolina and Florida. It is also found in considerable quantities in Tennesee and Arkansas. According to data and figures obtained from the Bureau of Mineral Resources this section of the United States produced nearly three million tons of phosphate in the year 1920, which is considerably over

50 per cent of the production of the entire world.

Texas, California, Louisiana and Utah are the leading states in the production of sulphur.

The United States produces annually about 1,600,000 long tons.

In the matter of mineral fuels the states of Texas and Oklahoma hold an important place. Next to the state of California the state of Oklahoma produces more petroleum than any other state in the nation. There are also large areas of oil fields in Texas which have brought considerable prosperity to that great state.

Manufactures.—While the south has been backward in the matter of manufacturing, it is slowly beginning to develop along that line. The south has been distinctly agricultural and is so to a large extent to-day. However, there are in the south to-day two very important factors in the development of manufacturing, namely plenty of raw materials and power in the shape of fuel and water. The great cotton fields of the south can furnish abundant material for the factories right at home, and thus save considerable in the matter of transportation; lumber is also to be found in abundance. The coal of the mountain ranges and the water falls of the uplands and Piedmont sections will be a source of power for years and years to come.

The manufactures of the south, therefore, are for the most part concerned with raw materials of local origin on which freight charges would be high if shipped to any great distance. Thus we find the lumbering industry located near the forested regions centering in Little Rock, Arkansas and Montgomery in Alabama as well as Memphis in Tennessee; leather goods at Waco in Texas and packing-house products at San Antonio and Fort Worth, all of which cities are located near the great pasture lands of Texas; sugar refining is carried on in New Orleans; the iron industry at Wheeling in West Virginia and Birmingham in Alabama; tobacco at Key West in Florida, Richmond and Petersburg in Virginia and Winston-Salem and Durham in North Carolina.

It is in the cotton industry that the south should have its greatest opportunity. Here we have the center of location of raw materials, plenty of power and a supply of cheap labor. With the building of railroads north and west and the increase of her own population, the south is no longer isolated, but is also near to the great markets of the east and middle west. These advantages should go a long way toward shifting the center of cotton spinning and manufacturing from the northeastern section of the United States to the southern section. Many cotton mills are already established on the Fall line, where the water falling from the Piedmont Plateau to the low coastal plain furnishes abundance of power. Thus we find the industry developed in such cities as Columbia, South Carolina; Raleigh, North Carolina and Augusta and Atlanta, Georgia. These mills have a further advantage in being able to draw on a cheap supply of labor from the poorer uplands of these states. According to latest statistics the Carolinas ranked next to Massachusetts in cotton manufactures.

Cities.—Because of the agricultural tendencies of the south, the population remained almost stationary during the nineteenth century. The cities of the south have been slow to feel the impulse of the new development which took hold of the rest of the country during the middle decades of that century. Affected so little by immigration the cities of this section were of slow growth and of a very conservative type. Another factor that has left the south behind is that the movement of peoples has been east and west, and with the large numbers of Europeans coming to this country very few found their way into this section. Then, too, the Appalachian Mountains in this region are a more formidable barrier, affording fewer passes that can easily reach into the interior. This fact is a vital one, and accounts for the reason that Savannah, Atlanta and Richmond are not the important commercial centers that New York, Philadelphia and Baltimore have become.

Then, too, the coast of this section is not so advantageous to commerce as that of the more northern section. Most of the coast line is straight and is fringed in many places with sand bars and reefs which make it impossible or difficult to find a landing place. Hence no harbor such as the northeastern section shows has developed.

The rural character is further shown when it is pointed out that there are only seven cities in this entire region having a population of over 100,000. Compare this with the fact that in New York State alone there are 7 cities of over that number. Furthermore, of the cities having a population of 25,000 or over Texas has eight; Tennessee and Georgia, four each; Virginia, two, and the others, with the exception of Mississippi, only one.

The metropolis of the South is New Orleans. This city holds a unique place among the American cities in that it is a river port and a seaport at the same time. Its elevation is only about ten feet above sea level, and is below the top of the levee. Here is an example of how man has mastered an unfavorable natural location and made it a fit place for a dwelling. The river at this point is about one mile wide, affording an excellent harbor with plenty of wharfage. The city owns and controls the docks and terminals.

New Orleans holds one of the most strategic positions of any of the cities in the United States. It is the natural outlet of the entire Mississippi Valley, and in all probability had it not been for the fact that the western section of this valley was in the possession of a foreign nation at the time of this nation's birth, New Orleans would have become the most important shipping center in the country. Even in the early days statesmen and politicians, especially of New York city, saw that New Orleans was its natural competitor for the trade of the then great unsettled middle west. This fact was a potent reason for the building of the Erie Canal, which tended to turn the trade away from the river to the lakes and canal to New York.

The port of New Orleans is accessible to the largest steamships. The fact that it is farther from Europe than New York mitigates somewhat against its taking any great share of that trade. However, its position with reference to the West Indies and South America is most favorable and with the further development of trade with those countries, this city will hold a most important place. According to statistics from the Bureau of Census, New Orleans carries about 6 per cent of the foreign commerce of this nation and ranks third in that respect. It is the largest exporter of cotton. Sugar, wheat, corn and tobacco are also important items of export every year. The chief imports are coffee and bananas.

The second city in size in the south is Galveston. This city, though an important port, is almost without a harbor. It was only by building jetties far out into the gulf that anything like a harbor could be made. At present the harbor is a very excellent one, having a channel of about 28 feet in depth. Galveston is an outlet for Texas and the southwest as far north as Denver. Because of the rail lines connecting this port with the interior and also the wealth of resources in the shape of raw materials of the great state of Texas, Galveston is a close rival of New Orleans for the carrying of commerce and shipping. At the present time she has a very slight lead over New Orleans in the actual amount of foreign commerce carried. According to the report of percentages of foreign commerce handled, Galveston handled about 6.3 per cent, while the figure for New Orleans was 6.1 per cent. This city also has the same advantage in respect to trade with South America as has New Orleans.

Going farther east, the next most important city is Atlanta, in the state of Georgia. This city, located near the end of the Great Valley of the Appalachian Ranges and near the easy east and west passes, is called the "Gateway of the South." Norfolk, in Virginia, is the Atlantic port of Louisville and Cincinnati. In Florida the city of Tampa on the west coast is located near the large deposits of phosphates, and is the only deep water harbor for hundreds of miles along the gulf coast. Jacksonville is probably better known than any other city of the same size in the country. It has become a famous winter resort for northern tourists, and is the terminus of important coastline railways. Key West should also be mentioned. It is the most southerly city in the United States. It is the city nearest to Cuba, the Panama Canal and South America.

Railroads.—The South has been slow in the matter of railway development. Most of the lines have been short and many have been put through poor sections which give very little revenue. The greatest single system in the south to-day is the Southern Railway. This system reaches nearly every important town from the Chesapeake Bay to Florida and from the Atlantic Ocean to the Mississippi River.

A second very important line is the Illinois Central, running from Chicago and paralleling the Mississippi River to New Orleans. This river taps the great central west and does much to bring a considerable portion of the nation's trade to New Orleans. This railway is also a potent factor in destroying the old-time through river traffic.

The Louisville & Nashville road connects St. Louis and Cincinnati with Memphis, Atlanta and Mobile. Two very picturesque roads are the Atlantic Coast Line, skirting the Piedmont Plateau from Chesapeake Bay to Jacksonville, and the Florida East Coast Line. The latter road connects the city of Key West with the mainland, being built one hundred miles out into the sea by means of the various small islands off the Florida coast.

THE CENTRAL STATES.

This section is often called the middle west, especially by those dwelling east of the Appalachian Mountains. Here is truly the very "Heart of the Republic." This section comprises about 25 per cent of the

area, 33 per cent of the population and 58 per cent of the agricultural area of the nation. The percentage of improved land in this section is higher than that of any other section in the country. The states of Kansas, Iowa, Illinois and Missouri contain more acres of improved land than any other states in the nation. The physical nature of this section naturally turned the attention of its settlers to farming. The level and rolling prairies with a deep rich soil have been an attractive magnet to the farmers of the stony and hilly farms of New England and the Atlantic States. Most of the population of this section came from the older states, especially Massachusetts, Connecticut, New York and Virginia, and nowhere will the traveler find the democratic traditions of American life more carefully preserved than in this section. This section is also fast becoming a leading manufacturing section. With the development of the automobile and new machines for agriculture, most of this work is done in the central west.

Forests.—A portion of this section of the United States was almost treeless, but there were sections where lumber was in abundance. Today in the eastern and southern sections some hardwood trees remain; principally of oak, ash, basswood, birch and maple. From the central part of Michigan north through Minnesota and Wisconsin there was orginally a great forest of white pine, hemlock and spruce. This region has become almost exhausted and no longer holds the supremacy in production.



DRESSING SHEEP

Typical scene in a great packing house in the stockyards district of Chicago, the center of the meat packing industry. The methods of slaughtering and dressing sheep and cattle are similar. Before releasing the meat for sale, the stamp of the United States inspector must be affixed.

Agricultural Products.—It is in farming products that this section has acquired and held first place in the nation. The level prairies have offered a fine field for the use of the most improved types of farm machinery, and because of the climate and soil, grain is the principal staple crop of this section like cotton and tobacco of the south. The nature of the soil in this section caused wheat and corn to grow as it never had grown either in the south or in the northeast section. Wheat grows mostly in the northern sections, especially Minnesota and the Dakotas, while corn is the staple product in the south. Here corn is used largely as a supply. The principal region for corn growing is in the belt from central Ohio to central Kansas and from the Ohio River to Wisconsin. Corn from this section goes to the market in a more condensed form of beef, pork, mutton and horses and mules.

Another commodity of this region is the sugar beet. This is one of the few commodities in which there is competition in production between temperate and tropical regions. The sugar beet belt is just north of the corn belt and runs somewhat into the wheat belt. Thus we find that it rarely competes with corn for it requires a great deal of hand labor; hence in those regions where corn will mature the farmer gets the greater return per acre from corn rather than from the sugar beet. Sugar beets, therefore, are usually cultivated in those regions where it is too cool for corn to mature. As a result of the labor and climatic requirements this industry was late in development in this country. Here in 1890 was produced only about 3,000 tons, but due to tariffs this crop has increased until in recent years it amounts to nearly 1,000,000 tons.

Cattle and Meat Products.—It is difficult to refrain from speaking in superlatives when one is talking of the various products that come from the middle west. The cattle industry and meat packing play an enormous part in the economic life of the people of this section. Cattle raising is a frontier industry and before the days of the railroad and refrigerator car its volume was limited and the markets had to be near at hand. Today with the development of transportation and refrigeration the pastures situated a long distance from the markets are under no handicap. As settlements advance the land rises in value and cattle must seek new pastures farther on. So that while cattle raising is more largely carried on in the states farther west, the center of the meat packing industry is in Chicago. Because of the corn and grain lands, cattle raising has centered near the central states, and because of transportation facilities the meat-packing industry has centered in Chicago. More than one-half of our meat comes from the central states. In point of production Illinois is first and Kansas second. This industry has also extended to South Omaha, St. Joseph, Sioux City, St. Paul, Indianapolis, St. Louis and Cincinnati.

Meat packing is a splendid example of how modern methods and inventions have envolved a large number of by-products. These by-products, as in many other lines of industry, afford the major portion of the profits. What was formerly thrown away and wasted is now utilized for the benefit of both manufacturer and consumer. In the early days the chief products of meat were beef, hide and tallow. Today, in addition to the three products mentioned above, we have combs, hairpins, brush backs and scoops from the horns, the handles of toothbrushes, razors and knives from the shin bones, in addition to such articles as buttons, felt, soap, glue, pipe stems, chessmen and fertilizer from other portions of the animal. Even glands are used for medical preparations.

Manufactures.—The center of general manufactures in the United States is a little west of central Ohio, and about one-third the value of manufactured products comes from the central states. As in the east there is abundant fuel and also plenty of water for power, while from the standpoint of transportation facilities the middle west is unexcelled. Here we have the great inland seas which reach far into the interior with an outlet into the ocean either through the St. Lawrence Valley or the Erie Canal, while in no other section of the country is there such a dense network of railways. These factors, coupled with the increase of the population, promise to make this section one of the greatest manufacturing districts on this continent.

The lumber industry has of course centered around the Great Lakes and Duluth, Saginaw and Bay City are noted for the production of lumber. Because of the power of the rivers and the presence of wood pulp the paper mill district is around Green Bay in Wisconsin, Duluth and Sault Ste. Marie. Furniture making which formerly centered in Grand Rapids because of nearness to the raw material is still a prominent industry in that city. This industry is held there largely on account of the capital and skilled labor that are already there. Other centers of furniture making are found in Sheboygan, Wisconsin and Rockford, Illinois.

The largest single industry with the exception of the manufacture of automobiles is the making of agricultural implements. That this industry should center here near the great farm lands of the nation is not surprising. While this industry is dependent on a supply of hard woods, in the main it has followed the western movement of agriculture. In the early days this center was in New England; later it was in New York state and Auburn of that state was long a prominent center for the manufacture of agricultural implements. The center for this industry is now in Chicago, while Moline, Illinois; Springfield, Ohio; St. Louis, Missouri; Racine, Wisconsin, and Peoria, Illinois, are large manufacturers of these commodities.

Since the beginning of the twentieth century the automobile industry has grown more rapidly than any other industry with the possible exception of the moving picture. Automobile manufacturing has centered largely around the Great Lakes, especially such cities as Detroit, Cleveland and Toledo. The growth of these cities has furnished an ample supply of labor, while the wealth of the population has furnished an ample market for this mode of transportation. The middle west with its rolling level country has developed the building of roads, so that almost all towns of any size are reached, and in many cases the only mode of reaching them is by the use of the automobile.

Other large industries in this section are the manufacture of rubber goods in Akron, Ohio; cash registers in Dayton, Ohio; leather goods in St. Louis; tanning in Milwaukee and ready made clothing in Chicago.

Minerals.—The principal minerals of this section are gold, iron ore, copper and coal. The gold of this region is found largely in the Black Hill district in South Dakota. The iron ore of this region is a most important mineral for it contains a small amount of impurities. The ore in this section contains as high as 80 per cent pure metal in many cases. The principal fields are in northern Michigan, along the shores of Lake Superior, northern Wisconsin and Minnesota. Here are found the largest beds in the world. The beds furnish more than four-fifths of the ore used in this country, and in bulk it exceeds that produced by England and Germany. In fact Minnesota alone furnishes more ore in a year than any foreign country. Most of

this ore, as we have seen, is smelted in Pennsylvania but a large number of blast furnaces are to be found along the great lakes, where the ore can be dumped from the barges direct to the plants.

The iron industry naturally gives rise to much of the iron and steel manufacturing of this section. In such cities as Chicago, Toledo, Detroit, Cleveland, Dayton, Canton and Elgin iron and steel are important products.

There are also beds of gypsum to be found from Kansas to Iowa, while the abundance of salt in the region about Detroit is one of the causes that have favored the growth of a large chemical industry in that city. In East Liverpool and Cincinnati, near the large clay deposits of southern Ohio, are found extensive pottery works.

Water Routes.—It is in the wealth of her natural water routes that the west has an advantage in the carrying on of commerce. In fact its rapid development during the nineteenth century was aided largely because of these waterways. The great Mississippi River system, reaching from the far-away Rocky Mountains across the continent into New York via the Alleghany River, encouraged the pioneers to push farther and farther into this section to find homes. In the memory of men now living large portions of this country were a wilderness. The level nature of the country and the wealth of its waterways made possible its settlement at a very early date. During the early part of the nineteenth century steamboat traffic started upon the Ohio and Mississippi Rivers and continued to develop in a remarkable degree, until the era of railroads cut into their revenue. The Missouri has never been used to the same extent as have the other streams on account of the fact that this region furnished no staple commodity that needed to be carried into the interior, and by the time settlers were ready to settle this section the building of railroads had begun so that water transportation was not so necessary.

The Mississippi River system which embraces the great central part of the United States is connected by canal with the Great Lakes along four routes. A canal connects the Wisconsin with the Fox River, another canal connects the Illinois with the Chicago River, the Ohio River is connected with Lake Erie and the Illinois River with the Mississippi at Rock Island. These connections furnish a through water route from the far interior to the great seaport of the east. The recent agitation for the St. Lawrence Canal on the part of the western farmers, is actuated by a desire to find a more direct and cheaper route to the sea. The minds of many western farmers and financiers are fired with the thought of making many of the inland cities virtually seaports and thus causing a great reduction in freight rates. Most of these canals are too shallow to compete successfully with the railroads. There is really only one deep water canal—the great Chicago Drainage Canal. This canal is 24 feet deep and over 300 feet wide. The most important factor in the matter of water routes in this section is the Great Lakes. These great inland seas, the like of which is found in no other country, are able to carry ships of ocean types and can carry freight at about one tenth the cost of carrying it by rail. By means of the use of the Welland Canal in Canada cargoes can go without change of load from Duluth in Minnesota, nearly two thousand miles inland to the open sea. The full utilization of the water ways in this section, as in any other section, will go a great way in the cheapening of rates and making possible the development of the industries of the country.

Illinois.—Twenty-third state in area and third in population lies in nearly a central position in the great Mississippi Valley. For about 50 miles in its northeast corner it touches Lake Michigan, and there the world's fourth city, Chicago, is the world's greatest railroad center. The Mississippi River extends along the entire western border, and it separates Illinois from Iowa and Missouri. On the east are Indiana and Kentucky, and part of this boundary is formed by the Wabash River. Kentucky and Missouri are on the south, with natural boundaries in part formed by the Ohio and Mississippi rivers. The area of the state is 56,665 square miles, of which 622 square miles are water. Population, 1930, 7,630,654. The capital is Springfield.

Illinois is one of the prairie states; the surface is largely level, but in the northwest, near the Mississippi River, the land is hilly. The elevation ranges from 279 feet at Cairo, in the extreme south, to 1,241 feet in the northwestern county (Jo Daviess). The climate is continental, little influenced by local conditions, except along the shores of Lake Michigan, where the lake tempers the severity of winter and cools the air in summer. Throughout the state the winters are cold and the summers are hot as a rule.

There is an excellent drainage system. The bordering streams, the Mississippi, Wabash, and Ohio rivers, have been mentioned. Running southwest through the state is the Illinois River, which for a part of its course is navigable; it is destined to be an important waterway.

Chicago.—No other city in the world located a thousand miles from the sea has so favorable a situation for commerce. This city is virtually a seaport situated as it is on one of the great inland lakes of the middle west. That a town should grow up here was seen by many in the early days of the last century. It is a well known fact that wherever people are compelled to pass, or there is a break in the transportation facilities, at that spot a town or city is likely to develop. The southward extension of Lake Michigan right into the center of the middle west compels the east and west traffic to go around it, and this simple geographic fact makes a great lake port near its head a necessity. Other facts that have helped in the growth of the city are its location in the midst of a rich grain center, near the stock belt of the United States, and also the fact that it is about midway between the Atlantic and Pacific oceans. Such a spot, marking the place where all lines of trade and commerce naturally converge, gives Chicago an unrivaled opportunity for trade and commerce. Also the supplies of timber, coal, iron and copper within easy reach of the city of Chicago, make it a seat of manufacturing as well as trade. This city is a typical example of a city created by economic forces.

The real site of Chicago was determined largely by the mouth of the Chicago River, which offers an easy portage to the Mississippi. It has spread out now so that it borders the lake shore for about forty miles. Although it has an artificial harbor, it is one of the largest shipping ports in the world. Some one has said that Chicago is the western terminus of the Erie Canal. Thirty nine railway lines enter Chicago, making this city the greatest railway center in the world. A glance at a railway map shows a great convergence of lines into this city. This fact, together with the lake port facilities, makes Chicago a great distributor of commodities and in part accounts for the fact that it is the greatest grain and meat market in the world. The leading industry of slaughtering and meat packing yields nearly one-fourth of the total value of the manufactured products in this district. Of the industrial manufacturing some of the larger are clothing, foundry, machine shop products, printing, iron and steel cars and agricultural implements. The great rolling mills at South Chicago and the blast furnaces and steel mills at Gary, only fifteen miles away, are among the largest in the whole country.

Detroit.—The second city of rank in this district is the city of Detroit. Its growth has been the most remarkable during the last decade, and to-day it ranks as the fourth city in size in the whole country. This city was originally established by the French as a military post and also for trading purposes. Although located on a river, it is virtually a lake port, and has exceeded in growth the other cities in this region with the exception of Chicago. Located in the eighty-mile gap between Lakes Huron and Erie, permitting the passage of railroads which connect the middle west with Canada, Detroit is primarily a crossroads city where the lake route is crossed by the east-west trunk lines of railways. This city is a typical example of a city growing up where there is a break in the mode of transportation.

The largest city of Michigan and the fourth city of the United States, population (1930) 1,568,000, was founded by Cadillac in 1701. The harbor is the finest on the great lakes, the Detroit river offering anchorages comparable to those of the Golden Horn at Constantinople. The city and its residence suburbs of great beauty extend for 30 miles along the river down to lake Erie. Opposite the city lies Windsor, Canada. The streets and avenues are generally of notable width and it is a common sight to see a double row of automobiles parked in the center of a great business street.

Many splendid buildings and parks adorn the city, the greatest of the latter being Belle Isle, an island of over 700 acres in the river. The water works, valued at over $5,000,000.00 are owned by the city and have a daily capacity of 250,000,000 gallons. The electric light plant is also municipally owned. The system of public schools has few rivals in America.

In recent years Detroit has become one of the manufacturing wonders of the world. Its automobile industry, embracing every grade of cars, employs scores of thousands and sends the name of Detroit to every corner of the earth. Adding machines, stoves, furnaces, ships, and many other products make Detroit notable.

The leading manufactured output of Detroit is the automobile. In fact, Detroit surpasses all the other cities in the country in the manufacture of this commodity. This city, with the city of Cleveland, together produce over one-third of the entire output of the United States. The value of the output in Detroit alone has caused rapid growth and high wages. It is but natural that this industry should

concentrate in the cities of the middle west, for this section in the earlier days was the center of carriage making, and when this new mode of transportation developed it was easy to change to this type of vehicle.

The other manufactures of Detroit are of a wide variety, but the following should be noted: cars, ships, stoves, drugs, alkalies, tobacco and matches.

In shipping Detroit rivals the greatest Atlantic ports. The annual tonnage passing Detroit is nearly 101,000,000 tons, a tonnage greater than that of New York. The annual tonnage of the Detroit River is more than double that of the Suez Canal. In addition to its great water system of transportation, Detroit is one of the great railroad centers of America.

Cleveland.—This city is not favored with a good harbor, nor is it located on a large stream. The Cuyahoga River is but a small stream and does not do for Cleveland what the Chicago River does for Chicago. However, its position with respect to other cities and localities has had much to do with its growth and development. A glance at a map will show that Cleveland is located on a direct line between the great ore mines of Lake Superior and Pittsburg. In other words, it is the point on the Lakes nearest to Pittsburg which makes this a natural transfer point. Also its relation to Atlantic ports in distance, as well as its railway connections, are so advantageous that a large portion of freight is unloaded here and transferred from lake vessels to cars. Five great east-west railroads run through this city, making it a prominent railway center. Also there are numerous electric lines connecting this city with the suburban sections in northern and central Ohio. Its prominence as a shipping port is shown by the fact that its lake trade amounts to over 1,300,000 tons annually. Cleveland, however, is the chief manufacturing city in Ohio, and its manufactures show the effect of the transportation which bring to it coal and iron. Thus the more important manufactures include iron and steel, automobiles, steel bridges, metal-working tools and machines, carriage and vehicle hardware and gas stoves and ranges. The refining of petroleum is another large industry made possible by being in the neighborhood of a great oil-producing region and favored by pipe-line transportation of the crude oil and water carriage of the refined products.

Cincinnati.—County seat of Hamilton County, long the largest city of Ohio, now the second city with a population (1930) of 451,160. Beautifully situated on hills rising in three terraces to a height of nearly five hundred feet above the Ohio river, Cincinnati occupies a commanding commercial position half way between Pittsburg and Cairo. Her public educational system embraces every development from the kindergarten to the specialized departments of the municipal university. Three inclined plane cable lines elevate cars and passengers from the lower business levels to the beautiful residence districts on the hill tops. Cincinnati owns its water works and the Cincinnati Southern Railway, which extends to Chattanooga. The value of the municipal property approaches $130,000,000. Five bridges spanning the Ohio bring a number of Kentucky cities, including Covington and Newport, within Cincinnati's immediate district. Machinery and machine tools, iron products, meat packing and the manufacture of shoes, clothing, and pottery are a few of the more than 4,000 industries that make Cincinnati one of America's greatest cities. The city was named in honor of the Society of American Revolutionary officers—The Cincinnati.

Other Lake Ports.—In this connection two other cities of some prominence should be noted. Toledo, Ohio, although located on the Maumee River is virtually a lake port. It has an excellent harbor, the river gradually widening out into the Maumee Bay gives abundance of room for shipping and wharfage. Toledo has the disadvantage of being located off the main direct route between the east and west. It is not on a direct line between Chicago and the east, and also, ships from Chicago or Duluth and Detroit do not stop here on their way to Cleveland or Buffalo. However, it may be reached by large vessels and is a favorable point for future connection of Lake Erie with the Ohio River. Thirteen steam roads and ten electric lines give this city unusual advantages for trade and commerce. The principal manufactures are the refining of petroleum, flour, automobiles, plate and cut glass besides many machine shops and foundries. Perhaps this city is more distinguished on account of its glass works. Here some of the finest material of its kind in this country is made.

The other lake port of importance in this section is Duluth. From the standpoint of natural location, few cities have a better site. Located at the end of a great lake and in the midst of a great grain, ore and lumber country, this city should be one of the most prominent and populous cities in the nation. However, the proximity to the Canadian boundary causes Duluth to lose much of the advantage gained by its location, for this turns much of the Canadian commerce from the natural line of least resistance. Were it not for this fact, Duluth would be a second Chicago. As it is, Duluth is a shipping port for iron ore, grain and coal, while lumber, flour and steel mills are typical industries.

Another lake port that should be mentioned is Milwaukee. This has grown up to be a large center of general industry, although as a shipping point it has never gained prominence. It is an outlet for the great state of Wisconsin. Its chief industries are leather and iron.

River Ports: St. Louis —A city near the confluence of three great rivers, the Mississippi, the Missouri and the Ohio, is a result of natural causes. Here must be a meeting place of traffic from the east and west and north. This point became a focus for exploration and trade where water routes from the Appalachians, the Great Lakes, gulf and Rocky Mountains meet. As a result St. Louis has been the metropolis of the Mississippi Basin since the very early days. From the advent of the steamboat in the early decades of the nineteenth century until the Civil War this city enjoyed great prosperity and rivaled Chicago. The closing of communication with the southern seaboard, the extension of railways reducing the traffic by water to small importance caused this city to lose much of its importance of early days. However, the extension of the railways to the Pacific Coast has made St. Louis a railroad center second only to Chicago. The terminals of over twenty lines are in this city. It has, therefore, become a great distributing point for the west and southwest not only for its own products but grain, livestock, cotton, hardware and agricultural implements. Its manufactures include slaughtering, meat-packing, boots and shoes, tobacco, clothing, iron and steel, chemicals, furniture and paints.

Minneapolis and St. Paul.—This city with its twin—St. Paul—located across the river was located at this point on account of the falls and rapids in the Mississippi River. Later the railroad connections and settlement of the wheat lands to the north and west led to the commercial and industrial growth of these two cities. Nine railroads connect these two cities with Chicago, St. Louis, Lake Superior, the Pacific Coast and Canada, giving these cities access to the great markets of the east. Minneapolis is the greatest flour manufacturing city in the world. The tremendous horse power of the St. Anthony Falls and Taylor Falls in the St. Croix afford abundant power for these mills, which have a capacity of from 80,000 to 90,000 barrels daily. The natural resources of this section for production and the power from the rivers for preparation of the products of flour and other commodities in close proximity is another example of how the geographic environment of a locality affects its economic development.

Kansas City.—At the eastern bend of the Missouri, where it comes down from the north, is another break in the mode of transportation. In the early pioneer days this was the river terminus for the overland stages. Its growth, however, is due largely to the development of the railroads. This district is second only to Chicago in the matter of livestock and in the value of its meat products.

Other cities located on rivers are *Omaha* and *Cincinnati*. The former is noted particularly as a meat-packing center, while the latter has a wide variety of manufactures like clothing, boots and shoes, wagons, soap and artistic pottery.

Of the cities that are strictly inland, the most important is Indianapolis, the capital of Indiana. This city was located largely by act of the legislature, being about the center of population for the state. This city has neither waterways nor power, but has the advantage of being located near the coal region and in the midst of a very rich agricultural region. Perhaps the factor that has developed Indianapolis more than any other is the railroads. About fifteen steam and twelve electric lines radiate from it. In no other state does its capital have so great an economic influence as does Indianapolis in the state of Indiana.

THE WESTERN STATES

In discussing the economic geography of the western states it is perhaps best to consider all the territory lying west of the 100th meridian of longitude. This is a gradually rising plain which extends some twelve hundred miles to the Rockies, and after that range comes a series of ranges and narrow valleys until the coast is reached. All of this section, with the possible exception of the strip along the northwest coast of the United States might be called the land of little rain, for the most of this section has less than 20 inches of rainfall per year, and in some areas it is under 10 inches per year. The high altitude and lack of rainfall, coupled with high winds, make a large portion of this region a virtual desert. The climate of the eastern section of this area is of an extreme continental type, very hot in summer and cold in winter. In the extreme northwest one finds a comparatively warm climate both winter and summer. The climate of this region more nearly duplicates that of the British Isles than

any other section of continental United States. Southern California, however, has a sub-tropical climate with almost rainless summers. In fact irrigation is needed for most of the farming done south of San Francisco.

In the eastern section and on the high plateau of this region are the great sheep and cattle ranges of the country. Cattle raising has been somewhat curtailed by the westward movement of sheep raising. The close cropping of the grass by sheep does not leave enough for cattle to subsist upon, and in many instances has changed a grass growing region into a sand blown region. This is at least one reason for a decline in the matter of cattle raising, and perhaps in the rise of the price of meat.

In the northwest region dairying is carried on to a considerable extent, especially in sections of the country near the large cities where land is not fertile enough to make the growing of staple crops more profitable than this type of farming. Farther south, along the Pacific Coast, near San Francisco, is the greatest poultry district in the world, while still farther south, ostrich farming is carried on to great advantage.

Irrigation.—The climatic conditions in this section of the country have been serious drawbacks in the development of agriculture. Most of this region has been considered too dry to attempt to raise crops of any kind. In fact the thing that attracted the early settlers to this region was its mining resources. As the country began to grow more populous, the necessity of growing more food in this section became more and more apparent. The thing most needed to make gardening and agriculture possible was water, hence the process of irrigating the land has developed in this region to quite a wide extent. Here is a great opportunity for it, as it is estimated that at least fifty millions of acres, situated in valleys and along the foot of mountains, can be irrigated. When one stops to calculate that fifty million acres of land would be a region about the size of the state of Missouri it is not easy to exaggerate the wealth it will add to the country.

Irrigation, or the application of water to land, has been practiced since very ancient times by peoples dwelling in dry lands. The Indians of Arizona and New Mexico practiced it in this country before the advent of the white man. The first white people to practice irrigation in this country were the Mormons in Utah. Here conditions were very ideal for this method of watering the land as there is an inexhaustible supply of water furnished by the melting snows from the mountains, while the topography of that region afforded a level area suitable for bringing water to it.

While wind movement and relative humidity are a factor, the largest influence in determining the necessity for irrigation is the amount and seasonable distribution of precipitation, particularly rainfall. The arid and semi-arid territory of the United States is included in the states of Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming. Irrigation is practiced to a greater or less extent in all of these states and also in Arkansas and Louisiana, in which, together with eastern Texas, it is confined mainly to rice growing. In the eastern states it is practiced over small areas for the growing of fruit and truck crops.

In that part of the United States lying east of the arid and semi-arid states named above, the normal annual precipitation exceeds twenty-five inches and is so distributed throughout the year as to provide sufficient moisture for the growing of general crops. While droughts of short duration occur in this section sufficiently often to make desirable the irrigation of such crops as truck and small fruits, which may be seriously damaged by lack of precipitation at certain periods, it is not a general practice. General crops sometimes suffer from insufficient moisture but these conditions do not occur often enough to warrant the expense of irrigation.

The forty to fifty inches annual rainfall in Arkansas, Louisiana and eastern Texas is sufficient for all crops except rice, for which the ground must be kept under water during the growing period. Irrigation is practiced in this region to supply the rice fields.

The states of North and South Dakota, Nebraska, Kansas, Oklahoma, western Texas, Montana, Wyoming, Colorado and New Mexico lie in the so-called semi-arid region. They have a normal annual precipitation which varies from about fifteen inches on the west to about twenty-five inches or more at the eastern boundaries. In the eastern part of this section, the precipitation varies from year to year and irrigation advances eastward in dry years and recedes to the west in years of plentiful and well distributed rainfall. On the high plain of the western part of this section, crops are grown without irrigation but it is generally practiced in the valleys. On the high mountains of the main ranges of the Rocky Mountains which extend thru this section, precipitation in the form of snowfall is heavy.

Just west of this section lies the real arid region of the United States. It extends between the Rocky Mountains and the Sierra Nevada and Cascade Mountains from central Idaho to the Mexican boundary line. The normal annual precipitation in the region varies from about two inches in southwestern Arizona and southwestern California to about eight inches in southern Idaho. In the larger parts of Arizona, Nevada, and Utah, and considerable parts in California, Oregon, Washington and Idaho, practically no crops can be grown in the valleys without irrigation. On the higher lands in all of these states except Nevada and California, the precipitation is greater and some grain and forage crops are grown without irrigation.

West of the Sierra Nevada and Cascade Mountains the precipitation varies. It is less than the amount considered necessary to mature crops in the southern part of California; it is equal to the greatest precipitation of any place in the United States in Washington and Oregon. But even in Washington and Oregon there is a dry period in the late summer when irrigation is desirable for growing crops and it is used somewhat for pastures, vegetables, and fruits. This same condition obtains in northern California. However, although the annual rainfall in the southern part of the state is less than is normally required to mature crops (since most of the precipitation occurs in the winter and spring) it is possible to grow crops without irrigation.



Publishers Photo Service

Painted Desert. Twilight in Canyon de Schelly. An area of tablelands in north central Arizona, deriving its name from the array of colors displayed in the rocks.

Streams are the chief source of the water used in irrigation in the United States—83 per cent of irrigated areas receive the entire supply from this source and 2 per cent additional receive part of the supply from streams. The streams in the western states have one common characteristic — they are mountain streams or have their origin in the mountains and are subject to heavy floods in the spring and early summer, and become very low in the late summer. This condition makes it necessary to store a part of the flood flow for use in the late summer if the entire water supply is to be used. The situation of this territory, according to the various drainage basins, is as follows:

1. The drainage basin of the Missouri and its tributaries. The northern half of the Great Plains, extending from the

Rocky Mountains toward the Mississippi River, is drained by the Missouri River and its tributaries. In most of this area some crops can be grown without irrigation, and the irrigated land is confined almost exclusively to the stream valleys. The Missouri itself is not very largely utilized, and many of its tributaries are in the same condition. Storage has been provided for only a small part of the flood flow of the main stream and its tributaries north of the Platte, and there is in these streams a large supply of water available for future development in Wyoming, Montana, and the Dakotas. Included in this basin is the Shoshone project in northwest Wyoming. The water supplying this project is furnished by the Shoshone River which runs through a deep and narrow canyon into the Big Horn River, a tributary of the Yellowstone River. On this river is constructed a huge masonry dam over 328 feet high. This project serves about 100,000 acres of land. Another notable development is located on the Cheyenne River and its tributaries (including the Belle Fourche). This project irrigates over one hundred thousand acres of land in western South Dakota. The location is splendid in regard to markets, located as it is near the mining towns of the Black Hills as well as within striking distance of the great cities of Omaha, Minneapolis, St. Paul and Chicago.

2. The North Platte supplies large areas of Colorado, Wyoming and Nebraska. Its low-water flow is largely utilized and storage has been provided in the Pathfinder Reservoir in central Wyoming for a large part of the flood water of this stream. But there is a considerable supply of additional storage, which would make it possible to extend the area irrigated. Because of the level nature of the land, the farms are divided into holdings of about eighty acres. This is larger than the average irrigated farm, which seldom runs over ten or twenty acres on account of the rugged nature of the surrounding country which limits the amount of available land.

3. The South Platte waters a large area of land in Colorado and a small area in Nebraska. The low-water flow of these streams is fully utilized. Most of the flood water and winter flow of these streams is stored in many small reservoirs rather than in one large reservoir. Yet there is some water available for further development of the same kind in the lower part of the stream. Water stored on the North Platte can be used on the main Platte in Nebraska and there is water from floods, winter flow, and return seepage that could be stored on the main stream if the demand for water justified the expense. Uncertainty as to the need for irrigation and as to the water supply have retarded development in this section.

4. The central part of the Great Plains is drained by the Arkansas River and its tributaries. The Arkansas waters a large area in Colorado and a small area in Kansas. The low-water flow of the Arkansas is all used, and a large part of the flood water is stored in small reservoirs; but there is still some water available for storage on the main stream and its tributaries.

5. Practically all of the land used for rice growing in Arkansas and a considerable part of that in Louisiana and Texas is watered from wells. There is nothing to indicate that the water supply is not sufficient for a large expansion of the rice-growing area, if other conditions justify it. The rice grown along the Gulf coast in Louisiana and Texas is supplied principally by pumping from streams entering the Gulf. These streams are so nearly at the Gulf level that heavy pumping at times causes the salt water of the Gulf to enter the streams. The supply of fresh water is limited unless storage is provided. This has not been done. In Texas, water for rice is taken from streams at higher levels, and here the supply is insufficient in some seasons, but there is plenty of water for storage purposes. Streams flowing to the Gulf of Mexico supply scattered areas throughout central Texas, and in the northern section the water is supplied from wells to a considerable area. The water supply is sufficient for a large extension of irrigation from both sources, if other conditions justify it.

6. The Rio Grande and its tributaries drain south central Colorado, most of central and eastern New Mexico, and the southwestern part of Texas. This large



Courtesy Atkinson, Kier Bros., Spicer Co.

COOLIDGE DAM AND LAKE

Built by the United States, Department of the Interior, for irrigation purposes. The height above bedrock is 250 feet. The total over-all length of the structure, including spillways is 920 feet. The reservoir capacity is 1,200,000 acre feet. This dam is the first multiple dome project ever built.

area lies largely in Colorado and Texas with a considerable portion in New Mexico. The Rio Grande is subject to heavy floods and at times is dry or nearly so, and storage is necessary for permanently successful irrigation. The river is dammed near Eagle, New Mexico, forming the Elephant Butte Reservoir, which has sufficient capacity to store the flood water and to regulate the flow of the stream below. Water from this reservoir supplies about 180,000 acres of land in a strip forty miles wide on both sides of the stream in New Mexico, in Texas, and in Mexico. There is little opportunity to use water from the Rio Grande below the El Paso Valley in Texas, except near the mouth of the river where a large area is irrigated. The lower part of the river receives much of its water from tributaries in Mexico below El Paso and is not dependent on storage in Elephant Butte Reservoir. Most of the water used for irrigation in this section is pumped from the river.

At times the supply is low, but there is a good supply for storage, although reservoirs have not been built. The question of providing storage on this part of the Rio Grande is complicated by the fact that the river forms the boundary between the United States and Mexico, and until some agreement is reached between the two republics for the equitable division of the water supply, the extent of safe irrigation development on either side of the river can not be determined. The Pecos, a tributary of the Rio Grande, drains a large part of southeastern New Mexico. It is subject to heavy flood periods and periods of very low discharge. Storage has been provided for part of the flood flow but there is opportunity for further development and larger storage. There are many flowing wells in this valley.

7. The Colorado River system drains all the land west of the Rio Grande drainage area to the California boundary and extends northward to northern Wyoming. It supplies water to land in Wyoming, Colorado, Utah, New Mexico, Nevada, Arizona and California. In the upper states the areas of tillable land in the valleys of the tributaries of the Colorado are limited and much of the low-water flow of these streams is not yet utilized, while there is very little storage. The Gunnison project is in western Colorado and a large supply was obtained by tunneling under a mountain range 2,000 feet high to feed the Uncampahgre valley. This region opens for productive agriculture over 140,000 acres.

Near the mouth of the stream very large areas are irrigated in Arizona, California, and New Mexico. The Numa project has a most favorable situation. It is situated on the delta of the Colorado River in the states of Arizona and California. The soil of this region is very rich in plant food and will prove one of the richest projects. It is estimated that a farm of ten acres will be sufficient to support a family. On account of the warm climate of a sub-tropical nature, and the fact that this section is practically frost free, more than one crop can be raised, thus doubling the income per acre. Over one hundred thousand acres of land are under irrigation. The low-water flow reaching this portion of the river is just about sufficient for the land irrigated. Any considerable extension of the area watered will necessitate storage. A very large volume of flood water is available for storage, and Federal and local agencies are studying the possibilities of storing these flood waters. A compact between the states interested for the control of the river has been provided for by state and Federal legislation.

Gila River (which is a tributary of Colorado River) and its tributaries drain a considerable part of western New Mexico and most of southern Arizona. All of these streams are subject to heavy floods and to periods with practically no discharge. Consequently, storage is necessary to make them reliable sources of water for irrigation. Little storage has been provided except on Salt River, where the Roosevelt Reservoir has sufficient capacity to store the entire flow of the stream above the reservoir. The Roosevelt Dam is located just a little south of the central part of Arizona. It is 284 feet high, 1,080 feet long, and 170 feet thick at the base. The water is easily distributed over the entire section, which comprises between 250,000 and 300,000 acres. The climate of this section is very

favorable to the growing of grapes, almonds, dates and other warm country products. Tributaries reaching the stream below the reservoir are subject to violent flood conditions but storage for this surplus water has not been provided. In the irrigated section of the Salt River Valley, ground water has come near the surface making drainage necessary. Both wells and open ditches have been installed for the purpose of lowering the ground water and supplying additional water for irrigation. There is opportunity for more work of this kind.

Boulder Dam which was completed in 1935, is 727 feet high, 1,180 feet across at the top, and 650 feet thick at the bottom, and the greatest dam in the world. It supplies a tremendous quantity of water to California, Arizona, Nevada, Colorado and Utah.

8. North and west of the Colorado River basin lies the Great Basin, which has no outlet to the sea. This basin includes small parts of Wyoming, Idaho, Oregon, and California, and most of Utah and Nevada. It really consists of several independent drainage basins, one with the Great Salt Lake as its low point, another entering in the "sinks" in western Nevada, and a third, consisting of the Sevier River drainage in southwestern Utah. There are also small basins in northern California and southern Oregon.

The Great Salt Lake receives almost its entire inflow from the mountains lying to the east of its basin. Jordan River carrying the discharge of Utah Lake, enters at the south end, Bear River enters at the north end, and between these there are also several short streams entering. These are typical mountain streams with flood conditions in the spring of the year when the snows on the mountains are melting and diminishing and almost disappearing in the late summer or early fall. Water is stored in Utah Lake for use in the Jordan Valley and in Bear Lake for use in the Bear River Valley. Water stored in Strawberry Reservoir, in the Colorado River basin, is brought into this basin through a tunnel discharging into Spanish Fork River, a tributary of Utah Lake. The low-water flow of all the streams in this drainage basin is used, but there is opportunity for much additional storage.

The "sinks" in western Nevada receive water from both east and west. Humboldt River and its tributaries drain most of the eastern slope of this basin. The Humboldt has a flood period in spring and most of the irrigation along this stream consists in damming the stream so that it will overflow natural meadows on its bottom lands during its flood. A much larger use of the stream could be made if a part of the flood water were stored for use in the late summer.

Walker, Carson, and Truckee rivers flow into the "sinks" from the west. These streams rise in California in the Sierra Nevada Mountains. Carson and Walker rivers water considerable areas in both states. Truckee River is the outlet of Lake Tahoe, which lies on the border between California and Nevada. Plans for using Lake Tahoe for a storage reservoir have been made, but litigation has prevented its use to any large extent. Water from both Truckee and Carson rivers is stored in Lahontan Reservoir in Nevada. There is opportunity for additional storage on all of these streams.

Throughout the Great Basin there are large valleys which have no surface water supply. In some of these a good supply of ground water has been found. It is probable that large areas can be supplied from wells, when this becomes economically feasible.

9. North of the Great Basin and extending from western Montana and Wyoming to the Pacific Ocean is the Columbia River Drainage basin.

Clark Fork of the Columbia and its tributaries, the Bitterroot and Flathead, water lands in western Montana. Water is stored in Flathead Lake for lands near the lake. There is opportunity for storage on the other tributaries.

Snake River rises near the headwaters of the Missouri and Colorado in northwestern Wyoming and waters land in Idaho, Oregon, and Washington. Its low-water flow is all used, and storage has been provided for much of the flood water in Jackson Lake in Wyoming and in reservoirs in Idaho. The American Falls Dam of the Snake River, an important project completed in 1927 at a cost of $3,060,000, is 4,971 feet in length.

The Columbia River itself is not extensively used for irrigation. Throughout its course it is so far below the level of the surrounding land that extensive and expensive pumping operations would be necessary, but some water is pumped from the river. It carries a large volume of water that could be used if it were economically feasible.

In Washington the tributaries of the Columbia coming from the Cascade Mountains supply the water for the irrigation in that state. The low-water flow of these streams is utilized and storage has been provided for part of the flood water, but there is opportunity for further development of the storage projects.

The tributaries of the Columbia supply a large part of the water for irrigation in Oregon. Irrigation has not been developed to the stage of storing water and there is opportunity for a much wider use of irrigation.

West of the Cascade Mountains the rainfall is heavy and there is no need for irrigation except during the dry period in the late summer. Some irrigation is practiced during this time and there is abundant supply of water for a very large extension of the irrigated territory.

10. A large area is included in irrigation enterprises on Pacific coast streams other than the Columbia and Colorado rivers.

In northern California the dry season in summer is more pronounced than it is in Oregon and Washington, and at that time there is little water in the streams.

Sacramento River waters a large area, and the summer flow is fully used. The stream is subject to very heavy floods.



Publishers Photo Service

The Grand Canyon of Arizona. A patchwork of color embracing all the colors of the spectrum. A telephoto view from the El Tovar hotel grounds. The Grand Canyon is without question the hardest task for a photographer. The purple and blue haze that fills every shadow, mingles with the red of the rocks, and the immense distance across makes it a real task. Then even if one gets perfect results the diminutive reproduction makes one sick at heart.



Publishers Photo Service

New Mexico. The Cliff Dwellings. Many of these rooms have communicating passages. Some of the smaller openings served as chimneys to the fireplaces, the remains of which are still quite traceable and in a few instances in fair condition.

The San Joaquin and its tributaries supply water to the larger part of the irrigated land in California. The low-water discharge of these streams is all used.

In the San Joaquin Valley irrigation has brought the ground water near the surface and a great many wells and pumps have been put in, in some instances to furnish a supplemental supply of water when streams are low, and in others to provide the entire water supply.

The coast streams south of San Francisco Bay are torrential in character. On some of these streams reservoirs have been built to store flood waters, but on many reservoir sites do not exist and large quantities of flood water are lost to the ocean. In the valleys of these streams there are many wells, both flowing and pumped, and the heavy draft on the ground water has lowered its level. In the absence of reservoir sites, the flood water is spread over the gravelly soil where the streams emerge from the mountains in order that it may enter the soil and replenish the ground-water supply. There is a large supply of flood water in southern California for which there is a large demand.

Taking the western part of the United States as a whole, with few exceptions, the low-water flow of the streams is exhausted, but there is a very large supply of flood water available for storage. There is no lack of tillable land on which this water can be used. Future extension of irrigation depends on whether economic conditions are such that the value of the crops which can be produced will justify the expense of storing the flood waters. The same may be said of the use of ground water. The extent of the supply of ground water is not so well known as the amount of flood water, but there are many places where water can be obtained from wells when the expense of pumping is justified.

Many different crops will grow on these irrigated lands illustrating the varied climate of the United States. For example, hay, grain and vegetables will be the staple crops of the northern enterprises, especially in Montana, Wyoming, the Dakotas and Nebraska. In Idaho, Washington, Oregon and California the principal crops are apples, peaches, pears and plums, while in the warmer southwest the sub-tropical fruits can be grown to profitable advantage. The high value of the land will encourage intensive tillage, and the ever present problem of labor supply will tend to make most of these farms small enough for one man to work. In the orchard-growing sections the holdings of each individual does not run over five or ten acres per man. This will mean a more dense rural population, especially for the irrigated lands, and will perhaps overcome the distaste of many to take up agriculture on account of the isolation which it has always meant. It is thought by many that irrigation of lands may have the effect of building up farm villages patterned somewhat after the old manorial villages of England and the Continent minus the allegiance to some overlord. Thus farmers can congregate in one place where schools, stores, medical attendance and churches can be maintained on a high level, while the outlying land could be worked during the day by the individual owners.

California.—Second state in size, is one of the most rapidly growing sections of the American Union; in 30 years (1900 to 1930) it rose from twenty-second in population rank to sixth. The Pacific Ocean forms its entire western boundary (949 miles, excluding islands); the states of Oregon, Nevada, and Arizona are on the north and east, and Mexico's Lower California is south. The area of the state is 158,297 square miles, of which 2,645 square miles are water. Population, 1930, 5,672,009. The capital is Sacramento.

There is a narrow coastal plain extending along the Pacific shore. This widens at San Francisco and joins the Great Valley, which extends through two-thirds of the state. Again the coastal plain widens in the southwest, in the vicinity of Los Angeles and Long Beach. The highest elevations are east of the Great Valley, where towers Mt. Whitney, 14,496 feet elevation, the highest point in continental United States. Mt. Shasta, in the north, rises almost as high (14,161 feet) and several others tower more than 13,000 feet. California has the distinction of having the highest peak in the United States, but possesses the lowest spot on the continent as well, for Death Valley, in the southeast, is 276 feet below sea level. About 100 miles south of Death Valley, in the region of the Salton Sea, in the Imperial Valley, is another depression which is below the level of the sea. Nearly a third of the state has an average elevation of more than 5,000 feet.

The Great Valley is about 400 miles in length and averages nearly 40 miles in width. It is well watered, especially in the northern part, and is the most fertile section of the state.

Everywhere except in the high altitudes, live stock may find sustenance all the year, and in nearly all the state flowers bloom every month. Rainfall varies in extent. In the north it averages more than 50 inches; at San Francisco, 24 inches; at Los Angeles, 15 inches; at San Diego, 10 inches. In the Great Valley there is an average of 30 inches through most of its extent, but in the southeastern desert region, there is only an occasional rain, and over a good part of southern California irrigation is practiced. Except in the mountains snow is almost unknown, though in January, 1932, Los Angeles was blanketed with a fall of two inches—the first in 50 years.

In the great length of California every product of agriculture and horticulture flourishes remarkably well. All the cereals are grown in the north; barley is the largest crop there, followed by hay and corn. The Great Valley is famous for its fruit, and throughout the south the citrus crop—oranges, lemons, etc., are a vast source of wealth. It is the greatest vegetable and fruit state of the Union, and only Texas exceeds it in the total value of products of the soil. California boasts that it supplies 70 per cent of America's oranges and nine-tenths of its grapes. More dates, prunes, figs, and apricots are grown here than in any other state.

Its mineral wealth originally gave California the name of "the Golden State". It was here that gold was discovered in 1848. For many years the output of this precious metal exceeded in value $50,000,000 a year, but the supply declined slowly, and now the gold mines yield about $8,000,000 every year. Other minerals and metals taken in paying quantities are copper, silver, lead, and mercury. The petroleum output is tremendous, ranking California with Oklahoma and Texas as one of the three greatest petroleum states. The wells of the state have produced nearly 300,000,000 barrels a year. Natural gas exists in quantities which bring more than $30,000,000 per year. The entire mineral production is worth more than $400,000,000 in average years.

Oregon.—The ninth state in size and thirty-fourth in population, is located in the Pacific Northwest, between Washington on the north and California and Nevada on the south. Idaho is east, and the Pacific Ocean extends along the entire western side of the state. The scenic Columbia River forms nearly all of the boundary between Washington and Oregon. The area is 96,699 square miles of which 1,092 square miles are water. Population, 1930, 953,786. The capital is Salem.

The state lies to the west of the Continental Divide, and its general slope is from east to west. In the east, where the Snake River forms a part of the boundary, the valley of that stream has an average elevation of about 1,400 to 2,000 feet, with higher ground immediately west. Probably a sixth of the state is 4,500 to 5,000 feet above the sea; in the south and east, dryness prevails.

The Cascade Range crosses from north to south, west of the center of the state, and on each side there are also elevations of 4,000 to 5,000 feet; then as one travels westward there is found a decline to heights of less than 1,000 feet, then to 500 feet, in the valley of the Willamette River. Nearer the ocean is the Coast Range, 2,500 to 3,500 feet in elevation, and along the Pacific is the low coastal plain. There are peaks of far greater heights than any that have been named, for Mt. Hood, the highest point in the state, rises to 11,253 feet.

The various elevations assure to Oregon every variety of climate found in the temperate zone. There is cold on the mountains in winter, but at the same time roses are blooming in Portland, for the Japan Current carries warm breezes to the coastal plain and the river valleys. On the highlands in the east it is cool, even in summer, and frosts may occur at any time.

The broad and deep Columbia River widens to an estuary at its mouth. By canal construction around rapids, it is navigable for 200 miles, and light-draft steamers go up the Columbia and the Snake rivers as far as Lewiston, Idaho, more than 450 miles from the ocean. The scenery along the Columbia is magnificent, and travelers may enjoy its scenic glories in comfort along the great Columbia River Highway.

The Snake is the largest tributary of the Columbia, and it is also a bordering stream, for it marks more than half of the boundary between Oregon and Idaho. It flows through a highland section, and thus is in sharp contrast to the Willamette, which runs north through a remarkably fertile valley between the Cascades and the Coast Range. This section is the garden spot of Oregon. The only other stream of importance is

the Deschutes, which has its source in the Cascade Mountains and its outlet, after a course of about 200 miles, in the Columbia.

Washington.—The nineteenth state in size and thirtieth in population, is in the northwest corner of the Union, facing the Pacific Ocean on the west. It is deeply indented by Puget Sound, which separates the state from Vancouver Island, a part of British Columbia, north of Washington. Idaho is east, and Oregon is south. The Columbia River is between the state and Oregon along three-fourths of the southern boundary. The state, roughly triangular, is 300 miles long from east to west and extends 240 miles from north to south. The area is 69,127 square miles, of which 2,291 square miles are water. Population, 1930, 1,563,396. The capital is Olympia.



Publishers Photo Service

The Grand Canyon of Arizona. Fantastic cliffs of yellow and white rising out of abyssmal depths, a striking contrast to the purplish lines of the distance.

The Cascade Range, identified in parts of the state by local names, runs from the north through the west-central section. East of these mountains is the northern part of the Great Basin, with average heights of 1,500 to 2,500 feet, but exceeding 5,000 feet in numerous places. Here, however, the valleys of the Columbia and Snake rivers are lowlands. On this eastern plateau there is much arid land, much of which irrigation has reclaimed.

The garden spot of Washington is in the valley leading northward to Puget Sound; it has become the center of population of the state and the home of most of its industries. More than 500,000 acres are under irrigation, and on these lands immense crops of wheat are grown on large ranches. In many parts of the state apples are a phenomenal crop, and the soil and climate are as well suited to peaches, pears, apricots, and similar fruits. Winter wheat is the chief source of agricultural wealth, followed by apples, hay, spring wheat, corn, barley, and potatoes, but the second asset of the farms in money value is cattle.

Dry Farming.—In places where irrigation by water stored up in reservoirs cannot be used, either because of distance from the supply or cost of such a project, and where there is at least ten inches of rain fall per year a different type of farming has developed. This is known as dry farming and the crops of this type of agriculture are naturally of a drought resisting species, especially Kaffir corn, sorghum, alfalfa and durum wheat. This latter crop is of special importance and forms a considerable part of our wheat crop.

This type of farming is carried on by storing the rains of two winters in the soil. In the region west of the Rockies the rain falls chiefly during the winter season. The soil of this region is underlaid by clay which is almost impervious to water. The rain of a winter is allowed to fall on the land and then to prevent evaporation during the following summer the entire plot is covered with any kind of material which will keep the wind and sun from reaching the soil. At the beginning of the second winter this covering is removed and another season's rain falls, thus the land has the larger part of two season's rain stored and is ready for cultivation the following summer. Under such conditions it is possible to grow the durum wheat, and some other staples like alfalfa, which has a long root running far down in the soil, in a section of the country that has only about ten or twelve inches of rain per year. Dry farming is another excellent example of the effect of land and climate on the nature of products grown.

Agricultural Products of the West.—This region cannot be called very important economically as a farming section. The ruggedness of the soil and the climate have been barriers that have been difficult to overcome. The fact that mining has paid larger returns also helps to account for the unwillingness of individuals to take up agriculture. Hence we find that very little is exported from this region except fruits and hops. The farmers on all parts of the Pacific slope have turned their attention largely to fruit-farming, so much so that the apples and other fruits of Washington and Oregon are considered to be unequalled in the markets of the east. The different climates of this region enable the farmers to grow both temperate and sub-tropical fruits. Peaches, pears and plums from the temperate regions and oranges, olives, lemons and figs from the southern sections.

Considerable grain is grown on the Pacific slope, especially in the states of Washington and Oregon. The dryness of the summers in this region enable the farmers to cut, thresh and sack their grain on the same day. However, very little of the grain in this region is exported, largely because of the high freight rates on such heavy commodities as wheat.

Mineral Products. — It is in mineral products that this western section abounds. In fact it was the cause of its first settlements. Man will go anywhere for gold, from the cold bleak mountain passes of the Arctic Klondike region to the hot burning plains of Australia. It is the one magnet that will attract him to the most uninhabitable regions of the earth. This Rocky Mountain region never could compare as a dwelling place with the rich farm lands of the middle west or even the farms of the east. The only reason that settlers first came to this region was the search for gold. Gold is still the principal mineral of the Pacific Slope and is to be found principally along the foothills of the Sierras.

Coal is scattered throughout this region, principally in Washington and Colorado. There are also beds of anthracite coal in Colorado and New Mexico. Lead and zinc are mined to considerable extent in Idaho. Copper is also found in abundance in the states of Arizona, Montana and Utah. Butte, a city in Montana, is the greatest copper center in the world. Iron ore is widely distributed in Colorado. In the matter of smelting iron ore, Colorado is the leading state west of the Mississippi.

Important fields of petroleum have been discovered in the extreme southwest. The fields of southern California are among the most productive in the world. The principal center is around Bakersfield, in that state. The importance of this fuel is shown in that it affords a fuel for the railroads which are located so far from the coal mines. The output of this mineral fuel in California is now of greater value than the output of gold.

Of other important minerals mention should be made of the asphalt beds in California and Utah; salt from the dried sea regions of California in the Salton Sink; borax from the Death Valley in the Mohave Desert. Even precious stones like turquoise, sapphire and topaz are found in New Mexico, Arizona and Montana.

Forests.—A great part of the wealth of this region is in its forests. This section has in the main supplanted the Michigan field as the source of supply of much of our timber. The yellow pine of the country furnishes for the most part the timber for use in the various mines. In the Puget Sound region is the center of the Douglas fir and cedar. The northern Pacific slope contains the largest body of standing coniferous woods in the United States.

Manufactures.—One does not find in this region manufacturing of a national type. Most of the products manufactured here are for home consumption. There is plenty of power and raw material, but the supply of labor is lacking and the markets are too remote for industry to develop on the same large scale as in the middle west, south or east. Such manufacturing as one finds here is largely of articles for the smelting of ores which is prominent in Butte and Seattle, steel and iron in Colorado, shipbuilding in San Francisco and mining machinery in Los Angeles and Denver. Lumbering is of course the chief industry in Tacoma, Portland and Spokane, flour milling in Stockton and Sacramento, and the refining of Hawaiian and California beet sugar is carried on in San Francisco. The fact that this region is somewhat isolated, due to the high cost of shipping, enables the industries here to compete, with the industries of the east.

Railroads.—The commercial development of the west is due in a great measure to the railroads that have found their way through the passes and over the mountains to the coast. These roads in fact have been the very life of this section in connecting it with the eastern sections. Were it not for the railroads this region would not have been settled until a much later date. Its very topography is such that railroad building is an expensive operation, a fact which accounts for the small number of roads as compared with the more level sections.

Six transcontinental railroads now connect the Mississippi Valley with the coast. These lines are the very life of the commercial development of the west. The first line to be built was the Union Pacific, built in the sixties, from Omaha in Nebraska to Sacramento. The Missouri Pacific joining with the Denver & Rio Grande and Western Pacific offers a connected route from St. Louis to San Francisco. The longest line to the west is the Santa Fe, which follows the old Santa Fe trail through the southwest to San Francisco. The shortest of the Pacific lines is the Southern Pacific, running from New Orleans to Los Angeles and San Francisco. This is the one line that enters the city of San Francisco proper. All other lines have their terminals in the cities across the bay from Frisco. Two great railroads parallel each other in the north. One of these is the Northern Pacific, which connects Minneapolis and Duluth with the west, and the other is the Great Northern.

Cities.—The natural economic condition in the interior of this western region is unfavorable to the existence of very large cities. With the exception of Denver and Salt Lake City, most of the large centers of population are on the Pacific slope. In this entire section there are only eight cities which have a population of more than 110,000. These are namely, Los Angeles, San Francisco, Seattle, Portland, Denver, Oakland, Salt Lake City and Spokane. In four of the states there is no city of over 50,000 population, namely Nevada, Wyoming, Arizona and New Mexico. This small population is due in part to the inaccessibility of the region and to climate, especially in the dry regions. Without doubt lack of water will be a barrier to this section in becoming as populous as those regions to the east and south. The density of the population varies from less than two per square mile in a state like Nevada to from 45 to 90 per square mile on the Pacific slope.

In the interior the city of Denver is the most prominent commercially. This city originated as a placer mining camp and is now the chief commercial center for the entire Rocky Mountain region. It has a population of over 200,000; nine railways enter it, three of which are transcontinental. It is a market for grain, slaughtering, meat packing and the smelting and refining of lead.



Publishers Photo Service
Yosemite Valley. General View showing El Capitan

Another city of the interior is Salt Lake City. This is one of the few artifically founded cities in the United States. Its origin was due to a religious movement. It had the good fortune, however, to be located on the direct line followed by the gold seekers in the middle of the last century, and hence it became a center for outfitting these adventurers. Its population to-day is about 140,000 and it is the business center for the irrigated region of this section. It is also the market for the sheep husbandry of the Great Basin.

Another city of some industrial importance is Butte, in Montana. This city owes its prominence to its copper mines and smelters. It is said to be one of the richest cities, per capita, in the United States.

It is on the Pacific slope where we must look for the largest cities. This region, with greater accessibility from the west and a better rainfall, is a more popular habitation for man. The metropolis of the coast is the city of Los Angeles. This city has grown remarkably in the last twenty years. Its splendid climate and clear skies have made it an attractive place to man. It is the fruit center of southern California, the country around being irrigated by means of artesian wells. Another industry that has centered in and around this city on account of its climate is the moving picture industry.

San Francisco, the second city in size in this region, is located on an excellent harbor, but unlike New York its hinterland is limited by the mountain barriers only a few miles to the east. However, ten railway lines reach the bay, and here as in New York we find regular steamship lines to foreign ports. The principal lines on the ocean run to Mexico, South America, Hawaii, the Philippines, Japan, China, Australia and New Zealand. The commercial possibilities of this city should become greater if the far eastern people should ever develop to the extent of the Europeans who are opposite our Atlantic shore.

Going farther north we come to a rapidly developing section around the Puget Sound. The metropolis of this section is Seattle which bids fair to become a vigorous rival of San Francisco in the struggle for supremacy in the trade with the Orient. Seattle is forty-eight hours closer to the Orient than any other port in the United States, thereby having a large exporting and importing business. It is well called "The Gateway to the Orient." Located near the great lumber camps, the manufacturing of lumber and timber products exceeds all other industries. Feed and cereal mills, machine shops and fishing industries have attained great proportions. Eighty per cent of all manufacturing in the state is in Seattle.

Tacoma, also located on Puget Sound, shares with Seattle some of the advantages above mentioned. Located near the coal fields which furnish the necessary fuel, its principal industry is the smelting of ores.

Portland, on the Willamette River, is the largest city in Oregon and has transcontinental connections with the east. It is the commercial center for the Oregon forests and the Columbia River fisheries.

Spokane, an inland city, is in a center of grain growing. Two great continental lines converge in this city, giving it excellent transportation facilities.

Only a small portion of the foreign commerce of the United States goes through the Pacific coast. According to statistics recently available only about 6 per cent of the nation's commerce reaches this side of the country, and of that about one-half goes through the city of San Francisco. The tonnage of the Puget Sound ports is greater, but it is less in value than that of the more southern port. However, trade is certain to increase on this coast as it faces an ocean around which half of the people of the world live. As western ideas of trade are more fully adopted and the wants of the people of the Pacific increase, the commerce of this section of the nation may not be inferior to that of the eastern seaboard.

Below are listed the cities of the United States with a population of over 100,000 according to the census of 1930.

New York, N. Y.	6,930,446
Chicago, Ill.	3,376,438
Philadelphia, Pa.	1,950,961
Detroit, Mich.	1,568,662
Los Angeles, Cal.	1,238,048
Cleveland, Ohio	900,429
St. Louis, Mo.	821,960
Baltimore, Md.	804,874
Boston, Mass.	781,188
Pittsburgh, Pa.	669,817
San Francisco, Cal.	634,394
Milwaukee, Wis.	578,249
Buffalo, N. Y.	573,076
Washington, D. C.	486,869
Minneapolis, Minn.	464,356
New Orleans, La.	458,762
Cincinnati, Ohio	451,160
Newark, N. J.	442,337
Kansas City, Mo.	399,746
Seattle, Wash.	365,583
Indianapolis, Ind.	364,161
Rochester, N. Y.	328,132
Jersey City, N. J.	316,715
Louisville, Ky.	307,745
Portland, Ore.	301,815
Houston, Tex.	292,352
Toledo, Ohio	290,718
Columbus, Ohio	290,564
Denver, Colo.	287,861
Oakland, Cal.	284,063
St. Paul, Minn.	271,606
Atlanta, Ga.	270,366

Dallas, Tex.	260,475
Birmingham, Ala.	259,678
Akron, Ohio	255,040
Memphis, Tenn	253,143
Providence, R. I.	252,981
San Antonio, Tex.	231,542
Omaha, Neb.	214,006
Syracuse, N. Y.	209,326
Dayton, Ohio	200,982
Worcester, Mass.	195,311
Oklahoma City, Okla.	185,389
Richmond, Va.	182,929
Youngstown, Ohio	170,002
Grand Rapids, Mich.	168,592
Hartford, Conn.	164,072
Fort Worth, Tex.	163,447
New Haven, Conn.	162,655
Flint, Mich.	156,492
Nashville, Tenn.	153,866
Springfield, Mass.	149,900
San Diego, Cal.	147,995
Bridgeport, Conn.	146,716
Scranton, Pa.	143,433
Des Moines, Iowa	142,559
Long Beach, Cal.	142,032
Tulsa, Okla.	141,258
Salt Lake City, Utah	140,267
Paterson, N. J.	138,513
Yonkers, N. Y.	134,646
Norfolk, Va.	129,710
Jacksonville, Fla.	129,549
Albany, N. Y.	127,412
Trenton, N. J.	123,356
Kansas City, Kan.	121,857
Chattanooga, Tenn.	119,798
Camden, N. J.	118,700
Erie, Pa.	115,967
Spokane, Wash.	115,514
Fall River, Mass.	115,274
Ft. Wayne, Ind.	114,946
Elizabeth, N. J.	114,589
Cambridge, Mass.	113,643
New Bedford, Mass.	112,597
Reading, Pa.	111,171
Wichita, Kan.	111,110
Miami, Fla.	110,637
Tacoma, Wash.	106,817
Wilmington, Del.	106,597
Knoxville, Tenn.	105,802
Peoria, Ill.	104,969
Canton, Ohio	104,906
South Bend, Ind.	104,193
Somerville, Mass.	103,908
El Paso, Tex.	102,421
Lynn, Mass.	102,320
Evansville, Ind.	102,249
Utica, N. Y.	101,740
Duluth, Minn.	101,463
Tampa, Fla.	101,161
Gary, Ind.	100,426
Lowell, Mass.	100,234

POSSESSIONS OF THE UNITED STATES

Alaska.—This great territory in the northwestern part of North America has a wide range of climate. In the interior are found such extremes of temperature as—60° in winter and 90° in summer. But along the coast, due to the warm Japanese Current, the thermometer rarely goes below zero in winter, and in summer the highest is around 80°. The average winter temperature of Sitka is practically the same as that of Richmond, Virginia.

In area Alaska is nearly the size of the United States east of the Mississippi. Its coast line is longer than that of the continental United States.

Alaska has long been noted for its furs and the fur industry continues to be important; but it is now more scientifically carried on than ever before in history, for it was seen that the supply of fur-bearing animals would soon be extinct if the wasteful methods of hunting and trapping of the nineteenth century should be followed. As a result many fur farms have been established, especially farms breeding different varieties of foxes. Excellent facilities for this type of farming are to be found on many of the islands off the coast, especially on the Pribilof Islands.

No waters are more abundantly supplied with fish than the waters of the Alaskan rivers and coasts. From the standpoint of value these fishing grounds are among the most valuable in the world. Here is a section from which we receive over fifty per cent of the salmon used in the United States. Huge canning factories of salmon form an important industry along the sea coast. Other fish caught in large quantities are the halibut, the cods and the herring. Fishing is Alaska's most important industry, with 800 vessels and 21,695 men engaged in it in 1933. The value of the salmon pack for 1933 was $28,376,014.

Another of the rich resources of this region is its supply of timber. Most of the heavy forests stretch along the moist coast line of the southeast. This region is really an extension of the forests in British Columbia and is well supplied with coniferous trees. Some timber is found in the interior, especially along the water courses. The lower courses of the Yukon River are almost all wooded. This timber, however, is too small for lumber and has no great value except as it is available for use as paper pulp. The forests of this region are not as fully developed as they could be largely on account of their inaccessibility, many of the best sources of supply being located too far away from water transportation. Only those that are located near ports that can be reached by boats have real commercial value.

As in the case of California and other western states, the supply of gold in Alaska was the cause of attracting most of the early settlers. The rush to the Klondike and Alaskan fields in the years from 1897 to 1899 was equalled only by the rush of gold seekers to California in 1849. The precious metal is scattered over a wide area. Placer mines are located in western Alaska along the Yukon, the Tanana and the Kuskokwim and their tributaries and in the Seward Peninsula near Nome. The principal gold-quartz mines are located in southeastern Alaska.

Copper is found in the watersheds of the Copper River and along Prince William Sound. In fact, so much copper has been found, and mining it is so profitable that the value of the copper output has in recent years exceeded that of gold.

Large amounts of silver are secured from the copper ore; some silver comes from silver lodes. Large coal fields are still almost untouched. Some petroleum is taken and explorations for new deposits are being carried on. Among the other minerals are lead, tin, garnet, gypsum, platinum and quicksilver.

The commercial value of Alaska is many times the price paid Russia for this territory. Her wealth will be in her raw materials for many years to come. Her exports of salmon, minerals and furs will constitute her chief source of wealth for some time to come. Agriculture will probably never develop beyond the home consumption stage. An important industry has arisen there that may prove to be a most important factor in increasing the supply of food for this region as well as furnishing an excellent article of export. On the barren moss grown tundra or plains the government placed a number of reindeer some few years ago. The reindeer can thrive in this locality and is not only important as a food supply but can be used as a beast of burden. In 1930 there were 110 herds containing about 712,500 deer, valued at $18,000,000. About two-thirds of the reindeer are owned by the Eskimos.

By Army and Navy installations of cable and radio, supplemented by private installations, almost all of Alaska, with the exception of a few of the Aleutian Islands, is in touch with the outside world.

Lack of transportation facilities has held back the development of Alaska. Coastwise steamers provide uninterrupted service between the ports of southern Alaska and Puget Sound, but such northern points as Nome are reached only from July to September. In the summer river boats ply on the Yukon River for more than 2,000 miles.

The Alaskan Railroad, a government undertaking, is 509 miles in length, counting its branches. It runs from Seward on Prince William Sound to Fairbanks in the interior. A privately owned line, 190 miles in length, runs from Cordova to Kennicott. It is used especially to bring out the copper ore. A railroad extends from Skagway to the Canadian border and thence to White Horse in the Yukon region 1930 population increased to 59,278.

The cities of Alaska are small in number as well as in population. The 1920 census showed a decrease from the figures of 1910, due largely to the World War. The war took away many men, not only those who enlisted but also many who were attracted by the high wages of the shipyards.

The principal towns are those along the coast. Starting at the southeastern part and going up the coast there are the following: Ketchikan, Wrangell, Petersburg, Sitka, Juneau, Cordova, Valdez, Seward, Kodiak (on Kodiak Island) and, far to the north, Nome. Juneau the capital and largest town, has a population of 3,058. Fairbanks, the largest town in the interior, has 1,155 inhabitants.

In proportion to the number of people Alaska is said to have more nationalities than any other section of the world. Among the whites the Scandinavians are most numerous. There are about 13,600 Eskimos, who live along the northern coast.

Porto Rico.—Porto Rico is an island about ninety-five miles long and about thirty-five miles wide. It is somewhat smaller than our state of Connecticut, and because of its rich fertile soil is one of the most densely populated islands in the West Indies. The climate is tropical, though the elevation in certain portions furnishes a climate that makes an excellent dwelling place for the white man. The chief commercial products of this island are coffee and sugar cane. For a long time coffee was the principal crop, but of late years there has been a tendency to grow more and more sugar cane by planters who buy up vast tracts of land and allow it to be worked by a plantation system with negro labor. The growth of sugar cane farming has had a tendency to squeeze out the small white farmers and increase the negro, or black population. The chief exports of this island are sugar

and coffee. Its chief manufactures are limited to the refining of sugar cane, the manufacture of cigars and cigarettes and Panama hats.

The Philippines.—This large archipelago of over three thousand islands near the coast of Asia forces the United States to take a keen interest in the affairs of the far east. About 100,000 square miles of land was added to the soverignity of the United States when these islands were purchased from Spain, and while most of the islands have a tropical climate unfit for the white man, yet in the northern section, especially on the island of Luzon, the climate is temperate and here we find most of the tilled land and large cities. The principal commercial products are its raw materials, the chief of which are sugar cane, tobacco, coconut and the famous Manila hemp. This latter product is used in the making of ropes. Over half of the land in these islands is covered with forests of many valuable tropical woods. Of chief commercial importance are rubber and gutta percha, dye woods and bamboo.

This latter tree is used largely for building purposes.

These islands are also rich in mineral resources. In the northern islands we find gold and copper in considerable quantity. Here also are rich iron deposits located near coal that has attracted a considerable number of people to this region.

Like Alaska, this region lacks transportation facilities. As a consequence most of the people are near the coast. Some building of railways has been carried on since American occupation which already has brought considerable wealth to the people in the interior. As transportation facilities are provided more sugar and coffee can be raised; the rubber districts can also be tapped; and these commodities which are



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Bringing the coconuts from the interior of the Philippine Islands to the market. As there is no train service to most of the interior of the country the nuts are stacked as large rafts and brought down the river the same as lumber is shipped down the rivers of our country.

in so great a demand in this country will bring a vast amount of wealth to these islands. The bulk of trade is carried on with this country. About one-half of her exports come to the United States. Manila, situated on the northern island of Luzon, is the principal port for foreign trade. It has an excellent harbor and is in the path of many commercial routes from North and South America to the Orient.

Hawaiian Islands.—Located far out in the Pacific Ocean at the crossroads of ocean traffic this little group of Hawaiian islands forms a most important possession for the United States. It not only furnishes an important mid-ocean supply station but in a sense is the western gateway to the Panama Canal. The population of these islands is largely Asiatic, due largely to the demand for cheap labor in the sugar plantations. The great commercial crop of these islands is sugar, which is grown everywhere on the lower elevations. Sugar forms about 87 per cent of the entire exports of the islands, and represents a value of over $39,000,000 annually. Other prominent



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HAWAII—An unusual photograph of the pineapple industry.

commercial crops are pineapples, cocoa, bananas, vanilla and rubber, which are found in the moist regions, while coffee and tobacco grow in abundance in the higher and drier regions. Pineapples are a most important crop for export. Over 1,500,000 cases of this fruit were exported to the United States in 1920. Some of the largest canneries in the world are located on these islands, consuming many hundreds of tons of fruit per day.

Other Possessions of the United States.—In the far away Pacific Ocean there are two groups of islands belonging to this country. They are not important commercially except that they lie in the way of many of the commercial routes in the southern Pacific. The islands are Tuituila, in the Samoan group, and Guam. They are important as coaling stations for the navy.

In the Carribean region a recent possession of the United States, are the Virgin Isles just to the east of Porto Rico. These are important mainly as coaling stations and as the eastern gateway to the Panama Canal.

Another possession of no small importance is the Canal Zone on the Isthmus of Panama. Here the United States has control over a strip of land ten miles wide on each side of the Panama Canal. It would be hard to overestimate the commercial value of this strip of land to the United States. In the first place it has shortened the distance between New York and the Orient. New Orleans and other ports also receive the same benefit. It also means that the western coast of South America is brought many thousand miles nearer the Atlantic ports of the United States. This means that freight costs are appreciably lessened. The bringing of New York and the Atlantic seaboard nearer to the Orient means also that these cities are in a better position to compete with London and the other cities of Europe for the trade of the Far East.

THE CENTRAL AMERICAN STATES

In this division should be included Mexico as well as the small states comprising the regular section called Central America on all political maps, for geographically and climatically they are about the same. In both sections the coast is low and unhealthful, while towards the interior the land rises to a high plateau, making it more habitable for men. These countries are rich in natural resources. One of the greatest oil tracts in the world is in the district around Tampico, in Mexico, on the gulf, while this country has some of the richest silver mines in the world. Other minerals occurring in large quantities are zinc and lead and copper. Mexico ranks next to the United States in the production of copper. Gold and silver are found in paying quantities in several of the small states in Central America, particularly Nicaragua and Honduras. There is also iron in abundance in Mexico. Most of the natural resources of this region are poorly developed on account of poor transportation facilities as well as on account of the backwardness of the people. Here we find a strange mixture of white, Indian and Negro with the Indian predominant. In the state of Mexico the Indian represents about 40 per cent of the entire population, which goes far towards explaining the unstable political conditions in that country.

One of the vast untouched resources of this region is its wealth of forest materials. Here along the Caribbean Sea are dense forests producing mahogany, rosewood, cedar, logwood and rubber. The cultivated products of this region are of every variety from tropical to temperate according to the elevation cultivated. The most distinctive crop is coffee, which is grown from southern Mexico into Central America on the Pacific slope. Tobacco and cotton are of some importance especially in Mexico.



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PHILIPPINES—Opening Coconuts. The natives use a large and heavy steel knife for splitting the nuts. The external husk of the coconut yields the coir fibre with which are made fabricated ropes, cordage, brushes, etc. The nut is then broken up into small pieces and dried for making coconut oil.

The manufacturing of this entire region is largely of the handwork type. The economic development of the race shows its influence to a marked degree. As in the Orient, so we find here the making of hand carved and inlaid woods, pottery, jewelry and leather working. Another factor that has hindered the factory type of manufacturing is the lack of fuel. While this region is rich in precious metals, iron and oil, it is lacking in coal. However, there are a few blast furnaces in the vicinity of Monterey which is located near coal fields of some value.

The principal commercial centers of this region are located along the eastern coast. Vera Cruz is the principal commercial

port, being the natural outlet for most of the plateau region of Mexico. The fact that it is connected with the interior by rail has helped this city to keep a primary place as a commercial center. However, Tampico, a little farther north, has a better harbor and an easier entrance to the plateau. On the western shore of Mexico is the harbor of Acapulco the first harbor on the Pacific coast of any importance south of San Francisco. Here are good shipping facilities. The only thing lacking is better transportation facilities to the interior. The mountain ranges come close to the coast, forming a difficult barrier to overcome. This harbor has an important location in that it is in direct line with the shortest route from the Panama Canal to the Hawaiian Islands and the Orient.

This entire region, which is so rich in precious metals, tropical fruits, forest products and cattle, is nevertheless comparatively poor. One of the reasons for this poverty we have mentioned, namely the predominance of an inferior race, the Indian. Other reasons that are equally potent are that owing to the scarcity of water much of the interior is given over to stock raising, an occupation affording few comforts; also the fact that much of the land is held in the hands of a few wealthy men, forming an aristocratic class, while the common people who are compelled to work on these lands are little more than slaves; and last of all, the lack of railroads and navigable rivers from the interior have done much to retard the development of these countries.

CANADA.

Area and Population.—The great Dominion of Canada extends from about the latitude of the North Cape to Rome. It is about thirty times the area of the British Isles and even exceeds that of the United States, Alaska, Hawaii, Porto Rico and the Virgin Isles combined. Its total area is 3,603,900 square miles.

The population of Canada was officially estimated in 1931 to be 10,376,786. The population, omitting the little explored northwest territory, is only a little over 3 per square mile; in other words, just about one-tenth of the population per square mile of continental United States. This country consists of nine provinces and two territories with populations as follows:

	Population 1931
Alberta	731,000
British Columbia	694,000
Manitoba	700,000
New Brunswick	408,000
Nova Scotia	512,000
Ontario	3,431,000
Prince Edward Island	88,000
Quebec	2,874,000
Saskatchewan	921,000
Northwest Territory	9,000
Yukon	4,000
Total population	8,835,102

Here then is a vast unsettled country with resources enough to support at least fifty million or more people. The character of the people and the climate of the country are such as to make Canada the one serious rival of the United States in this hemisphere. At the last census the percentage of Canadian born population was 64.49, British born 17.82 and foreign born 17.69. The foreign population is largely in the prairie provinces and to a considerable extent is composed of immigrants from the United States who have been attracted to these provinces on account of their cheap and highly productive lands.

Canada is rich in natural resources, the chief of which are agriculture, forests, mining and fisheries. The long hours of sunshine, which lasts from sixteen to nineteen hours daily, and the warm winds coming in from the Pacific push the limits of grain growing and forests over a thousand miles north into Canada. The broad plains in western Canada are more favorable to agriculture than the plains just to the south in the United States. This is due primarily to the fact that rains reach the Canadian plains in greater amount than in this country, and also to the fact that evaporation is much less.

Argiculture is now the leading industry in this country, and wheat is the chief money crop of Canadian farms. Agricultural products represent the largest share of Canadian exports. Oats, hay, potatoes, apples and barley are also important crops in this section. The greatest wealth, however, comes from its wheat crop, which averages about 400,000,000 annually. Canada ranks fifth in the list of wheat-producing countries of the world. Most of this crop is grown on the great plains in the west where climate and soil are so splendidly adapted to this crop. In the St. Lawrence valley, which has a shorter growing season owing to the colder winters, the principal crops are hay, oats and potatoes. In southern Ontario we find much of the climate and soil of western New York and Michigan duplicated. Here is the principal apple and small fruit growing region. From southern Ontario also come most of the dairy products of Canada, which is the greatest cheese making and cheese exporting country in the world. More than 125,000 pounds of butter and 160,000,000 pounds of cheese are marketed annually. The Dominion's entire revenue from agriculture is nearly one and one-half billion dollars. Cooperative marketing has aided Canadian agriculture greatly.

Mineral Resources.—Like the United States, Canada has a large variety as well as a large extent of minerals. Throughout the length and breadth of the country minerals in paying quantities exist. Very little is known of the possibilities from a mineral standpoint of the practically unexplored northwest territory. It is calculated that deposits of gold, copper and nickel exist here in considerable quantities. Here is one of the largest areas of oil-bearing countries yet unexplored. Already oil fields have been found and the country gives every promise of having a much larger supply.

Gold, copper and iron are known to exist in paying quantities in four different sections. Gold is found in the Yukon territory, copper in the mountain region of British Columbia, and iron in the region about Lake Superior and also in Nova Scotia. Canada has virtually a monopoly in the production of nickel, the mines around Sudbury being the most productive in the world. Canada also has large deposits of mica and furnishes the market of the United States with practically the entire amount that is consumed here. Canada also produces between 80 and 85 per cent of the world's entire supply of asbestos. The principal mines of this mineral are located in the province of Quebec.

Canada has also large fields of coal but their location is such that the best advantage and use cannot be made of them. The great populous St. Lawrence Valley is almost devoid of coal, and has to import much of this mineral from the United States. The coal mines of Canada are known to extend over an area of more than 111,000 square miles, and may be conveniently divided into the bituminous coal fields of Nova Scotia and New Brunswick, the lignite fields around Manitoba and Saskatchewan, and the anthracite and bituminous fields in British Columbia, Vancouver Island and Queen Charlotte Island. It will be a great many years before this great western field will be fully developed. The lack of natural waterways and railroads will hinder the full development for some time to come. The cost of transportation of coal by rail for the eastern provinces is prohibitive and accounts for the fact that Canada has been importing from the United States over 20,000,000 tons of coal yearly for the last three years. The greatest asset of Canada is perhaps its forests. The total area covered by forests is estimated to be between 500 million and 600 million acres. Over 50 per cent of this area is covered with timber suitable for sawing into lumber. A large part of the remaining acreage is covered with timber suitable for use as paper pulp. From the standpoint of lumber resources Canada ranks third in the world. The principal varieties are spruce, Douglas fir, white pine, cedar; also hardwoods such as oak, ash, hickory and several varieties of the maple. There is also an abundance of hemlock, the bark of which gives rise to the tanning industry, which is especially prominent at Quebec. The yearly output of lumber and wood pulp is about $220,000,000.

Fisheries.—Canada also possesses some of the most extensive fishing waters in the world. Nearly four-fifths of the fishing waters of the north Atlantic region belong to Canada. Then there is the great Hudson Bay and the Pacific Coast. As in the case of the fishing waters in the United States, the principal variety of fishes are cod, haddock and halibut on the Atlantic coast, and salmon on the Pacific coast. The total value of all fish products marketed averages about $44,000,000 per year.

Fur.—Fur-bearing animals abound in considerable number in the vast sub-arctic forests of Canada, and fur trading has been an important part of Canada's activities since the earliest days of the French regime when that trade was monopolized by large proprietary companies. In this section are found furs of great value, including the beaver, sable, marten and black and silver foxes. An important fact to note in connection with the fur trade is that Canada no longer depends for its supply of skins on the trapping of wild animals, but is now breeding various fur-bearing animals on farms. Large farms are now given over in Canada to the breeding of foxes, Persian lamb, raccoon, mink, marten and skunk. The leading section in the matter of fur farming is found in the province of Prince Edward Isle. The export value of furs from Canada averages about $13,000,000 per year.

Manufactures.—The industrial development of this country is very small when compared with the resources that are capable of development. This is undoubtedly due to the fact that Canada is relatively a new country. Immigration from Europe has gone through the ports of the

southern Atlantic seaboard, while Canada has been out of the line of march. Three important factors have hindered manufacturing in this region, namely, the lack of a supply of labor, lack of adequate transportation facilities, and a small market for its product. In the matter of wealth of raw material and power, Canada is only equalled by the United States. However, Canada has made great strides in manufacturing development in the last thirty years. In 1892, according to statistics for that year, the value of the manufactured products amounted to something over $300,000,000. Now the value of all manufactured products averages in excess of $3,500,000,000 annually. There is a distinct movement among the people of Canada to build up the industries of that country in such a manner that all wants along the lines of manufactured products can be supplied at home. The "Made in Canada" movement is daily gaining strength. Some of the industries have a distinct advantage due to the cheapness of the raw materials, and hence we find that lumbering, grain and dairy industries are developed to a high degree. Also the pulp mills in the east have the advantage of location near the supply of spruce. The iron and steel industry is carried on in Nova Scotia in a small degree. The city of Sydney is the principal center, being located near supplies of coal, iron and limestone. There are also important steel works along the shore of the great lakes, especially at Toronto, Hamilton and Sault St. Marie.

Transportation Routes.—No country has more magnificent waterways than Canada. Here we find four great rivers; the Yukon, Mackenzie, Saskatchewan and St. Lawrence. All of these reach far into the interior and should be natural routes of trade. With the exception of the St. Lawrence none of these is of much commercial importance. All of the rivers are icebound a considerable portion of the year, which prevents the full utilization of these streams. The fact that the St. Lawrence is icebound a portion of the year causes much of the trade to turn from its natural channel and seek an ocean port that is ice free, like New York City.

In the matter of railways Canada has a greater mileage in proportion to the population than any other country. According to latest statistics the total mileage of Canadian railway lines is over 40,000 miles, or a little over forty miles of railroad to every ten thousand inhabitants. Three transcontinental roads connect the Atlantic and Pacific, namely the Canadian Pacific, Grand Trunk and the Canadian Northern.

Cities.—The commercial capital of Canada is Montreal. Although this city is a thousand miles inland it is a seaport. Geographically it has a better location than New York for it is nearly three hundred miles nearer Liverpool than New York and is also on the natural outlet for the Great Lake Basin of the United States and Canada. Ice is the factor that prevents it from seriously competing with New York and becoming the metropolis of the new world.

Quebec was formerly the most important city. It is the oldest city in Canada and has become prominent as a manufacturing rather than a commercial center. The building of a railroad bridge at Quebec has helped this city considerably in connecting it with the Atlantic ports of the maritime provinces.

Two other cities of importance should be mentioned, namely Halifax and St. Johns. Both of these cities are located on ice free harbors and are railroad terminals for trunk lines to the west.

The second city in size in Canada is the city of Toronto, located in the midst of a rich hinterland in the Ontario peninsula.

Going farther west we come to the city of Winnipeg on the prairies north of the Great Lake region. This city has become a railway center for the transcontinental roads of Canada and is located in the midst of the world's richest grain fields. No other city in the world has so large and undisputed a hinterland as Winnepeg. Were it not for the international boundary line this city would be a serious rival of Chicago.

Edmonton, a town a thousand miles north of the southern boundary of Canada is important principally as a fur depot and as the center for outfitting hunters and trappers and miners.

In General.—Commercially the Dominion of Canada is the best customer of the United States. Over 62 per cent of its imports come from the United States. We need her goods and she needs ours. When the time comes that this nation must become an importer of wheat and other raw materials, which may not be far off, it is then that we shall have to look to Canada as the great supplier of wheat. We need her wood pulp and lumber, and she needs the products of our sub-tropical regions as well as our machinery. Geographically the country is an extension of the United States, and the fact that people of the same language and race are on both sides of the boundary line does much to make each country the complement of the other.

SOUTH AMERICA

North America and South America are similar in shape, each having the form of a triangle. Each continent is widest in the northern section and narrows down towards the southern end. Each has a lofty mountain range on its western border; the Andes correspond to our



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ARGENTINE—Sheep dipping.

Rocky Mountain system, while the eastern range of mountains of the coast of Brazil corresponds to the Appalachian Ranges and the highlands of Guiana resemble somewhat the Laurentian highlands in northern Canada and Labrador. Furthermore the desert plateaus of the Salt Lake region correspond to those of Bolivia in the region of Lake Titicaca. The resemblance between the two continents is still further exemplified by its river systems. Each continent contains two great river systems. In South America the great Amazon system compares in position with the St. Lawrence system of North America, draining the northern part of the continent, while the great Parana and its tributary, the Paraguay, conform to the Mississippi and Missouri rivers of North America, and like the latter, run from north to south-draining the great interior of the continent. Again, the warm coast of Peru and Ecuador is a reproduction of that of western Mexico, and the heavy rainfall on the coast of North America is represented in South America by the region in southern Chile with its archipelagos covered with a large virgin forest. South America, then is a continent with large river systems, an abundance of fertile land and mountains, containing a vast wealth in minerals, that still remains in an almost natural condition, despite the fact that the white man discovered and settled in this region long before he settled in North America.

From the economic point of view the development of South America is very backward. With the exception of the coast regions it is almost uninhabited. This is especially true of the great interior. This is due largely to climatic conditions for about three-fourths of the continent lies in the tropical zone and is therefore not well suited to emigrants from temperate lands. Another factor that hinders development is that of race. Here is a continent, which with the exception of the basin of the Parana and Plata rivers and the valleys of Chile, is dominated by an inferior race. Probably more than 75 per cent of the population of northern South America is pure Indian, mixed Indian or Negro. Even the descendants of the early Spanish and Portuguese settlers in the tropical region lack the energy of their forefathers due to the enervating effect of climate.

Other geographic factors that have hindered the economic development of South America may be briefly mentioned as follows: This continent is far removed from other developed parts of the world. Like Australia it is off the main lines of travel. For ages the movement of temperate zone peoples has been east and west, and South America, facing Africa the most backward continent of the old world, has not had the benefit of being on the line of travel as in the case of North America. Another geographical factor that hinders development is that there ar no deep indentations on the coasts such as are found in all other continents except Africa and Australia. This fact alone makes travel into the interior very difficult. The economic wealth and development of North America and Europe is in part due to their extent of coast line. No continent has more magnificient rivers than South America and for the most part they are navigable for great distances. However it is not always easy for boats to use them because of rapids and falls, while in the vast forest regions railroad building is difficult owing to the luxuriant growth of tropical vegetation.

Natural Regions.—Most of the wealth of South America is derived from its mountains and plains. This country, like all new countries, is still in the extractive stage of commerce in that most of its trade and commerce has to do with agriculture, mining and the products of the forests.

From a commercial standpoint the plains of South America are among the richest in the world. The great plains in this continent extend north and south over a distance of four thousand miles through

the interior. These plains are divided into three sections, called the Plains of the Orinoco, Plains of the Amazon and Plains of the La Plata. The plains of the Orinoco are for the most part in Venezuela. The climate here is very warm, but despite the heat and long periods of drought the grasslands of this plain are admirably suited to cattle raising. A little farther to the south the plains of the Amazon are found. These plains are covered with an abundance of vegetation and occupy about half the area of Brazil, as well as portions of Colombia, Ecuador, Peru and Bolivia. The great wealth of this plain is in its forest products, and is only very slightly developed for want of transportation facilities. No other part of the world offers so large a variety of valuable woods. Here is found the famous Para rubber tree which gives a great deal of wealth to the country of Brazil. The high temperature and heavy rainfalls of the region along the Amazon River are specially adapted to the growth of this tree. According to the variety of vegetation the plains of the Amazon may be divided into belts, each belt showing a different variety of products. The Palm Tree Belt occupies a region lying along both sides of the Amazon for almost its entire distance. Here we find the rubber and ebony trees as well as a variety of tropical fruits such as bananas, dates and cocoanuts from the higher slopes to the west. Another belt is known as the region of virgin forests and has an immense wealth of gums, rosins and medicinal plants, as well as cabinet and dyewoods. This region extends south from the mouth of the Amazon to Bahia, in Brazil. Farther south in the uplands of this valley is the coffee, tobacco and sugar region. Here is grown about four-fifths of the coffee that is consumed in the world. Coffee is Brazil's most important and valuable export. In this same region cotton is also grown to some extent.

The plains of the Parana, or the Plata, as the estuary is called into which the Parana system flows, are noted for the hardwoods of the northern section and the great wheat and pasture lands in the southern section. Along this river in Paraguay grow the hardest woods known, namely the lapacho, nandubay and quebracho. These hard woods rival teakwood in durability. However, it is in the southern section of these plains that there has been the greatest development. Live-stock raising and agriculture have been developed to such an extent that Argentina is to-day one of the great grain growing and meat producing countries in the world. East of the 64th meridian of longitude we find a climate somewhat like that in our states west of the 100th meridian. This section is of great importance as a future supplier of wheat. Only a small portion of the land is under direct cultivation but despite this fact over 5 per cent of the world's supply of wheat and corn come from this region.

Live-stock raising is also an important activity in this region. The great fertile pasture lands furnish an abundant supply of food. According to the latest figures Argentina has thirty million head of cattle and sixty-seven million head of sheep.

Along the entire western section of the continent the Andes Mountains extend their lofty peaks and high plateaus. Here is a region which in the torrid zone has every phase of climate from frigid through temperate to tropical. On the warm and calm coasts of Ecuador grows the famous cacao tree which produces the cocoa of commerce. Another important product from the Andean valleys of this region is quinine. This is the region of minerals, rubies and emeralds from the northern section. The silver mines in Peru and Bolivia have been worked for centuries and still have vast supplies of materials. Further south in Chile we come to the famous nitrate producing section which is so important an item in the commerce and trade of Chile. Over 85 per cent of the exports of Chile consist of nitrate products. Here also is the principal copper producing section of South America, while coal mines and fields are to be found in the section of Coronel, which is the chief coal port on this continent.

Manufacturing.—In the torrid zone the principal type of manufactures is that of articles made by hand. Thus we find in this region considerable work in pottery and leather. In Ecuador is the chief center for the making of the famous Panama hats, so called largely because of the fact that these hats are shipped into this country through the Panama Canal region. There are also some cotton mills in Brazil and Peru, especially wherever there is an abundance of water power to be had. In the temperate region manufacturing has made more progress. For example, the country of Uruguay has large trade in beef extract, while the making of flour, the refining of sugar and tanning of leather are activities largely carried on in Brazil and Argentina. Chile ranks high as an industrial country, having large steel works and smelteries of copper. Another very important industry of high rank in this country is the production of iodine. Next to nitrate and copper production this is a close competitor.

Cities.—The most important city in South America is Buenos Aires, in the Argentine Republic. This city has a population of 2,042,889 (1928) and next to Paris is the largest Latin city in the world. It is the natural outlet of almost the entire continent, and with the completion of railways connecting this city with Santiago, in Chile, and the Bolivian plateau it will no doubt be the leading commercial city of this continent, as New York City is of the northern continent. Buenos Aires has the advantage of being located in the temperate zone and in the midst of a fertile land. The temperature is such that the people from Europe and other temperate regions seeking a home quickly adapt themselves to this locality.

Rosario, a flourishing city of 265,000 people, located on the Parana river, is in the center of the wheat growing section and because of its accessibility to ocean vessels it has become the port for the exportation of wheat in this region.

Tucuman, in the center of Argentina, is in the sugar producing region and its industries consist largely of sugar refining.

Mendoza, located in the western part of Argentina, is in the center of fruit growing and wine making. Because of its climate and products this region is often called the California of Argentina. On the Pacific coast most of the commerce of Chile passes through the Ports of Iquique, Antofagasta and Valparaiso. Neither of these cities has a good harbor. Iquique is the chief nitrate port. Here is a city that has grown up in a most forbidding place. Water has to be brought to it from the mountains over seventy miles away. The city is the result of the great deposits of nitrate in the Atacama Desert. Antofagasta is the chief port of the Bolivian plateau for goods sent towards the Pacific. Valparaiso is important as the port of Santiago and the terminus of an east and west railroad connecting the Atlantic and Pacific oceans.

In the tropical zone a few cities may be mentioned as being of commercial importance. Rio de Janeiro, a city of a 2,004,000 (1929 est.), is the chief port of tropical South America. It has an excellent harbor and is an important coffee exporting port. Other cities that are important are as follows: Santos, in Brazil, is in the center of the coffee growing section; Para and Manaos, on the Amazon, are chiefly important as rubber ports; Potosi, in Bolivia, is remarkable for its silver mines; Guayaquil is important only as being the port for Quito. The chief cities in the north are Bogota, the capital of Columbia, Barranquilla, the outlet for the Magdelena River valley, and Caracas, the capital of Venezuela.

Foreign Commerce.—The bulk of imports to these countries in South America consists of manufactured products. As a result these nations buy largely from Europe. This is due in part to the fact that South America is near the ports of Europe and also that the people of this country favor Europe as a place to buy their products. From the standpoint of exports the bulk of her raw materials goes to the United States. The three great commercial nations of this continent are Argentina, Chile and Brazil. According to figures last obtainable the average annual exports of Argentina in animal and meat products amounted to over $161,000,000; the exports of Brazil show an annual shipment of coffee amounting to over $180,000,000, while rubber amounts to about $83,000,000 annually. The chief export of Chile is that of mineral products, sending out on an average of over $109,000,000 worth of these products.

From the standpoint of balance of trade the United States has suffered a great deal in its dealings with South American countries. This country has failed to make the headway that the merchants and traders of England, France, Germany and Italy have. This has in a large measure been due to the faults of American business methods. The following list of some of the measures that would aid in extending trade in the United States was printed in a pamphlet issued some years ago by the Pan-American Union.

1. The appointment of men of culture, tact and energy as ministers and consuls.
2. The sending of business representatives who are gentlemen and who speak Spanish, Portuguese or French.
3. The manufacture of articles to suit the local Latin American trade.
4. The giving of credit to reliable purchasers as is done by European shippers.
5. The use of greater care in packing goods for the long distance to be traveled and for the severe changes in climate.
6. The opening of North American banks in the principal cities of South America.
7. The investment of North American capital in South America.
8. The popularizing in our schools and colleges of the study of the Romance languages, history and institutions.

Trade Routes and Transportation.—As stated elsewhere, a serious drawback in the commercial and economic development of

South America has been its lack of transportation facilities. The continent has many large rivers but the lands about most of them are so impenetrable that no habitation is found any distance from the river banks. As a result, the ports along these rivers are usually small and concerned solely with the raw materials to be found close at hand. While the Amazon and the Parana systems can be likened to the St. Lawrence and Mississippi systems of North America, yet the former valleys are in no sense settled, unless we except the region near the mouth of the La Plata. Vast territories in central and western Brazil are without human habitation of any sort, either savage or civilized. The water sheds between the Orinoco, Amazon and Parana systems are very low and during the period of heavy rains the waters of the three systems mingle together. A dream of many South American engineers is a continuous waterway from north to south, by means of canals, to join the rivers together. This would make a short route from Panama and the ports of North America to Buenos Aires. However, due to the vast wilderness and lack of cities along the route such a waterway would probably be too expensive to build and maintain.

In the matter of railroad building there has been considerable development in the republics of Argentina, Chile, Uruguay and Brazil. There are two interoceanic railroads; one from Buenos Aires to Valparaiso and another from Bahia Blanca to Zapala, at the foot of the Andes, to be extended to the Pacific, at Valdivia. A line connects Montevideo and Rio de Janeiro which will be extended up the coast to Bahia and Pernambuco, where it will connect with Atlantic steamers from Europe and the United States, thus shortening the time from these ports to the ports on the La Plata river. A new line has been completed across Brazil from Corumba, a port on the Paraguay, eastward to Rio de Janerio. Chile has a railroad running from Tacna and Iquique south to Port Mont. This road is intersected by a number of short lines running east and west, touching the coast at various points. The topography of the country in northern Argentina lends itself readily to the building of roads, and hence we find a net work of roads in this section more dense than in any other country in South America. In addition to the two continental roads mentioned above there are routes tapping the Bolivian plateau, besides a number of short lines running between Bahia Blanca and Buenos Aires. Railroad building in Peru, Ecuador and Columbia is an expensive operation. Hence we find here only a few short routes. The same is true of the northern republics, as the topography and climate of these regions make the building of long railways unprofitable. Most of these lines run for only a short distance, affording an outlet to some port nearby. The highest railroad in the world is in Peru. It is at an approximate elevation of 16,000 feet above sea level.This road is only profitable because it can handle the ores from the Cerro de Pasco mines. Another interesting road is the line from Quito to Guayaquil. This road opens up no new trade routes but is located in the region which is rich in tropical fruits and cocoa. It will probably do a great deal toward stimulating the commerce of the city of Quito which, though located on the equator, is a thriving city with a temperate climate.

Another dream of railroad builders is a road connecting the two continents running from New York and Chicago to Santiago and Buenos Aires. This road would undoubtedly do a great deal toward opening up and developing the interior along the route but the jungle nature of much of the country through which it would have to pass lessens somewhat its practical value.

EUROPE

In General.—No other continent in the world has had more influence on the development of art, trade and science than the continent of Europe. The word "European" is synonymous with civilization. In fact civilization as we know it came from this continent. It was from this continent that sailors and merchants eager to find new markets finally circumnavigated the globe. Why has Europe played so important a part in the world? There are of course many answers to this question, but geography has played an important part in causing this continent to be a leader.



NUREMBERG, GERMANY

The city of Nuremberg is situated on the little river, Pegnitz, in south central Germany. It is noted for the manufacture of toys and electrical machinery. The building shown is typical of the medieval appearance of Nuremberg.

No other continent in the world has so many miles of sea coast. In no other continent are there so many deep indentations which bring all the different parts of the country within easy communication. In fact no part of Europe,with the exception of the eastern section, is more than a thousand miles from the sea, and much of the more important part of the continent is within five hundred miles of salt water. This factor alone had the tendency of encouraging trade and travel in the middle ages, and did much to bring the people of the various parts of the continent into touch with each other. This fact is an important one in that when people travel they discover new needs for themselves and this is the foundation of trade and commerce.

Another factor that has helped Europe maintain its leadership is the climate. According to its latitude, Europe should be frigid to a large extent; as a matter of fact it is temperate. For example, the British Isles are in about the same latitude as Labrador, while most of Europe is north of the latitude of New York City. Because of the east-west trend of the mountains the prevailing westerly winds can carry moisture and warmth far inland over the great European plain. This makes a most agreeable climate which is highly favorable to agriculture and other human activities.

THE BRITISH ISLES.

No other nation in the world has profited more from her geographical position than England. During ancient times and even down to the discovery of America, these islands were on the fringe of the world. But after the discovery of America these islands found themselves in the middle of the world with lines of trade coming to them from the western hemisphere, and at the same time facing the broad open European plain on the east. This position therefore, has made the British Isles the great distributors of commodities and England the greatest commercial nation in the world. Her insular position has also had much to do with her development, for being entirely surrounded by water, England has been less subject to invasion by foreign armies, and hence her resources have been preserved from the wastes that invading armies cause in an enemy country.

The supremacy of the British people in manufacturing trade and commerce is due in the main to the following factors:

1. Their insular position.
2. Their central location in relation to Europe and the Americas.
3. The deep harbors making nearly every section accessible to the sea.
4. Abundant supplies of coal and iron.
5. A favorable climate.
6. A heterogeneous race; Celt, Saxon, Dane and Norman.
7. Inventive genius.
8. Freedom from foreign wars.

Agriculture.—In the middle ages the population supported itself by growing its own products. To-day the entire group of islands is largely dependent on other nations for its supply of food. The limited area of land surface, and the owning of large estates by aristocratic families has forced the agricultural industry to be largely of the small farm type. The climate of this region is more favorable to cattle and sheep raising than to agriculture, and for centuries, England and the other countries comprising the British Isles, have been famous as growers of cattle and sheep. Cattle and sheep are even now fairly numerous. The principal crops are barley, oats, potatoes and flax, the latter being a product of Ireland.

Minerals.—It is from their mineral resources that the British people have gained their greatest advantage. England is the largest producer of coal in the world, and the British coal fields exceed in area those of the rest of Europe. The principal fields are located in northeastern England, southern Scotland and southern Wales. In normal times the British Isles produce over 300,000,000 tons annually. Much of this is exported to other countries, colonies and naval stations, but a large part is used to run the huge factories that turn out the world's greatest supply of manufactured products.

Manufactures.—Because of the presence of coal and also because of improvements and inventions, especially in the spinning and weaving of cloth, England was able at the beginning of the nineteenth cen-

tury to outstrip all rivals. With plenty of fuel and machinery that could be operated by cheap labor she was able to strengthen her place in the industrial world. As a result we find industrial England located in the north near the coal fields and also near the former pasture lands of sheep. Wool was the first industry of prominence in this locality. Here we find the woolen industry in such cities as Leeds, Bradford, Halifax, Huddersfield and Leicester. Leeds is one of the greatest industrial cities in England and is first in the manufacture of wholesale clothing and is also a large manufacturer of iron and steel.



FAIR MAID'S HOUSE, PERTH, SCOTLAND

Perth is an ancient and historic city which has become a modern industrial center. The old tavern shown in this picture is typical of early England.

The cotton industry is located on the western slope of the Penine Range, where the moisture from the ocean winds is very favorable for the spinning of cotton. This industry centers largely in Manchester and the surrounding cities of Oldham, Bolton, Blackburn, Burnley and Preston. The raw material has to come from across the seas to these huge factories, most of the cotton coming from the United States.

Other types of manufacturing are to be found in large quantities, such as shipbuilding in Glasgow, Newcastle and Belfast. Tin is still obtained from the mines of Cornwall after centuries of production. Lead, zinc and copper are smelted at Swansea near the Welsh coal fields. Blast furnaces for smelting iron ore are found chiefly in Middlesborough, while special types of hardware and cutlery are made in Birmingham and Sheffield.

Cities.—The largest city of the British Empire is the city of London. That a large city should grow up at this point on the Thames was determined by its geographical location. The Thames River is an estuary for a considerable distance and faces two great rivers, the Rhine and the Scheldt, which invites commerce to, and from across the channel. Its position as the gateway of southern England and opposite the mouths of continental rivers has made this city one of the principal distributing centers in the world. English vessels bring the wares of the various countries of the world to London and then again reship them to other ports. It is today the world's greatest market for tea.

The principal city and port on the western coast of England is Liverpool. This city situated on the estuary of the Mersey river has become the great port for ship lines from America. Through this port most of the cotton, wheat, meat and tobacco is received.

Other ports of importance are Cardiff, the chief port for exporting anthracite coal; Manchester, which is reached by canal with the Mersey River; Hull, located opposite the Weser, Elbe and Kiel Canal; Glasgow, in Scotland, and Belfast, in Ireland. This city is the center of the flax growing region, the manufacture of linen as well as large shipbuilding works. Another city in Ireland which is of some commercial importance is the city of Londonderry. This city has been called the "Troy of the old World" in that it is a great center for the manufacture of shirts, collars and cuffs.

FRANCE

France has the advantage of fronting on two large seas. These two fronts, the Atlantic Ocean and the Mediterranean Sea, are factors that have done much to determine the political, religious and commercial life of this country. The broad level plain to the north, with the ports of Havre and Bordeaux opening toward England and America, have given France a share in the world's international trade, while the Mediterranean front has made her a potent factor in the trade with Africa and the Orient.

Agriculture.—On account of the excellent climate and splendid soil France is able to grow a large amount of agricultural products. The crowded condition of the country has made intensive farming a necessity. The small farms of France yield more wheat per acre than any other country, except Belgium, where like crowded conditions prevail. About one-half of the country of France is under cultivation, the principal crop being wheat. The general average yield of wheat is from 21 to 25 bushels per acre. This yield compared with the yield of 12 to 15 bushels in the United States and 10 bushels per acre in Argentina is an example of what intensive tillage would do towards increasing the supply of food in the newer countries.

Next to cereals, the most characteristic French crop is fruit. Because of the mild climate the grape can grow in all sections of the country. The principal region, however, is in the north of France in the Champagne district. Other sections where grapes are grown in considerable quantities are in the Rhone district and around Bordeaux, along the Garonne River.

Minerals.—France is relatively poor in minerals as compared with the other great nations of the world. Her largest deposits are in the northen provinces. The recent acquisition of Alsace-Lorraine and the Saar Basin have increased the area of coal fields to a considerable extent. Here also are large deposits of iron ore. The mineral resources of the country west of the Rhine have been one of the causes of much of the strife between the German and French nations for many centuries.

Manufactures. — French manufactures reflect in a great measure the temperament of the Latin races. Here manufacturing does not concern itself so much with quantity and bulk but more with artistic designs and value. Hence we find that the characteristic French manufacturers are for the most part concerned with the making of silk fabrics, china and glassware, scientific instruments, jewelry, embroideries, wines and the canning of sardines and the small patotoes that are used in the high class restaurants of the large cities of the world. Another industry which is typical fo the French nation is the manufacture of the fine kid glove. The glove industry at Grenoble, in southeastern France, has for many centuries been most prominent. Nature placed the raw materials close at hand where hundreds of thousands of wild goats used to pasture on the mountain side. Nowhere in the world are kid gloves made that are of finer quality than the gloves of Grenoble, in France.

Transportation Routes.—France was one of the first nations to become a united country during the middle ages, and later became one of the leading commercial nations. A geographic factor that has favored the political and commercial unity of this country is its splendid system of rivers which radiate from the central portion of the country, thus making all parts of the country accessible. Almost all of these rivers are navigable and the various systems are connected by a system of canals which makes it possible to reach all points on the various river systems by boat. In the early days this was an important factor toward uniting the people. The chief rivers are the Seine and Moselle, in the north; the Loire and Garonne, in the west, and the Rhone in the east and south.

The Rhone is of the least value of all these routes largely because of its swift current and poor outlet to the sea.

France has a number of important railways leading into the surrounding countries. The most prominent are the routes from Paris to Berlin, Paris to Vienna and Paris to Turin, in Italy. The first two follow either the plain or pass through the low mountains to the east. The road to Italy reaches that country through the famous Mt. Cenis tunnel. A line also reaches around the end of the Pyrenees to Barcelona, in Spain, making that port virtually a French port.

Although France has a favorable position for commerce with excellent river and railroad systems and a coast facing on two seas, yet it is almost stationary in population and trade. The coast has no natural harbors. The principal harbors are Havre, Bordeaux, Dunkirk and Marseilles. Out from these ports goes a large amount of exports of small value, but because of the importation of very few raw materials the ships returning to France are not usually loaded, as is the case with ships returning to Great Britain. This in a measure accounts for the fact that France is not able to compete with England as a commercial nation.

GERMANY

In General.—Since 1871 Germany has made remarkable developments in commerce and industry, and previous to the Great War in 1914 was easily the greatest competitor of Great Britain in the matter of trade. Even to-day Germany possesses much of the natural resources that she had before the war, and the nature of the climate, soil and people is such as to warrant their playing an important part in the commerce and industry of the future.

Agriculture.—Because of the limited area of German territory and the sandy structure of the soil, which requires constant attention and the application of fertilizers, it is but natural that scientific farming should develop to a high degree in this nation. Here the worn out and old lands needed to be made sufficient to feed a fast increasing population. The prosperity of German agriculture rests upon the science of chemistry. While wheat is grown to some extent, the limited size of farms

and the cool and moist summers make the growing of root crops, such as sugar beets and potatoes, more profitable. Rye and oats are other staple crops of importance. However, sugar beet growing is the chief agricultural crop. This crop can be grown with profit on account of the supply of cheap labor, which is most essential to enable this crop to yield the greatest returns. In recent years Germany is one of the largest exporters of beet sugar in the world.

Minerals.—In proportion as nations have been able to utilize their mineral wealth, especially coal and iron, have they secured a leading place in the commerce of the world. For this reason England, the United States and to some degree France were early in entering into competition for world commerce. Up to 1871 Germany was a rural nation of small farmers. It was only after she utilized the mineral resources at her command that this nation became a rival for world trade, and became one of the great industrial nations of the world. Great deposits of iron, silver and lead are found in the Harz and Erzgebirge mountains. Coal is scattered over a wide field, though some of the best fields are in the Saar Basin which is now under the control of the French. The need for new fertilization of the soil was instrumental in the development of the great potash fields.

Industries and Manufactures.—Iron and steel industries form the major portion of German manufacturing, especially the manufacture of machinery and scientific instruments of great value. Textiles also hold a prominent place in manufactures, especially cotton, woolen and silk. Beet sugar refining, and the making of chemicals play a large part in the commercial and industrial development of the land. It is interesting to note that there was an apparent relation between the chemical and munition plants. The fact that dye factories could be changed into munition plants accounts in a measure for the keen interest the German government and people took in the dye industry. The chief centers for the manufacture of iron and steel are Dusseldorf, Essen, Stettin and Kiel; silk goods at Kiefeld; cotton goods at Munchen; dyes at Elberfeld; chinaware at Meissen and the manufacture of toys and electrical machinery at Nuremburg.

Transportation Routes.—In the matter of railway communication Germany was in the lead of other European countries in mileage. Like the railways of England and France, which center in London and Paris, the railways of Germany center in its capital at Berlin. A net work of lines run out from this city to all the chief ports and other points in the interior. Lines run to Rotterdam, to Switzerland, Italy and Constantinople. Five great rivers enter the sea from the interior, which with the canals joining them give over seven thousand miles of water navigation. The rivers are the Rhine, the Ems, the Elbe, the Weser and the Oder. Three of these rivers—the Rhine, the Ems and the Weser—flow into the North Sea; the others flow into the Baltic. The great German port before the war was Hamburg. This port, located on the Elbe River, is one of the natural gateways from England and America for goods entering Europe. It is the only natural Atlantic port that Germany possesses. Next in importance to Hamburg as a seaport is the city of Bremen, on the estuary of the Weser.

Although Germany is surrounded by other nations, still her position for commerce is far from unfavorable. Occupying a large portion of the northern plain in Europe it is in the pathway for routes following the lines of least resistance. In one sense, Germany is at the crossroads of commerce. By her system of canals and railways she is able to attract commerce from the Mediterranean countries as well as a share in the commerce moving east and west. With settled political conditions and a resumption of her former scientific practices in agriculture and industry, Germany will soon be on its feet again as a commercial nation.

BELGIUM

Belgium has a better geographic location for commerce and trade than any other continental country in Europe. It has the advantage of being directly opposite the great ports of the greatest commercial and industrial country in the world. This position, therefore, makes this country commercial rather than agricultural. The presence of iron and coal near by, together with markets in abundance, are further reasons why this country turns to manufacturing rather than to agriculture. This country is the most densely populated country in Europe, having about 659 persons to the square mile. This dense population could not possibly get its food from the soil and hence has to turn to some other activity to gain a livelihood.

Belgium is a great hive of industry, the chief, of which are linen, carpets, lace and diamond cutting. Belgium is the greatest lace manufacturing country in the world. Steel works abound in this country, especially near the iron and coal fields of southern Belgium. Glass working is another special type of manufacture based on the mineral close at hand.

The industrial centers are as follows: lace and carpet manufacturing center in Brussels; the woolen industry in Verviers; linen centers in Ghent; the making of steel and smelting of zinc in the Liege district; glass manufacturing in Charleroi.

The great commercial city of Belgium is Antwerp, the city of which Napoleon said "it held a dagger pointing toward the heart of England". This city lies some miles up the Scheldt River, and boats to reach it must first pass through Dutch territory. However, Antwerp is one of the great ports of the world, being a close rival of New York, London and Liverpool in the matter of tonnage clearances. In this city the diamond industry of Belgium has centered.

HOLLAND

Another small country which is very important commercially is the little kingdom of Holland. This country, with rich colonies in the East Indies, has become commercial rather than industrial. Since the sixteenth century Dutch traders have brought to Europe the spices and fruits of the Far East. Because of this fact Holland imports and exports the same commodity. A glance at her imports show that spices, coffee, sugar, tobacco and indigo hold a prominent share of that trade, while at the same time these same goods enter into her export trade in nearly the same quantities Holland, therefore, is a great distributor of goods and from her position on the North Sea and at the mouth of the Rhine and Scheldt she becomes a natural gateway to the plains of Europe.

The people of Holland have long been noted as breeders of dairy cattle. This is the home of the famous Holstein-Friesian cow which to-day holds a leading place as a milk producer. The abundance of rainfall makes this country an excellent pasture for dairy stock. The Dutch have also become famous as horticulturists and growers of vegetables. The tulip and hyacinth have been among the chief flowers for the markets of England and France. England is the great market for most of the vegetables of this country.

GREECE

Greece occupies the southern peninsula of the Balkans extending down into the Mediterranean Sea. Although its industries are chiefly agricultural, only one-fifth of the land can be cultivated. The remainder is rugged and mountainous territory surmounted by Olympus, famed peak of the ancients, 9,800 feet high.

The important products include cereals, tobacco, currants, figs, raisins, wine, olives and olive oil, nuts and silk. Minerals are abundant, including iron ore, chromite, magnesite, zinc, lead ore, lignites and salt. Shipbuilding and shipping are important industries.



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A Relic of Ancient Greece

The Porch of the Maidens of the Temple of Athena. In Greek mythology, Athena is said to have sprung from the head of Zeus.

Athens, the capital, is the chief city. It is a commercial and industrial center, although most of the manufacturing plants are at Piraeus, its port. Saloniki, another old city, has an excellent harbor and is a port for the shipment of Bulgarian and Yugoslavian goods.

ITALY

During the thirteenth and fourteenth centuries Italy was the leading commercial nation of Europe. It was the center of the civilized world and the point of convenience of all trade routes from the Orient, Africa and northern Europe. Since the discovery of America and the rounding of the Cape of Good Hope, the country has lost much of its ancient importance as a commercial center.

The chief industry of Italy is agriculture. Cereals constitute the leading cultivated crop. Large acreages are planted to wheat, corn, oats, barley, beans and potatoes. Livestock raising includes sheep, cattle, horses, mules, pigs and goats. The chest-

nut is an important nut crop. Large areas are given over to olive trees which are raised chiefly for the oil, and to vineyards which produce wine. The climate is well adapted to the growth of the mulberry tree, on which the silk worm thrives. Silk cocoons



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ATHENS, GREECE
A bird's-eye view of Athens as seen from the Acropolis

average annually 155,716,000 pounds. Lemons, oranges and figs are important products.

Italy is not rich in minerals, and especially is lacking in coal. Hydroelectric power is being developed. The production of iron and steel and zinc is on the increase. In the former Austrian territory north of Fiume are the rich quicksilver mines, which make Italy the world's largest producer of that metal. Sulphur is an important product, the output being more than 300,000 tons annually.

Northern Italy is the most productive region. It is also the most important manufacturing section. Milan, second in population, is noted for its silk and furniture and for printing. Genoa, in the northwestern portion, has varied manufacturing and produces many works of art. Our illustration shows Santa Margherita, a beautiful scenic suburb of Genoa. Turin, north of Genoa, leads in the motor industry.

Rome, the capital, is not a great commercial city, but it is the railroad center of the country. Naples, the largest city, has an excellent harbor. It is an important port and has many industrial plants.

Switzerland is a land-locked republic, without seaports or rivers that run to the sea. It is mountainous and only a small portion of the country lends itself to cultivation, and yet it is commercially important.

More than one-third of Switzerland is devoted to meadows and the chief agricultural pursuit is dairying. Great quantities of condensed milk and many forms of chocolate are exported. There are rich forests and their products contribute to the industries. Hydroelectric power makes up for the lack of coal.

Clocks and watches from Switzerland and fine Swiss embroideries are known all over the world. Wherever handwork enters into the value of a product the people of this mountain republic excel other Europeans. The centers of industry are Zurich, Basel, Geneva and Berne, the capital.

Switzerland has an important industry in the tourist trade and hotels employ about 65,000 persons. This "playground of Europe" with its superb scenery affords rest and sport to millions of visitors from all over the world.



SANTA MARGHERITA, ON THE ITALIAN RIVIERA
This scenic suburb, a few miles to the east of Genoa, is a favorite beach resort for the Italian public.

Spain occupies all of the Iberian Peninsula in southwestern Europe, with the exception of Portugal on the west and the British fortified station of Gibraltar on the extreme southern tip. On the north the high Pyrenees separate Spain from France.

The interior is largely made up of tablelands cut by irregular ranges of mountains. Rainfall in the interior is slight, but on the northern coast occurs the heaviest rainfall in Europe. The southern coast has an extremely warm winter climate.

The mineral wealth is great, including rich deposits of iron, coal, lead, copper, tin, manganese, silver, salt, phosphorus and sulphur. Recently platinum has been discovered.

An important forest product is cork, the bark of the cork oak, which flourishes in the northeastern section of the country. Spain is a leading producer of olives and olive oil and of grapes and wine. Nuts and oranges are valuable exports.

The leading industry is agriculture, including the raising of cereals, vegetables, hay and fruits. A quarter of the area is devoted to grazing. Many cattle, sheep, pigs, horses, mules and goats are raised. The Merino sheep originated in Spain.

Madrid, capital and largest city, is on a high plateau. It has long been a center of culture and in recent years has become important industrially. Barcelona, a Mediterranean port with an excellent harbor, is in a rich fruit section. Other cities of importance include Valencia, Seville, Malaga, Bilbao and Granada.

The Scandinavian Countries include Denmark, Norway and Sweden. Greenland is a Danish colony. Iceland is a sovereign state, having the same king as Denmark. Norway is largely a maritime country. Denmark and Sweden are principally agricultural, although much of Sweden is mountainous.

Denmark is largely a sandy, level plain, almost entirely surrounded by the sea, and as a result the entire country has

much raw and rainy weather. Farming is therefore one of the principal occupations of the country. Hence we find hay, oats, beet sugar, butter, cheese and eggs large items in the matter of export. Dairying is without doubt the chief specialty of the farmers of this country.

Denmark has one large city—Copenhagen—which is excellently located as a distributor of goods. It is situated on a water pathway leading into the central-eastern part of Europe.

Neither Norway nor Sweden is very rich in minerals, though we do find some iron, copper and a little silver. As in the case of Denmark, the great handicap is a lack of coal. Norway is more of a commercial nation than Sweden due to its geographical position on the ocean and its many good harbors. This fact has enabled Norway to have a relatively large share in the carrying trade of the world. Fishing is an important industry in both countries; the Norwegians are sailors by tradition and the fishing industry has had a tremendous influence in the life of the people.

Both Norway and Sweden have considerable forest lands; those of Sweden being larger and of greater value. Considerably more than one-third of Swedish exports consists of forest products. In Norway the principal forest products consist of pulp and matches.

Both of these countries have the advantage of having ice free harbors. Bergen and Oslo are now the chief commercial and industrial centers of Norway, and Stockholm and Gothenburg are the chief trade centers of Sweden.

Russia.—European Russia may be compared geographically with Canada. In both countries we find vast rich plains suitable for the growing of wheat and other grains; both have a forest belt of great size and value, while in the northernmost sections are barren moss grown tundras, or frozen plains.

Nearly 40 per cent of Russia is heavily forested and therefore ranks as one of the foremost countries in the world in forest resources. Most of the forest land was owned by the state under the old regime and development was necessarily slow.

Though Russia is a land of peasants and agriculturists, yet in the main the land fit for cultivation is relatively limited. This is due to the large areas of tundras, forests and salt marshes in the southeast and the swamps in the west. In the Ukraine districts and extending eastward, is the famous black earth belt and the chief section for the growing of wheat. Wheat is exported while rye is largely used in bread for home consumption. The soil of Russia is especially suited to the growing of sugar beets. Lately over one million acres of land were devoted to the cultivation of this crop.

Next to the United States, Russia is the greatest producer of petroleum. Most of the supply is found in the region of Baku, on the Caspian Sea. Outside of this region petroleum has been found in small quantities in the Urals and in Turkestan. Russia is also rich in many minerals, especially platinum, gold, coal and salt. Before the Great War about nine-tenths of the world's supply of platinum came from this region. As a producer of gold Russia formerly ranked high. Most of the gold in Russia is found in the Ural Mountains.

Russia has developed very slowly, and because of political conditions, is still in a chaotic condition as far as trade and commerce are concerned. Much of this lack of development may be ascribed to its geography. Here is a vast level country with extremes in climate tending to hold back full development in any land. Then, too, Russia has no deep seaport that is ice free. The search for warm waters actuated the Russian political policy for the greater part of the nineteenth century. From the interior of this broad and level plain arise the great rivers, the Don, Dwina, and Volga. The really great river—the Volga—loses its commercial importance due to the fact that it flows into the Caspian Sea. Most of the other rivers are ice bound for many months of the year. Its principal seaports are Archangel, on the arctic White Sea, and Odessa, on the Black Sea.

From the commercial viewpoint Russia was chiefly important as a producer of foodstuffs and raw materials. This makes her a desirable neighbor of Germany, who has an abundance of manufactured products to sell in return for the wheat and lumber of this region. Fully 50 per cent of her imports came from Germany before 1914. In fact most of her manufactured imports came from Germany. It was only in the field of special machinery that the United States found a market in this country.

ASIA

Asia is not only the largest continent in the world, but in many repects it is the grandest and most interesting of the main divisions of the globe. Here we find the oldest nations in the world, the highest tableland and mountains on the globe and the most sparsely and densely populated sections in the world. Its commercial backwardness is in a large measure due to its geography. Here we find a huge continent, the large part of which is inaccessible. The east-west trend of the mountains causes great difference in climate between the middle northern section and the south. The change in climate between lower and western China and India is most marked. The great open, high plains, which are an extension of the fertile European plain, is largely a desert owing to the fact that the rains have become exhausted in their long march from the Atlantic. Civilization never went forward here in the same way it did in Europe except in sections where navigable rivers made trade possible, hence we find the Tigris and Euphrates valleys and the river valleys of China and India as the only seats of a form of civilization which existed in ancient times.

China.—The country of China includes the province of Mongolia, Manchuria, Kashgaria and Tibet. Here is a nation a third larger than continental United States, with a population of over 400,000,000, living under conditions which would be impossible for any other race. This country extends from the latitude of Jamaica to that of Labrador and has a corresponding variety of climate.

The most prosperous part of China is the eastern section where the valleys open toward the ocean, allowing the rain-bearing winds to go into the interior. This section is made up largely of three great river valleys, the Hwang-ho, the Yangtze-Kiang and the Si-Kiang. These river valleys contain very fertile soil, though in the Hwang-ho valley there is much loose soil which is destroyed by floods and earthquakes, thus making agriculture a hazardous undertaking. This is particularly true of the upper regions of this river.

The principal food of the Chinese is fish and rice. Every inch of available land is stripped of forests in order to prepare it for cultivation. The great demand for food and the fear of wild beasts have been the potent causes for the stripping of the forest lands in China. The principal agricultural region is in southern China. Here rice is the most important food crop. The Si-Kiang valley is the home of sugar and cotton, for the ancient traders had heard that in this far away land of "a reed that bore wool without sheep, and honey without bees". The principal hill products are silk and tea, the two commodities which originally opened China to foreign commerce.

In northern China and Manchuria the principal crops are beans and wheat. The city of NeuChang, on the Gulf of Liaoting, is the greatest bean market in the world. Manchuria, together with the province of Mongolia, rivals the United States and Canada in the amount of land adapted to the growing of spring wheat. Much of this region is pasture land where herds of cattle are kept. Here, as in Canada and the Argentine, is a future granary for the world. Aside from poultry and swine there are few domestic animals in China. This is largely due to an over-crowded condition and lack of food. However, farther west in central Asia one finds sheep, goats, horses and camels.

It is believed that some of the greatest fields of coal in the world may be found in China. Already vast deposits have been discovered in the province of Shansi. It is claimed that this region contains twenty times as much anthracite coal land as the United States. Other valuable anthracite deposits are known to exist in the province of Hunan. Bituminous coal is found in many of the other provinces, and in Manchuria. These coal fields lie mostly in horizontal seams, making it possible to mine the coal under more favorable circumstances than in the United States. Then, too, these fields are conveniently located near iron. These two minerals are near each other in the Shantung Peninsula.

Other minerals of considerable quantity and value are to be found in the southwestern province of China on the plateau of Yunnan. Here silver, lead, tin, gold and sulphur are mined. These same minerals are also found in the Shantung Peninsula, and in the Shansi Mountains.

The characteristic type of Chinese manufactures is of the handwork variety The Chinese have been very slow to take on new ideas. Religion has had a most marked effect on the commercial and industrial development. The old Confucian motto, "Walk in trodden paths" has kept this race from trying new ideas in all phases of life. However, modern machinery has been introduced, especially in the cotton mills. The making of India ink, the carving of wood and ivory, the manufacture of paper, matting, bamboo, fans and fireworks are the chief products of Chinese industry.

Another great handicap to the development of China is the lack of transportation and communication facilities. Most of the transportation is carried on by river boats. The great rivers afford excellent facilities, but can only reach the sections contiguous to them. On land most freight is carried by wheelbarrow. This mode of trans-

portation is due mainly to the absence of good roads. For some reason it seems never to have occurred to the Chinese to repair their highways, and hence most of the roads are little more than paths. A great deal of carrying is done by porters, and in China man power is cheap. In Manchuria horses and camels are used to some extent. The caravan trade across Mongolia to the west is carried by camels. Much of the tea for Europe goes this way, and it is said that ocean traveling injures the flavor of the tea. There are less than half as many miles of railroad in all of China as in Illinois. An important line built as a joint enterprise with Russia cuts across Manchuria.

Shanghai, Hankow, Peiping (formerly Pekin), Hangchow, Canton, Tientsin, Chungkin, Soochow and Nanking are some of the large cities of China. The Nationalist government has set up a new capital at Nanking. Shanghai, the largest city and chief port, is the outlet for central China. Hankow is at the head of navigation on the Yangtze River. It is an industrial city which has been likened to Chicago. Peiping, formerly the capital, on the Gulf of Chihili, an inlet of the Yellow Sea, consists of an inner and an outer city. Every form of transportation is seen on the streets, from jinrikishas and camels to bicycles and automobiles. The famous Temple of Heaven is in the city. Canton is the leading city of southern China. It is an important port and has extensive manufacturing interests. Many of the inhabitants live in houseboats. The island of Hongkong is owned by Great Britain. It contains one of the best harbors of China.

Japan, like Great Britain, is an island kingdom off the coast of a continent, and likewise it is a great commercial nation. The Japanese Empire consists of a string of islands extending along the coast of Asia from the peninsula of Kamchatka to the Philippine Islands. Most of Japan is mountainous and only a small part responds to cultivation. About one-sixth of the land is fit for the plow, and in their eagerness for soil the farmers terrace the hills and mountains. Farms are small and most of the work is done by hand. Rice is the leading crop and most of it is raised in the lowlands where plenty of water is obtainable. Wheat, barley, millet, rye, buckwheat, corn, beans, potatoes, tobacco and tea are other crops. Mulberry trees are extensively grown for their leaves on which the silkworms feed. The export of silk in 1927 was valued at $352,675,000.

More than half of Japan is forested, the trees including bamboo, cypress, fir and cedar. In the island of Taiwan (Formosa) grows the camphor tree which is commercially very valuable. In the north great oak forests are found. The bamboo, included in the forest trees is in reality a grass that grows rapidly to the size of a tree. It has a variety of uses and is one of the valuable plants of the Orient.

Fishing is an important occupation in Japan, and fish takes the place of meat in the ordinary diet of the Japanese. Minerals are not abundant, although considerable deposits of coal provide all that the country requires and allows some for export. Petroleum is the second most important mineral, with iron third.

Japan is a manufacturing nation, and products are made not only in factories but in the homes. The textile industry was greatly stimulated during the World War and has suffered a decline. Cotton goods are the principal textile exported. Toys form a large item of the exports. Other manufactured goods include iron products, chemicals, fiber products, glass and earthenware. Shipbuilding was enormously stimulated during the World War and has suffered a depression since. Bonuses have been given workmen to reduce actual distress.

Japan is fairly well equipped with railroads, though the total number of miles is less than in some states of the United States. The standard gauge is being adopted. Electrification is taking place rapidly on many roads.



COLOMBO, THE CAPITAL OF CEYLON
Queen Street, showing the entrance to Government House, also the Colombo lighthouse and clock tower.

Tokio and Osaka are the largest cities. Tokio, the capital, is on a shallow bay and hence does not have an especially good harbor. It is a modern manufacturing city. Osaka is a leading port and great manufacturing city. With its many bridges spanning canals it has been likened to Venice. Kobe is a port and the center of the silk industry. The beautiful city of Kyoto in the interior is much sought by tourists and is noted for its porcelains, brocades and toys. It is the seat of an imperial university. Nagoya, east of Kyoto, is a railroad center. Nagasaki and Moji are ports in the south. Yokohama is the leading port for the trade of Tokio. It has developed rapidly and recently and is a leading shipping port for silk.

Taiwan (Formosa), an island about the size of Massachusetts, was ceded to Japan by China in 1895. It is the world's greatest source of camphor. Oolong tea is a product of Taiwan.

Chosen (Korea) was annexed by Japan in 1910. This ancient kingdom is mountainous and has immense forest areas. It is rich in minerals which Japan lacks. Seoul is the capital and chief city.

India is a country consisting of British provinces, in area as large as the United States east of the Rocky Mountains, and with a population well over 300,000,000. India is tropical and sub-tropical in climate, but in the northwest portion high mountains give a cool climate. The great mountain wall is useful in shutting off the cold winds from central Asia, in providing summer resorts and in furnishing water from many streams which originate in the snows of the mountains. In southern India are great plateaus with lowlands along the coast. Along the Indus and the Ganges rivers are extensive lowlands.

About one-fifth of India is forested. Among the important trees are the teak, sandalwood, ironwood, deodar, date palm, coconut palm, banyan and acacia. The principal industry is agriculture, and more than two-thirds of the people derive their living from the soil, and from livestock and forest products. Large areas are irrigated. Crops include rice, wheat, sugar cane, rape and mustard seed, linseed, cotton, jute, tea and rubber. Livestock includes oxen, cattle, sheep, goats, horses, mules, donkeys and camels.

India has rich mineral deposits. Coal production was over 22,000,000 long tons in 1927. The ores of iron, manganese, tungsten, gold, copper, lead and silver are abundant. Petroleum production in 1928 was 8,300,000 barrels.

Railroads are largely owned by the government. The development of railroad transportation is hampered by the fact that several different gauges are used. Navigable waterways total 4,000 miles and there are 200,000 miles of highways.

The chief city and principal port is Calcutta, on the Ganges River. Bombay is the leading port of western India, and because of its nearness to England it is sometimes called the "Gateway to India." The capital, Delhi, is accessible to all India and is a railroad and trading center. Other important cities are Benares, Madras, Rangoon, Hyerabad, Lahore and Ahmedabad.

The island of Ceylon, south of India, is also a British possession, about as large as West Virginia but with a population almost as large as that of Australia. Ferry boats ply between India and Ceylon. Most of the island is covered with jungle and the people live on about one-sixth of the land. Tea, rice, rubber, cacao, cinnamon, cocoanuts and graphite are important products. Colombo, the capital has a good harbor and is an important world port.

Turkey is mainly in Asia, though this new republic still has some land in Europe. The capital is now at Angora, in Asia Minor, as the southwestern part of the continent is called. Turkey in Asia embraces 273,808 square miles, while the European portion is now reduced to 8,819 square miles. Since the World War the total area of Turkey has been materially reduced.

Herding and farming are the principal occupations. Agriculture is carried on in a crude fashion measured by Western standards although under the new rule modern machinery is finding its way into the country. Products include tobacco, wheat, barley, rye, grapes, olives, cotton, silk, figs and nuts. Large numbers of sheep, goats and cattle are raised. Mineral resources

are vast but still largely unmined. Transportation and communication are poor, and good hotels almost unknown. Travelers are often forced to carry their supplies with them in making extended journeys.

The chief city of Turkey is Constantinople, in Europe. Smyrna is an important seaport of Asia Minor. Angora, the capital, is in a region noted for its Angora goats, whose long silky hair is the mohair of commerce.

Persia.—The kingdom of Persia has long been a part of Asia Minor. It has an area of 628,000 square miles and an estimated population of 10,000,000. It is a mountainous region, shelving into great plateaus and with narrow lowlands near the sea. The climate is warm and the rainfall light, resulting in much arid and unproductive territory.

Only in favored spots where water may be obtained is the soil productive. Crops include cotton, tobacco, rice, fruits and nuts. Persian rugs have been famous from time immemorial, the hair and wool coming from the flocks tended by nomadic tribesmen.

Although rich in minerals, little has been taken out. An exception is found in petroleum. The oil export in 1926-27 was valued at $63,868,000. Teheran is the capital and largest city. Tabriz, Ispahan and Mesnad are next in importance.

Afghanistan is a mountainous country peopled with a fiery warlike race of Mohammedans. Fertile valleys cut the mountains and the products include dairy products, grains and fruits. The fat-tailed sheep is native and of great value to the natives who eat the meat, use the fat as a butter substitute, and use or sell the wool and hides. Kabul is the capital and leading city.

French Indo-China is controlled by the French. The British control the Malay Peninsula. The East Indies are under the rule of Great Britain and the Netherlands. All of this general area is productive and yields in abundance in response to the heavy rains that occur throughout the region. Great rubber plantations have been developed. Spices, cotton, sugar, tobacco, rice, tea and coffee are some of the products. The island of Java produces much of the world's supply of quinine, which is obtained from the cinchona tree.

The immense expanse of northern Asia, Siberia, is a part of Russia (Union of Socialist Soviet Republics). The southern boundary is about the same latitude as the northern border of the United States and the northern coastline is beyond the Arctic Circle. Vast forests of evergreens stand largely untouched because of poor means of transportation. A railroad runs across Siberia, connecting Vladivostock on the east with Europe on the west. The country is rich in minerals, largely untouched. Vast acreages of farm land await development.



HARVESTING WHEAT IN AUSTRALIA

Wheat is the leading crop of Australia. More than 12,000,000 acres are grown annually. The illustration shows a combined harvester and thresher in operation.

Other Countries and Divisions of Asia.—Palestine is a land with a long history, and today is a mandate of Great Britain. Some of the land is very productive; other portions lack rainfall, and in the east is a part of the great Arabian Desert. Grazing is important, and crops include cotton, grapes, citrus fruits, olives and figs. Jerusalem is the capital and leading city. Bethlehem is held sacred by Christians as the birthplace of Jesus. Jaffa and Haifa are important seaports.

The Arabian Peninsula includes several countries. This great area is about the size of the United States east of the Mississippi River, but it is thinly populated and much of the land is desert. Many of the natives are nomadic and rove over the country with their herds of sheep, goats, horses and camels. Mecca and Medina are leading cities. Products include dates, wheat, barley, fruit, hides, wool and coffee.

Iraq, formerly called Mesopotamia (a word meaning "between two rivers"), has products similar to those of Arabia. The country is rich in petroleum. Baghdad is the chief city and a trade center. Basra and Mosul are other cites of importance.

AUSTRALASIA

Australia is a term used to denote that part of Oceania which lies between the equator and the latitude 47° South. By extension it is sometimes used for all of Oceania.

Australia is the world's largest island, and because of its size it is considered a continent. It is about 2,100 miles long and 1,000 miles wide and is almost as large as the United States without Alaska. Tasmania, a large island across Bass Strait from the southeastern corner, is considered a part of Australia and is one of the states of the Commonwealth.

The coastline is very uniform and there are few good harbors. A ridge of mountains, plateaus and hills fringe most of Australia, preventing easy access to the interior. The trade winds bring abundant rain to the northern, eastern and part of the southern coast areas, but the interior is dry and fully one-third of the continent is desert. More of the land is adapted to grazing than to farming. The pastoral products are therefore more important than the agricultural. Australia is the world's largest producer of wool, the clip in 1928-29 being estimated at 950,000,000 pounds. Sheep and cattle are raised in large numbers and the meat is exported as frozen beef, frozen lamb and frozen mutton. Dairy products are also exported. Agricultural products are similar to those of the United States, and include wheat, oats, barley, corn, hay, potatoes, sugar cane, cotton and fruits.

Gold mining has declined in importance though it is still an important industry. Gold is found in the eastern mountains and in the plateaus of Western Australia. Desert conditions in the western part have impeded mining. Coal occurs in abundance in the southeastern region. Other minerals, including tin, silver, lead, zinc, iron and copper are present in smaller quanities. Much of the continent has remained unexplored for mineral resources.

Manufacturing has more than doubled since the World War. It is largely concentrated in New South Wales, where ample coal supplies are a stimulus. Most of the manufactured products relate to the pastoral and agricultural industries and the manufactured goods are chiefly consumed at home. Fishing has never become important. Pearl fishing has been followed along the northwestern coast for many years.

Transportation is a serious problem. The railroads use several gauges of track, necessitating frequent changes in traveling or shipping. A proposed railroad has adopted the standard gauge. Motor transportation and more recently air travel have aided the development of the interior. The streams are not navigable for any considerable distance. The Murray-Darling system is too shallow for navigation for a large part of the year.

More than two-fifths of the total population live in the cities and their suburbs. Sydney is the metropolis and chief port, and its harbor is one of the finest in the world. It is a beautiful modern city with large manufacturing interests and with splendid streets and parks. Melbourne is the second city and a leading port. It has some manufacturing and is a railroad center. Brisbane, Adelaide and Perth are other cities of importance. Darwin is a port on the northern coast and Fremantle is on the western coast. Hobart is the principal city of Tasmania. The federal territory of Canberra, containing the capital, is located between Melbourne and Sydney and has a corridor to the harbor on Jervis Bay.

New Zealand consists of two large islands and many smaller ones. The length of the two main islands is more than 1,000 miles and the maximum width is 200 miles, narrowing to as little as six miles. Thus surrounded closely by the ocean, the climate is not subject to extremes of temperature. The summers are not hot and the winters are mild. High, snow-capped mountains, volcanoes, geysers and hot springs provide interesting scenery. Two-thirds of the land is tillable and responds well to cultivation. Stock raising and dairying are the leading occupations. More than ninety per cent of the total exports are pastoral products. Farmers have learned how to work together and a large proportion have their coöperative companies and receive monthly checks for their produce. Periodically extra checks in the form of bonuses are paid, representing surplus returns.



WELLINGTON HARBOR, NEW ZEALAND
Panoramic view of Wellington, the capital, from the hills of North Island.



SYDNEY HARBOR, AUSTRALIA
Sailing in the fine harbor of Sydney, capital of the state of New South Wales.

New Zealand was originally peopled by the Maoris, a brown race of intelligence. Some 65,000 remain and they have representatives in Parliament and participate in the affairs of the Dominion. The settlement of the islands has been chiefly by the British and by the white race exclusively. The former vast forests have largely been wasted and now a program of reforestation is making rapid progress. With the decline of forests, the bird life has suffered. The moa, now extinct, was a giant running bird, standing higher than a man. No land mammals were native to the islands, but they have been brought in and today the wild dogs and wild pigs are found as descendants of animals imported long ago. There are no snakes.

The leading farm crops are wheat, oats and barley. Fishing has not been extensively followed. Manufacturing is largely confined to food products. Auckland is the chief city and an important port. Wellington, the capital, is a trade center. Dunedin and Christchurch on South Island are important cities.

AFRICA

In General.—Africa is the second largest continent, ranking in size next to Asia. It is in the general shape of a triangle, south of Europe and southwest of Asia, about 5,000 miles long and 4,650 miles in breadth. It is in reality a huge platform of land rising from deep seas with a narrow continental ledge. The average elevation is 2,130 feet. In the northwest the Atlas Mountains have elevations as high as 14,000 feet. In Ethiopia are extensive highlands. At the head of the Gulf of Guinea are the Kamerun Mountains. In the south and southeast are ranges of mountains. The highest peaks, Kibo and Kenya are not parts of ranges. The Ruwenzori group culminates in the peak of that name. Mountains over 6,000 feet high run from northwest to southeast in the eastern part of the Sahara Desert. The Congo Basin is a great hollow in the central plateau and was formerly a lake. The southern plateau is higher than the northern, ranging from 3,000 to 4,000 feet.

The coastline is very regular affording few good harbors. The climate of the entire continent is warm, and in many places too hot for comfort. The central portion along the equator has heavy rainfall. On either side of this belt the rainfall is lighter, and farther on either side come the great deserts with little or no rainfall. In the path of the heavy rainfall are dense jungles which are the homes of such animals as monkeys, gorillas, snakes, crocodiles and hippopotami. Elephants, buffaloes and other large animals frequent the regions where the jungle is not so dense. Away from the tropical jungle come immense savannas, areas of grassland. Here are antelopes, giraffes, zebras and other herbivorous animals. Preying on them and associated with them in the same region are the flesh-eating lions, leopards, hyenas and cheetahs.

Africa remained for many years unexplored. The desert and the jungle were forbidding until man began to seek out the wealth of what was often called the "dark continent." Today practically all of Africa has been explored, following the lead of such pioneers as Livingstone and Stanley. However, because the climate is hard on the white man, it is probable that thousands of square miles will ever remain the haunt of wild animals and of the black race. The white race has settled principally in the southern portion where the climate is more nearly like that of Europe.

Africa has great rivers but because of the tablelands these streams are not navigable for long distances. Frequent waterfalls are encountered. In some instances railroads are being built to go around the falls and rapids. Africa has a series of Great Lakes second only to those of North America. Victoria is next to Superior the largest fresh water lake in the world. Tanganyika is the longest lake in the world. Chad doubles in size during the rainy season.

Africa has suffered from the lack of transportation. Much of the continent is practically impenetrable. The Cape to Cairo Railroad, conceived and begun by Cecil Rhodes, provides an almost continuous line of rails from north to south. A small part of the route uses steamer, pack train and automobile transportation. In the Union of South Africa railroads connect all important cities. At various points on the coast railroads have been built for short distances into the interior.

Africa is rich in native tropical products. Cotton and tobacco are valuable crops and rubber plantations are becoming of value. Gold was a lure that brought many and the discovery of rich diamond fields brought others. Copper is present in abundance.

The Sahara Desert covers an area almost as large as Europe. Here the camel has for ages provided the only transportation across the sandy wastes. Recently the railroad and the automobile have come in and have succeeded in materially reducing the time of travel. Much of the desert would produce crops if there were water. In much of the Sahara rain never falls. There are many fertile spots, or oases, sometimes covering large areas. Here the date palm grows and yields commercially important crops. Oases serve as valuable supply stations for travelers.



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A MONUMENT OF OLD EGYPT
The Obelisk of Heliopolis is the finest one left in Egypt.

Egypt is a productive country, but only where the influence of the Nile River is felt. Water for irrigation and for drinking purposes and a highway for commerce are provided by the Nile, which rises in the lake region of central Africa where the rainfall is heavy. The fruitfulness of the Nile valley is due to the yearly overflow of its banks and the consequent rich deposits of silt. Egypt's principal crop is cotton, long famous for its fine long fiber. About one-third of the world's production is from Egypt. Over 4000 years ago the papyrus plant was grown and provided paper. Today Egypt imports all her paper.

Egypt has many monuments which tell the story of ancient achievements. Obelisks, pylons, stone monuments, culminating in the Pyramids, considered one of the Seven Wonders of the Ancient World (see page 1226), tell of early days. Thebes was the capital of Egypt in the sixteenth to twelfth centuries and was completely destroyed 27 B.C. Remains still stand of the Colossi at Thebes.

Cairo is the chief city of Egypt and the capital. It is located about 100 miles up the Nile from the Mediterranean. The largest Mohammedan university of the world is in Cairo. Alexandria, near the mouth of the Nile, is the leading seaport and chief trading center of the country. Port Said, at the north entrance of the Suez Canal, is a coaling station. The canal is about 100 miles long and is large enough to take all but the largest ships. It is controlled by the British and about half of the ships passing through belong to Great Britain.



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THE COLOSSI AT THEBES

The Great Colossi at Thebes, Egypt, were once the main entrance to the ancient City of the Hundred Gates.

Ethiopia, formerly called Abyssinia, is a mountainous highland country in eastern Africa, with lowlands near the coast but having no seacoast. The rugged nature of the country has helped the Ethiopians to maintain their independence when almost all the rest of Africa has passed into the control of Europeans. Coffee was first grown in Ethiopia and from there was introduced to the world. Other products include sugar cane, tobacco, barley, corn, millet, wheat and bananas. Many of the natives are nomads and follow their herds of sheep, goats, horses and cattle. Addis Abeba, the capital, is not in reality a city but a group of villages. A railroad connects the capital with the coast in French Somaliland. Became Italian Province, 1936.

Liberia is an independent country on the southwest (Guinea) coast. It was founded in 1882 by freed negroes from the United States and today is a negro republic. It has rich forests whose timber is largely unused due to lack of suitable transportation. Coffee, oils, nuts and ivory are exported. Recently rubber plantations have been developed. The capital is Monrovia, named after an American president.

The Union of South Africa embraces the Cape of Good Hope, Natal, Orange Free State and the Transvaal. Adequate railroads and good highways have been developed. There are vast mineral deposits, and mining operations are revealed in the mineral output which is annually valued at $300,000,000. Rich fields of diamonds and of platinum have recently been discovered. The government maintains a strict supervision of diamond production. Agriculture, dairying and the raising of livestock are important occupations. The wool clip averages per annum 282,000,000 pounds.

Johannesburg, the metropolis and leading railroad center, is a flourishing, modern city. Cape Town is second in size and has a fine harbor and extensive shipping. It is the legislative capital. Pretoria, in the Transvaal, is the administrative capital. Durban and Port Elizabeth are important ports. Kimberley is in the heart of the diamond country.

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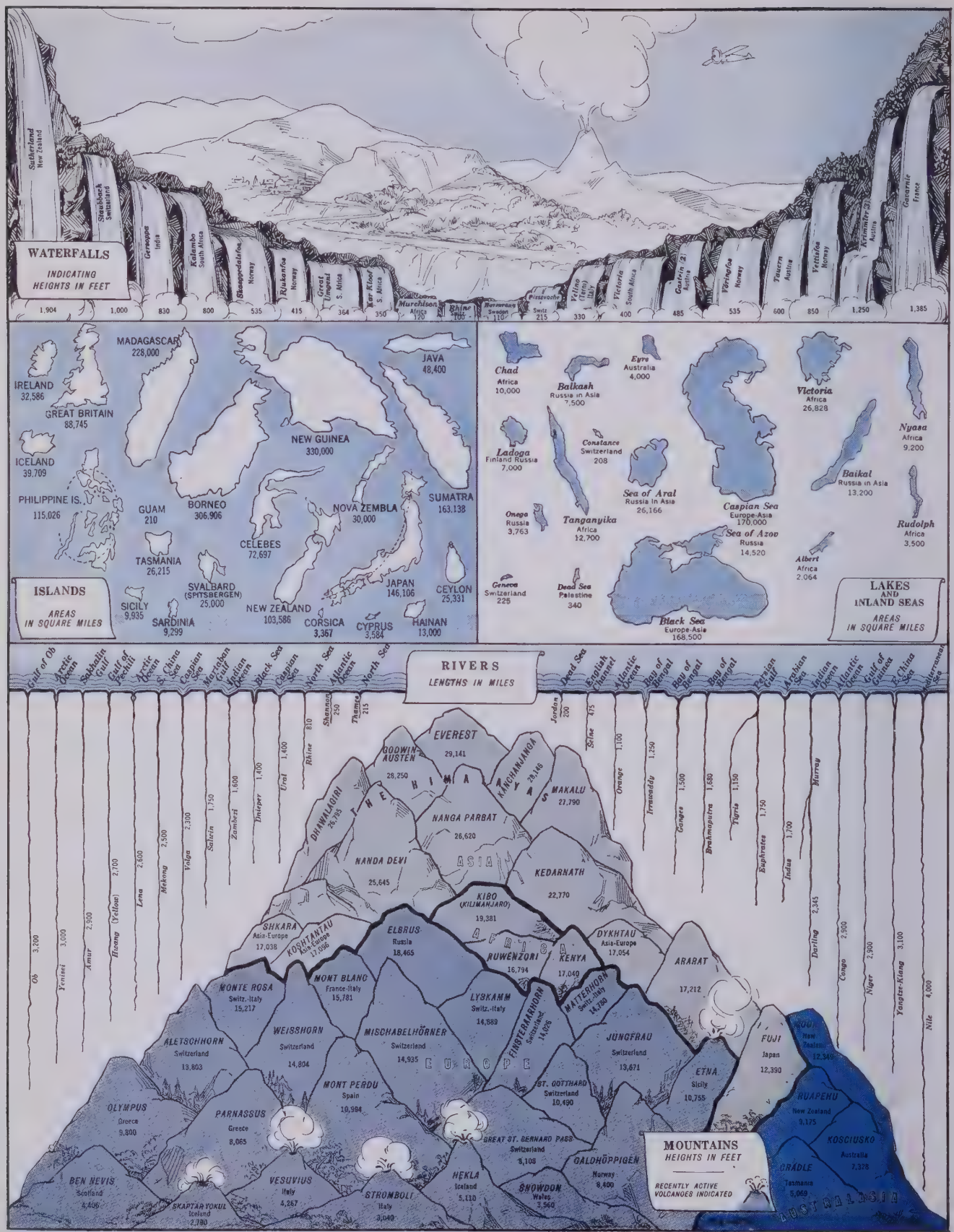
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EASTERN HEMISPHERE

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THE EARTH — Shape and Size of the Earth—The Earth is very nearly an oblate spheroid, whose shorter axis coincides with its axis of rotation passing through the two poles. It rotates at a velocity of 15 degrees an hour (about 17,366 miles a minute at the equator); 1 degree is therefore equal to 4 minutes.

The circumference of the globe is about 24,855 miles, and the diameter about 7,900 miles. More exactly—

Earth's equatorial semidiameter equals 3,963.296 miles.

Earth's polar semidiameter equals 3,949.790 miles.

Earth's mean semidiameter equals 3,958.794 miles.

Earth's oblateness equals $\frac{1}{300}$.

One degree of latitude at pole equals 69.407 miles.

One degree of latitude at equator equals 68.704 miles.

The temperature increases on an average about 1 degree F. for every 64 feet descent. But this amount is variable according to the locality, geological formation and dip of strata.

Chemical Composition.—By combining a large number of analyses of rocks of all sorts, F. W. Clarke has estimated the relative amounts of elements in the crust of the earth:

	Per Cent		Per Cent
Oxygen	47.02	Phosphorus	0.09
Silicon	28.06	Manganese	0.07
Aluminum	8.16	Sulphur	0.07
Iron	4.64	Barium	0.05
Calcium	3.50	Strontium	0.02
Magnesium	2.62	Chromium	0.01
Sodium	2.63	Nickel	0.01
Potassium	2.32	Lithium	0.01
Titanium	0.41	Chlorine	0.01
Hydrogen	0.17	Fluorine	0.01
Carbon	0.12		
			100

The Magnetic Poles.—The geographical poles of the earth are the extremities of the imaginary line passing through its center of gravity and about which it revolves, and are therefore symmetrically located with regard to the equator.

It is common to speak of the magnetic pole in the northern hemisphere as the "north" magnetic pole and the one in the southern hemisphere as the "south" magnetic pole, but the scientist who speaks with greater accuracy will tell you that the north pole of your compass needle will be attracted only to a south magnetic pole and his explanation is this:

If a dipping needle is moved along a long bar magnet, the north end of the needle will dip down vertically when it is directly over the south pole of the magnet. North and south poles attract each other. Two north poles repel each other. The law of magnetic poles is the same when the earth is one of the magnets and a compass or dipping needle is the other. It follows then that near the north geographic pole of the earth there is a south magnetic pole. This is beneath a point where the needle dips 90°. Tests have located this place approximately in King William's Land, Canada, in about 95°30′ west, 70°30′ north and covers considerable area. Over the south magnetic pole the north end of a dipping needle points downward.

The position of the north magnetic pole in the southern hemisphere has been located approximately in latitude 71° south and longitude 150° east by Mr. E. N. Webb who went on an expedition led by Sir Douglas Mawson in 1912. Here the south end of a dipping needle points vertically downward.

The earth is a huge magnet surrounded by lines of magnetic force which enter the south magnetic pole in the northern hemisphere, and come out of the north magnetic pole in the southern hemisphere. It is these lines of force which direct a compass needle.

By reason of the annual variation of the magnetic needle, it is believed that the magnetic poles are not stationary, but have a slow motion around the geographical poles.

The Land.—The superficial area of the Earth is 196,950,000 square miles. The land area is 57,510,000 square miles.

Heights and Depths.—The mean height of the land has been estimated at 2,440 feet; the mean depth of the sea, 11,470 feet(Karstans); the greatest depth of the ocean as yet discovered (in the Pacific, between Guam and Midway) is 31,614 feet. If the whole of the solid crust of the earth were to be leveled, so as to form a spheroid, it would still be covered by an ocean of a uniform depth of 8,000 feet (Prof. Penck).

THE OCEANS.—The oceans, including the inland seas connected with them, cover 139,440,000 square miles. Murray states the greatest depth of the Atlantic Ocean at 27,366 feet; Pacific Ocean, 30,000 feet; Indian Ocean, 18,582 feet; Southern Ocean, 25,200 feet; Arctic Ocean, 9,000 feet. The Atlantic Ocean has an area, in square miles, of 24,536,000; Pacific Ocean, 70,000,000; Indian Ocean, 17,084,000; Arctic Ocean, 5,500,000; Southern Ocean, 30,592,000.

Antarctic Ocean.—Situated about, or within, the antarctic circle. The great Southern Ocean is that part of the ocean which surrounds the world between the latitude of 40 degrees south and the antarctic circle. The northern portions of this band are often called the South Atlantic, South Indian and South Pacific, while the southern portions are usually called the Antarctic Ocean. The average depth of the continuous ocean which surrounds south polar land is about two miles; it gradually shoals toward antarctic land, which in some places is met with a short distance within the antarctic circle. Life is abundant in the surface waters, and at the bottom of the ocean.

Arctic Ocean.—Lies to the north of Europe, Asia, and North America, and surrounds the north pole; it is usually defined as the water area within the arctic circle. Physiographically, the Norwegian Sea and Greenland Sea, situated between Norway and Greenland, belong to the same basin as the Arctic Ocean. If the Arctic Ocean be regarded as lying wholly within the arctic circle, then it is almost land-locked, between that circle and the parallel of 70 degrees north. It communicates with the Pacific by Bering Strait, and with the Atlantic through Davis Strait and the wide sea between Norway and Greenland. The area of the ocean is about 5,500,000 square miles, and into it there drain about 8,600,000 square miles of land.

The coasts of Europe and Asia are low, with several deep indentations, the principal being the White Sea and Gulf of Obi. The shores of North America are skirted by a most irregular assemblage of islands, forming numerous gulfs, bays, and channels.

The Atlantic Ocean.—The Atlantic Ocean separates the Old World from the New, and has been likened to a longitudinal valley divided by a series of submarine plateaus into an eastern and western half. Upon these plateaus there rise volcanic islands. The ocean, including the Mediterranean and other inclosed seas, covers an area of 34,301,400 square miles. Its greatest depth has been sounded to the north of the Virgin Islands, and has been named the "international deep."

The currents are primarily originated by the wind. The trade winds, which blow from the northeast and southeast toward the equator, give rise to the northern and southern equatorial currents, which are deflected on reaching the coast of the New World, a portion of the water returning toward the Gulf of Guinea (Equatorial Current or Guinea Current), a portion following the coast of Brazil, and another portion entering the Caribbean Sea and the Gulf of Mexico, whence it issues as the Gulf Stream. It is to the warm waters of this stream that western Europe owes its mild climate and freedom from icebergs. The cold currents flowing out of Baffin Bay, southward along the coast of North America, and from the cold Southern Ocean along the east coast of South America and the west coast of Africa, produce a corresponding lowering of the temperature.

Islands in the Atlantic.—*Iceland.*—39,709 square miles, population 94,690. The island consists in the main of a plateau, from which rise glacier-girt mountains (Juköd) including twenty-nine volcanoes. There are few trees, and the habitable part of the island does not exceed 16,200 square miles. Climate comparatively mild and equable. The fisheries and sheep-breeding are of importance. The exports include dried fish, wool, blubber, tallow, eiderdown and ponies. Capital is Reykjavik, population 17,678.

Bermudas (British).—A group of coral islands in the northern Atlantic. Area 19 square miles, population 20,127. Staple exports onions, potatoes, bulbs, nearly all being exported to the United States.

Azores (Portuguese).—A group of volcanic islands in the North Atlantic, mountainous (Pico, 7,710 feet), but fertile. Area 922 square miles, population 242,613, mostly Portuguese and Roman Catholics. The exports include oranges, wine and cereals. The islands form an integral portion of Portugal. Capital is Angra.

Madeira (Portuguese).—An island of volcanic origin, belonging to Portugal. Climate equable. Area 314 square miles, population 170,000, mostly Portuguese. Exports wine, sugar. Capital, Funchal, population, 50,192.

Canaries.—A group of islands of volcanic origin near the African coast, mountainous (Pico de Teide, on Tenerife, 12,190 feet). Area 3,342 square miles, population 506,414. Staple exports vegetables, bananas, cochineal. The islands form an integral portion of the kingdom of Spain.

Trinidad (British).—1,862 square miles; population, 381,753; exports asphalt and crude petroleum.

Ascension.—A British island of volcanic origin, rising 2,740 feet. Area 34 square miles, population 200. Sanatorium and coaling station. Celebrated for its turtles. Capital, Georgetown.

St. Helena.—A British island of volcanic origin, rising 2,700 feet. Area 47 square miles, population 3,747.

Indian Ocean.—That great body of water which has Asia on the north, the East In-

dies and Australia on the east, Africa on the west, and the Antarctic Ocean on the south. The Cape of Good Hope and the southern extremity of Tasmania may be considered its extreme southern limits on the west and east. Its length from north to south somewhat exceeds 6,500 miles, its breadth varies from 6,000 to 4,000 miles.

It is traversed by the equatorial current flowing east to west, and its navigation by sailing vessels is more or less modified by the periodic tradewinds and monsoons. Its chief arms are the Bay of Bengal on the east of India, and the Arabian Sea on the northwest, extensions of the latter being the Persian Gulf and Red Sea.

Islands.—Some of the most characteristic coral atolls and islands are to be found toward the central part of the Indian Ocean, such as the great Maldive group, the Chagos, Diego Garcia, and the Keeling Islands. Almost all the tropical shores are skirted by fringing and barrier reefs. Christmas Island is an upraised coral formation. St. Paul's, Mauritius, Rodriguez, and others are of volcanic origin, while Madagascar, Ceylon, and Socotra are typical continental islands.

Pacific Ocean.—The largest of the great divisions of the ocean, occupying about one-half of the water-surface of the globe and more than one-third of the area of the world. It is almost landlocked toward the north, communicating with the Arctic Ocean by the narrow (40 miles) and shallow Bering Strait, whereas it opens widely into the deep Southern Ocean. Its length from north to south is about 9,000 miles; its greatest breadth, at the equator, is over 10,000 miles; its area is approximately 70,000,000 square miles. The average depth of the Pacific appears to be greater than that of the Atlantic, and its bed more uniform. Recent soundings between the Friendly Islands and New Zealand gave depths of from 5,022 up to 5,155 fathoms (nearly six miles).

In the Pacific the tides never attain the maximum heights for which some parts of the Atlantic Ocean and the Indian Ocean are celebrated. On all the west coast of America the rise of the tide is usually below 10 feet, and only in the Bay of Panama does it vary from 13 to 15 feet.

The trade-winds of the Pacific are not so regular in their limits as those of the Atlantic, and this irregularity extends over a much wider region in the case of the southeast trade-wind than in the case of the northeast. The cause of this is the greater number of islands in the south Pacific Ocean, which, especially in the hot season, disturb the uniformity of atmospheric pressure by local condensations. The northeast trade-wind remains the whole year through within the northern hemisphere. The southeast trade-wind, on the other hand, advances beyond the equator both in summer and winter, still preserving its original direction. In the region stretching from New Guinea and the Solomon Islands southeastward there are no regular winds. The zones of the two trade-winds are separated by regions of calms and of light winds, the limits of which vary of course with the varying limits of these zones. In the Chinese seas the terrible typhoon occasionally rages, and may occur at any season of the year.

Islands.—The Pacific Ocean is remarkable for the innumerable small islands and island groups which stud its surface, but the area occupied by the truly oceanic islands is very small; they are principally congregated toward the central and western portions of its basin, while the eastern portion is comparatively free from islands. The larger islands—including Borneo, New Guinea, Celebes, Java and Sumatra—are continental. The oceanic islands—including the Hawaiian Islands, Ladrones, Carolines, Gilbert, Solomons, Fiji, Friendly and Samoa—are all either of volcanic or coral origin, the volcanic islands within the zone of coral-reef builders being fringed with coral reefs, while many are entirely of coral formation.

Early Navigation.—The Portuguese were the first Europeans who entered the Pacific, which they did from the east. Balboa, in 1513, discovered it from the summit of the mountains which traverse the Isthmus of Darien. Magellan sailed across it from east to west in 1520-21. Drake, Tasman, Bering, Anson, Byron, Bougainville, Cook, Vancouver, Laperouse, and others, traversed it in different directions in the seventeenth and eighteenth centuries.

ANTARCTIC EXPLORATION

Commander	Nationality	Date	South Latitude	Longitude
J. Cook	British	1773	67° 5′	142° W.
J. Cook	British	1774	71° 15′	106° W.
Bellingshausen	Russian	1820	67°	var.
Weddell	British	1824	74 15′	34° W.
D'Urville	French	1840	66°	140° E.
Wilkes	British	1840	66°	var.
James Ross	British	1840	71° 56′	171° E.
James Ross	British	1843	78° 11′	161° E.
Larsen	Norwegian	1893	63° 10′	60° W.
Christiansen	Swedish	1895	74° 0′	170° E.
De Geriache	Belgian	1899	71° 36′	87° W.
Borchgrevink	Br.-Nor.	1900	78° 50′	165° W.
Scott	British	1902	82° 17′	163° W.
Bruce	British	1904	74° 0′	24° W.
Shackleton	British	1909	88° 23′	
Amundsen	Norwegian	1911	Reached	pole Dec.14
Scott	British	1912	Reached	pole Jan.18
Byrd	American	1929	Reached	poleNov.29

POLAR REGIONS.—Antarctic—Rear Admiral Richard E. Byrd, U. S. N., gave the world the first extensive knowledge of the south pole and lands in the antarctic circle. In 1928-30 Byrd explored Little America, Ross Shelf Ice, Queen Maud Range, King Edward Land, Rockefeller Mts.; in 1933-35, Marie Byrd Land, Edsel Ford Range, Bernt Balchen Glacier, Haines Mts. and Leverett Plateau. Much knowledge was gained of the antarctic. Valuable coal fields and plant bearing sandstone holding numerous fossils have been discovered. A large plateau lies to the east and south of the Edsel Ford Range. The temperature is from 20 above to 72 below zero around the pole.

Arctic Regions.—The regions around the north pole, and extending from the pole on all sides to the arctic circle. The arctic or north polar circle just touches the northern headlands of Iceland, cuts off the southern and narrowest portion of Greenland, crosses Fox's strait north of Hudson's bay, whence it goes over the American continent to Bering strait. Thence it runs to Obdorsk at the mouth of the Obi, crosses northern Russia, the White Sea, and the Scandinavian peninsula, and returns to Iceland.

Valuable minerals, fossils, etc., have been discovered within the arctic regions. In the archipelago north of the American continent excellent coal frequently occurs. The mineral cryolite is mined in Greenland. Fossil ivory is obtained in islands at the mouth of the Lena. In Scandinavia, parts of Siberia, and northwest America, the forest region extends within the arctic circle. The most characteristic of the natives of the arctic regions are Eskimos. The most notable animals are the white bear, the musk-ox, the reindeer, and the whalebone whale. Fur-bearing animals are numerous. The most intense cold ever registered in those regions was 74° below zero. The aurora borealis is a brilliant phenomenon of arctic nights.

Islands.—Within the arctic circle, as far as discovered, islands cover an area of 1,233,000 square miles. The more important of these islands are:

Greenland.—827,300 square miles of which 717,000 are within the arctic circle. The interior, a lofty plateau, is covered with a cap of ice, from which glaciers descend into the sea. Only 34,000 square miles are described as habitable. Population 13,459. Of trees there are only dwarf willows and birches, and a juniper tree in the extreme south. Fishing and hunting are the principal occupations. Exports are blubber, cod-liver oil, sealskins. Capital is Godthaab.

ARCTIC EXPLORATION

Commander	Nationality	Date	North Latitude	Locality
John Davis	British	1587	72° 12′	West Greenland.
Wm. Barentz	Dutch	1596	77° 20′	Spitsbergen and Greenland Sea.
Henry Hudson	British	1607	80° 23′	Greenland Sea and Spitsbergen.
Henry Hudson	British	1616	77° 45′	Ellesmere.
William Baffin	British	1616	77° 45′	Smith Sound.
V. Bering	Danish	1728	70° 41′	disc. Bering Strait.
J. C. Phipps	British	1773	80° 48′	Spitsbergen and Greenland Sea.
William Scoresby	British	1806	81° 30′	East Greenland and Spitsbergen.
W. E. Parry	British	1827	82° 45′	Spitsbergen Sea.
John Franklin	British	1846	—	North Canada.
Wm. Morton and E. K. Kane	Amer.	1854	78° 45′	Cape Constitution.
O. Nordenskiold	Swede	1868	81° 42′	Spitsbergen.
C. F. Hall	Amer.	1871	82° 11′	West Greenland coast.
Julius Payer	Austrian	1874	81° 50′	disc. Franz Josef Land.
G. S. Nares	British	1876	83° 20′	Grinnell Land.
Nordenskiold	Swedish	1876–9	77° 41′	First northeast passage.
A. W. Greely	Amer.	1882	83° 24′	North Greenland.
Fred. Jackson	British	1896	81° 20′	Franz Josef Land.
Fridtjof Nansen	Norw.	1896	86° 14′	North of Franz Josef Land.
Duke of Abruzzi	Italian	1900	86° 34′	North of Franz Josef Land.
R. E. Peary	Amer.	1906	87° 6′	North of Greenland.
R. E. Peary	Amer.	1909	90°	Reached the pole April 6.
Richard E. Byrd	Amer.	1926	90°	Reached the pole May 9.
Roald Amundsen	Norw.	1926	90°	Reached the pole May 12.
Umberto Nobile	Italian	1928	90°	Reached the pole May 23.

Arctic Islands of America.—529,000 square miles (432,000 square miles within the arctic circle). At most a thousand inhabitants. All the other islands within the arctic circle are uninhabited.

Svalbard (Spitsbergen).— 25,000 square miles, a group of mountainous islands, accessible almost throughout the year along its western shore. There are reindeer, ice bears, foxes. The island is frequented by sealers and whalers, but has no permanent inhabitants.

Nova Zembla.—(New Land) 30,000 square miles. Samoyed fishing settlement.

Franz Josef Land.—7,400 square miles as far as known. Uninhabited; difficult of access. Renamed *Fridtjof Nansen Land.*

The Anjou Islands.—10,800 square miles, off the coast of Siberia, including New Siberia. Uninhabited.

Wrangel Land.—1,800 square miles. Uninhabited.

Ellesmere Island.—76,000 square miles, west of northern Greenland, largely covered with glaciers. Uninhabited.

Baffin Land.—211,000 square miles. Inhabited by a few Eskimos.

COUNTRIES OF THE WORLD.—TABLE 1.—GOVERNMENTS AND RULERS

Country	Capital	Form of Government	Title of Ruler	Present Official Head	Born	Began Rule	Population
Afghanistan	Kabul	Kingdom	King	Mohammed Zahir Khan	1911	Nov. 8, 1933	6,330,500
Albania	Tirana	Kingdom	King	Zog I	1894	1925	1,003,068
Argentina	Buenos Aires	Republic	President	Augustin P. Justo	1876	1932	12,372,965
Australia	Canberra	British Empire	Governor	Lord Gowrie	1872	1935	6,724,000
Austria	Vienna	Republic	President	William Miklas	1872	1928	6,759,062
Belgium	Brussels	Kingdom	King	Leopold III	Nov. 3, 1901	Feb. 23, 1934	8,213,449
Bolivia	LaPaz	Republic	President	Col. David Toro	.....	1936	2,974,000
Brazil	Rio de Janeiro	Republic	President	Getulio Vargo	.....	1930	45,332,660
Bulgaria	Sofia	Kingdom	Czar	Boris III	Jan. 30, 1894	1918	6,067,000
Canada	Ottawa	British Empire	Governor General	Lord Tweedsmuir	1875	1935	10,376,786
Chile	Santiago	Republic	President	Arturo Alessandri	1869	1932	4,287,665
China	Nanking	Republic	President	Lin Sen	.....	1931	404,987,418
Colombia	Bogota	Republic	President	Dr. Alfonso Lopez	.....	1934	8,893,030
Costa Rica	San Jose	Republic	President	Sr. Don Leon Cortez	.....	1936	551,541
Cuba	Havana	Republic	President	Dr. Miguel Marino Gomez y Arias	.....	1936	4,008,169
Czechoslovakia	Prague	Republic	President	Dr. Eduard Benes	1884	1935	14,729,536
Denmark	Copenhagen	Kingdom	King	Christian X	1870	1912	3,684,000
Dominican Republic	Trujillo Ciudad	Republic	President	Rafael Leonidas Trujillo	1893	1930	1,478,121
Ecuador	Quito	Republic	President	Federico Diaz	.....	1935	1,500,000
Egypt	Cairo	Kingdom	King	Faruk I	1920	1936	14,186,898
Estonia	Tallinn	Republic	State Head	Konstantin Pats	.....	1932	1,126,383
Finland	Helsingfors	Republic	President	Pehr Evind Svinhufvud	1861	1931	3,667,067
France	Paris	Republic	President	Albert Lebrun	1871	1932	41,834,923
Germany	Berlin	Republic	Reichsfuehrer	Adolf Hitler	1889	1934	65,969,052
Great Britain	London	Monarchy	King	George VI	1895	1936	46,189,206
Greece	Athens	Monarchy	King	George II	1890	1935	6,746,000
Guatemala	Guatemala	Republic	President	Jorge Ubico	1879	1931	2,245,593
Haiti	Port-au-Prince	Republic	President	Stenio Vincent	.....	Nov. 18, 1930	2,550,000
Honduras	Tegucigalpa	Republic	President	Tiburco Carias	.....	1932	854,184
Hungary	Budapest	Kingdom	Regent	Nicholas von Horthy	1868	Mar. 1, 1920	8,898,367
Iceland	Reykjavik	Kingdom	King	Christian X	Sept. 26, 1870	May 14, 1912	114,743
India	Delhi	British Empire	Viceroy	Marquess of Linlithgow	1887	1936	351,399,880
Iraq (Mesopotamia)	Bagdad	Kingdom	King	Ghazi I	1912	1933	2,849,282
Irish Free State	Dublin	British Empire	President	Eamonn de Valera	1882	Dec. 6, 1932	3,033,000
Italy	Rome	Kingdom	King	Victor Emanuel III	Nov. 11, 1869	July 29, 1900	41,806,000
Japan	Tokio	Empire	Emperor	Hirohito	Apr. 29, 1901	Dec. 26, 1926	69,254,158
Latvia	Riga	Republic	President	Albert Kviesis	1871	Apr. 9, 1930	1,950,502
Liberia	Monrovia	Republic	President	Edwin J. Barclay	.....	May, 1931	1,500,000
Liechtenstein	Vaduz	Principality	Prince	Francis I	Aug. 28, 1853	1929	10,213
Lithuania	Kovno	Republic	President	Antona Smetona	1875	Dec. 17, 1926	2,471,000
Luxemburg	Luxemburg	Grand Duchy	Grand Duchess	Charlotte	Jan. 23, 1896	Jan. 9, 1919	303,000
Mexico	Mexico	Republic	President	Gen. Lazaro Cardenas	1895	1934	16,552,722
Monaco	Monaco	Principality	Prince	Louis II	July 12, 1870	June 26, 1922	22,153
Morocco	Rabat	Protect	Sultan	Moulai Mohammed	1913	1927	5,063,271
Nepal	Kathmandu	Kingdom	Maharajah	Tribhubana Bir Bikram	June 30, 1906	Dec. 11, 1911	5,639,092
Netherlands	Amsterdam	Kingdom	Queen	Wilhelmina	Aug. 31, 1880	Nov. 23, 1890	8,392,102
Newfoundland including Labrador	St. John's	British Empire	Governor	Vice-Adm. Humphrey T. Walwyn	1879	1936	290,127
New Zealand	Wellington	British Empire	Governor-General	Viscount Galway	1882	1935	1,573,432
Nicaragua	Managua	Republic	President	Dr. C. B. Jarquin	1884	1936	750,000
Norway	Oslo	Kingdom	King	Haakon VII	Aug. 3, 1872	1905	2,817,124
Palestine	Jerusalem	British Mandate	Brit. High Comm'ner	A. G. Wauchope	1874	1931	1,035,154
Panama	Panama	Republic	President	Dr. J. D. Arosemena	.....	1936	467,459
Paraguay	Asuncion	Republic	President	Col. R. Franco	.....	1936	851,564
Persia	Teheran	Kingdom	Shah	Reza Pahlevi	Mar. 16, 1878	Dec. 6, 1925	9,000,000
Peru	Lima	Republic	President	Oscar Benavides	1876	Apr. 30, 1933	6,147,000
Poland	Warsaw	Republic	President	Ignace Moscicki	.....	June 1, 1926	33,310,000
Portugal	Lisbon	Republic	President	Antonio O. de F. Carmona	1869	Nov. 29, 1926	7,260,000
Rumania	Bucharest	Kingdom	King	Carol II	Oct. 15, 1893	June 6, 1930	19,033,363
Russia (U.S.S.R.)	Moscow	Soviet Republic	President	V. M. Molotov	.....	1931	147,013,600
Salvador	San Salvador	Republic	President	Maximiliano H. Martinez	.....	1931	1,459,578
San Marino	San Marino	Republic	Great Council	60 Members	.....	.....	13,948
Siam	Bangkok	Kingdom	King	Ananda	1924	1935	12,699,000
Spain	Madrid	Republic	President	Manuel Azana	.....	1936	28,719,177
Sweden	Stockholm	Kingdom	King	Gustaf V	June 16, 1858	Dec. 8, 1907	6,211,566
Switzerland	Berne	Republic	President	Dr. Guiseppi Motta	.....	1937	4,143,500
Syria	Beirut	French Mandate	High Commissioner	Damien Count de Martel	.....	1933	2,831,622
Turkey	Ankara	Republic	President	Gazi Mustafa Kemal	1880	Aug. 1923	17,500,000
Union of South Africa	Pretoria	British Empire	Governor-General	Earl of Clarendon	June 7, 1877	1924	9,479,985
United States	Washington	Republic	President	F. D. Roosevelt	Jan. 30, 1882	Mar. 4, 1933	128,429,000
Uruguay	Montevideo	Republic	President	Gabriel Terra	1873	1931	1,941,398
Venezuela	Caracas	Republic	President	Gen. E. L. Contreras	.....	1935	3,026,878
Yugoslavia	Belgrade	Kingdom	King	Peter II	1923	1934	14,296,431

COUNTRIES OF THE WORLD—TABLE II.—STATISTICS AND INDUSTRIES

Countries	Area Square Miles	Public Debt	Miles of Railroad	Chief Industries	Leading Products and Exports
Afghanistan	245,000	.....	.....	Agriculture, grazing.	Wool, skins, fruit, nuts.
Albania	17,374	$2,763,600	.....	Agriculture, cattle and sheep raising.	Wood, corn, wheat, rice, tobacco, olives, oranges, fish.
Argentina	1,153,418	972,914,721	24,223	Grazing, agriculture.	Beef, mutton, wheat, hides.
Australia	2,974,581	3,533,606,000	25,805	Grazing, agriculture, manufacturing.	Wool, meat, butter, wheat.
Austria	32,369	332,558,000	3,623	Grazing, agriculture, manufacturing.	Grains, fruits, wine, cattle, salt, yarns. leather goods.
Belgium	11,752	No Funded Debt	3,000	Agriculture, forestry, manufacturing.	Textiles, leather, glass, iron, steel, zinc wares, sugar.
Bolivia	506,467	70,600,000	1,722	Mining, agriculture.	Minerals, rubber, hides, cocoa.
Brazil	3,285,319	.....	19,603	Agriculture, mining.	Coffee, rubber, cattle, cotton, sugar.
Bulgaria	39,814	293,344,700	1,724	Agriculture, grazing.	Tobacco, grain, hides, petroleum, attar of roses.
Canada	3,690,043	2,177,763,959	40,572	Agriculture, mining.	Copper, lumber, nickel, grain, coal, cattle.
Chile	281,820	410,370,561	5,412	Agriculture, mining.	Copper, silver, nitrate, grain.
China	4,277,170	724,796,171	4,350	Agrieulture.	Silk, rice, tea, indigo, cotton, eggs, cereals, beans, copper.
Colombia	482,400	80,440,000	1,384	Agriculture, mining.	Coffee, fine woods, emeralds, gold, bananas, cotton.
Costa Rica	23,000	41,845,560	430	Agriculture, stock raising.	Coffee, cacao, bananas, gold, silver.
Cuba	41,634	80,518,300	3,025	Agriculture, lumbering.	Sugar, tobacco, cattle, hard woods.
Czechoslovakia	54,195	1,129,000,000	8,315	Agriculture, mining, lumbering.	Food stuffs, minerals, wood, livestock.
Denmark	16,570	358,628,200	3,185	Agriculture, dairying.	Dairy products, eggs, fuels, metal and wood manufactures, textiles.
Dominican Republic	19,325	21,500,000	153	Agriculture.	Sugar, cacao, tobacco.
Ecuador	118,627	24,554,494	530	Agriculture.	Cacao, ivory, nuts, coffee, hats, hides, rubber.
Egypt	347,840	546,023,708	2,842	Agriculture, mining.	Cotton, petroleum, cereals, sugar cane.
Estonia	18,355	22,949,060	1,156	Agriculture, dairying.	Dairy products, paper, flax, potatoes, timber.
Ethiopia (Abyssinia)	350,000	.....	495	Grazing, agriculture.	Hides, skins, coffee, beeswax.
Finland	149,641	89,400,000	2,992	Lumbering, agriculture.	Lumber, butter, cheese, paper, grain.
France	212,659	17,788,344,400	26,876	Agriculture, manufacturing.	Textiles, coal, raw silk, wine, wool.
Germany	185,889	2,013,504,600	33,347	Agriculture, manufacturing.	Grain, sugar, beer, iron and steel products.
Great Britain	94,284	36,374,322,200	20,389	Agriculture, manufacturing.	Grain, machinery, coal, iron.
Greece	49,022	302,730,000	1,770	Agriculture, mining.	Tobacco, fruits, wine, olive oil.
Guatemala	42,353	16,836,802	700	Agriculture, lumbering.	Coffee, sugar, bananas, chicle.
Haiti	10,204	17,735,479	158	Agriculture.	Cacao, cotton, logwood, sugar, coffee.
Honduras	46,332	.....	934	Agriculture, stock raising.	Bananas, coffee, sugar, hides.
Hungary	35,911	274,932,000	4,374	Agriculture, mining.	Grain, coal, iron.
Iceland	39,709	3,640,167	.....	Agriculture, stock raising.	Hay, potatoes, mutton, fish.
India	1,805,332	3,624,974,140	52,886	Agriculture.	Cotton, jute, oil, minerals.
Iraq (Mesopotamia)	143,240	.....	749	Agriculture, stock raising.	Wheat, barley, rice, millet.
Irish Free State	26,592	126,300,000	3,028	Agriculture, manufacturing.	Grain, potatoes, hay, meat.
Italy	119,744	9,559,851,600	10,358	Agriculture, manufacturing.	Silk, oil, fruits, cotton.
Japan	148,756	2,979,500,000	12,127	Agriculture, manufacturing.	Rice, silk, porcelain, toys, tea.
Latvia	40,856	15,771,556	1,776	Agriculture, stock raising.	Flax, linseed, grain, meat.
Liberia	45,000	5,000,000	.....	Agriculture.	Coffee, rubber, oil, ivory.
Liechtenstein	65	.....	.....	Agriculture, stock raising.	Grain, meat products.
Lithuania	20,550	8,606,850	1,213	Agriculture, lumbering.	Flax, grain, wood products.
Luxemburg	999	11,981,800	330	Agriculture.	Grain, hay, iron products.
Mexico	767,198	267,493,250	16,714	Agriculture, stock raising.	Grain, cotton, fiber, meats, coffee, sugar.
Monaco	8	.....	.....	Gambling.	
Morocco	231,500	37,054,304	1,500	Agriculture, grazing.	Eggs, poultry, grain, wool, hides.
Nepal	54,000	.....	24	Agriculture, grazing.	Rice, grain, cattle, hides.
Netherlands	12,582	98,810,760	2,284	Agriculture, fishing, manufacturing.	Food products, fish, sugar, cereals.
Newfoundland, including Labrador	162,750	79,477,479	989	Mining, fishing, lumbering.	Paper, fish, iron ore.
New Zealand	103,285	1,386,613,975	3,254	Agriculture, stock raising.	Grain, wool, dairy products.
Nicaragua	49,200	22,470,374	171	Agriculture, lumbering.	Sugar, coffee, bananas, timber.
Norway	124,964	423,991,544	2,349	Fishing, lumbering.	Fish, paper, matches, ships.
Palestine	9,000	30,558,550	756	Agriculture.	Grain, fruit, nuts, wines.
Panama	33,667	18,686,055	47	Agriculture, stock raising	Bananas, coconuts, hides, gum.
Paraguay	172,000	4,200,000	.....	Agriculture, grazing.	Hides, quebracho, yerba mate, tobacco.
Persia	628,000	7,976,291 (funded)	231	Agriculture.	Grain, fruits, oil, rugs, wines.
Peru	533,916	100,811,961	2,725	Mining, stock raising.	Copper, silver, oil, cotton, wool.
Poland	149,140	466,984,470	12,040	Agriculture, lumbering, mining.	Grain, beets, timber, zinc.
Portugal	35,490	348,227,450	2,040	Agriculture, fishing.	Wines, cork, fish, wool.
Rumania	122,282	871,977,169	7,102	Agriculture, lumbering.	Cereals, oil, timber.
Russia	8,144,228	1,336,425,000 (internal)	47,051	Agriculture, manufacturing.	Grain, beets, flax, machinery.
Salvador	13,173	22,905,820	.....	Agriculture.	Coffee, tobacco, rice, indigo.
San Marino	38	.....	20	Agriculture, stock raising.	Grain, meat, hides.
Siam	200,148	56,682,124	1,739	Agriculture, lumbering.	Rice, teakwood, fish, coal, iron.
Spain	190,050	2,898,128,500	9,859	Agriculture, mining.	Olives, cork, wine, silk, coal, iron.
Sweden	173,157	482,024,920	10,246	Agriculture, mining.	Grain, beets, coal, steel, butter.
Switzerland	15,976	383,549,479	3,374	Agriculture, manufacturing.	Grain, dairy products, watches, textiles.
Syria	60,000	.....	887	Agriculture.	Cotton, silk, wines, fruits.
Turkey	282,627	628,230,000	3,291	Agriculture, mining.	Tobacco, cereals, cotton, minerals.
Union of So. Africa	472,347	.....	13,281	Mining, stock raising, agriculture.	Gold, diamonds, hides, wool, grain.
United States	3,026,789 (continental)	16,185,309,831	249,309	Agriculture, mining, manufacturing.	Grain, cotton, oil, coal, textiles, meat, automobiles.
Uruguay	72,153	224,618,248	.....	Agriculture, grazing.	Grain, wool, hides, meat.
Venezuela	393,976	5,470,000	661	Agriculture, stock raising.	Coffee, cacao, balata, hides, rubber, oil.
Yugoslavia	96,134	534,442,924	6,231	Agriculture, stock raising.	Corn, sugar, tobacco, meat, hides.

THE PANAMA CANAL

THE Panama Canal is due south of Niagara Falls, within ten degrees of the equator. In certain parts of the Isthmus of Panama the sun rises in the Pacific Ocean and sets in the Atlantic. The city of Panama is south and east of Colon, the city at the eastern entrance to the Canal. When Balboa discovered the Pacific Ocean he called it the "Southern Sea." From that day in 1513, and beginning with the expressed wish of Balboa, the idea of a ship canal across the Isthmus has developed. It remained for the nineteenth century to witness a serious consideration of a workable plan.

A French company under the leadership of de Lesseps began the work of digging a canal in 1880, but their project collapsed in 1888. The first Panama Railroad was begun in 1850 and the first train crossed in January, 1855. For the haul of 47 miles the road charged first-class passengers $25 each and "steerage" passengers $10. The freight rates were five cents a pound on baggage and $1.80 a cubic foot for express. The French company bought the railroad for $18,000,000 to help in building the canal. Before discontinuing their work, the French excavated about 50,000,000 cubic yards of earth.

The United States Government purchased the rights and property of the French company for $40,000,000. When the agitation for a canal was started in 1903 a treaty was offered to Colombia in whose territory the zone was located. The treaty was rejected, but, by a fortunate series of events for the American building of the canal, Panama seceded and became an independent state. On Nov. 13 the Hay-Bunau-Varilla Treaty was signed. By it the United States guaranteed the independence of Panama and paid $10,000,000 for the Canal Zone, a strip ten miles across the Isthmus, excluding the cities of Panama and Colon, over which the United States, however, has a sanitary control. In addition, beginning in 1913, a payment of $250,000 has been made annually.

Six days later President Roosevelt appointed an Isthmian Canal Commission. A new commission was appointed on Apr. 1, 1905. The days of construction were absorbing ones. There were contests with yellow fever and malaria and heroic encounters with great slides of earth. There were prolonged arguments over a sea-level or a lock canal, with the advocates of the latter winning. In February, 1907, Col. George W. Goethals was made Chief Engineer and a commission of army officers was installed who were to "stay on the job until they were ordered home." The following January Col. Goethals was given entire control in the Canal Zone, and on Apr. 1, 1914 he was appointed as first Governor of the Panama Canal Zone.

Although the opening of the Canal did not come until 1914, President Wilson, in the White House, on Oct. 10, 1913, four centuries after Balboa had stood on the "peak in Darien" and discovered the Pacific, pressed a key which turned the waters into the Gaillard Cut section of the Canal. On Aug. 15, 1914, the passage of the S.S. *Ancon*, opened the great Canal to traffic. Nothing shows better the use of this great piece of engineering than a tabulation of the traffic during the years that have elapsed since the memorable trip of the *Ancon*.

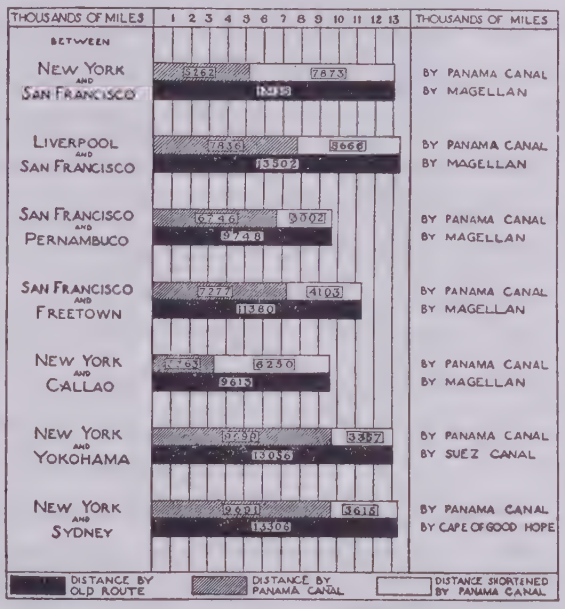
Besides the revenue paying vessels, certain ships paying no tolls pass through. These are vessels belonging to the United States, Colombia or Panama engaged in government business. These constitute no small part of the traffic as may be seen from the fact that in the year ending June 30, 1930, 545 United States vessels made the passage. The tolls listed in the tabulation refer to all sea-going ships paying tolls. Vessels in the immediate service of the United States do not pay, but those of the Shipping Board in commercial service do.

The minimum depth of the channel is 42 feet, and in Gatun Lake the maximum depth is 85 feet. The Panama Railroad follows the Canal on the eastern bank from Colon to Panama. The total length of the Canal from deep water to deep water is a fraction over 50 miles. From the Atlantic Ocean starting point in Limon Bay the Canal extends to Gatun, where three locks lift traffic to Gatun Lake. The way proceeds up the valley to Gamboa and through the famous Gaillard (formerly known as Culebra) Cut and to the Pedro Miguel lock and dam. A lock lowers the vessel to the Miraflores Lake and at the south end of this body of water two more steps lower the ship to the level of the Pacific. A channel at sea-level carries the ship for eight miles out past Balboa. The locks are 1,000 feet long and 110 feet wide, which takes any ship at present built.

A part of the cost of building the Panama Canal has been written off as chargeable to national defense. This sum on June 30, 1930, was $113,127,338. It includes $40,000,000 paid to the French Canal Company. The balance of the investment is $268,578,015 with an added $6,417,489 spent for equipment. In the fiscal year 1930 the net income of the Canal from all sources was $18,082,452 and the net profit on auxiliary business operations was $760,972.

A ship going from New York to San Francisco saves 7,873 miles by using the Canal. Peru and Chile are brought nearer to New York than is San Francisco. Between New York and Ecuador the Canal saves 7,400 miles; Japan, 3,357 miles; Hawaii, 6,600 miles. Curiously enough the distance from New York to Manila is but 14 miles less than by way of the Suez Canal; and Hong kong is 18 miles farther by way of Panama

From Liverpool to San Francisco the distance by way of the Strait of Magellan, 13,502 miles has been reduced to 7,836 miles by the Canal, a saving of 5,666 miles. The distance saved on the voyage to Valparaiso is 1,540 miles; to Callao, 4,043 miles; to Honolulu, 4,403 miles; to Wellington, New Zealand, 1,366 miles.



Courtesy Panama Canal Office

HOW THE PANAMA CANAL SAVES DISTANCES

This chart illustrates graphically some of the reductions of distances by use of the Panama Canal.

PANAMA CANAL COMMERCIAL TRAFFIC (Fiscal years end June 30)

YEAR	SHIPS	NET TONS	CARGO TONS	TOLLS
1915	1,075	3,792,572	4,888,454	$ 4,367,550
1916	758	2,396,242	3,094,114	2,408,090
1917	1,803	5,798,557	7,058,563	5,627,563
1918	2,069	6,574,073	7,532,031	6,438,853
1919	2,024	6,124,990	6,916,621	6,172,829
1920	2,478	8,546,044	9,374,499	8,513,933
1921	2,892	11,415,876	11,599,214	11,276,890
1922	2,736	11,417,459	10,884,910	11,197,832
1923	3,967	18,605,786	19,567,875	17,508,415
1924	5,230	26,148,878	26,994,710	24,290,964
1925	4,673	22,855,151	23,958,836	21,400,524
1926	5,197	24,774,591	26,037,448	22,931,055
1927	5,475	26,227,815	27,748,215	24,228,830
1928	6,456	29,458,634	29,630,700	26,944,500
1929	6,413	29,837,794	30,663,006	27,127,377
1930	6,185	29,980,614	30,030,232	27,076,890
1934	5,129	24,482,818	24,718,651	23,307,063

STATES AND TERRITORIES OF THE UNION—

State or Territory and Area	Origin and Meaning of Name	Date of Admission Into Union	Settlement: Where, When, By Whom	Original Territory from Which Derived	Population When Admitted or Acquired	Miles of Railroad	Persons to Sq. Mile 1930
Alabama 51,279 sq. miles.	Indian—Here we rest.	1819	Mobile Bay, 1702, by the French.	Louisiana, Georgia and Mississippi and Alabama territories.	127,901	5,257.5	51.6
‡**Alaska** 586,400 sq. miles.	Al-ay-eska, meaning "the great country."	1867	Three Saints, 1784, by the Russians.	Purchased from Russia in 1867 for $7,200,000.	.....	789.61	0.1
Arizona 113,810 sq. miles.	Indian word Arizonac meaning "small spring."	1912	Tucson, 1580, by the Spanish.	New Mexico territory.	205,000	2,494.21	3.8
Arkansas 53,525 sq. miles.	From a tribe of Indians.	1836	Arkansas Post, 1685, by the French.	Louisiana and Louisiana, Missouri and Arkansas territories.	97,574	4,809.34	35.3
California 155,652 sq. miles.	From an old Spanish romance.	1850	San Diego, 1768, by the Spanish.	New Albion, Upper California.	92,597	8,292.17	36.5
Colorado 103,658 sq. miles.	Spanish—Red, or Ruddy.	1876	Auroria, 1859, by the Americans.	Louisiana and Mexican cession. Colorado territory.	175,000	4,966.58	10.0
Connecticut 4,820 sq. miles.	Indian—Long River.	*1788	Windsor, 1636, by the English.	North Virginia, New England.	237,964	968.33	333.4
Delaware 1,965 sq. miles.	In honor of Lord De La Warr.	*1787	Wilmington, 1637, by the Swedes.	New Sweden, New Netherlands, three lower counties on the Delaware.	59,096	325.11	121.3
District of Columbia 62 sq. miles.	In honor of Columbus.	1790	Rome, 1663, by the English.	Ceded to government by Maryland and Virginia.	.....	36.42	7,852.7
Florida 54,861 sq. miles.	Spanish—Blooming.	1845	St. Augustine, 1565, by the Spanish.	Florida territory.	87,445	5,686.44	26.8
Georgia 58,725 sq. miles.	In honor of George II.	*1788	Savannah, 1733, by the English.	One of the original thirteen states.	82,548	6,762.26	49.5
‡**Hawaii** 6,407 sq. miles.	From the native Owhyhee.	1898	Honolulu, 1820, by the Americans.	Sandwich islands.	154,001	230.55	57.5
Idaho 83,354 sq. miles.	Indian — Gem of the Mountains.	1890	Cœur d'Alene, 1842, by the Americans.	Oregon, Washington, and Idaho territories.	84,385	2,938.98	5.3
Illinois 56,043 sq. miles.	Indian—The Men.	1818	Kaskaskia, 1682, by the French.	Northwest, Indian and Illinois territories.	55,211	12,510.84	136.2
Indiana 36,045 sq. miles.	Indian's Ground.	1816	Vincennes, 1702, by the French.	Northwest and Indiana territories.	147,178	7,105.01	89.8
Iowa 55,586 sq. miles.	Indian—Drowsy Ones.	1846	Dubuque, 1833, by the Americans.	Louisiana, Missouri, Michigan, Wisconsin, and Iowa territories.	182,000	9,709.02	44.4
Kansas 81,774 sq. miles.	Indian—People of the South Wind.	1861	Leavenworth, 1854, by the Americans.	Louisiana, Kansas territory.	107,206	9,342.06	23.0
Kentucky 40,181 sq. miles.	Indian—Land of Tomorrow.	1792	Boonesboro, 1769, by the English.	Virginia.	73,677	4,033.23	65.0
Louisiana 45,409 sq. miles.	In honor of Louis XIV.	1812	New Orleans, 1718, by the French.	Louisiana, Territory of Orleans.	76,556	4,762.71	46.3
Maine 29,895 sq. miles.	French Province—Maine.	1820	Saco, 1623, by the English.	New England, Laconia, and Massachusetts.	298,335	2,197.47	26.7
Maryland 9,941 sq. miles.	In honor of Queen Henriette Marie.	*1788	St. Mary's, 1632, by the English.	One of the original states.	319,728	1,438.82	164.1
Massachusetts 8,039 sq. miles.	Indian—Great-Hill-Small-Place.	*1788	Plymouth, 1620, by the English.	North Virginia, New England, Massachusetts Bay.	378,787	2,015.94	528.6
Michigan 57,480 sq. miles.	Indian—Great Lake.	1837	Sault Ste. Marie, 1668, by the French.	Northwest, Indiana, and Michigan territories.	212,267	8,155.35	84.2
Minnesota 80,858 sq. miles.	Indian—Sky-colored Water.	1858	St. Paul, 1838, by the Americans.	Louisiana and Northwest and Minnesota territories.	172,793	8,816.16	31.7
Mississippi 46,362 sq. miles.	Indian—Fish River.	1817	Biloxi, 1699, by the French.	Louisiana and Georgia, Mississippi territory.	75,448	4,284.13	43.4
Missouri 68,727 sq. miles.	Indian—Great Muddy.	1821	St. Genevieve, 1755, by the French.	Louisiana and Louisiana and Missouri territories.	66,586	7,939.91	52.8
Montana 146,131 sq. miles.	Spanish—A Mountain.	1889	Yellowstone River, 1809, by the Americans.	Louisiana and Nebraska, Idaho, Dakota and Montana territories.	175,000	5,230.60	3.7
Nebraska 76,808 sq. miles.	Indian—Wide River.	1867	Bellevue, 1847, by the Americans.	Louisiana, Nebraska territory.	122,993	6,174.36	17.9
Nevada 109,821 sq. miles.	Spanish—Snow-covered.	1864	Genoa, 1850, by the Americans.	Upper California and Utah and Nevada Territories.	35,000	2,122.65	0.8
New Hampshire 9,031 sq. miles.	After Hampshire, England.	*1788	Portsmouth, 1623, by the English.	North Virginia, New England, Laconia.	141,885	1,165.62	51.5
New Jersey 8,224 sq. miles.	In honor of Island of Jersey.	*1787	Elizabethtown, 1617, by the Dutch.	New Netherland.	184,139	2,296.70	537.8
New Mexico 122,503 sq. miles.	Aztec—"Mexitli," war god.	1912	Santa Fe, 1605, by the Spanish.	New Mexico.	330,000	2,874.64	3.0
New York 47,654 sq. miles.	In honor of Duke of York.	*1788	New York, 1614, by the Dutch.	New Netherland.	340,120	8,330.78	264.2
North Carolina 48,740 sq. miles.	In honor of Charles II.	*1789	Albemarle Sound, 1653, by the English.	Albemarle colony.	393,751	5,188.79	65.0
North Dakota 70,183 sq. miles.	Indian—Allied Friends.	1889	Pembino, 1859, by the Americans.	Louisiana, Minnesota and Nebraska and Dakota territories.	182,000	5,275.58	9.7

*Original Thirteen States. ‡Organized Territories.

HISTORICAL, GEOGRAPHICAL AND INDUSTRIAL

Chief Productions	Highest and Lowest Altitudes Feet	Public Lands Acres	Motto and Meaning State Flower	Popular Name of State and People
Corn, oats, wheat, rice, cotton, sugar, iron, lumber, manufactures, potatoes.	Cheaha Mt. 2,407 Gulf of Mexico 0	.....	Here we rest. Goldenrod.	**Ala.** Cotton; "Lizards."
Seals, salmon, gold, copper, silver, lumber, tin, lead, coal.	Mt. McKinley 20,300 Pacific Ocean 0	368,014,735	No motto.	‡**Alaska.**
Copper, gold, silver, alfalfa, fruits, live stock, wheat, barley.	San Francisco Pk. 12,611 Colorado River 100	18,199,100	*Ditat deus* (God enriches). Sahuaro cactus.	**Arizona.**
Cotton, lumber, corn, oats, wheat, fruits, wool, coal, tobacco, petroleum, rice, aluminum, diamonds.	Blue and Magazine Mts. 2,800 Ouachita River 55	218,911	*Regnat populi* (The people rule). Apple blossom.	**Ark.** Bear; "Toothpicks."
Gold, silver, copper, lead, petroleum, borax, lumber, fruits, wine, olives, beet sugar.	Mt. Whitney 14,496 Death Valley —276	20,422,083	*Eureka* (I have found it). California poppy.	**Cal.** Golden; "Gold Hunters."
Gold, silver, coal, copper, vegetables, fruits, live stock, wheat, beet sugar, oats, corn.	Mt. Elbert 14,420 Arkansas River 3,350	7,717,121	*Nil sine numine* (Nothing without providence). Columbine.	**Colo.** Centennial; "Rovers."
Manufactures, woolen, cotton, notions; tobacco, iron, granite, cereals.	Bear Mountain 2,355 Long Island Sound 0	.....	*Qui transtulit sustinet* (He who transplanted still sustains). Mountain laurel.	**Conn.** Nutmeg; "Wooden Nutmegs."
Corn, wheat, tomatoes, fruits, manufactures, leather, iron, steel, machinery.	Centerville 440 Atlantic Ocean 0	.....	Liberty and independence. Peach blossom.	**Del.** Blue Hen; Diamond; "Blue Hen's Chickens."
Flour mills, manufactures.	Tenleytown 420 Potomac River 0	.....	*Justitia omnibus* (Justice to all). American beauty rose.	**District of Col.**
Fruits, vegetables, tobacco, rice, cotton, lumber, turpentine, resin, fish, phosphate.	Iron Mountain 325 Atlantic Ocean 0	11,506	In God we trust. Orange blossom.	**Fla.** Flower; Everglades; "Fly-up-the-Creeks."
Cotton, corn, rice, oats, tobacco, oysters, peaches, melons, marble, clay; cotton goods, lumber, fertilizers, tar.	Brasstown Bald 4,768 Atlantic Ocean 0	.....	Wisdom, justice, moderation. Cherokee rose.	**Ga.** Empire State of the South; "Buzzards"; "Crackers."
Sugar, fruits, rice, coffee, hides, wool, honey, sisal.	Mauna Kea 13,784 Pacific Ocean 0	.....	.....	‡**Hawaii.**
Gold, silver, copper, lead, lumber, flour, wheat, oats, barley, live stock, potatoes.	Borah Peak 12,655 Snake River 720	10,764,857	*Esto perpetua* (Mayest thou last forever). Syringa.	**Idaho.** Gem.
Corn, wheat, oats, potatoes, hay, live stock, wool, meat, manufactures, coal.	Charles Mound 1,241 Mississippi River 279	.....	State sovereignty, national union. Violet.	**Ill.** Prairie; "Suckers," "Illini."
Corn, wheat, tobacco, vegetables, fruits, wool, coal, clay, flour, machinery, Bedford stone.	Greensfork Tp. 1,240 Ohio River 316	.....	No motto. Tulip-tree flower.	**Ind.** Hoosier; "Hoosiers."
Corn, wheat, oats, potatoes, hay, live stock, butter, coal, lumber, poultry.	In Osceola Co. 1,675 Mississippi River 477	.....	Our liberties we prize and our rights we will maintain. Wild rose.	**Iowa.** Hawkeye; "Hawkeyes."
Corn, wheat, hay, live stock, fruits, coal, petroleum, salt, meats, Kaffir corn.	In Wallace Co. 4,135 Verdigris River 700	.....	*Ad astra per aspera* (To the stars through difficulties). Sunflower.	**Kan.** Sunflower; "Jayhawkers."
Tobacco, hemp, wheat, cotton, live stock, lumber, coal, sorghum, flour.	Big Black Mtn. 4,150 Mississippi River 257	.....	United we stand, divided we fall. Goldenrod.	**Ky.** Blue Grass; Dark and Bloody Ground; "Corncrackers."
Cotton, corn, rice, sugar, lumber, oysters, salt, sulphur.	In Claiborn Co. 400 Gulf of Mexico 0	.....	Union, justice, and confidence. Magnolia.	**La.** Creole; Pelican; "Creoles."
Hay, grains, dairy products, potatoes, wool, granite, ice, lumber, apples, paper.	Mt. Katahdin 5,267 Atlantic Ocean 0	.....	*Dirigo* (I direct). Pine cone and tassel.	**Maine.** Pine Tree; Lumber; "Foxes."
Wheat, hay, corn, vegetables, fruits, oysters, coal, wool, canned fruits, vegetables.	Backbone Mtn. 3,340 Atlantic Ocean 0	.....	*Fatti maschii, parole femine* (Manly deeds, womanly words.) Blackeyed Susan.	**Md.** Old Line; "Crawthumpers."
Manufactures (woolen, cotton), boots, shoes, fish, tobacco, granite, marble.	Mt. Greylock 3,505 Atlantic Ocean 0	.....	*Ense petit placidam sub libertate quietem* (With the sword she seeks calm peace under liberty). Mayflower (trailing arbutus).	**Mass.** Bay; "Beaneaters."
Corn, wheat, oats, hay, fruits, vegetables, iron, copper, clay, lumber, manufactures.	Porcupine Mtns. 2,023 Lake Erie 572	.....	*Si quaeris peninsulam amoenam, circumspice* (If you seek a beautiful peninsula, behold it here). Apple blossom.	**Mich.** Wolverene; "Wolverenes."
Corn, wheat, oats, barley, flaxseed, wool, live stock, flour, iron, lumber, dairy products.	Mesabi Range 1,920 Lake Superior 602	214,340	*L'etoile du nord* (The star of the north). Moccasin flower.	**Minn.** North Star, Gopher; "Gophers."
Cotton, corn, wheat, oats, potatoes, rice, tobacco, oysters, shrimps.	Near Iuka 780 Gulf of Mexico 0	.....	*Virtute et armis* (By valor and arms). Magnolia.	**Miss.** Bayou; "Tadpoles."
Corn, wheat, oats, rye, cotton, swine, honey, zinc, lead, tobacco, meats.	Taum Sauk Mtn. 1,800 St. Francis River 230	.....	*Salus populi suprema lex esto* (The welfare of the people is the supreme law). Hawthorn.	**Mo.** Ozark; Iron Mountain; "Pukes."
Wheat, wool, live stock, fruit, oats, barley, lumber, copper, lead, silver, coal.	Granite Peak 12,850 Kootenai River 1,800	7,192,318	*Oro y plata* (Gold and silver). Bitterroot.	**Mont.** Mountain; Treasure; "Bug-eaters"; "Stubtoes."
Corn, wheat, oats, live stock, hay, chicory, sugar beets, fruits, potatoes.	In Banner Co. 5,300 In Richardson Co. 825	28,623	Equality before the law. Goldenrod.	**Neb.** Antelope; "Tree Planters"; "Cornhuskers."
Gold, silver, copper, zinc, wool, live stock, lumber, borax.	Boundary Peak 13,145 Colorado River 470	53,878,958	All for our country. Sagebrush.	**Nev.** Silver; "Sage Hens."
Hay, corn, potatoes, oats, apples, granite, mica, manufactures.	Mt. Washington 6,288 Atlantic Ocean 0	.....	No motto. Purple lilac.	**N. H.** Granite; "Granite Boys."
Market garden crops, cereals, fruits, fisheries, manufactures, textiles, machinery.	High Point 1,805 Atlantic Ocean 0	.....	Liberty and prosperity. Violet.	**N. J.** Jersey Blue; "Jersey Blues," "Clamcatchers."
Gold, silver, fruits, vegetables, live stock, wool, lumber, copper, coal, turquoise.	N. Truchas Peak 13,306 Red Bluff 2,876	16,869,600	*Crescit eundo* (It increases as it goes). Yucca.	**New Mexico.** Sunshine.
Market garden crops, fruits, corn, wheat, dairy products, manufactures, clothing, textiles, books, magazines, papers.	Mt. Marcy 5,344 Atlantic Ocean 0	.....	*Excelsior* (Higher). Rose.	**N. Y.** Empire; "Knickerbockers."
Cotton, corn, tobacco, wheat, shad, oysters, lumber, mining.	Mt. Mitchell 6,684 Atlantic Ocean 0	.....	*Esse quam videri* (To be, rather than to seem). Goldenrod.	**N. C.** Old North; Turpentine; "Tarheels."
Wheat, oats, barley, flaxseed, live stock, wool, minerals.	Black Butte 3,468 Pembina 790	126,474	Liberty and union, now and forever, one and inseparable. Wild prairie rose.	**N. D.** Sioux; "Tuckoes."

STATES AND TERRITORIES OF THE UNION—

State or Territory and Area	Origin and Meaning of Name	Date of Admission Into Union	Settlement: Where, When, By Whom	Original Territory from Which Derived	Population When Admitted or Acquired	Miles of Railroad	Persons to Sq. Mile 1930
Ohio 40,740 sq. miles.	Indian—Great.	1803	Marietta, 1788, by the Americans.	Northwest territory.	45,365	8,810.14	163.1
Oklahoma 69,414 sq. miles.	Indian—Red People.	1907	Guthrie, 1889, by the Americans.	Indian and Oklahoma territories.	1,414,042	6,681.67	34.5
Oregon 95,607 sq. miles.	Spanish—Wild Marjoram.	1859	Astoria, 1811, by the Americans.	Oregon territory.	52,566	3,487.54	10.0
Pennsylvania 44,832 sq. miles.	Latin—Penn's Woods.	*1787	Chester, 1638, by the Swedes.	Original state.	434,373	11,153.77	214.8
Philippines 114,400 sq. miles.	In honor of Philip II.	.....	Cebu, 1565, by the Spanish.	Archipelago de San Lazaro.	7,000,000	792.0	111.0
Porto Rico 3,435 sq. miles.	Spanish—Rich Port.	.....	San Juan, 1510, by the Spanish.	.....	953,243	.....	449.4
Rhode Island 1,067 sq. miles.	Rhodes, an island in the Ægean Sea.	*1790	Providence, 1636, by the English.	Providence and Rhode Island plantations.	68,825	195.77	644.3
South Carolina 30,495 sq. miles.	In honor of Charles II.	*1788	Ashley River, 1670, by the English.	Carteret colony.	249,073	3,778.95	57.0
South Dakota 76,868 sq. miles.	Indian—Allied Friends.	1889	Southeast part, 1859, by the Americans.	Louisiana, Minnesota, and Nebraska and Dakota territories.	328,808	4,287.45	9.0
Tennessee 41,687 sq. miles.	Indian—River with the Great Bend.	1796	Fort Loudon, 1757, by the English.	North Carolina, territory south of the Ohio river.	35,791	3,961.84	62.8
Texas 262,398 sq. miles.	From tribe of Indians.	1845	San Antonio, 1692, by the Spanish.	.....	212,592	16,890.64	22.2
Utah 82,184 sq. miles	Indian—Mountain Dwellers.	1896	Salt Lake City, 1847, by the Americans.	Mexican cession, Utah territory.	207,905	2,193.78	6.2
Vermont 9,124 sq. miles.	French — Green Mountain.	1791	Fort Dummer, 1724, by the English.	New Netherland, New Hampshire grants.	85,425	1,056.88	39.4
Virginia 40,262 sq. miles.	In honor of Elizabeth, the Virgin Queen.	*1788	Jamestown, 1607, by the English.	South Virginia.	748,308	4,505.29	60.2
Washington 66,836 sq. miles.	After George Washington, first President of United States.	1889	Columbia River, 1811, by the English.	Oregon and Washington territories.	349,390	5,538.95	23.4
West Virginia 24,022 sq. miles.	From Virginia.	1863	Berkeley County, 1726?, by the Americans.	Virginia.	376,688	4,005.77	72.0
Wisconsin 55,256 sq. miles.	Indian—Wild Rushing Channel.	1848	Green Bay, 1745, by the French.	Northwest, Illinois, Michigan and Wisconsin territories.	305,391	7,333.15	53.2
Wyoming 97,548 sq. miles.	Indian—Mountains and valleys alternating.	1890	Cheyenne, 1867, by the Americans.	Louisiana (chiefly), Nebraska, Dakota, Idaho, and Wyoming territories.	60,705	2,043.49	2.3

*Original Thirteen States. ‡Organized Territories.

POLITICAL AND STATISTICAL

States and Population 1930	Capitals and Population 1930	Requirements as to Citizenship	Previous Residence Required: In State	In County	In Town	In Precinct	Persons Excluded from Suffrage (Besides felons, idiots and insane)	Governors: Salaries	Governors: L'gth Term Yrs.
Alabama Pop. 2,646,248	Montgomery Pop. 66,079	Citizen of United States or alien who has declared intentions.	2 years	1 year	3 mos.	3 mos.	Convicted of treason.	$7,500	4
Arizona Pop. 435,573	Phoenix Pop. 48,118	Citizen of United States by nativity or naturalization.	1 year	30 days	30 days	30 days	Under guardianship.	7,500	2
Arkansas Pop. 1,854,482	Little Rock Pop. 81,679	Citizen of United States or alien who has declared intentions.	1 year	6 mos.	30 days	30 days	Failure to pay poll-tax, U. S. soldiers, or marines.	6,000	2
California Pop. 5,677,251	Sacramento Pop. 93,750	Citizen, by nativity, naturalization, or treaty of Queretaro.	1 year	90 days	.....	30 days	Chinese, embezzlers of public moneys, convicted of infamous crimes.	10,000	4
Colorado Pop. 1,035,791	Denver Pop. 287,861	Citizen, native or naturalized (intentions declared), who is duly registered.	1 year	90 days	30 days	10 days	While confined in public prison, under guardianship.	5,000	2
Connecticut Pop. 1,606,903	Hartford Pop. 164,072	Citizen of United States, who can read English language.	1 year	.....	6 mos.	.....	Convicted of heinous crime, unless pardoned.	5,000	2
Delaware Pop. 238,380	Dover Pop. 4,800	Citizen who shall have paid a registration fee of $1.00.	1 year	3 mos.	.....	30 days	Paupers.	7,500	4
District of Col. Pop. 486,869	Washington Pop. 486,869	District is without suffrage.	.....	.....	.....	.....	District is governed by three commissioners appointed by the President.	6,000	3
Florida Pop. 1,468,211	Tallahassee Pop. 10,700	Citizen of United States.	1 year	6 mos.	.....	30 days	Duelists, convicted of any infamous crime.	10,000	4
Georgia Pop. 2,908,506	Atlanta Pop. 270,366	Citizen of United States who can read and has paid all his taxes since 1877.	1 year	6 mos.	.....	.....	Convicted of bribery or larceny, unless pardoned, delinquent taxpayer.	7,500	2
Idaho Pop. 445,032	Boise Pop. 21,544	Citizen of United States, male or female.	6 mos.	30 days	.....	10 days	Bigamists, polygamists, under guardianship, Chinese, Indians.	5,000	2
Illinois Pop. 7,630,654	Springfield Pop. 71,864	Citizen of United States.	1 year	90 days	30 days	30 days	Convicted of felony or bribery in elections, unless restored to citizenship.	12,000	4
Indiana Pop. 3,238,503	Indianapolis Pop. 364,161	Citizen, or alien who has declared intention and resided one year in United States.	6 mos.	60 days	30 days	30 days	United States soldiers, sailors, and marines, and persons convicted of infamous crime.	8,000	4
Iowa Pop. 2,470,939	Des Moines Pop. 142,559	Citizen of United States.	6 mos.	60 days	10 days	10 days	Convicted of infamous crime, U. S. soldiers.	7,500	2
Kansas Pop. 1,880,999	Topeka Pop. 64,120	Citizen of the U. S., male or female, or alien, who has declared intention.	6 mos.	30 days	30 days	30 days	Convicted of treason, under guardianship.	5,000	2
Kentucky Pop. 2,614,589	Frankfort Pop. 11,626	Citizen of United States.	1 year	6 mos.	60 days	60 days	Convicted of treason, or bribery in an election.	6,500	4

HISTORICAL, GEOGRAPHICAL AND INDUSTRIAL—Continued

Chief Productions	Highest and Lowest Altitudes Feet	Public Lands Acres	Motto and Meaning State Flower	Popular Name of State and People
Corn, wheat, oats, hay, potatoes, fruits, tobacco, live stock, wool, dairy products, coal, petroleum, salt, iron, steel, machinery, flour.	Campbell Hill 1,550 Ohio River 425	.....	*Imperium in imperio* (An empire within an empire). Carnation.	**Ohio.** Buckeye; "Buckeyes."
Corn, wheat, oats, cotton, flax, live stock, petroleum, minerals.	Black Mesa 4,978 Red River 300	.....	*Labor omnia vincit* (Labor conquers everything). Mistletoe.	**Okla.** Sooner.
Lumber, live stock, wheat, hay, fruits, hops, wool, salmon, gold, silver, paper.	Mt. Hood 11,253 Pacific Ocean 0	13,423,703	*Alis volat propriis* (She flies with her own wings). Oregon grape.	**Ore.** Beaver; "Webfeet."
Manufactures, steel, machinery, textiles, coal, coke, petroleum, natural gas, iron, grains, wool, leather.	Negro Mtn. 3,213 Delaware River 0	.....	Virtue, liberty, and independence. Mountain Laurel.	**Pa.** Keystone; "Leatherheads."
Cacao, coffee, tobacco, cotton, hemp, cocoanuts, corn, sugar, rice, timber, dyewoods.	Mt. Apo 9,610 Pacific Ocean 0	.....	.....	‡**Philippines.**
Coffee, sugar, tobacco, cotton, citrus fruits, bananas, pineapples, salt.	Luquillo Mtns. 3,532 Atlantic Ocean 0	.....	.....	**Porto Rico.**
Manufactures, worsted, cotton, jewelry, machinery, rubber, minerals.	Durfee Hill 805 Atlantic Ocean 0	.....	Hope. The violet.	**R. I.** Little Rhody; "Gun-flints."
Cotton, wheat, corn, oats, tobacco, rice, oysters, turpentine, lumber, phosphates.	Sassafras Mtn. 3,548 Atlantic Ocean 0	.....	*Dum, spiro, spero* (While I breathe, I hope.)	**S. C.** Palmetto; "Weasels."
Corn, wheat, oats, flax, potatoes, live stock, wool, gold, silver, tin, dairy products.	Harney Peak 7,242 Big Stone Lake 962	396,200	Under God the people rule. Pasque flower.	**S. D.** Coyote; Sunshine.
Corn, wheat, cotton, potatoes, tobacco, live stock, coal, iron, marble, lumber.	Clingman's Dome 6,642 Mississippi River 182	.....	Agriculture, commerce. Passion flower.	**Tenn.** Volunteer; "Butternuts."
Cotton, grains, sulphur, rice, sugar, live stock, wool, fruits, lumber, petroleum, coal.	El Capitan 8,700 Gulf of Mexico 0	.....	No motto. Bluebonnet.	**Texas.** Lone Star; "Beef-heads"
Gold, silver, copper, lead, coal, vegetables, fruits, sugar, wheat, oats, live stock, wool.	King's Peak 13,498 Beaverdam Creek 2,000	25,994,956	Industry. Sego lily.	**Utah.** Deseret; Beehive.
Hay, cereals, potatoes, lumber, marble, dairy products, maple sugar, manufactures, wood pulp.	Mt. Mansfield 4,393 Lake Champlain 95	.....	Freedom and unity. Red clover.	**Vt.** Green Mountain; "Green Mountain Boys."
Corn, wheat, oats, tobacco, potatoes, cotton, oysters, coal, iron, cotton manufactures.	Mt. Rogers 5,719 Atlantic Ocean 0	.....	*Sic semper tyrannis* (Ever so to tyrants.) American dogwood.	**Va.** Old Dominion; "Beagles."
Lumber, coal, wheat, barley, oats, fruits, salmon, live stock, minerals.	Mt. Rainier 14,408 Pacific Ocean 0	877,921	*Al-ki* (By and by). Rhododendron.	**Wash.** Evergreen; "Chinook."
Corn, oats, hay, wheat, fruits, cattle, sheep, lumber, coal, petroleum, natural gas, minerals.	Spruce Knob 4,860 Potomac River 240	.....	*Montani semper liberi* (Mountaineers are always free men). Rhododendron.	**W. V.** Panhandle; "Panhandlers."
Corn, oats, barley, wheat, hay, potatoes, fruits, beet sugar, dairy products, iron, lumber.	Rib Hill 1,940 Lake Michigan 581	.....	Forward.	**Wis.** Badger; "Badgers."
Wool, lumber, coal, copper, petroleum, minerals.	Gannett Peak 13,785 Belle Fourche River 3,100	17,510,569	*Cedant arma togae* (Let arms yield to the gown). Indian paint brush.	**Wyoming.** Equality.

FACTS CONCERNING THE STATES

Legislatures			Members' Terms		Electoral Vote 1928	Total Assessed Valuation of Realty	Wealth (In 1922) By Bureau of the Census [1]			Name of State
Ann. or Bien.	Limit of Term	Salaries of Members	Senators	Representatives			Total	Railroads and Equipment	Motor Vehicles	
Quad.	50 days	$4.00 per diem	4	4	12	$ 780,726,751	$ 3,002,043,000	$ 295,544,000	$ 33,496,000	**Alabama**
Ann.	60 days	$4.00 per diem	2	2	3	115,236,380	1,314,291,000	105,831,000	13,736,000	**Arizona**
Bien.	95 days	$6.00 per diem	4	2	9	624,000,000	2,599,617,000	278,425,000	31,302,000	**Arkansas**
Bien.	None	$8.00 per diem	4	2	13	9,885,903,184	15,031,734,000	710,573,000	317,695,000	**California**
Bien.	None	$1,000 per term	4	2	6	1,046,057,218	3,229,412,000	364,963,000	59,893,000	**Colorado**
Bien.	157days	$300 per annum	2	2	7	2,617,826,096	5,286,445,000	179,075,000	58,321,000	**Connecticut**
Bien.	60 days	$5.00 per diem	4	2	3	265,582,580	625,765,000	21,910,000	8,916,000	**Delaware**
United States acts as		Congress legislature.	.....	.....	.....	.....	1,697,270,000	21,231,000	19,996,000	**Dist. of Col.**
Bien.	60 days	$6.00 per diem	4	2	6	501,715,176	2,440,491,000	233,548,000	44,106,000	**Florida**
Bien.	60 days	$4.00 per diem	2	2	14	1,311,069,248	3,896,759,000	319,619,000	53,489,000	**Georgia**
Bien.	60 days	$5.00 per diem	2	2	4	341,032,291	1,533,941,000	159,946,000	19,934,000	**Idaho**
Bien.	None	$1,000 per annum	4	2	29	6,151,037,984	22,232,794,000	1,221,143,000	292,664,000	**Illinois**
Bien.	61 days	$6.00 per diem	4	2	15	3,448,456,175	8,829,726,000	790,298,000	176,518,000	**Indiana**
Bien.	None	$550 to $1,250 per term	4	2	13	969,374,571	10,511,682,000	583,887,000	183,655,000	**Iowa**
Bien.	50 days	$3.00 per diem	4	2	10	3,520,576,524	6,264,058,000	666,315,000	120,422,000	**Kansas**
Bien.	60 days	$5.00 per diem	4	2	13	1,570,402,257	3,582,391,000	314,731,000	57,337,000	**Kentucky**

States and Population 1930	Capitals and Population 1930	Requirements as to Citizenship	Previous Residence Required				Persons Excluded from Suffrage (Besides idiots, felons and insane)	Governors	
			In State	In County	In Town	In Precinct		Salaries	L'gth Term Yrs.
Louisiana Pop. 2,101,593	Baton Rouge Pop. 30,729	Citizen of United States.	2 years	1 year	in parish	3 mos.	Inmates of prison or charitable institution except soldiers' home.	$7,500	4
Maine Pop. 797,423	Augusta Pop. 17,198	Citizen of United States.	3 mos.	.....	.....	.....	Paupers and Indians not taxed.	5,000	2
Maryland Pop. 1,631,526	Annapolis Pop. 12,531	Citizen of United States who can read English.	1 year	6 mos.	6 mos.	1 day	Those guilty of bribery.	4,500	4
Massachusetts Pop. 4,249,614	Boston Pop. 781,188	Citizens who can read and write English.	1 year	6 mos.	6 mos.	6 mos.	Paupers (except U. S. soldiers) and persons under guardianship.	10,000	2
Michigan Pop. 4,842,325	Lansing Pop. 78,397	Citizen of United States or alien who declared intention 2 years and 6 months prior to November 8, 1894.	6 mos.	20 days	20 days	20 days	Indians with tribal relations, duelists, and accessaries.	5,000	2
Minnesota Pop. 2,563,953	St. Paul Pop. 271,606	Citizen of United States who has been such for 3 months preceding election.	6 mos.	30 days	30 days	30 days	Convicted of treason, unpardoned, under guardianship, Indians lacking customs of civilization.	7,000	2
Mississippi Pop. 2,009,821	Jackson Pop. 48,282	Citizen of United States who can read or understand constitution.	2 years	1 year	1 year	1 year	Indians not taxed, persons who have not paid taxes, bigamists.	7,500	4
Missouri Pop. 3,629,367	Jefferson City Pop. 21,596	Citizen of United States or alien who has declared intention not less than 1 year nor more than 5 before election.	1 year	60 days	60 days	60 days	Persons in poorhouses or asylums at public expense, those in prison, or convicted of infamous crime.	5,000	4
Montana Pop. 537,606	Helena Pop. 11,803	Citizen of the United States.	1 year	30 days	30 days	30 days	U. S. soldiers, seamen, and marines, Indians.	7,500	4
Nebraska Pop. 1,377,963	Lincoln Pop. 75,933	Citizen of United States or alien who has declared intention 30 days before election.	6 mos.	40 days	20 days	10 days	Convicted of treason unless restored to civil rights.	7,500	2
Nevada Pop. 91,058	Carson City Pop. 1,596	Citizen of the United States, male or female.	6 mos.	30 days	30 days	30 days	Unpardoned convicts, Indians, Chinese.	7,000	4
New Hampshire Pop. 465,293	Concord Pop. 25,228	Citizen of United States.	6 mos.	6 mos.	6 mos.	6 mos.	Paupers (except soldiers).	5,000	2
New Jersey Pop. 4,041,334	Trenton Pop. 123,356	Citizen of United States.	1 year	5 mos.	.....	.....	Paupers, convicted of crime, unless pardoned or restored by law.	10,000	3
New Mexico Pop. 423,317	Santa Fe Pop. 11,176	Citizen of United States.	1 year	3 mos.	30 days	30 days	U. S. soldier, sailor, or camp follower, Indians.	5,000	2
New York Pop. 12,588,066	Albany Pop. 127,412	Citizen who shall have been a citizen for ninety days prior to election.	1 year	4 mos.	30 days	30 days	Offenders against elective franchise rights, guilty of bribery, betting on elections, and persons convicted of bribery or infamous crime and not restored to citizenship by the Executive.	25,000	2
North Carolina Pop. 3,170,276	Raleigh Pop. 37,379	Citizen of United States who can read.	1 year	4 mos.	.....	4 mos.	Convicted of infamous crime.	7,100	4
North Dakota Pop. 680,845	Bismarck Pop. 11,090	Citizen of United States and civilized Indian.	1 year	90 days	.....	30 days	Under guardianship, or convicted of treason, unless restored to civil rights.	5,000	2
Ohio Pop. 6,646,697	Columbus Pop. 290,564	Citizen of United States.	1 year	30 days	20 days	20 days	Persons in U. S. military and naval service on duty in Ohio.	10,000	2
Oklahoma Pop. 2,396,040	Oklahoma City Pop. 185,389	Citizen of United States and native Indians.	1 year	6 mos.	30 days	30 days		7,500	4
Oregon Pop. 953,786	Salem Pop. 26,266	Citizen of the United States or alien who has declared intention 1 year prior to election.	6 mos.	No set	time		Chinese, U. S. soldiers and sailors.	7,500	4
Pennsylvania Pop. 9,631,350	Harrisburg Pop. 80,339	Citizen of United States at least 1 month and if 22 years old or more must have paid tax within 2 years.	1 year	.....	.....	2 mos.	Convicted of perjury and fraud as election officers, or bribery of voters, nontaxpayers.	18,000	4
Rhode Island Pop. 687,497	Providence Pop. 252,981	Citizen of United States.	2 years	.....	6 mos.	.....	Paupers.	8,000	2
South Carolina Pop. 1,738,765	Columbia Pop. 51,581	Citizen of United States.	2 years	1 year	4 mos.	4 mos.	Those convicted of bribery, unless pardoned, paupers.	7,500	4
South Dakota Pop. 692,849	Pierre Pop. 3,659	Citizen of United States or alien who has declared intention. Indian who has severed tribal relations.	1 year	90 days	30 days	30 days	Under guardianship, convicted of treason unless pardoned, U. S. soldiers, seamen, and marines.	3,000	2
Tennessee Pop. 2,616,556	Nashville Pop. 153,866	Citizen of United States who has paid poll-tax of preceding year.	1 year	6 mos.	.....	.....	Convicted of bribery or other infamous offense.	7,500	2
Texas Pop. 5,824,715	Austin Pop. 53,120	Citizen of United States or alien who has declared intention 6 months prior to election.	1 year	6 mos.	6 mos.	6 mos.	Paupers, United States soldiers, marines, and seamen.	4,000	2
Utah Pop. 507,847	Salt Lake City Pop. 140,267	Citizen of United States, male or female.	1 year	4 mos.	.....	60 days	Convicted of treason or crime against elective franchise, unless pardoned.	6,000	4
Vermont Pop. 359,611	Montpelier Pop. 7,837	Citizen of United States.	1 year	3 mos.	3 mos.	3 mos.	Those who have not obtained the approbation of the local board of civil authority.	5,000	2
Virginia Pop. 2,421,851	Richmond Pop. 182,929	All persons who have paid state poll-taxes for the three preceding years; who served in time of war in the army or navy of the United States, of the Confederate states, or of any state.	2 years	1 year	1 year	30 days	Paupers.	5,000	4
Washington Pop. 1,563,396	Olympia Pop. 11,733	Citizen of the United States, and all residents of territory, prior to statehood.	1 year	90 days	30 days	30 days	Convicted of infamous crimes, Indians not taxed.	6,000	4
West Virginia Pop. 1,729,205	Charleston Pop. 60,408	Citizen of the state.	1 year	60 days	10 days	.....	Paupers, convicted of treason, or bribery at elections, U. S. soldiers and sailors.	10,000	4
Wisconsin Pop. 2,939,006	Madison Pop. 57,899	Citizen of United States or alien who has declared intention, and civilized Indians.	1 year	10 days	10 days	10 days	Under guardianship, convicted of crime or treason, betting on elections.	7,500	2
Wyoming Pop. 225,565	Cheyenne Pop. 17,361	Citizen of United States.	1 year	60 days	10 days	10 days	Unable to read state constitution in the English language.	6,000	4

CONCERNING THE STATES—Continued

Legislatures			Members' Terms		Electoral Vote 1928	Total Assessed Valuation of Realty	Wealth (In 1922) By Bureau of Census			Name of State
Ann. or Bien.	Limit of Term	Salaries of Members	Senators	Representatives			Total	Railroads and Equipment	Motor Vehicles	
Bien.	60 days	$5.00 per diem	4	4	10	$ 1,724,954,042	$ 3,416,860,000	$ 264,484,000	$ 38,439,000	Louisiana
Bien.	None	$300 per annum	2	2	6	743,685,759	2,006,531,000	119,353,000	35,044,000	Maine
Bien.	90 days	$5.00 per diem	4	2	8	2,297,638,623	3,990,730,000	183,100,000	61,561,000	Maryland
Ann.	None	$750 per annum	4	1	18	6,292,963,588	12,980,839,000	268,013,000	146,249,000	Massachusetts
Bien.	None	$800 per annum	1	2	15	6,977,978,007	11,404,861,000	571,827,000	216,492,000	Michigan
Bien.	90 days	$500 per annum	4	2	12	1,715,451,965	8,547,918,000	554,570,000	141,553,000	Minnesota
Bien.	None	$400 per session	4	4	10	774,877,211	2,177,690,000	213,021,000	28,595,000	Mississippi
Bien.	70 days	$5.00 per diem	4	2	18	4,933,074,349	9,981,409,000	612,795,000	145,789,000	Missouri
Bien.	60 days	$10.00 per diem	4	2	4	845,150,000	2,223,189,000	318,993,000	23,308,000	Montana
Bien.	90 days	$5.00 per diem	2	2	8	2,357,541,548	5,320,075,000	380,413,000	95,067,000	Nebraska
Bien.	60 days	$8.00 per diem	4	2	3	173,373,697	541,716,000	172,202,000	4,373,000	Nevada
Bien.	None	$200 per annum	2	2	4	622,976,904	1,374,135,000	104,699,000	18,380,000	N. Hampshire
Ann.	None	$500 per annum	3	1	14	6,250,129,030	11,794,189,000	532,263,000	132,323,000	New Jersey
Bien.	60 days	$4.00 per diem	2	2	3	309,933,364	851,836,000	207,660,000	9,184,000	New Mexico
Ann.	None	$1,500 per annum	2	1	45	28,216,483,604	37,035,262,000	1,479,682,000	384,113,000	New York
Bien.	60 days	$4.00 per diem	2	2	12	2,106,077,771	4,543,110,000	251,694,000	67,779,000	North Carolina
Bien.	60 days	$5.00 per diem	4	2	5	959,980,787	2,467,772,000	305,530,000	36,036,000	North Dakota
Bien.	None	$1,000 per annum	2	2	24	13,497,743,790	18,489,552,000	1,009,197,000	324,733,000	Ohio
Bien.	60 days	$6.00 per diem	4	2	10	1,829,672,051	3,993,524,000	441,267,000	98,925,000	Oklahoma
Bien.	40 days	$3.00 per diem	2	1	5	1,124,988,691	3,419,459,000	365,252,000	50,373,000	Oregon
Bien.	50 days	$1,500 per annum	4	2	38	9,197,969,051	28,833,745,000	1,902,737,000	308,136,000	Pennsylvania
Ann.	60 days	$5.00 per diem	1	1	5	1,419,219,663	1,924,326,000	34,671,000	25,297,000	Rhode Island
Ann.	40 days	$200 per annum	2	2	9	426,000,000	2,404,845,000	160,166,000	35,098,000	South Carolina
Bien.	60 days	$5.00 per diem	2	2	5	1,689,898,990	2,925,968,000	229,631,000	46,076,000	South Dakota
Bien.	75 days	$5.00 per diem	2	2	12	1,769,903,096	4,228,251,000	269,323,000	50,734,000	Tennessee
Bien.	60 days	$5.00 per diem	4	2	20	2,847,218,835	9,850,888,000	640,968,000	189,731,000	Texas
Bien.	60 days	$4.00 per diem	4	2	4	192,755,380	1,535,477,000	177,314,000	18,575,000	Utah
Bien.	None	$4.00 per diem	2	2	4	234,046,008	842,040,000	53,953,000	16,170,000	Vermont
Bien.	60 days	$500 per session	4	2	12	1,170,550,646	4,891,570,000	501,972,000	63,113,000	Virginia
Bien.	60 days	$5.00 per diem	4	2	7	1,265,649,130	5,122,405,000	390,042,000	79,904,000	Washington
Bien.	60 days	$4.00 per diem	4	2	8	1,160,018,901	4,677,919,000	441,524,000	41,297,000	West Virginia
Bien.	None	$500 per annum	4	2	13	5,084,245,568	7,866,081,000	396,746,000	141,083,000	Wisconsin
Bien.	40 days	$7.00 per diem	4	3	3	447,954,091	976,239,000	128,700,000	11,397,000	Wyoming

PRODUCTION OF THE PRINCIPAL MINERALS AND METALS, AND THE TOTAL VALUE OF ALL MINERAL PRODUCTS IN THE UNITED STATES, BY STATES

Figures in **bold-face** indicate the ranking states.

States	Rank	Coal Net Tons	Rank	Iron Ore Gross Tons	Rank	Gold Fine Ounces	Rank	Silver Fine Ounces	Rank	Copper Pounds	Rank	Lead Short Tons	Rank	Zinc Short Tons
Alabama	7	16,061,991	3	6,121,087	14	2,781	22	361						
Alaska	25	67,267			2	537,282	10	168,868	7	69,224,951	17	564		
Arizona					5	165,000	3	4,420,000	1	**764,855,874**	10	6,252	16	1,135
Arkansas	22	2,111,992									19	120	18	951
California	27	5,800	16	3,121	1	719,064	9	844,413	8	47,674,660	9	6,686	15	2,781
Colorado	8	10,580,811			4	324,923	5	3,475,661	11	6,277,332	5	32,980	6	44,567
Connecticut														
Delaware														
Florida														
Georgia	26	21,725	11	262,003	15	970	25	48	19	397,078				
Idaho					9	83,600	1	**7,410,000**	10	6,533,888	2	147,348	8	22,581
Illinois	2	83,268,864					23	310			14	2,273	13	3,792
Indiana	6	28,961,651												
Iowa	11	7,399,030												
Kansas	12	7,188,358									8	7,252	7	30,197
Kentucky	5	29,350,941									18	185	19	315
Louisiana														
Maine									17	766,000				
Maryland	16	4,343,293	15	6,070										
Massachusetts														
Michigan	23	1,280,658	2	17,587,416	22	59	20	529	4	226,794,139				
Minnesota			**1**	**43,263,240**										
Mississippi														
Missouri	14	5,119,591	13	71,968			12	63,066	18	577,665	**1**	**194,175**	4	55,992
Montana	18	4,177,894			8	97,822	4	3,958,000	2	323,174,850	6	18,568	2	104,629
Nebraska														
Nevada					6	143,800	6	2,850,000	5	116,316,441	7	11,658	12	8,362
New Hampshire											20	30	21	14
New Jersey			9	375,238									3	98,470
New Mexico	20	2,836,801	10	275,266	11	27,307	7	1,061,775	6	98,264,563	12	4,199	10	12,025
New York			5	899,970			16	26,406			21	29	14	3,776
North Carolina	30	466	12	108,332	19	509	17	9,710						
North Dakota	24	526,046												
Ohio	4	42,888,610												
Oklahoma	15	4,567,930									4	56,097	**1**	**161,401**
Oregon	28	4,112			10	33,712	14	46,562	12	2,451,016	24	5		
Pennsylvania	1	**223,420,676**	6	515,845	18	623	18	6,230	16	779,393				
Rhode Island														
South Carolina					17	642	21	487						
South Dakota	29	640			3	486,119	11	99,741	20	64,806	22	27		
Tennessee	13	5,904,593	7	408,954	20	455	13	61,148	9	14,799,680	15	1,705	9	21,071
Texas	21	2,204,266			21	359	8	854,442	21	9,308	23	13		
Utah	17	4,238,718	14	52,722	7	136,581	2	7,111,417	3	227,169,630	3	83,504	11	9,200
Vermont									14	1,116,384				
Virginia	10	8,188,502	8	400,135		667	24	103			16	815	17	951
Washington	19	3,659,830				8,302	15	44,120	13	1,922,406	13	2,636	20	19
West Virginia	3	81,579,916												
Wisconsin			4	1,167,640							11	4,533	5	50,014
Wyoming	9	9,055,252				4,871	19	710	15	852,777				

States	Rank	Petroleum Barrels	Rank	Cement Barrels	Rank	Salt Short Tons	Rank	Natural Gas Value	Rank	Clay Products Value	Rank	Building Stone Value	Rank	Total Value
Alabama							16	$ 25,213	18	$ 2,159,104	20	$ 1,202,256	18	$ 65,371,469
Alaska													24	40,710,655
Arizona									43	134,562	38	306,579	6	212,615,978
Arkansas	8	11,182,000					13	315,612	29	679,183	36	374,465	33	12,061,702
California	3	174,305,000	4	5,653,362	5	146,784	5	6,816,524	11	4,329,220	8	3,133,305	7	175,401,518
Colorado				1,500,000					17	2,299,448	24	975,794	15	80,586,021
Connecticut									25	1,423,782	21	1,143,011	42	3,981,203
Delaware									42	164,486	41	121,354	49	523,991
Florida									38	181,339	32	479,837	38	7,294,467
Georgia									14	2,964,706	14	1,799,210	37	7,650,553
Idaho									41	173,611	42	96,382	21	55,224,026
Illinois	10	4,479,000	7	4,659,990			11	479,072	4	12,459,777	6	3,403,094	4	236,934,229
Indiana			2	8,705,831			12	453,310	8	7,950,926	5	4,657,813	14	85,079,370
Iowa			8	4,626,141			20	225	10	5,313,394	31	561,084	25	39,336,372
Kansas	4	46,482,000	9	4,015,169	4	527,123	6	5,701,436	19	2,064,520	30	603,490	12	102,673,055
Kentucky	9	4,860,000					10	580,380	9	6,172,554	19	1,429,838	17	77,177,421
Louisiana	5	32,869,000					7	3,262,987	35	458,445			27	36,204,387
Maine									33	500,725	23	1,068,485	43	3,726,121
Maryland									16	2,721,115	25	921,909	31	19,617,596
Massachusetts									24	1,493,765	7	3,138,165	39	7,225,750
Michigan			6	4,688,899	1	**1,762,430**	19	1,013	12	3,685,172	10	2,494,284	8	163,997,853
Minnesota									22	1,503,659	13	1,833,800	9	152,490,554
Mississippi									32	528,481			47	966,135
Missouri			3	5,882,240			17	8,230	7	9,155,088	11	2,242,742	13	105,320,378
Montana							15	81,406	34	464,715	39	261,460	10	123,733,415
Nebraska									28	789,612	35	406,707	36	7,943,729
Nevada					9	970							20	55,410,190
New Hampshire									36	235,219	22	1,141,810	45	1,594,584
New Jersey									3	20,741,244	16	1,655,692	19	57,710,181
New Mexico									38	194,533	43	77,290	23	43,312,947
New York	13	3,804,000	5	5,417,530	2	1,570,446	9	2,499,303	6	10,892,954	4	5,342,954	22	52,123,552
North Carolina									21	1,589,508	12	1,975,876	40	5,246,391
North Dakota									40	176,843			44	1,749,549
Ohio	11	4,234,000	12	1,566,209	3	823,234	3	18,434,815	1	**52,899,180**	2	6,611,266	5	218,181,419
Oklahoma	2	180,107,000	11	1,722,466			4	13,984,656	23	1,496,490	29	621,056	3	259,134,377
Oregon									37	232,564	34	443,524	41	4,074,247
Pennsylvania	6	14,478,000	1	**27,752,838**			2	28,716,492	2	40,467,104	1	**11,021,655**	1	**880,220,510**
Rhode Island											28	632,452	48	717,123
South Carolina									31	605,768	33	447,940	46	1,393,297
South Dakota									46	32,161	40	205,497	35	8,348,684
Tennessee							18	2,450	15	2,791,867	15	1,753,180	26	36,910,448
Texas	1	381,516,000	10	2,436,398	6	62,297	8	3,192,625	13	3,026,559	27	698,499	16	77,552,369
Utah			14	929,730	7	55,279			30	610,288	37	368,705	11	113,589,282
Vermont									45	87,609	3	5,729,676	34	8,980,573
Virginia									20	1,666,854	17	1,580,161	28	32,243,648
Washington			13	1,513,792					26	1,274,708	26	903,635	32	18,576,052
West Virginia	12	4,095,000			8	32,513	1	**57,389,161**	5	10,988,677	18	1,500,809	2	306,916,191
Wisconsin									27	874,172	9	2,757,790	30	24,976,780
Wyoming	7	12,556,000					14	144,425	44	110,091	44	64,509	29	29,567,250

TRAVEL DISTANCES BETWEEN IMPORTANT CENTERS IN THE UNITED STATES

	Atlanta.	Baltimore.	Boston.	Buffalo.	Chicago.	Cincinnati.	Cleveland.	Denver.	Detroit.	Galveston.	*Havana. Via Tampa.	*Honolulu Via San Francisco.	Indianapolis.	Jacksonville, Fla.	Kansas City.	Little Rock.	Los Angeles.	*Manila, Ph.Is. Via San Fran. and Honolulu.	Milwaukee.	Minneapolis.	Nashville.	New Orleans.	New York.	Omaha.	Philadelphia.	Pittsburg.	Portland, Me.	Portland, Ore.	Saint Louis.	*Salt Lake City.	San Francisco.	*San Juan, P.R. Via New York or Tampa.	*Seattle, Wash.	*Sitka, Alaska. Via Seattle.	Washington.
Atlanta		686	1104	888	731	461	705	1523	722	907	940	5165	548	351	884	553	2267	10800	816	1151	289	496	874	1020	783	774	1212	2839	607	2086	2750	1944	2992	4010	646
Baltimore	686		418	402	802	593	474	1827	653	1561	1393	5571	704	885	1211	1279	3014	11206	887	1222	810	1150	188	1292	97	334	526	3111	934	2358	3156	1747	3039	4057	40
Boston	1104	418		478	999	905	661	2024	724	1979	1811	5768	944	1303	1432	1529	3235	11403	1084	1419	1200	1568	217	1489	321	674	108	3326	1184	2555	3353	1776	3236	4254	458
Buffalo	888	402	478		527	427	183	1552	251	1575	1795	5296	466	1239	954	1051	2757	10931	612	947	722	1253	411	1017	413	235	561	2836	706	2083	2881	1970	2764	3782	442
Chicago	731	802	999	527		294	344	1025	272	1152	1671	4769	183	1096	457	628	2260	10404	85	420	442	915	912	490	821	468	1082	2309	283	1556	2354	2471	2237	3255	813
Cincinnati	461	593	905	427	294		244	1257	261	1210	1413	4996	111	812	618	636	2421	10631	379	714	295	826	757	717	666	313	988	2536	341	1783	2581	2316	2531	3549	553
Cleveland	705	474	661	183	344	244		1369	109	1392	1657	5113	283	1056	771	868	2574	10748	429	764	539	1073	584	834	493	146	744	2653	523	1900	2698	2143	2581	3599	514
Denver	1523	1827	2024	1552	1025	1257	1369		1297	1151	2462	3869	1120	1824	639	1082	1361	9504	1048	902	1234	1348	1937	538	1846	1493	2107	1409	916	657	1454	3496	1595	2613	1810
Detroit	722	653	724	251	272	261	169	1297		1351	1674	5041	272	1073	708	827	2511	10676	357	692	556	1087	662	762	664	321	807	2581	482	1828	2626	2221	2509	3527	668
Galveston	907	1561	1979	1575	1152	1210	1392	1151	1351		1613	4579	1109	1027	840	524	1681	10214	1237	1346	891	411	1749	1040	1658	1490	2087	2560	869	1713	2164	2617	2746	3764	1521
Havana Via Tampa.	940	1393	1811	1795	1671	1413	1657	2462	1674	1613		6104	1497	586	1823	1474	3144	11739	1756	2091	122	1202	1581	1960	1490	1655	1919	3779	1547	2954	3689	1120	3951	4969	1353
Honolulu Via San Francisco.	5165	5571	5768	5296	4769	4996	5113	3869	5041	4579	6104		4885	5360	4479	4714	2897	5635	4789	4643	5010	4859	5681	4279	5590	5237	5851	3161	4692	3285	2415	7240	3373	4391	5582
Indianapolis	548	704	944	466	183	111	283	1120	272	1109	1497	4885		899	492	585	2295	10520	268	603	295	852	825	606	734	381	1027	2425	240	1672	2470	2384	2420	3438	664
Jacksonville, Fla	351	885	1303	1239	1096	812	1056	1824	1073	1027	586	5360	899		1185	833	2462	10995	1181	1516	654	616	1073	1385	982	1125	1411	3204	972	2387	2945	1590	3333	4351	845
Kansas City	884	1211	1432	954	457	618	771	639	708	840	1823	4479	492	1185		470	1803	10114	542	556	595	881	1342	200	1251	898	1515	2019	277	1250	2064	2901	2234	3252	1171
Little Rock	553	1279	1529	1051	628	686	868	1082	827	524	1474	4714	585	833	470		1816	10349	713	919	367	451	1410	670	1319	966	1612	2489	345	1577	2299	2478	2677	3695	1239
Los Angeles	2267	3014	3235	2757	2260	2421	2574	1361	2511	1681	3144	2897	2295	2462	1803	1816		8532	2345	2263	2183	1961	3145	1899	3054	2701	3318	1127	2080	1225	482	4107	1313	2331	2974
Manila, Ph. Is., Via S. Fran. and Honolulu.	10809	11206	11403	10931	10404	10631	10748	9504	10676	10214	11739	5635	10520	10995	10114	10349	8532		10424	10278	10645	10494	11319	9914	11225	10872	11486	8796	10327	8920	8050	12878	9008	10026	11197
Milwaukee	816	887	1084	612	85	379	429	1048	357	1237	1756	4789	268	1181	542	713	2345	10424		335	527	1000	997	510	906	553	1167	2237	368	1576	2374	2556	2152	3170	898
Minneapolis	1151	1222	1419	947	420	714	764	902	692	1346	2091	4643	603	1516	556	919	2263	10278	335		862	1261	1332	364	1241	888	1502	1901	574	1430	2228	2891	1817	2835	1233
Nashville	289	810	1200	722	442	295	539	1234	556	891	1229	5010	295	654	595	367	2183	10645	527	862		557	998	731	907	608	1283	2550	318	1797	2595	2233	2679	3697	770
New Orleans	496	1150	1568	1253	915	826	1070	1348	1087	411	1202	4859	852	616	881	451	1961	10494	1000	1261	557		1338	1081	1247	1139	1676	2757	700	1838	2444	2206	2943	3961	1110
New York	874	188	217	411	912	757	584	1937	662	1749	1581	5681	825	1073	1342	1410	3145	11319	997	1332	998	1338		1402	91	444	325	3221	1065	2469	3266	1559	3149	4167	228
Omaha	1020	1292	1489	1017	490	717	834	538	762	1040	1960	4279	606	1385	200	670	1899	9914	510	364	731	1081	1402		1311	958	1572	1819	413	1066	1864	2961	2005	3023	1303
Philadelphia	783	97	321	413	821	666	493	1846	664	1658	1490	5590	734	982	1251	1319	3054	11225	906	1241	907	1247	91	1311		353	429	3130	974	2377	3175	1650	3058	4076	137
Pittsburg	774	334	674	235	468	313	140	1493	321	1490	1655	5237	381	1125	898	966	2701	10872	553	888	608	1139	444	958	353		782	2777	621	2024	2822	2003	2705	3723	302
Portland, Me.	1212	526	108	561	1082	988	744	2107	807	2087	1919	5851	1027	1411	1515	1612	3318	11486	1167	1502	1283	1676	325	1572	429	782		3391	1267	2638	3436	1884	3319	4337	566
Portland, Ore.	2839	3111	3326	2836	2309	2536	2653	1409	2581	2560	3779	3161	2425	3204	2019	2489	1127	8796	2237	1901	2550	2757	3221	1819	3130	2777	3391		2232	922	746	4780	186	1204	3122
Saint Louis	607	934	1184	706	283	341	523	916	482	869	1547	4692	240	972	277	345	2080	10327	368	574	318	700	1065	413	974	621	1267	2232		1479	2277	2624	2391	3409	894
Salt Lake City	2086	2358	2555	2083	1556	1783	1900	657	1828	1713	2954	3285	1672	2387	1250	1577	784	8920	1576	1430	1797	1838	2469	1066	2377	2024	2638	922	1479		870	4028	1068	2086	2369
San Francisco	2750	3156	3353	2881	2354	2581	2698	1454	2626	2164	3689	2415	2470	2945	2064	2299	482	8050	2374	2228	2595	2444	3266	1864	3175	2822	3436	746	2277	870		4825	958	1976	3167
San Juan, P. R. Via New York or Tampa.	1944	1747	1776	1970	2471	2316	2143	3496	2221	2617	1120	7240	2384	1590	2901	2478	4107	12878	2556	2891	2233	2206	1559	2961	1650	2003	1884	4780	2624	4028	4825		4708	5726	1787
Seattle, Wash	2992	3039	3236	2764	2237	2531	2581	1595	2509	2746	3951	3373	2420	3333	2234	2677	1313	9008	2152	1817	2679	2943	3149	2605	3058	2705	3319	186	2391	1068	958	4708		1018	3027
Sitka, Alaska. Via Seattle.	4610	4057	4254	3782	3255	3549	3599	2613	3527	3764	4969	4391	3438	4351	3252	3695	2331	10026	3170	2835	3697	3961	4167	3023	4076	3723	4337	1204	3409	2086	1976	5726	1018		4045
Washington	646	40	458	442	813	553	514	1810	668	1521	1353	5582	664	845	1171	1239	2974	11197	898	1233	770	1110	228	1303	137	302	566	3122	894	2369	3167	1787	3027	4045	

The figures in this table are taken from the "official table of distances" used by the war department of the United States government, except the distances to cities marked with an asterisk (*), which are computed along the best routes of travel. All distances are in statute miles.

WORLD TRAVEL DISTANCES

The chief ports of the world are named in alphabetical order across the top and down the sides of the tables. The distance between any two ports will be found at the intersection of the two columns which contain the names of the selected ports. Thus the distance from Baltimore to Bombay is given as 8,431, and the small "s" shows that the route is via Suez Canal. Distances are for full-powered steam vessels reckoned in nautical miles.

	Amsterdam.	Antwerp.	Barbados.	Belfast.	Bombay.	Boston.	Bremen.	Buenos Ayres.	Cape Town.	Cherbourg.	Genoa.	Glasgow.	Hamburg.	Havana.	Havre	Hongkong.	Liverpool.	London.	Melbourne.	New Orleans.	New York.	Plymouth.	Rio de Janeiro	San Francisco.	Shanghai.	Singapore.	Southampton.	Valparaiso.	Yokohama.
Amsterdam	——	135	3877	733	s 6336	3164	272	6370	6193	303	2237	818	290	4335	267	9764	711	201	11131	4837	3346	385	5280	M 13639	10507	s 8324	277	M 8869	11226
Antwerp	135	——	3841	697	s 6300	3128	357	6334	6157	267	2201	782	385	4299	231	9728	675	180	11095	4801	3310	349	5244	M 13603	10471	8288	238	8833	11190
Baltimore	3638	3602	1823	3204	s 8431	674	3851	5898	6913	3357	4332	3250	3869	1112	3423	s 11859	3328	3562	O 12703	1614	410	3265	4808	M 13167	s 12602	c 10419	3383	M 8397	H 13327
Barbados	3877	3841	——	3637	s 8199	1880	4090	4169	5284	3596	4100	3719	4108	1472	3662	s 11627	3624	3801	C 11047	2115	1825	3549	3079	M 11438	12370	s 10187	3622	M 6668	13089
Belfast	733	697	3637	——	6245	2730	880	6271	6089	459	2146	113	891	3899	528	9673	137	663	s 11040	4401	2912	360	5168	M 13527	10535	8233	488	8757	s 11135
Bermuda	3248	3112	1222	2958	7876	707	3459	5175	6181	2967	3771	2885	3477	1141	3033	s 11627	2945	3172	C 11972	1643	699	2875	4085	M 12444	s 12376	s 9864	2956	M 7678	s 13094
Bombay	s 6336	s 6300	s 8199	6245	——	s 7962	6549	c 8349	4604	6040	4473	6327	6567	s 9000	6115	4090	6223	6260	6535	9502	8153	5997	c 7824	9780	4633	2450	6090	M 9875	5352
Boston	3164	3128	1880	2730	s 7962	——	3377	5804	6776	2883	3863	2777	3395	1422	2949	11390	2854	3088	12534	1924	379	2791	4714	13073	s 12133	s 9950	2909	M 8303	12852
Bremen	272	357	4090	880	6549	3377	——	6583	6406	513	2450	922	171	4548	480	9977	924	409	s 11344	5050	3559	598	5501	M 13852	H 10720	8537	479	9082	s 11439
Buenos Ayres	6370	6334	4169	6271	c 8349	5804	6583	——	3778	6074	6130	6350	6601	5669	6151	c 10643	6258	6294	9099	6255	5838	6029	1135	M 7536	c 11386	9376	6124	M 2766	c 12105
Cape Town	6193	6157	5284	6089	4604	6776	6406	3778	——	5897	5972	6168	6424	6716	5966	6898	6076	6117	5814	7347	6795	5852	3267	10217	7641	5631	5947	5447	8360
Charleston	3846	3810	1630	3561	s 8388	845	4059	5790	6828	3565	4459	3498	4077	605	3631	s 11986	3548	3770	C 12620	1107	614	3473	4700	13059	s 12729	s 10546	3591	M 8289	s 13448
Cherbourg	303	267	3596	459	6040	2883	513	6074	5897	——	1941	544	531	4029	71	s 9468	437	227	s 10835	4531	3065	108	4984	M 13343	10211	8028	83	M 8573	s 10930
Colon	4818	4782	1225	4543	9283	2173	5031	5318	6410	4537	5184	4625	5049	1380	4603	s 12711	4530	4742	C 12203	1380	1972	4445	4228	M 12587	s 13454	s 11271	4563	M 7817	s 14173
Constantinople	2898	3158	5057	3103	3837	4820	3407	7381	s 6137	2898	1312	3185	3425	5852	2975	7266	3081	3118	8633	6354	5011	2855	5997	M 14352	8009	5826	2948	9583	8728
Galveston	5031	4995	2240	4595	9696	2118	5244	6378	7470	4725	5591	4641	5262	765	4816	13124	4719	4955	13263	380	1893	4658	5288	M 13649	s 13861	s 11678	4776	M 8877	& 14586
Genoa	2237	2201	4100	2146	4473	3863	2450	6130	5972	1941	——	2228	2468	4895	2018	7901	2124	2161	9268	5397	4054	1898	5040	M 13399	8644	6461	1991	M 8626	s 9363
Gibraltar	1389	1353	3252	1298	4953	3015	1602	5282	5124	1093	854	1380	1620	4047	1162	s 8381	1276	1313	9748	4549	3206	1050	4192	H 12551	9124	6941	1143	M 7781	s 9843
Glasgow	818	782	3719	113	6327	2777	922	6350	6168	544	2228	——	1049	3945	610	9755	210	745	11122	4447	2959	442	5158	M 13609	10498	8315	570	M 8839	s 11217
Hamburg	290	385	4108	891	6567	3395	171	6601	6424	531	2468	1049	——	4566	498	9995	942	427	11362	5068	3577	616	5519	M 13870	10738	8555	497	M 9100	s 11457
Havana	4335	4299	1472	3899	s 9000	1422	4548	5669	6716	4029	4895	3945	4566	——	4120	s 12428	4023	4259	C 12512	597	1197	3962	4579	M 12974	s 13165	s 10982	4080	M 8168	s 13890
Havre	267	231	3662	528	6115	2949	480	6151	5966	71	2018	610	498	4120	——	9537	503	194	10904	4622	3131	175	5061	M 13412	s 10280	8097	105	M 8642	11999
Hongkong	9764	9728	s 11627	9673	4090	11390	9977	c 10643	6898	s 9468	7901	9755	9995	s 12428	9537	——	9651	9688	5031	s 12924	s 11580	9425	c 10118	6041	853	1440	s 9518	10536	1580
Honolulu	M 13882	M 13776	M 11611	M 13700	8375	M 13246	M 14025	M 7709	M 10390	M 13516	M 12386	M 13782	M 14043	M 13111	M 13585	4858	M 13690	M 13736	4916	7340	M 13280	M 13473	8587	2089	4333	5925	13566	5916	3445
Jamaica	4314	4278	1040	4039	s 8844	1658	4527	5166	6260	4033	4739	4121	4545	716	4099	s 12266	4026	4238	C 12051	1115	1457	3941	4076	M 12471	13009	s 10826	4059	7665	s 13728
Lisbon	1111	1087	3085	1020	5249	2797	1324	5304	5148	815	1150	1102	1342	4174	884	8677	998	1035	s 10044	4676	3025	770	4214	M 12573	s 9420	7237	865	M 7803	10139

K, via Kiel canal. S, via Suez canal. C, via Cape of Good Hope. M, via Strait of Magellan. H, via Cape Horn. T, via Torres strait.

WORLD TRAVEL DISTANCES—Continued

The chief ports of the world are named in alphabetical order across the top and down the sides of the tables. The distance between any two ports is found at intersection of the two columns which contain the names of the selected ports. Thus the distance from New York to Melbourne is given as 11,586, and the small "c" shows that the route is via Cape of Good Hope. Distances are for full-powered steam vessels reckoned in nautical miles.

	Amsterdam.	Antwerp.	Barbados.	Belfast.	Bombay.	Boston.	Bremen.	Buenos Ayres.	Cape Town	Cherbourg	Genoa.	Glasgow.	Hamburg.	Havana.	Havre.	Hongkong	Liverpool.	London.	Melbourne.	New Orleans.	New York.	Plymouth.	Rio de Janeiro.	San Francisco.	Shanghai.	Singapore.	Southampton.	Valparaiso.	Yokohama.
Liverpool	711	675	3624	137	6223	2854	924	6258	6076	437	2124	210	942	4023	503	9651	—	638	11018 ■	4525	3053	345	5158	13517 M	10394 ■	8211	463	8747 M	11115 S
London	201	180	3801	663	6260	3088	409	6294	6117	227	2161	745	427	4259	194	9688	638	—	11055 ■	4761	3270	309	5204	13563 M	10437 ■	8248	201	8793 M	11150 S
Manila	9667	9631	11530	9576	3793	11293 S	9880 ■	10546 C	6801	9371	7804	9658	9898	12325 S	9440	640	9554 S	9591 ■	4511 T	12827 ■	11584	9328	10021 C	6238	1130	1435	9421 S	10406	1768
Melbourne	11131	11095	11047 C	11040 S	6535	12534	11344 S	9099	5814	10835 S	9268	11122	11362	12512 C	10904	5031	11018 ■	11055	—	13140 C	11586 C	10792 S	8827	6966	5234	3823	10885 S	6280 M	4875 S
Montrea	3317	3281	2715	2645	8141	1222	3530	6421	7108	3036	4042	2693	3548	2475	3102	11569 S	2760	3241	12936 S	2977	1451	2944	5331	13690 M	12312 S	10129 S	3062	8290 M	13031 S
New Orleans	4837	4801	2115	4401	9502	1924	5050	6255	7347	4531	5397	4447	5068	597	4622	12924 S	4525	4761	13140 C	—	1699	4464	5160	13524 M	13667 ■	11484 ■	4582	8754 M	14386 S
Newport News	3514	3478	1699	3080	8307	550	3727	5774	6789	3233	4208	3126	3745	988	3299	11735	3204	3438	12579 C	1490	286	3141	4590	13043 M	12478 S	10295 ■	3259	8273 M	13203 S
New York	3346	3310	1825	2912	8153	379	3559	5838	6995	3065	4054	2959	3577	1227	3131	11580	3053	3270	11586 C	1699	—	2973	4748	13107 M	13324 S	10141 ■	3091	8337 M	13042 S
Panama	11383 M	11347 M	9182 M	11274 M	12386 M	10817 M	11596 M	5280 M	7961 ■	11087 ■	11143 M	11353 M	11614 M	10682 M	11156 M	9324	11261 ■	11307 M	7949	11268 M	10851 M	11042 M	6158 M	3277	8672	13405 M	11137 M	2615 M	7702 C
Para	4319	4193	1142	4056	8262 ■	2943	4442	3235	4330	3933	4163	4138	4460	2577	4010	11204 C	4043	4153	10120 C	3136	2915	3883	2145	10504 M	11947 C	10250 ■	3983	5734 M	12666 C
Philadelphia	3482	3446	1828	3048	8284	517	3694	5870	6861	3201	4185	3094	3712	1158	3267	11712 C	3172	3406	12652 C	1660	234	3109	4782	13141 M	12455 S	10272 ■	3227	8371 M	13174 S
Plymouth	385	349	3594	360	5997	2791	598	6029	5852	108	1898	442	616	3962	175	9425 S	345	309	10792 M	4464	2973	—	4939	13300 M	10168 S	7985 ■	129	8530 M	10887 S
Portland, (Me.)	3086	3050	1927	2652	7912	98	3299	5849	6787	2805	3807	2698	3317	1470	2871	11334 S	2776	3010	12579 S	1972	427	2713	4759	13118 M	12077 S	9894 ■	2831	8348 M	12796 C
Rio de Janeiro	5280	5244 K	3079	5168	7824	4714	5501	1135 K	3265	4984	5040	5250	5519	4579	5061 K	11118 C	5158	5204 ■	8827	5160	4748	4939	—	8414	10861 C	8851 C	5034	3644 M	11580 C
Leningrad	1070	1165	4888	1606	7353	4052	951	7381	7204	1311	3248	1648	860	5346	1275	10755 K S	1716	1207	12142 M	5848	4234	1396	6299	14650 M	11518 S	9335	1277	9880 M	12237
St. Thomas	3846	3810 M	440 M	3586 M	8265	1516 M	4059 M	4629	5708 ■	3570	4160 M	3668 M	4077 M	1040 M	3639 M	11687 S	3573 M	3770 M	11499 C	1590	1435	3473	3539 M	11898	12430 S	10247	3591 M	7128	13149
San Francisco	13639	13603	11438	13527	9780	13073	13852	7536	10217 ■	13343	13399 M	13609 M	13870 M	12974 M	13412 M	6041	13517 M	13563 M	6966	13524 ■	13107	13300	8414 M	——	5491	7330	13393 M	5140 M	4521 S
San Juan	3867	3831	502	3600	8307	1480	4080	4694	5773	3583	4202	3681	4098	975	3652	11730 S	3588	3791	11564 C	1525	1428	3494	3604	11963 M	12473 ■	10289	3612	7193 M	13192 S
Savannah	3916	3880	1648	3443	8640	928	4129	5820	6860 ■	3684	4535 S	3489 M	4147 M	634 M	3701 M	12062 S	3618	3840 ■	12650	1136 ■	695 M	3543 M	4730 M	13089 M	12805 ■	10622	3661 M	8319 M	13524
Seattle	14418 M	14382 M	12217 ■	14306 M	9515	13852 M	14631 ■	8315 M	10998 ■	14122 M	13509 S	14388 M	14649 M	13753 M	14191 M	5779	14296 M	14342 ■	7326	14303 M	13886 M	14079 M	9193 M	799	5209	7068	14092 M	5917	4259
Shanghai	10507	10471	12370	10535	4633	12133 S	10720	11380 C	7641	10211 S	8644	10498	10738 S	13165 S	10280	853	10394 S	10437	5234	13667 ■	12324 S	10168	10861 C	5491	——	2183	10267	10266 M	1030
Singapore	8324	8288	10187	8233	2450	9950 S	8537	9376	5631	8028	6461	8315	8555	10982	8097	1440 S	8211	8248	3823 S	11484 ■	10141 S	7985	8851 C	7330	2183	——	8078	10899 M	2902
Southampton	277	238	3622	488	6090	2909	479	6124	5947	83	1991	570	497	4080	105	9518 S	463	201	10885 S	4582	3091	129	5034	13393 M	10261 S	8078	——	8623	10980
Suez	3376	3340	5239	3285	2960	5002 M	3589 M	8154 M	5259 ■	3080 M	1513 M	3367 M	3607 M	6034 M	3157 M	6388	3263 M	3300 M	7755	6536 M	5193 M	3037 M	6179 M	12278	7131	4948 ■	3130 M	9768	7850
Valparaiso	8869	8833	6668 M	8757 M	9875 M	8303 M	9082 M	2766 C	5447 ■	8573 M	8626 M	8839 M	9100 M	8168 S	8642 M	10536	8747 M	8793 M	6280	8754 M	8337 M	8530 M	3644 M	5138	10266	10899 ■	8623 M	——	9339
Yokohama	11226	11190	13089 S	11135	5352	12852 S	11439	12105 C	8360	10930	9363	11217	11457	13890 S	10999	1580	11113	11150	4875	14386 S	13042 ■	10887	11580 C	4521	1030	2902	10980	9339	——

K, via Kiel canal. S, via Suez canal. C, via Cape Town. M, via Strait of Magellan. H, via Cape Horn. T, via Torres strait.

ELEVATIONS OF HEALTH OR PLEASURE RESORTS IN THE UNITED STATES

The elevations above sea level of 100 resorts, the figures being those of the highest points of the places named.

Place	Feet
Abilene, Tex.	1726
Albuquerque, N. M.	4950
Asheville, N. C.	1985



Chimney Rock

Near Asheville, N. C., in a picturesque mountainous region well known as both a summer and winter resort. This section is also known as the "Land of the Sky."

Ashland, Ore.	1868
Atlanta, Ga.	1032
Atlantic City, N. J.	21
Ausable Forks, N. Y.	551
Bar Harbor, Me.	240
Boulder, Colo.	5350
Bozeman, Mont.	4755
Bristol, Tenn.	1680
Burlington, Vt.	112
Carlsbad, N. M.	3102
Carson, Nev.	4660
Cayuga Lake, N. Y.	381
Chautauqua Lake, N. Y.	1308
Cheshire, Mass.	945
Cheyenne, Wyo.	6060
Coeur d'Alene Lake, Ida.	2131
Colorado Springs, Colo.	5980
Concord, N. H.	244
Crawford Notch, N. H.	1891
Custer, S. D.	5301
Delaware Water Gap, Pa.	350
Denver, Colo.	5280
Durango, Colo.	6517
El Paso, Tex.	3710
Flagstaff, Ariz.	6894
Flathead Lake, Mont.	2884
Fort Bayard, N. M.	6166
Fulton Chain Lakes, N. Y.	1706
Glenwood Springs, Colo.	5748
Grand Canyon Hotel, Ariz.	6866
Hot Springs, Ark.	607
Hot Springs, S. D.	3443
Hot Springs, Va.	2195
Jackson Lake, Wyo.	6733
Kaaterskill, N. Y.	2440
Keene, N. H.	487
Lake Champlain, N. Y.	95
Lake Chelan, Wash.	1080
Lake Erie	572
Lake George, N. Y.	322
Lake Hopatcong, N. J.	926
Lake Huron	581
Lake Michigan	581
Lake Ontario	246
Lake Placid, N. Y.	1864
Lake St. Clair	575
Lake Superior	602
Lake Tahoe, Cal.-Nev.	6225
Lake Winnepesaukee, N. H.	504
Las Vegas, N. M.	6714
Little Rock, Ark.	300
Los Angeles, Cal.	300
Luray, Va.	819
Manitou, Colo.	6336
Marfa, Tex.	4695



Seven Falls

At Colorado Springs, Colo., one of America's beauty spots which annually attracts thousands of visitors. The glistening waters drop between granite cliffs to the icy depths of a pool below where the water plunges down South Cheyenne Canyon.

Miami, Fla.	20
Monterey, Cal.	360
Moosehead Lake, Me.	1023
Natural Bridge, Va.	736
Niagara Falls, N. Y.	603
Ogden, Utah	4300
Oneida Lake, N. Y.	370
Ouray, Colo.	7710
Palm Beach, Fla.	20
Pasadena, Cal.	828
Pensacola, Fla.	39
Phoenix, Ariz.	1083
Plattsburg, N. Y.	109
Portage, N. Y.	1310
Portsmouth, N. H.	80
Prescott, Ariz.	5346
Raquette Lake, N. Y.	1762
Reno, Nev.	4490
St. Petersburg, Fla.	20
Salt Lake City, Utah	4390
San Angelo, Tex.	1847
San Antonio, Tex.	660
San Bernardino, Cal.	1049
Santa Barbara, Cal.	500
Santa Fe, N. M.	6950
Saranac Lake, N. Y.	1535
Saratoga Springs, N. Y.	314
Schroon Lake, N. Y.	807
Sebago Lake, Me.	276
Seneca Lake, N. Y.	444
Skyland, Va.	3606
Tampa, Fla.	72
The Dalles, Ore.	96
Ticonderoga, N. Y.	277
Trinidad, Colo.	5985
Tucson, Ariz.	2375
Tupper Lake, N. Y.	1556
Umbagog Lake, Me.-N. H.	1256
Watkins Glen, N. Y.	1009
White Sulphur Springs, W. Va.	1917
Winchester, Va.	717
Woodstock, N. H.	649

ELEVATIONS OF LARGE CITIES OF THE UNITED STATES

The highest and lowest elevations in each of the largest fifty cities of the United States, arranged according to population in 1930.

City	Elevation in Feet	
	Highest	Lowest
New York, N. Y.	430	Sea level
Chicago, Ill.	665	581
Philadelphia, Pa.	440	Sea level
Detroit, Mich.	635	575
Los Angeles, Cal.	2785	Sea level
Cleveland, Ohio	865	573
St. Louis, Mo.	585	394
Baltimore, Md.	445	Sea level
Boston, Mass.	300	Sea level
Pittsburgh, Pa.	1240	715
San Francisco, Cal.	900	Sea level
Milwaukee, Wis.	740	581
Buffalo, N. Y.	680	571
Washington, D. C.	420	Sea level
Minneapolis, Minn.	945	695
New Orleans, La.	5	−1
Cincinnati, Ohio	820	435
Newark, N. J.	225	Sea level
Kansas City, Mo.	1005	745
Seattle, Wash.	450	Sea level
Indianapolis, Ind.	816	667
Rochester, N. Y.	660	260
Jersey City, N. J.	180	Sea level
Louisville, Ky.	540	380
Portland, Ore.	1050	Sea level
Houston, Tex.	74	Sea level
Toledo, Ohio	625	572
Columbus, Ohio	860	685
Denver, Colo.	5550	5100
Oakland, Cal.	1550	Sea level
St. Paul, Minn.	1060	685
Atlanta, Ga.	1050	940
Dallas, Tex.	500	390
Birmingham, Ala.	900	565
Akron, Ohio	1140	760
Memphis, Tenn.	320	195
Providence, R. I.	199	Sea level
San Antonio, Tex.	800	560
Omaha, Neb.	1245	970
Syracuse, N. Y.	681	364
Dayton, Ohio	960	720
Worcester, Mass.	720	415
Oklahoma City, Okla.	1100	1070
Richmond, Va.	225	15
Youngstown, Ohio	1080	818
Grand Rapids, Mich.	780	590
Hartford, Conn.	100	Sea level
Ft. Worth, Tex.	700	545
New Haven, Conn.	145	Sea level
Flint, Mich.	810	700

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THE RACE OF THE CLIPPER SHIPS

Trade and industry owe much to the clipper ships which reached the height of their glory in the middle of the nineteenth century. The name "clipper" was derived from the fact that the bow was so designed that it cut through the waves instead of hitting them. For a period of time, clipper ships literally sailed every other type of craft from the seas and were adopted wherever maximum speed and seaworthiness were essential. Splendid prizes were held out to the captains and crews as an inducement, and the keenest rivalry existed between ships in the race home, a spirit of competition even more strong than that which existed between ship-owners. As long as the word "clipper" remains in the English language, so will these clipper races remain famous alike for the skill as for the competitive instinct in the crews that got them home in record time.

In our picture the artist, Manning deV. Lee, has depicted three clippers racing with taut sails and flying spray for the valuable cargo of Brazilian coffee which will belong to the winner. Intense rivalry developed between ship-owners to bring each new crop of the aromatic beans to market at the earliest possible moment.

BOOK VI

TRADE AND INDUSTRY

AGRICULTURE is the oldest and most important industry. It is the art of tilling the ground, the planting, cultivation and harvesting of crops, and includes fruit-growing or horticulture, animal husbandry, or the rearing, breeding, feeding and management of the domesticated breeds of live stock, as well as the manufacture or evolving from products of the soil articles for home consumption or purposes of commerce. By it humanity is fed and clothed, and it contributes in many other ways to the welfare and wealth of the world. Without agriculture man would be a barbarian and the earth a wilderness.

The knowledge that centuries of research and practice give, the light contributed by agricultural chemistry supplemented by new and improved machinery and modern transportation facilities, have greatly enlarged the productions and possibilities of agriculture; and its problems, the mysteries of the soils, and of animal and plant life are engaging the best intellect.

Acreage Yields.—While in the aggregate of field productions the United States ranks first, America does not compare favorably with older countries in acre-yields. To compass this a more scientific farming, more educated farmers, more thorough tillage and cultivation, careful seed selection, proper fertilization, and rational crop rotation must be the agencies; in fact a more intimate knowledge and use of the underlying principles governing soil fertility, and crop and live stock production. What this would mean finds illustration in the examples afforded by England and Germany in wheat-growing, with averages of 32.2 and 26.1 bushels per acre, respectively, compared with the 14 bushels per acre in the United States, from a soil naturally as fertile and as well adapted as any.

Home and Foreign Markets.—In the settlement and development of America the millions of acres of fresh land brought into production yielded more than domestic consumption required, which caused the seeking of markets elsewhere for the surplus, and the resulting export trade has been a wellspring of prosperity. There are signs, however, that American farmers will not so largely depend for profits in the future upon foreign demands, as home requirements are annually increasing. A case in point is the constantly lessening difference between the production and home consumption of wheat.

In the five-year period of 1894-8 exports from the United States averaged 32 per cent of annual production, and in 1904-8 had fallen to 17 per cent, while the average annual production was 535,387,000 bushels for the first period, and 665,959,000 bushels in the latter. Deducting the average yearly exports for each period it is shown that the consumption of wheat at home increased 50 per cent. Also, for 1909, the value of agricultural exports was $903,000,000, or $151,000,000 below the highest record, made in 1907, and $114,000,000 below the next highest, in 1908, while on the other hand the imports of agricultural products were never so high in value, the amount being $637,000,000, in 1909.

Soils and Their Fertilization.—Naturally the soil is and must be of primal importance. Plants obtain their food from the soil, and atmosphere, and the mineral elements in the soil are utilized only through the plant roots. If requisite elements are lacking yields are less, however much of a factor tillage may be. Without proper proportions of plant food available in the soil, tillage and good seed do not suffice to maintain it in a high state of productivity, and a supply of suitable plant food must be maintained if maximum yields are to be realized.

Chemistry of Soil.—Vegetation requires carbon and oxygen, taken into the plant leaves from the air as carbon dioxide; hydrogen, a constituent of water absorbed through the plant roots; nitrogen, taken from the soil by all plants and also from the air, especially by legumes; and potassium, phosphorus, magnesium, calcium, iron and sulphur, drawn only from the soil.

Of these, nitrogen, the most expensive element of plant food, although comprising four-fifths of the atmosphere, is perhaps the one becoming the most seriously deficient in the ordinary soils of the wheat and corn growing sections, due largely to continuous grain-growing, resulting in a loss of vitality and dwarfed growths.

A rational rotation of crops, use of manures, with the legumes as pasture and hay crops, or used as green manure by plowing them into the soil, will upbuild the land, and the shortage of nitrogen be overcome by the liberal use of legumes, such as alfalfa, clover and peas, in the form of either green or animal manures, which also add humus of great importance.

Phosphate.—One eminent soil expert says: "To increase the value of farm manure we should add phosphate to it. Thus we can balance manure, and when used on soils rich in potassium, in rotation with nitrogen-fixing legume crops, we can provide plant food in a balanced ration to meet the needs of maximum yield. By these means we can check the progress of soil exhaustion, and even gradually increase the fertility and productive capacity of the land. Indeed, we can thus profitably enrich such land even beyond its virgin fertility," and, again ". . . land may be built up and be made richer than it ever was by a good system of strictly grain farming." The experiment stations are successfully solving these problems.

Humus, decaying vegetable or animal matter, is the great storehouse of nitrogen, and is also an indispensable element in soils, not so much because of its direct nourishment to plants but because it helps to render other materials available for the growing crops. It is humus that gives life and heart to the soil, improves its physical condition, its tilth and texture, augments its water-holding capacity, gives its dark color, modifies extremes in its temperature, facilitates the entrance of air, and is what most worn-out lands suffer for want of.

Commercial Fertilizers, by which are provided artificial plant food, are in common and extensive use where lands have been depleted and crop production decreased, as on the tobacco and cotton lands of the Southern states, acting as a sort of medicine or stimulant to the soil, but many of them have little or no further influence than is evidenced in the increase of a single season's crops or crop.

Composition of the Principal Commercial Fertilizing Materials

Fertilizing Material	Nitrogen	Phosphoric Acid			Potash	Chlorine
		Available	Insoluble	Total		
Supplying nitrogen:	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
Nitrate of soda	15.5–16.0					
Sulphate of ammonia	19.0–20.5					
Dried blood (high grade)	12.0–14.0					
Dried blood (low grade)	10.0–11.0			3.0– 5.0		
Concentrated tankage	11.0–12.5			1.0– 2.0		
Tankage (bone)	5.0– 6.0			11.0–14.0		
Dried fish scrap	7.0– 9.0			6.0– 8.0		
Cotton-seed meal	6.5– 7.5			1.5– 2.0	2–3.0	
Castor pomace	5.0– 6.0			1.0– 1.5	1–1.5	
Supplying phosphoric acid:						
South Carolina rock phosphate			26–28	26.0–28.0		
South Carolina rock superphosphate (dissolved South Carolina rock phosphate)		12–15	1– 3	13.0–16.0		
Florida land rock phosphate			33–35	33.0–35.0		
Florida pebble phosphate			26–32	26.0–32.0		
Florida superphosphate (dissolved Florida phosphate)		14–16	1– 4	16.0–20.0		
Boneblack			32–36	32.0–36.0		
Boneblack superphosphate (dissolved boneblack)		15–17	1– 2	17.0–18.0		
Ground bone	2.5– 4.5	5– 8	15–17	20.0–25.0		
Steamed bone	1.5– 2.5	6– 9	16–20	22.0–29.0		
Dissolved bone	2.0– 3.0	13–15	2– 3	15.0–17.0		
Thomas slag				11.4–23.0		
Supplying potash:						
Muriate of potash					48–52.0	45.0–48.0
Sulphate of potash (high grade)					48–52.0	0.5– 1.5
Sulphate of potash and magnesia					26–30.0	1.5– 2.5
Kainit					12–12.5	30.0–32.0
Sylvinit					16–20.0	42.0–46.0
Cotton-hull ashes				7.0– 9.0	20–30.0	
Wood ashes (unleached)				1.0– 2.0	2– 8.0	
Wood ashes (leached)				1.0– 1.5	1– 2.0	
Tobacco stems	2.0– 3.0			3.0– 5.0	5– 8.0	

The following table is given, showing the amount of fertilizing constituents in one ton of various agricultural products, if returned to the land in the form of manure:

Farm Products	Nitrogen	Phosphoric Acid	Potash
Timothy hay	19.2	7.2	25.2
Clover hay	39.4	8.0	35.0
Alfalfa hay	53.2	10.8	49.2
Cowpea hay	79.6	13.2	47.2
Field corn fodder	17.2	7.2	21.4
Corn silage	8.4	2.4	6.6
Wheat straw	8.6	2.6	14.8
Rye straw	10.0	5.8	15.8
Oat straw	13.0	4.4	24.4
Wheat	34.6	19.2	7.0
Rye	32.4	16.2	10.4
Oats	36.2	15.4	11.4
Corn	29.6	12.2	7.2
Barley	39.6	15.4	9.0
Wheat bran	51.2	58.4	31.4
Linseed meal	108.6	37.6	26.2
Cotton seed meal	142.8	61.8	36.4
Potatoes	7.0	3.2	11.4
Milk	10.2	3.4	3.0

Kinds of Soils.—Generally a soil well drained, with a sandy or gravelly subsoil, is adapted to tree and fruit growing. The deep alluvial prairie lands are premier for corn, and the rather drier and more compact soils, containing liberal proportions of lime and clay, are especially prized for wheat. Soil alone, however, does not determine the kinds of crops that should be raised.

Rainfall.—Over a large portion of America the precipitation is ample for the requirements of agriculture, but owing to wide variation in the yearly rainfall some sections have too much and others too little. In some of the plains regions west of the Missouri river, and elsewhere as well, precipitation is comparatively scant, but over considerable of these the greatest proportion of the yearly rainfall comes in the crop-growing season.

All localities are subject to vagaries of the weather, but their harmful effects are minimized by the knowledge that experience and study have brought. Diversity of crops, scientific methods of preparation and tillage best adapted to the particular locality, drainage and irrigation are being utilized through a better understanding, and have large influence on the general welfare.

Irrigation and Drainage.—Irrigation is the artificial watering of land to increase production, or make available for agriculture lands that otherwise would be too dry. Artificial watering of the land has been practiced from earliest times in the older countries, and even by the prehistoric people of some portions of what are now the United States.

Mormons, beginning late in 1840, in Utah, were the first modern people to demonstrate the practicability of extensive irrigation in America, and from their modest beginnings farming and fruit-growing by irrigation have slowly but continuously been extended until the nation, states, municipalities, companies and individuals are all interested in irrigation enterprises in the regions of insufficient rainfall. Authorities state that in 1860 about 100,000 acres of land were under irrigation in the United States, while in 1910 there were being irrigated over 10,000,000 acres, and more than 15,000,000 acres capable of irrigation were under completed canals and reservoirs.

The National Reclamation Law of 1902 gave great impetus to such undertakings in the United States. By its provisions the proceeds from sales of public lands in fourteen states and two territories have been used in the construction of irrigation systems. In each of these the reservoirs are essential parts, storehouses for the collected flood-waters thereby made usable when needed for lands otherwise barren. Most of the irrigated lands are supplied by gravity with water from reservoirs and surface streams, although the lands watered by artesian wells are not unimportant, and those irrigated by pumping from wells by wind-power and gasoline engines are increasing, especially where immeasurable quantities of water, popularly called the underflow, lie near the surface. The applying of water in the United States is quite generally by checks, flooding and furrows, and in all skill and judgment are required, the character and situation of the soil and the crops planted being governing factors.

Drainage, by either natural or artificial means, has for its principal object the removal of excess water from the land, to make it more productive. Many tracts already producing would be greatly enhanced in value if some practical system of soil drainage were installed. The most efficient method is by the use of porous tiles, buried at proper depths and distances apart in the ground. In times of too much water they quickly carry off the surplus, early leaving the surface in condition for cultivation, and in times of drought permit such action of the earth's vapors as to accumulate moisture in the soil.

Underdrainage.—The practice of underdrainage is old, but the use of specially made burnt clay tiles for the purpose is comparatively recent. Such lands, for instance, as are full of water for the first two or three feet below the surface, or those where water stands on the surface after heavy rains, are greatly improved by tile drainage, and ditches also are often profitably employed to carry off surface water. Properly drained fields obviously present many advantages. Even in lands under irrigation the circulation of water in the soils is quite necessary, to prevent injurious accumulation of soluble substances having unfavorable effects. Fortunately, most lands have natural underdrainage, but without this the removal of the excess water by tiles is to be commended.

Ground too wet is generally cold, often sour, and unfriendly to plant growth, whereas well drained land, containing the moisture held by capillarity, has appreciably more warmth and needed aëration. These conditions not only increase its powers for developing and yielding plant food, but the soil being warmer, promotes the germination of seeds and gives thriftier, healthier plants. In ordinary seasons it enables preparation, planting, cultivating and harvesting to be done at such times as experience has shown best.

Tillage and Dry Farming.—It is quite probable that low yields and failures of crops are more generally due to inadequate and improper tillage than to any other part of the farmer's work. Proper seed, a soil of average fertility, its timely and proper preparation and subsequent tillage, where crops are cultivated during their growth, very materially determine yields.

Good soils often fail of compensating returns because of poor tillage. It is through the processes aided by cultivation that plant food is available and utilized. Sowing or planting the staple crops on unbroken sod would be unprofitable. By tillage the soil is not only aërated and pulverized but moisture is conserved. The action of air and moisture in the soil brings about such changes that the otherwise largely unavailable food elements are liberated for assimilation by plants through their roots. Hence, the importance of thorough and scientific tillage for all crops, for yields are materially influenced by the frequency and kind of cultivation given.

Dry Farming.—This is all the more imperative in those regions of scant rainfall, and in these in recent years have been adopted a system of culture that makes production more certain and more abundant. This is popularly called "dry farming," the principles of which have been practiced from the most ancient times. Dry farming means simply proper tillage, an outstanding feature being suitable preparation of the soil for the reception and retention of the natural precipitation. By providing a loose, finely pulverized surface, or dust blanket, capillary attraction with the moisture beneath is broken, lessening evaporation and promoting proper percolation.

Where irrigation is impracticable for lack of water, as in the major portions of the semiarid regions, such methods prove advantageous, and by conservation the natural rainfall is made sufficient for yields that otherwise would have been impossible. Its general principles might be profitably adopted everywhere, and are absolutely essential to remunerative results in regions of scant rainfall.

Agricultural Education.—Recognizing agriculture as the country's chief industry, Americans early evinced interest in agricultural education, which took practical form in the organization of societies for its promotion. Washington, the first president of the United States, strongly urged upon Congress the wisdom of providing ways and means for agricultural research and dissemination of the useful knowledge acquired, and he was a member of the first society formed, in 1785, for the advancement of agriculture in America.

This was the nucleus from which has developed the comprehensive agricultural educational system of our day, reaching its highest efficiency in the present excellent colleges and schools maintained in the interest of husbandry, with their elaborate curricula, extensive equipment, and army of capable instructors. Now, also, nearly every farming community has an agricultural or similar association. State, county and district fairs have been educators; nearly, if not all, the states have their boards of agriculture or their equivalent, supported by public funds, and from these institutions are issued, free, a great variety of literature to those interested in rural pursuits.

Agricultural Literature.—In the same time there has been developed through private enterprise an extensive agricultural literature, of general and special works and periodicals, many of which are devoted wholly to some one branch of farming, as dairying, a single breed of live stock, orcharding, market gardening, and the like. Farmers' institutes, the agricultural college short courses and extension work, instruction by correspondence and home reading courses and other kindred methods, all aid in teaching the whys and wherefores of the business of farming.

Extension Education.—A number of colleges, with the coöperation of interested railroads, carry the gospel of better farming direct to those who cannot attend the schools, by sending out train specials,

known as seed, wheat, dairy, corn, alfalfa, or poultry trains, depending on the topic selected for presentation. These trains are properly equipped and manned with college specialists, who lecture at the different railroad stations visited, and answer such questions as may be propounded, illustrating their lectures and answers by examples, specimens, diagrams, charts and tables—a method of teaching found extremely popular.

United States Department of Agriculture.—The head of the agricultural educational forces in the United States is the National Department of Agriculture, which was established in 1862 as a bureau, under direction of a commissioner, and in 1889 by an act of Congress made an executive department of the government under a secretary, appointed by the President, and who is a member of his cabinet. The work of its extensive corps of scientists and experts is principally for the nation as a whole, while that of the colleges and experiment stations chiefly concern the advancement of agriculture in the states in which they are respectively located. The national department issues bulletins, reports and other literature from its specialized bureaus, some free and others for which only nominal charges are made. The most popular are the "Farmers' Bulletins" and the "Yearbooks," both free, the latter obtained generally by application to members of Congress.

Agricultural Colleges.—While there were a number of agricultural colleges and schools supported mostly by private funds and popular subscriptions previously, the Land Grant act of 1862, by which Congress donated public lands to states and territories providing agricultural colleges, laid the broad foundation upon which have been built institutions for teaching agriculture and the mechanic arts in every state and territory. Supplemental to this endowment the states make liberal appropriations for furthering the work.

To Michigan belongs the distinction of having the oldest agricultural college in the United States, it having been created by legislative enactment in 1855, and formally opened in 1857. Nearly one-half of such colleges are connected with their state universities, and the others are separate, or are parts of technical or industrial institutes.

Curricula.—Their curricula embody many distinct courses, pertain to nearly every conceivable phase of farm affairs, and provide for teaching the sciences related to the various industries of farm, shop and home. Chemistry, physics, bacteriology, botany, entomology, zoölogy, mechanics, and kindred studies, are prominent Courses comprehend among others the study of soils, soil physics, crops and their production, farm mechanics and farm management; animal husbandry, or the origin and history of the various breeds of domesticated animals and their characteristics, care, feeding, breeding and management; dairying, horticulture, veterinary science, mechanical engineering, electrical engineering, and domestic science and art.

Agricultural Experiment Stations, as the term would imply, are for conducting agricultural experimental investigations. They are generally connected with the agricultural colleges, and the members of the faculties of the colleges usually comprise the staff of the station. The first of the regularly organized experiment stations was in Connecticut in 1875, followed by others elsewhere.

In 1887 Congress passed the Hatch act, which gave $15,000 a year for the maintenance of each agricultural experiment station, for experimentation, investigation, and the compilation and reporting of results.

Purpose and Work.—The law specifically states that these stations shall "conduct original researches or verify experiments on the physiology of plants and animals, the diseases to which they are severally subject, with remedies for the same; the chemical composition of useful plants at their different stages of growth, the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and waters; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses for forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese, and such other researches or experiments bearing directly on the agricultural industry of the United States, as may in each case be deemed advisable."

In 1906 Congress passed the Adams act, having for its object extension and strengthening of the experimental work of stations by additional funds. By its provisions an initial appropriation of $5,000 was to be increased each year until 1911, when it would amount to $15,000, thereafter making annually available an aggregate of $30,000 of government funds for each station, under the Hatch and Adams acts. Several states have two stations, one being supported wholly with state funds, and several maintain branches of the government stations.

Publication of Results.—Results of the work of these stations are published in bulletins and circulars sent free to those who desire them. While the agricultural colleges and stations are in a sense separate institutions, their property and work are more or less closely interwoven, to their mutual advantage, the colleges profiting from the work of the stations, and the stations from the gratuitous use of the college farms, buildings, apparatus and equipments.

Plant Breeding, and Seeds.—A work of great importance carried on by experiment stations is that of improving crops in both yield and quality. Knowing that through the process of selection based on chemical analysis the sugar content of the sugar-beet had been increased from about 5 per cent to 16 per cent, the idea was advanced that the chemical composition of corn might be similarly changed. Experiments showed that it could be done at will, either to a high or low protein, oil content, or other constituent; that a corn rich in protein had an added value for feeding to growing animals; the corn with the larger oil content was of special worth in fattening animals, and the increase of carbohydrates rendered it more valuable for manufactures, as for starch, glucose, and other articles. Similarly, wheat had been improved for flour-making by increasing the gluten content, and such possibilities in plant-breeding seem well-nigh limitless.

Value of Selected Seed.—The wisdom of using seed selected according to approved standards has already been convincingly demonstrated, through improved quality and increased yields. Several states, notably Minnesota, Illinois and Kansas, have by these methods materially enlarged their yields of wheat and corn. Experience has shown, too, the advisability of planting only such seeds as have been graded, and tested for germination, so that a given quantity may be planted uniformly on a given area, with reasonable assurance of definite results.

Imperfect Vitality of seeds cannot be detected by mechanical examination alone, but the testing box tells in advance of the field planting. The importance of this is emphasized by the illustration that if seed corn, for instance, was only 90 per cent germinable, it would mean the vacant places in the field would aggregate 10 per cent of the area, or ten acres out of a hundred which would produce nothing, due to an uneven and imperfect stand because of the 10 per cent of worthless seed. Lacking good seed there can be no successful agriculture. (See also *Elementary Agriculture* under Education.)

Status of the United States in Agriculture.—In its aggregates of field production the United States is without a peer among the nations. Although the capabilities of some parts are as yet but poorly comprehended, the possibilities of others scarcely suspected, and developments superficial, owing to the large holdings by corporations as well as by individuals, and the variant conditions that had to be understood before they could be dealt with, the achievements of the past promise to be far surpassed by the enlightened husbandmen of the future.

Rank Among Our Industries.—The country's progress and development agriculturally is suggested by the fact that the aggregate of Indian corn raised in 1911 in the United States was considerably more than twice that in 1890. With a yield of 308,103,000 bushels, it assumed first rank in wheat in 1890; in 1909 the yield was 737,189,000 bushels, or 139 per cent greater. The 1901 crop, however, of 748,460,000 bushels was the largest ever produced, the 1909 crop being next.

In quantity and value the agricultural products of the United States exceed those from any other source. In three-score years they have advanced from the point of not equaling home demands to that of making the United States the world's largest exporter of farm products. In the aggregate of products American agriculture rivals that of all Europe. The farms not only contribute abundantly for home needs, and provide export commodities overshadowing in value all others combined, but supply the manufacturers of the country with raw materials, although, as already stated, the ratio between production and consumption at home has been gradually narrowing.

Exports.—For the year ending June, 1911, the value of farm products exported from the United States was $1,000,000,000, of which live stock and their products were an important part. Large numbers of domestic animals, especially cattle and sheep, and immense shipments of dressed meats go to foreign ports constantly. Cotton is the leading export crop, the amount thus disposed of in 1911 reached a total value of $526,000,000. For the fiscal year ending June 30, 1911, the live animals exported aggregated in value $19,050,000, while that of packing house and dairy products reached nearly $150,000,000.

TABULATIONS ON AGRICULTURE, HORTI-

TABLE I.

Crop	Soil	Planting Date	Seed to Acre	Normal Yield per Acre	Origin and Brief History	Use
Alfalfa. *Medicago sativa.* Linn. *eguminosæ.*	Deep, well-drained, nonacid, fertile, with deep, permeable subsoil.	May-August, north March-May, Aug.-Oct. south.	20-25 pounds broadcast. 15-20 pounds drilled.	3 tons.	Is native to southwestern Asia and was in use centuries before Christian era. Spread from Media to Greece about 480 B. C., Italy first century A. D., Spain eighth century, Mexico and South America sixteenth century. Was introduced from Chili into California in 1854. Came from Mexico to Texas early part of nineteenth century.	Stock feeding. Pasture. Soiling. Soil improvement.
Barley. *Hordeum sativum.* Jessen. *Gramineæ.*	Old, well-subdued land, not soggy. Rich clay loam best.	April-May north. March-April, September-March, south.	1.5 to 2.5 bushels.	25.5 bushels.	Supposed to be native of western Asia, and widely grown before Christian era. Use as bread-plant universal throughout Europe, Asia and Africa to close of fifteenth century.	Malting purposes. Hay and grain. Food for domestic animals. Human diet. Malt-sprouts and brewers' grains are by-products.
Buckwheat. *Fagopyrum esculentum.* Mœnch. *Polygonaceæ.*	Rather light, well-drained, and not over-rich. Will grow on wide range, including poor land.	May-July 15.	3-5 pecks.	18.1 bushels.	Native of Europe and northern Asia. Has been cultivated for centuries in all grain-growing countries. Is found wild in China and Siberia, and has been grown in China for food from time immemorial.	Flour for human food. Honey plant. Grain for poultry. Middlings a by-product for stock feeding.
Clover, Alsike. *Trifolium hybridum.* Linn. *Leguminosæ.*	Deep clay loam. Will do well on moist and cool land.	March-August.	8-15 pounds alone. 4-6 pounds on wheat or rye in spring.	1.5 tons hay. 4 bushels of seed.	Takes its name from parish in South Sweden. From there probably introduced into England. Is found in Europe, northern Africa, western Asia. Reached America from Great Britain or Scandinavia.	Hay. Pasture. Silage. Honey plant. Soil improvement.
Clover, Red. *Trifolium pratense.* Linn. *Leguminosæ.*	Slightly alkaline medium clay loam, underlaid with moderately porous clay subsoil.	March-August.	15 pounds alone. 8-14 pounds on small grain in spring.	1.5 tons hay. 3-6 bushels of seed.	Probably native to Europe. Introduced into England early in seventeenth century. Doubtless introduced into America by early colonists.	Hay. Pasture. Soiling. Silage. Soil improvement.
Clover, White. *Trifolium repens.* Linn *Leguminosæ.*	Light clay loam, slightly alkaline.	March-August.	10-12 pounds alone. 2-4 pounds in mixtures.	1.5 tons hay. 2.5 to 6 bushels of seed.	Indigenous to Europe, northern America and probably western Asia. Grown in every country in Europe and throughout America. Best in moderately cool, moist climate.	Lawn grass. Pasture. Honey plant. Short hay. Soil improvement.
Corn. *Zea mays.* Linn. *Gramineæ.*	Fertile, medium loam. New lands preferable.	May-June north. Late March, south.	4-8 quarts. 9-11 quarts for silage.	25.4 bushels. 8-12 tons silage.	Originated in Mexico. Found in cultivation and principal food of Indians by first explorers of North America. Is related botanically to a native Mexican grass, teosinte (*Euchlæna mexicana*).	Human food. Stock feeding. Grain for poultry. For manufacture of glucose, dextrine, alcohol, starches, grits, hominies, oil, etc.
Cotton. *Gossypium hirsutum* and *G. barbadense.* *Malvaceæ.*	Fertile clay or sandy loam, with a clay subsoil at a depth of about two feet.	April-May 15.	½ to 1 bushel.	0.5 bale.	Origin antedates recorded history. Supposed to have originated in India, or possibly China. Found in various countries of southern Asia and Africa, and Columbus and other explorers found it native in West Indies, South America and Mexico. First cultivated in United States in colony of Virginia, 1621.	Manufacture of cloth, thread and yarn. Cottonseed oil. Cottonseed meal, oil cake and hulls for stock feed.
Cowpea. *Vigna unguiculata.* Walp. *Leguminosæ.*	Wide range, sandy and loamy soils preferred.	May-June north. May-July south	1 to 1.5 bushels. 3 pecks for seed.	1.5 tons. 10 bushels of seed.	Native of India and region northwestward to southern part of trans-Caspian district. Has been cultivated more than 2,000 years. Reached West Indies latter part of seventeenth century, and mainland of America later.	Soil improvement. Forage. Seed food for man and domestic animals. To fit land for sod.
Mangels. *Beta vulgaris.* Linn. *Chenopodiaceæ.*	Wide range, deep alkaline loam preferable. Good preparation of seed-bed essential.	April-May	5-8 pounds.	24 tons.	Considered direct descendant of chard, used as vegetable by Greeks 300 B. C. Use of root for cattle feeding recorded in sixteenth century. Beets introduced in America by early colonists.	Stock feed.
Millet. Many groups and varieties. *Gramineæ.*	Fertile, mellow clay loam.	April-July.	1-3 pecks drilled.	1.5 tons.	Cultivated in China since 2800 B. C. Still largely grown in oriental countries as food grain and forage. In America, usually grown as supplementary or catch-crop.	Hay. Forage. Soiling. Silage. Pasture. Seed for stock feed.
Oats. *Avena sativa.* Linn. *Gramineæ.*	Not specially fertile. Clay loam preferable.	April-May north. February-March, September-December south.	2-3 bushels.	30.1 bushels.	Probable nativity Tartary in western Asia, or possibly eastern Europe. Largely north temperate zone crop, but grown in Australia, Africa and South America. Has been cultivated in America since advent of first settlers.	Food for animals. Human food. Forage crop. Pasture.
Rice. *Oryza sativa.* Linn. *Gramineæ.*	Rich, moist, well-drained clay loam.	March 15-June 15.	1.3 bushels	25-30 bushels.	Existed in India in early historic times, and doubtless indigenous there. Introduced into America soon after settlement of Virginia. Introduced accidentally into lower Carolina in 1694.	Human food. Stock feed. Starch. Wine.

*The bulletins herewith mentioned may be had upon application to the director of the respective agricultural experiment station or college publishing

CULTURE AND ANIMAL HUSBANDRY
FIELD CROPS

Fertilizers	Plant Diseases and Enemies	Remedies	Bulletins*
Lime to correct acidity, well-rotted manure.	Dodder.	Close cutting, removal of stalks, burning, close pasturing.	Farmers' Bulletins Nos. 194, 215, 339, 373.
Commercial fertilizer containing phosphoric acid and potash.	Leaf spot.	Mowing.	Canada Central Experimental Farm Bulletin No. 46.
	Anthracnose.	Mowing, and application of nitrate fertilizer.	Most experiment stations have issued bulletins.
	Root rot.	Plowing under.	
	Web-worm, army worm.	Mowing, fall disking.	
Barnyard manure.	Rust and mildew	No effective remedy.	
200 to 500 pounds of complete commercial fertilizer.	Closed smut.	Formaldehyde treatment: 1 pint formaldehyde into 20 gallons water in barrel. Submerge sacks of barley 10 minutes in solution, then empty on platform to dry. Preferably, cover drying seeds with blanket for two hours.	Wisconsin Experimental Station Reports Nos. 20, 21, 22, 23.
	Loose smut.	Hot water treatment, which is effective also against closed smut: Grain in gunny sacks submerged 12 hours in cold water, to soften hull; then removed and drained 1 hour; then submerged in hot water at *constant* temperature of 130° F. for not over 6 minutes. Seed should be sown same or following day.	Yearbooks of the U. S. Dept. Agr.
Fertilizer seldom needed.	Relatively free from diseases and insects.		Yearbooks of the U. S. Dept. Agr.
Light applications barnyard manure or moderate dressing of complete fertilizer on poor soil. 100 pounds of low-grade fertilizers, especially if sown late.	Birds may cause loss.		Cornell Bulletin No. 238.
Lime.	Clover failure.	Lime and manure. The addition of potash may aid.	U. S. Dept. Agr. Plant Industry Bulletins Nos. 31, 59, 66, 123.
Carbonate of lime.			
Stable manures.	Flower midge.	Feed off or mow first crop just before timothy heads out. Pasturing or clipping back to delay blooming ten days useful.	Farmers' Bulletins Nos. 123, 237, 260, 323.
	Seed fly.	No practicable remedy known.	
	Root borer.	Crop rotation.	
See alsike clover.	See alsike clover.	See alsike clover.	See alsike clover.
See alsike clover.	See alsike clover.	See alsike clover.	See alsike clover.
10-20 tons farm manure each year or two.	Root worm.	Crop rotation and fall plowing.	U. S. Dept. Agr. Office of Experiment Stations, Bulletin No 57.
Phosphoric acid, nitrogen and potash.	Webworm.	Crop rotation and fall plowing.	Farmers' Bulletins Nos. 32, 41, 81, 174, 199, 229, 253, 292, 298, 303, 313, 317.
Plow under large quantities of vegetable matter, preferably legumes and grasses.	Cutworm.	Early fall plowing. Sprinkling bran mixed with paris green and molasses in proportions of 30 pounds bran, 1 pound paris green, 2 quarts molasses, enough water to moisten the bran.	
	Chinch bug.	Trap in dusty furrows. Destroy in furrows by kerosene. Strip of coal tar will prevent passage.	
	Grasshoppers.		
	Crows. Smut.	Burn affected plants and rotate crops.	
Acid phosphate kainit.	Webworm and cotton-square borers.	Dust with paris green.	U. S. Dept. Agr. Office of Experiment Stations, Bulletin No. 33.
Muriate of potash.	Plant lice.	Plow under host plants in fall or winter, or spray with whaleoil soap, kerosene emulsion or tobacco solution.	Bureau Plant Industry Bulletin No. 62.
Nitrate of soda.	Cutworms. Cotton worm.	Place about fields bunches of grass immersed in paris green; or destroy by winter cultivation.	Division of Statistics Bulletin No. 16.
Cottonseed meal.	Cottonboll worm.	Apply paris green to plants.	Yearbooks 1902, 1904.
Barnyard manure.	Mexican cottonboll weevil. Wilt.	Mature crop early and destroy immediately all rubbish. Fumigate seed with carbon bisuphide before planting.	Farmers' Bulletins No. 36, 48, 217, 302, 314, 326.
	Sore-shin or damping off.	Plant disease-resistant seed; burn infested plants; rotate crops.	
	Root knot.	Lime and cultivate to keep surface mulch dry.	
Acid phosphate 200 to 400 pounds and muriate of potash or kainit, 160 pounds per acre.	Wilt.	Bordeaux mixture. Iron variety practically immune.	U. S. Dept. Agr. Bureau of Plant Industry, Bulletin No. 25.
			U. S. Dept. Agr. Agrostology Bulletin No. 64, Circular No. 24.
	Mildew and leaf spot.	Seldom extensive damage.	Yearbook for 1896.
	Nematode worms.	Iron variety practically immune.	Most experiment stations have issued bulletins.
10 to 12 tons manure in fall. 300 to 500 lbs fertilizer rich in nitrogen.	See sugar beet.	See sugar beet.	New York (Cornell) Bulletins Nos. 243, 244.
Manures to be determined by local needs.	Smut.	Formaldehyde or hot water treatments. See under barley.	Farmers' Bulletin No. 168.
Requires plant food near surface.			Division of Botany Bulletin No. 23.
	Chinch bug.	Crop rotation. See under oats.	Kentucky Experiment Station Bulletin No. 98.
			Kansas Bulletin No. 102.
Fertilizers must be used sparingly.	Closed and loose smut.	Formaldehyde or hot water treatments of seed. See under barley.	Farmers' Bulletins Nos. 250, 395, 420, 424.
Barnyard manure, 10 to 25 loads per acre on poor soils.	Orange leaf rust.	Plant resistant and early maturing varieties.	Ohio Experiment Station Bulletins Nos. 101, 138.
Fertilizer containing 10 to 20 pounds each of ammonia and potash, and 30 to 60 pounds of phosphoric acid per acre.	Black stem rust.		Kansas State Bd. Agr. 14th Report.
	Chinch bugs.	Plow furrow to prevent spread. Scatter tar in furrow. In extreme cases burn one field to save another.	
	Army worms.		
Rich soils generally used.	Rice weevil.	Carbon bisulphide.	Farmers' Bulletin No. 110.
	Rice worm.	Draw off water and allow field to dry for few days.	Division of Botany Bulletin No. 22.
	Rice grub.	Water.	U. S. Dept. Agr. Office of Experiment Station Bulletin No. 113.
	Chinch bug.	Thorough flooding.	Louisiana Experiment Station Bulletins Nos. 24, 50, 61, 77.
	White blast.	Application of lime to soil.	
	Smut.	See under barley.	

the same, or to the United States Department of Agriculture. A list of such stations follows the tables.

TABLE I. FIELD

Crop	Soil	Planting Date	Seed to Acre	Normal Yield per Acre	Origin and Brief History	Use
Rye. *Secale cereale.* Linn. *Gramineæ.*	Light, with little clay. Well drained, will grow on poor soil.	April-May or September-November.	3-4 pecks, early. 6-8 pecks, late.	15.7 bushels. 1 ton of straw.	Original home was between Austrian Alps and Caspian Sea. Culture more than 2,000 years old. Seems to be of decreasing importance.	Grain for animal and human food. Fall pasture. Soiling. Cover-crop and green manure. Flour. Alcoholic liquors.
Sorghum. *Andropogon sorghum.* Brot. or *Sorghum vulgare.* Pers. *Gramineæ.*	Rich, well drained, sandy or clay loam.	March-June.	1.5to2bushels broadcast. 6 pounds to 0.5 bushel for silage drilled.	3-6 tons fodder. 8-20 tons green forage.	Originated in tropical or subtropical regions of old world, and in cultivation as human food for many centuries, long before Christian era. Tropical Africa generally considered birthplace.	Pasture for hogs. Hay. Fodder. Silage. Sirup.
Soybean. *Glycine Hispida.* Maxim. *Leguminosæ.*	Well-drained sandy, loam or clay soil.	May-June.	2-3 pecks in drills. 1 to 1.5 bushels broadcast.	12-20 bushels.	Native of southeastern Asia. Thought to be derived from wild *Glycine soja* of Japan. Grown extensively in China and Japan.	Animal grain feed. Silage. Soiling. Hay. Cover-crop and soil improvement. Human food.
Sugar Beet. *Beta vulgaris,* Moq. *Chenopodiaceæ.*	Clay loam, or medium light sandy loam.	May, north January-May south.	8-12 pounds.	11.5 tons.	Known at least three centuries before Christian era. Sugar first extracted about middle of eighteenth century by Marggraff. First attempt to grow beets for sugar in U. S. in 1830, near Philadelphia.	Stock feeding. Sugar manufacture.
Sugar Cane. *Saccharum officinarum.* Linn. *Gramineæ.*	Well-drained soil of good average character.	March 21-May 20.	4 tons of cane.	8-25 tons.	Origin lost in antiquity. Cultivation probably among first undertaken by tropical peoples. Early use almost exclusively for eating raw. As source of sugar it stood practically alone until beginning of last century.	Manufacture of sugar and molasses.
Sweet Potato. *Ipomœa batatas.* Poir *Convolvulaceæ.*	Warm, sandy, well-drained and aerated.	March 21-May.	1.5 to 4 bushels.	100 bushels.	Nativity unknown, probably tropical America. Was cultivated in tropics of both hemispheres when authentic records began. De Candolle inclines to an American origin.	Human food.
Timothy. *Phleum pratense.* Linn. *Gramineæ.*	Deep clay loam, moist and fertile.	March-October.	8-16 pounds; with clover 10 pounds.	1.5 tons.	Native of Europe and extensively cultivated in cooler parts of North America as a forage plant. Introduced to America from England in 1720.	Hay. Pasture.
Tobacco. *Nicotiana tabacum.* Linn. *Solanaceæ.*	Rich, friable sandy loam in seed-bed, well fertilized each spring with fertilizer containing 10 per cent ammonia, 8 per cent available phosphoric acid, 12 per cent soluble potash.	February 1 to March 1 in seed-bed. April-June in field.	1 tablespoonful to 100 square yards of seed-bed, to set out six acres.	800-1000 pounds.	Of American origin. Pipes and other means for smoking tobacco were found in prehistoric mounds of the United States, Mexico and Peru. Columbus found natives using tobacco for smoking, chewing and snuff. In 1558, Jean Nicot, French ambassador to Portugal, sent a supply of tobacco seed to Queen Catherine de' Medici, and to commemorate the service the generic name Nicotiana was given.	Disinfectant. Smoking and chewing purposes. Stalks for making of paper.
Vetch. *Vicea* spp. *Leguminosæ.*	Wide range. Used on poor sandy or gravelly soils to improve them. Prefers moist clay loam.	April-June. September-December.	1 bushel.	1.5 to 3 tons.	Common spring vetch is native in Europe and western Asia. Was cultivated by Romans. Reached America 100 years ago.	Cover-crop. Stock feed. Soil improvement. Pasture.
Wheat. *Triticum sativum.* Lam. *Gramineæ.*	Light clay and glacial drift soils.	September-October. April-May.	6-8 pecks.	13.8 bushels.	Wheat cultivation antedates recorded history. Monuments more ancient than Hebrew scriptures depict its cultivation established. Chinese grew wheat 2700 B. C. Cultivation in America prior to discovery by Columbus not known.	Flour for human food. Grain for stock feeding. Straw. Bran, shorts and middlings are by-products for stock-feeding.

TABLE II. ORCHARD

Crop	Climate	Soil	Planting Time, Plants or Seed per Acre	Diseases	Remedies
Apple *Pyrus. malus.* Linn. *Rosaceæ*	Temperate	Clay loam to sandy loams, with variety preferences.	Fall or spring, fall preferable.—27-33.	Scab.	Spray thoroughly with lime-sulphur, 1-40, or bordeaux, 3-3-50, 3 times: (1) Just before blossoms open, (2) just as blossoms fall, (3) 10 to 14 days after blossoms fall.
				Fire blight.	Cut out and destroy diseased parts. Wash wound with corrosive sublimate 1 part to 1,000 of water. Paint wound with gas tar or lead paint.
				N. Y. apple tree canker.	Spray before buds start with lime-sulphur, 1-12, or bordeaux, 10-10-50; soak body and limbs when making first application for scab. Cut out cankers and treat wound as for fire-blight.
Asparagus. *Asparagus officinalis,* Linn. *Liliaceæ*	Temperate.	Warm, well-drained loam, deep rich, fertile and moist.	Early spring, April preferable for seed.—5,445-14,520. 1 oz. of seed to 400 plants. Rows 8 ft. apart, plants 1 ft. in row; or rows 4 ft. apart, plants 2 ft. in rows, 5,445. Rows 2 ft. apart, plants 18 inches in row, 14,520.	Rust.	During cutting season, permit no plants to mature. Fertilise liberally and cultivate thoroughly. Late in the fall burn all infected plants. Spray with bordeaux, 5-5-50, containing a sticker of resin, sal soda, soap. Spray when shoots are 8 to 10 inches high after cutting, and repeat once or twice a week.

CROPS—Continued

Fertilizers	Plant Diseases and Enemies	Remedies	Bulletins
250 pounds per acre of dissolved phosphate rock.	Black rust of stems. Orange rust of leaves. Smut. Ergot. Chinch bug. Hessian fly.	Burn infested stubble—rotate crops. Formaldehyde or hot water treatment. See under barley. Clean seed on clean land. Burn rubbish nearby. Rotate crops. Plow deep trenches and use tar strips. Resistant varieties, late seeding, burning stubble, sowing early wheat trap crop.	Pennsylvania Agr. Experiment Station Bulletin No. 52. U. S. Dept. Agr. Yearbooks.
Barnyard manure and leguminous green manures.	Grain smut. Whole-head smut. Chinch bugs and green aphis.	Rotation and seed selection. Hot water and formaldehyde treatments. See under barley. Seldom serious. Avoid continuous cropping on same area.	Farmers' Bulletins Nos. 37, 50 90, 135, 174, 246, 288. Bureau of Chemistry Bulletins Nos. 14, 20, 26, 34.
200 to 300 pounds high-grade acid phosphate. 50 pounds muriate or sulphate of potash per acre.	Sclerotium. Nematode root worms. Rabbits. Grasshoppers. Reddish brown hairy caterpillar.	Fatal. No treatment. Not specially serious.	Farmers' Bulletins Nos. 58, 121, 372. Connecticut Experiment Station Bulletin No. 22. Delaware Bulletins Nos. 60, 61. Georgia Bulletin No. 17. Indiana Bulletin No. 108. Kansas Bulletins Nos. 18, 92, 100, 123. Many other station bulletins.
Green fertilizers, generally alfalfa. Stable manures. Complete commercial fertilizers.	Leaf spot. Curly top. About 150 insect enemies.	Bordeaux mixture and crop rotation. Seldom occurs in two successive seasons in same locality. See entomology bulletins in next column.	Division of Entomology Bulletins Nos. 19, 23, 29, 33, 40, 43. Specia Report No. 28. Bureau of Chemistry Bulletins Nos. 27, 96. Farmers' Bulletins Nos. 52, 92.
Stable manure. Nitrogenous fertilizers, dried blood, fish refuse in small quantities. Lime extensively.	Root diseases, rind disease, sereh, pineapple disease, red top, top rot, smut, rust. Rats. Borers. Innumerable insects. Parasitic nematodes on roots.	Burn over, use quicklime as soil fungicide. Burn over or poison. Mongoose will destroy. Hand pick, rotate crops, use trap crops, or rest land. Fought by introduction of parasites. Expose soil to air and sunlight.	Bulletins of Hawaiian Sugar Planters Experiment Station, Louisiana, Cuba, and Porto Rico Experiment Stations.
Abundant humus. Light straw manure. Crimson clover sod plowed under at half-growth. Stable manure put in furrow under the crop.	Black rot. Soil rot. Soft rot. Tortoise beetles. Sawflies. Flea beetles.	Use slip-seed. Thoroughly clean and disinfect storage house. Plant in new soil. Crop rotation. Apply kainit and sulphur, 300 pounds per acre. Dry potatoes before storing. Destroy all infected potatoes. Dip plants before setting in solution of arsenate of lead, 1 pound to 25 gallons water. Paris green or the above arsenical spray. Arsenical sprays.	Farmers' Bulletins Nos. 26, 129, 324. Arkansas Experiment Station Bulletin No. 72. South Carolina Bulletin No. 63.
Top dressing with barnyard manure and complete fertilizer.	Rust Grasshoppers		Farmers' Bulletin No. 111. Division of Agrostology, U. S. Dept. Agr., Bulletins Nos. 7, 14, 17, 20. N. Y. State College of Agr. Farmers' Reading-Course Bulletin No. 10.
In field, 1,000 pounds cottonseed, 1,000 pounds cottonseed meal, 300 pounds carbonate of potash, 700 pounds fine ground bone, and 800 pounds of lime to acre. Cow manure at rate of 20 to 25 loads per acre. Seldom needed. On poor land, complete fertilizer, and especially phosphoric acid and potash, may be required.	Root rot. Sore skin. Wilt. Angular leaf spot. Pole burn. Flea beetle and hornworm. Tobacco worm. Cutworms. Bud worm.	Sterlize soil with heat or formalin before seed sown. Lime. Plant disease-resistant seed; burn infected plants; crop rotation. Grow vigorous plants. Apply heat carefully and ventilate sheds to reduce humidity. Light spray of paris green, 1 pound paris green, 1 pound quicklime, 100 gallons water, stirred constantly while in use. Dust or spray with paris green, 1 pound to 160 gallons water. Sow along rows bran and paris green, 1 pound paris green, 50 pounds bran. Hand pick or dust or spray with paris green.	Farmers' Bulletins Nos. 60, 82, 83, 120, 343. Plant Industry Bulletin Nos. 18, 51, 91, 96. Report on the Culture of Tobacco, U. S. Census, 1883. Bulletins from experiment stations, particularly Connecticut, Maryland, North Carolina, Kentucky. Farmers' Bulletins Nos. 18, 102, 147. Division of Agrostology Circular No. 6. Alabama Experiment Station Bulletins Nos. 87, 96, 105.
Barnyard manure. Complete commercial fertilizer. 200 to 400 pounds of a 4-12-4 fertilizer commonly used.	Hessian fly. Chinch bug Rust. Loose smut. Stinking smut or bunt.	Late seeding, burning stubble. Clean tillage, crop rotation. Plant resistant varieties. No satisfactory treatment. Formalin, 1 pound to 50 gallons water. Sprinkle the wheat and cover with cloths soaked in the solution, or immerse the sacks 30 minutes; or blue stone, 1 pound to 5 gallons water. Immerse sacks 10 minutes, then drain and dry. Apply the solution to all utensils and machinery used.	Farmers' Bulletins Nos. 132, 250. U. S. Dept. Agr. Division of Physiology and Pathology Nos. 16, 24, 29. Plant Industry Bulletins Nos. 3, 47, 78, 79. Office of Experiment Station Bulletin No. 11.

AND GARDEN CROPS

Insect and Other Enemies	Insecticides and Remedies	Time to Bear	Yield per Acre	Bulletins on Culture
Bud moth.	Applications of either 1 lb. paris green or 4 lbs. arsenate of lead in 100 gals. water (1) when leaf tips appear and (2) just before blossoms open.	3 to 6 years from planting. Good crop in 10 to 15 years.	Tree 30 years old 20-30 bus.	Cornell Bul. 272. Geneva Buls. 163 and 185. Cornell Buls. 93, 124, 142. Geneva Buls. 262, 296, 306, 320. Geneva Circular 9.
Canker worms.	Spray once or twice before blossoms open with 1 lb. paris green, or 4 lbs. arsenate of lead in 100 gals. water. Repeat after blossoms fall. Use sticky bands or wire-screen traps to prevent ascent of wingless females.			
Codling moth.	Use burlap bags on trunk, and kill caterpillars under them every 10 days from July 1 to Aug. 1, and once later.			
Oyster shell scale.	Spray with kerosene emulsion diluted with 6 parts of water or whale oil soap, 1 lb. to 4 or 5 gals. water, in May or June when young white lice appear.			
Asparagus beetle.	Chickens and ducks will destroy. Close cutting of young shoots early in season. Use fresh air-slacked lime or arsenites dusted on dew-wet plants after cutting period.	Seed 3-4 years. Plants 1-3 years.	2000 bunches of 3½ in. diameter.	Geneva Buls. 75, 188. California Buls. 165 and 172. New Jersey Reports 1896, 1898. Farmers' Bul. 61. Massachusetts Bul. 61. Iowa Bul. 53.

TABLE II. ORCHARD AND

Crop	Climate	Soil	Planting Time, Plants or Seed per Acre	Diseases	Remedies
Beans (bush). *Phaseolus vulgaris. Leguminosæ.*	Warm temperate.	Good warm loam.	May-June—1 qt. of seed to 100 feet of drill. In drills 2 ft. apart plants 12 inches in row. In hills, 18x20 inches, 3 plants per hill.	Anthracnose or red spot.	Plant clean seed. Hand spray with Bordeaux mixture, 5-5-50, (1) when plants break through ground, (2) when first pair of leaves are expanded, (3) when pods have set.
Beans (pole). *Phaseolus vulgaris. Leguminosæ.*	Warm temperate.	Warm fertile soil.	Late spring, after danger of frost. After ground becomes warm.—1 qt. seed to 200 hills. Hills 4x4 ft., one plant per hill. Should be at least 5 plants per pole.	Blight.	Spray with bordeaux as for anthracnose.
Beets. *Beta vulgaris.* Linn. *Chenopodiaceæ.*	Temperate.	Loose, light, fresh, clean rich soil.	April-June—Seed 5-6 lbs. per acre. In drills 12x6 inches.	Scab, rust, rot, spot diseases.	Avoid following potatoes with beets. Practice clean culture and proper rotations. Spray with bordeaux mixture for leaf diseases.
Blackberry. *Rubus nigrobaccus.* Bailey. *Rosaceæ*	North temperate. Cool, northern exposure.	Strong loam, retentive of moisture and tending toward clay.	Spring preferably, or fall—900 to 1550.	Anthracnose and leaf rust. Orange rust.	Cut out bearing canes as soon as they are through fruiting. Dig up and burn infected bushes as soon as detected.
Cabbage. *Brassica oleracea.* Linn. *Cruciferæ*	Cool, moist climate.	Well-drained, rich, friable loam.	April-May to June-July—7,000-11,000. 1 oz. seed to 3,500 plants.	Club root or club foot. Black rot.	Practice crop rotation. Set only healthy plants. Do not use manure containing cabbage refuse. Lime the seed-bed at least as early as fall before. Practice crop rotation. Soak seed 15 minutes in solution made by dissolving one corrosive sublimate tablet in pint of water.
Cauliflower. *Brassica oleracea.* Linn. var. *botrytis.* D. C. *Cruciferæ.*	Temperate, cool and moist.	Richest land, strong, moist loam best.	April-July in seed-bed. July in field.—7,000 to 10,000. 1 oz. seed to 3,000 plants.	Same as cabbage.	See cabbage.
Celery. *Apium graveolens.* Linn. *Umbelliferæ.*	Temperate.	Moist peaty soil or highly fertilized land.	January-April in seed-bed. May-August in field—20,000 to 30,000. 1 oz. seed to 7,000 plants.	Cerospora leaf blight or early blight. Septoria leaf blight or late blight.	Spray with ammoniacal copper carbonate, 6-3-45, making 5 to 8 applications. Begin while still in seed-bed. Bordeaux 5-5-50, may be used for earlier application. Same treatment as for early blight, but continue till harvest.
Cherry. *Prunus avium* and *Prunus cerasus.* Linn. *Rosaceæ.*	*Sweet.* 39-44° latitude 68-86° longitude. *Sour.* 35-45° latitude, 68-100° longitude.	Elevated, light, dry, loamy, retentive soil.	Spring or fall—Sweet 48, sour 134.	Brown rot. Black knot. Leaf spot; powdery mildew.	Plant resistant varieties. Prune trees to let in sunlight and air. Spray with self-boiled lime-sulphur, 8-8-50, to which add 2 lbs. arsenate of lead to 50 gals. Spray (1) about time young fruit sets, (2) 2 to 3 weeks later, (3) 1 month before fruit ripens, omitting the arsenate. Cut out and burn all knots before leaves appear. Spray with lime-sulphur or bordeaux. Dust with sulphur or spray with potassium sulphide, 1 oz. to 3 gals. water, or lime-sulphur as for leaf spot.
Currant. *Ribes rubrum.* Linn. *Saxifragaceæ.*	Cool temperate climate.	Cool, moist and rich soil.	Fall or spring—2,178.	Cane blight or wilt. Leaf spot and anthracnose	Begin when plants are small, go over 3 or 4 times every summer and cut out and burn all diseased canes. Upon first appearance of currant worms spray with bordeaux and paris green, 1 lb. to 100 gals., or arsenate of lead, 4 lbs. to 100 gals. Repeat if second brood of worms appears.
Gooseberry. *Ribes* spp. *Saxifragaceæ.*	Cool and shady north temperate.	Moist, but not soggy, clay loams. Rich, cool, bottom lands.	Fall or early spring—2,178.	Powdery mildew.	Cut away drooping branches. Keep ground free from weeds. Spray with potassium sulphide, 1 oz. to 2 gals. Commence when buds are breaking and repeat every 7 to 10 days until fruit is gathered.
Grape. *Vitis.* spp. *Vitaceæ.*	Warm. Along shores of bodies of water best. The location must provide frost drainage.	Gravel or clay.	In spring. Completed by last of May—605.	Black rot. Downy mildew.	Remove all mummies and diseased leaves. Rake all refuse into furrows and cover. Use surface cultivation and keep down weeds and grass. Keep vines well sprouted. Spray with bordeaux, 4-4-50, till middle of July, after that with ammoniacal copper carbonate. Spray first when third leaf shows. Foliage should be protected by coating of spray *before* every rain. Make 4 applications of bordeaux, 50 to 60 gals. of spray to acre. Apply bordeaux as for black rot.
Lettuce. *Lactuca sativa.* Linn. *Compositæ*	Cool temperate.	Open, loose, rich loam.	April-June Aug-Sept.—1 oz. seed to 3,000 plants. Rows 2 ft. apart, plants 1 ft. in row equals 21,780 plants.	Rot or drop.	Steam sterilization of soil to depth of 2 inches or more; or use fresh soil for every crop. Common in greenhouses
Muskmelon. *Cucumis melo.* Linn. *Cucurbitaceæ.*	Hot, bright temperate climate.	Light and quick warm soil. Sandy loam.	May-June—1 oz. seed to 50 hills. Plants 6x6 ft. (preferable). Plants 5x5 ft.	Downy mildew. Wilt.	No effective method of control. Spray with bordeaux, 5-5-50. Gather and destroy all wilted leaves and plants.
Onion. *Allium cepa.* Linn. *Liliaceæ.*	Temperate.	A rich, moist, but not wet, loam with subsoil of clay.	April-May—1 oz. to 100 feet of drill. 4-5 lbs. per acre. In drills, 14 to 20 in. apart, seed 5 to 6 lbs.; sets 6 to 12 bus.	Mildew. Smut.	Spray with bordeaux, 5-5-50, when plants show 3 leaves. Repeat every 10 days till harvest. Crop rotation. Drill into rows when planting seed, 100 lbs. sulphur and 50 lbs. air-slacked lime to acre.
Pea (garden). *Pisum sativum.* Linn. *Leguminosæ.*	Temperate.	Rich, friable soil, not overrich in nitrogen.	April-May or July-Aug.—1 quart of seed to 100 ft. of drill, or 2 bus. per acre Dwarf 12x1 in.; tall, double rows 3 ft. apart.	Powdery mildew.	Fungicidal spray.

GARDEN CROPS—Continued

Insect and Other Enemies	Insecticides and Remedies	Time to Bear	Yield per Acre	Bulletins on Culture
Weevil.	Use bisulphide of carbon as for pea bug.	45-65 days from seed	75-120 bus.	Cornell Bul. 239. New Jersey Bul. 151. Geneva Bul. 48.
Weevil.	Use bisulphide of carbon as for pea bug.	65-70 days from seed.	75-100 bus. dry beans.	Cornell Buls. 87, 115. New Hampshire Bul. 62.
Not often damaged by insects.		65-150 days.	400 to 700 bus.	Cornell Bul. 163.
Saw-fly Cane borer.	Spray with paris green or arsenate of lead, or apply hellebore. In midsummer cut off and destroy the drooping tips.	1 year. Good crops in 2 and 3 years.	50 to 100 bus.	Cornell Bul. 99. Central Experimental Farm, Ottawa, Can., Bul. 56.
Cabbage worm. Cabbage Apnis.	If plants not heading, spray with kerosene emulsion or paris green to which sticker has been added. If heading, apply hellebore. Before plants begin to head spray with kerosene emulsion diluted with 6 parts water; whale-oil soap, 1 lb. in 6 gals. water; or one of tobacco extracts.	90-150 days.	7500 heads.	New Jersey Bul. 98. Geneva Buls. 232, 251, 302. Cornell Bul. 78.
Same as Cabbage.	See cabbage.	110 days from seed.	125-200 barrels, 18-30 heads per barrel.	See cabbage.
No widespread or serious insect pests.		120-150 days.	120-160 crates.	Cornell Bul. 132. Michigan Bul. 102. Geneva Bul. 51.
Aphis. Plum curculic	Spray with kerosene emulsion diluted with 6 parts of water or with one of tobacco extracts. Spray just after blossoms fall with arsenate of lead, 6-8 lbs. in 100 gals. water, and repeat in about a week. After fruit has set, jar trees daily over sheet or curculio catcher.	3 years. Commercial crops 4-6 years according to variety.	2½ tons.	Cornell Buls. 81, 98, 235. Geneva Bul. 98. U. S. Dept. Agr. Bureau of Entomology Circular 120.
Currant worm.	When worms first appear, spray with 1 lb. paris green or 4 lbs. arsenate of lead in 100 gals. of water. Ordinarily the poison should be combined with bordeaux. After fruit is half grown use hellebore.	1 year. Good crops in 2 and 3 years.	100 bus.	Geneva Buls. 167, 199. Iowa Bul. 30.
Currant worm.	See currant.	1 year. Good crops in 2 and 3 years.	100 bus.	Geneva Buls. 114, 133, 161.
Steely beetle or flea beetle. Root worm. Leaf Hopper. Rose Chafer.	When buds begin to swell, cover with arsenate of lead, 8 lbs. in 100 gals. of water. To kill larvæ add 1 lb. paris green or 4 lbs. arsenate of lead to every 100 gals. of bordeaux mixture. Spray latter part of June with 6 lbs. arsenate of lead in 100 gals. water. Repeat in 7 to 10 days. Cultivate thoroughly in June, close to vines, to kill pupæ. Spray underside of leaves with whale-oil soap, 1 lb. in 10 gals. water, about July 1. Repeat in a week or 10 days. Spray with 10 lbs. arsenate of lead in 100 gals. water.	Fair crop in 4 years.	3 to 5 tons.	Cornell Buls. 157, 208, 224, 235, 254, 266.
Little troubled by insects.		65 days from seed.	400-800 half-bushel baskets, 600 baskets good average.	Massachusetts Bul. 69.
Striped cucumber beetle. Aphis.	Plant early squashes as trap crop. Spray with bordeaux. Dust with tobacco dust or snuff, or land plaster with a little kerosene or turpentine. Spray with kerosene emulsion diluted with 6 parts water or use one of tobacco extracts. Burn vines after harvest, and keep down weeds.	120-140 days from seed.	3,000-7,000 melons.	Cornell Bul. 95.
Onion fly or maggot. Thrips.	See cabbage-root maggot. Kerosene emulsion, diluted with 6 parts water; tobacco decoction; whale-oil soap, 1 lb. to 4 gals. water.	135-150 days from seed.	500 bus.	Geneva Bul. 182. Michigan Bul. 31.
Pea weevil or pea bug. Pea moth or worm. Pea aphis or louse.	Fumigate seed stock with carbon bisulphide. Place seed in tight vessel or room and expose to fumes for 2 or 3 days. One pound of bisulphide for 100 bushels of peas. Early planting of early varieties. Plant seed in drills and use cultivator to bury aphides after they have been brushed from vines.	50 to 80 days.	100 to 150 bus. green in pod.	Cornell Bul. 67. Farmers' Bul. 45. Florida Bul. 36. New Jersey Report 14. Delaware Bul. 49.

TABLE II. ORCHARD AND

Crop	Climate	Soil	Planting Time, Plants or Seed per Acre	Diseases	Remedies
Peach. *Prunus persica.* Sieb. & Zucc. *Rosaceæ.*	Warm and sunny. In north near body of water.	Light and sandy loam.	Spring preferable—134.	The yellows. Leaf curl. Brown rot.	Dig out and burn diseased trees as soon as discovered. Spray trees once *before buds swell* with bordeaux, 5-5-50, or lime-sulphur mixtures used for San Jose scale. Plant resistant varieties. Prune trees to let in air and sunlight. Thin fruit well. Spray with self-boiled lime-sulphur, 8-8-50, and arsenate of lead 2 lbs. to 50 gals. water. Spray (1) when shucks are shedding from young fruit, (2) 2 to 3 weeks later, (3) 1 month before fruit ripens, omitting the arsenate.
Pear. *Pyrus communis.* Linn. *Rosaceæ.*	Temperate. Best near large bodies of water.	Strong loam of moderate depth overlying a porous subsoil.	Spring or fall—48 to 108 standard plants. 193 dwarf plants.	Fire blight. Scab.	Prune out blighted branches, cutting 6 to 8 inches below diseased part. Disinfect with corrosive sublimate solution, 1 to 1,000. Clean out limb and body cankers. Disinfect all large wounds and cover with coat of paint or gas tar. Plant resistant varieties. Spray three times with lime-sulphur, 1-50, or bordeaux, 3-3-50, as for apple scab.
Plum. *Prunus domestica.* Linn. *Rosaceæ.*	Temperate.	Clay loam. Some varieties on light moist soils.	Spring or fall—108-134.	Black knot. Brown rot. Leaf spot.	Cut out and burn all knots before leaves appear in spring. See peach. Two or three applications of self-boiled lime-sulphur or bordeaux, 3-3-50. First application about 10 days after blossoms fall. Japan plums should not be sprayed with bordeaux.
Potato. *Solanum tuberosum.* Linn. *Solanaceæ.*	Moist, cloudy climate. Sensitive to frost.	Warm, rich, sandy or loamy soil.	March to May—8 to 10 bu. seed. Early, rows 18 in. apart; late, 3 ft. x 18 in. or 3 ft. x 3 ft.	Blight and rot. Scab.	Spray with bordeaux, 5-5-50. Commence when plants are 6 to 8 in. high and repeat every 10 to 14 days during season. Use 40 to 100 gals. per acre each application. Treat tubers before cutting by soaking in formalin solution, 1 pint to 30 gals. water, for 2 hours, or in corrosive sublimate, 1 oz. to 7 gals., for 1½ hours. Plant in clean soil.
Quince. *Cydonia vulgaris.* Pers. *Rosaceæ.*	Temperate	Heavy, moist, retentive clay loam, well drained.	Spring or fall—200.	Leaf and fruit spot.	Spray three times with bordeaux as for apple and pear scab.
Radish. *Raphanus sativus.* Linn. *Cruciferæ.*	North temperate.	Rich, light, loose; one that drains rapidly.	March-Sept.—1 oz. seed to 100 ft. of drill. Rows, in garden, 12 to 18 in apart.	Relatively free from diseases.	
Raspberry. *Rubus strigosus.* Michx. (red). *R. occidentalis.* Linn. (black). *Rosaceæ*	Cool temperate.	Deep, moist soil. Lighter loams for red, heavier loams for black.	Fall or spring, the latter preferable for black-caps—Black 2,420; red 2,904.	Anthracnose. Cane blight or wilt. Red rust.	Remove all old canes and diseased new ones as soon as fruit is gathered. Spray with bordeaux, 5-5-50, when new canes are 6 to 8 inches high and follow with two more at intervals of 10 to 14 days. No successful treatment known. For new settings use only plants from healthy plantations. Dig up and destroy infected plants.
Spinach. *Spinacia oleracea.* Linn. *Chenopodiaceæ.*	Cool season plant. Grown in fall and spring.	Abundance of available plant-food, particularly nitrogen. Any good garden or field soil.	March and Aug-Sept.—1 oz. seed to 100 ft. drill or 10 to 12 lbs. per acre; rows 12 to 15 in. apart.	Mildew, anthracnose, leaf blight.	Burn all affected parts. Practice crop rotation. Treat soil with mixture of flowers of sulphur and air-slacked lime.
Squash. *Cucurbita pepo,* var. *Conensa.* Linn. *Cucurbetaceæ*	Temperate.	Warm and quick soil. Sandy lands or sandy loams best.	Summer, April-May; winter, May-June—1 oz. seed for 25 hills, or 4 lbs. per acre. Summer, hills 4x4 ft.; winter, hills 8x10 ft.	Mildews.	Bordeaux mixture or ammoniacal carbonate of copper.
Strawberry. *Fragaria chiloensis,* var. *ananassa.* *Rosaceæ*	Cool season plant.	Rich, rather moist, sandy soil.	Aug. or spring—10,000 to 14,000.	Leaf-spot, rust, or leaf-blight.	In setting new plantations, remove all diseased leaves before plants are taken to field. Spray newly set plants with bordeaux, 5-5-50, as soon as growth begins. Repeat three or four times during season. The following spring, spray just before blossoming and again 10 to 14 days later. Plant resistant varieties.
Tomato. *Lycopersicum esculentum,* var. *vulgare.* *Solanaceæ*	Warm climate, long season, sunny, open position.	Warm soil, light, porous and well drained.	Start plants in hot bed Feb. or March; transplant May to June—1 oz. to 3,000 plants.	Septoria, leaf-spot. Mildew. Black rot. Bacterial blight.	Spray with bordeaux, 5-5-50, as soon as plants are set out. Spray underside of leaves. Repeat every week or ten days. Spray with bordeaux. Crop rotation. Crop rotation, destruction of affected vines and contiguous vegetable matter.
Turnip. *Brassica rapa.* Linn. *Cruciferæ.*	Cold weather plants. North temperate.	Loose, moist soil.	April, or July-Aug.—1 oz. seed to 100 ft. of drill. Rows 18 in. apart, or broadcast. Rutabaga, rows 2 ft., plants 10 inches in row.	Club root. Soft rot.	See cabbage. Plant on soils free from disease. Plant resistant varieties.
Watermelon. *Citrullus vulgaris.* Schrad. *Cucurbitaceæ.*	Warm and sunny climates. Southern temperate.	Light, quick, warm, gray, sandy soil, with strong clay subsoil.	May-June—1 oz. seed for 30 hills, or 4 to 5 lbs. per acre. Hills 8x10 ft.	Free from any vital disease.	

TABLE III. HORSES, CATTLE,

Best Breeds	Characteristics	Uses	Brief Breeding Rules
HORSES **American Saddle Horse**	Head rather small and clean cut. Eyes wide apart, full, clear and prominent. Ears pointed. Long upright neck, sloping shoulders. Deep chest, short, strong back. Barrel ribbed well back. Strong coupling, quarters level, strongly muscled. Pasterns long and sloping. Bones of leg broad and flat, strong tendons. Height about 15 hands 2 inches. Weight about 1,000 pounds.	Saddle horse for pleasure, as a gaited horse, hunter, cavalry or commercial purposes. A light harness horse also.	1. Age of puberty 12 to 24 months. 2. Best age for breeding, 2 to 3 years. 3. Period of heat, 9 days after delivery and each 2 or 3 weeks thereafter; duration of heat, 2 to 3 days.

GARDEN CROPS—Continued

Insect and Other Enemies	Insecticides and Remedies	Time to Bear	Yield per Acre	Bulletins on Culture
Peach borer.	Dig out borers in June and mound up trees. Apply gas tar or coal tar to trunk from roots up to a foot or more above surface of ground.	2 years. Good crop in 4 to 5 years.	5-10 bus. per tree in full bearing.	Cornell Buls. 176, 192, 276.
Curculio.	Spray just after blossoms fall with arsenate of lead, 6 to 8 lbs. in 100 gals. water, and repeat in a week. After fruit has set, jar tree daily over a sheet and destroy beetles.			
San Jose scale.	See apple.			
Pear psylla.	After blossoms fall, spray with kerosene emulsion diluted with 6 parts water or whale-oil soap, 1 lb. in 4 or 5 gals. water, or one of tobacco extracts. Repeat every 3 to 7 days.	3 or 4 years. Fair crop in 6 to 12 years. Dwarfs in 5 to 7 years.	A tree 20-25 years old from 6-15 bus.	Cornell Buls. 108, 145, 142, 272. Geneva Buls. 67, 84.
Leaf blistermite.	Spray with lime-sulphur wash in fall or spring, or with concentrated lime-sulphur solutions, 1 gal. in 10 gals. water.			
Pear slug.	Spray with 1 lb. paris green or 4 lbs. arsenate of lead in 100 gals. of water.			
Plum curculio.	Spray just after blossoms fall with arsenate of lead, 6 to 8 lbs. in 100 gals. water, and repeat in about a week. After fruit has set, jar trees daily over sheet and destroy the beetles.	3 years. Good crop in 5 or 6 years.	3 to 8 bus. per tree.	Cornell Buls. 38, 81, 131, 235. Geneva Buls. 98, 117.
Colorado potato beetle.	Spray with paris green, 2 lbs., or arsenate of lead, 4 lbs., in 100 gals. water, or arsenite of soda combined with bordeaux mixture.	80 to 140 days.	100-300 bus.	Geneva Buls. 101, 123, 221, 241, 264, 267, 279, 290, 311. Vermont 85. Maine 141.
Flea beetles.	Bordeaux mixture as applied for potato blight.			
Quince curculio.	When adults appear, jar them from tree onto sheets or curculio catchers and destroy them.	2 years. Good crop in 4 years.	100 to 300 bus.	Cornell Buls. 80, 145, 148.
San Jose scale.	See apple.			
Round-headed apple-tree borer.	See apple.			
Maggots.	Cover soil just after planting with a heavy dressing of unleached wood ashes. Inject bisulphide of carbon into earth about plants.	30-45 days from seed.	2,800-3,500 bunches.	
Sawfly.	See blackberry.	1 year. Good crop in 2 and 3 years.	50-100 bus.	Geneva Buls. 124, 226.
Cane borer.	See blackberry.			
Leaf miner.		30 to 60 days.	200 barrels.	Rhode Island Bul. 41. Geneva Buls. 70, 99.
Striped cucumber beetle.	See muskmelon.	Summer, 60-80 days; winter 125-160 days.	10 to 15 tons, winter.	N. Y. State Exp. Station Report 6th. New Jersey Bul. 94. Geneva Buls. 75, 113, 156, 158. Ohio Bul. 105. Cornell Bul. 31.
Squash-vine borer.	Plant a few early squashes between rows of late varieties as trap crop. As soon as early crop is harvested, remove and burn vines.			
Aphis.	Spray with kerosene emulsion diluted with 6 parts water or use one part of tobacco extract. Burn vines after fruit harvest and keep down weeds.			
Squash stinkbug.	Trap adults under boards in spring. Kill nymphs with kerosene emulsion.			
White grubs.	Dig out grubs from beneath infested plants. Destroy pupæ by early fall cultivation of land.	1 year. Heavier crop usually in 2 years.	75-250 bus.	Cornell Bul. 79.
Boll worm.	Hand picking. Use of corn as a trap crop. Destruction of wormy fruit.	150 days from seed.	8 to 16 tons.	Cornell Buls. 32, 61. Michigan Buls. 19, 31. Florida Bul. 48. Kentucky Bul. 66. Connecticut Bul. 115.
Tobacco worm.	Hand picking.			
Nematode galls.	Crop rotation and preventing contiguity of host plants, notably cowpeas.			
Root maggots.	Inject bisulphide of carbon into soil about roots before grubs have burrowed deeply into tissues. Crop rotation.	60-70 days from seed.	600 to 1,000 bus.	Geneva Report 6th.
Flea beetle.	Spray with bordeaux or sprinkle with paris green diluted with land plaster (1 part by bulk of paris green to 50 of plaster).			
Melon worm.	Spray with paris green, 4 ounces to 50 gals. water. Two or three sprayings a week apart.	120-180 days.	400-500 melons.	Georgia Bul. 38.
Melon louse.	Spray with a 1 to 20 mixture of kerosene and water, or kerosene emulsion, or whale-oil soap, 1 lb. to 1 gal.			
Striped cucumber beetle.	See muskmelon.			
Flea beetle.	Hand picking and thorough spraying with bordeaux mixture and paris green.			

SHEEP AND SWINE

Best Foods	Diseases and Symptoms	Treatment	Bulletins
For the trotter. When not in training, feed should be reduced at least one-half. Good oats and clean sweet timothy should constitute bulk of ration. Also a few carrots and a bran mash occasionally. In spring, when shedding, bran mash may be given more often to keep bowels open.	*Big-head.*—Symptoms: Loss of vitality, irregular appetite or other digestive disturbance. Tendency to stumble. Then intermittent or migratory lameness. Swelling of bones of face and jaw. Animal becomes thin, coat rough, and skin tight.	Place animal under new conditions. Give lime, one peck slacked in a cask of water, more water being added from time to time. Give a tablespoonful of powdered bone meal in each feed, with free access to a large piece of rock salt. Feeds containing mineral salts, such as beans, cowpeas, oats and cottonseed meal are good. Animal should not work during active stage or be used for breeding.	Best references to breeds in studbooks issued by breed societies.

TABLE III. HORSES, CATTLE,

Best Breeds	Characteristics	Uses	Brief Breeding Rules
HORSES—Cont'd. **Belgian Draft**	Short body set on short legs. Tendons of legs large. Head good size. Eyes small, neck short, thick and well crested. Shoulders heavily muscled. Chest deep and wide, good barrel. Back short, broad and inclined to sag. Loins wide, short and very thick. Flank low and full. Hindquarters short, very wide, muscular. Lower thighs very wide, well muscled. Hocks round and meaty. Colors, chestnut, roan. brown and bay.	Draft and crossing, especially on grade draft mares.	4. Period of gestation 11 to 12 months. 5. Proper rations and sufficient exercise important during pregnancy. 6. Fecundity favored by (a) Warm climate. (b) Abundance of exercise. (c) Generous supply of nutritious food, regularly given. (d) Crossing (e) Heredity (f) Full maturity of animal. 7. Variation in type caused by (a) Changed conditions of life. (b) Heredity—union of two animals with diverse qualities. (c) Habit or use or disuse of parts. (d) Food.
Clydesdale	Weight 1700 to 2000 pounds for stallions, 1500 to 1800 pounds for mares. Height, 16 to 16½ hands. Colors, bay, brown, black or chestnut, with white markings on face and legs. Head intelligent. Shoulder good, which gives a free, easy, long stride. High withers. Arm well muscled. Feathering on leg is fine, silky and long. Quarters and croup muscular. Springy, strong pastern. Front action free and snappy.	Draft and crossing on native draft mares.	
French Coach	Height 16 hands. Weight 1000 to 1400 pounds. Rather upstanding Smooth and symmetrical, fine quality, clean cut, intelligent head, long graceful neck, closely ribbed body, muscular quarters. Legs well set and fine. High free knee action, regular uplifting hock action. Colors, bay, brown or black.	Coach and carriage horse, cavalry and fast saddle purposes. Crossing on common brood mares for production of grade coach horses for general city purposes.	8 Selection is of two kinds— (a) Natural. Survival of those possessing greatest ability to live and get food under particular conditions. (b) Methodical. Favoring and fixing of characters especially useful to mankind.
German Coach	Colors, bay, brown or black. Height 16 to 16½ hands. Weight 1350 to 1450 pounds. Deep round body. well proportioned, close ribs, neck long and high set on shoulders, neat head, intelligent face. Back short and strong, smooth at coupling, plump rounded quarters, strongly muscled limbs, strong hock good feet.	Saddle, carriage and draft. The horse-of-all-work.	9. Heredity—like produces like. Offspring resemble parents in stature, form and feature. Normal and abnormal characters are inherited. Predisposition to diseases is subject to laws of heredity. Characters that have appeared regularly through many generations transmitted with greatest force. Variations also transmitted.
Hackney	Considerable substance, very smooth, gracefully curved outlines, rather short legs, head well proportioned, full bright eyes, well-developed neck, shoulders long, sloping. well muscled. Body deep and round-ribbed. Muscular loins and quarters, strong hocks, excellent action. Colors, brown, bay or chestnut, with white markings. Height 15. 2 to 16 hands.	Heavy-harness horse. A desirable cross on common mares of much quality.	10. Correlation of parts. Whole organism so closely interwoven that change in one organ or set of organs almost certain to result in disturbance of the balance of other qualities and produce a change of other organs. Certain characters are normally correlated.
Percheron	Height 15. 25 to 16 5 hands Weight 1500 to 2000 pounds. Colors, gray and black. Active temperament, intelligent head, deep body, wide muscular croup, clean-cut legs, joints clean and hard; legs show abundance of quality. Good action.	Draft and crossing to produce grade draft mares.	11. Atavism, or reversion to characteristics of remote ancestors, may occur. Leading causes are change of environment and crossing.
Shetland Pony	Height 10 hands 2 inches. Weight 325 to 375 pounds. Compact build, deep body, heavy muscular quarters, short legs, short broad back, deep full chest, muscular neck, small head and ears, prominent eyes, docile disposition. Colors, brown, black and bay. Long shaggy coats, heavy, long mane.	Child's pony and light driving.	12. Inheritance of acquired characters. Acquired character is gained as result of action, nonaction, or reaction from environment. Such characters may be inherited. 13. Determination of sex. Many theories have been advanced, but in the present state of our knowledge it is not practicable to attempt to control the sex among the mammalian animals.
Shire	Conformation low, broad and stout. Heavy in build, slow in movement. Large girth, deep and strongly coupled with broad back, quarters heavily muscled. legs strong, feet large. Feathering on legs below knees and hocks. Weight 2200 pounds. Height 17 hands. Colors, brown, bay or black with white markings on face and legs.	Draft and crossing to produce grade draft horses.	14. Prenatal influences of doubtful consequence. Pregnant animals should be kept quiet and free from causes which might produce extreme nervous shock. They should have normal exercise.
Standard-Bred Trotter	Head well proportioned, clean cut, neck long and muscular, crested in stallions. Shoulders well muscled, chest low, foreleg long from elbow to knee, short from knee to fetlock. Pasterns sloping, feet moderate in size, oily in appearance. Back and loin well muscled, hindquarters and croup well muscled and smooth. No fixed colors. Height 16 hands. Weight for mares 900 pounds, stallions 1150 pounds.	Racing, driving as a roadster, and breeding. Also heavy - harness horse. Much used in breeding "cow ponies."	15. Four methods of breeding (a) Cross-breeding. A union of different breeds or races or breeding together of different strains of families within the same breed. Increases fertility, size and restores constitution, vigor and thrift. Breaks up established types, and destroys prepotency of the breed. Not certain to produce improvement.
Suffolk Punch	Low-set, short legs, deep body, muscular, durable feet. Head clean cut, with full forehead and Roman nose, neck full, with strong crest, chest deep and wide. Barrel deep, round-ribbed, and well let down on hind flank. Legs and hindquarters muscular. Height 16½ hands. Weight 2000 pounds. Color chestnut.	Heavy draft and crossing on range mares.	(b) Grading. Breeding of unimproved females to males of well-established breeds will invariably improve stock.
Thoroughbred	Very deep, narrow chest, long legs. Refinement and clear definition of feature. Large nostrils, full, clear eyes, broad forehead, neck long and straight, sloping shoulder, muscular hindquarters, sharp withers, well marked superficial blood vessels, silky skin and hair. Colors, bay, brown, or chestnut, more or less white in face and limbs. Height 15 to 16 hands. Weight 900 to 1050 pounds.	Racing, sporting, breeding Influence felt in all but draft breeds.	(c) Inbreeding. Breeding together of close relations. Will fix desirable qualities. Likely to diminish size, weaken constitution, impair fecundity. (d) Line-breeding. Union of animals more or less closely related. Favors fixation of characters, but may result in too great refinement and weakness of constitution.
Welsh Pony	Good shoulders, strong back, neat head, best of legs and feet. Height 12 to 13 hands. Colors, bay or brown, gray or black. Great strength and endurance.	Child's pony and for hack and tradesmen's purposes.	16. Pedigree and individual excellence should both enter into choice of breeding animals. Neither alone sufficient.

SHEEP AND SWINE—Continued

Best Foods	Diseases and Symptoms	Treatment	Bulletins
When horse goes into training, strength of food should be gradually increased. At first may have all hay he will consume. Later it may be necessary to limit it. No carrots. Bran mash once or twice a week if constipated. Oats gradually increased.	*Hives.*—Symptoms: Eruption of swellings from one-half to two inches in diameter on skin. The edges of swellings cut off sharply from surrounding tissue.	Withhold feed for 24 hours. Then give bran mashes and small quantities of hay. Cleanse digestive tract by quart of linseed oil or 1½ pounds epsom salts. To relieve itching, apply alkaline solutions, 1 tablespoonful sodium bicarbonate to 1 quart of water, or a weak solution of ammonia.	Report of Kansas State Board of Agriculture, 1899.
	Heat stroke.—Symptoms: Horse stops sweating, appears droopy in harness, drags along, soon falls and becomes unconscious. Breathing rapid and shallow, pulse rapid and weak, body temperature excessively high.	Treatment energetic. Apply ice bags to head and pour cold water over body to reduce temperature immediately. Give ½ pint whisky, followed by tincture of digitalis in 1 dram doses by mouth or ½ dram doses subcutaneously to stimulate heart. Continue cold water until temperature is reduced to 102 or 103 degrees Fahr. Rub limbs briskly with straw or the hands. Recovery is gradual, over week or two.	
	Moon blindness.—Symptoms: Great irritation in eyeball, excessive flow of tears; eye kept closed and drawn back into socket; mucous membrane on inside of eyelid red, swollen and may protrude between closed lids; eyeball enlarged and cloudy, very sensitive to light.	Keep animal in the dark and wash off eye several times daily with a 4 per cent solution of boric acid. A few drops may be dropped in eye. Ice poultices may be used 3 or 4 days, after which warmth should be applied by covering eye with cotton soaked in warm water. One or two drams of potassium iodide daily have been recommended.	Farmers' Bulletin No. 170.
For the driving horse.—Oats lead among the grains. Bran mash for constipation. When horse is not taken from stable during day, the concentrates should be reduced by one-third. Laxative foods, such as clover or alfalfa hay or bran, in too large quantities should be guarded against.	*Lampers.*—Symptoms: Mucous membrane of mouth becomes congested with blood and protrudes below incisor teeth.	May be relieved by making a few shallow punctures in mucous membrane with a sharp knife that has been thoroughly sterilized. Such treatment demands expert care.	
	Rheumatism.—Symptoms: Animal becomes stiff and lame, followed by rise of temperature (104 degrees Fahr.) A swelling appears around joints of legs which is very painful to the touch. Location may change from day to day, and attacks be intermittent.	Administer a cathartic, aloes balls containing 7 drams of aloes. Thoroughly rub affected joints with a stimulating liniment, as camphor or chloroform liniment. Follow cathartic with salicylates given in form of sodium salicylate. 6 to 8 drams may be given 2 or 3 times daily in food. Keep horse in dry place and give plenty of fresh air.	North Carolina Bulletin No. 189.
For the work horse.—In general, horse should have over 2 pounds of provender daily for each 100 pounds of weight. Of this about two-thirds should be grain, depending on heaviness of work. Morning meal should be rather light, mostly of grain. Midday ration should not be large. Heavy feeding at night. In cold weather a more carbonaceous ration may be used. Equal parts of corn and oats better than larger proportion of oats.	*Colic.*—Symptoms: Animal lags or stops in harness or walks around stall restlessly. Looks around at side, kicks at belly, may grit teeth. Tail gets a peculiar crook and is held extended. May lie down, roll, kick, or make violent movements, as slamming head against floor or biting at self or manger. Attacks may be intermittent.	Give animal plenty of room. To allay pain, cannabis indica, 1 to 2 ounces, may be given, or morphine sulphate, 5 to 7 grains, given subcutaneously. Larger doses of either dangerous. An excellent prescription is fluid extract cannabis indica, 4 drams; tincture opium, 6 drams; sulphuric ether, 1 ounce; sweet spirits of niter, 1 ounce. Give in 1 dose and repeat if necessary in an hour. To stimulate intestines, 8 drams of aloes or 1 pint of linseed oil. Injections of lukewarm water into rectum good. In fermentation colic tapping is quickest and surest method. This requires expert surgery.	Florida Bulletin No. 72.
	Heaves.—Symptoms: Distressing dry cough which often occurs in paroxysms. A double respiration present. Expired air comes from nose in 2 jets, with pause between them.	Condition incurable. Greatest benefit from regulation of diet. All dusty hay should be withheld and small quantities of best timothy given sprinkled with lime or molasses water. Nutritious concentrated foods best: corn, oats and bran with carrots and turnips or apples mixed in.	
For the brood mare.—Much the same as for work horse with the addition of more protein foods, as bran and oil-meal. If constipated, give bran mash. After foaling, a hot bran mash fed once a day has a cooling and laxative effect. To stimulate milk flow, good pasture grass best, but oats or wheat bran with equal weight of corn-and-cob meal is good.	*Bots.*—Symptoms: Cause irritation of walls of stomach and intestines and obstruction of passage between stomach and intestines.	Best treatment preventive. Eggs should be removed from hair before tenth day. If occasional bots noticed in manure, animal should be starved for 12 hours, allowing only water, after which give 2 teaspoonfuls of tartar emetic in water as a drench. Repeat in 4 hours; 8 or 12 hours later give a drench of 1 pint to 1 quart of linseed oil.	Iowa Bulletin No. 18.
	Worms.—Symptoms: Presence of worms in fæces the only sure sign.	Give animals no food for 12 to 18 hours. Then give tartar emetic in two-dram doses every 4 hours until 3 doses are given. Follow in 3 or 4 hours with 1¼ pints of linseed oil.	
	Curb.—Symptoms: A rupture of the ligament on posterior surface of hock with swelling and heat, often lameness. Leg shows bulging backward below point of hock.	In acute inflammation cold water should be applied for 10 to 12 hours daily in constant stream. If lameness persists after a week, a blister of biniodide of mercury 1 part to vaseline 8 parts should be applied and animal should rest for 2 to 4 weeks.	
For the foal.—Should begin to nibble grain from mother's box at 2 months, and at 5 to 6 months be eating well. Should have more protein than work horse. Oats, shorts, peas and perhaps corn, may constitute the grain. Alfalfa, clover and mixed hays may constitute the roughness. Abundant exercise important.	*Founder.*—Symptoms: Onset sudden with fever from 102.5 to 106 degrees Fahr., rapid respiration, increased pulse, intense pain in feet. Animal stands with hind feet well under body.	Give tincture of aconite in 10-drop doses every 2 hours during first day. Allow animal to stand with affected feet in a soaking-tub of cold water, or in puddle of soft clay, water to be kept cold by addition of ice. Give 2 ounce doses of saltpeter in a pint of water 3 times daily for 1 week. Case may need expert attention.	New Jersey Bulletin No. 92.
	Bone spavin.—Symptoms: Onset gradual. Lameness most marked when horse is first brought out of stable and disappears on warming up. Bony enlargement on hock joint.	Proper shoeing will assist in removing lameness. 4 to 6 weeks rest with repeated blisters may give temporary relief. Most successful treatment requires assistance of a veterinarian.	
	Ringbone.—Symptoms: Onset gradual with lameness. Local heat, swelling and pain in joint. Presence of bony enlargement about joint.	Foot should be properly dressed and shod. If lameness is marked, prolonged rest and repeated mercurial blisters (1 part biniodide of mercury to 8 of vaseline) should be applied. If this is not successful, call veterinarian.	
For the stallion.—During breeding season, grain ration should consist mainly of good sound oats, varied by ration of corn, corn-and-cob meal, or barley. Wheat bran is valuable. The roughness should be clean, sweet hay, timothy or timothy and clover mixed.	*Splint.*—Symptoms: Lameness. Pressure over splint will cause animal to flinch. Skin will show increase of temperature and there may be some edema. New bony growth may be seen or felt on front of internal splint bone.	For acute inflammation, let cold water run over part for several hours each day for a week. Hair should be clipped, then apply blister of one dram benzoid of mercury to one ounce of petrolatum. Animal should rest 3 to 4 weeks. In severe cases, call veterinarian.	Special Report on Diseases of the Horse, Bureau of Animal Industry, U. S. Dept. Agr., 1903.

TABLE III. HORSES, CATTLE,

Best Breeds	Characteristics	Uses	Best Foods
CATTLE			
Aberdeen-Angus	Black color, polled heads, rotund compact type, smoothness of conformation, short legs, evenness of flesh when fat, deep, full hindquarters. Beef breed.	Beef. Very valuable in crossing and grading. Little value for milk.	
Ayrshire	Medium size, standard weight for cows 1000 pounds, bulls 1500 pounds or more. A little smoother than Jersey or Holstein but from behind wedge shape is evident. Tips of ears notched, horns white with black tips and curve outward and upward. Body large and deep, ribs well sprung, hindquarters often heavy. Udder shows high development of form and setting. Color variable through red, white, and brown in patches. Mild but active disposition. Dairy breed.	Milk, butter, and cheese. Crossing to improve grade herd.	
Brown-Swiss	Weight for cows 1200 pounds and bulls 1800 pounds. Colors shade from light to dark chestnut brown. Light tuft of hair between horns, on inside of ears, and a narrow line along back. Nose black, mouth surrounded with meal-colored band. Horns with black tips, medium size. Face dishing, large, full eye; ribs well sprung. Hoofs and tongue black, udder large, extending well up in front and rear. Teats large, well placed. Short legs. Dairy breed.	Milk for condensing and butter and cheese making.	
Galloway	Low, blocky animal, with long, soft, shaggy coat of black hair, hornless, well sprung in the ribs, resembling barrel in shape, which is evenly covered with juicy lean flesh. Head short and wide, forehead broad, face clean, nostrils large. Eye large and prominent. Neck short, clean. Shoulders broad, joining body smoothly. Hindquarters long, wide, well filled. Rump straight, wide, carrying width of body out uniformly, well filled with flesh. Thighs broad and thick. Legs short and clean. Beef breed.	Beef, hides and crossing. Very prepotent.	
Guernsey	Clean-cut, lean face, long, thin neck, backbone rising well between shoulder blades, pelvis arching and wide, rump long, abdomen large and deep, udder full in front, of large size and capacity. Teats well apart, and of good even size. Hair a shade of fawn with white markings, cream colored nose, horns amber, small, curved and not coarse. Mature cows about 1050 pounds. Bulls 1200 to 1500 pounds. Dairy breed.	Milk, cream and butter. Cross-breeding.	
Hereford	Color, red and white. Head, including jaws and throat, white, white under neck, down the breast, under belly, and on legs. Bush of tail white, white strip on top of neck to top of shoulders, remainder of body red. Head short, forehead broad, eyes full, horns rather strong and of whitish yellow color, free from black tips, more or less drooping, neck short and thick. Hide heavy and loose and covered with dense soft coat of hair. Breast broad and full, free from loose dewlap. Shoulders broad on top. Ribs well sprung and extending well backward. Rump bones wide apart. Legs short, straight and set well apart. Line of back straight and level. Quarters full and well rounded. Beef breed.	Beef, especially early or "baby" beef.	
Holstein-Friesian	Color, black and white piebald. Head, broad between eyes, eyes large and bright, horns small, tapering toward tips, neck long, chest moderately deep and low, barrel long and wedge shaped, large abdomen, legs rather short and nearly straight and wide apart. Hair fine, soft and furry. Udder very capacious, extending well forward in front; teats well formed and wide apart. Dairy breed.	Milk, butter and cheese. Fair beef qualities.	
Jersey	Small head, muzzle black or dark in color surrounded by light or mealy strip of light skin and hair. Eyes prominent, bright and wide apart. Horns crumpled, small, often black tipped. Neck fine, clean and small. Legs short, fine boned and small. Body well rounded, large and deep. Skin mellow, loose, yellow, with short fine silky hair. Udder large, not pendulous. Teats medium size, placed far apart. Back straight from shoulder to tail. Movement light and graceful. Cows 800 to 1000 pounds, bulls 1200 to 1500 pounds. Dairy breed.	Milk and butter.	
Red Polled	Weight for bulls 1800 to 2000 pounds, cows 1300 to 1500 pounds. Color red. Nose flesh color. Switch of tail and udder white. Head medium length, wide between eyes. Poll well defined and prominent, neck of medium length, clean cut, straight from head to top of shoulder. Chest broad and deep, back long, straight and level, hips wide and well covered, legs short and straight. Udder full and flexible. Teats well placed and wide apart. Hide, loose, mellow, with full coat of soft hair. Dual purpose breed.	Beef, milk and butter.	
Shorthorn	Head wide between eyes, short from eyes to nostril. Horns short, curved forward, waxy white with dark tips. Neck short and fine. Back straight, level and broad and deeply covered with flesh. Thighs wide, deep and long, well filled down in the twist. Body deep, squarely built. Flanks well let down, underline nearly straight. Legs medium length. Colors, pure red, pure white, a mixture of these colors, or roan. Beef breed.	Beef, crossing, grading. Fair results for milk, butter and cheese.	

For dairy cattle

1. The dairy calf.—Avoid fattening feeds. Choose such as tend to develop a vigorous muscular system. Gradually substitute skimmed milk for full milk after first few days. A small quantity of some concentrated feed, as shorts, linseed meal, or flaxseed meal boiled into a jelly with water (1 part meal to 6 of water) is fed daily with the skimmed milk. Milk should be at blood heat unless calf is accustomed to cold milk. At 6 or 8 weeks other feeds are given, preferably oats wheat middlings, or a mixture of both. For older calves, mill feeds, oil-meal, barley, malt sprouts, etc., are desirable. Keep fine quality of early-cut hay before calves.
2. Dairy heifer.—As time of parturition approaches, feeding should be plain, good clean hay from clover or mixed grasses, corn fodder, corn silage (not to exceed 25 to 30 pounds a day) or roots. Both dry and succulent roughage is fed, and small amounts of bran, ground oats, shorts, gluten feed and perhaps corn. Shortly before calving, feeding of all grains except about 2 pounds of bran, is discontinued and dry roughage and roots are fed till cow freshens. Directly after calving a warm thin slop of oatmeal, bran or shorts is given or warm water only. Until danger of fever is over, feed should be very light and gradually increased for 2 or 3 weeks until cow is on full feed. Corn meal good for a heavy milking heifer.
3. Dairy cow.—
   (a) Summer.—Ample pasturage. Later in the season add soiling crops, such as corn, alfalfa, peas and oats, rye, rape, etc. Summer silage: corn, red or other clover and alfalfa. 30 pounds of soiling crop or silage average allowance for dairy cows on poor pastures, to be increased as conditions demand. In case of heavy milkers or very short pasture, add few pounds of wheat bran or wheat bran and oats, throughout season.
   (b) Winter.—Succulent feeds should be provided during entire lactation period. Silage and roots are main available feeds. Best results from not over 40 pounds silage fed daily, and fed with some dry roughage, hay or corn fodder. Protein feeds, as clover hay, wheat bran or oil-meal should be fed with corn silage or fodder. Clover hay or hay of other legumes stands first for dairy cows. Pure timothy, especially if late cut, is a poor cow feed. Other kinds of hay are millet, oat, sorghum, alfalfa and pea. Common concentrates are the cereals and mill refuse, starch or glucose factory refuse, brewery and distillery feeds and oil-meals. Good rule is to feed as many pounds of grain feeds a day as cow produces pounds of butterfat during week and to feed as much roughage as cow will eat up clean. Should give variety of feeds containing liberal amount of easily digestible substances. Feeding must be regular.
4. Dairy bull.—Ground oats, wheat bran, gluten meal, oil-meal, silage, clover hay; grain ration not to exceed 5 or 6 pounds per day for 1000-pound animal. Keep animal vigorous, not fat and lazy.

For beef cattle

Baby beeves (10 to 16 months).—Require heavy grain feeding. Corn depended on largely, fed with a food rich in protein, as oil-meal or gluten feed. Oats and bran may be added if not too expensive. Good ration is 5 pounds corn, 2 pounds oats, ½ pound oil-meal, plenty of good clover or alfalfa hay. Corn silage is valuable. Daily ration must be increased as fast as calves can handle it.

Long yearlings (18 to 23 months).—When calves are born in spring they are given little or no grain before or after weaning. Through summer and fall depend on grass. In winter a liberal feed of hay with small allowance of grain. Pasture without grain following summer and full feed of grain next fall and winter. If roughage is largely alfalfa, clover or cowpea hay, the grain ration may consist of corn alone. If other roughage used, supplement corn with equal weight of bran, or one-third to one-half of that weight of oil-meal. In the second fall feed close grown corn fodder, shelled corn, alfalfa, clover or cowpea hay. If non-legume roughage used make night grain ration one-fifth to one-fourth oil-meal, gluten or cottonseed meal.

Short two-year-olds.—Finish by feeding grain in connection with spring and summer pasture. With this system a light grain ration is fed the first winter and less than half feed of grain second winter. Soaked shell corn is effective for spring and summer feeding.

Fall feeding two-year-olds.—Corn fodder on pasture. May begin about September 15 and continue in field for 3 months. Begin with 3 pounds of corn a day and increase till cow's capacity is reached. 3 pounds bran and 1 pound oil-meal or cottonseed meal per steer per day will greatly increase gains.

Winter feeding range two-year-olds.— Cattle which have had no grain during summer and fall. Snapped corn most used early in feeding with alfalfa, clover or cowpea hay. Field-cured stalks with alfalfa equally good. After 6 to 8 weeks begin shelled corn gradually to replace snapped corn. If non-leguminous hays used, supplement corn with about 2 pounds per day of bran, oil-meal, gluten or cottonseed meal. On full feed will take 20 to 25 pounds grain per day, plus all roughage desired.

Range three-year-olds.—Require smaller proportion of protein foods than above, but consume a larger proportion of grain to hay.

SHEEP AND SWINE—Continued

Brief Breeding Rules	Diseases and Symptoms	Treatment	Bulletins
1. Age of puberty 4 to 18 months.	*Caked udder.*—Part or all of udder becomes enlarged and firm. Cow is depressed and there may be a slight rise of temperature. Gland is sensitive to pressure and flow of milk is lessened. Milk is watery and may be tinged with blood.	Give sparingly of milk producing food. Massage udder with hand and rub in camphorated oil or tincture of iodine 1 part, alcohol 8 parts. Then severe warmth should be applied by sponges wrung out of hot water and held against udder. In case of development of abscess or gangrene expert assistance will be needed.	Herdbooks of all breeding and registration societies. Special Report on Diseases of Cattle and Cattle Feeding, U. S. Department of Agriculture, Bureau of Animal Industry, 1892. Revised 1904.
	Chapped teats.—Symptoms: Apparent on teats. May cause great difficulty in milking.	In fresh cows wean calf as soon as possible. See that teats are dry before cow goes out into the cold or wet weather. Bland antiseptic ointment, as a 10 per cent ointment of calomel in petrolatum should be applied after milking. Yellow oxide of mercury in a 5 per cent ointment is also good. Care must be taken to prevent milk becoming contaminated. In very bad cases milk should be withdrawn for few milkings with tube and udder massages. End of teat and milking tube must be sterlized before inserting. Astringent applications, as lead water with laudanum or tannic acid ointment, are good when there is considerable discharge from the sores.	Bureau Animal Industry Circular No. 51.
2. Best age for breeding beef cattle, 20 to 27 months, dairy cattle 18 to 24 months.			Same Bulletin No. 108.
			Same, 15th Annual Report.
	Milk fever.—Symptoms: Attack usually comes on within two days after calving. Cow is restless, staggering gait, especially in hind legs, weakening of knees and fetlocks in front. This increases until paralysis becomes general, and animal goes down. Cow takes very characteristic position—head turned round to side, usually left, rests against chest, causing peculiar arching of neck. If head drawn out straight, immediately flops back to above position. Animal quiet and insensible.	Because of paralysis of the throat, great care should be taken in administration of medicines by the mouth. Patient should be kept in an upright position on the breastbone, and not on her side. Only successful treatment is the injection into the udder of atmospheric air, which requires the assistance of a surgeon.	Farmers' Bulletins Nos. 55, 205, 346.
			Connecticut Reports, 1893-1901.
3. Period of heat, 40 to 60 days after delivery, if suckling the calf, and 20 to 30 days if calf is taken away at birth. Period recurs each 3 weeks thereafter. Duration 12 to 24 hours.			Cornell Bulletins Nos. 268, 269.
			Florida Bulletin No. 96.
	Sore tongue.—Inability to eat, frequent movement of lips with formation of froth on their margin, driveling of saliva. Ulcers occur on gums around teeth, inside lips and on tip of tongue. Muzzle dry and parched, and crusts and scabs form over the parts. The thin skin in clefts between jaws may become fissured and eroded, causing a slight swelling with pain. Animal takes position with back arched and feet propped under body.	Remove herd from pasture to barn or corral and feed on soft nutritious food, such as bran mashes, ground feed and gruels. Keep clear cool water in manger. Dissolve 2 heaping tablespoonfuls of borax or one tablespoonful potassium chlorate in each of first 2 buckets of water taken during day. Astringents, such as ½ tablespoonful alum, borax or chlorate of potash, should be placed on tongue. Feet may be treated with a 2 per cent solution of carbolic acid or of creolin. Fissures or lesions of skin benefited by carbolized vaseline or zinc ointment.	Georgia Bulletin No. 49.
			Illinois Bulletin No. 142.
			Indiana Bulletins Nos. 129, 130, 136, 137; Circulars Nos. 12, 14.
4. Period of gestation 9 to 9½ months (285 days).			Kansas Bulletin No. 81.
	Indigestion.—Symptoms: When stomach and small intestines affected, loss of appetite and rumination, coated tongue and emaciation. Constipation is usual, although diarrhœa may be present. Fæcal matter contains imperfectly digested food and more or less mucus. When large intestine involved, appetite may not be affected. Diarrhœa marked, droppings coated with mucus. No undigested food present. Animal will lose flesh and become hidebound.	In constipation, 1 quart of castor oil should be given. Easily digested and nutritious food should be given in small quantities. Green food best or hot bran mashes, with small amount of good sweet hay. In diarrhœa and fermentation a mixture of bismuth subnitrate 1 dram and creosote ½ dram shaken up with milk or given as a drench twice daily for 2 or 3 days is beneficial. For a tonic powder, nux vomica 1 dram, reduced iron ½ dram, powdered gentian root 1 ounce, should be given in the feed 2 or 3 times daily for a few weeks.	Louisiana Bulletins Nos. 104, 115.
			Maryland Bulletin No. 84.
			Massachusetts Report, 1908.
Breeder should work toward a certain standard or ideal and should choose parents that approach that ideal. The parents, especially the male, should have known ancestry of approved type, as there is less danger of undesirable variations in the offspring.			Michigan Bulletins Nos. 149, 257; Circular No. 4.
	Choking.—Symptoms: Champing of jaws, driveling of saliva, ceasing to chew and choking movements, head extended, eyes bulging, inability to swallow.	When obstruction is in pharynx, a block of wood should be placed in mouth between back teeth, and object removed with hand. If in gullet, small amount of olive oil should be given at frequent intervals to lubricate the esophagus and allow object to pass into stomach. If this fails, the probang, a long, hollow, flexible tube, may be used. It is oiled. By means of probang, foreign body gradually forced into stomach.	Mississippi Bulletins Nos. 70, 121.
			Missouri Bulletins Nos. 53, 58.
	Cough.—Symptoms: Chilly sensations or a chill followed by rise of temperature to 103 to 105 degrees Fahr., loss of appetite and rumination, dry muzzle, constipation, rapidity of pulse and respiration. Cough at first dry, harsh and painful. Later cough becomes moist and there is nasal discharge.	Animal should be placed in light, comfortable stall and given plenty of clear water. Keep bowels open with 1 pound of Glauber's salts. Feed green succulent materials if possible or bran mashes and moistened hay. An electuary consisting of extract of belladonna leaves 5 grains, morphine sulphate 3 grains, powdered licorice-root 4 drams and sufficient sirup to make an electuary, should be given on tongue 4 times daily. If cough persists after the secretion ceases a mixture of ammonium chloride 1 dram in ½ ounce of brown mixture should be given 4 or 5 times daily.	New York (Geneva) Bulletin No. 317.
			Ohio Bulletin No. 193.
The feeding and environment are important if best results are desired.			Oregon Bulletin No. 102. Pennsylvania State Board of Agriculture Bulletin No. 16.
	Warts.—Symptoms: Appear as grayish or grayish red projections of skin or mucous membrane. Favorite location is udder and teats, sides of head and neck, on lips and belly.	May be removed with scissors or fingers, or ligatured by rubber band or horsehair. Roots should be cauterized with tincture of iron, glacial acetic acid or lunar caustic. Acids should not be used around eyes or mouth. When warts are found in large numbers, arsenic in form of Fowler's solution should be given in 1 teaspoonful doses twice a day for a 6-months calf.	Pennsylvania Bulletin No. 88; Report, 1908.
The various breed associations have established standards of excellence which serve as guides to breeders in choice of parents.			Rhode Island Bulletin No. 77.
	Mange.—Symptoms: Contagious disease. Points of redness, pimples, vesicles and formation of scabs. Intense itching which becomes unbearable at night in hot stables or when exposed to sun. Animals scratch, rub, and bite themselves. Hair falls out and skin is bloody. In worst stages skin moist and bloody, ulcerated, scabby, thickened and wrinkled.	A good combination of drugs for killing parasites is flowers of sulphur 1 ounce, vaseline (or lard) 10 ounces. Best method is to dip animal in a vat containing flowers of sulphur 24 pounds, unslaked lime 12 pounds, water 100 gallons. This should be repeated in 10 days to 2 weeks.	South Carolina Bulletin No. 67.
			Tennessee Press Bulletin No. 1900.
	Ringworm.— Symptoms: Formation of circular patches on skin which soon becomes denuded of hair. Outer layer of skin is inflamed and vesicles form which exude a gummy liquid. Scaly crusts are formed, usually on head and neck.	Remove crusts by washing with soap and water, then apply acetic acid, 10 per cent sulphur ointment, tincture of iodine, or nitrate of mercury ointment once daily. Cleanse and whitewash stable to destroy spores scattered by crusts.	Texas Bulletin No. 110.
For additional breeding rules, see horses.			Wisconsin Bulletins Nos. 33, 38, 116, 117, 151.

TABLE III. HORSES, CATTLE,

Best Breeds	Characteristics	Uses	Best Foods
SHEEP			
Cheviot	Medium size, hornless, face and legs white, body closely covered with wool of soft fiber and pure white. Head bold and broad. Fleece forms almost a ruff about face. Deep and large in breast, back wide and straight. Short legs set well apart, hoofs black. Mature rams 200 pounds, ewes 150 pounds.	Mutton. Not superior as a wool producer. Wool of good quality, but light.	A clean and dry feeding place is necessary. Regularity in feeding imperative. Ordinarily best to feed sheep twice a day. Sheep need to have access to salt and water at all times.
Cotswold	Large, high-standing breed with heavy fleece of long white, lustrous wool. Ample topknot often covering eyes. Bold upright carriage. Head moderately small, face white or mixed with gray, eyes prominent, neck short, thick and strong, shoulders broad and full, back broad, breast broad and well forward, quarters long and full, mutton quite down to hock. Weight of ram 250 pounds, ewe 200 pounds.	Mutton and wool, the latter especially. Crossing on native and merino sheep.	*Feeding lambs.*—When ewe has a single lamb, not necessary to feed any grain until near weaning time. When a ewe has two lambs, they should get some grain. If lambs are to be sold before weaning, grain feeding must begin as early as possible. A mixture of three-fourths corn meal and one-fourth bran is satisfactory. Right after weaning it is well to have fresh pasture, or rape or other succulent feed. In addition, lambs should be fed liberally on grain.
Dorset-Horn	Face and legs pure white, flesh-colored nose. Both sexes have horns. Eyes prominent, neck short and symmetrical, shoulders broad and full. Chest full and deep, quarters wide and full with mutton extending down to hock. Fleece medium grade, of even quality, extending over belly and well down on legs. Short stout legs. Weight for rams 200 pounds, ewes 160 pounds.	Mutton breed. Early breeder, valuable for production of hothouse or winter lambs. Fleece light.	For fattening, corn is best. combined with peas and bran, Grain feeding must come gradually. For fattening mature lambs during fall, good grass pasturage and rape or rutabagas, with a mixture of corn and oats, is most satisfactory.
Hampshire Down	Black face, head large, well covered with wool on forehead and cheeks, nostrils wide. Ears large and drooping, eyes prominent and lustrous, legs well under outside of body, straight, almost black. Chest deep and full with breast prominent and full, back straight, quarters long and deep in thigh. Ewes prolific and heavy milkers. Weight for rams 250 pounds, ewes 185 to 195 pounds.	Mutton and production of early market lambs. Fleece inferior.	For final fattening, lambs should be confined in yard. During winter dry succulent fodder with grass will give good results; for dry fodders, alfalfa or clovers; for succulence, corn silage or roots; for grain, corn, oats, bran and oil-meal or cottonseed meal.
Leicester	Hornless, large size, rectangular form of body on clean legs, bare faces or carrying a very scant topknot. Head long, tapering toward muzzle, face wedge-shaped, covered with fine white hairs, eyes large and prominent, neck strong and moderately short. Breast deep, broad and full. Back broad and well fleshed. Legs of moderate length. Fleece fine, uniform, curly, with bright luster.	Crossing purposes to get early lambs for market. For wool especially, and mutton.	To fatten lambs in a short period give preparatory feeding on rape or roots for about six weeks. Should have pasture before going on rape, which must be restricted in quantity. For grain, begin with bran or oats. Give one-fourth pound per head daily at start. Increase quantity slowly. At end of a month about 1 pound per head, which should consist of ½ corn and ½ bran or oats, given in 2 feeds. For fodder, clover hay, corn stalks or pea-straw. Increase amounts gradually.
Lincoln	Large size with heavy fleece of long wavy or curly wool and moderate tuft of wool on face. Color white, head large, without horns, body deep, back wide and straight. Legs broad and set well apart. Weight for rams 250 pounds, ewes 200 pounds.	Wool. Crossing, especially on merino stock.	*Breeding ewes.*—Fond of clover hay, alfalfa, alsike, pea-straw, shredded corn fodder and oat hay. A ewe weighing 100 to 150 pounds will eat 2 to 3 pounds of such fodders daily during winter. May need to supplement pasture with small grain, as oats. Just before lambing time, ewes should be fed liberally on variety of roughage. Some succulent food, as corn silage and roots, will help to produce good flow of milk. After lambing they should receive some wheat bran or oats, unless they can go on good pasture.
Merino	Distinguished by its very fine wool, usually delicately crimped. Wool generally short and dense. Grows to tips of ears and hoofs of feet. Form, when shorn, angular, shoulders narrow, back not usually so straight or strong as English breeds, legs less straight and neck more slender. Ram usually has horns. Very enduring and resistant. *The American merino* has 3 to 5 heavy folds on neck, and folds on arm and sides and across hips. Fleece covers entire sheep except tip of nose and hoofs. Eyes hidden by wool. Outside of fleece a dirty brown, but inside white. Ewes 80 to 100 pounds, rams 100 to 175 pounds. *Delaine merinos* have smoother bodies than the American, and fewer folds and wrinkles. Mature ewes 100 to 150 pounds, rams 140 to 200 pounds. *Rambouillet merinos* have large bodies, usually smooth and free from wrinkles, except perhaps on neck. Fleece fine and white. Rams usually have large spirally curved horns, ewes hornless. Legs long. Rams 175 to 185 pounds, ewes 140 to 160 pounds.	Wool Fleece especially fine, strong and heavy. Used for crossing to increase wool production. Delaine merino mutton of fair quality.	*Feeding rams.*—For ram lambs, clean, heavy oats and pasture are best. In winter, clover hay and corn fodder, roots or silage, should constitute the ration. During breeding season, bran, oats, roots and clover hay should be fed liberally.
Oxford Down	Largest of down breeds. Nearly straight on underline. Long and coarse fleece. Very stately appearance. Color of face and legs brown, which is often flecked with gray. Ewes very prolific and heavy milkers. Not hardy under American climatic conditions. Rams 250 to 350 pounds, ewes 180 to 275 pounds.	Representative mutton breed. Fleece long and coarse.	
Shropshire Down	Dark brown face and legs. Broad head, short face, thick muscular neck, body somewhat barrel shaped, except that it is straight on back Body, head and legs to knees covered with fleece of even length and quality. Weight for rams 225 pounds, ewes 175 pounds.	Mutton and wool.	
South Down	Smallest of down breeds, but the model in form. Short straight legs, wide apart; broad level back thickly fleshed; long broad hips; neck short, thick at shoulder; head small, forehead full, face short, eyes prominent, ears small. Face and legs uniform reddish brown. Hindquarters carry down very heavy; breast broad and prominent. Fleece compact, long and close wool, white and carrying some yolk. Best weight for rams 200 pounds, ewes 150 pounds.	Mutton breed; used for crossing to produce early lambs. Wool of good quality.	
Suffolk Down	Large, rangy sheep, black-faced, hornless, with long clean, black legs. Wool is of good quality and mutton is excellent. A good feeder and very prolific.	Mutton breed; used also for crossing. Wool is short.	

Best Breeds	Characteristics	Uses	Best Foods
SWINE			
Berkshire	Rather more than medium size. Snout of medium length, face dished. Ears nearly erect, well carried. Jowl heavy. Neck short with considerable crest. Shoulder, back and rump of good width. Body deep. Ham thickly meated, strong constitution. Color black with a white mark on face. White on each foot and on tip of tail.	Lard and pork. Meat lean and of high quality.	*Breeding boar.*—Should not be overfed, but given just what he will eat up clean. Ration needs to be varied and have bulk, and always contain a succulent food. Young boars should be fed more concentrated foods than older animals. Boar should be fed more liberally during breeding season, than remainder of year. Food should consist of grain (finely ground oats with one-third to one-half ration of wheat middlings or wheat bran), skimmed milk, succulent food (roots, finely cut second-crop clover or alfalfa leaves).
Cheshire	Medium size. Body has good length. Shoulders and hams well developed. Face slightly dished. Ear small and erect. Bone fine and of fair quality. Color white. Black spots often occur on skin.	Lard, pork and bacon.	
Chester-White	Medium size, face straight or very slightly dished. Ear droops and is somewhat loosely attached to head. Color white, hair in many specimens wavy or curly. Neck wide, deep and short. Jowl smooth, neat and firm. Shoulders broad, deep and full. Chest large, deep, full in girth. Sides full, smooth, deep; ham broad, full, long, wide and deep. Back broad on top, straight or slightly arched, legs short and straight. Coat fine. Weight of boars 2 years old 500 pounds, sows 450 pounds.	Lard and pork. Crossing, especially with Poland-China.	*Breeding sows and young.*—Good pasture (blue-grass, clover, field-pea, alfalfa, cowpea, soybean) is essential and cheap. Mature sows need little except good pasture in August and September. In October about 2 pounds per head of corn should be given. After sows are bred they should have pasture and some grain, preferably equal parts of corn and oats at the rate of 3 or 4 pounds to 300

SHEEP AND SWINE—Continued

Brief Breeding Rules	Diseases and Symptoms	Treatment	Bulletins
Age of puberty 6 to 10 months. Best age for breeding 18 to 20 months. Period of heat, regularly during spring and autumn months. At other seasons period is irregular and often absent. Duration 2 to 3 days. Period of gestation 5 months (21 weeks). One ram to 30 to 50 ewes. Ram may be allowed to run with flock at night. In north, breed in October to December to get lambs in March-May; in South breed in August or September. Ewes have passed greatest usefulness at 7 to 8 years. Lambs may be allowed to run with mother 3 to 4 months. Should be weaned by 4 months. To get hot-house lambs, have rams and ewes in good physical condition, not overfat. Use a young ram and keep him well fed while in service. Give ewes abundance of succulent food and some corn. If ewe was not shorn in fall, shear as early as safe. Have ram with ewes not earlier than March 15 nor later than May 15. For additional breeding rules see horse.	*Stomach worm.*—Symptoms: Sheep become unthrifty, dull and lose flesh and strength. A soft non-inflammatory swelling appears under the jaws. Diarrhœa appears. *Tapeworms.*—Symptoms: Slow development. Weakness and loss of flesh. Flanks are drawn up or distended with gas. Unsteady on feet. Excessive diarrhœa may develop. *Bloating.*—Symptoms: Abdomen becomes bloated and distended, filling with gas. Feeding falls off, animal shows stupidity, and respiration is difficult. *Liver rot or fluke disease.*—Symptoms do not appear until disease is far advanced. Rapid loss of condition and weakness, wool becomes dry and may drop off. Eyes and lips become bloodless. Appetite falls off. Bowels irregular. *Gid, staggers or sturdy.*—Symptoms: Animal moving in a circle, swaying, reeling, running forward with head elevated, turning about sharply, showing lack of control. Animal may be stupid. Eyes becoming staring, sight lost. *Scab.*—Symptoms: Sheep scratch, rub and bite infested places. Little blisters form which rupture and exude a yellowish liquid which dries on skin and forms scab. Mites may be found in margin of scab. Wool mats and falls out. Shoulders, sides, back and rump most affected. *Sheep Ticks.*—Symptoms: Animals show itching and pain caused by ticks, and bite and scratch themselves. *Foot rot.*—Symptoms: Lameness is apparent. Foot reveals red, moist spot in cleft just above the horny part. A sticky offensive discharge from hole in horn of hoof follows. Just above hoof there is swelling, accompanied by heat and sensitiveness. *Paper skin or lung worm disease.*—Symptoms: A fitful or spasmodic cough leaving animal almost suffocated. Discharge accompanies cough. In final stages skin becomes dry and papery. Appetite falls off, resulting in weakness and decline. *Sore feet and sore mouth.*—Symptoms: Lameness and difficulty in eating. Ulcers appear on skin of leg above hoof and in membrane lining the lips. *Garget.*—Symptoms: Udder is swollen and hot. Milk contains streaks of blood or clumps of pus. *Grass staggers.*—Symptoms: Failing appetite, constipation, abdominal pain, fever, restlessness, unsteadiness, delirium, running against objects aimlessly. *Scours.*—Symptoms: Offensive diarrhœa, loss of appetite, distended abdomen, abdominal pain. Depression and weakness.	Change flock to high, well-drained land which has not been occupied by sheep for some time. Feed generously and provide plenty of salt. Mix 10 drams of coal-tar creosote in a gallon of water and give to lambs 4 to 6 tablespoonfuls, and to yearlings and older sheep 8 to 10 tablespoonfuls every other day until 3 doses have been given. Feed should be withheld for 12 hours before and 3 hours after medicine. Fringed tape worm difficult to control by medicine. For broad tapeworm, give every sheep in flock ½ to 1 dram of extract of male fern in 2 to 4 ounces of castor oil, or 1 to 1½ drams of kamala. Withhold feed night before and in the morning of the day in which the medicine is given and give no water for 5 or 6 hours after medicine. Surgical treatment is necessary. Remove sheep to high, dry pastures and separate the sick from the well. Give nourishing food and plenty of salt. Infested pastures and pools should be drained and should be used for other purposes until clean. Snails should be destroyed. Drugs have little effect. Animals in advanced stage should be slaughtered. Carcasses of infested sheep should be completely disposed of so that dogs cannot get at them. As precaution, give dogs that have run of place 1 or 2 teaspoonfuls of castor-oil, followed 12 to 24 hours later by 25 minims of extract of male fern, followed with another dose castor-oil in 2 hours. Keep dog tied and burn all discharges. Shear all sheep and confine for 2 to 4 weeks. Then dip in a mixture that will kill the mange mites. Lime and sulphur dip is very good. Repeat 7 to 10 days later. Each sheep must be kept in dip 2 minutes and head dipped at least once. Dip flock in lime and sulphur mixture or in a kerosene emulsion. Dip twice with an interval of two weeks. Pens and resting places must be thoroughly cleaned before animals are returned. Treat feet of healthy sheep with a solution of 1 pound chloride of lime to 12 quarts water or 1 pound carbolic acid crystals to 4 gallons water. Remove sheep to clean fields. To treat diseased sheep, cut away all loose or undermined horn and all proud flesh, and stand sheep for 10 minutes in solution containing 4 pounds copper sulphate in 5 gallons water. When disease has reached deeper, area should be washed with a solution containing 1 ounce carbolic acid crystals in 20 ounces water, then dusted with a powder of equal parts boric acid and oxide of zinc and covered with soft bandage. Market infested animals or separate from flock. Remove flock to clean inclosures and give nourishing feed, plenty of salt and pure water. Fumigation is best, using a mixture of flowers of sulphur and alcohol in a deep vessel floating in pan of water. Place in tight room and ignite. Attendant should remain to see that none suffocate. A mixture of 1 part salt to 25 parts of copperas should be kept constantly before sheep. Remove scabs and wash twice daily with solution of 1 tablespoonful creolin in 1 quart of water. Then paint infected parts only with Lugal's solution of iodine. Give 5 ounces of epsom salts dissolved in a pint of water, as purgative. Bathe udder often with warm water and rub with camphorated oil, and keep udder milked out clean. Affected animals should receive a strong laxative. Then give 2 tablespoonfuls, twice a day, of following mixture in a half pint of linseed tea: Aromatic spirits of ammonia 1½ ounces, alcohol 2½ ounces, fluid extract of nux vomica ½ dram. 2 teaspoonfuls castor-oil containing 2 or 3 drops of creolin should be given at once and followed by a tablespoonful of following mixture 3 times daily: Paregoric 1 dram, subnitrate of bismuth 2 drams, sherry wine 3 drams, salol ½ dram, mucilage of acacia 5 ounces.	Best breed information found in flockbooks published by the various breed societies. Experiment station records will reveal innumerable experiment station bulletins. Arizona Bulletin No. 60 Report, 1908. Illinois Bulletin No. 129, Circular No. 125. Michigan Bulletin No. 178. Missouri Board of Agriculture, Missouri Bulletin 7 (1909), No. 2. Missouri Station, Circular Information No. 25. Nevada Bulletin No. 63. New York (Cornell) Bulletin No. 285. Oklahoma Report, 1908. Tennessee Bulletin No. 84. Wisconsin 23d Report. Virginia Bulletin No. 178. Wisconsin Report, 1907. Wyoming Bulletins Nos. 79, 81, Report 1908.

Brief Breeding Rules	Diseases and Symptoms	Treatment	Bulletins
1. Age of puberty 3 to 7 months. 2. Best age to breed 8 to 12 months. 3. Period of heat, 3 days after weaning the pigs and every 9 to 12 days thereafter. Duration 1 to 3 days. 4. Period of gestation 112 to 116 days.	*Mange.*—Symptoms: The crusts about eyes and ears are often the first evidence of disease. Disease spreads until it may cover entire body. Marked itching. Sometimes loss of flesh and decline. *Verminous bronchitis.*—Symptoms: Bronchial tubes inflamed, very severe coughing. Growth stunted. Caused by a small round worm in bronchial tubes. *Paralysis.*—Symptoms: Hind legs affected first, gradually extending over entire body. *Rickets or rachitis.*—Symptoms: Animals stunted and poorly nourished. Lameness appears and bones about joints swell. Bones may become very weak and body fall over.	Crusts may be removed by scrubbing with soap and water followed by application of a 3 per cent solution of creolin or an ointment made of sulphur 2 drams, resorcin 1 dram and vaseline to make an ounce. Continue daily until all parasites are killed. When large numbers are affected, dipping in lime and sulphur dip (described under mange in cattle) is necessary. Dipping should be repeated after 6 days. Kill adult pigs for food in first stages. Give young pigs a teaspoonful of turpentine in swill 3 times daily. Surgical treatment requiring extreme care is necessary. Feed concentrated and nutritious food rich in proteids. Milk, middlings, bran and ground bone meal are good. Lime water should be given. Sunlight, fresh air, clean quarters and exercise must be provided. Precipitated phosphate of calcium in 1 dram doses 2 or 3 times daily in the feed, with oil of phosphorus in 1 drop doses is helpful.	Best breed information found in herdbooks published by various breed associations. Bureau of Animal Industry Bulletin No. 48. Farmers' Bulletin No. 331. Colorado Bulletin No. 146. Report 1907. Illinois Circulars Nos. 126, 133. Indiana Bulletins Nos. 100, 126. Iowa Bulletin No. 106. Mississippi Bulletin No. 107.

TABLE III. HORSES, CATTLE,

Best Breed	Characteristics	Uses	Best Foods
SWINE—Cont'd **Duroc-Jersey**	Medium size, fine bone. Snout medium length, face slightly dished, ear drooped, jowl heavy, body wide and deep set on short legs. Ham heavily fleshed. Cherry red the popular color, but yellowish red and chestnut are often seen. Weight of boars 2 years old 600 pounds, sows 500 pounds.	Lard and pork. Crossing, especially with Berkshire and Poland-China.	or 400 pound sows, until late December. Then substitute daily 5 or 6 pounds of ration, ground oats 2 parts, ground corn 2 parts and bran 1 part. Skimmed milk is especially recommended for mixing grain ration. In winter give liberally of clover, alfalfa, or pea-hay.
Hampshire or **Thin-Rind Swine**	Medium size, face straight, ear inclined forward, but does not droop. Jowl light, as is also shoulder and ham. Back of medium width. Legs of medium length and bone of good quality. Color, black extremities with a white belt 4 to 12 inches wide encircling body and including fore-legs, which should also be white. Weight, boars 2 years old 450 pounds, sows 400 pounds.	Bacon and pork. Almost general purpose.	For first 24 hours after pigs are born, give sow no food. Then give light ration of ¼ ground corn, ½ shorts. ¼ ground oats mixed with 3 to 5 pounds skimmed milk to one of grain. Pigs should be given a little feed at 3 weeks, using same ration as for sow. Feed liberally to 3 months of age.
Large Yorkshire or **Large White Swine**	One of the largest breeds. Snout of medium length, with little or no dish. Moderate dish in face. Jowl of good width and muscular. Ears rather large, firmly attached, fringed with fine hair. Shoulders and back of medium width. Side long. Ham lighter than that of lard type with flesh carried well round inside of thigh. Legs medium length. Bone fairly heavy, clean and flinty. Color, white.	Bacon. Valuable for crossing on Poland-China, Berkshire and Chester-White.	*The bacon hog.*—Best feeds are mixed peas, barley, oats, shorts and skimmed milk. Barley, ground or soaked over night is feed most used. Oil-meal or tankage may be added advantageously. Summer feeding on pasture of clover, alfalfa or rape. *The lard hog.*—Principal source of food the undigested food in droppings of steers. Follow steers with equal number of pigs of about 6 months of age, and give them one-fourth to one-third pound of tankage daily. For the last 4 or 5 weeks of fattening they should be removed from steer lots and fed as much corn as they will consume. Method will vary according to method of feeding the steers. Pigs that do not follow steers are fattened on pasture, clover or alfalfa or June-grass being best. Corn alone or abundant clover pasture is excellent ration.
Poland-China	Medium size. Face slightly dished. Jowl full and heavy. Ears fine, firmly attached; about one-third of ear droops. Neck short, thick and heavily arched on top. Shoulder heavy. Side short. Back wide. Ham very wide and deep. Legs short, bone fine. Black, with 6 white points on face, feet and tip of tail. Weight of boars 2 years old 600 pounds, sows 500 pounds.	Lard and pork. Valuable in crossing.	
Tamworth	Should have golden-red hair on a flesh-colored skin, free from black. Snout long and straight. Ear large. Jowl narrow and light. Neck and shoulder are light; back and loin of medium width, side of good length, moderately deep. Rather deficient in ham. Legs long and strong.	Bacon. Crossing, especially with Berkshire.	

TABLE IV. CHICKENS, TURKEYS,

Best Breeds	Characteristics	Uses	Best Foods
CHICKENS **Plymouth Rock**	Three varieties, the barred, white and buff. Back and body rather long, breast broad and deep. Single combs, yellow shanks. Cocks weigh 9½ pounds and hens 7½ pounds.	General purpose, for both meat and eggs. Brown egg.	A good ration must contain sufficient digestible nutrients to meet needs of animal. Animal's appetite is safest guide as to amount of food needed.
Wyandotte	Eight standard varieties, white, buff, black, silver, golden, silver penciled, partridge and Columbian. A bird of curves, back short and broad, body deep and round, breast broad and deep, with a low-set keel. Shanks short, strong and carried well apart. Colors silver, white, black, buff and mixtures. Close-fitting rose combs. Abundant fluffy, close-fitting plumage. Weight 8½ pounds for cocks, 6½ pounds for hens.	General purpose, for both meat and eggs. Brown egg.	
Rhode Island Red	Two varieties, single comb and rose-comb. Tail color black. Rhode Island red has a red surface of body plumage, with a red under color, free from slate. Buckeye breed surface color is dark, rich garnet, and under color allows a bar of slate-color next to surface. Body of bot-long, Rhode Island reds level. Buckeye body shows slight elevation in front. Weight of Rhode Island red cocks 8½ pounds, hens 6½ pounds, Buckeye cocks 9 pounds, hens 6 pounds.	General purpose. Brown egg.	*Balanced ration.*—For egg production, 1 part protein to 4.6 parts carbohydrates. For fattening, 1 part protein to 7 or 8 parts carbohydrates. For raising young chickens, 1 part protein to 4 parts carbohydrates.
Brahma	Two varieties, light and dark. Show heavy leg and toe feathering, thick, close plumage. General color of light Brahma, white, with black tail and black center stripes in both hackle and saddle feathers. In dark Brahma, wings of cock crossed by heavy black bar, and entire breast, body, leg and toes black. Back, wings, body and breast of female have a basis of gray on which are distinct dark pencilings. Weight for dark cocks 11 pounds, hens 8½ pounds; for light cocks 12 pounds, hens 9½ pounds.	Meat breed. Brown egg.	The ration should consist of foods which the fowl likes. The following grains are preferred by fowls in order named: wheat, corn, oats, peas, barley, buckwheat, rye. The ration should provide a good variety and sufficient bulk to aid digestion. Wheat, bran, clover and alfalfa meal provide bulk in ration. The ration should contain easily digested foods, as whole grain and part ground feed. Feed at least one-third ground grain, as wheat or bran middlings, ground oats, corn meal and very small quantities of gluten meal. Wheat is most desirable of grains. Corn should be used largely because it is cheaper. Heavy oats rank next. Meat in some form, as beef scrap or green cut bone or skimmed milk should be included in every ration. It should form at least 10 to 15 per cent of total food consumed each day. Green food in form of cabbage, roots or cut clover should be given each day. Grit in form of cracked oyster shells or mortar is indispensable. Because of cost, wheat bran and middlings, and buckwheat middlings may be much used. Chickens should be fed according to age and season of year, giving the more heat producing foods in winter. The lighter and more active breeds can be fed a wider ration than the heavy and more sluggish breeds. The ration should be balanced in such a way that the appetite is kept good, the needs of egg production met, and the fowls prevented from becoming too fat.
Cochin	Four varieties, buff, partridge, white, black. Peculiarity is an appearance of massiveness and fluffiness. Heavy, short feathering is piled high on back and extends wide at sides. Excessive thigh and shank feathering. Combs single, low, close on head and evenly serrated with five distinct points. Cocks weigh 11 pounds, hens 8½ pounds.	Meat breed. Brown egg.	
Leghorn	Eight varieties, single-comb and rose-comb brown single-comb and rose-comb white, single-comb and rose-comb buff, single-comb black and single-comb silver duckwing. Characterized by early maturity and great activity. Large combs on top of head.	Egg production. White egg.	
Minorca	Three varieties, single-comb black, rose-comb black, single-comb white. Long body, carried rather upright, deep at breast with back tapering sharply toward tail, which is long and carried rather low. Comb large. Ear lobes large and pure white. Cocks of rose-comb weigh 8 pounds, hens 6½ pounds. Single-combs weigh 1 pound heavier.	Egg breed. White egg.	
Dorking	Three varieties, colored, white and silver-gray. Body long and deep. Carries abundance of flesh. Skin white. Colored largest cocks weigh 9 pounds and hens 7 pounds. White cocks weigh 7½ pounds, hens 6 pounds. Silver-gray variety is between these two. All have a fifth toe.	General purpose, meat especially. Egg of very light color.	
Orpington	Three varieties, buff, black and white. Long body, abundant plumage, white skin. Short heavy shanks. Tendency to feathering on shanks. Cock weighs 10 pounds, hen 8 pounds.	General purpose. Egg tinted.	
Houdan	Color black and white evenly broken in alternate splotches throughout entire plumage. Head ornaments of crest and beard. White skin. Carry fifth toe on each foot. Cocks weigh 7 pounds, hens 6 pounds.	General breeding purposes. White egg.	
Hamburg	Six varieties, golden spangled, silver spangled, golden penciled, silver penciled, white and black. About size of the Leghorn.	Egg and fancy breed. White egg.	
Indian	Two varieties, Cornish and white. Beaks and shanks yellow. Bird of strong proportions. Back and wings of cock mixture of red and black, tail and breast black. Hen's back, wings, breast and body a rich bay penciled with black. Cocks weigh 9 pounds, hens 6½ pounds.	Meat breed. Tinted egg.	

SHEEP AND SWINE—Continued

Brief Breeding Rules	Diseases and Symptoms	Treatment	Bulletins
Boars do not show best form before 4 or 5 months old, and should not begin service under 10 months. Give best service 2 to 5 years old. Sows should be prolific and good milkers. For pork, breed sows any time after 8 months of age, but for pure-bred breeding stock 12 months of age better. Should breed twice a year, to get 1 litter in early spring (April to May), the second in September or October. Pigs may run with sows 8 to 10 weeks.	*Sore mouth.*—Symptoms: Aversion to food and saliva dripping from mouth. Gums become congested and later necrotic patches develop, especially about front teeth and tusks. Offensive odor to mouth. Jaws are swollen, lips and mouth often cracked and covered with scabs. Rapid decline and prostration.	Affected animals should be separated from well animals and pens thoroughly disinfected. Wash mouth with 2 per cent warm creolin solution to remove patches. Then a 10 per cent ointment of salicylic acid may be applied in severe cases. Treat daily until ailment is cured.	
	Cottonseed poisoning.—Symptoms: Loss of appetite accompanied by thumps. Animal drops over, kicks and squeals for a few minutes and dies.	Complete elimination of cottonseed meal from ration is the only positive prevention. Given in proper quantities it is normally safe, but its use demands special precautions.	Ohio Bulletins Nos. 209, 213. Oklahoma Bulletin No. 80. Pennsylvania Bulletin No. 95. South Dakota Bulletin No. 105. Wisconsin Bulletin No. 184; Report 1907.
	Catarrhal rhinitis or snuffles.—Symptoms: Animal more quiet than usual and may experience slight chills. Eyes are red, appetite lessened and constipation is present. Watery discharge from nostrils, which later thickens and makes breathing difficult.	Keep animal warm and provide clean, well-lighted pen. Liquid foods should be warmed, 1½ ounces of castor oil should be given. Fumigation by burning tar in close room may help. To lessen nasal discharge, tincture of belladona leaves in ½-teaspoonful doses twice daily may be added to feed.	
	Thumps.—Symptoms: Sets in suddenly with a jerking or twitching movement of flanks, which may become excessive, producing a thumping. Animal keeps quiet and has a poor appetite. May fall off in weight.	If caused by worms, give dried sulphate of iron in swill once a day for 7 or 8 doses, ¼ pound sulphate for 40 pigs. If caused by indigestion, give less food and allow access to charcoal and wood ashes. Exercise should be allowed also on free pasture. In first stages give every 4 hours a physic of 2 ounces raw linseed oil followed with 3 to 10 drops of tincture of opium in a little oil.	
	Hog cholera.—Symptoms: Continuous fever and discoloration of skin. Animals lack spirit and lie huddled together. Refuse to move when disturbed.	Demands expert and immediate care.	
For additional breeding rules see horses.	*Swine plague.*—Symptoms: Aversion to food. Much coughing, back arched, groin sunken, eyes reddened and skin in front takes reddish tinge.	Demands expert and immediate attention.	

DUCKS AND GEESE

Brief Breeding Rules	Diseases and Symptoms	Treatment	Bulletins
Very close inbreeding tends to produce chicks that are weak and fall an easy prey to disease or are infertile. Line breeding is better. Mate offspring of a pair with father and mother rather than brother with sister.	*Simple canker.*—Symptoms: Appears as yellowish or whitish patches in mouth or throat. Surrounded by inflamed mucous membrane.	Dust powdered boric acid on sores or apply pure creolin with soft cotton cloth. Fifteen grains boric acid in 1 ounce water may be used freely as a wash.	Ontario Department of Agriculture Bulletin No. 151.
	Lice.—Symptoms: May be found under wings and on skin about feather roots, on abdomen, back, neck and head.	Dust thoroughly with pure fresh Persian insect powder. Work well down to skin. Repeat in 10 days.	Farmers' Bulletins Nos. 41, 51, 64, 177, 182, 200, 234, 287, 355, 357.
	Mites.—Symptoms: Red, black and gray. Breed in cracks and crevices of building or under droppings.	Keep roost clean. Use abundance of mixture of 1 quart kerosene and 1 fluid ounce creolin or good liquid lice killer for painting roosts and droppings-board.	Bureau of Animal Industry Bulletin No. 110; Same Circular No. 140. Arizona Bulletin No. 60. Connecticut Bulletins Nos. 52, 55.
Grandchildren of original father may be mated to those of original mother.			
	Diphtheria.—Symptoms: Fowl becomes suddenly ill and loses appetite; legs are hot, comb hot and deep red. Difficult breathing and sharp cough. Inflammation of throat. Legs and wings may become paralyzed.	Segregate sick fowl and preferably kill and burn. May give fowl four times daily a 0.01 grain tablet of biniodide of mercury. Cleanse mouth and throat often with strong peroxide of hydrogen, or 1 tablespoonful creolin in 4 fluid ounces of water.	Kansas Bulletins Nos. 162, 164. Maine Bulletins Nos. 157, 159, 165, 166, 168 (contains bibliography). Maryland Bulletin No. 138. Missouri Board of Agriculture Missouri Bulletin No. 6 (1908), No. 12. New York (Cornell) Bulletins Nos. 212, 258, 274, 277, 282, 284.
Selection involves the careful inspection of the individuals of any generation and preservation for breeding of only the best.	*Scaly leg.*—Symptoms: Rough grayish or whitish scales and crusts on shanks and feet.	Apply ointment made by mixing 1 teaspoonful creolin in 1 cupful melted lard. Stir until cool and apply daily until scales and crusts drop off.	
Hybridization involves the crossing of two strains, varieties, or races in order to combine the favorable qualities of the two. Sex control seems at present beyond human power.	*Colds.*—Symptoms: Sneezing, watery eyes, discharge from nostrils and swollen face. Bubbles or drops form in corners of eyes.	Sleeping quarters should be well ventilated. Give condition powders or tonic in food or drinking water, or season mashes with ginger and red pepper. Following mixture will usually cure if taken at start: 20 to 30 drops spirits of camphor with a tablespoonful granulated sugar. Dissolve in pint of drinking water and allow birds access to no other drink.	Oregon Bulletin No. 100; Circular No. 4. Pennsylvania Bulletin No. 87. Rhode Island Bulletin No. 126, Report 1908.
Period of incubation is 19 to 24 days, average 21.	*Catarrh* (contagious) *or roup.*—Symptoms: Peculiar, strong offensive odor. A glairy water-white or yellowish discharge from nostrils and under eyelids. Legs hot. Comb and wattles hot and deep red. Characteristic roup smell always present.	Kill and burn all very sick birds. Segregate in an open shed all that show symptoms. Use creolin dip—1 teaspoonful pure creolin in 1 pint water and dip heads in solution, using fresh solution for each 6 birds—and make fowl inhale creolin vapor by spraying over with the same solution. Thoroughly cleanse head, mouth, eyes, nostrils and throat with this disinfectant, and keep fowls in wide open, fresh pens.	
To get early market poultry mate late in fall. Brahma and Cochin pullets begin to lay at 7 to 9 months. Leghorns and other small breeds 4 to 6 months. Plymouth Rock and Wyandottes, 5 to 7 months. Mate breeding hens 2 to 6 weeks before earliest date for hatching. Hens should have few weeks rest before breeding season, for high-class stock. Breeding stock should have free range or, if confined, be not crowded and fed green feed and meat scrap in addition to that given laying stock. Hold eggs for hatching in cool, dry place, at temperature of 40 to 55 degrees Fahr. Hen for setting should be in fair condition, should feel hot to hand when handled, and should allow herself to be handled freely.	*Worms.*—Symptoms: Will appear in the excrement.	Allow no food for 12 hours. Then give in 1 dose a mixture of 2 teaspoonfuls oil of turpentine and 1 tablespoonful sweet oil. Administer directly into crop through rubber tube passed down throat. May be necessary to repeat in 12 to 24 hours.	
	Gapes.—Symptoms: Difficult breathing and characteristic gaping attitude. Caused by a parasitic worm which attaches itself to mucous lining of windpipe.	Remove worms by a loop of horsehair or a wire gape-worm extractor dipped in a weak solution of creolin. Stretch fowl's neck forward and introduce extractor into windpipe. Carefully twist it as withdrawn. Immediately disinfect extractor bearing worms.	
	Diarrhœa.—Symptoms: Looseness of bowels. Discharges yellowish, greenish, dark or watery.	Give bird dry grain with abundance of charcoal, and do not allow any meat food. Scalded milk, thickened with well-boiled flour and seasoned with ginger, makes a desirable food and remedy.	
	Contagious diarrhœa.—Symptoms: Thirst, little appetite, stupidity, bowel discharge loose and watery, often dark or bluish green, sometimes blood streaked. Comb and wattles dark red or purplish, and legs hot.	Segregate affected birds. Disinfect and remove excrement. Give calomel in 0.01 of a grain dose 3 times daily. For difficult cases dissolve 12 tablets of mercury bichloride, 0.001 of a grain drug strength each, in 1 quart of drinking water and allow no other drink. This medicine should be given less frequently as soon as improvement appears.	

TABLE IV. CHICKENS, TURKEYS,

Best Breeds	Characteristics	Uses	Best Foods
CHICKENS—Cont'd **Bantam**	Ornamental birds of many varieties: Sebright, rose-comb, booted white, Brahma, Cochin, Japanese, Polish, game, black-breasted red Malay.	Fancy and ornamental varieties of many foregoing breeds.	See page 392d.

Best Breeds	Characteristics	Uses	Best Foods
TURKEYS **Bronze**	Largest and hardiest of all varieties for the market. Adult cock 36 pounds, hen 20 pounds.	Meat.	The young must be fed with care at first, allowing only bread and milk mixed with ¼ pot cheese and a little chopped onion, given 2 or 3 times a day. Once or twice a day feed finely cracked corn, wheat and oatmeal mixed in equal parts. After second week, bread and milk should be decreased and grains and pot cheese increased. Fine grit and charcoal should be available. Water should be provided in such a way that young turkeys cannot become wet. When turkeys graze in fields during day they should be fed grain at night, corn, wheat, oats or peas. During breeding season, one feeding a day of mixture of equal parts by weight of wheat middlings, wheat bran, corn meal, ground oats and meat scraps, stirred up with skimmed milk, should be given. In fattening turkeys for market they should be fed all the whole corn they will eat at night. In morning a mixture of 6 parts corn meal, 3 parts wheat middlings, 1 part beef scraps, mixed as thick paste with sour skimmed milk may be given. Turkeys do best on free range.
Narragansett	Plumage bronze and black with a mixture of white. Second in size to bronze. Cock 30 pounds, hen 18 pounds. General color gray.	Meat.	
Buff	Feathers a reddish buff, the wing flights being white.	Meat.	
Slate	Plumage of a bluish slate shade. Cock 27 pounds, hen 18 pounds.	Meat.	
Black	Plumage pure black. Otherwise same as above.	Meat.	
White Holland	Plumage pure white throughout; has pinkish white shanks. Cocks 28 pounds, hens 18 pounds.	Meat.	
Bourbon Red	A kindred variety to the buff, having deep reddish-buff plumage.	Meat.	

Best Breeds	Characteristics	Uses
DUCKS **Rouen**	Largest and most popular of all colored market varieties. Weight 9 pounds for drakes, 8 pounds for ducks.	Meat.
Black Cayuga	Largest solid black duck known. Mature pair weighs 15 pounds. Body of good length.	Meat. A fair layer.
Pekin	Largest white duck in existence. Specimens weigh as high as 10 or 12 pounds. Head and beak long and of good size, beak orange-yellow, back, breast and body long, broad and deep, with deep keel. Creamy white.	Meat. A good layer.
Crested White	Medium-sized white duck with large white crest or topknot, about two-thirds the size of Pekin, which it resembles in color and shape of body, except crest.	Meat. A fair layer.
Indian Runner	Head long and flat, light fawn in color, cap and cheek markings light fawn, bill straight, green with black bean at tip, eyes hazel, neck white from head to beginning of breast markings, back, light fawn or gray, breast light fawn, body light fawn, rear half white. Shanks and feet orange-yellow. Carriage very erect. Small size.	Meat. The best layer.
Colored Muscovy	Good size, black and white in color, black predominating. Side of head and region around eye are without feathers and are carunculated or corrugated and scarlet. Builds her nest and never scatters her eggs. Never quacks. Active on wing.	Meat.
White Muscovy	Same as colored muscovy except that it is pure white.	Meat.

Best Breeds	Characteristics	Uses
GEESE **African**	Large head with pronounced black knot and heavy gray dewlap under throat. Neck long, back broad and flat, breast full and round, body large and upright, thighs short and plump. Shanks medium length and dark orange color. Wings of good size, close fitting. General color, gray. Mature gander 20 pounds, goose 18 pounds.	Meat and feathers.
Embden	Color white. Square, compact body. Neck long and massive appearing, large head. Medium-size orange-colored bill. Back slightly arched, breast round, deep and full. Shanks short, stout, deep, orange color, thighs strong, wings large, tail short. Eyes bright blue. Mature gander 20 pounds, goose 18 pounds.	Meat and feathers.
Toulouse	Blue-gray in color, marked with brown. Head large but short, bill short and stout, neck medium long, body compact, medium length, deep, belly almost touching ground, back broad, slightly arched; breast broad and deep, wings large, strong, close fitting, tail short. Adult gander 20 pounds, goose 18 pounds.	Meat and feathers.
White and Brown Chinese	Bodies plump and round, covered with coat of soft feathers and fine down. Medium size, mature specimens weighing 10 to 14 pounds. Long arch necks, with large round knob at base of beak. Short erect body and carriage.	Meat and feathers. Much in demand for ornamental purposes.

DUCKS AND GEESE—Continued

Brief Breeding Rules	Diseases and Symptoms	Treatment	Bulletins
Set fresh eggs from vigorous stock having the qualities particularly desired. Eggs should not be more than 1 week old, and must be clean. For Asiatic breeds, mate 1 male to 6 to 10 females; for Americans, 1 male to 15 to 20 females; for Mediterraneans, 1 male to 20 to 25 females. In selecting breeding stock, pedigree, appearance, condition and performance are of first importance in the parents. Strong, constitutional vigor and early maturity essential.	*Fowl cholera.*—Symptoms: A yellowish discoloration of part of droppings usually white. Fowl becomes unsteady on legs, feathers rumpled, wings droop, head drawn down, comb and wattles pale, legs hot. Food repulsive. *Pip.*—Symptoms: Mucous membrane of mouth dries and a hard horny scale is formed on end of tongue. The hard scale or pip will in time fall off of its own accord. *Bronchitis.*—Rattling in throat and difficult loud breathing.	Use mercury bichloride as on page 393 (contagious diarrhœa). 1 per cent solution carbolic acid in drinking water and cayenne pepper in food are recommended. Treatment seldom satisfactory. Apply equal parts of glycerine and water freely or wash mouth frequently with a solution of 15 grains boracic acid in 1 ounce of water. Remove fowl to comfortable fresh-air pen, protected from drafts. Give nourishing, bracing food. Use 12 tablets arsenite of antimony, 0.001 of a grain each, to each pint of drinking water and allow bird no other drink.	See page 393.

Brief Breeding Rules	Diseases and Symptoms	Treatment	Bulletins
Select big, strong, vigorous, healthy, well-matured stock, not closely related. Constitutional vigor of first importance. Introduce new blood into flock. Males should be unrelated to females, as inbreeding weakens flock. Medium-sized male with good, fair-sized females of strong constitutional vigor and mature age will give best results. Have 4 or 8 females to 1 male. Hen lays 20 to 40 eggs in a season, beginning March or April. 1 mating sufficient to fertilize entire batch of eggs. Hen will lay 15 to 20 eggs before becoming broody, and if broken up then will lay another batch. Period of incubation 26 to 30 days. Old birds in good condition, not overfat, best breeders. Birds of either sex may be used for breeding until 8 or 10 years old. Laying generally begins in March or April.	*Blackhead.*—Symptoms: Turkeys look pinched, shrunken and purple about head. Feathers rough. Diarrhœa present with bright yellow excrement. Birds have little life and drag about. *Colds.*—See under chickens. *Roup.*—See under chickens. *Gapes.*—See under chickens. *Tapeworms.*—Symptoms: Presence of worms in fæces. *Diarrhœa.*	Kill and burn affected birds, and thoroughly disinfect coops, buildings, feeding and drinking troughs, etc. Pepper, ginger and something sour in food aid in prevention. Freshly powdered kuosso, tansy and pumpkin seeds are recommended. Turpentine in small doses has given success. Mix 2 ounces sulphuric acid and ½ pound copperas in 2 gallons water, and give 1 teaspoonful of mixture in each quart of drinking water.	See chicken references. Farmers' Bulletin No. 200.

Brief Breeding Rules	Best Foods	Diseases and Symptoms	Bulletins
Mate only standard specimens. Select meaty birds, deep keeled and strong in bone. Attention must be given to pedigree, appearance, condition and performance. Quick growth is important. Better ducklings result from eggs from old ducks, but young ducks lay a month earlier than old ones, and their eggs may be used for early hatching. Laying period December to June. Usually 1 male to 5 females till June, then to 10 females. Birds are kept in flocks of 25 to 40 of both sexes. Laying season extends from January to August. Period of incubation 25 to 32 days. Ducks are poor sitters and eggs generally hatched by hen or incubator. For general breeding notes see chickens.	When breeding birds have free range and water-run, they may be fed either whole corn, wheat, oats or barley, or a mixture. If eggs are desired, supply good beef scrap. The birds may be allowed to help themselves. When confined and heavy egg production desired, soft food should be fed morning and night and a light feed of hard grains in middle of day. Corn meal, low-grade flour, wheat bran, meat scrap and some green food, as turnips, cabbage, cut clover or alfalfa, make a valuable mixture. Drinking water should always be within reach. Begin to feed ducklings when 40 to 48 hours old. Start with mixture of two-thirds wheat bran and one-third corn meal, moistened with water or milk; a raw egg stirred in with each quart of grain is good addition, as is also a little sand or prepared grit. Keep before ducklings for 2 days if it remains sweet. Otherwise renew. When ducklings 1 week old, they may take 0.05 beef scrap, 3 parts wheat bran, 2 parts corn meal, 4 feedings a day. Gradually increase proportion of corn meal so that at 6 weeks the meal and bran are equal, and the beef scrap is 0.15 of the whole. At 6 weeks feed 3 times daily. If this feed too laxative, reduce the beef scrap. Excess green food likely to make skin yellow. Abundance of grit and fresh water must be constantly available.	Ducks are remarkably free from disease and there are no diseases peculiar to them. Ducks running with other fowls may contract diseases, which should be treated as for other fowls. Lameness may result from damp quarters. Ducks having colds, as shown by frothy scum over eyes, should have eyes washed with warm water containing a little carbolic acid. Treat as for cold.	See chicken references. Farmers' Bulletin No. 64.

Brief Breeding Rules	Best Foods	Diseases and Symptoms	Bulletins
Choose bright, active goose and gander of good parentage, 2 to 5 years old. Mate in fall or early winter. Gander and geese 1 to 4 in number, should be put together and isolated till they become acquainted. Young ganders often take but 1 goose. Hens may be placed on the eggs. Goose will usually lay 2 litters. Wild ganders do not mate until 2 to 3 years old, and frequently will not mate first year in captivity. Period of incubation 27 to 33 days. Laying season is very short, beginning about February 1. Will lay 20 to 50 eggs per year. Geese not fully mature until 1 year old, and first year eggs frequently infertile. Best laying is from second year on. Ganders are most valuable at 3 to 7 years. Goose becomes broody after laying about 18 to 20 eggs. If these taken away and goose shut up for few days she will then lay another batch, and with similar treatment a third batch. Eggs for hatching should be held at 50 to 60 degrees and turned each day. For general breeding notes, see chickens.	Geese graze freely and in this way pick up much of their food. In winter, supply a little grain and liberal allowance of succulent food, as roots and cabbage. At laying time the feed should be increased. A liberal ration, as prepared for ducks, containing considerable animal food, should be given twice a day. Water and grit should always be accessible. In finishing grass-fed geese for market, feed corn meal with 10 per cent of beef scrap, scalded or wet with cold water. Once a day give whole corn. Keep goslings in warm place, and first 2 or 3 days feed a little soaked bread and water. Gradually let them out, and in a week they may go free. Will need nothing but a little stale bread first 5 weeks, if on good free range. After 5 weeks a mash of one-third corn meal, two-thirds bran should be given. After 6 weeks give equal parts of corn and bran, to fatten.	Geese are almost wholly free from disease, and the grower is seldom troubled in this respect.	See chicken references. Farmers' Bulletin No. 64.

TABLE OF SHRUBS AND HEDGES

Name of Shrub	Height in Feet	Time of Flowering	Color of Flowers	Distance Apart in Feet	Uses	Remarks
Althea, or Rose of Sharon (*Hibiscus*).	8 to 10	August September	Red, pk., wht.	3	Screen.	Single kinds better; makes good screen; stands pruning well.
Common Barberry (*Berberis vulgaris*.)	6	June	Yellow	2	Defensive screen.	Foliage dense, very dark green.
Japanese Barberry (*Berberis Thunbergii*)	4	June	Yellow	1 ½	Boundary, drive, terrace.	Bears red berries; fall color striking.
Single Bridal Wreath (*Spiraea Van Houtter*)	5 to 6	June	White	2 to 3	Boundary.	Widely planted, showy and economical.
Sea Buckhorn (*Hippophae rhamnoids*).	6 to 10	.....	.....	3	Screen.	Gray foliage makes it distinctive.
Dogwood (*Cornus alba*)	8	June	White	2 ½	Screen or background for lower growths.	Bark blood-red and showy in winter.
Slender Deutzia (*Deutzia gracilis*).	2 ½	June	White	2	Edging.	Showiest of dwarf-flowering hedges.
English Privet, or Prim (*Ligustrum vulgare*).	2 to 6	.....	.....	1	Best clipped hedge; edging, terrace, etc.	Better than California, because hardier.
English Wayfaring Tree (*Viburnum lantana*).	10 to 15	June	White, large	5	Screen.	Grows rapidly, has attractive, dark foliage and purple fruit.
Golden Bell (*Forsythia intermedia*).	5 to 8	Early May	Yellow	3	Boundary.	Best of yellow shrubs; blooms before Cydonia; too striking for wide use.
Tartarian Honeysuckle (*Lonicera Tatarica*).	10	June	Pink	3	Screen.	Dense foliage, showy flowers and berries.
Large-flowered Hydrangea (*Hydrangea panculata, var. grandiflora*).	3 to 15	July, August	White pink	2 to 3	Screen, boundary.	Blooms when flowers are scarce; showy.
Japanese Briar (*Rosa rugosa*).	5 to 8	All summer	Wt., pk., red	2	Boundary.	The only rose suitable for a hedge.
Japanese Snowball (*Viburnum plicatum*).	6 to 8	June	White	4	Screen, boundary.	Showy and better than Common Snowball.
Japan Quince (*Cydonia Japonica*).	4	May	Red	1 ½	Defensive boundary.	Blooms among first of all the shrubs; thorny, subject to scale.
Lilac (*Syringa vulgaris*).	8 to 15	June	Purple, white	2	Screen.	Spreads all over creation if given a chance, but is an excellent screen.
Honey Locust (*Gleditschia triacanthos*).	3 to 15	May	Greenish	1 ½	Defensive.	Requires close attention to pruning; apt to become bare near bottom. Being supplanted by better kinds.
Garland's Mock Orange (*Philadelphus coronarius*).	8 to 15	Early June	White	3	Screen.	Flowers highly scented; grows rapidly.
Osage Orange (*Maclura pomifera*).	3 to 15	May	White	2 to 3	Defensive screen.	Bears yellow fruit 3 to 4 inches in diameter, when not clipped.
Spirea (*Spiraea arguta*).	2 to 3	Early May	White	2	Edging, terrace.	Two weeks earli r than *Spiraea*; showy, but not a sure bloomer.
Spirea (*Spiraea, Anthony Waterer*).	2 to 3	All summer	Magenta	2	Boundary, edging, terrace.	Good for those who like such things.
Native Thorn (*Crataegus coccinea*).	3 to 12	May	White	2 ½	Screen; defensive boundary.	One of the best native shrubs, or small trees. Bears showy scarlet fruit; improves with shearing, making very dense hedge. Can be kept at any height.
Cockspur Thorn (*Crataegus Crus-galli*).	3 to 15	Late May	White	2 ½	Defensive screen; boundary.	Native plant, with very long thorns. Fruit showy. Good windbreak.
Wistaria or Wisteria (*W. Frutescens*).	8 to 15	All summer	Lilac	2	Screen; trellis.	Handsome, hardy, slow-growing, climbing shrub. Flowers in elegant racemes, slightly scented.

FLOWER PLANTING TABLE

May is the almost sole flower-planting month; the Adonis, Cornflower, Pink, Primrose and Sweet Pea may also be planted in April.

Name of Flower	Life of Plant	Blooms	Plants In. Apart	Seeds Inches Deep	Colors
Achillea	Annual-Perennial	May-June	6	.....	Yellow
Adonis	Annual	June-October	6	¼	Blue-White
Ageratum	Perennial	August-October	10	.....	White-Rose
Anemone	Annual	July-September	14	¼	Various
Aster	Annual	July	8	⅛	Blue-White-Pink
Bachelor's Button	Annual	June-September	14	¼	Various
Balsam (Lady's Slipper)	Perennial-Annual	June-July	10	¼	Blue-White-Pink
Bellflower (*Campanula*)	Perennial	May-August	26	.....	Crimson
Bleeding Heart (*Dicentra*)	Perennial	June-October	12	½	Orange
Calendula	Annual	August	10	⅛	Orange
California Poppy	Annual	June-September	8	⅛	Orange
Candytuft	Annual	August	36	¼	Green
Castor Bean	Perennial-Annual	August-October	18	½	Various
Chrysanthemum	Annual	June-September	10	¼	White-Purple-Rose
Clarkia	Annual	June-October	10	¼	Red-Purple-Yellow-White
Cockscomb	Perennial	June-July	12	.....	Various
Columbine (Aguiliegia)	Perennial	July-August	12	.....	Coral
Coral Bell	Annual	June-August	12	⅛	Yellow-Brown
Coreopsis	Annual	June	10	⅛	Blue-White-Rose
Cornflower	Annual	August-September	24	¼	Red-White-Pink
Cosmos	Annual	July-September	36	.....	Various
Dahlia	Perennial	Aug.-Sept.	10	.....	White-Pink-Rose
Daisy	Perennial	July-August	10	.....	Yellow
Evening Primrose	Perennial-Biennial	April-July	6	¼	Blue

FLOWER PLANTING TABLE—Continued

Name of Flower	Life of Plant	Blooms	Plants In. Apart	Seeds Inches Deep	Colors
Forget-Me-Not	Perennial	July	10	.....	Various
Four-o'Clock	Perennial-Annual	July-August	12	¼	Red-White-Yellow
Foxglove	Perennial-Biennial	June	12	⅛	White-Pink
Gaillardia	Perennial	July-October	12	⅛	Yellow-Red
Globe Amaranth	Annual	July	12	¼	Pink
Godetia	Annual	July-October	12	⅛	White-Red
Gourds	Annual	July-October	14	½	Various
Helianthus	Perennial	July	12	¼	Yellow
Heliopsis	Perennial	August-September	18	.....	Yellow
Hollyhock	Biennial	August	16	½ drills	Red-Pink-Purple-White-Yellow
Iceland Poppy	Perennial-Annual	June-September	6	⅛	White to Orange
Iris	Annual	May-July	12	.....	White-Blue-Yellow
Larkspur	Perennial-Annual	June-July	8	½	Blue-White-Pink
Lavatera	Annual	July	8	¼	Rose
Lobelia	Annual	June-September	4	⅛	Blue-Red
Love-in-a-Mist	Annual	June-July	10	¼	Scarlet
Love-Lies-Bleeding	Annual	June-September	8	¼	Blue-White
Lupine	Perennial-Annual	June	5	.....	Blue-White-Pink
Mallow	Perennial	July-September	10	.....	White-Rose
Marigold	Annual	August-October	6	¼	Lemon to Orange
Mignonette	Annual	July-October	12	⅛	Whitish Green
Monkshood	Perennial	July-August	8	.....	White-Blue
Moonflower	Annual	August-September	5	¼	White
Morning Glory	Annual	July-August	12	¼	Various
Nasturtium	Annual	July-October	10	½	Various
Nicotiana	Annual	July-August	8	¼	Red-White
Pansy	Perennial-Annual	May-October	12	⅛	Various
Peony	Perennial	May-June	48	.....	Red-White-Pink
Petunia	Annual	July-September	8	Scatter	White-Pink-Blue-Wine
Phlox	Perennial-Annual	July-October	8	⅛	Various
Pink	Perennial-Annual	August	6	⅛	White to Rose
Poppy	Annual	July-August	5	⅛	Various
Portulaca	Annual	July-October	5	⅛	White-Red-Yellow
Primrose	Perennial	April-May	6	.....	Yellow-Pink
Pyrethrum	Perennial	August-October	12	.....	Various
Rudbeckia	Perennial	August-September	12	.....	Yellow
Salpiglossis	Annual	June-August	8	⅛	Various
Salvia	Perennial-Annual	August-October	6	⅛	Scarlet
Scabiosa	Perennial	June-August	8	.....	Blue-Yellow-White
Schizanthus	Annual	July-August	10	¼	Yellow-Lilac
Silene	Perennial	June-August	6	.....	White to Rose
Snapdragon	Perennial-Annual	July-August	8	¼	Various
Stock	Annual	June-July	6	¼	White to Red
Sunflower	Perennial-Annual	August	36	¼	Yellow
Sweet Alyssum	Annual	May-September	5	⅛	White
Sweet Pea	Annual	June-October	8	3 trench	Various
Sweet William	Perennial-Biennial	July-August	10	¼	Red-White-Pink
Verbena	Perennial	June-August	8	.....	Various
Veronica	Perennial	August	6	.....	Purple
Violet	Perennial	March	6	.....	Violet
Wallflower	Perennial-Biennial	July-August	8	½	Yellow-Brown
Zinnia	Annual	July-October	10	½	Various

THE ROSE GARDEN

There are numerous varieties of roses, and their care occupies an important province in flora culture. The best results are obtained from setting out the plants or roots in the spring—from the middle of April to the middle of May. For practical purposes they may be divided into the following classes, with the leading examples of each:

Classes	Characteristics
The Hybrid Perpetuals	Hardiest of the garden roses
Frau Karl Druschki	An ideal white rose
Jacqueminot ("Jack Rose")	Brilliant scarlet
Paul Neyron	Dark rose—largest of all
Magna Charta	Bright pink—a favorite
George Arends	Splendid soft pink
The Hybrid Teas	The most satisfactory for the general garden
Robert Huey	One of the largest bright reds
The Lyon	Deep coral pink verging on yellow
White Killarney	One of the best pure whites
La France	Clear satiny pink
Burbank	Rich pink
Richmond	Brilliant crimson
The Teas	Much tenderer than the Hybrid Teas; sweet scented
The Bride	Pure white
Perle des Jardins	Beautiful rich yellow
Papa Goutier	Dark Crimson
Hardy Climbers	Popular and showy
American Pillar	Large, single, pink flowers
Excelsa	Finest of crimson ramblers
Hiawatha	Single, brilliant crimson
Dorothy Perkins	Soft shell-pink, fragrant

Classes	Characteristics
Lady Gay	Delicate cerise-pink which change to creamy white.
Wichmoss	A "Moss" rose, light bluish-pink, fragrant.
Hybrid Briers	Hardy semi-climbing roses
Lord Penzance	Beautiful contrasting shades
Refulgence	Dazzling scarlet, in clusters
Juliet	Rosy red with reverse petals of old gold
The "Baby Ramblers"	Dwarf, "perpetual bloomers"
Phyllis	Beautiful pink
Jessie	Bright cherry-red, white center
Orleans	Brilliant red, white center
Snowball	White, free flowering
Noisette	Excellent climber for walls
William Allen Richardson	Deep orange-yellow flowers
Garland	Semi-double, blush and white
Longworth Rambler	Splendid autumn climber; flowers, semi-double and crimson
Japanese and Chinese	
Blairii (China)	Vigorous climber for sunny walls; flowers, blush and rose
Rugosa (Japanese)	No pruning is needed; flowers, white, rose and violet

NUMBER OF YEARS SEEDS RETAIN THEIR VITALITY

Vegetables	Years	Vegetables	Years	Vegetables	Years	Vegetables	Years
Cucumber	8 to 10	Asparagus	2 to 3	Radish	4 to 5	Pepper	2 to 3
Melon	8 to 10	Beans	2 to 3	Beets	3 to 4	Tomato	2 to 3
Pumpkin	8 to 10	Carrots	2 to 3	Cress	3 to 4	Egg Plant	1 to 2
Squash	8 to 10	Celery	2 to 3	Lettuce	3 to 4		
Broccoli	5 to 6	Corn (on cob)	2 to 3	Mustard	3 to 4	HERBS	
Cauliflower	5 to 6	Leek	2 to 3	Okra	3 to 4	Anise	3 to 4
Artichoke	5 to 6	Onion	2 to 3	Rhubarb	3 to 4	Caraway	2....
Endive	5 to 6	Parsley	2 to 3	Spinach	3 to 4	Summer Savory	1 to 2
Pea	5 to 6	Parsnip	2 to 3	Turnip	3 to 6	Sage	2 to 3

COMPARATIVE YIELD OF VARIOUS GRAINS, VEGETABLES, AND FRUITS

	Lbs. per acre		Lbs. per acre
Hops	442	Parsnips	11,200
Wheat	1,260	Grass	7,000
Barley	1,600	Carrots	6,800
Oats	1,840	Potatoes	7,500
Peas	1,920	Apples	8,000
Beans	2,000	Turnips	8,420
Plums	2,000	Cinquefoil grass	9,600
Cherries	2,000	Vetches, green	9,800
Onions	2,800	Cabbage	10,900
Hay	4,000	Mangel-Wurzel	22,000
Pears	5,000		

ECONOMICS OF PLANTS, ANIMALS AND MINERALS

I. Foodstuffs. II. Narcotics and Medicines. III. Fibers. IV. Commercial Woods. V. Gums, Resins and Extracts. VI. Oils, Fats and Waxes. VII. Dyestuffs and Tanning Materials. VIII. Animal Products. IX. Mineral Products.

The most important commercial products are summarized in the following pages. The materials are grouped according to their sources: thus all the many products of the cotton plant are treated under one head; and since cotton fiber is the most important product of this plant, it is placed under the general heading of vegetable fibres, even though it supplies oil, cattle food and other articles. Countries of production are mentioned in the order of their relative importance.

FOODSTUFFS

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Wheat is the fruit of a grass (*Triticum sativum*). Fr., *Froment, Blé;* Ger., *Weizen;* Sp., *Trigo.*	Its commercial varieties, hard, soft, red, white, etc., differ in percentage of starch and gluten. The whole grain is ground into *graham flour*, made into *breakfast foods* and used in brewing. From parts of the grain are prepared *whole wheat flour, white flour, middlings, bran, wheat grits, wheat starch, macaroni, spaghetti*, etc. Wheat straw is plaited into braids (Leghorn, etc.) for hat making, and is used like the straw from other grains for packing material and as bedding for animals.	Grows in temperate climates, the largest crops being raised in United States (especially in Minnesota, North Dakota, Ohio, South Dakota and Kansas); Central Europe (Russia, France, Austria-Hungary and Italy); India, Argentina, Canada and Australia. The area of wheat production is steadily increasing and wheat raising has become an important industry in newly developed countries, such as parts of British America, West Australia and Manchuria. The United States is the chief exporter of flour.	Wheat flour may be said to be the standard foodstuff of modern civilized man. In the modern flour mill, heavy rollers of steel or porcelain have replaced the old-style millstones. The bran, middlings and flour are separated by sieves, the finest being of silk bolting cloth. Macaroni is made from special varieties of hard, glutinous wheat. The principal countries exporting wheat are United States, Russia, Argentina, Canada, Roumania, India and Australia. Straw braids come largely from Italy, China and Japan.
Barley is the seed of a grass (*Hordeum sativum*, variety *vulgare*, etc.). Fr., *Orge;* Ger., *Gerste;* Sp., *Cebada.*	It is used chiefly in brewing and for horse feed; also in soups. *Pearl barley, barley flour, malt, beer* and *alcohol* are its chief products.	Cultivated chiefly in north and central Europe, the colder parts of Asia and North America.	Malt is made by moistening barley and allowing it to sprout in a dark room. During germination the starch is converted into dextrine and maltose. On fermentation, maltose produces alcohol. Pearl barley is prepared by removing the hard outer coats of the grain.
Rye is the seed of a grass (*Secale cereale*). Fr., *Seigle;* Ger., *Roggen;* Sp., *Centeno.*	It is used in the form of *rye flour* and for distilling whisky and vodka. Rye straw is plaited into *hat braids.*	Cultivated in the cold climates of northern Europe, especially in Russia. Only small amounts are grown in the United States.	Rye flour is the chief breadstuff in parts of Russia, Scandinavia and Germany. Whisky is distilled from fermented rye and corn.
Oats is the fruit of a grass (*Avena sativa*). Fr., *Avoines;* Ger., *Hafer;* Sp., *Avenas.*	Used chiefly for horse feed, and in lesser amounts for making *oatmeal* and breakfast foods.	Grown in largest amounts in Russia and the United States (especially Illinois and Iowa). Cultivated throughout the temperate parts of the civilized world.	The manufacture of oatmeal is of relatively small importance since the more nourishing products of wheat are increasingly used.
Corn, Maize or **Indian Corn** (*Zea mays*) belongs to the grass family. Flint, dent, sugar, soft and pop corn differ in percentage of starch and gluten, and the grain may be white, yellow, red or black in color. Fr., *Blé, Grain;* Ger., *Getreide, Korn;* Sp., *Grano.*	Among the dozens of useful products made from corn are *corn meal, corn grits, hominy, breakfast foods, beer, whisky, alcohol, cologne spirits, cornstarch, dextrine, glucose, grape sugar, corn sirup, corn oil, soap, rubber substitute* and *cattle foods.* A special variety of corn is raised to make *cob pipes.* Compressed *corn pith* is packed between the double hulls of warships. Corn husks are used in *mattresses* and *paper* is made in very limited amount from the leaves and stalks. Large amounts of *popcorn*, plain and candied, are eaten in the United States.	Corn is the most valuable farm crop of the United States. The chief corn growing states are Illinois, Iowa, Kansas, Nebraska and Missouri. The bulk of the world's production of maize is grown in this country, although it is an important crop in Hungary, Italy, Egypt, South Africa, and other parts of the world.	Corn is of primary importance as a food for live stock, enormous quantities being used to fatten cattle and swine. The manufacture of starch and other products from corn is an industry of increasing magnitude. The chief starch derivatives are *dextrine* and *glucose* or *grape sugar* (used in brewing beer and as a substitute for true sugar). Corn oil may be called a by-product in starch manufacture, yet the annual value of corn oil is greater than that of cornstarch produced in the United States. It is used in soap and paints. Vulcanized by heating with sulphur, it forms a widely used adulterant and substitute for rubber.
Rice is the fruit of a grass (*Oryza sativa*). Fr., *Riz;* Ger., *Reis;* Sp., *Arroz.*	*Rough rice* and *clean rice* are the common commercial articles. *Rice polish, saké* or rice wine, rice straw and rice paper are of lesser importance. Rice, steamed and swelled, is now extensively used as a breakfast food.	It is usually grown in swampy land or else on irrigated fields. In most countries rice is grown in the most primitive fashion. Immense irrigating plants and modern agricultural machinery make possible the large production in parts of the United States. It is the chief crop in southeastern Asia, from India through Indo-China, a great part of China, southern Japan and many islands of the Pacific. Rice of excellent quality is raised in Texas, Louisiana, Arkansas and South Carolina, and an amount about equal to the production of this country is imported from eastern Asia.	It is estimated that one-third of the people of the world live principally on rice. Rough rice or paddy (rice in the hull) is first hulled by machinery and then the grains are polished or whitened. The *rice polish*, which consists of the powdered outer coats, is a very nourishing cattle food. *Saké*, the national drink of Japan, is a weak alcoholic liquor brewed from rice. Rice straw is of enormous use in Asia, being employed for hundreds of purposes, some of them as unexpected as the making of bags, ropes and sandals.
Millet and **Sorghum** are cultivated grasses of many genera (*Panicum, Setaria, Andropogon*, etc.). Fr., *Millet;* Ger., *Hirse;* Sp., *Mijo.*	Guinea corn, kaffir corn, broom corn and other names are employed to distinguish the different kinds.	These grains are grown in practically all parts of the world. In Europe and America they are important chiefly as fodder plants, although in many other parts of the world the seeds are used as human food.	In some places the juice of sorghum is boiled down to make sirup or sugar. Common brooms are made of the tops of one variety of sorghum (broom corn). These grains are mainly of local importance.

FOODSTUFFS—Continued

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Buckwheat (*Fagopyrum esculentum*) is regarded as a cereal because its seeds are used like those of wheat, rye and other grains. Fr., *Sarrasin;* Ger., *Buchweizen;* Sp., *Trigo sarraceno.*	The seeds are ground into buckwheat flour. Buckwheat fields are especially attractive to bees and a fairly important source of honey.	Buckwheat cultivation has decreased in recent years. New York and Pennsylvania produce the greater part of the crop in the United States. Abroad it is raised chiefly in Russia, France and Japan.	Buckwheat flour is less used than formerly. Very little of this grain enters into foreign trade.
Hay is made from many grasses and leguminous plants. Fr., *Foin;* Ger., *Heu;* Sp., *Heno.*	Timothy, clover and alfalfa are the chief sources of hay in the United States.	It is produced almost exclusively in temperate climates. Its yearly value in the United States is almost equal to that of the wheat crop.	Hay is most important in the cattle raising sections of the world. Some baled hay is exported to Europe and a little is sent to the tropics.
Starch is prepared from many seeds and roots. The common starches are from corn, wheat, rice, potatoes (*Solanum tuberosum*), cassava, tapioca (*Manihot utilissima*), arrowroot (*Maranta arundinaceæ*) and the pith of the sago palm tree (*Metroxylon* sp.) Fr., *Amidon;* Ger., *Stärke;* Sp., *Almidón.*	Starches appear on the market in powder, lump, flake and pearl forms. Starch grains differ in size and shape according to their source so that it is not difficult under a microscope to identify the various kinds. Glucose, dextrine and alcohol are made from starch.	For industrial purposes starch is prepared chiefly from potatoes in Europe and from corn and potatoes in the United States. Cassava is a very important foodstuff in almost all parts of the tropics. Many starches are of great local importance, such, for example, as taro in Hawaii. Comparatively few enter into general commerce.	In general, starches are separated from roots or seeds by grating them and washing with water. The starch grains are carried off in suspension and later separated from the water. Starch and starchy foods are of the greatest importance to men and animals. Aside from the manufacture of glucose, dextrine and alcohol, starch is used for sizing yarn, cloth and paper, for making paste and laundry purposes. Tapioca comes on the market chiefly from Brazil and Straits Settlements. Arrowroot starch is produced in Bermuda, St. Vincent and Jamaica. Sago is exported from Straits Settlements.
Vegetables of an almost infinite variety are used in all parts of the world. Many of these are roots, some seeds, some leaves or other parts of plants.	The bulk of the crop is consumed fresh, although beans, peas, etc., are dried and increasing amounts of vegetables are canned or otherwise preserved.	The largest cultivation of fresh vegetables is as a rule near great cities.	Vegetables are so heavy in proportion to value that they are not normally shipped long distances. Potatoes and onions, being least perishable, are most important in general commerce. Better transportation facilities naturally increases the trade in both fresh and canned vegetables.
Fruits, like vegetables, are used in great variety. Those deserving special mention are: **Apple** (*Pyrus malus*).—Fr., *Pomme;* Ger., *Apfel;* Sp., *Manzana.* **Plum** (*Prunus domestica*).—Fr., *Prune;* Ger., *Pflaume;* Sp., *Ciruela.* **Grape** (*Vitis* sp.).—Fr., *Raisin;* Ger., *Weinbeere;* Sp., *Uva.* **Orange** (*Citrus sinensis* and *aurantium*).—Fr., *Orange;* Ger., *Orange;* Sp., *Naranja.* **Banana** (*Musa sapientum*).—Fr., *Banane;* Ger., *Banana;* Sp., *Banana, Guineo.* **Date** (*Phoenix dactylifera*).—Fr., *Datte;* Ger., *Dattel;* Sp., *Datil.* Many others are of almost as great value.	Large quantities of dried and evaporated fruits are produced, among which are apples, apricots, plums (prunes) and grapes (raisins). Canned fruits, jellies, sirups, wines, liquors and vinegar are manufactured.	Different fruits thrive in different climates. Apples are widely raised in temperate regions, the largest production being in the northern United States and parts of Canada. France, Italy and Spain, the greatest grape-growing countries, are the largest producers of wine.	Refrigerator cars and special steamers make possible the shipment of fresh fruits to parts of the world distant from the region of production. There is a large export of green, ripe and dried apples from the United States and Canada to England and the Continent. Australia and South Africa are increasing their export of apples and other fresh fruit. Prunes, raisins and other dried fruits are shipped to all parts of the world from California and Mediterranean countries. Bananas, oranges and pineapples are the chief tropical fruits in general commerce. Florida and southern California, with the West Indies, Central America and northern South America, supply the markets of the United States. Those used in England and northern Europe come from the Canary islands and the West Indies. Dates come chiefly from northern Africa and western Asia.
Sugar is obtained from the juice of the sugar cane (*Saccharum officinarum*) and from the juice of the sugar beet (*Beta vulgaris*). Fr., *Sucre;* Ger., *Zucker;* Sp., *Azucar.* Maple sugar is from the juice of the sugar maple tree (*Acer saccharinum*). Sugar and sirup are made also from the juice of several palm trees.	Pure cane and beet sugar are in every way identical. Raw cane sugar, brown to yellowish in color, produced by evaporation of the juice in open pans (muscovados), and crystals from vacuum pans are both important commercially. The price of raw sugar is determined by its purity as shown on chemical analysis. A fairly good indication of purity is found in color, and raw sugars are graded according to an accepted standard which is set by the Dutch government. *White sugar*, granulated, loaf and pulverized, as commonly sold, is more nearly chemically pure than most other articles of commerce. *Molasses*, from cane juice boiled in open pans, is palatable for human food, and, like all cane molasses, is fermented and distilled to make *rum.* *Molasses* from vacuum pans (whether from cane or beet juice) is not pleasant in taste, but is an important food for cattle and is distilled to make alcohol.	Sugar cane is grown in India, Cuba, Hawaii, Java, Brazil, Mauritius, Louisiana and other parts of tropics and subtropics. India's large production is consumed locally and enters little into export trade. Sugar beets are grown most extensively in Germany, Austria, Russia, France and United States. More than half of the world's supply of sugar (exclusive of India) now comes from the sugar beet. Economic modern processes necessitate the building of enormous mills and the manufacture of sugar on a very large scale. A factor of great importance in this has also been the production of sugar from beets, grown on the farms of the temperate zone, close to the point of consumption. Here the refuse or pulp from the beets, along with the molasses, is promptly used for stock food.	After harvesting, sugar cane is carried (usually by rail) promptly to the mill, where the juice is pressed out. Modern mills have nine rollers, arranged in three sets. The trash, or bagasse, is almost dry when it leaves the last rollers and is used as fuel to run the mill. The juice is boiled down, generally in vacuum pans heated by steam, and the sugar crystals which form are separated from the molasses in centrifugals. Sugar beets are sometimes stored for several months before being used. The juice is commonly extracted by diffusion; that is, the beets are sliced and soaked in warm water. The sweet liquid is then treated in practically the same way as cane juice. Raw sugar is refined or purified by dissolving it in water, treating it with lime and the serum of blood, filtering through animal charcoal and recrystallizing. The large sugar refineries are located in the United States and Europe. Sugars from the maple and the palm are produced only in small amounts and are only of local value. Sugar of milk is of some importance medicinally and industrially.

FOODSTUFFS—Continued

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Alcohol is formed as a result of the fermentation of sugar and is therefore obtainable from practically any fruit or from any starchy matter through conversion of the starch into sugar. Alcohol is also a product of wood distillation. Fr., *Alcool;* Ger., *Weingeist;* Sp., *Alcohol.*	Alcohols differ in chemical composition according to the source. Grain alcohol, denatured alcohol and wood alcohol are the chief commercial types.	All parts of the world make and use alcoholic liquors. Distilled liquors contain more alcohol than fermented drinks. Wood alcohol and denatured alcohol are finding an increasing use for many industrial purposes in Europe and America, largely because of the lessened tax on their production.	Grain alcohol is distilled from fermented grain, chiefly Indian corn, in the United States. Potatoes are the most important source of alcohol in Germany. For industrial purposes it is denatured, or rendered unfit for use in beverages, by the addition of substances which give it an objectionable taste, odor or color. Alcohol finds a large use for heating, lighting and the development of power in alcohol motors. In these uses Europe leads. It is employed also in the manufacture of artificial silk, ether, paints, varnishes and hundreds of other products.
Tea, as it appears in commerce, is the prepared leaves of a bush or small tree (*Thea sinensis*). Fr., *Thé;* Ger., *Thee;* Sp., *Te.*	Teas are classed commercially according to the district of production as China, Ceylon, India, Assam, Japan, Formosa, Java; according to the method of preparation giving sun-dried, pan-fired, basket-fired; (*a*) green—Gunpowder, Imperial, Hyson, Caper, etc.; (*b*) black—Pekoe, Oolong, Souchong, Congou, etc., and according to the quality, dependent chiefly on the age of the leaf. *Brick tea* is commonly of low grade and not salable in the United States. It is made from tea dust and sweepings or from large leaves and trash. It has a large sale in Tibet and Russia. *Soluble tea,* or tea extract, and *tablet tea* are not of great commercial importance.	Tea is grown chiefly in hilly country throughout eastern and southern Asia. China, Ceylon, India, Japan and Java are the chief producing countries. The cultivation of the tea plant requires great care to produce leaves of perfect quality, young, tender and fragrant. The very youngest leaves and leaf buds, when properly prepared, sell for the highest price. In some places tea is picked only once or twice a year, while in other countries, where the climate is favorable to rapid growth of new shoots, the pickings are very frequent.	Green and black teas are made from leaves of the same species of plant. For black tea the leaves are allowed to wither and ferment slightly before being dried, usually over a charcoal fire. Green teas are prepared by drying the leaves more quickly and not allowing them to ferment. Tea is popular because of its pleasant taste and stimulating quality (due to the theine, or caffeine, which it contains). Outside of tea producing countries, the chief consumers are English-speaking people. The United Kingdom buys about half of all export teas, chiefly from Ceylon, Assam and Bengal. The United States uses more green tea than any other country, much of our supply coming from Japan, Formosa and China. Much Chinese tea is exported overland to Russia.
Coffee is the seed of a small tree. The world's supply of coffee is produced chiefly by the species of tree which was originally native in Abyssinia and cultivated in Arabia (*Coffea arabica*). The Liberian coffee tree (*C. liberica*) is cultivated to a limited extent. Fr., *Café;* Ger., *Kaffee;* Sp., *Café.*	The commercial varieties of coffee are named according to the districts of production, and to a very considerable extent these names when so applied indicate flavor (Mocha, Java, La Guayra, Santos, Rio, etc.). Such names as Mocha and Java, indicating high-grade coffees, have in the past been applied to beans from other localities, but this practice has been stopped in the United States by recent pure food laws. *Coffee extract* is prepared for sale to only a small amount. The popularity of coffee is due to the fact that, like tea and chocolate, it contains caffeine, a mild stimulant.	Coffee is cultivated in many parts of the tropics. Brazil is by far the greatest producer, the coffee district being mainly in the states of Sao Paulo, Rio de Janeiro, Minas Geraes and Espirito Santo. Much coffee is grown in the mountains of northwestern South America, Central America and the West Indies. Coffee is grown in Java and other parts of the East Indies, as well as in smaller quantities in Arabia, Africa and Australia.	Two beans are usually contained in each red coffee berry. The berries are sometimes dried in the sun and then cleaned by machinery to separate the beans from the several coats which cover them. In the wet method the berries are first crushed and washed to free them from the pulp, after which the beans are dried in the sun and cleaned by machinery. Coffee is roasted before use and people in some parts of the world prefer a much darker roast than others. Coffee is but little adulterated at the present time, but there are various substitutes on the market, such as chicory, roasted barley, etc. The United States uses more coffee than any other part of the world both in total amount and per capita.
Cacao Beans are the seeds of a rather small tree (*Theobroma cacao*). Fr., *Cacao;* Ger., *Cacao;* Sp. *Cacao.* (This species is absolutely distinct from the cocoanut palm and from coca, the leaves of which yield cocaine.)	Cacao beans are classified commercially according to the place of origin as San Thomé, Bahia, Esmeralda, Guayaquil, Mexican, etc., and according to the method of drying as fermented (rotted) or unfermented. *Cocoa* and *chocolate* in its many forms, bitter, sweet, milk, candy, etc., are increasingly used for food and drink. They are in some respects superior to both tea and coffee in supplying nutriment (oil, starch and albuminoids) in addition to the same stimulant principle. *Cocoa butter* is added to some of the finest candies and enters into the manufacture of cosmetics, pomades and salves. Cocoa shells are of scarcely any importance.	Cacao trees are grown in warm moist climates, usually in the shade of larger trees. Brazil, Ecuador and the island of Sao Thomé in the gulf of Guinea, Venezuela, Trinidad, Mexico, Central America, Ceylon and the East Indies produce cacao. The beans grow in pods six to ten inches long, each of which contains, perhaps, fifty seeds. These, after removal from the rind, are dried, generally in the sun, on especially prepared floors. It is customary to allow them to ferment slightly before drying, to develop the flavor.	Chocolate is made by grinding cacao beans which have first been cleaned, roasted, crushed and separated from the thin skin or shell which covers each. Sugar, vanilla or other ingredients are added to make sweet chocolate, etc. Cocoa or cocoa powder is made by pressing the ground-up beans in a powerful machine to remove some of the oil, and then pulverizing the remaining mass. Because it contains less fat than chocolate some people find it easier of digestion. Cocoa butter is the solid oil or fat removed in making cocoa. Great factories in the United States, Holland, France, Switzerland, England and Germany use the bulk of the crop of cacao beans. The United States imports beans from the producing countries and prepared chocolate and cocoa from Europe.
Yerba Mate or (Paraguay tea), the dried leaves of a tree (*Ilex paraguayensis*). Fr., *Maté;* Ger., *Maté;* Sp., *Maté.*	These leaves contain caffeine and are used like tea.	The tree grows wild in Paraguay and adjoining regions of Argentina and Brazil. The leaves are not selected but entire branches are taken.	After drying, the leaves and twigs are broken up and packed for sale. Maté is a common beverage in many parts of South America. Attempts, not very successful, have been made to popularise it in Europe and America.
Mustard is the seed of plants of the genera *Brassica* and *Sinapis.* Fr., *Moutarde;* Ger., *Senf;* Sp., *Mostazo.*	*Yellow* and *black mustard* are the important kinds, although some seeds are brown, red or white in color. Mustard is used in condiments and medicinally. *Oil* pressed from mustard seeds is used in some countries for burning and soap-making.	Widely cultivated in Europe, as well as in the United States, Asia and the East Indies.	Used in larger amount than any other spice. Black mustard, or a mixture of black and yellow mustard, produces on mixing with water a very pungent essential oil. To this is due the sharp smell and taste of mustard and its action on the skin (in mustard plasters, etc.). The flour made by grinding the seeds of black and yellow mustard enters into a great many condiments.
Pepper is the fruit of a vine (*Piper nigrum*). Fr., *Poivre;* Ger., *Pfeffer;* Sp., *Pimienta.*	*Black pepper* consists of the dry, unripe berries, while *white pepper* is the ripe fruits with the outer skin removed.	Grown chiefly in the neighborhood of Singapore and on the Malabar coast of India.	Whole peppers, *i. e.*, the entire berries, are pulverized to make ground pepper. Half the value of spices imported into the United States consists of whole black and white pepper.

FOODSTUFFS—Continued

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Red Pepper (Cayenne pepper or chillies) is the fruit of a small plant (*Capsicum* spp.). Fr., *Poivre de Cayenne;* Ger., *Spanische pfeffer;* Sp., *Pimiento.*	Enters into the composition of many condiments, and unripe appears as green peppers. There are large and small varieties.	Grown in almost all parts of the world and used in large amounts by people in warm climates, as Mediterranean countries, India, Africa, Mexico and West Indies.	In addition to the local production, the United States imports red peppers from Africa and Japan.
Allspice (or Pimento) is the dried unripe fruit of a tree (*Pimenta officinalis*). Fr., *Piment;* Ger., *Jamaikapfeffer;* Sp., *Pimento.*	A common spice, sometimes called *Jamaica pepper.*	Grown and produced almost exclusively in Jamaica.	The berries are simply dried in the sun and are commonly used whole. Popular because of its cheapness.
Cloves are the dried flower buds of a tree (*Caryophyllus aromaticus*). Fr., *Girofle;* Ger., *Gewurznelke;* Sp., *Clavos de Girofle.*	A spice used in food, confectionery and liquors. *Clove oil* is employed also in medicine and dentistry and is the basis for the manufacture of artificial vanilla.	Cultivated in the Molucca islands, East and West Indies, Zanzibar and Pemba.	The manufacture of vanillon, or artificial vanilla, from oil of cloves is important. The United States is the largest consumer of cloves.
Nutmegs are the kernels of the fruits of a small tree (*Myristica fragrans*). Fr., *Muscade;* Ger., *Muskatnuss;* Sp., *Moscada.*	The fruit looks like a small pear and the kernel is covered by a thin shell, outside of which is a red seed coat, which when dry is *mace,* another spice.	Nutmegs and mace are produced chiefly in Banda islands, East Indies.	The selling price has fallen within recent years so that West Indian plantations are no longer profitable.
Vanilla is the prepared, unripe seed pod of an orchid (*Vanilla planifolia*). Fr., *Vanille;* Ger., *Vanille;* Sp., *Vainilla.*	The pods, or beans, are used in flavoring. *Vanilla extract* is made from the beans and is imitated with tonka beans (from a South American tree) and artificial vanilla (from coal tar or oil of cloves).	Vanilla beans are produced in greatest amount and best quality in the state of Vera Cruz, Mexico. Reunion, Tahiti and Mauritius supply inferior grades. The vine requires a very moist climate.	Aside from the use in food, candy, chocolate, ice cream, etc., the cheaper grades of vanilla are employed extensively in flavoring chewing tobacco.
Ginger is the dried rootstalk of a plant (*Zingiber officinale*). Fr., *Gingembre;* Ger., *Ingwer;* Sp., *Gengibre.*	*Coated ginger* is dried with the skin on, while *peeled ginger* is scraped and bleached. Candied and preserved ginger, powdered ginger and ginger ale are commonly sold.	Grown in tropical countries, particularly in Bengal, Cochin China, China, Africa and Jamaica. African is usually coated ginger and Jamaica is the best quality of peeled ginger.	Ginger is next to pepper among spices in the amount imported yearly into the United States. Candied ginger is exported in large amount from Canton, China.
Turmeric consists of the dried stems of a plant of the ginger family (*Curcuma longa*). Fr., *Curcuma;* Ger, *Gelbwurzel;* Sp., *Curcuma.*	*Curry,* a much used condiment, is compounded with turmeric powder.	Grown in southeastern Asia and neighboring islands.	Used industrially in making yellow dye for cotton goods, in preparing fancy leather and in chemical work.
Cinnamon is the dried bark from young twigs of a small tree (*Cinnamomum zeylanicum*). Fr, *Cannelle;* Ger., *Zimmt;* Sp., *Canela.*	The best is in quills, or long rods, composed of pieces of bark rolled together. *Chinese cinnamon* or *cassia* is inferior. Used as a spice, usually in powdered form. *Cinnamon oil* is distilled from the bark as well as from leaves and twigs.	The best quality is from Ceylon. Cassia is from China, India and Indo-China.	Cassia is cheaper and much more common than true cinnamon.
Caraway, *anise, sesame, cardamoms, coriander,* and *pistachio* are less important spices.	*Sarsaparilla, fruit juices, aloes, asafetida* and many *essential oils* are used in flavoring.	Most spices are natives of Asia and the East Indies and are cultivated in the tropics and subtropics.	Many flavoring materials and extracts are made artifically in the chemical laboratory.
Olives are the fruit of a tree (*Olea europea*). Fr., *Olive;* Ger., *Olive;* Sp., *Oliva;*	*Pickled olives* are usually the unripe fruits prepared and bottled in salt water. *Olive oil* (sweet oil) is the most popular oil for table purposes. Oils from cotton seeds, peanuts, sesame seeds and other sources are used like olive oil.	The tree, which lives to a great age, grows in Mediterranean countries, California and Australia. Only limited districts produce olives fit for bottling. Most olives are grown for the production of oil.	Olives for pickling are soaked in lye to remove bitterness and often spices are added to the pickle to give an aromatic flavor. Olive oil is pressed from the ripe fruit. The poorer grades of oil are used in lubricating and for soap-making.

NARCOTICS AND MEDICINES

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Tobacco is the prepared leaf of a plant (*Nicotiana tabacum, N. rustica,* etc.). Fr., *Tabac;* Ger., *Tabak;* Sp., *Tabaco.*	Commercial grades are named from the locality of production as Havana, Sumatra, Mexican, Turkish, Virginia, etc. Certain grades are appropriate for use as cigar wrappers and others for fillers and are so named in the trade. *Cigars, cigarettes, chewing tobacco, smoking tobacco* and *snuff* are extensively used. The stems and ribs of the leaves are employed in *sheep-dip* and for fumigating greenhouses.	More tobacco is raised in the United States than in any other country and Kentucky raises more than any other state. India is the second largest producer. In Europe it is cultivated in Austria-Hungary, Russia, Germany, Netherlands, France, Belgium and Turkey. Cuba, Porto Rico, Mexico, Central and South America, China, Java, Sumatra, Philippines, Ceylon, Syria and Cape Colony are important producers. Seeds of Havana tobacco plants raised in Connecticut or elsewhere produce a grade of Havana tobacco. The many grades of tobacco are due to the varieties of the plant, as well as to soil, climate and cultivation. The curing of the leaf is of the utmost importance. It includes a period of slight fermentation and drying in well ventilated barns.	Cigars are nearly all made by hand, but many cigarettes are manufactured by machinery Nearly all plug tobacco is flavored with molasses, vanilla, licorice or other substances. The United States exports over half of the tobacco raised, chiefly to England in the form of leaf tobacco. Few cigars are exported, but cigarettes and plug tobacco go to the East Indies, China and Australia. Leaf tobacco is imported in large amount from Cuba, Sumatra, and Turkey and manufactured cigars are brought from Cuba. Large revenues are raised in many countries from the taxation of tobacco, and in Austria, France, Spain, Italy and Japan the tobacco business is a government monopoly.
Hops are the dried fruits of the hop vine (*Humulus lupulus*). Fr., *Houblon;* Ger., *Hopfen;* Sp., *Lupulo, hoblon.*	Hops are employed chiefly in brewing beer and malt liquors.	They are cultivated in almost all parts of Europe, especially in England, Germany and Austria. In the United States, California, Oregon, Washington, New York and Wisconsin produce the largest crops.	Hops are added to the malt, liquor, or wort, before fermentation and give a bitter flavor to malt liquors. Hops are not exported on a large enough scale to be an important item in commerce.

NARCOTICS AND MEDICINES—Continued

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Opium is the dried juice of the white poppy (*Papaver somniferum*). Fr, *Opium;* Ger., *Opium;* Sp., *Opio.*	Opium is valuable as a narcotic because of the morphine and other alkaloids it contains. *Laudanum* is a tincture of opium and alcohol. Paregoric is a common preparation in which opium is an ingredient.	Opium culture is an important industry in northern India, China, Persia, Asiatic Turkey and Egypt. In China the government strongly discourages opium smoking and has greatly restricted the cultivation of the poppy. The juice is obtained by scratching the seed capsule and collecting the little drops which exude on it. The juice is then further dried in the sun.	Opium for smoking is exported to China from India. It is used in the form of pills in Mohammedan countries like Persia and Turkey. The United States imports opium for medicinal purposes chiefly from Turkey in Asia.
Quinine is the bark of a tree (*Cinchona sp.*). Fr., *Quinquina;* Ger., *Chinarinden;* Sp., *Quina.*	A drug of great importance, much used in the form of sulphate of quinine or other salts.	Originally native in the Andes and hence called Peruvian bark. The world's supply now comes from plantations in Java. Produced also in South America, Ceylon and India.	The principal market is Batavia, Java, from whence it is largely shipped to Holland
Coca is the leaf of a small tree or bush (*Erythroxylon coca*). Fr., *Coca;* Ger., *Cocablatter;* Sp., *Coca.*	*Cocaine*, an alkaloid which produces local anæsthesia, is the important constituent	Cultivated chiefly in steep valleys in the Andes of Peru and Bolivia, in smaller quantities in India, Ceylon and Java.	The Indians of the Andes chew the leaves on account of the stimulating effect, and the bulk of the crop is so used. The residue is exported to manufacturers of medicinal preparations in Europe and America.
Medicinal Plants and drugs are numbered by the hundred. Among the most important are:	These are used in the form of extracts, tinctures and other pharmaceutical preparations.	Many grow wild, but the tendency of modern medicine is to use material from carefully selected plants cultivated for the purpose.	The preparation of medicines is carried on by a large number of firms in practically all parts of the world. The trade in drugs, however, is of less relative importance now than it was in the middle ages, when rhubarb, for example, occupied a prominent place in the list of commodities.
Rhubarb, a genus of plants belonging to the family *Polygonaceae.* Fr., *Rhubarbe;* Ger., *Rhabarber;* Sp., *Ruibarbo.*	Its root has long been recognized as of medicinal value owing to its astringent properties. The principal kinds of medicinal rhubarb have received such names as Russian or Turkey, East Indian, Himalayan, Chinese, and English, according to their source.	The best comes from China, though it is called Turkey rhubarb. In Europe and America generally there are several kinds of rhubarb cultivated for the sake of their stalks.	Rhubarb possesses more or less purgative and astringent properties; this is essentially the case with the roots, and hence these are largely used in medicine. The leaf-stalks of certain species are now largely used for tarts, puddings, jam, etc., and the juice is made into a kind of wine.
Sarsaparilla, the dried roots of several plants of the genus *Smilax.* Fr., *Salsepareille;* Ger., *Sarsaparilla;* Sp., *Zarzaparrilla.*	*Smilax medica* supplies the sarza of Vera Cruz. *S. siphilitica*, or *S. papyracea*, yields the Lisbon or Brazilian sort. *S. officinalis* belongs to Central America, although it yields the kind known as Jamaica sarsaparilla. *Hemidesmus indicus* yields the East Indian sort.	There are two special varieties obtained from Jamaica and Lima respectively. The roots are very long, of the thickness of a quill, dark brown in color and bitter in taste.	Sarsaparilla is valued in medicine on account of its mucilaginous and demulcent qualities. Various decoctions made from the roots are medicinally used as tonics and diuretics, and derive their properties from the presence of starch, resin, a volatile oil, and the crystalline principle smilacine.
Aconite is a hardy herbaceous plant, of the family *Ranunculaceae*, represented by the well-known wolfsbane or monkshood. Fr., *Aconit;* Ger., *Eisenhütchen, Wolfswurz;* Sp., *Acónito.*	An alkaloid contained in the leaves of monkshood. It is one of the most powerful poisons known.	The plants are natives of Europe, Asia, and North America, but the woolly aconite, or monkshood, is probably a native of Great Britain.	They are remarkable for their poisonous properties and medicinal qualities, being used internally as well as externally in rheumatism, gout, neuralgia, etc. In certain forms, a tincture of the root is used medicinally in cases of heart disease.
Ipecacuanha, the dried root of several plants of the family *Rubiaceae.* Fr., *Ipecacuana,* Ger., *Ipecacuanha, Brechwurzel;* Sp., *Ipecacuana.*	The best is the annulated, yielded by the *Cephaelis ipecacuanha.*	It is a native of Brazil, and the dried root is exported from the Rio Janeiro, Buenos Ayres, and other South American ports. Recently the cultivation of the plant has been introduced into India and Ceylon. The name of *American ipecacuanha* is given to the *Euphorbia ipecacuanha*, a plant which grows in sandy places in North America.	It is simply the root that is valuable, and in its bark exists the active principle emetine, which renders ipecacuanha of service in medicine. The color of the root is generally brown or red. The cases in which ipecacuanha is used are mainly dysentery, asthma, and coughs.
Belladonna, a plant, *Atropa belladonna*, or deadly nightshade of the family. *Solanaceae.* Fr., *Belladone;* Ger., *Belladonna;* Sp., *Belladama.* All parts of the plant are poisonous, and the incautious eating of the berries has often produced death.	The inspissated juice is commonly known by the name of extract of belladonna.	A plant which has narcotic and poisonous berries, a native of Europe.	The extract of the plant is used medicinally for soothing irritation and pain, and by oculists for the purpose of dilating the pupil during an examination of the eye, and diminishing the sensibility of the retina to light. The activity of belladonna is owing to the presence of the alkaloid atropine.
Nux Vomica, the fruit of a species of *Strychnos*, order *Loganiaceae.* Fr., *Noix vomique;* Ger., *Brechnuss;* Sp., *Nuez vómica.*	The taste of the berries is exceedingly bitter, and from them the two alkaloids strychnine and brucine are obtained.	The plant is chiefly found in Cochin China and the East Indies. The fruit of the tree is a large berry, much like a small orange, and in it the seeds are laid flat.	The seeds are mainly exported from India, and their only value is for the extraction of the alkaloids, which are used in medicine. The alkaloids are known as a very virulent poison.
Castor, the name of the plant *Ricinus communis*, and also of the oil extracted from the seeds of the plant. Fr., *Huile de ricin;* Ger., *Rizinusöl;* Sp., *Aceite de ricino.*	The beans and the oil made therefrom.	It is a native of India, but its cultivation is now very widespread. The seeds are oval in shape, and mottled brown in color.	The oil is obtained from the seeds by bruising and pressing. It is afterward heated to the boiling point, which coagulates and separates the albumen and impurities. Castor-oil is used medicinally as a mild but efficient purgative. It is chiefly imported from India.
Areca, a genus of lofty palms with pinnated leaves, and a drupe-like fruit inclosed in a fibrous rind. Fr., *Arec;* Ger., *Areca;* Sp., *Areca.*	It produces nuts and fibers.	The tree grows in various parts of the East Indies, and is cultivated on account of its nuts. There are two species of areca and each of them is remarkable for the for the purposes to which its fruit is applied. One is the *Areca catechu*, also known as the betel-nut palm, which is one of the most beautiful trees of the East Indies.	With lime and the leaves of the betel pepper, the areca-nuts when green form the celebrated masticatory of the east. They are an important article in eastern trade. The nuts are also imported into Europe and America for the manufacture of tooth powder.

MAKING WILLOW FURNITURE



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1—The willow withes as they come already stripped of bark and tied up in bundles from Europe. The best willow comes from France. **2**—The first step in making furniture is to soak the willow for several hours in water. This makes it soft and pliable. This photograph shows an operator putting a bundle of willow in the tank to soak. **3**—Showing chairs made of willow which are almost finished. The withes are carried up through the frame and back of the chair and finished off in a heavy braid around the top edge. The ends are then clipped off and the chair is finished. **4**—This photograph shows an expert workman weaving a chair from willow withes The best workmen are Hungarians. This art has been introduced into this country from Europe. **5**—This photograph shows an expert workman weaving a chair from willow withes. **6**—A fine specimen of the willow weavers art. A finished chair with the workman going over the edge and clipping off the last projecting ends of the willow. **7**—Before leaving the factory the willow porch sets are fitted with seat cushions and pillows. This photograph shows the cushion maker supplying a beautiful porch settee with pillows and cushions. (See page 404.)

NARCOTICS AND MEDICINES—Continued

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Aloe, a plant of which there are nearly two hundred species. Fr., *Aloès;* Ger., *Aloe;* Sp., *Aloe.*	From the juice of the leaves of many species a drug is obtained, known as aloes, which is of much value in medicine. *Aloe fiber* is obtained from species of *aloe, agave, yucca, etc.*, and is made into coarse fabrics, ropes, etc.	The principal drug-producing species are the Socotrine aloe, the Barbadoes aloe, the Cape aloe, etc. A beautiful violet color is afforded by the leaves of the Socotrine aloe. The American aloe is a different plant altogether; as are also the aloes or lign-aloes of scripture, which are supposed to be the *Aquilaria Agallochum* or aloe wood.	Some of the larger kinds are of great use, the fibrous parts of the leaves being made into cordage, fishing nets and lines, cloth, etc. The inspissated juice of several species is used in medicine, under the name of *aloes*, forming a bitter purgative. Formerly the chief source of the drug was Socotra, but it is now imported from various parts of the world.
Kola, the seeds or fruit of the *Sterculia acuminata.* The nuts are also known as guru nuts, Fr., *Noix de kola;* Ger., *Kotanüsse;* Sp., *Nueces de kola.*	Nuts and alkaloids.	The tree grows extensively in tropical Africa.	Medicinally the nuts are employed in case of diarrhœa and affections of the liver. Large supplies are shipped from the Gambia to France and Germany, where they are used to adulterate cocoa and chocolate.
Angostura Bark, the aromatic bitter medicinal bark obtained chiefly from *Galipea officinalis.* Also called cusparia bark. Fr., *Ecorce d'Angostura de Columbie;* Ger., *Angosturarinde;* Sp., *Corteza de Angostura.*	Chiefly valuable for its bark.	The tree is 10 to 20 feet high, and grows in the tropical regions of South America.	The bark is valuable as a tonic and febrifuge and is also used for a kind of bitters. From this bark being adulterated by the poisonous bark of *Strychnos Nux Vomica, its use* as a medicine has been almost given up. It is an article of considerable commerce in Venezuela.

FIBERS

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Manila Hemp is a fiber obtained from the leaf stalk of the abaca (*Musa textilis*) of the banana family. Fr., *Chanvre de Manille, Abacá;* Ger., *Manila hanf;* Sp., *Abacá.*	The strongest rope fiber in common use, especially desirable for marine cordage. The finest fibers are used by natives in the Philippines for weaving sinamay cloth.	Produced commercially only in the Philippine islands. Practically all of this fiber is cleaned by hand.	The most important export from the Philippines. The bulk of the production is sent to the United States and England.
Sisal (or sisal hemp) is a hard, strong fiber from the leaves of a century plant (*Agave sisalana*). Fr., *Sisal, Chanvre d'Amerique;* Ger., *Sisal hanf;* Sp., *Henequen, Maguey.* Many similar fibers are obtained from the leaves of other species of *agave* plants.	Sisal is very important for making rope and twine. All of these fibers are used locally for making mats, bags, ropes, harness etc.	Sisal is cultivated in Yucatan and the Bahamas. The home of the agave plants is Mexico and Central America and this part of the world produces most of these fibers.	On modern plantations machines have superseded the primitive hand methods of cleaning the fiber. Sisal is the chief product of Yucatan and its greatest export. The bulk of the production is used in the United States in making rope, twine and sacking. All of the other agave fibers are of less commercial importance than sisal.
Willow is a tree or shrub, yielding pliable twigs, or withes (*Salix* spp.). Fr., *Saule;* Ger., *Weide;* Sp., *Sauce.*	Willow is used in basketry and for light, easily movable furniture.	The willow is native to many parts of the world, occurring as a shrub in cold regions and as a tree in temperate and warm climates.	Willow furniture is an important product. The pictures on the preceding page depict this use of the tough, pliable willow shoots.
New Zealand Flax (or New Zealand hemp) is a fiber from the leaves of a plant (*Phormium tenax*) of the lily family. Fr., *Chanvre de la Nouvelle Zelande;* Ger., *Neuseeland-Hanf;* Sp., *Cañamo de la Neuva Zelanda.* Fibers more or less similar to the foregoing are obtained from the leaves of other plants.	Used in rope making.	A wild plant in New Zealand. Prepared by scraping away the pulpy part of the leaf.	An important cordage fiber. The fiber exported is all graded by New Zealand government inspectors, who certify to its quality.
	These are all cordage fibers and some of them are much used by native people.	The plants grow wild in the warmer parts of both the old and the new worlds. Some are cultivated, but on a smaller scale than with sisal.	While these fibers are used to some extent in the mills of Europe and America, they are of relatively small importance.
Flax is the bast fiber of an annual herb (*Linum usitatissimum*). Fr., *Lin;* Ger., *Flachs, Lein;* Sp., *Lino.*	Flax or linen fiber and linseed oil are the chief products of the plant. *Tow* is a by-product in making linen and flax yarns and fabrics. *Linseed oil* is used in paints, varnishes, printer's ink, oilcloth and linoleum. *Linseed oil-cake* is a valuable cattle food. *Flax seeds* find limited use in medicine.	Flax is grown for fiber in Russia, Belgium, Italy, France, Holland, Ireland and Egypt. Little flax fiber is produced in the United States. Plants for fiber production are straight stemmed, while the varieties grown for seed have many branches. Flax seeds are produced in Russia, India, Argentina and the United States. Plants harvested for fiber are pulled up by the root in order to obtain the greatest possible length. The fiber is separated from the stalk of the plant by retting, a process of partial decay, breaking and scutching to remove the woody parts and hackling or combing. In the best grades of flax most of this work is done by hand.	Flax yarns are used in making rope, twine, bagging and coarse unbleached fabrics. Linen yarns are made into products of the better grade, including fine linens, cambrics, laces, etc. Linen is bleached by exposure to the sun and by treatment with a dilute solution of chloride of lime. Linen rags are the stock for the best qualities of paper. The United States imports flax fiber mainly from Europe, as well as large quantities of linens, laces, etc. Some flax seeds are imported and large amounts of linseed oil-cake are sent to Europe.

FIBERS—Continued

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Hemp is the bast fiber from a tall plant (*Cannabis sativa*) of the nettle family. Fr., *Chanvre;* Ger., *Hanf;* Sp., *Canamo.* Other hemps of different botanical origin and having quite different qualities are called by such names as manila hemp, sisal hemp, tampico hemp, Mauritius hemp, sunn hemp, bowstring hemp, etc. Strictly speaking, none of these is true hemp.	As with other cordage fibers of this character, the long, combed fibers are called line and the short strands, tow. The commercial fiber is longer, coarser and less strong than flax. It cannot be bleached perfectly white, although used in so-called coarse linens. Russian, Italian and Kentucky, as applied to hemp, denote the country of origin. Italian hemp is the finest, Kentucky the strongest. *Hemp oil* is pressed from the seeds. The dried leaves (*bhang*) are smoked or made into a drink in India and used, as is an extract (*hasheesh*), as an intoxicant.	Cultivated in Russia, the warm countries of Asia, the shores of the Mediterranean, Kentucky, Missouri, Illinois and California. The fiber is extracted by rotting, cleaning and combing, but more of the work is done by machinery than in the case of flax.	Russia produces more hemp fiber than all the rest of the world. Russia and Italy are the largest exporters. The United Kingdom uses a very large amount of the fiber in making binder twine and bagging. Hemp is considerably used in carpet manufacture. The use of jute for making bagging and burlap has had the effect of lessening the demand for hemp. Hemp oil is used in paints, varnishes and soap. The oil-cake is a cattle food.
Jute is the bast from a tall plant (*Corchorus sp*). Fr., *Jute, Chanvre de l'Inde;* Ger., *Jute, Jutehanf;* Sp., *Cañamo de las Indias.*	The commercial fibers are long, but softer and weaker than hemp. It does not bleach well and is less durable than hemp, especially when exposed to dampness. Extensively employed in cordage, burlap, bagging, carpets, etc. *Jute butts*, or rejections, are an important paper stock.	Grown in large quantities in the Ganges valley, India, and in lesser amount through other parts of southeastern Asia. The stalks are rotted and treated like flax and hemp.	Jute does not easily spin into fine threads. Its chief use is in making burlap and gunny sacks, although it is used in twine, rope, carpets, curtains, upholstery fabrics such as plushes, etc. Calcutta is the great shipping port for jute fiber and Dundee, Scotland, the most important place for its manufacture. There are large jute mills making burlap, etc., in India, the United States and other countries. Paper factories in this country use a large amount of jute butts for making wrapping papers.
Ramie is the bast fiber from a plant (*Boehmeria nivea*) of the nettle family. Fr., Ger. and Sp., *Ramie.*	Commonly called China grass, or rhea, although fibers from other plants sometimes receive these names. Usually strong and silky in appearance but difficult to clean and bleach.	Cultivated chiefly in China. Produced in Indo-China, India and on a small scale in Mediterranean countries. Will probably be cultivated widely when cheap processes can be employed for the preparation of clean fiber.	Used largely in China for weaving grass cloth, or Canton linen. The fiber is very difficult to "de-gum." Many experiments are being made to find a satisfactory process. Now used in making fabrics which resemble linen, laces, underwear, plushes, etc. Will be used more largely as its manufacture is improved.
Bast Fibers from other plants are of some importance; among these are *sunn hemp, linden bast, Cuba bast* and *lace bark.*	Sunn hemp is similar to jute in its qualities and uses. Linden bast or Russian bast is made into mats, ropes, etc.		These fibers are not used on a large scale. Cuba bast is woven into ladies' hats and used for tying bundles of cigars.
Coconut Palm.—This tree (*Cocos nucifera*) yields a great variety of useful products. Fr., *Cocotier;* Ger., *Cocospalme;* Sp., *Coco.*	*Coconut fiber* (*coir*, or coco fiber) is obtained from the outer husk of the nut. The shells are made into cups. The milk is a nourishing drink. The kernel or meat of the nut is used for food as *shredded* or *desiccated coconut.* Dried coconut meat (*copra*) is pressed to make *coconut oil* for soap and candle making and cooking. The *oil-cake* is a valuable cattle food. Coconut wood (porcupine wood) from the trunk of the tree is not of great importance. *Palm sugar* is made from the juice collected from the flower spathe or this juice is fermented to make alcoholic drinks (*toddy, tuba, arrack*).	The coconut palm grows in coast regions throughout the tropics. It is commonly cultivated, but frequently its products are of only local use. Plantations in nearly all parts of the world supply some articles for export.	Coconut fiber is made into matting, ropes and brushes, and the poorer grades are used in upholstery. Coco fiber comes chiefly from Ceylon and India. Much is imported into the United States in the form of yarn. Coconut oil and copra are among the chief exports of Ceylon. Copra is obtained also from islands in the Pacific and Indian oceans and in smaller quantities from other parts of the tropics. Coconut oil is manufactured and used on a larger scale in Europe than in the United States. Fresh coconuts come to this country largely from the West Indies and northern South America.
Cotton consists of the seed hairs of a plant (*Gossypium* spp.). Fr., *Coton;* Ger., *Baumwolle;* Sp., *Algodon.*	The chief commercial types of cotton are American upland, sea island, Egyptian, Indian, Brazilian and Peruvian. These differ in the length of the individual fibers (staple). The quality is indicated by the grading under such names as fine, good, good fair, fully fair, middling fair, good middling, middling, etc. Cotton fiber is spun into *yarn* and made into *thread, muslin, calico* and hundreds of other cotton or part cotton fabrics. *Mercerized yarn* is prepared by treatment with strong caustic alkali. *Cotton linters* are used in cheap yarns, cotton batting, mattresses, and the manufacture of celluloid and artificial silk. *Cottonseed oil* is used for table purposes, for packing sardines, for cooking, making soap, candles, etc.	Cotton is next to corn the most valuable farm crop of the United States. Nearly three-fourths of all the cotton produced annually in the world is grown in the south Atlantic and gulf states. The remainder comes mostly from India, Egypt, China, Brazil, and Asiatic Russia. A comparatively small percentage of the crop is sea island cotton from the coast of Georgia and from islands in the West Indies. The area of cotton production is spreading in the United States as well as in foreign countries. The cotton fiber, attached to the seeds, is picked by hand from the plants in the field. The seeds and fiber (or lint) are separated by machines (cotton gins) and the cotton is pressed into bales. Cotton seeds are subjected to heavy pressure in machines in order to extract the oil. The oil-cake is a valuable cattle food and the hulls are used for fuel or for paper making.	The greatest centers of cotton manufacture are in England, New England, the Carolinas and Georgia. Germany, Russia, India and Japan are among the important manufacturing nations Modern cotton mills are of immense size. The bales are opened, the cotton cleaned, carded, and twisted into slivers, rovings, and finally into yarn. Raw cotton, cotton yarn and cotton fabrics are all important in trade. About half the crop of the United States is exported in bales to be manufactured in the mills of other countries. Sea island cotton has the longest staple and is used for the finest qualities of yarn and fabrics. Egyptian cotton also has a long staple. Large amounts are imported into the United States. England has an enormous foreign trade in cotton fabrics. The United States exports chiefly unbleached muslin, more of which goes to China than to any other country.
Silk Cotton consists of the seed hairs of various trees and plants. Kapok is from a large tree (*Ceiba pentandra*). Fr., *Kapok, Soie vegetale;* Ger., *Kapok, Wolle der Wollbaume;* Sp., *Kapok, Algodon de seda.*	*Kapok* or *ceiba* is the commonest vegetable silk in commercial use. Similar fibers from other sources are called *balsa, pochote* and other names.	Kapok comes chiefly from Java, although the tree is common in many parts of the tropics. The crop is principally from wild trees.	These fibers can not be spun satisfactorily and are therefore used only for upholstery. The chief European market is in Holland.

FIBERS—Continued

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Raffia is peeled from the large leaflets of a palm tree (*Raphia pedunculata*). Fr., *Raffia;* Ger., *Raphiafaser;* Sp., *Raphia.*	Madagascar raffia is the only important grade. A similar soft fiber used locally is produced in West Africa.	From a very common wild tree.	Exported in considerable amounts from Madagascar and used by gardeners for tying plants. Used for making mats and basketry and in kindergartens.
Piassava comes from the sheathing bracts of certain palm trees, in West Africa *Raphia vinifera;* in Bahia, Brazil, *Attalea funifera;* in Para, Brazil, *Leopoldinia piassaba.* Fr., Ger. and Sp., *Piassava.*	Stiff coarse fibers known as West African bass, Bahia or Para bass or piassava.	From wild trees.	Used in making brooms and brushes. Piassava is an important export from the producing regions.
Kittool (*Caryota urens*) and **Palmyra** fiber or **bassine** (*Borassus flabellifer*) are from the leaf sheaths of other palms.	These and several other palm fibers of lesser importance are finer and less stiff than piassava.	Produced in Ceylon and India.	Fairly important for brush making, having some resemblance to bristles.
Palmetto fiber is from the leaf stalks and creeping stems of a palm (*Serenoa serrulata*).	The fiber and an extract used in tanning are both obtained from this palm.	Grows in Georgia, Florida, Alabama and Mississippi.	Manufactured in limited amount. Used for upholstery and in paper making.
Crin Vegetal is the shredded leaves of a palm (*Chamaerops humilis*). **Panama Straw** (*Carludovica palmata*) and many other fibers are of commercial value.	*Crin vegetal* and *Spanish moss* are used in upholstery, *zacaton* in brush making, *esparto* for paper stock, and *Panama straw* for weaving hats.	Crin vegetal grows wild in Algeria. Spanish moss is prepared for use in the Southern states. Esparto comes from North Africa. Zacaton roots from Mexico. The best Panama straw is prepared in Ecuador and Peru.	These fibers are fairly important in trade. Panama straw enters into commerce only as Panama hats and is not an article of export in its crude state.
Rattan is the stem of a climbing palm (*Calamus* species). Fr., *Rotin;* Ger., *Indianische Rohre, Rotang;* Sp., *Roten, Bejuco.*	Rattan cane is used whole or peeled. Split rattan is the bark which is removed from the peeled rattan.	Rattan vines grow wild in tropical forests of southeastern Asia. The thorny leaves and branches are cleaned away from the stems and the outer skin is removed. Then the rattan is cut into lengths, sorted according to thickness and tied in bundles.	Used for a multitude of purposes in the east. In Europe and America for making furniture, baskets, whips, etc. Split rattan is used for chair seats and peeled rattan for brushes and basketry. Exported largely from Singapore and Java.
Bamboo is the stem of the largest plant of the grass family (*Bambusa* spp.). Fr., *Bambou;* Ger., *Bambusrohr;* Sp., *Bamboa, Bambu, Caña.*	One of the most useful plants in the world. Whole stems and split bamboo are both important commercially.	Grows in tropical countries. Most common in southern Asia and the East Indies.	In the east, large bamboo serves for house construction, furniture, utensils, agricultural implements, fishing rods, canes and hundreds of other purposes. The young shoots are eaten as a fresh vegetable. Split bamboo is woven in basketry, mats, etc., and used in stiff brushes. Imported from the East Indies.

COMMERCIAL WOODS

SOFT WOODS OR NEEDLE-LEAVED WOODS

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Pine Wood is from various species of coniferous trees (*Pinus strobus, P. palustris,* etc.) Fr., *Pin;* Ger., *Fichte, Tanne;* Sp., *Pino.*	Soft pines are of several kinds, chiefly *white pine, western white pine, sugar pine* and *red pine.* Hard or *yellow pines* are more numerous and include *longleaf, (Georgia, hard* or *southern) pine, shortleaf (bull, spruce, Cuban, slash, pitch* or *loblolly) pine, western yellow pine* and *European (northern) pine,* called also *yellow deal* and *Scotch fir. Turpentine (spirits of turpentine)* and *rosin (colophony)* are prepared from the sap of certain species of yellow pine trees. *Tar, pitch, charcoal* and other products are obtained by distilling yellow pine wood.	Soft pine forests yield lumber in the northern United States and Canada and in the Rocky mountains. White pine was formerly the common timber in the Appalachians, but the supply is almost exhausted. Yellow pine is cut in large amount in the forests from North Carolina to Texas, and other hard pines come from the middle and far west, as well as from Mexico and the West Indies. Scotch fir is one of the most important woods of northern Europe. Turpentine is distilled from the sap of pines in Georgia and adjacent states, Russia, Austria, France and India.	The industries relying mainly on the forest and its products in the United States employ almost a million workers and add perhaps two billion dollars annually to the wealth of the nation. Pine is the most important construction wood in use. Very little of the great area formerly covered with white pine now remains in this country. The yellow pine is being cut rapidly and the price of lumber has practically doubled in the past twenty years.
Spruce (*Picea spp.*). Fr., *Sapin, Epinette;* Ger., *Fichte;* Sp., *Abeto, Picea.* **Hemlock** (*Tsuga* spp.). Fr., *Cigue;* Ger., *Schierling;* Sp., *Pinabete.* **Fir** (*Abies* or *Pseudotsuga* spp.). Fr., *Sapin;* Ger., *Tanne;* Sp., *Abeto,* are coniferous soft woods of great importance.	These are known by many names and there are several botanical species of each. *Black, white, red, tideland* and *Norway spruces, Douglas fir* and *European silver fir (Swiss pine)* are most important.	The spruces are common in Canada, northern Europe and on the northern Pacific coast of America and Asia. Hemlock is cut in northern United States, Canada, Japan and Siberia. Fir is found in the same general region as spruce.	The United States exports soft woods, chiefly pine, spruce and hemlock, to Europe, the West Indies, South America, Austria, Hawaii and Africa. Canada exports large quantities of spruce and pine to the United States and England. Russia and Sweden supply great quantities of soft woods to Europe, although the forests of Sweden are being rapidly cut away. Northern Japan and eastern Siberia contain forest areas rich in soft woods, which are beginning to be developed.
California Redwood comes from a coniferous tree (*Sequoia sempervirens*).	A soft, straight-grained, durable wood. Much used in shingles.	One of the largest trees of the world. Found only on the Pacific coast.	
Cedar. Fr., *Cedre;* Ger., *Zeder;* Sp., *Cedro,* and **Cypress.** Fr. *Cypres;* Ger., *Cupresse;* Sp., *Cipres,* are of many species. The true cedars belong to the genus *Cedrus.*	*Bald cypress, yellow cypress, Indian cypress, white cedar, juniper, red cedar* and dozens of other woods have more or less similarity.	These woods are widely distributed and extensively used, but are not marketed in such large amounts as the pines, spruces and firs.	

COMMERCIAL WOODS—Continued

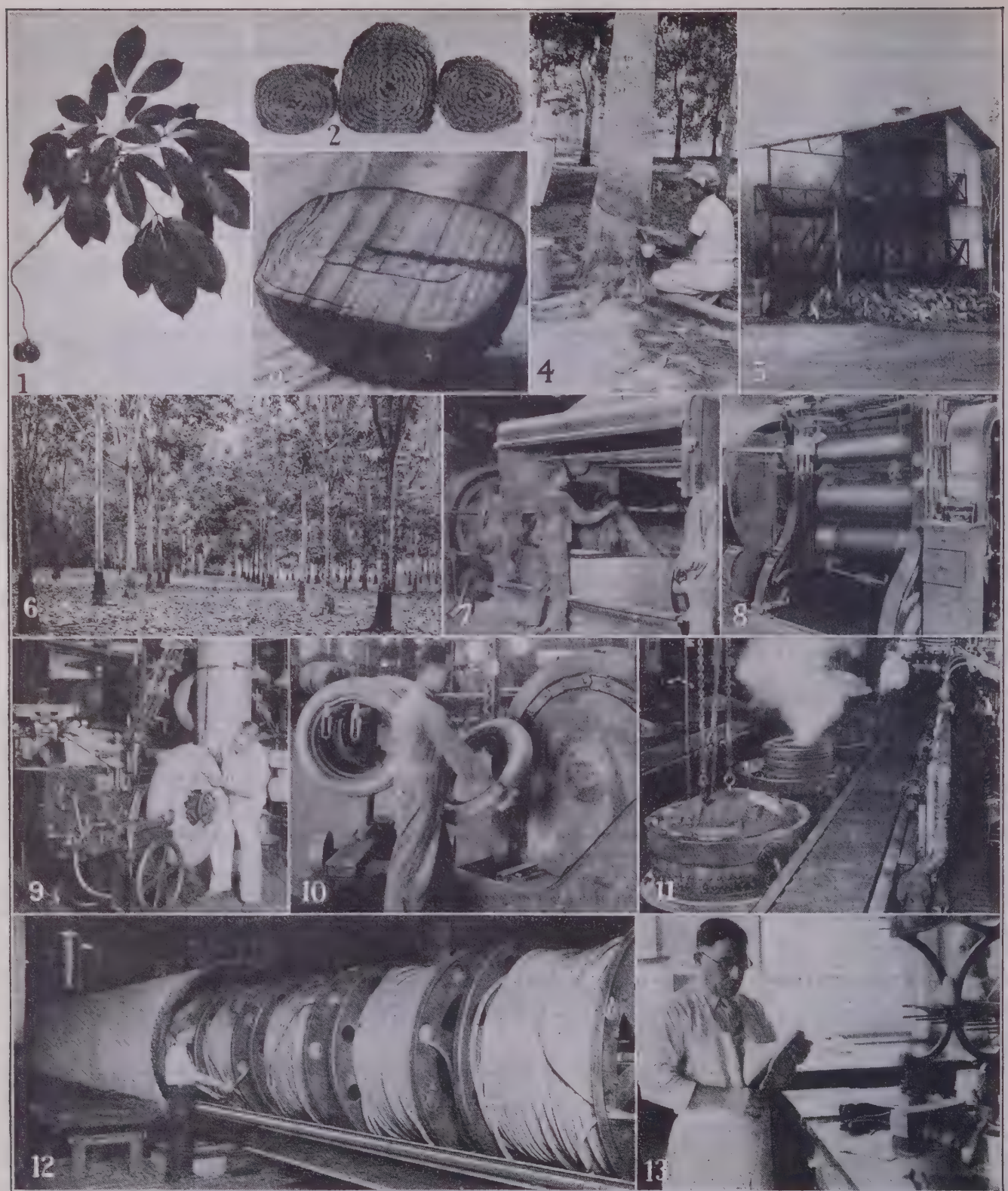
HARD WOODS OR BROAD LEAVED WOODS

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Populus, spp., a misnomer Tulip tree. **Carolina Poplar** (*Populus deltoides*) large trees. Fr., *Peuplier;* Ger., *Pappelholz;* Sp., *Alamo.*	Tulip tree (*whitewood*) and Carolina poplar (*cottonwood*), although classed in the trade as hard woods, are almost as soft as pine.	Both are from large trees in the eastern and central United States.	These are soft, light, comparatively cheap woods, extensively used for general construction. They are not especially strong. All of them are important in paper making.
Linden comes from the basswood or lime tree (*Tilia* spp.). Fr., *Tilleul;* Ger., *Linde;* Sp., *Tila, Tilo.*	*Linden, basswood* and *whitewood* are the names used in America. *Linden, lime* or *lin* are European names. The bark supplies a useful bast fiber for ropes, mats, etc.	Common in southern Canada, central United States and Europe, growing to be trees of fairly large size.	Similar to Carolina poplar.
Maple (*Acer* spp.).—Fr., *Erable;* Ger., *Ahorn;* Sp., *Arce, Meple.* **Birch** (*Betula* spp.).—Fr., *Bouleau;* Ger., *Birke;* Sp., *Abedul.* **Beech** (*Fagus* spp.).—Fr., *Hêtre;* Ger., *Buche;* Sp., *Haya.* **Sycamore** (*Platanus* spp.).—Fr., *Sycomore;* Ger., *Platane;* Sp., *Platano.* These are among the important hard woods in common use.	*Sugar maple, silver maple, rock maple, black birch, cherry birch,* and many other names are employed. Peculiarities of the grain are known as bird's-eye, curly, etc., in the trade.	All of these are obtained from the hardwood forests of central United States and Europe. In some European forests the trees have been carefully planted and scientifically tended.	These are close-grained hard woods, suitable for furniture and cabinet work. Birch is the wood commonly used in imitation of mahogany. The silver maple and the Japan maple are highly valued as shade and ornamental trees.
Oak is from many species (*Quercus alba, Q. rubra, Q. robur,* etc.). Fr., *Chene;* Ger., *Eiche;* Sp., *Roble, Encino.*	*White oak, chestnut oak, live oak, red oak, black oak, swamp oak, willow oak,* and many other varieties are found in the lumber trade. *Oak bark* is used in tanning leather. *Cork* is the bark of one species (*Q. suber*) found in Portugal, Algeria and Spain.	Chiefly from eastern and central United States and Europe. Oaks are found also in many other parts of the world.	An open-grained hard wood of great strength and durability. When cut parallel to the medullary rays (quartered oak) it exhibits a beautiful grain valued highly for cabinet work.
Chestnut (*Castanea* spp.) is a large tree. Fr., *Châtaigne;* Ger., *Kastanien;* Sp., *Castaña.*	American and European chestnut woods are very similar. The nuts are popular for food. An extract from wood and bark is used in tanning.	Formerly a very common tree in the northern United States and still abundant. Common also in Europe.	The wood is used extensively for cabinet work. It is open-grained, softer and much less strong than oak.
Ash (*Fraxinus* spp.).—Fr., *Fréne;* Ger., *Esche;* Sp., *Fresno.* **Elm** (*Ulmus* spp.).—Fr., *Orme;* Ger., *Ulme;* Sp., *Olmo.* **Hickory** (*Carya* spp.).—Fr., *Noyer;* Ger., *Hickory;* Sp., *Nogal americano.*	These woods are of much commercial value. Hickory nuts are marketed.	The trees are found in the central United States, some on the west coast. Ash and elm grow also in Europe and Asia.	Valuable for their toughness and elasticity. Used for tool handles, carriage and wagon building, furniture, etc.
Walnut (*Juglans* spp.).—Fr., *Bois de noyer;* Ger., *Nusskolz;* Sp., *Nogal.*	*American* black walnut, *English, Italian, French* and *Circassian* walnut are commercial varieties. The nuts are exported from southern Europe.	Formerly a very abundant tree in the central United States. Has now become scarce, and high priced. Grown in many parts of Europe.	Used for gun stocks, cabinet work, veneering, etc. A highly decorative wood which has gone out of style in the United States because it is difficult to obtain.
Cherry is from the wild black cherry tree (*Prunus serotina*).		Native in the eastern United States.	Valued on account of its red color. Like walnut, cherry has become scarce and high priced.
Sweet Gum is from a common tree (*Liquidambar styraciflua*).	The wood is called *gum, red gum, hazel* or *bilsted.*	Native in the United States and Mexico. Cut chiefly in the Southern states.	A cheap cabinet wood, used to some extent in building.

IMPORTED CABINET WOODS

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Mahogany is the wood of a tropical tree (*Swietenia mahagoni.* Fr., *Acajou;* Ger., *Mahoganyholz;* Sp., *Caoba.*	*Santo Domingo, Cuban* and other kinds are named from the locality of production. Honduras *bay wood* is of inferior quality. Nearly all of the wood with a beautiful grain, or figure, is cut into thin veneers.	A wild tree in tropical forests of the West Indies, Mexico, Central and South America. African mahogany (*khaya*) comes from the west coast.	One of the most sought for of all cabinet woods. Largely imported into Europe and America. Particularly useful because of its beautiful color, grain and durability.
Cigar-Box Cedar is from a tree of the mahogany family (*Cedrela ovorata*).	*Cedro* is the name under which this wood is largely handled.	Produced largely in West Indies, Mexico, Central America and northern South America. Tuna mahogany of Australia is very similar.	One of the important woods of commerce. Too soft for work of the best grade but considerably used for furniture.
Teak is from a large tree (*Tectona grandis*). Fr., *Teck;* Ger., *Teakholz;* Sp., *Teca.*	Especially valuable for shipbuilding because it is practically indestructible.	Chiefly from Burma. Grows in southeastern Asia and adjacent islands.	A very important export from farther India.
Ebony (*Diospyros* spp. and other tropical trees).—Fr., *Ebène;* Ger., *Ebenholz;* Sp., *Ebano;* and **Rosewood** (*Dalbergia* or *Machoeium* sp.)—Fr., *Bois de rose;* Ger., *Rosenholz;* Sp., *Palo de rosa.*	*Cocobolo, tulip, amaranth, padauk, satinwood,* and many others are used for cabinet work and fancy articles.	Nearly all of these hard woods of beautiful colors are from tropical forests.	*Lignum vitæ* is especially useful for making pulleys and caster wheels. These woods are obtained in only limited quantity and many of them are sold by weight rather than measure.

THE RUBBER INDUSTRY



1. A branch from a rubber tree, showing the leaf and the seed. 2. Roll brown crêpe, a form of crude rubber. 3. Up-river fine Para crude rubber. 4. Tapping a rubber tree. 5. House in which the crude rubber is smoked. 6. A rubber plantation in the Far East. 7. Mixing mill. Here the crude rubber is torn and kneaded in passing between large hollow iron rolls. 8. A calender, or set of rolls, used in making rubber sheeting. 9. Core type one-man tire building machine. 10. Operator placing raw tire on a conveyor which will take it to the press room, where it is automatically dumped into a mold and made ready for vulcanization. 11. Vulcanizing automobile tires. 12. Lead encased rubber hose ready for vulcanization with high pressure water inside. 13. Making rubber footwear.

Photographs 1, 10 and 13 by courtesy U. S. Rubber Co.; all others by Courtesy B. F. Goodrich Rubber Co.

GUMS, RESINS AND EXTRACTS

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Gum Arabic is from small thorny trees (*Acacia* spp.). Fr., *Gomme arabique;* Ger., *Arabisches gummi;* Sp., *Goma arabiga.* **Gum Tragacanth** and **Mesquite Gum** are similar.	*Kordofan gum, Senegal gum, Barbary gum, Cape gum* and *wattle gum* are all of similar nature.	The trees grow wild in sandy regions in Africa and Australia.	These gums are soluble in water. Used for making mucilage, confectionery, etc., and in stiffening and printing silk and cotton fabrics.
Copal is resin produced by trees of many species. Fr., and Ger. *Copal;* Sp., *Goma copal.* (*Trachylobium, Dammara, Hymenaea, Agathis,* etc.).	Copals are named usually from their locality as *Zanzibar* (the hardest), *Sandarusi, Mozambique, Sierra Leone, Benguela, Angola, Loango, South American, Manila,* etc. *Kauri* is from the kauri pine tree of New Zealand.	These resins are mostly gathered from the trunks and branches of living trees. The best and hardest varieties, like Zanzibar and kauri, are found underground, having been formed perhaps ages ago and become partly fossilized.	Used for making varnishes by dissolving them in spirits of turpentine and oil. These substances are commercially important.
Dammar, Sandarach, Benzoin, Asafetida, Myrrh, Olibanum, Aloes, Guiac, Dragon's blood, Kino, Peru Balsam, Tolu, Copaiba, Storax and **Gamboge** are resins, gum resins or extracts from the juices of plants.	Gum resins and resins of many kinds are used in varnishes, medicines, incense, etc.	Such forest products are gathered in nearly all countries.	Not of so much relative commercial importance as such materials were in the middle ages.
Rubber is the milky juice (latex) of many trees and vines of the tropics and subtropics. (*Hevea, Manihot, Castilloa, Ficus, Landolphia,* etc.). Fr., *Caoutchouc, Gomme elastique;* Ger., *Kautschuk, Federharz;* Sp., *Caucho, Hule, Goma elastica.*	Crude india rubber, or *caoutchouc,* has dozens of commercial varieties differing greatly in quality according to the nature of the plant and the process of preparation (*Para, Ceara, Central American, African, Ceylon, plantation,* etc.) Crude rubber is treated with sulphur (vulcanized) to make elastic and waterproof articles, as well as hard rubber goods (*vulcanite* and *ebonite*). Substitutes for rubber are made from rape oil, corn oil, etc.	The largest supplies of rubber come to market from the East Indies. Para rubber is prepared by smoking (drying) the latex over a fire. The latex is coagulated often by simple drying in the air and frequently by chemical or mechanical processes. Mexico and Central America, Africa and the East Indies furnish large amounts. Most of the world's supply comes from wild trees. Every year there is a larger production from plantations, and much of this, like the Ceylon rubber, is of very fine grade and brings the highest market price.	Rubber has, within a very few years, become an important article in the world's commerce. Its uses are multiplying and its price has risen in proportion. Factories in Europe and America make automobile tires, rubber bands, elastic cloth, toys, shoes, tubing, hose, waterproof cloth, stoppers, erasers, etc., as well as articles of hard rubber, such as combs, buttons, surgical and chemical appliances. Rubber is used in floor cloths, cements and varnishes. Old rubber articles are worked over and the reclaimed rubber utilized.
Gutta-Percha is from the milky juice of a tree (*Palaquium gutta*). Fr., and Ger., *Gutta-Percha;* Sp., *Guta-Percha.*	Similar in some ways to rubber.	From the East Indies.	Used to insulate submarine cables and for making golf balls. Singapore is the chief port of shipment.
Balata is similar.			
Chicle or *Sapodilla* is from the milky juice of a tree (*Achras sapota*). Fr., Ger. and Sp., *Chicle.*	Chicle is called also *gum chicle,* or *crude chewing gum.*	Chiefly from Yucatan.	Used in chewing gum.

OILS, FATS AND WAXES

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
See Cotton, Corn, Olive, Flax, Hemp, Cocoanut, Cacao for other oils. See also various animal oils and petroleum.	Vegetable oils are of two important types, *fixed* or *fatty oils* and *volatile* or *essential oils.* Fixed oils are either *drying oils* like linseed or *nondrying* like olive.	Fixed oils are obtained from seeds by pressure in powerful machinery or by chemical processes. The oil-cake remaining is used for cattle food and fertilizer.	Drying oils are used in paints and varnishes, preparing leather, etc. Nondrying oils are used for table purposes, cooking, illuminating, lubricating, soap and candle making, etc. *Glycerine* is a by-product in soap making.
Castor Oil is from the seeds of the castor plant (*Ricinus communis*). Fr., *Huile de ricin;* Ger., *Rizinusöl;* Sp., *Aceite de ricino.*	The cold drawn or cold pressed oil is used in medicine. Much castor oil is treated with sulphuric acid to produce *Turkey red oil* for use in dyeing and calico printing.	The largest production is in India. Grown in the tropics and warm temperate climates.	Used in soap making, lubricating, preparing artificial leather and celluloid.
Palm Oil is from the pulp and seeds of a palm (*Elaeis* spp.). Fr., *Huile de palme;* Ger., *Palmfett;* Sp., *Aceite de palme.*	Palm oil is from the pulp, palm kernel oil from the seeds.	From the coast of the gulf of Guinea, West Africa.	For making soap and candles, and used in the preparation of tinplate.
Peanut Oil, *sunflower, almond, sesame, poppy, rape seed, kapok, soy bean* and various other oils are used.		Seeds for oil production are little cultivated in the United States with the exception of flaxseed, cotton and corn.	Marseilles, Rotterdam, and several other European cities have great mills for the production of vegetable oils of this character.
Essential Oils are made chiefly from flowers and leaves of plants.	*Attar of roses, patchouli, lavender, violet, geranium, cedar, wintergreen, cloves, lemon, orange, sassafras, peppermint, citronella, lemon grass, cinnamon, bay, almond, eucalyptus* and many others are prepared.	Fragrant oils are prepared in large amount for the perfumery trade in France, Italy, Germany and Austria, from roses, violets and other cultivated plants. Peppermint oil is produced in the United States, and it, as well as menthol, comes from Japan.	These oils are obtained by distillation of the plant with water or else by absorbing the fragrance in lard or oil (enfleurage). They are used in perfumery, for flavoring and in medicine.
Camphor is from the wood of the camphor tree (*Cinnamomum camphora*). Fr., *Camphre;* Ger., *Kampher;* Sp., *Alcanfor.*	Although called *gum camphor,* this is strictly a volatile or essential oil.	From Formosa, Japan, China and Borneo. Prepared by distilling the wood with water.	Nine-tenths of the world's supply is exported from Formosa. Its production is a monopoly of the Japanese government. Used in making celluloid and smokeless powder, in medicine and as a protection against insects.

OILS, FATS AND WAXES—Continued

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Vegetable Waxes are from myrtleberries (*Myrica* spp.), Japanese waxberries (*Rhus* spp.) or the leaves of the carnauba palm (*Copernicia cerifera*). Fr., *Cire végetal;* Ger., *Vegetabilishes Wachs;* Sp., *Cera vegetal.*	*Myrtleberry* or *Bayberry wax*, *Japan wax* and *carnauba wax* are much like beeswax in their nature and uses.	Japan wax is produced only in Japan. Carnauba wax is from Brazil.	These waxes are found in commerce but are not of great importance.

DYESTUFFS AND TANNING MATERIALS

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Logwood (*Hoematoxylon campechianum*).—Fr., *Campeche;* Ger., *Kampeschenholz, Farbholz;* Sp., *Palode Campeche.* **Brazil wood** (*Coesalpinia* spp.).—Fr., *Bois de Bresil;* Ger., *Brasilholz;* Sp., *Madera de Brasil.* **Fustic, Young Fustic, Sappan, Cam, Bar, Peach** and other woods.	Handled commercially in logs, chips, or very commonly in the form of extract.	From the forests of tropical America and the West Indies.	Aniline and other coal-tar dyes have lessened the demand for these, as well as almost all other vegetable dyes. There is still a fairly large trade in logwood.
Indigo is obtained from the juice of the indigo plants (mostly *Indigoferum* spp.). Fr., *Indigo;* Ger., *Indigo;* Sp., *Añil, Indigo.*		India, Ceylon, Java and Central America are the chief producers. Formerly cultivated much more extensively.	Prepared by soaking the plants in water. The green solution turns blue on exposure to the air, the indigo separates and falls to the bottom of the tank.
Madder, Annatto, Safflower, Quercitron, Turmeric, Turnsole, Persian Berries, Saffron, Archil, Cudbear, Litmus, Woad and many other vegetable substances are used as dyes.			
Tanbarks are from many species of trees.	*Hemlock, white oak, wattle, mangrove, larch* and *willow* are used.	Obtained mostly as by-products of lumber industry. In the United States, hemlock is most important.	Extracts from the bark are usually prepared and the material is found in commerce in this form. The value is largely dependent on the percentage of tannin.
Tanning extracts are prepared from many woods, fruits, leaves, roots and galls.	*Oak, chestnut, quebracho* and *cutch* are extracts from wood. *Myrobalans, valonia, divi-divi* and *algarobilla* are fruits yielding tannin. *Sumac* and *gambir* leaves, *canaigre* and *palmetto* roots and oak and sumac galls are all employed.	Obtained in nearly all parts of the world.	Different substances or extracts are employed in preparing different qualities of leather.

MISCELLANEOUS SUBSTANCES

Name of Raw Material	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Vegetable Ivory is the seed of a palm tree (*Phytelephas* spp.). Fr., *Ivoire végetal;* Ger., *Holzelfenbein;* Sp., *Corozo, Tagua.*	Other species of palms produce vegetable ivory in the South Sea islands.	From Ecuador, Colombia and Panama.	Used for making buttons, etc. Exported to United States and Europe.
Argols, a deposit in wine casks. Fr., *Tartre;* Ger., *Weinstein;* Sp., *Tártaro.*	*Argal* or *lees* are the only source of tartaric acid and tartrates.	Principally from Portugal.	Used in dyeing, making baking powder, cream of tartar, seidlitz powders and tartar emetic.
Lycopodium powder consists of the spores of club mosses. Fr., *Lycopode;* Ger., *Lycopodium, Barlapp;* Sp., *Licopodio.*		Exported from Russia.	Used in fireworks and by pharmacists.
Pyrethrum is the powdered flowers of a plant allied to the chrysanthemum. (*Pyrethrum* spp.).	Used in insect powders.	From Persia and southeastern Europe.	

ANIMAL PRODUCTS

Animal	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Cattle are of several important types. The most abundant is the domestic ox (*Bos taurus*). Fr., *Bétail;* Ger., *Rindvieh;* Sp., *Ganado.* The Indian Humped Ox and the Water Buffalo are raised in the East.	*Beef*, fresh, dried, salted, canned or otherwise preserved is the most valuable of all cattle products. *Hides* (including kips and calfskins) are second only to beef in importance. *Milk* is sold fresh, condensed, evaporated, or is made into butter, cheese, *casein* and *sugar of milk.* Horns, hoofs and bones are used for buttons, handles for knives, brushes, umbrellas and fancy articles, or made into *gelatine* and *glue.* *Tallow* from beef fat is used in food, soap, candles and lubricants. *Oleo oil* and *stearine* are from tallow and are used in making oleomargarine or butterine. *Neat's-foot oil* is a lubricant. *Dried blood* is used in purifying sugar, clarifying wines, and in dyeing. *Cow hair* is mixed in plaster. *Pepsin* and rennet are made from the stomach. All waste parts go into *fertilizers.*	The United States, Russia, India, Argentina, Germany, Austria-Hungary, France and Australia are the greatest cattle raising countries. In this country, the cattle raising area has moved rapidly westward. More than half of the beef cattle are now found in Texas, Iowa, Missouri, Kansas, Nebraska, Colorado and Wyoming. They are fattened in the corn belt (Illinois, Iowa, Nebraska, Kansas) and killed in the slaughter houses of Chicago, Kansas City, St. Louis and Omaha. The by-products of slaughtering are very numerous and the industry is conducted so economically that, in the great slaughter houses, no part of the animal is wasted. In some parts of the world hides and tallow are the chief products of the cattle industry on account of the difficulty of transporting the meat.	The United States, Argentina and Australia are the greatest exporters of live cattle and beef. Great Britain buys the greater part of the cattle products exported by the United States. Refrigerator cars and cold storage in steamships make possible the shipment of fresh meat to long distances. Fresh meat is a growing export from Argentina, Australia, New Zealand and South Africa to Europe. The dairy industry is of growing importance and New Zealand exports butter and cheese to England. Denmark, Sweden, Holland, Switzerland, Canada and Australia export dairy products. Notwithstanding the large production of hides in the United States, our tanning industry is so large that millions of dollars worth are annually imported, chiefly from South America. Sole leather is made from cattle hides. Leather is split and finished in a great number of styles.

SHOE INDUSTRY



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1—Cutting room where uppers and linings are cut out from strong canvas. Patterns are so arranged as to allow little waste. **2**—Weighing scraps to ascertain percentage of waste. **3**—This machine cuts the lining from strong, white canvas. 20 thicknesses of cloth are cut at one time. Assistant at left holds two cutting dies. **4**—The ingenious machines which insert the eyelets in the canvas uppers of the shoes. One of these machines will insert two rows of hooks or eyelets in ten seconds. **5**—The shaping machine which stretches the upper in a smooth even form over the wooden last and takes the edge down. **6**—Rubber is placed between these plates, then placed in a hydraulic press which forces the rubber into design of the sole. Surplus rubber soles to the canvas uppers of the shoes. **7**—Cutting insoles from sheets of composition cork. These insoles insulate and keep rubber from heating foot. **8**—Machine cutting out rubber heels from large thick mass of rubber resembling dough. Scraps are thrown back in mixer and used again. **9**—Building up the rubber soles on the shoes. The workman is seen here smoothing down the rubber edging on a shoe. **10**—Attaching the rubber soles to the canvas uppers of the shoes. **11**—Trucks loaded with shoes ready for vulcanizing oven. This process hardens and cements together soles, heels and edgings. **12**—Shoes just out of vulcanizing oven, where the canvas upper is cemented to the rubber sole. **13**—Finishing off the edges of the rubber soles on buffer machines. **14**—In the finishing department. Here the girls are threading the laces into the shoes.

ANIMAL PRODUCTS—Continued

Animal	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Sheep (*Ovis aries*) are of a great number of breeds (Merino, Lincoln, Leicester, Southdown, Highland, etc.). Fr., *Moutons;* Ger., *Schafe;* Sp., *Carneros.*	*Wool* is the most valuable product of the sheep. The grades of wool are named according to the breed of sheep, the locality and the use to which they may be put. Clothing wools are fine and comparatively short, combing wools are of medium length, carpet wools are long and coarse. *Meat* (mutton and lamb) is of less importance than beef and pork. *Sheep* and *lamb skins* are used with the wool on, for rugs and furs (Persian lamb, broadtail, Astrakhan, Tibet). *Skins* (roans) are tanned for morocco and fancy leather. *Chamois* is usually oil-tanned sheepskin. *Catgut* is made of sheep intestines, *tallow* from the fat, *cheese* from the milk and *fertilizer* of all waste.	Raised chiefly in temperate countries, in largest numbers in Australia, Argentina, Uruguay, Russia and the United States. The finest wools are raised in Germany, Argentina, Australia, South Africa, and the United States. Combing wools come from England, Scotland, France, Australia and the United States. Carpet or native wools are produced in Russia, Asia Minor and China from sheep of unimproved breed. Sheep raising is an industry appropriate to a fairly open, temperate country which is sparsely settled. For this reason it has prospered in the western United States, Argentina, Australia, New Zealand and South Africa, where good breeds of sheep have been introduced.	Within the past hundred years, cotton has displaced wool as the most important commercial textile fiber. Wool is carded and spun into woolen yarns or combed and spun into worsted yarns. Woolens and worsteds are the two types of wool fabrics. Cotton is very largely mixed with wool to cheapen the product. The United Kingdom, Germany and France supply the world with woolen and worsted fabrics. The United States mills supply mainly the home market. Nearly all the factories are in New England and the Middle states. Live sheep are exported from Argentina, Australia, the United States and Canada, but a larger value is represented in frozen mutton, which goes in refrigerator ships from New Zealand, Australia and Argentina to Europe.
Swine are of many breeds (*Sus scrofa*). Fr., *Cochon;* Ger., *Schwein;* Sp., *Puerco, Cochino.*	The *meat* is by far the most valuable product. It is sold fresh, salted, pickled and smoked and in the form of ham, bacon and sausage. *Lard, lard oil, stearine,* and other fats and oils are obtained from the fat. The *skins* are made into leather and all waste parts are utilized in *fertilizers* or converted into *prussiate* (cyanide) *of potash.* *Bristles* come chiefly from China and Russia, where pigs have not been improved by breeding.	Pigs are raised in almost all parts of the world, but the hog raising industry is greatest in the United States. Corn is the food which is most important in fattening the animals for market.	Chicago, Kansas City and Omaha are the chief pork packing centers. Probably in no other industry is every by-product more completely utilized. Hog products constitute one of the most valuable of this country's exports, greatly exceeding the value of even cattle products.
Goats are less varied in their breed than many other domestic animals (*Capra* species). Fr., *Chévre;* Ger., *Zeige;* Sp., *Cabra.*	*Angora* and *Cashmere* are breeds which produce exceptional qualities of hair. The hair from the common goat is coarse and is used in making carpets and blankets. *Goat* and *kid skins* are the most valuable products of these animals.	The greatest number of goats are raised in western Asia. There are many in southern Europe and northern Africa. Angora goats are raised in Asia Minor, South Africa, Texas and Australia. In Switzerland they are raised for their milk, and cheese made from it.	Large numbers of goat and kid skins are imported into the United States, chiefly from the East Indies, Mexico and South America. These are largely tanned with chrome to make glazed kid and soft leathers. By other processes morocco and glove leather are prepared.
Camels (*Camelus* species) are of two types, the one-humped or dromedary, and the two-humped or Bactrian. Fr., *Chameau;* Ger., *Kameel;* Sp., *Camello.*	*Camel hair* is the only product which enters into general commerce. Locally the flesh, milk and hide are utilized.	Camels are found throughout central Asia and northern Africa. Camel hair comes chiefly from interior Asia.	The hair or wool is soft and suitable for making hosiery, underwear and shawls.
Alpaca is an animal similar to the camel (*Lama huanacos*). Fr., *Alpaga;* Ger., and Sp., *Alpaca.*	The wool of this animal is used to make dress goods.	Raised in Peru.	Imported into Europe and United States.
Horses are chiefly beasts of burden (*Equus caballus*). Fr., *Chevaux;* Ger., *Pferde;* Sp., *Caballos.*	*Horsehair* is from manes and tails. *Hides* are tanned to make leather. Horse flesh is eaten in Europe. *Pony skins* are used as furs.	Horsehair is exported chiefly from Russia, Argentina, Germany, and other countries.	The hair is used for making haircloth and brushes, and for stuffing mattresses and furniture.
Wild Animals of many kinds are killed for the sake of their skins.	Important *furs* are obtained from the sable, fox, weasel, marten, ermine, mink, skunk, raccoon, bear, otter, beaver, muskrat, seal, nutria, squirrel, chinchilla, mole, monkey, rabbit, etc.	Good furs come mostly from Siberia, Russia and British America, with the exception of skins of the monkey and cat families.	London and Leipzig are the world's great fur markets Skins of the domestic cat are dyed and dressed so as often to resemble more costly fur. Rabbit fur is similarly altered. Great numbers of rabbit skins are imported from Australia and New Zealand to the United States and the fur from them is used in making felt hats. Nutria fur is used for the same purpose.
Other Animals furnish products of value.	*Ivory* is chiefly from the tusks of African and Indian elephants.	*Deer horns* for knife handles, etc., come from many parts of the world. *Deer skins* are tanned for leather.	*Musk*, a perfume, comes from the musk ox of Asia. *Castoreum* from the beaver and *civet*, from the civet cats of Africa and Asia, are the bases for perfumes.
Whales are of several species (*Balæna, Physeter*). Fr., *Baleine;* Ger., *Wallfisch;* Sp., *Ballena.*	*Whale oil* (sperm oil) is drained from the blubber. *Whalebone* is from the mouth, *spermaceti* from the blubber and cavities in the head and *ambergris* from the intestines. *Porpoise leather* is from the skin of the white whale.	The Greenland fishery is most important, but whale fishing is not as prosperous an industry now, as it was one hundred years ago. This is largely because of the scarcity of whales and partly because kerosene is so generally used for illuminating.	Whale oil is used in leather dressing, burning, soap making and lubricating. Spermaceti is used in candle making and for waxing cartridge covers; whalebone for stiffening dresses, making brushes and whips; and ambergris in perfumes.
Sponges are the skeletons of peculiar animals (*Spongidæ*). Fr., *Eponge;* Ger., *Schwamm;* Sp., *Esponji.*	The qualities differ with the species and locality.	Obtained in the Mediterranean and West Indies.	Imported largely from the eastern Mediterranean.
Fish are of hundreds of species but there are comparatively few that are of great commercial importance. Fr., *Poisson;* Ger., *Fisch;* Sp., *Pescado.*	Of the food fish, cod, haddock, herring, sardines, mackerel and salmon are handled in large quantities fresh, canned, salted or otherwise cured. *Caviare* is the prepared roe of sturgeon. *Isinglass* is a pure gelatine made from the swimming bladders of sturgeon and other fish.	The great fisheries of the world are the "Grand Banks" off Newfoundland, the North Sea and the coast of Norway. Salmon are canned on the northwest coast of America and on a smaller scale in Japan, Siberia and Norway. Portugal, Spain and France lead in canning sardines. *Oils*, made from menhaden and other fish are used in preparing leather, in paints, oiling ropes, etc. *Cod liver oil* is used in preparing chamois and other leather and in pharmacy.	Canned salmon leads in value our exports of fish products, and goes mainly to England. We import herring, etc., in oil from Europe and considerable quantities of fresh or canned lobsters from Nova Scotia and Newfoundland. *Fertilizers* are prepared from the refuse from fish canneries and from fish which are not otherwise useful.

ANIMAL PRODUCTS—Continued

Animal	Chief Commercial Articles Produced	Habitat and Cultivation	Manufacture, Uses and Trade
Oysters are the most valuable shellfish. (*Ostrea* species, *Meleagrina*, etc.) Fr., *Huitres;* Ger., *Austern;* Sp., *Ostras.*	Oysters are gathered on the coasts of Europe and America. Some are canned but the greater amount are consumed fresh. Pearl oysters (*Meleagrina*) supply *mother of pearl* and occasionally true pearls. Abelone (*Haliotis*) and various mussel shells are also used.	Pearl oysters are found off the coasts of Ceylon, Society islands, northern Australia, Panama, in the Gulf of California, the Red Sea and the Persian gulf. Abalone shells come from the shores of the Pacific.	Pearl shell is used for buttons, knife handles, etc. Mother of pearl is imported largely from the South Pacific.

PRODUCTS OF BIRDS

Raw Material	Chief Commercial Articles Produced	Habitat and Production	Manufacture, Uses and Trade
Eggs are chiefly from the domestic fowl. Fr., *Oeufs;* Ger., *Eier;* Sp., *Huevos.*	Aside from their use as food, eggs supply *egg albumen.* Large numbers are bought in the spring and summer and preserved by cold storage.	There is a large and increasing foreign trade in fresh eggs.	Eggs are used in preparing tanned leather for gloves, etc.; and egg albumen in photographic paper, clarifying sugar, etc.
Feathers and bird skins are from many kinds of wild and tame birds. Fr., *Plumes;* Ger., *Federn;* Sp., *Plumas.*	Ostrich, cock, goose, duck, turkey, pheasant, heron, grebe, and many wild birds furnish *plumes* for decorative purposes.	Ostrich feathers are obtained by killing wild birds in central Africa and from ostrich farms in South Africa. Smaller quantities come from North Africa, Argentina and California. Down, for pillows and feather beds, is from the domestic goose.	The United States imports feathers and down chiefly from Europe. The greater part of the supply of ostrich feathers comes from South Africa, and from California ostrich farms.
Guano is the accumulated excrement of birds and bats. Fr., Ger. and Sp., *Guano.*	A valuable fertilizer. Refuse from fish canneries and oil factories goes under the name of fish guano.	From dry islands and caves.	Exported mainly from islands in the Pacific.

INSECT PRODUCTS

Silk is from the cocoons of the cultivated silkworms (*Bombyx mori*). Fr., *Soie;* Ger., *Seide;* Sp., *Seda.* Pongee and other wild silks are produced by insects of different species (*Antheræa*).	*Silk cocoons* are reeled to obtain *raw silk.* The unreelable parts of the cocoons are *silk waste,* which is converted into *spun silk.* Raw silk is "thrown" or twisted giving *tram* and *organzine* for weaving.	Silkworms are reared and cocoons produced commercially only in China, Japan, India and Mediterranean countries, particularly Italy, southern France, Greece, Turkey and western Asia. Here, cheap and competent labor can be obtained as it cannot in any other part of the world where the climate is favorable. The reeling of the raw silk from the cocoon is largely conducted in modern factories.	China exports almost half the raw silk of commerce. Japan and Italy each export less than half as much as China. The United States leads the world in the quantity of silk manufactured. France uses almost as much raw silk and makes fabrics of high grade. More than half the raw silk imported into the United States comes from Japan. We import silk fabrics in large amount from France, Germany and Switzerland.
Honey (Fr., *Miel;* Ger., *Honig;* Sp., *Miel*) and **Beeswax** (Fr., *Cire de abeilles;* Ger., *Bienenwachs;* Sp., *Cera de las abejas*) are produced by the honey bee (*Apis mellifica*).	*Honey* is sold either in the comb or extracted. *Beeswax* is obtained by melting the comb. Beeswax is adulterated and imitated by the use of paraffin, stearine, and vegetable waxes. Wax is used for candles, waxing floors and thread, artificial plants, salves, etc.	Honey and wax are produced in northern Europe and the United States.	Much honey is shipped from California to other parts of the United States and to Europe. Beeswax is imported from Europe and South America.
Lac is a resinous substance formed on twigs by the lac insect (*Tacchardia lacca*). Fr., *Laque;* Ger., *Lack;* Sp., *Laca.*	*Stick lac* is the crude material as gathered from the trees. *Seed lac* and *button lac* are partly purified. Red lac dye is a by-product now of little importance or value. *Orange shellac* is bleached to make white shellac.	From forests of northern India and Indo-China.	Dissolved in alcohol to make varnishes. Used in sealing wax, putty, for sizing paper, stiffening felt hats, etc.
Cochineal consists of the dried bodies of insects (*Coccus cacti*). Fr., *Cochenille;* Ger., *Cochenille;* Sp., *Cochinilla.*	Used as a red dye for wool.	Raised on cactus plants in Mexico, Central America, Teneriffe, and the East Indies.	Of little present importance due to the extensive use of dyes from coal tar.
Cantharides are the dried bodies of beetles (*Cantharis, Mylabris,* etc.) Fr., *Cantharides;* Ger., *Kantharidien;* Sp., *Cantáridas.*	*Cantharides,* Spanish flies and Chinese blistering beetles are similar.	From southern Europe, India and China.	Used medicinally for blistering purposes, and internally as a stimulant to the urinary organs.

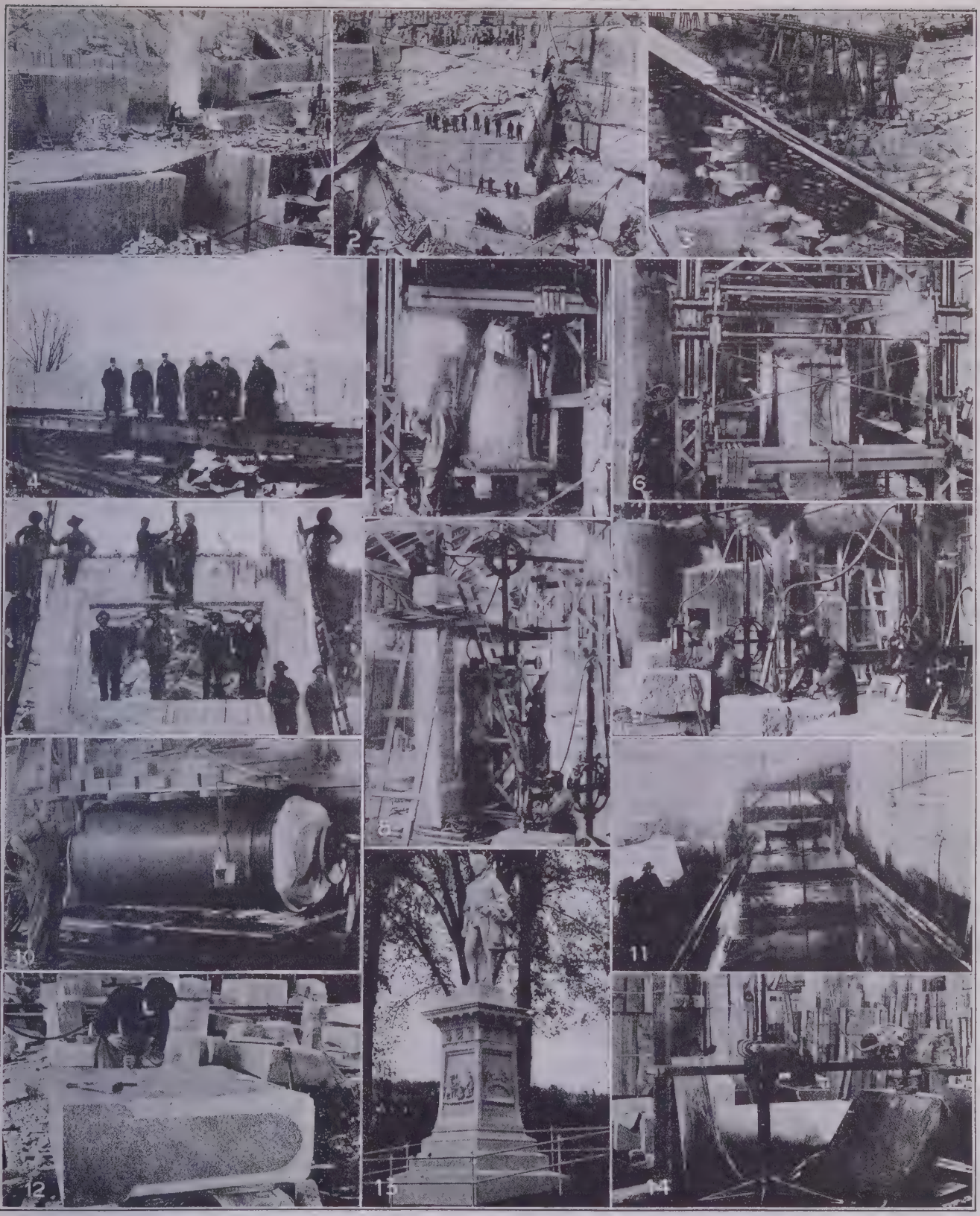
MINERAL PRODUCTS

Metals	Ores and Chief Products	Locality and Preparation	Manufacture, Uses and Trade
Iron is the most useful metal. Fr., *Fer;* Ger., *Eisen;* Sp., *Hierro.* With the addition of carbon and often small amounts of other elements, iron is made into **Steel** (see pictures on page 418).	*Hematite* (sesquioxide of iron) is the ore which supplies three fourths of the iron of commerce. *Limonite* brown (homatite) is a hydrous oxide and furnishes nearly one-fourth of the world's supply of the metal. Magnetite and siderite are less common ores. *Pig iron* is the crude form of the refined metal and is transformed into *cast iron, wrought iron* and *steel* in their multitudinous forms. These three forms of iron differ in hardness, strength, elasticity, malleability, etc., according to the amounts of carbon, sulphur, phosphorus, manganese and other elements. *Ochers* and metallic paints are iron oxides. *Prussian blue* and *copperas* are iron compounds. *Pyrite* (iron pyrites or fool's gold) is a sulphide of iron, useless as an iron ore.	The United States, Germany, Great Britain, Spain and France are the greatest producers of iron. Its ores occur in almost all parts of the world. Hematite is mined in Minnesota, Michigan, Alabama and other parts of the United States and in Germany, England, France, Spain, Russia, etc. Limonite is also widely distributed. Pig iron is made by smelting iron ore in a blast furnace. The ore, mixed with limestone, is melted by burning coke, coal or charcoal. Pyrite is found in Spain and many other parts of the world and is valuable in the preparation of sulphuric acid (oil of vitriol).	The United States manufactures more iron and steel than any other country. Almost half of the production is in Pennsylvania. Cast iron appears in many articles but is weaker than other forms of iron. Wrought iron contains less impurity and is used for bars, plates, wire, structural material and parts of machinery. Steel (Bessemer, Siemens-Martin, open hearth, etc.) contains more carbon than wrought iron, possesses both strength and hardness, and is used for rails, structural material, machinery, tools, wire rope, sheet steel, etc. Its hardness may be increased by tempering. The United States imports iron ore from Cuba and Spain, pig iron from the United Kingdom and a little manufactured iron and steel from Europe. **We export large quantities of manufactured iron and steel.**

MINERAL PRODUCTS—Continued

Metals	Ores and Chief Products	Locality and Preparation	Manufacture, Uses and Trade
Lead is the softest, heaviest, most malleable and most easily melted of the common metals. Fr., *Plomb;* Ger., *Blei;* Sp., *Plomo.*	*Galena* (lead sulphide) is the only important ore; it often carries a considerable percentage of silver. Carbonates and sulphates of lead are less common. *Solder* and *type metal* are alloys of lead with tin and antimony. *White lead* is a carbonate, *red lead* and *litharge* are oxides. *Chrome yellow* and *orange mineral* are lead compounds used as pigments.	Ores are found in many countries but the main supply is from the United States, Spain, Germany and Mexico. The chief lead mines of the United States are in Missouri, Idaho, Utah Colorado and Kansas. Much lead bullion is from smelters where silver ores are reduced.	The chief use of metallic lead is in piping, sheet lead, shot and alloys. Large amounts of ore are transformed not into metallic lead but into white lead for use in paints. Lead ores and lead bullion are imported from Mexico. England is the greatest importer of lead and lead ores.
Zinc is one of the most useful metals. Fr., *Zinc;* Ger., *Zink;* Sp., *Zinc.*	*Sphalerite* or blend (zinc sulphide) is the chief ore. Carbonates, silicates and oxides of zinc are found. Crude zinc (*spelter*) is distilled from roasted ore. *Brass, German silver* and other alloys contain zinc. *Galvanized iron* consists of a coating of zinc on sheet iron. *Zinc oxide* (zinc white) resembles white lead and is used in paints.	Germany, United States and Belgium supply most of the zinc. In this country, Missouri and Kansas lead in zinc production.	Used in electric batteries, making hydrogen, zinc etchings, etc. The greatest amount of zinc is used in alloys and zinc compounds. Zinc and zinc ores are both imported and exported by the United States, the imports exceeding the exports. Zinc oxide is exported in larger amount than any other form.
Copper is, next to iron, the most important metal in use. Fr., *Cuivre;* Ger., *Kupfer;* Sp., *Cobre.*	There are many ores. *Chalcopyrite,* and *bornite,* (sulphides of copper and iron) are widely distributed. *Chalcocite* (copper sulphide) is mined in Montana, *malachite* and *azurite* (carbonates of copper) in Arizona and metallic copper in Michigan. *Copper matte* is the crude metal as it comes from the smelter. *Brass* and *bronze* are alloys of copper with zinc, tin, aluminium, etc. *Copper sulphate* (blue vitriol) is the most important chemical compound of copper.	The greatest production is in the United States, in Arizona, Montana, Michigan, and Utah. Spain, Japan, Chili, Australia and Germany produce smaller amounts. The metal is purified by smelting, and refined, often by electrolytic methods.	The value of copper has increased within recent years, due to its enormous use in electrical work. Aside from this, copper is employed in large amount in the various alloys into which it enters, and in coins, utensils, printing plates, etc. Copper sulphate is extensively used in electrical apparatus, dyes, chemical work and as an antiseptic. Large amounts of manufactured copper are exported to Europe. Smaller quantities of ores, matte and regulus are imported from Mexico, South America and other countries. Copper wire is extensively used by telephone and telegraph companies.
Gold is the standard precious metal. Fr., *Or;* Ger., *Gold;* Sp., *Oro.*	Gold ores are usually gravels or beds of quartz rock in which the metal occurs in small particles. *Chloride of gold,* used in photographic work, is its only important compound. Pure gold is called 24 carats fine. A smaller figure indicates that the metal is alloyed to harden it.	Found in nearly all parts of the world. South Africa and the United States are the leading producers. Australia, South America and parts of Europe possess important gold fields. Gold is separated from gravel (placer mines) by washing with water. The particles of metal, being heavy, sink and can be collected. Rock containing gold is crushed to fine powder and the gold combined with mercury (amalgamation). Low-grade ores are treated with a solution of cyanide of potassium which dissolves the gold and the metal is later separated.	Gold is used for money, jewelry, gold leaf (gilding) and in dentistry. It is almost always alloyed with copper and silver. Gold is the world's accepted standard of value. Shipments of gold go from one country to another chiefly to balance international business dealings. Government treasuries and bank vaults are the chief storehouses for gold, either as bullion or coin.
Platinum is a rare metal. Fr., *Platine;* Ger., *Platin;* Sp., *Platina.*	Found with gold, iridium and other rare metals in placer mines.	Chiefly from Russia. Smaller amounts from Colombia, California, Canada and Australia.	Used in the terminals of incandescent electric lamps. Also employed by chemists, jewelers and dentists.
Silver is the common precious metal. Fr., *Argent;* Ger., *Silber;* Sp., *Plata.*	*Argentiferous galena* (lead ore) is the commonest ore of silver. The amount of silver per ton varies greatly. Zinc and copper ores often carry silver. Many sulphides of silver (argentite, pyrargyrite, etc.) are found, as well as chlorides and bromides (cerargyrite and bromyrite). *Chloride* and *nitrate of silver* are used in photography.	Silver is produced in greatest amount in the Rocky mountains and the Andes. The United States, Mexico, Australia, Bolivia, Chili, Peru and Germany furnish nearly the entire supply. Montana, Colorado, Nevada and Utah lead in silver production in the United States. The ores are usually smelted and refined to purify the metal.	Manufactured into innumerable articles for household use and personal adornment. The cheapest are not solid (sterling) but are electrically plated with a very thin coating of silver. Silver coins form the bulk of the currency of the world, although in most countries gold is the standard.
Mercury (or quick silver) is a heavy metal which is liquid at ordinary temperatures. Fr., *Mercure;* Ger., *Merkur, Quecksilber;* Sp., *Mercurio.*	*Cinnabar* (sulphide of mercury) is the source of the metal, although a little is found in nature in the pure state. *Vermilion* (artificially prepared cinnabar) is used in paints. *Calomel* and *corrosive sublimate* are used in medicine and *fulminates* of mercury in explosives.	Produced in Spain, the United States, Austria, Italy and Russia. California supplies most of this country's quota. Obtained by distillation of the ore.	Used principally in the extraction of gold and silver from their ores by amalgamation. Employed in thermometers and barometers, silvering mirrors, and in making amalgams for dental work. Half of the mercury produced in this country is exported to Mexico, Central America and China.
Aluminium (or aluminum) is the lightest metal in common use. Fr. and Ger., *Aluminium;* Sp., *Aluminio.*	*Bauxite* (aluminium hydrate) is the only ore. *Cryolite* (fluoride of aluminium and sodium), a mineral mined only in Greenland, was formerly used as an ore but is now utilized in the manufacture of alum and soda. *Alum* (a sulphate) is made from cryolite or clays.	Bauxite is mined in France, Ireland, Austria, Arkansas, Alabama and Georgia. Aluminium is refined by electric processes, the works in America being located near Niagara Falls.	Used largely as an addition to iron and steel, preventing bubbles and waste in castings. Used in electrical work, and for purposes where a light, strong metal is necessary, as in certain machinery, hulls for small boats, etc. Refineries are located in Switzerland, France and Great Britain.
	Corundum (aluminium oxide) is, next to diamond, the hardest natural mineral. *Sapphire* and *ruby* are transparent forms suitable for gems. *Emery* is an impure form of corundum.	Canada, North Carolina, Alabama and India have mines of corundum. Emery is produced chiefly in Greece and Asia Minor. Rubies and sapphires are found in Ceylon, India and Montana.	Corundum and emery are powdered for use as abrasives in wheels, sharpening stones, polishing powder and cloth.
	Feldspar is a silicate of aluminium with other metals.	Mined in Canada, Pennsylvania, Connecticut, New York, Maine and Norway.	Ground up for use in pottery making. The location of manufacturing centers of pottery of all kinds and of bricks, is dependent on clay deposits. In pottery making, Ohio, New Jersey and Pennsylvania lead the United States. Abroad, fine china is made in France, Germany, Austria, England, Japan, and China. All of these countries export chinaware.
	Clay is chiefly silicate of aluminium and other metals. *Kaolin* is its purest form. The properties of clay vary with its composition, as china clay, fire clay, pipe clay, brick clay etc.	Clays are found in all parts of the world as a result of the decomposition of other rocks. For many purposes they are freed from sand and grit by washing with water, the clay being carried away in suspension. Later it is allowed to settle and gathered up in the form of mud.	

GRANITE INDUSTRY



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1—Sectional quarry view showing the quarrying of large blocks. **2**—Quarry view showing sheet formation where extra large stones are removed through channeling operations. **3**—Raising a spire memorial in the rough, 5-0x5-0x51-0, from the bottom of the quarry hole. **4**—Spire memorial in the rough already for transportation from the quarry to cutting plant. Size 5-0x5-0x51-0. **5**—Gang granite saw in operation. **6**—Another gang granite saw in operation. **7**—Granite base for monument. Base 18-3x13-7x1-0. **8**—Penumatic surfacing machine working on extra large stone. **9**—Pneumatic surfacing machines in operation. **10**—Polishing granite column. **11**—The largest granite polishing machine in the world operated by electricity with four traveling machines. **12**—Skilled letter cutter using fine pneumatic tool. **13**—Robert Burns Statue showing artistic carving in Barre granite. **14**—A small electric polishing machine. (See page 417.)

MINERAL PRODUCTS—Continued.

Metals	Ores and Chief Products	Locality and Preparation	Manufacture, Uses and Trade
Tin is less abundant than most of the common metals. Fr., *Etain;* Ger., *Zinn;* Sp., *Estaño.*	*Cassiterite* (tin oxide) is the only important ore. This mineral is commonly found as pebbles (stream tin) in gravel. *Tinplate* and alloys containing tin are of enormous importance in the arts. Of these, *bronze* is chief. *Gun metal, pewter, solder, type metal* and *britannia metal* are other alloys. Salts of tin are used in dyeing, glass making, etc.	The Malay peninsula and nearby islands (Banca and Billiton) produce over half the tin ore of the world. The remainder is mined in Bolivia, Australia, Tasmania and Cornwall, England. Small deposits occur in the United States. Tin melts at a low temperature and is easily refined.	England manufactures more tin than any other country. Tinplate, used for tin cans, roofing and kitchen utensils, is made by dipping sheet iron or steel in a bath of melted tin, thus covering it with a thin layer of tin. Tinplate is manufactured in the United States and imported from England. Tin metal is imported from England and Straits Settlements.
Antimony.—Fr., *Antimoine;* Ger., *Antimon;* Sp., *Antimonio.* **Bismuth.**—Fr., Ger. and Sp., *Bismuth.*	*Stibnite* (antimony sulphide) is the chief ore of antimony. Bismuth occurs in small amounts in a pure state and also combined with sulphur. These metals form many alloys such as *type metal, anti-friction metals, white metal, babbitt metal, fusible metals,* etc. *Tartar emetic* and other antimony compounds are used in medicine and dyeing.	Antimony is produced in Germany, France, Italy, Hungary, United States, Japan, and other countries. Bismuth comes mainly from Bolivia and Australia. Some is produced in Saxony and England.	While the total amounts of these metals in use are relatively small, they are of high importance due to their peculiar properties. Our imports of antimony are mainly in the form of regulus or metal.
Nickel.—Fr. and Ger., *Nickel;* Sp., *Niquel.* **Cobalt** is found with nickel and forms pigments. Fr., *Cobalt;* Ger., *Kobalt;* Sp., *Cobalto.*	*Garnierite* (a silicate of nickel and magnesium) is the common ore. Magnetic iron pyrite (*pyrrhotite*) often carries several per cent of nickel. Sulphides and other compounds occur. *German silver* contains nickel, copper and zinc. It enters into other alloys.	In Ontario, Canada, nickel is found in pyrrhotite. Garnierite is mined in largest amount in New Caledonia. Norway produces other ores.	France and Germany refine nickel from imported ore, chiefly from New Caledonia. Nickel steel, being especially hard and tough, is used for armor plate, special machinery and wire rope. Nickel is extensively used for cheap electro-plating. Nickel and nickel oxide are exported to Holland and England from the United States and ores and matte are imported from Canada.

THE FOLLOWING METALS ARE LITTLE USED IN THE PURE STATE, BUT ENTER INTO THE COMPOSITION OF MANY USEFUL MINERALS

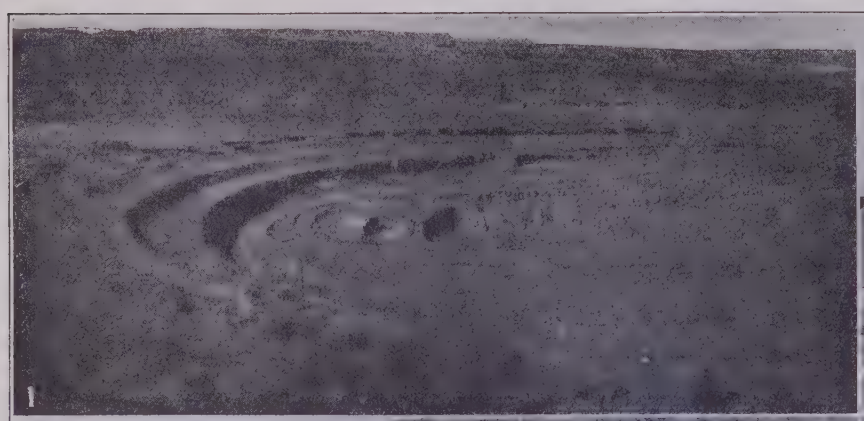
Metals	Ores and Chief Products	Locality and Preparation	Manufacture, Uses and Trade
Magnesium.—Fr., *Magnésium;* Ger., *Magnesium;* Sp., *Magnesio.*	The metal is used in flash powders for photographic use. *Magnesite* (magnesium carbonate) is used in making carbon dioxide gas and *epsom salts* and for preparing *magnesia* (calcined magnesia).	Chiefly mined in Austria, Germany and Greece.	Used in chemical manufacture, in fireproofing and lining furnaces. Imported into the United States.
	Dolomite (magnesium calcium carbonate) is common limestone, used for building.	Found in many parts of the world.	Calcined dolomite is used for lining iron furnaces.
	Talc (hydrous magnesium silicate), soapstone or steatite, is a soft mineral.	Mined in Maryland, Virginia, North Carolina, etc., and in Europe.	Made into laundry tubs, firebrick, hearthstones, griddles, slate and tailor's pencils, gas tips, etc. Imported in small amount from France and Italy.
	Meerschaum or sepiolite (magnesium silicate).	From Asia Minor and New Mexico.	Easily carved. Made into pipes and cigar holders in Austria and France. Largely imitated.
	Asbestos is a fibrous variety of serpentine (a magnesium silicate). Mineral *wool* is an artificial fibrous mineral.	Mined in Quebec, Canada. Another variety of asbestos comes from Italy. Mines recently discovered in Wyoming.	A fireproofing material. This mineral fiber is spun and woven into fireproof fabrics for theater curtains or made into felt building paper, pipe covering, etc.
Calcium (Fr., *Calcium,* Ger., *Calcium;* Sp., *Calcio*) has no commercial use in the metallic state. Its compounds, both natural and artificial, are of great economic importance.	*Limestone* (calcium carbonate) is a very common rock used for building. It may be of almost any color and coarse or fine in texture. *Marble* is a name applied to limestones suitable for polishing or ornamental work. *Mexican onyx* is translucent. *Chalk* is of peculiar soft texture; *whiting* is prepared chalk used to make putty and paints; *precipitated chalk* is similar.	Limestones are found and utilized in all parts of the world. In the United States, Pennsylvania, Illinois, Ohio, Indiana, New York and Missouri are the chief producers. Fine marbles are quarried in Italy, Egypt, France, Spain and Greece. Vermont, Georgia, Tennessee and New York supply the greater part of the marble used in the United States.	As building material, limestone is used everywhere. Lime is used in chemical industries and mortar. Handsome marbles are imported from Carrara, Italy, and other parts of Europe. Mexican onyx is also imported. Chalk comes mainly from the south of England. We export some Portland cement and import a little from Europe.
	Lime is made by burning (calcining) common limestone. *Portland* and *hydraulic cements* are prepared by calcining siliceous limestones or a mixture of limestone and clay.	Hydraulic and Portland cements are of enormous commercial importance, being used in concrete construction work. Europe and the United States produce large quantities. Pennsylvania is the leading state in this industry.	Buildings (both shops and residences) are now being extensively constructed of cement—in the former case being reënforced by iron rods.
	Chloride of lime (or bleaching powder), *acetate of lime, calcium carbide* and many other compounds are of industrial value.		
	Gypsum (hydrous calcium sulphate) is used in fertilizers (*land plaster*). *Plaster* is prepared by calcining (burning) gypsum. *Plaster of paris* is its purest form. *Alabaster* is compact white gypsum.	A common mineral mined in many parts of the world. Michigan, Kansas, New York, Ohio and other states produce it.	Fertilizers and plaster use up large quantities of this mineral. Plaster of paris is used for casts, decorative plaster work, cement, etc.
	Fluorite (calcium fluoride) is a less common mineral.	Mined in England, Kentucky and Illinois.	Used in chemical manufacture and as a flux for ores.
	Phosphate rock (chiefly calcium phosphate, is important in the preparation of fertilizers, and chemicals containing phosphorus.	Found in deposits of organic origin in South Carolina, Florida, Tennessee, the West Indies, Canada, Spain, France, Germany and England.	The natural phosphates are treated with sulphuric acid as a first step in the manufacture of phosphatic fertilizers. Exported in large amount to Germany, England and other countries.
Arsenic.—Fr., *Arsenic;* Ger., *Arsénik;* Sp., *Arsénico.*	*Arsenopyrite* (arsenic and iron sulphide), *orpiment* and *realgar* (sulphides of arsenic) are the sources of arsenic. *Arsenic* (white arsenic, arsenious acid or oxide of arsenic), *paris green* and other compounds and salts are prepared.	Germany, England, Canada the United States and Spain produce the ores. Chemical laboratories transform them into the useful compounds.	Sheep dip, rat poison, insecticides, embalming fluid, pigments and dyes are prepared with arsenic compounds. Arsenic salts are used in preparing certain coal-tar colors.

METALS—Continued

Metals	Ores and Chief Products	Locality and Preparation	Manufacture, Uses and Trade
Chrome.—Fr. and Ger., *Chrome;* Sp., *Cromo.*	*Chromite* (oxide of chromium and iron) is the only ore. *Bichromate of potash* is the most important compound.	Mined in Asia Minor, Greece, Canada, New Caledonia, California, etc. Salts are prepared in the chemical laboratory.	Bichromate of potash and chromic acid are used in tanning soft leather. A small percentage added to steel makes it very hard and suitable for burglar-proof safes, tools, etc. Salts of chrome are used for dyes and pigments (chrome yellow, chrome green).
Barium.—Fr., *Baryte;* Ger., *Barium, Baryt;* Sp., *Bario.*	*Barytes* or barite is a heavy white mineral (barium sulphate).	Mined in the United States and Germany.	A substitute or adulterant for white lead in paints and used in making oxygen.
Strontium.—Fr. and Ger., *Strontium;* Sp., *Estroncio.*	*Strontianite* (strontium carbonate) and *celestite* (strontium sulphate) contain this element.	Found in Germany, Scotland, Texas and New York.	Strontium salts are used in sugar refining and making red fire.
Potash (or potassium), an alkaline metal. Fr. *Potasse;* Ger., *Kalium;* Sp., *Potasio.*	Chlorides, sulphates, etc., are found in Germany. Wood ashes and sugar beet refuse furnish much of the world's potash.	Stassfurt, Germany, possesses the only known large deposit of natural potash salts.	These salts are the source of potash in many chemical industries and in fertilizers. Exported in large amount from Germany to England, France and America.
Sodium (Fr., *Sodium;* Ger., *Natrium;* Sp., *Sodio*) is the most important alkaline metal.	*Salt* (rock salt, sea salt, lake salt, halite or sodium chloride) is the commonest natural compound of sodium. Important for food and in chemical manufacture.	Rock salt is mined in Germany, Austria, Spain, England, Louisiana, Kansas, India and other parts of the world. Obtained by evaporating salt water from wells in England, Michigan, New York, Ohio and China, or by evaporating salt water in the West Indies, Great Salt lake, etc.	Used for meat packing, curing fish, in silver refining, and the preparation of hydrochloric acid, soda ash, carbonate of soda, etc. The foreign trade in salt does not represent very large values.
	Soda niter (nitrate of sodium) is a very easily soluble mineral.	Found in quantity only in the deserts of northern Chili.	Exported in large amounts to Europe and America for fertilizer and the manufacture of nitric acid and other chemicals.
	Borax (hydrous sodium borate) occurs in nature in an impure form and is prepared also from calcium borates.	Borates are found in Tuscany, Central Asia, California and Nevada, and in South America.	Borax and boracic acid are used in pottery manufacture, for the preservation of meat, in dyeing and in medicine.
Rare Metals.—Tungsten, molybdenum; vanadium, uranium. Thorium, cerium, lanthanum and yttrium.	The ores of these metals are unusual minerals.	Found in Colorado, Arizona, Germany, England and Sweden.	Used in making special high grades of steel. Their salts are used in dyeing.
	Monazite, samarskite, thorite and other rare minerals contain these elements.	Found in North Carolina, Norway, Brazil and Ceylon.	Used in preparing the mantles for incandescent gas lights.
Lithium.	Lithium silicates are the source of this element.	Principally from South Dakota, California and Sweden.	In chemical laboratories converted into lithium carbonate for medicinal tablets and mineral waters.
Radium.	Occurs with ores of uranium.	A newly discovered very rare element.	The chloride has peculiar properties and is used chiefly by physicians.

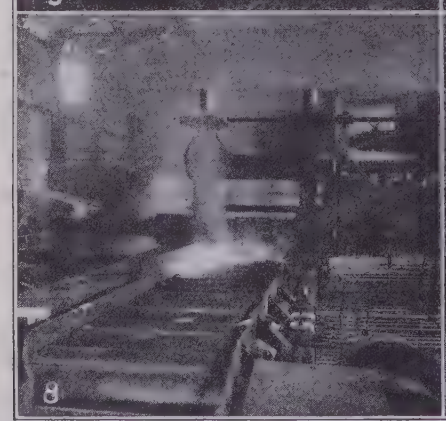
NONMETALLIC MINERALS

Mineral	Ores and Chief Products	Locality and Preparation	Manufacture, Uses and Trade
Sulphur.—Fr. *Soufre;* Ger., *Schwefel;* Sp., *Azufre.*	*Sulphur* or *brimstone* is found in a pure state in volcanic regions or associated with gypsum and limestone. *Pyrite* (sulphide of iron) is also a source of sulphur compounds.	Sicily, Italy, Japan, Louisiana and Texas have mines of native sulphur.	Used in manufacturing sulphuric acid, gunpowder, matches, as a disinfectant, for bleaching and vulcanizing rubber. Blue vitriol, green vitriol and alum are sulphates. Sulphur is imported from Sicily and Italy.
Quartz (silica) is of many varieties, crystalline to amorphous. Fr., *Quartz;* Ger., *Quarz;* Sp., *Cuarzo.*	*Rock crystal* is employed for lenses. Many semiprecious stones are varieties of quartz, as *agate, moss agate, onyx, sard, chalcedony, chrysoprase, jasper,* etc. *Rock flint, flint* and *quartz sand* are used in making glass and pottery. *Sandstones* of various colors are chiefly quartz.	Rock flint is mined in Connecticut and Pennsylvania. Flint comes from the chalk cliffs of England and France. Sandstones are quarried and used for building in almost all parts of the world. Pennsylvania, Ohio, and New York supply the greatest quantities in the United States. Honestones and whetstones are mostly sandstone, and in this country are largely quarried in Arkansas, Michigan and New Hampshire.	Outside of building stones, quartz is used in greatest amount in making glass and pottery. For glass it is melted with alkali (soda ash) and either lime or lead oxide. Glass is either blown or molded. Belgium, Austria, Germany, France, Great Britain and the United States manufacture glassware. Pennsylvania, Indiana and New Jersey are the leading states. Large amounts are imported by England and the United States.
Gems of many kinds are found in nature. Fr., *Pierres precieuses;* Ger., *Edelsteine;* Sp., *Piedras preciosas.*	These are nearly all transparent stones having brilliancy or beauty of color. Aside from diamond, corundum and varieties of quartz, the following are important—*topaz, emerald, aquamarine, tourmaline, olivine, spinel, moonstone, opal, turquoise* and *garnet.*	Produced in many parts of the world. Siberia, Russia, Ceylon, India, Brazil, North Carolina and Montana are all important.	Cut and polished for use in jewelry. Much of this work is done abroad.
Mica is a common mineral found in rocks in many parts of the world. Fr., *Mica;* Ger., *Marienglas, Glimmer;* Sp., *Espejuelo.*	Several varieties occur (*muscovite, biotite,* etc.) Valuable only when found in large sheets which can be split smoothly.	Mined in India, Canada, North Carolina and South Dakota.	Transparent sheets are used for lamp chimneys and stove doors. Employed in electrical work, and lubricating. Imported from India.
Building Stones.—Fr., *Pierres de construction;* Ger., *Bausteine;* Sp., *Piedrasde construcción.*	*Granite, syenite, gneiss, basalt* and other hard or durable rocks.	Quarried for local use in all parts of the world.	Only stone of exceptional beauty is shipped to a great distance. Scotland, Norway, the New England states and other localities produce fine stones. The story of the granite industry is told in pictures on page 415.









Photos by courtesy Youngstown Sheet and Tube Company

1—An Open-Pit Mine. Scene in Minnesota where the largest iron ore mines in the world are located. Trains travel up circular terraces to take out the ore. **2**—Loading an ore ship at docks on the Great Lakes. Loaded trains from the mines run out on tracks over the ore pockets. Loading chutes convey the ore into the hold of the ship. **3**—The Blast Furance. The four huge stacks, or "stoves," heat the air for the furnace, which is seen at the right directly undes the elevator which carries up the materials to fill the blast furnace. **4**—A Bessemer converter, making steel from iron. This is one of the most spectacular scenes around a steel mill. **5**—After steel has been made in a Bessemer converter it is emptied into a great fire brick lined ladel. Our picture shows the ladle pouring into the ingot molds. **6**—Tapping the open-hearth furnace, showing large ladle which receives the steel. Smaller cinder ladle at right. **7**—In the puddle mill, making wrought iron. Puddler drawing ball of the plastic metal from the furnace. **8**—Rolling an ingot in the blooming mill. Thrust after thrust elongates the ingot to many times its original length. **9**—Mighty rolls of the sheet mill rolling sheet steel. **10**—Car loaded with sheet and tube pipe, ready for shipment. (See page 413.)

CARBON AND CARBON COMPOUNDS

Mineral	Forms and Chief Products	Locality and Preparation	Manufacture, Uses and Trade
Coal is the most important fuel. Fr., *Charbon de terre, houille;* Ger., *Kohle, Steinkohle;* Sp., *Carbon mineral.*	*Peat, lignite* and *brown coal* are poor in quality, retaining much appearance of vegetable origin. *Bituminous coal,* coking coal, non-coking coal, cannel coal, cherry coal, splint coal, gas coal, steam coal, etc., are all varieties of soft coal and contain a considerable percentage of volatile matter. *Anthracite coal* is almost pure carbon. By distillation, bituminous coal yields *gas, ammonia, coal tar* and *coke.* Coal tar products are numbered by the thousand. Among them are *naphtha, benzene, oil of mirbane, perfumes, flavors, drugs, saccharine, aniline* and other dyes, *phenol, carbolic acid, salicylic acid, napthaline, photographic developers, creosote, oils, tar* and *pitch.*	Coal is a result of the alteration of vegetable matter. Deposits occur in almost all parts of the world, but many are almost entirely undeveloped; as, for example, the coal fields of China. The largest production is in the United States, Wales, England, Germany, Austria, Russia and Australia. Mines are worked in India, Japan, Mexico, South America, South Africa, China and the Philippines. Pennsylvania, Ohio, West Virginia, Alabama, Indiana, Iowa and many other states mine coal in great amount. Pennsylvania produces nearly all of the anthracite and a large quantity of bituminous coal.	Bituminous coal is the fuel which runs the factories, railways and steamships of the world. The distillation of coal tar and the utilization of its numerous by-products, is one of the best examples of modern economy which turns waste material into useful products and large profits. Much coke is made without saving the by-products. The United States exports coal, both bituminous and anthracite to Canada and ships bituminous coal to Mexico, Cuba and other countries. Some coal is imported from British America. Great Britain has a large export trade in coal. Much of that shipped from Cardiff, Wales, is in the form of briquettes or blocks made by mixing small coal with pitch or tar and pressing it into shape.
Petroleum (or coal oil).—Fr., *Pétrole;* Ger., *Petroleum, Bergol;* Sp., *Petróleo.*	Petroleum or *coal oil,* in its crude state, is a dark colored liquid. It yields by distillation, first; light oils, *gasoline, naphtha, benzine;* second, *illuminating oils, kerosene, headlight oil,* etc.; third, *lubricating oils, engine oil, cylinder oil, machine oil;* fourth, *petroleum residuum* (for asphalt paving) and *coke. Petrolatum, vaseline* and *paraffin wax* are by-products in petroleum refining.	Obtained from wells in the United States, Russia, Dutch East Indies, Galicia, Roumania and other countries. More than half of the world's output is from the United States, the leading districts being (1) Kansas and Oklahoma, (2) California, (3) Illinois, (4) Pennsylvania and (5) Texas. Crude oil is transported from the wells for hundreds of miles through pipe lines to the refineries.	Probably no modern industry is more effectively organized and carried on than the petroleum business. There is no waste in the distillation of the crude oil and no part of it for which uses have not been found. In addition, the business of selling the oil is managed with the highest skill. American kerosene oil is exported to all parts of the globe. Crude oil is also exported as well as other petroleum products.
Asphaltum (or mineral pitch).—Fr., *Asphalte, Goudron minéral;* Ger., *Asphalt;* Sp., *Asfalto.*	A bituminous mineral substance found more or less pure, in some localities. *Rock asphalt* consists of sandstone or limestone impregnated with asphalt. Much asphalt is produced in refining certain grades of petroleum—such as those obtained in California and Texas.	The pitch lake of Trinidad and the Bermudez lake at the mouth of the Orinoco in Venezuela, are the largest known deposits of moderately pure asphalt. Smaller deposits of high grade occur in Utah, Cuba and the Barbadoes. Rock asphalts are mined in France, Switzerland, Sicily, California, Kentucky and Oklahoma.	For paving, rock asphalts are much used in Europe. Trinidad and Venezuelan asphalts are exported in large quantities to the United States and Europe. For paving, these lake asphalts are mixed with broken stone, sand and petroleum residuum. Pure varieties (gilsonite, marjak, glance pitch) are made into black varnish, used for insulating, etc.
Graphite is almost pure carbon. Fr., *Graphite;* Ger., *Graphit;* Sp., *Grafito.*	*Plumbago* or *black lead* is used in making crucibles, lead pencils, lubricants for heavy machinery, stove polish, foundry facings, paint, etc. *Artificial graphite* is made from coal or coke by an electric process.	Produced in Bohemia, Ceylon, Italy, Germany, Mexico and the United States. The deposits in Ceylon are the largest in the world. Much of that mined in New York and Alabama is of very high grade.	Powdered graphite is mixed with fine clay in greater or less proportion and then molded and baked to form such articles as crucibles and lead for pencils. Graphite is imported from Ceylon to the United States, and lead pencils from Europe.
Diamond is pure crystallized carbon. The hardest known substance. Fr., *Diamant;* Ger., *Diamant;* Sp., *Diamante.*	Many diamonds are transparent, colorless stones. Some are blue or yellow. Some stones (*bort* and *carbonado*) are unfit for gems but valuable for polishing or in diamond drills.	South Africa produces the bulk of the world's supply. These deposits are in rock. In Brazil and India a few diamonds are found in gravel. Most of those from Brazil are opaque and dark colored (carbonado).	The beauty of a diamond is largely due to cutting. The diamond cutting industry is centered in Amsterdam and Antwerp. Diamonds are imported to the United States mainly from Holland and Belgium after cutting. Carbonado is used in diamond drills. Diamonds are used in cutting glass and for grinding and polishing.
Amber is a fossil resin. Fr., *Ambre;* Ger., *Bernstein;* Sp., *Ambar.*		Found chiefly along the shores of the Baltic.	Used in making mouthpieces for pipes, cigar holders, beads, etc.
Carborundum.	Carbide of silicon. Harder than any known substance but the diamond.	Manufactured at Niagara Falls, by electrically heating a mixture of coke, sand and salt.	Used for making polishing powder, in grinding wheels, sharpening stones, abrasive cloth, etc.

MONEY, BANKING AND FINANCE.—Money comprises all things which every one accepts in exchange for his property and services and in exchange for which one can always procure the property and services of others which are on the market for sale. It includes coins made of gold, silver and copper, notes issued by banks, and, in the United States and some other countries, certain government notes.

Functions of Money may be described by the phrases *standard of value* and *medium of exchange.* By the former is meant that commodity in terms of which the value, or ratios of exchange, of commodities are measured and expressed. Gold is that commodity in the chief commercial countries of the world at the present time, and a certain definite portion of it, in the United States 23.22 grains, is declared by statute to be the unit of value and is given a special name, as the dollar, pound sterling, mark, franc, etc. By the medium of exchange is meant those things which *mediate,* or act as go-betweens, in exchanges. It includes coins made of the standard commodity, all other things included under the head money, and many things not ordinarily so included, such as bank deposits, some other book accounts, various devices for making payments used by express companies and post offices, private tokens, etc.

The Elements of the Medium of Exchange common to the leading countries at the present time may be classified as *standard coins, subsidiary coins* and *bank currency.* In some countries are also found certain special coins not classifiable either as standard or subsidiary, and certain *government notes.*

Standard Coins are those made from the commodity which serves as the standard of value, are minted freely or at a small charge for whoever brings metal of the proper standard to the mints, and are legal tender for all payments public and private.

Subsidiary Coins are usually made of silver with an intrinsic value below their face value, are redeemable in standard coins, are legal tender only for small amounts, and are minted in limited quantities on government account. Among special coins may be mentioned the United States silver dollar, the five-franc piece of France, Belgium, Switzerland and Italy, and the thaler of Germany. These are coins which possess full legal tender power in their respective countries, and are not directly redeemable in standard coins, but are either no longer coined at all or only coined from time to time in limited quantities under the authority of special laws.

The Government Notes referred to are usually noninterest-bearing promissory notes issued by governments in various denominations suitable for monetary purposes, and payable to bearer on demand. In the early stages of their history they are frequently not redeemable on demand in standard coins, and consequently depreciate in various degrees according to the likelihood of their redemption in a long or a short period, the fiscal condition of the government issuing them, and other circumstances.

United States Money.—The medium of exchange of the United States at the present

time, exclusive of its bank currency, consists of gold coins, silver dollars, silver half and quarter dollars and dimes, a nickel five-cent piece, a copper cent, gold certificates, silver certificates, greenbacks and Sherman notes.

Gold and Silver Certificates are issued, the former chiefly in large, and the latter in small denominations, by the treasury department in exchange for gold coins and silver dollars respectively, which are held for their redemption.

Greenbacks, also called United States notes, were first issued in 1862 and 1863 to assist in financing the Civil war. Until January 1, 1879, they were not redeemable in coin and were consequently depreciated. Since that time the Secretary of the Treasury has been obliged to redeem them in gold on demand, and for that purpose has kept on hand a gold reserve, which was fixed at $150,000,000 by the act of 1900. When redeemed, they can only be reissued in exchange for gold coin, and the total amount which may be issued under existing laws is $346,681,016.

The Sherman Notes were issued under authority of an act passed in 1890 providing for the purchase each month of 4,500,000 ounces of silver bullion at its market price, to be paid for in treasury notes, which were to be redeemable on demand in gold coin or silver dollars at the option of the Secretary of the Treasury.

In 1893 the silver purchase clause of this act was repealed, about $150,000,000 of the certificates having been issued to that time. The bullion accumulated in the vaults of the treasury under authority of this act was subsequently coined by authority of law, silver certificates issued, and, by authority given in the act of 1900, gradually substituted for the Sherman notes, less than $1,000,000 of which still remain in circulation.

MONETARY SYSTEM OF THE UNITED STATES, 1933

I. Gold, Silver and Minor Coins

	Gold Coin	Standard Silver Dollars	Subsidiary Silver Coin	Minor Coin
Weight	25.8 grains to the dollar.	412.5 grains	385.8 grains to the dollar	5 cent piece; 77.16 grains, 75 per cent copper, 25 per cent nickel.
Fineness	900-1000.	900-1000.	900-1000.	1 cent piece: 48 grains, 95 per cent copper, 5 per cent tin and zinc.
Ratio to gold		15.988 to 1.	14.953 to 1.	
Limit of issue	Unlimited.	Coinage ceased in 1905, resumed in 1921.	Needs of the people.	Needs of the people.
Denominations	$20, $10, $5, $2½.	$1.	50 cents, 25 cents, 10 cents.	5 cents, 1 cent.
Legal tender	Unlimited.	Unlimited, unless otherwise contracted.	Not to exceed $10.	Not to exceed 25 cents.
Receivable	For all public dues.	For all public dues.	For all dues up to $10.	For all dues up to 25 cents.
Exchangeable	For gold certificates, as below, and subsidiary and minor coin.	For silver certificates and minor coin.	For minor coin.	
Redeemable			In lawful money at the treasury in sums or multiples of $20.	In lawful money at the treasury in sums or multiples of $20.

II. Paper Currency

	Gold Certificates	Silver Certificates	United States Notes	Treasury Notes of 1890	National Bank Notes	Federal Reserve Notes	Federal Reserve Bank Notes
Limit of Issue	Unlimited for gold coin unless gold reserve falls below $100,000,000.	Amount of silver dollars coined, $562,173,530.	$346,681,016.	No further issues; volume steady diminishing by redemption in silver dollars.	Not to exceed capital of banks.	Unlimited, not to exceed collateral deposited.	Unlimited, not to exceed collateral deposited.
Denominations	$10,000, $5,000, $1,000, $500, $100, $50, $20, $10.	$100, $50, $20, $10, $5, $2, $1.	$1,000, $500, $100, $50, $20, $10, $5, $2, $1.	$1,000, $500, $100, $50 $20, $10, $5, $2, $1.	$1,000, $500, $100, $50, $20, $10, $5.	$10,000, $5,000, $1,000, $500, $100, $50, $20, $10, $5.	$1,000, $500, $100, $50, $20, $10, $5, $2, $1.
Legal tender		Not a tender.	For all debts, public and private, except customs and interest on public debt.	Unlimited, unless otherwise contracted.	Not a tender.	Not a tender.	Not a tender.
Receivable	For all public dues.	For all public dues.	For all public dues.	For all public dues.	For all public dues except customs.	For all public dues.	For all public dues except customs.
Exchangeable	For subsidiary and minor coin.	For silver and minor coin.	For subsidiary and minor coin.	For silver and minor coin.	For subsidiary silver and minor coin.	For subsidiary and minor coin.	For subsidiary silver and minor coin.
Redeemable	In gold coin at the treasury.	In silver dollars at the treasury.	In gold at the treasury.	In gold or silver at the treasury.	In lawful money at the treasury, or at bank of issue.	In gold at the treasury or at any Federal Reserve Bank.	In lawful money at the treasury, or at the bank of issue.

COINAGE OF THE UNITED STATES, 1792-1926

Denomination	Pieces	Values
GOLD		
Double eagles	168,820,856	$3,376,417,120.00
Eagles	52,811,985	528,119,850.00
Half eagles	78,249,869	391,249,345.00
Three-dollar pieces (coinage discontinued under act of September 26, 1890)	539,792	1,619,376.00
Quarter eagles	19,222,833	48,057,082.50
Dollars (coinage discontinued under act of September 26, 1890)	19,499,337	19,499,337.00
Dollars, Louisiana Purchase Exposition (act of June 28, 1902)	250,258	250,258.00
Dollars, Lewis & Clark Exposition	60,069	60,069.00
Total gold	339,454,999	$4,365,292,437.50
SILVER		
Dollars (coinage discontinued, act of Feb. 12, 1873, resumed act of Feb. 28, 1878)	843,826,021	$843,826,021.00
Trade dollars (discontinued, act of Feb. 19, 1887)	35,965,924	35,965,924.00
Dollars (Lafayette souvenir, act of March 3, 1899)	50,026	50,026.00
Half dollars	455,621,800	227,810,900.00
Half dollar (Columbian souvenir)	11,310,170	5,655,085.00
Quarter dollars	604,154,341	151,038,585.25
Quarter dollars (Columbian souvenir)	40,023	10,005.75
Twenty-cent pieces (coinage discontinued act of May 2, 1878)	1,355,000	271,000.00
Dimes	1,278,356,797	127,835,679.70
Half dimes (coinage discontinued, act of February 12, 1873)	97,604,388	$4,880,219.40
Three-cent pieces (coinage discontinued, act of Feb. 12, 1873)	42,736,240	1,282,087.20
Total silver	3,371,020,730	$1,398,625,533.30
MINOR		
Five-cent pieces, nickel	1,401,129,862	$70,056,493.10
Three-cent pieces, nickel (coinage discontinued, act of September 26, 1890)	31,378,316	941,349.48
Two-cent pieces, bronze (coinage discontinued, act of September 26, 1890)	45,601,000	912,020.00
One-cent pieces, copper (coinage discontinued, act of February 21, 1857)	156,288,744	1,562,887.44
One-cent pieces, nickel (coinage discontinued, act of April 22, 1864)	200,772,000	2,007,720.90
One-cent pieces, bronze	5,252,120,427	52,521,204.27
Half-cent pieces, copper (coinage discontinued, act of February 21, 1857)	7,985,222	39,926.11
Total minor	7,095,275,571	$128,041,600.40
Total coinage	10,805,751,300	5,891,959,571.20

Silver-dollar coinage under acts of April 2, 1792, $8,031,238; February 28, 1878, $378,166,793; July 14, 1890, $187,027,345; March 3, 1891, $5,078,472—total $578,303,848.

The Medium of Exchange of other Countries, exclusive of their bank currency, resembles that of the United States in most essentials, but differs from it in some particulars.

Canada.—That of Canada approximates it most closely, the unit of value being the same, and government notes playing an important role. The gold coins of both England and the United States, however, are there current, and the governor-general may declare other gold coins legal tender at their bullion value.

England has a large unit of value, consisting of 123.274 grains of standard and 113.001 grains of pure gold, which is represented in a coin called the *sovereign*. Its silver coins are all subsidiary, the shilling weighing 87 3/11 grains 0.925 fine, being the unit among them and having a tale value of one-twentieth of a sovereign. The penny and the farthing are minor coins of copper having tale values respectively, of one-twelfth and one-forty-eighth of a shilling.

Only during and since the World War have government notes constituted an element of the English currency.

England's currency was inconvertible until 1925 when the gold standard was resumed. The par value of the sovereign is $4.8665 in United States currency.

France, Belgium, Switzerland, and Italy prior to the war had the so-called franc system, the franc consisting of 4.978 grains of standard and 4.4802 grains of pure gold, being the unit (par value 19.30 cents U. S. currency). In these countries all the silver coins were subsidiary, except the five-franc piece which in its status closely resembles the silver dollar of the United States. It contains 385.8 grains of standard and 347.22 grains of pure silver, and from 1865

to 1878 they were coined in limited quantities for government account only, but since the latter date their coinage has been suspended. However, they still remain legal tender at their tale value for all amounts.

All of these countries suspended specie payments shortly following the outbreak of the World War. The Swiss franc, however, depreciated very little. In October, 1926, the Belgian government established a new unit of currency, the Belga with a fine gold content of 0.209211 grams (par value in U. S. currency of 13.90 cents) and a fixed relation to the Belgian paper franc of 5 to 1, making the latter worth 2.78 in United States currency. In 1927, France and Italy still had inconvertible paper currency, the French franc being worth approximately four cents and the Italian lira about five cents in United States currency.

Germany makes the mark its unit, consisting of 6.1457 grains of standard gold. All silver coins are subsidiary except the thaler. The silver mark weighs 85.733 grains, and all subsidiary coins are legal tender only in payments of twenty marks or less. The thalers are remnants of the old currency systems in use before the foundation of the empire and are legal tender for any amount. Imperial treasury notes constitute a small element of the currency of the empire.

During the war Germany's currency became inconvertible and in 1923 it was practically worthless. Later one trillion of the old marks were exchanged for one of the new marks issued by the Reichsbank established under the Dawes plan. The gold content of the new mark is the same as that of the old.

Banks.—The largest element of the medium of exchange of commercial nations is supplied by banks, which also frequently perform other important financial functions, such as the encouragement of saving, the purchase and sale of securities, the promotion of industrial enterprises and the execution of trusts of various kinds. Their most fundamental operations are *the conduct of deposit accounts* and *the making of loans and discounts*.

Deposits are credits on the books of a bank obtained by business men and others by the sale to the bank of their surplus cash, their own personal notes, and of credit instruments representing payments due them from other people. These credits give the customer the right to call upon the bank for legal tender money or for a transfer to the credit of some other person of all or some part of the amount due him.

Some, known as *demand deposits*, give the right to demand payment at any time without notice, and others, known as *time deposits*, only after the lapse of a certain time from the date of demand.

Check.—In making use of his rights the customer employs the *check*, which is a written order to the bank to pay to bearer or to the order of a specified person a specified sum.

Loans and Discounts.—The personal notes and bills of exchange payable at some future date received by the bank in return for credits allowed or cash advanced are usually described in bank accounts as *loans* and *discounts*.

Bank Notes.—Instead of opening credit accounts or advancing legal tender money to its customers a bank having the authority may *issue notes*—that is, transfer to them its promises to pay to bearer on demand—in denominations convenient for use as money. To the bank these notes represent obligations of the same kind as deposits, but to the customer they serve as hand-to-hand money and may be substituted for government notes, and, for many purposes, for coin.

Banking Processes.—Through the processes involved in *loaning, discounting, conducting deposit accounts*, and *issuing notes*, banks perform a large part of the world's exchanges, in the United States the major part. Nearly all business men and a large percentage of other people are their customers.

Purchases of goods are generally made on time, the credit instruments, such as personal notes and bills of exchange, which represent the obligations thus created, are discounted by the banks, and deposit accounts opened against them. By transfers of these from one person to another the mutual indebtedness created by purchases and sales on credit are canceled and the transactions thus completed and closed.

Profits.—The interest on the discounted notes and bills, which it has purchased by credit accounts bearing no interest or a lower interest than is charged on loans or by notes, is the chief source of a bank's profits.

Exchange.—In the conduct of their business banks find themselves each day in the possession of checks, drafts and other bills of exchange drawn on other banks in the same or other cities.

Clearing Houses.—In order to collect those drawn on banks located in the same town clearing houses have been organized in all large and in many small cities. These are places at which clerks of the various banks meet for the purpose of exchanging checks, drafts, etc., and settling mutual obligations.

Correspondents.—For the collection of paper drawn on out-of-town banks and the supply of their customers with the means of meeting out-of-town payments, banks usually employ what are known as correspondents. These are banks in commercial and financial centers with which they arrange to have credited the amounts of checks, drafts, etc., sent for collection, and debited the drafts drawn in favor of their customers.

Through this correspondence system the banks of the entire commercial world have been organized into a great machine for the conduct of commerce, business men anywhere being able through their banker to make payments in any part of the world or to receive amounts due them.

Through it, also, the mutual indebtedness of the people of different cities, states and nations, created by mutual trade, investments, and other financial operations, are canceled in substantially the same manner as those between citizens of the same place are canceled by local banks and clearing houses.

Bank Balances.—The aggregates of the debits and credits which the banks of a place have with their correspondents represent with a considerable degree of accuracy what the people of the place owe to outsiders and what outsiders owe to them. The balance between these aggregates may be great or small, in favor of the banks or against them, and their payment, if demanded, must be accomplished by the shipment of money. If payment is not demanded the banks will ordinarily pay interest on adverse balances and receive interest on favorable ones. The banks are thus put to expense whenever the balance is against them and are making a profit whenever it is in their favor. In the first case, in order to indemnify themselves, they must charge a premium on drafts on out-of-town places, and in the second case they can afford to sell drafts at a discount, provided they can make more out of their funds at home than the interest allowed on their balances with correspondents.

Rate of Exchange.—This premium charged or discount allowed on drafts is known as the *rate of exchange*. If a premium is charged, *exchange is said to be at a premium;* if a discount is allowed, it is *said to be at a discount*.

The rate of exchange at a given time is fixed by a process of bargaining between either the banks of a place which have favorable balances with correspondents and therefore desire or are willing to sell exchange, and those which have unfavorable balances and consequently desire or are willing to buy exchange, or, in case all the banks are in the same situation as regards the condition of their balances, between the banks and those of their customers who want exchange.

Foreign Exchange.—In the foreign exchange, between countries having the same standard, the so-called *par of exchange* must be calculated; that is, the exact equivalent of the unit of one nation in terms of the other. Between the United States and other nations this calculation consists of dividing the number of grains of pure gold contained in the foreign unit by 23.22, the number of grains of pure gold in our dollar.

Between countries having different standards—for example, between gold and silver standard countries—the place of the par of exchange is taken by the relative market values of the two metals. If one or both of the nations have a secondary standard its depreciation must be calculated as well as the par of exchange or the relative values of the metals constituting their primary standards.

The rates of exchange between foreign countries fluctuate above or below the par of exchange or the substitute for it as the domestic rate fluctuates above and below the par value of domestic drafts. Between gold standard countries the upper and lower limits of these fluctuations are determined by adding to and subtracting from the par of exchange the cost of obtaining and shipping gold, and are called the *gold points*.

Foreign exchange during and since the war is discussed below under the title "Inconvertible Notes and Government Budgets."

Foreign Drafts are drawn by parties of various degrees of financial reputation and are made payable at different dates. Accordingly the element of interest enters into the calculation of their market values and consequently into the prices at which they are quoted.

When a New York banker sells a cable there is no appreciable interval between the time at which his balance with his foreign correspondent is diminished by the amount drawn, but when he sells a *sixty-day* draft he receives the pay for it at the date of sale and still draws interest on the total amount of his balance for sixty days, the draft not being payable until after the lapse of that period of time.

Leaving out of consideration, therefore, the cost of the cablegram, he could afford to sell a sixty-day draft at the price of a cable, minus interest, on the amount for sixty days at the rate received on balances with his correspondent.

Classes of Banks.—From the standpoint of the *source* of their authority to do business, banks in the United States may be classified as national, state and private,

according as they are chartered by Congress or by state legislatures, or operate without charters under the authority of the common law.

In the first group (chartered by Congress) belong the National, Federal Reserve, Federal Land, and Federal Intermediate Credit Banks, and in the second (state chartered) belong state and savings banks and trust companies. Private banks without special charters are prohibited in some states but permitted in others.

On the basis of their *functions* banks may be classified as commercial and investment banks and trust institutions; the first group playing an essential role in the exchange of commodities and services and supplying the greater part of the medium of exchange; the second serving as intermediaries in the assembling and the investment of the savings of individuals; and the third administering trusts of many kinds—such as the estates of deceased persons, of living persons who are unable or unwilling to administer them for themselves, and of charitable, educational and other institutions, acting as financial agents for corporations, states and municipalities and promoting and financing new enterprises, especially combinations, mergers and trusts.

The National, Federal Reserve, state and some private banks primarily perform commercial banking functions but combine investment and sometimes trust banking with them, while the Federal Land Savings and most private banks are primarily investment institutions, and trust companies are primarily trust and investment institutions, sometimes, when the law of the state in which they are located permits, combining commercial banking functions with these.

Banking Laws.—The laws governing the different classes of institutions are not uniform throughout the United States, although a tendency towards uniformity is observable in recent legislation.

The Federal Reserve, Federal Land and Federal Intermediate Credit Banks were created by special acts of Congress, passed respectively in 1913, 1916 and 1923, and the National Banks by an act passed in 1863.

Several amendments to these laws have been passed since their original enactment. Under the authority of the National Banking act and its amendments, several thousand National Banks have been incorporated and are now in operation. From time to time our states have enacted and amended general laws under the authority of which thousands of state banks, savings banks, and trust companies have been established and are regulated and administered.

The Federal Reserve act and amendments provide for twelve Federal Reserve Banks and the machinery for their administration and control, and the Federal Farm Loan act for a like number of Federal Land Banks and an indefinite number of Joint Stock Land Banks.

The characteristic features of National Banks, as determined by the laws at present in force, are: a minimum capitalization of $25,000 in towns of small size and of correspondingly larger amounts in larger cities; the right to issue notes on the security of certain specified classes of government bonds deposited with an officer known as the Comptroller of the Currency; the maintenance of a percentage of deposits as reserves, this percentage varying in size according as the bank is located in country towns, reserve cities or central reserve cities; limitations of the amount as the reserves required by law, amount and kinds of real estate mortgages which may be purchased, and of the amount that may be loaned to any single firm or person to ten per cent of the bank's capital and surplus; five detailed reports per annum to the Comptroller of the Currency, at times specified by him, and examinations by officers appointed by him; and the requirement that each bank must subscribe to the capital stock of the Federal Reserve Bank of its district an amount equal to six per cent of its own capital.

State Legislation.—The legislation of the various states regarding commercial banks is far from uniform, but the national banking code has served as a model in many cases. The chief differences between the rights and privileges of the two classes of institutions are the following:

(1) State banks do not issue notes chiefly because the National Government levies a tax of ten per cent on such notes and sometimes also because such issues are prohibited by law.

(2) In most states commercial banks with a capital stock as small as $10,000 are permitted and in a few no minimum is prescribed.

(3) The laws of most states are more liberal than the national banking code in the matter of real estate loans and in that of the amount permitted to be loaned to a single firm or individual.

The laws regarding savings banks differ somewhat according as the institution belongs to the mutual or the stock class, but usually limit their investments to certain specified classes of securities, limit the amount of deposits in the name of a single individual, and permit the bank to require a certain number of days' notice of the depositor's intention to withdraw deposits.

Legislation regarding trust companies is changing rapidly. The tendency in some states now is to require them to segregate the different branches of their business and to conform to the laws regulating institutions which specialize in each branch, for example, to the laws regarding commercial banks in the management of their strictly commercial business and to those regarding savings banks in their savings business.

The Banking System of the United States.—Under the operations of these laws the banking institutions of the country have been organized into a system, the machinery of which may be briefly described as follows:

The country is divided into twelve districts, in each of which is located a Federal Reserve Bank. A board of seven persons, consisting of the Secretary of the Treasury, the Comptroller of the Currency (the executive head of the national banking system) and five other persons appointed by the President, with offices at Washington, exercises important administrative and controlling powers over these banks. With the Federal Reserve Bank of each district, through stock ownership and in other ways, are affiliated all the National Banks located in the district and such state banks and trust companies as have elected to become so affiliated, such affiliated institutions being known as *member banks*. *Non-member banks* are indirectly connected with the Federal Reserve System through affiliation with member banks, which serve as their correspondents and reserve agents.

For their member banks each Federal Reserve Bank serves as reserve and collection agent and rediscounts certain kinds of commercial paper. Service as reserve agent means that balances of member banks with the Federal Reserve Bank of their district which in the case of banks in New York, Chicago and St. Louis, known as *central reserve cities*, must amount to at least thirteen per cent of their demand deposits, in that of banks in more than fifty other large and moderate sized cities, known as *reserve cities*, to ten per cent of their demand deposits, and in that of other banks, known as *country banks*, to seven per cent of their demand deposits. All member banks must keep an additional reserve amounting to at least three per cent of their time deposits.

As collection agent each Federal Reserve Bank collects for its member banks at par "checks drawn on all member and clearing member banks" (certain non-member banks admitted to the system for clearing purposes only) "and on all other non-member banks which agree to remit at par through the Federal Reserve Bank of their district." This process of check collection involves the interchange between the Federal Reserve Banks of checks received by each one drawn on banks in the other districts, the balances being debited or credited to each bank, as the case demands, by the Federal Reserve Board at Washington on an account established by each bank by the deposit with this board of a fund of gold known as the *gold clearance fund*.

Commercial paper discounted by a member bank for its customers, when it conforms to certain requirements prescribed by law and the regulations of the Federal Reserve Board, may be rediscounted at the Federal Reserve Bank of its district at rates prescribed by the Federal Reserve Board.

The Federal Reserve Banks also serve as depositories and as disbursing and financial agents for the federal government. Funds received by the government from taxes, sales of securities, or any other source may be deposited with the Federal Reserve Banks and credited to its account, and payments may be made by checks drawn against and debited on these accounts. The government may also deposit funds with National Banks, but to an increasing extent it is using for this purpose the Federal Reserve Banks, which may also be called upon to perform other financial services for the government, such as the sale of bonds and the payment of coupons.

In order to perform these services for member banks and the federal government, the Federal Reserve Banks have been equipped with certain powers, among the most important of which is the right to issue notes and to conduct certain open market operations. With the consent of the Federal Reserve Board, any Federal Reserve Bank may deposit with one of its officers, known as the *Federal Reserve Agent*, commercial paper which it has rediscounted for its member banks and gold or gold certificates, and issue notes known as *Federal Reserve Notes*, to the par value of the security deposited, provided a gold reserve amounting to at least forty per cent of the amount issued be held by the bank. Another kind of note, known as *Federal Reserve Bank Note*, may be issued by Federal Reserve Banks on conditions identical with those under which National Banks are permitted to issue notes, namely the deposit with the Comptroller of the Currency of certain classes of bonds of the federal government.

While the Federal Reserve Banks do not conduct checking accounts and transact other kinds of banking business with private persons and corporations, they are permitted to buy and sell upon the open

market certain carefully specified and defined classes of securities, among the most important of which are those issued by the federal government, and high grade bills of exchange.

The McFadden amendments to the Federal Reserve Act passed in 1927 were designed to put National Banks in a position of competitive equality with state banks in regard to branch banks and real estate loans.

Operation of the System.—The commercial banking business of the country is performed through this machinery in substantially the following manner:

Private persons and corporations, states, municipalities and other local political bodies, as well as innumerable associations of other kinds, deposit their current funds with local banking institutions and sell them their own promissory notes and the other forms of commercial paper which regularly come into existence in the transaction of the commerce of the country, and are credited with the amounts deposited and the proceeds of these sales on so-called *checking accounts*. They make their disbursement by drawing checks against these banks which are debited on these accounts. For these checks they receive hand-to-hand money, if that is what they need, or drafts on banks in other cities, if they have out-of-town payments to make, or send them directly to their creditors, who deposit them in their own banks for collection and crediting to their accounts. Local banks thus become responsible for the supply of their communities with the hand-to-hand money required and with the loans needed to carry on current commercial processes.

The banks in each locality conduct checking accounts with banks in the reserve and central reserve cities and, if they are members of the Federal Reserve System, with the Federal Reserve Banks of their respective districts, through the use of which they collect the checks on out-of-town institutions received from their customers, supply their own cash needs and dispose of surplus cash. If at any time their balances on these out-of-town checking accounts are exhausted or approach exhaustion, they replenish them through rediscounts of paper purchased from their customers, or through loans on security of their own paper.

The responsibility for the distribution of the cash resources of the entire country and for the adjustment of the total volume to its changing needs as well as for the intra- and inter-district clearing of the vast volume of checks used in the transaction of the country's business and for the smooth running of its commercial credit machinery rests upon the Federal Reserve Banks. They serve as central reservoirs, into which regularly flows surplus cash from every part of the country and from which regularly are supplied the needs of localities in which there is a shortage. Adjustments of the total volume of hand-to-hand money to meet the changing needs occasioned by seasonal and other fluctuations are made through the issue and retirement of Federal Reserve Notes. The need for an increase in their volume shows itself in the first place in the form of the presentation for discount at the local banks of an increasing volume of commercial paper, a portion of which in turn is sent for rediscount to the Federal Reserve Banks. Against these rediscounted notes and bills of exchange Federal Reserve Notes are issued and sent to the local banks and through them to their customers. When the need which occasioned the increase disappears or decreases, these notes accumulate in the local banks, having been deposited by customers who do not need them, are returned to the Federal Reserve Banks in payment of the matured commercial paper they have rediscounted, and for other purposes, and are cancelled and retired.

Through the rediscount of commercial paper for member banks the Federal Reserve Banks make it possible for local institutions to discount the commercial paper of their customers and make loans to them in other forms and thus to meet their commercial credit needs.

Additional Machinery for Investment Banking.—In the assembling and investment of the savings of the people of the United States, besides the commercial banking machinery, function the Federal Land and Joint Stock Land Banks, Farm Loan Institutions chartered by some of the states, a large and increasing number of trust companies, and savings banks, insurance companies, a large number of private banks, bond and mortgage houses, brokerage firms and stock exchanges. The Federal and State Farm Loan Banks and some other institutions aim primarily at obtaining capital to loan to farmers for agricultural purposes, chiefly through the sale of bonds to the investing public and the loan of the proceeds to farmers on the security of mortgages on their property. Insurance companies invest in the same form of security large amounts of the premiums they collect on the policies they issue. Commercial and savings banks, trust companies and many private banks receive savings deposits from their customers and invest them in bonds, mortgages and other investment securities. Brokers and bond houses serve chiefly as middlemen and distributing agents.

Stock Exchanges are organizations of brokers and other dealers in securities to facilitate the purchase and sale of the bonds and stock of railroad, public service, industrial and public corporations. They consist of offices located in the financial districts of large cities like New York, Chicago, Boston and Philadelphia, equipped with telephone and telegraph instruments which connect them with similar institutions in all parts of this and other countries, and with brokers' offices, banks, trust companies and other institutions directly in touch with the people who save and invest, and open at regular hours on week days for the meeting of brokers who execute orders for purchase and sale received from customers. The operations of the New York Stock Exchange extend to all parts of the country and to Europe, while those of the other exchanges are more restricted in scope.

European Banking Systems.—European banking systems differ from ours in the peculiarities both of the constituent institutions and of the central banking machinery.

The English, French and German systems, for example, consist of a relatively small number of large banks, each with many branches scattered throughout the country, a single central bank, also with branches, and numerous institutions of a more or less specialized character. The chief English institutions are the Bank of England, whose beginning dates back to the end of the seventeenth century; several large joint stock and private banks, foreign and colonial banks and discount firms and companies. The French system is headed by the Bank of France, which was established at the beginning of the nineteenth century by the first Napoleon, with which are associated five very large incorporated banks, with numerous branches scattered throughout France and several other countries, provincial, foreign and colonial banks. In Germany there is the new Reichsbank, the successor to the Imperial Bank, established in 1875. In addition to this central note issuing institution there are branches and small local, commercial, mortgage and coöperative banks.

In the performance of commercial banking functions the chief peculiarities of these foreign systems appear in the organization and operation of their central banks and in the relations of these with the other institutions.

The Bank of England.—In its ownership and management the Bank of England is a private institution and the laws passed by Parliament for its regulation and control leave wide scope for the exercise of initiative and judgment by its officers and board of directors. The privilege of issuing bank notes in England, while to a very limited extent shared with a small number of other institutions, is practically confined to this one. It is limited, however, in such a manner as to render the issues inelastic. The law requires that beyond the relatively small amount of 18,450,000 pounds, which may be issued against public securities, every note must be backed pound for pound by coin or bullion. This means, of course, that the notes practically replace an equivalent amount of coin when they are issued, and restore the same amount to circulation when they are retired, thus leaving the total volume of the circulating medium of the country unchanged.

The vaults of the Bank of England constitute the central cash reservoir of the British Isles. Other banks as a rule carry in their vaults only a sufficient amount of cash to supply the daily needs of their customers, depending upon other London banks, and ultimately upon the Bank of England, for additional supplies when needed, and shipping surplus accumulations to them and finally to the Bank of England. Through the conduct of checking accounts with these other banks and the discount for them of short-time commercial paper in case of need the bank places these cash resources at their disposal and distributes them throughout the country as needed.

On account of the large volume of foreign commerce conducted by Englishmen for centuries the city of London has become the chief market in the world for foreign bills of exchange, and the Bank of England has acquired a unique position in the distribution of the cash resources of the world. By raising its rate of discount, and through it the market rate in London, it may attract funds from every financial center in Europe and even from the United States, and by lowering its rate may turn the stream in the opposite direction. It is through the exercise of this unique power that it is able to render the total volume of the English currency responsive to business needs and elastic. The Bank of England also serves as depository, disbursing and fiscal agent for the English government.

The London Stock Exchange.—The London Stock Exchange also occupies a unique position in the investment markets of the world. Before the World War it regularly dealt in a larger variety and volume of foreign securities than any other exchange in the world, and, while since then its relative importance has considerably decreased, no other ex-

change has as yet succeeded to its unique position. It still serves as an international distributor of investment funds.

The position of London is, however, being threatened by New York, due to the large investments of American funds abroad, and the New York Stock Exchange now lists foreign securities.

The Bank of France and the Imperial Bank of Germany (Reichsbank).—The Bank of France and the old German Reichsbank (1875) were privately owned and controlled by officers directly or indirectly appointed by their governments. With the dissolution of the old Imperial Bank in October, 1924, the assets being assumed by the new Reichsbank, the control of the federal government over the bank was removed. The new bank is an autonomous institution independent of the German government. It is located in Berlin and its name is unchanged. Both the Reichsbank and the Bank of France are endowed with the right to issue notes against commercial securities and thus have the power to supply an elastic element to the currencies of their respective countries. Both conduct checking accounts, rediscount commercial paper and make advances to other banks and thus serve as the distributors of the cash resources of their respective countries. Through changes in their discount rates both exercise a considerable degree of control over the expansion and contraction of credit by other banks. Both serve as depository, disbursing and fiscal agents for their respective governments.

Effects of the World War.—The World War threw the financial machinery of the world into a state of disorder unparalleled in modern times. This was accomplished chiefly through the suspension of specie payments throughout Europe, the issuance of huge quantities of inconvertible government and bank notes, an enormous increase in the total indebtedness of all belligerent and most neutral countries, and the dissolution of old and the creation of new government units.

Inconvertible Notes and Government Budgets.—The expenses of the war constituted a heavy drain on the treasuries of the warring nations. This was met by levying taxes, selling bonds, and issuing inconvertible currency. The central banks were required by the governments to make additional loans. The rapid depreciation of the currencies, however, did not begin until the postwar period.

The English pound, though inconvertible, did not depreciate to the extent of other currencies. During the period 1916-1919, exchange rates were "pegged" (change in price by buying or selling prevented) at $4.76 and fluctuations one way or the other were slight. Early in 1919 when artificial stabilization was discontinued, exchange rates on London fell rapidly, going as low as $3.33. The increased gold holdings of the Bank of England and the retirement of its notes made possible a return to the gold standard in 1925. On the whole, England has escaped the worst ravages of an inconvertible currency, though she still suffers from the disorganization of world markets.

On August 5, 1924, the legal maximum limits of note issues of the Bank of France was raised from 6.8 billion to 12 billion francs. This limit was gradually increased until it reached 43 billion on July 31, 1920. Since that date it has been decreased. Exchange rates on France fell rapidly during 1915 and reached a low point in April, 1916, of about 16½ cents. During most of the war the franc was worth approximately 17 cents. In March, 1919, the franc was "unpegged" and immediately there began a precipitous fall. From over 18 cents in March, 1919, the franc fell to less than 6 cents in April, 1920. In March, 1924, it reached the low point of about 3½ cents, much the lowest point that the franc had ever touched since the days of the assignats at the time of the French Revolution. The French returned to the gold standard on June 24, 1928.

At the outbreak of the World War, Italy was still on an irredeemable paper basis as a result of the suspension of specie payments in 1893. However, the paper circulation was covered by approximately sixty per cent gold reserve. Immediately upon the outbreak of the war the maximum note issue limits of the issuing banks was increased. Subsequent issues brought the total from about 2,500,000,000 lire in 1914 to about 22,000,000,000 lire in 1920, since which time it gradually declined. Some of these issues were for state and other for business purposes. Prices and exchange rates rose and fell accordingly. As in the case of Britain and France, the exchange rate was pegged for the lira until 1919. When the artificial support was withdrawn the lira fell from 19 cents to less than 4 cents in April, 1920. Italy returned to the gold standard by royal decree on December 22, 1927.

Germany furnishes perhaps the best example of the disastrous effects of the issue of inconvertible currency. In 1914 the Reichsbank had about 2,000,000,000 marks of notes outstanding. Although the government resorted to taxation, there was a deficit of 134,000,000,000 marks for the period of April 1, 1914, to March 31, 1919. To cover its constant deficits the government issued long term loans amounting to 97,000,000,000 marks and borrowed the rest from the Reichsbank. The demands of the Treaty of Versailles for reparations payments increased the budget deficit although efforts were made by the new government to increase revenues by taxation. This was, however, unsuccessful and the deficit was met by increasing the note circulation of the Reichsbank until by November 15, 1923, it had increased from the bare two billion in 1914 to 92,844,720,743,000 million marks.

While during the four years of war, prices just about doubled in Germany, by November 15, 1923, they had multiplied by about 720 billion times over 1913. The effects of this chaotic condition of the currency was to destroy all normal business and to turn the nation into a speculative paradise. Thousands of people had their savings disappear because the savings were in terms of money which came to have practically no value. Institutions with endowments were impoverished. The thrifty classes who had saved were reduced to penury, and the practice of saving had been discouraged. On the whole all debtors benefited at the expense of creditors. In 1924 the gold standard was restored in Germany.

Russia, Austria, Poland and Hungary had experiences similar to those of Germany. In all of these countries issues of paper money in almost unlimited amounts were followed by a rise of prices to fantastic heights.

Stabilization.—The stabilization of the currencies and budgets of the old and newly created governments of Europe since the World War has been in many instances a prodigious task, but today the leading nations are on a gold basis and their currencies are stable. Austria has a new unit, the schilling (par value 14.07 cents U. S. currency), issued by the new National Bank of Austria. In Hungary a new bank of issue, the National Bank of Hungary, began business in June, 1924. Its new currency unit is the pengo (17.49 cents). Czechoslovakia has a National Bank of Czechoslovakia and the crown has been stabilized at about 2.96 cents. Poland in 1924 introduced the zloty (11.22 cents), Russia has the ruble (par value 51.46 cents), and the Soviet chervonetz which equals ten rubles. Finland, the markka (2.52 cents), Lithuania, the litas (10 cents), Latvia, the lat (19.3 cents). In almost all cases the gold exchange standard is used, foreign exchange being used as a reserve.

The United States.—In the United States there was no suspension of specie payments. The national debt was increased by about 18 billion dollars. This has been in part retired and refinanced at lower rates of interest. Taxation has yielded large revenues. Adjustments of foreign debts owed to the Government of the United States have been made with Great Britain, Italy, France and the other allied nations, which, calculated on a 5 per cent interest rate, are equivalent to a cancellation of fifty per cent of the original amount due. The ability of the allies to pay depends in part on their own prosperity and the ability of Germany to collect and transfer reparations payments under the Dawes Plan. Gold imports into the United States have increased, bank reserves are large, foreign trade and the purchase of foreign securities have developed at a rapid rate.

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THE WORLD

Pop., Thous.

2,136,767

Continents, Islands, etc.

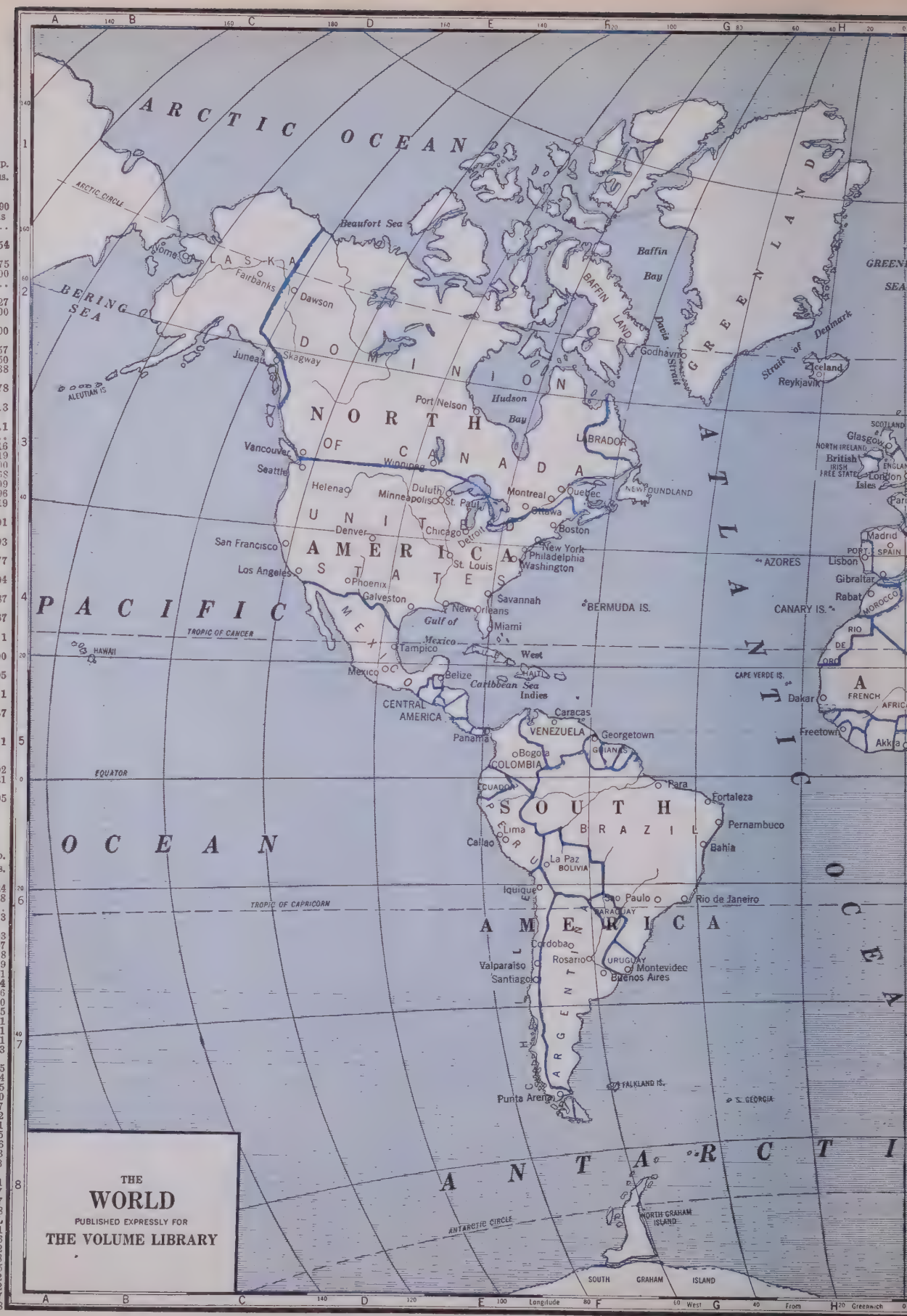
Name Key Pop. Thous.

Africa 5K ...166,390
Aleutian Islands 2Q & 3B.....
Asia 3M ..1,098,054
Australia 6O 6,575
Azores 4G....300
Baffin Land 2F..
Bermuda Is. 4F 27
Borneo 5O.2,100
British Isles 3H 47,200
Canary Is. 4H 557
Celebes 5O.3,450
Cuba 4E...3,638
Europe 3K 541,278
Falkland Is. 7F 3
Fridjof Nansen Land 1K.....1
Fiji Is. 6Q.....
Greenland 2G.16
Guam 5P.....19
Haiti 4E...2,300
Hawaii 4B...368
Iceland 2H...109
Japan 4P..66,296
Java 5O...41,719
Madagascar 6L 3,701
New Caledonia 6Q 93
Newfoundland 3F 277
New Guinea 5P 404
New Zealand 7Q 1,587
North America 3D 169,467
Nova Zembla 2K 1
Philippines 5O 12,590
South America 6F 78,195
South Georgia 7G 1
Sumatra 5N 7,657
Svalbard (Spitzbergen) 1J 1
Tainan (Formosa) 4O 4,592
Tasmania 7P.221
West Indies 4E 1,605

CITIES

Name Key Pop. Thous.

Adelaide 7P..324
Aden 5L.....48
Akkra 5J.....
Albany 0O.....3
Alexandria 4K 573
Algiers 4J...257
Auckland 7Q.218
Bahia 6G....329
Bangkok 5N..541
Beira 6K 4
Belize 5E.....16
Berlin 3J...4,250
Bogota 5E...235
Boma 5J.....1
Bombay 4M.1,161
Boston 3F...781
Brisbane 6P.313
Buenos Aires 7F 2,195
Cairo 4K...1,064
Calcutta 4M 1,485
Callao 6E.....70
Canberra 7P...7
Canton 4O...812
Capetown 6J..271
Caracas 5F...135
Chicago 3E.3,376
Cordoba 6F..253
Dakar 5H.....53
Dawson 1Q & 2C 1
Delhi 4M...447
Denver 4D...287
Detroit 4E..1,568
Diego Suarez 6L
Duluth 3E...101
Entebbe 5K....6
Fairbanks 2C..2
Fortaleza 5G..98
Freetown 5H..55
Galveston 4D..52
Georgetown 5F.62
Gibraltar 4H..17
Glasgow 3H.1,088



THE
WORLD
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Goa 5M.....2
Godhavn 2G.....
Helena 3D....11
Hobart 7P....58
Hong Kong 4O 840
Iquique 6E....46
Istanbul (Constantinople) 4K 794
Jerusalem 4K.90
Juneau 2C.....4
Kabul 4M.....80
Kano 5J.....50
Khartoum 5K.50
Lagos 5J.....
La Paz 6F...146
Leningrad 3K 2,228
Lima 6E.....272
Lisbon 4H...594
Livingstone 6K..
Loanda 6J .....
London 3H.8,202
Los Angeles 4C 1,238
Madras 5M...647
Madrid 4H..896
Mafeking 6K...3
Manila 5O.....
Melbourne 7P 1,032
Mexico City 4D 960
Miami 4E....110
Minneapolis 3E 464
Mogdishu 5L..30
Montevideo 7F 655
Montreal 3F..818
Moscow 3K.2,781
Nanking 4O..633
New Orleans 4E 455
New York 4E 6,930
Nome 1Q & 2B.1
Orenburg 3L.129
Oslo 3J.....253
Ottawa 3E ...126
Palmerston 6O .....
Panama 5E ..114
Para 5F.....280
Paris 3J...2,891
Peiping 3O.1,401
Pernambuco 6G 240
Perth 6O.....254
Philadelphia 4E 1,950
Phoenix 4D...48
Port Elizabeth 6K 43
Port Nelson 3E..
Punta Arena 7F 24
Quebec 3F...130
Rabat 4H.....53
Rio de Janeiro 6G 1,468
Rockhampton 6P 30
Rome 4J....1,008
Rosario 6F...485
St. Louis 4E 822
St. Paul 3E..271
San Francisco 4C 634
Santiago 7E..782
Sao Paulo 6F 879
Savannah 4E..85
Seattle 3C....365
Shanghai 4O 3,259
Skagway 2C...14
Stockholm 3J.514
Sydney 6P .1,256
Tampico 4D...76
Tananarivo 6L 87
Tokyo 4P...5,312
Townsville 6P 32
Tripoli 4J.....65
Valparaiso 6E 189
Vancouver 3C 246
Vienna 3J..1,865
Vladivostok 3O 128
Washington 4E 486
Wellington 7Q 144
Winnipeg 3D 218
Yakutsk 2N....7
Yeniseisk 2M...

NORTH AMERICA

Pop., Thous., 169,467

Area, sq. m., 8,559,000

Political Divisions, Islands, etc.

Name Key Pop. Thous.

Alaska 4D 59
Baffin Land 4M..
Bahama Islands 12P 60
Canada 8K.10,376
Central America 16N..
Cuba 13O..3,638
Ellesmere Island 2K
Greenland 3O.16
Haiti 14R..2,300
Iceland 2R...108
Jamaica 14P.858
Kodiak Island 5B .....
Labrador 6P...4
Mexico 14J 16,404
Newfoundland 7R 277
Panama 16P.750
United States 10K ...122,775
Vancouver Island 8E.....
Victoria Island 4H .....
West Indies 14P

TOWNS

Exclusive of United States

Calgary 8G....83
Chihuahua 12H 43
Colon 16P 57
Durango 13H..32
Edmonton 7G.79
Guadalajara 14H 150
Guatemala 15M 165
Halifax 8Q....59
Havana 13O..589
Kingston 14P.62
La Paz 13G..143
Leon 16N.....53
Managua 16N.61
Merida 14M...91
Mexico City 14K 960
Monterey 13J.129
Montreal 9O.818
Morelia 14J...34
Ottawa 9O...126
Panama 16P.114
Port au Prince 14Q 79
Puebla 14K..111
Quebec 8O...131
Regina 8H....53
Saint Johns 7R 40
San Jose 16O..50
San Salvador 15M 95
Santa Clara 13P 26
Santiago de Cuba 14P..144
Santo Domingo 14R 30
Tegucigalpa 15N 40
Toronto 9N....631
Vancouver 8E.246
Vera Cruz 14K 70
Victoria (Canada) 8E....39
Victoria (Mexico) 13K.....
Winnipeg 8K.218

UNITED STATES

Town Key Pop. Thous.

Albany 9O...127
Atlanta 11N.270
Austin 12K..53
Baltimore 10O 804
Baton Rouge 12L 31
Birmingham 11M 259
Boston 9P...781
Buffalo 9N..573
Butte 9G.....39
Charleston (S. C.) 11O.62
Charleston (W.Va.)10N.60
Chattanooga 11N 119
Chicago 10M 3,376
Cincinnati 10N 451
Cleveland 10N 900
Colorado Springs 10H 33
Columbia 11O..51
Columbus 10N 290
Dallas 12K..260
Denver 10H..287
Des Moines 9K..168
Detroit 9N..1,701
Duluth 9J...101
El Paso 12H..102
Fargo 10E...82
Galveston 11E.....
Guthrie 13K 53
Hartford 9P..163
Houston 12K..292
Jackson 12M..48
Jacksonville 12O 129
Kansas City 10K 302
Lansing 9M...78
Lincoln 10K..75
Little Rock 11K 81
Los Angeles 11E 1,233
Louisville 10M 307
Madison 9L..57
Memphis 11M 253
Miami 13O..110
Milwaukee 10M 578
Minneapolis 9K..464
Mobile 12M...68
Montgomery 12M 66
Nashville 11M 153
Newark 10L..442
New Haven 9P 162
New Orleans 12M 455
New York 9P 6,930
Oakland 10E..284
Oklahoma City 11K 185
Omaha 10K..214
Philadelphia 10O ...1,950
Pittsburgh 10N..669
Portland (Me.) 9P 70
Portland (Ore.) 9E..301
Providence 9P 252
Raleigh 11O..37
Richmond 10O 182
Sacramento 10E 93
Saint Louis 10L..822
Saint Paul 9L 271
Salt Lake City 10G..140
San Antonio 12K....231
San Diego 11E 147
San Francisco 10D 634
Savannah 11O..85
Seattle 8E..365
Shreveport 12L.76
Sioux City 10K 79
Sioux Falls 10K 33
Spokane 8F....108
Tacoma 8E..106
Topeka 10K..64
Toledo 10N..290
Trenton 10O.122
Tucson 12G..32
Tulsa 11K..141
Washington 10O 486
Wichita 11K.111
Wilmington 11O 106





SOUTH AMERICA

Pop., Thous., 78,195

Area, sq. m., 7,598,000

Political Divisions, Islands, etc.

Name Key Pop. Thous.

Argentina 10E 11,846
Barbados Islands 3F..60
Bolivia 7E..3,014
Brazil 6G.41,477
Chiloe Island 11D .....
Chile 10D..4,287
Colombia 4C 7,851
Cuba (West Indies) 1C..3,638
Curacao Island 3D...71
Ecuador 5C.2,500
Falkland Islands 12F..2
Galapagos Islands 5A...2
Guadalupe Island (West Indies) 2E 267
Guiana, British 4F..318
Dutch 4F...227
French 4G...22
Haiti (West Indies) 2D..2,300
Jamaica (West Indies) 2C..858
Margarita Island 3E.....
Martinique Island 2E..234
Paraguay 8F..857
Peru 6C....4,500
Porto Rico (West Indies) 2E 1,543
South Georgia 13H 1
Staten Island 13E .....
Trinidad Island 3E 412
Uruguay 10F 1,941
Venezuela 3D 3,226

CENTRAL AMERICA

Costa Rica 3B 527
Guatemala 3A 2,163
Honduras 3A..859
Honduras, Br. 2A 51
Nicaragua 3B 750
Panama 3C..467
Panama Canal Zone 3C....30
Salvador 3A.1,722

TOWNS

Antofagasta 8D 53
Aracaju 6J....38
Arequipa 7D..46
Azul 10F.....59
Bage 9F.....35
Bahia (Sao Salvador) 7J..329
Barbacena 8H 100
Barrancas 3E..5
Barranquilla 3C 139
Belem (Para) 5G 279
Bello Horisonte 8H 108
Blumenau 9G.112
Boa Vista 5E.50
Bogota 4C...235
Borba 5F.....20
Bucaramanga 3C 45
Buenos Aires 10F 2,195
Cachoeira 9G..64
Cali 4C.....122
Callao 6C....65
Campinas 8G.150
Campos 8H...227
Caracas 3D..135
Cartagena 3C..92
Concepcion (Chile) 10D.77
Cordoba 9E..253
Corrientes 9F.53
Cuenca 5C....42
Curitiba 8G..100
Cuyaba 7F....34
Cuyari 5D.....
Cuzco 7D.....40
Diamantina 8H 70
Fortaleza 5J..98
(Ceara) 6C..
Gaianhuna 6J..65
Georgetown 4F.62
Guayaquil 5B 122
Havana (Cuba) 1B 580
Kingston (Jamaica) 2C..67
La Paz 7D..116
La Plata 10F..182
Lima 7C....272
Maceio 6J....103
Macallanes .....
Manaos 5F....84
Maracaibo 3D.105
Maranhao (S Luis) 5H...53
Mendoza 10D..76
Merida (Mexico) 2A 80
Minas Novas 7H 48
Montevideo 10F 450
Natal 6J.....30
Oruro 7E.....53
Paraiba 6J....53
Parnamiribo 48
4F
Parnahiba 5H..74
Pelotas 9G..107
Pernambuco (Recife) 6J.340
Ponaven 4C...31
Port au Prince (Haiti) 2D.125
Porto Alegre 9G..273
Port of Spain 3E 63
Potosi 9F....93
Quito 5C..104
Riobamba 5C..21
Rio de Janeiro 8H 1,468
Rio Grande do Sul 9G.....48
Rosario 10E..455
Salta 8E.....34
Salta Grande 8G..
San Francisco 5G 32
San Jose dias
San Miguel de Tucuman 5G
San Rafael 4E 48
Santa Fe 9E.125
Santa Marta 3C 23
Santarem 5F..20
Santiago 10D.702
Santiago de Cuba 2C..143
Santo Domingo (Haiti) 2D..30
Santos 8G..127
Sao Leopoldo 9G.....87
Sao Paulo 8G 879
Socorro 4C....23
Teffe 5E.....22
Theresina 5H 57
Tucuman 9E.123
Uberaba 7G..35
Valdivia 11D..34
Valparaiso 10D..189
Villa Rica 9F.27

CENTRAL AMERICA

Town Key Pop. Thous.

Belize 2A.....12
Colon 3B.....32
Guatemala 3A 120
Managua 3A..61
Panama 3B..50
San Salvador 3A 26
Tegucigalpa 3A 26

EUROPE

Pop. 541,278,173

Countries, Islands, Etc.

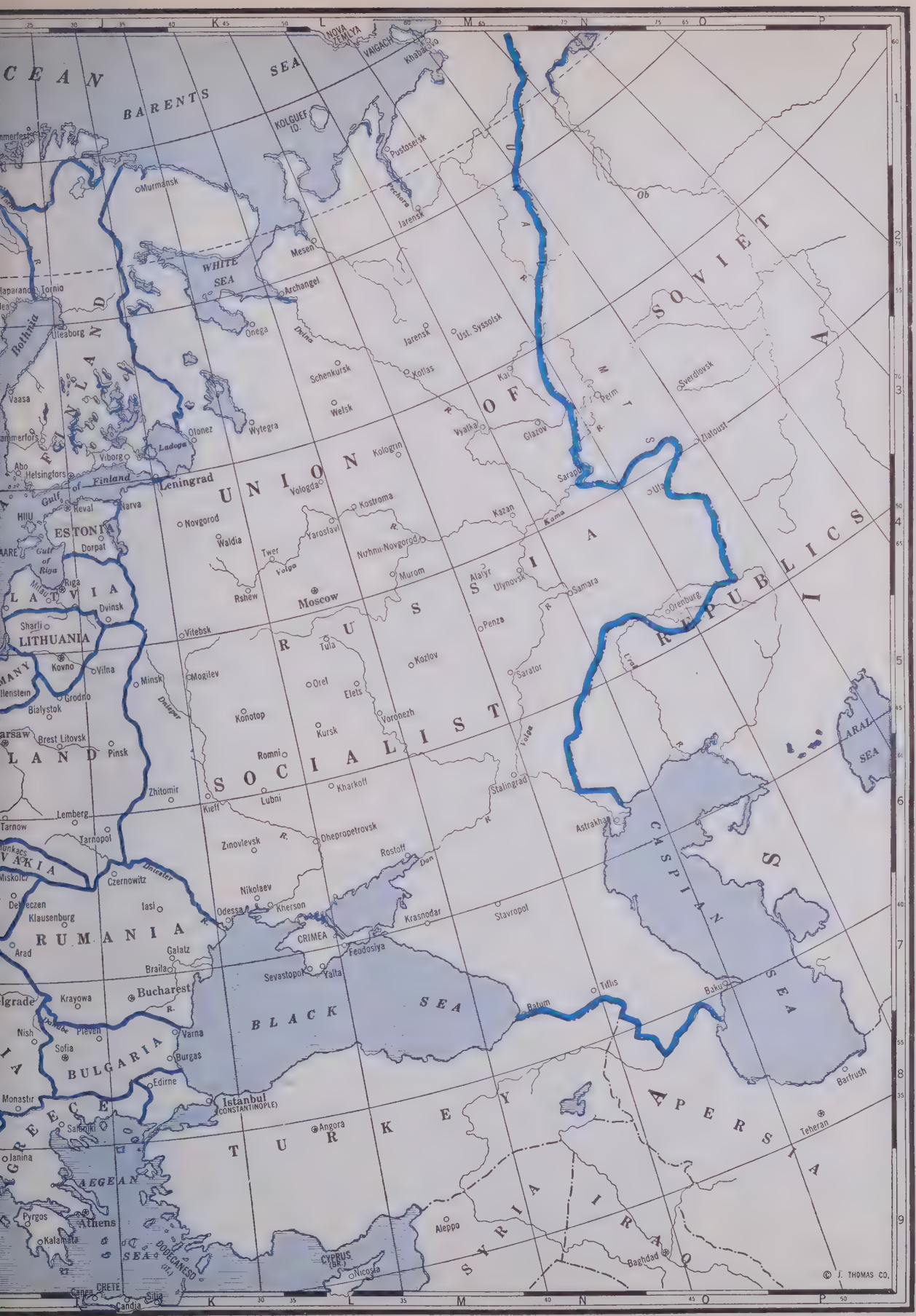
Name Key Pop. Thous.

Albania 8H..1,003
Andorra 8D....5
Austria 7G..6,732
Balearic Islands 8D 368
Belgium 6E 8,159
British Isles 5D 49,159
Bulgaria 8J 6,006
Cyprus 9L...325
Czechoslovakia 6H 14,726
Denmark 5F 3,590
England 5E 37,932
Estonia 4J..1,120
Faroe Islands 3E 22
Finland 3J..3,667
France 6E 41,834
Germany 6F and 5H 65,300
Greece 8J 6,480
Hungary 7H 8,688
Iceland 1D...109
Irish Free State 5C 2,971
Italy 8G 41,806
Latvia 4H..1,900
Liechtenstein 7F 10
Lithuania 5J 2,392
Luxemburg 6F 299
Malta 9G 244
Monaco 8F....24
Netherlands 5F 8,061
Northern Ireland 4D 1,256
Norway 3G..2,814
Nova Zemlya 1L 1
Orkney Islands 4E 15
Poland 6H 31,927
Portugal 8B 6,698
Rumania 7J 18,025
San Marino 8G 13
Sardinia 8F...973
Scotland 4E 4,842
Shetland Islands 3E 21
Sicily 9G..4,426
Spain 8C...28,709
Sweden 3H..6,162
Switzerland 7F 4,066
Turkey (in Europe) 8K 1,004
Union of Socialist Soviet Republics (Soviet Russia) 5L 156,168
Vatican City 8G .....†528
Wales 5D...2,158
Yugoslavia 8H 13,930

TOWNS

Amsterdam 5E 766
Antwerp 6E..284
Archangel 2L.128
Astrakhan 6N 199
Athens 9J....452
Barcelona 8D 991
Belfast 4D...415
Belgrade 7H..241
Berlin 6G..4,250
Bern 7F....111
Birmingham 5D 1,002
Bologna 7F...246
Bordeaux 7D..262
Braunschweig 6F 146
Bremen 5F..295
Breslau 6G..599
Bristol 5D...398
Brno 7G....263
Brussels 6E..834
Bucharest 7J..631
Budapest 7H 1,420
Cadiz 8B.....75
Cagliari 8F..101
Calais 6E.....70
Cologne 6F...700
Copenhagen 5G 771
Cork 5C.....78
Danzig 5H...235
Debreczen 7H 117
Dhepropetrovsk 6L ..... .233





Dortmund 6F.525
Dresden 6G..625
Dublin 5D...410
Dundee 4E...175
Dusseldorf 6F.....464
Edinburgh 4D.....438
Frankfurt 6F.540
Frederikshavn 4G.....
Goteborg 4G..247
Granada 8C..118
Graz 7G.....152
Glasgow 4D.1,088
Geneva 7E...142
Genoa 7F....608
Hamburg 5F 1,079
Hannover 5F.425
Havre 6E....165
Helsingfors 4J.....243
Hull 5E.....377
Istanbul 8K..690
Kazan 4M...202
Kharkoff 6L..417
Kieff 6K.....539
Kiel 5F.....213
Konigsberg 5H 286
Krasnodar 7M 162
Leeds 5E....482
Leicester 5E.239
Leipzig 6G...684
Leningrad 4K 2,228
Liege 6E.....165
Linz 7G.....102
Lisbon 8B...594
Liverpool 5D.855
Lodz 6H....605
London 5E..8,202
Lubeck 5F...120
Lyon 7E.....579
Madrid 8C...896
Mainz 6F....130
Malaga 8C...191
Malmo 5G....129
Manchester 5D 766
Mannheim 6F 249
Marseilles 8E 800
Messina 9G..182
Milan 7F....992
Minsk 5J....153
Moscow 5L.2,781
Munich 6F...685
Murcia 8C...160
Nancy 6E....120
Nantes 6D...187
Naples 8G...839
Newcastle 4E.283
Nice 7E.....219
Nikolaev 7K.104
Nizhnii-Novgorod 4M 350
Norwich 5E..126
Nurnberg 6F.393
Odessa 7K...475
Oremburg 5O.129
Oslo 4G.....253
Palermo 9G..389
Paris 6E....2,891
Pilsen 6G....114
Plymouth 5D.208
Posen 6H....246
Portsmouth 5D 249
Praha (Prague) 6G 848
Pustosersk 1L...
Reims 6E....112
Reval 4J.....134
Riga 4J.....377
Rome 8G...1,008
Rostoff 6M...457
Rotterdam 5E 587
Rouen 6E....122
Saloniki 8J..236
Samara 5N...80
Saratov 5M..277
Sevilla 8B...231
Sheffield 5E..511
Sofia 8J.....213
Southampton 5D 176
Stalingrad 6M 294
Stavanger 4F.46
Stettin 5G...254
Stockholm 4H 514
Stuttgart 6F.343
Szeged 7H...168
Taranto 8G..105
The Hague 5E 449
Tiflis 7N.....347
Toulon 8E...133
Toulouse 7D.194
Trieste 7G...249
Tula 5L.....178
Tver 4K.....106
Valencia 8D.327
Venice 7G...260
Verona 7F..153
Vienna 6G.1,865
Vilna 5J....214
Voronezh 5L.165
Warsaw 6H.1,178
Welsk 3L.....
Wick 4E.....8
Wytegra 3K...
Yalta 7L.....27
Yaroslavl 4L.155
Zagreb 7G...185
Zaragoza 8D.177
Zhitomir 6K..76
Zinovievsk 6K 66
Zurich 7F....249

ASIA

Pop. Thous., 1,098,054

Area of Continent 17,255,890 Sq. Miles

Principal Divisions, Islands, etc.

Name Key Pop. Thous.

Aden 7C.....48
Afghanistan 6E 11,000
Aleutian Is. 1O.
Andaman Is. 8H 29
Arabia 6C.10,000
Asir 6B.....
Baluchistan 6E 868
Bhutan 6H..300
Bokhara 5F.....
Borneo 9L..2,100
British North Borneo 8M.275
Burma 7J.14,667
Cambodia 8K 2,806
Celebes 9M.3,450
Ceylon 9G..5,422
China 6K.474,000
Chinese Republic 5J .....
Cochin China 8K 4,467
Cyprus 4B...347
Dutch East Indies 9M.60,731
El Hasa 6D.....
Federated Malay States 9K 1,713
Formosa (Taiwan) 6M..4,592
Fridtjof Nansen Land 1G.....1
French Indo-China 8K 21,652
Goa 8F.....567
Hadramaut 7D 150
Hainan 7L.....
Hejaz 5B.....900
Hokushu 4N.....
Honshu 4N.....
India 7G.263,400
Iraq 5C....2,849
Japan, Empire of 4N...66,296
Khiva 5E.....
Korea 5M.21,000
Kuril Is. 3N....
Kyushu 5M.....
Malay Peninsula 8J 1,700
Manchukuo 4L 30,929
Molucca Is. 9N 892
Mongolia 4J 1,750
Nepal 6G..5,600
New Guinea 9O 394
New Siberia Is. 1K 1
Nicobar Is. 9J 9
Nova Zembia 1G 1
Okhotsk 2M.....
Oman 7D.....500
Palestine 5B 1,035
Persia 5D.10,000
Philippine Is. 8M 12,590
Sakhalin I. 3M 295
Sarawak 9L..475
Shikoku 5N.....
Siam 8K..11,684
Siberia 2J.10,335
Sinkiang 5H 2,688
Sokotra I. 7D.12
Sumatra 9K 7,600
Svalbard (Spitzbergen) 1F..1
Syria 4C...2,831
Taiwan (Formosa) 6M..4,592
Tibet 6H...3,390
Turkestan 5F 1,137
Turkey 4C 12,607
Union of Socialist Soviet Republics 3J..20,809
Uralsk 4E.....
Yemen 7B..2,500

CITIES

Towns Key Pop. Thous.

Ahmadabad 7F 313
Aigun 4L.....38
Akaba 5B.....
Akyab 7H.....40
Amoy 6L.....234
Amritsar 6G 264
Angora 4C....72
Aomori 4N...58
Baghdad 5C..175

ASIA

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LEGEND

⊛ CAPITALS

SCALE OF MILES

0 250 500 750

Longitude

East



Bangalore
8G 306
Bangkok 8J..545
Banjermasin 9L
Barnaul 4H...74
Baroda 7F...112
Baskra 5C....90
Bassein 8J....40
Beirut 4C....133
Bellary 8F....39
Benares 7G..205
Blagovese Hensk
3L 161
Bombay 7F.1,161
Brusa 4B.....61
Calcutta
7H 1,485
Calicut 8F....82
Canton 7L...861
Changsha 6L.606
Chita 4K.....61
Colombo 9G..284
Cuttack 7H....51
Dacca 7H....138
Damascus 4C.193
Delhi 6G.....447
Foochow 6L..322
Fusan 5M....106
Hakodate 4N.197
Hanchow 6M.506
Hankow 6L...777
Hanoi 7K....130
Harbin 4L...330
Hodeida 7B...41
Hongkong 7L.840
Hue 8K.....31
Hunchun 4M..39
Hyderabad
8G 463
Irkutsk 4J....100
Jaipur 7G....144
Jerusalem 5B.90
Kabul 6F.....80
Kagoshima
5N 137
Karachi 7E..263
Kerman 6E...30
Kermanshah
5D 40
Khaharovsk
3M 50
Khotan 5G....40
Kiungchow
7D 45
Kobe 5N....787
Kokand 5F....69
Korsakovsk 3N..
Krasnoyarsk
3H 72
Kuala-Lumper
9K 111
Kweiyang
6K 100
Kyoto 5N....765
Lahore 6F...420
Lanchow 5K..450
Lucknow 7G.274
Macao 7L....75
Madras 8G..647
Madura 8G..138
Mandalay 7J.147
Masulipatam
8G 44
Maulmain 8J..61
Mecca 6B.....70
Meshed 5E....85
Mosul 5C....100
Mukden 4L..250
Multan 6F...119
Mysore 8F....83
Nagasaki 5M.204
Nagpur 7G..215
Nanking 6L..633
Niigata 4N..125
Omsk 3G....161
Osaka 5N..2,453
Padang 9K...41
Peiping 5L.1,297
Perm 3F.....175
Peshawar
6F 121
Petropavlovsk
2N 72
Pondicherry
8G 43
Poona 7F....250
Port Arthur
5L 50
Quetta 6F....49
Rangoon 8J..400
Saigon 8K...150
Samarkand
5E 135
Semipalatinsk
4G 56
Sendai 4N...190
Shanghai
6M 3,259
Shiraz 6D....35
Singapore
9K 596
Smyrna 4B..153
Soochow 5J..260
Srinagar 6G.173
Surat 7F....117
Sverdlovsk
3F 223
Tabriz 4D...180
Tainan 6M....55
Tashkend
5F 421
Teheran 5D..350
Tientsin 5L.1,387
Tokyo 4N..4,978
Tomsk 3H...100
Tsinan 5L...260
Uralsk 3E....37
Urga 4K.....30
Vitemsk 3K...98
Vladivostok
4M 78
Wenchow 6M.631
Yarkand 5G.100
Yezd 5D.....30
Yokohama
4N 620
Yunnan 7K..156

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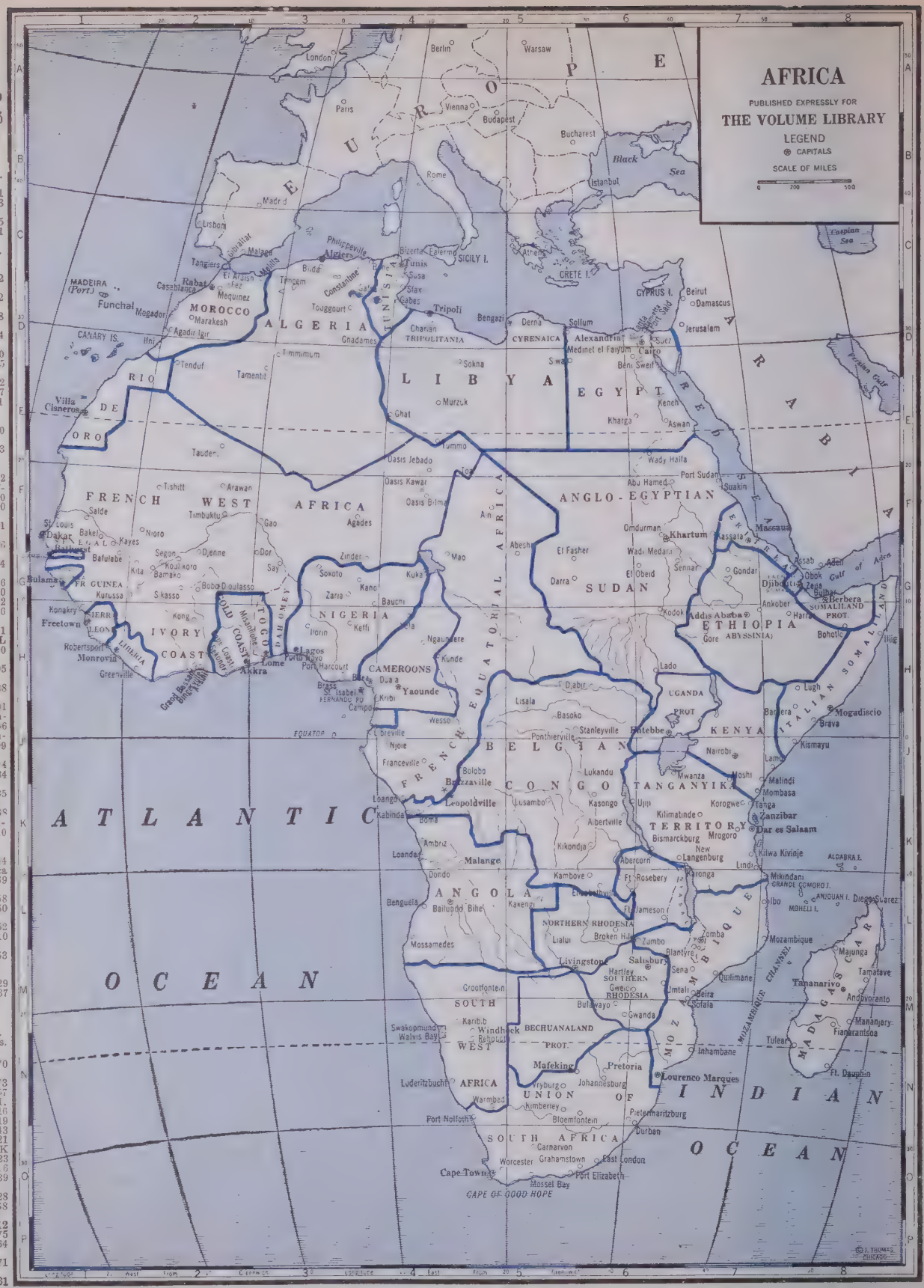
Pop., Thous., 166,390
Area, Sq. Miles, 11,545,000

Political Divisions, Islands, etc.

Name Key Pop. Thous.
Aldabra Islands 8K 1
Algeria 3D..6,533
Anglo Egyptian Sudan 6F..5,545
Angola 5L..4,181
Anjouan Islands 8L .....
Bechuanaland Protectorate 5M 152
Belgian Congo 5J 8,902
Cameroons 4H 1,878
Canary Islands 1D 504
Comoro Islands 8L 130
Cyrenaica 5D..165
Dahomey 3H 1,112
Egypt 6E..14,217
Eritrea 6F...621
Ethiopia (Abyssinia) 7G 5,500
Fernando Po Island 4H...23
French Equatorial Africa 5H 3,192
French West Africa 2F..14,000
Gambia 1G...200
Gold Coast 2H 3,121
Guinea, French 1G 2,236
Guinea, Portugese 1G ...364
Ivory Coast 2H 1,866
Kenya 7J..3,040
Liberia 1H..1,072
Libya 5E....576
Madagascar 8M 3,701
Moheli Island 8L
Morocco 2D..6,050
Mozambique 7M 3,995
Nigeria 4G 19,928
Nyasaland 7L 1,561
Rhodesia, Southern 6L ..1,386
Rhodesia, Southern 6M..1,109
Rio de Oro 1E 74
Senegal 1G..1,584
Sierra Leone 1H 85
Somaliland, Fr. 6G 98
Somaliland, Italian 9H...1,010
Somaliland Protectorate 8G 344
Southwest Africa 5M 269
Tanganyika 7K 4,858
Togo 3H 750
Tripolitania 4D 552
Tunisia 4D..2,410
Uganda Protectorate 6H..3,553
Union of South Africa 5O 6,929
Zanzibar 7K..137

TOWNS

Town Key Pop. Thous.
Addis Ababa 7G 70
Alexandria 6D 573
Algiers 3C...257
Andovoranto 8M..
Aswan 6E....16
Bamako 2G...19
Benghazi 5D..43
Berbera 8G...21
Bismarckburg 6K
Bizerta 4C....23
Blantyre 7L 9
Bmda 3C....39
Bloemfontein 6N 28
Bona 4C.....68
Brazzaville 4J 12
Bulhar 8G....75
Cairo 6D...1,064
Cape Town 5O 271
Casablanca 2D 161
Constantine 3C 42
Dakar 1F....34
Damietta 6D..34
Dar es Salaam 7K 27
Diego Suarez 8M..
Dijbouti 6G..11
Durban 6N..200
East London 6O 50
El Fasher 5H..12
Elizabethville 6L 18
El Obeid 6G..11
Entebbe 6J....6
Fianarantsoa 8M 13
Fort Jameson 6L 05
Freetown 1H....45
Gabus 4D.....10
Gafsa 4D.....5
Grahamstown (O 15
Grand Bassam 2H 7
Grootfontein 5M 11
Jinja 3H....85
Johannesburg 6N 340
Kano 4G.....50
Kassala 6F....10
Kayes 1G....12
Keff 3H 24
Khartum 6F....32
Kimberley 5N 45
Lagos 3H....100
Leopoldville 4J 7
Libreville 4J....16
Loanga 4K 6
Lome 3H.....6
Lourenco Marques 6N.....38
Luderitzbucht 4N 10
Majunga 8L....20
Mananjary 8M 12
Massala 6F....21
Melilla 3D....52
Mogadiscio 8H 30
Mogador 2D..18
Mombasa 7J..39
Monrovia 1H..10
Mossel Bay 5O..6
Murzuk 4D....17
Nairobi 7J....52
Philippeville 3C 29
Pietermaritzburg 6N.....43
Port Elizabeth 5O 25
Port Harcourt 4H 104
Port Said 6D .....
Port Sudan 6F....30
Pretoria 6N....97
Rabat 2D....38
Rehoboth 5M..9
Saint Louis 1F 20
Salisbury 6M..20
Sekondi 2H..10
Semara 6G....3
Sfax 4D 26
Sikasso 3G....12
Suez 6D....1
Swakopmund 5M 18
Tamatave 8M 15
Tananarivo 8M 87
Tanga 7K.....6
Tangiers 2C...54
Tanta 6D 2F..96
Timbuktu 2F..15
Touggourt 3D..12
Tripoli 4D....71
Tulear 8M....18
Tunis 4C....188
Wadi Medani 6G 35
Windhoek 5M 18
Worcester 5O..8
Yola 4G....22
Zanzibar 7K..35
Zinder 4G....47


AFRICA
PUBLISHED EXPRESSLY FOR
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LEGEND
CAPITALS
SCALE OF MILES
0 200 500
EUROPE
ATLANTIC OCEAN
INDIAN OCEAN
ARABIA
Red Sea
Black Sea
Caspian Sea
Persian Gulf
Mediterranean Sea
London
Berlin
Warsaw
Paris
Vienna
Budapest
Bucharest
Rome
Madrid
Lisbon
Istanbul
Athens
Beirut
Damascus
Jerusalem
Cairo
Alexandria
Suez
Medinet el Fayum
Beni Sweif
Aswan
Khartum
Omdurman
Port Sudan
Suakin
Massaua
Asmara
Addis Ababa
Gore
Harar
Djibouti
Berbera
Bohotle
Mogadiscio
Brava
Kismayu
Lamu
Mombasa
Malindi
Zanzibar
Dar es Salaam
Tanga
Moshi
Arusha
Nairobi
Kisumu
Entebbe
Kampala
Lado
Juba
Stanleyville
Leopoldville
Brazzaville
Elisabethville
Albertville
Kasongo
Usumbura
Lusaka
Broken Hill
Livingstone
Salisbury
Bulawayo
Gwelo
Umtali
Beira
Quilimane
Tananarivo
Tamatave
Majunga
Andovoranto
Fianarantsoa
Tulear
Mananjary
Diego Suarez
Ft. Dauphin
Lourenco Marques
Inhambane
Johannesburg
Pretoria
Durban
Port Elizabeth
East London
Cape Town
Mossel Bay
Worcester
Grahamstown
Port Nolloth
Luderitzbucht
Swakopmund
Walvis Bay
Windhoek
Kimberley
Bloemfontein
Pietermaritzburg
Warmbad
Mafeking
Francistown
Broken Hill
Ndola
Kitwe
Lobito
Benguela
Nova Lisboa
Sa da Bandeira
Mossamedes
Luanda
Malange
Dondo
Ambriz
Boma
Matadi
Kabinda
Loanga
Pointe Noire
Brazzaville
Libreville
Port Gentil
Fernando Po
Port Harcourt
Lagos
Akkra
Lome
Porto Novo
Cotonou
Freetown
Monrovia
Robertsport
Greenville
Grand Bassam
Bingerville
Abidjan
Conakry
Bissau
Bathurst
Dakar
St. Louis
Bamako
Segou
Mopti
Timbuktu
Gao
Agades
Zinder
Kano
Ibadan
Ilorin
Benin
Sokoto
Kaduna
Jos
Maiduguri
Fort Lamy
Abeshr
El Fasher
Darfa
El Obeid
Wadi Medani
Sennar
Gondar
Kassala
Abu Hamed
Wady Halfa
Kharga
Keneh
Assuan
Sollum
Derna
Bengazi
Tobruk
Tripoli
Gadames
Ghat
Murzuk
Sokna
Tummo
Oasis Jebado
Oasis Kawar
Oasis Bilma
Tauderi
Timmimun
Tenduf
Tamentit
Touggourt
Biskra
Constantine
Bona
Bizerta
Tunis
Susa
Sfax
Gabes
Algiers
Philippeville
Bougie
Tenes
Oran
Mostaganem
Tlemcen
Nemours
Melilla
Tangiers
Casablanca
Rabat
Meknes
Fez
Marakesh
Agadir Igir
Mogador
Funchal
MADEIRA (Port.)
CANARY IS.
Villa Cisneros
RIO DE ORO
Port Etienne
Atar
Nouakchott
St. Louis
Dakar
Bathurst
Bolama
PR. GUINEA
Bafulabe
Kita
Kayes
Nioro
Kouli Koro
Segou
Djenne
Mopti
Timbuktu
Arawan
Tishitt
Salde
Gao
Agades
Zinder
Dor
Say
Mao
Abeshr
Kuka
Kano
Bauchi
Keffi
Ilorin
Ibadan
Oshogbo
Abeokuta
Lagos
Porto Novo
Cotonou
Akkra
Lome
Misahohe
Kumasi
Coomassi
Sekondi
Takoradi
Axim
Grand Bassam
Bingerville
Abidjan
Sassandra
Greenville
Robertsport
Monrovia
Freetown
Konakry
Kurussa
Sokoto
Zaria
Kaduna
Jos
Maiduguri
Fort Lamy
Bobo Dioulasso
Ouagadougou
Kong
Bissau
Bolama
Bafulabe
Kita
Bamako



Towns
Name Key Pop.
Thous.
Aberdeen
Scotland 4F..212
Abilene
Texas 3D..10
Acapulco
Mexico 5E..43
Accra
Gold Coast 4D..60
Adana
Turkey 2E..276
Addis Ababa
Abyssinia 4E..
Aden
Arabia 4E..53
Adrianople
Turkey 2E..109
Agra
India 3E..188
Ahmedabad
India 3E..216
Akron
Ohio 2D..69
Albany
Australia 2F..3
Albany
New York 2F..94
Albuquerque
New Mexico 3D..10
Aleppo
Syria 2E..169
Alexandria
Egypt 3E..
Algiers
Algeria 2D..
Allahabad
India 3E..175
Allentown
Pennsylvania 2F..
Alma Ata
Russia 4E..
Amarillo
Texas 2D..10
Amoy
China 4E..
Amritsar
India 3E..
Amsterdam
Netherlands 3D..
Anchorage
Alaska 3F..
Ancona
Italy 3D..
Angora
Turkey 2E..
Antofagasta
Chile 3F..
Antwerp
Belgium 3D..
Arequipa
Peru 4F..
Asmara
Eritrea 4E..
Asuncion
Paraguay 4G..
Athens
Greece 3E..
Atlanta
Georgia 3D..
Auckland
New Zealand 4G..
Augusta
Georgia 3D..
Austin
Texas 3D..
Bahia
Brazil 3F..
Baku
Russia 3E..
Baltimore
Maryland 2F..
Bangalore
India 3E..
Bangkok
Siam 4E..
Barcelona
Spain 3D..
Barranquilla
Colombia 2F..
Basra
Turkey 3E..
Batavia
Java 4F..
Beirut
Syria 2E..
Belfast
Ireland 3D..
Belgrade
Serbia 3E..
Bengal
India 3E..
Bergen
Norway 3C..
Berlin
Germany 3D..
Bermuda
Islands 3F..
Bern
Switzerland 3D..
Bilbao
Spain 3D..
Birmingham
England 3E..
Birmingham
Alabama 3D..
Bizerta
Tunis 2D..
Bloemfontein
Orange Free State 4F..
Bogota
Colombia 2F..
Bombay
India 3E..
Bordeaux
France 3D..
Boston
Massachusetts 2F..
Brandon
Manitoba 2C..
Brazil
Republic 3F..
Bremen
Germany 3D..
Brest
France 3D..
Bridgeport
Connecticut 2F..
Brisbane
Australia 2F..
Bristol
England 3E..
Brooklyn
New York 2F..
Brussels
Belgium 3D..
Bucharest
Roumania 3E..
Budapest
Hungary 3D..
Buenos Aires
Argentina 4G..
Buffalo
New York 2E..
Burlington
Vermont 2F..
Cadiz
Spain 3D..
Cairo
Egypt 3E..
Calcutta
India 3E..
Calgary
Alberta 2C..
Cali
Colombia 2F..
Callao
Peru 4F..
Cambridge
England 3E..
Canton
China 4E..
Cape Town
Cape Colony 4F..
Capetown
Cape Colony 4F..
Caracas
Venezuela 2F..
Cardiff
Wales 3E..
Carlsruhe
Germany 3D..
Carthage
Tunis 2D..
Cartagena
Colombia 2F..
Casablanca
Morocco 2D..
Catania
Italy 3D..
Cawnpore
India 3E..
Cayenne
French Guiana 3F..
Ceylon
Island 3E..
Chattanooga
Tennessee 3D..
Chefoo
China 4E..
Chemnitz
Germany 3D..
Chicago
Illinois 2D..
Chihuahua
Mexico 3D..
Christiania
Norway 3C..
Cincinnati
Ohio 2D..
Cleveland
Ohio 2D..
Cochabamba
Bolivia 4F..
Colombo
Ceylon 3E..
Colon
Panama 2F..
Colorado
Springs 2D..
Columbia
South Carolina 3D..
Columbus
Ohio 2D..
Concepcion
Chile 4G..
Constantine
Algeria 2D..
Constantinople
Turkey 3E..
Copenhagen
Denmark 3C..
Cordoba
Argentina 4G..
Corfu
Greece 3E..
Cork
Ireland 3D..
Cornwall
England 3E..
Corunna
Spain 3D..
Coventry
England 3E..
Cracow
Austria 3D..
Cuba
Island 3E..
Curacao
Island 3F..
Curityba
Brazil 4G..
Cuzco
Peru 4F..
Dakar
Senegambia 4D..
Dallas
Texas 3D..
Damascus
Syria 2E..
Danzig
Germany 3D..
Dayton
Ohio 2D..
Delagoa Bay
Portuguese 4F..
Denver
Colorado 2D..
Des Moines
Iowa 2D..
Detroit
Michigan 2D..
Dijon
France 3D..
Dresden
Germany 3D..
Dublin
Ireland 3D..
Dundee
Scotland 3E..
Durban
Natal 4F..
Dusseldorf
Germany 3D..
Edinburgh
Scotland 3E..
Edmonton
Alberta 2C..
Elizabeth
New Jersey 2F..
El Paso
Texas 3D..
Erie
Pennsylvania 2E..
Erzerum
Turkey 3E..
Essen
Germany 3D..
Fez
Morocco 2D..
Florence
Italy 3D..
Fort Wayne
Indiana 2D..
Fort Worth
Texas 3D..
Frankfort
Germany 3D..
Frankfort
Kentucky 3D..
Fredericton
New Brunswick 2F..
Freetown
Sierra Leone 4D..
Fremantle
Australia 2F..
Fuchau
China 4E..
Galveston
Texas 3D..
Geneva
Switzerland 3D..
Genoa
Italy 3D..
Ghent
Belgium 3D..
Glasgow
Scotland 3E..
Gothenburg
Sweden 3C..
Granada
Spain 3D..
Grand Rapids
Michigan 2D..
Graz
Austria 3D..
Guadalajara
Mexico 3D..
Guatemala
Guatemala 3E..
Guayaquil
Ecuador 2F..
Halifax
Nova Scotia 2F..
Hamburg
Germany 3D..
Hamilton
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Hanover
Germany 3D..
Harbin
China 4E..
Harrisburg
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Hartford
Connecticut 2F..
Havana
Cuba 3E..
Helena
Montana 2C..
Helsingfors
Finland 3C..
Hobart
Tasmania 4G..
Hongkong
China 4E..
Honolulu
Hawaii 9B..
Houston
Texas 3D..
Hull
England 3E..
Indianapolis
Indiana 2D..
Innsbruck
Austria 3D..
Ipswich
Queensland 2F..
Irkutsk
Russia 4E..
Jacksonville
Florida 3D..
Jaffa
Syria 2E..
Jamaica
Island 3E..
Jassy
Roumania 3E..
Jersey City
New Jersey 2F..
Jerusalem
Syria 2E..
Johannesburg
Transvaal 4F..
Kansas City
Missouri 2D..
Kazan
Russia 3E..
Kharkov
Russia 3E..
Khartum
Egypt 4E..
Kiaochau
China 4E..
Kiel
Germany 3D..
Kieff
Russia 3E..
Kimberley
Cape Colony 4F..
Kingston
Jamaica 3E..
Kingston
Ontario 2E..
Knoxville
Tennessee 3D..
Kobe
Japan 4E..
Kokstad
Griqualand 4F..
Kowloon
China 4E..
Kurrachee
India 3E..
Lahore
India 3E..
Lansing
Michigan 2D..
La Paz
Bolivia 4F..
Leeds
England 3E..
Leghorn
Italy 3D..
Leipsic
Germany 3D..
Lima
Peru 4F..
Lincoln
Nebraska 2D..
Lisbon
Portugal 3D..
Liverpool
England 3E..
Lodz
Russia 3D..
London
England 3E..
Londonderry
Ireland 3D..
Los Angeles
California 3C..
Louisville
Kentucky 3D..
Lubeck
Germany 3D..
Lucknow
India 3E..
Lyons
France 3D..
Madeira
Island 3D..
Madras
India 3E..
Madrid
Spain 3D..
Magdeburg
Germany 3D..
Mahon
Balearic Islands 3D..
Malaga
Spain 3D..
Manchester
England 3E..
Manchester
New Hampshire 2F..
Manila
Philippine Islands 2C..
Marseilles
France 3D..
Martinique
Island 3F..
Mauritius
Island 4F..
Mayaguez
Porto Rico 3F..
Mazatlan
Mexico 3D..
Medellin
Colombia 2F..
Melbourne
Australia 2F..
Memphis
Tennessee 3D..
Merida
Mexico 3E..
Messina
Italy 3D..
Mexico
Republic 3D..
Milan
Italy 3D..
Milwaukee
Wisconsin 2D..
Minneapolis
Minnesota 2C..
Mobile
Alabama 3D..
Modena
Italy 3D..
Monaco
Principality 3D..
Monrovia
Liberia 4D..
Montevideo
Uruguay 4G..
Montgomery
Alabama 3D..
Montreal
Quebec 2E..
Moscow
Russia 3D..
Munich
Germany 3D..
Nagasaki
Japan 4E..
Nagpur
India 3E..
Nanking
China 4E..
Nantes
France 3D..
Naples
Italy 3D..
Nashville
Tennessee 3D..
Natal
Brazil 3F..
Newark
New Jersey 2F..
New Bedford
Massachusetts 2F..
New Brunswick
New Jersey 2F..
New Haven
Connecticut 2F..
New Orleans
Louisiana 3D..
New York
New York 2F..
Nice
France 3D..
Nicosia
Cyprus 2E..
Nijni Novgorod
Russia 3D..
Norfolk
Virginia 2F..
Nottingham
England 3E..
Nuremberg
Germany 3D..
Odessa
Russia 3E..
Oporto
Portugal 3D..
Oran
Algeria 2D..
Orleans
France 3D..
Osaka
Japan 4E..
Oslo
Norway 3C..
Ottawa
Ontario 2E..
Oxford
England 3E..
Palermo
Italy 3D..
Panama
Panama 2F..
Para
Brazil 3F..
Paris
France 3D..
Parma
Italy 3D..
Pau
France 3D..
Pekin
China 4E..
Pernambuco
Brazil 3F..
Perth
Australia 2F..
Perth
Scotland 3E..
Peshawur
India 3E..
Philadelphia
Pennsylvania 2F..
Phoenix
Arizona 3D..
Pisa
Italy 3D..
Pittsburg
Pennsylvania 2E..
Plymouth
England 3E..
Portland
Maine 2F..
Portland
Oregon 2C..
Port Said
Egypt 3E..
Portsmouth
England 3E..
Portsmouth
Virginia 2F..
Prague
Austria 3D..
Pretoria
Transvaal 4F..
Providence
Rhode Island 2F..
Puebla
Mexico 3D..
Quebec
Province 2E..
Quebec
Quebec 2E..
Queenstown
Cape Colony 4F..
Quito
Ecuador 2F..
Rabat
Morocco 2D..
Rangoon
Burmah 4E..
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Recife
Brazil 3F..
Regina
Assiniboia 2C..
Reykjavik
Iceland 3B..
Richmond
Virginia 2F..
Rio de Janeiro
Brazil 4G..
Riverside
California 3C..
Rochester
New York 2E..
Rome
Italy 3D..
Rosario
Argentina 4G..
Rosetta
Egypt 3E..
Rosslyn
Canada 2E..
Rotterdam
Netherlands 3D..
Roubaix
France 3D..
Rouen
France 3D..
Sacramento
California 3C..
Saginaw
Michigan 2D..
St. Etienne
France 3D..
St. Helena
Island 4D..
St. Helens
England 3E..
St. John
New Brunswick 2F..
St. John
Newfoundland 2F..
St. Johns
Porto Rico 3F..
St. Joseph
Missouri 2D..
St. Louis
Missouri 2D..
St. Paul
Minnesota 2C..
St. Petersburg
Russia 3D..
Salem
Massachusetts 2F..
Salonica
Turkey 3E..
Salt Lake City
Utah 2D..
Salvador
Brazil 3F..
San Antonio
Texas 3D..
San Diego
California 3C..
San Francisco
California 3C..
San Jose
California 3C..
San Juan
Porto Rico 3F..
San Luis Potosi
Mexico 3D..
San Salvador
Salvador 3E..
Santander
Spain 3D..
Santiago
Chile 4G..
Santiago
Cuba 3E..
Santo Domingo
Dominican Republic 3F..
Santos
Brazil 4G..
Sarajevo
Bosnia 3E..
Savannah
Georgia 3D..
Scranton
Pennsylvania 2F..
Seattle
Washington 2C..
Seoul
Corea 4E..
Seville
Spain 3D..
Sheffield
England 3E..
Shimonoseki
Japan 4E..
Shreveport
Louisiana 3D..
Singapore
Straits Settlements 4E..
Smyrna
Turkey 2E..
Sofia
Bulgaria 3E..
Southampton
England 3E..
Spokane
Washington 2C..
Springfield
Illinois 2D..
Springfield
Massachusetts 2F..
Stockholm
Sweden 3C..
Stuttgart
Germany 3D..
Suez
Egypt 3E..
Sydney
Australia 2F..
Syracuse
New York 2E..
Tacoma
Washington 2C..
Tahiti
Island 10E..
Tampico
Mexico 3D..
Taranto
Italy 3D..
Tasmania
Island 4G..
Tegucigalpa
Honduras 3E..
Teheran
Persia 3E..
Tiflis
Russia 3E..
Tientsin
China 4E..
Timor
Island 4F..
Tokio
Japan 4E..
Toledo
Ohio 2D..
Toledo
Spain 3D..
Toronto
Ontario 2E..
Toulon
France 3D..
Toulouse
France 3D..
Trenton
New Jersey 2F..
Trieste
Austria 3D..
Trinidad
Island 3F..
Tripoli
Barbary 2D..
Tripoli
Syria 2E..
Troy
New York 2E..
Tucuman
Argentina 4G..
Tunis
Tunis 2D..
Turin
Italy 3D..
Utica
New York 2E..
Valencia
Spain 3D..
Valencia
Venezuela 2F..
Valparaiso
Chile 4G..
Vancouver
Island 2C..
Venice
Italy 3D..
Vera Cruz
Mexico 3D..
Victoria
Island 2C..
Vienna
Austria 3D..
Vigo
Spain 3D..
Vladivostok
Russia 4E..
Warsaw
Russia 3D..
Washington
District 2F..
Wellington
New Zealand 4G..
Wheeling
West Virginia 2E..
Wilmington
Delaware 2F..
Windsor
Ontario 2E..
Winnipeg
Manitoba 2C..
Worcester
Massachusetts 2F..
Yarmouth
Nova Scotia 2F..
Yeddo
Japan 4E..
Yokohama
Japan 4E..
York
England 3E..
Youngstown
Ohio 2E..
Yucatan
Mexico 3E..
Yuma
Arizona 3D..
Zanzibar
Island 4E..
Zurich
Switzerland 3D..

MEXICO
Pop. 16,404,030
TOWNS
Name Key Pon. Thous.
Acambaro 8H.15
Acaponeta 6F..7
Acapulco de Juarez 9J....5
Acayucan 11J..5
Agua Grande 7D Aguascalientes 8G 48
Alamos 4D.....4
Aldama 10F..12
Allende 8D..6
Alvarado 10F..6
Amecа 7G.....19
Apam 10H.....4
Arandas 8G.....6
Arcelia 9J.....5
Atotonilco 6F..8
Atoyac de Alvarez 9J....5
Autlan 7F..13
Campeche 13H..17
Camotlan 8G.....21
Celaya 8H.....6
Cerritos 9F.....6
Chihuahua 6C.43
Chilpancingo 9J....9
Ciudad Juarez 6B.....39
Ciudad Victoria 9F.....17
Colima 7F.....15
Colotlan 7G.....10
Comitan 13J..10
Concordia 6F..8
Cordoba 10H..16
Cuatro Cienegas SD.....3
Cuernavaca 9H.....16
Culiacan 5E..16
Cumpas 4B.....2
Durango 6F.....13
Ensenada 1C.....6
Fresnillo 7F.....11
Guadalajara 7G.....170
Guanajuato 8G.....19
Guaymas 3C.....8
Hermosillo 3C.....15
Huatusco 10H..7
Huetamo 9H..5
Huitla 10J..10
Iguala 9J.....11
Izamal 14G..8
Jalapa 10H..8
Jamiltepec 10J..7
Juchitan 11J..14
Lagos 8G.....10
Lampazos de Naranjo 9D..3
La Paz 4E..143
La Pietad SH.10
Leon 8G.....53
Linares 9E.....10
Matamoros 1D.....9
Merida 14G..19
Metlatula 8F..25
Mexico 9H..1,000
Meyuatlan 11J..4
Misantla 10H..8
Monclova 8D..13
Montemorelos 9E.....7
Monterrey 8E..150
Morelia 8H..84
Motul 14G.....5
Navojoa 4D.....24
Oaxaca 10J.....24
Ometepec 10J.....3
Oputo 4B.....2
Orizaba 10H..30
Pachuca 9G..40
Panuco 10G.....5
Parral 8D.....9
Patamo 8G.....10
Piedras Negras 8D..15
Progreso 14G..10
Puebla 10H..111
Putuandiro 8H.8
Queretaro 9G.32
Rio Grande 7F..2
Salamanca 8G..9
Saltillo 8E.....43
San Andres Tuxtla 11H..9
San Cristobal 13K.....13
San Luis Potosi 8G.....73
San Marcos 9J..7
San Pedro 7E.19
Santiago 4F...6
Sombrerete 7F.....15
Tampico 10F.78
Tacubaya 9H..55
Tapachula 13K.....10
Tehuacan 10H..9
Tehuantepec 11J.....9
Tepic 6G.....14
Tezlutlan 10H.12
Ticul 14G.....7
Tlacolula 11J...7
Tlacotalpan 11H 6
Tlaxiaco 10J...9
Toluca 9H...36
Tonala 12J....2
Torreon 7E...65
Tulancingo 9G 10
Tuxpan 10G....5
Tuxtla 12J....13
Uruapan 8H..15
Valladolid 15G 5
Vera Cruz 11H 70
Villa Hermosa 12H 15
Zacatecas 7F..15
Zamora 3C....14
Zitacuaro 9H...7

WEST INDIES
Islands, Republics, Towns

Name Key Pop. Thous.
Andros Islands 10A 7
Bahama Islands 11B 59
Barbados 15E 173
Camaguey 10B 48
Cat I. 11A.....4
Cuba 9B...3,638
Curacao 13E..76
Dominica 15D 37
Eleuthera I. 10A 6
Great Abaco Island 10A...4
Greater Antilles 10C .....
Grenada 15E..67
Guadeloupe 15D 267
Haiti (Island) 12C 3,200
Haiti (Republic) 11C 2,300
Havana 8B...589
Jamaica 10C 1,070
Kingston 10C..67
Leeward Islands 15D 122
Lesser Antilles 14D .....
Long Island 11B 4
Martinique Island 15D.235
Port au Prince 12C 75
Port of Spain 15F 67
Porto Rico 13C 1,543
St. Croix Island 14D..11
St. Vincent 15E 47
San Juan 13C 114
Santa Lucia 15E 56
Santiago de Cuba 10C...45
Santo Domingo (Republic) 12C 1,200
Santo Domingo 12C (town)..40
Tobago 15E...27
Trinidad 15F 412
Virgin Islands 14C 43
Windward Islands 15E 180





New Westminster 2H....17
Niagara Falls 11L....19
North Battleford 5H....5
North Bay 10K....15
North Sydney 14H....6
Orillia 11K....8
Oshawa 11K....23
Outremont 12K....28
Ottawa 11K..126
Owen Sound 10K....12
Pembroke 11K.9
Penetanguishene 10K....4
Penticton 3H...4
Peterboro 11K.22
Picton 11K....3
Portage la Prairie 7J...6
Port Arthur 8J....19
Port Hope 11K.4
Preston 10L....6
Prince Albert 5H....9
Prince Rupert 2F....6
Quebec 12J...130
Regina 5J....53
Renfrew 11K...5
Riviere du Loup 13H....8
St. Boniface 7J....16
St. Catharines 11L....24
St. Hyacinthe 12K....13
St. James Jc. 7J....11
St. Jerome 12K....4
St. Johns 13J..40
St. Johns 12K.10
St. Thomas 10L....15
Sandwich 10L.10
Sarnia 10L....18
Saskatoon 5H..43
Sault Ste. Marie 9K....23
Selkirk 7H....4
Shawinigan Falls 12J...15
Sherbrooke 12K....28
Smiths Falls 11K....7
Sorel 12J....10
Spring Hill 14J.6
Stellarton 14J..5
Stratford 10L.17
Sudbury 10J..18
Swift Current 5J....5
Sydney 14H..23
Sydney Mines 14H....7
Thetford Mines 12K....10
Thorold 11L....5
Toronto 11L..631
Transcona 7J...5
Trenton 11K...6
Trois Rivieres 12J....35
Truro 14J....7
Valleyfield 12K....11
Vancouver 2H....246
Verdun (part of Montreal) 60
Victoria 2H...39
Wallaceburg 10L....4
Waterford 14J..5
Waterloo 10K..8
Welland 11L..10
Westmount (part of Montreal) 24
Weyburn 6J....5
Windsor 10L..63
Winnipeg 7J..218
Woodstock 10L.11
Yarmouth 13K.7
Yorkton 6H....5

Name Key Pop. Thous.

Towns

Alberta 4G...731
British Columbia 694
Manitoba 7H.700
New Brunswick 108
Northwest Terr. 7D....9
Nova Scotia 11J....512
Ontario 5J..3,431
Prince Edward Island 13J..88
Quebec 12H..2,874
Saskatchewan 5H..921
Yukon 2C....14

Provinces

CANADA
Pop. 10,376,786

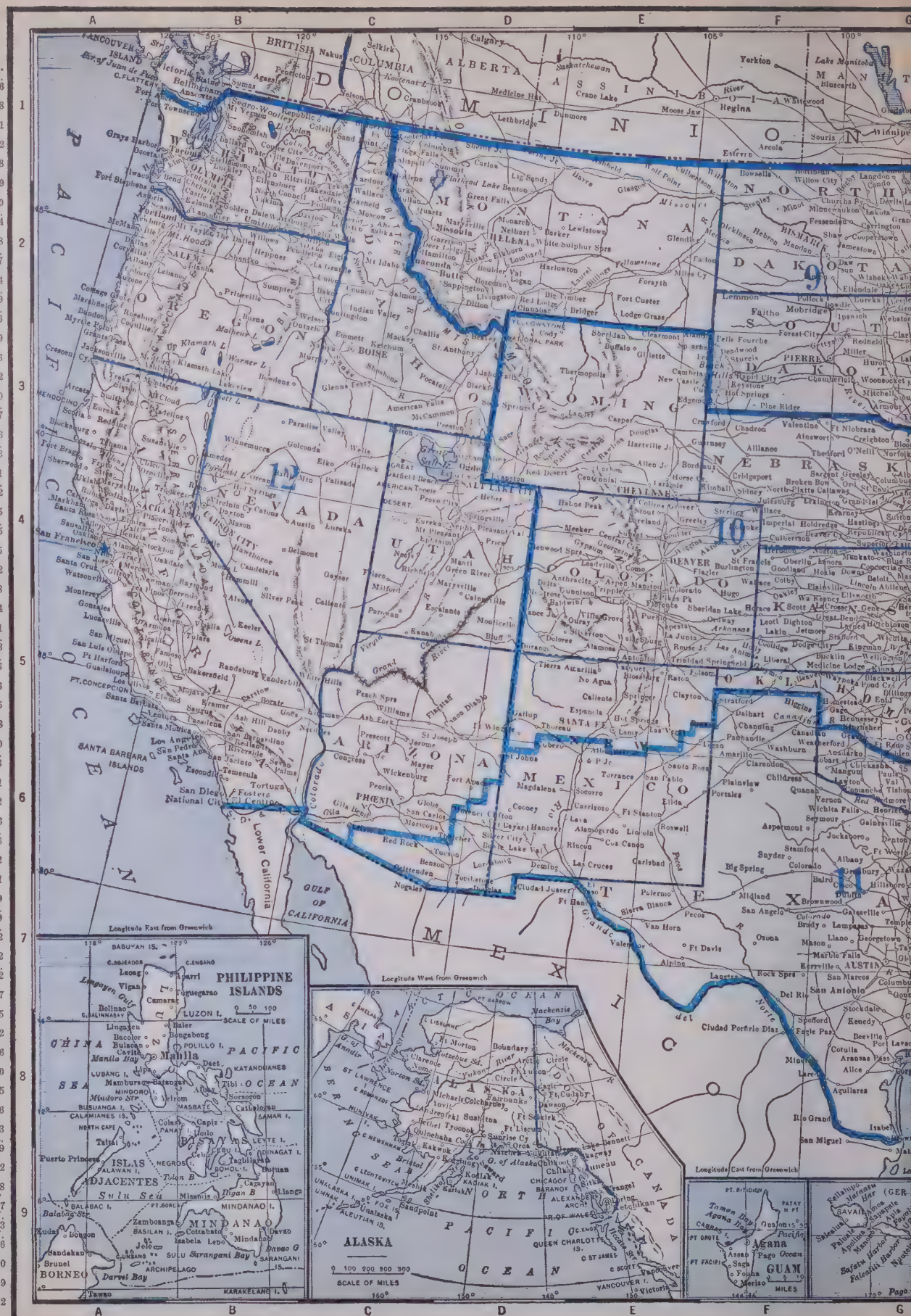
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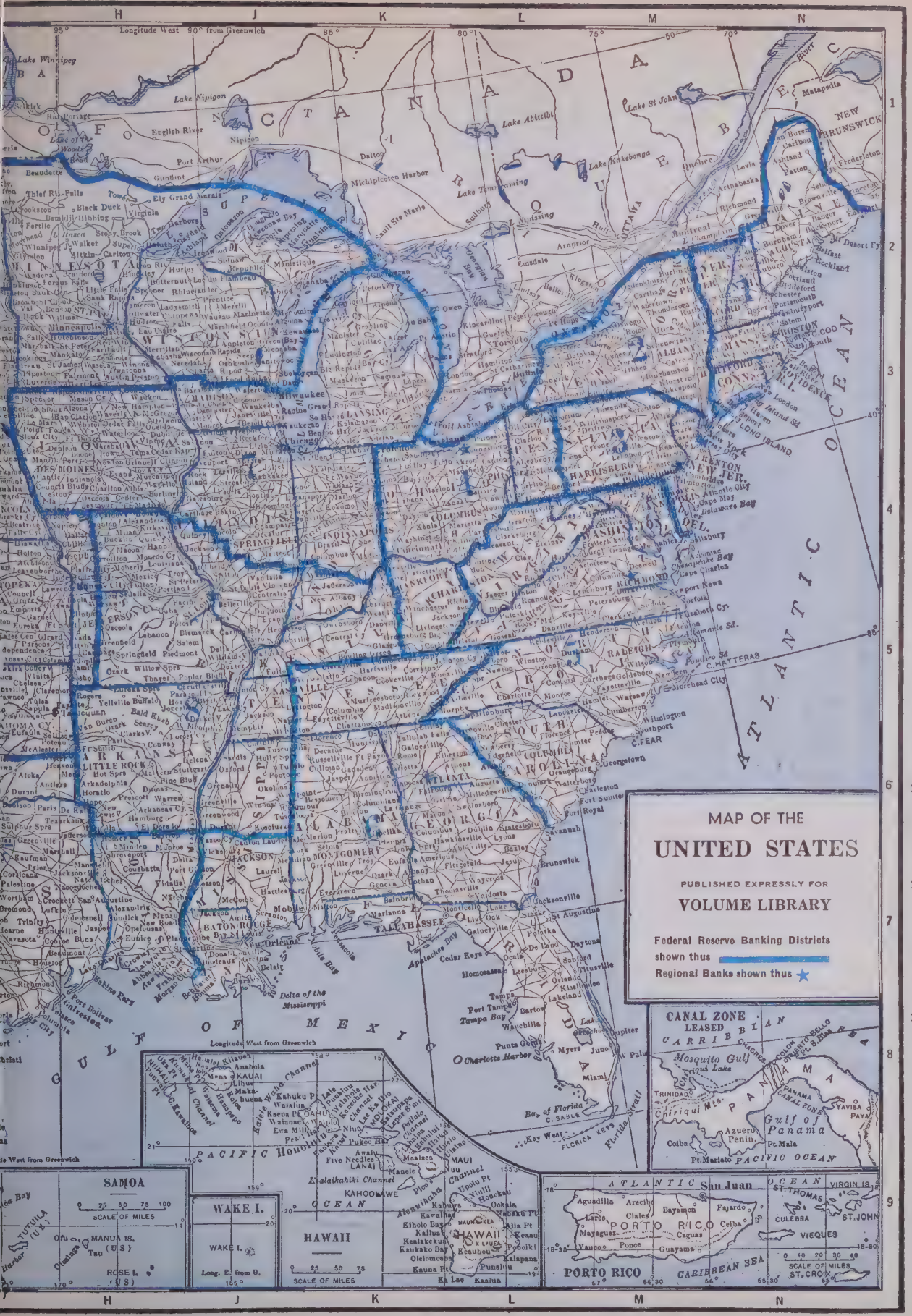
Name Key Pop. Thous.

Amherst 11J...7
Arnprior 11K...4
Barrie 11K...7
Beauport 12K..13
Belleville 11K.13
Brantford 10L.30
Brockville 11K.9
Bucknam 12K....4
Calgary 11C..83
Campbellton 13J....4
Campbellton (Quebec) 13J..6
Cap de la Madeleine 12J....8
Cap St. Ignace 13J....3
Charlottetown 11J....14
Chatham (Ontario) 10L....14
Chatham (New Brunswick) 12J....4
Chicoutimi 12J....11
Coaticook 12K....4
Collingwood 10K....3
Cornwall 12K.11
Dartmouth 11J..9
Drummondville 12K.3
Dundas 10L....5
Eastview 12K.3
Edmonton 11C..59
Edmundston 13J.6
Fairbank (near Toronto) 11L....3
Farnham 12K....4
Fernie 3H....2
Fort Erie 10L....5
Fort Frances 8J....5
Fort William 8J....26
Fredericton 13J.8
Galt 11L....14
Glace Bay 11J....20
Goderich 10L....4
Grand Mere 12J....6
Guelph 11L....26
Halifax 11J..59
Hamilton 11L.155
Hawkesbury 12K....5
Hudson Heights 12K....3
Hull 11K....27
Ingersoll 10L....5
Joliette 12K..10
Kenora 7H....8
Kingston 11K.23
Kitchener 10L.30
Lachine 12K..18
La Tuque 11H..7
Leamington 10L....4
Lethbridge 4J.13
Lewis 12J....11
Longueuil 12K....5
Magog 12K....5
Midland 10K....6
Minnico (near Toronto) 11L....6
Moncton 13J....20
Montmagny 13J.3
Montreal 12K.818
Moose Jaw 5J.21
Mt. Dennis (near Toronto) 4
Nanaimo 2H....6
Nelson 3H....5
New Glasgow 14J....8
Newmarket 11K.3
New Waterford 14J....7
Niagara Falls 11L..19
North Battleford 5H....5
North Bay 10K....15
North Sydney 14H....6
Orillia 11K....8
Oshawa 11K...23
Outremont 12K....28
Ottawa 11K..126
Owen Sound 10K....12
Pembroke 11K.9
Penetanguishene 10K....4
Penticton 3H...4
Peterboro 11K.22
Picton 11K....3
Portage la Prairie 7J...6
Port Arthur 8J....19
Port Hope 11K.4
Preston 10L....6
Prince Albert 5H....9
Prince Rupert 2F....6
Quebec 12J...130
Regina 5J....53
Renfrew 11K...5
Riviere du Loup 13H....8
St. Boniface 7J....16
St. Catharines 11L....24
St. Hyacinthe 12K....13
St. James Jc. 7J....11
St. Jerome 12K....4
St. Johns 13J..40
St. Johns 12K.10
St. Thomas 10L....15
Sandwich 10L.10
Sarnia 10L....18
Saskatoon 5H..43
Sault Ste. Marie 9K....23
Selkirk 7H....4
Shawinigan Falls 12J...15
Sherbrooke 12K....28
Smiths Falls 11K....7
Sorel 12J....10
Spring Hill 14J.6
Stellarton 14J..5
Stratford 10L.17
Sudbury 10J..18
Swift Current 5J....5
Sydney 14H..23
Sydney Mines 14H....7
Thetford Mines 12K....10
Thorold 11L....5
Toronto 11L..631
Transcona 7J...5
Trenton 11K...6
Trois Rivieres 12J....35
Truro 14J....7
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Wallaceburg 10L....4
Waterford 14J..5
Waterloo 10K..8
Welland 11L..10
Westmount (part of Montreal) 24
Weyburn 6J....5
Windsor 10L..63
Winnipeg 7J..218
Woodstock 10L.11
Yarmouth 13K.7
Yorkton 6H....5

U. S. Towns

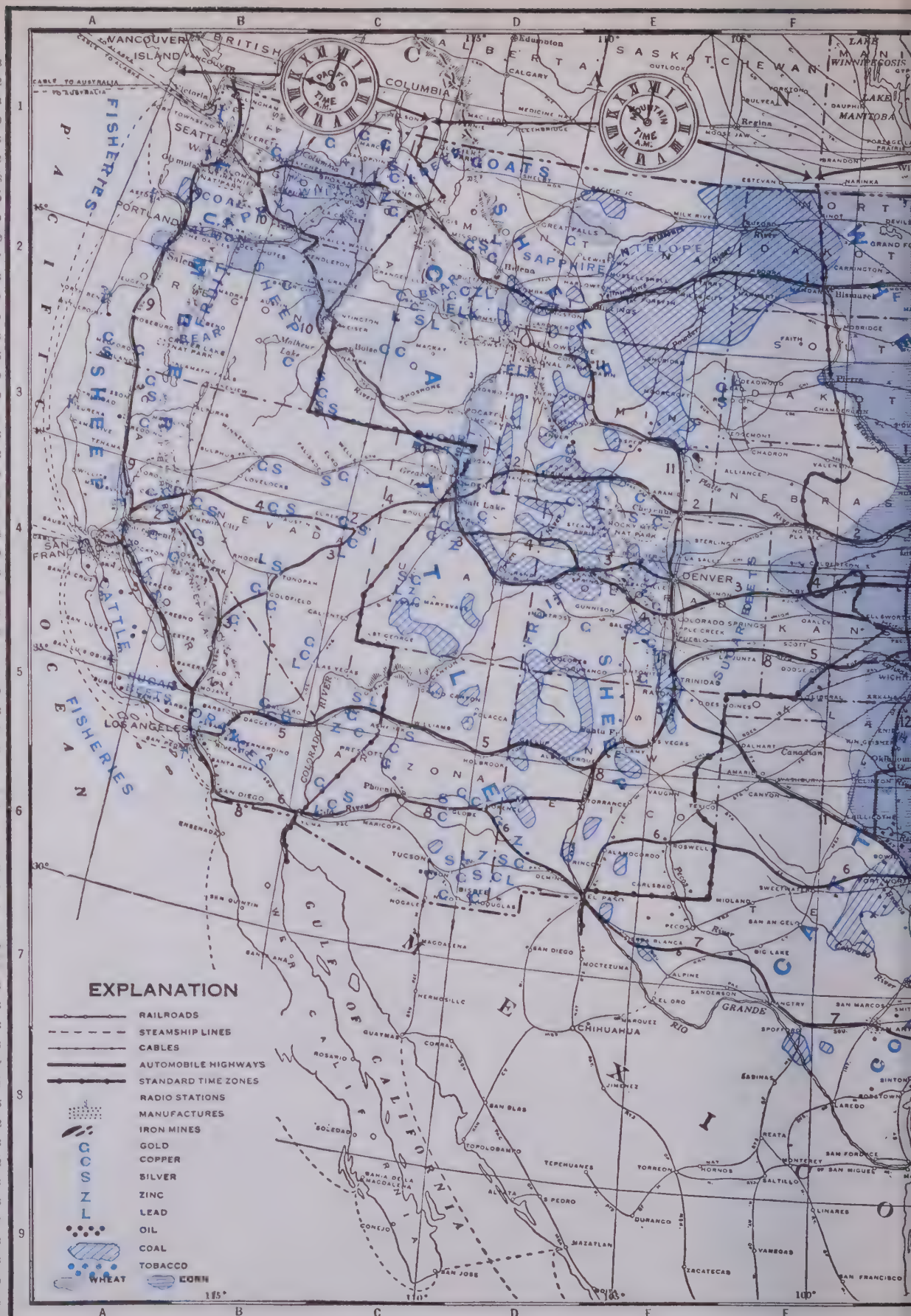
Elevation in ft.	City	Key	Pop.
54	New York, N.Y.	3M	6,930,446
593	Chicago, Ill.	4J	3,376,438
41	Philadelphia	4M	1,950,961
579	Detroit, Mich.	3K	1,568,662
267	Los Angeles	6B	1,238,048
582	Cleveland, O.	4L	900,429
455	St. Louis, Mo.	5J	821,960
130	Baltimore, Md.	4M	804,874
10	Boston, Mass.	3N	781,188
743	Pittsburgh, Pa.	4L	669,817
15	San Francisco	4A	634,394
593	Milwaukee, Wis.	3J	578,249
583	Buffalo, N. Y.	3L	573,076
25	Washington	4M	486,869
812	Minneapolis	3H	464,356
5	New Orleans	7J	458,762
490	Cincinnati, O.	4K	451,160
60	Newark, N. J.	3M	442,337
750	Kansas City	5H	399,746
10	Seattle, Wash.	1B	365,583
708	Indianapolis	4K	364,161
513	Rochester, N.Y.	3L	328,132
15	Jersey City	3M	316,715
449	Louisville, Ky.	5K	307,745
29	Portland, Ore.	2B	301,815
38	Houston, Tex.	7H	292,352
587	Toledo, O.	4K	290,718
744	Columbus, O.	4K	290,564
5,183	Denver, Colo.	4E	287,861
14	Oakland, Calif.	4A	284,063
703	St. Paul, Minn.	3H	271,606
1,032	Atlanta, Ga.	6K	270,366
425	Dallas, Tex.	6G	260,475
600	Birmingham	6K	259,678
873	Akron, O.	4L	255,040
273	Memphis, Tenn.	6J	253,143
11	Providence	3N	252,981
675	San Antonio	7G	231,542
1,034	Omaha, Neb.	4G	214,006
398	Syracuse, N. Y.	3M	209,326
740	Dayton, O.	4K	200,982
475	Worcester	3N	195,311
1,197	Oklahoma City	6G	185,389
18	Richmond, Va.	4M	182,929
841	Youngstown, O.	4L	170,002
610	Grand Rapids	3K	168,592
38	Hartford, Conn.	3N	164,072
614	Fort Worth	6G	163,447
10	New Haven	3N	162,655
712	Flint, Mich.	3K	156,492
450	Nashville	5K	153,866
83	Springfield	3N	149,900
13	San Diego	6B	147,995
9	Bridgeport	3N	146 716
726	Scranton, Pa.	3M	143,433
805	Des Moines, Ia.	4H	142,559
47	Long Beach	6B	142 032
804	Tulsa, Okla.	5G	141,258
4,248	Salt Lake City	4D	140,207
193	Paterson, N. J.	3M	138,513
10	Yonkers, N. Y.	3M	134,646
12	Norfolk, Va.	4L	129,710
8	Jacksonville	7K	129,549
30	Albany, N. Y.	3L	127,412
35	Trenton, N. J.	3M	123,356

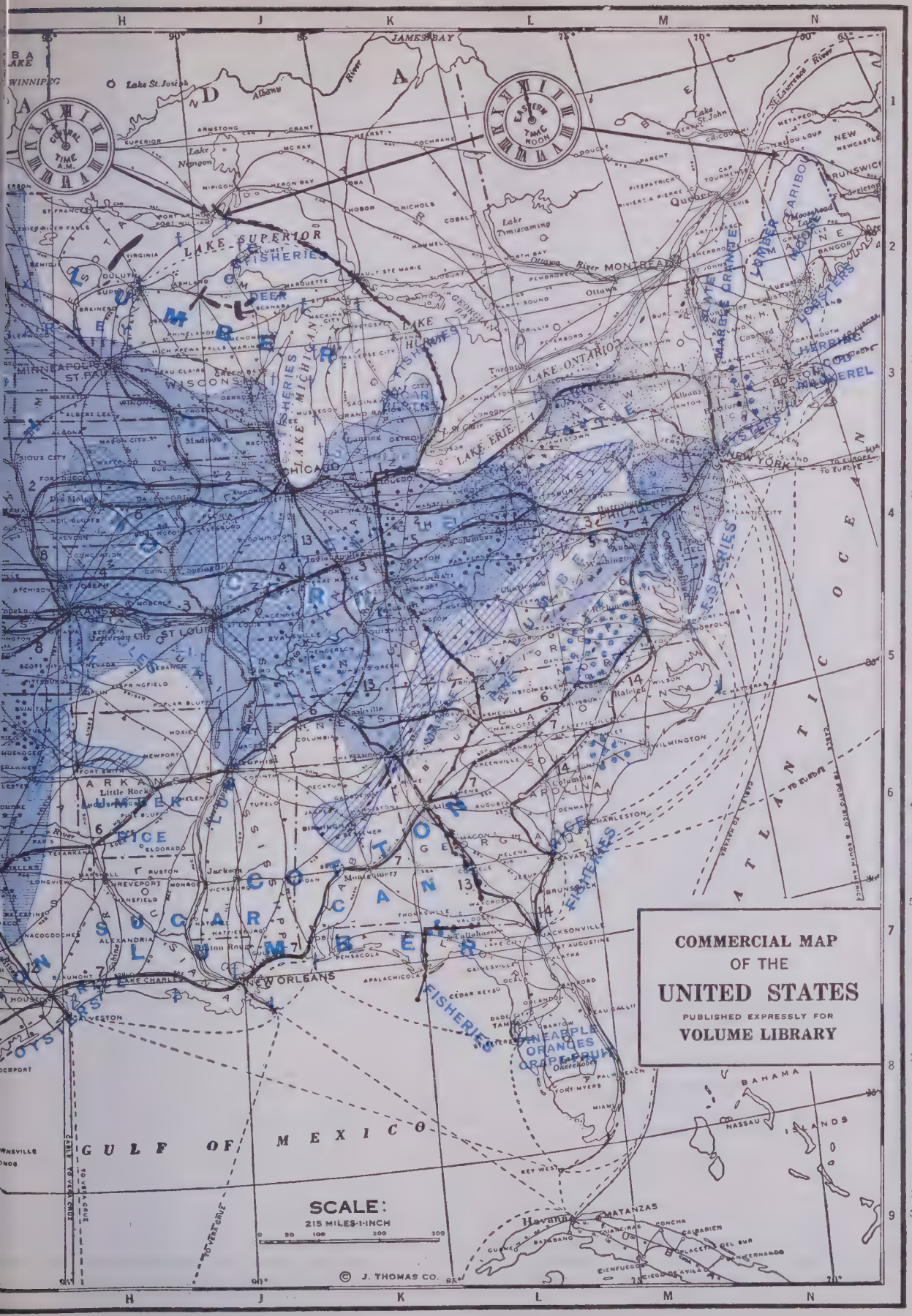




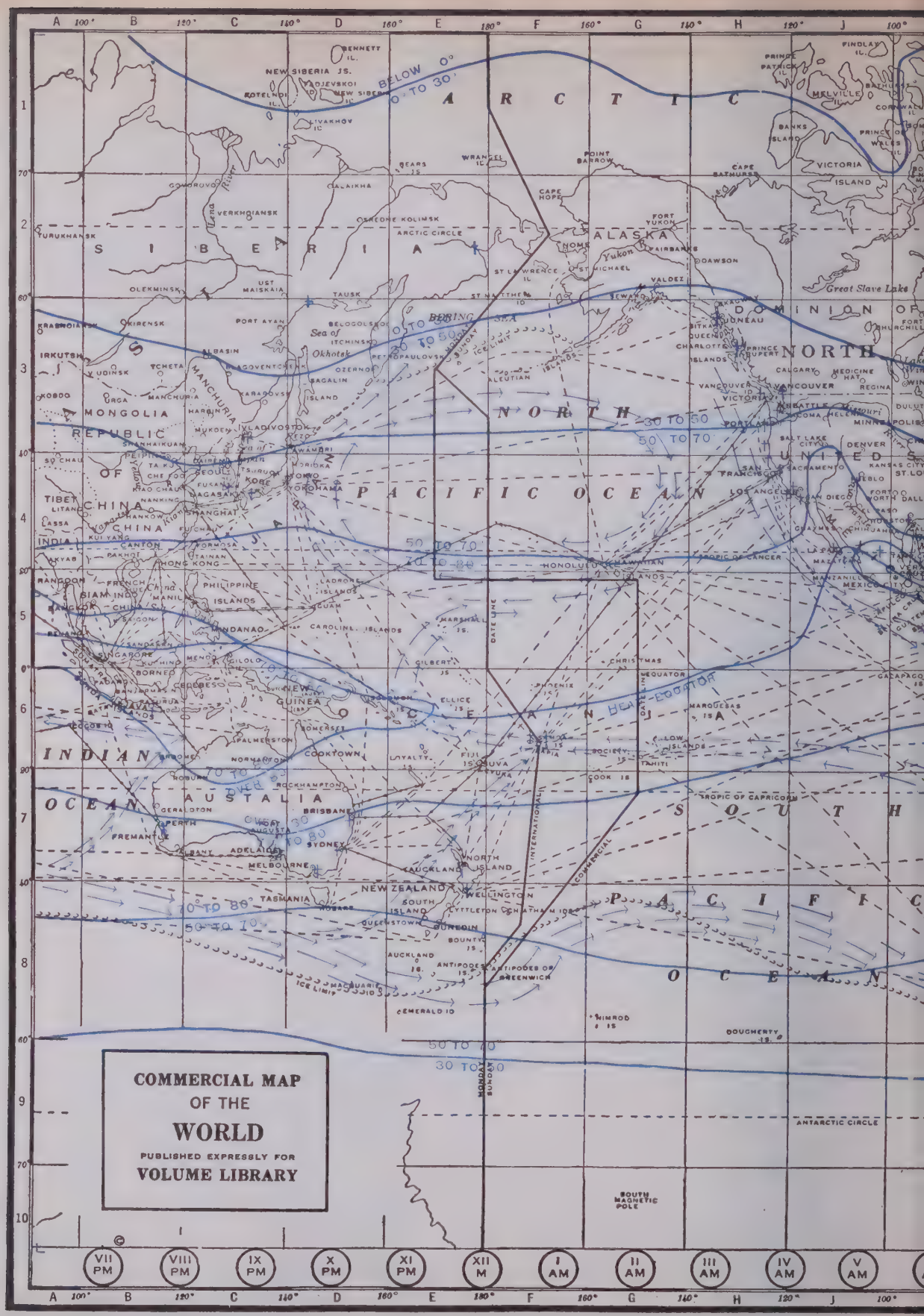
771 Kansas City, Kan. .121,857
674 Chattanooga, Tenn. 119,798
6 Camden, N. J. 4M ..118,700
684 Erie, Pa. 3L ...115,967
1,909 Spokane, Wash. 1C ...115,514
42 Fall River 3N ...115,274
788 Fort Wayne, 4K ...114,946
24 Elizabeth, N. J. 3M ..114,589
22 Cambridge 3N ...113,643
17 New Bedford 3N ...112,597
206 Reading, Pa. 3M ..111,171
1,291 Wichita, Kan. 5G ...111,110
15 Miami, Fla. 3M ...110,637
46 Tacoma, Wash. 1B ...106,817
134 Wilmington 4M ...106,597
890 Knoxville 5K ...105,802
468 Peoria, Ill. 4J ...104,969
1,030 Canton, O. 4L ...104,906
712 South Bend 4J ...104,193
13 Somerville 3N ...103 908
3,695 El Paso, Tex. 7E ...102,421
26 Lynn, Mass. 3N ...102,320
383 Evansville 5J ...102,249
407 Utica, N. Y. 3M ...101,740
609 Duluth, Minn. 2H ...101,463
15 Tampa, Fla. 8L ...101,161
620 Gary, Ind. 4J 100,426
101 Lowell, Mass. 3N ...100,234
260 Waterbury 3N 99,902
246 Schenectady 3M 95,692
30 Sacramento 4A 93,750
254 Allentown, Pa. 3M 92,563
50 Bayonne, N. J. 3M 88,979
642 Wilkes-Barre 3M 86,626
730 Rockford, Ill. 4J 85,864
65 Lawrence 3N 85,068
21 Savannah, Ga. 6L 85,024
721 Charlotte, N. C. 5L 82,675
183 Berkeley, Cal. 4A 82,109
1,179 Altoona, Pa. 4L 82,054
264 Little Rock 6H 81,679
828 St. Joseph, Mo. 4H 80,935
593 Saginaw, Mich. 3K 80,715
317 Harrisburg, Pa. 4N 80,339
1,104 Sioux City, Ia. 4G 79,183
828 Lansing, Mich. 3K 78,397
92 Pawtucket 3N 77,149
173 Manchester 3N 76,834
863 Binghamton 3M 76,662
210 Shreveport, La. 7H 76,655
829 Pasadena 6B 76,086
1,148 Lincoln, Nebr. 4G 75,933
565 Huntington 4L 75,572
571 Niagara Falls 3L 75,460
858 Winston-Salem 5L 75,274
418 East St. Louis 5J 74,347
35 Troy, N. Y. 3M 72,763
12 Quincy, Mass. 3N 71,983
612 Springfield, Ill. 4J 71,864
26 Portland, Me. 2N 70,810
762 Lakewood, O. 70,509
904 Roanoke, Va. 5L 69,206
980 Springfield, O. 4K 68,743
252 Mobile, Ala. 7J 68,202
199 New Britain 3N 68,128
173 East Orange 3M 68,020
629 Racine, Wis. 3J 67,542

1,184 Johnstown, Pa.
4M ...66,993
608 Cicero, Ill.
4J 66,602
10 Atlantic City
4M 66,198
160 Montgomery
6K 66,079
33 Newton, Mass.
8N 65,276
513 Covington, Ky.
4K 65,252
932 Pontiac, Mich.
3K 64,928
590 Hammond, Ind.
4J 64,560
886 Topeka, Kan.
5G 64,120
630 Oak Park, Ill.
4J 63,982
128 Brockton
3N 63,797
592 Evanston, Ill.
4J 63,338
57 Passaic, N. J.
3M 62,959
485 Terre Haute
4J 62,810
290 Glendale, Cal.
6B 62,736
10 Charleston
6L 62,265
652 Wheeling
1L 61,659
114 Mount Vernon
3M 61,499
559 Davenport, Ia.
1J 60,754
10 Charleston
4L 60,408
143 Augusta, Ga.
6L 60,342
357 Lancaster, Pa.
4M 59,949
13 Medford, Mass.
3N 59,714
7 Hoboken, N. J.
3M 59,261
22 Chester, Pa.
4M 59,164
104 Union City
5M 58,659
34 Malden, Mass.
3N 58,036
860 Madison, Wis.
3J 57,899
235 Bethlehem, Pa.
3M 57,892
21 Beaumont
7H 57,732
118 San Jose, Cal.
1A 57,651
1,260 Springfield, Mo.
5H 57,527
678 Decatur, Ill.
4J 57,510
55 Irvington, N. J.
3M 56,783
115 Holyoke
3N 56,537
730 Hamtramck
3K 56,268
732 Cedar Rapids
1H 56,097
370 York, Pa.
4M 55,254
940 Jackson, Mich.
3K 55,187
753 Kalamazoo
3K 54,786
592 East Chicago
4J 54,784
752 McKeesport
4L 54,632
72 New Rochelle
3L 54,000
334 Macon, Ga.
6K 53,829
837 Greensboro
5L 53,569
466 Austin, Tex
7G 53,120
635 Highland Park
3K 52,959
6 Galveston, Tex.
8G 52,938
400 Waco, Tex
7G 52,848
281 Fresno, Calif
5B 62,513
593 Hamilton, O.
4K 52,176
392 Durham, N. C.
5M 52,037
190 Columbia, S. C.
6L 51,581
785 Cleveland Hts.
3K 50,945
8 Port Arthur.
7H 50,902
604 Dearborn, Mich.
3K 50,358
611 Kenosha, Wis.
3J 50,262
1,985 Asheville
5L 50,193
4,660 Pueblo, Colo.
5E 50,096
1,037 Pittsfield
3M 49,677
19 Watertown
3M 49,413
162 Woonsocket, R. I.
3N 49,376
35 Haverill, Mass.
3N 48,710
806 New Castle, Pa.
4M 48,674
12 Everett, Mass.
3M 48,434





283 Jackson, Miss.
7J 48,282
1,082 Phoenix, Ariz.
6C 48,118
19 Stockton, Calif.
4A 47,963
43 Brookline, Mass.
3M 47,490
857 Elmira, N. Y.
3M 47,397
591 Bay City, Mich.
2K 47,355
609 Berwyn, Ill.
4J 47,027
66 Clifton, N. J.
4M 46,875
647 Aurora, Ill.
4J 46,589
935 Muncie, Ind.
3K 46,548
34 Stamford
3N 46,346
811 Waterloo, Ia.
3H 46,191
11 Chelsea, Mass.
3M 45,816
946 Lexington, Ky.
5K 45,736
524 Williamsport
3M 45,729
10 Portsmouth, Va.
5M 45,704
1,317 Jamestown, N. Y.
5L 45,155
610 Lorain, Ohio
4L 44,512
84 Chicopee, Mass.
3N 43,930
946 Wichita Falls
6G 43,690
819 Battle Creek
3K 43,573
43 Perth Amboy
4M 43,516
10 Salem, Mass.
3N 43,353
3,683 Amarillo, Tex.
6F 43,132
260 Columbus, Ga.
6K 43,131
536 Joliet, Ill.
3J 42,993
84 Cranston, R. I.
3N 42,911
525 Portsmouth, O.
4L 42,560
886 Lima, O.
4K 42,287
984 Council Bluffs
4G 42,048
241 Montclair, N. J.
4M 42,017
612 Dubuque, Ia.
3J 41,679
592 Muskegon
3K 41,300
897 Warren, O.
4L 41,062
12 Kearny, N. J.
4M 40,716
438 Fitchburg
3N 40,692
517 Lynchburg, Va.
5L 40,661
20 St. Petersburg
7L 40,425
156 Poughkeepsie
3M 40,288
4,296 Ogden, Utah
4D 40,272
743 Oshkosh, Wis.
3J 40,108
874 Anderson, Ind.
4K 39,804
583 East Cleveland
3K 39,667
651 LaCrosse, Wis.
5J 39,614
5,576 Butte, Mont.
2D 39,532
589 Sheboygan
3J 39,251
51 Waltham, Mass.
3N 39,247
488 Quincy, Ill.
4J 39,241
150 Meriden, Conn.
3N 38,481
125 Bloomfield, N. J.
4M 38,077
563 Rock Island
4J 37,953
641 Cumberland
4M 37,747
1,077 San Bernardino
6B 37,481
590 Green Bay
3J 37,415
316 Raleigh, N. C.
5M 37,379
54 Taunton, Mass.
3N 37,355
16 Santa Monica
6B 37,146
61 West New York
3N 37,107
605 Danville, Ill.
4J 36,765
1,624 Hazleton, Pa.
3M 36,765
3,098 High Point
5M 36,745
677 Auburn, N. Y.
3M 36,652
704 Zanesville, O.
4L 36,440
628 Superior, Wis.
2H 36,113
46 Arlington, Mass.
2M 36,094



The International Date Line.—This line marks the change of day in circumnavigating the earth east or west. By common consent of the leading nations, it is placed in the Pacific; for a great part of its extent it coincides with the 180th meridian. When ships "cross the line," they add a day to their calendar if they are going west, and subtract a day if they are going east. Why? The date line is placed in the Pacific, far from most lands,



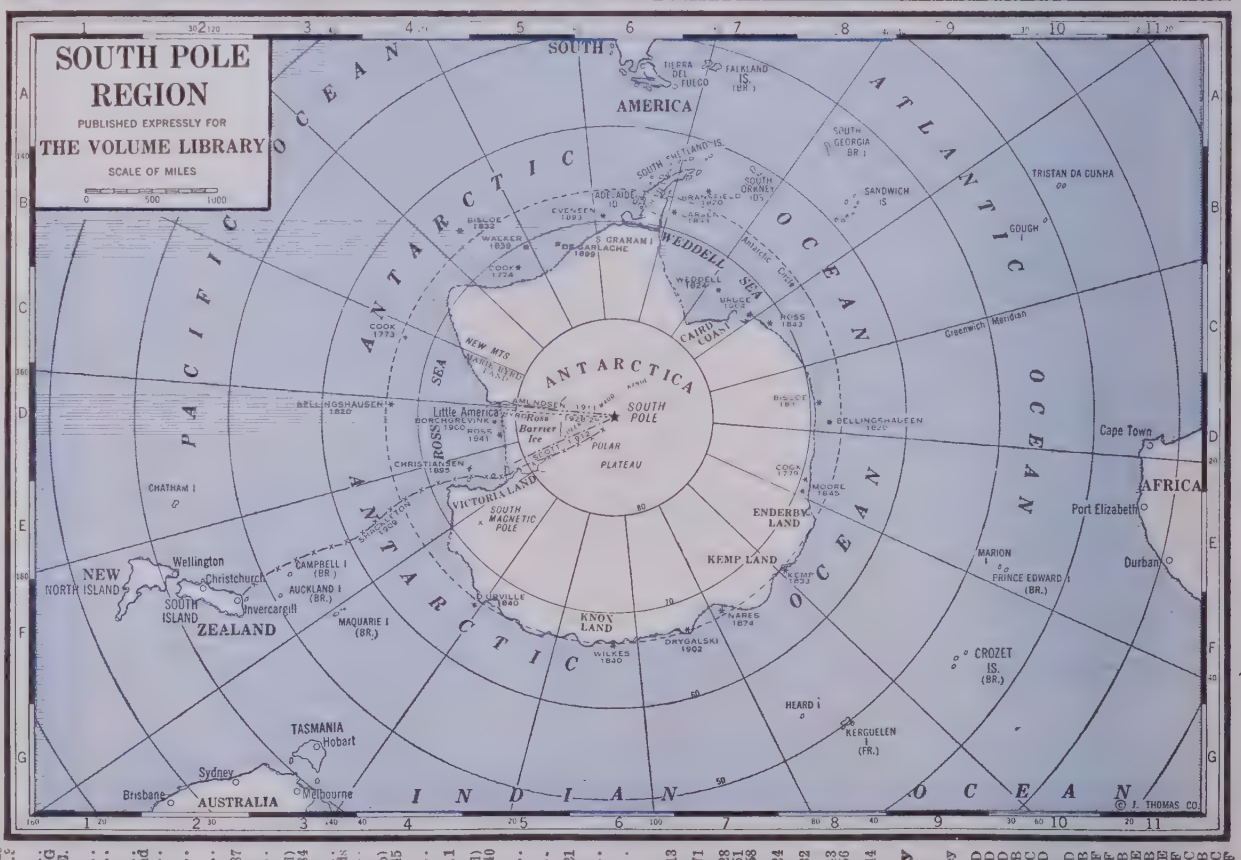
Approximate Length of Longest Day at Different Latitudes.

North Latitude	Days	Hrs.	Min.
90° (North Pole)	186		
85°	161		
80°	134		
75°	103		
70°	65		
66 33′	24	..	
65°	21	9	
60°	18	30	
55°	17	7	
50°	16	9	
45°	15	26	
40°	14	51	
35°	14	22	
30°	13	56	
25°	13	34	
20°	13	13	
15°	12	53	
10°	12	35	
10°	12	5	
5°	12	17	
0° (Equator)	12	..	

South Latitude			
0° (Equator)	12	..	
5°	12	17	
10°	12	35	
15°	12	53	
20°	13	13	
25°	13	34	
30°	13	56	
35°	14	22	
40°	14	51	
45°	15	26	
50°	16	9	
55°	17	7	
60°	18	30	
65°	21	9	
66 33′	24	..	
	Days		
70°	65		
75°	103		
80°	134		
85°	161		
90° (South Pole)	174		

because the change is most conveniently made where traffic is not likely to be disturbed by a confusion of dates. As a matter of fact, the observance of the date line is theoretical rather than actual, and sailing masters change time, not at the line, but most commonly at the nearest port of call. The line as drawn on the Flat-Globe represents the official interpretation of the United States Government at present.





NORTH POLE REGION Expeditions

Name	Key
Amundsen-Ellsworth	— — — —
Andree	—*—*—*—
Byrd-Bennett	- - - - - -
De Long-Jeanette	—·—·—·—
Nansen-Fram	—x—x—x—
Peary	———
Stefanson	— * — * —
Wilkins-Eielson	—·—·—·—

Countries, Islands, Etc.

Name	Key	Pop. Thous.
Baffin Island	6G	
Banks Island	4E	
Borden Island	5E	
Cockburn Land	5F	
Devon Island	5F	
Edge Island	8C	
Ellesmere Island	6E	
Finland	10B	3 667
Fridtjof Nansen Land	7B	
Greenland	8F	15
Iceland	10F	10
Jay Mayen Island	9D	
Lenin Island	6A	
New Siberia Islands	4A	1
North East Island	8C	
Norway (Section of)	10C	2,814
Nova Zemlya	8A	1
Siberia (Section of)	4A	
Svalbard (Spitsbergen)	8C	1
Victoria Island	4F	
Wales Island	5F	
West Spitsbergen	8C	

TOWNS

Name	Key	Pop. Thous.
Abo	11B	63
Archangel	10A	72
Bergen	11D	91
Dawson	2E	1
Fairbanks	2D	2
Fort Hope	5G	
Fort Nelson	2G	
Helsingfors	11B	243
Juneau	1F	4
Leningrad	11B	2,228
Nidaros	11D	
Nome	1C	1
Orca	1E	
Oslo	11D	253
Resolution	3G	
Reykjavik	10F	25
Sitka	1F	1
Stockholm	11C	514
Tanana	2D	
Teller	1C	
Umivik	9G	
Yakutat	1F	

Points Reached by Explorers

Explorer	Key
Andree	7C
Cagni	6C
Greeley	7D
Kane	6E

SOUTH POLE REGION Expeditions

Name	Key
Amundsen	—·—·—
Byrd	- - - - -
Scott	———
Shackleton	—x—x—x—

Countries, Islands, Etc.

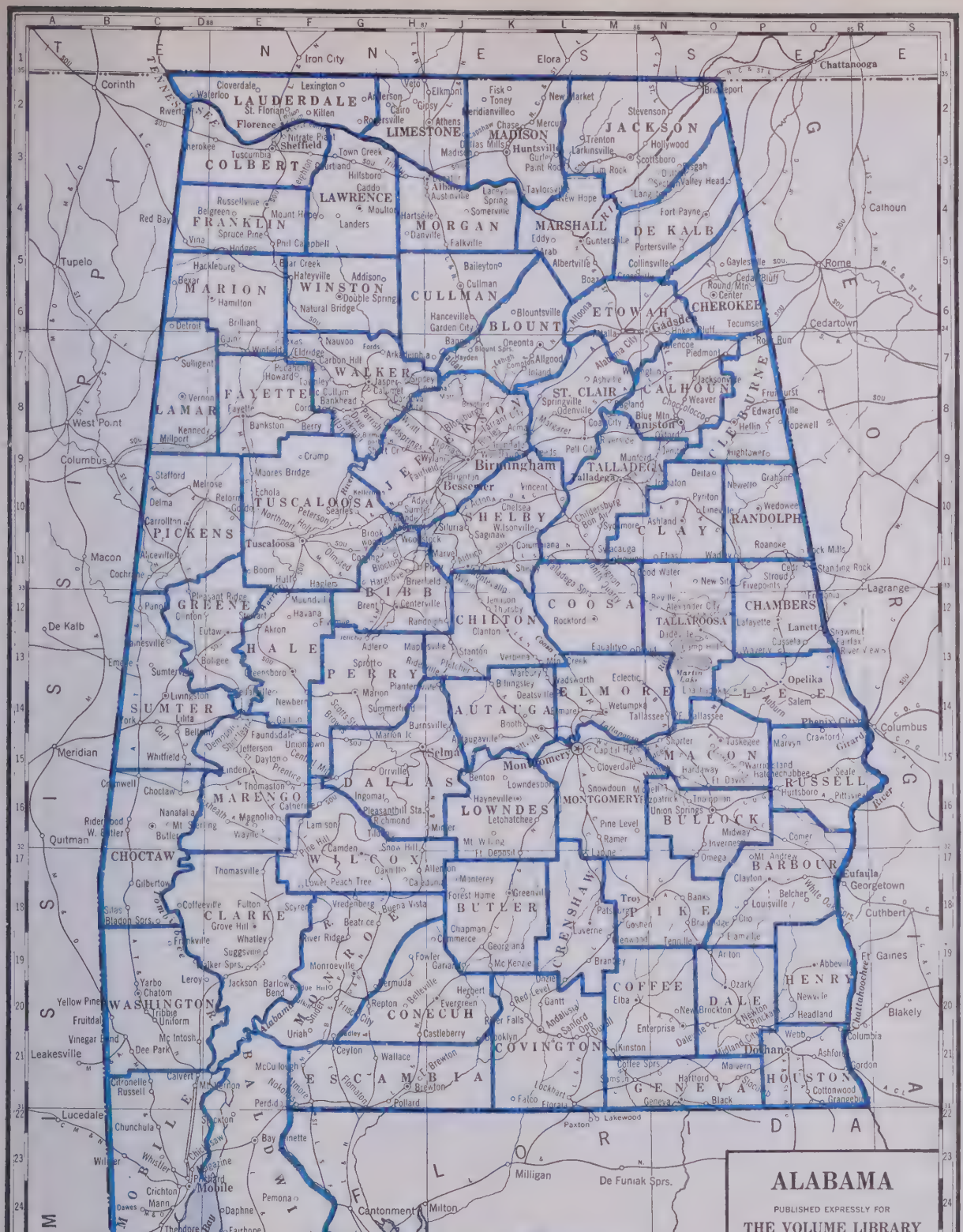
Name	Key	Pop. Thous.
Adelaide Island	6B	
Auckland Islands	3F	
Caird Coast	7C	
Campbell Island	3E	
Chatham Island	2E	7562
Crozet Islands	9F	
Enderby Land	8E	
Falkland Islands	4A	
Gough Island	10B	
Heard Island	8G	
Kemp Land	7E	
Kerguelen Island	8G	
Knox Land	6F	
Little America	5D	
Macquarie Island	3F	
Marie Byrd Land	5D	
Marion Island	10E	
New Zealand	2F	1,587
North Graham Island	6B	
North Island (New Zealand)	1F	984
Queen Maud Range	6D	
Sandwich Islands	8B	
South America (Southern Tip)	6A	78,145
South Graham Island	6B	
South Georgia	8A	1
South Island (New Zealand)	2F	540
South Orkney Islands	7B	
South Shetland Islands	6B	
Tasmania	3G	221
Tierra Del Fuego	6A	
Tristran Da Cunha	10B	

TOWNS

Name	Key	Pop. Thous.
Brisbane	2G	313
Cape Town	11D	271
Christchurch	2F	128
Durban	11E	151
Hobart	3G	58
Invercargill	2F	24
Melbourne	3G	1,032
Port Elizabeth	11E	43
Sydney	2G	1,256
Wellington	2E	144

Points Reached by Explorers

Name of Explorer	Key
Bellingshausen	4D & 8D
Biscoe	4D & 8D
Borchgrevink	5D
Bransfield	7B
Bruce	7C
Christiansen	5D
Cook	4C, 5C & 8D
De Gerlache	6B
Drygalski	7F
Durville	5F
Evensen	6B
Kemp	7E
Larsen	6B
Moore	8E
Nares	7F
Ross	5D & 7C
Walker	5B
Weddell	7C
Wilkes	6F


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MARION
WINSTON
CULLMAN
ETOWAH
BLOUNT
WALKER
CALHOUN
FAYETTE
ST. CLAIR
LAMAR
TUSCALOOSA
JEFFERSON
Birmingham
TALLADEGA
CLEBURNE
RANDOLPH
PICKENS
SHELBY
CLAY
BIBB
COOSA
CHAMBERS
GREENE
CHILTON
TALLAPOOSA
HALE
PERRY
ELMORE
LEE
SUMTER
AUTAUGA
MACON
RUSSELL
MARENGO
DALLAS
LOWNDES
MONTGOMERY
BULLOCK
CHOCTAW
WILCOX
BARBOUR
CLARKE
BUTLER
CRENSHAW
PIKE
HENRY
WASHINGTON
CONECUH
COFFEE
DALE
HOUSTON
ESCAMBIA
COVINGTON
GENEVA
Mobile
Pensacola
Milligan
De Funiak Sprs.
Cantonment
Milton
Choctawhatchee Bay
Mississippi Sound
GULF OF MEXICO
SANTA ROSA ISLAND
Tuscumbia
Florence
Sheffield
Huntsville
Decatur
Gadsden
Anniston
Talladega
Sylacauga
Alexander City
Opelika
Auburn
Phenix City
Columbus
Tuskegee
Montgomery
Selma
Demopolis
Meridian
Tuscaloosa
Bessemer
Jasper
Fayette
Russellville
Florence
Muscle Shoals
Tupelo
Corinth
Iuka
Chattanooga
Rome
Cedartown
Calhoun
Gadsden
Oneonta
Blountsville
Cullman
Hanceville
Baileyton
Albertville
Guntersville
Scottsboro
Stevenson
Fort Payne
Piedmont
Jacksonville
Anniston
Ashland
Lineville
Roanoke
Wedowee
Randolph
Lafayette
Lanett
West Point
Columbus
Macon
Eufaula
Georgetown
Cuthbert
Abbeville
Ft. Gaines
Blakely
Dothan
Ashford
Gordon
Headland
Newville
Ozark
Enterprise
Brewton
Atmore
Flomaton
Bay Minette
Foley
Fairhope
Daphne
Theodore
Grand Bay
Bayou La Batre
Pascagoula
Citronelle
Chunchula
Lucedale
Leakesville
Vinegar Bend
Fruitdale
Yellow Pine
Uniform
Tribbie
Bladon Sprs.
Silas
Gilberton
Thomasville
Grove Hill
Coffeeville
Clarke
Jackson
Yarbo
Chatom
Leroy
Whatley
Suggsville
Monroeville
Perdue Hill
Bermuda
Repton
Evergreen
Castleberry
Brewton
Ceylon
Wallace
Pollard
Flomaton
Atmore
Bay Minette
Stockton
Silverhill
Loxley
Robertsdale
Summerdale
Seminole
Magnolia Sprs.
Point Clear
Battles Wharf
Crichton
Mann
Dawes
Whistler
Wilmer
Prichard
Chickasaw
Citronelle
Calvert
Mt. Vernon
Russell
Tribbie
Uniform
Fruitdale
Vinegar Bend
Mc Intosh
Dee Park
Leakesville
Lucedale
Chunchula
Stockton
Bay Minette
Perdido
Pollard
Flomaton
Atmore
Brewton
Evergreen
Castleberry
Repton
Bermuda
Monroeville
Perdue Hill
Suggsville
Whatley
Jackson
Yarbo
Chatom
Leroy
Grove Hill
Thomasville
Gilberton
Coffeeville
Clarke
Jackson
Barlow Bend
Bladon Sprs.
Silas
Tribbie
Uniform
Fruitdale
Yellow Pine

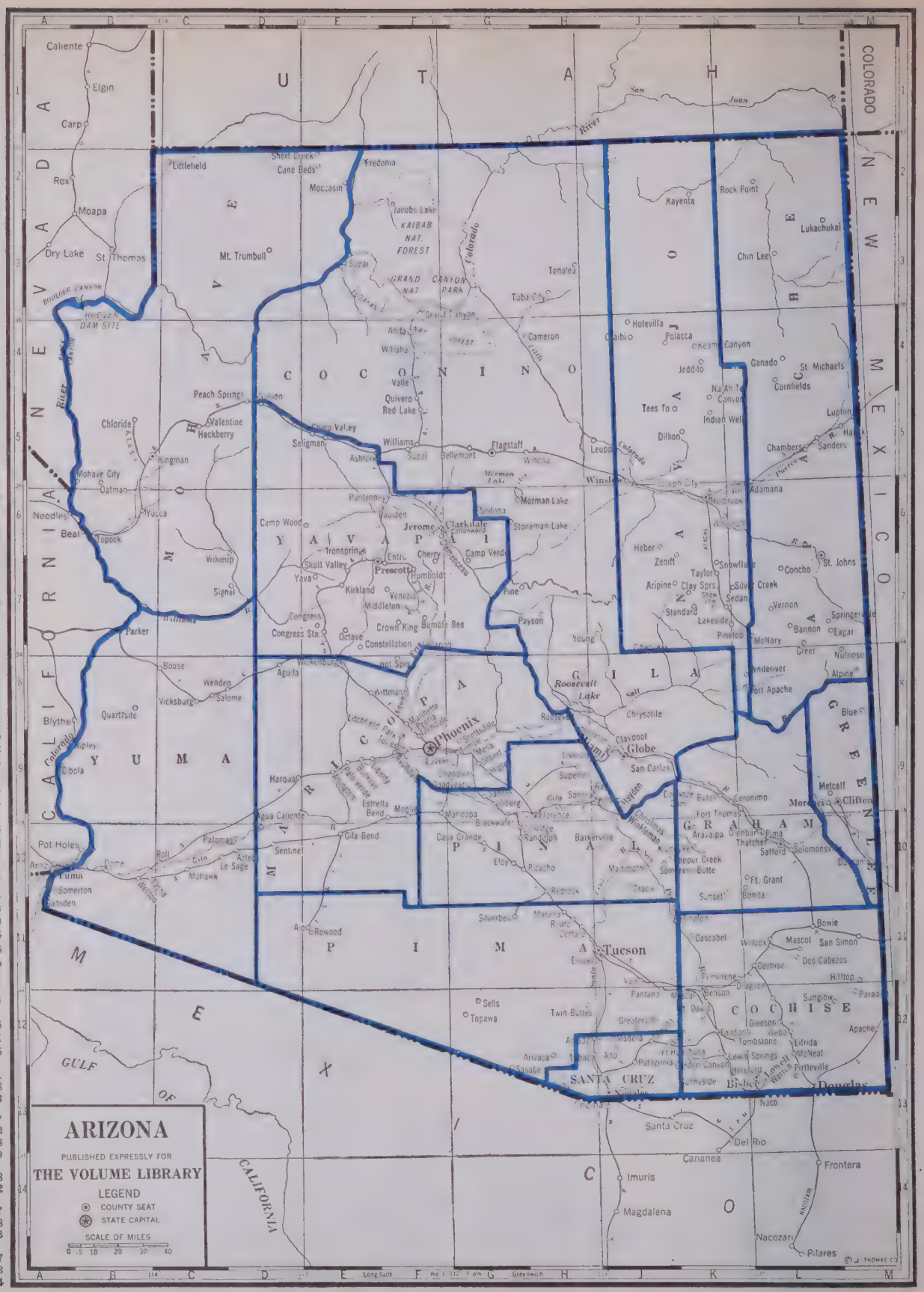
ARIZONA
Pop. 435,573

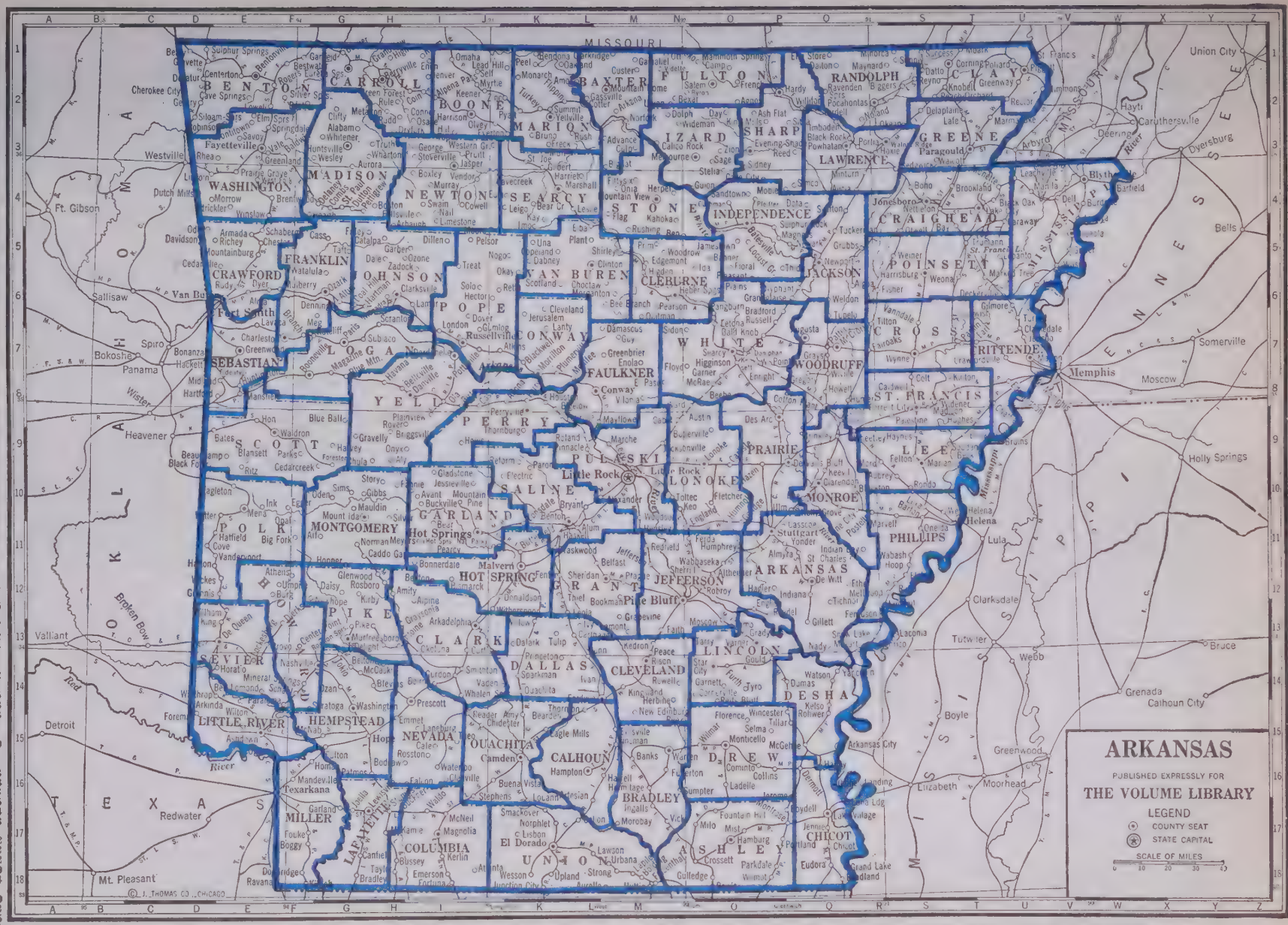
COUNTIES

	Pop. Thous.
Apache 6M	17
Cochise 12L	40
Coconino 5G	14
Gila 3J	31
Graham 10L	10
Greenlee 9M	9
Maricopa 9F	150
Mohave 5C	5
Navajo 6K	21
Pima 11H	55
Pinal 10H	22
Santa Cruz 13J	9
Yavapai 7F	28
Yuma 10A	17

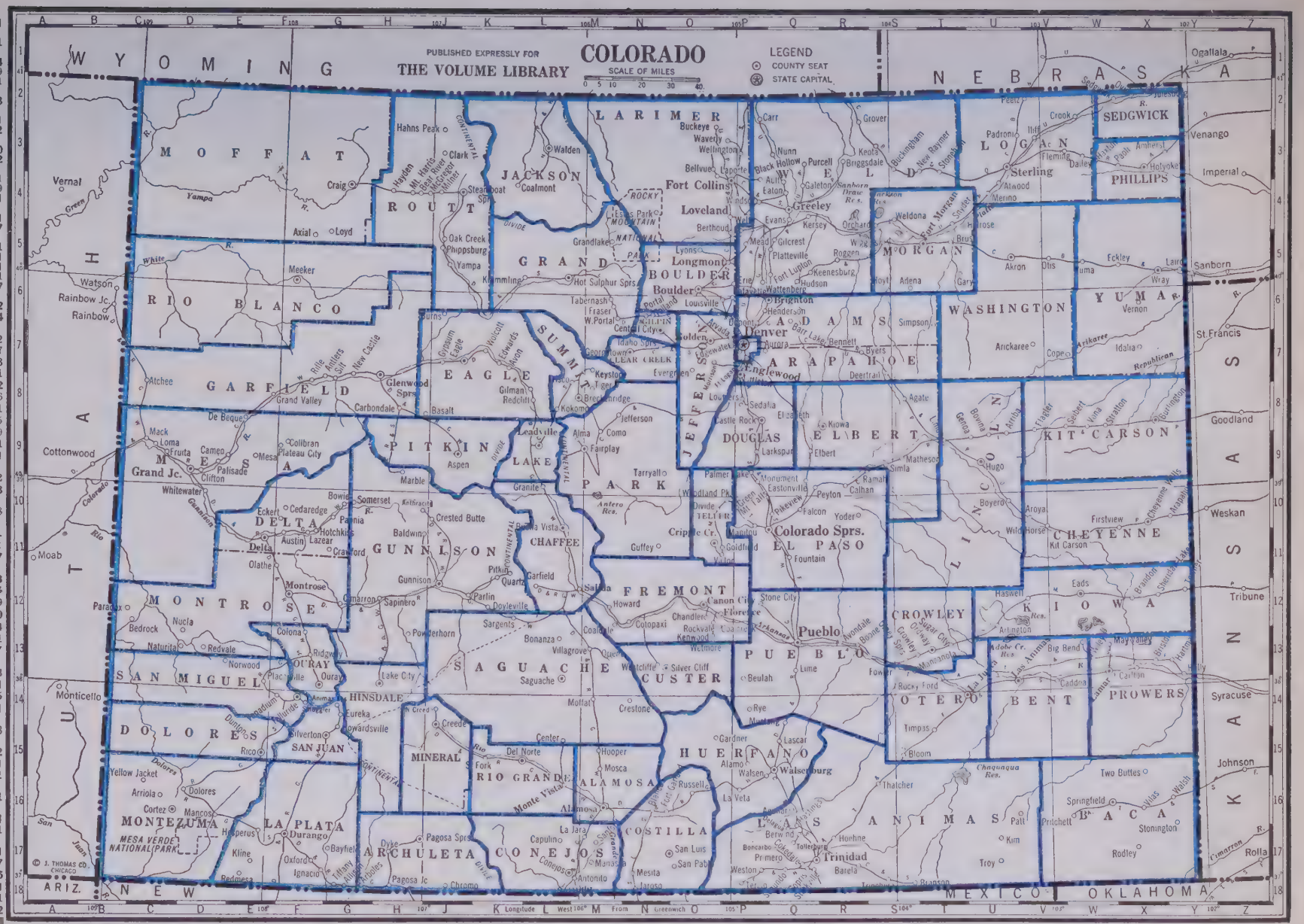
TOWNS

Town	Key	Pop.
Ajo	11E	2
Ashfork	5F	†5
Benson	12K	†9
Bisbee	13L	8
Bowie	11M	†6
Buckeye	9E	1
Camp Verde	6G	†4
Casa Grande	10G	1
Chandler	9G	1
Clarkdale	6G	2
Clemenceau	6G	1
Clifton	9M	2
Coolidge	10H	†8
Cottonwood	6G	1
Douglas	13L	9
Duncan	10N	1
Flagstaff	5G	3
Florence	9H	1
Gila Bend	10E	†7
Gilbert	9G	†7
Glendale	8F	3
Globe	9J	7
Hayden	9J	2
Holbrook	6K	1
Humboldt	6F	1
Jerome	6F	4
Kingman	5B	2
Leupp	5H	†5
Lowell	13L	4
Mesa	9G	3
Metcalf	9M	†5
Miami	9J	7
Morenci	9M	5
Nogales	13J	6
Oatman	5B	1
Patagonia	12J	†7
Peoria	8F	2
Phoenix	9F	48
Pima	10L	†9
Pirtleville	13L	5
Prescott	6F	5
Ray	9J	4
Safford	10L	1
Saint Johns	7M	1
San Simon	11M	†5
Scottsdale	8G	1
Seligman	5E	†5
Solomonsville	10L	1
Somerton	10A	†8
Sonora	9J	3
Springerville	7M	†7
Tempe	9G	2
Thatcher	10L	†8
Tolleson	9F	†9
Tombstone	12K	†8
Tucson	11J	32
Wickenburg	8E	†7
Willcox	11L	†8
Williams	5F	2
Winkelman	10J	†7
Winslow	5J	3
Yuma	10A	4


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PIMA
COCHISE
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Phoenix
Tucson
Prescott
Flagstaff
Globe
Kingman
Yuma
Nogales
Douglas
Bisbee
Clifton
Holbrook
Winslow
Williams
Jerome
Clarkdale
Cottonwood
Sedona
Camp Verde
Cottonwood
Page
Lake Powell
Roosevelt Lake
Grand Canyon
Kaibab Nat. Forest
Grand Canyon Nat. Park
Colorado River
Little Colorado
San Juan River
Gila River
Salt River
Verde River
Hoover Dam Site
Boulder Canyon
Mormon Lake
Lake Mary
Oak Creek Canyon
Sycamore Canyon
Havasu Lake
Imperial Dam
Parker Dam
Painted Desert
Petrified Forest
Navajo Indian Reservation
Hopi Indian Reservation
Fort Apache Indian Reservation
San Carlos Indian Reservation
Papago Indian Reservation
Gila Indian Reservation
Colorado River Indian Reservation
Fort Mohave Indian Reservation
Fort Huachuca
Fort Grant
Fort Thomas
Fort Apache
Camp Verde
Camp Wood
Camp Verde
Camp Grant
Camp Rucker
Camp Rucker
Camp Rucker


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CRAIGHEAD
POINSETT
JACKSON
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SEBASTIAN
LOGAN
CONWAY
FAULKNER
WHITE
WOODRUFF
RITTENDEN
YELL
PERRY
PULASKI
PRAIRIE
LEE
ST. FRANCIS
SCOTT
SALINE
LONOKE
MONROE
GARLAND
MONTGOMERY
POLK
HOT SPRING
GRANT
JEFFERSON
ARKANSAS
PHILLIPS
PIKE
CLARK
LINCOLN
SEVIER
DALLAS
CLEVELAND
DESHA
LITTLE RIVER
HEMPSTEAD
NEVADA
OUACHITA
CALHOUN
DREW
MILLER
LAFAYETTE
COLUMBIA
UNION
BRADLEY
ASHLEY
CHICOT
Little Rock
Hot Springs
Pine Bluff
Fort Smith
Texarkana
El Dorado
Camden
Memphis
Jonesboro
Paragould
Blytheville
Helena
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Greenwood
Clarksdale
Holly Springs
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Gosnell
Manila
Leachville
Monette
Valliant
Hartford
Alma
Van Buren
Ozark
Clarksville
Russellville
Morrilton
Conway
Greenbrier
Damascus
Quitman
Heber Springs
Clinton
Searcy


CALIFORNIA
Pop. 5,677,251
COUNTIES
Pop. Thous.
Alameda 3G..474
Alpine* 4F...†2
Amador 4F...8
Butte 3E....34
Calaveras 4F...6
Colusa 2E....10
Contra Costa 3G.....78
Del Norte 1B..4
Eldorado 4F...8
Fresno 5H...144
Glenn 2E.....10
Humboldt 1C..43
Imperial 8N..60
Inyo* 6H.....6
Kern 5K.....82
Kings 4J.....25
Lake 2E.....7
Lassen 4C.....12
Los Angeles 6M 2,208
Madera 4H...17
Marin 2G.....41
Mariposa* 4G..3
Mendocino 1E..23
Merced 4H....36
Modoc 4B.....3
Mono* 5F.....1
Monterey 3J..53
Napa 2F.....22
Nevada 4E....10
Orange 6M...118
Placer 4E....24
Plumas 4D.....7
Riverside 8M..81
Sacramento 3F 141
San Benito 3H 11
San Bernardino 7L.....133
San Diego 7N.....209
San Francisco 2G 634
San Joaquin 3G 102
San Luis Obispo 3K 29
San Mateo 2G..77
Santa Barbara 4L 65
Santa Clara 3H 145
Santa Cruz 3H 37
Shasta 3C....13
Sierra* 4E.....2
Siskiyou 2B...25
Solano 3F....40
Sonoma 2F....62
Stanislaus 3G..56
Sutter 3E.....14
Tehama 3D...13
Trinity 2C.....2
Tulare 5J.....77
Tuolumne 4G..9
Ventura 5L...54
Yolo 3F.....23
Yuba 3E.....11
TOWNS
Town Key Pop.
Alameda 2G...35
Alhambra 6M..29
Alturas 4B....2
Anaheim 6M..10
Arcadia 6L....5
Auburn 4E.....2
Bakersfield 5K 26
Bell 6M.....7
Bellflower 6M..6
Berkeley 2G..82
Beverly Hills 6M 17
Brawley 8N...10
Bridgeport 5F..†2
Burbank 6M...16
Burlingame 2G 13
Calexico 8O....6
Chico 3D.....7
Colton 7M....8
Colusa 2E.....2
Compton 6M..12
Corona 6M.....7
Coronado 7O..5
Crescent City 1B 1
Daly City 2G..7
Downieville 4D .....†5
El Centro 8O..8
Eureka 1C....15
Fairfield 3F....1
Fresno 4J....52
Fullerton 6M..10
Gardena 6M...6
Glendale 6M..62
Hanford 4J....7
Hawthorne 6M..6
Hollister 3H...3
Huntington Park 6M 24
Imperial 8N....1
Independence 6H .....†4
Inglewood 6M..19
Jackson 4F....2
Lakeport 2E....1
Lodi 3G.....6
Long Beach 6M 142
Los Angeles 6M 1,238
Lynwood 6M....7
Madera 4H....4
Mariposa 4G....4
Martinez 2G....6
Marysville 3E....5
Merced 4G.....7
Modesto 3G....13
Monrovia 6M..10
Monterey 3H...9
Monterey Park 6M 6
Napa 2F.....6
Nevada City 4E 1
Oakland 2G....284
Ontario 6M....13
Orange 6M.....8
Oroville 3E....3
Oxnard 5M....6
Palo Alto 2G..13
Pasadena 6M..75
Petaluma 2F....8
Pittsburg 2G....9
Placerville 4F..20
Pomona 6M....20
Quincy 4D.....1
Red Bluff 2D....3
Redding 3C....14
Redlands 7M 9
Redondo Beach 6M 8
Redwood City 2G....8
Richmond 3G..20
Riverside 8M..6
Roseville 3F....6
Sacramento 3F.....93
Salinas 3H....10
San Andreas 4F 1
San Bernardino 7M 37
San Diego 7O 147
San Fernando 6M 7
San Francisco 2G 634
San Gabriel 6M 7
San Jose 3G....57
San Leandro 2G..11
San Luis Obispo 4K 8
San Mateo 2G....13
San Rafael 2G..8
Santa Ana 6M 30
Santa Barbara 4L 33
Santa Clara 3H 6
Santa Cruz 2H 14
Santa Maria 4J....7
Santa Monica 6M..37
Santa Paula 5M....7
Santa Rosa 2F 10
Sonora 4G.....2
South Gate 6M 19
South Pasadena 6M 13
South San Fran. 2G..16
Stockton 3G....47
Susanville 4C....7
Torrance 6M....7
Tulare 5J.....6
Ukiah 1E.....3
Vallejo 2G....14
Venice 6M....10
Ventura 5M....11
Visalia 5J.....7
Watsonville 2H..8
Weaverville 2C..1
Whittier 6M..14
Willows 2E....2
Woodland 3F....5
Yreka 2B.....2
Yuba City 3E..3
† POP. SHOWN IN HUNDREDS.
COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX.
* POP. OF COUNTY SEAT BELOW ONE THOUSAND.
NEVADA
Pop. 91,058
COUNTIES
Pop. Thous.
Churchill 6D....5
Clark 9J.....8
Douglas* 5E...1
Elko 8B.....9
Esmeralda 6G..1
Eureka* 8D....1
Humboldt 6B..3
Lander 7D.....1
Lincoln* 8G...3
Lyon 5E.....3
Mineral* 6F...1
Nye 7F.....3
Ormsby 4E....2
Pershing 6C...2
Storey 5D.....1
Washoe 5C....27
White Pine 9D 11
TOWNS
Town Key Pop.
Austin 7D.....1
Carson City 5E..1
East Ely 9E...†7
Elko 8C.....3
Ely 9E.....3
Eureka 8E....†5
Fallon 5D.....1
Gardnerville 5E 1
Goldfield 7G...1
Hawthorne 6F.†4
Las Vegas 8J..5
Lovelock 6C....1
McGill 9D.....2
Minden 4E...†1
Montello 9B...†6
Ploche 9F....†6
Reno 4D.....18
Sparks 4D.....4
Tonopah 7F....4
Virginia City 5D 1
Wells 9B.....†6
Winnemucca 6B 1
Yerington 5E..1
CALIFORNIA
AND
NEVADA
PUBLISHED EXPRESSLY FOR
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LEGEND
COUNTY SEAT
STATE CAPITAL
SCALE OF MILES
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COLORADO
SCALE OF MILES
0 5 10 20 30 40
LEGEND
COUNTY SEAT
STATE CAPITAL
WYOMING
NEBRASKA
KANSAS
UTAH
NEW MEXICO
OKLAHOMA
ARIZ.
MOFFAT
ROUTT
JACKSON
LARIMER
WELD
LOGAN
SEDGWICK
PHILLIPS
RIO BLANCO
GARFIELD
EAGLE
GRAND
SUMMIT
BOULDER
MORGAN
WASHINGTON
YUMA
ADAMS
ARAPAHOE
DENVER
JEFFERSON
CLEAR CREEK
PITKIN
LAKE
PARK
DOUGLAS
ELBERT
LINCOLN
KIT CARSON
MESA
DELTA
GUNNISON
CHAFFEE
FREMONT
CROWLEY
KIOWA
CHEYENNE
MONTROSE
OURAY
SAGUACHE
CUSTER
PUEBLO
OTERO
BENT
PROWERS
SAN MIGUEL
HINSDALE
DOLORES
SAN JUAN
MINERAL
RIO GRANDE
ALAMOSA
HUERFANO
LAS ANIMAS
MONTEZUMA
LA PLATA
ARCHULETA
CONEJOS
COSTILLA
BACA
MESA VERDE NATIONAL PARK
Fort Collins
Loveland
Greeley
Boulder
Longmont
Denver
Colorado Sprs.
Pueblo
Trinidad
Sterling
Grand Jct.
Durango
Cortez
Monte Vista
Alamosa
Walsenburg
Lamar
Springfield
Julesburg
Ogallala
Venango
Imperial
Sanborn
St.Francis
Goodland
Weskan
Tribune
Syracuse
Johnson
Rolla
Elkhart
Two Buttes
Pritchett
Stonington
Rodley
Kim
Troy
Boncarbo
Berwind
Primero
Tollerburg
Hoehne
Patt
Barela
Thatcher
Chaquaqua Res.
Las Animas
Timpas
Bloom
Fowler
Caddoa
Carlton
Hartman
Holly
Wiley
Granada
Lamar
Prowers
Big Bend
Adobe Cr. Res.
Las Animas
Mayview
Bristol
Haswell
Eads
Kiowa
Arlington
Crowley
Ordway
Sugar City
Manzanola
Rocky Ford
La Junta
Swink
Boone
Olney Springs
Ordway
Sugar City
Crowley
Fowler
Caddoa
Timpas
Bloom
Thatcher
Walsenburg
Chaquaqua Res.
Two Buttes
Springfield
Vilas
Walsh
Pritchett
Stonington
Rodley
Kim
Troy
Boncarbo
Berwind
Primero
Tollerburg
Hoehne
Patt
Barela
Trinidad
Aguilar
Stonington
Cimarron
Rolla
Elkhart
Johnson
Syracuse
Tribune
Weskan
Goodland
St.Francis
Sanborn
Imperial
Venango
Ogallala
Julesburg
Sedgwick
Phillips
Yuma
Washington
Kit Carson
Cheyenne
Lincoln
Elbert
Douglas
Arapahoe
Adams
Morgan
Logan
Sterling
Fort Morgan
Brush
Wiggins
Hillrose
Atwood
Merino
Crook
Pearl
Iliff
Julesburg
Ovid
Sedgwick
Holyoke
Amherst
Paoli
Haxtun
Dailey
Flemings
Wray
Eckley
Yuma
Idalia
Republican
Arikaree
Vernon
Akron
Otis
Lamar
Bonny Res.
Burlington
Stratton
Seibert
Vona
Flagler
Arriba
Genoa
Hugo
Limon
Matheson
Simla
Calhan
Ramah
Peyton
Falcon
Yoder
Boyero
Aroya
Firstview
Cheyenne Wells
Kit Carson
Haswell
Eads
Kiowa
Arlington
Crowley
Ordway
Sugar City
Manzanola
Rocky Ford
La Junta
Swink
Boone
Olney Springs
Las Animas
Timpas
Bloom
Fowler
Caddoa
Carlton
Hartman
Holly
Wiley
Granada
Lamar
Prowers
Big Bend
Adobe Cr. Res.
Mayview
Bristol
Pueblo
Colorado Sprs.
Fountain
Ellicott
Yoder
Falcon
Peyton
Calhan
Ramah
Simla
Matheson
Hugo
Limon
Elbert
Kiowa
Elizabeth
Kiowa
Castle Rock
Larkspur
Douglas
Lincoln
Elbert
Kit Carson
Cheyenne
Arapahoe
Aurora
Englewood
Littleton
Denver
Golden
Idaho Springs
Georgetown
Clear Creek
Central City
Black Hawk
Nederland
Boulder
Longmont
Lyons
Loveland
Fort Collins
Berthoud
Johnstown
Milliken
Platteville
Gilcrest
Evans
Greeley
Kersey
Weldona
Orchard
Wiggins
Hillrose
Brush
Fort Morgan
Snyder
Barr Lake
Bennett
Byers
Strasburg
Deer Trail
Agate
Arickaree
Cope

CONNECTICUT
Pop. 1,606,903

COUNTIES

	Pop.	Thous.
Fairfield	13D	396
Hartford	5J	424
Litchfield	5E	82
Middlesex	9K	51
New Haven	12G	603
New London	9N	118
Tolland	4L	28
Windham	4O	54

TOWNS

Town Key Pop.

Ansonia 13F....19
Avon 5H.....1
Baltic 7N.....2
Beacon Falls 12G....3
Berlin 7J.....1
Bethel 12G....4
Bloomfield 13H....2
Bridgeport 15E.....146
Bristol 7G....28
Brookfield 10C.....19
Brooklyn 5O.....2
Burlington 5G.....1
Burnside 3J.....3
Canton 4G.....3
Chester 11G.....1
Clinton 13K.....1
Colchester 9M.....19
Collinsville 4G.....1
Cromwell 8J.....2
Danbury 12C....22
Danielson 4P.....4
Darien 16C.....6
Deep River 11L.....2
Derby 12F.....10
Durham 10J.....11
East Granby 7O.....4
East Hampton 8K.....1
East Hartford 5J.....16
East Killingly 4O.....1
East Lyme 12N.....2
East Windsor Hill 4K.....3
Ellington 3L.....3
Enfield 2K.....13
Essex 12L.....3
Fairfield 15D.....17
Farmington 6H.....1
Forestville 7G.....2
Glastonbury 6K.....5
Granby 2H.....5
Greenwich 17A.....5
Groton 11O.....4
Guilford 11J.....1
Hartford 5K....164
Hazardville 2K....1
Higganum 9K.....1
Jewett City 7O.....4
Kensington 7H.....1
Kent 6C.....1
Killingly 4P.....8
Lakeville 2C.....2
Lebanon 7N.....1
Ledyard 10E.....1
Litchfield 4F.....2
Madison 12J.....1
Manchester 5K....21
Mansfield 4M....3
Marble Dale 7D.....3
Meriden 9H....38
Middlebury 9F....1
Middlefield 9F....1
Middletown 11H.....24
Milford 14F....12
Monroe 13E....11
Montville 10N....3
Moodus 8L.....1
Moosup 6P.....3
Mystic 11O....3
New Britain 7H.....68
New Canaan 15C....2
New Hartford 1F....1
New Haven 12G....162
Newington 7J.....4
New London 12N....29
New Milford 9C....4
Niantic 12N....1
Noank 12O.....1
Norfolk 2D.....1
North Canaan 1D.....3
North Grosvenor Dale 2P.....3
North Haven 11H.....3
North Stonington 10P.....1
Norwalk 16C..36
Norwich 8N....23
Old Lyme 12M.1
Old Saybrook 12L.....1
Orange 13F....1
Oxford 11E....1
Plainfield 6P...8
Plainville 7G..6
Plantsville 8G.1
Plymouth 7F....6
Pomfret 3O....1
Poquonock 3J....1
Portland 8J....4
Preston 8N....3
Putnam 3P.....7
Redding 13C...1
Ridgefield 13C..3
Rockville 4L..7
Rockyhill 7J....2
Salisbury 2C.....2
Sandy Hook 11D.....1
Saybrook 13L..2
Seymour 12F...6
Sharon 4C....1
Shelton 13F...10
Simsbury 3H...3
Somers 2L.....1
Somersville 2L.1
Southbury 10E.1
South Coventry 5M 1
S. Glastonbury 7K 1
Southington 7G 5
S. Manchester 5K 15
S. Norwalk 16C 15
Southport 16D.1
S. Windsor 4K.2
Stafford 2M...5
Stafford Springs 2M 3
Stamford 17B.46
Sterling 6P....1
Stonington 12P 2
Stratford 15F.17
Suffield 2J....4
Taftville 8O...1
Tariffville 3H..1
Terryville 7F...4
Thomaston 7F..4
Thompson 2P..4
Thompsonville 1K 11
Tolland 3L.....!
Torrington 5F.26
Trumbull 13E..3
Uncasville 11N.1
Union City 9F.2
Unionville 5G..2
Vernon 4L.....8
Versailles 8O..1
Wallingford 10H 11
Warehouse Point 3K....1
Washington 8D.1
Washington Depot 8D.....1
Waterbury 9F..99
Waterford 12N.4
Watertown 8F...3
Waterville 8F...1
Westbrook 13L.1
W. Hartford 5J 24
Westport 16D..5
Wethersfield 6J 7
Willimatic 6N 12
Willington 3M.1
Wilson 5J.....1
Wilton 15C...2
Windham 6N.13
Windsor 4J....5
Windsor Locks 3J 4
Winsted 3F....7
Woodbury 9E...1
Woodstock 2O..1

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.



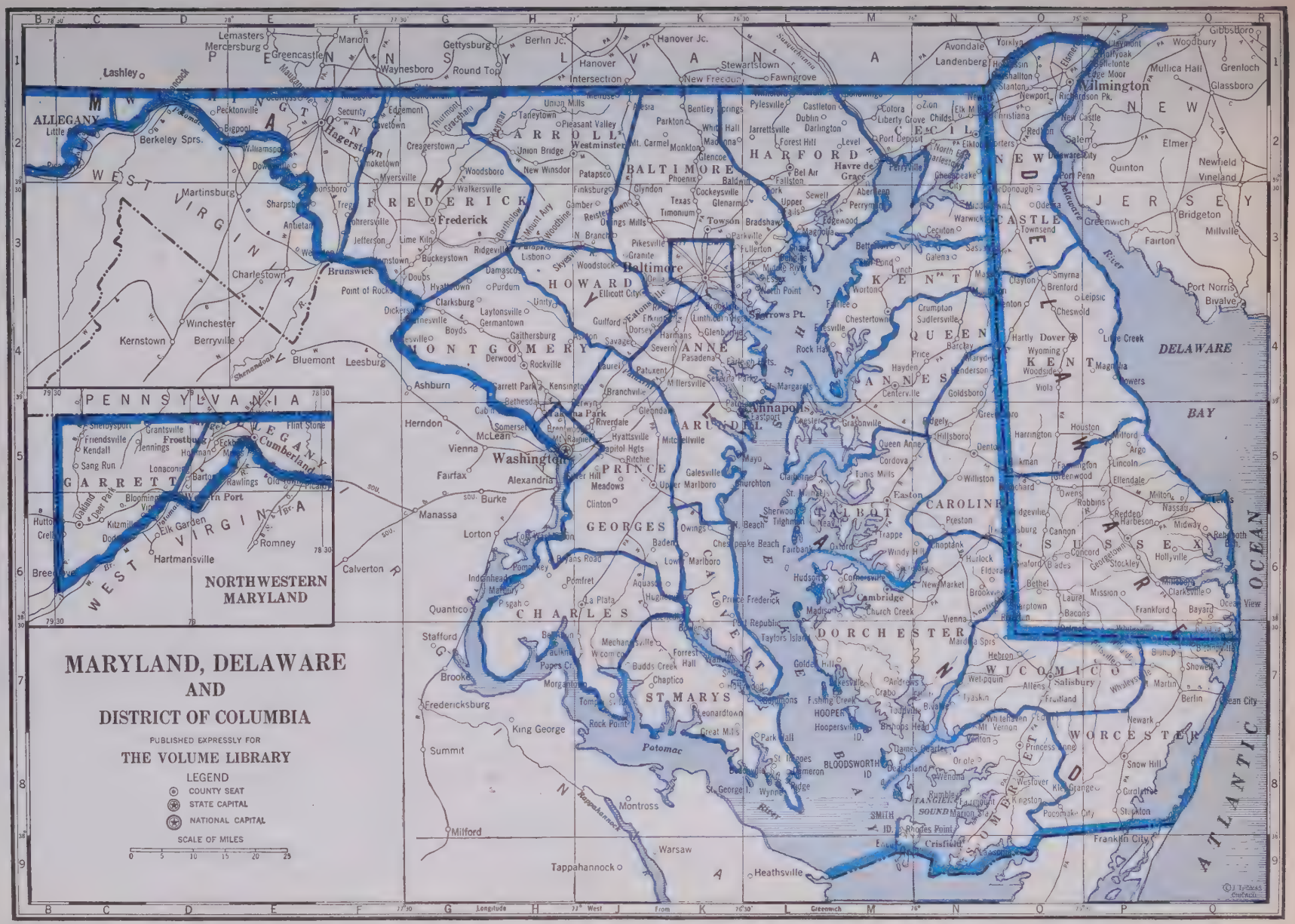
CONNECTICUT

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† POP. SHOWN IN HUNDREDS.

COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX.

* POP. OF COUNTY SEAT BELOW ONE THOUSAND.

Rockville 4H...1
St. Michaels 5L 1
Salisbury 7O 10
Snow hill 8P...1
Sparrows Point 4L 5
Takoma Park 5H 6
Taylors Island 7L 1
Thurmont 2G..1
Towson 3K....3
Upper Marlboro 5J .....†4
Western Port 6D 3
Westminster 2H 4
Williamsport 2E 1

DELAWARE
Pop. 238,380

COUNTIES

	Pop. Thous.
Kent 4O	31
New Castle 2O	161
Sussex 6P	45

TOWNS

Town	Key	Pop.
Clayton	1P	1
Delaware City	2P	1
Dover	4O	4
Elsmere	1O	1
Georgetown	6P	1
Harrington	5O	1
Laurel	6O	2
Lewes	5Q	1
Middletown	3O	1
Milford	5P	3
Milton	5P	1
Newark	2O	3
New Castle	2O	4
Seaford	6O	2
Smyrna	3O	1
Wilmington	1O	106

DISTRICT OF COLUMBIA
Pop. 486,869
Washington 5H 486,869

Pop. 1,631,526

COUNTIES

	Pop. Thous.
Allegany	5B 79
Anne Arundel	5K 55
Baltimore	2K 124
(Baltimore City	4K 804)
Calvert*	6K 9
Caroline	5N 17
Carroll	2H 35
Cecil	2N 25
Charles*	6J 16
Dorchester	6 M 26
Frederick	3G 54
Garrett	3B 19
Harford	3L 51
Howard	3M 14
Kent	3M 14
Montgomery	411 49
Prince Georges*	5J 60
Queen Annes	4M 14
Saint Marys*	7K 15
Somerset*	8O 23
Talbot	5M 18
Washington	1H 65
Wicomico	7O 32
Worcester	8P 21

TOWNS

Town	Key	Pop.
Aberdeen	2M	1
Annapolis	5L	12
Baltimore	4K	804
Barton	5D	1
Bel Air	2L	1
Berlin	7Q	1
Bethesda	5J	1
Brunswick	3F	3
Cambridge	6M	8
Capitol Heights	5J	1
Centerville	4M	1
Chesapeake City	2N	1
Chestertown	4M	2
Childs	2N	2
Crisfield	9N	3
Cumberland	2F	37
Dundalk Quarter	4K	1
Deal Island	8N	1
Delmar	7O	1
Denton	5N	1
Easton	5M	4
Eastport	5L	1
Elkton	2N	3
Ellicott City	3J	1
Emmitsburg	1F	1
Essex	3L	1
Federalsburg	6N	1
Frederick	3G	14
Frostburg	4D	5
Fullerton	3K	1
Gaithersburg	4H	1
Hagerstown	2F	30
Havre de Grace	3K	3
Hyattsville	5J	4
Indianhead	6H	1
Lakesville	7M	1
Lansdowne	4K	1
La Plata	6J	†3
Laurel	4J	2
Leonardtown	7K	†6
Lonaconing	3D	1
Luke	6D	2
Mount Rainier	5J	3
Mount Savage	5D	1
North East	2N	1
Oakland	6C	1
Oxford	6M	†9
Pikesville	3K	1
Pocomoke City	7O	2
Port Deposit	2M	†9
Prince Frederick	6K	†4
Princess Anne	8O	†9
Reisterstown	3J	1
Relay	4K	1
Riverdale	5J	1

FLORIDA
Pop. 1,468,211

COUNTIES

Pop. Thous.

Alachua 6L....34
Baker* 4L.....6
Bay 22H.....12
Bradford 5L...9
Brevard 11Q..13
Broward 19R..20
Calhoun 3B....7
Charlotte 16M..4
Citrus 9K.....5
Clay 5M.......6
Collier* 20O...2
Columbia 4K.14
Dade 21S....142
De Soto 15M..7
Dixie 7H.....6
Duval 4N....155
Escambia 20C.53
Flagler* 7O...2
Franklin 5C...6
Gadsden 3D...29
Gilchrist* 6J...4
Glades* 16O...2
Gulf* 5B......3
Hamilton 3J...9
Hardee 14M...10
Hendry* 17O...3
Hernando 10L.4
Highlands 14O.9
Hillsborough 13K 153
Holmes 19H..12
Indiana River 14R 6
Jackson 2B...31
Jefferson 3F...13
Lafayette* 5H..4
Lake 10N.....23
Lee 17M.....14
Leon 3E.....23
Levy* 7K....12
Liberty* 4C....4
Madison 3G...15
Manatee 14K..22
Marion 8L....29
Martin 15R....5
Monroe 23O..13
Nassau 3N.....9
Okaloosa* 20E.9
Okeechobee 14P 4
Orange 10O...49
Osceola 12O..10
Palm Beach 16R 51
Pasco 11L....10
Pinellas 13J...62
Polk 13M.....72
Putnam 6N...18
St. Johns 6O.13
St. Lucie 14R.7
Santa Rosa 20D 14
Sarasota 15L..12
Seminole 10O.18
Sumter* 10L.10
Suwannee 4J...15
Taylor 5G....13
Union* 5K.....7
Volusia 8O....42
Wakulla* 4D..5
Walton 20F...14
Washington 20H 12

TOWNS

Town Key Pop.

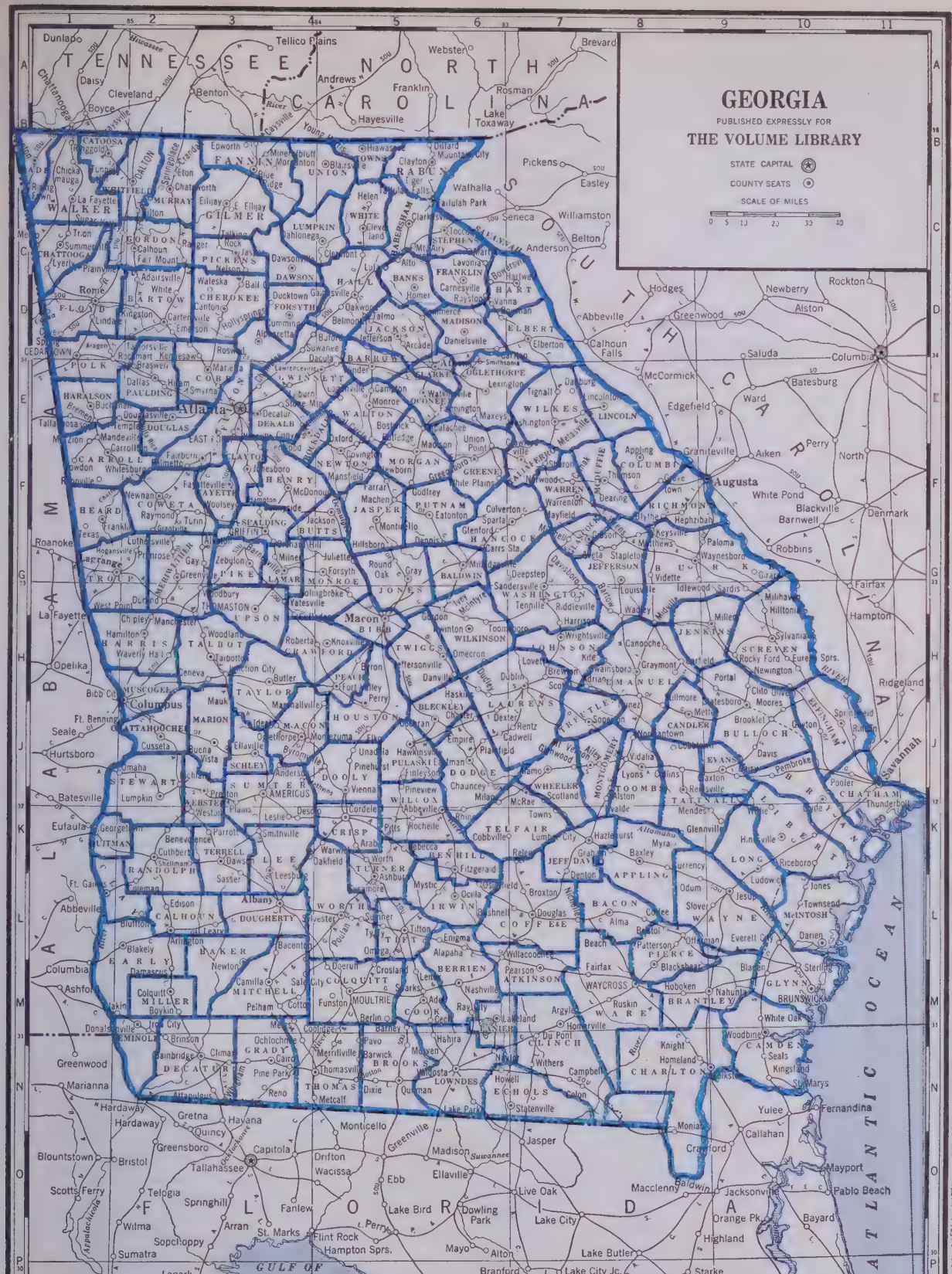
Apalachicola 6B and 23K..3
Arcadia 15 M..4
Avon Park 14N.3
Bartow 13M....5
Blountstown 21K 1
Bonifay 20H...1
Bradenton 14K.5
Bristol 4C and 21K.†1
Bronson 7K...†6
Brooksville 10L 1
Bunnell 7O...†6
Bushnell 10L.†5
Chattahoochee 3C 3
Chipley 20H...1
Clearwater 13J.7
Cocoa 11P.....2
Coral Gables 21R 5
Crestview 20E.†9
Cross City 7H..1
Dade City 11L..1
Daytona Beach 8P 16
Deerfield 18R..1
De Funiak Springs 20G..2
De Land 8O....5
Delray Beach 17R 2
Eustis 9M.....2
Fernandina 3N.3
Fort Lauderdale 19R 3
Fort Myers 17M 9
Fort Pierce 14R 4
Gainesville 6L 10
Green Cove Springs 5N..1
Haines City 12M .....†1
Hialeah 20R..
Hollywood 19R..
Homestead 22R..1
Inverness 9L...1
Jacksonville 4N 129
Jasper 3J.....1
Jupiter 12L..1
Key West 12
Kissimmee 11N.3
La Belle 17N.†3
Lake Butler 5K .....†8
Lake City 4K..4
Lakeland 12M.18
Lake Wales 13N 3
Lake Worth 17S 5
Leesburg 9M..4
Live Oak 4J...†5
MacoLenny 4L.†5
Madison 3G.....†3
Manatee 14L..3
Marianna 20K..3
Mayo 5H.....†5
Melbourne 12Q.3
Miami 21R..10
Miami Beach 6
Milton 20D.....1
Monticello 3F..1
Morriston 16O .....†8
Mt. Pleasant 3D.1
Mulberry 13M..1
New Smyrna 8P 4
Ocala 8L.....7
Okeechobee 15P 1
Orlando 10N..27
Ormond 7O...1
Oviedo 10O...2
Palmetto 14K..3
Palatka 7N....6
Palm Beach 16 R 1
Panama City 22H 5
Pensacola 21D.31
Perry 5G..12K.2
Plant City 12K.2
Punta Gorda 16M 1
Port Tampa City 13K Gorda 1
Quincy 3D 3
River Jc. 3C..5
St. Andrew 22H 1
St. Augustine 5O 12
St. Cloud 12O.1
St. Petersburg 13K 40
Sanford 9O 1
Sarasota 15K..8
Sebring 14N..2
South Jackson-ville 4N 5
So. Miami 21R..1
Starke 5I....†1
Stuart 15R.....1
Tallahassee 4E 10
Tampa 13K ..101
Tarpon Spgs 12J.3
Tavares 10N...1
Titusville 10Q 2
Trenton 6J.....†7
Vero Beach 14R 2
Warrington 21C.2
Wauchula 14M.2
West Palm Beach 17S..26
Wewahitchka 22K .....†5
Winter Garden 10N 1
Winter Haven 12N 7
Winter Park 10O 8

† POP. SHOWN IN HUNDREDS.

COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX.

* POP. OF COUNTY SEAT BELOW ONE THOUSAND.





GEORGIA

Pop. 2,908,506

COUNTIES

	Pop. Thous.
Appling 8K	13
Atkinson* 7L	6
Bacon 8L	7
Baker* 3L	7
Baldwin 6G	22
Banks* 5C	9
Barrow 5D	12
Bartow 2D	25
Ben Hill 6K	13
Berrien 6M	14
Bibb 5H	77
Bleckley 5J	9
Brantley* 9M	6
Brooks 5N	21
Bryan* 10K	5
Bulloch 9J	26
Burke 9G	29
Butts 4F	9
Calhoun 2L	10
Camden* 10M	6
Campbell 3F	9
Candler 8J	8
Carroll 1F	34
Catoosa* 2B	9
Charlton* 9N	4
Chatham 11K	105
Chattahoochee* 2J	8
Chattooga* 1C	15
Cherokee 3D	20
Clarke 5E	25
Clay 1L	6
Clayton 3F	10
Clinch 7M	7
Cobb 3E	35
Coffee 7L	18
Colquitt 4M	30
Columbia* 8F	8
Cook 5M	11
Coweta 2F	25
Crawford* 4H	7
Crisp 4K	17
Dade* 1B	4
Dawson* 4C	3
Decatur 2N	23
DeKalb 4E	76
Dodge 6J	21
Dooly 4J	18
Dougherty 4L	22
Douglas 2E	9
Early 1L	18
Echols* 7N	2
Effingham* 10J	10
Elbert 7D	18
Emanuel 8H	24
Evans 9J	7
Fannin 3B	12
Fayette* 3F	8
Floyd 1D	48
Forsyth* 4D	10
Franklin* 6C	15
Fulton 3E	318
Gilmer* 3C	7
Glascock* 7F	4
Glynn 10M	19
Gordon 2C	16
Grady 3N	19
Greene 6F	12
Gwinnett 4E	27
Habersham* 5C	12
Hall 4D	30
Hancock 6F	13
Haralson* 1E	13
Harris* 2H	11
Hart 7D	15
Heard* 1F	9
Henry 4F	15
Houston 5H	11
Irwin 5L	12
Jackson 5D	21
Jasper 5F	8
Jeff Davis 7K	8
Jefferson 8G	20
Jenkins 9H	12
Johnson 7H	12
Jones* 5G	8
Lamar 4G	9
Lanier 6M	5
Laurens 7H	32
Lee* 4K	8
Liberty* 10K	8
Lincoln* 7E	7
Long* 9K	4
Lowndes 6N	29
Lumpkin* 4C	4
McDuffie 7F	9
McIntosh* 10L	5
Macon* 4J	16
Madison* 6D	14
Marion 3J	6
Meriwether* 2G	22
Miller* 2M	9
Milton* 3D	6
Mitchell 4M	23
Monroe 4G	11
Montgomery* 7J	10
Morgan 5F	12
Murray* 2B	9
Muscogee 2H	57
Newton 4F	17
Oconee* 5E	8
Oglethorpe* 6E	12
Paulding 2E	12
Peach 4H	10
Pickens* 3C	9
Pierce 8L	12
Pike* 3G	10
Polk 1E	25
Pulaski 5J	9
Putnam* 5F	8
Rabun* 1K	6
Randolph 2K	17
Richmond 8F	72
Rockdale 4E	7
Schley* 3J	5
Screven 10H	20
Seminole 2N	7
Spalding 3F	23
Stephens 6C	11
Stewart 2K	11
Sumter 4K	26
Talbot 3H	7
Taliaferro* 7F	5
Tattnall* 8K	15
Taylor* 4H	10
Telfair 7K	14
Terrell 3K	18
Thomas 4N	32
Tift 5L	16
Toombs 8J	17
Towns* 5B	4
Treutlen 7J	7
Troup 1G	36
Turner 5K	11
Twiggs* 5H	8
Union* 4B	10
Upson 3G	19
Walker 2B	26
Walton 5E	21
Ware 8K	11
Warren 7F	5
Washington 7G	25
Wayne 9L	12
Webster* 3K	5
Wheeler* 7J	6
White* 5C	6
Whitfield 2B	20
Wilcox 5K	13
Wilkes 7E	15
Wilkinson* 6H	10
Worth 4L	21

TOWNS

Town	Key	Pop.
Abbeville	5K	1
Adel	5M	1
Albany	4L	14
Alma	8L	1
Americus	3K	8
Arlington	2L	1
Ashburn	5L	1
Athens	5E	18
Atlanta	3E	270
Augusta	9F	59
Bainbridge	2N	6
Barnesville	4G	3
Baxley	8K	2
Blackshear	8L	1
Blakely	2L	1
Blue Ridge	1B	1
Brunswick	10M	13
Buena Vista	3I	1
Butler	4H	1
Cairo	3N	3
Calhoun	2C	2
Camilla	4M	2
Canton	3D	2
Carrollton	1F	5
Cartersville	2D	5
Cedartown	1D	8
Cochran	5J	1
College Park	3E	2
Columbus	2H	43
Commerce	3D	3
Conyers	4E	1
Cordele	4K	6
Covington	4F	3
Cuthbert	2K	3
Dallas	2E	1
Dalton	2B	8
Danielsville	3K	1
Dawson	3K	3

Cont. on page 454

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.

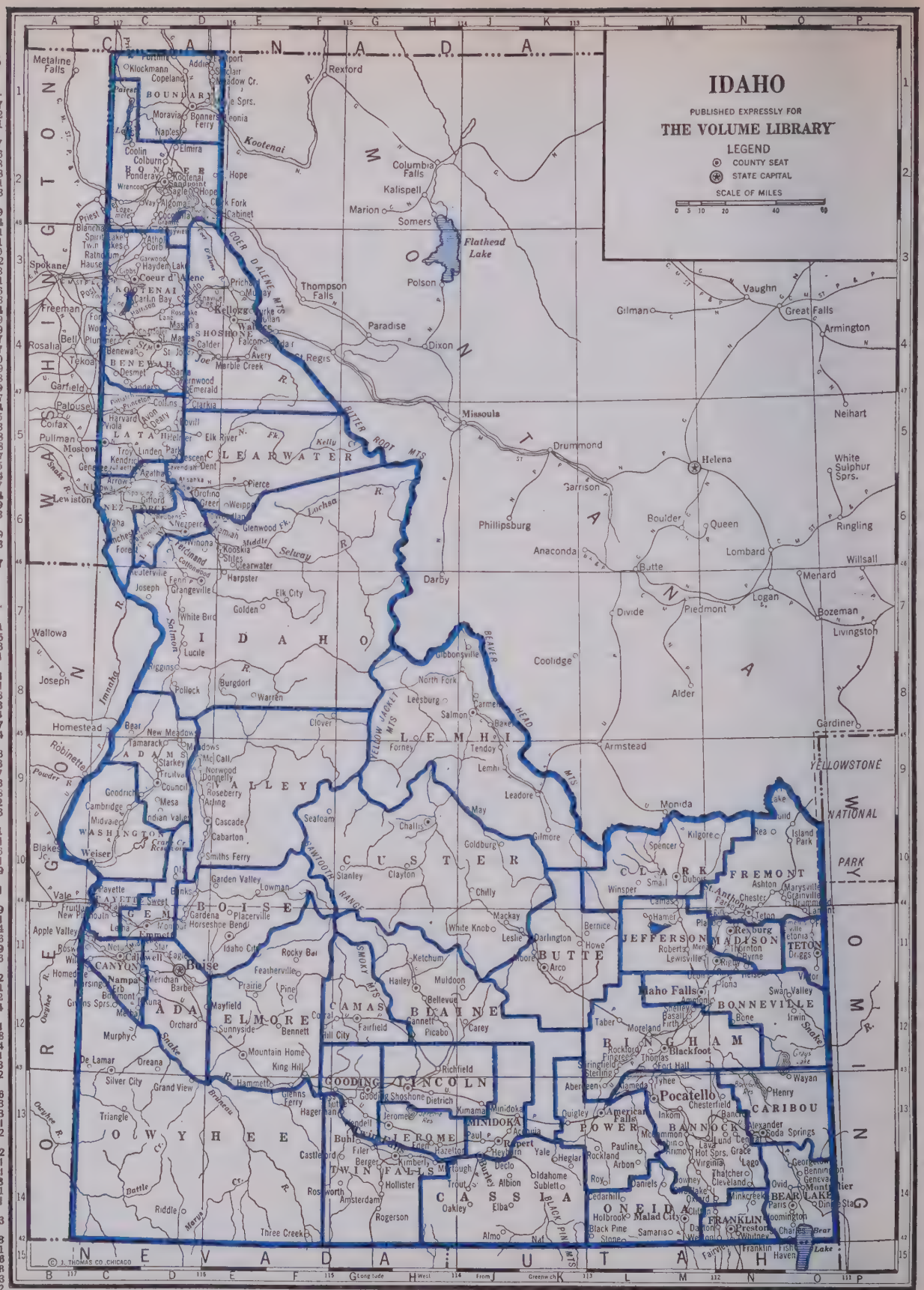
IDAHO
Pop. 445,032

COUNTIES

	Pop. Thous.
Ada 12D	37
Adams* 9C	2
Bannock 13N	31
Bear Lake* 14O	7
Benewah 4C	6
Bingham 12M	18
Blaine* 12H	3
Boise* 11E	1
Bonner 2C	13
Bonneville 12O	19
Boundary 1C	4
Butte* 11K	1
Camas* 12G	1
Canyon 11C	30
Caribou* 13O	2
Cassia 14J	13
Clark* 10M	1
Clearwater 5E	6
Custer* 10H	3
Elmore 12F	4
Franklin 14N	9
Fremont 10O	9
Gem 10D	7
Gooding 13G	7
Idaho 7E	10
Jefferson 11L	9
Jerome 13H	8
Kootenai 8C	19
Latah 5C	17
Lemhi 9J	4
Lewis* 6D	5
Lincoln 13H	3
Madison 11N	8
Minidoka 13J	8
Nez Perce 6C	17
Oneida 14L	5
Owyhee* 13C	4
Payette 10C	7
Power 13L	4
Shoshone 4E	19
Teton* 11O	3
Twin Falls 14G	29
Valley* 9E	3
Washington 10C	7

TOWNS

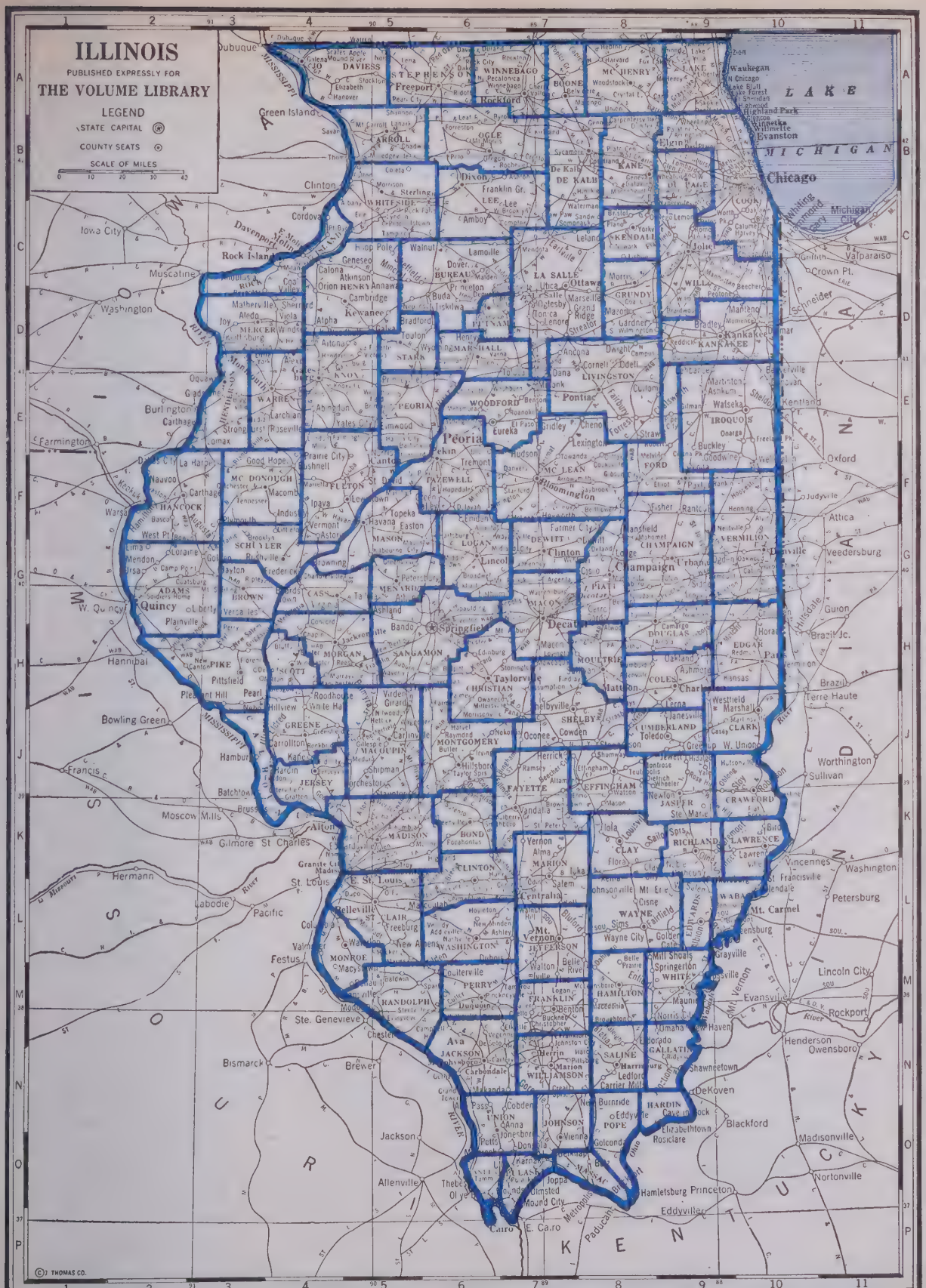
Town	Key	Pop.
American Falls	13L	1
Arco	11K	†5
Blackfoot	12M	3
Boise	11D	21
Bonners Ferry	1D	1
Buhl	13G	1
Burke	4E	†8
Burley	14J	3
Caldwell	11C	4
Cascade	9D	†7
Challis	10H	†4
Coeur d'Alene	3C	8
Council	9D	†3
Driggs	11O	†7
Dubois	10M	†3
Elk River	5D	†8
Emmett	11C	2
Fairfield	12G	†3
Glenns Ferry	13F	1
Gooding	13G	1
Grace	13N	†6
Grangeville	7D	1
Hailey	12H	†9
Idaho City	11E	†1
Idaho Falls	12M	9
Jerome	13H	1
Kellogg	3D	4
Kimberly	14H	†6
Lewiston	6C	9
McCall	9D	†6
Malad City	14M	2
Meridian	11D	1
Montpelier	14O	2
Moscow	5C	4
Mountain Home	12E	1
Nampa	11C	8
Nezperce	6D	†4
Orofino	6D	1
Paris	14O	†8
Payette	10C	2
Pocatello	13M	16
Preston	14N	3
Rexburg	11N	3
Rigby	11N	1
Rupert	13J	2
St. Anthony	11N	2
St. Maries	4C	1
Salmon	8J	1
Sandpoint	2C	3
Shelley	12M	1
Shoshone	13H	1
Silver City	12C	†3
Soda Springs	13N	†8
Spirit Lake	3C	1
Troy	5C	†6
Twin Falls	13H	8
Wallace	4E	3
Weiser	10C	2



GEORGIA Towns—Cont.

Dawsonville	4C	†2
Decatur	4E	†3
Donalsonville	1F	1
Douglas	7L	2
Douglasville	2E	2
Dublin	7H	6
Eastman	6J	3
East Point	3E	9
Eatonton	5F	1
Elberton	7D	4
Fairburn	3F	1
Fitzgerald	6K	4
Forsyth	4G	3
Ft. Benning	2J	5
Ft. Valley	4H	4
Gainesville	4D	2
Greensboro	6F	1
Griffin	3F	10
Hapeville	3E	4
Hartwell	7D	2
Hawkinsville	5J	2
Hazlehurst	4K	1
Jackson	4F	1
Hogansville	2G	2
Jefferson	5D	1
Jonesboro	3F	1
Jesup	9L	2
La Fayette	1B	2
Lakeland	6M	1
Lawrenceville	4E	2
Lindale	1D	3
Louisville	8G	1
Lumpkin	2K	1
Lyons	3J	2
McCaysville	3B	1
McDonough	4F	1
McRae	7J	1
Macon	5H	53
Madison	5F	3
Manchester	3G	3
Marietta	3E	7
Metter	8J	1
Milledgeville	5G	5
Millen	9H	2
Monroe	5E	3
Montezuma	4J	2
Monticello	5F	1
Moultrie	4M	7
Nashville	6M	1
Newnan	2F	6
Ocilla	6L	2
Pelham	4M	2
Perry	5J	2
Porterdale	4F	3
Quitman	3N	4
Rochelle	1D	2
Rossville	1B	3
Sandersville	7G	3
Savannah	11J	85
Soperton	7J	1
Sparta	6F	1
Statesboro	9J	3
Swainsboro	8H	2
Sylvania	10H	1
Sylvester	4L	1
Talbotton	3H	1
Tallapoosa	1E	2
Thomaston	3G	4
Thomasville	4N	11
Thomson	7F	3
Tifton	6L	6
Toccoa	6N	3
Valdosta	8J	1
Vidalia	8K	1
Vienna	4J	1
Warrenton	7F	1
Washington	7E	3
Waycross	8M	15
Waynesboro	8G	3
West Point	IG	3
Winder	5E	3
Wrightsville	7H	1

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.



ILLINOIS

Pop. 7,630,654

COUNTIES

	Pop. Thous.
Adams 2G	62
Alexander 6O	22
Bond 6K	14
Boone 7A	15
Brown 3G	7
Bureau 6C	38
Calhoun* 3J	8
Carroll 5B	18
Cass 4G	16
Champaign 8G	64
Christian 6H	37
Clark 10J	17
Clay* 8K	16
Clinton 6L	21
Coles 8H	37
Cook 9B	3,982
Crawford 10K	21
Cumberland* 9J	10
De Kalb 7B	32
De Witt 7G	18
Douglas 8H	17
Du Page 9B	91
Edgar 10H	24
Edwards 9L	8
Effingham 8J	19
Fayette 7K	23
Ford 8F	15
Franklin 7M	59
Fulton 4F	43
Gallatin 9N	10
Greene 4J	20
Grundy 8D	18
Hamilton 8M	12
Hancock 2F	26
Hardin* 9O	6
Henderson* 3E	8
Henry 4C	43
Iroquois 9E	32
Jackson 6N	35
Jasper 9K	12
Jefferson 7L	31
Jersey 4J	12
Jo Daviess 4A	20
Johnson* 7O	10
Kane 8B	125
Kankakee 9D	50
Kendall* 8C	10
Knox 4D	51
Lake 9A	104
La Salle 7C	97
Lawrence 10K	21
Lee 6C	32
Livingston 8D	39
Logan 6G	28
McDonough 4F	27
McHenry 8A	35
McLean 7F	73
Macon 7G	81
Macoupin 5J	48
Madison 5K	143
Marion 7K	35
Marshall 6D	13
Mason 5F	15
Massac 8O	14
Menard 5G	10
Mercer 3D	16
Monroe 4L	12
Montgomery 6J	35
Morgan 4H	34
Moultrie 8H	13
Ogle 6B	28
Peoria 5E	141
Perry 6M	22
Piatt 8G	15
Pike 3H	24
Pope 8O	7
Pulaski 7O	14
Putnam* 6D	5
Randolph 5M	29
Richland 9K	14
Rock Island 8C	98
Saint Clair 5L	157
Saline 8N	37
Sangamon 6H	111
Schuyler 4G	11
Scott 4H	8
Shelby 7J	25
Stark 5D	9
Stephenson 5A	40
Tazewell 6F	46
Union 6N	19
Vermilion 9G	89
Wabash 10L	13
Warren 4E	21
Washington 6L	16
Wayne 8L	19
White 9M	18
Whiteside 5B	39
Will 9C	110
Williamson 7N	53
Winnebago 7A	117
Woodford 6E	18

TOWNS

Town	Key	Pop.
Alton	4K	30
Belleville	**5L**	**28**
Belvidere	**7A**	**8**
Benton	**7M**	**8**
Berwyn	9B	47
Bloomington	**7F**	**30**
Blue Island	9B	16
Brookfield	9B	10
Cairo	**7P**	**13**
Calumet City	9B	12
Canton	5F	11
Carlinville	**5J**	**4**
Centralia	7L	12
Champaign	8G	20
Charleston	**8H**	**8**
Chicago	**9B**	**3,376**
Chicago Heights	9B	23
Cicero	9B	65
Clinton	**7G**	**5**
Danville	**10G**	**36**
Decatur	**2H**	**57**
Dixon	**6C**	**9**
East Moline	4C	10
East St. Louis	8L	74
Effingham	8J	8
Edwardsville	**5K**	**6**
Elgin	8B	35
Elmhurst	9B	14
Evanston	9B	63
Forest Park	9B	14
Freeport	**5A**	**22**
Galesburg	**4D**	**28**
Geneva	**8B**	**4**
Granite City	9A	25
Greenville	**6K**	**3**
Harrisburg	**8N**	**11**
Havana	**5F**	**6**
Harvey	9B	16
Hennepin	**6D**	**3**
Highland Park	9A	12
Hillsboro	**6J**	**4**
Jacksonville	**4H**	**17**
Jerseyville	**4J**	**4**
Kankakee	**9C**	**22**
Kewanee	4C	17
La Grange	9B	10
La Salle	7D	13
Lawrenceville	10K	6
Lincoln	**6G**	**12**
Louisville	**8K**	**3**
Macomb	**4F**	**9**
Marion	**7N**	**9**
Mattoon	8H	14
Maywood	9B	25
Melrose Park	9B	10
Metropolis	**8O**	**3**
Moline	4C	32
Monmouth	**4E**	**8**
Morris	**8D**	**5**
Mount Carmel	**10L**	**7**
Mount Vernon	**7L**	**12**
Murphysboro	**6N**	**8**
Nashville	**6L**	**2**
Oak Park	9B	63
Olney	**9K**	**5**
Oquawka	**3E**	**1**
Ottawa	**7C**	**11**
Paris	**10H**	**8**
Park Ridge	9B	10
Pekin	**6F**	**16**
Peoria	**6E**	**104**
Pontiac	8E	8
Princeton	**6C**	**4**
Quincy	**2G**	**39**
Rockford	**7A**	**85**
Rock Island	**8C**	**37**
Salem	7K	4
Springfield	**6H**	**71**
Sterling	5C	10
Streator	8D	14
Sycamore	7B	4
Taylorville	**6H**	**7**
Urbana	**8G**	**13**
Vandalia	**7K**	**4**
Vienna	**7O**	**1**
Waukegan	**9A**	**33**
West Frankfort	7M	14
Westchester	9B	15
Wilmette	9B	12
Winnetka	9B	12
Wood River	5K	8

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.

INDIANA

Pop. 3,238,503

COUNTIES

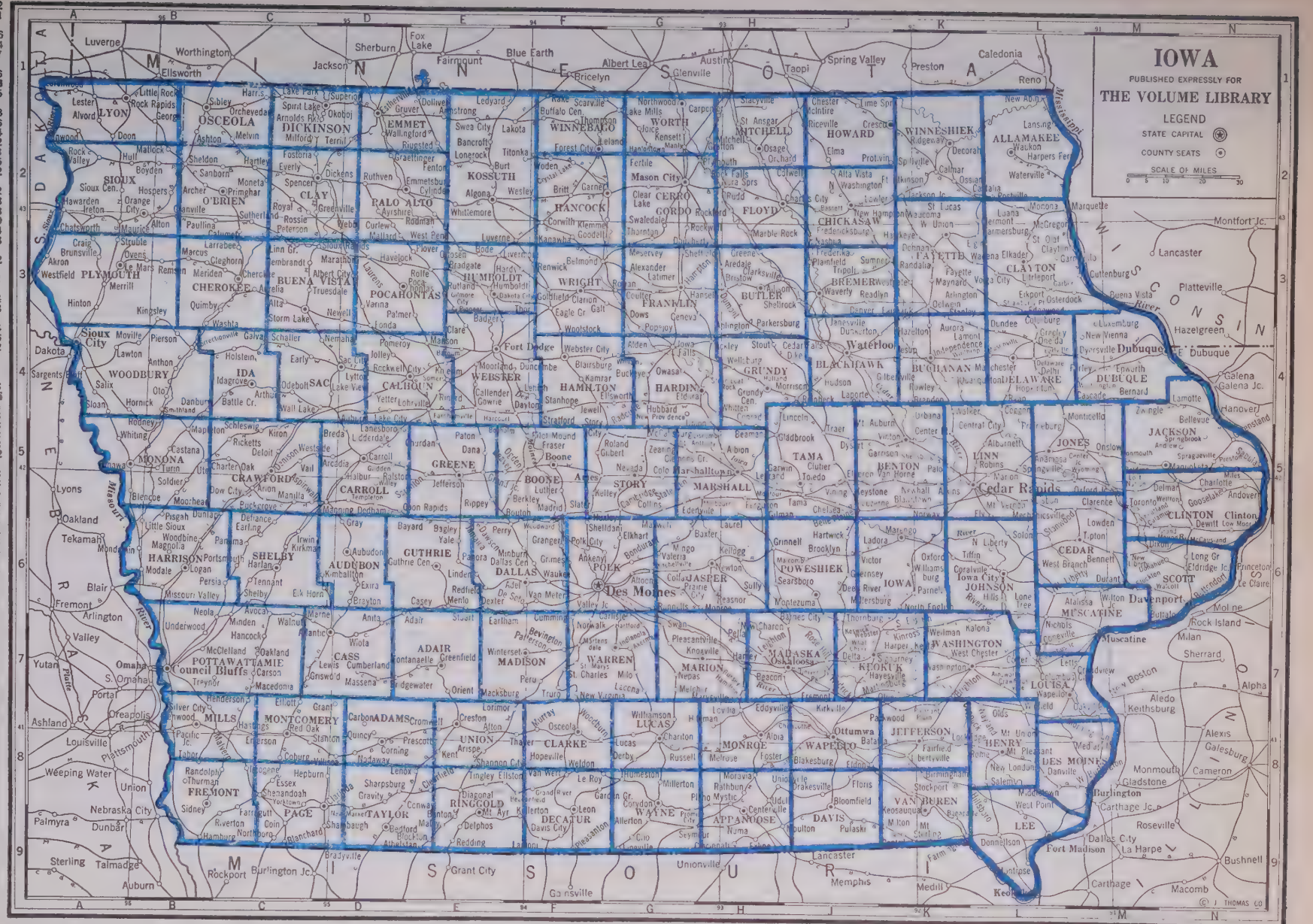
	Pop. Thous.
Adams 10E	19
Allen 9D	146
Bartholomew 7K	24
Benton 3E	11
Blackford 9F	13
Boone 6G	22
Brown* 6K	5
Carroll 6D	15
Cass 6D	34
Clark 8N	37
Clay 4J	26
Clinton 6F	27
Crawford* 6N	10
Daviess 4L	25
Dearborn 10K	21
Decatur 8K	17
De Kalb 10C	24
Delaware 9G	67
Dubois 5N	20
Elkhart 7B	68
Fayette 9J	19
Floyd 7N	34
Fountain 4G	17
Franklin 10J	14
Fulton 6D	15
Gibson 3N	29
Grant 8F	51
Greene 5K	31
Hamilton 7G	23
Hancock 8H	16
Harrison 7O	17
Hendricks 6H	19
Henry 9H	35
Howard 7F	46
Huntington 8E	29
Jackson 7L	23
Jasper 4D	13
Jay 10F	20
Jefferson 9M	18
Jennings* 8L	11
Johnson 7J	21
Knox 3L	43
Kosciusko 7C	27
Lagrange 9A	13
Lake 3B	261
La Porte 5A	60
Lawrence 5L	35
Madison 8G	82
Marion 6H	442
Marshall 6C	25
Martin 5M	10
Miami 7E	29
Monroe 6K	35
Montgomery 5G	26
Morgan 6J	19
Newton 3D	9
Noble 8B	22
Ohio 10L	3
Orange 6M	17
Owen 5K	11
Parke 4H	16
Perry 5O	16
Pike 3M	16
Porter 4B	22
Posey 2O	17
Pulaski 5D	11
Putnam 5H	22
Randolph 10G	24
Ripley* 9K	18
Rush 8J	19
St. Joseph 6A	160
Scott 8M	6
Shelby 8J	26
Spencer 4O	16
Starke 5C	10
Steuben 10A	13
Sullivan 3K	28
Switzerland 8L	8
Tippecanoe 5F	47
Tipton 7F	15
Union 10J	5
Vanderburg 3O	113
Vermillion* 3H	23
Vigo 3J	98
Wabash 7D	25
Warren 3F	9
Warrick 3O	18
Washington 6M	16
Wayne 10H	54
Wells 9E	18
White 5B	15
Whitley 8C	15

TOWNS

Town	Key	Pop.
Albion	8B	1
Anderson	8G	39
Angola	10A	2
Auburn	9C	5
Bedford	5L	13
Bloomfield	5K	2
Bloomington 6K		18
Bluffton	9E	4
Boonville	3O	4
Brazil	4J	8
Brookville	10J	2
Brownstown	7L	1
Cannelton	5O	2
Columbia City 8C		3
Columbus	7K	9
Connersville 9J		12
Covington	3G	2
Crawfordsville 5G		10
Crown Point 3B		4
Danville	5H	1
Decatur	10E	1
Delphi	5E	2
East Chicago 3A		54
Elkhart	7A	33
Elwood	8G	10
English	6N	1
Evansville 3O		103
Fort Wayne 9D		115
Fowler	3E	1
Frankfort	6F	12
Franklin	7J	5
Gary	3A	100
Goshen	7B	4
Greencastle	5H	4
Greenfield	8K	5
Hammond	3A	63
Hartford City 9F		6
Huntington 8D		13
Indianapolis 7H		364
Jeffersonville 8N		12
Kentland	3D	1
Knox	6B	3
Kokomo	7F	32
La Fayette 3F		26
Lagrange	9A	1
La Porte	5A	15
Lawrenceburg 10K		4
Lebanon	6G	6
Liberty	10J	1
Logansport 6E		18
Madison	9M	6
Marion	8F	24
Martinsville 6I		4
Michigan City 4A		26
Mishawaka 6A		28
Monticello	5E	2
Mt. Vernon	2O	5
Muncie	9G	46
Nashville	6K	13
New Albany 7N		28
Newcastle	9H	13
Newport	3H	17
Noblesville 7G		4
Paoli	6M	2
Petersburg	3M	2
Plymouth	6C	5
Portland	10F	7
Princeton	3N	7
Rensselaer	4D	2
Richmond	10H	32
Rising Sun 10L		1
Rochester	6D	3
Rockport	4O	2
Rockville	4H	1
Rushville	8J	5
Salem	6M	3
Scottsburg	8M	1
Shelbyville	8J	10
Sheols	5M	1
South Bend 6A		104
Spencer	5K	2
Sullivan	3K	5
Terre Haute 3J		62
Tipton	7F	4
Valparaiso	4B	8
Vernon	8L	14
Versailles	9K	15
Vincennes	3L	17
Wabash	7E	5
Warsaw	7C	5
Washington 4L		9
Whiting	3A	10
Williamsport 3F		1
Winamac	5C	1
Winchester	10G	4

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.


LAKE MICHIGAN
Chicago
Gary
Hammond
East Chicago
Indianapolis
Terre Haute
Fort Wayne
Evansville
South Bend
Richmond
Lafayette
Muncie
Anderson
Kokomo
New Albany
Jeffersonville
Michigan City
La Porte
Elkhart
Marion
Bloomington
Columbus
Greencastle
Crawfordsville
Lawrenceburg
Madison
Vincennes
Princeton
Rockport
Boonville
Corydon
Salem
Seymour
Shelbyville
Greensburg
Connersville
Richmond
Hartford City
Huntington
Wabash
Peru
Logansport
Rensselaer
Kentland
Valparaiso
Portland
Winchester
Rushville
Greenfield
Noblesville
Anderson
Muncie
Marion
Kokomo
Peru
Wabash
Huntington
Decatur
Bluffton
Portland
Winchester
Rushville
Connersville
Shelbyville
Franklin
Columbus
Seymour
Madison
Vincennes
Princeton
Rockport
Boonville
Corydon
Salem
Scottsburg
Jeffersonville
New Albany
Michigan City
La Porte
Elkhart
Goshen
Warsaw
Plymouth
Rochester
Peru
Logansport
Rensselaer
Kentland
Valparaiso
Whiting
Hammond
Gary


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Waterloo
Sioux City
Burlington
Ottumwa
Keokuk
Fort Madison
Clinton
Marshalltown
Mason City
Boone
Ames
Iowa City
Grinnell
Newton
Pella
Oskaloosa
Knoxville
Centerville
Chariton
Corydon
Creston
Red Oak
Shenandoah
Clarinda
Atlantic
Audubon
Carroll
Denison
Storm Lake
Spencer
Estherville
Emmetsburg
Algona
Webster City
Fort Dodge
Humboldt
Iowa Falls
Marshalltown
Tama
Toledo
Marengo
Belle Plaine
Vinton
Waterloo
Independence
Manchester
Dyersville
Maquoketa
Anamosa
Monticello
Tipton
Wilton Jc.
Muscatine
Columbus Jc.
Wapello
Fairfield
Mt. Pleasant
Burlington
Keosauqua
Bloomfield
Centerville
Chariton
Albia
Knoxville
Pella
Oskaloosa
Grinnell
Newton
Iowa City
Tipton
Clinton
Maquoketa
Dubuque
Manchester
Independence
Waterloo
Cedar Falls
Marshalltown
Tama
Toledo
Iowa Falls
Webster City
Fort Dodge
Humboldt
Algona
Emmetsburg
Estherville
Spencer
Storm Lake
Denison
Carroll
Audubon
Atlantic
Clarinda
Shenandoah
Red Oak
Creston
Corydon

KANSAS

Pop., 1,880,999

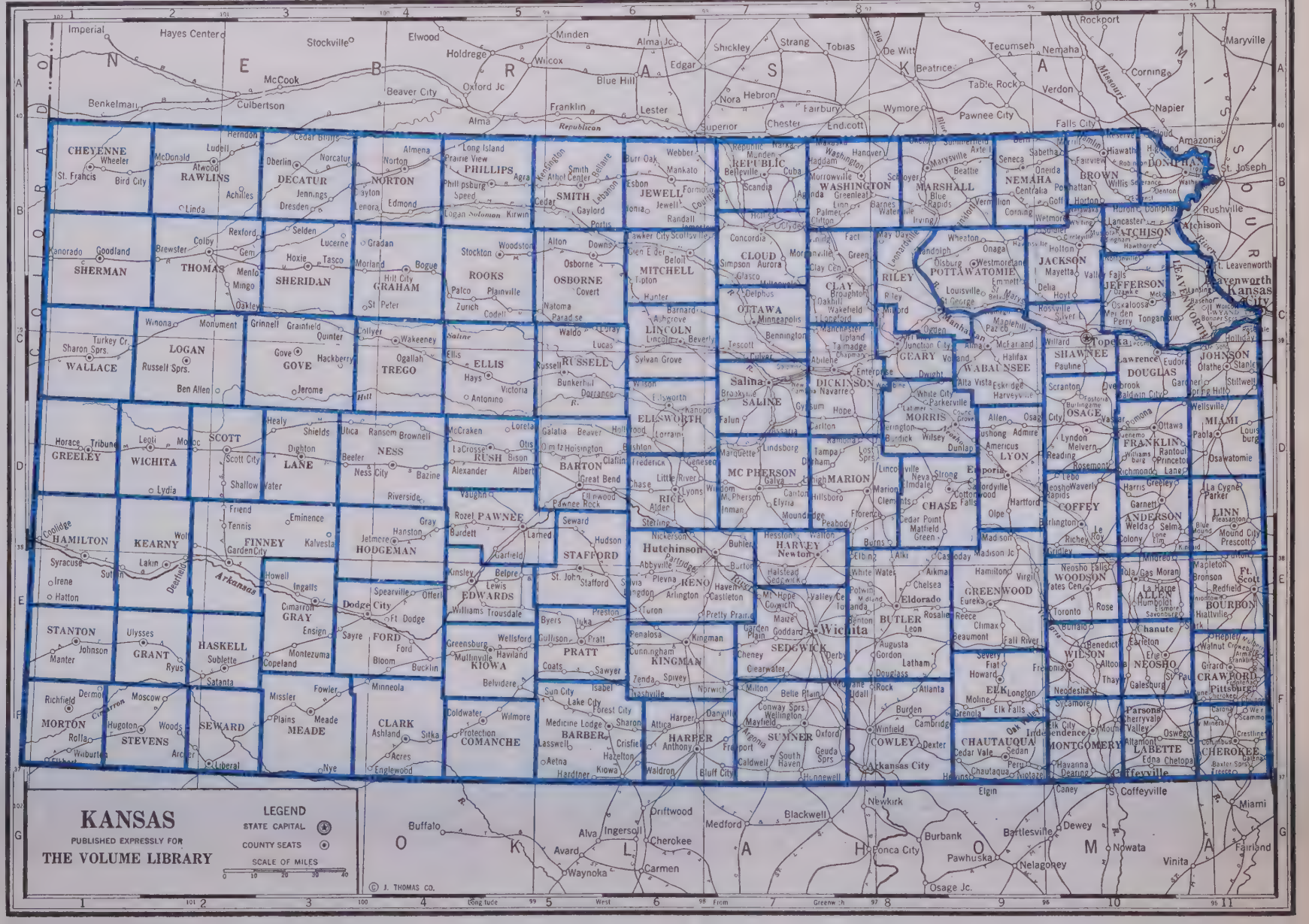
COUNTIES

Name	Key No.	Pop. Thous.
Allen	10E	21
Anderson	10D	13
Atchison	10B	18
Barber	5F	10
Barton	10D	28
Bourbon	11E	20
Brown	10B	16
Butler	8E	35
Chase*	9D	5
Chautauqua	9F	5
Cherokee	11E	31
Cheyenne*	1B	6
Clark	4F	1
Clay	8B	13
Cloud	7B	14
Coffey	10D	13
Comanche*	5F	4
Cowley	8F	49
Crawford	11F	48
Decatur	3B	8
Dickinson	8C	25
Doniphan	11B	14
Douglas	10C	57
Edwards	4E	7
Elk	9F	9
Ellis	5C	19
Ellsworth	6C	10
Finney	3E	25
Ford	4E	29
Franklin	10D	14
Geary*	8C	26
Gove*	3C	5
Graham	4B	7
Grant	2E	3
Gray	3E	5
Greeley*	1B	1
Greenwood	9E	19
Hamilton	1E	2
Harper	6F	8
Harvey	7D	22
Haskell	2E	2
Hodgeman	3D	2
Jackson	10B	14
Jefferson*	10C	14
Jewell	6B	14
Johnson	10C	27
Kearny*	2E	3
Kingman	6E	11
Kiowa	4E	6
Labette	10F	31
Lane*	3D	3
Leavenworth	10C	42
Lincoln	6C	9
Linn	11D	13
Logan*	2D	3
Lyon	9D	29
McPherson	7D	29
Marion	8D	18
Marshall	8B	23
Meade	3F	6
Miami	11D	21
Mitchell	6B	12
Montgomery	10F	57
Morris	8C	11
Morton*	1F	3
Nemaha	9B	18
Neosho	10F	22
Ness	4D	8
Norton	4B	11
Osage*	10D	17
Osborne	7C	11
Ottawa	7C	10
Pawnee	5D	12
Phillips	5B	12
Pottawatomie	9B	15
Pratt	5E	13
Rawlins	2B	7
Reno	6E	47
Republic	7B	14
Rice	6D	13
Riley	8B	19
Rooks	5D	9
Rush	4D	5
Russell	5C	11
Saline	7C	29
Scott	3C	5
Sedgwick	7E	136
Seward	2F	18
Shawnee*	10C	85
Sheridan*	3C	6
Sherman	1B	7
Smith	5B	13
Stafford	6E	10
Stanton*	1E	2
Stevens	2F	4
Sumner	7F	28
Thomas*	2B	6
Trego	4C	6
Wabaunsee*	10C	9
Wallace*	1C	2
Washington	8B	17
Wichita*	2D	2
Wilson	10F	18
Woodson	10E	8
Wyandotte	10C	141

TOWNS

Abilene	8C	5
Anthony	6F	2
Arkansas City	8F	12
Ashland	4F	1
Atchison	11B	13
Atwood	2B	1
Augusta	8E	4
Baxter Springs	11F	4
Belleville	7B	2
Beloit	6B	3
Burlington	10D	2
Chanute	10E	10
Cherryvale	10F	4
Clay Center	8B	4
Coffeyville	10F	16
Colby	2B	2
Coldwater	4F	1
Columbus	11F	3
Concordia	7B	5
Council Grove	8D	2
Dodge City	4E	10
Eldorado	8E	10
Ellsworth	6C	2
Emporia	9D	14
Erie	10F	1
Eureka	9E	3
Fort Scott	11E	10
Fredonia	10F	3
Galena	11F	4
Garden City	3E	6
Garnett	10D	2
Girard	11F	2
Goodland	1B	3
Great Bend	5D	5
Greensburg	4E	1
Hays	5C	4
Herington	8C	4
Hiawatha	10B	3
Hill City	4B	1
Holsington	5D	3
Holton	10B	2
Howard	9F	1
Hugoton	2F	1
Humboldt	10E	2
Hutchinson	7E	27
Independence	10F	12
Iola	10E	7
Junction City	8C	7
Kansas City	11C	121
Kingman	6E	2
Kinsley	4E	2
La Cross	5D	1
Larned	5D	3
Lawrence	10C	13
Leavenworth	11C	17
Liberal	2F	5
Lincoln	6C	1
Lyons	6D	2
McPherson	7D	6
Manhattan	8C	10
Mankato	6B	1
Marion	8D	1
Marysville	8B	4
Meade	3F	1
Neodesha	10F	3
Ness City	4D	1
Newton	7D	11
Oberlin	3B	1
Olathe	11C	3
Osawatomie	11D	4
Osborn	5B	1
Oswego	10F	1
Ottawa	10D	9
Paola	11D	3
Parsons	10F	14
Pittsburg	11F	18
Pratt	5E	6
Rosedale	11C	7
Salina	7C	20
Scott City	2D	1
Sedan	9F	1
Seneca	9B	1
Smith Center	5B	1
Stockton	5B	1
Syracuse	1E	1
Topeka	10C	64
Troy	11B	1
Wellington	7F	7
Wichita	7E	111
Winfield	8F	9
Yates Center	10E	2

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KANSAS
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LEGEND
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COUNTY SEATS
SCALE OF MILES
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COLORADO
NEBRASKA
MISSOURI
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Blue
Arkansas
Missouri
Cheyenne
Rawlins
Decatur
Norton
Phillips
Smith
Jewell
Republic
Washington
Marshall
Nemaha
Brown
Doniphan
Sherman
Thomas
Sheridan
Graham
Rooks
Osborne
Mitchell
Clay
Cloud
Jackson
Atchison
Wallace
Logan
Gove
Trego
Ellis
Russell
Lincoln
Ottawa
Riley
Pottawatomie
Jefferson
Leavenworth
Wyandotte
Greeley
Wichita
Scott
Lane
Ness
Rush
Barton
Ellsworth
Saline
Geary
Shawnee
Douglas
Johnson
Hamilton
Kearny
Finney
Gray
Ford
Edwards
Stafford
Pawnee
Rice
McPherson
Morris
Lyon
Osage
Franklin
Miami
Linn
Stanton
Grant
Haskell
Meade
Clark
Kiowa
Pratt
Kingman
Harvey
Marion
Chase
Coffey
Anderson
Allen
Morton
Stevens
Seward
Comanche
Barber
Harper
Sumner
Cowley
Butler
Greenwood
Woodson
Wilson
Neosho
Labette
Montgomery
Chautauqua
Elk
Crawford
Cherokee
Bourbon
Linn
Buffalo
Alva
Ingersoll
Cherokee
Driftwood
Medford
Blackwell
Newkirk
Ponca City
Pawhuska
Burbank
Bartlesville
Dewey
Nowata
Vinita
Miami
Fairland
Coffeyville
Caney
Elgin
Osage Jc.
Arkansas City
Winfield
Chanute
Parsons
Oswego
Independence
Cherryvale
Fredonia
Yates Center
Iola
Humboldt
Garnett
Ottawa
Paola
Osawatomie
Lawrence
Topeka
Kansas City
Leavenworth
Atchison
Hiawatha
Troy
Horton
Holton
Seneca
Marysville
Beatrice
Tecumseh
Nemaha
Falls City
Table Rock
Verdon
Corning
Napier
Rushville
St. Joseph
Maryville
Amazonia
Rockport
Tobias
Strang
Shickley
Fairbury
Wymore
Pawnee City
Endicott
Superior
Chester
Nora
Hebron
Edgar
Blue Hill
Franklin
Lester
Oxford Jc
Holdrege
Minden
Alma Jc
Elwood
Stockville
Imperial
Hayes Center
McCook
Culbertson
Benkelman
Beaver City
Alma
Wilcox
Republican

KENTUCKY

Pop., 2,614,589

COUNTIES

Name	Key	Pop. Thous.
Adair	8F	16
Allen	8D	15
Anderson	5G	8
Ballard	3A	9
Barren	8E	25
Bath*	5J	11
Bell	8K	38
Boone*	2G	9
Bourbon	4J	18
Boyd	4M	43
Boyle	6G	16
Bracken*	3J	9
Breathitt	6K	21
Breckinridge*	6D	17
Bullitt*	5E	8
Butler*	7C	12
Caldwell	2D & 7A	13
Calloway	4C	17
Campbell	2H	73
Carlisle	3B	7
Carroll	3G	8
Carter	4L	23
Casey*	7G	16
Christian	8B	34
Clark	5J	17
Clay*	7K	18
Clinton*	8G	9
Crittenden	2D	11
Cumberland*	8F	10
Daviess	6B	43
Edmonson*	7D	11
Elliott*	5L	7
Estill	6J	17
Fayette	5H	68
Fleming	4K	12
Floyd	6M	41
Franklin	4G	21
Fulton	4A	14
Gallatin*	3G	4
Garrard	6H	11
Grant*	3H	9
Graves	4C	30
Grayson*	7D	17
Green*	7F	11
Greenup	4L	24
Hancock*	5C	6
Hardin	6E	20
Harlan	8L	54
Harrison	4H	14
Hart*	7D	16
Henderson	6A	26
Henry*	4G	12
Hickman	4B	8
Hopkins	7B	37
Jackson*	7J	10
Jefferson	4E	355
Jessamine	5H	12
Johnson	5M	22
Kenton	2H	93
Knott*	7L	15
Knox	8J	26
Larue	6E	9
Laurel	8J	21
Lawrence	5M	16
Lee*	6K	9
Leslie*	7K	10
Letcher	8L	35
Lewis	4K	14
Lincoln	7H	17
Livingston*	2C	8
Logan	8C	21
Lyon	3D & 8A	8
McCracken	3B	46
McCreary*	8H	14
McLean*	7B	11
Madison	6H	27
Marion*	6L	15
Marshall	3E	12
Martin*	5M	8
Mason	3J	18
Meade*	5E	8
Menifee*	5K	4
Mercer	6G	14
Metcalf*	8F	9
Monroe*	8E	13
Montgomery	5J	11
Morgan*	5L	15
Muhlenberg	7B	37
Nelson	6F	16
Nicholas	4J	8
Ohio	7C	24
Oldham	4F	7
Owen*	4G	10
Owsley*	7K	7
Pendleton	3H	10
Perry	7L	42
Pike	6N	63
Powell*	6J	5
Pulaski	8H	35
Robertson*	4J	3
Rockcastle*	7H	15
Rowan*	4K	10
Russell*	8G	11
Scott	4H	14
Shelby	4F	17
Simpson	8D	11
Spencer*	5F	6
Taylor	7F	12
Todd*	8B	13
Trigg	3D & 8A	12
Trimble*	4F	5
Union	1D & 6A	17
Warren	8D	33
Washington	6F	12
Wayne	8G	15
Webster*	6A	19
Whitley	8K	29
Wolfe*	6K	8
Woodford	5G	10

TOWNS

Ashland	4M	29
Barbourville	8J	2
Bardstown	6F	1
Bardwell	3B	1
Bellevue	2H	8
Benton	3C	1
Berry	6A	1
Bowling Green	8D	12
Cadiz	8A	1
Campbellsville	7F	1
Carrollton	3G	2
Catlettsburg	4M	5
Central City	7C	4
Clifton	3H	3
Corbin	8J	8
Covington	2H	65
Cynthiana	4H	4
Danville	6G	6
Dayton	2H	9
Earlington	7B	3
Elizabethtown	6F	2
Falmouth	3H	1
Fort Thomas	2H	10
Frankfort	4G	11
Franklin	8D	3
Fulton	4B	3
Georgetown	4H	4
Glasgow	8E	5
Greenville	7B	2
Harlan	8L	4
Harrodsburg	6G	4
Hazard	7L	7
Henderson	6A	11
Hickman	4A	2
Hopkinsville	7B	10
Irvine	6J	3
Jackson	6K	3
Jenkins	7M	3
Lebanon	6F	3
Lexington	5H	45
Louisville	4E	307
Ludlow	2H	6
Lynch	8M	7
McRoberts	7M	3
Madisonville	7B	6
Maysville	3J	8
Middlesboro	9K	10
Morganfield	6A	2
Mount Sterling	5J	4
Murray	4C	2
Newport	2H	29
Nicholasville	5H	3
Owensboro	6B	22
Paducah	3B	33
Paintsville	5M	2
Paris	4J	6
Pikeville	6M	3
Pineville	8K	3
Prestonsburg	6M	2
Princeton	7A	4
Providence	6A	4
Richmond	6H	6
Russellville	4K	3
Shelbyville	4F	5
Somerset	8H	2
Sturgis	6A	2
Three Point	8L	2
Van Lear	6M	2
Versailles	5G	2
Wayland	7M	2
Winchester	5J	8

† POP. SHOWN IN HUNDREDS.

COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX.

* POP. OF COUNTY SEAT BELOW ONE THOUSAND.

LOUISIANA

Pop. 2,101,593

PARISHES

Same as Counties

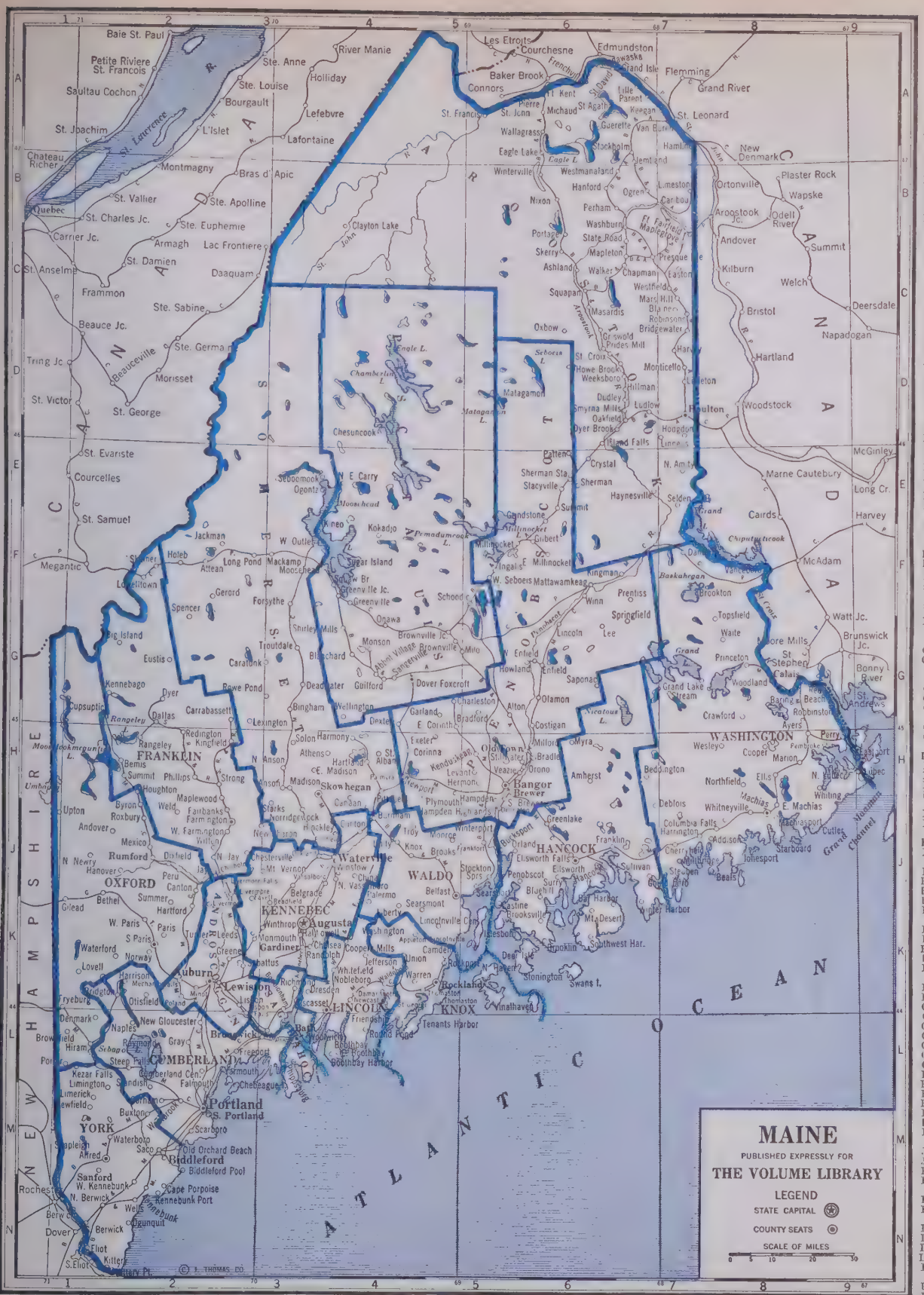
Name	Key	Pop. Thous.
Acadia	6E	39
Allen*	3E	17
Ascension	6H	18
Assumption	7H	15
Avoyelles	4F	34
Beauregard	5F	14
Bienville*	2F	13
Bossier*	1C	28
Caddo*	2C	124
Calcasieu	6C	141
Caldwell*	3F	10
Cameron*	7C	6
Catahoula*	5G	12
Claiborne	1D	32
Concordia	4G	42
De Soto	3C	31
East Baton Rouge	6H	68
East Carroll	1H	15
East Feliciana*	6H	19
Evangeline	5E	25
Franklin	3G	29
Grant	4E	15
Iberia	7G	29
Iberville	6G	13
Jackson	3E	13
Jefferson	8K	40
Jefferson Davis	6E	19
Lafayette	6F	38
Lafourche	8J	32
La Salle	3F	11
Lincoln	2E	23
Livingston*	6J	18
Madison	2H	14
Morehouse	2G	23
Natchitoches	3D	38
Orleans	7K	458
Ouachita	2F	54
Plaquemines*	8K	9
Pointe Coupee	5G	21
Rapides	4E	65
Red River*	3D	16
Richland	2G	24
Sabine*	4C	16
Saint Bernard*	7K	19
Saint Charles*	7J	12
Saint Helena*	5J	8
Saint James*	7H	15
Saint John the Baptist*	7J	14
Saint Landry	5F	60
Saint Martin	6F	38
St. Mary	8G	21
Saint Tammany	6K	29
Tangipahoa	5J	46
Tensas*	3H	15
Terrebonne	8H	30
Union	1F	20
Vermilion	8F	33
Vernon	4D	20
Washington*	5K	29
Webster	1D	29
West Baton Rouge	6G	9
West Carroll	1G	13
West Feliciana*	1K	10
Winn	3E	14

TOWNS

Town	Key	Pop. Thous.
Abbeville	7F	4
Alexandria	4E	23
Amite	5J	2
Arcadia	2E	1
Bastrop	1F	5
Baton Rouge	6H	30
Benton	1C	14
Berwick	8H	1
Boguluса	5K	14
Breaux Bridge	6G	1
Bunkie	5F	2
Church Point	6F	1
Colfax	4E	1
Cottonport	5F	1
Cotton Valley	1D	1
Coushatta	3D	1
Covington	6K	3
Crowley	6F	7
Delhi	2G	1
Denham Springs	6H	1
De Quincy	6C	3
De Ridder	5D	3
Donaldsonville	7H	3
Edgard	7J	1
Eunice	6F	3
Farmerville	1F	1
Ferriday	4G	2
Franklin	8G	3
Franklinton	5K	1
Glenmora	5E	1
Gretna	7K	7
Hahnville	7J	1
Hammond	5J	6
Harrisonburg	3G	1
Haynesville	1D	2
Homer	1D	2
Houma	8J	6
Independence	5J	1
Jackson	5H	3
Jeanerette	7G	2
Jena	3F	1
Jennings	6E	4
Jonesboro	2E	1
Kenner	7J	2
Kentwood	5J	1
Lafayette	6F	14
Lake Arthur	7E	1
Lake Charles	6D	15
Lake Providence	1H	2
Lecompte	4F	1
Leesville	4D	3
Lutcher	7H	1
Mandeville	6K	1
Mansfield	2C	3
Many	4D	1
Marksville	4F	1
Melville	5G	1
Merryville	5C	2
Minden	1D	5
Monroe	2F	26
Morgan City	8H	5
Napoleonville	7H	1
Natchitoches	3D	4
New Iberia	7F	8
New Orleans	7K	458
New Roads	5G	1
Oakdale	5E	3
Oak Grove	1G	1
Oberlin	5E	1
Opelousas	6F	6
Patterson	8J	2
Pineville	4E	3
Plaquemine	6H	5
Ponchatoula	6J	2
Port Allen	6H	1
Rayne	6E	3
Rayville	2G	2
Roseland	5J	1
Ruston	2E	4
St. Francisville	5G	1
St. Joseph	3H	1
St. Martinville	6F	2
Shreveport	2C	76
Slidell	6K	2
Sulphur	6D	1
Tallulah	2H	3
Thibodaux	7H	4
Vidalia	4G	1
Ville Platte	5F	1
Vinton	6C	1
Vivian	1C	1
Welsh	7E	1
West Monroe	2F	6
Westwego	7J	3
Winnfield	3E	3
Winnsboro	2G	1
Zwolle	3C	1

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COUNTY SEATS
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CANADA
QUEBEC
NEW BRUNSWICK
ATLANTIC OCEAN
Aroostook R.
St. John R.
Penobscot R.
Kennebec R.
Androscoggin R.
Saco R.
Presumpscot R.
Piscataquis R.
Allagash L.
Eagle L.
Chamberlain L.
Matagamon L.
Seboeis L.
Pemadumcook L.
Chesuncook
Moosehead L.
Sebec L.
Schoodic L.
Cobscook Bay
Passamaquoddy Bay
Machias Bay
Penobscot Bay
Muscongus Bay
Casco Bay
Sheepscot Bay
Kennebec R.
Androscoggin R.
Saco R.
Presumpscot R.
Piscataquis R.
Allagash L.
Eagle L.
Chamberlain L.
Matagamon L.
Seboeis L.
Pemadumcook L.
Chesuncook
Moosehead L.
Sebec L.
Schoodic L.
Cobscook Bay
Passamaquoddy Bay
Machias Bay
Penobscot Bay
Muscongus Bay
Casco Bay
Sheepscot Bay
Baie St. Paul
Petite Riviere St. Francois
Saultau Cochon
St. Joachim
Chateau Richer
Quebec
Carrier Jc.
St. Anselme
Frammon
Beauce Jc.
Tring Jc
St. Victor
St. Samuel
St. Evariste
Courcelles
Megantic
Lovelltown
Big Island
Eustis
Kennebago
Cupsuptic
Rangeley
Dallas
Redington
Rangeley
Bemis
Houghton
Upton
Andover
Roxbury
Byron
Mexico
Rumford
Dixfield
N. Newry
Hanover
OXFORD
Peru
Canton
Bethel
Gilead
Summer
Hartford
W. Paris
Paris
S. Paris
Norway
Waterford
Lovell
Harrison
Otisfield
Bridgton
Tryeburg
Denmark
Brownfield
Hiram
Porter
Kezar Falls
Limington
Limerick
Newfield
Buxton
YORK
Waterboro
Saco
Old Orchard Beach
Biddeford
Biddeford Pool
Sanford
W. Kennebunk
Rochester
N. Berwick
Wells
Berwick
Dover
Eliot
S. Eliot
Kittery
Kittery Pt.
Kennebunk
Kennebunk Port
Cape Porpoise
Gunquit
Ogunquit
Arundel
Kennebunkport
Cornish
Parsonsfield
Limington
Limerick
Newfield
Shapleigh
Alfred
Sanford
W. Kennebunk
Rochester
N. Berwick
Berwick
Dover
Eliot
S. Eliot
Kittery
Kittery Pt.
Kennebunk
Kennebunk Port
Cape Porpoise
Gunquit
Ogunquit
Arundel
Kennebunkport
Cornish
Parsonsfield
Portland
S. Portland
Cumberland Ctr.
Falmouth
Cumberland
Gray
New Gloucester
Naples
Raymond
Sebago
Steep Falls
Standish
Sebago L.
Long L.
Brunswick
Topsham
Bath
Woolwich
Arrowsic
Phippsburg
Georgetown
Westport
Boothbay
Boothbay Harbor
Southport
Edgecomb
Wiscasset
Alna
Newcastle
Damariscotta
Nobleboro
Jefferson
Whitefield
Dresden
Richmond
Gardiner
Randolph
Pittston
Farmingdale
Hallowell
Augusta
Manmouth
Winthrop
Monmouth
Leeds
Turner
Auburn
Lewiston
Greene
Lisbon
Sabattus
Litchfield
Wales
Minot
Poland
Mechanic Falls
Oxford
Otisfield
Norway
Paris
Hebron
Buckfield
Sumner
Canton
Peru
Dixfield
Mexico
Rumford
Mason
Newry
Bethel
Gilead
Summer
Hartford
Sumner
Hebron
Buckfield

MASSACHUSETTS AND RHODE ISLAND

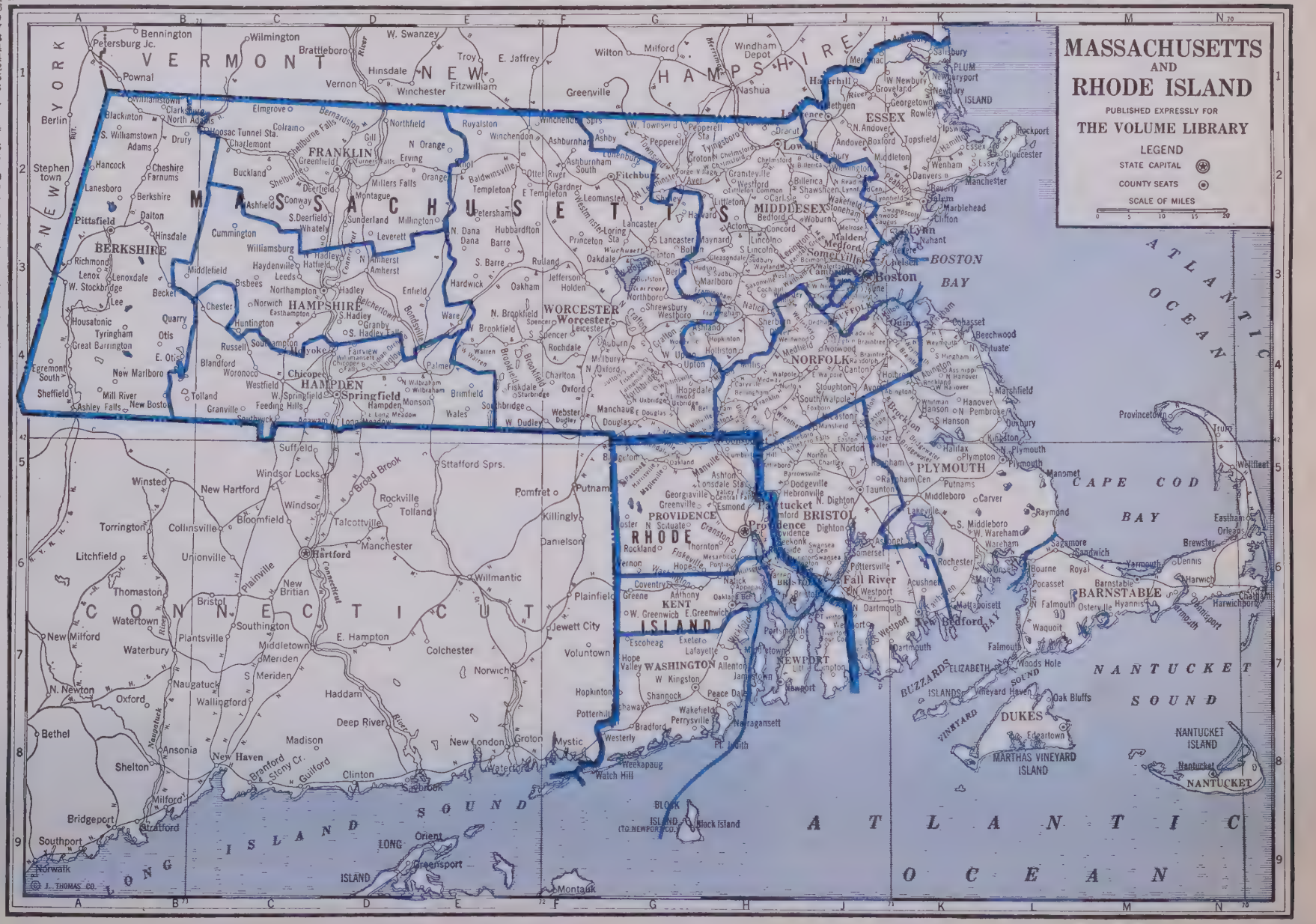
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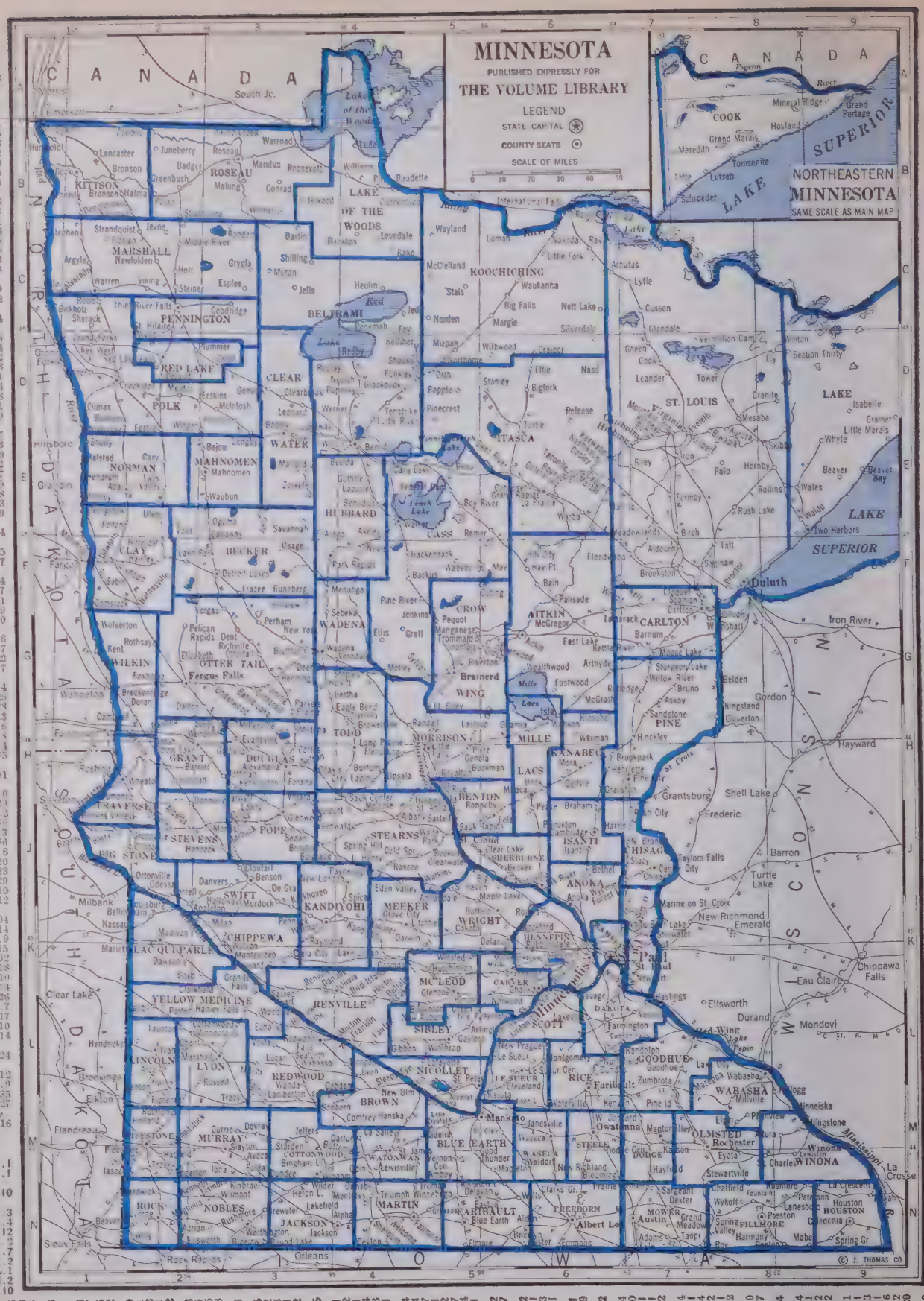
STATE CAPITAL ⊛

COUNTY SEATS ⊙

SCALE OF MILES 0 5 10 15 20


VERMONT
NEW HAMPSHIRE
NEW YORK
MASSACHUSETTS
CONNECTICUT
RHODE ISLAND
ATLANTIC OCEAN
LONG ISLAND SOUND
BOSTON BAY
CAPE COD BAY
NANTUCKET SOUND
BUZZARDS BAY
VINEYARD SOUND
FRANKLIN
HAMPSHIRE
HAMPDEN
BERKSHIRE
ESSEX
MIDDLESEX
NORFOLK
PLYMOUTH
BRISTOL
WORCESTER
BARNSTABLE
DUKES
NANTUCKET
KENT
WASHINGTON
NEWPORT
PROVIDENCE
Boston
Springfield
Worcester
Hartford
New Haven
Fall River
New Bedford
Pittsfield
Lowell
Fitchburg
Nashua
Lawrence
Salem
Gloucester
Plymouth
Provincetown
Nantucket
Martha's Vineyard
Block Island
Montauk
Greenport
Orient
Bridgeport
Stamford
Norwalk
Southport
Milford
Ansonia
Shelton
Derby
Waterbury
Meriden
Middletown
Wallingford
Naugatuck
Torrington
Litchfield
Winsted
Windsor Locks
Suffield
Enfield
Thompsonville
Stafford Springs
Willimantic
Putnam
Killingly
Danielson
Pomfret
Plainfield
Jewett City
Norwich
New London
Groton
Mystic
Stonington
Colchester
Hebron
Andover
Manchester
Rockville
Vernon
Tolland
Ellington
Bloomfield
Windsor
Simsbury
Granby
Canton
Avon
Farmington
New Britain
Bristol
Plainville
Southington
Cheshire
Prospect
Wolcott
Waterbury
Oxford
Seymour
Ansonia
Derby
Stratford
Fairfield
Westport
Norwalk
Darien
Stamford
Greenwich
New Canaan
Wilton
Ridgefield
Danbury
New Milford
Bethel
Brookfield
Newtown
Sherman
Kent
Cornwall
Litchfield
Torrington
Winsted
Canaan
Salisbury
Lakeville
Sharon
Falls Village
Great Barrington
Stockbridge
Lee
Lenox
Pittsfield
Dalton
Hinsdale
Cummington
Williamsburg
Northampton
Amherst
Hadley
Easthampton
Chicopee
Holyoke
Westfield
Agawam
West Springfield
Springfield
Ludlow
Palmer
Monson
Brimfield
Wales
Holland
Sturbridge
Southbridge
Webster
Dudley
Oxford
Charlton
Sturbridge
Auburn
Millbury
Grafton
Shrewsbury
Worcester
Leicester
Spencer
Brookfield
West Brookfield
Warren
Palmer
Ware
Belchertown
Granby
South Hadley
Chicopee
Longmeadow
East Longmeadow
Agawam
Southwick
Granville
Tolland
Blandford
Otis
Becket
Washington
Peru
Windsor
Cummington
Plainfield
Hawley
Heath
Rowe
Charlemont
Buckland
Shelburne
Shelburne Falls
Colrain
Greenfield
Deerfield
Whately
Conway
Sunderland
Montague
Leverett
Amherst
Hadley
Northampton
Easthampton
Southampton
Westhampton
Williamsburg
Haydenville
Leeds
Florence
Northampton
Hatfield
Whately
Deerfield
Greenfield
Montague
Turners Falls
Erving
Gill
Northfield
Bernardston
Leyden
Colrain
Shelburne Falls
Charlemont
Hawley
Heath
Rowe
Florida
Monroe
Monroe Bridge
Adams
North Adams
Williamstown
Clarksburg
Blackinton
Berlin
Petersburg Jc.
Bennington
Wilmington
Brattleboro
W. Swanzey
Troy
E. Jaffrey
Fitzwilliam
Hinsdale
Vernon
Winchester
Pownal
Williamstown
Clarksburg
North Adams
Hoosac Tunnel Sta.
Charlemont
Shelburne Falls
Colrain
Greenfield
Deerfield
Whately
Conway
Sunderland
Montague
Millers Falls
Erving
Gill
Northfield
Bernardston
Leyden
Monroe Bridge
Florida
Monroe
Adams
Cheshire
Farnums
Lanesboro
Berkshire
Dalton
Hancock
Stephentown
Pittsfield
Richmond
Lenox
Lenoxdale
W. Stockbridge
Lee
Becket
Housatonic
Tyringham
Great Barrington
Egremont
South Egremont
Sheffield
Mill River
Ashley Falls
New Boston
Otis
E. Otis
New Marlboro
Blandford
Russell
Southampton
Huntington
Chester
Middlefield
Bisbee
Leeds
Haydenville
Williamsburg
Cummington
Whately
S. Deerfield
Ashfield
Buckland
Shelburne
Shelburne Falls
Colrain
Charlemont
Hoosac Tunnel Sta.
Drury
S. Williamstown
Adams
Stephentown
Berlin
Petersburg Jc.
Bennington
Wilmington
Brattleboro
W. Swanzey
Troy
E. Jaffrey
Fitzwilliam
Hinsdale
Vernon
Winchester
Pownal
Williamstown
Clarksburg
North Adams


MICHIGAN
PUBLISHED EXPRESSLY FOR
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LEGEND
STATE CAPITAL
COUNTY SEATS
SCALE OF MILES
0 5 10 20 30 40
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
WISCONSIN
INDIANA
OHIO
CANADA
ONTARIO
Belle Harbor
ISLE ROYAL
(TO KEWEENAW CO.)
Eagle Harbor
Eagle River
KEWEENAW
MANITOU I.
HOUGHTON
Ontonagon
White Pine
Rockland
ONTONAGON
Bergland
BARAGA
Baraga
L'Anse
Baraga
Michigamme
Watersmeet
Wakefield
GOGEBIC
Bessemer
Ironwood
Hurley
Big Bay
Ransom
Marquette
GRAND ID.
Munising
Grand Marais
LUCE
Newberry
Sault Ste. Marie
Whitefish Bay
Raco
CHIPPEWA
Rudyard
Dafter
MACKINAC
Mackinaw City
Pickford
DRUMMOND
Drummond
MARQUETTE
Princeton
Gwinn
ALGER
Munising
Cusino
Driggs
Ludoga
Germfask
SCHOOLCRAFT
Blaney
McMillan
Soo Jc.
Naubinway
Hessel
Moran
Iron River
Crystal Falls
Amasa
IRON
Channing
Sagola
DICKINSON
Kingsford
Quinnesec
Norway
Vulcan
Iron Mountain
Woodruff
Eagle River
Rhinelander
Gagen
Laona Jc.
Pembine
Heafford Jc.
Monico
Antigo
Crivitz
Marinette
MENOMINEE
Bagley
Dagget
Stephenson
Wallace
Cedar River
Menominee
Escanaba
Gladstone
Perkins
Cornell
Rapid River
Garden
DELTA
Gladstone
Manistique
Thompson
Naubinway
Epoufette
Hessel
Mackinac Island
Mackinaw City
Cheboygan
Indian River
Tower
Onaway
Rogers City
PRESQUE ISLE
Harbor Springs
Petoskey
Harbor Spgs.
Pellston
EMMET
Alanson
Good Hart
Cross Village
BEAVER I.
St. James
Straits
Mackinac
BOIS BLANC I.
COCKBURN I.
MANITOULIN ISLAND
GREAT DUCK I.
FITZWILLIAM I.
Drummond I.
Detour
Waucedah
DELTA
Escanaba
Stonington
Garden
Faithorn
Powers
Spalding
Carney
Daggett
Ingalls
Wallace
Menominee
WASHINGTON ID.
Marinette
Oconto
Sturgeon Bay
Algoma
Kewaunee
Green Bay
Manitowoc
Sheboygan
Pt. Washington
Milwaukee
Racine
Kenosha
Waukegan
Evanston
Chicago
Chicago Hts.
Blue Id.
Michigan City
Gary
Porter
Hammond
Whiting
East Chicago
Lake Michigan
Lake Michigan
Lake Michigan



MINNESOTA

Pop. 2,563,953

COUNTIES

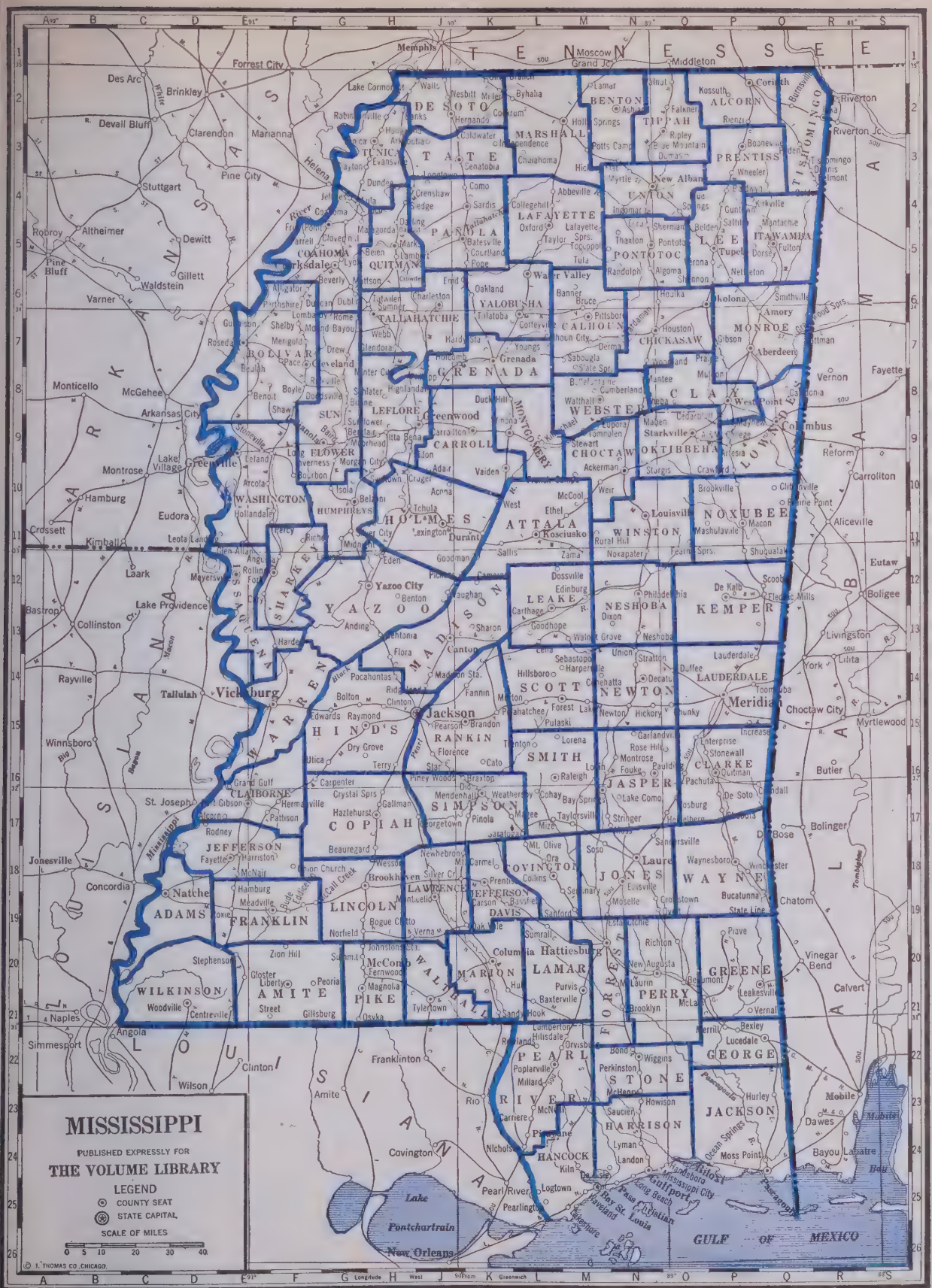
Name Key Pop. Thous.

Aitkin 6G....15
Anoka 6J....18
Becker 3F....22
Beltrami 4D..30
Benton* 5J....15
Big Stone 1J....9
Blue Earth 5M....33
Brown 5M....25
Carlton* 3G....21
Carver 5K....16
Cass* 4F....15
Chippewa 5K....13
Chisago* 7J....18
Clay 1F....28
Clearwater* 3E....9
Cook* 8B....2
Cottonwood 3M....14
Crow Wing 5G....25
Dakota 7L....34
Dodge* 7M....12
Douglas 3H..18
Faribault 5N..21
Fillmore 8N....24
Freeborn 6N..28
Goodhue 7L..31
Grant* 2H....9
Hennepin 6K....517
Houston 9N..18
Hubbard 4E....9
Isanti 6J....12
Itasca 6E....27
Jackson 4N....15
Kanabec 6H....8
Kandiyohi 4K..23
Kittson* 1B....9
Koochiching 6C....14
Lac Qui Parle 2K....15
Lake 9D....7
Lake of the Woods* 4B..4
Le Sueur* 5L..17
Lincoln* 2L....11
Lyon 3L....19
McLeod 5K...20
Mahnomen* 3E....6
Marshall 2C..17
Martin 4N....22
Meeker 4K...17
Mille Lacs 6H....14
Morrison 5H..25
Mower 7N....28
Murray 3M...13
Nicollet 5L...16
Nobles 3N....18
Norman 2....14
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Otter Tail 3G....51
Pennington 2C....10
Pine 7H....21
Pipestone 2M 12
Polk 2D....36
Pope 3J....13
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Redwood 3L...20
Renville 4K..23
Rice 6L....29
Rock 2N....10
Roseau 3B....12
St. Louis 7D....204
Scott 6L....14
Sherburne 5J..9
Sibley* 5L....15
Stearns 4J....62
Steele 6M...18
Stevens 2J....10
Swift 3J....14
Todd 4H....26
Traverse 1H...7
Wabasha 8L..17
Wadena 4G...10
Waseca 6M...14
Washington 7K....24
Watonwan 4M....12
Wilkin 1G....9
Winona 9M...35
Wright 5K....27
Yellow Medicine 2K....16

TOWNS

Ada 2E....1
Aitkin 6G....1
Albert Lea 6N....10
Alexandria 3H....3
Anoka 6J....4
Austin 7N....12
Bayport 7K....3
Bemidji 4E....7
Benson 3J....2
Bird Island 4L.1
Blue Earth 5N.2
Brainerd 5G..10
Breckenridge 1G....2
Buffalo 5K....1
Caledonia 9N..1
Cambridge 6J..1
Camden 6K....8
Chaska 7E....6
Chisago City 7E....3
Clinton 7E....3
Columbia Heights 6K..5
Crookston 2D..6
Crosby 5G....3
Detroit Lakes 3F....3
Duluth 8F....101
Elk River 6J..1
Ely 8D....5
Evelyth 7D....5
Fairmont 4N..12
Faribault 6N..9
Fergus Falls 3G....12
Frazee 3F....1
Gilbert 7D....2
Glencoe 5K....2
Glenwood 3J..2
Grand Rapids 6E....3
Hastings 7L..5
Hibbing 7D..15
Hopkins 6K..3
Hutchinson 6K....3
International Falls 6B....5
Jackson 4N....3
Lake City 5L..3
Litchfield 4K..2
Little Falls 5H....5
Long Prairie 4H....1
Luverne 2N....1
Madison 2K....1
Mankato 5M..14
Marshall 3L....3
Milaca 6J....1
Minneapolis 6K....404
Montevideo 3K..4
Moorhead 1F....7
Mora 6H....1
Morris 2J....4
New Ulm 5M..14
Northfield 6L....1
Ortonville 1J....2
Owatonna 6M..7
Park Rapids 4F....2
Pine City 7H..1
Pipestone 2M..3
Preston 8N....1
Red Lake Falls 2D....1
Red Wing 7L..9
Redwood Falls 3L....2
Robbinsdale 6K....4
Rochester 7M..20
Roseau 3B....1
St. Cloud 5J..21
St. James 4M..2
St. Louis Park 6K....4
St. Paul 6K..271
St. Peter 5L..4
Shakopee 6L....2
Slayton 3M....1
Sleepy Eye 4L..2
S. St. Paul 6K....10
Stillwater 7K..7
Thief River Falls 2C....4
Two Harbors 9F....4
Virginia 7D..11
Wabasha 8L....2
Wadena 4G....2
Waite Park 5J....1
Warren 1C....1
Waseca 6M....3
Warren 1C....1
Wheaton 1H....6
Willmar 4K....6
Windom 3M....2
Winona 9M..20
Worthington 3N....3

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.


MISSISSIPPI
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LEGEND
COUNTY SEAT
STATE CAPITAL
SCALE OF MILES
0 5 10 20 30 40
© J. THOMAS CO., CHICAGO.
TENNESSEE
ARKANSAS
LOUISIANA
ALABAMA
Memphis
Moscow
Grand Jc.
Middleton
Forrest City
Des Arc
Brinkley
Devall Bluff
Clarendon
Marianna
Pine City
Stuttgart
Robroy
Altheimer
Dewitt
Pine Bluff
Gillett
Waldstein
Varner
Monticello
McGehee
Arkansas City
Lake Village
Montrose
Greenville
Hamburg
Eudora
Crossett
Kimball
Laark
Mayersville
Lake Providence
Bastrop
Collinston
Rayville
Tallulah
Vicksburg
Winnsboro
Jonesville
Concordia
Natchez
Fayette
Harrisonburg
Rodney
St. Joseph
Port Gibson
Grand Gulf
Carpenter
Crystal Spgs
Gallman
Hazlehurst
Georgetown
Pinola
Mize
Taylorsville
Stringer
Lake Como
Bolton
Raymond
Edwards
Clinton
Utica
Dry Grove
Terry
Florence
Cato
Pearl
Brandon
Pulaski
Forest
Lake
Newton
Hickory
Chunky
Meridian
Choctaw City
Myrtlewood
Butler
Bolingen
Bose
Sandersville
Waynesboro
Winchester
Bucatunna
State Line
Chatom
Vinegar Bend
Calvert
Bexley
Lucedale
Merrill
Wiggins
Perkinston
Howison
Hurley
Mobile
Dawes
Bayou Labatre
Moss Point
Ocean Springs
Pascagoula
Gulfport
Biloxi
Long Beach
Pass Christian
Bay St. Louis
Waveland
Lake Pontchartrain
New Orleans
Pearl River
Logtown
Pearlington
Picayune
Carriere
McNeil
Nichols
Lyman
Landon
Kiln
Lumberton
Hilldale
Orvisburg
Poplarville
Millard
Rio
Amite
Franklinton
Wilson
Clinton
Naples
Woodville
Centreville
Liberty
Gloster
Zion Hill
Summit
Johnston City
Fernwood
Magnolia
Tylertown
Osyka
Gillsburg
Street
Peoria
Stephenson
Simmesport
Angola
Meadville
Roxie
Fayette
McNair
Harrison
Union Church
Wesson
Brookhaven
Silver Cr.
Mt. Olive
Ora
Collins
Prentiss
Seminary
Soso
Laurel
Evansville
Moselle
Crossroads
Bucatunna
Richton
Piave
New Augusta
Laurin
Beaumont
Leakesville
Brooklyn
Vernal
Columbia
Hattiesburg
Purvis
Baxterville
Hook
Sumrall
Oak Vale
Verna
Tylertown
Sandy
Lumberton
Hilldale
Orvisburg
Bond

MISSOURI

Pop. 3,629,367

COUNTIES

Name Key Pop.

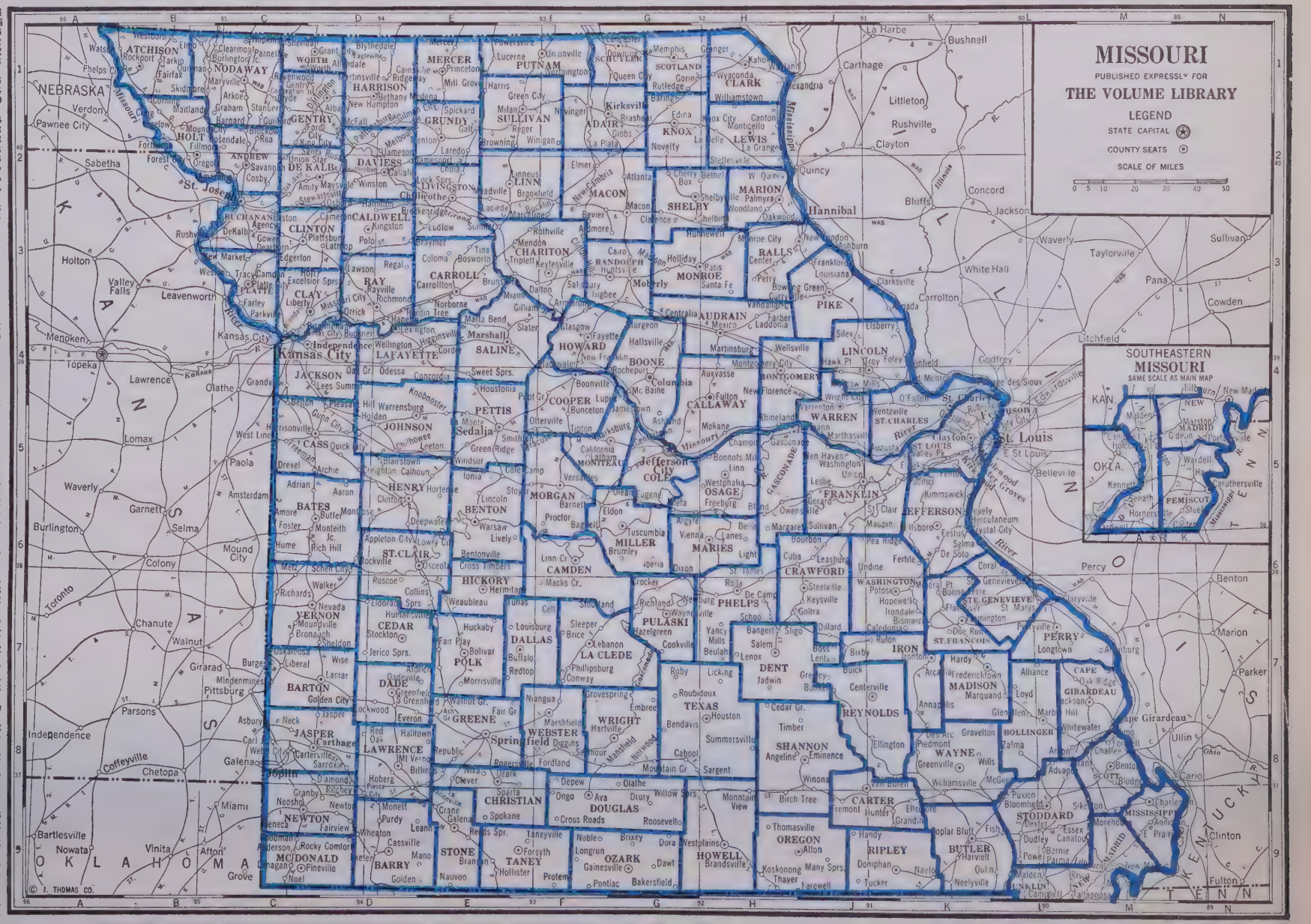
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Andrew 2C....19
Atchison 1B....13
Audrain 4H....22
Barry 9D....22
Barton 7C....14
Bates 6C....11
Benton 5E....11
Bollinger* 7L....12
Boone 4G....39
Buchanan 3C....23
Butler* 9L....12
Caldwell 4H....10
Callaway 5H....19
Camden* 6F....9
Cape Girardeau 7M....33
Carroll 3E....19
Carter* 8J....5
Cass 5C....30
Cedar* 7D....11
Charlton* 3F....19
Christian* 8E....13
Clark 1H....10
Clay 3C....23
Clinton 3C....10
Cole 5G....38
Cooper* 4F....11
Crawford 6J....11
Dade 7D....11
Dallas* 7F....10
De Kalb* 2D....10
Dent 7H....10
Douglas 8F....13
Dunklin 9L &
5M....35
Franklin 5J....30
Gasconade 5H....12
Gentry 2D....5
Greene 8D....36
Grundy 3D....15
Harrison 1D....17
Henry* 3D....22
Hickory* 6E....12
Holt* 2B....6
Howard 4F....13
Howell 9H....19
Iron* 7K....12
Jackson 4C....470
Jasper 8C....73
Jefferson* 5K....27
Johnson 5D....22
Knox 2G....9
Laclede 7D....11
Lafayette 4E....23
Lawrence 8D....20
Lewis 2H....10
Lincoln 4J....13
Linn* 2F....13
Livingston 2E....18
McDonald* 9C....13
Macon 2G....23
Madison 7K....9
Maries* 6H....8
Marion 2H....33
Mercer 1E....9
Miller 6G....16
Mississippi
& 8M....15
Moniteau 5G....13
Monroe 3H....19
Montgomery 4H....13
Morgan 5E....10
New Madrid 9M
& 4N....30
Newton 9C....26
Nodaway 1C....26
Oregon* 9J....12
Osage* 5H....12
Ozark* 9G....9
Pemiscot 5N....37
Perry 7L....13
Pettis 5G....34
Phelps 7F....17
Pike* 3L....18
Platte* 3C....18
Polk 7E....17
Pulaski* 6G....10
Putnam 1F....11
Ralls* 3H....10
Randolph 3G....26
Ray 4D....25
Reynolds* 7J....8
Ripley 9J....11
St. Charles
4C....10
Ste. Genevieve
6L....2
St. Joseph 2C....80
St. Louis 5L....821
Salem 7H....2
Savannah 2C....1
Sedalia 5E....20
Sikeston 8M....5
Slater 4M....3
Springfield 8E....57
Trenton 2E....6
Union 5J....2
University City
5K....25
Warrensburg
5E....5
Washington 5J....5
Webb City 8C....6
Webster Groves
5K....16
Westplains 9H....3
Webster 7F....16
Worth 1C....6
Wright* 8G....16

TOWNS

Name Key Pop.

Albany †D....1
Bethany 1D....2
Bolivar 7E....2
Bonne Terre
6K....4
Boonville 4F....6
Brookfield 2F....6
Butler 6C....2
California 5G....2
Cameron 3D....3
Cape Girardeau
7M....16
Carrollton 3E....4
Carthage 8C....9
Caruthersville
5N....4
Centralia 4G....2
Chaffee 8M....2
Charleston 8M....3
Chillicothe 2E....8
Clayton 5K....9
Clinton 5D....5
Columbia 4G....14
Crystal City
5K....3
De Soto 6K....5
Doniphan 9J....1
Eldon 5G....3
Excelsior Springs
3D....4
Farmington 6K....3
Fayette 4F....2
Ferguson 4L....3
Festus 6K....4
Flat River 6K....5
Fredericktown
7K....2
Fulton 4H....6
Gallatin 2D....1
Hannibal 2J....22
Hermann 5H....2
Higginsville
4E....3
Independence
4C....15
Jackson 7M....2
Jefferson City
5G....21
Joplin 8C....33
Kansas City
4C....399
Kennett 5M....4
Kirksville 2G....8
Kirkwood 5K....9
Lamar 7C....2
Lebanon 7F....3
Lexington 4D....4
Liberty 3C....3
Louisiana 3J....3
Macon 3G....3
Maplewood 5L....12
Marceline 2F....3
Maryville 1C....5
Mexico 4H....8
Milan 2F....2
Moberly 3G....13
Monett 8D....4
Neosho 9D....4
Nevada 6C....7
Perryville 7L....2
Poplar Bluff
9K....7
Richmond 4D....4
Rolla 6H....3
St. Charles
4K....10
Ste. Genevieve
6L....2
St. Joseph 2C....80
St. Louis 5L....821
Salem 7H....2
Savannah 2C....1
Sedalia 5E....20
Sikeston 8M....5
Slater 4M....3
Springfield 8E....57
Trenton 2E....6
Union 5J....2
University City
5K....25
Warrensburg
5E....5
Washington 5J....5
Webb City 8C....6
Webster Groves
5K....16
Westplains 9H....3
Wayne* 8K....14
West Plains
6K....12
Weston 4J....8
Washington
Vernon 6C....25
Warren 4J....8
Washington
Texas* 7H....18
Taney* 9F....8
Sullivan 9E....11
Stone* 9E....11
Shelby 4H....15
Shannon* 8L....27
Scott* 8M....11
Scotland 1G....8
Schuyler* 1G....6
Saline 4E....30
Ray 4D....25
Ralls* 3H....10
Randolph 3G....26
Reynolds* 7J....8
Ripley 9J....11
St. Charles
4K....10
St. Clair 6D....13
St. Genevieve
6L....2
St. Francois
6K....35
St. Louis 5K....211
St. Louis City
5L....821
Saline 4E....30
Schuyler* 1G....6
Scotland 1G....8
Scott* 8M....11
Shannon* 8L....27
Shelby 4H....15
Stoddard 9E....11
Stone* 9E....11
Sullivan 9E....15
Taney* 9F....8
Texas* 7H....18
Vernon 6C....25
Warren 4J....8
Washington
Wayne* 8K....14
West Plains
6K....12

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.



NORTH DAKOTA
SOUTH DAKOTA
WYOMING
MONTANA
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COUNTY SEATS
SCALE OF MILES
0 10 20 30 40 50 60
Glacier
Toole
Liberty
Hill
Blaine
Phillips
Valley
Daniels
Sheridan
Roosevelt
McCone
Richland
Dawson
Prairie
Fallon
Carter
Chouteau
Hill
Blaine
Phillips
Valley
Petroleum
Garfield
Musselshell
Yellowstone
Carbon
Stillwater
Sweet Grass
Park
Big Horn
Treasure
Rosebud
Powder River
Custer
Fallon
Carter
Hill
Liberty
Toole
Pondera
Teton
Pondera
Glacier
Lewis and Clark
Cascade
Fergus
Petroleum
Golden Valley
Musselshell
Yellowstone
Carbon
Big Horn
Powder River
Custer
Prairie
Wibaux
Hill
Blaine
Phillips
Valley
Daniels
Sheridan
Roosevelt
McCone
Richland
Dawson
Fallon
Carter
Chouteau
Pondera
Teton
Lewis and Clark
Cascade
Fergus
Petroleum
Golden Valley
Musselshell
Yellowstone
Carbon
Big Horn
Powder River
Custer
Prairie
Wibaux
Toole
Glacier
Pondera
Teton
Lewis and Clark
Cascade
Fergus
Petroleum
Golden Valley
Musselshell
Yellowstone
Carbon
Big Horn
Powder River
Custer
Prairie
Wibaux
Flathead
Lake
Sanders
Lincoln
Missoula
Ravalli
Granite
Powell
Deer Lodge
Silver Bow
Beaverhead
Jefferson
Madison
Gallatin
Meagher
Wheatland
Sweet Grass
Park
Stillwater

NEBRASKA

Pop. 1,377,963

COUNTIES

Name Key Pop. Thous.

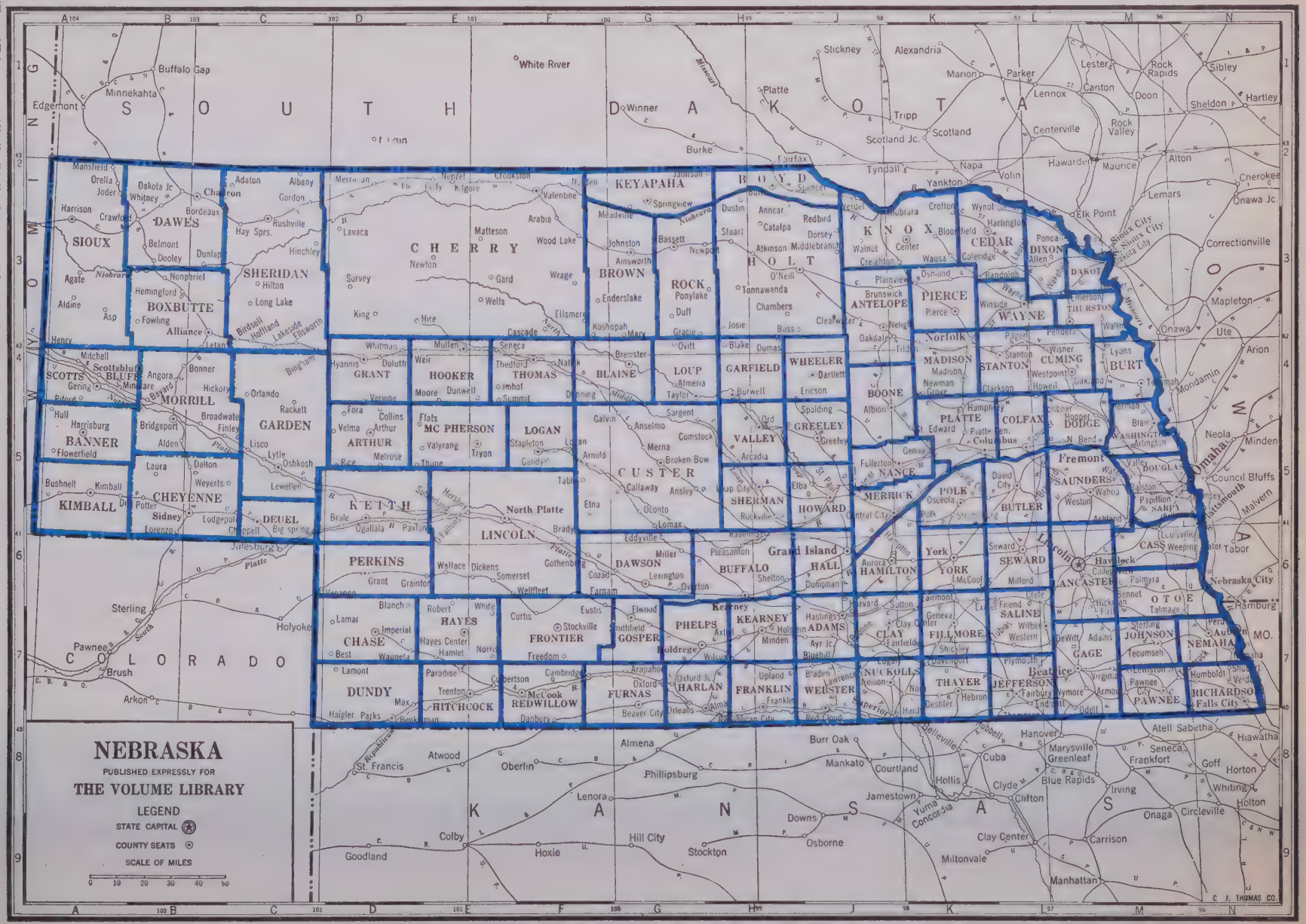
Adams 7J ... 25
Antelope 3J ... 15
Arthur* 5D ... 1
Banner* 3G ... 1
Blaine* 4G ... 1
Boone 4J ... 11
Box Butte 3B 11
Boyd* 3H ... 7
Brown 4G ... 3
Buffalo 6H ... 24
Burt 4M ... 13
Butler 5L ... 11
Cass 6M ... 17
Cedar 3K ... 16
Chase* 7D ... 5
Cherry 3E ... 10
Cheyenne 5B 10
Clay* 7J ... 13
Colfax 5L ... 11
Cuming 4L ... 14
Custer 6L ... 28
Dakota* 2M ... 11
Dawes 2B ... 9
Dawson 6G ... 17
Deuel 5C ... 3
Dixon* 3L ... 9
Dodge 5L ... 25
Douglas 5M 232
Dundy 7D ... 5
Fillmore 7K ... 12
Franklin 7H ... 9
Frontier* 7F ... 8
Furnas 7G ... 12
Gage 7L ... 39
Garfield 4H ... 3
Gosper* 6J ... 4
Grant* 1D ... 1
Greeley* 5J ... 8
Hall 6J ... 27
Hamilton 6J ... 12
Harlan 7G ... 8
Hayes* 7E ... 3
Hitchcock* 7E 7
Holt 3H ... 16
Hooker* 4E ... 1
Howard 5J ... 10
Jefferson 7L ... 16
Johnson 7M ... 9
Kearney 7H ... 8
Keith 5D ... 8
Keya Paha* 2K 1
Kimball* 5A ... 4
Knox* 1K ... 19
Lancaster 6L 100
Lincoln 5F ... 25
Logan* 5F ... 2
Loup* 4G ... 1
McPherson* 5E 1
Madison 4K ... 26
Merrick 5J ... 10
Morrill 4B ... 9
Nemaha 7N ... 18
Nuckolls 7J ... 13
Otoe 6M ... 19
Pawnee* 7M ... 8
Perkins* 6D ... 5
Phelps 7G ... 11
Pierce 5K ... 11
Platte 5K ... 21
Polk 5K ... 10
Red Willow 7F 13
Richardson 7N ... 19
Rock* 3G ... 3
Saline 7L ... 16
Sarpy* 5M ... 20
Saunders 5L ... 20
Scotts Bluff 28
Seward 6L ... 15
Sheridan 3C ... 10
Sherman 5H ... 9
Sioux* 2A ... 4
Stanton 5M ... 7
Thayer 7K ... 13
Thomas* 4F ... 1
Thurston 3M ... 10
Valley 5H ... 9
Washington 5M ... 12
Wayne 5M ... 12
Webster* 7J ... 10
Wheeler* 4J ... 3
York 6K ... 17

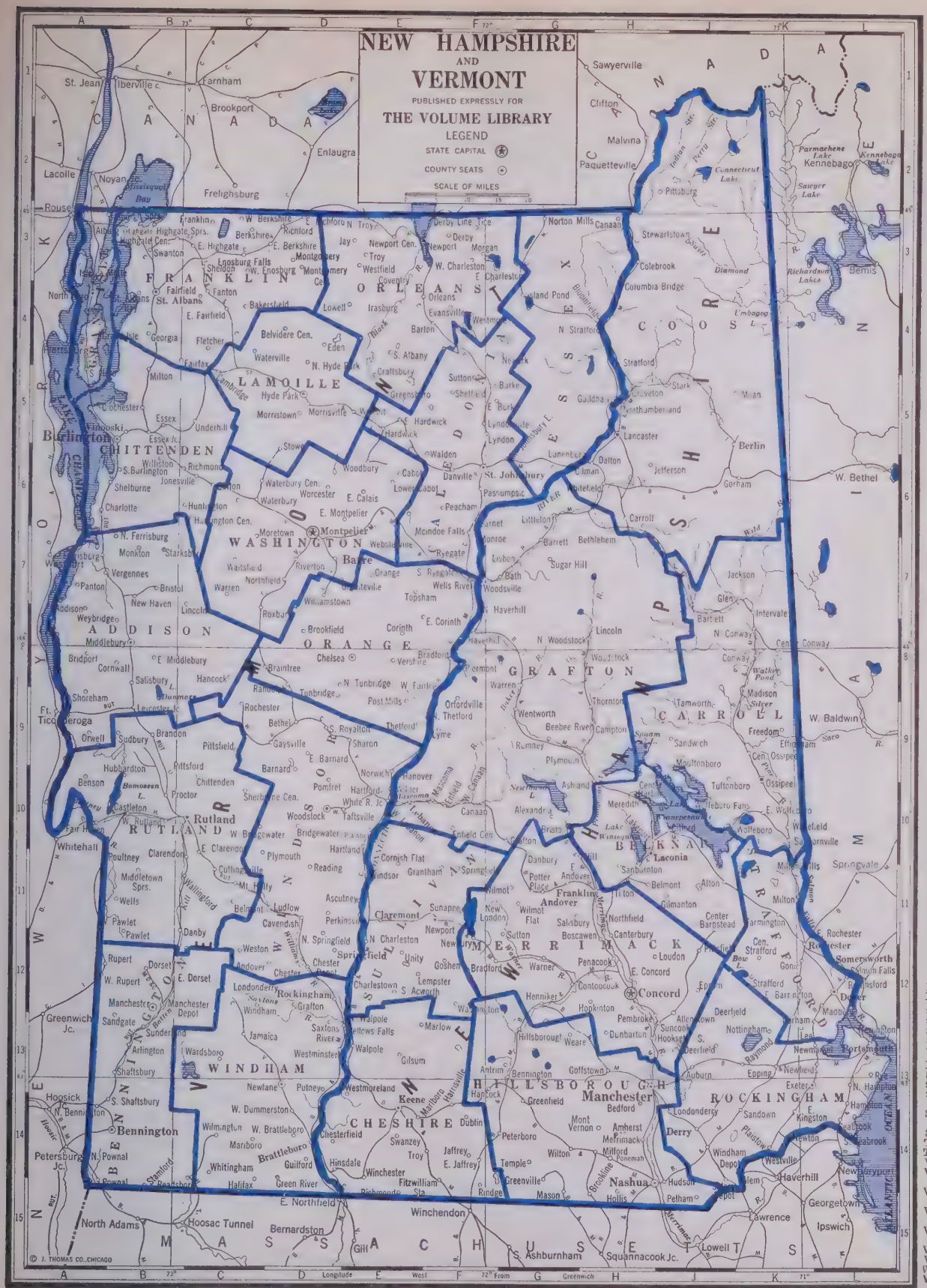
TOWNS

Name Key Pop. Thous.

Ainsworth 3G ... 1
Albion 4J ... 2
Alliance 4B ... 6
Arapahoe 6H ... 1
Arlington 5M ... 1
Ashland 5M ... 1
Atkinson 3H ... 1
Auburn 7N ... 3
Aurora 6J ... 3
Bayard 4B ... 1
Beatrice 7L ... 10
Beaver City 7G ... 1
Bellevue 5M ... 1
Benkelman 7D ... 1
Blair 5M ... 1
Bridgeport 5B ... 1
Broken Bow 5G ... 2
Burwell 4H ... 1
Cambridge 7F ... 1
Central City 5J 2
Chadron 2B ... 4
Chappell 5C ... 1
Valley View 6L 2
Columbus 5K ... 6
Cozad 6G ... 1
Crawford 2B ... 1
Creighton 3K ... 1
Crete 6L ... 1
David City 5L ... 2
Deshler 7K ... 1
Elwood 7G ... †5
Fairbury 7L ... 6
Falls City 7N ... 5
Franklin 7H ... 1
Fremont 5M ... 11
Friend 6L ... 1
Fullerton 5K ... 1
Geneva 7K ... 1
Genoa 5K ... 1
Gering 4A ... 2
Gordon 2C ... 1
Gothenburg 6F 2
Grand Island 6J ... 18
Grant 6D ... †7
Greeley 5J ... †8
Hartington 2L ... 1
Hastings 7J ... 15
Havelock 6L ... 3
Hebron 7K ... 1
Hemingford 3B 1
Holdrege 7G ... 3
Humboldt 7N ... 1
Imperial 7D ... 9
Kearney 6H ... 8
Kimball 5A ... 1
Lexington 6G ... 2
Lincoln 6L ... 75
Loup City 5H ... 1
McCook 7F ... 6
Madison 4K ... 1
Minatare 4A ... 1
Minden 7H ... 1
Mitchell 4A ... 2
Nebraska City 6N ... 7
Neligh 3J ... 1
Norfolk 4K ... 10
North Bend 5L 1
North Platte 5F ... 12
Oakland 4M ... 1
Ogallala 5D ... 1
Omaha 5N ... 214
O'Neill 3J ... 2
Ord 5H ... 2
Osceola 5K ... 1
Oxford 7G ... 1
Pawnee City 7M ... 1
Pender 3L ... 1
Pierce 3K ... 1
Plainview 3K ... 1
Plattsmouth 6N ... 3
Randolph 3K ... 1
Ravenna 6H ... 1
Red Cloud 7J ... 1
Rushville 3C ... 1
St. Edward 4K 1
St. Paul 5J ... 1
Schuyler 5L ... 2
Scottsbluff 4A 8
Scribner 4L ... 1
Seward 6L ... 2
Sidney 5B ... 3
South Sioux City 3M ... 3
Stanton 4L ... 1
Stromsburg 5K 1
Superior 7J ... 3
Sutton 6K ... 1
Tecumseh 7M ... 1
Tekamah 4M ... 1
Tilden 4K ... 1
Trenton 7E ... †8
Tryon 5E ... †1
Valentine 2F ... 1
Valley 5M ... 1
Wahoo 5M ... 2
Wakefield 3L ... 1
Walthill 3M ... 1
Wayne 3L ... 2
Weeping Water 6M ... 1
Westpoint 4L ... 2
Wilber 7L ... 1
Wisner 4L ... 1
Wymore 7L ... 2
York 6K ... 5

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.


SOUTH DAKOTA
NEBRASKA
KANSAS
COLORADO
IOWA
MISSOURI
White River
Missouri
Niobrara
Platte
Republican
Republican
Republican


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CANADA
FRANKLIN
ORLEANS
LAMOILLE
CHITTENDEN
ADDISON
WASHINGTON
ORANGE
RUTLAND
WINDSOR
WINDHAM
BENNINGTON
CALEDONIA
ESSEX
GRAFTON
COOS
CARROLL
BELKNAP
MERRIMACK
CHESHIRE
HILLSBOROUGH
ROCKINGHAM
STRAFFORD
SULLIVAN
Connecticut Lake
Parmachene Lake
Kennebago Lake
Sawyer Lake
Richardson Lakes
Umbagog
Diamond
Indian Stream
Perry Stream
Second Connecticut Lake
Third Connecticut Lake
Fourth Connecticut Lake
Lake Memphremagog
Willoughby Lake
Lake Champlain
Missisquoi Bay
Missisquoi R.
Black R.
Lamoille R.
Winooski R.
White R.
Ottauquechee R.
Saxtons River
Williams R.
Deerfield R.
Contoocook R.
Merrimack R.
Piscataquog R.
Souhegan R.
Nashua R.
Squam L.
Newfound L.
Winnisquam L.
Lake Winnipesaukee
Lake Waukewan
Ossipee L.
Province Pond
Bomoseen L.
Hortonia L.
Dunmore L.
Lake Champlain
Connecticut R.
Passumpsic R.
Wells River
Ompompanoosuc R.
Waits R.
Wild R.
Ammonoosuc R.
Israel R.
Upper Ammonoosuc R.
Johns R.
Moose R.
Androscoggin R.
Swift R.
Peru
Clifton
Sawyerville
Malvina
Paquetteville
Lacolle
Noyan
Frelighsburg
St. Jean
Iberville
Farnham
Brookport
Enlaugra
Rouse
Highgate Springs
Highgate Center
Swanton
Franklin
W. Berkshire
Berkshire
Richford
E. Highgate
E. Berkshire
Montgomery Center
Enosburg Falls
Sheldon
W. Enosburg
Montgomery
Fairfield
Fanton
St. Albans
E. Fairfield
Bakersfield
Lowell
Irasburg
Coventry
Newport Cen.
Jay
Troy
Westfield
Orleans
Evansville
Derby Line
Derby
Newport
Morgan
W. Charleston
E. Charleston
Island Pond
Norton Mills
Canaan
Stewartstown
Colebrook
Columbia Bridge
Bloomfield
Stratford
Stark
Groveton
Northumberland
Milan
Berlin
Gorham
Jefferson
Dalton
Lancaster
Guildhall
Lunenburg
Lyndonville
Lyndon
Sutton
Barke
Sheffield
E. Burke
Burke
Barton
N. Stratford
Newark
Greensboro
Craftsbury
Belvidere Cen.
Eden
Waterville
N. Hyde Park
Hyde Park
Morristown
Morrisville
Wolcott
Hardwick
Walden
Cabot
Danville
St. Johnsbury
Passumpsic
Peacham
Barnet
Monroe
Lisbon
Littleton
Carroll
Bethlehem
Barrett
Sugar Hill
Bath
Woodsville
Haverhill
Jackson
Glen
Bartlett
Intervale
N. Conway
Conway
Center Conway
Fryeburg
Lovell
Waterford
Stowe
Woodbury
Cabot
Lower Cabot
Worcester
E. Calais
E. Montpelier
Montpelier
Moretown
Waterbury Cen.
Waterbury
Duxbury
Moondoe Falls
Ryegate
Barre
Orange
S. Ryegate
Wells River
Topsham
Groton
Ryegate
Corinth
E. Corinth
Williamstown
Roxbury
Brookfield
Randolph
Braintree
Granville
Chelsea
Vershire
Tunbridge
N. Tunbridge
W. Fairlee
Orfordville
Thetford
N. Thetford
Lyme
Post Mills
Fairlee
Bradford
Newbury
Wells River
Woodstock
N. Woodstock
Lincoln
Thornton
Campton
Tamworth
Madison
Silver Lake
Freedom
Effingham
Saco R.
Ossipee
Center Ossipee
Moultonborough
Tuftonboro
Tuftonboro Falls
E. Wolfeboro
Wolfeboro
Wolfeboro Falls
Alton
Alton Bay
Milton
Milton Mills
Rochester
Gonic
Strafford
Barrington
Farmington
Center Barnstead
Center Strafford
Somersworth
Salmon Falls
Rollinsford
Dover
Portsmouth
Newington
Madbury
Durham
Lee
Nottingham
Deerfield
Raymond
Epping
Newfields
Newmarket
Exeter
Hampton
N. Hampton
Seabrook
Kingston
E. Kingston
Newton
Plaistow
Atlantic Ocean
Hampton Beach
Rye
Auburn
Goffstown
Bedford
Londonderry
Sandown
Derry
Windham
Depot
Salem
Pelham
Hudson
Nashua
Hollis
Merrimack
Milford
Amherst
Mont Vernon
Peterboro
Wilton
Temple
Greenville
Mason
Ridge
Fitzwilliam Sta.
Richmond
Winchester
Hinsdale
Chesterfield
Swanzey
Troy
Jaffrey
E. Jaffrey
Dublin
Harrisville
Marlborough
Keene
Westmoreland
Putney
Newfane
Antrim
Bennington
Hancock
Greenfield
Francestown
Deering
Weare
Goffstown
Manchester
Londonderry
Windham
Derry
Salem
Pelham
Hudson
Nashua

NEW JERSEY

Pop., 4,041,334

COUNTIES

Name Key Pop. Thous.

Atlantic 5L..124
Bergen 8C..364
Burlington 5H.....93
Camden 4J...252
Cape May 5N 29
Cumberland 3L 69
Essex 7D....833
Gloucester 3J 70
Hudson 8D..690
Hunterdon 5E..34
Mercer 5F...187
Middlesex 7E..212
Monmouth 6F.....147
Morris 6C...110
Ocean 7H....33
Passaic 7B..302
Salem 2K.....36
Somerset 6E...65
Sussex 5B....27
Union 7D....305
Warren 4C....49

TOWNS

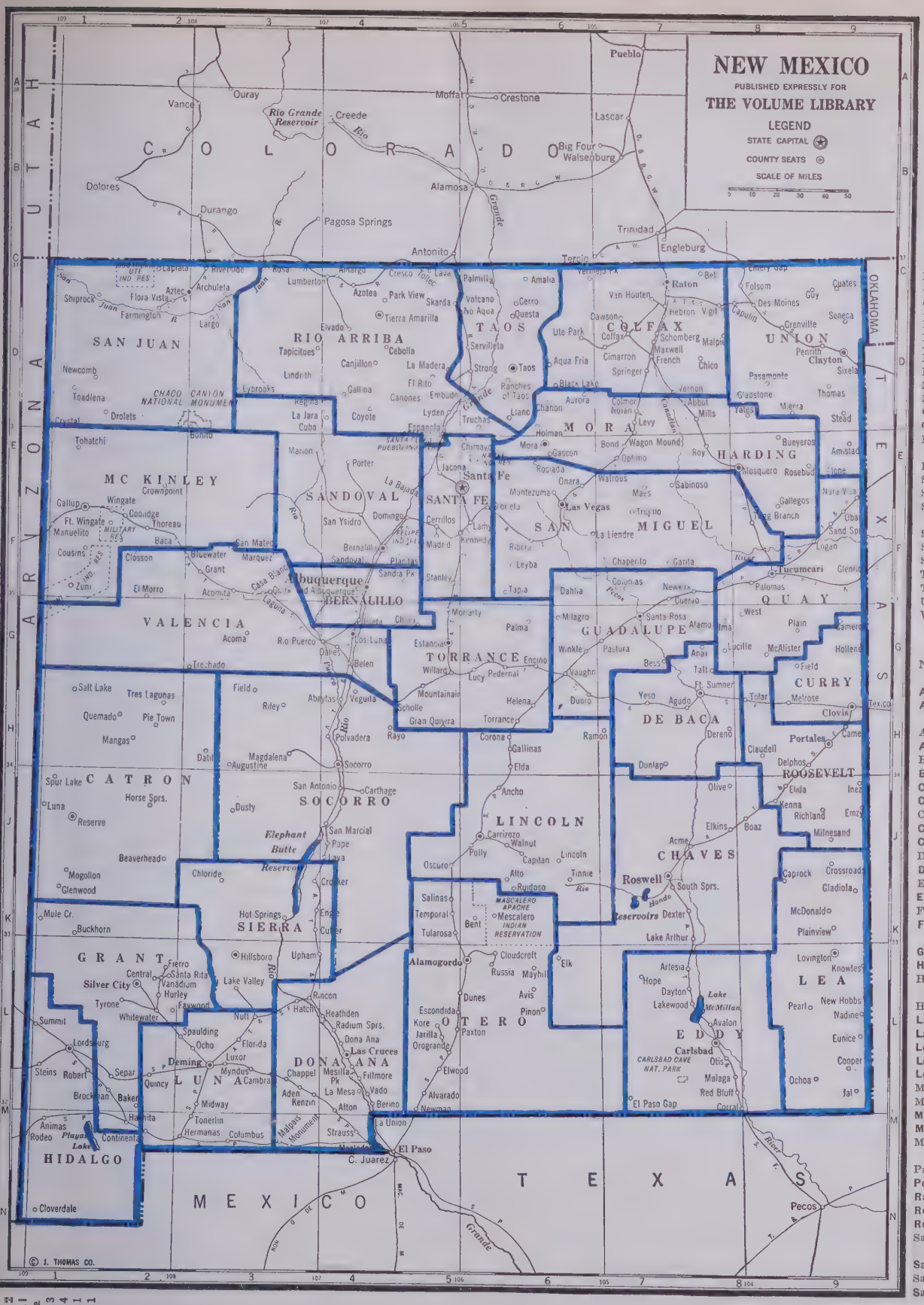
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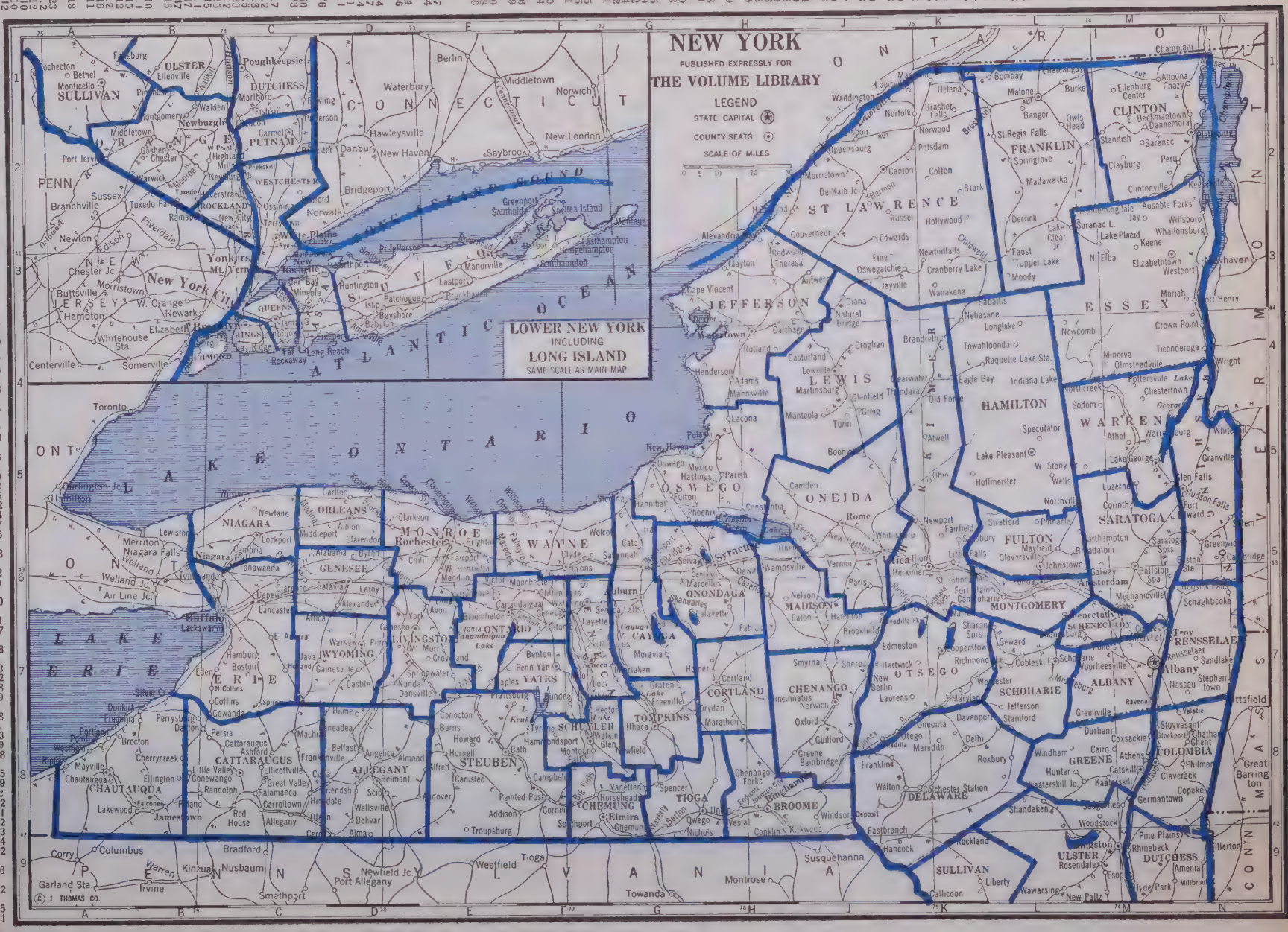
Asbury Park 8G 14
Atlantic City 6L 66
Atlantic Highlands 4H...8
Audubon 7D..85
Bayonne 7D..85
Belleville 7C..26
Bergenfield 8C..8
Bernardsville 6D 3
Bloomfield 7C..33
Bloomingdale 1H...2
Bogota 8C.....8
Boonton 7C.....6
Bordentown 5G..4
Bound Brook 6E 7
Bradley Beach 8G 3
Bridgeton 3L..15
Burlington 4G 10
Butler 6C.....3
Caldwell 7C...5
Camden 3H...118
Carlstadt 8C...5
Carteret 6E...13
Cedargrove 7D..4
Chatham 6D...3
Clayton 3K.....2
Cliffside 8C...15
Clifton 7C....45
Collingswood 3H 12
Cranford 7D...5
Dover 6C.....10
Dumont 8C....5
Dunellen 6D...5
E. Newark 7D..2
E. Orange 7D 68
E. Paterson 8C 4
Edgewater 8C..4
Egg Harbor City 5K.....3
Elizabeth 7D 114
Englewood 8C..17
Fair Lawn 8C..5
Fairview 8C....4
Fort Lee 8C....8
Franklin 6B...4
Freehold 7F...6
Garfield 7C...29
Garwood 7D...3
Glassboro 3J...4
Glen Ridge 7C..7
Gloucester City 3H 13
Greenwich 2L..1
Guttenburg 8D..6
Hackensack 8C 24
Haddonfield 4H 8
Haddon Heights 4H 5
Hammonton 5K 7
Harrison 7D..15
Hasbrouck Heights 8C..5
Hawthorne 7C.11
Highland Park 6E 8
Hightstown 6F..3
Hoboken 8D..59
Irvington 7D..56
Jersey City 8D 316
Kearny 7C....10
Keyport 7E....4
Lakewood 7G....5
Leonia 8C.....5
Linden 7D....21
Lindenwold † Little Ferry 8C 4

Livingston 7C..3
Lodi 8C.....11
Long Branch 8F 18
Madison 6D..7
Manasquan 7F..2
Manville 6E..8
Matawan 7E..2
Merchantville 4H 3
Metuchen 7E..3
Middlesex 6E..3
Midland Park 8C 3
Millburn 7D...8
Milltown 6E..2
Millville 3L..14
Montclair 7C..42
Montville 6C..2
Moorestown 4G..15
Morristown 6C..16
Mt. Holly 5H..2
Netcong 5D..2
Newark 7D..442
New Brunswick 6E..34
Newton 5B.....5
Ocean City
5M 5
Ocean Grove 8F..2
Orange 7C....33
Oradell 8C....4
Palisades Park 8C 7
Palmyra 4H...4
Park Ridge 8C..2
Passaic 8C....63
Paterson 7G..138
Paulsboro 3J...6
Penns Grove 3H 5
Perth Amboy 7D..44
Phillipsburg 3D 19
Pitman 3J....5
Plainfield 6D..34
Pleasantville 6J 11
Pt. Pleasant 8G 2
Pompton Lakes 8C 3
Princeton 5F...6
Railway 7D....3
Ramsey 8C....4
Raritan 6E....4
Red Bank 8F..11
Ridgefield 8C..4
Ridgefield Park 8C 10
Ridgewood 5C..12
Riverside 4H...3
Riverton 4H...3
Rockaway 6C...13
Roselle 7D....2
Rumson 8F....2
Rutherford 8C..14
Salem 2K...8
Sayreville 7E..8
Scotch Plains 7D 4
Secaucus 8C....8
Somerville 6E..8
S. Amboy 7E..8
S. Orange 7D..13
S. Plainfield 6E 5
S. River 7E..10
Springfield 7D..3
Summit 6D..14
Swedesboro 2L..2
Tenafly 8C....5
Toms River 2
Trenton 5G...123
Tuckerton 7K..1
Union 7D....16
Union City 8C 58
Vauxhall 7D....3
Verona 7C.....7
Vineland 4L....17
Wallington 8D..9
Washington 4D..4
Westfield 7D..15
W. New York 8D 36
Westville 3J....3
Westwood 8C....4
Wharton 6C....3
Wildwood 5N..15
Williamstown 4J 5
Woodbine 4M..2
Woodbury 3J...8
Wyckoff 8C....2

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LEGEND
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COUNTY SEATS
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0 10 20 30 40 50
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MEXICO
SAN JUAN
RIO ARRIBA
TAOS
COLFAX
UNION
MORA
HARDING
MC KINLEY
SANDOVAL
SANTA FE
SAN MIGUEL
QUAY
VALENCIA
BERNALILLO
GUADALUPE
TORRANCE
CURRY
DE BACA
ROOSEVELT
CATRON
SOCORRO
LINCOLN
CHAVES
GRANT
SIERRA
LUNA
DONA ANA
OTERO
EDDY
LEA
HIDALGO
Albuquerque
Santa Fe
Las Vegas
Roswell
Carlsbad
Clovis
Portales
Hobbs
Alamogordo
Deming
Silver City
Gallup
Farmington
Aztec
Bloomfield
Durango
Pagosa Springs
Pueblo
Trinidad
Raton
Springer
Clayton
Tucumcari
Las Cruces
El Paso
C. Juarez
Pecos
Lovington
Artesia
Hobbs
Ruidoso
Mescalero Apache Indian Reservation
Chaco Canyon National Monument
Carlsbad Cave Nat. Park
Elephant Butte Reservoir
Rio Grande Reservoir
Lake McMillan
Brantley Reservoirs
Conchas Lake
Navajo Indian Reservation
Ute Ind. Res.
Jicarilla Apache Ind. Res.
Santa Clara Pueblo
Picuris Indian Pueblo
Isleta Pueblo
Laguna Ind. Res.
Acoma Ind. Res.
Zuni Ind. Res.
Malpais Monument
Rio Grande
Pecos River
Canadian River
Dolores River
San Juan River
Animas River
Gila River
Mimbres River
Hondo Reservoirs
Lake Arthur
El Paso Gap
Corrales
Cloverdale
Malaga
Red Bluff
Otis
Avalon
Lakewood
Dayton
Hope
Loving
Knowles
Eunice
Jal
Monument
Tularosa
Alamogordo
Cloudcroft
Mayhill
Elk
Russia
Avis
Dunes
Pinon
Escondida
Kore
Jarilla
Orogrande
Paxton
Elwood
Alvarado
Newman
Berino
Vado
Fillmore
Mesilla Pk
La Mesa
Afton
Aden
Kenzin
Chappel
Radium Sprs.
Dona Ana
Las Cruces
Heathden
Rincon
Hatch
Upham
Hillsboro
Lake Valley
Silver City
Fierro
Central
Santa Rita
Vanadium
Hurley
Faywood
Tyrone
Whitewater
Null
Spaulding
Ocho
Florida
Luxor
Myndus
Cambra
Deming
Quincy
Separ
Robert
Steins
Lordsburg
Summit
Hachita
Midway
Tonerlin
Hermanas
Columbus
Playas Lake
Continental
Animas
Rodeo
Brockman
Baker
Buckhorn
Mule Cr.
Glenwood
Mogollon
Reserve
Luna
Horse Sprs.
Spur Lake
Quemado
Pie Town
Salt Lake
Tres Lagunas
Mangas
Datil
Magdalena
Augustine
Socorro
San Antonio
Carthage
Dusty
San Marcial
Pope
Laya
Crocker
Engle
Cutler
Hot Springs
Chloride
Beaverhead
Riley
Field
Abeytas
Veguita
Polvadera
Rayo
Los Lunas
Belen
Jarales
Peralta
Chilili
Tome
Valencia
Isleta
Los Lunas
Belen
Bosque
Bosque Farms
Manzano
Estancia
Willard
Mountainair
Scholle
Gran Quivira
Encino
Lucy
Pedernal
Torrance
Corona
Gallinas
Elida
Ancho
Carrizozo
Walnut
Polly
Capitan
Lincoln
Oscuro
Alto
Tinnie
Ruidoso
Salinas
Temporal
Tularosa
Bent
Mescalero
Cloudcroft
Russia
Mayhill
Elk



Hudson Falls 5N.....6
Huntington 3D..9
Ilion 5K.....9
Ithaca 7G.....20
Jamaica 3C....14
Jamestown 8B.45
Johnson City 8H.....13
Johnstown 6L..10
Kingston 9M..28
Lackawanna 7B.....23
Lake George 5M.....16
Lake Pleasant 5L.....15
Little Falls 6K.....11
Little Valley 8C.....1
Lockport 6C...23
Lynbrook 4C...11
Lyons 6F.....3
Malone 1L.....8
Mamaroneck 2C.....11
Massena 1K...10
Mayville 8A....1
Middletown 2B.....21
Mineola 3C.....8
Monticello 1A..3
Mount Vernon 3C.....61
Newburgh 2B..31
New City 2B..14
New Rochelle 3C.....54
New York 3C....6,930
Bronx Bor. 3C.....1,265
Brooklyn Bor. 3C.....2,560
Manhattan Bor......1,867
Queens Bor.1,079
Richmond Bor......158
Niagara Falls 6B.....75
North Tonawanda 6C...19
Norwich 7J.....8
Ogdensburg 2J.....16
Olean 8C.....21
Oneida 6J.....10
Oneonta 7K...12
Ossining 3C...15
Oswego 5G....22
Owego 8H.....4
Peekskill 2C...17
Penn Yan 7F...5
Plattsburg 1M.....13
Port Chester 3C.....22
Port Jervis 2A.10
Poughkeepsie 1C.....40
Rensselaer 7M.....11
Riverhead 3E...7
Rochester 6E.....328
Rockville Center 3D...13
Rome 5J.....32
Rye 3C.....8
Salamanca 8C...9
Saranac Lake 2L.....8
Saratoga Springs 6M.....13
Scarsdale 3C....9
Schanarie 7L..18
Schenectady 6M.....95
Syracuse 6H..209
Tonawanda 6B.12
Troy 7M.....72
Utica 6J.....101
Wampsville 6J.†2
Warsaw 7D.....3
Waterloo 6F....4
Watertown 4H.32
Watervliet 7M.....16
Watkins Glen 8F.....2
White Plains 3C.....35
Yonkers 3C...131

Albany 7M...127
Albion 5D....4
Amsterdam 6L.....34
Auburn 6G....36
Baldwin Spa 6M.....4
Batavia 6D....4
Bath 8E.....14
Beacon 1C.....11
Belmont 8D....11
Binghamton 8H.....76
Brooklyn 3C.2,560
Buffalo 6B...573
Canandaigua.....7
Canton 2J.....3
Carmel 2C.....3
Catskill 8M....3
Cohoes 7L.....23
Cooperstown 7K.2
Corning 8F.....15
Cortland 7H...15
Delhi 8K.....1
Dunkirk 7B.....17
Elmira 8G.....47
Endicott 8H...16
Floral Park 6L.....10
Fonda 6L.....10
Freeport 3D....15
Fulton 5G.....12
Geneva 6F....12
Geneseo 7E....12
Glen Cove 3D..11
Glens Falls 5M.....18
Gloversville 6L.....23
Goshen 2B.....9
Hempstead 4C...10
Herkimer 6K...10
Hudson 8M....12
Ilion 5K.....9

Albany 7M..211
Allegany 8D..38
Bronx 3C..1,265
Broome 8H..147
Cattaraugus.....72
Cayuga 6G....64
Chautauqua.....126
Chemung 8G..74
Chenango 7J..34
Clinton 1M..46
Columbia 8M..41
Cortland 7H..31
Delaware 8K..41
Dutchess 1C &.....105
9M.....105
Erie 6B....795
Essex 3M..33
Franklin 2L..45
Fulton 6L..46
Genesee 6D...44
Greene 8M...25
Hamilton 5J...3
Herkimer 5K..64
Jefferson 4H..83
Kings 4C..2,580
Lewis 4J...25
Livingston 6E..37
Madison 7K..46
Monroe 6F..439
Montgomery 6L..33
Nassau 3C....303
New York.....60
Niagara 5C...149
Oneida 5J...198
Onondaga 6H..291
Ontario 7F...45
Orange 2B..130
Orleans 5D...38
Oswego 7K...46
Otsego 7K...66
Putnam 2C....13
Queens 4C..1,079
Rensselaer.....119
Richmond.....158
Rockland 3B..59
St Lawrence.....90
Saratoga 6M..63
Schenectady.....125
Schoharie 7J..19
Schuyler 7G..11
Seneca 7F...25
Steuben 8C..161
Suffolk 3E..161
Sullivan 9K &.....76
10K.....76
Tioga 8G....41
Tompkins 7G..41
Ulster 1B &.....355
9K.....355
Warren 5M..31
Washington.....80
Wayne 6F...46
Westchester.....49
Wyoming 7D..29
Yates 7F....16

Albany 7M..211
Allegany 8D..38
Bronx 3C..1,265
Broome 8H..147
Cattaraugus.....72
Cayuga 6G....64
Chautauqua.....126
Chemung 8G..74
Chenango 7J..34
Clinton 1M..46
Columbia 8M..41
Cortland 7H..31
Delaware 8K..41
Dutchess 1C &.....105
9M.....105
Erie 6B....795
Essex 3M..33
Franklin 2L..45
Fulton 6L..46
Genesee 6D...44
Greene 8M...25
Hamilton 5J...3
Herkimer 5K..64
Jefferson 4H..83
Kings 4C..2,580
Lewis 4J...25
Livingston 6E..37
Madison 7K..46
Monroe 6F..439
Montgomery 6L..33
Nassau 3C....303
New York.....60
Niagara 5C...149
Oneida 5J...198
Onondaga 6H..291
Ontario 7F...45
Orange 2B..130
Orleans 5D...38
Oswego 7K...46
Otsego 7K...66
Putnam 2C....13
Queens 4C..1,079
Rensselaer.....119
Richmond.....158
Rockland 3B..59
St Lawrence.....90
Saratoga 6M..63
Schenectady.....125
Schoharie 7J..19
Schuyler 7G..11
Seneca 7F...25
Steuben 8C..161
Suffolk 3E..161
Sullivan 9K &.....76
10K.....76
Tioga 8G....41
Tompkins 7G..41
Ulster 1B &.....355
9K.....355
Warren 5M..31
Washington.....80
Wayne 6F...46
Westchester.....49
Wyoming 7D..29
Yates 7F....16

TOWNS

Name Key Pop. Thous.

COUNTIES

Pop.. 12,568,066

† POP. SHOWN IN HUNDREDS.

COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX.

* POP. OF COUNTY SEAT BELOW ONE THOUSAND.



NORTH CAROLINA

Pop. 3,170,276

Counties

Name	Key	Pop. Thous.
Alamance	2F	42
Alexander	2E	12
Alleghany	1B	7
Anson	5D	39
Ashe	1A	21
Avery*	1A	11
Beaufort	6L	45
Bertie	2L	25
Bladen*	5L	22
Brunswick	7L	14
Buncombe	8D	97
Burke	3A	29
Cabarrus	4C	34
Caldwell	3B	35
Camden*	1M	5
Carteret	5L	15
Caswell*	1F	18
Catawba	3B	43
Chatham*	3F	24
Cherokee	9A	16
Chowan	2L	11
Clay*	9B	5
Cleveland	4A	51
Columbus	6K	30
Craven	4K	58
Cumberland	5H	115
Currituck*	1N	8
Dare*	2N	5
Davidson	3D	47
Davie*	3C	14
Duplin*	5J	35
Durham	2G	97
Edgecombe	3J	53
Forsyth	2D	133
Franklin	2H	32
Gaston	4B	78
Gates*	1L	10
Graham*	8B	5
Granville	2G	28
Greene*	4J	18
Guilford	2E	183
Halifax	1J	53
Harnett	5G	38
Haywood	8C	39
Henderson	8E	23
Hertford	1K	17
Hoke	5F	14
Hyde*	4M	5
Iredell	3C	46
Jackson	9C	17
Johnston	5H	57
Jones*	5K	10
Lee	4F	35
Lenoir	4J	53
Lincoln	4B	22
McDowell	7D	20
Macon	9C	13
Madison	7D	20
Martin	3K	23
Mecklenburg	4C	172
Mitchell*	7E	13
Montgomery	6E	16
Moore	5F	28
Nash	2J	52
New Hanover	7K	43
Northampton*	1K	27
Onslow*	5K	15
Orange*	2F	21
Pamlico*	4L	9
Pasquotank*	1M	29
Pender*	6K	15
Perquimans	2L	9
Person	1F	22
Pitt	3K	59
Polk*	9E	10
Randolph	3E	36
Richmond	5E	38
Robeson	6F	66
Rockingham	2E	66
Rowan	3C	56
Rutherford	4A and 8F	40
Sampson	5H	40
Scotland	5F	20
Stanly	4D	30
Stokes	1D	30
Surry	1C	37
Swain	8B	11
Transylvania	9D	9
Tyrrell*	3M	4
Union	5C	40
Vance	1H	27
Wake	3G	94
Warren	1H	23
Washington	1L	9
Watauga	2A	11
Wayne	4J	53
Wilkes	2B	36
Wilson	3J	41
Yadkin*	2C	18
Yancey*	7E	14

Towns

Name	Key	Pop. Thous.
Aberdeen	5G	1
Ahoskie	1K	3
Albemarle	4D	3
Andrews	9B	1
Asheboro	3E	3
Asheville	8D	50
Badin	4D	3
Beaufort	6L	2
Belhaven	3L	2
Belmont	4B	4
Bessemer City	4B	3
Brevard	9D	2
Burlington	2F	9
Canton	8D	5
Charlotte	4C	82
Clinton	5H	2
Concord	4C	11
Cooleemee	3C	2
Cramerton	4B	2
Dunn	4G	4
Durham	2G	52
E. Spencer	3D	2
Edenton	2L	3
Elizabeth City	1M	10
Elkin	1C	2
Farmville	3J	2
Fayetteville	4G	13
Forest City	9F and 4A	4
Gastonia	4B	17
Goldsboro	4J	14
Graham	2F	2
Granite Falls	3B	3
Greensboro	2E	53
Greenville	3K	9
Hamlet	5E	4
Henderson	1H	6
Hendersonville	8E	5
Hickory	3B	7
High Point	3E	36
Kings Mountain	4A	3
Kinston	4J	11
Laurinburg	5F	3
Lenoir	3A	6
Lexington	3D	9
Lincolnton	4B	3
Louisburg	2H	2
Lumberton	6F	4
Marion	7E	2
Monroe	5C	6
Mooresville	3L	5
Morehead City	6L	3
Morganton	3A	3
Mt. Airy	1C	6
Mt. Holly	4B	2
Mt. Olive	4J	2
New Bern	4K	11
Newton	3B	4
N. Wilkesboro	2B	3
Oxford	1G	4
Plymouth	3L	2
Raleigh	3G	37
Reidsville	1E	6
Roanoke Rapids	1J	3
Rockingham	5E	2
Rocky Mount	3J	21
Roxboro	1F	3
Rutherfordton	8F	2
St. Pauls	5G	2
Salisbury	3C	18
Sanford	4F	4
Shelby	4A	10
Smithfield	3H	2
Spencer	3C	3
Spindale	8F	3
Spray	1E	6
Statesville	3C	10
Tarboro	3J	6
Thomasville	3D	10
Wadesboro	5D	3
Washington	3K	7
Waynesville	8L	2
Whiteville	6G	2
Wilkesboro	2B	1
Williamston	3K	2
Wilmington	6J	32
Wilson	3J	12
Windsor	2L	1
Winston Salem	2D	75

NORTH DAKOTA

Pop., 680,845

COUNTIES

Name Key Pop. Thous.

Adams 8C....18
Barnes 6L....18
Benson* 8J....13
Billings* 6B....3
Bottineau 2F....13
Bowman* 5B....5
Burke 2D....9
Burleigh 6F....19
Cass 6M....48
Cavalier 2K....14
Dickey 8K....10
Divide 1C....9
Dunn* 5C....8
Eddy 4J....4
Emmons 8G....12
Foster 5J....6
Golden Valley 6A....9
Grand Forks 4M....31
Grant* 7E....10
Griggs 5K....6
Hettinger 6H....8
Kidder 6J....6
La Moure* 7K....11
Logan* 7H....5
McHenry* 3F....15
McIntosh 8H....9
McKenzie* 4B....9
McLean* 5D....17
Mercer* 5D....9
Morton 7F....19
Mountrail* 1D....13
Nelson* 4K....13
Oliver* 6E....4
Pembina* 2L....11
Pierce 3G....9
Ramsey 3J....13
Ransom 7L....10
Renville* 2E....7
Richland 8N....21
Rolette* 3H....10
Sargent* 8L....6
Sheridan* 3D....2
Sioux* 8F....3
Slope* 7B....1
Stark 7C....15
Steele* 5L....2
Stutsman 6J....25
Towner 3J....8
Traill 5M....12
Walsh 3L....20
Ward* 3B....13
Wells* 5H....9
Williams 3B....19

TOWNS

Name Key Pop. Thous.

Ashley 8I....1
Beach 6A....1
Bismarck 7F....11
Bottineau 2G....8
Bowman 8B....1
Cando 3J....1
Carrington 5J....3
Casselton 6M....1
Cavalier 2L....1
Center 6E....1
Crosby 2B....1
Devils Lake 4H....7
Dickinson 6C....5
Ellendale 8K....1
Enderlin 7L....1
Fargo 6N....28
Garrison 5H....1
Grafton 3M....3
Grand Forks 4M....17
Hankinson 8N....1
Hartland 3D....2
Harvey 5H....2
Hebron 6D....1
Hettinger 8C....1
Hillsboro 5M....1
Jamestown 6J....8
Kenmare 2D....1
Lakota 3K....2
La Moure 7K....2
Langdon 2K....3
Lidgerwood 8M....1
Linton 7L....1
Lisbon 7L....3
McClusky 5G....1
Mandan 7F....11
Minot 3M....32
Mohall 1E....1
Mott 8D....2
New Rockford 7H....2
Oakes 8L....2
Park River 3L....1
Rolla 3H....1
Scranton 8B....1
Stanley 3G....1
Stanton 3D....1
Steele 7H....1
Towner 3G....1
Valley City 6L....5
Wahpeton 8N....5
Washburn 5F....2
Williston 3B....5
Wishek 6H....1

OHIO Towns—Cont.

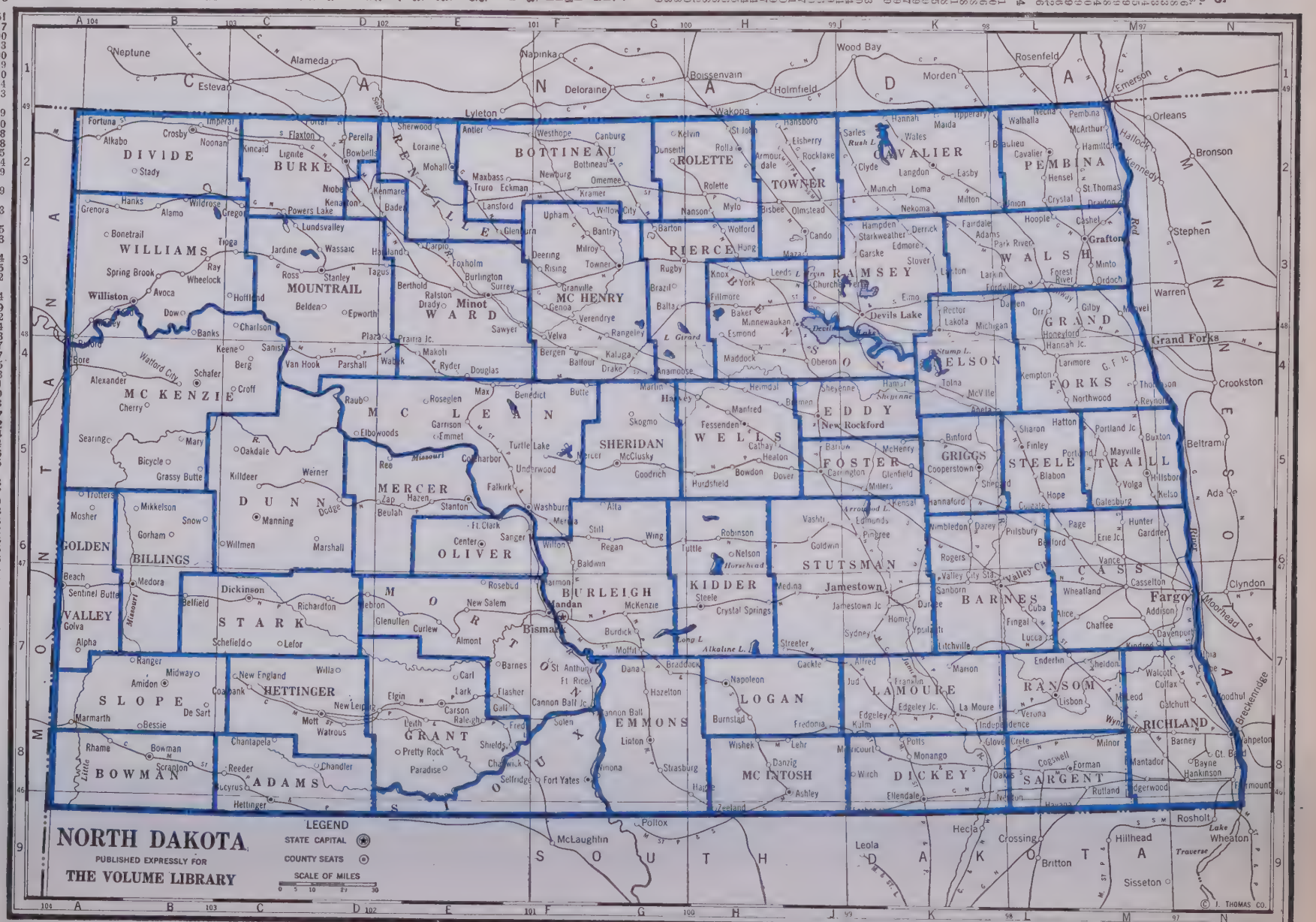
Campbell 9E....14
Canton 7E....104
Carrollton 8F....2
Celina 1F....4
Chardon 8C....1
Chillicothe 4J....18
Cincinnati 1K....451
Circleville 4H....7
Cleveland 7C....900
Clyde 4D....3
Columbus 4H....290
Conneaut 9B....9
Coshocton 7G....10
Crestline 5E....4
Crooksville 6H....3
Cuyahoga Falls 7D....19
Dayton 2H....200
Defiance 2D....8
Delaware 4G....8
Delphos 2E....5
Dennison 7F....4
Dover 7F....9
East Cleveland 7C....39
East Liverpool 9F....23
East Palestine 9E....5
Eaton 1H....3
Elmwood Place 1K....4
Elyria 6D....25
Euclid 7C....12
Fairport Harbor 7C....4
Findlay 3D....19
Fostoria 3D....12
Franklin 2J....4
Fremont 4D....13
Galion 5E....7
Gallipolis 6L....7
Garfield 9E....15
Geneva 8C....3
Georgetown 3L....1
Girard 9D....9
Greenfield 3J....3
Greenville 1G....7
Hamilton 1J....52
Hillsboro 3J....4
Hubbard 9D....4
Ironton 5L....16
Jackson 5K....5
Jefferson 9C....1
Kent 7D....8
Kenton 3F....7
Lakewood 6C....70
Lancaster 5H....8
Lebanon 2J....3
Lima 2F....42
Lisbon 9E....3
Lockland 2K....5
Logan 6J....6
London 4H....4
Lorain 6C....44
Louisville 7E....3
McArthur 5J....1
McConnellsville 7H....1
Mansfield 5E....33
Marietta 7J....14
Marion 4F....31
Martins Ferry 9G....14
Marysville 4G....3
Massillon 7E....26
Maumee 3C....4
Medina 6D....4
Miamisburg 2H....5
Middleport 6K....3
Middletown 2J....29
Millersburg 6F....2
Mingo Jc. 9F....5
Montpelier 1C....3
Mt. Gilead 5F....1
Mt. Vernon 5F....9
Napoleon 2D....4
Nelsonville 6J....5
Newark 6G....30
New Boston 4L....5
Newburg 7C....4
New Comerstown 7G....4
New Lexington 6H....3

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† POP. SHOWN IN HUNDREDS.

COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX.

* POP. OF COUNTY SEAT BELOW ONE THOUSAND.





OHIO

Pop. 6,646,697

Counties

Name	Key	Pop. Thous.
Adams	3L	20
Allen	2E	69
Ashland	6E	26
Ashtabula	9C	68
Athens	6J	44
Auglaize	2F	28
Belmont	8G	94
Brown	2L	20
Butler	1J	114
Carroll	8F	16
Champaign	3G	24
Clark	3H	99
Clermont	2K	29
Clinton	3J	21
Columbiana	9E	86
Coshocton	6G	28
Crawford	5E	35
Cuyahoga	7D	1,201
Darke	1G	38
Defiance	1D	22
Delaware	4G	26
Erie	5D	42
Fairfield	5H	44
Fayette	3J	20
Franklin	4G	361
Fulton	2C	23
Gallia	6L	23
Geauga	8C	15
Greene	3H	33
Guernsey	7G	41
Hamilton	1K	589
Hancock	3E	40
Hardin	3F	27
Harrison	8G	18
Henry	2D	22
Highland	3K	25
Hocking	6J	20
Holmes	6F	16
Huron	5D	33
Jackson	5K	25
Jefferson	9F	88
Knox	5F	29
Lake	8C	41
Lawrence	7L	44
Licking	7G	59
Logan	4F	28
Lorain	6D	109
Lucas	3C	347
Madison	4H	30
Mahoning	9E	236
Marion	4F	45
Medina	6D	29
Meigs	6K	23
Mercer	1F	25
Miami	2G	51
Monroe	8H	18
Montgomery	2H	273
Morgan	6H	13
Morrow	5F	14
Muskingum	6H	67
Noble	7H	14
Ottawa	4C	24
Paulding	1E	15
Perry	6H	31
Pickaway	4H	27
Pike	4K	13
Portage	8D	42
Preble	1H	22
Putnam	2E	25
Richland	5E	65
Ross	4J	45
Sandusky	4D	39
Scioto	4L	81
Seneca	4E	47
Shelby	2G	24
Stark	7E	221
Summit	7D	344
Trumbull	9D	123
Tuscarawas	7F	68
Union	4G	19
Van Wert	1E	26
Vinton	5J	10
Warren	2J	27
Washington	7J	42
Wayne	6E	47
Williams	1C	24
Wood	3D	50
Wyandot	4E	19

Towns

Name	Key	Pop. Thous.
Ada	3F	2
Akron	7D	255
Alliance	8E	23
Amherst	6D	2
Ashland	6E	11
Ashtabula	8C	2
Athens	6J	7
Barberton	7D	23
Barnesville	8G	4
Batavia	2K	1
Bedford	7D	6
Bellaire	9G	13
Bellefontaine	3G	9
Bellevue	5D	6
Berea	6D	5
Bowling Green	3D	6
Bridgeport	9G	4
Bryan	1C	4
Bucyrus	5E	10
Cadiz	8G	2
Caldwell	7H	1
Cambridge	7G	14

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OHIO Towns—Cont.
New London 5D 1
New Philadelphia 7F 12
Newton Falls 8D 3
Niles 9D 13
N. Olmsted 7E 1
Northfield 7D 1
Norwalk 5D 7
Norwood 2K 83
Oak Harbor 4C 1
Oak Hill 5L 1
Oakwood 1E 6
Oberlin 6D 4
Ottawa 2E 4
Oxford 1J 2
Painesville 7C 10
Paulding 1D 1
Perrysburg 3C 3
Piqua 2G 16
Pomeroy 6K 3
Port Clinton 4D 4
Portsmouth 5D 42
Powhatan Point 9H 2
Ravenna 8D 8
Reading 2K 5
Richwood 4F 1
Ripley 3L 1
Rittman 6E 2
Rocky River 7C 5
Rossford 3D 4
St. Bernard 2H 7
St. Clairsville 8G 5
St. Marys 2F 5
Salem 9E 10
Salineville 9F 2
Sandusky 5D 24
Sebring 9E 3
Shelby 3F 9
Sidney 2G 9
Spencerville 2F 1
Springfield 3H 68
Steubenville 9F 35
Struthers 9D 11
Swanton 3C 1
Tiffin 4D 16
Tiltonsville 9G 2
Tippecanoe City 2H 2
Toledo 3C 290
Toronto 9F 7
Troy 2G 8
Uhrichsville 9G 6
Upper Sandusky 4E 3
Urbana 3G 7
Van Wert 1E 8
Wadsworth 6D 5
Wapakoneta 2F 5
Warren 9D 41
Washington Court House 3J 8
Waverly 4K 2
Wellington 6D 2
Wellston 5J 5
Wellsville 9F 7
W. Carrollton 2H 2
Westerville 5G 2
West Union 3L 1
Willoughby 7C 4
Willshire 1C 2
Wilmington 3J 5
Woodsfield 8H 2
Wooster 6E 10
Xenia 3H 2
Yorkville 9G 1
Youngstown 9D 170
Zanesville 6H 36

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.

OKLAHOMA

Pop. 2,396,040

COUNTIES

Name Key Pop. Thous.

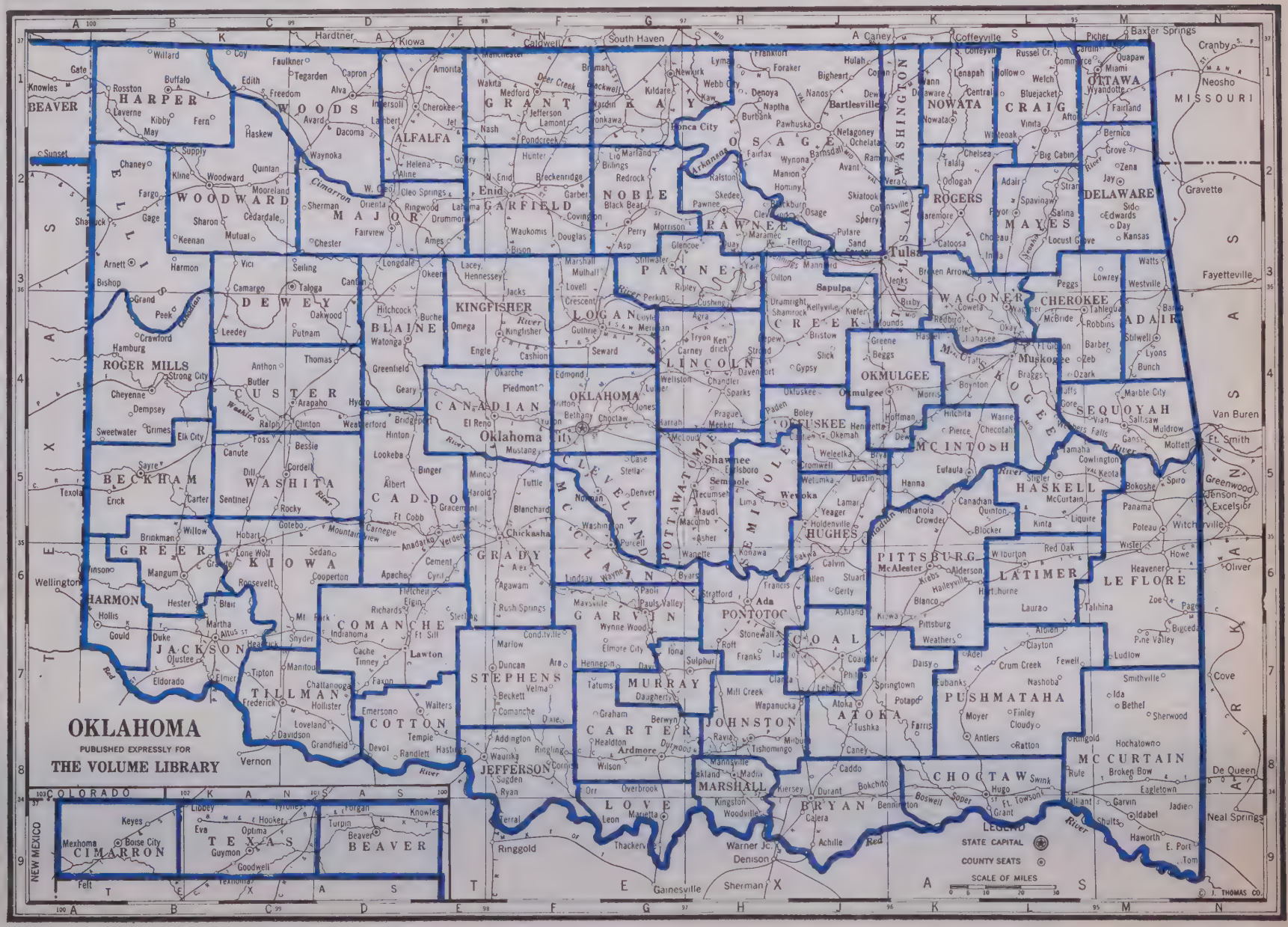
Adair 3M....14
Alfalfa 1E....15
Atoka 7J....14
Beaver 1A &
9D....11
Beckham 5B....28
Blaine 3E....20
Bryan 8J....32
Caddo 5D....50
Canadian 4E....28
Carter 8G....41
Cherokee 8L....24
Choctaw 8L....17
Cimarron 9A....2
Cleveland 5F....54
Coal 7J....11
Comanche 7D....94
Cotton 8D....15
Craig 1L....18
Creek 3J....64
Custer* 4C....27
Delaware* 2M....15
Dewey* 3C....13
Ellis* 3A....10
Garfield 2F....53
Garvin 6G....31
Grady 6E....47
Grant 4F....54
Greer 8B....15
Harmon 6A....13
Harper* 1B....7
Haskell 5L....16
Hughes 5J....30
Jackson 7B....28
Jefferson 8F....17
Johnston 7H....13
Kay 1G....50
Kingfisher 3E....15
Kiowa 6C....18
Latimer 6L....11
Le Flore 6M....42
Lincoln 3H....33
Logan 3F....31
Love 9F....10
McClain 5G....22
McCurtain 8M....34
McIntosh 5K....24
Major 2D....12
Marshall 8H....11
Mayes 2L....17
Murray 7G....12
Muskogee 4L....66
Noble 2C....15
Nowata 1K....13
Okfuskee 4J....29
Oklahoma 4F....221
Okmulgee 4K....42
Osage 2M....38
Ottawa 1M....29
Pawnee 3H....19
Payne 3G....36
Pittsburg 6K....50
Pontotoc 6H....32
Pottawatomie 5H....66
Pushmataha 7L....14
Roger Mills* 4B....14
Rogers 2K....18
Seminole 5M....19
Sequoyah 7P....32
Stephens 7E....53
Texas* 9C....14
Tillman 7C....24
Tulsa 3K....187
Wagoner 3L....22
Washington 1K....27
Washita 5C....29
Woods 1D....17
Woodward 2C....15

TOWNS

Name Key Pop. Thous.

Ada 6H....16
Altus 7B....11
Alva 1D....8
Anadarko 5E....5
Anadarko 4C....2
Arapaho 4C....5
Ardmore 8G....15
Arnett 3A....14
Atoka 7J....5
Barnsdall 2J....1
Bartlesville 3M....14
Beaver 9D....2
Bethany 4F....3
Blackwell 1G....9
Boise City 9A....1
Bristow 4J....6
Britton 4F....2
Broken Arrow 3K....1
Broken Bow 8M....3
Buffalo 1B....3
Carnegie 5D....2
Chandler 3H....2
Chelsea 2L....1
Cheyenne 4B....1
Chickasha 5E....14
Claremore 2K....3
Cleveland 3H....2
Clinton 4C....7
Coalgate 7J....2
Collinsville 2K....2
Comanche 7F....1
Commerce 1M....2
Cordell 5C....2
Cushing 3H....9
Dewey 1K....2
Drumright 3H....4
Duncan 7E....8
Durant 8J....7
Edmond 4F....3
Elk City 5B....5
El Reno 4E....9
Enid 2F....26
Erick 5A....2
Eufaula 5K....2
Fairfax 2H....2
Fairview 2D....1
Ft. Gibson 4L....1
Ft. Sill 7D....3
Frederick 7C....4
Guthrie 4F....9
Guymon 9C....2
Hartshorne 6K....3
Healdton 8F....2
Heavener 6M....2
Henryetta 5J....7
Hobart 6C....4
Holdenville 5H....7
Hollis 7A....2
Hominy 2J....3
Hugo 8L....5
Idabel 9M....2
Jay 2M....†2
Kingfisher 4E....2
Konawa 6H....2
Lawton 7D....12
McAlester 6K....11
Madill 8H....2
Mangum 6B....4
Marietta 9G....1
Marlow 7F....3
Maud 5H....4
Medford 1F....1
Miami 1M....8
Muskogee 4L....32
Newkirk 1G....2
Norman 5F....9
Nowata 1K....3
Okemah 5J....4
Oklahoma City 4F....185
Okmulgee 4J....17
Pauls Valley 6G....4
Pawhuska 1J....5
Pawnee 2H....2
Perry 2G....4
Picher 1M....7
Ponca City 1G....16
Poteau 5M....3
Purcell 5G....2
Sallisaw 4M....1
Sand Springs 3J....6
Sapulpa 3J....10
Sayre 5B....3
Seminole 5H....11
Shattuck 2A....1
Shawnee 5H....23
Snyder 7C....1
Stigler 5L....1
Stillwater 3G....7
Stilwell 4M....1
Stroud 4H....1
Sulphur 7H....4
Tahlequah 3M....2
Taloga 3C....†4
Taloga 3C....†4
Tecumseh 5H....2
Thomas 4D....1
Tishomingo 7H....1
Tonkawa 1G....3
Tulsa 3K....141
Vinita 1L....4
Wagoner 3L....2
Walters 8E....2
Watonga 4E....2
Waurika 8E....2
Waynoka 2D....1
Weatherford 4D....2
Weleetka 4J....2
Wetumka 5J....2
Wewoka 5H....10
Wilburton 6L....1
Wilson 8F....2
Woodward 2B....5
Wynne Wood 6G....1
Yukon 4F....1

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.



OREGON

Pop. 953,786

Counties

Name	Key	Pop. Thous.
Baker	4M	.16
Benton	4D	.16
Clackamas	3E	.46
Clatsop	1C	.21
Columbia	1D	.20
Coos	7C	.28
Crook	5H	.3
Curry*	8B	.3
Deschutes	5G	.14
Douglas	7D	.21
Gilliam*	2H	.3
Grant*	4K	.5
Harney	7K	.5
Hood River	2F	.8
Jackson	8D	.32
Jefferson*	4G	.2
Josephine	8C	.11
Klamath	8F	.32
Lake	8H	.4
Lane	5D	.54
Lincoln	4C	.9
Linn	4E	.24
Malheur*	7M	.11
Marion	3E	.60
Morrow	2J	.4
Multnomah	2E	.338
Polk	3D	.16
Sherman*	2G	.2
Tillamook	2C	.11
Umatilla	2K	.24
Union	3L	.17
Wallowa	2M	.7
Wasco	3G	.12
Washington	2D	.30
Wheeler*	4H	.2
Yam Hill	3D	.22

Towns

Name	Key	Pop. Thous.
Albany	4D	.5
Ashland	9E	.4
Astoria	1C	.10
Baker	4L	.7
Bandon	7B	.1
Beaverton	2E	.1
Bend	5G	.8
Burns	6K	.2
Canyon City	5K	†2
Condon	3H	†9
Coquille	7B	.2
Corvallis	4D	.7
Cottage Grove	6D	.2
Dallas	3D	.2
Enterprise	2M	.1
Eugene	5D	.18
Forest Grove	2D	.1
Fossil	3H	†5
Gladstone	3E	.1
Gold Beach	8B	†1
Grants Pass	8D	.4
Gresham	2E	.1
Heppner	2J	.1
Hillsboro	2D	.3
Hood River	2F	.2
Independence	3D	.1
Klamath Falls	9F	.16
La Grande	3L	.8
Lakeview	9H	.1
Lebanon	4D	.1
McMinnville	3D	.2
Madras	4G	†2
Marshfield	6B	.5
Medford	8D	.11
Milton	1L	.1
Milwaukie	2E	.1
Moro	2H	†3
Myrtle Point	7C	.1
Newberg	3D	.2
Newport	4C	.1
North Bend	6B	.4
Ontario	5N	.1
Oregon City	3E	.5
Oswego	2E	.1
Pendleton	2K	.6
Portland	2E	.301
Prineville	4G	.1
Rainier	1E	.1
Reedsport	6C	.1
Roseburg	7D	.4
St. Helens	2E	.3
Salem	3D	.26
Seaside	1C	.1
Sheridan	3D	.1
Silverton	3E	.2
Springfield	5D	.2
The Dalles	2G	.5
Tillamook	2C	.2
Toledo	4C	.2
Union	2L	.1
Vale	5M	†9
Vernonia	2D	.1
West Linn	3E	.1
Woodburn	3D	.1

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.

PENNSYLVANIA

Pop. 9,631,350

Counties

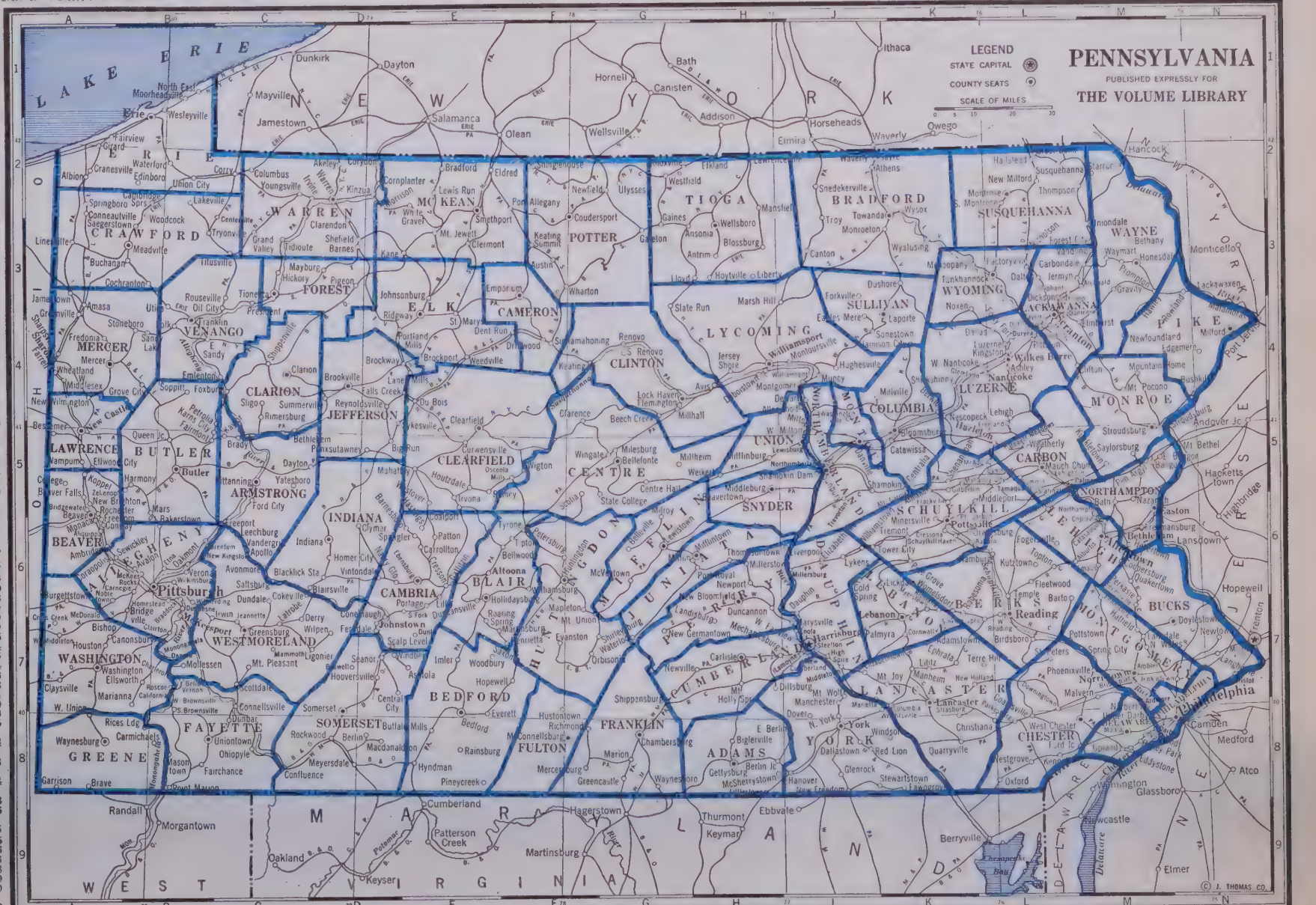
Name Key Pop. Thou.
Adams 8H ..87
Allegheny 1,374
6H ..1,374
Armstrong 5G 79
Beaver 5A 149
Bedford 7E ..37
Berks 6L ..251
Blair 6E ..130
Bradford 2K ..61
Bucks 7M ..308
Butler 3D ..103
Cambria 5F ..163
Cameron 4E ..5
Carbon 7L ..63
Centre 5G ..86
Chester 8L ..326
Clarion 4C ..39
Clearfield 5E ..86
Clinton 4G ..32
Columbia 5K ..58
Crawford 3A ..62
Cumberland 7I ..162
Dauphin 6I ..195
Delaware 8M ..280
Elk 3E ..32
Erie 2B ..175
Fayette 8B ..198
Forest 3C ..5
Franklin 8G ..65
Fulton 8F ..9
Greene 8A ..41
Huntingdon 5H ..39
Indiana 6D ..39
Jefferson 4D ..33
Juniata 6H ..14
Lackawanna 3L ..310
Lancaster 7K ..196
Lawrence 3A ..97
Lebanon 6K ..97
Lehigh 6M ..172
Luzerne 4L ..344
Lycoming 4H ..58
McKean 2E ..43
Mercer 2C ..120
Mifflin 5I ..46
Monroe 6N ..39
Montgomery 8M ..516
Montour 5J ..14
Northampton 6N ..169
Northumberland 5M ..94
Perry 6I ..43
Philadelphia 8N ..1,950
Pike 4N ..18
Potter 2F ..17
Schuylkill 5K ..235
Snyder 5H ..33
Somerset 8D ..80
Sullivan 3J ..7
Susquehanna 1L ..39
Tioga 2H ..33
Union 5H ..14
Venango 3C ..63
Warren 2D ..41
Washington 7A ..204
Wayne 3M ..28
Westmoreland 7C ..295
Wyoming 3L ..15
York 8J ..167

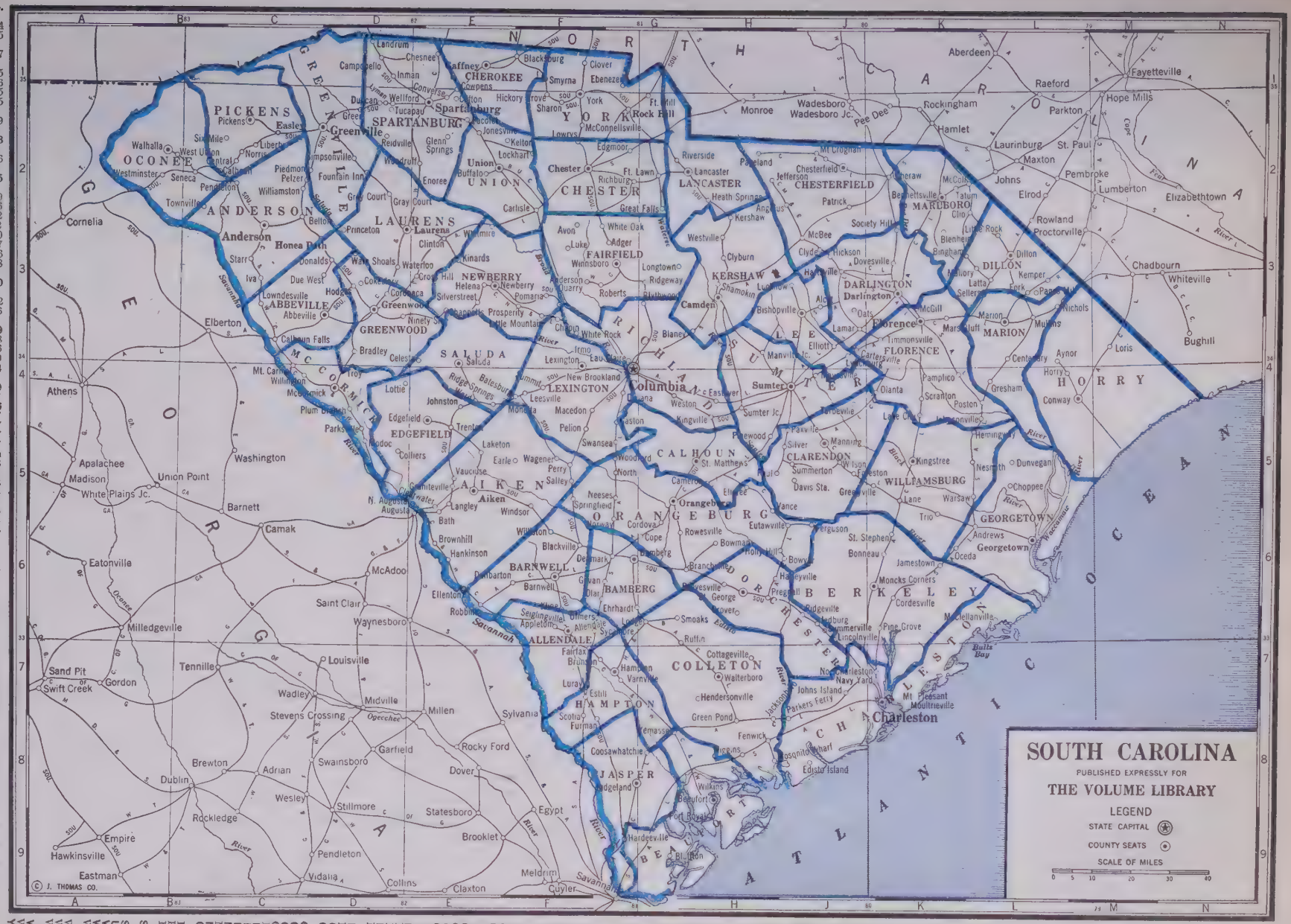
Towns

Aliquippa 6A 27
Allentown 6M 92
Altoona 6E ..83
Ambridge 6A ..9
Apollo 5A ..4
Ashland 3M ..10
Ashley 4L ..7
Athens 2M ..4
Avoca 4L ..4
Bangor 5M ..5
Beaver Falls 5A ..17
Bedford 7E ..4
Bellefonte 5G ..12
Bethlehem 6M ..57
Blairsville 6F ..57
Bloomsburg 5K ..9
Brackenridge 6B ..6
Braddock 6B ..19
Bradford 2K ..19
Bridgeport 7M ..11
Brookville 4D ..4
Butler 5B ..23
Canonsburg 7A ..12
Carbondale 3L ..20
Carlisle 7H ..12
Carnegie 6B ..12
Catasauqua 6M ..4
Centerville 3A ..0
Chambersburg 7I ..13
Chester 8L ..58
Clairton 6B ..15
Clarion 4C ..3
Clearfield 4E ..9
Clifton Heights 8M ..5
Coaldale 5K ..6
Coatesville 8L ..14
Columbia 7K ..11
Conemaugh 7D ..6
Connellsville 7C ..13
Conshohocken 7M ..10
Coraopolis 6A ..10
Corry 2C ..7
Danville 5J ..7
Darby 8M ..9
Dickson 3L ..12
Donora 7A ..13
Downington 7L ..4
Doylestown 7M ..4
Du Bois 4E ..11
Dunmore 3L ..22
Duquesne 6B ..21
Duryea 4L ..8
Easton 6M ..34
E. Pittsburgh 6B ..6
E. Stroudsburg 5M ..6
Edensburg 6D ..3
Ellwood City 5A ..12
Emaus 6M ..6
Enola 7H ..4
Ephrata 7K ..5
Erie 1B ..115
Farrell 4A ..14
Ford City 5C ..6
Forest City 3M ..5
Forty Fort 4L ..6
Frackville 5K ..8
Franklin 4B ..10
Freeland 4L ..7
Gettysburg 8H ..5
Gilberton 5K ..4
Girardville 5K ..4
Glassport 6B ..8
Glen Olden 8M ..4
Greensburg 7C ..16
Greenville 3A ..8
Grove City 4B ..6
Hanover 8J ..11
Harrisburg 7J ..80
Hazleton 5L ..39
Hollidaysburg 6E ..5
Homestead 6B ..20
Honesdale 3M ..5
Huntingdon 6F ..7
Indiana 6D ..9
Jeannette 7C ..15
Jersey Shore 4H ..5
Jessup 3L ..9
Johnstown 7D ..66
Kane 3D ..6
Kingston 4L ..21
Kittanning 5C ..7
Kulpmont 5J ..6
Lancaster 7K ..59
Lansdale 7M ..8
Lansdowne 8M ..9
Lansford 5L ..9
Latrobe 7C ..10
Lebanon 6K ..25
Letchburg 6C ..4
Lehighton 5L ..6
Lemoyne 7H ..4
Lewisburg 5J ..3
Lewistown 6G ..13
Lititz 7K ..4
Lock Haven 4G ..9
Luzerne 4L ..6
McAdoo 5K ..5
McKeesport 6B ..54
McKees Rocks 6B ..18
Mahanoy City 5K ..14
Mauch Chunk 5L ..3
Meadville 3A ..16
Mechanicsburg 7H ..5
Media 8M ..5
Middletown 7J ..6
Midland 5A ..6
Milton 5J ..8
Minersville 6K ..9
Monessen 7B ..20
Monongahela 7B ..8

Cont. on Page 479

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.


PENNSYLVANIA
PUBLISHED EXPRESSLY FOR
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LEGEND
STATE CAPITAL
COUNTY SEATS
SCALE OF MILES
0 5 10 20 30
LAKE ERIE
NEW YORK
OHIO
WEST VIRGINIA
MARYLAND
DELAWARE
NEW JERSEY
ERIE
CRAWFORD
WARREN
MC KEAN
POTTER
TIOGA
BRADFORD
SUSQUEHANNA
WAYNE
PIKE
MERCER
VENANGO
FOREST
ELK
CAMERON
LYCOMING
SULLIVAN
WYOMING
LUZERNE
MONROE
LAWRENCE
BUTLER
ARMSTRONG
CLARION
JEFFERSON
CLINTON
COLUMBIA
CARBON
BEAVER
INDIANA
CLEARFIELD
CENTRE
UNION
SNYDER
SCHUYLKILL
NORTHAMPTON
ALLEGHENY
WESTMORELAND
CAMBRIA
BLAIR
MIFFLIN
JUNIATA
PERRY
DAUPHIN
LEBANON
BERKS
BUCKS
WASHINGTON
FAYETTE
SOMERSET
BEDFORD
HUNTINGDON
CUMBERLAND
LANCASTER
MONTGOMERY
GREENE
FRANKLIN
ADAMS
YORK
CHESTER
DELAWARE
Pittsburgh
Philadelphia
Erie
Harrisburg
Reading
Lancaster
Scranton
Allentown
Bethlehem
Easton
Johnstown
Altoona
Wilkes Barre
Williamsport
Chambersburg
Gettysburg
Hagerstown
Cumberland
Morgantown
Wheeling
Martinsburg
Keyser
Oakland
Randall
Ebbvale
Berryville
Elmer
Newcastle
Glassboro
Camden
Medford
Atco
Trenton
Bristol
Doylestown
Norristown
Media
Chesapeake Bay
Delaware
Susquehanna
Allegheny
Monongahela
Youghiogheny
Ohio
Beaver
Shenango
Mahoning
Conemaugh
Kiskiminetas
Juniata
Susquehanna
Lackawaxen
Delaware
Lehigh
Schuylkill
Swatara
Conestoga
Brandywine
Christina
Patapsco
Potomac
Cheat


SOUTH CAROLINA
PUBLISHED EXPRESSLY FOR
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LEGEND
STATE CAPITAL
COUNTY SEATS
SCALE OF MILES
0 5 10 20 30 40
© J. THOMAS CO.
NORTH CAROLINA
GEORGIA
ATLANTIC OCEAN
PICKENS
OCONEE
ANDERSON
GREENVILLE
SPARTANBURG
CHEROKEE
YORK
CHESTER
LANCASTER
UNION
LAURENS
ABBEVILLE
GREENWOOD
NEWBERRY
FAIRFIELD
CHESTERFIELD
MARLBORO
DARLINGTON
KERSHAW
RICHLAND
LEXINGTON
SALUDA
EDGEFIELD
MCCORMICK
AIKEN
CALHOUN
SUMTER
CLARENDON
FLORENCE
MARION
DILLON
HORRY
WILLIAMSBURG
GEORGETOWN
ORANGEBURG
BARNWELL
ALLENDALE
HAMPTON
COLLETON
BAMBERG
BERKELEY
DORCHESTER
JASPER
BEAUFORT
Columbia
Charleston
Greenville
Spartanburg
Anderson
Greenwood
Florence
Sumter
Aiken
Rock Hill
Camden
Darlington
Orangeburg
Walterboro
Beaufort
Georgetown
Conway
Myrtle Beach
Hilton Head
Parris Island
Port Royal
Bluffton
Ridgeland
Hardeeville
Yemassee
Ridgeway
Winnsboro
Chester
Lancaster
Union
Laurens
Abbeville
Greenwood
Newberry
Saluda
Edgefield
McCormick
Barnwell
Allendale
Bamberg
Blackville
Denmark
Bishopville
Lamar
Hartsville
Dillon
Marion
Mullins
Loris
Latta
Timmonsville
Lake City
Kingstree
Hemingway
Andrews
Georgetown
Pawleys Island
Murrells Inlet
Litchfield Beach
Isle of Palms
Sullivans Island
Folly Beach
Mount Pleasant
James Island
Johns Island
Kiawah Island
Seabrook Island
Edisto Island
Wadmalaw Island
Yonges Island
Awendaw
McClellanville
Moncks Corner
Goose Creek
North Charleston
Navy Yard
Summerville
Ladson
Lincolnville
Ravenel
Hollywood
Meggett
Green Pond
Fenwick
Jacksonboro
Adams Run
Ruffin
Smoaks
Varnville
Estill
Hampton
Scotia
Furman
Gifford
Coosawhatchie
Grays
Tillman
Ehrhardt
Olar
Denmark
Blackville
Williston
Elko
Barnwell
Snelling
Allendale
Fairfax
Brunson
Luray
Appleton
Ulmers
Sycamore
Lodge
Ruffin
Cottageville
Walterboro
Hendersonville
Green Pond
Fenwick
Jacksonboro
Adams Run
Ridgeville
Harleyville
Bowman
Holly Hill
Eutawville
Vance
Elloree
Orangeburg
Cordova
Rowesville
Bowmans
Branchville
Reevesville
George
Pregnall
Ridgeville
Cordesville

SOUTH DAKOTA

Pop. 692,849

Counties

Name Key Pop. Thous.

Armstrong 3F..1
Aurora* 7K....7
Beadle 5K....22
Bennett* 8E...4
Bon Homme 8L.....11
Brookings 5N..16
Brown 2K....31
Brule 7J.....7
Buffalo* 6J....1
Butte 3A.....8
Campbell* 1G..5
Charles Mix 1G.....16
Clark 4L.....11
Clay 8N.....10
Codington 4M..17
Corson* 1E....9
Custer 6A.....5
Davison 7L...16
Day 2L.....14
Deuel* 4N.....8
Dewey* 2F.....6
Douglas 7K....7
Edmunds* 2J...8
Fall River 7A..8
Faulk* 3J.....6
Grant 3N.....10
Gregory* 8J..11
Haakon* 5E....4
Hamlin* 4M...8
Hand 4J.....9
Hanson* 7L....6
Harding* 2A...3
Hughes 5G....7
Hutchinson* 7L 13
Hyde 4H.....3
Jackson* 6E....2
Jerauld 6K....5
Jones* 6F.....3
Kingsbury 5L..12
Lake 6M.....12
Lawrence 5A..13
Lincoln 7N...13
Lyman* 6H....6
McCook 6M...10
McPherson* 1J..8
Marshall 1L...9
Meads 4C....11
Mellette* 7F..5
Miner 6L.....8
Minnehaha 7N 50
Moody 6N.....9
Pennington 6B 20
Perkins* 2C...8
Potter 3G.....5
Roberts 2M...15
Sanborn 6K....7
Shannon 8C....4
Spink 4K.....15
Stanley* 5F...2
Sully* 4G.....3
Todd 8F.....5
Tripp 7H....12
Turner 7M....14
Union 9N.....11
Walworth* 2G..8
Washabaugh 7E 2
Washington 7C.1
Yankton 8M..16
Ziebach* 3E...4

Towns

Name Key Pop. Thous.

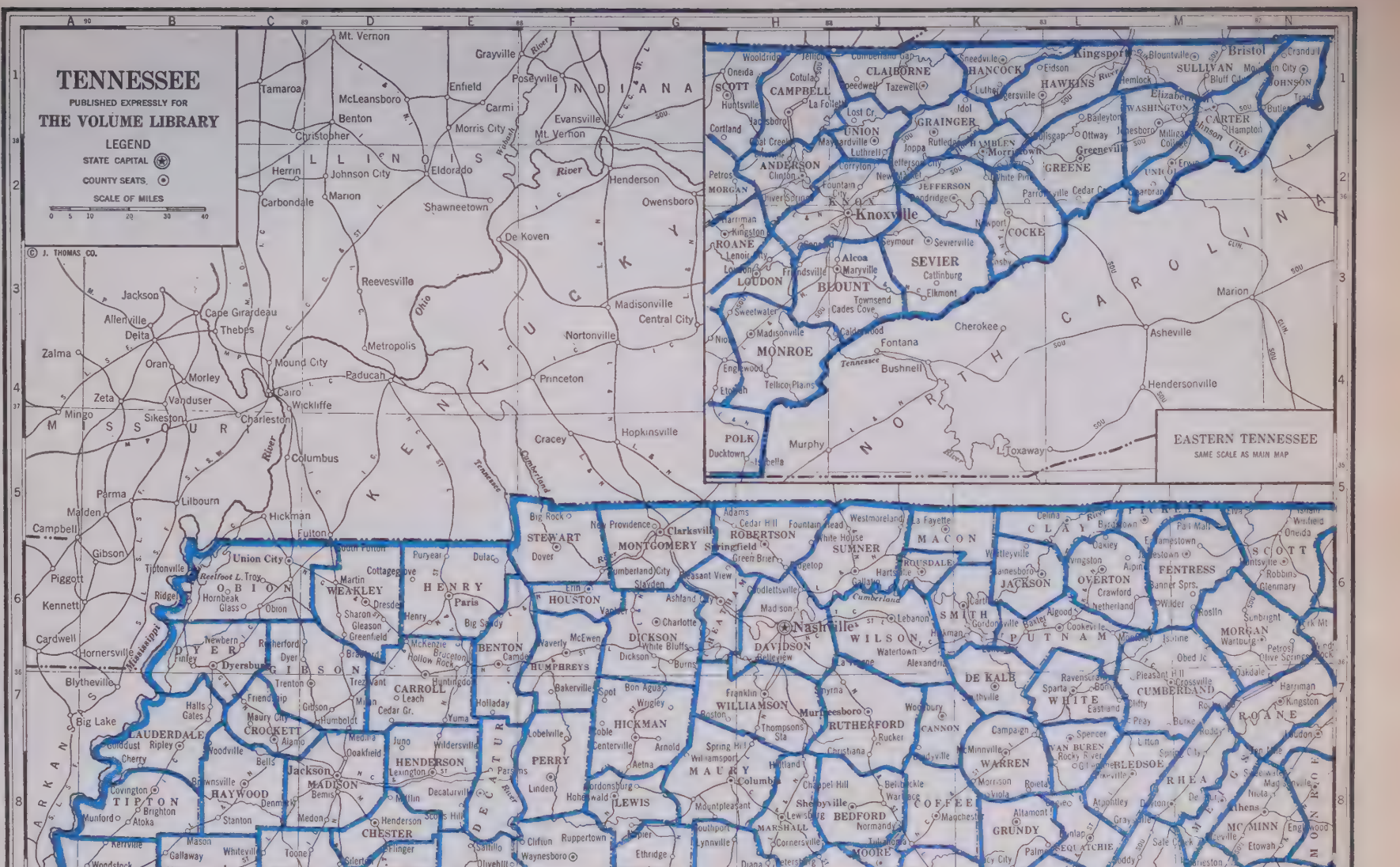
Aberdeen 2K..16
Alexandria 7L .....†6
Arlington 5M..1
Armour 7K....1
Belle Fourche 4A 2
Beresford 8N..1
Bison 2C.....†2
Britton 1L....1
Brookings 5N..4
Buffalo 2B...††
Burke 8J.....†6
Canton 7N.....2
Centerville 8N.1
Chamberlain 6H .....!
Clark 4L.....1
Clear Lake 4N .....†8
Custer 6A.....1
Deadwood 5A..2
Dell Rapids 6M 1
De Smet 5L...1
Dupree 3E...†3
Edgemont 7A..1
Elk Point 9N..1
Eureka 1H....1
Faulkton 3J...†7
Flandreau 6N..1
Fort Pierre 5G .....†6
Fort Thompson 6J 1
Freeman 7M..†9
Gannvalley 6J.†2
Gettysburg 3G.1
Gregory 8H....1
Groton 2L.....1
Hayti 4M...†3
Highmore 4H..!
Hot Springs 7B 2
Howard 6M....1
Huron 5K....10
Ipswich 2J...†9
Kadoka 6E....3
Kennebec 6H..!
Kimball 6J....1
Lake Andes ...!
Lead 2K.....5
Leola 2J....†7
McIntosh 1E..†6
Madison 6M..4
Martin 7E....2
Milbank 3N...†2
Miller 5J....10
Mitchell 6L...10
Mobridge 2G..3
Mound City 2G ....††
Murdo 6F....†6
Olivet 8L....††
Onida 4G.....†8
Parker 7M....1
Parkston 7L...†2
Philip 6E....†2
Pierre 5G....3
Plankinton 7K..†7
Platte 7J.....1
Rapid City 5B.....10
Redfield 4K....2
Salem 6M.....1
Scotland 8L...†5
Selby 2G.....†5
Sioux Falls 7N.....33
Sisseton 2M...1
Spearfish 4A...1
Sturgis 4B....1
Timber Lake 2F .....†5
Tripp 8L.....†9
Tyndall 8L....1
Vermilion 8N..2
Wagner 8K....1
Watertown 4M..10
Webster 3L....1
Wessington Springs 6K..1
White River 7F 14
Winner 7H....2
Woonsocket 6K.1
Yankton 8M..6

† POP. SHOWN IN HUNDREDS.

COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX.

* POP. OF COUNTY SEAT BELOW ONE THOUSAND.

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† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.

Clarksville 5G..9
Cleveland 9M..9
Clinton 2H....1
Coal Creek 2H..1
Collierville 9B..1
Columbia 8H...7
Cookeville 6L..3
Copperhill 9N..1
Covington 8B..3
Cowan 9K.....1
Crossville 7M..1
Dayton 8M.....2
Dickson 6G....2
Dresden 6D.....1
Ducktown 5H..1
Dunlap 8L.....1
Dyer 7C.....1
Dyersburg 7B..8
Elizabethton 1M 8
Englewood 8N and 4H..1
Erwin 2M.....3
Etowah 8N and 4G..4
Fayetteville 9J.3
Fountain City 2J 3
Franklin 7H...3
Gallatin 6J....3
Glass 6C.....1
Glenmary 6N..1
Greeneville 2L.5
Greenfield 7D..1
Halls 7B.....1
Harriman 2G and 7N..4
Hartsville 6K..1
Henderson 8D..1
Humboldt 7D..4
Huntingdon 7E.1
Jackson 8D...22
Jasper 9L.....1
Jefferson City 2K 1
Jellico 1H.....1
Johnson City 1M 25
Kingsport 1M.11
Knoxville 2J..105
La Follette 1H.2
Lawrenceburg 9G 3
Lebanon 6J....4
Lenoir City 3H 4
Lewisburg 8H..3
Lexington 8E..1
Livingston 6L.1
Loudon 3H and 7N..2
McKenzie 7D..1
McMinnville 8K 3
Manchester 8K.1
Martin 6D...3
Maryville 3J...4
Mascot 2J.....2
Memphis 9A.253
Milan 7D.....3
Morristown 2K.7
Mountain City 1N 1
Mount Pleasant 8G 2
Murfreesboro 7J 7
Nashville 6H.153
Newbern 7C....1
Newport 2K....2
Paris 6E.....3
Pulaski 9H....3
Ripley 7B.....2
Rockwood 7M..3
Rogersville 1L.1
Savannah 9E...1
Shelbyville 8J.5
Soddy 9M...1
Somerville 9B..1
South Pittsburg 9K 2
Sparta 7L.....2
Springfield 5H.5
Sweetwater 8N and 3H..2
Tiptonville 6B.1
Tracy City 8K .2
Trenton 7L....2
Tullahoma 8J..4
Union City 6C 5
Waverly 7F....1
Whitwell 9L..2
Winchester 9K.2
Woodbury 7K.15

TENNESSEE

Pop. 2,616,556

Counties

Towns

Name Key Pop. Thous.

TEXAS

Pop. 5,824,715

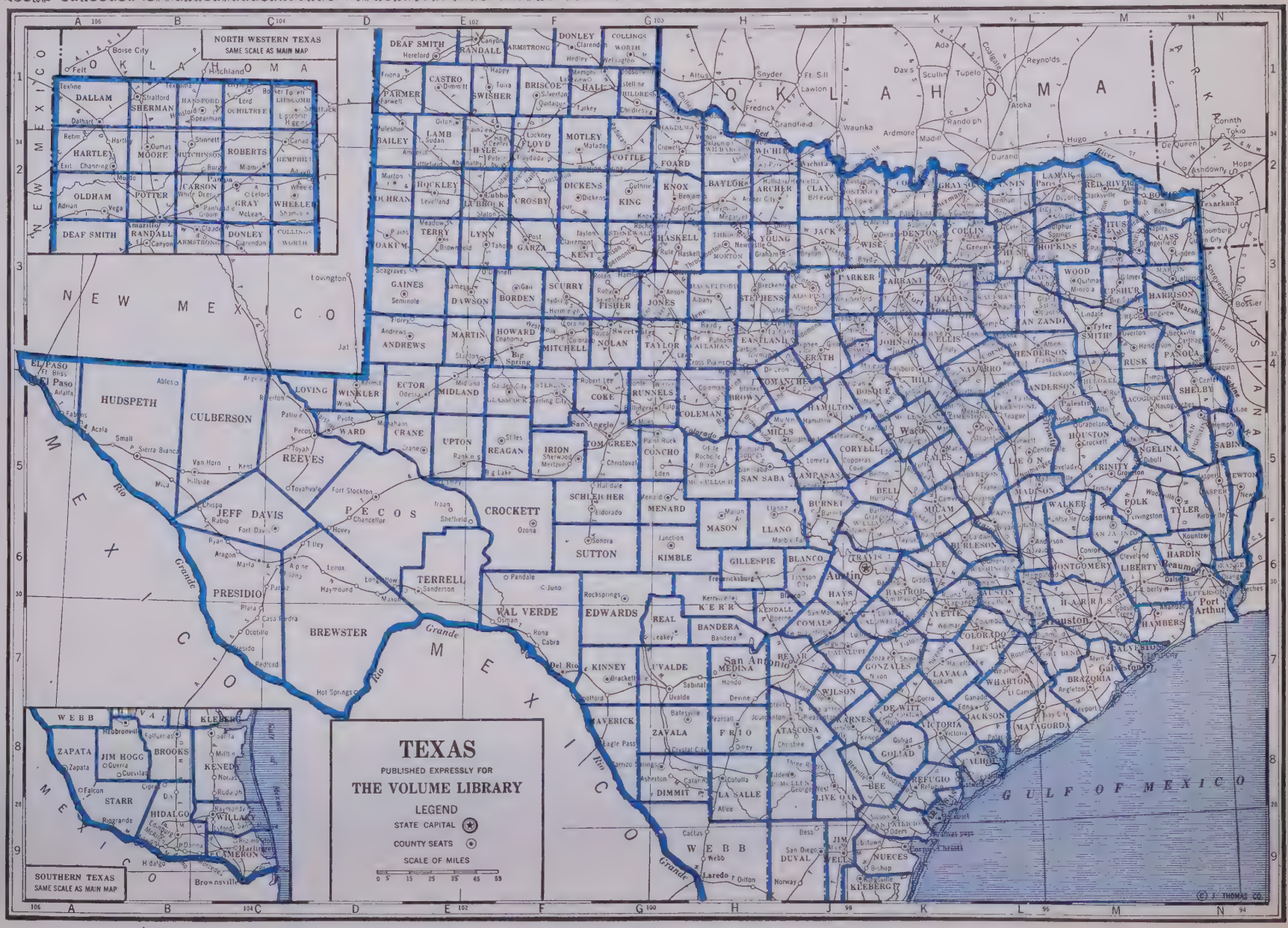
Counties

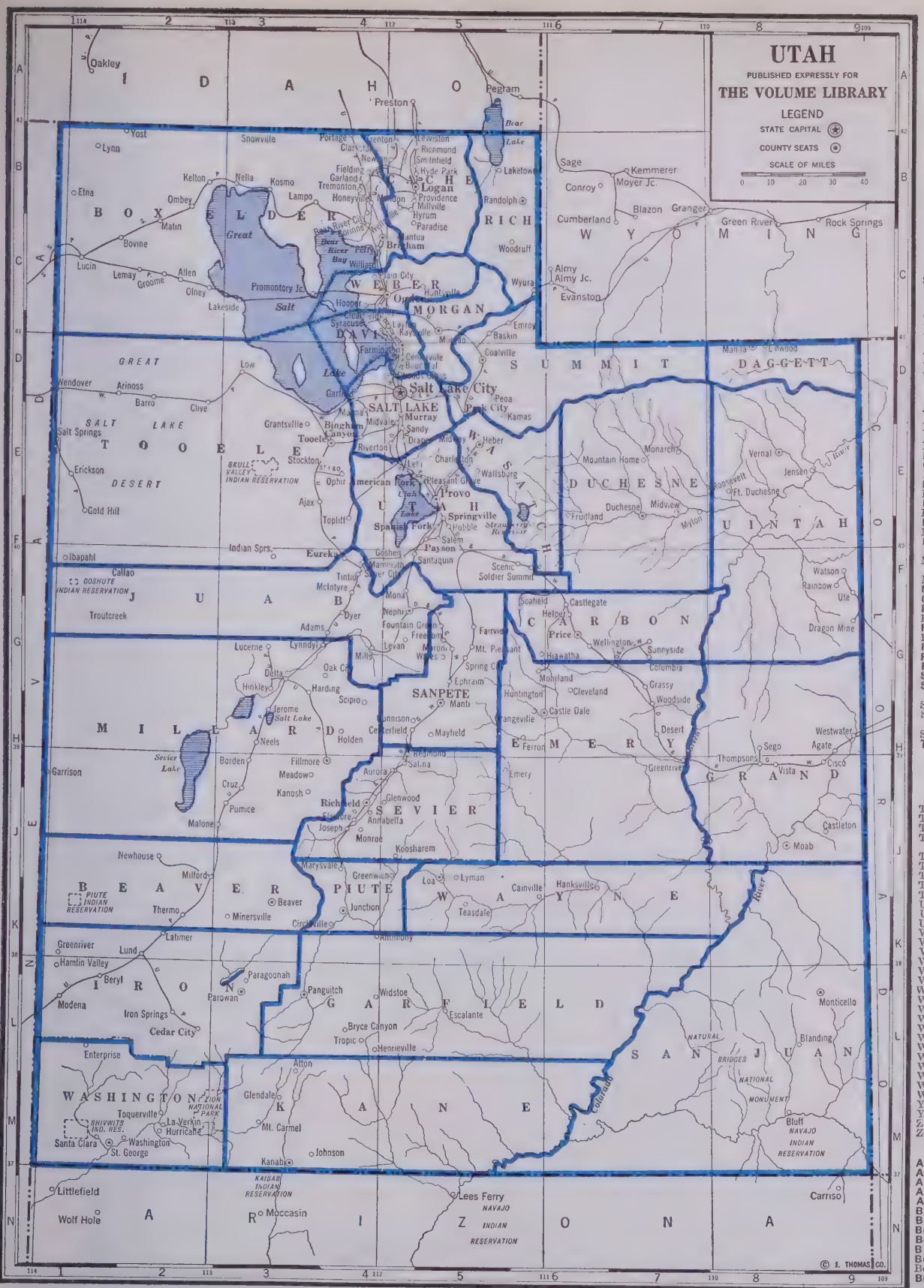
Name Key Pop. Thous.

Anderson 4L..34 47
Andrews* 4D..17 17
Angelina 5M..29 69
Aransas 8K....9 9
Archer 2H..13 8
Armstrong* 4J..3 2
Atascosa 8J..13 30
Austin 6L..19 18
Bailey* 2D....5 7
Bandera* 7H..23 9
Bastrop 6K..23 38
Baylor 2H....7 4
Bee 8J....15 32
Bell 5K....50 312
Bexar* 7J....253 1,058
Blanco* 6J....3 4
Borden* 3F....3 1
Bosque* 2M..15 18
Brazoria 7M..23 108
Brazos 5L..21 66
Brewster 6D....6 6
Briscoe* 1F....5 3
Brooks 8B....5 8
Brown 4H..26 37
Burleson 5K..19 15
Burnet 5J..30 22
Caldwell 6J..35 26
Calhoun 8L..13 17
Callahan 4H..22 12
Cameron 9C..77 151
Camp 3M....7 9
Carson 2B....7 7
Cass* 3M....6M 5
Castro* 1E....4 4
Chambers* 6M..5 9
Cherokee 4M..43 36
Childress 1G..16 7
Clay 2J..21 11
Cochran 1C..14 6
Coke 4G..11 5
Coleman 4H..33 13
Collin 3K..436 264
Collingsworth 3C & 1G..14 5
Colorado 6J..19 20
Comal 6J..11 19
Comanche 4H..18 11
Concho* 5G....3 3
Cooke 2K....24 21
Coryell 5J....19 25
Cottle 2G....5 3
Crane 5C....2 3
Crockett* 6F..11 4
Crosby 2F....9 7
Culberson* 5B..1 3
Dallam 1A....7 2
Dallas 3K..325 844
Dawson 3E..13 16
Deaf Smith 3A & 1D....5 13
Delta 2L....5 3
Denton 2K..152 143
De Witt* 7K..27 20
Dickens 3C & 1F..10 3
Dimmit* 8G....8 9
Donley 3C & 1F..10 3
Duval 9J & 8B..12 12
Eastland 4H..34 23
Ector 4D....6 65
Edwards* 6G....2 2
Ellis 4K..63 55
El Paso 4A..159 359
Erath 5H..39 27
Falls 5L..22 19
Fannin 2L..41 23
Fayette 6K..30 19
Fisher* 3G..13 5
Floyd 2F....6 8
Foard 2G....5 2
Fort Bend 7L..29 40
Franklin 3M....8 5
Freestone* 4L..25 13
Frio 8H..39 16
Gaines 3D....9 9
Galveston 7M..64 113
Garza 3F....5 4
Gillespie 6H..17 10
Glasscock* 4F..1 1
Goliad 8K..10 5
Gonzales 7K..28 16
Gray 2C..65 24
Grayson 2K..65 70
Gregg 3M..53 75
Grimes* 5J..22 13
Guadalupe 7J..52 41
Hale 1F..41 36
Hall 1F....7 3
Hamilton 4J..13 7
Hansford* 1B....3 2
Hardeman 2G..14 6
Hardin* 6N..13 15
Harris 6M..359 1,243
Harrison 3M..48 43
Hartley* 3G..10 3
Haskell 3G..16 7
Hays 6J..19 25
Henderson 4L..35 27
Hidalgo 9B..77 180
Hill 4K..43 27
Hockley 2E....9 16
Hood* 4J....6 4
Hopkins 3L..29 23
Houston 5M..30 21
Howard 4F..22 32
Hudspeth* 5B..3 2
Hunt 3L....49 64
Hutchinson* 2B..14 25
Irion* 5F....2 1
Jack 3J....9 6
Jackson 7L..10 12
Jasper 5N..17 24
Jeff Davis* 6C..1 2
Jefferson 6N..133 250
Jim Hogg 8A..4 5
Jim Wells 9J..13 33
Johnson 4K..33 67
Jones 3G....24 20
Karnes 7J....23 13
Kaufman 3L..40 71
Kendall 6H....4 6
Kenedy* 8C....7 1
Kent* 2F....3 1
Kerr 6H....10 20
Kimble 6G....4 3
King* 2G....1 1
Kinney 7F....3 3
Kleberg 8C..12 30
Knox* 2G....11 4
Lamar 2L....48 37
Lamb* 2E....17 14
Lampasas 5J..8 6
La Salle 8H..5 3
Lavaca 7K....27 18
Lee 6K....13 8
Leon* 5L....19 8
Liberty 6M..19 30
Limestone 4K..39 22
Lipscomb* 1C..4 3
Live Oak* 8J..8 3
Llano 5H....5 3
Loving 4C....1 1
Lubbock 2E..39 66
Lynn 3E....12 9
McCulloch 5H..13 8
McLennan 4K..98 150
McMullen* 8J..1 1
Madison 5L..12 8
Marion 3M..10 9
Martin 4E....5 3
Mason 5H....5 3
Matagorda 7L..17 36
Maverick 8G....6 9
Medina 7H..13 20
Menard 5G....4 2
Midland 4E....8 25
Milam 5K..37 22
Mills 4H....3 3
Mitchell 4F..14 10
Montague* 2J..19 12
Montgomery 6M 14 30
Moore* 2B....1 2
Morris* 3M..10 7
Motley 2F....6 3
Nacogdoches 4M 30 29
Navarro 4K..60 39
Newton* 5N..12 7
Nolan 4G....19 16
Nueces 9K..51 165
Ochiltree 1C....5 3
Oldham* 2A....1 1
Orange 6N..15 60
Palo Pinto* 3J..17 16
Panola 4M....24 20
Parker 3J....18 27
Parmer* 1D....5 4
Pecos 6D....7 7
Polk 5M....17 18
Potter 2B....46 66
Presidio 6C..10 4
Rains* 3L....7 3
Randall 1E....7 3
Reagan* 5F....3 1
Real* 6G....2 2
Red River 2M..30 19
Reeves 5C....6 7
Refugio 8K....7 8
Roberts* 2C....1 1
Robertson* 5K..27 16
Rockwall 3L....7 8
Runnels 4G....21 13
Rusk 4M....32 30
Sabine* 5N....11 6
San Augustine 4N 12 8
San Jacinto* 5M 9 7
San Patricio 8K 23 45
San Saba 5H..10 5
Schleicher 5F..3 2
Scurry 3F....12 16
Shackelford 3H 6 3
Shelby 4N....28 22
Sherman* 1B..2 2
Smith 4M....53 97
Somervell* 4J..3 2
Starr 9A....11 32
Stephens 3H..16 9
Sterling* 4F..1 1
Stonewall* 3G..5 2
Sutton 6F....2 2
Swisher 1E....7 8
Tarrant 3K..197 716

Cont. on page 483

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.





UTAH

Pop. 507,847

Counties

Name	Key	Pop. Thous.
Beaver	2K	5
Box Elder	2B	17
Cache	5B	27
Carbon	6G	17
Daggett*	8D	74
Davis	4D	14
Duchesne*	7E	8
Emery*	6H	7
Garfield	5L	4
Grand*	8H	1
Iron	2L	7
Juab	3G	8
Kane	4M	2
Millard	3H	9
Morgan*	5C	2
Piute*	4K	1
Rich*	6B	1
Salt Lake	4E	194
San Juan*	8L	3
Sanpete	5G	16
Sevier	5H	11
Summit*	6D	9
Tooele	2E	9
Uintah	8E	9
Utah	5F	49
Wasatch	5E	5
Washington	1M	7
Wayne*	6K	2
Weber	4C	52

Towns

American Fork	4E 3
Bingham Canyon	4E 3
Bountiful	4D 2
Brigham	**4C 5**
Cedar City	2L 3
Eureka	4F 3
Heber	**5E 2**
Helper	**6G 2**
Kanab	**3M 1**
Lehi	4E 2
Logan	**5B 9**
Magna	4E 3
Manti	**5H 2**
Midvale	4E 2
Mt. Pleasant	5G 2
Murray	4E 5
Nephi	**5G 2**
Ogden	**4C 40**
Panguitch	**3L 1**
Park City	5D 3
Parowan	**3L 1**
Payson	5F 3
Price	**6G 4**
Provo	**5E 14**
Richfield	**4J 3**
St. George	**1M 2**
Salt Lake City	**4D 140**
Smithfield	5B 2
Spanish Fork	5F 3
Springville	5E 3
Tooele	**4E 5**

TEXAS

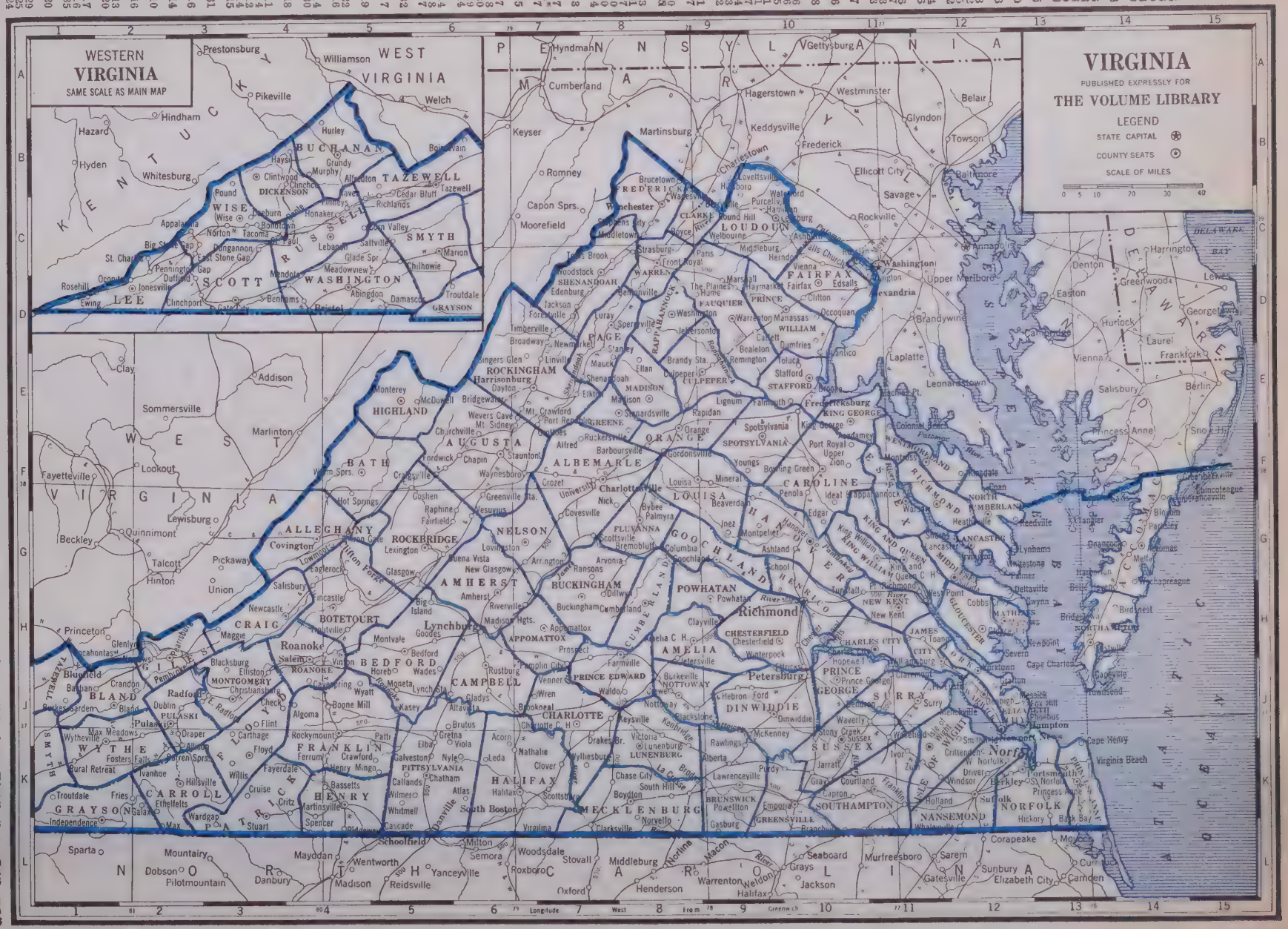
Texas Counties Cont. from Page 482

Taylor	4G 41
Terrell	6E 2
Terry	3E 8
Throckmorton	3H 5
Titus	3M 16
Tom Green	5G 36
Travis	6J 77
Trinity	5M 13
Tyler*	5M 11
Upshur	3M 22
Upton*	5E 5
Uvalde	7G 12
Val Verde*	7F 14
Van Zandt*	3L 32
Victoria	7K 20
Walker	5L 18
Waller	6L 10
Ward*	5D 4
Washington	6L 25
Webb	9H & 8A 42
Wharton	7L 29
Wheeler*	2C 15
Wichita	2H 74
Wilbarger	2H 24
Willacy	9C 10
Williamson	5J 44
Wilson	7J 17
Winkler*	4D 6
Wise	3J 19
Wood*	3M 24
Yoakum	*2D 1
Young	3H 20
Zapata*	8A 2
Zavala*	8G 10

Towns

Abilene	**3G 23**
Alice	**9J 4**
Amarillo	**3B 43**
Athens	**4L 4**
Austin	**6J 53**
Ballinger	**4G 4**
Bay City	**7L 4**
Beaumont	**6N 57**
Beeville	**8J 4**
Big Spring	**4F 13**
Bonham	**2L 5**
Borger	2B 6
Brackenridge	**3H 7**
Brenham	**6L 5**
Brownsville	**9C 22**
Brownwood	**4H 12**
Bryan	**5L 7**
Cameron	**5K 7**
Childress	**1G 6**
Cleburne	**3K 11**
Coleman	**4H 6**
Colorado	**4F 4**
Corpus Christi	**9K 27**
Corsicana	**4K 15**
Crockett	**5M 4**
Crystal City	8G 6
Cuero	**7K 4**
Dallas	**3K 260**
Del Rio	**7F 11**
Denison	2K 13
Denton	**3K 9**
Eagle Pass	**8G 5**
Eastland	**4H 4**
Electra	2H 6
El Paso	**4A 102**
Ennis	4K 7
Fort Worth	**3K 163**
Gainesville	**2K 8**
Galveston	**7M 52**
Goose Creek	6M 5
Graham	**3H 4**
Greenville	**3L 12**
Harlingen	9C 12
Hillsboro	**4K 7**
Houston	**7M 292**
Huntsville	**5L 5**
Jacksonville	4M 6
Kerrville	**6H 4**
Kingsville	**9J 32**
Laredo	**9H 32**
Lockhart	**7J 4**
Longview	**3M 5**
Lubbock	**2E 20**
Lufkin	**5M 7**
Luling	7J 5
McAllen	9B 9
McKinney	**3K 7**
Marlin	**5K 5**
Marshall	**3M 16**
Memphis	**1G 4**
Mercedes	9B 6
Mexia	**5K 5**
Mineral Wells	3J 5
Mission	9B 5
Macogdoches	**4M 5**
New Braunfels	**7J 6**
Orange	**6N 7**
Palestine	**4L 11**
Pampa	**2C 10**
Paris	**5C 13**
Plainview	**2E 8**
Port Arthur	7N 50
Quanah	**2G 4**
Ranger	**3H 6**
San Angelo	**5G 25**
San Antonio	**7J 231**
San Benito	9C 10
Seguin	**7J 5**
Sherman	**2K 15**
Sulphur Springs	**3L 5**
Sweetwater	**3G 10**
Taylor	**3K 7**
Temple	**5K 15**
Terrell	**3L 8**
Texarkana	2N 16
Tyler	**3M 17**
Uvalde	**7G 5**
Vernon	**2H 9**
Victoria	**7K 7**
Waco	**4K 52**
Waxahachie	**3K 8**
Weatherford	**3J 4**
Weslaco	9B 4
Wichita Falls	**2J 43**

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.



† POP. SHOWN IN HUNDREDS.

COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX.

* POP. OF COUNTY SEAT BELOW ONE THOUSAND.

Shenandoah 7C 20
Smyth 6C & 1K 25
Southampton* 11K 26
Spotsylvania* 9F 10
Stafford* 10E..8
Surry* 11J.....7
Sussex* 10K..12
Tazewell 1J & 6B 32
Warren 8C.....8
Warwick* 12J..8
Washington 5D 33
Westmoreland* 11F 8
Wise 3B.....51
Wythe 2K....20
York* 12H 7

TOWNS

Town Key Pop.
Abingdon 5D..2
Alexandria 11D 24
Appalachia 3C 3
Bedford 5H....3
Big Stone Gap 3C 3
Bluefield 1J...3
Bristol (Va. & Tenn.) 4D..30
Buena Vista 6G 4
Cape Charles 13H 2
Charlottesville 7F 15
Chincoteague Island 1F...2
Clifton Forge 5G 6
Covington 4G 6
Crewe 8J.....2
Culpeper 9E...2
Dante 4C.....3
Danville 5K...22
East Radford 3J 2
Emporia 10K..2
Falls Church 11C 2
Farmville 8J...3
Franklin 11K..2
Fredericksburg 10E 6
Fries 2K.....2
Front Royal 8C 2
Galax 2K.....2
Hampton 12J..6
Harrisonburg 7E 7
Hopewell 10H..11
Lexington 5G..3
Lynchburg 6H..40
Madison Heights 6H..2
Marion 6C.....4
Martinsville 4K..7
Newport News 12J 34
Norfolk 13K..129
Norton 3C.....3
Petersburg 10H 28
Phoebus 12J...2
Pocahontas 1J..2
Portsmouth 13K 45
Pulaski 2J.....7
Radford 3J....6
Richmond 10H 182
Roanoke 4H..69
Salem 4H.....4
Saltville 5C....2
South Boston 6K 3
South Norfolk 13K 7
Staunton 6F..11
Suffolk 12K..10
Vinton 4H.....3
Waynesboro 7F..6
Williamsburg 11H 3
Winchester 8B..10
Wytheville 2K..3

VIRGINIA
Pop. 2,421,851

COUNTIES

Name Key Pop. Thous.
Accomac* 14C..35
Albemarle 7F..26
Alleghany 4G..20
Amelia* 8H..13
Amherst* 6H..19
Appomattox* 8
Arlington* 7H 26
Augusta 6G 38
Bath* 5F....8
Bedford 5H...29
Bland* 2J....0
Botetourt* 5H 15
Brunswick 9K 20
Buchanan* 4B 20
Buckingham* 7H 13
Campbell* 6H 51
Caroline* 10F..15
Charles City* 11H 4
Charlotte* 7J..16
Chesterfield* 11H 26
Clarke 9C.....7
Craig* 4H.....3
Culpeper 9E..13
Cumberland* 8H 7
Dickenson* 4B 16
Dinwiddie* 9J 18
Elizabeth City 12J 26
Essex* 11E..6
Fairfax* 10D..25
Fauquier 9D..21
Floyd* 3K..11
Fluvanna* 8G..7
Franklin 4J..24
Frederick 8B..13
Giles* 2H 12
Gloucester* 12H 11
Goochland* 9G..7
Grayson* 1K & 6D..20
Greene* 8E..5
Greensville 10K 13
Halifax* 6K..41
Hanover* 10G..17
Henrico 10H..30
Henry 4K..20
Highland* 3E..4
Isle of Wight* 13J 7
James City 11H 7
King and Queen* 11G 7
King George* 10E 5
King William* 11G 7
Lancaster* 12G..8
Lee* 2D..30
Loudoun 10C..43
Louisa* 8H..14
Lunenburg* 8J..8
Madison* 8E..8
Mathews* 12H..7
Mecklenburg* 8K 32
Middlesex* 12G 7
Montgomery 3J 19
Nansemond 12K * 7G...16
Nelson* 7G..16
New Kent* 11H 4
Norfolk 13K..30
Northampton* 14H..18
Northumberland* 12F..11
Nottoway* 8J..14
Orange 9F..12
Page 8D..14
Patrick* 3L..15
Pittsylvania 5K 61
Powhatan* 9H 6
Prince Edward 8J 14
Prince George* 10J 10
Princess Anne* 13K 16
Prince William 10D 13
Pulaski 2J.....20
Rappahannock 6D 7
Richmond* 11E..6
Roanoke 4H..35
Rockbridge 5G 20
Rockingham 7E 29
Russell* 4C..25
Scott 3D..24
Shenandoah 7C 20
Smyth 6C & 1K 25
Southampton* 11K 26
Spotsylvania* 9F 10
Stafford* 10E..8
Surry* 11J.....7
Sussex* 10K..12
Tazewell 1J & 6B 32
Warren 8C.....8
Warwick* 12J..8
Washington 5D 33
Westmoreland* 11F 8
Wise 3B.....51
Wythe 2K....20
York* 12H 7

WASHINGTON
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COUNTY SEAT
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PACIFIC OCEAN
IDAHO
OREGON
Columbia R.
Snake R.
Puget Sound
Strait of Juan De Fuca
Grand Coulee Dam
Lake Chelan
Lake Roosevelt
Mt. Rainier National Park
Olympic Mts.
Cascade Mts.
Yakima Indian Reservation
Colville Indian Reservation
Spokane Indian Reservation
Quinault Indian Reservation
Quileute Indian Reservation
Makah Indian Reservation
Port Angeles
Seattle
Tacoma
Everett
Bellingham
Spokane
Yakima
Walla Walla
Pullman
Olympia
Vancouver
Aberdeen
Hoquiam
Longview
Kelso
Kennewick
Pasco
Richland
Wenatchee
Moses Lake
Ellensburg
Centralia
Chehalis
Bremerton
Port Orchard
Port Townsend
Sequim
Port Angeles
Forks
La Push
Neah Bay
Clallam Bay
Sekiu
Pysht
Twin Rivers
Lake Crescent
Sol Duc Hot Springs
Hoh Indian Reservation
Queets
Taholah
Moclips
Pacific Beach
Copalis Beach
Ocean Shores
Westport
Grayland
Raymond
South Bend
Willapa
Bay Center
Oysterville
Nahcotta
Long Beach
Sea View
Ilwaco
Chinook
Astoria
Warrenton
Seaside
Cannon Beach
Tillamook
Neskowin
Lincoln City
Newport
Waldport
Yachats
Florence
Reedsport
Coos Bay
North Bend
Bandon
Port Orford
Gold Beach
Brookings
Crescent City
Klamath Falls
Lakeview
Burns
Ontario
Nyssa
Vale
Jordan Valley
Owyhee
Nevada
Utah
Wyoming
Montana
Canada
Columbia
Whitman
Lincoln
Adams
Franklin
Grant
Douglas
Chelan
Okanogan
Ferry
Stevens
Pend Oreille
Spokane
Kittitas
Yakima
Benton
Klickitat
Skamania
Clark
Cowlitz
Wahkiakum
Pacific
Grays Harbor
Mason
Jefferson
Clallam
Island
San Juan
Skagit
Whatcom
Snohomish
King
Pierce
Thurston
Lewis
Garfield
Asotin
Columbia
Walla Walla
Franklin
Benton
Klickitat
Skamania
Clarke

WEST VIRGINIA
Pop. 1,729,205

COUNTIES

	Pop. Thous
Barbour 9O	18
Berkeley 1SF	58
Boone 15F	25
Braxton 11L	23
Brooke 18R	24
Cabell 13C	90
Calhoun 10J	10
Clay* 13J	13
Doddridge* 8L	10
Fayette 15K	72
Gilmer* 10L	10
Grant 10R	8
Greenbrier 16M	35
Hampshire 8U	15
Hancock 3R	39
Hardy 9R	13
Harrison 8N	78
Jackson* 11G	16
Jefferson 8X	15
Kanawha 13G	157
Lewis 10M	21
Lincoln* 14E	19
Logan 16F	58
McDowell 19G	90
Marion 7N	66
Marshall 3L	39
Mason 10D	23
Mercer 7S	62
Mineo 17D	38
Monongalia 6O	50
Morgan 6W	11
Nicholas* 14L	20
Ohio 4L & 19R	72
Pendleton* 12R	9
Pleasants 7J	6
Pocahontas 14O	14
Preston 7P	29
Putnam* 12F	16
Raleigh 17J	68
Randolph 10P	25
Ritchie 9J	13
Roane 11H	19
Summers 17L	20
Taylor 8O	19
Tucker 9Q	8
Tyler 7N	11
Upshur 9N	23
Wayne* 14D	31
Webster* 12M	14
Wetzel 6L	22
Wirt* 9H	5
Wood 8L	56
Wyoming* 17G	50

TOWNS

Town	Key	Pop.
Alderson	17L	1
Anmoore	6W	1
Arnett	14J	1
Barboursville	12E	1
Beckley	16J	9
Beechbottom	18R	1
Belington	9O	1
Benwood	4L	3
Berkeley Springs	6W	1
Bethany	19C	1
Bluefield	19J	19
Boomer	14F	1
Bramwell	19L	1
Bridgeport	8N	1
Buckhannon	10N	4
Cameron	5M	2
Canebrake	19G	1
Cedar Grove	14H	2
Century	9X	1
Chapmanville	13C	1
Charleston	13G	60
Charles Town	8X	2
Chattaroy	17D	2
Chelyan	14H	1
Chester	16R	3
Clarksburg	8N	28
Clay	13J	14
Clendenin	12H	1
Coalwood	18G	1
Davis	9R	1
Dorothy	15H	1
Dunbar	13G	4
East Bainville	15L	1
Eccles	16R	1
Eckman	18H	1
Elbert	19G	1
Elizabeth	11K	1
Elkhorn	10P	1
Eskdale	14H	1
Ethel	16F	1
Fairmont	7O	23
Fayetteville	15J	1
Follansbee	18R	4
Franklin	12R	14
Freeman	19J	1
Gary	19G	1
Glasgow	11L	1
Glatto	18J	1
Glen Dale	4L	1
Glen Jean	16J	1
Glenville	10L	1
Grafton	8O	7
Grantsville	10J	1
Hamlin	13E	1
Handley	14H	1
Harrisville	9K	1
Hinton	17K	6
Holden	16E	2
Hollidays Cove	17R	4
Huntington	13C	75
Hurricane	12E	1
Kenova	13C	3
Keyser	7T	6
Keystone	18H	1
Kilsyth	16J	1
Kimball	19G	1
Kingwood	7P	1
Lewisburg	16M	1
Logan	16F	4
Lumberport	8N	1
McDowell	18H	1
McMechen	4L	3
Mabscott	16J	1
Madison	15F	1
Magnolia	7V	1
Mammoth	13H	1
Mannington	7N	3
Marfrance	15M	1
Marlington	14O	1
Marmet	13G	1
Martinsburg	7W	14
Maybeury	19H	2
Middlebourne	7K	17
Milton	12E	1
Montgomery	14J	2
Moorefield	9T	17
Morgantown	6O	16
Moundsville	4L	14
Mount Hope	15J	2
Mullens	17H	2
New Cumberland	16R	2
Newell	16R	1
New Martinsville	6K	2
Nitro	13F	1
Oak Hill	15J	2
Paden City	6K	2
Parkersburg	8G	29
Parsons	9P	2
Petersburg	10S	1
Phillippi	9O	1
Piedmont	7S	2
Pineville	17G	4
Point Pleasant	10E	3
Princeton	19J	6
Red Jacket	17E	2
Richwood	14M	5
Ripley	11G	6
Romney	8T	1
Ronceverte	16M	2
Sabraton	6P	1
St. Albans	13F	3
St. Marys	7J	2
Salem	8M	2
Shinnston	8N	2
Sistersville	6K	3
Spencer	11H	2
Summersville	14L	5
Sutton	11L	1
Thomas	9Q	1
Union	18M	3
Wayne	14D	6
Webster Springs	12M	6
Weirton	17R	13
Welch	18G	5
Wellsburg	18R	6
Weston	9M	8
West Union	8L	9
Wheeling	4L & 19R	61
White Sulphur Springs	16N	1
Williamson	17D	9
Winfield	12F	2

† POP. SHOWN IN HUNDREDS. COUNTY SEATS SHOWN IN HEAVY FACE TYPE IN MARGINAL INDEX. * POP. OF COUNTY SEAT BELOW ONE THOUSAND.


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SAME SCALE AS MAIN MAP
OHIO
PENNSYLVANIA
MARYLAND
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Wheeling
Moundsville
Cambridge
Bedford
Somerset
Connellsville
Chambersburg
McConnellsville
Hyndman
Hagerstown
Martinsburg
Charles Town
Winchester
Leesburg
Front Royal
Manassas
Luray
Harrisonburg
Staunton
Orange
Spottsylvannia
Charlottesville
Louisa
Warm Sprs.
Lovingston
Goochland
Buckingham
Powhattan
Cumberland
Amherst
Farmville
Fincastle
Newcastle
Roanoke
Huntington
Charleston
Parkersburg
Clarksburg
Morgantown
Weirton
Wellsburg
Follansbee
Hollidays Cove
Chillicothe
Portsmouth
Ashland
Grayson
Catlettsburg
Paintsville
Prestonsburg
Pikeville
Elkhorn City
Williamson
Welch
Princeton
Bluefield
Beckley
Oak Hill
Fayetteville
Summersville
Richwood
Webster Springs
Buckhannon
Weston
Elkins
Petersburg
Moorefield
Keyser
Romney
Berkeley Spgs.
Shepherdstown
Harpers Fy
Kingwood
Grafton
Fairmont
Mannington
Shinnston
Clarksburg
Weston
Sutton
Gassaway
Spencer
Ripley
Point Pleasant
Gallipolis
Pt. Pleasant
Ravenswood
Parkersburg
Marietta
Williamstown
Belpre
Athens
McArthur
Wellston
Jackson
Waverly
Chillicothe
Greenup
Ashland
Ironton
Huntington
Barboursville
Milton
Hurricane
Nitro
St. Albans
Dunbar
Charleston
Kanawha
Boone
Logan
Mingo
Wayne
Lincoln
Cabell
Putnam
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Gilmer
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Tyler
Wetzel
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Tucker


CANADA
LAKE SUPERIOR
MICHIGAN
MINNESOTA
IOWA
ILLINOIS
LAKE MICHIGAN
Superior
Ashland
Hurley
Ironwood
Bessemer
Wakefield
Marquette
Escanaba
Menominee
Green Bay
Sturgeon Bay
Manitowoc
Two Rivers
Sheboygan
Milwaukee
Racine
Kenosha
Waukegan
Beloit
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Madison
Portage
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Eau Claire
La Crosse
Wausau
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Ashland
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Douglas
Burnett
Washburn
Sawyer
Price
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Vilas
Forest
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Marathon
Wausau
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Dunn
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Pierce
St. Croix
Polk
Barron
Rusk
Sawyer
Price
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Douglas
Bayfield
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Iron
Lake Superior
Lake Michigan
Lake Winnebago
Green Bay
Lake Michigan
Duluth
Superior
Ashland

WYOMING

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Counties

Name	Key	Pop. Thous.
Albany	8K	12
Big Horn*	2F	11
Campbell	2K	6
Carbon	8H	11
Converse	5K	7
Crook*	2M	5
Fremont	5E	10
Goshen	7M	11
Hot Springs	3F	5
Johnson	3H	4
Laramie	9L	26
Lincoln	7B	10
Natrona	5H	24
Niobrara	5M	4
Park	2D	8
Platte	7L	9
Sheridan	1H	16
Sublette*	5C	1
Sweetwater	8E	18
Teton*	3B	2
Uinta	9B	6
Washakie	3F	4
Weston	3M	4
Yellowstone National Park	2B	12 (Part in Wyoming)

Towns

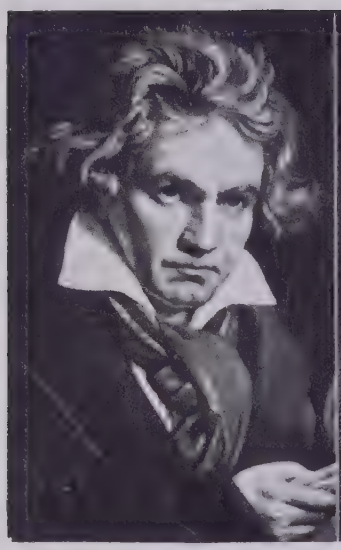
Name	Key	Pop. Thous.
Afton	5B	3
Basin	2F	9
Buffalo	2H	1
Casper	5J	16
Cheyenne	9L	17
Cody	2D	1
Cumberland	8B	1
Diamondville	8B	3
Douglas	5K	3
Evanston	9B	3
Fort Washakie	3E	1
Freedom	5B	1
Frontier	7B	8
Gem	2K	8
Gillette	2K	1
Glenrock	5K	3
Green River	8D	2
Grybull	2F	1
Hanna	7J	1
Jackson	4B	5
Kemmerer	8B	1
Kleenburn	1H	3
Lander	5E	1
Laramie	9K	8
Lovell	1F	1
Lusk	5M	1
Midwest	4J	2
Newcastle	3M	1
Parco	8H	17
Parkerton	5K	5
Pine Bluffs	9N	6
Pinedale	5C	2
Powell	1E	1
Rawlins	8G	4
Reliance	8E	3
Riverton	5E	1
Rock Springs	8D	8
Saratoga	8H	5
Sheridan	1H	8
Sundance	2M	3
Sunrise	7L	9
Superior	8E	1
Thermopolis	4F	2
Torrington	7M	1
Wheatland	7L	1
Worland	3F	1

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ALBANY
CONVERSE
CAMPBELL
JOHNSON
SHERIDAN
BIG HORN
WASHAKIE
HOT SPRINGS
PARK
TETON
YELLOWSTONE NATIONAL PARK
FREMONT
NATRONA
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SWEETWATER
LINCOLN
SUBLETTE
UINTA
Cheyenne
Laramie
Casper
Rawlins
Rock Springs
Evanston
Kemmerer
Pinedale
Jackson
Sheridan
Buffalo
Lovell
Cody
Worland
Thermopolis
Riverton
Lander
Torrington
Wheatland
Douglas
Glenrock
Newcastle
Sundance
Moorcroft
Upton
Hulett
Aladdin
Alva
Aberdeen
Hilsboro
Ranchester
Ft. Mackenzie
Parkman
Dayton
Banner
Big Horn
Shell
Greybull
Basin
Otto
Manderson
Ten Sleep
Hyattville
Worland
Meeteetse
Cody
Powell
Clark
Crandall
Corbett
Pitchfork
Ishawooa
Valley
Holm
Lodge
Wapiti
Yellowstone Park
Yellowstone Lake
Yellowstone River
Morano
Elk
Kelly
Jackson
Wilson
Victor
Ashton
W. Yellowstone
Snake
Grand Teton
Jackson Lake
Dubois
Du Noir
Tipperary
Burris
Crowheart
Bargee
Anchor
Dickie
Grass Cr.
Thermopolis
Hot Springs
Hot Springs State Park
Hamilton Dome
Kirby
Cosgrove
Bonnie
Basin
Greybull
Otto
Manderson
Ten Sleep
Worland
Hyattville
Big Horn
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Shoshone Res.
Meeteetse

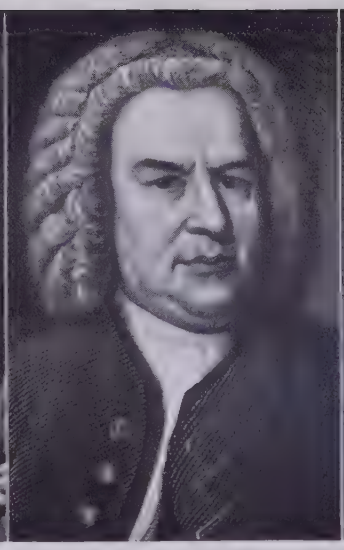
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DICTIONARY OF BIOGRAPHY

CONCISE BIOGRAPHIES OF FOUR THOUSAND IMPORTANT HISTORICAL AND CONTEMPORARY CHARACTERS, FEATURING THE ONE HUNDRED GREATEST MEN AND WOMEN IN HISTORY. Page 489



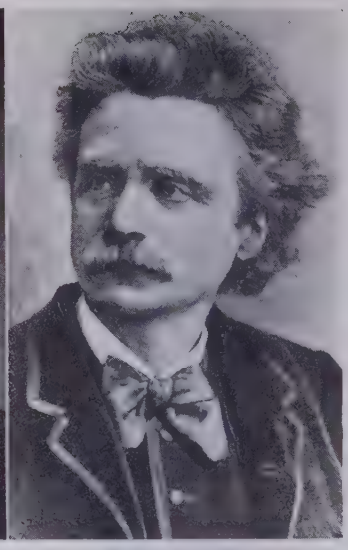
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Germany



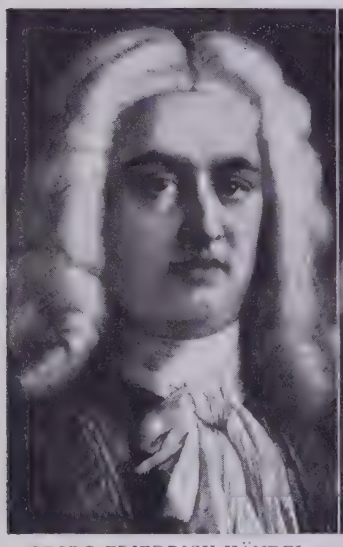
JOHANN SEBASTIAN BACH
Germany



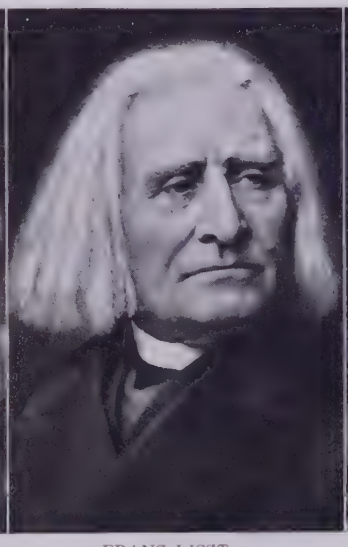
FREDERIC CHOPIN
Poland



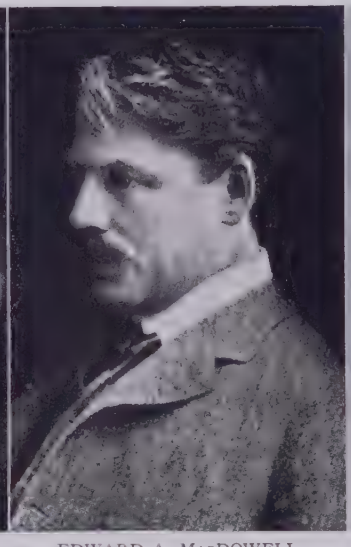
EDVARD GRIEG
Norway



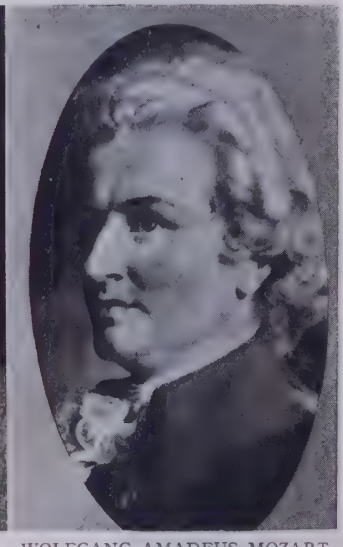
GEORG FRIEDRICH HÄNDEL
Germany



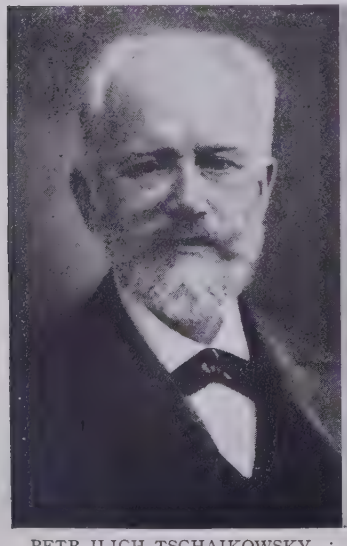
FRANZ LISZT
Hungary



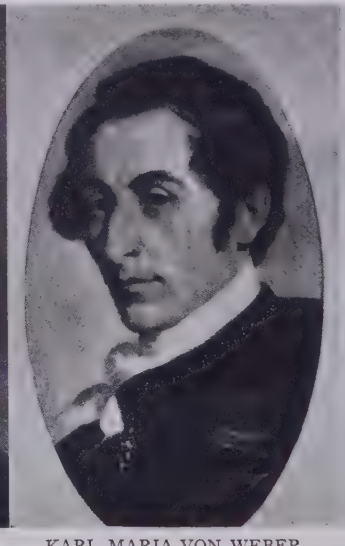
EDWARD A. MacDOWELL
United States



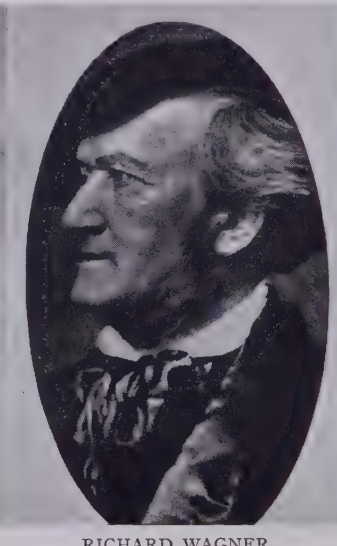
WOLFGANG AMADEUS MOZART
Germany



PETR ILICH TSCHAIKOWSKY
Russia



KARL MARIA VON WEBER
Germany



RICHARD WAGNER
Germany



IGNACE JAN PADEREWSKI
Poland

GREAT COMPOSERS OF MUSIC

DICTIONARY *of* BIOGRAPHY

Biographies in large type are those of the one hundred greatest men and women in history—so designated by a consensus of highest authorities.

Abbas I. (*ăb-băs'* or *ăb'băs*), **the Great,** shah or king of Persia, born in 1557, obtained the throne in 1586. He extended his rule beyond Persia proper, and at his death in 1628 his dominions stretched from the Tigris to the Indus. He is regarded by the Persians as their greatest sovereign.

Abbe (*ab'e*), **Cleveland,** meteorologist, was born in New York in 1838. He was graduated from College of the City of New York in 1857; Ph.D., 1891; LL.D., University of Michigan, 1888; in 1881 he became professor meteorologist U. S. Weather Bureau; professor meteorology, Columbia University in 1893. Was member National Academy of Sciences and many other scientific societies. Died. 1916.

Abbey, Edwin Austin, artist, was born in Philadelphia, Pa., in 1852, and began his art studies at the Philadelphia Academy of Fine Arts. He stands in the foremost rank of painters of historical and subject pictures. He acquired great fame as an illustrator of Shakespeare, whose plays have also supplied him with the subjects for some of his most successful pictures. Died, 1911.

Abbot, Ezra, American critic, was born in 1819. He contributed to periodicals, and also wrote several critical works in support of Unitarianism. Died, 1884.

Abbott, Jacob, author, was born at Hallowell, Me., in 1803, and was graduated from Bowdoin College in 1820. He studied theology at Andover, Mass. In 1838 he settled in Farmington, Me., where he died in 1879. He wrote there most of his books, which number in all more than two hundred. Among them are the *Rollo Books, Lucy Books, Jonas Books, Franconia Stories, Harper's Story Books, Marco Paul Series, Gay Family Series, and Juno Books.*

Abbott, John Stephen Cabot, a younger brother of Jacob Abbott, and author of many historical works, was born in Brunswick, Me., in 1805, and was graduated from Bowdoin College in 1825. He died in New Haven in 1877. Among his works are: *History of Napoleon Bonaparte; Napoleon at St. Helena; Life of Napoleon III.; History of the Civil War in America,* and *History of Frederick the Great.*

Abbott, Lyman, clergyman, author, editor, was born in Roxbury, Mass., in 1835; graduated from the University of New York in 1853; studied and practiced law; ordained Congregational minister in 1860. Edited Literary Record of *Harper's Magazine;* associate editor *The Christian Union* with Henry Ward Beecher, whom he succeeded as pastor of Plymouth church, Brooklyn, in 1888; resigned in 1898. Editor of *The Outlook;* author: *Jesus of Nazareth; Old Testament Shadows of New Testament Truths; A Study in Human Nature; In Aid of Faith; Life of Christ; Evolution of Christianity; The Theology of an Evolutionist; Henry Ward Beecher; Christian Ministry; Personality of God,* and *Industrial Problems.* Died 1922.

Abel (*ā'bel*), **Niels Henrik,** noted Norwegian mathematician, was born at Findoe, Norway, in 1802, and died near Arenthal in 1829. His work on elliptic functions is particularly celebrated. His complete mathematical works were published in 1839.

Abelard (*ab'ē-lärd*), **Peter,** scholastic philosopher and theologian, the boldest thinker of the twelfth century, was born at Pallet, near Nantes, in 1079, and died in the Abbey of St. Marcel in 1142. The doctrines advanced by Abelard in his controversy with St. Bernard have a decidedly rationalistic tendency; and he and his predecessor, Erigena, may be looked upon as the first avowed representatives of that school.

Abercrombie (*ab'-ĕr-krum-bi*), **James,** British general, was born in Scotland in 1706. He was commander-in-chief of the British forces in America in 1758. He died in 1781.

Abercromby, Sir Ralph, British general, born in Scotland in 1734. He served with much ability in Holland and in the West Indies, and in 1800 was chosen to command the forces to be sent against the French in Egypt, where he was killed in 1801.

About (*a-bōō'*), **Edmond Francois Valentin,** French novelist and miscellaneous writer, born in 1828, died in 1885. He was educated at the Lycée Charlemagne and the Ecole-Normale, Paris; was sent at government expense to the French school at Athens; on his return to Paris, devoted himself to literature. He was latterly a member of the Academy.

Abraham, the progenitor of the Israelitish nation. He was a native of Chaldea, but migrated with his wife, Sarah, and his nephew, Lot, to Canaan, where he lived a nomadic life and worshiped the one God, Jehovah, in the midst of the polytheistic Canaanites. He died about 1800 B. C. Of his two sons, Isaac was the ancestor of the Israelites; and the Arabs claim to be descended from Ishmael.

Abruzzi (*a-brōōt'sē*), **Duke of the,** prince of royal house of Italy, was born at Madrid, Spain, in 1873; scientist, explorer, aëronaut, sportsman, litterateur; traveled round world as a youth; ascended Mount St. Elias, Alaska, 1896; his Arctic expedition of 1899 penetrated nearest to north pole up to that time. In 1909 he ascended some of the highest peaks of the Himalayas.

Acton, Lord. See **Dalberg-Acton.**

Adams, Brooks, author, was born at Quincy, Mass., in 1848, son of the late Charles Francis Adams; graduated at Harvard in 1870; studied in Harvard law school one year; went as secretary to his father to Geneva, where the latter was arbitrator upon the Alabama claims under the treaty of Washington. Admitted to the bar; practiced law until 1881. Resumed law practice; lectured at Boston University school of law.

Adams, Charles Francis, statesman and economist, son of John Quincy Adams, was born in 1807; nominated by the Free Soil party for the office of vice-president in 1848; elected member of Congress 1858-60 by the Republicans; minister to England 1861-68; and one of the arbitrators of the Alabama claims, 1870. He was the Democratic candidate for governor of Massachusetts in 1876. He died in 1886.

Adams, Charles Francis Jr., historical writer, born in Boston, 1835; graduated at Harvard, 1856; admitted to the bar, 1858; served in union army through Civil War; brevetted brigadier-general, United States army, May, 1865. President Union Pacific railway, 1884-90; president Massachusetts Historical Society, 1895. Author: *Chapters on Erie and Other Essays; Railroads, Their Origin and Problems; Richard Henry Dana, a Biography* and other papers. Died, 1915.

Adams, Charles Kendall, educator, historian, was born at Derby, Vt., in 1835, and educated at the University of Michigan. From 1892 to 1901 was president of the University of Wisconsin. He was the author, among other writings of *Democracy and Monarchy in France; Manual of Historical Literature,* and of a monograph on *Christopher Columbus.* From 1892 to 1895 he acted as editor-in-chief of *Johnson's Universal Cyclopaedia.* Died in 1902.

Adams, George Burton, educator and historian, was born at Fairfield, Vt., in 1851. Educated at Beloit College, Yale, and the University of Leipzig. Professor of history at Yale, 1888-1925. Editor: Duruy's *Middle Ages;* Bemont and Monod's *Medieval Europe.* Author: *Civilization During the Middle Ages; The Growth of the French Nation; European History, Vol. II.,* in Hunt and Poole's *Political History of England.* Died 1925.

Adams, Henry, historian; born in Boston in 1838; graduated at Harvard, 1858; private secretary to his father, who was American minister at London, 1861-68; assistant professor of history at Harvard, 1870-77; editor *North American Review,* 1875-76. Author: *Essays in Anglo-Saxon Law; Historical Essays, Life of Albert Gallatin.* Died, 1918.

Adams, Henry Carter, professor of political economy and finance at the University of Michigan ; born in Davenport, Iowa, 1851; director Division Transportation, eleventh census; statistician Interstate Commerce Commission; president American Economic Association 1895-97. Author: *Outline of Lectures on Political Economy; State in Relation to Industrial Action,* etc. Died, 1921.

Adams, John, second president of the United States, was born at Quincy, Mass., in 1735, was graduated at Harvard in 1755, and was admitted to the bar in 1761. He was one of the delegates to the Continental Congress at Philadelphia, 1774. He was commissioner to the court of France, 1778, and was sent on an embassy to England, 1779. He was elected vice-president of the United States in 1789, and succeeded Washington as president in 1797. Died, 1826.

Adams, John Quincy, sixth president of the United States and son of the above, was born in Quincy, Mass., in 1767. When his father was elected president, the younger Adams was sent on an embassy to Berlin, and traveled through Silesia. On his return to America he was engaged as professor of rhetoric at Harvard University, and chosen United States senator for Massachusetts. When Monroe was elected president he recalled Adams from Europe, and made him secretary of state. On the retirement of Monroe from office Adams gained the presidency after a hard contest against Jackson, in 1825, and on the expiration of his term of office retired to Quincy, near Boston, but in 1830 was chosen as representative of his district. He died at Washington during the session of Congress 1848.

Adams, Maude, actress, was born at Salt Lake City in 1872; her family name was Kiskadden, but she adopted her mother's maiden name, Adams. She appeared on the stage in child's parts; went to school; starred as Lady Babbie in *The Little Minister,* 1897-98; as Juliet, in *Romeo and Juliet,* 1900; in *L'Aiglon,* 1900-01; in *Quality Street,* 1902; in *The Little Minister,* and *Hop o' My Thumb,* 1905; *Peter Pan,* 1906-07; *Joan of Arc,* 1909, etc.

Adams, Samuel, one of the American revolutionary leaders, was born in Boston, Mass., 1722. Adams was a member of the first Congress, and signed the Declaration of Independence in 1776; took an active part in framing the constitution of Massachusetts, and was for several years president of the senate of that state. Died, 1803.

Adams, William T. See **Optic, Oliver.**

Addams, Jane, social reformer, head resident of Hull House, Chicago, was born at Cedarville, Ill., in 1860; graduated from Rockford College, 1881; 1889 opened, with Miss Ellen Gates Starr, social settlement of Hull House; has been inspector of streets and alleys in neighborhood of Hull House, and has been a frequent writer and lecturer on social and political reform. Author: *Democracy and Social Ethics,* and *Newer Ideals of Peace.* 1931, won Nobel peace prize. Died 1935.

Addison, Joseph, English essayist, was born at Milston, England, in 1672, graduated at Oxford, and held for some years a fellowship at the university. Here some of his early writings brought him into notice and secured him a pension of $1,500 a year. At the death of King William his pension was stopped, and having no means of his own his prospects were gloomy indeed, until a lucky chance put him on his feet again. The ministry desired a poem written in praise of Marlborough, who had just won the battle of Blenheim. Addison wrote the poem, *The Campaign,* and was rewarded with the office of excise commissioner. In 1710 he began to bring out his famous essays. These he contributed to the *Tatler,* next to the *Spectator,* and afterwards to the *Guardian,* which he published in conjunction with his friend, Richard Steele. The most successful of these periodicals was the *Spectator.* It was a daily paper, but without any news. Addison died in 1719.

Ade (*ād*), **George,** author and dramatist, was born at Kentland, Ind., 1866; graduated from Purdue University, 1887; in newspaper work in Lafayette, Ind., 1887-90; on *Chicago Record,* 1890-1900. Author: *Artie; Pink Marsh; Doc Horne; Fables in Slang;* Plays: *The Sultan of Sulu; Peggy From Paris; The County Chairman; The College Widow,* etc.

Adler, Cyrus, orientalist and archaeologist, was born at Van Buren, Ark., 1863; graduated from University of Pennsylvania, 1883; Ph.D., Johns Hopkins, 1887; librarian Smithsonian institution, 1892-1905, assistant secretary of same 1905-1908; He has written many articles on Semitic philology, Assyriology, Oriental archaeology, comparative religion, bibliography, American Jewish history, etc. Author: *Told in the Coffee House.*

Adler, Felix, educator, lecturer; born in Alzey, Germany, 1851. Studied under Hebrew rabbi; graduated at Columbia; studied at Berlin and Heidelberg; professor of Hebrew and Oriental literature at Cornell, 1874-76; established in 1876 New York Society for Ethical Culture, to which he gives regular Sunday discourses. Author: *Creed and Deed; The Moral Instruction of Children,* etc.

Adrian IV. (*ā'dri-an*), named Nicholas Breakspeare, the only English pope, was born about 1100. He was chosen abbot, then cardinal, and lastly pope in 1154. He was vigorous in maintaining his authority at Rome and throughout Europe. He died in Italy in 1159.

Ærenthal (*ā'ren-tāl*), **Alois Leopold Baptist, Baron von,** Austro-Hungarian Minister for foreign affairs, was born in 1854. He was educated at Prague and Bonn Universities, and as a boy learned both Czech and German. He entered the diplomatic service in 1877, and served in Paris and St. Petersburg; minister to Roumania in

1895, and ambassador to Russia in 1899. In October, 1906, he was appointed to succeed Count Goluchowski. Died, 1912.

Æschines (*es'ki-nēz*), an Athenian orator, second only to Demosthenes, was born 389 B. C. He established a school of eloquence in Rhodes, and died at Samos, 314 B. C.

Aeschylus (*es'ki-lus*), the first in time of the three great tragic poets of Greece, born at Eleusis, in Attica, B. C. 525, died in Sicily 456 B. C. Before he gained distinction as a dramatist he had highly distinguished himself at the battle of Marathon (490), as he afterwards did at Artemisium, Salamis, and Plataea. He first gained the prize for tragedy in B. C. 484. *The Persians*, the earliest of his extant pieces, formed part of a trilogy which gained the prize in B. C. 472. In B. C. 468 he was defeated by Sophocles, and then is said to have gone to the court of Hiero, king of Syracuse. Altogether he is reputed to have composed seventy tragedies and gained thirteen triumphs. Only seven of his tragedies are extant: *The Persians, Seven Against Thebes, Suppliants, Prometheus, Agamemnon, Choephori*, and *Eumenides*, the last three forming a trilogy on the story of Orestes.

Aeschylus may be called the creator of Greek tragedy, both from the splendor of his dramatic writings, and from the scenic improvements and accessories he introduced. Till his time only one actor had appeared on the stage at a time, and by bringing on a second he was really the founder of dramatic dialogue. His style was grand, daring, and full of energy, though sometimes erring in excessive splendor of diction and imagery, if not indeed harsh or turgid. His plays have little or no plot, and his characters are drawn by a few powerful strokes.

References.—Plumptre's *Life of Æschylus;* English poetical translations of his plays by Blackie, Plumptre, Swanwick and Browning.

Æsop (*ē'sop*), celebrated fabulist, said to have been born in Phrygia about 620 B. C. Attached himself to the court of Croesus, King of Lydia. Sent by that monarch upon an embassy to Delphos, he so offended the inhabitants by the keenness of his sarcasms, that they hurled him from a rock into the sea. He died about 564 B. C.

Ætius (*ā-ē'shi-us*), Roman general, born about 396, in Moesia, in 433 became patrician, consul, and general-in-chief. His crowning victory was that at Chalons over Attila in 451; three years later the Emperor Valentinian III., jealous of his greatness, stabbed him to death with his own hand.

Agamemnon (*ag-à-mem'non*), king of Mycenae and Argos, son of Atreus and Eriphyle, brother of Menelaus, and commander-in-chief of the Grecian army at the siege of Troy. Returning from Troy, Agamemnon was treacherously murdered by his wife, who, during his absence, had formed an attachment with Ægisthus, son of the noted Thyestes.

Agassiz (*ag'à-sē*), **Alexander,** naturalist, born in Neufchatel, Switzerland, 1835; graduated at Harvard, 1855; Lawrence Scientific School, 1857; 1885-1910 engaged in zoölogical investigation. Appointed director Museum Comparative Zoölogy, Cambridge, 1902; appointed by Emperor William III. of Germany member Order of Merit, 1902; member of Academy of Science, Paris; president of National Academy of Science. Author: *Explorations of Lake Titicaca; List of the Echinoderms; Three Cruises of the Blake.* Died, 1910.

Agassiz, Louis Johann Rudolph, eminent naturalist, was born in Switzerland in 1807, the son of a Swiss Protestant clergyman. He studied medicine and graduated at Munich, but devoted himself principally to ichthyology, and was employed to classify and arrange the collection brought from Brazil by Martius and Spix. In 1846, he came to America, where he was well received, and in 1848 accepted the chair of zoölogy and geology at Harvard College. In 1865 he visited Brazil, and on his return placed the large collection he had made in the museum at Cambridge. He wrote *Glaciers, Outlines of Comparative Physiology, An Essay on Classification*, and numerous other valuable works, and was to the last a disbeliever in the Darwinian theory of evolution. Died, 1873.

Agesilaus (*à-jes-i-lā'us*), king of Sparta from 397 B. C., was one of the most brilliant soldiers of antiquity. He was born in 444 B. C., and died in Egypt in 360 B. C.

Agricola (*à-grik'ō-là*), **Cnaeius Julius,** a Roman of the imperial times, distinguished not less by his great abilities as a statesman and a soldier than by the beauty of his private character; born at Forum Julii (now Frejus, in Provence, France) 37 A. D. He was the first Roman general who effectually subdued Britain, and the only one who displayed as much genius and success in training the inhabitants to the amenities of civilization as in breaking their rude force in war; died, 93.

Agrippa (*à-grip'à*), **Marcus Vipsanius,** a Roman citizen, who lived 63-12 B. C., and rose to an exalted position. Rome owed to him the restoration and construction of several aqueducts and of the Pantheon, besides other public works of ornament and utility.

Aguinaldo, Emilio, Filipino general, was born in the island of Luzon, 1870. He was educated at St. Thomas University in Manila. In the rebellion of 1896 against Spain he was an important though unsuccessful leader. When the Americans finally overcame the Spanish fleet in 1898, he organized another insurrection, this time for Philippine independence, making himself president of the government and assuming powers of dictator. He was several times defeated and fled to the mountains, where he was captured by General Funston. The next month, April, 1901, Aguinaldo took the oath of allegiance to the United States.

Ainsworth (*ānz'wûrth*), **William Harrison,** English novelist, was born at Manchester, England, in 1805, and educated at the grammar school. He had contributed some articles to magazines prior to 1822, and his earliest success was *Rookwood*, with its vivid description of Dick Turpin's ride to York. By 1881 he had published no fewer than thirty-nine novels. Seven of them were illustrated by Cruikshank. He died at Reigate in 1882.

Airy (*âr'i*), **George Biddell,** English mathematician, astronomer, physicist, and engineer, was born at Alnwick, England, in 1801; was graduated at Trinity College, Cambridge, in 1823; soon after published his *Mathematical Tracts on the Lunar and Planetary Theories*, the *Figures of the Earth*, and the *Undulatory Theory of Optics*. As astronomer-royal at Greenwich he introduced the systematic observation of the magnetic elements, and carried on investigations in the Lunar Theory, the magnetism of iron ships, the density of the earth, the length of the seconds-pendulum, and in a great variety of other subjects. After his retirement from the direction of the Greenwich Observatory, in 1881, he was continuously engaged upon his Numerical Lunar Theory. He died in 1892.

Akbar (*ăk'bĕr*), celebrated Mogul emperor, was born at Amarkote in Sindh in 1542. He encouraged commerce, and had the land carefully measured so that the taxes should be fair. His people were of different races and religions, but he was just and tolerant to all. Measures like these gained for him the title of "Guardian of Mankind," and caused him to be held up as a model to Indian princes of later times. He died in 1605.

Akenside (*ā'ken-sid*), **Mark,** an English poet, was born in 1721, died in 1770. He owes his position among the poets chiefly to his *Pleasure of the Imagination*, a poem which at once became famous.

Alarcon Y Mendoza (*à-lär-kän' ē men-dō'thà*), **Don Juan Ruiz de,** one of the most distinguished dramatic poets of Spain, born in Mexico about the beginning of the seventeenth century. He went to Europe about 1622, and in 1628 published a volume containing eight comedies, and in 1634 another containing twelve. His *Tejador de Segovia*, (Weaver of Segovia), and *Las Paredse Oyen*, (Walls Have Ears), are still performed on the Spanish stage. He died in 1639.

Alaric I. (*al'à-rik*), king of the Visigoths, was born about the middle of the fourth century. In 396 he ravaged Greece, from which he was driven by the Roman general, Stilicho, but made a masterly retreat to Illyria. In 400 he invaded Italy, but was defeated by Stilicho at Pollentia in 403. Alaric made a second invasion of Italy, during which he besieged Rome thrice. The first time 408, the city was saved by paying a heavy ransom; the second, 409, it capitulated. Alaric led a third siege, and the city was taken in 410, and sacked for six days, Alaric, however, doing everything in his power to restrain the violence of his followers.

Albani (*ăl-bà'nē*), **Madame** (née **Emma La Jeunesse**), vocalist, was born in 1852 at Chambly, Canada, and was trained in music by her father. At twelve she made her début at Albany, N. Y., whence she assumed the professional name of Albani. In 1878 she married Mr. Ernest Gye, eldest son of the director of the Royal Italian Opera, London. Died, 1930.

Albert, prince of Saxe-Coburg-Gotha and husband of the late Queen Victoria of England, was born near Coburg, Germany, in 1819. He married Victoria in 1840; soon after was made field-marshal in the British army, and in 1857 received the title of prince consort. He acquired great influence in public affairs as the prudent and trusted adviser of the queen, and became popular throughout England. He died in 1861.

Albert I, king of Belgium, was born in 1875. Carefully educated, he traveled widely, urged many reforms in the Belgian Congo. In 1900 married the Duchess Elizabeth of Bavaria. His heroic leadership in resisting the Germans of 1914 made him the idol of the Belgian people, and commanded the respect of the civilized world. Following the expulsion of the Germans, he and his queen reentered Brussels, and at once proclaimed an independent Belgium. He was killed in 1934, while mountain climbing.

Alberti (*ăl-ber'tē*), **Leon Battista,** an Italian architect, and writer on art and poetry, was born at Florence, Italy, in 1404; died at Rome in 1472. He was much employed by Pope Nicholas V. He completed the Pitti Palace at Florence, and designed the church of St. Frances at Rimini. His chief book, *De Re Ædificatovia*, is highly valued.

Albertus Magnus (*ăl-ber'tus măg'nus*), Count of Bollstadt, the *Doctor Universalis* of the schoolmen, was born at Lauingen, in Swabia, about 1193, studied at Padua, and, entering the newly founded Dominican order, taught in the schools of Hildesheim, Ratisbon, and Cologne. Of his works the most notable are the *Summa Theologiat* and the *Summa de Creaturis*. Albertus excelled all his contemporaries in the wideness of his learning, and in legend appears as a magician.

Albuquerque (*ăl-bōō-kâr'kā*), **Affonso de,** an eminent Portuguese admiral, born in 1453, died in 1515. His career was extremely successful. He extended the Portuguese power over Malabar, Ceylon, the Sunda Islands, and the Peninsula of Malacca, and made the Portuguese name respected by all the nations and princes of India.

Alcæus (*al-sē'us*), of Mitylene, one of the greatest lyric poets of Greece, flourished about the end of the seventh or the beginning of the sixth century B. C. He was the inventor of the form of verse which after him is called the Alcaic, and which Horace, the happiest of his imitators, transplanted into the Latin language.

Alcibiades (*al-si-bi'à-dēz*), Athenian general, was born at Athens 450 B. C. His handsome person, his distinguished parentage, and the high position of Pericles procured him a multitude of friends and admirers. Socrates was one of the former, and gained considerable influence over him. After a distinguished career in military life in Greece and Persia he was put to death 401 B. C.

Alcott, Louisa May, daughter of Amos Bronson Alcott, a famous American authoress, was born in Germantown, Pa., in 1832. Her first volume was *Flower Fables*, published in 1855. During the Civil War she was a volunteer nurse in the South, and wrote *Hospital Sketches* in 1863. *Little Women* was published in 1868, and was followed at short intervals by *Little Men, Jo's Boys*, etc. She died in 1888 at Boston, Mass.

Alcuin (*al'kwin*), or **Flaccus Albinus,** the most distinguished scholar of the eighth century, the confidant and adviser of Charlemagne, was born at York about 735. At his death in 804 he left, besides numerous theological writings, a number of elementary works on philosophy, mathematics, rhetoric, and philology; also poems and a great number of letters.

Alden, Henry Mills, author, classical scholar and editor, was born at Mount Tabor, near Danby, Vt., 1836; graduated from Williams College in 1857, Andover Theological Seminary in 1860. Managing editor *Harper's Weekly* 1863-69. Died, 1919.

Alden, John, one of the Pilgrims to Plymouth, Mass., was born in England in 1599, died at Duxbury, Mass., in 1687. He was one of the signers of the compact in the cabin of the *Mayflower*. Alden married Priscilla Mullens, to whom his first proposal was in behalf of Miles Standish, but Priscilla indicated her preference for Alden over the soldier. He was a magistrate for more than fifty years, and greatly assisted in the government of the infant colony.

Alderman, Edwin Anderson, educator, president of the University of Virginia since 1904, was born at Wilmington, N. C., in 1861; graduated from the University of North Carolina, 1882; D. C. L.; LL.D.; professor of English, State Normal College, 1892; professor pedagogy, University of North Carolina, 1892-96; president of same 1896-99; president Tulane University, 1899-1904. He is well known as a speaker and lecturer. Author, *Life of William Hooper, signer of the Declaration; School History of North Carolina.* Died, 1931.

Aldrich, Nelson Wilmarth, former United States senator, was born at Foster, R. I., in 1841; received an academic education; president of the Providence common council, 1871-73; member of the Rhode Island general assembly 1875-76, elected to the House of Representatives of the Forty-sixth Congress and reëlected to the Forty-seventh Congress; elected, 1881, to the United States Senate to succeed Ambrose E. Burnside, and was reëlected 1886, in 1892, 1898 and 1905. For many years he was Republican leader of the Senate, and was co-author of the Payne-Aldrich Tariff bill. Died in 1916.

Aldrich, Thomas Bailey, poet and editor, was born in Portsmouth, N. H., 1836. While engaged in the office of a New York merchant he began to write verses, the success of which soon induced him to enter on a literary career. His first volume, miscellaneous poems, was published in 1855, and was called *The Bells;* afterward he published *Babie Bell*, several other volumes of poems, and *The Story of a Bad Boy*. He was on the editorial staff of the *Home Journal*, 1856-52, and *Every Saturday*. In 1881 he became editor of the *Atlantic Monthly*, but resigned in 1890. Died at Boston 1907.

Alexander the Great, or Alexander III., of Macedon, was born in 356 B. C., son of

Philip. He was educated partly by Aristotle, and early gave proofs of skill and courage. A revolt of Thebes at the commencement of his reign was promptly quelled with great severity; then crossing the Hellespont, he marched against the Persians, whom he repeatedly defeated, conquering Phenicia and Egypt. After the final defeat of Darius at Gaugamela, and the capture of Babylon, Susa, and Persepolis, Alexander commenced the conquest of India, but after crossing the Indus and penetrating as far as the Ganges, he was compelled to return to Babylon, but paused at Susa to celebrate his marriage with the daughter of Darius. He died at Babylon, after a reign of about thirteen years; his body was embalmed and taken to Alexandria, which city had been founded by him and named in his honor. Died 323 B. C.

References.—Hogarth's *Philip and Alexander of Macedon;* Wheeler's *Alexander the Great;* M'Crindle's *The Invasion of India by Alexander the Great.* Dr. Budge has edited Syriac and Ethiopic *Lives* of Alexander.

Alexander I., emperor of Russia, 1801-25, was born at St. Petersburg in 1777. In 1793 he married Elizabeth, daughter of Karl Ludwig, crown prince of Baden, and, on the assassination of his father, Paul, in 1801, succeeded him on the throne. He encouraged education and science, and carried out many reforms. In 1805 he joined the coalition against Napoleon, and was present at the battle of Austerlitz. In 1808 he conquered Finland, and in 1806-12 waged a successful war against Turkey. He died at Taganrog, 1825.

Alexander II., emperor of Russia, 1855-81, was born in 1818. In 1841 married the Princess Marie, daughter of the Grand-duke of Hesse. He succeeded to the throne in 1855, and a year later the Crimean war was terminated by the peace of Paris. The grand achievement of his reign, which was in great measure his own deed, was the emancipation of the serfs—twenty-three million souls—in 1861. He resisted strenuously all foreign interference with Polish affairs during the insurrection of 1863, which was suppressed with great severity. During his reign, the Russian empire was widely extended in the Caucasus and in Central Asia. By his establishment of schools and internal improvements he did more to build up Russia than any emperor since Peter the Great. He was assassinated at St. Petersburg in 1881.

Alexander III., emperor of Russia, 1881-94, was born in 1845. He showed vigor in government and ability in repressing the Nihilists. The harsh laws against the Jews and the severe famine of 1892 are among the later events of his reign. In 1866 he married Princess Dagmar of Denmark, sister of the queen-dowager Alexandra of Great Britain. His son, Nicholas II., succeeded him when he died at Livadia, Crimea, in 1894.

Alexander, John White, American composer, was born in Allegheny City, 1856. He was an artist's apprentice on *Harper's Weekly* at eighteen, working with Abbey, Pennell, and Pyle. In 1877 he went to Munich where he studied and won numerous honors. His pictures, mainly portraits and figures, are exhibited in many galleries. He was president of the National Academy of Design from 1909 until his death in 1915.

Alexander, Nevski (*nef'ske*), Russian hero and saint, was born at Vladimir in 1219, the son of the grand duke Jaroslav of Novgorod. He received the surname of Nevski on account of the splendid victory over the Swedes which he achieved in 1240 on the Neva, in the province where Petrograd now stands. At the death of his father, in 1247, he became grand duke of Vladimir, when Pope Innocent IV. made a diplomatic attempt to reunite the Greek and Roman churches, and with this view sent an embassy to Alexander which proved ineffectual. He died in 1263 at Kassimcow.

Alexander Severus, Roman emperor, 222-235, born about 208, was the cousin, adopted son, and successor to Heliogabalus. Although a pagan he reverenced the doctrines of Christianity. During a campaign against the Germans on the Rhine, to defend the frontiers of the empire from their incursions, an insurrection broke out among his troops, headed by Maximin, in which he was murdered, 235.

Alexeieff (*a-leks-a'yef*), **Eugenii Ivanovitch,** Russian admiral, was born in 1844. He was educated in the naval school of Russia; chief of eastern fleet during Japanese-Chinese war, 1897. In 1898 he was made vice-admiral, and commander of Kwangtung province. In 1900-01 he was chief of the Russian Pacific squadron, but his conduct of affairs during the Russo-Japanese war led to his recall to Russia, 1904.

Alexius I. Comnenus (*a-lek'si-us kom-nē'nus*), one of the ablest Byzantine emperors, was born at Constantinople, 1048, was the nephew of the emperor Isaac Comnenus, and in 1081 was elevated by his soldiers to the throne. Died in 1118.

Alfieri (*ăl-fi-ā'rē*), **Vittorio, Count,** Italian dramatic poet, was born in Piedmont in 1749. He began at a mature age to learn Latin, and also to study the Tuscan dialect, for which purpose he went to Tuscany. On his journey thither he made the acquaintance of the countess of Albany, to whom he became deeply attached and to whom he was privately married. He left twenty-one tragedies and six comedies, besides various odes and sonnets. Died in Florence, 1803.

Alfonso V., king of Aragon, Naples, and Sicily, was born in 1385. He received the surname of "the Magnanimous" because on his accession to the throne he destroyed a document containing the names of all the grandees who were hostile to him. He honorably distinguished himself by his patronage of letters; died at Naples in 1458.

Alfonso X., surnamed "the Astronomer," "the Philosopher," or "the Wise," king of Leon and Castile, was born 1226; succeeded his father, Ferdinand III., in 1252; died at Seville, 1284. He was the most learned prince of his time, and acquired lasting fame through the completion of the code of laws commenced by his father.

Alfonso XIII., king of Spain, is the son of the late King Alfonso XII. and Queen Marie Christina, a daughter of the late Karl Ferdinand, archduke of Austria. He was born after his father's death in 1886, and his childhood was spent at Madrid and the Palace of Miramar, in San Sebastian. In Spain the sovereign comes of age at sixteen, and during the king's minority his mother reigned as queen regent. On May 17, 1902, the regency ceased, and Alfonso XIII. assumed his full powers. On May 31, 1906, he married Princess Ena of Battenberg. Abdicated the throne. 1931.

Alfred the Great, the youngest son of Ethelwolf, king of the West Saxons, born 849. After the death of his brother, Alfred mounted the throne of England in 871, at a time when the kingdom was a prey to the invasion of the Danes, and to domestic dissensions. After several unfortunate actions with the Danes, Alfred concealed his misfortunes for a year under the dress of a peasant, till the success of one of his chiefs, Odun, earl of Devon, in defeating a body of Danes, drew him from his retirement. The Danes were completely defeated at Eddington, in 878. After the victory, Alfred behaved with great magnanimity to his foes, giving up the kingdom of the East Angles to those of the Danes who embraced Christianity. From that time, however, though the Danes occasionally repeated their depredations, the mind of Alfred was not shaken from its noble purpose of enlightening his subjects, and giving stability to their independence. He is said to have been engaged in 56 battles, by sea and land, although his valor as a warrior has excited less admiration than his wisdom as a legislator. He composed a body of statutes, instituted the trial by jury, and divided the kingdom into shires and tithings. He was so exact in his government that robbery was unheard of, and valuable goods might be left on the highway without danger. He founded, or, according to others, restored the University of Oxford, and filled the professional chairs with men of taste, genius, and erudition. He was himself a learned prince, and composed several works. To Alfred, also, England is indebted for the foundation of her naval establishments, and he was the first to send out ships to make the discovery of a north-east passage. In private life he was benevolent, pious, cheerful, and affable, and his deportment was both dignified and engaging. After a reign of over 28 years, he died, 901. He left by his queen, Elswitha, two sons and three daughters, and was succeeded by his second son, Edward, surnamed the Elder.

References.—The *Anglo-Saxon Chronicle* is the best authority on Alfred. There are *Lives* by Asser, Powell, Spelman, Bicknell, Reinhold Pauli and Thomas Hughes. See also Alfred's Laws in Thorpe's *Collection* and Turk's *Legal Code of Alfred the Great.*

Algardi (*ăl-gär'dē*), **Alessandro,** noted Italian sculptor, was born at Bologna, Italy, 1602. His chief work is a colossal relievo, in St. Peter's of *Pope Leo Restraining Attila From Marching on Rome.* Died at Rome in 1654.

Alger (*ăl'jẽr*), **Russell Alexander,** soldier, capitalist; born in Ohio, 1836. Taught school two winters; admitted to bar 1859; began practice in Cleveland; removed to Michigan 1860; began lumbering in a small way; enlisted 1861, and served in Civil War from captain to major-general of volunteers. In lumber business after war. Was governor of Michigan, 1885 and 1886; candidate for president in republican national convention, 1888; secretary of war, 1897-99, resigned; United States senator, 1902-7. Author: *The Spanish-American War.* Died, 1907.

Alison, Sir Archibald, lawyer and historian; was born at Kenley, England, 1792. He was admitted to the bar in 1814, occupied subsequently prominent legal positions, and was a writer on law, politics, and literature. His chief work, however, is *The History of Europe During the French Revolution,* which was exceedingly popular. He was created a baronet in 1852 and died near Glasgow, Scotland, 1867.

Allegri (*ăl-lā'grē*), **Gregorio,** musical composer, was born at Rome about 1584. He studied under Napani, and was a friend of Palestrini. He composed motets and sacred pieces; and was retained in the choir of the Sistine chapel, Rome, by Urban VIII., until his death, 1652.

Allen, Charles Grant Blairfindie, author and naturalist, born at Kingston, Canada, in 1848, graduated from Merton College, Oxford, in 1871. After four years at Queen's College, Jamaica, as professor of logic and principal, 1873-77, he returned to England, and, adopting a literary career, published *Physiological Æsthetics, Color Sense, Evolutionist at Large, Darwin,* and several clever novels—*Babylon; In all Shades; The Woman Who Did; An African Millionaire,* etc. He also wrote several books on travel. Died, 1899.

Allen, Ethan, soldier, was born at Litchfield, Conn., about 1737, and distinguished himself early in the Revolutionary War by the surprise and capture of Fort Ticonderoga in 1775. He next did good service in Montgomery's expedition to Canada, but was taken prisoner, and not exchanged until 1778. He was afterward a member of the Vermont legislature. He was author of a deistical work *Reason the Only Oracle of Man.* Died, 1789.

Allen, James Lane, author, born in Kentucky, 1849; graduate of Kentucky University; taught in Kentucky University; later professor of Latin and higher English, Bethany, West Virginia College; after 1886, he gave his entire attention to literature. Author: *Flute and Violin; The Blue Grass Region and Other Sketches of Kentucky; John Gray, The Kentucky Cardinal; Aftermath; A Summer in Arcady; The Choir Invisible; The Reign of Law, The Mettle of the Pasture,* etc. Died, 1925.

Allen, Viola, actress, born in New Orleans, La., 1867; was educated in Boston and at Wykham Hall, Toronto, and boarding school in New York. Made debut, Madison Square theater, New York, in *Esmeralda,* at age of fifteen; after few months joined John McCullough company, playing Virginia, Desdemona, Cordelia, etc. Subsequently played leading classical Shakespearean, and comedy rôles with Lawrence Barrett Tommaso Salvini, Joseph Jefferson, and William J. Florence. Leading lady at Boston Museum for a season; also at Empire theater in 1893, and four years following, creating and playing rôles in *Liberty Hall; Sowing the Wind; The Masqueraders; Under the Red Robe,* etc. Starred, 1898, as Gloria Quayle in *The Christian,* and in 1900 produced *In the Palace of the King;* and, in 1902, as Roma in *The Eternal City.* In 1903 began series of Shakespearean revivals, producing *Twelfth Night, A Winter's Tale, As You Like It.*

Allenby, Gen. Sir Edmund (Henry Hynman), (1861—), English General served in Bechuanaland expedition 1884-5, Zulu War, 1888, South African War, 1899-1902, and in the World War. British Armies under Allenby captured Jerusalem from the Turks, December 10, 1917. A decisive and crushing victory at Samaria, September 18-22, 1918, over 100,000 Turks. Died, 1936.

Allison, William Boyd, lawyer, American legislator, was born in Ohio, 1829; educated at Western Reserve College and practiced law until 1857; emigrated to Iowa; served in the Civil War; was sent to Congress while that struggle was going on, and remained as representative and senator from that time, save in 1872-73. His influence was marked and salutary on the legislation of his day. Died, 1908.

Allston, Washington, American painter, was born in South Carolina, in 1779; graduated at Harvard in 1800, and went the next year to London to study art. In 1803 he went to Paris, and in 1805 to Rome, where he formed a close intimacy with Thorwalsden and Coleridge. Elected an A. R. A. in 1819, he had the year before returned finally to America, and fixed his residence at Cambridge, Mass., where he died in 1843.

Alma-Tadema (*ăl'mä-tä'de-mä*), **Sir Laurence,** painter of classical subjects, born in Dronryp, Friesland, in 1836; studied at the Royal Academy of Antwerp, and was afterwards pupil and assistant of Baron Henry Leys. He settled in England in 1873, where his pictures found a ready welcome. He was elected A. R. A. in 1879. Died, 1912.

Almqvist (*ălm'kvist*), **Karl Jonas Ludvig,** Swedish author, was born at Stockholm in 1793, and died at Bremen in 1866. His romances as a whole, are considered the best in the Swedish language. *The Book of the Thorn-Rose* is regarded as the best.

Alstroemer (*ăl'strē-mẽr*), **Jonas,** Swedish industrial reformer, was born in 1685, and is noted for the great commercial improvements which he introduced into his native country. So extensive

and successful were the manufacturing and agricultural resources which he introduced, that the state ennobled him, made him chancellor of commerce, and erected a statue to his honor on the Stockholm Exchange. Died, 1761.

Alva, Fernando Alvarez, de Toledo, duke of, Spanish governor of the Netherlands under Philip II. of Spain, was born in 1508. Alva was recalled in 1573, but he was soon given the command of Portugal, which he quickly conquered. Though his pride and cruelty were excessive, he was undoubtedly one of the greatest generals of his age. Died, 1582.

Alvarado (*äl-vä-rä'dō*), **Alonzo,** one of the Spanish conquerors of Mexico and Peru under Pizarro, was born at Burgos about 1490; he was defeated and made prisoner by the Incan leader, Almagro. He afterward joined De Castro, and was lieutenant-general of the armed force which suppressed the rebellion of Gonzalo Pizarro in 1548. Died, 1554.

Alvarado, Pedro d', Spanish cavalier, was born in Badajoz, 1485. He took part in the expedition and victories of Cortez, and was intrusted with the command of the city of Mexico, and afterward made governor of Guatemala and Honduras. He explored California, and was killed soon after his return in an expedition against Jalisco. Died, 1541.

Alverstone, First Baron, Sir Richard Everard Webster, Lord Chief Justice of England since 1900, was born in 1842. He was graduated at Trinity College, Cambridge, and holds the degrees M.A., LL. D., D. C. L.; Q. C., 1878; Attorney-general, 1885-86, 1886-92, and 1895-1900; M. P. Isle of Wight, 1885-1900; Master of the Rolls, 1900. He was knighted in 1885, and created a baronet and baron in 1900. Died, 1915.

Alzog (*älˈtsōg*), **Johann Baptist,** Roman Catholic historian, was born in Ohlan, Silesia, 1808. He was professor of church history in the University of Freiburg, and wrote a *Manual of General Church History*, which is known in many languages. He was also the author of an *Outline of Pathology*, and in 1869 was a member of the commission on dogma which prepared the work for the vatican council. Died at Freiburg, Baden, 1878.

Ambrose (*am'brōz*), **St.,** a doctor in the Latin Church of the fourth century, was born at Treves, Gaul, 340. Consecrated archbishop of Milan, 374. Ambrose was repeatedly, in the discharge of his duty to the Church, brought into direct conflict with the highest secular authority. To him we owe the noble hymn, *Te Deum Laudamus*. No father of the Church has a wider fame. Died at Milan in 397.

Amerigo Vespucci (*ä-mä-rēˈgō ves-pōōtˈchē*). See **Vespucci.**

Ames (*āmz*), **Fisher,** American lawyer and politician, was born at Dedham, Mass., 1758. He was graduated from Harvard in 1774; began the practice of law in 1781; sat in the Massachusetts convention, and was afterward a member of Congress, and famed for his eloquence. He retired from public life with Washington, and devoted himself to literary pursuits; was elected president of Harvard College in 1804, which he declined. Died, 1808.

Ames, James Barr, dean Harvard Law School, 1895-1910; born at Boston, Mass., 1846; graduate of Harvard, 1868; Harvard Law School, 1872; LL.D., University of the City of New York, University of Wisconsin, 1898; Harvard, 1904. Instructor in history, 1872-73; associate professor of law, 1873-77, became professor of law, 1877, Harvard. Compiled collections of cases on torts, pleading, bills and notes, partnership, trust suretyship, admiralty and equity jurisdiction; was author of numerous articles in *Harvard Law Review* and other law reviews. Died, 1910.

Ames, Joseph Sweetman, physicist, professor of physics and director Physical Laboratory Johns Hopkins, was born at Manchester, Vt., 1864; graduated from Johns Hopkins in 1886; Ph.D., 1890. Author: *Theory of Physics; Manual of Experiments in Physics; Elements of Physics; Free Expansion of Gases.*

Amherst (*am'erst*), **Jeffrey, Lord,** British general, was born at Riverhead, England, 1717. As major-general he served on the continent and in America, where he succeeded Abercrombie as commander-in-chief. Here he was remarkably successful and, after many victories, Montreal surrendered and Newfoundland was recovered from the French. He was raised to the peerage in 1776, and was appointed field marshal in 1796. Died, 1797.

Ami, Henry M., assistant palæontologist, Geological Survey of Canada, 1882, was born at Belle Riviere, near Montreal, 1858; graduated from McGill University, B. A., 1882; M.A., 1885; D.SC., Queen's, 1892; McGill, 1907.

Amundsen, Roald (1872-1928), Norwegian explorer, discoverer of the South Pole and first to fly over North Pole in a dirigible, was born at Borge, Norway, 1872. At twenty-five he went as mate on the Belgian Antarctic Expedition. He sailed on his own expedition in 1903 and in 1905 located the Northwest Passage and the North Magnetic Pole. On Dec. 14, 1911, he planted the flag of Norway at the South Pole. He reached the North Pole by dirigible, the *Norge*, in 1926. Flying to the relief of Nobile in 1928, Amundsen lost his life. Author, *The North-west Passage*; *The South Pole*; *My Life as an Explorer*.

Amontons (*ä'mōNˈtōN'*), **Guillaume,** French physicist, born in Paris, 1663. In France, is considered the inventor of the telegraph; and, almost at the same time with Halley in England, he found that the boiling point of water varies with the elevation. Died, 1705.

Ampere (*ăNˈpâr*), **Andre Marie,** a distinguished mathematician and naturalist, was born at Lyons in 1775. In 1805, after he had been engaged for some time as private mathematical tutor at Lyons, he was called to Paris, where he distinguished himself as an able teacher in the polytechnic school and wrote his essay on the *Mathematical Theory of Chances*. Died, 1836.

Amurath (*ä-mōō-rätˈ*), or **Murad I.,** sultan of Turkey, was born about 1319. He succeeded his father, Orkhan, in 1360. He was the first to lead Turkish arms into Europe, and in 1361 took Adrianople. Urban V. preached a crusade against him, but the venture was disastrous to the Christians. He lost his life in the battle of Kossovo, 1389.

Amurath, or **Murad II.,** sultan of Turkey, was born about 1403. He succeeded Mohammed I. in 1422. He invaded Albania and the Peloponnesus, where George Castriot (*Scanderbeg*) defeated him; but retreated only to gain a great victory over his former adversary, Hunniades, at Kossovo, in 1448; in his reign poetry, jurisprudence, and theology began to flourish. Died of apoplexy at Adrianople, 1451.

Anacreon (*ä-nakˈrē-ŏn*), celebrated Greek lyric poet, was born at Teos in Ionia, about 563 B. C. He was patronized by Polycrates, the tyrant of Samos, and Hipparchus, the tyrant of Athens. He died at Abdera, about 478 B. C., suffocated by a grape-stone while in the act of drinking. His poems are chiefly devoted to the praises of love, pleasure, and wine.

Anastasius I. (*an-as-tāˈshi-us*), emperor of the East, was born 430 at Dyrrachium, in Epirus, and proclaimed emperor at the age of sixty. He suppressed the cruel and degrading spectacles where men fought with wild beasts, abolished the sale of offices, built a wall on the west side of Constantinople to defend it from the incursions of the barbarians. Died, 518.

Anaxagoras (*an-aks-agˈō-rās*), Greek philosopher of the Ionian school, was born at Clazomenae about 500 B. C. He studied under Anaximenes, and, after traveling through all the known parts of the globe, in search of knowledge, established himself at Athens, where he opened the first school of philosophy. Pericles, Socrates, and Euripides were among his pupils. Died, 428 B. C.

Andersen, Hans Christian, novelist, poet, and writer of fairy tales, was born at Odense, in Funen, 1805. He completed his *Agnes and the Merman* in Switzerland; and one of his best works, *The Improvisatore*, a series of scenes depicted in a glowing style and full of poetic interest, was the fruit of a visit to Italy. In the end of 1840 he commenced a somewhat lengthened tour in Italy and the East, of which he gave an account in *A Poet's Bazar*, 1842. His works have all been translated into German and English. His *Dying Child* has been translated into the language of Greenland; and on his seventieth birthday he was presented with a book containing one of his tales in fifteen languages. He died in 1875.

Anderson, Mary. See **Navarro, Mary Anderson de**

Anderson, Rasmus Bjorn, author, diplomat; born at Albion, Wisconsin, of Norwegian parentage, 1846; graduate of Luther College, Decorah, Iowa, 1866; University of Wisconsin, 1869; LL.D., 1888; professor of Scandinavian languages and literature, 1875-83; United States minister to Denmark, 1885-89. Editor and publisher of *Amerika* since 1898. Author: *Norse Mythology; Viking Tales of the North; America Not Discovered by Columbus; The Younger Edda; First Chapter of Norwegian Immigration*, 1821-1840; also many translations of Norse books, and author of several works in Norwegian.

Anderson, Sherwood, Author of short stories, was born at Camden, Ohio, 1876. Of poor parents "always on the road," with small commercial ventures, he obtained what education he could at public schools and through his own reading. Today he is preeminent as a story teller in the realistic vein. In his *Winesburg, Ohio*, and *The Triumph of the Egg*, both very candid in their subjects and treatments, he displays masterly vision and force. Other works are *Windy McPherson's Son*, *Many Marriages*, *A Story Teller's Story*, and *Dark Laughter*.

Andrassy (*onˈdrä-shē*), **Count Gyula,** Hungarian statesman, was born 1823, of an ancient and noble family. In 1867, when the right of self-government was conceded to Hungary, he was appointed premier of the New Hungarian ministry. He was a member of the Presburg Diet in 1847-48; lord-lieutenant of the county of Zempton, and Hungarian ambassador to Constantinople. Died, 1890.

Andre (*ănˈdrā* or *anˈdrē*), **John,** British soldier, born in London, England, 1751; served in the war with America, and rose to the rank of major. He conducted the negotiations with Benedict **Arnold for the betrayal of West Point, but being** discovered in disguise, was arrested and put to death as a spy. His remains lie in Westminster Abbey, where a cenotaph was erected to his memory. Executed, 1780.

Andrews, Elisha Benjamin, educator, author; born at Hinsdale, N. H., 1844; served private to second lieutenant of Union army in Civil War; graduate of Brown University, 1870; professor history and political economy, Brown University, 1882-88; professor political economy and finance, Cornell, 1888-89; president Brown University, 1889-98; superintendent schools, Chicago, 1898-1900; chancellor University of Nebraska, 1900-1909. Author: *Institutes of Constitutional History, English and American; Institutes of General History; Institutes of Economics;* etc. Died, 1917.

Andros (*anˈdros*), **Sir Edmund,** was born at London, England, in 1637; died, 1714. He was governor of the colony of New York for eight years, beginning in 1674. He was harsh and ruled without any regard to the wishes of the colonists.

Angelico (*ănˈjelˈē-kō*), **Fra,** the name by which we best know the great friar-painter, Guido di Pietri, whose monastic name was Giovanni. He was born in 1387 at Vecchio in Tuscany. His most important frescoes are those in the Florentine convent of San Marco (now a museum), at Orvieto, and in the Nicholas Chapel of the vatican. Of his easel pictures, the Louvre possesses a splendid example, *The Coronation of the Virgin*, and the London National Gallery a *Glory, or Christ*.

Angell (*ānˈjel*), **James Burrill,** educator, diplomat; born at Scituate, R. I., 1829; graduate of Brown University, 1849; professor modern languages and literature, Brown, 1853-60; editor *Providence Journal*, 1860-66; president of University of Vermont, 1866-71; president University of Michigan, 1871-1909; member Anglo-American International Commission on Canadian Fisheries, 1887; chairman Canadian-American Commission on Deep Waterways from Lakes to Sea, 1896; appointed minister to Turkey, 1897, but resigned May, 1898. President, University of Michigan, 1898-1909. Author: *Progress in International Law, The Higher Education*, etc. Died, 1916.

Angell, James Rowland, born Burlington, Vt., 1869, son of James Burrill Angell; graduate of University of Michigan, 1890; Harvard, A.M., 1892. Studied in Universities of Berlin, Halle, Leipzig and Vienna; famed as psychologist; author of textbook on psychology; dean University of Chicago, 1911-1918, and acting president, 1918-1919; member Adjutant General's staff on classification of personnel in Army, 1917-1918; president Carnegie Foundation. 1919-1921. President Yale University since 1921.

Angelo (*anˈjē-lō*), **Michael de Buonarotti.** See Michelangelo.

Anglin (*anˈglin*), **Margaret Mary,** actress, was born at Ottawa, Canada, 1876; educated at Loretto Abbey, Toronto, and Convent of the Sacred Heart, Montreal. Made professional début in *Shenandoah*, New York, 1894; leading woman with E. H. Sothern, 1897-98, Richard Mansfield, 1898-99, and in Empire Theatre Stock Co.; starred in *Zira*, 1905-06; with Henry Miller, in *The Great Divide*, 1906-07.

Anna Comnena (*kom-nēˈnȧ*), a learned Byzantine princess, author of one of the most valuable works to be found in the collection of the Byzantine historians, was the daughter of the emperor Alexander I. (Comnenus), born 1083. She framed a conspiracy against the life of her brother then ruling as emperor in 1118. Her brother spared her life, but punished her by confiscation of her property, which, however, he soon after generously restored. Disappointed and ashamed, she withdrew from the court and sought enjoyment in literature. Died, 1148.

Anne of Cleves, the fourth wife of Henry VIII., to whom she was married in 1540, was born at Cleves, Germany, 1515. She was the daughter of John, third duke of Cleves. The match was projected by Cromwell, and was partly the cause of that minister's ruin. Henry put her aside, settled on her a liberal annuity, with which she was well satisfied, and she spent the remainder of her days in England, where she died in 1557.

Anne, Queen of England, was the second daughter of King James II., by his first wife, Anne Hyde, and was born in London, England, in 1664. Anne ascended the throne on March 8, 1702. During her reign, which was made illustrious by the military triumphs of the duke of Marlborough, Sir George Rooke and Sir Cloudesley Shovel conquered the fortress of Gibraltar, a possession which Spain has never been able to regain; and the legislative union of Scotland with England was effected. The glorious galaxy of writers, in almost every branch of learning, who flourished in her time, has caused it to be considered the Augustan age of British literature. She died in 1714.

Annunzio (*ȧn-n ōōnˈtsē-ō*), **Gabriele d'.** See **D'Annunzuo, Gabriele.**

Anthony of Padua, St., born at Lisbon, 1195, was at first an Augustinian monk, but in 1220 he entered the Franciscan order, and became one of the most active propagators. He was canonized by Gregory IX. in the following year. According to legend, he preached to the fishes when

men refused to hear him; hence he is the patron of the lower animals, and is often represented as accompanied by a pig.

Anthony the Great, St., the founder of monastic institutions, was born 251 near Heraclea, in Upper Egypt. In 205, having sold all his property and given the proceeds to the poor, he withdrew into the desert whither a number of disciples were attracted by his reputation for sanctity; and thus was formed the first order of monks. Died, 356.

Antigonus (*an-tig'ō-nus*), **Cyclops,** or "one-eyed," a distinguished general of Alexander the Great, on whose death he became governor of Phrygia, Lycia, and Pamphylia; after defeating and slaying Eumenes, and waging other successful wars, he assumed the title of king. His ambitious schemes united his rivals, and he was slain in the battle of Ipsus. Died, 301 B.C.

Antiochus (*an-ti'ō-kŭs*) **III.,** surnamed **the Great,** was born about 238 B. C.; succeeded his father, Seleucus Callinicus, as king of Syria in 223 B. C., and was the most distinguished of the Seleucidae. He became involved in war with the Romans, who had conquered Macedonia, but declined to invade Italy at the instigation of Hannibal, who had come to his court of refuge. Peace was granted him only on condition of his yielding all his dominions east of Mount Taurus, and paying a heavy tribute. To raise the money, he attacked a rich temple in Elymais, when the people rose against him, and killed him in 187 B. C.

Antiochus IV., surnamed **Epiphanes,** became king of Syria in 175 B. C. He fought against Egypt and conquered a great part of it. He twice took Jerusalem; and, endeavoring there to establish the worship of Greek gods, excited the Jews to a successful insurrection under Mattathias and his heroic sons, the Maccabees. Died, 164 B. C.

Antipater (*an-tip'ă-tẽr*). Of the many persons who bore this name in antiquity the most celebrated was one of the generals of King Philip of Macedon, born about 400 B. C. When Alexander led his troops into Asia he left Antipater, who, along with Parmenion, had endeavored to dissuade him from the expedition, as governor of Macedon. He died, 319 B. C.

Antoinette (*ăn-twă-net'*), **Marie.** See **Marie Antoinette, Josephe Jeanne.**

Antoninus (*an-tō-ni'us*), **Marcus Aurelius,** See **Marcus Aurelius Antoninus.**

Antoninus Pius (**Titus Aurelius Fulvus**), Roman emperor, was born 86 A. D. In 120 he was made consul; afterward was sent by Hadrian as proconsul into Asia, where the wisdom and gentleness of his rule won for him a higher reputation than had been enjoyed by any of his predecessors. In 138 he was adopted by the Emperor Hadrian, in consequence of merit alone, and came to the throne in the same year. He died at Lorium, Italy, in 161.

Antony, Mark, celebrated Roman general, was born at Rome in 83 B. C. He took part in Caesar's great victory of Pharsalia, and with him was made consul in 44 B. C. After Caesar was killed, Antony with Augustus and Lepidus, formed a government called the *triumvirate,* which defeated the republican army of Brutus and Cassius at Philippi. Some time after, Antony visited Greece and Asia and met Cleopatra. His love for her made him forget the provinces he was to govern. When at last he turned his attention to them, his rule was so despotic that Augustus sent a force against him and defeated him in the naval battle of Actium, during the progress of which he was deserted by the Egyptian fleet. He took his own life in 30 B. C.

Apelles (*ă-pel'lēz*), the most celebrated painter in ancient times, the son of Pythias, was probably born at Colophon, Asia Minor. He flourished in the latter part of the fourth century B. C., and he united the fine coloring of the Ionian, with the accurate drawing of the Sicyonic school.

Apollodorus (*ă-pol-ō-dō'rus*), a great architect of the second century, was born at Damascus. He worked at Rome for the Emperor Trajan, and built the Forum and Column which bear that monarch's name, but his greatest work was a huge bridge over the Danube at its confluence with the Alt. He was banished and put to death by Hadrian.

Apollonius (*ap-ol-lō'ni-us*), of Perga, in Asia Minor, called "The Great Geometer," lived in the second half of the third century, B. C. He is generally considered one of the founders of the mathematical sciences.

Apollonius, called the Rhodian (Apollonius Rhodius), was born in Alexandria 230 B. C. He presided over an academy at Rhodes, was an eminent rhetorician, and wrote a poem, in four books, on the expedition of the Argonauts, and other poems.

Apponyi, Count George, Hungarian statesman, was born 1808. He was a member of the Presburg Diet of 1843, and chancellor of Hungary in 1847, when he opposed the revolutionary movements then breaking out, and which caused his retirement. In 1859 he was made a member of the imperial council in Vienna, and was instrumental in bringing about the reconciliation between Austria and Hungary. He is classed among the ablest of European statesmen. Died, 1899.

Apuleius (*ap-ū-lē'yus*), a satirical writer of the second century, born at Numidia, Africa, about A.D. 125, studied at Carthage. He was so extremely popular that the senate of Carthage and other states erected statues in his honor.

Aquinas (*a-kwī'nas*), **St. Thomas** celebrated scholastic divine, born about 1227, died in 1274, was descended from the counts of Aquino, in the Kingdom of the Two Sicilies. He was educated at the Benedictine monastery at Monte Casino, and at the University of Naples, where he studied for six years. About the age of seventeen he entered a convent of Dominicians, much against the wishes of his family.

He attended the lectures of Albertus Magnus at Cologne, in whose company he visited Paris in 1245 or 1246. Here he became involved in the dispute between the university and the Begging Friars as to the liberty of teaching, advocating the rights claimed by the latter with great energy. In 1257 he received the degree of doctor from the Sorbonne, Paris, and began to lecture on theology, rapidly acquiring the highest reputation. In 1263 he is found at the Chapter of the Dominicans in London. In 1268 he was in Italy, lecturing in Rome, Bologna, and elsewhere. In 1271 he was again in Paris lecturing to the students; in 1272 professor at Naples. In 1263 he had been offered the archbishopric of Naples by Clement IV., but refused the offer. He died on his way to Lyons to attend a general council for the purpose of uniting the Greek and Latin churches.

He was called, after the fashion of the times the *angelic doctor,* and was canonized by John XXII. The most important of his numerous works, which were all written in Latin, is the *Summa Theologiae,* which, although only professing to treat of theology, is in reality a complete and systematic summary of the knowledge of the time. His disciples were known as *Thomists.*

References.—Vaughan's *Life of St. Thomas of Aquin;* Townsend's *Schoolmen of the Middle Ages;* and *Histories of Philosophy* by Erdmann and Ueberweg.

Arabi Ahmed (*ä-rä'bē*) ("Arabi Pasha"), leader of the military insurrection in Egypt in 1882, was born in Egypt about 1841. He proclaimed to his troops that he was inspired by the prophet to undertake a holy mission, the motto of which was, "Erypt for the Egyptians," and he thus became the leader of a great rebellion. After his defeat Arabi was banished to Ceylon, but was permitted to return in 1901. Died, 1911.

Arago (*ar'ă-gō*), **Dominique,** celebrated French philosopher, was born at Estagel, France, 1786. In 1806 he was engaged with Biot in measuring an arc of meridian. His subsequent life was distinguished by an ardent and successful devotion to science. In 1018 appeared his *Recueil d' Observations géodéciques, astronomiques, et physiques.* He died in 1853.

Arbaces (*ăr-bē'sēz*), one of the generals of Sardanapalus, and the founder in 876 B. C. of the Median empire. The dynasty of Arbaces lasted until 559 B. C., when Cyrus overthrew it.

Arbuthnot (*ăr-buth'not* or *ăr'buth-not*), **John,** British physician and wit, the much-loved friend of Swift and Pope, was born at Arbuthnot, Scotland, 1675. He studied at Aberdeen and University College, Oxford, but took his M.D. degree at St. Andrews, 1696. In 1705 he was appointed physician to the queen, and her death in 1714 was a severe blow to his prosperity. In 1715, along with Pope, he assisted Gay in *Three Hours After Marriage,* a farce. Utterly careless of literary fame, Arbuthnot was the chief, if not the sole author of the brilliant *Memoirs of Martinus Scriblerus,* first published in Pope's works. He wrote, also, the celebrated *History of John Bull.* Died, 1735.

Arc, Joan of. See **Joan of Arc.**

Archimedes (*ăr-ki-mē'dēz*), the most celebrated mechanican of antiquity, was born in Syracuse, Sicily, about 287 B. C., and died 212 B. C. He is said to have visited Egypt in early life, and to have invented there several hydraulic machines, including the Archimedean screw, which he applied to drainage and irrigation. Vitruvius relates that he discovered the principle of specific gravity while pondering the means of detecting a supposed fraud in the debasement of a golden crown of King Hiero with silver, by observing that his body would displace its own bulk of water in a full bath tub, and ran home naked exclaiming, *Eureka, eureka.* "I have found it I have found it." His purely mathematical works show that he far excelled all who preceded him.

Argand (*ăr'gaN'*, Eng. *ăr'gand*), **Aime,** Swiss physician and chemist, was born in Geneva about the middle of the eighteenth century. He invented the "Argand lamp," which was brought out in England in 1782. Died in Switzerland in 1803.

Argyll (*ăr-gil'*), **Archibald Campbell, Earl of,** was the descendant of Sir Colin Campbell of Lochow or Loch Awe, who was knighted in 1286. Archibald was born in 1598, and in 1619, his father having turned Catholic and quitted Scotland, became the sole potentate of all the broad lands of his line. In 1640 he marched with 4,000 men through Badenoch, Athole, Mar, and Angus, enforcing subjection to the Scottish parliament. Charles, on his visit to Scotland in 1641, created him marquis. After the defeat of Worcester he defended himself for nearly a year in his castle of Inveraray against Cromwell's troops; but in 1652 he submitted to the protector. At the restoration he was committed to the Tower, from there taken by sea to Leith in 1661, and beheaded. A gorgeous monument was erected to him in 1895 in St. Giles's cathedral.

Ariosto (*ă-rē-ōs'tō*), **Ludovico,** one of the greatest of Italian poets, born at Reggio, 1474, died at Ferrara, 1533. In 1503 he was introduced to the Cardinal Hippolytus d'Este, who employed him in many negotiations. Here he produced his poem *Orlando Furioso,* which was published in Farrara in 1516.

Aristarchus (*ar-is-tär'kus*) **of Samos,** an Alexandrian astronomer, flourished 280-264 B. C. He seems to have anticipated Copernicus, maintaining that the earth moves round the sun. He wrote a treatise on the magnitude and distance of the sun and moon.

Aristides (*ar-is-ti'dēz*), surnamed "the just," was the son of Lysimachus. He was one of the ten leaders of the Athenians against the Persians at the battle of Marathon, 490 B. C. In 477 B. C. he introduced a change of the constitution by which all citizens, without distinction of rank, were admitted to political offices. Died, 468 B. C.

Aristippus (*ar-is-tip'pus*), the founder of the Cyrenaic school of philosophy among the Greeks, was the son of Artiades, a wealthy gentleman of Cyrene, in Africa, and was born in that city about 425 B. C. He was a pupil of Socrates.

Aristophanes (*ar-is-tof'ă-nēz*), the most celebrated of the ancient Athenian writers of comedy, was contemporary with Socrates and Plato. He was born at Athens, probably about 448 B. C. He wrote, in all, fifty-four comedies, but only eleven have come down to us. *The Knights* and *The Clouds* are among his most admired pieces. Others are *The Wasps, The Birds,* and *The Frogs.* One of his finest plays, *The Clouds,* is a satire against Socrates. He died about 380 B. C.

Aristotle, (*ar'-is-tot'l*) celebrated Greek philosopher, born in Stagira, Macedonia, in 384, B.C. and died at Chalcis, Euboea, in 322 B.C. At 17 years of age he went to Athens, where he resided for 20 years. Plato, his teacher, called him the "intellect of his school." About 343 Philip of Macedon made him the teacher of his son Alexander. His influence on both was for many years great and salutary. Alexander after the conquest of Persia presented him with 800 talents. During his marches he sent him plants and animals, and other things unknown in Greece, for scientific examination. Aristotle returned to Athens about 335 B.C. and taught in the Lyceum, a gymnasium near the city. His school is called the Peripatetic, because he taught while walking up and down, or in shady walks. His friendly relations with Alexander were interrupted, yet the Athenians suspected him of partisanship for Macedon, accused him of impiety, and forced him to flee to Chalcis. The most important of his writings bear the titles *Organon* or *Logic, Rhetoric, Poetics, Ethics, Politics, History of Animals, Physics, Metaphysics, Psychology,* and *Meteorology.* His writings on mathematics, economy, and history are lost, as well as his letters, and a work called *Politiai,* on constitutions. Many books bearing his name are spurious. No other philosopher has exerted so large an influence on so many centuries and nations.

References.—Zeller's *Aristotle and the Earlier Peripatetics;* The chief English works are Grote's *Aristotle,* dealing with the life of Aristotle, the *Organon, De Anima* and *Metaphysics;* G. H. Lewes's *Aristotle; a Chapter from the History of Science,* dealing chiefly with the physics and biology; Sir Alexander Grant's edition of the *Nicomachean Ethics* and introduction to Newman's edition of the *Politics;* Butcher's *Aristotle's Theory of Poetry and Fine Art;* and Cope and Sandys' edition of the *Rhetoric.*

Arius (*ă'ri-us* or *ă-rī'us*), founder of Arianism, was born in Libya about 256 A. D., was trained in Antioch, and became a presbyter in Alexandria. Here about 318 he maintained, against his bishop, that the Son was not co-equal or co-eternal with the Father, but only the first and highest of all finite beings, created out of nothing by an act of God's free-will. He defended his views before the council of Nicaea, 325, but they were condemned. Died at Constantinople, 336.

Arkwright, Sir Richard, noted English inventor, was born 1732, and died 1792. Until the age of 28 he was a barber and afterward a dealer in hair, and in a dye of his own invention. In 1768 he produced the model of his famous cotton-spinning frame, by which thread could be spun of any required fineness and strength and with immense velocity. Need and Strutt (the latter the inventor of the stocking frame) took an interest in it, and a machine driven by a horse was soon in operation. The first patent was granted in 1769. In 1775 Arkwright obtained a new patent, which after litigation was confirmed in 1785. He encountered bitter hostility, especially from the manufacturers, who at one time refused to buy his yarns, and tried to ruin him by mischievous legislation; but he was indomitable, showed remarkable capacity for management, and accumulated a fortune of $2,500,000. He acquired the rudiments of learning after he was 50 years old, and was knighted in 1786, on presenting an address to the king. In 1787 he was high sheriff of Derbyshire.

References.—Lewis' *Heroes of Science;* Coleridge's *Biographia Borelis;* and the *Triumphs of Steam.*

Arliss, George, actor, born 1868, in London, England. First appeared on the London stage in 1887; made his American debut in Mrs. Patrick Campbell's company in 1901. He is especially noted for his sympathetic character portrayals of middle and old aged gentility in "Disraeli," "The Green Goddess" and "Old English," among others.

Arminius (*ăr-mĭnĭ-us*), a German chieftain, prince of the Cherusci, was born about 18 B. C., and died by assassination in 21 A. D. He became a Roman citizen and served as a soldier in the Roman army. The majority of his life was devoted to the cause of German independence. He defeated the Roman Varrus, twice routed Germanicus, and finally drove the legions beyond the Rhine, thereby winning the title "German Liberator."

Arminius, Jacob, teacher of the system of Arminianism, born 1560, at Oudewater, a small town in Holland. He was ordained at Amsterdam in 1588, and soon became distinguished as a preacher. In 1589 he consented to answer a book which attacked the doctrine of Calvanism. Died, 1609.

Armour, John Ogden, capitalist, packer, was born in Milwaukee, 1863. President Armour & Company, Director C. M. & St. P. Ry.; I. C. Ry.; and National City Bank (New York). Died, 1927.

Armour, Philip D., merchant, capitalist, head for many years of the great firm of Armour & Company, pork packers and dealers in dressed meats and provisions, was born at Stockbridge, N. Y., 1832, and died at Chicago in 1901. His chief philanthropy was Armour Institute of Technology in Chicago, which was opened in 1893.

Armstrong, John, American soldier and writer, was born at Carlisle, Pa., 1758; died, 1843. He served in the revolutionary war, leaving the service with the rank of major. He wrote the *Newburgh Letters,* setting forth the hardships of the revolutionary soldiers in respect to pay. United States senator from New York, 1800-04; minister to France, 1804-10; brigadier-general in war of 1812; and secretary of war, 1813-14. He was charged with inefficiency in consequence of the capture of Washington, and resigned in September, 1814.

Armstrong, Sir William George, British inventor, was born in 1810 at Newcastle, England. In 1840 he produced much improved hydraulic engine, in 1842 an apparatus for producing electricity from steam, and in 1845 the hydraulic crane. Armstrong offered to his government all his inventions. He was knighted in 1859, and in 1887 was created Baron Armstrong; in 1894 he purchased Bamborough castle, to convert it into a retreat for cultured poverty. Died, 1900.

Arnauld I(*ăr'nō*), **Antoine,** known as "the great Arnauld," French philosopher and Jansenist theologian, was born at Paris in 1612. Entering the Sorbonne he became a pupil of Lescot, the confessor of Cardinal Richelieu, and afterward bishop of Chartres. His published works number 100. He died at Brussels in 1694.

Arndt (*ărnt*), **Ernst Moritz,** German poet and patriot, was born in the then Swedish island of Rügen, 1769. He received an excellent education at Jena, but in 1805, after traveling over a great part of Europe, he became professor of history at Griefswald. His *Geschichte der Leibeigenschaft in Pommern und Rügen* led to the abolition of serfdom; and in his *Geist der Zeit* he attacked Napoleon with such boldness that, after Jena, he had to take refuge in Stockholm. *Was ist des Deutschen Vaterland?* and others of his fiery songs, did not a little to rouse the spirit of Germany. Vigorous in mind and body, beloved and revered by the whole German people as "Father Arndt," he died at Bonn in 1860.

Arne (*ărn*), **Thomas Augustine,** composer, was born in London in 1710, and educated at Eton. He wrote his first opera, *Rosamond,* which was performed with great success in 1733. Next followed his comic operetta, *Tom Thumb;* and afterward his *Comus. Rule Britannia,* originally given in *The Masque of Alfred,* is his, as well as two oratorios and two operas, *Eliza* and *Artaxerxes.* He died in London in 1778.

Arnold, Benedict, an American general and traitor, was born in Connecticut, 1741. Joined Ethan Allen against Ticonderoga, and later succeeded Montgomery after the attack on Quebec, 1775, becoming a brigadier-general. Refused promotion by congress, and consented to remain in the army only at Washington's request. He secured command of West Point and entered into treasonable negotiations with Sir Henry Clinton for its betrayal. The capture of Major André exposed the plot, and Arnold fled at once. He became a brigadier-general in the British army and commanded several minor attacks. He was pensioned by the English government, but despised and neglected by the English people, except the royal family. Died in London, 1801.

Arnold, Bion Joseph, electrical engineer, inventor, was born at Casnovia, Mich., 1861; graduated from Hillsdale College, B. S., 1884, chief designer, Iowa iron works, Dubuque, Iowa; since 1893 independent consulting engineer. Designer and builder intramural railway, World's Columbian Exposition; consulting engineer Wisconsin state railway commission, 1905-07; devised plan for electrically operating trains of New York Central railroad in and out of New York, and member electric traction commissioners engaged in carrying on the work; consulting engineer for city of Chicago to revise street railway systems of city, 1902; chief engineer rebuilding Chicago traction system at cost of $40,000,000, 1907, and chairman of board of supervising engineers of the same.

Arnold, Sir Edwin, English author and journalist, was born in 1832; educated at King's College, London, and at Oxford; was appointed second master at King Edward VI's. school at Birmingham; resigned this for position of principal in the Sanskrit College of Poona, British India. In 1861 he became connected with the *London Telegraph;* noted as the author of several books, among them *Poets of Greece,* etc., and later his well-known poem, *The Light of Asia.* Died, 1904.

Arnold, Matthew, English poet and critic, eldest son of Dr. Arnold of Rugby, was born in Middlesex, England, 1822; was educated at Winchester, Rugby, and Balliol College, Oxford. He was elected fellow of Oriel College in 1845, and in 1851, after having been for some time private secretary to Lord Lansdowne, he was appointed lay inspector of schools under the committee of council on education. For ten years, 1857-67, he held the chair of poetry at Oxford. As a critic he holds a very high place. His later works were chiefly theological, being attempts to grapple with the supernatural aspects of Christianity from a rationalistic standpoint. Died, 1888.

Arnold, Sarah Louise, educator, born at North Abington, Mass., 1859; graduated State Normal School, Bridgewater, Mass., 1878; A.M., Tufts, 1902; taught in Massachusetts, Pennsylvania, Vermont, and New Hampshire; dean Simmons College since 1902.

Arnold, Thomas, educator and historian, was born in 1795, in the Isle of Wight, and educated at Winchester, and Corpus Christi College, Oxford; in 1815 he became Fellow of Oriel. After taking holy orders, he passed nine years at Laleham, near Staines, in literary occupations, and in preparing young men for the universities. Appointed head master of Rugby school in 1828, he raised that institution beyond all precedent, both by the remarkable success of his pupils and by the introduction of new branches of study into the Rugby course. The best known of Dr. Arnold's works are his edition of *Thucydides,* and his sermons delivered in the chapel of Rugby school. Died, 1842.

Arnold of Winkelried, a Swiss of Unterwalden, who, according to tradition, made a way for his comrades into the enemies' ranks at Sempach, in 1386, by grasping an armful of Austrain spearheads and plunging them into his own bosom.

Arrhenius (*ăr-rā'nĭ-us*), **Svante August,** Swedish chemist, was born in 1859. At nineteen he received the degree of doctor of philosophy from the University of Upsala. His most important contributions are in physical chemistry, more particularly in the theory of solutions, although his study of comets has added greatly to our knowledge of that subject. Received Nobel prize of chemistry, 1903. Died, 1927.

Arrian (*ar'i-an*), or **Flavius Arrianus,** Greek historian, was born in Nicomedia, Bithynia, about 100 A. D. The emperor Hadrian made him a Roman citizen and governor of Cappadocia, in 136. When fifty years old he settled in his native city for the rest of his life. He died about 180.

Artaxerxes I. (*ăr-taks-ûrk'sēz*), king of Persia, surnamed Longimanus, the second son of Xerxes, escaped from the conspiracy of Artaban and others, and ascended the throne in 465 B. C. His long reign, extending to 425, was marked by a decline of power. Died, 425 B. C.

Artaxerxes II., surnamed Mnemon, succeeded his father, Darius II., in 405 B. C. After gaining the victory over his brother, Cyrus, he became involved in a war with Sparta, which ended with the Antalcidean treaty of peace. Died, 361 B C.

Artaxerxes III., surnamed Ochus, was the son and successor of Artaxerxes II., and reigned in the true style of oriental despotism until 338 B. C. One of his most daring exploits took place in Egypt, where he caused the divine bull Apis to be slaughtered and cooked as ordinary beef. He was poisoned in 338 by his eunuch, Bagoas.

Artevelde (*ăr-te-vel'dē*), **Jacob Van,** popular Flemish leader of the fourteenth century, was a brewer in Ghent. His wealth, eloquence, and talents made him the most prominent man on the side of the citizens in their struggles against Count Louis of Flanders. His power was secure for ten years, but in 1335 he made a treaty with Edward III. of England, persuading him to assume the title of king of France. To strengthen this alliance, he tried to make Edward, the black prince, count of Flanders, when the people rose in rebellion and Artevelde was slain, 1345.

Arthur, Chester Alan, twenty-first president of the United States, son of a Baptist minister, was born in Franklin county, Vt., 1830; graduated from Union College in 1848; was admitted to the bar; appointed United States collector of the port of New York, 1871, served until 1878; was elected vice-president of the United States in 1880, and on the death of President Garfield, 1881, he became president. Died, 1886.

Arthur, Julia, actress, was born in Hamilton, Ontario, 1869, of Irish and Welsh parentage; real name, Ida Lewis; first New York success at Union Square theater in *The Black Masque;* London début, 1895, in Henry Irving's company, playing rôles next to Miss Terry. Married, 1898, Benjamin P. Cheney, Jr.

Asbury (*az'bĕr-i*), **Francis,** the first bishop of the Methodist Episcopal church ordained in America, was born in 1745. In 1765 he was appointed general assistant by John Wesley. He brought new life into the work, and at the outbreak of the revolution, when many other ministers returned to England, he kept on in his labors. At the end of the war it was decided to found an independent Methodist Episcopal church for America, and he was ordained in 1784 as bishop by his colleagues who had already been ordained by Wesley in England. For more than thirty years he worked earnestly and successfully, and the wonderful progress of Methodism in America, was largely due to his efforts and ability. He died in 1816.

Ascham (*as'kam*), **Roger,** English writer and classical scholar, was born in 1515 at Kirby Wiske, in Yorkshire. He wrote, in 1545, a treatise entitled *Toxophilus,* the pure English of which ranks it among the classical pieces of English literature. For this treatise, which was dedicated to Henry VIII., he was awarded a pension. In 1548 he became master of languages to Lady Elizabeth, afterward queen, and was subsequently appointed Latin secretary. Died, 1568.

Ashburton, Lord, Alexander Baring, English diplomat, was born in 1774, eldest son of the eminent merchant, Sir Francis Baring. Having been employed as special ambassador from England to the United States to settle the northeastern boundary question in August, 1842, he concluded the famous treaty called the Ashburton treaty, by which the frontier line was definitely settled. Died, 1848.

Ashhurst, John, Jr., American surgeon, educator, and author, was born at Philadelphia, Pa., 1839; acting assistant surgeon of United States army, 1862-65; professor of clinical surgery in University of Pennsylvania, elected in 1877. His two principal works are *Injuries to the Spine,* and *Principles and Practice of Surgery.* Died, 1900.

Ashmole, Elias, British antiquary, was born at Litchfield, England, 1617; held the appointment of Windsor herald, and published the *History of the Order of the Garter.* He left many works, and presented to the University of Oxford his valuable collection of coins, specimens, and manuscripts. Died, 1692.

Aspasia (*as-pā'shi-ă*), a beautiful Athenian woman, said to have been a native of Miletus in Asia Minor. Socrates is said to have been one of her admirers. In order to marry her, Pericles repudiated his wife. An affront offered to Aspasia is said to have caused the Peloponnesian war.

Asquith (*as'kwith*), **Rt. Hon. Herbert Henry,** prime minister of England, was born in 1852, and entered the British parliament in 1886. He was educated at Balliol College, Oxford, and was admitted to the bar, Lincoln's Inn, 1876, D. C. L., Oxford; LL.D., Edinburgh and Glasgow. On the defeat of the Rosebury ministry in 1895, he resumed practice at the bar. He was one of the most effective speakers on the liberal side during 1903 on the education question and the war commission's report, and during 1903, 1904, and 1905 in opposition to Chamberlain's fiscal policy, Chancellor of the exchequer, 1905. He became prime minister, 1908. Died, 1928.

Astor, John Jacob, American merchant, founder of the American fur company, was born near Heidelberg, Germany, 1763. After spending some years

in London he sailed to America in 1783, and soon invested his small capital in furs. By economy and industry he so increased his means that after six years he had acquired a fortune of $200,000. From this period, in spite of the war of 1812 and other temporary obstacles, his commercial connections extended over the entire globe, and his ships were found in every sea. He died in 1848, leaving property amounting to $20,000,000.

Astor, John Jacob, capitalist, great-grandson of John Jacob Astor, was born at Rhinebeck, N. Y., 1864; graduated at Harvard in 1888; traveled abroad, 1888-91; in 1897 he built the Astoria hotel, New York, adjoining the Waldorf hotel, which was built by William Waldorf Astor, his cousin, the two now forming one building under the name of Waldorf-Astoria hotel. Was colonel, staff of Governor Levi P. Morton, and, 1898, lieutenant-colonel of United States volunteers, in the Cuban war. Drowned at sea 1912.

Astor, William Waldorf, capitalist, author, was born in New York, 1848; son of John Jacob, second, and Charlotte Augusta (Gibbes) Astor; great-grandson of John Jacob, founder of the Astor fortune. Educated by private tutors, finishing in Europe; entered office of the Astor estate, 1871; succeeded his father, 1890, as head of the Astor family. Member of New York legislature, 1878-81; United States minister to Italy, 1882-85; removed to England. 1890; became owner *Pall Mall Gazette.* Died, 1919.

Athanasius (*ath-ā-nā'shi-us*), **Saint,** was born in Egypt about the year 296, entered the church at an early age, and was chosen bishop of Alexandria in 326. He is esteemed one of the most eminent among the ancient fathers of the church. He was a violent opponent of Arius; and his earnest advocacy of the Catholic faith, more particularly of the doctrine of the Trnity, subjected him to much persecution from the emperors Constantine and Julian, by both of whom he was several times exiled. Died in 373.

Athenagoras (*ath-ē-nag'ō-rās*), a Christian philosopher, born at Athens, who lived toward the close of the second century. His conversion to Christianity has been likened to that of St. Paul.

Atherton, Gertrude Franklin, novelist, was born at San Francisco, California, 1858, the daughter of Thomas L. Horn. She was educated at St. Mary's Hall, Benicia, California; Sayre Institute at Lexington, Kentucky; married George H. Bowen Atherton, deceased. Author: *The Doomswoman; Before the Gringo Came; A Whirl Asunder; Patience Sparhawk and Her Times,* etc.

Atticus (*at'ti-kus*) **Herodes, Tiberius Claudius,** a rich Athenian, born about 104 A. D. He was educated by the best masters, devoting special attention to oratory, in which he greatly excelled. His fame rests mainly upon immense expenditures for public purposes. Died, 180 A. D.

Atticus, Titus Pomponius, born at Rome 109 B.C., was educated with Cicero and the younger Marius. In 85 B. C. he withdrew to Athens; and, after 65 B. C., when Sulla induced him to return to Rome, he still devoted himself chiefly to study and the pleasures of friendship. None of his own writings have been preserved, but we have 396 epistles addressed to him by Cicero. Died, 32 B. C.

Attila (*at'i-la*), king of the Huns, who lived in the fifth century. He styled himself "the scourge of God," and devastated Lombardy. The city of Venice was founded by those who fled before him. On his death, in 453, his body was buried in three coffins, made of gold, silver, and iron. The captives who dug his grave were put to death.

Atwood, George, British mathematician, was born, 1746; died in London, 1807. He was educated at Cambridge University, became tutor of Trinity College, Cambridge, and invented a machine to illustrate the relations of time, space, and velocity in the motion of a body falling under the action of gravity.

Auber (*ō'bār'*), **Daniel Francois Esprit,** French composer of operas, was born at Caen, in Normandy, 1782. His opera *Masaniello* is considered his best. Among his works are the well-known operas, *Fra Diavolo, Le Domino Noir, Manon Lescant,* etc. In 1842, after the death of Cherubini, he was appointed director of the conservatory of music, Paris. Died, 1871.

Aubigne (*ō-bēn'yā'*), **Jean Henri Merle d'.** See **Merle d'Aubigne.**

Audubon (*ô'doo-bon*), **John James,** celebrated American naturalist of French descent, was born near New Orleans, La., in 1780; from childhood devoted to natural history, but it was not until 1830 that the first of the four volumes of his great work, *The Birds of America,* appeared. This magnificent collection of plates, which was sold for $1,000 a copy, was quickly followed by explanatory letterpress under the title of *American Ornithological Biography.* Died in New York, 1851.

Auenbrugger von Auenbrug (*ou'en-broog-gēr fŏn ou'en-brook*), **Leopold,** Austrian physician, was born in 1722. He originated the method of examining the lungs by percussion of the chest, and published the results of his investigations in a treatise which marks an epoch in the history of medicine. He died, 1809.

Auerbach (*ou'ĕr-bāk*), **Berthold,** German author, was born at Nordstetten in 1812. Having abandoned the study of Jewish theology, he devoted his attention to literature. His first publications were *Judaism and Modern Literature,* and a translation of the works of Spinoza. By some his *Auf der Hohe,* "On the Heights," is regarded as his best novel. *Das Landhaus am Rhein,* is known by the English title, *The Castle on the Rhine.* Died at Cannes, France, 1882.

Auersperg (*ou'-ĕrs-perk*), **von, Anton Alexander,** famous Austrian statesman and poet, whose pen-name was "Anastasius Grün"; was born at Laibach, Austria, in 1806. He was a member of the Frankfort parliament of 1848, and later of the Austrian Reichsrath. Died at Gratz, 1876.

Augereau (*ō-zh-rō'*), **Pierre Francois Charles,** duke of Castiglione, marshal and peer of France; one of the most brilliant and intrepid of that band of general officers whom Napoleon gathered around himself; was born in 1757. His services were so conspicuous that in less than three years he was made general of a division. In 1797 he was appointed to the command of the army of the Rhine; but after a few months the directory made him commander of the tenth division at Perpignan. In 1800 he received the command of the army in Holland, and was active in several engagements. In 1804 he was made a marshal and in the following year he commanded a division of the army which reduced the Vorarlberg. Died in La Houssaye, 1816.

Augustine (*ô'gus-tin*) **AureliusAugustinus, St.** a renowned father of the Christian church, was born at Tagaste, in Africa, in 354, his mother Monica being a christian, his father Patricius a pagan. His parents sent him to Carthage to complete his education, but he disappointed their expectations by his neglect of serious study and his devotion to pleasure. A lost book of Cicero's, called Hortensius, led him to the study of philosophy; but dissatisfied with this he went over to the Manichaeans. He was one of their disciples for nine years, but left them, went to Rome, and thence to Milan, where he became a teacher of rhetoric.

St. Ambrose, the bishop of Milan, converted him to the faith of his boyhood, and the reading of Paul's epistles wrought an entire change in his life and character. He retired into solitude, and prepared himself for baptism, which he received in his thirty-third year from the hands of Ambrose. Returning to Africa, he sold his estate and gave the proceeds to the poor, retaining only enough to support him. At the desire of the people of Hippo, Augustine became the assistant of the bishop of that town, preached with extraordinary success, and in 395 succeeded to the see. He entered into a warm controversy with Pelagius concerning the doctrines of free-will, grace, and predestination, and wrote treatises concerning them, but of his various works his *Confessions* is most secure of immortality. He died August 28, 430, while Hippo was besieged by the Vandals.

He was a man of great enthusiasm, self-devotion, zeal for truth, and powerful intellect, and though there have been fathers of the church more learned, none have wielded a more powerful influence. His writings are autobiographical, polemical, homiletic, exegetical. The greatest is the *City of God* (*De Civitate Dei*), a vindication of Christianity. His *Confessions* also gained wide fame.

References.—Schaff's *Nicene and Post-Nicene Fathers;* Milman's *Latin Christianity;* Mozley's *Augustinianism;* Cunningham's *St. Austin;* Harnack's *Hist. of Dogma;* and *Monasticism and Confessions of Augustine;* Hatzfeld's *St. Augustine;* Rainy's *Catholic Church;* Schaff's *Life and Labors of St. Augustine;* Baillie's *St. Augustine;* Maccabe's *St. Augustine and His Age.* For an unfavorable estimate, see Allen's *Continuity of Christian Thought.*

Augustus, Caius Julius Caesar Octavianus, Roman emperor, born 63 B. C., was the son of Caius Octavius and Accia, niece of Julius Caesar, by whom he was adopted when but four years of age. He was in Epirus when Julius Caesar was assassinated, but speedily returned to claim his inheritance. At the age of thirty-six he became emperor, with the title of Augustus. His reign was fortunate, good laws were framed in it, and the arts flourished under his protection. He died, 14 A. D.

Aurelianus (*ô-rē-li-ān'us*), **Claudius** or **Lucius Domitius,** emperor of Rome, was born in Pannonia, 212 A. D., the son of a peasant; entered the Roman army, his exploits in which attracted the notice of the emperors Valerian and Claudius, and on the death of the latter in 270 he was proclaimed emperor. The emperor's severity made him feared even by his friends, who, as they deemed in pure self-defense, conspired against him and put him to death, 275 A. D.

Aurungzebe (*ô-rung-zeb'*), emperor of India, known as the Great Mogul, was born in 1618. As emperor, his career was brilliant. His sons disturbed his latter days by attempting to depose him. He died in 1707.

Austen, Jane, English novelist; born in 1775, at Steventon, Hants, England, of which parish her father was rector. Her principal productions are *Pride and Prejudice; Sense and Sensibility; Emma; Mansfield Park; Northanger Abbey;* and *Persuasion.* They are distinguished for originality, naturalness, and fidelity of delineation, qualities in which the literature of her time was most deficient. She died at Winchester in 1817.

Austin, Alfred, English poet, novelist, and journalist; born at Headingley, near Leeds, 1835; took his degree at the University of London, 1853; admitted to the bar, 1857; published *The Season a Satire; The Human Tragedy; Interludes; Savonarola; English Lyrics,* and many other poems, plays, and political papers; made fifteenth poet laureate of England, 1896. Died, 1913.

Avebury (*ā'bĕr-i*), **Lord.** See **Lubbock, Sir John.**

Averroes (*ā-ver'ō-ēz*), originally Ibn Roshd, or, more fully, Mohammed-Ibn-Roshd, the most famous of Arabian philosophers, was born at Cordova, Spain, 1126. Died about 1198.

Avery, Elroy McKendree, author, historian, born at Erie, Monroe county, Mich., July 14, 1844; graduate of University of Michigan, Ph.B., 1871; served in Civil War; mustered out as close as sergeant-major of 11th Michigan volunteer cavalry. Member of many historical and economic societies. Author: *Elementary Physics; Elements of Natural Philosophy; Physical Technics; History of the United States;* etc.

Avicenna (*av-ē-sen'ā*), properly Ibn Sina or, more fully, Abu Ali Al-Hossein ibn Abdallaa Ibn Sina, a famous Arabian philosopher and physician, whose authority for many centuries passed as indisputable; born 980, at Charmatain, a village near Bokhara. Died, 1037.

Avogadro (*ä-vō-gä'drō*), **Amadeo,** Italian chemist and physicist, was born at Turin, Italy, 1776; died there, 1856. Professor of physics at Turin; formulated his celebrated law concerning the atomic theory in 1811.

Ayeshah (*ī'ē-shä* or *ä'ē-shä*), the favorite wife of Mohammed, was born at Medina in 610 or 611 A. D. She was only nine years of age when she married the prophet. In his last illness Mohammed, by his request, was carried to her house and expired in her arms. After the prophet's death Ayeshah took active part in the plot which deprived Caliph Othman of his power and life, and headed a force to resist the accession of Ali. Died, 678.

Babbitt, Isaac, American inventor, was born at Taunton, Mass., 1799. Being a goldsmith he became interested in the manufacture of alloys and in 1839 discovered the combination of copper, tin, and antimony known as Babbitt's Metal. In recognition of this service he was voted $20,000 by Congress. He died in 1862.

Baccio della Porta. See **Bartolommeo, Fra.**

Bach, Johann Sebastian, (*bäk*) in some respects the greatest musician that ever lived, son of Johann Ambrosius, was born 1685, and died July 30, 1750. He was treble singer in a choir at Luneburg until his voice changed, when he became a violinist of the court at Weimar. When twenty years old he was organist at Arnstadt, in 1708 became court organist at Weimar, and in 1714 concert master to the duke, with the additional duty of composing and conducting the vocal music of the ducal chapel. After a period of service as chapel master to the court at Kothen, the city authorities of Leipsic elected him in 1723 musical director of the Thomas School, where he labored for the remainder of his life. Bach published few works, but left a great number in manuscripts. The Bach society at Leipzig was engaged from 1850 to 1900 in publishing a complete collection of his compositions, which embrace a great variety of church music, both vocal and instrumental, and many other works for the organ, harpsichord, orchestra, and every solo instrument in use a century ago. As a virtuoso upon keyed instruments he had no rival.

References.—The most complete edition of his works is that issued at Leipzig by the Bach Society, in 59 folio volumes. See his *Life* by Miss Kay Shuttleworth, and the greatest work on the subject, *J. S. Bach,* by J. A. P. Spitta.

Bach, Karl Philipp Emanuel, German composer, second son of Johann Sebastian, was born at Weimar, in 1714; died at Hamburg in 1788. He was probably the most highly gifted of eleven brothers, and his influence on the development of certain musical forms gives him a prominent place in the history of the art. His most ambitious composition is the oratorio *Israel in the Wilderness.*

Bache, Franklin, physician and chemist, was born at Philadelphia, Pa., 1792; he published *System of Medicine* in 1819; was professor of chemistry

in the Philadelphia College of Pharmacy, 1831; held same chair in Jefferson Medical College, Philadelphia, in 1841. Died, 1864.

Bacheller, Irving, novelist, was born at Pierpont, N. Y., 1859; graduated from St. Lawrence University, 1882, actively connected with press of New York for years; was one of the editors of the *New York World*. Author of *Eben Holden; The Handmade Gentleman;* etc.

Bacon, Augustus Octavius, lawyer, United States senator from Georgia; born in Bryan county, Georgia, 1839; graduate of University of Georgia, 1859; in law practice in Macon, Georgia, 1866-1914; delegate national democratic convention, 1884; presidential elector, 1868. Elected to the United States senate, 1895; reelected, 1901 and 1913. He was for many years a trustee of the University of Georgia, and one of the regents of the Smithsonian Institution. Died, 1914.

Bacon, Benjamin Wisner, biblical writer and critic; professor new testament criticism and exegesis in Yale University since 1896; was born at Litchfield, Conn., 1860; graduated from Yale, 1881; B. D., Yale, 1884. Director of the American School of Oriental Research in Jerusalem, Syria, 1905-06. Author: *The Genesis of Genesis; Triple Tradition of the Exodus; Introduction to Literature of the New Testament; The Sermon on the Mount.*

Bacon, Francis, Baron Verulam and Viscount St. Albans, English lawyer, statesman and philosopher, was born at York House, London, 1561. In 1576 he went to France with Sir Amyas Paulett, the English ambassador, and stayed there until his father's death in 1579 recalled him to England. Then he began to study law at Gray's Inn, and in 1584 started on a parliamentary career as member for Melcombe Regis, in Dorsetshire, and soon became distinguished in the House as an orator. The great blot in his career during the reign of Elizabeth was, according to Macaulay and others, his prosecution of his friend Essex, which they maintain was undertaken "voluntarily"; but for this there is no proof.

After the queen's death, in 1603, Bacon rapidly rose in fortune and favor. He was knighted in 1603, became solicitor-general in 1607, attorney-general in 1613, privy councillor in 1616, lord high chancellor and Baron Verulam in 1618, and Viscount St. Albans in 1620.

But his fall was as rapid as his rise. The Parliament of 1620 took up the question of the obnoxious patents consisting in alehouses and inns, and monopolies of gold and silver thread, in which both the king and Buckingham's family were interested. This led to their abolition, on the initiative of Bacon; and his enemies at once started a crusade against "the reformer of abuses." A committee was appointed to inquire into "the abuses of the courts of justice;" and though Bacon denied that he took "rewards to pervert justice," and maintained that he only "partook of the abuse of the times," he was condemned by his peers.

But the sentence on him was never carried into effect; his imprisonment lasted only four days; his huge fine of $200,000 was remitted; his pardon was passed under the great seal—delayed till 1623, because he refused to give up York House, the place of his birth, to Buckingham; a pension of $6,000 a year was granted to him; and he was summoned to resume his seat in the house of lords in 1624.

It was after he retired from political life that Bacon practically began his literary career as one of the world's great philosophers. Up to that time his only acknowledged works had been several editions of his *Essays*—rewritten and augmented on every occasion with infinite care—his *Advancement of Learning*, in 1605, and his *Novum Organum* in 1620. The last five years of his life were full of work. In March, 1622, he produced his *History of Henry VII.;* in November, 1622, his *Historia Ventorum;* in January, 1623, his *Historia Vitae et Mortis;* in October, 1623, his *magnum opus*, entitled *De Augmentis Scientiarum*, a Latin translation, with large additions, of *The Advancement of Learning;* in December, 1624, *his Apophthegms;* and in 1625 his *Translation of the Psalms*. His last work, *Sylva Sylvarum* (1627), was published posthumously along with the *New Atlantis*.

Bacon was great as a moralist, a historian, a writer on politics, and a rhetorician; but it is as the father of the inductive method in science, as the powerful exponent of the principle that facts must be observed and collected before theorizing, that he occupies the grand position he holds among the world's great. His moral character, however was not on a level with his intellectual, self aggrandizement being the main aim of his life

References.—The chief authority on his life, and work is James Spedding, who edited *The Letters and Life of Bacon*, in 7 volumes, and his *Works*, also 7 volumes. His *Evenings with a Reviewer* is also worthy of perusal. See also Church's *Life of Bacon*, in the English "Men of Letters Series."

Bacon, Nathaniel, lawyer and member of Governor Berkeley's council in Virginia, leader of an alleged insurrection against the colonial government under pretense of resisting aggressions of the Indians, was born in England about 1642. Berkeley was forced to make many concessions to demands for better government; but he broke his promises, and a brief civil war followed, in which Jamestown was burned, 1676, and the governor took shelter in an English vessel. Died in Virginia, 1677.

Bacon, Roger, English scientist and publicist, was born about 1214. The most learned man of his day, he is reputed to have advocated the change since made in the calendar, to have invented gunpowder, and is known to have manufactured magnifying glasses. Died, 1294.

Baden-Powell (*bā'den-pō'el*, or *pou'el*), **Robert Stephenson Smyth,** British general and inspector-general of cavalry, was born 1857, and educated at Charterhouse, London. In 1876 he joined the 13th English hussars, and served as adjutant of that regiment in India, Afghanistan, and South Africa. In the Boer war he was given command of the 5th dragoon guards, and with a force of 1,200 men was besieged in Mafeking, which he held against the Boers from a few days following the outbreak of the war until May 18, 1900, the longest siege recorded in modern warfare; afterward organized the South African constabulary. He is the author of works on *Reconnoissance and Scouting, Vedette Duty, Cavalry Instruction, The Downfall of Prempeh, The Matabele Campaign*, and on *Pig-Sticking* or *Hog-Hunting*.

Baedeker (*bā'dē-ker*), **Karl,** German publisher at Coblentz, the originator of a series of admirable guide books, published since 1872 at Leipzig. Born, 1801; died, 1859.

Baekeland, Leo Henrik, chemist and inventor, was born at Ghent, Belgium, 1863. He studied at the University of Ghent, then won a traveling scholarship to Great Britain, Germany, and the United States. After teaching some years at Ghent and Bruges, he began the manufacture of photographic papers. He soon sold his invention to the Eastman Kodak Company and devoted himself to research. Among his discoveries are bakelite, a substitute for hard rubber, used especially in electrical apparatus, improvements in electric insulation, and synthetic varnishes. He was made president of the American Chemical Society in 1924.

Baer, George F., railway official, lawyer; born in Somerset county, Pa., 1842; educated at Franklin and Marshall College. Raised volunteer company in 1862; elected captain. Joined army of Potomac at second battle of Bull Run and took part in all engagements up to and including Chancellorsville, when he was detailed as adjutant-general, second brigade; counsel for Philadelphia & Reading, 1870, and later a director. For years confidential legal adviser in Pennsylvania of J. Pierpont Morgan; elected, 1901, president of Philadelphia & Reading railway company, Philadelphia & Reading Coal and Iron company, and Central Railroad company, of New Jersey. Died, 1906.

Baer, Karl Ernst von, Russian naturalist, founder of modern embryology, was born in Esthonia, Russia, 1792; died at Dorpat, 1876. He was educated in Germany and became a professor in the University at Königsberg, where, in 1828, he published *The Development of Animals*, a set of careful observations, and philosophical reflections that are most remarkable for clearness and thoroughness.

Baeyer (*bā'yĕr*), **Adolf,** German chemist, was born at Berlin, Prussia, 1835. In 1872 he became professor of chemistry at the University of Strassburg, and was Liebig's successor at Munich in 1875. He discovered cerulein, eosin, and indol, besides making other valuable contributions to the chemistry of dye-stuff. Died, 1917.

Bagehot (*bag'ut* or *baj'ut*), **Walter,** English economist and journalist, was born at Langport, Somerset, 1826. From a school at Bristol he passed in 1842 to University College, London, where he took his M.A. degree in 1848; in 1852 he was admitted to the bar, but joined his father as a banker and shipowner at Langport. His works include *The English Constitution; Physics and Politics; Lombard Street; Literary Studies; Economic Studies*, and *Biographical Studies*. Died, 1877.

Baggesen (*bag'ge-sen*), **Jens,** Danish poet and author, was born at Korsör, in the island of Zealand, 1764, and died at Hamburg, 1826. His German works fill 5 volumes; his Danish 12 volumes. Chief among them are his *Comic Tales, Labyrinthen*, and *Parthenais*.

Bailey, Edward Hodges, English sculptor, and member of the Royal Academy, was born in Bristol, 1788; died in London, 1867. The statue of Nelson in Trafalgar square, London, and the bas-reliefs on the south side of the marble arch in Hyde Park are both the work of Bailey.

Bailey, Joseph Weldon, lawyer, United States senator, 1901-13; born in Copiah, county, Miss., 1863; admitted to bar, 1883; presidential elector, 1884; removed to Texas, 1885, and began practice of law at Gainesville; presidential elector at large, 1888. He was chosen United States senator to succeed Hon. Horace Chilton in 1901; reëlected in 1907. Died, 1929.

Bailey, Liberty Hyde, scientist, director of College of Agriculture at Cornell since 1903; born in South Haven, Mich., 1858; graduated at Michigan Agricultural College, M.S., 1882; LL.D.; assistant to Asa Gray, Harvard, 1882-83; professor of horticulture and landscape gardening at Michigan Agricultural College, 1883-88; professor of horticulture, Cornell, 1888-1903. Author: *Survival of the Unlike; Evolution of our Native Fruits; Lessons With Plants; Botany, an Elementary Text for Schools; Principles of Fruit Growing*, etc.

Baillie (*bā'lī*), **Joanna,** Scotch poet and dramatist, was born in 1762, in Bothwell manse. In 1784 she went to reside in London, and in 1806 took up her residence at Hampstead, where she remained until her death in 1851. Her greatest achievement is undoubtedly the nine *Plays on the Passions*. Her *Family Legend*, produced at Edinburgh under Scott's auspices in 1810, was a great success.

Bain, Alexander, Scottish writer on mental philosophy, was born at Aberdeen, Scotland, in 1818. In 1860 he became professor of logic in the University of Aberdeen, and lord rector there. His chief works are: *The Senses and the Intellect; The Emotions and the Will; Logic; Mind and Body;* and *Education as a Science*. Died, 1903.

Bain, Robert Nisbet, assistant librarian British Museum, since 1883, was born at London in 1854; was educated privately. In business in London until 1883. He has published numerous translations from the Russian, Ruthenian, Roumanian, Hungarian, Swedish, Danish, and Finnish, chiefly fairy tales and novels.

Bainbridge, William, American naval officer, was born at Princeton, N. J., 1774, and died at Philadelphia, 1833. He was actively engaged in the Mediterranean in successive command of the frigates *George Washington, Essex*, and *Philadelphia*, was once captured by the French, and had to surrender his ship in the Tripolitan war. In the war of 1812 he captured the British frigate *Java*, for which congress voted him a gold medal. During the remaining months of the war he had charge of the Charlestown navy-yard.

Baird, Spenser Fullerton, American naturalist, was born at Reading, Pa., 1823. He was educated at Dickinson College, Carlisle, Pa., and was afterward professor of natural science in that institution. He wrote many papers on birds, reptiles, fishes, etc., and under his direction the national museum was begun in 1850. In connection with other editors, he published *The Birds of North America, The Mammals of North America*, and a *History of the Birds of North America*, in five volumes. He died, 1887.

Bajazet I. (*baj-a-zet'*), sultan of the Turks, was born in 1347. In 1389 he succeeded his father, Murad I., who fell in battle near Kossova, fighting against the Servians. In three years he conquered Bulgaria, a part of Servia, Macedonia, and Thessaly. From the rapidity with which these extraordinary conquests were effected he received the name of Ilderim, *i. e.*, lightning. Died, 1403.

Baker, Alfred, scientist, educator, professor of mathematics at the University of Toronto; was born at Toronto; graduated from the University of Toronto, B.A., with gold medal in mathematics. Elected by graduates a member of senate of University of Toronto, 1887-1906; retired from queen's own rifles, 1883, with rank of captain; F. R. S. Canada; and of the American mathematical society; president of the Ontario educational association, 1895; president of section III. royal society of Canada, 1905. Author of articles relating to quaternions, geometry of position, and foundations of geometry in the proceedings of the royal society of Canada; also elementary treatises on synthetic and analytical geometry.

Baker, James H., educator, was born at Harmony, Maine, 1848; educated at Bates College, Lewiston, Maine. President national council of education, 1892; president national association of state universities, 1907; became president of the U. of Colo. in 1892. Author of *Elementary Psychology; Education and Life*, and *American Problems*. Died, 1925.

Baker, Ray Stannard, author, was born at Lansing, Mich., 1870; graduated at Michigan Agricultural College, B.S., 1889; took partial law course and studies in literature at University of Michigan. Has traveled extensively. Member National Institute of Arts and Letters. Contributor of many articles and stories to American and English magazines. Was associate editor of *McClure's Magazine*, and of *American Magazine*.

Baker, Sir Samuel White, British African explorer, was born at London, 1821. He explored the western arm of the Nile and discovered the Albert Nyanza lake; organized an extensive agricultural

colony in Ceylon; He wrote *Eight Years' Wanderings in Ceylon; The Albert Nyanza; The Nile Tributaries; Ismailia*, etc. Died at Newton Abbot, England, 1893.

Balard, Antoine Jerome, French chemist, was born at Montpellier in 1802. He started out as a pharmacist, but soon became assistant professor at the faculty of sciences in his native town, then professor at the royal college. In 1826 he discovered in sea water the element bromine. This brought him great fame and a chair in the faculty of sciences in Paris. Later he was appointed to the College de France. He died in 1876.

Balboa, de, Vasco Nunez, Spanish conqueror, was born at Xeres de-Caballeros in 1475. After leading rather a dissolute life in his youth, he took part in the great mercantile expedition of Rodrigo de Bastidas to the new world. An insurrection which took place obtained for Balboa the supreme command in Darien, but he was soon succeeded by Pedrarias Davila, by means of the intrigues of the Spanish court, and in a subordinate situation Balboa made several successful expeditions. On September 25th of 1513 he obtained the first sight of the Pacific Ocean from a mountain-top in the isthmus of Panama. He took possession of it in the name of his sovereign. He was executed in 1517 on the charge of a contemplated revolt.

Baldung (*bal'-doong*), **Hans,** called also Hans Grün, German painter and wood-engraver, contemporary of Albrecht Durer, was born in Gmund, Swabia, 1476, died at Strassburg, 1545. His masterpiece, a painting of the crucifixion, is in the cathedral of Freiburg; his wood-engravings are numerous.

Baldwin, James Mark, psychologist; born in Columbia, S. C., 1861; graduate of Princeton, 1884; A.M., 1887; Ph.D., 1889; Sc.D., Oxford University, England, 1900; professor psychology Princeton, 1893-1903; professor philosophy and psychology, Johns Hopkins, 1903-1909. Author: *Social and Ethical Interpretations in Mental Development; Story of the Mind; Fragments in Philosophy and Science; Development and Evolution.* Editor-in-chief: *Dictionary of Philosophy and Psychology.*

Baldwin, Simeon Eben, jurist, governor, was born at New Haven, Conn., 1840; graduated from Yale, 1861; studied law at Yale and Harvard law schools LL.D., Harvard, 1891; admitted to bar, 1863. Member faculty, Yale law school since 1869, and now professor of constitutional and private international law; associate justice, 1893-1906, chief-justice 1906-1910, supreme court of errors, Connecticut; governor, 1911-1915.

Balfe (*balf*), **Michael William,** British composer, born at Dublin, Ireland, 1808. After singing at Paris in the Italian opera under Rossini, Balfe returned to Italy and produced in 1840 several operas. In 1835 he went to England as a vocalist composer, and after five years of successful composition he produced two operas in Paris. Died, 1870.

Balfour (*bal'foor*), **Arthur James,** British statesman and author, was born in 1848; died, 1930. Educated at Eton, and Trinity College, Cambridge; secretary for Scotland, with a seat in the cabinet, 1886;87; chief secretary for Ireland, 1887-91, and carried the crimes act through parliament; first lord of the treasury and leader of the house on the death of W. H. Smith, 1891, and again in 1895-1905. On the retirement of Lord Salisbury, in 1902, he became prime minister and lord privy seal, retaining the office of first lord of the treasury. When Chamberlain made his fiscal proposals, 1903, Balfour, holding that the country was not ripe for the taxation of food, committed himself and the government only to a policy of retaliation. At the end of 1905 he and his cabinet resigned. Author of *A Defense of Philosophic Doubt; Essays and Addresses; The Foundations of Belief, Being Notes Introductory to the Study of Theology.*

Balfour, Francis Maitland, British biologist, born at Edinburgh, 1851; educated at Trinity College, Cambridge. Between 1879 and 1882 he brought together all that was known about the development stages of animals in his *Comparative Embryology*, a work of the greatest value to students of embryology. In 1882 he and his single guide were killed on the Alps by slipping, while attempting to climb one of the spurs of Mont Blanc.

Ball, Sir Robert Stawell, British scientist, Lowndean professor of astronomy and geometry, Cambridge, director of the Cambridge observatory after 1892, was born in Dublin, Ireland, 1840; graduated from Trinity College, Dublin. Hon. M. A., Cambridge, 1892; LL.D., Dublin. Royal astronomer of Ireland, 1874-92. Author: *A Treatise on the Theory of Screws;* works on astronomy. Died, 1913.

Ballantine (*bal'lan-tin*), **William,** British lawyer, was born in London, 1812; admitted to the bar in 1834, and soon obtained a large practice, chiefly in criminal cases. He wrote *Experiences of a Barrister's Life*, and *Old World and the New.* Died, 1887.

Ballou (*bal-lōō'*), **Hosea,** American preacher and founder of the Universalists, was born in New Hampshire, 1771. He was self-educated; was expelled from his father's church on declaring his belief in the final salvation of all men. He started the *Universalist Magazine* in 1819, and in 1831, with his grandnephew, began the *Universalist Expositor*, a quarterly publication. Died, 1852.

Balmaceda (*bāl'mā-sā'thā*), **Jose Manuel,** Chilean statesman, was born in 1840; president of the republic of Chili 1886-91. In the civil war between the congressional party and himself, he was defeated, and committed suicide in 1891.

Baltimore (*bôl'ti-mōr*), **George Calvert, first Lord,** born at Kipling, in Yorkshire, about 1580, entered parliament in 1609, was knighted in 1617, and in 1619 became secretary of state. As early as 1621 he had despatched colonists to a small settlement in Newfoundland, and in 1627 he visited the place. The severe winter induced him to sail southward in search of a more genial country; but his attempts to settle in Virginia led to disputes, and he returned home to obtain a fresh charter. He died in 1632, and the patent was granted in June of the same year to his son, Cecil, second Lord Baltimore.

Balzac (*bāl'zāk*), **Honore de,** a celebrated French novelist, was born at Tours in 1799; died, 1850. Before completing his twenty-fourth year he had published a number of novels under various assumed names, but the success attending all was very indifferent; and it was not till 1829, by the publication of *Le Vernier Chouan*, a tale of La Vendée, and the first novel to which Balzac appended his name, that the attention of the public was diverted to the extraordinary genius of the author. A still greater popularity attended his *Physiologie de Mariage*, a work full of piquant and caustic observations on human nature. He wrote a large number of novels, all marked by a singular knowledge of human nature and distinct delineation of character, but apt to be marred by exaggeration.

Among his best-known works are: *Scenes de la Vie de Province; Scenes de la Vie Parisienne; Le Pere Goriot; Eugenie Grandet;* and *Le Medecin de Campagne.* The publication of this last, in 1835, led to a correspondence between Balzac and the Countess Eveline de Hanska, a Polish lady whom, after about fifteen years, he visited and married. A collected edition of his works under the title *La Comedie Humaine* began to appear in 1899. Numerous English translations have appeared, of which the best is the series by Miss Wormeley (1890-3), with a memoir of Balzac.

References.—Saintsbury's *French Novelists*, and Balzac's *Life*, written by his sister; Théophile Gauthier's *H. de Balzac;* Sainte-Beuce's *Contemporary Portraits;* Taine's *Essays;* and *Saltus's Balzac.*

Bancroft, George, American historian, was born in 1800, near Worcester, Mass.; graduated from Harvard College in 1817; proceeded in 1818 to Göttingen, where he studied history and philology. Subsequently he traveled through Germany and formed an acquaintance with Goethe and Schlosser. He soon became celebrated as a democratic politician, and was made collector of customs at Boston. When Polk was elected president, in 1845, he appointed Bancroft secretary of the navy. In the autumn of 1846 he was sent by Polk as ambassador to England, where he remained until 1849, carefully collecting materials for his *History of the United States.* He published the result of his labors in his *History of the Revolution in North America.* He had already published his *History of the Colonization of the United States of North America.* The whole of these writings are included in the author's *History of America*, a work of solid excellence, the tenth and last volume of which appeared in 1874. Died, 1891.

Bancroft, William Amos, railway president, was born at Groton, Mass., 1855; graduated from Harvard, 1878; studied at Harvard law school, 1879-81; overseer, Harvard, 1893; Massachusetts volunteer militia, 1875; private to major-general; appointed brigadier-general, United States volunteers, during war with Spain. Was President Boston Elevated Railway Company. Died, 1922.

Bandinelli (*bän'dē-nel'lē*), **Baccio,** Italian sculptor, was born 1488, at Florence, the son of a famous goldsmith. His talent secured him many patrons, and Pope Clement VII. bestowed on him an estate. He died in 1560.

Baner (*bā-nār'*), **Johan,** Swedish commander, of a distinguished family, born in 1595. He was so much addicted to literary studies that Gustavus Adolphus styled him his "learned general." He gained many victories; was revered for his humanity, and, having acquired a high reputation, died at Haldberstadt in 1641.

Bangs (*bangz*), **John Kendrick,** author, humorist, was born at Yonkers, N. Y., 1862; graduated from Columbia, 1883; studied law, 1883-84; associate editor *Life*, 1884-88; editor of *Literature*, 1898-99; *Harper's Weekly*, 1898-1900; *Metropolitan Magazine*, 1902-03; *Puck*, 1904-05. Vice-president Yonkers board of education, 1897; Author: *Roger Camerden; Katharine; The New Waggings of Old Tales; Three Weeks in Politics; The Idiot; A House Boat on the Styx; The Pursuit of the House Boat; Ghosts I Have Met; Cobwebs from a Library Corner; Mr. Munchausen; Olympian Nights;* also many stories contributed to syndicates and magazines. Died, 1922.

Banks, Sir Joseph, English naturalist, born, according to some accounts, at Beversby abbey, in Lincolnshire; according to others, in London, in 1743; died 1820. In 1766 he made a voyage to Newfoundland and Labrador, collecting plants; and from 1768-71 he sailed with Cook around the world in the capacity of naturalist. He wrote a work on the diseases of plants.

Banks, Thomas, the first eminent English sculptor, was born at Lambeth, England, 1735. The monuments of Sir Eyre Coote in Westminster abbey, and of Captains Burgess and Westcott in St. Paul's cathedral were among his last works. Died at London, 1805.

Barbarossa (*bär-bä-ros'ä*). See **Frederick I.**

Barbour (*bär'bēr*), **John,** father of Scottish poetry and history, was born about 1316; paid several visits to England and France; and was archdeacon of Aberdeen from 1357, or earlier, until his death in 1395. His national epic, *The Brus*, was first printed at Edinburgh in 1571.

Barclay de Tolly (*bär'klā dē tō'lē*), **Prince Michael,** one of the most distinguished Russian generals, was born in Livonia, 1761. In the year 1806, at Pultusk, as major-general he commanded Benningsen's advance guard. He lost an arm at the battle of Eylau. Although hated by the Russian national party, because regarded as a German, he was appointed minister of war by the emperor Alexander in 1810—an office which he held until 1813. He died in 1818.

Barham (*bär'am*), **Richard Harris,** English poet and humorist, was born at Canterbury, 1788; died in London, 1845. The *Ingoldsby Legends* constitute his chief claim to fame, and were first contributed to *Bentley's Miscellany.*

Baring-Gould (*bā'ring gōōld'* or *bär'ing*), **Sabine,** English clergyman and writer, was born at Exeter, England, 1834; graduated from Clare College, Cambridge; M.A., 1860; vicar, Dalton, Yorkshire, 1866; rector of East Mersea, Essex, 1871; succeeded to rectory of Lew-Trenchard on death of his uncle, 1881. His works cover a wide range of subjects, mythical, legendary, imaginative, historical, religious, and descriptive. Died, 1924.

Barker, George Frederick, physicist, professor of physics, University of Pennsylvania, 1872-1900, was born at Charlestown, Mass., 1835; graduated from Sheffield scientific school, Yale, 1858; M.D., Albany, 1863; LL.D., McGill University, Montreal, 1900; United States commissioner Paris electrical exhibition, 1881; legion of honor of France. Expert in poisons, criminal cases. Member National Academy of Sciences; president of the American association for the advancement of science, 1879; hon. member Royal Institution of Great Britain. 1899. Died, 1910.

Barker, Harley Granville, English actor, dramatist and manager, was born in London, 1877. For many years he was associated with the Elizabethan Stage Society, acting and producing, and with Mrs. Patrick Campbell's company. From 1904 he managed the Court theatre and produced plays of his own and of Shaw, Galsworthy, Barrie, and other new dramatists. *Waste* and *The Madras House* are among his plays.

Barlow, Joel, American poet and politician was born at Connecticut in 1755. He served as a military chaplain during the war of independence. In 1787 he published a poem called *The Vision of Columbus* which in 1805 appeared anew in an enlarged form as *The Columbiad.* He was appointed ambassador to France in 1811; died, 1812, at Zarnawicz, near Cracow, when on his way to a conference with the emperor Napoleon at Wilna.

Barnabas (*bär'na-bas*), **Saint,** a disciple of Jesus, whose name was Joses or Joseph, but received from the apostles the surname of Barnabas. He accompanied St. Paul on a religious mission to Antioch, and afterward visited Cyprus with St. Mark.

Barnard (*bär'närd*), **Edward Emerson,** scientist, professor of astronomy, University of Chicago, and astronomer Yerkes observatory; born at Nashville, Tenn., 1857; graduate of Vanderbilt University, 1887; astronomer Lick observatory, California, 1887-95. His principal discoveries are the fifth satellite of Jupiter and sixteen comets. Died, 1923.

Barnard, Frederick Augustus Porter, American mathematician, physicist, and educator, was born at Sheffield, Mass., 1809; graduated at Yale in 1828; professor, president, and chancellor, 1854-61, University of Mississippi. In 1864 was elected president of Columbia College, New York; resigned in 1888. Died, 1889.

Barnard, George Grey, American sculptor; born at Bellefonte, Pa., 1863; educated at Chicago Art Institute, and at Paris. His statue, the *Two Natures*, is in the Metropolitan Museum, New York, and his *God Pan* in Central park.

Barnard, John Gross, military engineer, was born at Sheffield, Mass., 1815, died 1882. He graduated at West Point 1833; served for seventeen years on the gulf coast, then in the war with Mexico. In the Civil War served at Bull Run, in

the army of the Potomac, as chief engineer of the defenses of Washington, and on General Grant's staff until Lee's surrender; received the rank of major-general in the United States army.

Barnby, Sir Joseph, English composer and organist; born at York, England, 1838; chorister in Yorkminster; organist St. Andrew's, Wells street, London, 1863-71; percentor and director of musical instruction in Eton College, 1875. His *Rebekah*, a sacred idyll, and *The Lord is King*, both with orchestra; numerous highly interesting "services" and anthems, such as *King All Glorious*, for the church, as well as several secular choruses and songs, have rendered him famous both in England and America. Knighted 1892. Died, 1896.

Barneveldt (*bär'nē-velt*), **John van Olden,** grand pensionary of Holland, was born in 1547. Chosen pensionary of Rotterdam in 1576. He was appointed grand pensionary of Holland, and, after a severe contest with the stadtholder Maurice of Nassau and his party, obtained from the Spaniards the recognition of the independence of Holland and in 1609 concluded a truce for twelve years. Arrested in 1618, he was tried by a special commission, and condemned to death; this sentence, both illegal and unjust, being confirmed by the synod of Dort, the venerable and patriotic statesman was beheaded, 1619.

Barnum, Phineas Taylor, American showman, was born in Bethel, Conn., 1810. At thirty-one he bought the American museum in New York, where he exhibited his famous dwarf General Tom Thumb. He eventually became proprietor of Barnum's Circus, an institution familiar to all Americans. He died in 1891.

Barr, Robert, novelist, editor of the *Idler*, was born at Glasgow, Scotland, 1850. He was educated at the Normal school, Toronto, Canada; school teacher in Canada until 1876. Founded the *Idler* magazine with Jerome K. Jerome in 1892, from the co-editorship of which he retired in 1895. Author: *In a Steamer Chair; The Face and the Mask; The Unchanging East; The Tempestuous Petticoat; A Rock in the Baltic.* Died, 1912.

Barras (*bä'rä'*), **Count Paul Francois Jean Nicolas,** French revolutionist, was born 1755, at Fos-Emphoux in Var. An original member of the Jacobin club, he represented Var in the national convention, voted for the king's execution, and had a share in the Girondists' downfall. On subsequent occasions he acted with decision against both royalists and Jacobins; and in 1795, being appointed dictator, he called his young friend Bonaparte to his aid, who assured his own future with the historical "whiff of grape-shot." The directory being appointed, Barras was nominated one of the five members. Once more dictator 1797, he guided the state almost alone, until his covetousness and love of pleasure had rendered him so unpopular that Bonaparte, with Sieyes' help, overthrew him, 1799. In 1815 he returned, and purchased an estate near Paris with part of the great fortune acquired in the revolution. He died in 1829.

Barrett, John, diplomatist, was born at Grafton, Vt., 1866; graduated from Dartmouth College, 1889. Assistant editor of the *Statistician*, San Francisco; on editorial staff newspapers San Francisco, Tacoma, Seattle; associate editor of the *Telegram*, Portland, Ore., 1891-94; American minister to Siam, 1894-98, settling by arbitration claims involving $3,000,000. American plenipotentiary to the international conference American republics, Mexico, 1901-02. American minister to Argentina, 1903-04, to Panama, 1904-05, to Columbia, 1905-06; director international bureau of American republics since 1906.

Barrett, Lawrence, American actor, was born at Paterson, N. J., 1838; first appearance at Detroit, 1853; from 1864 until his death in 1891 continued as star actor and manager; from 1886 closely associated with Edwin Booth.

Barrett, Wilson, English actor and manager, was born in Essex, England, 1846; in 1879 became manager of the Court theater, London, and in 1881 of the Princess. *The Silver King; Claudian; Hamlet; Hoodman Blind*, and his own Christian melodrama, *The Sign of the Cross*, are among the best plays in which he acted. He died in 1904.

Barrie (*bar'i*), **James Matthew,** novelist, dramatist, was born at Kirriemuir, Scotland, 1860; educated at Edinburgh University, taking his M.A. degree in 1882. After a year and a half as a journalist in Nottingham, he settled in London, and became a regular contributor to the *St. James' Gazette, British Weekly, National Observer, Speaker*, etc. In *Auld Licht Idylls* he opened a new and rich vein, the humor and the pathos of his native village. *The Little Minister*, first novel, came out in *Good Words*, in 1891; it was dramatized in 1897; *Jane Annie* was written with Sir Conan Doyle. Other successful pieces have been *The Professor's Love Story*, his own setting of the *Little Minister; The Admirable Crichton; Little Mary; Peter Pan; Quality Street*, and *What Every Woman Knows.*

Barringer, Paul Brandon, educator, president Virginia Polytechnic Institute, was born at Concord, N. C., 1857; attended University of Virginia, M.D., 1877; University of New York, LL.D., 1878; honorary LL.D., Davidson College, N. C. In 1888 became professor of physiology and materia medica, and 1896-1903, chairman of faculty, University of Virginia.

Barrows, David Prescott, born Chicago, 1873; graduate Pomona College, 1894; University of California, 1895; U. of Chicago, Ph.D., 1897. Supt. of schools, Manila, 1900 and Gen. Supt. of Education for Philippine Islands, 1903-1909. Dean U. of Cal., 1911-1919 and president, 1919-23. Major of Cavalry in National Army, 1917-1918; Lt. Col. Cavalry U. S. A., 1918; active duty in P. I. and Siberia, 1918.

Barrows, John Henry, educator, Presbyterian clergyman, president Oberlin College, Ohio, was born at Medina, Mich., 1847; graduated from Olivet College, Mich., 1867. During the World's Columbian Exposition he was chairman of the general committee on religious congresses. In 1896 he resigned his pastoral charge in Chicago and proceeded to India, to lecture on religious subjects, under the auspices of the Haskell endowment of the University of Chicago. On his return he became lecturer at the latter on comparative religions, and was also lecturer at the Union theological seminary, New York. In 1898 he became president of Oberlin College. Died, 1902.

Barrows, Samuel June, legislator, author, clergyman, was born at New York, 1845; graduated from Harvard divinity school, 1875; D.D., Howard University, Washington, D. C., 1897. Editor *Christian Register*, 1881-97; member of congress, tenth district, Massachusetts, 1897-99. President of international prison congress, 1905. Author: *Shaybacks in Camp; Isles and Shrines of Greece;* etc. Died, 1909.

Barry, Sir Charles, English architect, designed the two houses of parliament, the Manchester Athenæum, and the grammar school of King Edward VI., at Birmingham. In London he also designed the Travelers' club and the Reformed club, both in Pall Mall, and the college of surgeons, Lincoln's Inn Fields; born at Westminster, 1795. Died at Clapham, 1860.

Barrymore, Ethel, actress, born at Philadelphia, Pa., 1879; daughter of late Maurice and Georgiana (Drew) Barrymore. Made début in John Drew's company, 1896; played *Priscilla* in *Secret Service*, London; later appeared in leading rôles with Henry Irving.

Barrymore, John (John Blythe), actor, born February 15, 1882, son of Maurice Barrymore (Herbert Blythe) and Georgiana (Drew). Married Katherine C. Harris. Debut at Cleveland's theatre, Chicago, October 31, 1903. First appearance in New York, December, 1903; also played in London.

Barrymore, Lionel, actor, son of the late Georgie (Drew) and Maurice Barrymore, made his first appearance on the stage in 1893 in *The Rivals*. In 1912, toured in vaudeville, in *The Still Voice*.

Barthelmess, Richard, moving picture actor, born in New York City. His first picture was "War Brides." His later appearances include "Broken Blossoms," "Tol'able David," "Classmates."

Bartholdi (*bär-tōl'dē*), **Frederic Auguste,** sculptor, was born at Colmar, Alsace, of Italian ancestry on his father's side, in 1834. His best-known work is the colossal bronze "Liberty Enlightening the World," which was unveiled on Bedloe's island, New York harbor, in 1886. Died, 1904.

Bartlett, Paul Wayland, American sculptor; born at New Haven, Conn., 1865; studied at Boston under Fremiet and in Paris under Cavalier; produced statues as well as many other works in the art collections of Philadelphia, Boston, Chicago and Paris. Died, 1925.

Bartolommeo (*bär'tō-lōm-me-ō*), **Fra** (properly Baccio della Porta), one of the most distinguished masters of the Florentine school of painting, was born near Florence in 1475. His subjects are mostly all religious, and by far the greater part of his pictures belong to the later years of his life. He was a warm adherent of Savonarola, after whose tragical end he in 1500 assumed the Dominican habit. Bartolommeo died at Florence in 1517.

Barton, Clara, philanthropist, founder and organizer of national Red Cross Society in the United States, president 1881-1904; born in Oxford, Mass., 1821; graduate of Clinton liberal institution, New York. During Civil War did relief work on battlefields and organized search for missing men; laid out grounds for national cemetery, Andersonville, 1865; secured adoption of treaty of Geneva, 1882; first president American Red Cross; inaugurated American amendment of Red Cross, to provide for greater calamities of peace; distributed relief Johnstown flood, 1892; at request of president of United States carried relief to Cuba, 1898; did personal field work, Spanish-American war. Died, 1912.

Barye (*bä-rē*), **Antoine Louis,** French sculptor, born at Paris, in 1795. He was at first an engraver and metal-worker. His famous bronze of a lion struggling with a snake secured for him the cross of the legion of honor. He died at Paris in 1875.

Bascom, John, American educator, former president of the University of Wisconsin, was born at Genoa, N. Y., 1827; graduated in 1849 from Williams College, and six years later from Andover theological seminary; was for twenty years professor of rhetoric at Williams, and for thirteen years president of Wisconsin University. He retired from Wisconsin, 1887, and accepted the chair of political science at Williams, from which he resigned, 1901. Author: *Political Economy; Aesthetics; Philosophy of Rhetoric; Principles of Psychology; Philosophy of Religion; Comparative Psychology.* Died, 1911.

Bashford, James Whitford, bishop of Methodist Episcopal church since 1904; was born at Fayette, Wis., 1849; graduated from University of Wisconsin, 1873, A.M., 1876; pastor M. E. churches in Boston, Auburndale, Mass.; Portland, Maine; Buffalo, N. Y., 1875-89; president Ohio Wesleyan University, 1889-1904. Died, 1919.

Basil (*baz'il* or *bā'zil*), **Saint,** surnamed the Great, bishop of Cæsarea, where he was born about 329, is one of the most eminent of the Christian fathers. The attempts which St. Basil made to re-unite the two hostile churches of the East and West were unsuccessful. Died, 379.

Baskerville, Charles, chemist; born in Noxubee county, Miss., 1870; graduated from University of Virginia, 1890; professor of chemistry, college of the city of New York. Author: *School Chemistry; Key to School Chemistry; Radium and Its Applications in Medicine.* Died, 1922.

Baskerville, John, English printer and letter-founder, born, 1706, in Worcestershire; began about 1750 to make experiments in letter-founding, and succeeded in making types which have scarcely yet been excelled. Died, 1775.

Bassett, John Spencer, educator; born at Tarboro, N. C., 1867; graduated from Trinity College, N. C., 1888; Ph.D., Johns Hopkins, 1894; professor of history, Trinity College, N. C., 1893-1906, Smith College, Mass., since 1906. Author: *Constitutional Beginnings of North Carolina; Slavery in the State of North Carolina; The War of the Regulation.* Killed by a street car in 1928.

Bastable, C. F., economist, professor of political economy, Dublin University; professor of jurisprudence and international law, Dublin University, born at Charleville, County Cork, 1855; graduated from Trinity College, Dublin. George Rae lecturer, University College of North Wales, 1905. Author: *Theory of International Trade; Commerce of Nations; Public Finance;* contributor to *Encyclopædia Britannica; Harmsworth Encyclopædia.*

Bastian (*bäs'tē-än*), **Adolf,** German traveler and anthropologist, author of nearly sixty works, was born at Bremen, 1826. In 1866 he became professor of ethnology at Berlin and curator of the ethnological museum. Died, 1905.

Bastian (*bast'yan*), **Henry Charlton,** English physiologist, was born at Truro, Cornwall, 1837, and from a private school at Falmouth proceeded to University College, London, where he became professor of pathological anatomy, 1895, professor of the principles and practice of medicine. He is the champion of the doctrine of spontaneous generation. He wrote *Evolution and the Origin of Life; The Brain as an Organ of Mind; Paralyses—Cerebral, Bulbar, and Spinal.* Died, 1915.

Bates, Blanche, actress; born in Portland, Ore., 1873. First appearance on stage at Stockwell's theater, San Francisco, 1894; played leading parts in various comedies, 1896-98; appeared in Shakespearian rôles Augustin Daly's company, 1898; later starred in *The Great Ruby, Madame Butterfly*, and in *The Darling of the Gods.*

Bates, John Lewis, governor, lawyer; born at North Easton, Mass., 1859; graduated from Boston University, 1882, law department of same in 1885. Member Boston common council, 1891-1892; lieutenant-governor of Massachusetts, 1900-1-2; governor of Massachusetts, 1903-04; director United States trust company, president board of trustees, Boston University.

Bates, Katharine Lee, author, educator; born Falmouth, Mass., 1859; graduated Wellesley College, 1880; 1885-88 instructor English literature; 1888-91 associate professor, and in 1891 professor in charge, Wellesley College. Died, 1929.

Bauer (*bou'ĕr*), **Bruno,** German philosophical and historical writer, and biblical expositor of the Hegelian school, was born at Eisenberg, Germany, 1809, and died near Berlin, 1882. His writings embrace a number of critiques on the gospels and Pauline epistles; one on Strauss's *Life of Jesus.* On theological subjects Bauer has been called the "Voltaire of Germany."

Baumgarten (*boum'gär-ten*), **Alexander Gottlieb,** the founder of the science of æsthetics, or the philosophy of the beautiful, was born at Berlin, 1714, studied at Halle under Wolf, and was appointed professor of philosophy at Frankfort on-the-Oder, where he died, 1762.

Baumgartner (*boum'gert-nĕr*), **Karl Heinrich,** German physiologist, was born at Baden, 1798, and died at Baden-Baden, 1886. From 1824 to 1862 he was professor of clinical medicine at Freiburg.

Baur (*bour*), **Ferdinand Christian von,** German theologian, born 1792, at Schmiden, near Stuttgart, was the founder of the Tübingen school of theology. In 1826 he was called to the chair of protestant theology at Tübingen, which he held until his death in 1860.

Bax, Ernest Belfort, barrister-at-law, Middle Temple; author; born at Leamington, England, 1854; was educated privately in London and Ger-

many. In 1885 helped to start the socialist league in conjunction with the late William Morris, and for some time co-edited with him the weekly journal *Commonweal*. Author: *Jean-Paul Marat; Kant's Prolegomena; The Problem of Reality; Socialism, Its Growth and Outcome; The Peasants' War in Germany; Essays in Socialism, New and Old; The Roots of Reality*. Died, 1926.

Bayard (*bā'yär'*), **Pierre Du Terrail Chevalier De,** French knight, was born near Grenoble, in 1475. He served under Charles VIII., in an expedition against Naples, and in the wars against the English and Spaniards he distinguished himself by his bravery and nobleness of character. He was killed in a battle at the river Sesia, Italy, in 1524. He is known as "the knight without fear and without reproach."

Bayard, Thomas Francis, American statesman, was born at Wilmington, Del., 1828. He was privately educated and began the practice of law in his native city in 1851; entered Cleveland's cabinet as secretary of state in the latter year. In 1893 was appointed ambassador to England, the first to hold that rank as a representative of the United States. Died, 1898.

Bayes, Nora, actress, exceedingly popular, was originally associated with Keith theatres. Formed a show of her own, 1917, selecting her songs from a repertoire of 144 songs, having committed the words and music to memory. Played leading parts in *Cohan Revue*, 1918. Died, 1928.

Bazaine (*bā'zen'*), **Francois Achille,** a marshal of France; born at Versailles, 1811; distinguished himself in Algiers, the Crimea, and Mexico. Died at Madrid, 1888.

Beach, Rex Ellingwood, author, playwright; born at Atwood, Mich., 1877; educated at Rollins College, Winter Park, Fla., 1891-96, Chicago College of Law, 1896-97. Author: *Pardners; The Spoilers; The Silver Horde;* etc.

Beaconsfield, Earl of. See **Disraeli, Benjamin.**

Beale (*bēl*), **Joseph Henry, Jr.,** lawyer, educator; born in Dorchester, Mass., 1861; graduated from Harvard, 1882, A.M., LL.B., 1887; LL.D. Practiced law, Boston, 1888-92; teacher of law, Harvard law school, assistant professor, 1892, became professor of law in 1897. Author: *Cases on Criminal Law; Cases on Damages; Cases on Carriers; Innkeepers;* etc.

Beatrice Portinari (*bē'a'trēs pôr'te-nä'rē*), Dante's poetical ideal, daughter of a Florentine noble, remarkably graceful and accomplished. Dante first saw her when she was but nine years old, and but seldom afterward; but in his vivid imagination she grew to be the personification of divine truth, and so appears in the *Divine Comedy*. In 1287 she married a citizen of Florence. Born in 1266; died, 1290.

Beattie (*bē'ti*), **James,** Scottish poet and writer on philosophy, born at Laurencekirk, Scotland, 1735; died, 1803. Professor of moral philosophy in Marischal College, Aberdeen, 1760-97. His fame now rests almost wholly on *The Minstrel*, a descriptive poem written in the Spenserian stanza.

Beatty, John W., director of fine arts, Carnegie Institute, Pittsburg, Pa., born at Pittsburg, 1851; student of Munich Academy of Fine Arts; A.M., Western University of Pennsylvania, 1900; member of many art societies. Died, 1924.

Beaufort (*bū'fert*), **Henry,** cardinal and bishop of Winchester, born about 1370; was half-brother to King Henry IV. He was educated in England and Germany, and in 1405 became bishop of Winchester. In 1431 he conducted the young king, Henry VI., to France, to be crowned in Paris as king of France and England. Died, 1447.

Beauharnais (*bō'är'ne'*), **Eugene de,** viceroy of Italy during the reign of Napoleon I., and afterward duke of Leuchtenberg, and prince of Eichstadt, born 1781, the son of the vicomte Beauharnais. After his mother's marriage with Bonaparte, he accompanied him in his campaigns in Italy and in the expedition to Egypt; and in 1805, after the erection of the imperial throne, he was made a prince of France and viceroy of Italy. The victory of Lützen was decided by his conduct in that battle. Died, 1824.

Beauharnais, Hortense Eugenie de, daughter of Josephine; born in 1783; was married against her will to Louis, brother of Napoleon Bonaparte, from whom she separated in 1810. Her son by him was the late Napoleon III. Died, 1837.

Beaumarchais (*bō'mär'she'*), **Pierre Augustin Caron de,** French dramatist and poet, was the son of a watchmaker named Caron, and was born at Paris, 1732; married a widow, Madame Franquet in 1757, and from a little property of hers took the aristocratic name of Beaumarchais. Meanwhile devoting himself to literature, he produced *Eugenie*, a drama in five acts; *Les Deux Amis, ou Le Negociant de Lyon; Le Barbier de Seville;* and *Le Mariage de Figaro*. He died in 1799.

Beaumont (*bō'mont*), **Francis,** English poet and dramatist, best known by his literary partnership with John Fletcher, was born at Grace Dieu Leicestershire, in 1586; died, 1616.

Beauregard (*bō'rē-gärd*), **Pierre Gustave Toutant,** general of the army of the Confederate States during the Civil War, was born near Orleans, La., 1818. At the secession of Louisiana he resigned his commission in the regular army; in 1861 he was appointed by the confederate government to the command at Charleston, S. C., where, on April 12-13th, he commenced the war by the bombardment of Fort Sumter; July 21st he won the battle of Bull Run; after the war he became a railroad president, and in 1878 adjutant general of Louisiana. Died, 1893.

Bebel (*bā'bel*), **Ferdinand August,** German social democrat, was born at Cologne, 1840, and in 1860 removed to Leipzig, where in 1864 he established himself as a master turner. He was an effective speaker and writer. Died, 1913.

Beccaria (*bek'kä-rē'ä*), **Cesare, Marchese, di,** Italian economist and jurist, was born at Milan, 1738. In 1764 he published anonymously his work on *Crimes and Punishments*, in which he argued against capital punishment and torture. He was among the first to advocate the beneficial influence of education in lessening crime. In 1768 he was appointed professor of political philosophy at Milan; in 1791 he was made a member of the board for the reform of the judicial code. He died, 1793.

Becher (*bek'er*), **Johann Joachim,** German chemist, was born at Spires in 1635, and lived successively at Mainz, Vienna, Munich, Würzburg, Haarlem, London, where he died in 1682. His *Physica Subterranea* was the first attempt made to bring physics and chemistry into close relation. Died, 1682.

Beck, James M., lawyer, born at Philadelphia, Pa., 1861; graduate of Moravian college, Bethlehem, Pa., 1880. Was admitted to bar, 1884; United States attorney for eastern district of Pennsylvania, 1896-1900; assistant attorney-general of United States, 1900-1903. As master, appointed by United States court, sold, 1902, the *Philadelphia Record* for $3,000,000—highest price ever brought by an American newspaper at public sale. Member law firm of Shearman & Sterling, New York, 1903-1917; Beck, Crawford & Harris, New York, 1917-1921; 1921-5, U. S. Solicitor General. Died, 1936.

Becker, Wilhelm Adolf, German author and philologist, was born at Dresden in 1796, died, 1846. In 1840 he traveled through Italy; in 1837 was appointed professor of archæology at the University of Leipzig. His lively fancy, aided by a thorough knowledge of the classic languages, enabled him to make a novel use of antiquity. In his *Charikles* he ventured to reproduce the social life of old Greece; and in his *Gallus* to give sketches of the Augustan age at Rome.

Becket, Thomas a, celebrated English prelate, was born at London in 1118, studied at Oxford, Paris, and Bologna, and on his return home entered the church. Henry II. made him high chancellor and preceptor to Prince Henry in 1155, admitted him to the closest intimacy and confidence, and in 1162 raised him to the archbishopric of Canterbury. Becket now entirely gave up his courtier habits, assumed a rigid austerity of manner, and became a stubborn champion of the exorbitant privileges of the clergy. A violent contest ensued between the sovereign and the prelate, and the latter was at length obliged to fly from the kingdom. In 1170, however, he was restored, and he instantly recommenced his resistance to the monarch. He was murdered in Canterbury cathedral, 1170.

Beckford, William, an eccentric man of genius, was born at Fonthill, England, 1759. When he was about nine years of age his father died, and he inherited estates in Jamaica, and Fonthill, in Wiltshire. In 1784 he published *Vathek* in French. During all his life he was a hard-working student, but was of a most erratic disposition. Died, 1844.

Becquer (*bā-kār'*), **Gustavo Adolfo,** Spanish poet and novelist, was born at Seville, 1836. His weird and fantastic tales are written after the manner of Poe and Heine, and have proved very popular. He left three volumes of poems and legends, of which the best known is *Leyendas Espanolas*. Died at Madrid in 1870.

Becquerel (*bek'rel'*), **Antoine Cesar,** French physicist, born at Loiret, France, 1788. While studying the physical properties of yellow amber he had occasion to make experiments on the liberation of electricity by pressure; the result of his inquiries was the overthrow of Volta's theory of contact, and the construction by him of the first constant pile. He is, besides, one of the creators of electrochemistry, and invented a method of electrotyping. Died, 1878.

Beddoe, John, physician, anthropologist, born at Bewdley, England, 1826; was educated at Bridgnorth, University College, London, and Edinburgh University, graduating B.A., London, in 1851, and M.D., Edinburgh, in 1853. He served as a surgeon during the Crimean war, and afterward practiced at Clifton, 1857-91. He is the author of *Stature and Bulk of Man in the British Isles; The Races of Britain; Anthropological History of Europe*. Died, 1911.

Bede (*bēd*), or **Baeda** (*bē'dä*), surnamed "the venerable," English monk, scholar, and church historian, was born, 673, in the county of Durham, and died at Jarrow, at the monastery of St. Paul, in 735. He is said to have been the most learned Englishman of his day, and in the seclusion of his cell he wrote, besides his important *Ecclesiastical History of England*, which was translated from the Latin by King Alfred into Anglo-Saxon, a number of commentaries, homilies, hymns, and lives of the saints.

Bedford, John, Duke of, third son of Henry IV., was born in 1389. In 1414 his brother, Henry V., created him duke of Bedford; and during the war with France he was appointed lieutenant of the kingdom. After Henry's death in 1422, Bedford became guardian of the kingdom, and regent also of France; and, Charles VI. dying two months afterward, he had his nephew proclaimed king of France and England as Henry VI. In the wars with the dauphin which followed, Bedford displayed great generalship and defeated the French at Verneuil in 1424. The appearance of Joan of Arc was followed by disaster to his arms; and in 1435 a treaty was negotiated at Rouen between Charles VII. and the duke of Burgundy, which ruined English interests in France. Bedford's death at Rouen was mainly occasioned by anxiety and vexation. Died, 1435.

Beecher, Catherine Esther, eldest child of Lyman Beecher, was born at East Hampton, L. I., 1800. In 1822 she opened a school at Hartford, Conn., and ten years later a seminary for young women in Cincinnati, but was compelled to give it up on account of ill-health two years afterward. She made it the business of her life to improve and advance the intellectual, physical, and practical education of women. She organized societies and schools for training teachers and sending them to new states and territories. In pursuit of this object she published a series of books. Died, 1878.

Beecher, Henry Ward, preacher, theologian, lecturer, orator, was born at Litchfield, Conn., 1813; graduated at Amherst college in 1834, studied theology under his father at Lane seminary, Cincinnati. After a pastorate of ten years in two churches in Indiana, he removed to Brooklyn and assumed charge of Plymouth church, "an organization of orthodox Congregational believers." He for many years drew one of the largest and most influential regular congregations in the United States, and his published sermons soon became a power in this and other countries. His reputation as a writer is second only to his celebrity as a preacher. For nearly twenty years he was editor of the New York *Independent*, and in 1870 he became editor of the *Christian Union*, also a religious weekly. His most important works are: *Lectures to Young Men, Industry and Idleness, Life Thoughts*, being selections from his extemporaneous sermons, revised by himself; *The Star Papers*, these last being composed of articles contributed to the New York *Independent*, and the *Life of Christ*. He also edited the *Plymouth Collection of Hymns*. Died at Brooklyn, N. Y., 1887.

Beecher, Lyman, preacher and theologian, was born at New Haven, Conn., 1775; graduated from Yale college, studied theology for a year, and began preaching at East Hampton, L. I. where he remained until 1810. He then went to Litchfield, Conn., where were born his two most famous children, Henry Ward and Harriet (Mrs. Stowe), though nearly all of his thirteen children are well known. He was one of the first pulpit orators of the time. After sixteen years he was called to Hanover Street church, Boston, and during his six years of hard work there engaged in a theological discussion with Dr. Channing. He spent twenty years at the head of Lane theological seminary, Cincinnati. Died at Brooklyn, N. Y., 1863.

Beerbohm, Max, English caricaturist and writer, was born in London in 1872. He was educated at Oxford, then became a contributor to the *Yellow Book* and critic on the *Saturday Review*. He is best known by his incisive caricatures of prominent men in society, *Caricatures of Twenty-five Gentlemen* (1896), *The Second Childhood of John Bull* (1901), *Fifty Caricatures* (1913), and others. Among his published writings are *Zuleika Dobson* (1911), *Seven Men* (1919), and *Even Now* (1920).

Beers (*berz*), **Henry Augustin,** author, professor of English literature at Yale; was born at Buffalo, N. Y., 1847; graduated from Yale, 1869. Author: *A Century of American Literature; Odds and Ends* (verse); *Nathaniel Parker Willis; The Thankless Muse* (verse); *From Chaucer to Tennyson; Initial Studies in American Letters; A Suburban Pastoral and Other Tales; The Ways of Yale; A History of English Romanticism in the Eighteenth Century; A History of English Romanticism in the Nineteenth Century; Points at Issue;* contributor to leading magazines.

Beethoven, van (*vän bā'tō-ven*), **Ludwig,** one of the greatest musical composers of modern times, was born at Bonn in 1770. His genius was very early displayed, and his musical education was begun by his father, and continued by the court organist who introduced him to the works of Sebastian Bach and Handel. He soon attempted com-

position, and showed wonderful facility in improvisation. About 1790, he settled at Vienna, where Mozart quickly recognized his marvelous powers. When about 40 years of age, he was attacked with deafness which became total, and lasted through life. He became, gradually, the victim of morbid irritability, and hopeless melancholy, ending in confirmed hypochondria, and, finally, dropsy and delirium. He continued to compose, however, long after he had ceased to hear himself play, and received homage and honors from all parts of Europe. Died, unmarried, at Vienna, in 1827. The works of Beethoven are very numerous, and in every variety of style—orchestral, chamber-music, pianoforte, and vocal music. Among the most celebrated are the opera of *Fidelio;* the oratorio of the *Mount of Olives;* the cantata *Adelaide; Sinfonia Eroica* (heroic symphony); *Sinfonia Pastorale*—(Pastoral symphony); *Concerto in C Minor; Sonata Pathetique;* and the *Sonata with Funeral March.* Vast power, intense passion, and infinite tenderness are manifested in all his compositions, which abound no less in sweetest melodies than in grand and complicated harmonies. A statue of Beethoven, by Hülmel, was erected at Bonn in 1845.

Begas (*bā'gäs*), **Karl,** German painter, born at Hernsberg, near Aix-la-Chapelle, 1794; became a pupil of Gros at Paris in 1813; studied afterward at Rome, and was a member of the academy and court painter at Berlin from 1825 until his death in 1854. His pictures are partly biblical, partly romantic, and partly genre pieces. Of the first may be mentioned his *Baptism of Christ,* in the style of the old Florentines, which was placed in the garrison church at Potsdam, and his fine fresco of Christ and the four evangelists surrounded by a choir of angels in the church of Cracow. Specimens of the other classes are the *Lorelei, Girls Under the Oak Tree, The Vine Dressers,* etc. He is chiefly memorable as a master of light and shade.

Begas, Reinhold, German sculptor, was born in Berlin, 1831; son of Karl Begas. Educated under Rauch and Wichmann, 1846-51; studied in Italy, 1856-58. Principal works; statue of Borussia for hall of glory; Neptune fountain on Schlossplatz; statue of Alexander von Humboldt; statue of Schiller for Gendarmen market, all in Berlin; sarcophagus of Emperor Frederick III. in Friedenskirche, Potsdam, and sarcophagus of Empress Frederick; national monument to Emperor William; statue of Bismarck before the Reichstag Gebäude; several statues in the Siegesalle, Berlin. He died in 1911.

Behaim (*bā'hīm*), or **Behem** (*bā'hem*), **Martin,** German navigator and geographer, was born at Nuremberg about 1459, died about 1506; probably a pupil of Regiomontanus; visited Portugal about 1480, and in 1484 was made geographer of an expedition for the exploration of western Africa; knighted by John II. of Portugal. In 1492 he made a terrestrial globe, a gift to his native city, where it is still preserved.

Behring, Emil Adolph von, German physician, was born at Hansdorf, 1854. He studied in Berlin, became a surgeon in the army for a time, then was appointed professor at the University of Halle, 1894. In 1895 he became director of the Institute of Hygiene at Marburg. He discovered diphtheria serum, for which he was awarded the Nobel prize, 1901. A later discovery was bovivaccine, which prevents tuberculosis in cattle. Died, 1917.

Bekker (*bek'ĕr*), **Immanuel,** German scholar and philologist, was born at Berlin, 1785; died there, 1871. He became professor of philology at Berlin, and edited critical editions of Plato, the Attic orators, Aristotle, Thucydides, Aristophanes, Herodotus, Livy, Tacitus, and other classic writers. His chief independent work was *Anecdota Graeca.*

Belasco (*bē-las'kō*), **David,** dramatic author, was born at San Francisco, 1862; educated at Lincoln college, California. Author (plays): *Zaza; The Heart of Maryland; The Wife; The Charity Ball; Lord Chumley; May Blossom; Men and Women; LaBelle Russe; The Girl I Left Behind Me; Valerie; Hearts of Oak; The Darling of the Gods; Du Barry; Sweet Kitty Belairs; Adrea.* Manager of Mrs. Leslie Carter, David Warfield, Blanche Bates, and Frances Starr. Died, 1931.

Belisarius (*bel'i-sā'ri-us*), the great general of Justinian, was born in Illyria about 505. After commanding an expedition against the king of Persia about 530, he suppressed an insurrection at Constantinople, conquered Gelimer, king of the Vandals, and put an end to their dominion in Africa. In 535 he was sent to Italy to carry on war with the Goths, and took Rome in 536. He was afterward sent against the Persians and Huns, and in 563 was charged with conspiracy against Justinian, but was acquitted. That he was deprived of sight and reduced to beggary appears to be a fable of late invention. Died, 565.

Bell, Alexander Graham, scientist, inventor, born in Edinburgh, Scotland, 1847; educated at Edinburgh and in London University; LL.D., Ph. D.; invented telephone, for which patent was granted February 14, 1876; invented the graphophone, 1883. Regent Smithsonian institution. Officer French legion of honor. Member national academy of sciences and other scientific organizations. Author of many scientific and educational monographs. Died, 1922.

Bell, Alexander Melville, educator, was born in Edinburgh in 1819. He studied with his father, an authority on phonetics, and himself became a famous lecturer on elocution in the university of Edinburgh. He came to this country in 1870, teaching for ten years at Queen's University, Kingston, Ontario, then going to Washington, D. C. Here he developed his system of "visible speech" for the use of deaf mutes. Among his many books are *Letters and Sounds, Visible Speech, The Fundamentals of Elocution.* He died in 1905.

Bell, Sir Charles, British physician and anatomist, famous for his discoveries in the nervous system, was born at Edinburgh, Scotland, 1774. In 1807 he distinguished between the sensory and motor nerves in the brain. In 1812 he was appointed surgeon to the Middlesex hospital, which his clinical lectures raised to the highest repute. To study gunshot wounds, he went to Haslar hospital after Corunna in 1809, and after Waterloo took charge of a hospital at Brussels. Knighted in 1831, was appointed professor of surgery at University of Edinburgh in 1836; he died in 1842.

Bell, Henry, who introduced steam navigation into Europe, was born at Torphichen, Linlithgowshire, 1767. In 1812 he launched the *Comet* on the Clyde, the first steam vessel on European waters. The engine, at first of three horsepower, was afterward increased to six. He died at Helensburg, 1830.

Bell, James Franklin, army officer, was born at Shelbyville, Ky., 1856; graduated from United States military academy, 1878; served on plains in 7th United States cavalry, 1878-94; organized 36th infantry, United States volunteers, in Philippine Islands, 1899; appointed brigadier general of United States army, 1901; returned to United States in 1903; commandant of infantry and cavalry school, signal school and staff college to April, 1906; major-general, 1907. Died, 1919.

Bell, John, English sculptor, born in 1811, first exhibited in 1832, and has produced numerous admirable works in monumental, religious, and imaginative art. His last great work was the group *The United States Directing the Progress of America,* for the base of the Prince Consort memorial, in London. Died, 1895.

Bell, John, American politician, was born near Nashville, Tenn., 1797; was admitted to the bar, 1816; member of congress from Tennessee, 1827-41; nominated by the constitutional union party for president, 1860, and received the electoral vote of Tennessee, Kentucky, and Virginia. Died, 1869.

Bell, Robert, chief geologist geological survey of Canada; acting director, 1901-06; was born at Toronto, Ontario, 1841; was educated at McGill and Edinburgh Universities; D.Sc., McGill; LL. Queen's; F. R. S., 1897. Joined geological survey of Canada, 1857; made very extensive topographical and geological surveys in nearly all parts of the Dominion; was Canadian correspondent of the Royal Scottish Geographical Society from its foundation, and a member of many scientific societies; was a royal commissioner on the mineral resources of Ontario, 1888-89; professor of chemistry and natural science in Queen's University, Kingston, 1863-67. Died, 1917.

Bellamy (*bel'ā-mi*), **Edward,** American novelist and economist, born at Chicopee Falls, Mass., 1850. He was educated in Germany; admitted to the bar; was on the staff of the New York *Evening Post* in 1871-72; and on his return from the Sandwich Islands in 1877 founded the Springfield *News.* Author of *Looking Backward,* etc. Died, 1898.

Bellarmine (*bel'lär-mīn* or *mēn*), **Robert,** celebrated Roman Catholic theologian; was born at Monte Pulciano, in Tuscany, 1542. He entered the order of Jesuits in 1560, and in his twenty-seventh year, when he went to Louvain as professor of theology, began that long controversy with *heretics,* which formed the main business of his life. In 1599 he was made a cardinal against his own inclination. Died, 1624.

Bellew (*bel'ū*), **Harold Kyrle-Money,** English actor; was born in Calcutta, 1857; made stage début at Theater Royal, Brighton; became leading man and star in London; came to United States as leading man in Wallack's theater, New York, October, 1885. Headed exploration expedition in northern Queensland, 1900-02, returning to stage at head of own company in United States, October, 1902. Died, 1911.

Bellini (*bel-lē'nē*), **Gentile,** Venetian painter, was born about 1427, died 1507. He was employed, with his brother, Giovanni, to decorate the great council-chamber of the Venetian senate-house.

Bellini, Giovanni, Venetian painter, brother to Gentile Bellini, and with him the founder of the Venetian school of painting, was born 1426; died 1516. His best works are altar pieces. Among his more famous pictures are his *Infant Jesus; Holy Virgin,* and *Christ and the Women of Samaria.*

Bellini, Vincenzo, Italian composer of operas, was born at Castania, in Sicily, in 1802. He was sent to the conservatoire of Naples, where he studied composition. He visited Paris and London, and died near Paris in 1835. Among his best works are *Norma, I Puritani,* and *La Sonnambula.*

Bellmann (*bel'mān*), **Karl Mikael,** Swedish poet, was born at Stockholm, 1740; became court-secretary in 1775, and died in 1795. His later and more brilliant pieces are chiefly bacchanalian, idyllic, or humorous songs, for which he also furnished original melodies. A monument was erected to his memory at Stockholm in 1829.

Belloc (*be-lok'*), **Hilaire, Joseph Peter,** English writer and politician, was born in 1870; graduated from Balliol College, Oxford, 1895. Author: *Verses and Sonnets; The Bad Child's Book of Beasts; More Beasts for Worse Children,* etc.

Bellows, Henry Whitney, Unitarian divine and writer, was born at Walpole, N. H., 1814; graduate of Harvard and of Cambridge divinity school; in 1838 became pastor of All Souls church, New York; was instrumental in establishing the *Christian Enquirer* in 1846. He did excellent service as presiding officer of the sanitary commission during the war of the rebellion. Died, 1882.

Bell-Smith, Frederic Marlett, artist; president of the Ontario society of artists; born at London, 1846; studied drawing at South Kensington, London; went to Canada, 1867; charter member society of Canadian artists, 1867; director Toronto art school, 1889-91; lecturer and writer on art subjects.

Belmont, August, banker, was born at New York, 1853; son of prominent banker of the same name; graduate of Harvard, 1874, and at once entered the bank; became head of August Belmont & Company, American representatives of European banking firm of Rothschilds. Died, 1924.

Belmont, August, American politician and financier was born at Alzey, Germany, 1816; representative of the Rothschilds in the United States; art collector and turfman; United States minister to the Netherlands, 1854-58. Died, 1890.

Belmont, Perry, lawyer; was born at New York, 1851; graduated from Harvard in 1872; studied civil law, University of Berlin; LL.D., Columbia Law School, 1876; practiced law until 1881; member of congress, 1880-87; chairman committee on foreign affairs, 1885-87; United States minister to Spain, 1887-88. Inspector general with rank of major, 1st division, 2d army corps, United States volunteers, 1898.

Belshazzar (*bel-shaz'ar*), the last king of Babylon of the Chaldæan dynasty, began to reign about 554 B. C. The hand-writing on the walls of his palace, its interpretation by Daniel, the taking of Babylon by Cyrus the Great, and Belshazzar's death in 538 B. C. are familiar to all Bible readers.

Bem (*bem*), **Joseph,** Polish general, born in Galicia in 1795; served in the French campaign against Russia; 1812; took part in the Polish insurrection of 1830; joined the Hungarian army in 1848, defeated the Austrians in several battles, and after the defeat of Temesvar took refuge in Turkey, became a Mohammedan, and was made a pasha. Died, 1850.

Bembo (*bem'bō*), **Pietro,** Italian scholar, was born at Venice, 1470, and died at Rome, 1547, having in 1513 been made secretary to Leo X., and in 1539 a cardinal by Paull II., who afterward appointed him to the diocesses of Gubbio and Bergamo.

Bemis, Edward Webster, educator, economist, was born at Springfield, Mass., 1860; graduated from Amherst, 1880; A. M., 1884; Ph. D., Johns Hopkins, 1885; professor of history and political economy, Vanderbilt University, 1887-92; associate professor political economy, University of Chicago, 1892-95; now consulting engineer for cities, states and other public bodies upon public utilities of water, light, street railways and telephones.

Bendemann (*ben'dē-mān*), **Eduard,** German painter of the Düsseldorf school, was born at Berlin in 1811. From 1859 until 1867 he was director of the Düsseldorf Academy. He died in 1889.

Benedek (*bā'ne-dek*), **Ludwig von,** Austrian general, born at Odenburg, in Hungary, 1804. After having served with great distinction he obtained in 1866 the command of the Austrian army against Prussia, and lost the decisive battle of Sadowa on July 3d. Died, 1881.

Benedict, Saint, one of the originators of monastic institutions in the West, was born at Nursia, in Italy, 480. Early in life he retired into a desert and spent three years in a cavern. Being discovered, his sanctity drew to him such numbers of people that he founded twelve convents. In 529 he went to Monte Cassino, built a monastery on the site of the temple of Apollo, gave rise to the Benedictine order, and died in 543.

Benedict XIII., Pope, son of the duke of Gravina, a Neapolitan nobleman, was born in 1649, and was raised to the papal chair in 1724. He was pious, virtuous, and liberal. A fruitless attempt

which he made to reconcile the Roman, Greek, Lutheran, and Calvinist churches, bears testimony to his tolerant spirit. He died in 1730.

Benedict XIV., Prospero Lambertini, the most worthy to be remembered of all the pontiffs so named, was born at Bologna in 1675; began his pontificate with several wise and popular reforms; revived the Academy of Bologna; executed several public works in Rome; caused the best English and French books to be translated into Italian, and in various ways gave encouragement to literature and science. Died, 1758.

Benedict XV., Pope, was elected to the Holy See, September 3, 1914, as Cardinal Giacoma della Chiesa. He was of noble blood, and was born November 21, 1854, at Pegli, Italy, a son of the Marchese della Chiesa; ordained a priest, 1878; was secretary of the nunciature in Spain, 1883-1887; secretary to Cardinal Rampolla, 1887-1901; substitute secretary of state at the Vatican, Rome, 1901; adviser to the Holy Office and Archbishop of Bologna, 1907; and made Cardinal, 1914. He is described as a man of pronounced spiritual character, a firm opponent of modernism, quiet and reserved in manner, but the possessor of a very active mind. His first public utterance was an exhortation for the peace of the world. Died, 1922.

Benedict, Sir Julius, German composer, was born at Stuttgart, Wurtemberg, 1804, died at London, 1885. His operas include *The Gipsy's Warning; The Bride of Venice; The Crusaders; The Lily of Killarney.*

Bennett, Enoch Arnold, English author and journalist, born at North Staffordshire, 1867. Educated at Newcastle Middle School. Studied law, but in 1893 turned to journalism and editorial work. This he gave up in 1900 to devote himself to literature exclusively. The influence of environment and industrial association has attracted him in the majority of his best novels such as *The Old Wives Tale, Clayhanger* and *Mr. Prohack.* Life is grim in Mr. Bennett's eyes, but in the sadness of his vision his humor is rich and moves surely through the sombre lives of his characters. Died, 1931.

Bennett, James Gordon, American journalist; was born in Scotland in 1795 and died in 1872. In 1819 emigrated to America, and became a journalist in New York. In 1835 he issued the first number of *The Herald,* a journal which, through his great ability and enterprise, soon commanded world-wide attention. The first speech ever reported in full by telegraph was sent to *The Herald.*

Bennett, James Gordon, journalist, capitalist, proprietor of *New York Herald;* was born in New York, 1841, son of journalist of same name, inherited *The Herald* and a large fortune in 1872; inaugurated publication in England of storm warnings transmitted from the United States; sent Henry M. Stanley to Africa to find Livingstone, 1874-77; prominent yachtsman. Died, 1918.

Benson, Edward White, English prelate and primate of all England, 1882-96, was born in 1829 and died in Flintshire, Wales, 1896; graduated at Trinity College, Cambridge; taught for a while at Rugby; in 1877 was consecrated bishop of Truro. In 1882, on the recommendation of Gladstone, the crown appointed him successor to Dr. Tait in the archbishopric of Canterbury. He held this high office in the church until his death.

Bentham, Jeremy, English writer on ethics and jurisprudence; born at London in 1748; admitted to the bar in 1772. In all his ethical and political writings the doctrine of utility is the leading and pervading principle; and his favorite vehicle for its expression is the phrase *the greatest happiness of the greatest number.* He died in 1832.

Benton, Thomas Hart, American statesman, born in North Carolina in 1782, commenced legal practice at Nashville, Tenn., in 1811, and settled at St. Louis, Mo., in 1815; was elected United States senator in 1820, when he became a prominent supporter of General Jackson. He held a seat in congress for a period of thirty years, during which he voted for the annexation of Texas, and against the doctrines of nullification and state rights. Died, 1858.

Beranger (*bā'rĀN'zhā*), **Pierre Jean de,** French lyric poet, born in Paris, 1780, was of humble parentage, and became apprenticed to a printer. In 1815 he began to bring out a collection of national and other songs. His poems contributed in no small degree to the revolution of 1830. In 1833 a fifth series of his lyrics appeared, and in 1848 he was elected to the assembly, but declined to serve. Died in 1857.

Beresford (*ber'es-fĕrd*), **Lord Charles William de la Poer,** British admiral, was born in Ireland, 1846; educated at Bayford school, Rev. Mr. Foster's, Stubbington, Fareham, Hants. Entered *Britannia* as cadet, 1859; rear-admiral, 1897; naval A. D. C. to the queen, 1896-97; M. P. Waterford, 1874-80; commanded *Condor,* bombardment Alexandria, 1882; in command of naval brigade at battles of Abu Klea, Abu Kru, and Metemmeh; a lord commissioner of the admiralty, 1886; visited China on a special mission, at request of associated chambers of commerce of Great Britain, 1898-99; rear-admiral, Mediterranean, 1900-02; commanded channel squadron, 1903-05; admiral, 1906. Author: *Life of Nelson and His Times.* Died, 1919.

Bergman (*berK'mān*), **Torbern Olof,** Swedish chemist and naturalist, was born at Katharinberg, Sweden, 1735; studied at Upsala, and in 1761 was appointed adjunct in mathematics and natural philosophy; professor of chemistry, 1766. Died, 1784.

Bergson, Henri Louis, French philosopher, was born in Paris, 1859. He was educated at the Lycee Corot and at the Ecole Normale. He was professor of philosophy for many years at lycees and from 1900 to 1921 at the College de France, Gifford lecturer in the meantime at Edinburgh. His most noted works are *Creative Evolution, Time and Free Will, Matter and Memory,* a pamphlet during the war *La Significance de la Guerre,* and *Mind-Energy.*

Beriot (*bā'rē-ō*), **Charles Auguste de,** Belgian composer and violinist, born in Louvain, 1802. In 1836 he became the husband of the famous singer, Malibran. In 1842 he was made professor in the Brussels conservatorie, but resigned ten years after in consequence of failing eyesight. Died, 1872.

Berkeley, George, British divine and philosopher, and bishop of Cloyne, was born in Ireland in 1685. On his return from a visit to America, he was raised to the episcopate. In philosophy he was an idealist, and his doctrines are the natural reaction against the prevalent materialism of his age. Died, 1753.

Berkeley, Sir William, governor of the colony of Virginia, was born at London, England, 1610. He was appointed governor of Virginia in 1641 but resigned in 1651, upon the accession of Cromwell. He was the author of *A Discourse and View of Virginia,* and a drama called *The Lost Lady.* Died, 1677.

Berlichingen (*ber'liK-ing-en*), **Gotz** or **Gottfried von,** German knight, was born in 1480. He took part in the war of the peasants against the nobles, and was sentenced by Maximilian I. to pay a heavy fine. Goethe made his achievements the subject of one of his dramas. He died in 1562.

Berlioz (*ber'lē-ōs*), **Hector,** French composer, was born at La Cote St. Andre, 1803, and died in 1869. His best productions are the symphonies *Harold* and *Romeo and Juliet.*

Bernadotte, Jean Baptiste. See **Charles XIV.**

Bernard (*ber'nār'*), **Claude,** French physiologist, born near Villefranche, 1813; studied medicine at Paris, and in 1841 became assistant at the College de France to Magnedie, with whom he worked until his own appointment in 1854 to the chair of general physiology, and whom he succeeded in 1855 as professor of experimental physiology. He was elected to the academy in 1869, and died at Paris, 1878. His *Lecons de Physiologie Experimentale* is still a standard work.

Bernard (*bĕr'nard* or *bĕr-nded'*), **Saint,** of Clairvaux, was born of a noble family at Fountaines, near Dijon, in Burgundy, 1091; in 1113 entered the Cistercian monastery of Citeaux, and in 1115 became the first abbot of the newly-founded monastery of Clairvaux, in Champagne, where he died, 1153. He was canonized in 1174. His studious, ascetic life and stirring eloquence made him the oracle of Christendom. He was one of the greatest of the Latin hymn writers, many modern hymns being based on his *Jesu Dulcis Memoria.*

Bernardin de St. Pierre (*bār'nār'daN' dē saN' pyār'*), **Jacques Henri,** French writer, the admired author of *Paul and Virginia, Studies of Nature,* etc., was born at Havre in 1737. He was an engineer in Russia and France, 1767-1771, settling in Paris the latter year. He then became professor of morals at the normal school and a member of the institute. Died, 1814.

Bernhardt, Rosine Sarah, famous French tragic actress, widow of M. Jacques d'Amala, was born at Paris in 1844. Her parents were Jews, but she was educated in Grandchamp convent at Versailles. She made her first appearance on the stage in 1862, at the Théâtre Français. In 1867 her playing the part Marie de Neuberg in Victor Hugo's *Ruy Blas* made her famous. Died March 26, 1923.

Bernini (*ber-nē'nē*), **Giovanni Lorenzo,** known as the Cavaliere Bernini, was born in Naples in 1598. He was eminent as a painter, an architect, and a sculptor; and his merit entitled him to the rewards which he had the good fortune to receive from Louis XIV. He died in 1680.

Bernoulli (*ber-nōō'yē*), **Daniel,** Swiss mathematician and physicist, was born at Groningen in 1700, died at Basel in 1782. He was the son of John, and like his father devoted himself to medicine as well as to mathematics. At Basel he occupied in succession the chairs of anatomy and botany, and of experimental and speculative philosophy. He published various works between 1730 and 1756.

Bernoulli, James B., was born at Basel in 1654, where he also died, 1705. He devoted his life to the study of mathematics of which he became professor in the University of Basel. Among his triumphs are to be recorded his solution of Leibnitz's problem of the isochronous curve, and investigation of the properties of isoperimetrical figures.

Bernoulli, John B., brother of the preceding, was born at Basel, 1667. He and James were the first two foreigners honored by the Academy of Sciences at Paris. In 1694 he became a doctor of medicine, and soon after professor of mathematics at Groningen. His forte was pure mathematics, in which he had no superior in Europe in his day. He died in 1748.

Bert (*bār*), **Paul,** French physiologist and republican anti-religious statesman, was born at Auxerre, 1833, and died at Tongking, 1886. He was minister of public instruction in Gambetta's cabinet, 1881-82.

Berthelot (*ber't'-lō'*), **Pierre Eugene Marcellin,** French chemist, was born at Paris, 1827, and in 1860 became professor of organic chemistry in the Ecole de Pharmacie: in 1865 in the College de France; in 1889 perpetual secretary of the Academie des Sciences. He did very important work in synthetic chemistry, and wrote a history of alchemy. He died in 1907.

Berthier (*ber'ty'ā*), **Louis Alexandre,** prince of Neuchatel and Wagram, and marshal of the French empire, was born at Versailles, 1753. He entered the army in 1770, and fought with LaFayette in the American revolutionary war. Berthier was Napoleon's proxy in the marriage of Maria Louisa, at Vienna, 1810. In the campaigns of 1812, 1813, and 1814 he was constantly by the emperor's side, and acted both as chief of staff and as quartermaster-general. Died, 1815.

Bertillon (*ber'tē'yŏN'*), **Alphonse,** French anthropologist, head of indentification department in the perfecture of police of the Seine; born at Paris, 1853; founded his system of mensuration, known as the *Bertillon System,* in 1880. Author: *Ethnographie Moderne, les Races Sauvages; L'Anthropometire Judiciarie a Paris en* 1889. Died, 1914.

Berwick, James Fitzjames, Duke of, was born in 1670, at Moulins, France, and served with distinction in Hungary, Ireland, and Flanders. In four subsequent campaigns he successfully defended dauphine against the attempts of the duke of Savoy. His last service in the succession war was the reduction of Barcelona. Died, 1734.

Berzelius (*bĕr-zē'li-us*), **Johan Jakob,** Swedish chemist, was born at Westerlosa, in East Gothland, Sweden, 1779; died, 1848. He was a baron and senator of the kingdom. He was the author of what is known as the dualistic (or binary) theory of the chemical constitution of compounds, and devised the form of symbolic notation now employed. His reputation was world-wide, and his accurate investigations exerted very great influence on the development of scientific chemistry.

Besant (*bez'ant* or *bes'ant*), **Annie,** president British theosophical society; author and lecturer on religious, philosophical, and scientific subjects; was born in London in 1847. Founded in 1898 the Central Hindu College at Benares; 1904, the Central Hindu Girls' School, Benares; 1907, the University of India. Author: *Re-incarnation; The Wisdom of the Upanishats,* etc. Died, 1933.

Besant (*bē-sant'*), **Sir Walter,** English novelist, was born at Portsmouth, England, 1836. He studied at King's College, London, and at Christ's College, Cambridge. His first work, *Studies in French Poetry,* appeared in 1868. Sir Walter wrote *All Sorts and Conditions of Men; All in a Garden Fair; Dorothy Foster; Children of Gibeon; Armorel of Lyonesse; The Ivory Gate; Beyond the Dreams of Avarice; The Master Craftsman,* etc. Knighted in 1895, he died in 1901.

Bessel (*bes'el*), **Friedrich Wilhelm,** German astronomer, was born at Minden, Prussia, 1784, died at Königsberg, 1846. He attracted the attention of Olbers by his computation of the orbit of the comet of 1607 from observation which had just been discovered; appointed director of the new observatory at Königsberg, where the rest of his active life was passed. His investigations into the length of the seconds-pendulum and that of standards of length were of the highest importance.

Bessemer (*bes'ĕ-mĕr*), **Sir Henry,** English engineer and inventor, born at Charlton, England, in 1813; of his many inventions the chief is the process named after him, of converting pig-iron into steel at once by blowing a blast of air through the iron while in fusion until everything extraneous is expelled, and only a definite quantity of carbon is left in combination. He was knighted in 1879, and died in 1898.

Bessey, Charles Edwin, scientist, was born on a farm in Milton, Ohio, 1845; graduate of Michigan Agricultural College, 1869; Ph. D., LL. D.; acting chancellor of University of Nebraska 1888-91 and 1899-1900. Botanical editor of *American Naturalist,* 1880-97, was appointed prof. of botany in U. of Neb. in 1884. Author: *The Essentials of Botany; Botany for High Schools and Colleges,* etc. Died, 1915.

Bethmann-Hollweg (*bāt'mān hol'vāk*), **Dr. Theobald von,** statesman, philosopher, imperial chancellor of the German empire, was born at Hohenfinnow, near Berlin, Prussia, in 1856; of Jewish lineage; educated at the University of Bonn; elected to the Reichstag in 1890; named imperial chancellor, in succession to Prince von Bulow, 1909, Died, 1921.

Beust (*boist*), **Friederick Ferdinand, Count,** German statesman, was born at Dresden in 1809. He

devoted himself to politics and was employed by his government in different services in Berlin, Paris, and London. He completely reorganized the Austrian empire, and the present constitution was his work. He was Austrian ambassador at London, 1871-78. He died in 1886.

Beveridge, Albert Jeremiah, lawyer, writer, United States senator from Indiana, 1889-1911. Born in 1862; graduated from De Pauw University, Indiana, 1885; read law in office of Senator McDonald, became managing clerk; admitted to bar and was associated with McDonald & Butler until he began practice for himself. Died, 192-.

Beza (*bē'zä*), **Theodore,** Genevese reformer, was born at Vezelay, Burgundy, 1519, and studied Greek and law at Orleans. In 1549-59 was Greek professor at Lausanne. In 1559 he was appointed a theological professor and president of the College at Geneva; on Calvin's death the care of the Genevese church fell upon his shoulddrs. In 1574 he was sent by Conde on a mission to the court of the palatinate. He died in 1605.

Bichat (*bē'shä'*), **Marie Francois Xavier,** celebrated French physician and anatomist, was born at Thoirette (Jura), 1771. He devoted himself to anatomy, physiology, and surgery; and established with several of his friends *La Société Médicale d' Emulation*, through the medium of which he gave to the world many highly original and important memoirs, notably those on the tissues of the human body. He was nominated physician of the Hôtel-Dieu in 1799, and died in 1802, his premature death being hastened in great part by his incessant labors. His three great works are the *Traité des Membranes*, the *Recherches Physiologiques sur la Vie et la Mort*, and the *Traité d' Anatomié Générale*.

Biddle, A. J. Drexel, author, explorer, and lecturer, born at Philadelphia, Pa., 1874. He was educated at Heidelberg, Germany. Revived Philadelphia *Sunday Graphic* in 1895 and became its editor; head of publishing house of Drexel Biddle, in New York, Philadelphia, and San Francisco, 1895-1904. Author: *A Dual Rôle; All Around Athletics; The Flowers of Life; The Madeira Islands; The Land of the Wine.*

Biddle, John, the founder of English Unitarianism, born in 1615, at Wooton-under-Edge, in Gloucestershire. Twice during the commonwealth, he suffered for his creed, and even the protector himself, in order to save his life, was compelled to banish him to one of the Sicily isles. Died in jail, 1662.

Biddle, Nicholas, American commander, was born at Philadelphia, Pa., 1750, and took a conspicuous part in the revolutionary war. During the action of his ship, the *Randolph*, with the British ship, *Yarmouth*, in 1778, the former was blown up and he was killed.

Biela (*bē'lä*), **Wilhelm von,** German astronomer and military officer, was born near Stolberg, Germany, 1782. He is chiefly noted for his discovery, in 1826, of the comet named for him. Died, 1856.

Bierce, Ambrose, author, journalist; born in Ohio in 1842; served as line officer during Civil War; brevetted major for distinguished services; went to California, 1866; went to London, 1872, contributing to *Fun* fables, purporting to be translations from Zambri, the Parsee, afterward published as *Cobwebs from an Empty Skull.* Author of numerous sketches, essays and studies. Died, 1914.

Bierstadt (*bēr'stät*), **Albert,** landscape painter; born near Düsseldorf, Germany, 1830. Came in infancy to New Bedford, Mass., and married; studied four years in Europe, 1853-57; made repeated visits to the West and to Europe; specialty was pictures of scenes in Rocky Mountains, Sierras, and Switzerland. Died, 1902.

Bigelow, John, author and diplomat, was born at Malden, N. Y., 1817; graduated from Union College, 1835; LL. D., Union and Racine College 1886; College of City of New York, 1839; admitted to bar; one of the editors *New York Evening Post* 1849-61; consul at Paris, France, 1861-64; secretary of state, New York, 1875-77. Author: *France and Hereditary Monarchy; Writings and Speeches of Samuel J. Tilden;* etc. Died, 1911.

Bigelow, Melville Madison, lawyer, author, dean Boston University law school; born at Eaton Rapids, Mich., 1846; graduated from University of Michigan, A. B., 1866, LL. B., Ph. D., LL. D., Northwestern University, 1896. Author: *The Law of Estoppel; Leading Cases in the Law of Torts; The Law of Bills, Notes and Cheques; The Law of Wills.* Died, 1921.

Bigelow, Poultney, author, journalist; born in New York, 1855; graduate from Yale, 1879; Columbia law school, 1882; admitted to New York bar, 1882; was correspondent for *London Times* during Spanish-American war. Author: *The German Emperor and his Neighbors; Paddles and Politics Down the Danube; White Man's Africa; Children of the Nations.*

Billings, John Shaw, surgeon, librarian; was born in Switzerland county, Indiana, 1839; graduated from Miami University, 1857; M. D., LL. D.; D. C. L., Oxford, 1889; served in army as assistant surgeon and surgeon, reaching rank of lieutenant-colonel and deputy surgeon; later medical inspector army of Potomac; professor of hygiene, University of Pennsylvania, 1893-96; 1896 he became director New York public library, Astor, Lenox and Tilden foundations; chairman board Carnegie Institution, Washington. Author: *Principles of Ventilation and Heating; National Medical Dictionary;* and many other works. Died, 1913.

"Billings, Josh." See **Shaw, Henry W.**

Binet (*bē'nē'*), **Alfred,** French psychologist; born at Nice, France, 1857. He was one of the editors of *L'Année Psychologique*, and director of the psychological laboratory at the Sorbonne, Paris. His works include many themes in physiological psychology. Died, 1911.

Binns, Charles Fergus, educator and writer on ceramics, was born at Worcester, Eng., 1857; graduated King's Scholar, 1870; studied analytical chemistry, Birmingham, England, and decorative art, Worcester, 1872-5. Entered royal porcelain works, Worcester, England, 1872; superintendent successively chemical laboratory, department of painting, London depot of sales, department of clay working and pottery; principal technical school of science and art, Trenton, N. J., 1897-1900; director New York state college of clay working and ceramics beginning 1900. President American Ceramic society, 1901. Author: *Ceramic Technology; The Story of the Potter; The Potter's Craft,* etc.

Biot (*bē'ō'* or *b'yō'*), **Jean Baptiste,** French astronomer, optician, and natural philosopher, was born at Paris, 1774. He is especially celebrated for his researches in the circular polarization of light. Died, 1862.

Birrell (*bĕr'el*), **Rt. Hon. Augustine,** chief secretary to the lord lieutenant of Ireland since 1907; M. P. North Bristol since 1906; was born near Liverpool, 1850; graduated at Cambridge, 1872; LL. D., St. Andrews; barrister, 1875; bencher Inner Temple, 1903; editor of *Boswell's Life of Johnson; Collected Essays; Miscellanies; William Hazlitt; In the Name of the Bodleian,* etc.

Bishop, Sir Henry Rowley, English composer, was born at London, 1786; early devoted himself to the composition of dramatic music, and in 1809 produced his *Circassian Bride*, which was a great success. In 1840 his last dramatic piece, *The Fortunate Isles*, was produced at Covent Garden in honor of the queen's wedding; in 1842 he was knighted; and in 1848 became professor of music at Oxford. Died, 1855.

Bismarck-Schonhausen (*bis'märk-shen'hou-zen*), **Otto Eduard Leopold, Prince,** born of a noble family, at Shonhausen, April 1, 1815; studied at Gottingen, Berlin, and Greifswald; entered the army and became lieutenant in the Landwehr. After a brief interval devoted to his estates and to the office of inspector of dikes, he became in 1846 a member of the provincial diet of Saxony, and in 1847 of the Prussian diet.

In 1851 he was appointed representative of Prussia in the diet of the German federation at Frankfort, where with brief interruptions he remained till 1859, exhibiting the highest ability in his efforts to checkmate Austria and place Prussia at the head of the German states. From 1859-62 he was ambassador at St. Petersburg, and in the latter year, after an embassy to Paris of five months' duration, became first minister of the Prussian crown.

The lower house persistently refusing to pass the bill for the reorganization of the army, Bismarck at once dissolved it (October, 1862), closing it for four successive sessions until the work of reorganization was complete. When popular feeling had reached its most strained point the Schleswig-Holstein question acted as a diversion, and Bismarck—by the skillful manner in which he added the duchies to Prussian territory, checkmated Austria, and excluded her from the new German confederation, in which Prussia held the first place—became the most popular man in Germany.

As chancellor and president of the federal council he secured the neutralization of Luxembourg in place of its cession by Holland to France; and though in 1868 he withdrew for a few months into private life, he resumed office before the close of the year. A struggle between Germany and France appearing to be sooner or later inevitable, Bismarck, having made full preparations, brought matters to a head on the question of the Hohenzollern candidature for the Spanish throne. Having carried the war to a successful issue, he became chancellor and prince of the new German empire. Subsequently, in 1872, he alienated the Roman Catholic party by promoting adverse legal measures and expelling the Jesuits. He then resigned his presidency for a year, though still continuing to advise the emperor. Towards the close of 1873 he returned to power retaining his position until, in March, 1890, he disagreed with the emperor and tendered his resignation. In 1878 he presided at the Berlin Congress, in 1880 at the Berlin Conference, and in 1884 at the Congo Conference. Two attempts were made to assassinate him—at Berlin in 1866, and at Kissingen in 1874. He died July 31, 1898.

References.—*A Historical Biography*, by G. Lowe; *Our Chancellor*, by Dr. M. Busch; *A Political Biography*, by L. Bamberger; *Bismarck's Love Letters*, and *Letters to his Wife and Others*, both of which have been translated; *Bismarck's Table Talk*, edited by C. Lowe; *Political Life, Labors, and Speeches*, by E. Hahn; *Bismarck: the Man and the Statesman*, translation under the supervision of A. J. Butler; Sybel's *The Founding of the German Empire;* and Munroe-Smith's *Bismarck and German Unity.*

Bispham (*bis'pam*), **David S.,** operatic baritone, was born at Philadelphia, Pa., 1857; educated at Haverford College, Pa.; made début as the Duc de Longueville in *The Basoche*, given by the Royal English Opera, 1891; then with the Royal Company, New York, singing principal rôles German, French, and Italian. Died, 1921.

Bispham, George Tucker, lawyer, author; born at Philadelphia, 1838; graduate of University of Pennsylvania, 1858; law department, same, 1862; admitted to bar, 1861; later admitted to bar of United States supreme court. Author: *Principles of Equity*, and other books on law. Died, 1906.

Bissell, George Edwin, sculptor; born at New Preston, Conn., 1839; educated at Northville, Conn.; academy; acting assistant paymaster, United States navy, 1863-65. In marble business with father and brother at Poughkeepsie, New York, 1866; began career as sculptor there; studied art, Paris, Rome, and Florence, 1875-76; had studio in Paris at different times, for about six years, between 1884-96. Died, 1920.

Bitter, Karl Theodore Francis, sculptor, was born at Vienna, Austria, 1867; educated in gymnasium there; came to United States, 1889; won prize in competition for Astor memorial gates, Trinity church, New York. Director of sculpture at the Pan-American exposition, Buffalo, 1901; gold medal Pan-American exposition, 1901. Died, 1915.

Bizet (*bē'ze*), **Georges,** French composer, was born at Paris, 1838, died in 1875; studied at the conservatoire under Halevy, and in Italy. His best works are *Les Pecheurs de Perles*, *La Jolie Fille de Perth*, *L'Artésienne Djamileh*, the overture *Patrie*, and *Carmen.*

Bjornson (*by ĕrn'sun*), **Bjornstjerne,** Norwegian poet, novelist, dramatist, was born in Osterdalen in 1832. In early life a historical drama of his, called *Valborg*, was accepted by the royal theatre, but its author withdrew the piece. In 1856 the international students' reunion at Upsala stimulated him again to an effort to produce a national poetry, free from foreign influences. He began with *Synnöve Solbakken*, a story of peasant life, which was followed by *Arne* and many other pieces. *Marie Stuart* and *Sigurd Slembe* are both well-known plays, and he has written, besides his dramas, a series of folk plays, an epic, and much beautiful lyric poetry. Died, 1910.

Black, John Charles, lawyer, was born at Lexington, Miss., 1839; educated in common schools, Danville, Ill., and at Wabash College, Crawfordsville, Ind.; M.A.; LL. D.; private to colonel and brevet brigadier-general United States volunteers; commissioner pensions, United States, 1885-89; member of congress, 1893-95; United States attorney, 1895-99; commander-in-chief, G. A. R. 1903-04. Was president of United States civil service commission. Died, 1915.

Black, Joseph, eminent British chemist, was born in 1728 at Bordeaux, France. Between 1759 and 1763 he evolved the theory of *latent heat* on which his scientific fame chiefly rests, and made other important discoveries. Died, 1799.

Blackie, John Stuart, Scotch philosopher, was born at Glasgow in 1809; studied to be a lawyer, but devoted himself largely to literary pursuits; was a zealous educational reformer; took an active interest in everything affecting the welfare and honor of Scotland; spoke much and wrote much in his day on manifold subjects. He died in 1895.

Blackmar, Frank Wilson, economist, sociologist, was born at West Springfield, Pa., 1854; graduated University of the Pacific, 1881; graduate student and fellow, Johns Hopkins, 1886-9; Ph. D., 1889. Professor history and sociology, 1889-99, of sociology and economics, 1899, dean of graduate school 1896-1922, University of Kansas. Author: *Federal and State Aid to Higher Education in the United States; Spanish Colonization; Spanish Institutions in the Southwest; The Study of History and Sociology; The Story of Human Progress; Economics; The Elements of Sociology; Economics for High Schools,* etc.

Blackmore, Richard Doddridge, British novelist, was born at Longworth, Berkshire, and educated at Exeter College, Oxford. He graduated in 1847, afterward studied law, was admitted to the bar at the Middle Temple in 1852, and practiced for a time as a conveyancer. *Poems by Melanter* was the first of several volumes of verse;

his first distinct success was *Lorna Doone, a Romance of Exmoor*, which reached many editions. He died in 1900.

Blackstone, Sir William, celebrated English jurist, was born at London, in 1723. He was a judge, a member of parliament, and author of the well-known *Commentaries on the Laws of Engand*. Subsequently, having married, he vacated his fellowship and was appointed principal of New-In hall. That office, with his Vinerian professorship, he resigned in 1766. In 1770 he became one of the judges of the common pleas. Died, 1780.

Blaine, James Gillespie, American statesman, was born at Brownsville, Pa., 1830. At seventeen he entered Washington Collega, Pa. In 1854 he went to Maine to engage in journalism. In 1862, he was elected to congress and remained there eighteen years. He was balloted on for the presidency at the convention of 1876, and received 351 votes out of a total of 754. He was then appointed United States senator to fill an unexpired term, and four years later was again a candidate for the presidency. President Garfield appointed him secretary of state, which office he held until after the death of the president. In 1889 he again became secretary of state, in the cabinet of President Harrison. He died in 1893.

Blake, Robert, English admiral, who, more than any other, contributed to render England mistress of the seas, was born at Bridgewater, in Somersetshire, 1599. In 1649, in conjunction with two other officers of equal rank, he was appointed "general of the sea." In 1652 he was made sole admiral of the fleet for nine months, and during that year he fought and won four engagements with Dutch fleets under Tromp, Ruyter, and DeWitt. In 1654 Blake was appointed by Cromwell to command an English fleet in The Mediterranean. In 1657 he defeated the Spaniards at Santa Cruz. Died, 1657.

Blake, William, English artist and poet, was born at London, 1757. After studying art for some years, he began to paint in water colors and to engrave illustrations for magazines. At the same time he wrote poetry which showed great power and beauty. *Poetical Sketches, Songs of Experience*, and *Songs of Innocence*, are among his best works. He died at London in 1827.

Blanc (*blăN*), **Jean Joseph Louis,** French historian and socialist writer, was born at Madrid, 1813, started as a journalist. Member of the chamber of deputies in 1871. Blanc wrote an elaborate and well-written history of the French revolution. Died at Cannes, 1882.

Blanche of Castile, queen of Louis VIII., of France and daughter of Alphonso IX., king of Castile, was born about 1186. After carrying on the government during the absence of her son, Louis IX., in the holy land, she died in 1252.

Blanqui (*blăN'kē'*), **Louis Auguste,** French socialist was born at Puget-Theniers, France, 1805, and made himself conspicuous by his passionate advocacy of the most extreme political opinions. He died in 1881, having spent thirty-seven years of his life in prison.

Blashfield, Edwin Howland, artist. Born in New York, 1848; educated in Boston latin school; studied at Paris, 1867, under Léon Bonnat, also, receiving advice from Gérome and Chapu; exhibited at Paris salon, yearly, 1874-79, 1881, 1891, 1892; also several years at Royal Academy, London; returned to United States in 1881; exhibited genre pictures, and portraits. Died, 1936.

Blauvelt (*blo'velt'*), **Lillian Evans,** prima donna soprano; was born at Brooklyn, N. Y., 1873; educated in public schools; studied under M. Jacques Bouhy in New York and Paris. Sang in concerts in France and Belgium, later in Moscow, with philharmonic society; made début in opera at Théâtre de la Monnaie, Brussels, in *Mirelle;* received decoration of order of St. Cecilia at Rome, 1901 (only woman ever so honored).

Blavatsky (*blă-văts'ki*), **Madame Helena Petrovna** Russia theosophist, was born in Russi in 1831. She was of noble descent. She visited Thibet, where she claims she received the theosophical doctrines connected with her name. From 1873 to 1879 she was a resident of New York, became a naturalized American citizen, and founded the theosophical society. She died, 1891.

Blennerhassett (*blen'ĕr-has'et*), **Harman,** noted for his connection with Aaron Burr's conspiracy, was born in England about 1764; of Irish descent. When Burr was arrested and brought to trial, Blennerhassett was also arrested, but on the acquittal of Burr he was released. He died on the island of Guernsey in 1831.

Bliss, Cornelius Newton, merchant, politician, was born at Fall River, Mass., 1833. Was member Pan-American conference; was president protective tariff league; chairman New York republican state committee, 1887-88; declined to be a candidate for governor of New York, 1885 and 1891; secretary of the interior, in cabinet of President McKinley, 1897-99. Died, 1911.

Bliss, Gen. Tasker Howard (1853-1930), graduate U. S. Military Academy and U. S. Artillery School, has held many military commissions. Served in Philippines, 1905-9. Appointed Chief of Staff, and commissioned Major General, 1915. Rank of General, 1917. Member of Allied Conference and Supreme War Council, 1917.

Bloomfield, Maurice, philologist, professor Sanskrit and comparative philology Johns Hopkins; was born at Bielitz, Austria, 1855; S. C.; A. M.; Ph. D.; LL. D., Princeton, 1896. Edited for first time from original Sanskrit MSS. the *Sutra of Kaucika;* translated the *Atharva-Veda* in the sacred books of the East (edited by Max Müller); author of *The Atharva-Veda* and the *Gopatha Brahmana*. Died, 1928.

Bloomfield, Robert, English pastoral poet, was born in 1766, at Honington, Suffolk, where his father was a poor tailor. His chief works are *The Farmer's Boy* (composed in a London garret), *Rural Tales*, and *Wild Flowers*. Died, 1823.

Blouet (*blo͞o-e'*), **Paul,** better known as "Max O'Rell," French author, writer, and lecturer, was born at Brittany, France, in 1848; was educated in Paris; was French master at St. Paul's school, 1876-84, and after 1887 lectured and acted in the United Kingdom, United States, and colonies. Author of *John Bull and His Island; A Frenchman in America*. Died, 1903.

Blowitz (*blō'rits*), **Henri George Adolphe Opperde,** journalist, was born of Jewish ancestry at Blowitz, in Bohemia, 1825; during 1849-60 was a German teacher in various French schools. He was made officer of the legion of honor in 1878. Died, 1903.

Blucher (*blu'kĕr*), **Gebhard Lebrecht von,** Prussian field marshal and prince of Wahlstadt, was born at Rostock, Germany, 1742; first entered the Swedish, but soon passed to the Prussian army He went through the Polish campaign of 1772. In the Waterloo campaign he commanded the Prussian army in Belgium, and was severely defeated by Napoleon at Ligny. However, by out-manœuvring Grouchy, he was able to arrive at Waterloo in time to decide the victory for the allies and pursue the routed French army. He then retired from active service and died, 1819.

Blumenbach (*blo͞o'men-băk*), **Johann Friedrich,** German naturalist and ethnologist, was born at Gotha in 1752; became professor at Göttingen, an office he filled for nearly sixty years. His works gave a great impulse to scientific research in all directions, the chief of which were *Institutiones Physiologicae; Manual of Natural History; Manual of Comparative Anatomy and Physiology*. Died, 1840.

Blumenthal (*blo͞o'men-tăl*), **Leonhardt, Count von,** Prussian general, was born in 1810, died in 1900. He was chief of the general staff of the Prussian army in 1849; was chief of staff in the Franco-Prussian war; and became general field marshal in 1888.

Bluntschli (*blo͞ontsh'lē*), **Johann Kaspar,** jurist, economist, was born at Zurich in 1808; in 1833 became professor in its newly-founded university; in 1848 he went to Munich as professor of civil and international law; in 1861 removed to Heidelberg. He died at Karlsruhe in 1881.

Blythe, Samuel George, writer, journalist; was born at Geneseo, N. Y., 1868; educated at Geneseo state normal school; managing-editor of *Buffalo Express*, 1893-96; editor-in-chief of *Buffalo Enquirer* and *Courier*, 1897-98; chief Washington correspondent New York *World*, 1900-07; chairman standing committee of Washington correspondents, 1906-07. On staff of *Saturday Evening Post* since 1907.

Boabdil (*bō'ăb-dēl'*), properly Abu-Abdallah, the last Moorish king of Granada, dethroned his father, Abu-el-Hasan in 1481, and two years later was defeated, and taken prisoner by the Castilians near Lucena. The spot from which he looked his last on Granada, after giving up to Ferdinand the keys of the city, still bears the name of *el ultimo sospiro del Moro*, "the last sigh of the Moor." He died in 1536.

Bobadilla (*bō-vă-dēl'yă*), **Francisco,** was sent in 500 by Ferdinand and Isabella to investigate the work of Columbus in Hispaniola. He put Columbus in chains and sent him to Spain. Bobadilla was drowned on the return voyage in 1502.

Boccaccio (*bō-kă'chō*), **Giovanni,** Italian raconteur, the author of the *Decameron*, was born probably in Paris in 1313. He styled himself *Da Certaldo*, from the Italian village from which his family sprang. In 1350 he formed an intimate friendship with Petrarch. It is said that he was the first Italian who ever procured from Greece a copy of the *Iliad* and the *Odyssey*. While in Naples, about 1334, he fell passionately in love with a young woman, called by him Fiammetta, who was generally supposed to be a daughter of King Robert. To gratify her he wrote *Il Filocopo* a prose-romance, and afterward, *La Teseide*, the first attempt at romantic epic poetry, of which Boccaccio may be considered the inventor. He composed his famous *Decameron* in Naples, to please Joanna, the daughter and successor of King Robert. Petrarch's death deeply affected him, and he died the year after, 1375.

Boecklin (*bûk'lĭn*), **Arnold,** Swiss painter of romantic subjects, was born at Basel, Switzerland, 1827. His principal pictures are the *Sea Idyl; A Nymph and Fauns*, and several landscapes. He was seen at his best at Munich. Died at Fiesole, Italy, 1901.

Bode (*bō'dĕ*), **Johann Elert,** German astronomer, was born at Hamburg, 1747; at the age of eighteen he calculated an eclipse of the sun. In 1776 he commenced the *Astronomical Year Book*, which is still continued. But his fame rests chiefly on the *Uranographia*, published in 1801, in which he gives observations on 17,240 stars, or 12,000 more than can be found in any previous charts. He died at Berlin in 1826.

Bodenstedt (*bō'den-shtet*), **Friedrich Martin von,** German poet, author, journalist, was born at Peine, Hanover, 1819, and died at Wiesbaden 1892, having lived at Moscow, traveled in the Crimea, Turkey, Greece, and Asia Minor, edited the *Weser Zeitung*, filled the chairs of Slav languages and Old English at Munich, and was director of the Meiningen court theater.

Bodin (*bō'dăN'*), **Jean,** French publicist and economist, was born at Angers in 1530, and died of the plague at Laon, 1596. According to Bodin's greatest work, *Les Six Livres de la Republique*, property and the family form the basis of society and a limited monarchy is the best possible form of government.

Bodley, Sir Thomas, the restorer of the library originally established at Oxford by Humphrey, duke of Gloucester, now called the Bodleian library, was born in 1545. On the accession of Elizabeth he completed his studies at Oxford, took the degree of M. A., and was afterward elected a proctor, devoting himself to the extension of the library. Died, 1613.

Boehm (*bĕm*), **Sir Joseph Edgar,** Hungarian-English sculptor, was born at Vienna, 1834; educated 1848-51 in England, and finally settled there in 1862. In 1867 he executed a colossal statue of the queen; of his seated statue of Thomas Carlyle, enthusiastically praised by Ruskin, a replica was erected at Chelsea. Boehm became an A. R. A. in 1878, sculptor-in-ordinary to the queen in 1881, an R. A. in 1882, and a baronet in 1889. Died, 1890.

Boehm von Bawerk (*bĕm fŏn bă'verk*), **Eugen,** Austrian political economist, was born at Brünn, Austria, 1851. Educated at the Universities in Vienna, Heidelberg, Leipzig, and Jena. In 1884 was appointed a professor at Innspruck. Died, 1914.

Boehme, Jakob, German theosophist and mystic, was born of poor parents at Altseidenberg near Görlitz in upper Lusatia, in 1575, and in boyhood herded cattle. About 1612 he published *Aurora*, contining revelations and meditations upon God, man, and nature, and showing a remarkable knowledge of scripture and of the writings of alchemists. He died at Görlitz in 1624.

Boerhaave, (Dutch, *bo͞or'hä-ve*), (Eng., *bōr'hāv*), **Hermann,** the most celebrated physician of the eighteenth century, was born near Leyden, Holland, 1668. In 1689 he was made doctor of philosophy, and in 1690 began the study of medicine, reading carefully Hippocrates among the ancients, and Sydenham among the moderns. Peter the Great of Russia visited him at Leyden, and it is even said that a Chinese mandarin sent him a letter, addressed "Herr Boerhave, Celebrated Physician, Europe." His fame rests principally on his *Institutiones Medicae*, and *Aphorismi de Cognoscendis et Curandis Morbis*. Died at Leyden, 1738.

Boethius (*bō-ē'thi-us*), **Anicius Manlius Torquatus Severinus,** Roman philosopher, born about 475, was profoundly learned, and filled the highest offices under the government of Theodoric the Goth. Falsely accused of a treasonable correspondence with the court of Constantinople, he was executed in 524, after a long and rigorous imprisonment. His *Consolations of Philosophy*, written in prison, abounds in the loftiest sentiments, clothed in fascinating language.

Bogardus, James, American inventor, was born in Catskill, N. Y., 1800. Among his inventions are an 8-day clock, a dry gas meter, and an engraving machine for engine turning. His machine for making postage stamps received the prize offered by the British government in 1839. He died in 1874.

Boileau-Despreaux (*bwă'lō'dā'prā'ō'*), **Nicholas** French poet and critic, was born at Paris in 1636. He was a friend of Molière, LaFontaine, and Racine, and was pensioned by the king. He did much as a critic to purify and refine the French language, had a great influence on French literature. He was a member of the French Academy. He died at Paris in 1711.

Boito (*bō'ē-tō*), **Arrigo,** Italian composer and poet, was born in 1842 at Padua, and studied at the Milan conservatory. His first important work was the Wagnerian opera *Mefistofele*, which, at first an acknowledged failure, has since steadily grown in popularity. He wrote his own libretti and published several songs. Died, 1918.

Bok, Edward William (1863-1930), born in Holland. Came to United States at early age; educated in Brooklyn public schools. Editor, *The Ladies Home Journal* 1889-1919. Degree of LL.D. from Pope Pius, 1907. Built the Singing Tower at Lake Wales, Florida, as an expression of his thanks to the American Flag.

Boker (*bō'kĕr*), **George Henry,** American poet and dramatist, was born at Philadelphia in 1823, and died there in 1890. He wrote several plays, which were successful on the stage, among them

Calaynos, a tragedy, and *Francesca da Rimini*. In 1882 published a volume of verse, *The Book of the Dead*.

Boleyn (*bōōl'in*), **Anne,** queen of England and daughter of Sir Thomas Boleyn, subsequently earl of Wiltshire and Ormond; was born about 1507 and was brought up at the French court. She became maid of honor to Queen Catharine of England. King Henry VIII. was attracted by her beauty, had his marriage with Catharine declared void, and was married privately to Anne. She soon lost his favor, and on a charge of unfaithfulness was tried, condemned, and beheaded, 1536. She was the mother of Queen Elizabeth.

Bolingbroke (*bol'in-brook*), **Henry St. John Viscount,** English statesman, was born in 1678. Having studied at Oxford, he entered parliament in 1701, and in 1704 became secretary of war. He afterward became secretary of state for foreign affairs, and negotiated the treaty of Utrecht. On the accession of George I. he fled the country, and became secretary of state to the first pretender. He was attainted and his estate seized; but in 1723 he was permitted to return. His estates were restored, but he was not allowed to sit in parliament. He again withdrew to France in 1735, but returned to England on the death of his father, and died in 1751.

Bolivar (*bol'i-vär*), **Simon,** South American statesman, founder and first president of the republic of Columbia, known as "the liberator of South America." Born in Venezuela, 1783, he was educated in Madrid. When the revolt against the Spanish yoke broke out in Venezuela, he joined it. In 1822 Bolivar went to help the Peruvians in their struggle for liberty, and was given the chief command. After a long campaign he won the great battle of Ayacucho. Upper Peru was constituted a separate republic, with the title of Bolivia. Died, 1830.

Bonaparte, Charles Joseph, lawyer, ex-secretary of the navy, and ex-attorney general, United States, was born in Baltimore, 1851; graduate of Harvard in 1871; Harvard law school in 1874: chairman council of national civil service reform league; president of national municipal league; overseer, Harvard, 1891-1903; awarded Lætare medal by University of Notre Dame, 1903; was secretary of the navy, 1905-06; attorney general of United States, 1906-09. Died, 1921.

Bonaparte, Charles Lucien Jules Laurent, prince of Canino and Musignano, Lucien's eldest son, by his second marriage, was born at Paris in 1803. He acquired a considerable reputation as a naturalist, and especially as a writer on ornithology. Died, 1857.

Bonaparte, Jerome, youngest brother of Napoleon I., was born at Ajaccio in 1784. He served as naval lieutenant in the expedition to Hayti. He was employed by Napoleon in the liberation of Genoese prisoners who had been captured by the dey of Algiers. In the war with Prussia he commanded, in concert with General Vandamme, the 10th corps in Silesia, and in 1807 was made king of Westphalia. He was appointed governor of the Invalides in 1848, and in 1850 was made a French marshal. In 1852 provision was made by the French chambers, in default of issue of Napoleon III., by which the right of succession was confirmed to Jerome and his heirs. Died, 1860.

Bonaparte, Joseph, eldest brother of Napoleon I., was born at Corte, in Corsica, 1768, and was educated at Autun. In 1800, having proved his ability in several offices of state, he was chosen by the first consul as plenipotentiary to conclude a treaty of friendship with the United States. After the coronation of Napoleon, Joseph was made commander-in-chief of the army of Naples; in 1805, ruler of the Two Sicilies; and in 1806, king of Naples. In 1808 he was summarily transferred by his brother to the throne of Spain, and Murat took his place as king of Naples. After the battle of Waterloo he accompanied Napoleon to Rochfort, whence they intended to sail separately for the United States. He died in Florence in 1844.

Bonaparte, Josephine (wife of Napoleon I.). See **Josephine.**

Bonaparte, Louis, brother of Napoleon I., was born in 1778. After rising from honor to honor he was nominally made king of Holland, being little more than a governor subordinate to his brother. After the restoration of the house of Orange, Louis considered himself free from all responsibility, and returned to Paris, 1814. On the escape of his son, Louis Napoleon, from the prison of Ham, Louis was removed as an invalid to Livorno. Died, 1846.

Bonaparte, Lucien, brother of Napoleon, and prince of Vanino, was born in 1775; received his education in the College of Autun. Shortly before the 18th Brumaire he was elected president of the council of five hundred, and was the hero of that day. His opposition to Napoleon's progress toward monarchy involved the brothers in many quarrels. In 1810 he sailed for America, but fell into the hands of the English, was taken to England, and after a debate in parliament was declared a prisoner, but treated with distinction. After his brother's downfall he returned to Rome. Died, 1840.

Bonaparte, Napoleon. See **Napoleon I.**

Bonaparte Napoleon Eugene Louis Jean Joseph, son of Napoleon III. and of the empress Eugenie, born in 1856; was educated under his father's care at Paris and Versailles. On the abdication of Napoleon III., and on the declaration of a republic in France, the youth and his mother, the empress Eugenie, took refuge at Chiselhurst, England. When the Zulu war in South Africa commenced the young man volunteered his services to the British government, and was killed in 1879.

Bonaparte, Napoleon Joseph Charles Paul, nicknamed Plon-Plon, son of Jerome Bonaparte and Sophia Dorthea, was born in 1822; married, 1859, Princess Clothilde of Sardinia. By virtue of the decree of the French senate, 1852, Napoleon Joseph became in 1879, on the death of Prince Napoleon, son of the emperor, the representative of the Bonapartist claim to the French throne. Died, 1891.

Bonar (*bon'ar*), **Horatius,** hymn-writer, was born at Edinburgh in 1808; from the high school passed to the university, and became minister at Kelso Free Church, 1837-66, and then at Edinburgh. He edited the *Christian Treasury* and other magazines, and published some forty religious works, but is best known as the author of *Hymns of Faith and Hope*. He died in 1889.

Bonaventura (*bō'nā-ven-t ōō'rā*), **Saint,** cardinal, surnamed the "seraphic doctor," his real name John Fidenza, was born in Tuscany in 1221; entered Franciscan order; was a mystic in theology; ascribed knowledge of the truth to union with God, such as existed between man and his Maker prior to the fall. Died, 1274.

Bond, Carrie Jacobs, American song writer, was born in Wisconsin, 1862. She began publishing groups of songs in 1903 and soon won great popularity through the simplicity and humanness of her compositions. She is probably best known by her song "A Perfect Day."

Bond, Rt. Hon. Sir Robert, premier and colonial secretary of Newfoundland 1900-1909, was born in 1857; was educated for the bar but entered politics before being admitted; entered the legislature, 1882; appointed a delegate to British government by the government of Newfoundland on the French treaties question, 1890; appointed chairman of the deputation sent by the government to the "Ottawa conference," 1895; special delegate to conference on French treaties in Downing street, 1901; assisted in drafting regulations for carrying out Anglo-French convention, 1904; honorary LL.D., Edinburgh. Died, 1927.

Bonet-Maury (*bō'nā' mō'rē'*), **Amy-Gaston,** theologian, author, educator, vice-dean of protestant school of divinity of Paris; was born 1842; educated Lycee Henry IV., Paris; Schools of Divinity, Geneva and Strassburg; he served as protestant minister at Beauvais, where he erected the first church, and at St. Denis; lecturer in church history at protestant school of divinity of Paris, 1879. French delegate at congress of health and education, London, 1884; the parliament of religions, Chicago, 1893; the congress of religious sciences at Stockholm, 1897; corresponding member of the Institut de France, 1908. Died, 1919.

Bonheur (*bō'n ēr'*), **Marie Rosalie** (more commonly called Rosa), French artist, was born in Bordeaux in 1822. Her first master was her own father. In 1841 she contributed for the first time two small pictures to the French exhibition, *Two Rabbits*, and *Goats and Sheep*. In 1853 her famous *Horse Fair* was the principal attraction of the Paris exhibition. From 1849 she directed the gratuitous school of design for young girls. During the siege of Paris, 1870-71, her studio and residence at Fontainebleau were spared and respected by special order of the crown prince of Prussia. Died, 1899.

Boniface (*bon'i-fās*), **Saint,** was born at Credition, in Devonshire, 680. He was one of the most noted saints of the Roman Catholic church, generally styled "the apostle of Germany." For many years he engaged with much success in preaching and establishing churches in Germany, but was finally killed in 755 by a mob of armed pagans at Dokkum, in West Friesland. He was appointed archbishop of Mainz by Pope Gregory II.

Boniface VIII., previously Benedetto Gaetano, was born about 1228, and elected pope in 1294. He failed in his attempts to assert a feudal superiority over Sicily, and to exercise his papal authority in the disputes between France and England, and died, 1303.

Bonnat (*bō'nā'*), **Leon Joseph Florentin,** French painter, was born at Bayonne, 1833, and studied at Madrid, in Paris, and in Italy. He became famous for religious pictures, and latterly is best known as a great portrait painter. Died, 1922.

Bonner, Edmund, English prelate, bishop of London, was born about 1500. The reputation he gained at Oxford by his knowledge of the canon law recommended him to the notice of Wolsey, who promoted him to several offices in the church. In 1540 he was made bishop of London. After the accession of Elizabeth he refused to take the oath of supremacy. He was accordingly deposed from his bishopric and shut up in the Marshalsea, where he died in 1569.

Bonnet (*bō'nē'*), **Charles,** French naturalist and philosopher, was born at Geneva, 1720. He published several works on psychology. His *Considérations sur les Corps Organisés* is devoted to an examination of the theories of generation. He was for some years a member of the council of his native city. Died, 1793.

Bonnivard, de (*dē bō'nē'vär'*), **Francois,** French historian and hero of Byron's *Prisoner of Chillon;* was born near Geneva, 1496; educated at Turin, and became piror of St. Victor, near Geneva, 1510, at the age of fourteen years. Having fallen into the hands of robbers, who delivered him into the power of the duke of Savoy, he was imprisoned in 1530 in the castle of Chillon. The Genevese, aided by the Bernese, effected his liberation in 1536. He died about 1570.

Boone, Daniel, American hunter and pioneer, was born in Bucks county, Penn., 1735. The boy had but little education, but he knew the woods and Indian life. When thirty-four years old he went with five others into the wilds of Kentucky. He built a fort on the Kentucky river which he named Boonesborough. The Indians attacked the fort several times, but were driven off. He continued to live there until 1792, then went to Missouri, where he died in 1820.

Booth, Ballington, general-in-chief and president Volunteers of America, was born at Brighouse, England, 1859; son of Rev. William and Catherine Ballington. Commander Salvation Army, Australia, 1885-87; United States, 1887-96; founded, 1896, the Volunteers of America. Ordained presbyter, Chicago, 1896. Writer, public speaker, philanthropist.

Booth, Edwin Thomas, American actor, son of Junius Brutus Booth, was born in Baltimore, Md., 1833, appeared first on the stage in 1849, in *Richard III.* He speedily rose in his profession, visited England and the continent of Europe in 1861, 1881, and 1883, and met with enthusiastic receptions. He opened Booth's theater in New York, 1869, and did more than any other individual to keep the tone of dramatic art up to a moral and literary standard. Died, 1893.

Booth, Junius Brutus, actor, was born in England in 1796; first appeared on the stage in 1813, in the *Honeymoon*, and within four years became famous in London as *Richard III.* His American career was a triumph. He died in 1852.

Booth, Maud Ballington (née Charlesworth) wife of Ballington Booth, general-in-chief, Volunteers of America. Author: *After Prison—What? The Curse of Septic Soul Treatment; Twilight Fairy Tales.*

Booth-Tucker, Frederic St. George de Lautour, commander of Salvation Army in the United States; was born at Monghyr, Bengal, India, 1853; inaugurated Salvation Army work in India, 1882; had charge there until 1891; secretary for international work, Salvation Army, London, 1891-96; March, 1896-1904, in charge of United States; married in 1888 Emma Moss, daughter of General William Booth, of Salvation Army. Adopted name of Booth-Tucker. Author: *The Life of Catherine Booth; Life of General William Booth* and *In Darkest India*. Died, 1929.

Booth, William, general and commander-in-chief of Salvation Army; was born in Nottingham, England, 1829; became a minister of the Methodist New Connection in 1852; in 1865 organized the Christian mission in the densely populated east end of London. Out of this grew the Salvation Army, whose ramifications spread throughout the world. He is the author of *Orders and Regulations for Officers and Soldiers; Letters to My Soldiers.* Publications: newspapers entitled *War Cry, Young Soldier, Social Gazette*, etc. Died, 1912.

Bopp (*bop*) **Franz,** celebrated German philologist and Sanskrit scholar, was born at Mainz, 1791; was professor of oriental literature and general philology at Berlin. He was in 1842 made a knight of the newly erected French *Ordre du Mérite*, and in 1857 foreign associate of the French institute. Died, 1867.

Borah, William Edgar, lawyer, United States senator, was born in 1865, in Wayne county, Ill.; educated at the Southern Illinois academy, and at the Kansas State University, Lawrence; was admitted to practice law in 1890 at Lyons, Kan.; and devoted his entire time since then exclusively to practice of the law, until elected to the United States senate in 1907.

Borden, Sir Frederick William, Canadian National Statesman; M. P.; was born in 1847; King's College, Windsor, Nova Scotia, B.A.; Harvard, M.D.; appointed assistant surgeon 68th battalion King's county militia, 1869; surgeon lieutenant-colonel and hon. colonel of Canadian army medical corps; first elected to house of commons, 1874. Died, 1917.

Borden, Robert Laird, lawyer, premier, was born at Grand Pré, Nova Scotia, 1854; educated at Acacia Villa Academy, Horton. Began the study of law, 1874; admitted to bar, 1878; Q. C., 1891; president of Nova Scotia barristers' society, 1893-1904; hon. D. C. L., LL. D., 1905; member for the city and county of Halifax, 1896-1900; in 1901, upon the resignation of Sir Charles Tupper, elected leader of conservative party in the Dominion house of commons; premier, 1911-20.

Borden, William Cline, surgeon, educator; was born at Watertown, N. Y., 1858; graduated medical department Columbian University, Washington, 1883; appointed assistant surgeon, U. S. A. 1883; major and brigade surgeon, 1898: during Spanish-

American war commanded United States army general hospital, Key West, Fla.; dean medical department, George Washington University. Author: *Use of the Röntgen Ray by the Medical Department of the United States in the War with Spain.*

Borgia (*bôr'jä*), **Caesare,** Italian master of statecraft of great but evil fame, was born in 1476, the fourth son of Pope Alexander VI., by Rosa Vanozza. He compassed the death of his brother, Giovanni, who was the duke of Candia, in order to gain complete ascendency in the papal government; and in 1498, having been sent as nuncio to Louis XII. of France, he was created duke of Valentinois and married the daughter of Jean d'Albret, king of Navarre. He was sent in 1504 a prisoner to Spain by Pope Julius II., but escaped and joined the king of Navarre's army against Castile. In this campaign he was killed in 1507.

Borgia, Lucrezia, sister of the preceding, and like him the possessor of an infamous reputation, was born in 1480. Her father compelled her twice to marriage and divorce before she became the wife of the duke of Bisceglia. After her third husband had been murdered by Cæsare Borgia, she married Alfonso of Este, and passed her life in the court of Ferrara, cultivating literature and art. Died, 1523.

Borglum, John Gutzon de la Mothe ("Gutzon, Borglum"), sculptor, painter, born in Idaho, 1867; studied art in San Francisco; went to Paris, 1890. Exhibited as painter and sculptor in Paris salon; settled in New York since 1902. Exhibited in London and Paris, 1896-1901.

Borglum, Solon Hannibal, sculptor, was born at Ogden, Utah, 1868; pupil in Cincinnati art school and under Louis Rebisso and Fremiet, Paris; honorable mention, Paris salon, 1899; silver medal, Exposition Universelle, Paris, 1900; silver medal, Buffalo exposition, 1901; gold medal, St. Louis exposition, 1904; member national sculpture society. Died, 1922.

Borodin, Alexander Porfyrievich, composer, was born in St. Petersburg, 1834. He was educated for the medical profession and was all his life intensely active in this field, writing several books on chemistry, lecturing, and promoting schools of medicine for women. But he is most known as a composer of music. His symphony *In the Steppes* (1880) and his *Prince Igor* (completed after his death by Rimsky-Korsakov and Glazounov) are probably his best works. He died in 1887.

Borromeo (*bôr'rō-me'ō*), **Carlo, Count,** cardinal and archbishop of the Roman Catholic church, who exercised great influence during the pontificate of Pope Pius IV., was born at the castle of Arona, on the Lago Maggiore, northern Italy, 1538. Many supposed miracles at his tomb led to his being canonized thirty years after his death. Several memoirs of him have been published. Died, 1584.

Borrow, George, English author and traveler, was born in Norfolk in 1803. He made the gypsies one of the principal subjects of his study. His first important work was *The Zincali, or An Account of the Gypsies in Spain.* Died, 1881.

Bosanquet (*bō'sǎN'kā'*), **Bernard,** educator, formerly fellow of University College, Oxford; M.A.; LL.D.; born at Alnwick, England, 1848; Balliol College, Oxford, 1871-81; professor of moral philosophy, St. Andrews, 1903-08. Author: *Logic, or Morphology of Knowledge; History of Æsthetics; Philosophical Theory of the State,* etc. Died, 1923.

Boscawen (*bos'kâ-wen*), **Edward,** the admiral "Old Dreadnought," was born in Cornwall, England, 1711, the son of Viscount Falmouth. In 1755 he intercepted the French fleet off Newfoundland, capturing two 64-gun ships and 1,500 men. Boscawen crowned a long and victorious career by his signal victory over the French Toulon fleet in Lagos Bay, 1759. He received the thanks of parliament, a pension of 3,000 pounds a year, a seat in the privy council, and the command of the marines. He died at his Surrey seat, Hatchlands Park, 1761.

Bossuet (*bō'sü'e'*), **Jacques Benigne,** a distinguished orator and prelate of the Roman Catholic church, was born in Dijon, France, 1627. He was the author of several controversial works, all in defense of the Roman Catholic doctrines; but his fame rests chiefly on his *Sermons.* Died, 1704.

Boswell, James, the biographer of Johnson, was born in Edinburgh, 1740. He fell in with Johnson on a visit to London in 1763, and conceived for him the most devoted regard; made a tour with him to the Hebrides in 1773, the *Journal* of which he afterward published; settled in London, and was called to the English bar; succeeded, in 1782, to his father's estate, Auchinleck, in Ayrshire, with an income of 1,600 pounds a year. Boswell's *Life* appeared five years after Johnson's death. He died in 1795.

Bosworth, Joseph, Anglo-Saxon scholar, was born at Derbyshire in 1789, and died at Oxford in 1876, having been professor of Anglo-Saxon there from 1858. His chief works were *Elements of Anglo-Saxon Grammar* and *An Anglo-Saxon Dictionary.*

Botha (*bō'tä*), **Rt. Hon. Louis,** Boer soldier, statesmen, born in 1863 at Greytown in Natal, was a member of the Transvaal Volksraad, succeeded Joubert as commander-in-chief of the Boer forces during the war, and in 1907 became prime minister of the Transvaal colony under the new constitution. Died, 1919.

Botta (*bōt'tä*), **Carlo Giuseppe Guglielmo,** Italian historian, was born in 1766; studied medicine, and was imprisoned in 1792 as a revolutionary. He wrote *The History of Italy Between* 1789 *and* 1814, and a *History of the American War of Independence.* Died, 1837.

Botta, Paul Emile, French archæologist and traveler, son of preceding, was born in 1802. In 1830 he went to Egypt, where he entered into the service of Mehemet Ali as a physician. From Alexandria he was sent as consular agent to Mosul, where he commenced a series of discoveries which form an epoch in archæological science. He returned to France in 1868, and died at Acheres in 1870.

Botticelli (*bot'tē-chel'lē*), **Alessandro,** Italian painter, was born in 1437. In response to the invitation of Pope Sixtus IV., he went to Rome and executed some paintings for the chapel of the vatican. On returning to Florence he became a devoted follower of Savonarola. Died, 1515.

Bougainville (*bōō'gaN'vēl'*), **Louis Antoine de,** French navigator, was born in Paris, 1729. In 1734 he went as secretary of the French embassy to London. He took a voyage round the world with a frigate and a St. Malo transport, the first the French ever accomplished, which he described in his *Voyage Autour du Monde.* Died 1814.

Boughton (*bō'tun*), **George Henry,** artist, was born in England, 1834, and brought to the United States when three years old. He studied in New York, Paris, and London, and was a member of the National Academy of New York, and an associate of the Royal Academy after 1879. Died, 1905.

Bouguereau (*bōō'gē-rō'*), **William Adolphe,** French painter, was born at La Rochelle in 1825. In 1850 he gained the prix de Rome, and went to Italy to study. From that time his reputation was made. He painted some portraits, but his subjects are chiefly ideal, idyllic, and religious. He was made a member of the institute in 1876. Died, 1905.

Bouillon (*bōō'yôN'*), **Godfrey de,** duke of lower Lorraine; was born about 1061. He gained distinction in the armies of the emperor Heinrich IV., and was the great leader of the first crusade, and was unanimously proclaimed king of Jerusalem on its capture in 1099, but declined the title. He died in 1100, and was buried on Mount Calvary. His virtues are extolled in Tasso's *Jerusalem Delivered.*

Boulanger (*bōō'lǎN'zhā'*), **George Ernest Jean Marie,** French general and politician, was born in 1837; made colonel during the siege of Paris, general of brigade in 1880, and minister of war in 1886. A threat of prosecution drove him into exile, and he committed suicide at Brussels, in 1891.

Boulger (*bōl'jer*), **Demetrius Charles,** British historian and writer, was born in London 1853; educated at Kensington grammar school and private tuition. Has contributed to all the leading journals on questions connected with the Indian empire, China, Egypt, and Turkey since 1876; has also closely studied military questions, especially those connected with the French frontiers and the position of Belgium.

Boulton (*bōl'tun*), **Matthew,** English mechanician, born in 1728 at Birmingham. He founded the famous Soho iron and steel plant near Birmingham. Died, 1809.

Bourbaki (*bōōr'bä'kē'*), **Charles Denis Sauter,** French general, born at Pau, 1816, fought in the Crimea and Italy. In 1870 he commanded the imperial guard at Metz; and under Gambetta organized the army of the North and commanded the army of the Loire. He retired in 1881 and died in 1897.

Bourbon (*bōōr'bôN'*), **Charles,** French general known as "the constable de Bourbon," was born 1490; for his bravery at the battle of Marignano in 1515 he was made constable of France. With George of Frundsberg he led the mixed army of Spanish and German mercenaries that stormed and plundered Rome in 1527. Bourbon was struck down in the fierce struggle by a bullet, said to have been fired by Benvenuto Cellini.

Bourdaloue (*bōōr'dä'lōō'*), **Louis,** great French preacher, was born at Bourges, 1632, where, after being educated by the Jesuits for the church, he lectured in the academy for some time on humanity, theological ethics, etc. His sermons, based chiefly on the texts of Isaiah, St. Paul, and St. Augustine, were marked by profound moral earnestness and great logical power. His later years were spent in the preaching and practice of charity. He died at Paris in 1704.

Bourget (*bōōr'zhe'*), **Paul,** French poet, critic, and novelist, member of the French academy, was born at Amiens, 1852. He wrote many eminently realistic and analytical books, chiefly studies of the scientific and pessimistic tendencies of the age. Among them are: *Cosmopolis; Pastels of Men; Impressions of America.*

Bourinot (*bōō'ri-nō'*), **Sir John George,** Canadian author and parliamentarian, was born at Sydney, Nova Scotia, in 1837; educated at Trinity College, Toronto; established the Halifax *Reporter,* and in 1880 became clerk of the Dominion house of commons. Among his works are *How Canada Is Governed; Constitutional History of Canada; Parliamentary Practice and Procedure.* Died, 1902.

Boutell, Henry Sherman, lawyer, was born at Boston, Mass., 1856; moved with parents to Chicago in 1863; graduated from Northwestern University, 1874, and from Harvard University, 1876; admitted to the bar in Illinois, 1879, and the supreme court of the United States, 1886; was member of the board of trustees of Northwestern University, and in 1904 received the degree of LL.D. Served in Congress 1898-1911. Died, 1926.

Boutwell, George Sewall, legislator, political reformer, was born at Brookline, Mass., 1818; was self-instructed after a common school course. He began the study of law at eighteen, but never practiced. He was governor of Massachusetts 1852-53; member of congress 1863-69; secretary of the treasury 1869-73; and United States senator from Massachusetts 1873-77. Died at Groton, Mass., 1905.

Bowditch (*bou'dich*), **Charles Pickering,** trustee, archæological student; born at Boston, Mass., 1842; graduated at Harvard in 1863. Served in Civil War 1863-64; member of many archæological, historical, and other learned societies. Died, 1921.

Bowditch, Henry Pickering, physiologist; born at Boston, 1840; graduated from Harvard, 1861; Harvard Medical School, 1868; D.Sc., 1898; LL.D.; studied physiology in France and Germany, 1868-71; assistant professor, 1871-76, and 1876-1906, professor physiology at Harvard Medical school. Died, 1911.

Bowditch, Nathaniel, American astronomer, was born in 1773 at Salem, Mass. He showed at a very early age a great inclination for mathematics, in which he attained great proficiency, without ever attending a university. His work, *The New American Practical Navigator,* was received with great favor. He was later chosen professor of mathematics and astronomy in Harvard College. He died in 1838.

Bowell (*bou'el*), **Hon. Sir Mackenzie,** Canadian statesman; premier of Canadian parliament, 1894-95; was born at Rickinghall, Suffolk, 1823; removed to Canada, 1833. Entered Canadian parliament, 1867; minister of customs, 1878-91; minister of militia and defense, 1891; of trade and commerce, 1892-94; president of privy council, 1895-96; elected to the senate, 1892. Died, 1917.

Bowen, Francis, writer of political economy and philosophy, was born in Massachusetts in 1811; graduate of Harvard and later instructor there in political economy and intellectual philosophy. In 1843 he became editor of the *North American Review.* In 1854 he succeeded Dr. Walker in the Alford professorship of natural religion, moral philosophy, and civil polity. Died, 1890.

Bowles (*bōlz*), **Samuel,** journalist, for more than thirty years editor of the *Springfield Republican,* was born at Springfield, Mass., 1826; died, 1878. He traveled widely over the United States and was always warmly interested in political affairs, though never holding office. He was an accomplished and fascinating conversationalist, cosmopolitan in taste, and liberal in opinion.

Bowne (*boun*), **Borden Parker,** educator, writer on philosophy; was born at Leonardville, N. J., 1847; A.B., 1871, A.M., 1876; LL.D., Ohio Wesleyan, 1881; assistant professor of modern languages College of the City of New York, 1875-76, Author *The Philosophy of Herbert Spencer; Studies in Theism; Metaphysics; Introduction to Psychological Theory; The Christian Life; The Atonement.* Died, 1910.

Boyle, Robert, physicist, was born at Lismore castle, Ireland, 1626. Settling at Oxford in 1654, he experimented in pneumatics, and improved the air-pump. As a director of the East India company he worked for the propagation of Christianity in the East. He discovered "Mariotte's law" seven years before Mariotte. Died, 1691.

Bozzaris (*bōt'sä-rēs*) (often, *bō-zar'is*), **Marcos,** Greek patriot who distinguished himself in the early part of the struggle for Greek independence, was born at Suli, in the mountains of Epirus, toward the close of the eighteenth century. He died in battle while successfully leading a body of 1,200 men against the Turco-Albanian army, 4,000 strong, in 1823.

Bracton, Henry de, British ecclesiastic and jurist, was a "justice itinerant"; in 1264 became archdeacon of Barnstaple and chancellor of Exeter Cathedral; Died in 1268. His *De Legibus et Consuetudinibus Angliae* was the earliest attempt at a systematic treatment of the body of English law.

Braddock, Edward, British major-general, was born in 1695; commander against the French in America in 1755; with a force of 2,000 British regulars and provincials, he moved forward to invest Fort du Quesne, now Pittsburg, Pa.; his troops fell into an ambuscade of Indians, while they were attacked in the front by the French, and half of them slain, among the mortally wounded being Braddock.

Bradford, William, one of the pilgrims, and second governor of Plymouth colony was born in England in 1590, died at Plymouth, Mass., 1657. He sailed from Leyden, Holland, in the Mayflower. One of

his first acts, as the successor of Governor Carver, was to confirm the treaty with Massasoit, just in time to suppress a dangerous Indian conspiracy. He was governor for thirty-one years. He was author of *History of Plymouth Colony from 1602 to 1647*.

Bradlaugh (*brad'lô*), **Charles,** English politician, was born in London in 1833; in 1853 he entered a solicitor's office. His lectures in the hall of science, London, on social, political, and religious questions, were very popular. In 1872 he published his *Impeachment of the House of Brunswick*. In 1880 he was returned to parliament for Northampton, but refusing to take the oath, he was not allowed to take his seat until after the general election of 1885. Died, 1891.

Bradley, James, distinguished astronomer, was born in Gloucester, England, in 1693; in 1727 he published his theory of the aberration of the fixed stars, containing the important discovery of the aberration of light. His next discovery was that the inclination of the earth's axis to the ecliptic is not constant. Latterly he became astronomer-royal at Greenwich, and laid the foundations of modern astronomy. He died in 1762.

Brady, Alice (1895——), motion picture actress, educated in a New Jersey Convent, studied opera in Boston. She joined a musical comedy, encountering opposition from her father, William A. Brady, the director. Later he placed her in *Little Women*, her success being instantaneous. Her versatility and dramatic power are well shown in *Red Head*, and *The Fear Market*.

Bragg, Braxton, American general, born in Warren county, N. C., 1817, served with distinction under General Taylor in the Mexican war, and retired to private life in 1859. He became a brigadier-general in the confederate army in 1861, and succeeded General Beauregard in command of the army in Mississippi, with the rank of general, May, 1862. Died, 1876.

Brahe (*brā*; Dan. *brā'e*), **Tycho,** Danish astronomer, was born at Knudsthorp, 1546; studied at Copenhagen. The great merit of Brahe as an astronomer lies in the rare industry and assiduity with which he observed and recorded the position of stars and planets, and it was partly due to these observations that Kepler was led to the conception of his three famous laws. Died, 1601.

Brahms (*brāms*), **Johannes,** German musical composer, was born at Hamburg, 1833. Schumann early expressed the highest opinion of Brahms' genius, but for many years he was not appreciated in Germany. In 1861 he went to Vienna, where he acquired a high reputation, and held several important musical posts. Died, 1897.

Braille, Louis, French teacher of the blind, was born at Coupvray, 1809. He became blind at an early age but attained proficiency in music and was organist in a Paris church. In 1828 he began teaching the blind and eventually devised a system of point writing for literature and music known as the Braille system, now used extensively for the instruction of the blind throughout the world. He died in 1852.

Bramante (*brä-män'tä*), the assumed name of Donato Lazzari, celebrated Italian architect, born near Urbino in 1444. He was employed at Rome by Popes Alexander VI. and Julius II., for the latter of whom he planned, and partly executed, the buildings connecting the Belvedere and the Vatican, and subsequently designed the great church of St. Peter's, completed by Michael-angelo. Died, 1514.

Brande (*brand*), **William Thomas,** English chemist, born at London, 1788, died in 1866, having become an F. R. S. in 1809, professor of chemistry to the Apothecaries' company in 1812, Davy's successor at the Royal Institution in 1813, and head of the coinage department of the mint in 1854.

Brandeis, Louis Dembitz, born 1856 in Louisville, Ky., American jurist. In 1877 was graduated from Harvard Law School and in 1916 was appointed associate justice of the United States Supreme Court.

Brandes (*brän'des*), **George,** literary critic, was born of Jewish parentage, 1842, in Copenhagen, where he graduated at the university in 1864. Among his works are *French Romanticism; Impressions of Poland and Russia;* and *Main Currents of Nineteenth-century Literature*, etc. Died, 1927.

Brandl, Alois, professor of English philology in the University of Berlin since 1895; born at Innsbruck Tyrol, 1855; educated at Innsbruck; Ph.D.; LL.D.; extraordinary professor in the German University of Prague, 1884-88; ordinary professor in the University of Göttingen, 1888-92; of Strassburg, 1892-95; member of Berlin Akademie, 1904. Author of *Middle English Literature, Shakespeare, Schlegel-Tieck's Shakespeare*, etc.

Brant, Joseph, Indian chief of the Mohawk nation, was born in Ohio about 1742; held a commission in the British service, and fought against the American colonists in the revolution. He died in 1807.

Branting, Karl Hjalmar, Swedish statesman, was born at Stockholm, 1860. He was educated at Upsala University, then turned to journalism and became active in politics. He was elected to the Riksdag in 1896, was prime minister in 1920, was chairman of the Stockholm convention of Socialists for promoting peace, 1917, and attended as delegate from Sweden the meeting of the League of Nations at Geneva, 1920. He received the Nobel Peace Prize in 1921. Died, 1925.

Brassey, Thomas, English engineer and railroad contractor, was born in 1805 at Brerton, Cheshire, England; died in 1870. After building part of the Grand Junction and the London and Southampton railroads, he contracted, 1840, in partnership with another, to build the railroad from Paris to Rouen. In partnership with Betts and Peto he undertook the Grand Trunk of Canada, 1,100 miles in length, including the great bridge at Montreal.

Brassey, Thomas, Lord, English political economist and authority on seamanship, was born at Stafford in 1836, son of Thomas Brassey, the great contractor; educated at Rugby and at Oxford; was civil lord of the admiralty 1880-84; secretary to the admiralty 1884-85; governor of Victoria, Australia, 1895-1900. He was an enthusiastic yachtsman, interested in the British seamen, a writer on the British navy, and in 1893-95 was president Institute of Naval Architects. Died, 1918.

Bray, Frank Chapin, editor, born at Salineville, Ohio, 1866; graduated at Wesleyan University, Conn., 1890; apprenticed to printer's trade, 1878; editor: *Topics of the Day* department of the *Literary Digest*, New York, 1894-99; editor *The Chautauquan* 1899; 1902, editor-in-chief; 1906-1914, editor-manager *Chautauqua Press* and other publications.

Brazza (*brät'sä*), **Pierre Savorgnan de,** explorer, was born of Italian descent at Rio de Janeiro in 1852. In 1878 the French government gave him 100,000 francs for exploring the country north of the Congo, where he secured vast grants of land for France, and founded several stations; by 1886 he had established twenty-six stations. He continued to explore until 1897, being in 1888-97 governor of French Congo. He died in 1905.

Breckinridge, John Cabell, American politician, was born in Kentucky in 1821; entered congress in 1851, and in 1856 was elected vice-president under Buchanan. He became United States senator in 1861, was given a command in the confederate army, and rose to the rank of major-general Died, 1875.

Bremer (*brē'mĕr*), **Frederika,** Swedish novelist, was born in Finland in 1801, but was brought up near Stockholm, Sweden. Her first important novel *The Neighbors*, gave her a wide fame. She has been called the "Jane Austen" of Sweden. Among her best books are *The Diary, The President's Daughter*, and *Brothers and Sisters*. Died, 1865.

Brent, Charles Henry, Protestant Episcopal bishop of the Phillipines, was born at Newcastle, Ontario, 1862; graduated from University Trinity College, Toronto, 1884, A.M., 1889, D.D., 1901; associate rector St. Stephen's, Boston, 1891-1901. On editorial staff *The Churchman*, 1879-1900; William Belden Noble, lecturer, Harvard, 1907. Author: *With God in the World*. Died, 1929.

Breton (*brē'tôn'*), **Jules Adolphe,** French painter, distinguished as the artist of rural life, was born in 1827; died, 1906. His reputation greatly increased after the extraordinary sale of one of his pictures, *The First Communion*.

Breton de los Herreros (*brā-tōn' dā lōs er-rā'rōs*), **Don Manuel,** the most popular of modern Spanish poets, born 1796 at Quel, in the province of Logrono. In 1824 a comedy entitled *A la Vejez Viruelas*, was staged with great success. Henceforward he furnished theatrical managers with over 150 pieces, most of which have been highly popular. Died, 1873.

Brewer, David Josiah, jurist, associate justice of the United States supreme court, was born at Smyrna, Asia Minor, 1837; was graduated from Yale College in 1856 and from the Albany Law School in 1858; in 1861 was appointed United States commissioner; during 1863 and 1864 was judge of the probate and criminal courts of Leavenworth county; in 1870 was elected a justice of the supreme court of Kansas, and reëlected in 1876 and 1882; in 1884 was appointed judge of the supreme court of the United States in 1889; president of the Venezuelan boundary commission, appointed by President Cleveland; president international congress of lawyers and jurists, St. Louis, 1904. Author: *The Pew to the Pulpit; The Twentieth Century from Another View Point; American Citizenship; The United States a Christian Nation*. Died, 1910.

Brewer, William Henry, scientist, professor of agriculture, Sheffield Scientific School, Yale, 1864-1903; born at Poughkeepsie, N. Y., 1828; graduated at Yale Scientific School, 1852; first assistant on geological survey of California, 1860-64; president Arctic club of America; United States forestry commission, 1896; scientific survey of the Philippine Islands, 1903, etc. Died, 1910.

Brewster, Sir David, British natural philosopher, born at Jedburgh, Scotland, 1781. He was educated for the church of Scotland, but undertook the editorship of the *Edinburgh Encyclopædia*. In 1819 the Royal Society awarded him the Rumford gold and silver medals for his discoveries on the polarization of light; in 1832 he was knighted, and had a pension conferred upon him; in 1849 he was elected one of the eight foreign associates of the French institute, the highest scientific distinction in Europe. In 1859 he was chosen vice-chancellor of Edinburgh University. Died, 1868.

Brian, Boroihme (*bri'an bō-roim'*), or **Brian Boru** (*bō-rōō'*), king of Ireland, was born 926; ascended the throne in 978. Some time afterward he became supreme ruler of Ireland. He defeated the Danes in upward of twenty pitched battles. In the battle of Clontarf, 1014, in which he was killed, he gained a signal victory over a united army of revolted natives and Danes.

Briand, Aristide, French statesman, was born at Nantes, 1862. Through his writings in socialist journals, he was elected to the Chamber of Deputies in 1902. He rose rapidly into the ranks of influence, was instrumental in bringing about equanimity in the separation of Church and State (1905), became Minister of Public Instruction, Minister of Justice, then Prime Minister in 1909. His greatest work for France was in mobilizing the railway strikers in 1910 and during the war. When he was elected prime minister in 1921 it was for the seventh time. In that year he was spokesman for France at the disarmament conference at Washington. Died, 1932.

Bridges, Robert, English physician, dramatist and poet, was born in 1844. He studied and practiced medicine. Later he turned to literature. Appointed poet laureate, 1913. Among his plays are *Ulysses, Demeter* and *Nero*. His best known poems are *Prometheus* and *Eros and Psyche*. Died in 1930.

Bridgewater, Duke of (Francis Egerton) (1736-1803), called "the father of British internal navigation," was noted for establishing canals in England.

Bridgman, Frederick Arthur, artist; was born at Tuskegee, Ala., 1847; apprentice in engraving department American bank note company, New York, 1864-65; knight Legion of Honor, 1878; officer Order of St. Michael of Bavaria. Author: *Winters in Algeria; Anarchy in Art; The Idol and the Ideal*.

Briggs, Charles Augustus, clergyman, theologian, was born in New York in 1841; studied in University of Virginia, 1857-60; Union theological seminary, 1861-63. Editor *Presbyterian Review*, 1880-90; was tried for heresy and acquitted by presbytery of New York, 1892, but suspended by general assembly, 1893; ordained priest by Protestant Episcopal bishop of New York, 1899. Author: *Biblical Study; American Presbyterianism; Messianic Prophecy; Whither, etc.* Died, 1913.

Briggs, Le Baron Russell, educator; was born at Salem, Mass., 1855; graduated from Harvard, 1875; A. M., 1882; hon. LL.D., Harvard, 1900; Western Reserve, 1906; assistant professor English, 1885-90, professor English since 1890, dean of college, 1891-1902, dean faculty of arts and sciences. Boylston professor rhetoric and oratory since 1904, Harvard; president Radcliffe College, 1903-1923. Has edited and annotated a number of English classics.

Bright, John, eminent orator and radical statesman, was born of Quaker parentage, 1811; entered parliament for Durham, being afterward returned from Manchester, and losing that seat through his opposition to the Crimean war. He joined Gladstone's government which disestablished the Irish church, but opposed his home rule policy in 1886, Died, 1889.

Bright, Richard, English physician, was born 1789, died 1858; educated at Edinburgh; practiced with great success in London. His specialty was morbid anatomy and the connection between morbid symptoms and alterations of structure of the internal organs. His publications on this topic were made in 1836-40.

Brinton, Daniel Garrison, American ethnologist, was born at Thornbury, Pa., 1837, and died at Atlantic City, N. J., 1899. He graduated from Yale in 1858, and from Jefferson Medical College in 1861. In 1865 he settled in Philadelphia. There he undertook for a time the professorship of ethnology in the Academy of Natural Sciences and in 1886 was professor of American linguistics in the University of Pennsylvania.

Brisbane, Arthur, editor and writer on present day topics; was born at Buffalo, N. Y., 1864; educated American public schools, and five years in France and Germany. Began newspaper work in 1883; seven years on New York *World* as managing editor of different editions; editor New York *Evening Journal*, 1897-1921.

Bristol, Frank Milton, Methodist Episcopal bishop; was born in Orleans county, N. Y.; graduated Northwestern University, Ph.B., 1877; A.M.; D.D.; five times member general conference Methodist Episcopal church, and in 1908 elected bishop. Author: *Providential Epochs; The Ministry of Art*, etc.

Bristow, Joseph Little, journalist, United States senator, was born in Wolfe county, Ky., 1861; graduated from Baker University, Kansas, 1886; private secretary to Governor Morrill (Kansas), 1895-97; fourth assistant postmaster-general, 1897-1905; had charge of investigation of Cuban postal frauds and reorganization of Cuban postal service, 1900. Appointed by the president special Panama railroad commissioner, 1905; elected United States senator for the term 1909-15.

Brock, Sir Isaac, British officer, was born in Guernsey in 1769. In the war of 1812, when an American army, under General Hull, invaded Canada, the Americans surrendered without striking a blow. He was killed in the battle of Queenstown, Canada, 1812.

Brockhaus (*brok'hous*), **Friedrich Arnold,** founder of the famous publishing firm of Brockhaus in

Leipzig, and original publisher of the *Conversations-Lexikon*, was born at Dortmund in 1772; from 1811 to 1817 he carried on business in Altenburg, and finally moved to Leipzig, where he died, 1823.

Brodeur, Hon. Louis Philippe, Canadian statesman, minister of marine and fisheries in the Dominion government 1906-1911, was born at Beloeil, in the province of Quebec, 1862; educated at the college of St. Hyacinth; LL.D.; K.C., 1899; deputy-speaker of the house of commons, 1896-1900; speaker, 1900-04; minister of inland revenue, 1904-06; member of the imperial conference; one of the ministers who negotiated the Franco-Canadian treaty of 1907.

Bronte (*bron'te*), **Charlotte,** English authoress, was born at Thornton, 1816, died, 1855. After some experience as a governess she engaged with her sisters in the writing of novels, and in 1846 published with them a small volume of poems. In 1847 she published the well-known story, *Jane Eyre*. Her second story, *Shirley*, was published in 1849, and her third and last, *Villette*, in 1853. In 1854 she married Rev. Mr. Nicholls, but soon after her marriage died of consumption.

Brooke, Rupert, poet, born at Rugby, England, in 1887. He was educated at Rubgy and Kings College, Cambridge. At the beginning of the World War he enlisted in the British army. He died in 1915 on a hospital ship at Lemnos. His first volume of poems apeared in 1911. A second, called *1914 and Other Poems*, was published in 1915, shortly after his death. Many of the sonnets from this volume portray the unselfish exaltation which possessed so many young men at the beginning of the war.

Brooke, Stopford Augustus, British Unitarian preacher and man of letters, was born near Dublin 1832; educated at Trinity College and received degrees M.A. and LL.D. In 1872 appointed chaplain in ordinary to the queen. He published *Life and Letters of Frederick W. Robertson; Theology in the English Poets; History of English Literature; Study of Tennyson;* etc. Died in 1916.

Brooks, Phillips, preacher and orator, was born at Boston, Mass., 1835; graduate of Harvard, 1855; 1870-91 rector of Trinity church, Boston; from 1891 to 1893, bishop of Massachusetts. His freedom from the ordinary sectarian trammels, his liberal views of doctrine, with his profound convictions as to vital Christian truths, and his deeply spiritual, yet intensely practical preaching, gave him great popular power. He died in 1893.

Brougham (*brōō'am* or *brōōm*), **Henry Peter,** Lord Brougham and Vaux, British jurist, philosopher, and statesman, was born at Edinburgh, 1779. In 1808 he joined the English bar, and speedily acquired high reputation as an advocate. In 1810 he entered parliament, where he became a chief of the liberal party. In 1830 he became the acknowledged champion of parliamentary reform, was called to the house of peers, and appointed lord high chancellor of England, which office he resigned in 1834. He devoted the remainder of his life almost exclusively to science and literature at his chateau at Cannes, France. Died, 1868.

Brown, Calvin Smith, university professor, was born in Tennessee, 1866; graduated at Vanderbilt, 1888; D.Sc., 1892; studied at the Universities of Paris and Leipzig, 1894-5; Ph.D., University of Colorado, 1899; traveled in Spain, Italy, Greece, 1903-04. Professor of English, comparative literature, modern languages, Vanderbilt University, University of Colorado, and University of Missouri, 1889-1905; professor Romance language, 1905-9, acting professor German language and literature, 1908, professor since 1909, University of Mississippi. Editor: Tennyson's *Enoch Arden* and the two *Locksley Hall* poems; *The Later English Drama*, etc.

Brown, Charles Brockden, early American novelist, was born at Philadelphia, Pa., 1771, and died there in 1810. His two best known stories are *Wieland, or the Transformation*, and *Arthur Mervyn*.

Brown, Elmer Ellsworth, educator, chancellor of New York University since 1911; was born at Kiantone, Chautauqua county, N. Y., 1861; graduated from the Illinois State Normal University, 1881; University of Michigan, 1889; Ph.D.; associate professor, University of California, 1892-93; professor same, 1893-1906; U. S. commissioner of education, 1906-1911; chancellor N. Y. Univ., 1911—.

Brown, Francis, educator, was born in 1849; was appointed Davenport professor of Hebrew and the cognate languages, Union theological seminary, New York, in 1890; president of the faculty, Union theological seminary, 1908. Author of *Assyriology: Its Use and Abuse;* also many articles and reviews. Died, 1916.

Brown, Henry Billings, jurist, associate justice of the United States supreme court, 1891-1906; born at South Lee, Mass., 1836; graduate of Yale, 1856; LL.D., Yale, 1891; United States judge for eastern district of Michigan, 1875-90; resigned from United States supreme court bench, 1906. Died, 1913.

Brown, Henry Kirke, American sculptor and painter of great versatility; author of the colossal statue of General Washington in Union square, New York; *The Angel of the Resurrection*, in Greenwood cemetery, Brooklyn. He was born in 1814. Died, 1886.

Brown, John, leader of the Harper's Ferry insurrection, 1859, designed to incite the slaves of the southern states to rebellion; was born at Torrington, Conn., in 1800. In 1854 he went to Kansas. After the slavery agitation in that state was settled by a general vote, he traveled through the southern and eastern states, declaiming against slavery, and endeavoring to organize an armed attack upon it. In 1859, at the head of seventeen white men and five blacks, he commenced active hostilities by a descent upon Harper's Ferry. Instead of retreating to the mountains with arms and hostages, as his original design had been, Brown lingered in the town until evening, by which time 1,500 militiamen had arrived. He was captured, tried for treason, and executed in 1859.

Brown, Norris, lawyer, United States senator, was born in 1863, at Maquoketa, Iowa; graduated from Iowa State University, 1883, and two years later received the degree of M.A.; admitted to practice law in Iowa, 1883; moved to Kearney, Neb., 1888; attorney-general, 1904-06; was elected to the United States senate for the term 1907-13.

Browne, Charles Farrar, American humorist and satirist, known by the pseudonym of "Artemus Ward," was born at Waterford, Maine, 1834. He traveled over America lecturing, carrying with him a whimsical panorama as affording texts for his numerous jokes, which he took with him to London, and exhibited. He died in England in 1867.

Browne, Sir Thomas, English physician and author, was born at London in 1605. During the civil wars and the protectorate he remained in learned seclusion, indifferent to either party. He was knighted in 1671, and died on his birthday in 1682. His chief works are *Religio Medici;* and *Pseudodoxia Epidemica*.

Browning, Elizabeth Barrett, English poetess, was born at London in 1806; died at Florence, Italy, 1861. In 1846 she married Robert Browning. In 1850 Mrs. Browning published her collected works, together with several new poems. *Aurora Leigh*, her longest production, was published in 1856. *Poems Before the Congress* appeared in 1860.

Browning, John M., American inventor, was born at Ogden, Utah, 1854. His father was a gunsmith. He designed his first patented gun in 1879, then devoted himself to designing sporting rifles and automatic pistols for the Remington, Winchester and Colt companies for large royalties. He received high honors for his pistols and the Browning machine gun used during the World War. Died, 1926.

Browning, Oscar, English historian and critic, was born at London, 1837; educated at Eton, and King's College, Cambridge; master at Eton, 1860-75; college and university work at Cambridge from 1876. Died, 1923.

Browning, Robert, British poet, born at Camberwell, May 7, 1812; died Dec. 12, 1889. After completing his education at University College, London, he went to Italy, where he made diligent study of its mediæval history and the life of the people. In 1846 he married Elizabeth Barrett, and resided chiefly in Italy, making occasional visits to England.

His first poem, *Pauline*, was published in 1833; followed by *Paracelsus* in 1835; *Strafford, a Tragedy* (1837), produced at Covent Garden, Macready and Helen Faucit playing the chief parts. *Sordello* appeared in 1840, followed by the series called *Bells and Pomegranates*, including the three plays *Pippa Passes, King Victor and King Charles*, and *Colombe's Birthday;* four tragedies: *The Return of the Druses, A Blot on the Scutcheon, Luria*, and *A Soul's Tragedy;* and a number of dramatic lyrics, among them the well-known *Pied Piper Of Hamelin*, and *How they Brought the Good News from Ghent to Aix* (1841-46). Between 1846 and 1868 appeared *Men and Women; Christmas Eve and Easter Day; Dramatis Personae*, and some shorter poems. *The Ring and the Book* (1869), his longest poem, was followed by *Balaustion's Adventure;* and *Prince Hohenstiel-Schwangau* (1871); *Fifine at the Fair* (1872); *Red Cotton Nightcap Country* (1873); *Aristophanes' Apology; Inn Album* (1875); *Dramatic Idylls; People of Importance in Their Day* (1887); and *Asolando* (1889). He received the degree of D.C.L. from Oxford in 1882.

A Browning Society for the study of his works was formed in 1881, under whose auspices several of his dramas have been performed. His poems are often difficult to understand from the quick transitions of thought, and they are not infrequently rugged and harsh in expression, yet they are among the chief poetic utterances of last century.

References.—*Life of Robert Browning*, by William Sharp; *Life and Letters*, by Mrs. Sutherland Orr; *Robert Browning*, by Edmund Gosse; Molineux's *Browning Phrase-Book*.

Brown-Sequard (*sē'kär*), **Edouard,** physiologist, was born at Port Louis, Mauritius, 1818. In 1864 he became professor of physiology at Harvard; in 1873 became a medical practitioner in New York, and in 1878 succeeded Claude Bernard as professor of experimental medicine at the College de France. He published lectures on *Physiology and Pathology of the Nervous System*. He died in Paris in 1894.

Brubacher, Abram Royer, American educator, was born at Lebanon, Pa., in 1870. He was educated at Yale University, receiving the degree of Ph.D. in 1902. From 1908-14 he was Superintendent of Schools in Schenectady, N. Y., resigning to become President of State College for Teachers at Albany, N. Y., which position he holds at the present time. He was president of the N. Y. State Teachers Association in 1913-14. Besides various educational articles in magazines he is author of several English textbooks, of a general text in Education. advisory editor of the Volume Library.

Bruce, Robert, king of Scotland, born 1274, did homage for a time to Edward, but joined the national party; stabbed Comyn in a quarrel at Dumfries, 1306, and was that same year crowned king at Scone. In 1328, fourteen years after the great victory of Bannockburn, the independence of Scotland was acknowledged as well as Bruce's right to the crown. He died in 1329, in the thirty-third year of his reign.

Brugsch (*brooksh*), **Heinrich Karl,** German Egyptologist, Prussian consul to Cairo, was born in 1827. He organized the first Egyptian University, was an eminent authority on Egyptian archæology, and wrote numerous works covering many phases of that subject. Died, 1894.

Brummel, George Bryan, "Beau Brummel," was born at London in 1778; in his day the prince of dandies, was patronized by the Prince of Wales (afterward George IV.); quarreled with the prince; fled from his creditors to Calais, where, reduced to destitution, he lived some years. He settled at length in Caen, where he died insane in 1840.

Brunelleschi (*brōō'nel-les'kē*), **Filippo,** Italian architect, was born at Florence in 1377, is reckoned the first who established on a sound basis the theory of perspective. Brunelleschi's dome in the cathedral at Florence, measured diametrically, is the largest in the world, and served as a model to Michaelangelo for that of St. Peter's. Died, 1446.

Brunhilde (*brün'hēld'*) (Brunehaut), daughter of the Visigothic king, Athanagild; married King Sigebert of Austrasia in 561, and was afterward regent for her two grandsons, Theodebert II., king of Austrasia, and Theodoric II., king of Burgundy. Died, 613.

Bruno (*brōō'nō*), **Giordano,** a restless speculative thinker, was born at Nola, near Naples, in 1548, was trained a Dominican, but, doubting the dogmas, fled to Geneva, whence Calvinist suspicion of his scepticism drove him to Paris, where he lectured; in 1592 in Venice he was arrested by the officers of the inquisition and conveyed to Rome in 1593. There, in 1600, he was burned as an obstinate heretic.

Bruno, Saint, founder of the Carthusian order, was born at Cologne about 1040; became rector of the cathedral school at Rheims, but, oppressed by the wickedness of his time, withdrew in 1084 to the wild mountain of Chartreuse, near Grenoble. Here with six friends he founded the austere Carthusians. In 1094 he established a second Carthusian monastery at Della Torre in Calabria, where he died, 1101.

Brutus, Lucius Junius, figures in the history of early Rome as the hero who overturned the monarchial, and established the republican form of government. That his character as a stern old Roman hero might be complete, the legend adds that he sacrificed to the new republic his own sons, detected in a conspiracy to restore the monarchy. He fell in mortal combat against the Tarquins about 507.

Brutus, Marcus Junius, was born in 85 B. C., and died 42 B. C. He joined Pompey in his war against Cæsar; but after Pompey's defeat he was kindly treated by Cæsar, and made governor of Cisalpine Gaul. In 44 B. C., in his eagerness to preserve the liberty of the republic against Cæsar's apparent purpose of being made emperor, he was persuaded by Caius Cassius to join a conspiracy, and helped in Cæsar's assassination, although the latter had given him many honors and promised him others. Soon after, he and Cassius were defeated at Philippi by Antony and Octavius. Feeling that their cause was lost, Brutus at once flung himself upon his sword and died.

Bryan, William Jennings, editor, orator, and publicist; born in Salem, Ill., 1860; graduate of Illinois College, Jacksonville, 1881; Union College of Law, Chicago, 1883; member of congress, 1891-95; delegate to national democratic convention, 1896; wrote the "Silver plank" in its platform, made a notable speech, and was nominated for president of United States; received 176 electoral votes against 271 for William McKinley. Nominated for president in 1900 by democratic populist and silver republican conventions; again defeated by McKinley; later he established a weekly political magazine, *The Commoner*. Nominated for president in 1908, but defeated by W. H. Taft. Appointed Secretary of State by President Wilson, 1913. Resigned in 1915, after outbreak of World war. Died, 1925.

Bryan, William Lowe, educator; born near Bloomington, Ind., 1860; graduated from Indiana University, 1884; Ph.D.; LL.D.; vice-president 1893-1902, president since 1902, Indiana University. President American psychological association, 1903. Author: *Plato the Teacher*, edited with notes and introduction; *The Republic of Plato, with Studies for Teachers;* and many contributions on psychological subjects in current periodicals.

Bryant, William Cullen, poet and journalist, born at Cummington, Hampshire county, Mass., 1794; at eighteen he composed his *Thanatopsis*. He established *The New York Review*, to which he contributed many of his best poems. In 1826 he became principal editor of *The Evening Post*. The first collected edition of his poems appeared in 1832. In 1842 he published *The Fountain, and Other Poems*. In 1858 appeared a new edition of his poetical works, and in 1869 a metrical translation of the *Iliad*, followed in 1871 by that of the *Odyssey*. He afterward collaborated in writing the *History of the United States*. Died, 1878.

Bryce (*bris*), **Rt. Hon. James,** British historian, diplomat, statesman, was born at Belfast, Ireland, in 1838; educated at Glasgow University and Trinity College, Oxford; D.C.L., LL.D., F.R.S. He was admitted to Lincoln's Inn, 1867; became regius professor of civil law at Oxford University, 1870-93; under-secretary for foreign affairs for five months in 1886; chancellor of the duchy of Lancaster, 1892-94; president of the Board of Trade, 1894-95; chief secretary for Ireland, 1905-07. He was appointed ambassador to the United States, 1906. He took a deep interest in the condition of the eastern Christians and their emancipation from Turkish misrule. He strongly opposed the war in South Africa, and the education act of 1902. Author of *The American Commonwealth*. Died, 1921.

Buchanan (*bu-kan'an* or *bu-kan'an*), **James,** fifteenth president of the United States, was born in Pennsylvania, 1791; admitted to the bar, 1812; member of congress, 1821-31; minister to Russia, 1832-34; United States senator, 1834-35; secretary of state, 1845-49; minister to England, 1853-56; president, 1857-61. He spent the remainder of his life at his home in Lancaster, Pa. He died in 1868.

Buck, Dudley, organist, composer; born Hartford, Conn., 1839; studied at Trinity College, then Leipzig conservatory of music, and at Dresden and Paris; was organist Holy Trinity church, Brooklyn, and director and organist Apollo club, twenty-five years; retired, 1903. Among his compositions are the *Centennial Cantata; Golden Legend; Voyage of Columbus*, and *Light of Asia*. Died, 1909.

Buckingham (*buk'ing-am*), **George Villiers, Duke of,** the favorite of James I. and Charles I. of England, born at Brookesley, Leicestershire, 1592. On the accession of Charles I., in 1625, Buckingham maintained his ascendency at court, but after the ill-fated expedition against Cadiz he became odious to the nation. He was assassinated by a discontented officer named Felton, 1628.

Buckle, Henry Thomas, English historian, was born at Lee, Kent, 1821, the son of a London shipowner. In 1840 he found himself master of 1,500 pounds a year; by 1850 he knew eighteen foreign languages, and had amassed a library of 22,000 volumes, chosen mostly to help him in a *magnum opus*, of which all that was ever published was but a fragment: *An Introduction to the History of Civilization in England*. In 1862, after six months' wandering in Egypt and Palestine, he died of typhoid fever at Damascus.

Buckley, James Monroe, clergyman, editor *New York Christian Advocate*, born in Rahway, N. J., 1836; educated at Wesleyan University; M.A., D.D.; LL.D.; pastor in vicinity of New York until 1880. Died in 1920.

Budde (*bōōd'de*), **Karl,** theologian, professor of old testament theology, University of Marburg; born Bensberg, near Cologne, 1850; educated at Bensberg at Essen gymnasium in the Universities of Bonn, Berlin, Utrecht; passed the two examinations for church service at Coblenz in 1871 and 1874; professor extraordinarius in 1879 at Bonn; was promoted 1889 to the professorship at Strassburg; accepted a call to Marburg in 1900.

Buddha (*bood'ha*), ("the Wise" or the "Enlightened"), the sacred name of the founder of Buddhism, an Indian sage who appears to have lived in the 5th century B.C. His personal name was Siddhartha, and his family name Gautama; and he is often called also Sakyamuni (from *Sakya*, the name of his tribe, and *muni*, a Sanskrit word meaning a sage). His father was king of Kapilavastu, a few days' journey north of Benares.

Siddhartha, filled with a deep compassion for the human race, left his father's court, and lived for years in solitude till he had penetrated the mysteries of life, and become the Buddha. He then began to teach his new faith, in opposition to the prevailing Brahmanism, commencing at Benares. Among his earliest converts were the monarchs of Maghada and Kosala, in whose kingdoms he chiefly passed the latter portion of his life, respected, honored, and protected. Buddha did not leave his doctrines in writing; he declared them orally, and they were carefully treasured up by his disciples, and written down after his death. The determination of the canon of the Buddhist scriptures as we now possess them was the work of three successive councils, and was finished two centuries at least before Christ.

References.—Rhys David's *Buddhism;* Lillie's *Buddha and Buddhism*.

Budge, Ernest A. Wallis, English archæologist, keeper of Egyptian and Assyrian antiquities, British museum, was born in Cornwall, 1857; educated at Christ's College, Cambridge. Has conducted excavations at Aswan in Egypt, at Gebel Barkal, on the island of Meroe, and at Semna in the Sudan, and at Ninevah and Der.

Buffalo Bill—See **Cody, W. F.**

Buffon (*bü'fŏn'*), **Georges Louis Leclerc, Count de,** French naturalist, was born 1707, died 1788. He was educated for the law; but, after traveling for a time devoted himself to science. In 1739 he was elected a member of the academy of sciences, and appointed director of the royal garden. He was one of the pioneers of the modern doctrine of evolution.

Bulfinch, Charles, American architect, was born in Boston, Mass., 1763. His chief works are the Massachusetts state house, at Boston; McLean hospital, Somerville; Massachusetts general hospital, Boston; and the west porticos of the capitol at Washington. He died, 1844.

Bull, Ole Bornemann, famous violinist; born in Bergen, in Norway, 1810; he secured great triumphs both throughout Europe and in America by his wonderful playing. He afterward settled down at Cambridge, Mass., and had also a summer residence in Norway, where he died in 1880.

Buller (*bool'lĕr*), **Sir Redvers,** British general, was born in England in 1839, and as an officer of the 60th rifles saw much service in the China expedition of 1860. In the Boer war, 1899-1901, he had chief command of the first army corps sent from England to South Africa. He was successively adjutant-general, lieutenant-general, and commander-in-chief of the British forces. Retired, 1901. Died, 1908.

Bülow (*bü'lō*), **Prince Bernhard von,** German statesman, chancellor of the empire, 1900-09, was born at Klein-Flottbeck in 1849. At the conclusion of the Russo-Turkish war he was appointed one of the secretaries of the Berlin congress, and after more diplomatic service in Paris and St. Petersburg, he was appointed minister to Roumania, 1888, and ambassador to Italy, 1893. In 1899 he concluded the treaty with Spain, whereby the Caroline, Marianne, and Pelew islands were ceded to Germany, and upon this achievement he was created Count Bülow. In 1900, on the resignation of Prince Hohenlohe, he succeeded him as chancellor of the German empire, prime minister and minister of foreign affairs of Prussia, and, on June 6, 1905, he was raised to the dignity of prince. He resigned the chancellorship in 1909. He died in 1929.

Bülow, Friedrich Wilhelm, Baron von, Prussian general, was born at Falkenberg, 1755, died at Königsberg, 1816. His victories over Oudinot and Ney at Grossbeeren and Dennewitz saved Berlin; he acted a conspicuous part in the battle of Leipzig, and, by taking possession of Montmartre finished the campaign of 1814. In 1815 he joined Blücher by forced marches, and headed the column that first came to Wellington's aid at Waterloo.

Bulwer (*bool'wĕr*), **Edward George Earle Lytton.** See **Lytton, Lord.**

Bulwer, Sir Henry Lytton Earle, famous English diplomatist and author, an elder brother of Lord Lytton, usually known as Sir Henry Bulwer, was born 1804. In 1843 he was made minister plenipotentiary to the court of Madrid, and concluded the peace between Spain and Morocco in the following year. In 1849 he came to Washington, where he evinced equal art in concluding the Clayton-Bulwer treaty; died 1872. Among his works were *An Autumn in Greece; France, Social, Literary, and Political; Life of Byron* and *Historical Characters*.

Bunsen (*boon'sen*), **Baron, Christian Karl Josias,** German statesman and scholar, born, 1791, at Korbach, in the principality of Waldeck, died at Bonn, 1860. He is known in literature by his *Constitution of the Church of the Future; Christianity and Mankind; God in History*, and many other works.

Bunsen, Robert Wilhelm, German chemist, was born at Göttingen, 1811. He was the first to produce magnesium in large quantities, and in 1860 invented the magnesium light. His greatest discovery was that of spectrum analysis, made in conjunction with Kirchhoff. Bunsen will always be remembered by physicists and chemists from their constant use of the photo-meter and gas-burner, which are such useful adjuncts to laboratory apparatus, and which bear the "Bunsen burner" name. Died, 1899.

Bunyan, John, English writer, was born at Elstow, near Bedford, in 1628. After a short service in the Parliamentary army, he married at the age of nineteen. His marriage was followed by his conversion, or religious "awakening." In 1655 he became a member of the Baptist congregation at Bedford, and, subsequently, its pastor. After the restoration, he was convicted under the act against conventicles, 1660, and thrown into Bedford jail, where he remained for upward of eleven years, supporting his family by making tagged laces, and writing *The Pilgrim's Progress;* he was released from prison, 1672, becoming again pastor of the Bedford congregation. This position he held till his death, which took place, 1688. Of Bunyan's other works, the chief are his *Grace Abounding to the Chief of Sinners*, an autobiography, and the *Holy War*.

Burbank, Luther, naturalist, horticulturist; born in Lancaster, Mass., 1849. Moved to Santa Rosa, Cal., 1875; conducted Burbank's experiment farms. Was special lecturer on evolution at Leland Stanford Jr. University. Died, 1926.

Burdette (*bûr-det'*), **Robert Jones,** American journalist, humorist, and lecturer, was born in Pennsylvania in 1844. Served with the 47th Illinois volunteers as a private, in the Civil War. His humorous sketches won him an audience far and wide. He began to lecture in 1876, and was licensed a minister of the Baptist church, 1887; held a pastorate at Los Angeles until 1909, when he was incapacitated by an accident. He was the author of *Hawkeyeisms; Chimes from a Jester's Bells; Smiles Yoked with Sighs;* etc. Died, 1914.

Burdick, Francis Marion, lawyer, educator, Dwight professor law, Columbia University, 1891-1920; born at De Ruyter, N. Y., 1845; graduated from Hamilton College, 1869; LL.D.; professor law and history, Hamilton College, 1882-87; professor law, Cornell University School of Law, 1887-91. Mayor of Utica, 1882-83. Author: *The Essentials of Business Law; Cases on Torts; Cases on Sales; Law of Sales;* etc. Died, 1920.

Burgess, Frank Gelett, writer, illustrator; born Boston, 1866; graduated at Massachusetts Institute of Technology, B.S., 1887; draughtsman with Southern Pacific railway, 1887-90; instructor topographical drawing, University of California, 1891-94; designer, 1894-95; writer for various magazines in New York, 1897-98; removed to London, 1898, to San Francisco, 1900, to Boston, 1904; now lives in New York. Author: *Vivette; The Lively City Ligg; Goops and How to Be Them; A Gage of Youth; Burgess Nonsense Book*.

Burgess, John William, educator; born in Connersville, Tenn., 1844; attended Cumberland University, Lebanon, Tenn.; graduate of Amherst, 1867. Admitted to bar, Springfield, Mass., 1869; professor political science and constitutional law 1876-1912; dean faculty of political science 1890-1912, Columbia University; Roosevelt professor of American history and institutions, University of Berlin, 1906-07. Author: *Political Science and Comparative Constitutional Law; The Middle Period; The Civil War and the Constitution; Reconstruction and the Constitution*.

Burgoyne (*bûr-goin'*), **John,** British general, was born 1722; entered early into the army; and in 1762 displayed much talent and enterprise in command of a party of the British troops in Portugal. In the American war, he led the army which was to penetrate from Canada into the revolting provinces. At first, he was successful; but was ultimately compelled to surrender at Saratoga, 1777. He died in 1792.

Burke, Edmund, British statesman and orator, was born at Dublin, about 1729; graduated at Trinity College, Dublin. Going to London, he attracted attention by his essays on the *Sublime and Beautiful*, and devoted himself to literature. In 1766, entering parliament, his speeches on American affairs created a great sensation in the house of commons. Returned for Malton, he produced in 1780 his great plan of economical reform; and in 1782 he became paymaster under Lord Rockingham's government. He again took office in the duke of Portland's coalition ministry, when he made his famous speech on the India bill. In the impeachment of Warren Hastings, Burke played a leading part, his opening speech extending over four days. In 1794 he retired from parliamentary life, though he continued to produce his pamphlets on political affairs. His other chief works are *A Vindication of Natural Society; Reflections on the Revolution in France;* and some *Letters*. Died at Beaconsfield, England, 1797.

Burleigh (*bĕr'li*), **William Cecil, Lord.** See **Cecil, William, Lord Burleigh.**

Burleson, Albert Sydney, lawyer, postmaster-general, was born 1863, at San Marcos, Texas; was educated at agricultural and mechanical college of Texas; admitted to the bar in 1884; appointed by the governor of Texas attorney of the twenty-sixth judicial district in 1891; elected to said office 1892-96; elected to the fifty-sixth, fifty-seventh, fifty-eighth, fifty-ninth, sixtieth, sixty-first and sixty-second congresses.

Burlingame, Anson, American diplomatist; born in Chenango county, N. Y., 1820. He was elected member of congress in 1854-56-58. In 1861 he was sent as minister to China, and in 1868 he visited this country at the head of a Chinese embassy, and concluded a liberal treaty between the United States and China, which was promptly ratified by the Chinese government. Died, 1870.

Burne-Jones, Sir Edward, English painter, was born of Welsh ancestry at Birmingham, England, 1833. He was educated at Exeter College, Oxford, where William Morris, the poet, was his friend. About 1870 he began to be known as an oil painter, and his works henceforth are inspired by the earlier art of the Italian renaissance, and show more of grace and less of emphasis than his former paintings. Among his pictures are *The Days of Creation; The Beguiling of Merlin; The Mirror of Venus.* He furnished striking designs for stained glass at Christ Church, Oxford. He became D. C. L. 1881, A. R. A. 1885 (resigned 1893), and a baronet 1894. He died, 1898.

Burnett (*bûr-net'*), **Frances Hodgson,** author, playwright; born (Frances Eliza Hodgson), Manchester, England, 1849; began writing for magazine 1867; married Dr. L. M. Burnett, 1873; settled in Washington, 1875. Author (novels): *That Lass o'Lowrie's; Dolly, a Love Story; Kathleen; Surly Tim and Other Stories; A Little Princess.* Plays: *Little Lord Fauntleroy; Phyllis; The Snowman's Daughter; Esmeralda; The First Gentleman of Europe; Nixie; A Lady of Quality; The Shuttle;* etc. Died, 1924.

Burnham, Daniel Hudson, architect; born Henderson, N. Y., 1846; removed to Chicago, 1856; educated there and in Massachusetts; A.M., Sc.D. Architect Field's retail store and many other buildings in Chicago and elsewhere, including the Mills building, San Francisco; Ellicott Square, Buffalo; Society for Savings, and First, Third, and Fourth National Banks, Cleveland; chief architect and director of works, World's Columbian Exposition, 1890-93; chairman commissions for beautifying Washington and Cleveland, Ohio. Died, 1912.

Burns, Robert, Scottish poet, was born at Alloway, near Ayr, Scotland, 1759; died at Dumfries, 1796. He was the son of a small farmer, and was brought up amidst indigence and adversity. He received, however, the advantages of a common school education, though his chief advances in general knowledge he owed to the books he read, among which were *The Spectator,* the works of Pope, and the poems of Allan Ramsay. When sixteen years of age he fell in love, and his feelings, as he tells us, at once burst into song. His first volume of poetry was issued in 1786, from Kilmarnock, and at once became popular. The success of this volume, which was speedily republished in Edinburgh, induced him to take the farm of Ellisland, near Dumfries, where he married his "bonny Jean"; he removed to Dumfries in 1791 and, having been appointed to a position as exciseman, which had been obtained for him by a friend and an admirer of his genius, he subsisted entirely upon his income from that office, which yielded only about $350 a year. In 1792 he wrote about a hundred songs, as accompaniments to the melodies of Scotland; intemperance gradually gained upon him, while want threatened him; and, in his thirty-seventh year, he sank into an untimely grave.

Burnside, Ambrose Everett, American general, born at Liberty, Indiana, 1824; graduated at West Point in 1847. He commanded a brigade at Bull Run, and in February, 1862, captured Roanoke island. He commanded the Army of the Potomac, Nov. 1862-Feb. 1863, and was defeated at Fredericksburg, 1862. In 1863 he successfully held Knoxville, and in 1864 led a corps under Grant through the battles of the Wilderness and Cold Harbor. Resigning in April, 1865, he was elected governor of Rhode Island (1866-68), and United States senator in 1875 and 1881. He died at Bristol, R. I., 1881.

Burr Aaron, American statesman, was born 1756, died, 1836; he was a lieutenant-colonel in the revolutionary war; attorney-general of New York 1789; United States senator, 1791-97; mortally wounded Alexander Hamilton in a duel 1804; vice president of the United States 1801-05; tried on a charge of treason, 1807, but acquitted.

Burr, George Lincoln, educator, librarian; born Oramel, N. Y., 1857; graduated from Cornell, 1881; student Leipzig, Paris and Zürich; LL.D.; Litt.D. Librarian the President White library since 1878; member Cornell faculty. Writer on history of superstition and persecution.

Burr, William Hubert, engineer, professor civil engineering, Columbia University since 1893; born Watertown, Conn., 1851; graduated Rensselaer Polytechnic Institute, C. E., 1872; professor engineering, Harvard, 1892-93; consulting engineer to department of public works, 1893-95, of parks, 1895-97, of docks, 1895-97, and now department of bridges, and board of water supply, New York. Appointed, 1899, by President McKinley, member isthmian canal commission. Appointed, 1904, by President Roosevelt, member isthmian canal commission; consulting engineer to board of water supply, New York. Awarded first place in national competition, 1900, for proposed memorial bridge across Potomac at Washington.

Burritt, Elihu, "the learned blacksmith," was born at New Britain, Conn., 1810. He worked as a blacksmith in his native place and at Worcester, Mass., but devoted all his leisure to mathematics and languages—Latin, Greek, Hebrew, Arabic, and most of the modern European languages. He took a prominent part in advocating an ocean penny-postage. For many years he lived in England, in 1865-70 as United States consul at Birmingham. He died at New Britain, Conn., 1879.

Burroughs (*bûr'ōz*), **John,** essayist, naturalist; born Roxbury, N. Y., 1837; received an academic education, and taught school about eight years; treasury clerk, 1864-73; national bank examiner, 1873-74. From 1874 till his death he lived on a farm, devoting his time to literature and fruit culture. Author: *Notes on Walt Whitman as Poet and Person; Locusts and Wild Honey; Fresh Fields; Riverby; The Light of Day; Squirrels and Other Fur Bearers; Far and Near; Ways of Nature.* Died, 1921.

Burton, Ernest de Witt, theologian, critic; professor of new testament interpretation, University of Chicago, born Granville, Ohio, 1856; University of Leipzig, 1887; served many years as associate editor or editor of the *Biblical World;* editor (with others) of the *American Journal of Theology.* Author: *Constructive Studies in the Life of Christ* (with S. Mathews); *A Short Introduction to the Gospels;* etc. Died, 1925.

Burton, Sir Richard Francis, English traveler, was born 1821, at Barham House, Hertfordshire, and educated in France and England. After visiting Somaliland and service in the Crimea, he in 1856 set out with Speke on the journey which led to the discovery of Lake Tanganyika, 1858, and afterward traveled in America. He was subsequently consul at Santos in Brazil, at Damascus, and at Trieste. In 1876-78 he visited Midian, and in 1882 Guinea; and he was knighted in 1886. He died at Trieste, 1890.

Burton, Theodore Elijah, U. S. Senator, lawyer; born in Jefferson, Ohio, 1851; graduate of Oberlin College, 1872; admitted to bar, 1875; since then in practice at Cleveland; member congress, 1889-91, and 1895-1909; United States senator, 1909-15. Author: *Financial Crises and Periods of Industrial and Commercial Depression,* and *Life of John Sherman.* Died, 1929.

Bury (*ber'i*) **John B.,** British historian; regius professor of modern history, Cambridge University since 1902; was born 1861; graduate Trinity College, Dublin; M.A., Litt.D.; LL.D.; professor of modern history in Dublin University, 1893-1902; regius professor of Greek, 1898. Author: *History of the Later Roman Empire from Arcadius to Irene; Student's History of the Roman Empire from Augustus to Marcus Aurelius;* etc.

Butler, Benjamin Franklin, American politician, and general, was born in New Hampshire, 1818, studied law and settled in Massachusetts, where he became recognized as the leading democrat of New England. He promptly entered the service at the outbreak of the Civil War, and had command of the departments of the gulf and of the south Atlantic, acquiring no military fame but great notoriety for his arbitrary civil regulations; governor of Massachusetts, 1882. Died, 1893.

Butler, Joseph, eminent English divine, was born 1692 at Wantage, in Berkshire; died 1752. In 1718 he was appointed preacher at the Rolls chapel, where he preached those remarkable sermons which he published in 1726. His great work, the *Analogy,* of which the germs were contained in his three sermons, was published in 1736.

Butler, Nicholas Murray, educator; born Elizabeth, N. J., 1862; graduated, Columbia, 1882, Ph.D., 1884; student at Berlin and Paris, 1884-85; LL.D.; Litt.D.; dean faculty of philosophy, Columbia University, 1890, professor philosophy and education, and president since 1902. Editor of the *Educational Review;* the *Great Educators Series;* the *Teachers' Professional Library, etc.*

Butler, Samuel, English satirist, was born at Strensham, England, 1612. The experiences of this time furnished him with the material for his famous work, *Hudibras,* the first part of which appeared in 1663, and achieved the widest popularity. Died, 1680.

Butler, Samuel, an English writer, born, 1835, at Nottingham. Educated at Oxford; did work among the London poor for several years. In 1859, he left England to raise sheep in New Zealand. On his return to England in 1864, he painted a number of pictures which were exhibited in the Royal Academy; but letters finally claimed his devotion. His best known book is *The Way of All Flesh.*

Byrd, Richard Evelyn, American aviator, naval officer (ret.), was born at Winchester, Virginia, in 1888. He was educated at Shenandoah Valley Military Institute, Virginia Military Academy, University of Virginia, and graduated at the U. S. Naval Academy in 1912. At the age of twelve he made a trip around the world alone. He was the commander of the avaition unit of the Macmillan Polar Expedition of 1925. In 1926 he made, with Floyd Bennett, the first flight to the North Pole. He was advanced through grades to the rank of lieutenant commander after the polar flight. In 1927, with three companions, he made a 4,200 mile transatlantic flight to France. With the most complete equipment ever assembled for such a purpose Byrd left in 1928 for the South Pole areas. He discovered and mapped many new sections. On Nov. 29, 1929, he flew over the South Pole.

Byron, Lord, George Gordon, English poet, was born in London in 1788. He attended Trinity College, Cambridge. The criticism of his first work, *Hours of Idleness,* stung him into writing *English Bards and Scotch Reviewers;* in 1812 he published the first two cantos of *Childe Harold,* with immense success. Six months' stay at Geneva produced the third canto of *Childe Harold* and *The Prisoner of Chillon. Manfred* and *The Lament of Tasso* were written in 1817. The next year he was at Venice, and finished *Childe Harold* there. During the next three years he produced the first five cantos of *Don Juan,* and a number of dramas of various merit. In 1822 he removed to Pisa, and worked there at *Don Juan,* which poem, with the exception of *The Vision of Judgment,* occupied his pen almost up to the close of his life. In the summer of 1823 he sailed for Greece, to aid the struggle for independence with his influence and money. He arrived at Missolonghi on the 4th of January, 1824. On the 9th of April he was overtaken by a shower while on horseback, and fever and rheumatism followed. After twenty-four hours' insensibility, he expired on the evening of the 10th of April, 1824. His body was conveyed to England; and, denied a resting-place in Westminster abbey, was interred in Hucknall-Torkard churchyard near Nottingham.

Bystrom (*boo'strĕm*), **Johan Niklas,** a Swedish sculptor, born at Filipstad, in the province of Wermeland, 1773, worked three years under Sergell of Stockholm, applying himself chiefly to the study of the antique, and gained the academy's prize in 1809. He proceeded to Rome the following year, whence he soon sent home his *Drunken and Reposing Bacchante.* He returned to Stockholm in 1815, and exhibited his colossal statue of the prince-royal. He died at Rome, 1848.

Cabanis (*ká'bá'nēs'*), **Pierre Jean Georges,** physician and philosophical writer, born at Cosnac, France, 1757. He furnished Mirabeau with material for his speeches on public education; and Mirabeau died in his arms. Cabanis died near Meulan, 1808. His chief work is his once-famous *Rapports du Physique et du Moral de l' Homme.*

Cabell, James, author of novels and tales, born at Richmond, Va., 1879. While he was instructor of French and Greek at William and Mary College he started his preparation for authorship, especially in genealogy of the South, conducting genealogical research work for the Virginia Society of Colonial Wars, 1916, and the Virginia Society of the Sons of the American Revolution. Opposed in thought and feeling to the impressionistic and realistic attitudes in contemporary letters, Mr. Cabell cultivated a highly classical and exquisite style. His fiction consists of the biography of a legendary hero, traced through his various descendants to contemporary Virginia. The portions dealing with mythological characters, including *Figures of Earth, Jergen, The High Place, The Silver Stallion,* and two philosophical essays, *Beyond Life and Straws and Prayerbooks* are the better known. He is a master of delicate, graceful and subtle language.

Cabet (*kă'bā'*), **Etienne,** French communist, was born at Dijon, 1788, and died at St. Louis, Mo., 1856, having gone out to Texas in 1848 to found an "Icarian community," so named after his *Voyage en Icarie,* a "philosophical and social romance," describing a communistic Utopia.

Cable, George Washington, author, was born in New Orleans, 1844; educated in public schools; M.A., Litt.D., Yale, Bowdoin; served fourth Mississippi cavalry, Confederate States army, 1863-65; devoted to literature. Author: *Old Creole Days; The Grandissimes; Madame Delphine; The Creoles of Louisiana; Dr. Sevier; The Silent South;* etc. Died, 1925.

Cabot (*kab'ut*), **George,** American shipmaster, afterward merchant, was born 1751, died 1823. He was a member of the Massachusetts state constitutional convention, and of that which ratified the federal constitution; U. S. senator 1790-96.

Cabot, John, born 1450 (?); **Cabot, Sebastian,** born 1474, two Venetians, father and son, were both celebrated navigators and discoverers. John probably died 1498; Sebastian died 1557.

Caedmon (*kad'mun*), the father of English song, was the first Anglo-Saxon who composed in his own language works which are still existant. The date of his birth is unknown, but his death occurred about 680 A.D. He was originally a cowherd, attached to the monastery of Whitby, and according to a legend was commanded in a dream to sing *"The Beginning of Created Things."*

Caesalpinus (*ses'al-pī'nus*), **Andreas,** Italian physiologist; born at Arezzo 1519; was professor of medicine and botany at Pisa, physician to Pope Clement VIII., and published several medical works. He developed several new ideas on the circulation of the blood which are now well recognized. Died, 1603.

Caesar, Caius Julius, a great Roman general, statesman, and historian, was born B.C. 100, died B.C. 44. He was the son of the praetor Caius Julius Caesar, and of Aurelia, a daughter of Aurelius Cotta. At the age of sixteen he lost his father, and shortly after he married Cornelia, the daughter of Lucius Cinna, the friend of Marius. This connection gave great offence to Sulla, the dictator, who proscribed him for refusing to put away his wife.

His friends obtained his pardon with difficulty, and Caesar withdrew from Rome, and went to Asia, serving his first campaign under M. Minucius Thermus, the praetor in Asia.

On the death of Sulla, Caesar returned to Rome, where he distinguished himself as an orator. He afterwards visited Rhodes, when he was taken by pirates, and compelled to pay fifty talents for his release. To revenge himself, he fitted out some vessels at Miletus, overtook the pirates, made the greater number of them prisoners, and had them crucified before Pergamus. He then returned to Rome, where his eloquence and liberality made him very popular. He was pontifex maximus in 63 B. C., praetor in 62 B. C., and governor of Spain in 61 B. C. On his return to Rome, having united with Pompey and Crassus in the memorable "first triumvirate," he became consul, and then obtained the government of Gaul with the command of four legions.

His military career was rapid and brilliant. He compelled the Helvetii, who had invaded Gaul, to retreat to their native country, subdued Ariovistus, who at the head of a German tribe had attempted to settle in the country of the Aedui, and conquered the Belgae. In nine years he reduced all Gaul, crossed the Rhine twice (B. C. 55 and 53), and twice passed over to Britain, defeated the gallant natives of this island in several battles, and compelled them to give him hostages. The senate had continued his rule in Gaul for another period of five years, while Pompey was to have the command of Spain, and Crassus that of Syria, Egypt and Macedonia for five years.

The death of Crassus in his campaign against the Parthians dissolved the triumvirate; and about the same time the friendship between Caesar and Pompey cooled. The senate, influenced by Pompey, ordered that Caesar should resign his offices and command within a certain time, or be proclaimed an enemy to the state, and appointed Pompey general of the army of the Republic. Upon this Caesar urged his soldiers to defend the honor of their leader, passed the Rubicon (49 B. C.), and made himself master of Italy without striking a blow, Pompey retiring into Greece. Caesar then levied an army with the treasures of the state, and hastened into Spain, which he reduced to submission without coming to a pitched battle with Pompey's generals. He next conquered Massilia (now Marseilles), and returned to Rome, where he was appointed dictator. He then followed Pompey into Greece, and defeated him at Pharsalia, from which Pompey escaped, only to be assassinated in Egypt.

In Rome the senate and the people strove eagerly to gain the favor of the victor. They appointed him consul for five years, dictator for a year, and tribune of the people for life. When his dictatorship had expired he caused himself to be chosen consul again, and without changing the ancient forms of government ruled with almost unlimited power. In 46 B. C. he crossed to Africa, defeated the Pompeians, Scipio and Cato, at Thapsus, and returning to Rome he was received with the most striking marks of honor. The term of his dictatorship was prolonged to ten years, the office of censor conferred on him alone; his person was declared inviolable, and his statue placed beside that of Jupiter in the capitol.

He soon after was honored with four several triumphs, made perpetual dictator, and received the title of *imperator* with full powers of sovereignty. In February, 44, B. C. he declined the diadem which Antony publicly offered him, and next morning his statues were decked with diadems. His glory, however, was short-lived, for a conspiracy was set on foot by his enemy Cassius, and joined by many of his own friends, including M. Brutus; and, notwithstanding dark hints had been given to him of his danger, he attended a meeting of the senate on 15th (ides) March, 44 B. C., and fell beneath the daggers of the conspirators.

Caesar was undoubtedly the foremost man of his time, being great as a statesman, a general, an orator, a historian, and an architect and engineer, and his assassination was brought about more by jealousy and envy than by real patriotism.

References.—Mommsen's *History of Rome;* S. J. Delorme's *Caesar and his Contemporaries,* Napoleon III.'s Froude's, and Fowler's *Lives of Caesar;* Baring-Gould's *Tragedy of the Caesars;* and Holmes' *Caesar's Conquest of Gaul.*

Cagliari (*kăl'yä-rē*), **Paolo Veronese,** an Italian painter of great eminence, was born at Verona in 1532. The church of San Sebastiano, in Venice, contains many of his productions, which are reckoned the most important of his earlier period—*i. e.,* the period before he visited Rome, when he first became acquainted with the masterpieces of Raphael and Michelangelo. He died in 1588. The most celebrated of his productions are the *Marriage Feast at Cana of Galilee,* and the *Presentation of the Family of Darius to Alexander.*

Caine, Thomas Henry Hall, British novelist and dramatist; born in 1853, of Manx and Cumberland parentage; was educated at schools in Isle of Man and Liverpool; became a journalist, and was for six years an editorial writer on Liverpool *Mercury.* His first novel was the *Shadow of a Crime;* his success came with *The Deemster; The Manxman; The Christian; The Eternal City.* Published in 1908 *My Story,* an autobiographical narrative of the earlier years of his literary life. He is justice of the peace in the Isle of Man, where, in 1901, he was returned by a large majority to the house of keys for Ramsey. Died, 1931.

Caird (*kārd*), **Edward,** Scottish philosopher, was born at Greenock, Scotland, 1835; educated at Glasgow University; Balliol College, Oxford; LL.D.; D.C.L.; fellow and tutor of Merton College, Oxford, 1864-66; professor of moral philosophy, Glasgow University, 1866-93; master of Balliol College, Oxford, 1893-1907. Author: *Philosophy of Kant; Hegel,* in Blackwood's series; *Critical Philosophy of Emmanuel Kant.* Died 1908.

Caird, John, Scottish preacher, born at Greenock, in 1820; studied at Glasgow, and became minister (1845). He received the degree of D.D. in 1860, was appointed professor of divinity in 1862, and was principal of Glasgow University, 1873-98. He published a volume of *Sermons; Spinoza;* etc. He died, 1898.

Cairnes (*kārnz*), **John Elliot,** British economist, was born at Castle Bellingham, Ireland, 1823, studied at Trinity College, Dublin, where he graduated B.A. in 1848. An accident in the hunting-field in 1860 led to a breakdown in health; and, having resigned his chair in 1872, he died at Blackheath, 1875. Cairnes may be regarded as a disciple of Mill, though differing from him on many points.

Caius Gracchus (*kā'yus grak'us*). See **Gracchus.**

Cajetan (*kaj'ē-tan*), **Cardinal,** properly Jacopo Thomas de Vio, born at Gaeta, Italy, 1469; in 1508 became general of the Dominicans, in 1517 cardinal, in 1519 bishop of Gaeta, and in 1523 legate to Hungary. He died at Rome, 1534.

Calderon (*kŏl'dĕr-on*) **de la Barca, Pedro,** Spanish dramatist, and one of the greatest of all time, was born at Madrid in 1600, and was educated at the University of Salamanca. He entered the army and served several campaigns in Italy and in Flanders, gaining a knowledge of men and things which he afterward made use of in his plays. He became a priest and royal chaplain, and died in 1681, still working at his literary labors. In later life he wrote many religious plays.

Calderon, Ignacio, diplomat; was born at La Paz, Bolivia, 1848; graduate University of La Paz; secretary of Bolivian legation at Rome, 1868-70. Traveled through United States, and for a time acted as consul-general of Bolivia at New York; returned to Bolivia, 1886, to manage affairs of large importing and exporting company; minister from Bolivia to United States 1904-1920.

Calderwood (*kŏl'dĕr-wo͝od*), **Henry,** British philosopher and educator, was born at Peebles in 1830; from 1856 to 1868 was minister of Greyfriars, Glasgow, and then became professor of moral philosophy at Edinburgh. He died in Edinburgh, 1897.

Calhoun (*kal-hōōn'*), **John Caldwell,** American statesman of Irish Presbyterian descent, was born in Abbeville county, South Carolina, 1782; graduated at Yale, 1804, and became a successful lawyer. He was elected to congress, 1811. In 1817 he entered Monroe's cabinet as secretary of war, and did good work in reorganizing the war department. In 1829 he declared that a state can nullify unconstitutional laws. On the passing by South Carolina in 1832 of the nullification ordinance he resigned the vice-presidency, and entered the United States senate, becoming a leader of the states-rights movement, and a champion of the interests of the slave-holding states. He died at Washington, 1850. Henry Clay, Daniel Webster, and Calhoun were "the great triumvirate" of American political orators.

Caligula (*ka-lig'ū-la*), **Caius Caesar Augustus Germanicus,** Roman emperor, 37-41 A. D., the youngest son of Germanicus (nephew of Tiberius) by Agrippina, was born 12 A. D., at Antium. On the death of Tiberius, 37 A. D., who, it was suspected, had received foul play at his hands, it was found that he had been appointed coheir along with the grandson of Tiberius, but the senate and the people allowed Caligula supreme and sole authority; he was a spendthrift and barbarously cruel. Died, 41 A. D.

Callicrates, a Greek architect, who lived at Athens in the eighty-fourth Olympiad, was, in conjunction with Ictinus, the artist who constructed the famous Parthenon, the sculptures and decorations of which were the work of Phidias.

Callimachus (*ka-lim'ā-kus*), a native of Corinth, flourished about the year B. C. 540, and was celebrated as an architect, sculptor, and painter. To him is ascribed the invention of the Corinthian order.

Calvert, George, Lord Baltimore. See **Baltimore, George Calvert.**

Calvin, John, reformer and Protestant theological writer, born at Noyon, in Picardy, 1509, died at Geneva, 1564. His father, Gerard Calvin or Cauvin, *procureur-fiscal* and diocesan secretary, dedicated him early to the church, and he was presented with a benefice at the age of twelve. The income derived from this nominal office enabled him to proceed to Paris and enter on a course of regular study. He soon became dissatisfied with the teaching of the Roman Catholic Church; in consequence he gave up his cure, and took to the study of the law in Orleans.

In 1532 he returned to Paris a decided convert to the reformed faith, and was soon compelled to fly, when, after various wanderings, he found a protector in Margaret of Navarre. In 1534 he returned to Paris; but, finding that the persecution against those who were inclined to the doctrines of the reformers was still raging, he retired to Basel in the autumn of the same year. At Basel he published his great work, *The Institutes of the Christian Religion,* 1536.

Having gone to Italy, after a short stay at Ferrara he went to Geneva, where reform had just been established. In 1538, in company with Farel, he was expelled from Geneva in consequence of the reign of extreme strictness they had introduced, when he went first to Berne and then to Strasburg. Here he married a widow, Idelette de Burie, and had one son, who died early.

In 1541 his friends in Geneva succeeded in effecting his recall, when he laid before the council the draft of his ordinances respecting church discipline, which were immediately accepted and published. His college of pastors and doctors and his consistorial court of discipline formed a theocracy, with himself at the head of it, which aimed virtually at the management of all municipal matters and the control of the social and individual life of the people. Michael Servetus, passing through Geneva in 1553, was arrested, and through Calvin's instrumentality was burned alive because he had attacked the mystery of the Trinity in a book which was neither written nor printed at Geneva. This has been regarded as the great blot on Calvin's career, though approved of by many others of the reformers. His energy and industry were enormous; he preached almost daily, delivered theological lectures three times a week, attended all deliberations of the consistory, all sittings of the association of ministers, and was the soul of all the councils.

Up to 1561 the Lutherans and the Calvinists were as one, but in that year the latter expressly rejected the tenth article of the Confession of Augsburg, besides some others, and hence arose the name of *Calvinists.* Calvin retained his personal influence to the last; but a year or two before his death his health had broken down. As a theologian Calvin was equal to any of his contemporaries in profound knowledge, acuteness of mind, and in the art of making good a point in question. As an author he merits great praise. His Latin works are written with much method, dignity, and correctness. He was also a jurist and an able politician.

References.—*Henry's Life and Times of Calvin;* and other *Lives* by Bolsec, Masson, Fischer, Doumergue, John Scott, T. H. Dyer, and Bungener. See also Schaff's *History of the Christian Church.*

Cambaceres (*kăn'bä'sā'res'*), **Jean Jacques,** duke of Parma, French statesman and jurist, was born in Montpelier in 1753. He was brought up to the legal profession, and became president of the French convention in 1792. He was afterward president of the committee of public safety, and of the council of five hundred. When Napoleon Bonaparte was named first, Cambaceres was made second consul. He left France when the Bourbons

were a second time restored, but was permitted to return. Died, 1824.

Cambyses (*kam'bi'sēz*), second king of the Medes and Persians, succeeded his father, Cyrus, in 529 B. C. He put his brother Smerdis to death, and in 527 B. C. or 525 B. C. invaded and conquered Egypt. Died, 522. B. C.

Cameron (*kam'ĕr-un*), **Simon,** American politician; born Lancaster county, Pa., 1799; learned printing and became editor of a democratic paper at Harrisburg, Pa.; elected United States senator 1845, and again 1856; secretary of war under Lincoln, 1861-62; again United States senator 1866-77 when he resigned, and was succeeded by his son. Died, 1889.

Camillus (*kā-mil'us*), **Marcus Furius,** a famous patrician of early Rome; took Veii, a rival town, after a ten years' siege; was five times elected dictator, and gained a succession of victories over rival Italian tribes; died in 365 B. C., lamented by the whole nation, and remembered for generations after as one of the noblest heroic figures in Roman history.

Camoens (*kam'ō-ens*), **Luiz de,** the epic poet of Portugal, born 1524 at Lisbon, and studied the ancient classics at Coimbra; he was banished, 1556, to Macao, where he lived several years, and was engaged in writing his principal *Os Lusiadas* till recalled. He dedicated *The Lusiad* to the young king, Sebastian, who granted him a small pension (about $20); died in poverty and obscurity in the hospital at Lisbon, 1597.

Camp, Walter, athletic director and writer, was born at New Haven, Conn., 1859. He was graduated from Yale in 1880. He is considered the originator of modern American football, starting the rivalry with Harvard and improving rules. During the war he had direction of training camp athletics, out of which grew the famous Daily Dozen. He wrote much concerning sports. Died, 1925.

Campbell, Alexander, American theologian, was born at Shane's castle, Ireland, 1788. Attended Glasgow University; came to the United States, and served as pastor of a Presbyterian church in Washington county, Pa.; later became a Baptist. His followers are also known as "Christians," "Church of Christ," and "Campbellites." He died, 1866.

Campbell, Archibald. See **Argyll.**

Campbell, Hon. Archibald, Canadian capitalist, was born at Ridgetown, Ontario, 1846; educated at high school and collegiate institution of the county; elected member of parliament for West York, 1901 and 1904; chairman of the railway and transportation committee; elected to Dominion senate, 1907.

Campbell, Sir Colin, Lord Clyde, British general, was born in Glasgow, 1792. In 1808 he entered the army as an ensign. He distinguished himself greatly in the wars in the Peninsula, the United States, China, India, and the Crimean war. He reached the summit of his fame in 1857, when, as commander of the forces in India, he finally crushed the Sepoy mutiny and saved the English empire in India. He returned from India to England in 1860 and died 1863.

Campbell, Mrs. Patrick (Beatrice Stella Tanner), actress; born, Forest House, Kensington Gardens; married Patrick Campbell (killed in South Africa, 1900), 1884. Joined dramatic club "Anomalies," West Norwood, 1886-87; toured with Green's company, 1888; Ben Greet's company 1890-91; played engagements at the Adelphi St. James'; Haymarket; Garrick; Lyceum and other London theaters. She also made several visits to the United States.

Campbell, Thomas, a distinguished British poet, born in Glasgow, 1777. He wrote *The Pleasures of Hope.* The poem was published in 1799, and went through four editions in a twelvemonth. He died at Boulogne in 1844, and was buried in Westminster abbey.

Campbell-Bannerman, Rt. Hon. Sir Henry, late prime minister of Great Britain, was born in 1836. Educated at Glasgow University and Trinity College, Cambridge, B.A., 1858; M.A., 1861; secretary admiralty, 1882-84; secretary for war, 1886 and 1892-95; chosen leader of the liberal opposition in succession to Sir William Harcourt, February, 1899. On the resignation of the Balfour administration in December, 1905, he was summoned by the king and formed a liberal cabinet, himself becoming first lord of the treasury and prime minister; the general election which followed gave him a tremendous majority. Died in office, 1908.

Canisius (*kā-nē'sē-us*), **Petrus,** Dutch Jesuit missionary and scholar, was born at Nimeguen, Netherlands, 1521. He was the first provincial of the Jesuits in Germany, distinguished himself at the council of Trent, 1545, and was appointed court preacher to Ferdinand I. He wrote *Summa Doctrinae Christianae.* Died, 1597.

Canning, George, British statesman and orator, born in London, 1770. In 1796 he was appointed an under-secretary of state. In 1801 Pitt resigned office, and Canning joined the opposition against the Addington ministry. When the Portland ministry was formed, in 1807, Canning was appointed minister of foreign affairs. He arranged the relations of Brazil and Portugal; drew the French cabinet into agreement with the British respecting Spanish-American affairs; was the first to recognize the free states of Spanish America; contended earnestly for Catholic emancipation, and prepared the way for the repeal of the corn laws. Died, 1827.

Cannon, Joseph G., lawyer, ex-speaker the United States house of representatives; born in Guilford, N. C., 1836; admitted to Illinois bar; state's attorney, Vermilion county, Ill., 1861-68; member of congress, 1873-91, and again in 1893-1903, twelfth Illinois district, and in 1903-13, eighteenth district; chairman of committee on appropriations, 55th, 56th, and 57th congresses; speaker of 58th, 59th, 60th, and 61st congresses. Died, 1926.

Canova (*kā-nō'vā*), **Antonio,** Italian sculptor, was born, 1757, at the Venetian village of Possagno, and studied at Venice and Rome. His *Theseus,* 1782, was greeted as well worthy to vie with classic art, and he was regarded as the founder of a new school. In 1802 he was appointed by Pius VII. curator of works of art, and was called to Paris to model a colossal statue of Napoleon. Created marquis of Ischia. He died in Venice, 1822.

Canovas del Castillo (*kā'nō-vās del kās-tēl'yō*), **Antonio,** Spanish conservative statesman and historian, born at Malaga, 1826, became a member of the cortes in 1854, and was premier 1875-81, 1884-85, 1890-92, and from 1895 till the 8th of August, 1897, when, at the bath of Santa Aguida, Vittoria, he was shot by an anarchist in the presence of his wife.

Canrobert (*kaN'rō-bâr'*), **Francois Certain,** marshal of France, born 1809. After many years of effective service in the East, in the Crimea, and in Italy, when war was declared by France against Prussia, in 1870, he was one of the generals in command at Wœrth, where the French were defeated; senator 1876. Died, 1895.

Canterbury, Archbishop of. See **Davidson, Rev. Randall Thomas.**

Cantu (*kān-tōō'*), **Cesare,** modern Italian author, was born, 1805, at Brescia, in northern Italy, and was educated at Sondrio, where he was appointed professor of *belles-lettres.* His great work is the *Storia Universale* (35 vols., 1837-1842). Died, 1895.

Canute (*kā-nūt'*), or **Cnut** (*k'nōōt*), a king of England who succeeded to the rulership of the Danes in the north of England on the death of his father, Swein or Sweyn, was born 995. The sudden decease or assassination of Edmund made Canute sole ruler in 1017, and he continued to reign until his death in 1035.

Capet (*kā'pet*), **Hugh.** See **Hugh Capet.**

Capo D'Istria (*kā'pō dēs'trē-ā*), **John, Count of,** a Greek, who gained distinction as a diplomat, was born at Corfu in 1776; in 1813, in consideration of his meritorious labors, the emperor Alexander made him minister for foreign affairs. In 1827 he was made president of the new Greek government, where he fell by the hand of an assassin in 1831.

Caprivi (*kā-prē'vē*), **Count Georg Leo von,** German general, statesman, and chancellor, was born in 1831, and died in 1899. In 1883 he was given command of the 30th division of the imperial army at Metz; was subsequently given command of the 10th or Hanoverian army corps, the finest in the German army. In 1890 Emperor William made him chancellor. In 1894 he resigned office, and retired.

Caracalla (*kar'ȧ-kal'ȧ*) (properly Marcus Aurelius Antoninus Bassianus), Roman emperor, the son of the emperor Septimius Severus, born at Lyons, 188 A. D. After his father's death, 211 A. D., he ascended the throne as co-regent with his brother, Publius Septimius Antoninus Geta, whom he afterward caused to be murdered. In his famous constitution he bestowed Roman citizenship on all his free subjects not citizens—but simply in order to levy a greater amount of taxes on releases and heritages, which were paid only by citizens. He was assassinated, at the instigation of Macrinus, prefect of the prætorians, by one of his veterans named Martialis, 217 A. D.

Caracci (*kā-rä'chē*), or **Carracci, Agostino,** Italian painter, was born in Bologna in 1558, became a disciple of his cousin Ludovico. He dabbled in poetry and literature, and was a really great engraver on copper. His brother's jealousy is said to have driven him from Rome (where they did the frescoes in the Farnese palace) to Parma, where he died, 1602.

Caracci, Annibale, was born in Bologna in 1560, died, 1609; rapidly became a great painter under his cousin, and soon outstripped both him and his brother. The influence of Correggio and of Raphael largely molded his style. He was buried close to Raphael in the Pantheon.

Caracci, Ludovico, Italian painter, the son of a butcher, was born at Bologna in 1555, died, 1619, studied at Venice and Parma, and, with his two cousins, established in Bologna an "eclectic" school of painting.

Cardan (*kär'dan*), **Jerome,** Italian mathematician, naturalist, physician, and philosopher, was born at Pavia, 1501; graduated in medicine at Padua; and was professor of mathematics at Milan. He subsequently practiced medicine and gradually gained a high reputation. He died in Rome, 1576, a few weeks after finishing his candid autobiography, *De Propria Vita.*

Cardigan (*kär'di-gan*), **James Thomas Brudenell, Earl of,** was born 1797; died 1868; sat in the house of commons from 1818 to 1837, when he succeeded his father as seventh earl. He entered the army in 1824. From 1836 to 1847 he commanded the 11th hussars, on which he spent $50,000 a year, and which he made the crack regiment in the service. He commanded a cavalry brigade under Lord Lucan in the Crimea, and led the "Six Hundred" at Balaclava. He was inspector-general of cavalry 1855-60.

Carducci (*kär-dōōt'chē*), **Giosue,** Italian poet, was born, a physician's son, at Valdicastello, in the province of Pisa, in 1836, and died in 1907. In 1860 he became professor of Italian literature at Bologna, in 1876 was returned to the Italian parliament as a republican, and in 1890 was nominated a senator.

Carew, Mrs. James. See **Terry, Ellen.**

Carey (*kā'ri*), **Henry Charles,** political economist was born at Philadelphia, 1793. In 1836 he published an essay on the *Rate of Wages,* which was expanded into the *Principles of Political Economy.* In 1838 he published *The Credit System of France, Great Britain, and the United States;* and in 1848 *The Past, the Present, and the Future.* He was originally a free-trader, but was later recognized as the head of a new school of political economy. Died, 1879.

Carey, James F., socialist leader; born Haverhill, Mass., 1867; learned shoemaking trade; joined international boot and shoemakers' union; one of three leaders in unemployed agitation on Boston common, 1894; president Haverhill common council; member Massachusetts house of representatives; elected 1898, 1899, 1900, 1901, 1902; last four elections over combination of democratic and republican parties.

Carnart, Henry Smith, scientist, professor physics, University of Michigan, since 1886; born at Coeymans, N. Y., 1844; graduated from Wesleyan University, 1869; LL.D. Professor of physics and chemistry, Northwestern University, 1872-86; vice-president of St. Louis international electrical congress, and one of official delegates for the United States, 1904; accompanied the British association for the advancement of science to South Africa as a guest, 1905. Author: *Primary Batteries; Elements of Physics; University Physics; Electrical Measurements.* Died, 1920.

Carleton (*kärl'tun*), **Will,** author, lecturer; born at Hudson, Mich., 1845; graduated at Hillsdale College, B. S., 1869; A.M.; Litt.D.; became known as a poet, and lectured and gave author's readings through the United States, Great Britain and continental Europe. Author: *Farm Ballads; Rhymes of Our Planet; Songs of Two Centuries,* etc. Died, 1912.

Carlisle (*kär-līl'*), **John Griffin,** lawyer; born in Campbell county, Kentucky, 1835; common school education; admitted to Kentucky bar, 1858; lieutenant-governor of Kentucky, 1871-75; member of congress, 1877-89 (speaker, 1883-89); United States senator from Kentucky, 1890-93; secretary of treasury of United States, 1893-97; vice-president of anti-imperialist league. Died, 1910.

Carlyle, Thomas, English essayist, biographer, and historian, and one of the most remarkable writers of his age, was born in Scotland, 1795. He was educated at Edinburgh University, and commenced his literary career in 1823, by contributions of able essays to the *Edinburgh Encyclopedia* and the *Edinburgh Review.* Next followed his translations of Goethe's *Wilhelm Meister,* a work which showed a bent of reading destined to influence materially his future career. Succeeding these appeared his *Life of Schiller.* Between 1830 and 1833, Carlyle wrote his *Sartor Resartus,* and in 1837 he published *The French Revolution,* a history abounding in vivid and graphic descriptions. *Chartism,* and 5 volumes of his *Essays,* appeared in 1839, and in the next year he delivered a series of lectures on *Hero-Worship,* which were afterwards published in a collected form. His *Past and Present* was given to the world in 1843, and in 1850 the *Latter-Day Pamphlets,* essays suggested by the revolutionary convulsions of 1848. Carlyle's *Life of John Sterling* has been described as "one of the finest biographies ever written. In 1845 appeared his great work entitled *Oliver Cromwell's Letters and Speeches, with Elucidations,* which gave him a place among historians. In 1860-4 Carlyle brought out his *Life of Frederick the Great.* In 1865 he was elected Lord Rector of Edinburgh University.

Carlyle's leading characteristic is a rugged earnestness of expression, and a range of thought widened and deepened by his profound acquaintance with the writings of great German thinkers. He died at London, February 5, 1881.

References.—Froude's *Thomas Carlyle: a History of the First Forty Years of his Life,* and his

Thomas Carlyle: a History of his Life in London; also *Carlyle's Reminiscences*, edited by Froude and by Professor Norton. Of other books dealing with Carlyle's life, we may mention Conway's *Thomas Carlyle;* Shepherd's *Memoirs of the Life and Writings of Thomas Carlyle*, and *The Bibliography of Carlyle;* Wyllie's *Thomas Carlyle, the Man and his Books;* Masson's *Carlyle Personally and in his Works;* Larkin's *Carlyle and the Open Secret of his Life;* and *Lives* by R. Garnett, Hood, Nicoll, and Wilson's *Froude and Carlyle.*

Carman (*kär'man*), **William Bliss,** journalist, poet, was born at Fredericton, New Brunswick, Canada, 1861. Graduate of University of New Brunswick, B.A., 1881. Author: *Low Tide on Grand Pré; Songs from Vagabondia* (with Richard Hovey); *More Songs from Vagabondia* (with Richard Hovey); *By the Aurelian Wall; Last Songs from Vagabondia; Christmas Eve at St. Kavin's.* Died, 1929.

Carnarvon (*kär-när'vun*), **Earl of** (Henry Howard Molyneux Herbert), was born in London, Eng., 1831; was appointed governor of Carnarvon castle in 1854. He was the author of the British North America act, passed by both houses of parliament in 1867, whereby the Dominion of Canada was formed. Died, 1890.

Carnegie (*kär-neg'i*), **Andrew,** capitalist, manufacturer, philanthropist, author; born in Dunfermline, Fifeshire, Scotland, 1837; came with family to United States, 1848, settling in Pittsburg; learned telegraphy, entered employ of Pennsylvania railroad, and became telegraph operator, advancing by promotions until he became superintendent of Pittsburg division of Pennsylvania system; joined Woodruff, inventor of the sleeping car, in organizing Woodruff sleeping car company, gaining through it nucleus of his fortune; during Civil War served as superintendent of military railways and government telegraph lines in the east. After the war he developed iron works of various kinds and established, at Pittsburg, Keystone bridge works and Union iron works. Introduced into this country Bessemer process of making steel, 1868; interests were consolidated, 1899, in the Carnegie steel company, which, in 1901, was merged in the United States steel corporation, when he retired from business; married, 1887, Louise Whitfield, of New York. Gave libraries to many towns and cities in the United States and Great Britain, and large sums in other benefactions; total benefactions exceeding $75,000,000, including over $40,000,000 for nearly 1,500 municipal library buildings, and $10,000,000 for college professors' pension fund in United States, Canada, and Newfoundland. Lord rector of St. Andrew's University, 1903; LL.D., 1905. Died, 1919.

Carnot (*kär'nō'*), **Lazare Nicolas Marguerite,** was born in 1753 at Nolay, Burgundy, France. In 1791 he became a member of the legislative assembly, and in the convention voted for the death of Louis XVI. In 1797, having opposed the extreme measures of Barras, his colleague in the directory, Carnot, as a suspected royalist, was sentenced to deportation. He escaped into Germany, where he wrote his defense, which conduced to the overthrow of his colleagues in 1799. On his return to Paris he was made minister of war, 1800. Died, 1823.

Carnot, Nicholas Leonard Sadi, son of Nicolas, founder of thermo-dynamics, was born at Paris, 1796, died, 1832; in his *Reflexions sur la Puissance du Feu,* he enunciates the principle of reversibility, considered the most important contribution to physical science since the time of Newton.

Carnot, Marie Francois Sadi, French statesman, was born at Limoges, France, 1837. He was elected a member of the assembly in 1871, was twice a cabinet officer, and upon the resignation of President Grévy was chosen president of the French republic, 1887. He was assassinated by an anarchist, 1894.

Carpaccio (*kär-pät'chō*), **Vittore,** an early Venetian painter, was born in Istria, about 1450, and was influenced by the Vivarini and Gentile Bellini. In 1510 he executed for San Giobbe his masterpiece, the *Presentation in the Temple,* now in the Academia. Died about 1522.

Carpeaux (*kär'pō'*), **Jean Baptiste,** sculptor, was born at Valenciennes, 1827, in 1854 obtained the *Prix de Rome,* and died near Paris, 1875.

Carpenter, Frank George, journalist, traveler, author; born in Mansfield, Ohio, 1855; graduate of Wooster University, 1877. Began newspaper work as legislative correspondent for Cleveland *Leader,* at Columbus, 1879; newspaper tour to Mexico, 1891; to Russia, Germany, and England, 1892; to China, Japan, and Korea, 1894; spent 1900 in Philippines, China, Java, Australia and New Zealand. Author: *Carpenter's Geographical Readers—Asia, North America, South America. Europe, Australia, Our Colonies and Other Islands of the Seas, Africa;* etc. Died, 1924.

Carpenter, J. Estlin, theological writer, principal of Manchester College, Oxford; born 1844; second son of Wm. B. Carpenter, C.B., M.D., F.R.S., etc.; educated at University College school, London; University and Manchester New Colleges. M.A.; Litt.D.; D.D.; lecturer in Manchester College, London, and Oxford, 1875-1906; joint-editor with Professor Rhys Davids of the *Digha Nikaya,* and the *Sumangala Vilasini;* joint-author with Rev. P. H. Wicksteed of *Studies in Theology;* and other works.

Carpenter, William Benjamin, one of the most distinguished physiologists and writers on physiology of modern times; was born at Exeter, 1813, died at London, 1885. Graduate of Edinburgh University; M.D., LL.D., F.R.S. He took a chief part in the government expeditions which were sent out in 1868-69-70 for deep sea exploration in the north Atlantic.

Carpenter, Rt. Rev. William Boyd, bishop of Ripon, born at Liverpool, 1841; educated at Royal Institution school, Liverpool; St. Catharine's College, Cambridge; D.D., D.C.L.; vicar of St. James', Holloway, 1870-79; vicar of Christ church, Lancaster Gate, 1879-84; canon of Windsor; 1882-84; hon. chaplain to the queen, 1879-83; chaplain-in-ordinary, 1883-84. Author: *Commentary on Revelation; Thoughts on Prayer; Lecture on Preaching; Christian Reunion; Introduction to Study of the Bible.* Died, 1918.

Carranza, Venustiano; Mexican general and political leader, born in Coahuila, 1859. Educated for the law, but on account of defective eyes, took up farming. Joined Madero revolt against Diaz in 1910 and was appointed governor of his native state. Became leader of one of the Mexican factions. In 1915, recognized by United States as first chief of the Mexican de facto government. Died, 1920.

Carrel, Alexis, American surgeon and biologist, was born at Sainte-Foy-les-Lyons, France, in 1873. He studied medicine at Lyons and for several years was connected with French hospitals. In 1905 he came to this country and conducted laboratories at McGill University and at University of Chicago, then joined the Rockefeller Institute for medical research, New York city. His investigations in experimental surgery have proved the possibility of suturing (joining together by stitches) blood vessels and of transplanting whole organs and limbs from one person to another, for which he was awarded the Nobel Prize in 1912. His work during the World War was very outstanding. Among his publications are *The Preservation of Tissues, The Transplantation of Limbs, The Transplantation of Veins and Organs.*

Carroll, Charles, of Carrollton, American patriot, born at Annapolis, Md., 1737. He was elected a member of congress, 1776, and was among the first signers of the declaration of independence. He outlived all the other signers of the declaration of independence, and died in 1832 when ninety-five years old.

Carroll, Lewis, the pseudonym of Rev. Charles Lutwidge Dodgson, English humorist and author, born about 1833; graduate of Christ Church, Oxford, 1854; took orders in the church, 1861; lecturer at Oxford, 1855-81; wrote *Alice in Wonderland; Through the Looking-glass.* Died, 1898.

Carson, Christopher, popularly known as Kit Carson, an American frontiersman, born in Kentucky in 1809. During the Civil War he rendered important services in the territories, and was brevetted brigadier-general. Died in Colorado, 1868.

Carson, Rt. Hon. Sir Edward Henry, British lawyer, statesman; M. P. for Dublin University 1892-1918; Q. C., English bar, 1894; was born 1854; educated at Portarlington school; Trinity College, Dublin, M.A., LL.D. Solicitor-general for Ireland, 1892; solicitor-general of Great Britain, 1900-06.

Carson, Hampton Lawrence, lawyer, author; born at Philadelphia, 1852; graduate of University of Pennsylvania, 1871; A.M., LL.B., LL.D.; admitted to bar, 1874. Professor of law, University of Pennsylvania; attorney-general, Pennsylvania, 1903. Died, 1929.

Carson, Howard Adams, civil engineer; born at Westfield, Mass., 1842; B.S.; A.M., Harvard; principal superintendent of construction of Boston main drainage, 1878; chief engineer of Boston transit commission, 1894-1909, building the Boston subway, etc.

Cartier (*kär'tyā*), **Sir George Etienne,** Canadian statesman, born at St. Antoine, Canada, in 1814. In 1857 he became leader of the lower Canada section of the government, and in 1858, premier; and he held a cabinet office for several years afterward. Died at London, 1873.

Cartier, Jacques, French explorer, was born 1494. Employed by Francis I. to make explorations on the North American coast, in three successive expeditions, 1534-50; he completed the discovery and colonization of Canada. Died about 1557.

Cartwright, Edmund, inventor of the power-loom, was born at Marnham, England, 1743. A visit in 1784 to Arkwright's cotton-spinning mills resulted in his power-loom. Cartwright also took out patents for combing wool and various other inventions; he even joined Robert Fulton in his efforts toward steam navigation. He died at Hastings, in 1823.

Cartwright, Rt. Hon. Sir Richard John, Canadian statesman; minister of trade and commerce for Canada and member of parliament for South Oxford, 1896; born Kingston, Ontario, 1835; elected to parliament, 1863; finance minister, 1873-78; chief financial critic, and one of the leaders of the opposition in parliament 1879-96; acting premier and leader in the house of commons 1897; proposed a joint commission, and represented Canada on the Anglo-American joint high commission when it sat at Quebec in the summer of 1898, and Washington in the winter of 1898-99; acting premier during Sir Wilfrid Laurier's absence at colonial conference, 1907. Died, 1912.

Carus (*kā'rŏŏs*), **Paul,** philosophical writer, editor of *The Open Court* and *The Monist;* born at Illsenburg, Germany, 1852; graduate of University of Tübingen, Ph.D., 1876. Author: *The Ethical Problem; Fundamental Problems; The Soul of Man; Primer of Philosophy,* etc. Died, 1919.

Caruso (*Kah-roo-zo*), **Enrico,** the greatest operatic tenor, was born in 1873 in Naples. He made his debut in 1894 in Naples in "*L'amico Francisco.*" His success was immediate, and he sang in all the greatest operas. Died August 2, 1921.

Carver, John, the first governor of Plymouth colony, was born in England about 1575. He was one of the Pilgrims who came over in the *Mayflower,* and was chosen governor soon after landing. He assisted in settling his people in their new homes, but died within four months, in April, 1621.

Cary, Alice, American poet and prose writer, born 1820; commenced writing at eighteen. In connection with her sister Phoebe, born, 1824, she published her first volume in 1850, and from that time till her death continued to pour forth stories, poems, etc. Died, 1871.

Cary, Henry Francis, translator of Dante, was born at Gibraltar, 1772. He was educated at Rugby, Sutton, Coldfield, and Birmingham; in 1790 entered Christ Church, Oxford, and in 1796 took holy orders. In 1805 he published a translation of the *Inferno,* in 1814 of the whole *Divina Commedia.* Assistant librarian in the British museum 1826-37. He died in 1844, and was buried in Westminster abbey beside Samuel Johnson.

Cary, Phoebe, American poet, sister of Alice Cary, born near Cincinnati, 1824. She wrote about a third of the *Poems of Alice and Phoebe Cary,* and other poems. Her death quickly followed that of her sister in 1871.

Casabianca (*kä'zä-byäng'kä*), **Louis,** French naval officer, born in Bastia about 1755; in 1798 was captain of the flagship *L'Orient* in the expedition to Egypt. He was mortally wounded at the battle of the Nile, August 1, 1798.

Casaubon (*kä-sō'bun,* Fr. *käzō-bôn'*), **Isaac,** scholar and critic, born 1559 at Geneva, where, in 1582 he was appointed professor of the Greek language. Subsequently he held professorships at Montpelier, 1596, and at Paris, 1598. King James appointed him prebendary of Canterbury and Westminster. Died in London, 1614.

Casimir-Perier (*kä'zē'mēr'-pā'ryā'*), **Jean Paul Pierre,** French statesman, was born at Paris, 1847; served with distinction at the siege of Paris, 1871; entered the legislative chamber, 1874, and served both as vice president and president of that body; became premier of France, 1893, and president in 1894; resigned, 1895. Died, 1907.

Cassini (*käs-sē'nē*), **Giovanni Domenico,** Italian astronomer and savant, born at Perinaldo, near Nice, 1625; died 1712. In 1650 he was appointed to the astronomical chair in the University of Bologna. His first work related to the comet of 1652.

Cassini, Jacques, son of the preceding, born at Paris, 1677. In 1694 he was elected a member of the academy of sciences. On the death of his father he succeeded to the charge of the observatory at Paris, and died 1756. As an observer Cassini was eminently successful.

Cassius (*kash'i-us*), or in full, **Caius Cassius Longinus,** Roman general and politician, was quæstor to Crassus in the Parthian war, 54 B. C. After Pharsalia he was taken prisoner and pardoned by Cæsar. In 44 B. C. as prætor he attached to himself the aristocrats who resented Cæsar's supremacy, and won over Brutus; and in the same year Cæsar was murdered. Cassius fled to the East, united his forces with those of Brutus, and at Philippi, being routed, compelled his freedman Pindarus to kill him, 42 B. C.

Casson, Herbert Newton, editor, socialistic writer, born at Ontario, Canada, 1869; graduate of Victoria College; in 1893 went to Boston and with Morrison I. Swift organized the unemployed, and at head of 10,000 men marched to state house demanding relief.

Castle, Irene, dancer, movie actress, established a dancing school with her husband, Vernon Castle, which set the pace for dancing over all America. After her husband's death she retired for a time. Later she married Capt. Treman. Divorced. Married Frederic Mc Laughlin, 1924.

Castlereagh (*käs'l-rā', käs''l-rā*), **Robert Stewart, Lord,** British statesman, eldest son of the marquis of Londonderry; was born in 1769; president of the board of control in 1802; and secretary of war in 1805. During Lord Liverpool's administration, Lord Castlereagh again became a member of the government as foreign secretary, and concluded the treaty of Paris in 1814. He remained in office the remainder of his life, which was closed by suicide in 1822.

Catharine I., empress of Russia; born about 1685; was the outcast infant of a Livonian peasant girl, and became nurse in the family of the Protestant minister of Marienburg. In 1701 she married a Swedish dragoon, who soon afterward went with his regiment to Riga, and never returned.

After the capture of Marienburg by the Russians, Catharine became the mistress first to General Bauer, with whom she lived at Moscow, secondly Prince Menschikoff, and, finally, of Peter the Great, who married her privately near Warsaw in 1711, and publicly the next year at St. Petersburg. Shen then embraced the Greek religion, and took the name of Catharine. On the death of Peter in 1725, she was proclaimed czarina. Her death was the result of intemperance. Died, 1727.

Catharine II., empress of Russia; born in 1729. As empress she seized the Crimea, and took part in the dismemberment of Poland. She promoted the welfare of Russia by encouraging literature and commerce, but her reign was sullied by disgraceful amours. Died, 1796.

Catharine, Saint, of Siena, is a saint belonging to the fourteenth century, born about 1347. She was said to have been favored with extraordinary revelations, and the wounds of Christ were believed to have been impressed upon her body. Died, 1380.

Catharine of Aragon, queen of England; wife of Henry VIII.; born in 1485; daughter of Ferdinand of Aragon and Isabella of Castile. She was beautiful and virtuous, yet the king in 1527 sought a divorce on the ground that the marriage was uncanonical. After much temporizing on the part of the pope, the marriage was in 1533 pronounced invalid by Cranmer, archbishop of Canterbury, and his sentence was ratified by act of parliament. Died, 1536.

Catharine de Medici (*dā-mā'dē-chē*), born in 1519; great granddaughter of Lorenzo the Magnificent, niece of Pope Clement VII., and queen to Henry II. of France, acted as regent during the minority of her second son, Charles IX. She instigated the massacre of St. Bartholomew. Died, 1589.

Catiline (*kat'i-lin*), **Lucius Sergius,** Roman politician, born about the year 108 B. C.; died, 62 B. C. In the year 68 B. C. he was elected praetor; in 67 B. C. governor of Africa; and in 66 B. C. he desired to stand for the consulship, but was disqualified on account of the accusations brought against him of maladministration in his province. His political conspiracies were frustrated by Cicero, and he fled from Rome and took refuge with Manlius, who was in command of the army in Etruria. In 62 B. C. the army of the senate encountered that of Catiline near Pistoia, and after a desperate battle he was defeated and slain.

Catlin, George, ethnologist, was born at Wilkesbarre, Pa., 1796; studied law, but soon turned to drawing and painting. During 1832-40 he was studying the Indians of the far west; traveled, 1352-57, in South and Central America; and again lived in Europe until 1871. He died at Jersey City, 1872. His works include *Manners of the North American Indians, The North American Portfolio,* and *Last Rambles in the Rocky Mountains.*

Cato, Marcus Porcius, surnamed Censorius and Sapiens, afterward known as Cato Priscus, or Cato Major—to distinguish him from Cato of Utica—born at Tusculum in 234 B. C. In 184 B. C. he was elected censor, and discharged so rigorously the duties of his office that the epithet *Censorius,* formerly applied to all persons in the same station, was made his permanent surname. He repaired the water courses, paved the reservoirs, cleansed the drains, raised the rents paid by the publicans for the farming of the taxes. In the year 175 B. C. he was sent to Carthage to negotiate on the differences between the Carthaginians and the Numidian king, Masinissa; but having been offended by the Carthaginians he returned to Rome, where, ever afterward, he described Carthage as the most formidable rival of the empire, and concluded all his addresses in the senate house with the well-known words: "*Ceterum censeo, Carthaginem esse delendam.* (For the rest, I vote that Carthage must be destroyed.)" Cato died 149 B. C.

Cato, Marcus Porcius, named Cato the "younger," or Cato Uticensis, born 95 B. C. From Macedonia, where he was military tribune in 67 B. C. He quitted the questorship at the appointed time amid general applause. In 63 B. C. he was elected tribune, and also delivered his famous speech on the Catiline conspiracy, in which he denounced Cæsar as an accomplice of that political desperado, and determined the sentence of the senate. Died 46 B. C.

Catt, Carrie Chapman, suffragist, president international woman suffrage alliance; born Ripon, Wis., 1859; educated at State Industrial College of Iowa. State lecturer and organizer Iowa woman suffrage association, 1890-92; since then in service of national American woman suffrage association and international alliance.

Cattell (*ka-tel'*), **James McKeen,** educator, psychologist, professor of psychology, Columbia, 1891-1917; born Easton, Pa., 1860; graduate of Lafayette College, 1880, A.M., Ph.D.; professor psychology, University of Pennsylvania, 1888-91. President Psychol. Corpn. since 1921. Editor of *Science, The Popular Science Monthly,* and *Library of Philosophy, Psychology.*

Catullus (*ka-tul'us*), **Caius Valerius,** celebrated Roman lyric and elegiac poet, is supposed to have been born at Verona, Italy, B. C. 87, and to have died about B. C. 54; in the civic strife of the time he sided with the senate, and opposed to the length of directing against him a coarse lampoon.

Cavell, Edith, English nurse, was born in Norfolkshire, 1866. In 1907 she established a training school for nurses in Brussels. In August, 1915, she was suddenly arrested by the German governor, charged with having aided English and Belgian young men to escape. Found guilty in a German military court, she was secretly condemned and shot at 2 a.m., October 13, 1915.

Cavendish (*kav'en-dish*), **Henry,** English chemist and physicist, was born at Nice, France, 1731; died 1810. His most important work included the discovery of the composition of water, the composition of nitric acid, and the determination of the mean density of the earth.

Cavour (*kä'-vōōr'*), **Count Camilla Benso di,** distinguished Italian statesman of the nineteenth century; was born at Turin, 1810. He was educated for a military career, but his liberal tendencies being likely to prove an insuperable barrier to his promotion, retired during the stirring events of 1830-31, and devoted himself to agriculture, in which he introduced great improvements. In conjunction with Count Cesare Balbo, he, in 1847, established a political daily journal, in which he advocated the interests of the middle classes. On his suggestion the king was petitioned for a constitution, which was granted in February, 1848. As a member of the chamber of deputies, during the stormy period which succeeded Charles Albert's declaration of war against Austria, Cavour strenuously opposed the ultrademocrats. In the Marquis d'Azeglio's ministry, formed soon after the fatal battle of Novara, Cavour was successively minister of agriculture and commerce, minister of marine, and minister of finance; and in 1852 he was appointed to succeed d'Azeglio as premier. From this time until his resignation in 1859, in consequence of the conclusion of the peace of Villafranca, Cavour was the originator as well as the director of the Sardinian policy. The dispatches, which Cavour penned in reply to those of Austria prior to the outbreak of the Italian war are masterpieces of astute diplomacy. In 1860 he was again called upon to preside over the Sardinian government, the duties of foreign minister likewise devolving upon him, and temporarily those of the minister of the interior also. He continued to direct the Sardinian policy until his death, 1861.

Caxton, William, the founder of English printing, was born in 1422. During a residence in Flanders he acquired the new typographic art, and on his return set up a press in the almonry, Westminster, where he brought out the first printed book seen in England, the *History of Troy.* Died, 1491.

Cayley (*kā'li*), **Arthur,** English mathematician, was born at Richmond, Surrey, 1821. He was educated at King's College, London, and Trinity College, Cambridge. He was admitted to the bar at Lincoln's Inn in 1849, and established a practice as a conveyancer. He was president of the royal astronomical society, 1872-73, and of the British association in 1883. His chief book is an *Elementary Treatise on Elliptic Functions;* a ten volume edition of his *Mathematical Papers* was begun in 1889. He died at Cambridge, 1895.

Cecil (*ses'il* or *sis'il*), **William,** Lord Burleigh, English statesman, was born at Bourne, Lincolnshire, 1520. Entering Gray's Inn at the age of twenty-one devoted himself to the study of law. In 1547 Henry VIII. appointed him master of requests, and in the following year his talents procured for him the office of secretary of state. Elizabeth created him Baron Burleigh in 1571, and conferred on him the order of the Garter, when he was also made lord high treasurer. Died, 1598.

Cecilia (*sē-sil'i-ä*), **Saint,** a Roman lady of high descent, of the second or third century, who suffered martyrdom for her faith. From her skill in singing she is chosen the patroness of musicians, and especially of sacred music.

Cellini (*chel-lē'nē*), **Benvenuto,** Italian gold worker, sculptor, founder, and medailleur, was born at Florence in 1500, and first displayed skill as a chaser and gold-worker. At an early period he went to Rome, where he was employed by many distinguished patrons of art. He accompanied Cardinal Ferrara to France, and entered the service of Francis I. He executed several fine works in metal and marble—among them the celebrated bronze group of "Perseus with the Head of Medusa," now in the market-place in Florence. Died in 1570 or 1572.

Celsius (*sel'si-us*), **Anders,** Swedish astronomer, the constructor in 1742 of the centigrade thermometer, was born at Upsala, 1701. He was the grandson of Magnus Celsius, astronomer and decipherer of the Helsing runes, and nephew of Olof Celsius, professor of theology. He became in 1730 professor of astronomy at Upsala, where in 1740 a splendid observatory was erected for him. Died, 1744.

Celsus (*sel'sus*), an Epicurean philosopher, but tinged with Platonism, lived in the second century after Christ, and wrote, after 150 A. D., the *Logos Alethes.* He reproached Christians with their party divisions and ever-varying opinions and charged them with having wilfully altered their sacred writings.

Cenci (*chen'chē*), **Beatrice,** a noble Roman lady, whose tragic fate has served as the theme of one of Shelley's best tragedies, lived in the sixteenth century. The fine portrait of Beatrice, by Guido Reni, in the Barberini gallery, Rome, is well known. Died, 1599.

Cervantes Saavedra, Miguel de (Sp. *thāir-vän'tace sä-vä'thra*), Spanish author, was born at Alcala de Henares, 1547, died, 1616. In 1571 he joined the armament commanded by Don John of Austria against the Turks. In the battle of Lepanto (1571) he received a wound, which deprived him of the use of his left hand and arm; but he remained in active service till 1575, when, on his way from Italy to Spain, he was captured by Algerino corsairs. In 1580 his relatives and friends purchased his freedom. He returned to Madrid in his 34th year, when his literary career properly began.

He produced here his pastoral romance, *Galatea,* and several plays for the stage. From 1598 to 1603 all trace of him is lost, but he is supposed to have spent the interval in La Mancha, where he is said to have begun *Don Quixote* in prison. The first part was published at Madrid in 1605. In this work Cervantes hit the vulnerable point of his age, and gave the finishing stroke to the mummeries of knight-errantry. After his return to Madrid, while the publication of the first part of *Don Quixote* and its unprecedented success drew upon him the hostilities of those who resented the satire of his novel, he published his *Novelas ejemplares,* most of which had been written earlier. In 1614 he published the *Viaje al Parnaso.*

The second part of *Don Quixote* appeared in the beginning of 1615, and was received with the same enthusiasm which had greeted the first part. He had been living in great poverty, which the sale of this work relieved. But his health began to fail, and he had a presentiment of his death, indicated in the preface of his *Perseles y Sigismunda,* a serious romance which he prepared for the press at the beginning of 1616, though it was not published until 1617 by his widow. On April 19 he dictated to his wife a letter addressed to his friend Lemos, to whom he dedicated the work. Four days afterward he died, on the same day with Shakespeare.

References.—The best Spanish biography of Cervantes is that by Fernandez de Navarrete See also his *Life* by Roscoe, Kelly, and Watt.

Cesnola (*chās-nō'lä*), **Count Luigi Palma de,** archaeologist, was born near Turin, 1832. He served with the Sardinian contingent in the Crimean war, went to New York in 1860, and fought in the Civil War. Appointed American consul at Cyprus in 1865, he commenced a series of excavations; his splendid collection of statues, lamps, vases, inscriptions, etc., was purchased by the Metropolitan museum, New York, in 1873, of which he became director in 1879. He wrote *Cyprus, Its Ancient Cities, Tombs, and Temples.* Died, 1904.

Chadwick, George W., composer, born in Lowell, Mass., 1854. Director of the New England Conservatory of Music. He has composed several symphonies and overtures, including "*Rip Van Winkle,*" "*Thalia,*" "*Adonais,*" an opera "*Judith,*" and minor works. Died, 1931.

Chaffee (*chaf'ē*), **Adna Romanza,** American general; born in Orwell, Ohio, 1842; educated in public schools. Entered army, 1861, and served throughout the Civil War; commanded brigade, Santiago campaign, 1898; promoted major-general, United States volunteers, 1898. Honorably discharged as major-general, 1899. Appointed brigadier-general of the United States volunteers, 1900. Assigned to the command of United States forces for the relief of United States legation, Pekin, 1900; arrived at Pekin, China, August 14, 1900; promoted to major-general of the United States army, 1901. Detailed to general staff corps, 1903, and assigned to duty as assistant to chief of staff, Washington; promoted to lieutenant-general of United States army, 1904, and chief of staff until his retirement in 1906. Died, 1914.

Chaliapin, Feodor, basso, born in Kazan, Russia, 1873. After appearances in Petrograd, Paris and Italy he finally came to New York and joined the Metropolitan Opera Company in 1906.

Chalmers (*chä'mērz, chô'mērz*), **Thomas,** Scottish divine, was born in Fife, 1780; educated at St. Andrews, and ordained to preach at nineteen. He was subsequently professor of moral philosophy at St. Andrews, 1823, and of theology at Edinburgh, 1828. Died, 1847.

Chamberlain (*chām'bēr-lin*), **George Earle,** lawyer, United States senator; born near Natchez, Miss., 1854; graduate of Washington and Lee University, B.A., LL.B., 1876. Attorney-general

Oregon, 1891. Elected governor of Oregon for terms, 1903-07, 1907-11; elected United States senator for the terms 1909-15, 1915-21. Died, 1928.

Chamberlain, Rt. Hon. Joseph, British statesman, was born in London, 1836; educated in private school and University college, London; LL.D., D. C.L. On the death of his father he retired from the firm, in order to devote all his energies to public life. In 1876 he entered parliament and took his seat with the radicals; president of board of trade, with cabinet rank, 1880-85; president of local government board in 1885, until his divergence of views on the Irish policy of Gladstone caused his resignation, 1886; in 1895 took office under Lord Salisbury as colonial secretary. The negotiations with the Transvaal, which ended in war, occupied him fully during 1899, and his South African policy was one of the main controversial features of the general election of 1900 and during 1901. In 1902 he visited South Africa, and on his return received an address from the lord mayor and corporation of London, 1903. In 1903 he launched, at Birmingham, his scheme for the revision of the fiscal policy of the country and the adoption of a policy of preferential tariffs. His seventieth birthday and completion of thirty years' service as member of parliament for Birmingham were celebrated 1906. Died, 1914.

Chamberlin, Clarence Duncan, was born in Denison, Iowa, 1894. Studied engineering at Iowa State College. Joined the United States Signal Corps during World War and was commissioned in aviation. Gained his reputation while "barnstorming." Married Miss Wilda Bogert of Independence, Iowa. On Sunday, June 5th, 1927, he took off with Charles A. Levine as passenger in his plane "Columbia," landing at Eisleben, Germany, after 46½ hours of trans-Atlantic flying.

Chambers, Robert, Scottish publisher, was born in Peebles, 1802, began business as bookseller in Edinburgh in 1818 and gave his leisure to literary composition. In 1844 he published anonymously the *Vestiges of Creation*, which prepared the way for Darwin's *Origin of Species*. He received the degree of LL.D. from St. Andrews in 1863. The labor of preparing the *Book of Days* broke his health, and he died at St. Andrews, 1871.

Chambers, Robert William, author, artist; born in Brooklyn, 1856; educated at Julian's academy, Paris, 1886-93. First exhibited in salon, 1889; illustrations for *Life, Truth, Vogue*, etc. Author: *In the Quarter*; *The King in Yellow*; *The Red Republic*; *A King and a Few Dukes*; *The Maker of Moons*; *With the Band*. Died, 1933.

Chambers, William, Scottish publisher, was born at Peebles in 1800. In 1814 he was apprenticed to a bookseller in Edinburgh, and 1819 started business for himself, to book-selling afterward adding printing; in 1832 he started *Chambers' Edinburgh Journal*, and soon thereafter he united with Robert in founding the business of W. & R. Chambers, the best known of whose many publications are, besides the *Journal* and a numerous series of educational works, a *Miscellany*, *Papers for the People*, the *Cyclopædia of English Literature* (2 vols.), and *Chambers' Encyclopaedia* (10 vols.). He died in 1883, having shortly before received the offer of a baronetcy. He was made LL. D. of Edinburgh in 1872.

Chamisso (*shä-mē'sō*; French, *shä'mē'sō*), **Adelbert von,** German lyric poet, born in 1781 at the castle of Boncourt, in Champagne, France. As early as 1804-06, he, together with Varnhagen von Ense, published a *Musen Almanach*. In 1813 he wrote his original and amusing fiction called *Pleer Schlemihl*. Died, 1838.

Champlain (*sham'plān'*; French, *shaN'plăN'*), **Samuel de,** a French naval officer and explorer, of the seventeenth century. During the reign of Henry IV., of France, he visited many parts of America; discovered Lake Champlain, and formed the first French establishments at Quebec and Montreal. He was made governor of Quebec, from which he was driven by the English, in 1631. When peace was restored, he was reinstated. Died in 1635.

Champney, James Wells, an American painter and illustrator, born in Boston, Mass., 1843; studied at Paris, Antwerp, and Rome. He was especially distinguished as an illustrator and genre painter; elected an A. N. A. in 1882. Died, 1903.

Champollion (*shăN'pōl'yōN'*), **Jean Francois,** French Egyptologist and professor of history; born 1790; died, 1832. His greatest work was in the field of deciphering Egyptian hieroglyphics.

Channing, Edward, historian, born at Dorchester, Mass., 1856; died, 1832. Graduate of Harvard, 1878; Ph. D., 1880. Instructor in history, Harvard 1883; professor, 1897-1931. Life's work, a history of the United States, begun, 1895; seven volumes completed and final one in complete notes at death; won Pulitzer prize for sixth volume, *The War for Southern Independence*.

Channing, William Ellery, founder of American Unitarianism, was born in Newport, R. I., 1780; graduated from Harvard in 1798. He was termed the "apostle of Unitarianism." In 1821 he received the title of D.D. from Harvard, on account of the tractate on the *Evidences of Christianity*, his *Address on War*, and his *Sermons*. In 1822 he visited Europe, and made the acquaintance of great authors, notably Wordsworth and Coleridge. Coleridge said of him: "He has the love and the wisdom of love." He wrote essays and treatises, characterized by vigor, eloquence, taste, and a lofty tone of moral earnestness. Died, 1842.

Chaplin, Chas. Spencer, comedian, born near London, England, 1888. Mainly self educated; identified with theatre since seven years old; employed in vaudeville theatres, London; made screen debut, 1914, Keystone Film Co., Essanay, 1915, Mutual, 1916; signed with First Nat. Exhibitors' Circuit to make eight two-reel pictures for $1,000,000, 1917; directing his own productions since.

Chapman, Frank Michler, ornithologist; born in Englewood, N. J., 1864; academic education. Associate curator ornithology and mammalogy, American museum natural history since 1887. President Linnæan society New York, 1908; curator of ornithology since 1908.

Chapman, George, English poet, born 1559, died 1634. He published a translation of the *Iliad* in English ballad measure, and afterward translated the *Odyssey*, the Homeric hymns, and portions of Ovid, Terence, Musæus, and Petrarch, and wrote many plays.

Charcot (*shär'kō'*), **Jean Martin,** pathologist, was born at Paris, 1825, studied medicine at Paris, where he became a professor, doctor at the Salpetriere hospital, and a member of the institute. He contributed much to our knowledge of chronic and nervous diseases, and made hypnotism a scientific study. Died, 1893.

Charlemagne, or Charles the Great, emperor of the West and king of France, was born 742, and died, in Aix-la-Chapelle, 814. He was the second son of Pepin the Short, and the Frankish kingdom reverted to him and his brother Carloman on his father's demise, in 768. Carloman died three years later, and Charles secured the undivided sovereignty. Master of Gaul and western Germany, he now entered upon a wide career of conquest.

Incensed at the Lombard king Desiderius, and urged by Pope Adrian I., he crossed the Alps in 773, reduced Pavia, and secured the iron crown of Lombardy. Desiderius was exiled to the monastery of Corbie. A rebellion was put down, and Charlemagne appointed his second son, Pepin, to rule the country (776). The most terrific of his wars, that against the Saxons, had begun in 772, and with some intervals raged till 804. Invasions were repeated, new risings crushed, the greatest severities, as the slaughter of 4,000 prisoners at one time, were adopted, and Christianity was forced upon the people. Wittikind, the heroic leader of the Saxons, was finally compelled to surrender in 785, and was baptized, but it was only after fresh struggles that the nation was completely subdued.

In 778 Charlemagne crossed the Pyrenees to make war upon the Moors. The country as far as the Ebro was taken, but on his return his rear guard was destroyed by the Basques at Roncesvalles; the famous Roland being among the slain. The design of Duke Thassilo of Bavaria to unite the enemies of Charlemagne against him failed, and that country was placed under Frankish governors. War was waged against the Slavic tribes on the Baltic, and the subjection of the Avars was completed in 796. The territories of Charlemagne now extended from the Ebro to the Eider and Volturno, and from the Atlantic to the Oder and Thesis, and his aim of restoring the western Roman empire was achieved. On Christmas, 800, he was crowned at Rome by Pope Leo III., and henceforth styled himself emperor of the West, impressing Christian and Mussulman princes with his power.

He sought to establish a regular administration in his motley empire. Projected laws were submitted to great national assemblies, and the edicts known as capitularies evince his wisdom. The whole dominion was divided into counties, governed by earls, who were placed under imperial delegates. He increased the power of the clergy, but kept them under his control. He encouraged trade and industry, and established a uniform currency. Illustrious men, whose leading spirit seems to have been Alcuin, were invited from all countries to diffuse learning in his empire. Charlemagne himself was a diligent scholar and a patron of art. His favorite residence was Aix-la-Chapelle. His habits were active, frugal, and temperate. The only son who survived him was his successor, Louis le Débonnaire. The great emperor and his twelve legendary peers became the heroes of chivalric romance.

References.—His *Life* by Eginhard, Eng. trans. by Glaister; *Charles the Great*, by Mombert; Mullinger's *The Schools of Charles the Great*; Wells' *The Age of Charlemagne*; and Davis' *Charlemagne* in Heroes of the Nation series.

Charles I., king of England, second son of James I., was born in 1600, proclaimed king on the death of his father in 1625, and married to Henrietta Maria of France, daughter of Henry IV., in the May following. His reign is chiefly celebrated for the great civil war between the king and the parliament which began in 1641, and ended in the capture of the monarch, who was brought to trial in January, 1648, before a high court of justice, as a traitor to the country. Sentence of death being passed upon him, he was, on January 30, 1649, beheaded on a scaffold erected in the street near the windows of the banqueting house at Whitehall.

Charles II., king of England, son of Charles I., born in St. James palace, London, in 1630; was at The Hague, in Holland, when his father was beheaded. He assumed the royal title, and was proclaimed king by the Scots; landed in Scotland, and was crowned at Scone. Marching into England, he was defeated by Cromwell at Worcester, September 3, 1651, and fled to France. By the policy of General Monk, after Cromwell's death, he was restored to his crown and kingdom in 1660, an event known as the restoration. Died, 1665.

Charles V., surnamed "the wise," king of France 1364-80, was the son of King John II., and was born 1337. His father being made prisoner by the English at the battle of Poitiers, on September 19, 1356, he assumed the regency. His father died April 8, 1364, and Charles ascended the throne. Died, 1380.

Charles VI., "the mad," or the "beloved," born 1368, died October 21, 1422. He succeeded his father Charles V. in 1380, and France was under the oppressive rule of his uncles until he dismissed them in 1388. He reigned wisely till 1392, when his weak mind became deranged. Henry V. of England invaded the distracted land and won a great victory at Agincourt in 1415. Charles died, leaving most of France in English hands. His son by Isabella of Bavaria, Charles VII., succeeded him.

Charles VII., "the victorious," born 1403, died 1461. He was the fifth son of Charles VI. and Isabella, and became by the death of his brothers heir apparent in 1416. On the death of Charles VI. in 1422 Henry VI. of England was proclaimed king of France at St. Denis, and his authority was generally recognized. By 1453 the English had lost all but Calais. Charles' last years were embittered by his son Louis XI., who succeeded him.

Charles IX., king of France, second son of Henry II. and Catharine de' Medici, born 1550, died 1574. He succeeded his brother Francis II. in 1560, under the regency of his mother. Intervals of war and peace ensued. The battles of Jarnac and Moncontour were fought in 1569, after which an apparent reconciliation was effected, succeeded in 1572 by the massacre of St. Bartholomew. Charles manifested deep remorse, and died after terrible sufferings.

Charles X., king of France, the grandson of Louis XV., was born, 1757. He received the title Comte d'Artois, and in 1773 married Maria Theresa of Savoy. After the fall of the Bastille, in 1789, he headed the first emigration of nobles and took the lead in the attempts made to restore the monarchy. Under Louis XVIII., Artois headed the royalist party, and by the death of that monarch became king, under the title of Charles X. Charles was driven from the capital, and Louis Philippe declared king. Charles lived the remainder of his life in exile. He died at Görz, Austria, 1836.

Charles V. emperor of Germany, was born at Ghent, 1500, son of Philip, archduke of Austria, and of Johanna, daughter of Ferdinand and Isabella of Spain. He became in 1516, ruler of Spain, the Netherlands, Sicily, Naples, and the New World; and on the death of his grandfather, in 1519, added Austria to his dominions. His grandfather, Maximilian, had endeavored to secure for him also the succession to the imperial throne; but the electors were by no means anxious further to aggrandize his power, and at first rather favored the claims of the rival candidate, Francis I. of France. By dexterous policy, however, the honor was secured for the young Charles, who was crowned at Aix-la-Chapelle in 1520; and thus began that rivalry between Charles and Francis which is one of the determining factors of European history.

The war was waged in all quarters, but in Italy alone was it decisive; and the French were driven from the duchy of Milan in 1521,

and out of Italy altogether in 1522. The discomfiture of the French king was increased by the treachery of the Constable of Bourbon, who openly joined the side of Charles. Francis again invaded Italy and occupied Milan; but he was defeated and made captive at Pavia (Feb., 1525), and forced to sign the treaty of Madrid (1526), by which he resigned all his pretensions, and agreed to coöperate with Charles in suppressing heresy. But the terms were too humiliating, and war again broke out. Threatened by the Turks on his eastern frontier, and annoyed by the spread of heresy in Germany, Charles agreed to the peace of Cambrai (1529), which, however, left him master of Italy.

Hitherto Spain had been the residence and headquarters of Charles, but Germany now demanded his presence. The Diet of Worms in 1521 had settled nothing, save to show Charles as a faithful supporter of the papacy. He had issued an edict against Luther; but the only result was to organize German national sentiment against the emperor. Social and political disturbances, however, such as the Anabaptist movement and the Peasants' War, strengthened the hands of Charles, and at the Diet of Augsburg (1530) he renewed the Edict of Worms, and was met by the formation of the Schmalkaldic league of Protestant princes.

A threatened invasion by the Turks prevented Charles from taking immediate action, and, to secure the coöperation of the Protestants against the Turks, he was forced to make concessions (1532). But his policy was not changed; and although he was year after year diverted from his purpose—first by renewed war with Francis, which did not end till a joint invasion of rance by Henry VIII. of England and Charles forced Francis to sign a most unfavorable peace at Crespy (1544), and again by campaigns undertaken against the pirates of Tunis (1536) and Algiers (1541)—he never quite lost sight of it. The death of his rival, Francis I., in 1547, at last left him free; and the chief interest of the remaining years of his reign lies in his German dominions.

The two chief objects of his policy did not always harmonize, and his ultimate failure to secure either of them was, in part at least, due to this conflict between them. He wished to secure the reversion of the imperial throne for his son Philip; but in this he was disappointed, through the instance of his brother, Ferdinand of Austria, who claimed the empire for himself. The other object was to stamp out heresy, and restore Germany unbroken to the papacy.

Charles at first easily broke the power of the Protestant princes, and also made prisoners of their leaders; but the harsh manner in which an unsatisfactory compromise called the Augsburg Interim (1548) was enforced created discontent, and Charles found himself faced by the formidable opposition headed by Maurice of Saxony. At one time Charles almost fell into the hands of Maurice, and was driven a wanderer from Germany. He was forced to agree to the treaty of Passau (1552), and to the peace of Augsburg in 1555, which acknowledged the existing conditions, and established Protestantism over a great part of Germany.

The peace of Augsburg was the culmination of his reign. In 1556, disappointed in his ambitions and broken in health, he abdicated in favor of his son Philip, and retired to the monastery of San Yuste, near Plasencia, in Spain, where he died, 1558.

References.—Robertson's *Life of Charles V.*; Stirling-Maxwell's *Cloister Life of Charles V.*; Vehe's *Court of Austria.*

Charles X., king of Sweden, the son of the count Palatine, was born at Nyköping, 1622. He took part in the Thirty Years' war, and on the abdication of his cousin, Queen Christina, 1654, succeeded to the throne of a kingdom impoverished by her extravagance. In 1659 he was driven from an attack on Copenhagen by help of the Brandenburgers and the Dutch; and he died suddenly at Gothenburg, 1660.

Charles XII., king of Sweden, son of Charles XI., and a warlike prince, was born 1682. He ascended the throne at the age of fifteen. He had to cope with Denmark, Russia, and Poland combined against him; he foiled the Danes at Copenhagen, the Russians at Narva, and Augustus II. of Poland at Riga. Charles XII. was the last of the Swedish kings. Born in 1682, and died in 1718.

Charles the Bold, duke of Burgundy, son of Philip the Good, born, 1433, died, 1477. He fought at Gavre in his father's ranks in 1452, engaged in the "war of the public weal" in France, forcing Louis XI. to yield to the demands of the confederates, and after humbling Liege in 1466 and destroying Dinant, he succeeded Philip, in June, 1467, as duke of Burgundy. In 1472 Gelderland, his fifth duchy, was acquired. In 1476 he invaded Switzerland, but his forces were overwhelmed at Granson and at Morat, and he lost Lorraine. He attempted to recover it, and besieged Nancy. Here on January 5, 1477, Rene, duke of Lorraine, vanquished his army, Charles falling in the fight.

Charles Martel, duke of Austrasia, was born about A. D. 689; died, 741. He was the natural son of Pepin d'Heristal, and succeeded his father in the dukedom in 715. As mayor of the palace he possessed the whole regal power, which he administered with great success, and gained many victories the principal of which was over the Saracens in 732. It was in consequence of this victory that he was called *Martel*, or "the hammer." On the death of Thierry in 737, he omitted to declare a successor to the throne and continued to administer affairs with the title of duke of the Franks. At his death he divided his dominions between his sons Carloman and Pepin. The latter became the first king of France of the Carlovingian race; name was taken from the founder, Charles Martel.

Charlevoix (*shär'lē-vwä'*), **Pierre Francois Xavier de,** a noted French traveler and historian, born at St. Quentin, 1682. He became a member of the society of Jesuits when only sixteen years old. In 1720 he visited Canada, went up the St. Lawrence river and through the great lakes, and reaching the Mississippi through the Illinois river, sailed down to New Orleans, went from there to Santo Domingo, and thence to France, which he reached after an absence of two years. Died, 1761.

Charlton, John, English artist, was born at Bamborough Northumberland, 1849; studied at Newcastle school of arts and South Kensington; exhibited at royal academy, 1870, and regularly after that time.

Charron (*shä'rôn'*), **Pierre,** philosopher and theologian, born at Paris, 1541. After being admitted to the bar he took orders, and became a leader of the modern Catholics. He was a friend of Montaigne, from whose essays he borrowed freely. Died, 1603.

Chase, Salmon Portland, American jurist and statesman, was born in New Hampshire in 1808. He was sent to the house of representatives and to the United States senate from Ohio, and was elected governor of that state. Appointed secretary of the treasury by President Lincoln, at the outbreak of the Civil War, he conducted the finances with rare skill and success. Appointed chief-justice of the supreme court in 1864, he held this office at his death, in 1873.

Chase, Harry Woodburn, educator, was born in Groveland, Mass., 1883; received A.B. and A.M. degrees at Dartmouth; Ph.D. at Clark university, 1910; president of University of North Carolina, 1920-1930; president of National Association of State Universities, 1929; elected president of University of Illinois, 1930.

Chase, Susan Frances, educator, author, lecturer, was born in Shanghai, China; graduated from University of Wisconsin, 1895; Ph.D., University of Buffalo, 1898; taught at University of West Virginia; was instructor at University of Buffalo. Died, 1927.

Chase, William Merritt, American artist; was born at Franklin, Ind., 1849; early studied under B.F. Hayes in Indianapolis, J. O. Eaton, New York, A. Wagner and Piloty, Munich. Established studio in New York. Died, 1916.

Chateaubriand (*shä' tō' brē' dän'*), **Vicomte de Francois Auguste,** 1768-1848, French author, was born at St. Malo. At the flight of Louis XVI. he endeavored to stem the revolutionary tide, but failing, retired to England. In 1815 he was created a peer of France, was ambassador at London in 1822, and minister of foreign affairs, 1823-24.

Chatfield-Taylor, Hobart Chatfield, author, was born at Chicago, 1865; graduate Cornell, 1886. Editor: *America*, 1888-90; consul of Spain at Chicago, 1892-94; chevalier of the legion of honor and officer de l'Instruction Publique, France; chevalier of the order of Isabella, the Catholic, Spain; chevalier of the order of St. James, Portugal, etc. Author: *With Edge Tools; An American Peeress, Two Women and a Fool*, etc.

Chatterton, Thomas (1752-1770), English poet, began writing poetry when he was only 15, publishing several fine poems, showing brilliant imagination, invention, and fertility, under the name of Rowley. He went to London in 1769, but misfortune and starvation drove him to suicide by poison the following year.

Chatrian, Alexandre. See **Erckmann-Chatrian.**

Chaucer (*chô'sĕr*), **Geoffrey,** the "father of English poetry," was born about 1340. At one period he seems to have turned his attention to law, and to have become a member of the Inner Temple. In 1359 he served under Edward III. in his French campaign, and was made prisoner. The date of his return from captivity and of his subsequent marriage cannot now be ascertained. After his marriage he began to mix in public affairs. He was sent on an embassy to Genoa in 1372, and on his return was appointed comptroller of the customs for wools, and in the same year the king granted him a pitcher of wine daily for life. In 1377 he proceeded to Flanders in the retinue of Sir Thomas Percy, afterward earl of Worcester; and for several years thereafter he was employed in embassies and other business connected with the public service. He died at London in 1400 and was buried in Westminster abbey. His poems include *The Romaunt of the Rose; The Canterbury Tales; The Book of the Duchess; The House of Fame*, and *The Legend of Good Women.*

Cheops (*kē'ops*), or **Khufu,** a king of Egypt of the fourth dynasty. He built the great pyramid. He changed that government into a despotic tyranny which had previously been a limited monarchy, and died after reigning fifty-six years, hated by his people. According to Lepsius he lived about 2800-2700 B. C.

Cherubini (*kā'r ōō-bē'ne*), **Maria Luigi Carlo Zenobi Salvatore,** Italian composer, was born at Florence in 1760. He was naturalized in France, and settled in Paris, the scene of his greatest triumphs, where he composed operas, of which the chief were *Iphigenia in Aulis*, and *Les deux Journees*, or *The Water Carrier*, his masterpiece. Died, 1842.

Chesterfield, Philip Dormer Stanhope, Earl of, English politician, writer, and a man of fashion, was born in 1694, and educated at Cambridge. He was distinguished at the court of George II., and was sent as ambassador extraordinary to Holland in 1728. He was made a knight of the Garter in 1730. In 1745 he was appointed lord-lieutenant of Ireland, and afterward became secretary of state. He is now more known by his *Advice to His Son* than by his public services. Died, 1773.

Chesterton, Gilbert Keith, English journalist and author; born at Campden Hill, Kensington, 1874; educated at St. Paul's school; attended classes at Slade school; began reviewing art books for the *Bookman*, and then for the *Speaker;* since then has contributed to *Daily News, Literature, Pall Mall Magazine, Echo, World, Clarion*, Died, 1936.

Chevalier (*shĕ-vä'lyā'*), **Michel,** French economist, was born at Limoges, 1806, and trained as an engineer. He was sent by Thiers to inquire into water and railway communication in the United States; was made a councillor of state in 1838; and in 1840 professor of political economy in the Collège de France. As a freetrader he aided Cobden in carrying into effect in 1860 the commercial treaty between France and England, becoming a senator and grand officer of the legion of honor. He died at Montpelier, 1879.

Chevreul (*shĕ-vrül'*), **Michel Eugene,** French chemist, born at Angers, 1786, studied chemistry at the Collège de France in Paris. In 1826 he entered the academy of sciences, and in 1830 became director of the museum of natural history. Died in 1889, his hundredth birthday having been celebrated three years before with great enthusiasm.

Cheyne (*chā'nē*), **Thomas Kelly,** biblical scholar, joint-editor of the *Encyclopaedia Biblica*, and author of *Critica Biblica*, was born in London, 1841. Educated at Merchant Taylors school and Worcester college, Oxford, he became fellow of Balliol college in 1869; D.D. Litt.D. A member of the Old Testament Revision company, he contributed much to magazines and reviews. His chief books were *The Prophecies of Isaiah; Exposition of Jeremiah and Lamentations; The Book of Psalms*, etc. Died, 1915.

Cheyney, Edward ..otts, educator, author; born at Wallingford, Pa., 1861; graduate of University of Pennsylvania, 1883; professor European history, University of Pennsylvania. Author: *Social Changes in England in the Sixteenth Century; Social and Industrial History of England.*

Childs, George William, publisher and philanthropist, was born in Baltimore, 1829, became clerk in a book store in Philadelphia, and by 1850 was head of a publishing firm. Proprietor from 1864 of the Philadelphia *Public Ledger*. He died, 1894.

Chittenden (*chit'en-den*), **Russell Henry,** scientist, chemist, director Sheffield school, Yale, 1898-1922; born at New Haven, Conn., 1856; graduate Yale, Ph B, Ph.D., LL.D., Sc.D. Professor physiological chemistry, Yale. Member national academy sciences; president American physiological society, 1895-1904. Author: *Digestive Proteolysis; Studies in Physiological Chemistry*, 4 vols.; *Physiological Economy in Nutrition; The Nutrition of Man.*

Chitty (*chit'ti*), **Joseph,** English lawyer and legal writer; born 1776, died at London, 1841. His chief works are, *Treatise on the Parties to Actions and to Pleadings and Synopsis of Practice in the King's Bench and Common Pleas.*

Choate (*chōt*), **Joseph Hodges,** lawyer, diplomat, ambassador of United States to England, 1899-1905; born in Salem, Mass., 1832; graduate of Harvard and Harvard law school, 1852; LL.D., D.C.L.; one of the committee of seventy which broke up the Tweed ring, 1871; governor of New York hospital, 1877 (chairman of committee of elections). Author of *Addresses on Abraham Lincoln, Admiral Farragut*, etc. Bencher of the Inner Temple, England, 1905. Died, 1917.

Choate, Rufus, American lawyer, statesman, and orator, was born at Essex, Mass., in 1790. After graduating at Dartmouth college, he entered upon the study of law at Cambridge and in Washington. He was elected to the senate in 1841. After the death of Daniel Webster, Choate became the recognized leader of the Massachusetts bar. His foresight led him to anticipate the Civil War and to do more than was by some considered wise to conciliate the south. Died at Halifax, Nova Scotia, 1859.

Choiseul (*shwä-zül'*), **Stephen Francis, Duke of,** French statesman and diplomat, was born in 1719. He became prime minister of France, through the influence of Madame de Pompadour. In 1761 he negotiated the secret treaty with the king of Spain, known as the "family compact." In 1770 he was dismissed from office, and exiled to one of his estates. He died in 1785.

Chopin (*shō-paN'*), **Frederic Francois,** Polish pianist and composer, was born, 1810. His waltzes, mazurkas, and other compositions are peculiar in melody, rhythm, and harmony, and have a great charm. He was one of the first pianists. He spent most of his life in Paris, where he died, 1849.

Chosroes (*kos'rō-ēz*), or **Khosru I.,** king of Persia from A. D. 531 to 579. His reign was marked by great victories in war and wise conduct in peace. He enlarged his kingdom, and made his subjects love him by ruling justly and kindly. He lived to be eighty years old, and the forty-eight years of his reign have been called the golden age of Persia.

Chosroes II., king of Persia, grandson of Chosroes I., came to the throne in 591. He also was a great conqueror, but cared more for his own glory than for the good of the people. At last his subjects, led by his own son, rebelled against him, and put him to death, 628, after he had been king for thirty-seven years.

Christian II., king of Denmark and Norway, was born 1481, died 1559. In 1513 he succeeded his father John. He proceeded to subdue Sweden, where he expected aid from the treason of Gustavus Trolle. He was at first unsuccessful, but made a formidable invasion in 1520. Stockholm and Calmar held out, but both were soon reduced. Christian was crowned, and a fearful series of executions ensued. Sweden found a deliverer in Gustavus Vasa, while the Danes rose against Christian and gave their throne to Frederick, duke of Holstein. He attempted to recover his throne, and in 1531 was acknowledged king in Norway. He was soon forced to surrender to the Danes, and was imprisoned for the rest of his life.

Christian IV., king of Denmark and Norway and duke of Schleswig-Holstein, born in Zealand, 1577 and elected successor to the throne in 1580. He assumed the scepter in 1593. From 1610 he carried on a successful war, known as the Kalmarian war, against Charles IX. of Sweden, and his successor, Gustavus Adolphus, which ended in an advantageous peace in 1613. Died, 1648.

Christian IX., king of Denmark, 1863-1906, was born near Schleswig, 1818, died at Copenhagen, 1906. In 1864 he prosecuted a war against Austria, Prussia, and other German states, over the ownership of Schleswig and Holstein, which terminated against him. He was the father of Frederick VIII., Queen Alexandra of England, George I., king of Greece, and Dagmar, dowager empress of Russia.

Christie, James Elder, British artist; born Gardbridge, Fifeshire, 1847; educated at Paisley school of art, South Kensington art shcool, and at the Royal academy. Went to London, 1874; gold medal at South Kensington, 1875; gold medal at Royal academy, 1877, for historical painting. Chief pictures: *Tam o'Shanter; A Rose Among Thorns; Pied Piper of Hamelin; The May Queen;* etc.

Christina (*kris-tē'nȧ*), **Queen of Sweden,** born in 1626; succeeded her father, Gustavus Adolphus, in 1632. After her coronation in 1650, she fell under the influence of favorites, and ceased to interest herself in state affairs. She resigned the crown to her cousin, Charles Gustavus, in 1654, was baptized by the pope, and lived for some time at Paris. She died at Rome in 1689.

Christy, Howard Chandler, illustrator, writer; born in Morgan county, Ohio, 1873; educated at Duncan's Falls, Ohio; went East in 1893; then on New York illustrated periodicals; went to Cuba with second United States regulars and "rough riders"; saw the fighting before Santiago; his letters and illustrations published in *Scribner's Magazine; Harper's Magazine; Collier's Weekly,* and by R. H. Russell, publisher.

Chrysostom (*kris'os-tum* or *kris-os'tum*), **St. John,** one of the Greek fathers, born about 347. In 397 was made bishop of Constantinople. He was renowned for his eloquence and almsgiving. He was soon afterward deposed and conveyed to the Taurus mountains, whence he was ordered to proceed to Pityus, on the Euxine, but died on the journey at Comana in 407.

Church, Alfred John, English clergyman and writer, was born 1829; educated at King's college, London; Lincoln college, Oxford; professor of Latin in University college, London, 1880-88; rector of Ashley, Tetbury, Gloucestershire, 1892-97. Author: *Stories From Homer, Vergil, Greek Tragedians, Livy, Herodotus,* etc. Died, 1912.

Church, Frederick Edwin, American landscape painter, was born at Hartford, Conn., 1826. He first painted scenes from the Catskill mountains. He then traveled in South America, and painted. His *Tropical Scenery* and *View of Niagara Falls From the Canadian Shore* are among his best works. Died at New York, 1900.

Church, Richard William, English clergyman and writer, dean of St. Paul's, was born at Lisbon, 1815. He graduated from Wadham College, Oxford, in 1836, in 1838 was elected a fellow of Oriel, and in 1871 dean of St. Paul's. He died, 1890. Among his works, besides several volumes of sermons were *Essays and Reviews; Life of St. Anselm; The Beginning of the Middle Ages; Dante, an Essay; Spenser; Bacon,* etc.

Churchill, John. See **Marlborough, Duke of.**

Churchill, Winston, American novelist and writer; born at St. Louis, Mo., 1871; graduated, 1894, from the United States naval academy. An editor of the *Army and Navy Journal* of New York, 1894; managing editor of *Cosmopolitan Magazine,* 1895. Author: *The Celebrity; Richard Carvel; The Crisis; The Crossing; Coniston; Mr. Crewes' Career.*

Churchill, Rt. Hon. Winston Leonard Spencer, British statesman, author; was born, 1874; educated at Harrow and Sandhurst. Entered army, 1895, and served with Spanish forces in Cuba, and in South Africa, 1899-1900; member of parliament for Oldham, 1900-1906; for Manchester, 1906-1908. Author: *The Story of the Malakand Field Force; The River War; Savrola; London to Ladysmith via Pretoria; Ian Hamilton's March; Lord Randolph Churchill;* Died 1934.

Cibber (*sib'ėr*), **Colley,** actor, manager, and dramatist, was born in London, 1671. He was educated at Grantham, and in 1690 joined the Theatre Royal in Drury Lane, where he remained, with short intervals, during his whole theatrical career of forty-three years. In 1696 his first comedy, *Love's Last Shift,* was produced, the author playing Sir Novelty Fashion; it established his fame both as dramatist and actor. Poet laureate from 1730. He died suddenly, 1757.

Cicero, Marcus Tullius, Roman orator and statesman, was born in Arpinum in 106 B. C.; studied rhetoric under Milo and others; commenced pleading at the age of twenty-six, and offending Sulla by his successful defense of Roscius Amerinus, retired to Athens, where he studied under Antiochus; went as quaestor to Sicily in 76 B.C., and on his return impeached Verres, a former governor; was aedile in 69 B.C., praetor in 66 B.C., and, in 64 B.C., was elected consul in opposition to Catiline. His vigor in putting down the conspiracy of the latter gained for him the title of "Father of His Country." The measures passed by his enemy, the tribune Clodius, obliged him to withdraw to Greece. After about sixteen months, he was recalled by the senate, and, in 52 B.C., went as governor to Cilicia. He sided with the senate and afterward with Pompey against Caesar, but submitted to the latter after Pharsalia, and retiring to his Tusculan villa, wrote his *De Natura Deorum,* and other philosophical works. His defense of Caesar's murderers and the "philippic" orations directed against Marcus Antonius led to his proscription on the formation of the second triumvirate. He was murdered by Antonius' emissaries in 43 B. C.

Cid Compeador (*thēTH kăm-pā-ā-thōr'*), **Ruy,** or Rodrigo Dias de Bivar, hero of Spanish fiction, aided Sancho of Castile against his brother, Alfonso, king of Aragon, but on the death of Sancho acknowledged Alfonso as king of Castile. He lost the favor of Alfonso, and retired from his court, but obtained some aid from him in capturing the city of Valencia from the Moors, which he ruled till his death.

Cimabue (*chē-mā-bōō'ā*), **Giovanni,** Italian artist, one of the restorers of the art of painting in Italy, which had fallen into neglect during the barbarism of the dark ages; born at Florence in 1240; died about 1300. The exhibition of his table of *The Virgin* for the Rucellai chapel in Santa Maria Novella was the occasion of a public festival. Except the *Madonna,* little of his work remains.

Cimon (*si'mon*), Athenian commander, was the son of Miltiades, the conqueror at Marathon. With his patron Aristides, he was placed over the Athenian contingent to the allied fleet, which, under Pausanias, continued the war against Persia, 477 B. C. His greatest exploit was his encounter with a Persian fleet at the river Eurymedon, 466 B. C., when he destroyed or captured 300 out of 350 ships, and defeated the land forces on the same day. He likewise drove the Persians from Thrace, Caria and Lycia; and expended much of the money which he had obtained by the recovery of his patrimony in Thrace upon the improvement of Athens. At Athens he was opposed by the democracy, headed by Pericles, who procured his ostracism. He was recalled in 454 B. C., and was instrumental in obtaining a five years' armistice with Sparta. He died in 449 B. C. at the siege of a Cyprian town.

Cincinnatus (*sin-si-nā'tus*), **Lucius Quinctius,** a Roman consul, regarded by the later Romans as the model of antique virtue, born about 530 B. C. About 460 B. C. he was chosen consul, and two years later was made dictator. When the messengers from Rome arrived to tell him of his new dignity they found him plowing on his small farm. After a dictatorship of sixteen days he returned to his country life. He was again, when eighty years old, made dictator; died about 430 B. C.

Cinna, Lucius Cornelius, Roman patrician who supported Marius; Sulla, after driving Marius from Rome, and before setting out against Mithridates, allowed Cinna to be elected consul on his swearing not to disturb the existing constitution. No sooner, however, had he entered on office, 87 B. C., than he impeached Sulla, and agitated for Marius' recall. Cinna and Marius next declared themselves consuls after a cruel massacre of the Roman citizens. Marius died a few days later; and Cinna in 84 B. C. prepared to meet Sulla, but was slain by his own disaffected troops at Brundisium. During his fourth consulate his daughter Cornelia was married to Julius Cæsar.

Clapp, Moses Edwin, lawyer, United States senator, was born in Delphi, Ind., 1851; his parents removed to Hudson, Wis., in 1857; after obtaining a common school education, graduated from the Wisconsin law school in 1873; in 1878 was elected county attorney at St. Croix county, Wisconsin; in 1881 moved to Fergus Falls, Minn., and resided there until 1891; was elected attorney-general of Minnesota in 1887, 1889, and 1891, and removed to St. Paul and made that his permanent home in 1891; was elected to the United States senate in 1901 and 1911. Died, 1929.

Clarendon (*klar'en-don*), **Edward Hyde, Earl of,** English historian and statesman, was born, 1608 at Dinton, England. He sat in the short Parliament and in the long Parliament on the popular side, but during the civil war became a devoted royalist; was from 1641 one of the chief advisers of the king; on the failure of the royal cause, took refuge first in Jersey, and then in Holland with the prince of Wales; contributed to the restoration; came back with Charles, and became lord chancellor; fell into disfavor, and quitted England in 1667. He wrote, among other works, a *History of the Great Rebellion,* dignifiedly written, though often carelessly, but full of graphic touches and characterizations, especially of contemporaries. Died at Rome, 1674.

Clark, Alvan, American optician, engraver, and manufacturer of telescopes, was born at Ashfield, Mass., 1808, and died at Cambridge, Mass., 1887. Early in life he was a portrait painter; but in 1845 he turned his attention to the making of achromatic lenses and the manufacture of telescopes. Associated with his sons, he constructed object-glasses for universities, for the naval observatory at Washington, Lick observatory in California, the imperial observatory at Pulkowa, Russia.

Clark, Sir Andrew, British physician, was born at Wolfhill, near Coupar-Angus, Scotland, 1826; educated at Aberdeen and Edinburgh. In 1854 he settled in London, where he acquired a high reputation for his skill in the treatment of diseases affecting the respiratory, renal, and digestive organs. Among his patients were George Eliot and Gladstone. Created a baronet in 1883, he died 1893. He published several medical works.

Clark, Champ, congressman, lawyer; born in Anderson county, Kentucky, 1850; educated in common schools, Kentucky University, Bethany college, and Cincinnati law school; president Marshall college, West Virginia, 1873-74; admitted to the bar, 1875; city attorney of Louisiana, Mo., and later of Bowling Green, Mo.; prosecuting attorney of Pike county; presidential elector; member Congress, ninth Missouri district, 1893-95, and again after 1897; chairman Democratic national convention, St. Louis, 1904. In 1911 he was elected by his party speaker of the United States House of Representatives. Died, 1921.

Clark, Charles Edgar, naval officer; born Bradford, Vt., 1843; appointed to United States naval academy from Vermont, 1860, graduated, 1863, LL.D., University of Pennsylvania, 1905; commander battleship *Oregon* during the cruise from San Francisco to Key West and in the battle of Santiago, July 3, 1898. He was promoted rear admiral, 1902; retired, 1905. Died, 1922.

Clark, Charles Upson, born Springfield, Mass., 1875. Graduate, Yale University, B.A., 1897, Ph.D., 1903. Director, School of Classical Studies of American Academy in Rome, 1916-1919. Author: *Greater Roumania.* Lecturer and publicist.

Clark, Clarence Don, lawyer, United States senator, was born at Sandy Creek, Oswego county, N. Y., 1851; educated at Iowa State University; admitted to the bar in 1874; practiced law in Iowa until 1881; moved to Evanston, Wyo., was prosecuting attorney for Uinta county four years; upon the admission of Wyoming as a state was elected to the fifty-first and fifty-second Congresses; was defeated for reelection to the fifty-third Congress by a fusion of Democrats and Populists; was elected to the United States Senate, 1895-1917. Died, 1930.

Clark, Edwin Charles, English lawyer, regius professor of civil law, Cambridge, was born 1835; graduated at Trinity College, Cambridge, and was formerly scholar and fellow of Trinity; now professorial fellow at St. John's LL.D., F.S.A. Practiced for a short time as a conveyancer in London. Author: *Early Roman Law; Regal Period, Analysis of Criminal Liability; Practical Jurisprudence; A Comment on Austin; Cambridge Legal Studies; History of Roman Private Law.* Died, 1930.

Clark, Francis Edward (1851-1927), American clergyman, founder of United Society of Christian Endeavor. Born of New England parents in Quebec. Educated at Dartmouth College and Andover Theological Seminary. Founded society of Christian Endeavor, 1881. Devoted his time to the society as president, as president of the world organization, and as editor of *The Christian Endeavor World.*

Clark, George Rogers (1752-1818), American soldier and frontiersman, was born in Virginia, received a common school education, and became a land surveyor. He fought against the Indians. He moved to Kentucky and represented that district in the Virginia legislature. During the Revolution, Clark fought valiantly and successfully in the Northwest Territory. He captured Kaskaskia and other points. He forced the surrender of Gen. Hamilton. His services were of the utmost value, for in winning the Northwest land was preserved to the United States which otherwise would probably have passed to England or Spain.

Clark, Lindley D., editor United States bureau of labor, was born near Carthage, Ind., 1862; graduated from Earlham college, 1886; LL.B., LL.M., Columbian University. Author of *Legal Status of Organized Labor in the United States; Law of the Employment of Labor in the United States;* Summary of Labor Legislation, 1905-10; and has edited and compiled many reports and bulletins relating to labor.

Clark, Marguerite, actress, born Cincinnati, Ohio, educated at Ursuline Convent, Ohio. Debut in Baltimore, under management of Milton Aborn, 1900; featured with De Wolf Hopper Co., and Famous Players, loaned by latter to Lasky Co. Address: 50 Central Park W., New York, N. Y.

Clark, Thomas Arkle, university dean, was born at Minonk, Ill., 1862; graduated at the University of Illinois; 1890; graduate student, University of Chicago, 1894, Harvard, 1898-9. Instructor of English and Latin, University of Illinois Academy, 1891-3, instructor English, 1893-5, assistant professor rhetoric, 1895-9, professor rhetoric, 1899, acting dean, college literature and arts, 1900-1, dean undergraduates, 1901, dean of men since 1909, University of Illinois. Author: *English Composition in State Course of Study; English Composition in the Grades; Great American Authors; Great English Authors;* etc.

Clark, or **Clarke, William,** American explorer; born in Virginia, 1770, died at St. Louis, Mo., 1838. In 1804-06, in company with Lewis, he started on an exploring expedition from St. Louis to the mouth of the Columbia river; governor of Missouri territory 1813-21; superintendent of Indian affairs 1821 till his death.

Clark, William Andrews, capitalist, ex-United States senator; born near Connellsville, Pa., 1839; studied law at Mt. Pleasant, Ia., University; taught school, Missouri, 1859-60; went to Colorado, 1862; to Montana, 1863; afterwards merchant-banker, mine-owner, manufacturer, having large interests. President United Verde Copper Company of Arizona. President constitutional conventions, 1884 and 1889; commissioner from Montana to New Orleans Exposition 1884; Democrat candidate for delegate in Congress, 1888 (defeated); nominated by Democrats for United States senator, 1890, and claimed election, but was denied seat; elected to United States senate by legislature for term 1901-07. Died, 1925.

Clark, William Robinson, educator, religious writer; professor of philosophy, Trinity college, Toronto, after 1882; born at Inverurie, Scotland, 1829. Ordained priest, 1858; curate of St. Matthias,' Birmingham, 1857; LL.D., Hobart College, 1888; D.C.L., 1891; F.R.S., 1891; Slocum lecturer in the University of Michigan, 1899; president of the royal society of Canada, 1900; D.D., Queen's University, Canada, 1902. Author: *The Redeemer; The Comforter; The Four Temperaments; Witnesses to Christ.* Died, 1912.

Clarke, Adam, British Wesleyan divine and author, was born near Portrush, Ireland, 1762. From 1782 he preached in places as widely different as the Channel islands and Shetland, but after 1805 lived mostly in London. He died, 1832.

Clarke, Charles Cowden, English writer and critic, was born in 1787, at Enfield, Middlesex. He early imbibed a passion for the theater, and made frequent visits to London, where he formed the friendship of Leigh Hunt, Shelley, Hazlitt, Charles and Mary Lamb. On his father's death in 1820, he became a bookseller in London. In 1834 Clarke entered on that twenty years' course of public lectures on Shakespeare and other dramatists and poets which brought him so much celebrity and profit. In 1856 he went to live at Nice, but removed in 1861 to Genoa, where he died, 1877.

Clarke, Frank Wigglesworth, chemist; born at Boston, 1847; graduate of Lawrence scientific school, Harvard, 1867; D.Sc.; LL.D.; chief chemist of United States geological survey and honorary curator of minerals in United States national museum, since 1883. Member of numerous scientific bodies; chairman international committee on atomic weights; chevalier de la legion d'honneur. Author: *Weights, Measures and Money of All Nations; Elements of Chemistry;* etc.

Clarke, James Freeman, American theologian and writer, was born at Hanover, N. H., 1810; graduated at Harvard, 1829; Cambridge Divinity school, 1833; lecturer on ethnic religions, 1876-77. He wrote: *The Ten Great Religions,* his greatest work *Orthodoxy; Steps of Belief.* etc. Died at Jamaica Plain, Mass., 1888.

Clarke, James P., lawyer, United States senator, was born in Yazoo City, Miss., 1854; studied law at the University of Virginia, graduating in 1878; began the practice of his profession at Helena, Ark., in 1879; was elected attorney-general of Arkansas in 1892, but declined a renomination and was elected governor in 1894. At the close of his service as governor he moved to Little Rock and resumed the practice of law. Was elected United States senator 1903 and 1909.

Clarke, Samuel, English philosopher and theologian, was born at Norwich, 1675, and educated at Cambridge. He was for some time chaplain to the bishop of Norwich, a promoter of science; he afterward became chaplain to Queen Anne, and in 1709 rector of St. James. He died, 1729.

Claude (*klōd*) **of Lorraine,** or Claud Gelee, French landscape painter, born at Chamagne, in Lorraine, A. D. 1600; died in Rome, 1682. At the age of twelve, being left an orphan, he found a home with an elder brother, who was a carver in wood at Freiburg, and there showed some signs of genius. He made a tour in Italy, France, and Germany; in 1627, he returned to Rome, where he speedily made himself famous.

Claudianus (*klō-di-ā'nus*), **Claudius,** the last of the great Latin poets, came from Alexandria to Rome in 395 A. D., and obtained patrician dignity by favor of Stilicho, whose fall, 408, he seems not to have long survived. We have two epic poems by him, *Raptus Proserpinae* and the fragmentary *Gigantomachia,* besides panegyrics on Honorius and Stilicho, *Ediytia, Epigrammata,* etc.

Claudius (*klô'di-us*), **Marcus Aurelius Claudius Gothicus,** Roman emperor, born in Illyria in A. D. 214. He was of a poor family, but won fame as a soldier, and when the emperor Gallienus was murdered the soldiers made him emperor. He died in 270 from a pestilence.

Claudius, Tibrius Drusus Nero Germanicus, Roman emperor, born at Lugdunum (Lyons), 10 B. C. When Caligula was killed (A. D. 41), he was made emperor by the soldiers. This was the first time that an emperor was chosen by the army. The conquest of Britain was begun by him, and it would probably have been a Roman province had not Claudius been recalled to Rome; from his conquests in Germany he took the title of Germanicus. He was poisoned by his wife Agrippina, who wanted the empire for her son Nero, in A. D. 54.

Clausius (*klô'si-us*), **Rudolf Julius Emanuel,** German physicist, was born at Köslin, Pomerania, 1822. He was educated at Berlin, and held professorships of physics at Zürich, Würzburg, and Bonn. He discovered the principle of virial in mathematical physics and published a number of books on physical subjects. Died at Bonn, 1888.

Clarton, Kate (Mrs. Charles A. Stevenson), actress; born New York, 1850; first professional engagement with Miss Lotta, Chicago, 1870. Created part of Louise in *The Two Orphans.* First starring tour, 1876. Died, 1924.

Clarton, Philander Priestley, educator, U. S. commissioner of education, was born in Bedford county, Tenn., in 1862; graduated from University of Tennessee, 1882; later studied at Johns Hopkins University, and in Germany; Litt.D., Bates College, 1906. Has been a teacher in public, normal and collegiate institutions. Editor: *North Carolina Journal of Education,* 1897-1901, and *Atlantic Educational Journal,* 1901-3. U. S. commissioner of education, 1911-1921.

Clay, Henry, American statesman, born 1777 in Virginia; was admitted to the bar 1797, and began his career at Lexington, Ky. In 1806 was elected to congress, and again in 1809 was chosen senator. In 1811 he was sent to the house of representatives, where he was immediately elected speaker. Clay is best known as the author of the famous Missouri compromise, and of the compromise of 1850, known as Clay's "omnibus" measure. In 1824 he was an unsuccessful candidate for president, but was made secretary of state by J. Q. Adams the successful candidate. He was then returned to the United States senate, in which he played a leading part for many years ensuing, especially in the tariff compromise of 1833. Clay was again a candidate for president before the first whig national convention in 1839, but Harrison was nominated and elected. He had in 1842 bidden farewell to the senate, but was persuaded to return to it after 1844, and took a leading part in effecting the slavery compromise of 1850. He returned to Washington from Kentucky for the last time near the close of 1851, and was soon prostrated by disease, under which he gradually sank; he was a gallant party chief, an eloquent orator and a skillful legislator. Died, 1852.

Clayton, John Middleton, American statesman and diplomat, born in Delaware, 1796; graduated from Yale, 1815, and became a noted lawyer. He was United States senator, 1829-37, 1845-49, and 1851-56. During 1849-50 he was secretary of state under President Taylor and negotiated with the British government the historic Clayton-Bulwer treaty. Died, 1856.

Clemenceau (*klā'mān'sō*), **George Benjamin Eugene,** prime minister and minister of interior, France, 1906-09, was born Chateau de l'Aubraie, Feole, Vendee, 1841. Educated at Nantes, and settled in Paris, 1860; resided in United States 1865-69; founded *La Justice,* 1888-1900; *Le Bloc* 1900-02; *L'Aurore,* 1903-07. Resigned as premier, 1909, and was succeeded by M. Briand. Author: *De la Generation des Elements Anatomiques; Le Voile du Bonheur;* etc. Died, 1929.

Clemens, Samuel Langhorne ("Mark Twain"); author, lecturer; born at Florida, Mo., 1835; educated at common schools, Hannibal, Mo., M.A., L.H.D., LL.D., Litt.D., Oxford; apprenticed to printer at twelve; became, 1861, private secretary to his brother when latter was appointed territorial secretary, Nevada. City editor of *Virginia City* (Nev.) *Enterprise,* 1862; founded, 1884, publishing house of C. L. Webster & Co., failure of which involved him in heavy losses; later paid its debts by proceeds of lectures and books. Author: *The Innocents Abroad; Roughing It; Adventures of Tom Sawyer; A Tramp Abroad; Life on the Mississippi; The Adventures of Huckleberry Finn; A Yankee at the Court of King Arthur; Puddinhead Wilson; Tom Sawyer Abroad; Christian Science; Autobiography of Mark Twain,* etc. Died, 1910.

Clement XIV., Giovanni Vincenzo Antonio Ganganelli, born, 1705, at St. Arcangelo, near Rimini; died 1774. At the age of eighteen he entered the order of Minorites, and studied philosophy and theology, which he then successfully taught. On the death of Clement XIII. he succeeded to the papal chair, 1769. Clement XIV. was remarkable for liberality of mind, address as a statesman, sound learning, and mildness of character.

Cleomenes III. (*klē-om'ē-nēz*), king of Sparta, reigned 236-220 B. C. He reestablished the institutions of Lycurgus, and made a new distribution of the lands, relinquishing his own property. Died in Egypt.

Cleopatra (*klē'ō-pā'tra*), queen of Egypt; born in 69 B. C.; celebrated for her beauty, was the daughter of Ptolemy Auletes, by whose will she was left joint sovereign with her brother Ptolemy, 51 B.C.; in 41 B.C. she captivated Mark Antony, who rejected Octavia for her sake. A quarrel with Octavius ensued; the fleet of Antony and Cleopatra was defeated at Actium, and they fled together to Egypt, where they both ended their lives by committing suiside in the year 30 B. C.

Cleveland, Frances Folsom, born at Buffalo, N. Y., 1864; daughter of Oscar and Emma C. (Harmon) Folsom. Graduated from Wells college, Aurora, Cayuga county, N. Y., 1885; married President Cleveland, in the White House, June 6, 1886. Married Thomas J. Preston, Jr., Feb. 10, 1913.

Cleveland, Stephen Grover, president of the United States, 1885-89, and 1893-97, was born in Caldwell, Essex county, N. J., 1837, academic education; LL.D., Princeton, 1897. Went to Buffalo, 1855 and was admitted to bar, 1859; sheriff Erie county, 1870-73; in 1881 was elected mayor of Buffalo; in 1884 was elected president of United States as democrat, over James G. Blaine, republican, by majority of thirty-seven electoral votes; in 1888 again democratic nominee, but defeated by Benjamin Harrison; returned to law practice, locating in New York; in 1892 again elected president as democrat, defeating President Harrison. He took up his residence, after his second retirement from the White House, at Princeton, N. J., where he died, 1908.

Clews, Henry, banker; born in Staffordshire, England; intended for the ministry, but left school at fifteen to enter mercantile life in New York, whither his father had taken him for a visit; at outbreak of the Civil War invited by secretary of treasury to become agent to sell government bonds. Many years treasurer American geographical society; connected with many city institutions and financial corporations. Author: *Twenty-eight Years in Wall Street; The Wall Street Point of View,* etc. Died, 1923.

Clifford, William Kingdon, English mathematician and philosopher, was born in 1845; was educated at Cambridge; appointed professor of applied mathematics at University College, London, in 1871. Died, 1879.

Clifford, Mrs. W. K. (Lucy Lane), daughter of late John Lane; married, 1875, W. K. Clifford, F. R. S. Author: *Mrs. Keith's Crime; Love Letters of a Worldly Woman; Mere Stories: A Woman Alone; Woodside Farm.* Died, 1929.

Clinton, De Witt, American statesman, was born at Little Britain, N. Y., 1769. He graduated at Columbia College, and after studying law entered the lower house of the New York legislature, in 1797. He was chosen United States senator in 1802. He was elected governor of New York three times. His greatest service to the state was

in urging the construction of the Erie canal. He died at Albany, N. Y., 1828.

Clinton, George, American commander and statesman, born in 1739. He served in early life under General Amherst against the French, and afterward studied law. During the struggle for independence he sat in the colonial congress, and was made a brigadier-general. Died, 1812.

Clinton, Sir Henry, an English general, was born about 1738; entered the British army, 1751, and succeeded Sir William Howe as commander-in-chief in America. After his return to England he was appointed governor of Limerick, and subsequently of Gibraltar, where he died in 1795.

Clive (*klīv*), **Kitty,** British actress, was born in London in 1711. She came out at Drury Lane about 1728, and continued to play chiefly at that theater till 1769, when she quitted the stage, and retired to Twickenham. She died at Little Strawberry Hill, 1785.

Clive, Robert, Lord, English statesman and soldier, was born at Styche, near Market Drayton, in Shropshire, 1725; died in London, 1774. He went to India in 1744 as a writer under the East India company, but three years later relinquished the civil for the military service, in which he greatly distinguished himself. Scarcely had he arrived when the nabob of Bengal captured Calcutta, destroyed the British factories near that city, and threw 146 of his prisoners into the memorable "black hole of Calcutta." The victory of Plassy, 1757, was Clive's retaliation for these wrongs. His last years were embittered by the attacks of his enemies, and by charges of malversation and abuse of power; but the house of commons rejected a motion against him, and declared that "he had rendered great and meritorious services to his country."

Clodd (*klod*), **Edward,** English scientist and writer, secretary, London joint-stock bank, limited, since 1872; born in Margate, 1840. Educated at Aldeburgh grammar school. Entered commercial life, 1855; clerk in London joint-stock bank, limited, 1862.

Clodius (*klō'di-us*), **Publius,** a famous Roman tribune, who committed sacrilege and was tried for the offense, but acquitted through bribery. He persecuted Cicero, who had become his enemy by testifying against him, and was killed in an encounter with Milo, 52 B. C.

Clough (*kluf*), **Arthur Hugh,** English poet, was born at Liverpool, 1819. In 1837 he entered Balliol College, Oxford; in 1842 he was elected a fellow of Oriel. In 1898 he published the *Bothie of Toberna-Vuolich*, a "long vacation pastoral" in hexameter verse. He traveled in France and Italy, part of the time with Emerson, and was appointed on his return in 1849, warden of University Hall, London. Died at Florence, Italy, 1861.

Clovis I. (*klō'vis*), son of Childeric I., was born about 465, and is regarded as the real founder of the French monarchy. He succeeded Childeric in 481. Having conquered Alaric, king of the Visigoths, in 507, he gained most of the south provinces, but was himself overthrown near Arles, by Theodoric, in 509. Died, 511.

Cobb, Irving Shrewsbury, author-journalist, born at Paducah, Kentucky, in 1876, became newspaper reporter at 17, and editor at 19, staff correspondent *Louisville Evening Post, Paducah News, New York Evening Sun and New York Evening World,* and represented *Saturday Evening Post* as war correspondent in Europe, 1914-15. Author, *Funabashi, Mr. Busybody, Roughing It de Luxe, Europe Revises Paths Of Honor,* etc.

Cobbe (*Kob*), **Frances Power,** 1822-1904, was born at Newbridge, Ireland. She was a theist, a supporter of women's rights, and a vivisectionist.

Cobbett (*Kob'et*), **William,** 1762-1835, British politician and writer, born at Farnham, Sussex. He was imprisoned for libel against the government. Published the *Register,* and wrote numerous books, among which were *Grammar, Cottage Economy,* and *Advice to Young Men.*

Coburn, Foster Dwight, secretary of Kansas department of agriculture, was born in Jefferson county, Wis., 1846; served in the Civil war in the 135th and later in the 62d Illinois Infantry; removed to Kansas, 1867, and became a farmer and stockman; secretary of Kansas department agriculture, 1882 and 1894-1914. Was editor of the *Kansas City Live Stock Indicator* nearly six years; has been a regent of the state agricultural college three times and president and vice president of its board of regents; chief of department of live stock, St. Louis exposition, 1904. Appointed United States senator from Kansas, June 4, 1906, but declined. Died, 1924.

Cochrane (*kok'ran*), **Thomas** (tenth earl of Dundonald). See **Dundonald.**

Cockburn (*kō'burn*), **Sir Alexander,** British jurist, was born in 1802; in 1822 entered Trinity Hall, Cambridge; in 1829 was admitted to the bar, and soon became distinguished as a pleader before parliamentary committees; in 1851 attorney-general, in 1856 chief justice of the common pleas, in 1858 a baronet, and in 1859 lord chief justice. He died, 1880.

Cockburn, Sir George, 1772-1853; English naval officer whose operations against Martinique secured that island to Great Britain. His last noteworthy sea employment was to convey Napoleon to St. Helena.

Cockran, William Bourke, lawyer, orator; born in Ireland, 1854; educated in Ireland and France; came to the United States, 1871; member of congress, 1887-89, and 1891-95, as democrat. Was again elected to congress, February 23, 1904, at a special election to fill a vacancy caused by the resignation of George B. McClellan; reëlected, 1904 and 1906. Died, 1923.

Cody, Col. Wm. F. (Buffalo Bill), was a scout and showman of international fame, born, 1846. He was known as "Buffalo Bill," a sobriquet given him after having killed 4,280 buffalo in eighteen months to fill contracts for construction gangs of Kansas Pacific Railway. He was a government scout and guide against Sioux and Cheyenne Indians, 1868-72. Member of Nebraskan Legislature, 1872. General of Nebraskan National Guard, 1890-1, and held many other offices of responsibility. For over thirty years he was manager of the "Wild West Show," and traveled with it through several countries. Buried on mountain near Denver. Died, 1917.

Cohan, George Michael, American comedian and playwright, was born in Rhode Island, 1878. While still a child he appeared in numerous plays and soon became popular on the vaudeville stage. Later he wrote, produced, and acted in many plays and musical comedies and wrote popular songs. Among his plays are *Get-Rich-Quick Wallingford, Seven Keys to Baldpate,* and *The Miracle Man.*

Cohen, Solomon Solis, physician; born in Philadelphia, 1857; graduate of Philadelphia Central high school, 1872, A.M., 1877; lecturer on clinical medicine, Jefferson medical college, 1888-1902; professor of clinical medicine, Jefferson medical college, since 1902. Author: *Therapeutics of Tuberculosis, Essentials of Diagnosis.*

Coke (*kōōk* or *kōk*), **Sir Edward,** English jurist and law writer, was born 1552; educated at Norwich grammar school and Cambridge; admitted to the bar in 1578; became solicitor-general in 1592, and attorney-general in 1594. He showed much harshness in his prosecution of Essex, Raleigh, and others; but his loyalty gained him the chief-justiceship of the common pleas, in 1606. The remainder of his life was spent in compiling his *Commentaries upon Littleton.* Died, 1634.

Colbert (*kōl'bâr'*), **Jean Baptiste,** a distinguished French statesman, minister of finance in the reign of Louis XIV.; was born at Rheims, France, 1619. To him the kingdom was indebted for the enlargement of its navy, for the acquisition of many of its foreign possessions, and for a large number of internal improvements. The gardens of the Tuilleries, the Hotel des Invalides and the facade of the Louvre were all the work of Colbert. Died, 1683.

Colby, Frank Moore, editor and educator, born at Washington, 1865; graduated from Columbia, 1888, M.A., 1889; lecturer of history, Columbia, 1891-95; instructor of history and economics at Barnard College, 1891-95; professor of economics, New York University, 1895-1900; resigned to become editorial writer *Commercial Advertiser,* 1900-02. American editor *Nelson's Encyclopædia,* 1905-06. Died, 1925.

Cole, Thomas, artist, was born at Bolton, England, 1801, and came to America in 1819, where he became one of the known landscape painters. In 1830 two of his pictures appeared in the Royal Academy, and he afterward made sketching tours through England, France, and Italy; but all his best landscapes were American. Died at Catskill, N. Y., 1848.

Cole, Timothy, wood engraver, was born at London, England, 1852, and came to the United States, 1857; entered employment of *Scribner's Magazine,* 1875. Received diploma, Chicago exposition, 1893; first-class gold medal, Paris exposition, 1900; grand prix, St. Louis Exposition, 1904. Honorary member society of sculptors, painters, and engravers, London. Died, 1931.

Colebrooke (*kōl'brōōk* or *kōōl'brōōk*), **Henry Thomas,** British orientalist, was born in London, 1765. He was a director of the Bengal Asiatic society, and made translations from the Sanskrit works on Hindu law, algebra, arithmetic, and mensuration, which were important contributions to the history of mathematics. Died, 1837.

Colenso (*kō-len'sō*), **John William,** English divine, was born 1814. In 1846 he was appointed rector of Forncett St. Mary, in the county of Norfolk, England, and 1854 first bishop of Natal, South Africa. Died, 1883.

Coler, Bird Sim, politician, financier, ex-comptroller of New York, born at Champaign, Ill., 1867; educated at polytechnic institute and Andover academy. Entered his father's banking house as clerk and later became partner of the firm of W. N. Coler & Co. Democratic candidate for governor of New York, 1902. Author: *Municipal Government as Illustrated by the Charter; Municipal Government and Tunnels and Bridges,* etc.

Coleridge (*kōl'ri-j*), **Hartley,** eldest son of Samuel Taylor Coleridge, born at Clevedon, near Bristol, 1796. In 1815 he was entered a scholar of Merton College, Oxford. He afterward attempted a private school at Ambleside, but failed. Near this little town he resided till he died, 1849.

Coleridge, Samuel Taylor, British poet, essayist, and dramatist, was born at Bristol in 1772. He was sent to Christ's hospital, and subsequently studied at Cambridge, where, in 1792, he obtained the prize for the best Greek ode. His *Sibylline Leaves* and *Biographia Literaria* found many admirers, and several of his poems have been given very high praise, particularly the *Ancient Mariner.* Among his other works are: *Remorse, a Tragedy, Christabec, Aids to Reflection,* etc. Died, 1834.

Colfax (*kōl'faks*), **Schuyler,** American statesman, vice-president of the United States, was born in New York, 1823. Elected to Congress by the newly formed republican party, in 1854; he remained a member until 1869 and was three times speaker. He died, 1885.

Coligny (*kō'lēn'-yē'* or *kōlēn'yē*), **Gaspard de Chatillon, Sire de,** French admiral and general of eminence, born at Chatillon-sur-Loing, 1517. Introduced at court, he served under Francis I. in Italy. Killed in the massacre of St. Bartholomew, 1572.

Collier (*kol'yĕr*), **Jeremy,** English clergyman and controversialist, was born at Stow cum Quy, Cambridgeshire, 1650. In 1697 he published his *Short View of the Immortality of the English Stage,* which fell like a thunderbolt among the wits. Consecrated bishop in 1713. Died, 1726.

Collier, Peter Fenelon, publisher, was born at Carlow, Ireland, 1849; educated at Mt. St. Mary's college, Cincinnati. Founder and publisher of *Collier's Weekly* and head of P. F. Collier & Son, publishers. Died, 1909.

Collingwood, Cuthbert, Lord, English admiral, was born at Newcastle-upon-Tyne, 1750. He entered the navy at eleven, and from 1778 his career was closely connected with that of Nelson, whom he followed up the ladder of promotion, step by step. A peerage was his reward. He died at sea, 1810, and was buried beside Nelson, in St. Paul's.

Collins, William Wilkie, English novelist, was born in London, 1824. He was educated at a private school. From 1848 he made literature his profession. His first novel was printed in 1850. Died, 1889.

Collyer (*kol'yĕr*), **Robert,** Unitarian clergyman; born Keighly, Yorkshire, England, 1823; learned the blacksmith trade, which he followed after coming to the United States, 1850. Was Methodist local preacher, but became a Unitarian in 1859; became Unitarian missionary in Chicago; founded and was pastor Unity Church there 1860-89; subsequently pastor of the Church of the Messiah, New York. Died, 1912.

Colonna (*kō-lōn'nȧ*), **Vittoria,** the most celebrated poetess of Italy, was born in the year 1490. When four years old she was betrothed to a boy of the same age, Fernando d'Avalos, son of the Marchese de Pescara. At seventeen they were married. After her husband's death in the battle of Pavia, 1525, she found her chief consolation in solitude and in the cultivation of her poetical genius. Died in Rome, 1547.

Colquhoun (*kō-hōōn'*), **Archibald Ross,** journalist, descriptive writer, born off cape of Good Hope, 1848, of Scotch parentage. Explored from Canton to Chamo to trace best route for connecting Burmah and China by railway, 1881-82; London correspondent Franco-Chinese war and whole far East, 1883-84; traveled extensively, and been London *Times* correspondent in various parts of the world. Died, 1915.

Colt, Samuel, American inventor, born in Hartford, Conn., 1814. He early conceived the idea of revolving fire-arms, and in 1835, took out a patent for the weapon since known the world over as "Colt's revolver." In 1848 he established a company for the working out of his patent, and built at Hartford one of the most extensive armories in the world. Died, 1862.

Columbus, Christopher, the discoverer of the New World called America, was born in the neighborhood of Genoa, 1446, and went to sea at the age of fourteen. The Mediterranean was the chief scene of his early activity. The turning-point of his life came in 1470, when he was wrecked during a sea-fight with some Venetian galleys off the coast of Portugal. He settled at Lisbon, and during the next few years made many voyages to Madeira and the Azores, and in 1477 one to Iceland.

Gradually there grew up in his mind the conviction that it was possible to reach India by sailing westward. This idea seems to have taken shape as early as 1474. After making a vain appeal to the senate of his native state, Genoa, he turned to the king of Portugal, but without result; then to Henry VII. of England, and to the dukes of Medina Sidonia and Medina Celi, who advised him to appeal to Isabella of Castile. But it was not till after seven years of heart-breaking delays that Columbus's proposals were accepted by the Spanish monarchs.

On August 3, 1492, he set sail with one small ship, the *Santa Maria,* and two caravels, the *Pinta* and the *Nina,* the whole expedition including only 120 men. His real voy-

age of discovery began when he sailed westward from the Canary Islands on September 6. His men were not inspired by his hope, and throughout the voyage he had to plead with and cajole them to proceed—a variation of the magnetic needle having reduced them almost to a state of terror. On October 12 land was sighted—an island in the Bahamas, probably what is now known as Watling I., but named by Columbus San Salvador. He discovered Cuba and Haiti (which he called Hispaniola), and set sail for Europe in the two caravels, his ship having been wrecked. After a stormy voyage, in which the two caravels were separated, he cast anchor at Palos, March 15, 1493.

He set out again on September 25 with a much larger squadron, and reached Dominica, an island of the West Indies, on November, 3. He returned from his second voyage in 1496, and set out on his third, which resulted in the discovery of the mainland of South America (1498), and from which he returned in irons by the authority of a newly-appointed royal governor. But the king and queen speedily restored Columbus to favor.

In 1502 he set out on his last voyage (1502-04), during which he explored the south shore of the Gulf of Mexico. After his return to Spain, he died at Valladolid, May 20, 1506. There he was buried, but his bones were removed first to Seville, then to Santo Domingo, in Hispaniola, and, although this is disputed by Santo Domingo, to the cathedral in Havana (1796), and again, after the Spanish-American war of 1898-9, back to Seville.

References.—*Lives of Columbus* by Irving, Phelps, and Winsor's *Narrative and Critical Hist. of America*. The great critical study of Columbus' life and family is by Harrisse. The standard English edition of his *Letters* is Major's translation. See also the *Letters* ed. by Ford. Among the best of the shorter biographies are those of Markham and Adams.

Columella, Lucius Junius Moderatus, the most learned of Roman writers on practical agriculture, born at Cadiz in Spain, and flourished in the earlier part of the first century of the Christian era.

Combe (*kōōm* or *kōm*), **George,** British phrenologist and moral philosopher, born in Edinburg, 1788. Investigation convinced him that phrenology was based on fact. The result was his *Essays on Phrenology*, 1819. Died, 1858.

Comenius (*kō-mā'nē-oos* or *kō-mē'ni-us*), or **Komenski, John Amos,** educational reformer, was born in 1592, in Moravia. He studied at Herborn and then at Heidelberg, became rector of the Moravian school of Prerau, 1614-16. Settling at Lissa in Poland, 1628, he here worked out his new theory of education, wrote his *Didactica Magna*, and was chosen bishop of the Moravian brethren in 1632. Finally, he settled in Amsterdam, and died at Naarden, 1671.

Commons, John Rogers, educator, economist; born in Drake county, Ohio, 1862; graduated from Oberlin, 1888, A.M., 1890; student Johns Hopkins, 1888-90. Professor of political economy, University of Wisconsin since 1904. Author: *The Distribution of Wealth; Social Reform and the Church*, etc.

Comnena, Anna. See **Anna Comnena.**

Comstock (*kum'stok*), **Anthony,** moral reformer, secretary and special agent of New York society for suppression of vice, was born in New Canaan, Conn., 1844. His brother Samuel having been killed at Gettysburg, he volunteered to fill his place in regiment, enlisting in the 17th Connecticut volunteer infantry, December, 1863; mustered out, July, 1865. Appointed Post Office Inspector of New York, 1873. Died, 1915.

Comstock, John Henry, scientist, professor of entomology, Cornell, born at Janesville, Wis., 1849; graduated, B.S., Cornell, 1874; instructor and professor there, except 1879-81, when he was United States entomologist. Died, 1931.

Comte (*kōnt*), **Auguste,** French philosopher, founder of the "positive philosophy," born at Montpelier, France, 1798. He studied at Paris, and attracted the attention of his companions by the boldness and novelty of his speculations. In 1832 was appointed professor of mathematics at the Ecolé Polytechnique, which situation he was forced to resign in 1852, on account of differences with his colleagues. Died, 1857.

Conant (*kō'nant*), **Charles Arthur,** author, banker, born at Winchester, Mass., 1861; Washington correspondent of *New York Journal of Commerce*, 1889-1901; special commissioner of war department in Philippines, 1901; member of commission on international exchanges of United States, 1903; Treasurer of Morton trust company, 1902-06. Author: *A History of Modern Banks of Issue; The United States in the Orient*, etc.

Conaty (*kon'ā-tī*), **Rt. Rev. Thomas James,** Roman Catholic prelate, bishop of Los Angeles; born in Ireland, 1847; educated at Montreal college, 1863-67; Montreal theological school, 1872; ordained priest, 1872; J.C.D., D.D., selected by American Catholic bishops, trustees of university, to succeed Bishop Keane as rector Catholic university, Washington, 1896, and appointed to position by Pope Leo XIII., who also conferred upon him, 1897, the title of domestic prelate and nominated him titular bishop of Samos, 1901; appointed to see of Monterey and Los Angeles, Calif., 1903. Died, 1915.

Conde (*kon'-dā'*), **Prince de, Louis I. de Bourbon,** younger brother of Antony of Bourbon, king of Navarre, was born 1530. During the wars between Henry II. and Spain, he distinguished himself at the siege of Metz, the battle of St. Quentin, and the capture of Calais from the English. In the second Huguenot war, 1567-69, Condè had coins struck with the inscription: "Louis XIII., first Christian king of France"; but at Jarnac, 1569, he was defeated, taken prisoner and shot.

Conde, Prince de, Louis II. of Bourbon, commonly termed "the great Condè," was born 1621. By the death of his father, 1646, he became head of his family, and, next to the duke of Orleans, the highest personage in the state. The war having been renewed by Spain, 1673, he again commanded the French in the Netherlands, and soon after retired to Chantilly, where he enjoyed the society of such men as Molière, Boileau, and La Bruyère. Died, 1686.

Condillac (*kon'dē-yak'*), **Etienne Bonnot de Mably de,** French philosopher, the founder of sensationalism, was born of a noble family at Grenoble, 1715. He was chosen a member of the French academy of sciences in 1738. He died on his estate of Flux, near Beaugency, in 1780. He based all knowledge on the senses.

Condorcet (*koN'dor'se'*), **Jean Marie Antoine Nicholas Caritat, Marquis de,** French philosopher and mathematician, was born in 1743. He first gained celebrity by his successful labors as a mathematician. His treatise on integral calculus, written when he was but twenty-two years of age, was eminently successful. He was outlawed in 1793, and shortly after was taken prisoner, when he poisoned himself, in 1794.

Confucius, the Latinized name of the Chinese philosopher Kung-fu-tse (Reverend Master Kung), was born (according to the best Chinese authorities) in 551 B. C., in the kingdom of Loo, now part of the province of Shantung, died 479 B.C. He set himself up as a teacher at the age of 30. His fame soon spread, and in order to propagate his doctrines he visited neighboring countries, preaching and teaching, and returning about 506 B.C. He left a grandson, Tse-tse, and in A. D. 1671 there were 11,000 male descendants bearing the name of the philosopher most of them of the 74th generation. These descendants constitute a distinct class in Chinese society.

No founder of any religion can boast of success greater than that of Confucius: but he was not the originator of a religious creed. While striving to introduce a ritual more minute than that of Moses, he rejected divine revelation, and erected a structure of moral philosophy founded upon the wants and tendencies of human nature. The books containing his doctrines, partly written by himself, partly by his disciples, bear almost the same relation to the Chinese world as the Bible does to the Christian. Confucius also collected the poems, folk-lore, annals, songs, and rites then in vogue in various parts of the empire. Editing and pruning these, he produced what are still known as the "classics"—*i. e.*, the *Book of History* (or Tradition), the *Book of Odes*, the *Book of Changes* (or Oracles), the *Book of Rites*, and so on.

References.—*Life and Labors of Confucius*, by E. H. Parker. Various works of Confucius are translated into English by Legge in *Sacred Book of the East;* compare also his *Chinese Classics.*

Congreve (*kong'grēv*), **William,** English dramatist, was born near Leeds, 1670. His first piece, written at the age of seventeen, was a romance entitled *Incognito, or Love and Duty Reconciled.* In 1693 he wrote his first comedy, *The Old Bachelor.* This brought him not only great reputation, but also the substantial benefit of a commissionership in the hackney-coach office. Died, 1729.

Conkling (*kongk'ling*), **Roscoe,** American politician, was born at Albany, N. Y., 1829. In 1846 he removed to Utica, N. Y., where he became district attorney, and was mayor in 1858. In the latter year he was elected to congress, and in 1879 became a member of the United States senate. In 1881 he resigned his seat in the senate owing to Garfield's assumption of the control over appointments in his native state. Died at New York, 1888.

Conn, Herbert William, biologist, was born at Fitchburg, Mass., 1859; graduated from Boston University, 1881; Ph.D., Johns Hopkins, 1884; instructor biology, 1884-6, assistant professor, 1886-8, appointed professor in 1889, Wesleyan University. Director Cold Spring Harbor biology laboratory, 1889-97; bacteriologist, Storrs experiment station, from 1890; he was made director laboratory of Connecticut state board of health in 1905; lecturer, Trinity College, 1887-9. Specialist on the bacteriology of dairy products. Author: *Evolution of To-Day; The Living World; The Story of Germ Life; The Story of the Living Machine; The Method of Evolution; Agricultural Bacteriology; Bacteria in Milk and Its Products; An Elementary Physiology and Hygiene for Use in Schools;* and over one hundred scientific memoirs. Died, 1917.

"Connor, Ralph." See **Gordon, Charles W.**

Conrad I. (*kon'rad*), was chosen king of Germany in 911, and was the first of the elected rulers of Germany. His short reign was spent in putting down his nobles, who were always rebelling against him. Conrad died, 918.

Conrad II., king of Germany and Roman emperor, was the son of Henry, duke of Franconia, and succeeded Henry II., the last of the Saxon emperors, in 1024. Conrad died at Utrecht, 1039, and was succeeded by his son Henry III.

Conrad III., the first Hohenstaufen king of the Germans, was born 1093, son of Frederick of Swabia. While under twenty, he had bravely supported Henry V., who in return granted him the duchy of Franconia. He unsuccessfully contested the crown of Italy with the emperor Lothair of Saxony. When St. Bernard of Clairvaux preached a crusade, Conrad set out for Palestine with a large army, 1147. An attempt by the duke of Bavaria to regain his dukedom was defeated by the nephew of Conrad. Conrad's health had broken during the crusade, and he died at Bamberg, 1152.

Conrad, Joseph, English novelist, was born in Poland (Joseph Conrad Korzeniowski), 1856. Upon the death of his father, though very young, he left home and entered the French merchant marine. Later he joined an English ship as mate and sailed for the East. Until then, at twenty, he had not known the English language, of which he was to become a master. His voyages are recorded with vividness and force and are filled with the atmosphere of the tropics and the orient and the effect of these places on Europeans who touch them. Among his works are *Almayer's Folly, The Nigger of the Narcissus, Lord Jim, Typhoon, Rescue.* He died in 1924.

Conscience (*kōn'syĀNs'*), **Hendrik,** Flemish novelist, was born at Antwerp, 1812, and died at Brussels, 1883. His *Phantazy*, a fine collection of tales and his most popular romance, *De Leeuw van Vlaenderen*, early made his name known.

Considerant (*kōn'sē'dā'rāN'*), **Victor-Prosper,** French socialist, was born at Salins, France, 1808; he entered the army, which, however, he soon left to promulgate Fourier's doctrines. On the death of his master, Considerant became head of his school and edited the *Phalange.* In 1849 he was accused of high treason, and fled from France. In Texas he founded a community, *La Réunion*, which flourished for a time. He returned to France in 1869, and died, 1893.

Constable (*kun'stá-b'l*), **John,** landscape painter, born in East Bergholt, Suffolk, England, 1776, died suddenly, 1837. The national gallery has his best pictures, *The Cornfield, The Valley Farm*, and *The Haywain.*

Constans (*kon'stanz*), **Flavius Julius,** emperor of Rome, was born about A. D. 320. He was the youngest son of Constantine the Great, on whose death, 337, he received as his share of the empire Western Illyricum, Italy, and Africa. He was a weak and cruel ruler, and at last Magnentius, his general in Gaul, sent some conspirators to kill him A. D. 350.

Constant de Rebecque (*kōn'stāN' dĕ rē-bek'*), **Henry Benjamin,** author and politician, was born at Lausanne, Switzerland, 1767. Educated at Oxford, Erlangen, and Edinburgh, he in 1795 settled in Paris as a publicist and after the second restoration of the Bourbons wrote and spoke in favor of constitutional freedom. He died, 1830.

Constantine I. (*kon'stan-tin*), called the Great; born in 272, at Moesia. On the death of his father at York, where he accompanied him, Constantine was proclaimed emperor by the troops; he was acknowledged emperor by the senate in 312, and thereafter an edict was issued named of Milan, granting toleration to the Christians. He had still to extend his empire over the East, and having done so by the removal of Licinius, he transferred the seat of his empire to Byzantium, which was thereafter called Constantinople, i. e., Constantine's city. Constantine was baptized in 337 as a Christian, after having three years before proclaimed Christianity the state religion. Died, 337.

Constantine XIII., Palaeologus, the last emperor of the East, born in 1394. The Turkish sultan, Mohammed II., determined to take Constantinople and laid siege to it with a great army, 1453. Constantine, who had only about 9,000 soldiers, resisted bravely for nearly two months, but at

last the Turks battered down part of the walls and the emperor and his little band of nobles were all slain.

Constantius I., called Chlorus, a Roman emperor, father of Constantine the Great, born about A. D. 250. He died at York, England, 306.

Constantius II., a Roman emperor, second son of Constantine the Great, born 317. His cousin Julian won so many victories that the army proclaimed him emperor, and Constantius marched against him, but died on the way, 361. He was succeeded by Julian.

Conway, Sir William Martin, English traveler, art critic, and geographer, born at Rochester, England, 1856; was educated at Trinity College, Cambridge. University extension lecturer, 1882-85; professor of art, University College, Liverpool, 1885-88; president of the Alpine club, 1902-04. Author: *Woodcutters of the Netherlands in the fifteenth century; Early Flemish Artists; Literary Remains of Albrecht Dürer; No Man's Land* (history of Spitsbergen); etc.

Conwell, Russell Herman, lecturer, educator, Baptist clergyman; born at Worthington, Mass., 1842; captain of infantry, 1862-65, in Union army; promoted to lieutenant-colonel, 1865; foreign correspondent *New York Tribune* and *Boston Traveler*, 1868-70, president of Temple College. Died, 1925.

Cook, Albert Stanburrough, educator; born at Montville, N. J., 1853; graduated at Rutgers college, 1872; M.S., M.A., L.H.D., LL.D., associate in English, Johns Hopkins, 1879-81; professor of English, university of California, 1882-89; professor of English language and literature, Yale, 1889-1921; Co-editor of *Journal of English and Germanic Philology*, 1897-1905.

Cook, Captain James, a celebrated English navigator, best known through his *Voyages Round the World;* born in Marton, in North Riding, Yorkshire, 1728. After his death, at Hawaii, one of the Sandwich islands, 1779, many honors were paid to his memory, both in his own and in foreign countries.

Cooke, Josiah Parsons, American chemist, was born at Boston, Mass., 1827, and was professor of chemistry at Harvard from 1850. His chief works are *Elements of Chemical Physics, Principles of Chemical Philosophy, The New Chemistry, etc.* Died at Newport, R. I., 1894.

Cooke, Sir William Fothergill, British electrician, born at Ealing, England, 1806; was educated at Durham and Edinburgh. In 1867 Cooke received the Albert gold medal; Cooke was knighted in 1869. He died, 1879.

Cooley, Thomas McIntyre, American jurist, was born at Attica, N. Y., 1824, was admitted to the bar 1846, and became professor of law at the university of Michigan, 1859; was associate justice Michigan supreme court 1864-68, and chief-justice 1868-85. He died, 1898.

Coolidge, Archibald Cary, instructor in history, Harvard, 1893-99, professor since 1904, born at Boston, 1866; graduated from Harvard university, 1887. With Taft party to Philippine islands, 1905-06; Harvard lecturer at the Sorbonne and other French universities, 1906-07. Has contributed to *American Historical Review*, the New York *Nation*, etc. Died, 1928.

Coolidge, Calvin (1872-1933), lawyer, graduated Amherst. Member Mass. Legislature. Lieut.-Governor and Governor of Mass. Re-elected Governor on the issue of law and order as exemplified in his handling of the Boston police strike. Vice-President, 1920. Became President, August 3, 1923, on death of President Harding. Took oath of office in home of his father at Plymouth, Vermont, and announced intention of continuing his predecessor's policies. Took up the coal strike and settled it by using all existing agencies. Vice-President, 1921 to 1923. President, 1923 to 1929.

Cooper, Anthony Ashley. See **Shaftesbury.**

Cooper, James Fenimore, famous American novelist, was born in Burlington, N. J., 1789. After six years' experience of naval life, he retired from the sea in 1810, and took up his residence at Cooperstown, Otsego county, N. Y. In 1821 appeared his first work, *Precaution.* In quick succession followed *The Spy*, a tale which at once secured for him a place in the first rank of novelists; his sea stories, his famous "Leather Stocking series" of Indian life and adventure. After passing some years in Europe, died at Cooperstown, in 1851.

Cooper, Peter, American inventor, manufacturer, and philanthropist, was born in New York, 1791. His first invention was an improvement in a machine for shearing cloth. In 1830 he erected iron works in Canton, near Baltimore, and here constructed after his own designs the first locomotive engine ever made in this country. But the work of his life was the founding of an institution for instruction of the industrial classes—the Cooper Union, New York, whose corner stone he laid in 1854. In 1876 the independent party nominated him for president of the United States, and he received nearly 100,000 votes. Died, 1883.

Cooper, Sir Astley Paston, a celebrated English surgeon, was born in Brooke, Norfolk, 1768; studied under Henry Cline, surgeon to St. Thomas' hospital, London, and was appointed demonstrator of anatomy there, 1789. In 1822 he was elected one of the court of examiners of the college of surgeons, and in 1827, president. He was a D.C.L. of Oxford, and an LL.D., of Edinburgh. He died 1841.

Copernicus or **Koppernik, Nicholas,** astronomer, born at Thorn, then in Poland, 1473, his family being supposed to have come originally from Westphalia. Having studied medicine and theology at Cracow, and law at Bologna, he was made a canon of Frauenburg in 1497. In 1500 he went to Rome, where he taught mathematics and astronomy. He studied medicine at Padua, and in 1505 finally left Italy for Prussia to carry out the work of his life.

Doubting that the motions of the heavenly bodies could be so confused and so complicated as the Ptolemaic system made them, he was induced to consider the simpler hypothesis that the sun was the centre round which earth and the other planets revolve. Besides this fundamental truth Copernicus anticipated many other of the principal facts of astronomical science, such as the motion of the earth round its axis, the immense distance of the stars which made their apparent position the same from any part of the earth's orbit, etc. His general theory also enabled him to explain for the first time many of the important phenomena of nature, such as the variations of the seasons and the precession of the equinoxes.

The great work in which Copernicus explained his theory, *De Orbium coelestium Revolutionibus* (On the Revolutions of the Celestial orbs), was completed in 1530, and published at Nuremberg in 1543. He died at Frauenburg, 1543.

References.—*Life and Works of Copernicus*, by Leopold Prowe; *Popular History of Astronomy*, by A. M. Clarke; and *Lives* of the astronomer by Gassendi, Von Hipler, and Polkowski.

Copley (*kop'li*), **John Singleton,** American painter, was born at Boston, Mass., 1737. Washington sat to him in 1755, and later, in London, he painted George III. and his queen. Here also he became the friend of such men as West and Reynolds. He died at London, 1815.

Coppee (*kō'pā'*), **Francois,** French poet, was born in Paris, 1842. For three years a war office clerk, he early gave himself to poetry, and with *Le Reliquaire* and *Les Inimites*, gained the front rank of the "Parnassiens." Dramatic critic for some years to *La Patrie*, Coppée entered the academy in 1884. Died, 1908.

Coquelin (*kōk'lan*), **Benoit Constant,** French actor, born at Boulogne, 1841, was admitted to the conservatory in 1859, and having gained the second prize for comedy, made his début at the Théatre Français, 1860. For a quarter of a century he played here with unbroken success, both in classical pieces and in rôles created by himself in the broader aspects of comedy standing without a rival. Died, 1909.

Corbin, John, novelist, dramatic critic, born at Chicago, 1870, graduated at Harvard, 1892, A.M., 1893; Balliol college, Oxford, 1894-95; dramatic critic, *New York* Times, 1902; dramatic critic *New York Sun*, 1905-07; literary manager, New theater, New York, 1908. Author: *An American at Oxford; A New Portrait of Shakespeare.*

Corday d'Armans (*kōr'de'dar'mäN'*, or *môN'*), **Charlotte Marie,** French heroine, was born in 1768, at St. Saturnin, Normandy, of a noble Norman family; sympathized with the ideas of the French revolution; visited Paris in July, 1793, with the purpose of assassinating Marat and Robespierre; she interviewed the former while in his bath, and stabbed him with a knife; was immediately apprehended and executed four days afterward.

Corey, William Ellis, capitalist, steel manufacturer, was born in Pennsylvania, 1866. At sixteen entered chemical laboratory of Edgar Thomson steel works; invented Carnegie reforged armor. Succeeded Charles M. Schwab, and has been president of Carnegie steel company, National steel company, and American steel hoop company; president of United States steel corporation until 1911.

Corneille (*kōr'nāl'*), **Pierre,** creator of French tragedy, born 1606, at Rouen. He studied for the legal profession, but a love adventure, in which he became the rival of a friend, first prompted him to write verses. In 1635 appeared his *Médée*, a declamatory drama, written in imitation of Seneca. Cardinal Richelieu, who aspired to be patron of the stage, wished to number Corneille among his retainers, but Corneille was so audacious as to alter the plan of a comedy, and thus lost the cardinal's favor. He now returned to his native place, where M. Chalon, suggested that he should turn his attention to tragedy. The result was *The Cid*, 1636, which was received with enthusiastic applause. He died, 1684.

Cornelia (*kor-nē'li-*), the daughter of Scipio Africanus, was the wife of Tiberius Sempronius Gracchus, who was consul, 177 B. C.

Cornelius, von (*fōn kōr-nā'lē-oos*), **Peter,** German painter, was born at Düsseldorf, 1787, and studied under Langer in the academy of his native town. His chief works are frescoes in the Glyptothek and Ludwigskirche, in Münich. Died, 1867.

Cornell, Ezra, American philanthropist, was born 1807, at Westchester Landing, N. Y., died, 1874, at Ithaca, N. Y. He began life as a mechanic and miller at Ithaca, N. Y. In 1865 he founded Cornell University at Ithaca, with an endowment of $500,000, to which he subsequently added nearly $400,000. He also established the Cornell library at Ithaca, at a cost of $100,000.

Corning, James Leonard, physician; born at Stamford, Conn., 1855; educated at Heidelberg and Würzburg; M.D., LL.D. Specially distinguished as neurologist; discoverer of spinal anæsthesia, 1885; member of many medical and scientific societies. Author: *Carotid Compression; Brain Rest; Brain Exhaustion; Local Anæsthesia*, etc.

Cornwall, Barry. See **Proctor.** Died, 1923.

Cornwallis, Charles, Marquis, English statesman and general, was born 1738. He entered the British army 1756; entered the house of commons 1760, and the house of lords 1763. In 1780 he defeated General Gates at Camden, won the battle of Guilford court house, 1781, and surrendered to Washington at Yorktown, October 19, 1781. Appointed, in 1805, governor-general of India, a second time. He died 1805 at Ghazipur, in the province of Benares, while on his way to assume the command of the troops.

Corot (*ō'rō'*), **Jean Baptiste Camille,** French painter, pupil of Michallon and Bertin, and founder of the impressionist school; was born in Paris, 1796. As a landscape painter he ranks among the first in the world. He died at Paris, 1875.

Correggio (*kōr-red'jō*), **Antonio Allegri,** celebrated Italian painter, called Correggio from the place of his birth, a small town near Modena, now called Reggio; was born 1493. He was the founder, or rather his imitators for him, of what is called by some the Lombard, by others the Parma school of painting. Died, 1534.

Correlli (*kō-rel'i*), **Marie,** English novelist; of mingled Italian and Scotch parentage and connections; sent to France and educated in a convent. Her first book, *A Romance of Two Worlds*, was an instant success, and from that time she devoted herself entirely to literature. She persuaded Edward Morris, of Chicago, to purchase Harvard House, Stratford-on-Avon and to present it to Harvard University, to which it now belongs. Died, 1924.

Cortelyou, George Bruce, public official, financier, was born in the city of New York, 1862; law schools of the Georgetown and Columbian (George Washington) Universities; LL.D. In 1895, was appointed stenographer to President Cleveland; 1896, executive clerk; 1898, assistant secretary to President McKinley; 1900, secretary to the president, and 1901, reappointed by President Roosevelt; was appointed secretary of the newly established department of commerce and labor, 1903. He entered the new cabinet, 1905, as postmaster-general, and 1907 was appointed secretary of the treasury. In 1909 he became president of the New York gas company.

Cortes, or **Cortez** (*kōr'tez*), **Fernando,** a Spanish adventurer; born in Medellin in Estremadura in 1485; he went early in the sixteenth century with Valasquez, to Cuba, and subsequently obtained the command of the expedition sent against Mexico. He advanced to Mexico, where he was at first received with friendly demonstrations; but on his seizing Montezuma, the Mexican king, whom he subsequently put to death by fire, a struggle ensued, in which many thousands of lives were lost. He eventually succeeded in putting down all opposition, and in overrunning Mexico. He was rewarded with the title of marquis, and a grant of land; but later, on his return to Spain, he found himself very much neglected. He died near Seville in 1547.

Corvinus, Matthias. See **Matthias Corvinus.**

Corwin, Thomas, lawyer and orator, was born in Bourbon county, Kentucky, 1794; removed to Ohio in early youth; was admitted to the bar, 1818; was elected a member of congress in 1830, in 1840 governor of Ohio; elected to the senate of the United States in 1845, and appointed secretary of the treasury by President Fillmore in 1850. Died in Washington, D. C., 1865.

Coue, Emile, French psychotherapist, was born at Troyes and educated at Nancy. He was a druggist and physician for many years, then retired to give all his time to his theory of cure by autosuggestion, of which the famous "Day by day, in every way, I am getting better and better" is the most characteristic note. Died in 1926.

Coues (*kouz*), **Elliott,** American ornithologist, was born at Portsmouth, N. H., 1842, and graduated at Columbian University, 1861; M. D., Columbian. His chief works are: *Key to North American Birds Field Ornithology, Dictionary of North American Birds*, etc. Died, 1899.

Coulanges (*kōō'tänzh'*), **Fustel de.** See **Fustel de Coulanges.**

Coulter (*kōl'tĕr*), **John Merle,** botanist, head professor of botany, University of Chicago since 1896; born at Ningpo, China, 1851; graduated at Hanover College, Indiana, 1870; Ph.D., University of Indiana; president of Lake Forest Uni-

versity, 1893-96. Author: *Manual of Rocky Mountain Botany; Manual of Texan Botany; Morphology of Angiosperms*, etc. Died, 1929.

Courbet (*kōōr'be'*), **Gustave,** French painter, was born at Ornans, Franche-Comte, 1819. In 1839 he was sent by his father to study law in Paris, but the bent of his nature was toward art. In 1841 he took to landscape work, painting in the forest of Fontainebleau. In 1844 he began to exhibit at the salon; and his works created a great sensation in 1850; he retired to Tour-de-Pelitz, near Vevay, in Switzerland, where he died, 1877.

Courtois, Bernard, French chemist, was born at Dijon, 1777. He is especially noted for having discovered the element iodine in 1812, by leaching the ashes of burnt seaweed. He did not make his discovery known until a year later, when the Institute named it iodine for its color. He was forgotten for a long period, until in 1832 the Academy of Sciences awarded him 6,000 francs, in appreciation of his services to medicine. He died in 1838.

Cousin (*kōō'zaN'*), **Victor,** French philosopher, was born in Paris, 1792; died at Cannes, 1867. After a literary career extending over many years, he was made, in 1830, under the ministry of M. Guizot, a member of the council of public instruction in France. He published a translation of *Plato*, in thirteen volumes, and a *Course of the History of Philosophy*, in five volumes, which was his largest original work. His last years were spent in retirement in the Sorbonne.

Couture (*kōō'tūr'*), **Thomas,** French painter, pupil of Delaroche, was born in 1815. His chief work is *Les Romains de la Decadance*. Died near Paris, 1879.

Coverdale (*kuv'ĕr-dāl*), **Miles,** translator of the English Bible, was born in Yorkshire, 1488; died in London, 1569. He was a monk of Norwich, but early devoted himself to the work of the reformation. The *Psalms* of Coverdale and Tyndale's translation are still used in the services of the church of England.

Cowley, Abraham, in his own day considered the greatest of English poets, was born in London, 1618. From Westminster school he proceeded in 1637 to Trinity College, Cambridge, and while there wrote, among many other pieces, a large portion of his epic, the *Davideis*, its hero King David. On Cromwell's death he went to Paris, and returned to England at the restoration. He died at Chertsey, 1667, and was buried in Westminster abbey.

Cowper, William, English poet, was born, 1731; died 1800. He was admitted to the bar in 1754, but did not practice. He passed many years at Olney, Buckinghamshire, in the society of Mrs. Unwin, Lady Austen, and the Rev. John Newton, engaged in religious exercises and charities. Lady Austen turned his attention to poetry, and after contributing sixty-eight pieces to the *Olney Hymns*, he published in 1782 his first volume. The ballad of *John Gilpin* gave him a wide renown. In 1799 he revised his *Homer*, and wrote his last poem, *The Castaway*.

Cox, David, noted landscape painter, was born at Deritend, a suburb of Birmingham, England, 1783. He studied in London with John Varley. From 1827 till 1841 London was his headquarters, but in 1841 settled at Harborne, near Birmingham, where he died, 1859.

Cox, Sir George William, English writer, mythologist, was born 1827, educated at Rugby school and Trinity College, Oxford. In 1877 he succeeded to his uncle's baronetcy. Among his works are *Times of Ancient Greece; Aryan Mythology; History of Greece;* etc. Died, 1902.

Cox, James M., journalist and politician, was born at Jacksonburg, Ohio, 1870. In early days was newspaper reporter and country school teacher, bought Dayton Daily News and Springfield Press. Congressman 1909-13, three times governor of Ohio. Democratic nominee for President, 1920.

Cox, Kenyon, painter; born in Warren, Ohio, 1856; studied in Cincinnati and Philadelphia; in Paris under Carolus Duran and Gerome, 1877-82; returned to New York. Has contributed to leading magazines on art subjects. Author: *Mixed Beasts, Old Masters and New*. Died, 1919.

Cox, Palmer, artist; born in Granby, Quebec, Canada, 1840; graduate of Granby Academy; lived in San Francisco, 1863-75. He specialized in original humorous pictures illustrating his own books. Author: *The Brownies at Home*. Died, 1924.

Cox, Samuel Sullivan, American politician and diplomat, was born in Ohio in 1824, and died in New York, 1889. Graduate of Brown University; 1856-62 represented an Ohio district in congress. In 1866 he moved to New York, and was returned to congress almost continuously from 1868, except while he was minister to Turkey, 1885-86. The present arrangements for taking the national census were largely of his conception.

Coxe (*Koks*), **Arthur Cleveland,** 1818-1896, an American Episcopal bishop, born at Mendham, New Jersey. He became rector of Grace Church in New York City, 1859, and bishop of Western New York in 1865.

Crabbe (*krab*), **George,** English poet, born 1754, died 1832. He was a surgeon, but abandoned his profession for literary adventure, and went to London in 1780. He was ordained a priest in 1782, and became chaplain to the duke of Rutland at Belvoir castle. In 1783 he published *The Village*, and in 1807 *The Parish Register*, his best works.

Craddock, Charles Egbert. See **Murfree, Mary Noailles.**

Craigie (*krāg'i*), **Mrs. Pearl Mary Theresa.** See **Hobbes, John Oliver.**

Craik (*krāk*), **Mrs. Dinah Maria.** See **Mulock.**

Craik, George Lillie, Scottish writer and educator, born at Kennoway, Fife, 1798; studied for the church at St. Andrews, but settled in London in 1826. In 1849 he became professor of history and English literature in Queen's College, Belfast. Died at Belfast, 1866.

Cranach (*krä'näкн*), **Lucas,** German painter, was born near Bamberg, Germany, 1472. In 1520 he bought an apothecary's business at Wittenberg, where he was also a book-seller and paper-maker, became councilor and chamberlain, and was twice chosen burgomaster of the town. He was an intimate friend of Luther, whose picture he several times painted. Cranach died at Weimar, 1553.

Cranch (*kränch*), **Christopher Pearse,** American painter, was born at Alexandria, Va., 1813; studied in France and Italy in 1846-63; returned to New York and became a member of the National Academy in 1864. Died, 1892.

Crane, Walter, English painter, decorator, designer, book-illustrator, writer, lecturer, socialist, born at Liverpool, 1845. Apprenticed to W. J. Linton; first illustrated book, *The New Forest*, 1863; principal of the Royal College of Art, South Kensington, 1898-99; awarded Albert gold medal, society of arts, 1904. Publications: *Baby's Opera; Baby's Bouquet; Mrs. Mundi; Pan-Pipes;* illustrations to Shakespeare's *Tempest, Two Gentlemen of Verona, Merry Wives of Windsor; Decorative Illustration of Books;* Spencer's *Faerie Queen;* etc. Died, 1915.

Crane, William H., actor; born at Leicester, Mass., 1845, debut Utica, N. Y., 1863; appeared with Stuart Robson, Park theater, New York, in *Our Boarding House*, 1877, followed by numerous successes, including the two Dromios in Shakespeare's *Comedy of Errors*, ending with *The Henrietta*. Died, 1928.

Crane, Winthrop Murray, manufacturer, United States senator, was born at Dalton, Mass., 1853; A.M., Williams, 1897. Lieutenant-governor of Massachusetts, 1897-99; governor of Massachusetts 1900-02; United States senator from Massachusetts, appointed by governor, 1904; elected, 1905, to fill term expiring 1907, and reëlected that year for the term 1907-13. Died, 1920.

Cranmer, Thomas, archbishop of Canterbury, was born 1489, and educated at Cambridge University. He obtained the favor of Henry VIII. by furthering his divorce from Catharine of Aragon, and was appointed primate in 1533. He favored the reformed doctrines during the reign of Henry VIII., and in that of Edward VI. Protestanism was thoroughly established, and the *Book of Common Prayer* compiled, 1549, under his guidance. He was committed to the Tower on the accession of Mary, condemned at Oxford for heresy in 1554, and, after two years' imprisonment, burned there, openly rejecting the recantation of Protestantism which he had been induced to sign. Died, 1556.

Crassus (*kras'us*), **Lucius Licinius,** Roman orator and statesman, was born 140 B. C. He was consul in 95 B. C. and censor in 92 B. C. Died 91 B. C.

Crassus, Marcus Licinius, Roman general and statesman, was born about 105 B. C. Plutarch estimates the wealth of Crassus at more than 7,000 talents, and Pliny states that the lands of Crassus were worth 8,000 talents. About 60 B. C. Cæsar, Pompey, and Crassus became members of the first triumvirate. Killed 53 B. C.

Crawford, Francis Marion, American novelist, was born at Bagni di Lucca, Italy, 1854. From 1881 to 1883 he was in America, and subsequently resided at Sorrento, Italy. He published over forty novels, including *Mr. Isaacs; An American Politician; Zoroaster; Saracinesca; With the Immortals; The Rulers of the South* (hist.); *Marietta, a Maid of Venice; Cecilia, a Story of Modern Rome; The Heart of Rome; A Lady of Rome;* and the play, *Fransesca da Rimini*, produced by Sarah Bernhardt in Paris, 1902. Died, 1909.

Crawford, Thomas, American sculptor, was born in New York in 1814. His principal works are the bronze statue of Beethoven, executed for the Boston music hall the colossal equestrian statue of Washington at the capitol, Richmond, and the marble and bronze statuary for the capitol, Washington. Died in London in 1857.

Crawford, William Harris, American statesman, born in Virginia, 1772. In 1783 he settled in Columbia county, Georgia, was admitted to the bar 1798, and began his practice in Lexington. He was elected to the state senate in 1802, and to the United States senate to fill a vacancy in 1807, reëlected for a full term 1811, and was chosen president of the senate pro tem. 1812. He received the nomination for president, 1824, and in the election had forty-one electoral votes. He died in 1834.

Creasy (*krē'si*), **Sir Edward Shepherd,** English historian, born at Bexley, Kent, in 1812; from Eton passed to King's College, Cambridge, and in 1834 was elected a fellow; in 1840 was appointed professor of history at London University, in 1860 chief-justice of Ceylon, and knighted; died at Hampton Wick, 1878. He was author of *The Fifteen Decisive Battles of the World, Invasions of England, History of the Ottoman Turks*, etc.

Creel, Enrique C., Mexican diplomatist and statesman, was born at Chihuahua, Mexico, 1854; member of Mexican national congress, 1898-1904; speaker of house, 1892; governor of state of Chihuahua, 1903-06; ambassador extraordinary and minister plenipotentiary of Mexico to United States, 1906-09.

Creelman, James, author, journalist; associate editor of *Pearson's Magazine*, was born at Montreal, 1859. Editorial writer and correspondent *New York Herald*, 1877-89; was aide on General Lawton's staff, Philippines, captured Spanish flag, and was shot after he received surrender of Spanish commandant at El Caney, 1898. Author: *On the Great Highway, Eagle Blood*, etc. Died, 1915.

Creighton (*krī'tun*), **James Edwin,** educator, professor of logic and metaphysics, Cornell, was born at Pictou, Nova Scotia, 1861; Ph.D., Cornell, 1892; LL.D., Queen's University. Editor of *Philosophical Review;* American editor of *Kant Studien*. Author: *An Introductory Logic*. Died, 1924.

Creighton, Mandell, English historian, born at Carlisle, 1843; graduated at Merton College, Oxford, and was elected a fellow in 1866. He became vicar of Embleton, Northumberland, in 1875, first professor of ecclesiastical history at Cambridge in 1884, bishop of Peterborough in 1891, and of London, 1896. Died, 1901.

Crillon (*krē'yôN'*), **Louis des Balbes de Berton de,** French soldier, surnamed "le brave," was born at Murs in Provence, 1541. Wounded at Lepanto, 1571, he was yet sent to carry the news of the victory to the pope and the French king. He abhorred the massacre of St. Bartholomew, but took part in the siege of La Rochelle in 1573. When the peace with Savoy was concluded, Crillon retired to Avignon, and ended his days in the exercise of piety and penance. Died, 1615.

Crispi (*krēs'pē*), **Francesco,** Italian statesman, was born at Ribera in Sicily, 1819; was admitted to the bar at Palermo, but, joining the revolutionary movement of 1848, had to flee to France; in 1894 became premier of Italy. In 1895 strenuous efforts were made to discredit him by connecting him with a series of bank scandals; in 1896 the Abyssinian disaster of Adowa compelled his resignation. Died, 1901.

Critias (*krish'i-as*), a pupil of Socrates, but a hearer rather than a doer of his word. He had a high reputation as an orator, and also wrote poetry.

Crittenden (*krit"n-den*), **John Jordan,** American statesman, born in Kentucky in 1786. After having studied and engaged in the practice of the law, he, in 1816, became a member of the Kentucky house of representatives, and was elected to the United States senate in 1817, 1835, and 1855. In 1841 he became attorney-general in President Harrison's administration; and in 1848 was elected governor of Kentucky. He opposed the secession movement in 1860-61. Died, 1863.

Crocker, Francis, Bacon, electrician, physicist, professor of electrical engineering, Columbia, since 1889; born at New York, 1861; graduated at Columbia, M.E., 1882; Ph.D., 1895. President American Institute of Electrical Engineers, 1897-98. Died in 1921.

Crockett, David, American pioneer and politician, was born in Tennessee, 1786. He was chiefly noted for his adventures and eccentric habits, and was a member of congress from 1827 to 1831, and from 1833 to 1835. He joined the Texans in their revolt against Mexico, was taken prisoner at Ft. Alamo in 1836, and was killed in that celebrated massacre.

Crockett, Samuel Rutherford, British novelist; born in Duchrae, Galloway, 1860. Educated at Edinburgh, Heidelberg, and New College, Oxford. Entered Free church of Scotland, 1886; minister of Penicuik for some years, then became a writer and journalist. Died, 1914.

Croesus (*krē'sus*), last of the kings of Lydia, in the sixth century B. C.; celebrated for his wealth, so that his name became a synonym for a man overwhelmed by the favors of fortune.

Crofts, Ernest, British painter, keeper of the Royal Academy; born in Yorkshire, 1847; educated at Rugby and Berlin. Studied art at London and Dusseldorf. Pupil of A. B. Clay and Professor Hunten. Died, 1911.

Cromer (*krō'mĕr*), **Evelyn Baring, first Earl,** British statesman, and diplomat, was born at Cromerhall, Norfolk, 1841. Educated at ordnance school, Carshalton; Royal Military Academy, Woolwich. Hon. D.C.L., Oxford; LL.D., Cambridge; financial member of council of governor general of India, 1880; financial assistant at conference in London on Egyptian finance, 1884; agent and consul-general in Egypt, 1883-1907. Author *The War Game*, and other military works; *Modern Egypt* (2 volumes); etc. Died, 1917.

Crompton, Samuel, inventor of the spinning-mule, born near Bolton, England, 1753; for five years he worked at his project, and at last sold it for 60 pounds. It revolutionized the manufacture of British muslin, and brought wealth to all save

the inventor, who died in comparative poverty, 1827.

Cromwell, Oliver, the great Protector, born at Huntington, in 1599, of Welsh descent—one of his ancestors, called Williams, having adopted the surname of his patron, Thomas Cromwell, whose agent he was in the suppression of the monasteries. Early experiencing a "saving change," he emerged from his period of gloom and anxiety a stern and convinced Puritan and Calvinist, and a determined foe of Laud's absolutist pretensions in church and state. He sat as a member for Huntington in the Parliament of 1628. When the Scottish revolt compelled Charles to summon the Short Parliament (1640), Cromwell sat for Cambridge; and again in the Long Parliament as an active supporter of the popular and Puritan cause. He was never a parliamentarian in the ordinary sense of the word.

When the English Civil War began, his opportunity came. He fought at Edgehill (1642), and there perceived the weakness of the parliamentary levies against the spirit and dash of the royalist cavaliers. He saw that a counter-motive was required to meet the gallant traditions inspiring the king's soldiers, and this he found in the stern godliness of the English yeoman. He organized his famous cavalry regiments from this class, and at Marston Moor (1644) demonstrated the superiority of his troops, and stood forth as the greatest English military leader of the time—a fact which he showed again at Newbury (1644), Naseby (1645), Preston (1648), Dunbar (1650), Worcester (1651)—though the Scots, general Leslie excelled him in strategy.

Cromwell attached himself early to the extreme and independent party in the army and the state, and was their representative in their struggles with the Presbyterian Parliament, which, after Naseby, wished to disband the army. It is probable that Cromwell was moulded by circumstances rather than that he was himself the moulder of them. The execution of the king shocked all the moderate men; and after Cromwell's return from a ruthless expedition against the royalists in Ireland, he was summoned to Scotland, where Charles II. had been declared king by the whole nation. The "crowning mercy" at Worcester (1651) followed his victory over the Scots at Dunbar, and the three kingdoms were at his feet.

His first troubles were with Parliament. The "Rump," the remnant of the Long Parliament, being recalcitrant and determined to prolong its own existence, Cromwell summarily dissolved it. In September, 1656, he called a new parliament, which undertook the revival of the constitution and offered Cromwell the title of king. On his refusal he was again installed as Lord-protector, but with his powers now legally defined. Early in the following year, however, he peremptorily dissolved the house, which had rejected the authority of the second chamber. Abroad his influence still increased, reaching its full height after the victory of Dunkirk in June, 1658.

But his masterly administration was not effected without severe strain, and upon the death of his favorite daughter, Elizabeth Claypole, in the beginning of August, 1658, his health began to fail him. Towards the end of the month he was confined to his room from a tertian fever, and on Sept. 3, 1658, died at Whitehall, in the sixtieth year of his age. He was buried in King Henry VII.'s Chapel, in Westminster Abbey, but after the Restoration his body was taken up and hanged at Tyburn, the head being fixed on a pole at Westminster Abbey, and the remains buried under the gallows.

Great as a general, Cromwell was still greater as a civil ruler. He lived in a simple and retired way, like a private man, and was abstemious, temperate, indefatigably industrious, and exact in his official duties. He possessed extraordinary penetration and knowledge of human nature; and devised the boldest plans with a quickness equaled only by the decision with which he executed them. No obstacle deterred him; and he was never at a loss for expedients. Cool and reserved, he patiently waited for the favorable moment, and never failed to make use of it. In his religious views he was a tolerant Calvinist.

References.—Carlyle's *Cromwell's Letters and Speeches;* Harrison's *Cromwell;* Morley's *Cromwell;* Gardiner's *History of the Great Civil War;* and *History of the Commonwealth and Protectorate; Cromwell's Army,* and Roosevelt's *Oliver Cromwell.*

Cromwell, Richard, born in 1626, was the third son of Oliver, but by the deaths of two elder brothers, Robert and Oliver, became his father's heir. When the protector had been empowered to nominate his successor, an effort was made to train Richard to the work of government, but in vain. Scarcely had he entered on the protectorship when the forces of anarchy, both parliamentary and military, broke loose; finding himself unable to restrain them, and deep in debt, he abdicated in 1659. Died, 1712.

Cromwell, Thomas, earl of Essex, English statesman, born about 1485. He was in the service of Wolsey for several years before the cardinal's ruin in 1529, and remained his steady friend in adversity. His fidelity to his patron and his talents commended him to Henry VIII., who appointed him his secretary and spokesman in the house of commons. This made him the leader of the English reformation. He was created earl of Essex, received valuable estates from the spoils of the monasteries, and was the king's most powerful subject. But he had enemies on all sides, and, having lost the king's favor by his promotion of the marriage with Anne of Cleves, with whom Henry was disgusted, he was beheaded in 1540.

Cromwell, William Nelson, born 1854, lawyer; now senior member of law firm of Sullivan & Cromwell; officer, director, or counsel of more than twenty of the largest corporations in the United States, including United States Steel Corporation. He perfected the details of the transfer of Panama canal to United States government.

Cronje (*krŏn'ye*), **Pietrus Arnoldus,** Boer general, was born, 1835, of Huguenot descent; commanded the western army of the South African republics; frustrated the Jameson raid at Krugersdorp, 1895. Surrendered at Paardeberg to Field Marshal Lord Roberts, 1900; member of the executive council of the Transvaal republic; chief native commissioner. Died, 1911.

Crookes (*krooks*), **Sir William,** British chemist and physicist; proprietor and editor of *Chemical News;* president of the British association for the advancement of science, 1898; editor of *Quarterly Journal of Science;* born in 1832. Discoverer of thallium, a new element, 1861, radiant matter, 1879; radiant matter spectroscopy, 1881; new elements in gadolinite, etc., 1886. Died, 1919.

Crosby, Howard, American clergyman and scholar, was born at New York, 1826; graduate of the University of New York, 1844; professor of Greek there, 1851-59, and at Rutgers College, New Jersey, 1859-63; chancellor of the University of New York, 1870-81. In 1877 he was the leading organizer of the society for the prevention of crime, and its first president. Died, 1891.

Crothers (*kruth'ĕrz*), **Samuel McChord,** Unitarian clergyman, author, was born at Oswego, Ill., 1857; graduated at Princeton, 1874; studied theology at Union Theological Seminary; D.D.; Litt.D.; since 1894 at First Parish, Unitarian church, Cambridge, Mass.; preacher to Harvard University. Author: *The Gentle Reader; The Understanding Heart; The Pardoner's Wallet; The Endless Life.*

Crozier, William, army officer, was born at Carrollton, Ohio, 1855; graduated from United States Military Academy, 1876. Began his service in the United States army as an artillery officer, 1876; brigadier-general and chief of ordnance of United States army since 1901. With General Buffington invented the Buffington-Crozier disappearing gun carriage; invented the wire gun.

Cruikshank (*krook'shangk*), **George,** English artist, was born in London, 1792. His father and elder brother were both caricaturists. Like Hogarth, he was a moralist as well as an artist, and as a total abstainer he consecrated his art at length to dramatize the fearful downward career of the drunkard. He died, 1878.

Crumpacker, Edgar Dean, lawyer, congressman, was born in Laporte county, Indiana; was admitted to the bar in 1876, practiced law at Valparaiso, Ind.; was member of the lower house of Congress, 10th Indiana district.

Cruttwell, Charles Thomas, English clergyman and scholar, rector of Ewelme, Oxfordshire, canon of Peterborough cathedral; born in London, 1847; graduate of St. John's College, Oxford. Ordained to the ministry, 1875; dean of Gartree, diocese of Peterborough, 1892-1901; preacher to the University of Oxford, 1896-98 and 1903-05; proctor in convocation for the clergy of Peterborough diocese, 1900-06.

Cujas (*kū'-zhäs'*), **Jacques,** eminent French jurist, born in 1520, studied under Arnaud Ferrier at the University of Toulouse; became professor of the Roman law at Bourges and Valence. Among his numerous works are *Commentaries on Justinian's Institutes,* and on the *Pandects and Decretals.* Cujas has been styled by Hallam the greatest of all civil lawyers. Died at Bourges, 1590.

Culberson, Charles A., lawyer, United States senator, was born in Dadeville, Ala., 1855; studied law under his father and at the University of Virginia in 1876-77; elected attorney-general of Texas in 1890 and 1892; elected governor of Texas in 1894 and 1896; chosen United States senator, 1899, 1905 and 1911. Died, 1925.

Cullom, Shelby Moore, lawyer, United States senator, born in Kentucky in 1829, studied law, 1853, was admitted to the bar, and began to practice law at Springfield, Ill; was governor of Illinois in 1877-83; elected United States senator in 1883; and reëlected in 1888, 1894, 1899, 1905. He retired, 1911. Died, 1914.

Cummins, Albert Baird, lawyer, United States senator, was born near Carmichaels, Pa., 1850; LL.D.; Waynesburg Coll., 1903; studied law in office of McClellan & Hodges, Chicago. Admitted to Illinois bar, 1874; member of Iowa legislature, 1888; governor of Iowa, 1902-04, 1904-06, 1906-08; elected 1908 to United States senate to serve out term of Hon. W. B. Allison, deceased; reelected 1909 for the term 1909-15. Died, 1926.

Cunard (*kū-närd'*), **Sir Samuel,** civil engineer, founder of the Cunard steamship line, was born at Halifax, Nova Scotia, 1787; succeeded early as a merchant and shipowner, and removed to England in 1838; joined with George Burns, Glasgow, and David M'Iver, Liverpool, in founding, 1839, the Royal Mail Steam Packet Company, and obtained a contract for the mail service between Liverpool and Halifax, Boston, and Quebec. The first passage, 1840, was the *Britannia's* in fourteen days eight hours. Iron steamers were introduced in 1855, and paddle-wheels gave way entirely to the screw after 1862. Since then the Cunard line has been known as one of the leaders in transatlantic travel. Died, 1865.

Cunningham, Daniel John, British physician, scientist, professor of anatomy in the University of Edinburgh since 1903, and dean of the medical faculty; born at Crieff, Scotland, 1850. M.D., D.Sc., D.C.L., LL.D., F.R.S.; was examiner on anatomy in the Universities of Edinburgh, London, Cambridge, Oxford, and Victoria. Author: *Manual of Practical Anatomy; The Microcephalic Brain; The Anatomy of Hernia.*

Cunningham, William, English clergyman, educator, archdeacon of Ely, was born at Edinburgh, 1849; lecturer on economic history, Harvard University, 1899; chaplain of Trinity College, 1880-91; Hulsean lecturer, 1885; vicar of Great St. Mary's Cambridge, 1887-1908. Author: *Growth of English Industry and Commerce* (2 vols.); *Outlines of English Industrial History; Cure of Souls,* etc.

Curie (*kūūr-ē'*), **Madame,** nee Marie Sklodowska, Polish chemist and physicist, was born at Warsaw, Russia, 1867; educated at Warsaw, and at the Sorbonne, Paris; Sc.D., Paris; she discovered the element polonium, and with her husband, Pierre Curie, the element radium. Died 1934.

Curie, Pierre, French chemist, was born in Paris, 1859. Educated at the Sorbonne, he became professor of physics and chemistry at Paris, 1895, and at the Sorbonne, 1900. In conjunction with his wife he discovered the element radium; member of the French Academy of Sciences, 1905. He was killed by an accident, 1906.

Curran, Henry H., born 1877, graduate Yale University, 1898; journalist; president borough of Manhattan, 1917-1921; candidate Mayor of Greater New York, 1921.

Curran (*kur'an*), **John Philpot,** Irish legal and parliamentary orator, was born in County Cork, Ireland, 1750. He was educated at Trinity College, Dublin, and in 1773 went to London, and entered the Middle Temple. In 1782 he obtained a seat in the Irish parliament as member for Kilbeggan. Died, 1817.

Curtin, Jeremiah, American author, ethnologist, and linguist, was born at Milwaukee, Wis., 1840; graduated from Harvard, 1863; was secretary of legation at St. Petersburg, 1864-70; connected with the United States bureau of ethnology, 1883-91. Died, 1906.

Curtis, Benjamin Robbins, American jurist, born in Massachusetts, 1809; graduated at Harvard. On the impeachment of Andrew Johnson, he appeared as one of the counsel for the defendant. Died at Newport, R. I., 1874.

Curtis, Charles, lawyer, United States senator, was born at Topeka, Kan., 1860; member of congress from Kansas, 1893-1907; U. S. senator 1907-13, '15-'27. Vice president, 1929-1936. Died, 1936.

Curtis, Cyrus H. K., publisher, was born in 1850, and was educated in the public schools of New England. He became head of the Curtis publishing company, publishers of the *Ladies' Home Journal* and the *Saturday Evening Post.* Died, 1933.

Curtis, George Ticknor, American lawyer and writer, was born in Massachusetts, 1812, graduated at Harvard, and began law practice in Boston, afterward removing to New York. He was several times in the Massachusetts legislature, and was for a time United States commissioner. Among his many books are *Rights and Duties of Merchant Seamen; Treatise on the Law of Copyright.* Died, 1894.

Curtis, George William, American journalist, author, publicist, was born at Providence, R. I., 1824. He commenced the *Editor's Easy Chair* papers in *Harper's Monthly* in 1853, and became editor of *Harper's Weekly* on its establishment in 1857. He died at New York, 1892. He wrote *Lotus-Eating; Potiphar Papers: Prue and I; Trumps;* etc.

Curtis, William Eleroy, journalist, born in Akron, Ohio, 1850; graduate of Western Reserve College, 1871; *Chicago Record-Herald,* 1901-1911; commissioner of Columbian exposition to Madrid, and special envoy to the queen regent of Spain and Pope Leo XIII., 1892. Author: *The Life of Zachariah Chandler; Egypt, Burma, and the British East Indies;* etc. Died, 1911.

Curtiss, Glen Hammond, aviator and inventor, was born at Hammondsport, N. Y., 1876. He won many prizes, both in France and The United States, for aerial flights. President Curtiss Engineering Company; Director Curtiss Airplane & Motor Corp. Invented hydroplane and biplane. Author (with Augustus Post) of the *Curtiss Aviation Book,* and articles in popular and technical magazines. He died in 1930.

Curwood, James Oliver, American writer, was born at Owosso, Michigan, 1878. After graduation from the University of Michigan, he did newspaper work for several years. Later he was employed by the Canadian government to write up his travels in the "frozen north." These journeys gave him material for his books, which include *The Danger Trail, The Flaming Forest.* Died, 1927.

Curzon (*kûr'zon*) **of Kedleston, first Baron, George Nathanial,** English statesman, author, was born in Kedleston, 1859; graduate of Balliol college, Oxford; D.C.L., LL.D. Member of parliament, Lancashire, 1886-98; viceroy and governor-general of India, 1899-1905; lord warden of the Cinque ports, 1904-05. Author: *Russia in Central Asia.* Died, 1925.

Cushing (*kōōsh'ing*), **Caleb,** American lawyer and diplomatist, was born in 1843. He was a member of Congress, 1835-43; negotiated the first treaty of the United States with China; in 1872 he was one of the counsel for the settlement of the "Alabama claims," before the Geneva tribunal; and 1874-77 was minister to Spain. Died, 1879.

Cushing, Frank Hamilton, American ethnologist, was born at Northeast, Pa., 1857. He entered the national museum at Washington, and in 1875 began making collections of Indian relics for the department of ethnology. Author: *Zuni Fetiches,* etc. Died at Washington, 1900.

Cushman (*kōōsh'man*), **Charlotte Saunders,** American actress, was born and died at Boston Mass., 1816-1876.

Custer (*kus'tĕr*), **George Armstrong,** American soldier, born in Ohio in 1839, graduated at West Point in 1861, and served with distinction through the Civil War. As a cavalry commander in the west, he several times defeated the hostile Indians; but on June 25th, 1876, he attacked 5,000 Sioux on the Little Big Horn, in Montana, and he and his 264 men were all destroyed.

Cuvier, Georges Chretien Leopold Dagobert Baron, (*koo've-ai*), one of the greatest naturalists the world has produced, was born at Montbeliard, France, 1769. After finishing his education at Stuttgart, young Cuvier accepted the situation of tutor in a Protestant family in Normandy. The Abbe Texier, whom the troubles of the time had driven into exile from the capital, introduced him by letter to Jussieu and Geoffrey. Several memoirs, written about this time, and transmitted to the latter, established his reputation, and procured his admission to two or three of the learned societies in Paris.

In 1800 he was appointed successor to Daubenton as professor of natural history at the college of France, and in 1802 he succeeded Mertrud in the chair of comparative anatomy at the Garden of Plants. From that time he devoted himself steadily to the studies which have immortalized his name. His *Lecons d'Anatomie Comparee,* and the *Regne Animal,* in which the whole animal kingdom is arranged according to the organization of the beings of which it consists, have raised him to the pinnacle of scientific fame, and established him as perhaps the first naturalist in the world after Linnaeus. His numerous works upon these subjects show a master mind in the study of zoology; and extending the principles laid down in his comparative anatomy to the study of paleontology, he has been enabled to render immense service to geology.

Starting from the law that there is a correlation of forms in organized beings,—that all the parts of each individual have mutual relations with each other, tending to produce one end, that of the existence of the being—that each living being has in its nature its own proper functions, and ought therefore to have forms appropriated for that function and that consequently the analogous parts of all animals have received modifications of form which enable them to be recognized—he was able to ascertain from the inspection of a single fossil bone, not only the family to which it ought to belong, but the genus to which it must be referred. Even the very species of animal was thus to be made out, and the restoration of its external form as it might have lived and died, became in his hands an object of certainty and precision. His *Regne Animal* has been frequently translated, and forms the basis of all arrangements followed at the present time. Cuvier filled many offices of great importance in the state; particularly those connected with educational institutions. Napoleon treated him with much consideration; Louis XVIII. and Charles X. advanced him to honor; and Louis Philippe raised him to the rank of a peer of the realm. He died, 1832.

References.—Lee's *Memoirs of Baron Cuvier;* Carus's *History of zoology;* Thomson's *Science of Life;* Day's *Naturalists;* Duncan's *Heroes of Science.*

Cyrus the Great, founder of the Persian monarchy, commonly called Cyrus the Elder, was born about 590 B. C. Putting himself at the head of his Persian troops, Cyrus advanced into Media and overthrew the forces of Astyages, 559 B. C. After consolidating his dominions, which was a work of some time, Cyrus proceeded to conquer the surrounding nations. The kingdom of Lydia first yielded, 546 B. C., and its king, the famous Crœsus, fell into his hands. Ultimately, the whole of Asia Minor was subdued. But the crowning triumph of Cyrus was his capture of the city of Babylon, the metropolis of Assyria, 538 B. C., whose king was Labynetus, the Belshazzar of Daniel. Cyrus was defeated and slain, 529 B. C.

Cyrus the Younger, was born in 424 B. C., son of Darius, and governor of the western provinces of Asia Minor. After unsuccessfully plotting against his elder brother, Artaxerxes, he raised a large army, including about 12,000 Greek soldiers, with which he marched against him, but was defeated and slain at Cunaxa. Xenophon then conducted the retreat of the 10,000 surviving Greeks. Died, 401 B. C.

Dabney, Charles William, educator, president of University of Cincinnati since 1904, was born in Hampden-Sidney, Va., 1855; graduated from Hampden-Sidney College, 1873; Ph.D., LL.D.; was first to discover the phosphate deposits in tin ore in western North Carolina, took prominent part in establishing an industrial school at Raleigh, president of University of Tennessee, 1887-1904; assistant secretary agriculture, United States, 1893-97; member of many scientific and educational societies.

Da Costa (*dă-kos'tă*), **John Chalmers,** American surgeon, was born in Philadelphia, Pa., 1863; graduated from University of Pennsylvania scientific department, 1882; assistant surgeon, Jefferson hospital, 1887; demonstrator of surgery, Jefferson medical college, 1891; clinical professor of surgery, same, 1898; professor of surgery, 1900. Was appointed Surgeon to Philadelphia hospital in 1895, to St. Joseph's hospital in 1896. Author: *A Manual of Modern Surgery.* Edited English edition of Zuckerkandl's *Operative Surgery,* and Gray's *Anatomy.* Died, 1910.

Daendels (*dăn'dels*), **Herman Willem,** Dutch general, was born in 1762, died in 1818. He became colonel of a corps of volunteers in the French army in 1793, and afterward brigadier-general. After the fall of Napoleon he was intrusted with the organization of the East African colonies.

Daguerre (*dă-gâr*), **Louis Jacques Mande,** French inventor, was born in 1789. He discovered the daguerreotype process of photography. He was also celebrated as a dioramic painter; was named by the French government as an officer of legion of honor. Died, 1851.

Dahlgren (*dal'gren*), **John Adolf,** American admiral, was born in Philadelphia, Pa., 1809. He became a midshipman, 1826, and a lieutenant, 1837. Ten years afterward he began to experiment in the casting of heavy cannon for naval warfare, and finally devised the Dahlgren gun. He died in Washington, when in command of the navy yard, 1870.

Dahlmann (*dal'măn*), **Friedrich Christoph,** German historian, was born at Wismar, 1785; studied at Copenhagen and Halle, and in 1813 became a professor of history at Kiel, and in 1829 of political science at Göttingen, where he published his invaluable *Quellenkunde der deutschen Geschichte.* In 1842 he became professor of history at Bonn, and in the movement of 1848 headed the constitutional liberals. Died, 1860.

Dahn (*dăn*), **Julius Sophus Felix,** German publicist historian, poet, was born at Hamburg, 1834, the son of the actor, Friedrich Dahn. He studied at Munich and Berlin, and in 1872 became professor of German jurisprudence at Königsberg, and in 1888 at Breslau. Died, 1912.

Dalngerfield, Eliott, artist, was born at Harper's Ferry, Va., 1859; studied drawing and painting in New York with private teacher and at art student's league. First exhibited at National academy of design, 1880; studied in Europe, 1897; commissioned to paint the Lady chapel of the church of St. Mary the Virgin, New York, 1902.

Dalberg-Acton (*dăl'bern-ak'tun*), **Sir John Emerich Edward,** first Baron Acton, English historian, was born at Naples, Italy, 1834. In 1895, was made professor of modern history at Cambridge University, and as a liberal Catholic exerted a profound influence. He died, 1902.

D'Albert (*dal'bar'*), **Eugene Francis Charles** pianist and composer; born in Glasgow, 1864; studied first in London, afterward under Franz Liszt in Weimar. Visited the United States several times, and was court pianist in Weimar.

Dale, Alan, pseudonym of Alfred J. Cohen, dramatic critic, author, was born in Birmingham, England, 1861; educated at King Edward's school there, and Oxford University. Came to United States, and engaged in journalism in New York; dramatic critic of New York *Evening World,* 1887-95; dramatic critic of New York *Journal* and later with New York *American.* Died, 1928.

D'Alembert. See **Alembert.**

Dalhousie (*dal-hou'zi*), **James Andrew Broun Ramsay, Marquis of,** British statesman, was born at Midlothian, Scotland, 1812. He distinguished himself in parliament, holding with credit many important posts, and in 1847 proceeded to India as the youngest governor-general ever appointed to that country. He died in 1860.

Dallas, George Mifflin, American statesman and diplomatist, was born at Philadelphia, Pa., 1792. During 1831-33 he represented Pennsylvania in the United States senate; and minister to England, 1856-61. He died in 1864.

Dalton (*dôl'tun*), **John,** British chemist and physicist, was born near Cockermouth in 1766. He was famous for his experiments on the elastic force of steam. Died, 1844.

D'Alviella (*dăl-vē-el'la*), **Count Goblet,** member and secretary of the Belgian senate; professor at the University of Brussels; was born in Brussels, 1846; educated at Brussels and Paris. Director of the *Revue de Belgique,* 1874-1890.

Dalzell (*dal-zel'*), **John,** congressman, lawyer; born in New York, 1845; removed to Pittsburgh, 1847; graduate of Yale, 1865; admitted to bar, 1867; member of congress, 1887-1913. Died, 1927.

Damien de Veuster (*dă'myăN'de vē'stâr'*), **Joseph,** Roman Catholic missionary, was born near Louvain, Belgium, 1840. He long worked single handed for the lepers of Hawaii, but was ultimately joined by other priests. For twelve years he escaped the contagion; but in 1885 the malady appeared in him, yet he continued his labors until his death in 1889.

Damrosch (*dăm'rosh*), **Walter Johannes,** composer and musical director, was born in Breslau, Prussia, 1862; received his musical education under his father and Rischbieter, Urspruch, and Hans von Bülow; came to United States with his father, 1871. Succeeded his father as conductor of the New York symphony society, 1885; founded the Damrosch opera company, 1894; director of New York Symphony Orchestra, since 1903. He wrote *The Scarlet Letter,* opera in three acts; *Cyrano,* opera in four acts; songs, etc.

Dana (*dă'nă*), **Charles Anderson,** American journalis , was born at Hinsdale, N. H., 1819. From 1848 to 1862 he was managing editor of the New York *Tribune,* and from 1863 to the close of the Civil War was assistant secretary of war. In 1867 took hold of the New York *Sun,* and began the successful management of that paper on democratic lines. He died on Long Island, 1897.

Dana, Edward Salisbury, mineralogist, educator, was born in New Haven, Conn., 1849; graduated from Yale, 1870; Ph.D., 1876; professor of physics, Yale, since 1890; trustee of Peabody museum since 1885; editor *American Journal of Science* since 1875. Author: *Text-book of Mineralogy; Text-book of Elementary Mechanics; Dana's System of Mineralogy; Minerals and How to Study Them,* etc. Died, 1935.

Dana, Francis, American jurist and diplomat, was born in Massachusetts, 1743; graduated at Harvard, and admitted to the bar in 1767; was a member of the congress of 1777, which formulated the articles of confederation; judge and chief justice Mass. supreme court, 1785-1806. Died, 1811.

Dana, James Dwight, scientist, geologist, educator, was born at Utica, N. Y., 1813; graduated at Yale, 1833; professor of natural history and geology at Yale College, 1845-95. Died at New Haven, Conn., 1895.

Dana, John Cotton, librarian, was born at Woodstock, Vt., 1856, and graduated from Dartmouth, 1878; studied law, Woodstock, Vt., 1878-80; land surveyor, Colorado, 1880-81; admitted to New York bar, 1883; President of American library association, 1896; director of Newark Free Public Library. Died, 1929.

Dana, Richard Henry, Jr., lawyer and author, son of Richard Henry Dana, was born at Cambridge, Mass., 1815. He entered Harvard college in 1832, but suspended his studies on account of the weakness of his eyes in 1834. He then shipped as a common sailor on a voyage to California, of which he wrote a narrative entitled *Two Years Before the*

Mast. He was one of the founders of the free soil party in 1848. Died in Rome, Italy, 1882.

Dandolo (*dăn'dō-lō*), **Enrico,** doge of Venice, was born about 1105 or 1108 A. D. When the emperor Alexius, who had been raised to the throne by the exertions of Dandolo, was murdered by his own subjects, Dandolo laid seige to Constantinople, and took it by storm, 1204. He died in 1205 in Constantinople, and was buried in the church of St. Sophia.

Dane (*dān*), **Nathan,** American lawyer, was born in Massachusetts in 1752. He served in the continental congress, 1785-88; framed the ordinance for the Northwest territory, in which he prohibited slavery, and was United States senator, 1794-98. Died at Beverly, Mass., 1835.

Daniel, John Warwick, lawyer, United States senator, was born in Lynchburg, Va., 1842; educated at Lynchburg College and Dr. Gessner Harrison's university school; LL.D., studied law, University of Virginia, 1865-66, admitted to bar, 1866. Member of Virginia house of delegates, 1869-72; of state senate, 1875-81; member of congress, 1885-87; United States senator, 1887-1910. Died, 1910.

Daniels, Josephus, secretary of navy, journalist, was born in Washington, D. C., May 18, 1862. After an academic education at Wilson Collegiate Institute, N. C., he edited the Wilson (N. C.) *Advance*, studied law and was admitted to the bar, 1885. In the same year he became editor of the Raleigh *State Chronicle*; was state printer for North Carolina, 1887-93; chief clerk, department of the interior, 1893-95, and editor of the Raleigh *News and Observer*, since 1894. He was Secretary of the Navy, under President Wilson, 1913-1921. On May 2, 1888, he married Addie W. Bagley, of North Carolina.

D'Annunzio (*dän-nōō'dzē-o*), **Gabriele** (1864——), Italian poet, novelist, dramatist, and soldier, displayed remarkable literary talent at the age of 15. He studied widely, often working eighteen hours a day. He is essentially a poet, excelling in command of rhythm, in richness, splendor, and accuracy of language. His chief works are: *The Child of Pleasure; The Virgins of the Rocks; The Triumph of Death; The Flame of Life; The Dead City*, etc. As an aviator in the Great War, he won distinction for his bravery, and aroused Europe by his pen and voice. At the head of a band of insurgents, he took possession of Fiume for Italy, 1919, presenting a diplomatic problem yet unsolved.

Dante, Alighieri, foremost among Italian poets, and one of the greatest that the world has ever produced, was born at Florence in 1265. He was educated at the Universities of Bologna and Padua, and at a later period, while in Paris, applied himself to the study of theology. He fought in the victorious battle of Campaldino against the Aretines, 1289, and took an active part in storming the fortress of Caprona, 1290.

Having been twice entrusted with an embassy, he was chosen one of the *priori*, or chief-magistrates, of Florence, in 1300, when the struggle between the Guelphs and the Ghibellines was at its height. Dante espoused the cause of the Ghibellines or Imperialists, who, being the weakest numerically, were overcome in the struggle by the Guelphs or adherents of the Pope. All the Ghibelline leaders were banished and their property confiscated. Dante shared their fate and left his native city, never to return. For many years he was doomed to bear the sorrows and hardships of an exile. In 1304 he left Verona, and went to Paris.

When the Emperor Henry VII. invaded Italy, Dante returned to Verona, and employed his powerful pen to further the imperial cause. It was probably at this time 1310 that he wrote the work *De Monarchia*. The fruitless siege of Florence, and the sudden death of the Emperor, 1313, demolished his last hope, and he spent the remaining years of his life under the kind protection of Guido Novello da Volenta, in the city of Ravenna, where he died, 1321. Many cities of northern and central Italy claim the honor of having harbored Dante within their walls. His remains were buried in a chapel of the *Frati Minori*, in Ravenna. They were, however, subsequently removed, and in 1865 were discovered in the Braccioforte Sepulchral Chapel of the same city. In 1830 a marble cenotaph was consecrated to his memory in the church of Santa Croce at Florence.

When about 9 years old, Dante beheld for the first time Beatrice Portinari, then 8 years of age, and the love then enkindled in the heart of the tender boy remained forever the inspiration of his life. How pure and chaste this passion was may be seen from the poet's first work, *Vita Nuova*, which consists of a collection of poems referring to his early love; each of these poems is accompanied by a history of its origin and accurate analysis. Beatrice was married to the cavaliere Simone de Bardi, but died at an early age. A few years after her death Dante married the daughter of an old and noble family, by whom he had six or seven children.

In his work *De Monarchia* he advocated the supremacy of the emperor in temporal, and that of the Pope in spiritual affairs. He wrote several other works in Latin, besides many canzones, sonnets, and lyrics in Italian; most of the latter were collected in his *Convito*. But his greatest work is the *Divine Comedy*. The best English translations of the complete poem are those of Cary and of Longfellow.

References.—Symonds's *Introduction to the Study of Dante*; Rossetti's *A Shadow of Dante*; Gardner's *Dante Primer*; Butler's *Dante, His Times and His Works*; Federn's *Dante and His Times*; Toynbee's *Dictionary of Proper Names and Notable Matters in the Works of Dante*; Fay's *Concordance* for the *Comedia*.

Danton (*dăn'tŏn'*), **Georges Jacques,** French revolutionist, was born at Arcis-sur-Aube, France, 1759. As a member of the national convention, he used all his influence to hasten the execution of the king; and subsequently, as the president of the committee of public safety, he united with the other revolutionary leaders to establish that fatal tribunal under whose authority so many sanguinary judicial murders were committed. He quarreled, however, with Robespierre, and by that very tribunal which he himself had established, he was condemned and guillotined in 1794.

D'Arblay (*dăr'blā*), **Frances Burney,** English novelist; born at Lynn Regis, England, 1752. From the age of eighteen to twenty-six she worked at *Evelina*, which appeared anonymously in 1788, and won her fame. In 1793 she married General D'Arblay, a French refugee. Her later works are *Camille*, *The Wanderer*, and the *Memoirs* of her father. Died at Bath, England, 1840.

Darius (*dă-ri'us*), king of Persia, was born in 558 B. C., son of Hystaspes; dethroned Smerdis the usurper, and became king of Persia in 521, in succession to Cambyses. He captured Babylon after a siege of twenty months, conquered Thrace, and defeated the Scythians. He died in 486 B. C.

Darius III., Codomannus, the last ruler of the Persian empire, 336-330 B. C. At the battle of Arbela, 331 B.C., the Persian army, said to have consisted of more than 1,000,000 men, was completely routed. Darius fled to Ecbatana, where he collected a new force. Alexander pursued him thither, but before he came up with him Darius was assassinated by Bessus, satrap of Bactria, 330 B. C.

Darley (*dăr'li*), **Felix O. C.,** American artist, was born at Philadelphia, Pa., 1822. Though a painter of merit, he is especially known for his work as an illustrator. Some of the finest figures and scenes on the government bonds and legal tender notes were designed by him. Died, 1888.

Darling, Grace, born, 1815; died, 1842. With the assistance of her father, who was keeper of the Longstone lighthouse on one of the Farne islands, she rescued nine of the survivors of the wreck of the Forfareshire steamer, September 7, 1838.

Darnley (*dărn'li*), **Lord, Henry Stuart,** husband of Mary, queen of Scots, the eldest son of the earl of Lennox, by Lady Margaret Douglass, was born in England, 1545, where also he was educated. He is interesting chiefly on account of the position which he occupied with respect to his wife, and his tragic end in 1567. He was father of James I. of England.

Darrow, Clarence S., lawyer and socialist, was born in Kinsman, Ohio, 1857; studied law, and was admitted to bar, 1875. Elected to Illinois legislature, 1902. Active in political campaigns as independent democrat. Counsel in Debs strike case and large number of labor injunction and labor conspiracy cases on side of labor.

Darwin, Charles Robert, English naturalist, was born at Shrewsbury in 1809, died at Down, near Beckenham, in Kent, 1882. He was educated at the Universities of Edinburgh and Cambridge.

He early devoted himself to the study of natural history, and in 1831 was appointed naturalist to the surveying voyage of H.M.S. *Beagle*. The vessel sailed in 1831, and did not return till 1836, after having circumnavigated the globe. Mr. Darwin came home with rich stores of knowledge, part of which he soon gave to the public in various works. In 1839 he married his cousin Emma Wedgwood, and henceforth spent the life of a quiet country gentleman, engrossed in scientific pursuits—experimenting, observing, recording, reflecting, and generalizing.

In 1839 he published his *Journal of Researches During a Voyage Round the World;* in 1844 *Structure and Distribution of Coral Reefs; Geological Observations on Volcanic Islands, etc.*, in 1846 *Geological Observations in South America;* in 1851 and 1854 his *Monograph of the Cirripedia*, and soon after the *Fossil Lepadridae and Balaenidae of Great Britain*. In 1859 his name attained its great celebrity by the publication of *The Origin of Species by Means of Natural Selection*. This work, scouted and derided though it was at first in certain quarters, may be said to have worked nothing less than a revolution in biological science. In it for the first time was given a full exposition of the theory of evolution as applied to plants and animals, the origin of species being explained on the hypothesis of natural selection.

The rest of his works are largely based on the material he had accumulated for the elaboration of this great theory. The principal are a treatise on the *Fertilization of Orchids* (1862); *Domesticated Animals and Cultivated Plants; Descent of Man and Variation in Relation to Sex* (1871); *The Expression of the Emotions in Man and Animals* (1872); *Movements and Habits of Climbing Plants* (1875); *Insectivorous Plants* (1875); *Cross and Self Fertilization* (1876); *The Power of Movement in Plants* (1880); *The Formation of Vegetable Mould* (1881); the last containing a vast amount of information in regard to the common earth-worm. Mr. Darwin was buried in Westminster Abbey.

References.—Wallace's *Darwinism*; critical expositions by T. H. Huxley, Asa Gray, J. G. Romanes, St. G. Mivart and E. D. Cope; and *Life and Letters of Charles Darwin*, by Francis Darwin.

Darwin, Erasmus, English poet and physician; born in Eltham near Newark, England, 1731. He studied at Cambridge, obtained a degree in medicine at Edinburg in 1755 and settled at Lichfield as a physician. He died in 1802.

D'Aubigne, Jean-Henri Merle. See **Merle d'Aubigne.**

Daubigny (*dō'bēn'yē'*), **Charles Francois,** French landscape painter, was born in Paris, 1817. He was made chevalier of the legion of honor, 1857. Died, 1878.

Daudet (*dō'de*), **Alphonse,** French novelist, was born at Nimes, France, 1840; obtained appointment as private secretary in the office of the Duc de Morny. Alphonse's poem *Les Amoureuses*, published in 1858, was followed by the theatrical pieces (written partly in collaboration), *La Derniere Idole; L'Œillet Blanc; Lise Tavernier*. In the journals appeared some of his best work, *Robert Helmont; Contes du Lundi*, and the charming extravaganza of *Tartarin de Tarascon*, carried further in *Tartarin sur les Alpes*. He died in 1897.

Daun (*doun*), **Leopold Joseph, Graf von,** Austrian general, was born at Vienna, 1705; served against the Turks and through the war of the Austrian succession, and in 1754 was made a field-marshal. In 1758 he gained another victory at Hochkirch, and came near to annihilating the Prussian army. In 1759 at Maxen he forced Fink to surrender with 11,000 men. After this, however, he gained no important successes. Died, 1766.

Davenport, Homer Calvin, cartoonist, was born in Silverton, Ore., 1867. In 1892 was employed on San Francisco *Examiner*, and taken to New York by W. R. Hearst, 1895, and placed on New York *Journal;* organized the $-mark suit of clothes and the giant figure of the trusts in 1899. Died, 1912.

David, king of Israel, was the son of Jesse, of the tribe of Judah; was born in Bethlehem, and flourished in the eleventh century B. C. War having broken out between the Israelites and the Philistines, he fought and vanquished the giant Goliath. Saul gave him the command of a body of men, but having conceived a great hatred of him, David was exposed to imminent danger and compelled to seek a refuge among the Philistines. After the death of Saul he was recognized as king of Israel. Many acts of weakness were committed by him, but he obtained forgiveness from Jehovah by exemplary penitence. He is the reputed author of many of the psalms.

David, Felicien, French composer, was born at Cadenet, France, 1810. He became an ardent disciple of St. Simon and of Enfantin. In 1835 he returned to Paris, and published his *Mélodies Orientales* for the pianoforte. They were unsuccessful; and David remained in obscurity until his *Désert* made him known. In 1862 he was made an officer of the legion of honor, and in 1869 librarian to the Paris conservatory. Died, 1876.

David, Jacques Louis, founder of the modern French school of painting, was born at Paris, 1748; studied at Paris and Rome, and during the revolution was artistic superintendent of national fetes and solemnities. In 1804 Napoleon appointed him his first painter and gave him a

number of commissions, and among his most celebrated works are several historic portraits of the emperor, such as *Napoleon Crossing the Alps*. As one of the judges of Louis XVI. he was banished in 1816 from France, and died at Brussels, 1825.

David, Pierre Jean, French sculptor, known as David d'Angers, was born at Angers, France, 1789. A statue of Condé established his reputation; and in 1826 he was elected to the institute and appointed a professor in the school of the fine arts. In 1835-37 he executed the pediment of the Pantheon in Paris. Among his other works are busts of Washington and Lafayette in the capitol at Washington. He died in Paris, 1856.

Davids, T. W. Rhys, English orientalist, professor of comparative religion, Manchester, 1904-1922, was born at Colchester, 1843. He was educated at Brighton school and Breslau University; LL.D., Ph.D. Author: *Buddhism; Buddhist Birth Stories; Early Buddhism*, etc. Died 1922.

Davidson, Most Rev. Randall Thomas, archbishop of Canterbury since 1903, was born at Edinburgh, 1848; graduated at Trinity college, Oxford; D.D., LL.D., D.C.L. Curate of Dartford, Kent, 1874-77; sub-almoner to Queen Victoria, 1882; one of the six preachers of Canterbury cathedral, 1880-83; clerk of the closet to Queen Victoria, 1891-1901, to his majesty the king, 1901-03; bishop of Rochester, 1891-95; bishop of Winchester, 1895-1903. Author: *Life of Archbishop Tait, Charges, Sermons*, etc. Died, 1930.

Davidson, Samuel, biblical critic, was born near Ballymena, Ireland, 1807, and educated at the Royal College, Belfast; was professor Belfast, resigned in 1857. His works include *Sacred Hermeneutics; Treatise on Biblical Criticism*. He died 1898.

Davis, Henry Winter, American lawyer, legislator, and orator, was born at Annapolis, Md., 1817. He was elected member of congress by the voters of Baltimore in 1855 and 1857. He strenuously advocated the emancipation of the slaves and the extension to them of the rights of suffrage. Died, 1865.

Davis, Jefferson, American statesman and soldier, born in Kentucky, 1808; was graduated from West Point, 1828. At the commencement of the Mexican war he left congress, engaged actively in the contest and soon acquired distinction. When Pierce was elected president in 1853, Davis was appointed secretary of war. When Buchanan became president, Davis left the cabinet, but was returned to the senate by the legislature of Mississippi, which position he retained until the secession of his state. In February, 1861, Davis was chosen president of the Confederate States and reëlected for six years in 1862. After the fall of Richmond, in 1865, he was captured when endeavoring to escape, and was imprisoned in Fortress Monroe for two years. He was released on bail in 1867, and finally set at liberty by the general amnesty of 1868. Published *The Rise and Fall of the Confederate Government*, 1881. Died at New Orleans, 1889.

Davis, Jefferson, lawyer, United States senator, was born in Little River county, Arkansas, 1862; graduated from the law department of Vanderbilt University, 1884; admitted to bar the same year. Governor of Arkansas in 1901, 1903 and 1905. Was elected to the United States senate, 1907, for term 1907-1913. Died, 1913.

Davis, John, English navigator, was born at Sandridge, near Dartmouth, about 1550, and undertook in 1585-87 three Arctic voyages in search of a northwest passage. In his last voyage as pilot of an English ship he was killed by Japanese pirates in the strait of Malacca, 1605.

Davis, John William, statesman, was born in West Virginia and was educated at Washington and Lee University. He practiced law for many years and was elected to Congress in 1911. He became solicitor general in 1913; and ambassador to England in 1918. He was president of the American Bar Association in 1922 and two years later was unsuccessful Democratic candidate for the presidency, against Coolidge.

Davis, Richard Harding, novelist, journalist, was born in Philadelphia, Pa., 1864. He graduated from Lehigh University, subsequently studied at Johns Hopkins. He served as war correspondent for the *London Times* and *New York Herald*. Author: *Soldiers of Fortune; Our English Cousins; Van Bibber and Others; The Rulers of the Mediterranean; Dr. Jameson's Raiders; Exiles; With Both Armies in South Africa; Ranson's Folly; Captain Macklin*. Plays: *Taming of Helen; The Dictator*, etc. Died in 1916.

Davis, William Morris, geographer, geologist, professor of geology, Harvard University, since 1899; was born in Philadelphia, Pa., 1850; graduated from Lawrence scientific school, Harvard; 1869, M.E., Sc.D., Ph.D.; acting dean of Harvard graduate school of arts and sciences, 1906-07; member of Pumpelly's Carnegie institution expedition to Turkestan, 1903; visited South Africa, 1905. Author: *Elementary Meteorology; Physical Geography*. Died in 1921.

Davison, Alvin, educator, biologist, was born in Ohio, and educated at the National Normal University, and Princeton University; M.A., Ph.D., Princeton; instructor in biology, Lafayette College, 1896; associate professor, 1897; and professor, since 1898. Author: *Mammalian Anatomy; Practical Zoölogy; The Human Body and Health; Health Lessons*, etc. Fellow of the American association for the advancement of science and other scientific associations.

Davitt (*dav'it*), **Michael,** Irish journalist and political leader, was born at Straid, Ireland, in 1846. A strong home ruler, but socialistic on the question of land nationalization; after the split in the party he opposed Parnell, and was elected to parliament in 1892 as an anti-Parnellite, but unseated on the ground of intimidation. He died in 1906.

Davout (*da'vōō'*), **Louis Nicolas,** French marshal, was born in 1770, at Annoux, France; was educated with Bonaparte at the military school of Brienne. A marshal of the empire, 1804, he acted a brilliant part at Austerlitz, 1805, and Auerstadt, and was made duke of Auerstadt, 1808. At Eckmühl and at Wagram he checked the Austrian attack, and in 1811 was created prince of Eckmühl; after Waterloo he received the command of the remnant of the French army under the walls of Paris. In 1819 he was made a peer of France. He died in 1823.

Davy, Sir Humphry, noted English chemist was born at Penzance, in Cornwall, 1778. In 1803 he became a fellow, and in 1807 secretary of the Royal society. In 1815 he invented the miner's safety lamp. He was knighted in 1812, made a baronet and elected a president of the royal society in 1820. His chief works are *Elements of Chemical Philosophy*, and *Elements of Agricultural Chemistry*. He died at Geneva in 1829, of paralysis.

Dawes, Charles Gates, was born in Marietta, Ohio, August 27th, 1865. Son of Civil War General and graduated from Marietta College and Cincinnati Law School. Practiced law for seven years in Lincoln, Nebraska, then took up business and politics, with Chicago as headquarters and was a McKinley leader in campaign of 1896. Five years Controller of Currency of Washington, then President of Central Trust Company of Illinois at Chicago. Brigadier-General in Great War and head of the American Army Purchasing Board in France. President Harding made him first Director of Federal Budget System and allies made him head of the Expert Commission on German Finances and Reparation. He has written books on finance and has published "Journal of the Great War." Elected Vice President of United States of America, March, 1925. His home is at Evanston, Ill.

Dawson, Samuel Edward, president of Royal Society of Canada, 1907, king's printer for Dominion of Canada and deputy minister of department of public printing and stationery, Ottawa, was born at Halifax, Nova Scotia, 1833. Died, 1916.

Day, James Roscoe, clergyman, educator; chancellor of Syracuse University; was born at Whitneyville, Maine, 1845; graduated at Bowdoin College, 1874, S.T.D.; D.D.; LL.D.; D.C.L. Elected bishop of Methodist Episcopal church, 1904, but resigned. Died, 1923.

Day, Mrs. S. A. See **Gardener, Helen Hamilton.**

Day, William, Rufus, jurist; born in Ravenna, Ohio, 1849; graduate of University of Michigan, 1870; judge of court of common pleas, 1886-90; appointed assistant secretary of state by President McKinley, 1897; succeeded John Sherman as secretary of state, 1898, but in September, 1898, was succeeded by John Hay, becoming chairman of United States peace commissioners at Paris at close of war with Spain; became associate justice of United States supreme court in 1903. Died, 1923.

Deak (*dā'ăk*), **Franz,** Hungarian statesman, who did more than anyone else to establish in 1866 the Austro-Hungarian empire, was born at Kehida in Szalad district, 1803; entered the national diet in 1832, played the part of a moderate in the revolution of 1848, and died at Budapest, 1876.

Deakin (*dē'kin*), **Hon. Alfred,** Australian statesman, prime minister of commonwealth of Australia, 1903-05; born in Melbourne, Australia, 1856; graduated from Melbourne University; member of federal council, 1889-95-97-99; of national Australian convention, 1891; Australian delegate from Victoria to London to secure passing of the commonwealth bill, 1900; first attorney-general of the commonwealth of Australia, 1901-03; prime minister of the commonwealth of Australia, 1903-04, and a second time, 1905. Died, 1919.

Deane, Silas, American statesman and diplomat, was born in Connecticut, 1737; graduated from Yale, and was a member of the first continental congress. In 1776 he was sent to Paris as political and financial agent of the colonies. Benjamin Franklin and Arthur Lee joined him afterward, and he was on the committee which negotiated the treaty with France. Died in poverty, 1789.

Debs (*debz*), **Eugene Victor,** socialist, was born in Terre Haute, Ind., 1855; and became locomotive fireman on Terre Haute & Indianapolis railroad; grand secretary and treasurer of brotherhood of locomotive firemen, 1880-93; president of American railway union, 1893-97. As president of American railway union he won a large strike on the Great Northern railway; while managing the still larger strike of western roads in 1894 he was charged with conspiracy, but acquitted; then he was charged with violation of an injunction and sent to jail for six months for contempt of court. Candidate of Socialist party for president of United States, 1904, 1912 and 1920. Died, 1926.

DeBussy, Claude Achille, French composer, was born at Saint Germain, 1862, and entered the Paris Conservatoire when very young. In 1884 he won the Grand Prix de Rome and soon submitted *Printemps* and *La Demoiselle elue*, which were considered very unorthodox. After a Russian period, influenced by the music of Moussorgsky, he returned to Paris and rose to high prominence as a modern composer. His great triumph was in *Pelleas and Melisande*, produced at the Opera Comique in 1902. He died in 1918.

Decamps (*dē-kăN'*), **Alexandre Gabriel,** French painter, was born at Paris in 1803. In 1824 he was in Switzerland, in 1827-28 in Italy and the Levant. He was made a chevalier of the legion of honor in 1839, and in 1851 an officer. He died at Fontainebleau from a hunting accident, 1860.

De Candolle (*dē kăN'dōl'*), **Augustin Pyrame,** Swiss botanist, was born at Geneva, 1778; studied there and in Paris; in 1816 he retired to Geneva, where a professorship of botany was founded for him. He died in 1841.

Decatur (*dē-kā'tur*), **Stephen,** United States naval officer, was born at Sinepuxent, Md., 1779, and entered the navy in 1798. In 1804 he led a small party which burned, in the harbor of Tripoli, the American frigate *Philadelphia* after its capture by the Tripolitans. Having taken command of the frigate *United States*, he captured the British frigate *Macedonian*, 1812. In 1815 he captured two Algerine vessels of war, and compelled the dey of Algiers to sue for peace. He was killed in a duel by Commodore James Barron, 1820.

Deffand (*de'făN'*), **Marie de Vichy-Chamrond, Marquise du,** Parisian literary leader, was born at the Chateau de Chamrond, France, 1697. In 1718 she married the Marquis du Deffand, and for a number of years she led a life of gallantry and became a conspicuous figure in Paris literary society. Died in Paris, 1780.

De Foe (*dē fō'*), **Daniel,** English novelist and political writer, was born in London, 1661. He began his career as author in 1682, by publishing a pamphlet which contained strictures upon the clergy of that day. In 1701 he published his famous satirical poem, *The True-born Englishman*, which was written in vindication of King William, and in answer to a poem in which he had been attacked, called *The Foreigners*. In 1719 appeared the famous *Robinson Crusoe*, the most popular of all his works. De Foe, in rapid succession, produced his other notable works of fiction, *Moll Flanders; Journal of the Plague; Colonel Jack; Adventures of Roxana*, and the *Memoirs of a Cavalier*. He died in 1731.

Defregger (*dā'freg-ĕr*), **Franz von,** Austrian genre painter, was born at Stronach, Tyrol, 1835. In 1878 he was made professor of painting at the Munich Academy. The subjects of almost all his pictures are drawn from the Tyrolese peasant-life. Died in 1921.

De Kalb (*dē kalb'*), **John, Baron,** general, in the American revolution, was born about 1721, in Alsace, France; he accompanied Lafayette to America in 1777. He was then appointed a major-general by congress, served in the field in New Jersey and Maryland, and was second in command to General Gates. He was killed in the battle of Camden, 1780.

De Koven (*dē kō'ven*), **Henry Louis Reginald,** American composer, was born in Middletown, Conn., 1861; graduated at Oxford, 1880. Has served as musical critic on various New York publications. His operas are: *The Begum; Don Quixote; Robin Hood; The Mandarin; The Highwayman; Student King; The Snowman*; etc. He has written also a large number of songs and various music for piano and orchestra. Died, 1920.

Delacroix (*dē-lă'krwă'*), **Ferdinand Victor Eugene,** French painter, chief of the romantic school, was born near Paris, 1799. At the age of eighteen he entered the *atelier* of Pierre Guérin. In 1822 his first work, *Dante and Virgil*, attracted much attention. In 1857 he was chosen by the institute to fill the place of Paul Delaroche. He died in 1863.

Delambre (*dē-lăN'br'*), **Jean Baptiste Joseph,** eminent French astronomer, was born at Amiens, 1749, and studied first under Delisle, and afterward under Lalande. After the discovery of the planet Uranus in 1781, he computed tables of its motion. In 1802 he was appointed inspector-general of education, and in 1803 perpetual secretary of the mathematical section of the institute. In 1807 he obtained the chair at the Collège de France rendered vacant by the death of Lalande, his master and friend. He died at Paris, 1822.

Deland (*dē'land'*), **Margaretta Wade,** *née* Campbell, American writer, was born at Allegheny, Pa., 1857; educated at private schools, and married, 1880, Lorin F. Deland, Boston. Author: *John Ward, Preacher; The Old Garden and Other Verses; Dr. Lavendar's People; The Common Way; The Awakening of Helena Richie*; etc.

De la Ramee (*dē lärä' mā*) **Louise** (better known by her pen name "Ouida"), English novelist of French extraction, was born at Bury St. Edmunds, England, in 1840. Her first novel, *Granville de Vigne*, appeared in book form in 1863, and was followed by numerous others dealing with many phases of European society. Among her stories are: *Under Two Flags; Held in Bondage, Chandos; Two Little Wooden Shoes; Wanda; Tricotrin*, and *Santa Barbara*. She died in Italy, 1908.

Delaroche (*dē-lä'rōsh'*), **Paul,** French historical painter, was born at Paris in 1797, died in 1856. He studied under Watelet and Gros. Many of his subjects are drawn from English and French history, and they are usually of a somber character.

Delcasse (*del'kä'sā'*), **Theophile,** French statesman, was born in Pamiers, France, 1852, educated in Paris, and began his career as a journalist. He was elected to the chamber of deputies in 1889, for Foix. He has always been a consistent advocate of colonial expansion; foreign minister when M. Waldeck-Rousseau succeeded M. Dupuy, and and when M. Combes, in 1902, succeeded M. Waldeck-Rousseau; visited England with the president in 1903, and with Lord Lansdowne prepared the Anglo-French agreement, signed in 1904. The difficulty with Germany about Morocco caused his retirement in 1905. Died, 1923.

Delille (*dē-lēl'*), **Jacques,** French poet, was born in Auvergne, France, 1738. He was educated at the College de Lisieux in Paris, and obtained a professorship in Amiens. The revolution compelled Delille to leave France, and he traveled in Switzerland and Germany, and then in London occupied eighteen months in translating *Paradise Lost.* Blind in his old age. He died in 1813.

De Martens. See **Martens, Frederic de.**

De' Medici, Catharine. See **Catharine de Medici.**

De Mille (*de-mil'*), **James,** Canadian novelist, was born at St. John, New Brunswick, in 1837. He was professor of history and rhetoric in Dalhousie College for a number of years. Died at Halifax, Nova Scotia, 1880.

Democritus (*de-mok'ri-tus*), Greek philosopher, was born at Adbera, in Thrace, about 470 or 460 B. C. Only a few fragments of his numerous physical, mathematical, ethical, and musical works are extant. Died about 357 or 360 B. C.

DeMorgan, William Frend, English novelist, was born in London in 1839. He studied art at the Royal Academy, and for several years devoted himself to pottery. His creations were much sought after on account of their beautiful design and lustre, becoming known as the "DeMorgan" pottery. When he was sixty-five years old he wrote a novel, *Joseph Vance,* which immediately made him famous as an author, and he soon followed it with another called *Alice-For-Short.* These two volumes placed him among the foremost English novelists. He also wrote *Somehow Good; It Can Never Happen Again;* and *An Affair of Dishonor.* Died in 1917.

Demosthenes, famous ancient Greek orator, was the son of a sword-cutler at Athens, where he was born in 382 (according to some in 385) B. C. His father left him a considerable fortune, of which his guardians attempted to defraud him. Demosthenes, at the age of seventeen years, conducted a suit against them himself, and gained his cause. He then set himself to study eloquence, and though his lungs were weak, his articulation defective, and his gestures awkward, by perseverance he at length surpassed all other orators in power and grace.

He thundered against Philip of Macedon in his orations known as the *Philippics,* and endeavored to instill into his fellow-citizens the hatred which animated his own bosom. He labored to get all the Greeks to combine against the encroachments of Philip, but their want of patriotism and Macedonian gold frustrated his efforts. He was present at the battle of Chaeroneia (338 B. C.), in which the Athenians and Boeotians were defeated by Philip, and Greek liberty crushed.

On the accession of Alexander, in 336 B. C. Demosthenes tried to stir up a general rising against the Macedonians, but Alexander at once adopted measures of extreme severity, and Athens sued for mercy. It was with difficulty that Demosthenes escaped being delivered up to the conqueror. In 324 B. C., he was imprisoned on a false charge of having received a bribe from one of Alexander's generals, but managed to escape into exile. On the death of Alexander next year he was recalled, but the defeat of the Greeks by Antipater caused him to seek refuge in the temple of Poseidon, in the island of Calauria, on the coast of Greece, where he poisoned himself to escape from the emissaries of Antipater (322 B. C.).

The character of Demosthenes is by most modern scholars considered almost spotless. His fame as an orator is equal to that of Homer as a poet. Cicero pronounces him to be the most perfect of all orators. He carried Greek prose to a degree of perfection which it never before had reached. Everything in his speeches is natural, vigorous, concise, symmetrical. We have under his name sixty-one orations, some of which are not genuine. The great opponent—and indeed enemy—of Demosthenes as an orator was Aeschines.

References.—Plutarch's *Life of Demosthenes;* Jebb's *Attic Orators;* Schaefer's *Demosthenes and His Time;* Blass's *Demosthenes;* and Butcher's *Demosthenes.*

Dempsey, William Harrison (Jack), was born in 1896. For several years he was world champion heavy-weight boxer, defeating Jess Willard, Georges Carpentier, Tom Gibbons, and Louis Firpo. In 1926, however, he himself met defeat at the hands of Gene Tunney, an ex-marine.

Deneen, Charles Samuel, lawyer, public official, was born in Edwardsville, Ill., 1863; graduated from McKendree College, 1882; studied law, and was admitted to the Illinois bar. Elected to Illinois house of representatives, 1892; served one term as attorney for sanitary district of Chicago, 1895-96; state's attorney of Cook county, Ill., 1896-1904; governor of Illinois, 1904-13.

Denby, Edwin, born Evansville, Ind., 1870; graduate University of Michigan Law School, 1896. Sergt. U. S. Marine Corps, 1917. Member fifty-ninth to sixty-first Congresses. Secretary of the Navy in Harding Cabinet. Died, 1929.

Depew, Chauncey Mitchell, lawyer, United States senator, was born in Peekskill, N. Y., 1834; was graduated at Yale College in 1856; studied law, and was admitted to the bar in 1858; LL.D., Yale, 1887. Died, 1928.

De Quincey, Thomas, English essayist, born in Manchester, England, in 1785. In 1803 he entered Worcester College, Oxford, which he left without a degree, and soon after became acquainted with Coleridge and Wordsworth, took a cottage at Grasmere, and became a member of the famous "lake school." He had acquired the habit of taking opium by using it to cure an attack of neuralgia, and so greatly did it grow upon him that he was known to take as many as 12,000 drops, equal to ten wineglasses, in a day. He was engaged in preparing fourteen volumes of his works for the press within a few days of his death. Died, 1859.

De Reszke (*dā resh'ke*), **Edouard,** Polish singer, born in Warsaw, Poland, 1856; studied under Ciaffei and Coletti, at Milan and Naples, where he developed a splendid bass voice; made his début, Theatre des Italiens, Paris, as the king in *Aida,* 1876. Later appeared in grand opera in Europe and United States, taking basso rôles. Died, 1917.

De Reszke, Jean, Polish tenor, brother of Edouard, was born in Warsaw, Poland, 1853; studied music under Ciaffei, Cotogni, and Sbriglia; début as baritone singer in *La Favorita,* Venice, 1874; tenor début, Madrid, 1879. He made his début in Paris, 1885, and has appeared in leading rôles in grand opera in Europe and United States. Died, 1925.

Derby, Edward George Geoffrey Smith-Stanley, fourteenth Earl of, British statesman, was born in 1799. He entered parliament in 1821, and in 1827-28 was under-secretary for the colonies. In 1844 he was called to the house of lords as Baron Stanley of Bickerstaffe. On the death of his father, in 1851, he succeeded to the earldom and the vast estates in England and Ireland. He declined the premiership in 1845 and in 1851, but accepted it in 1852, and resigned it the same year. He became prime minister a third time in 1866, and resigned in 1868. Died, 1869.

De Ruyter. See **Ruyter.**

Derzhaven (*dyer-zhä'vēn*), **Gabriel,** a Russian lyric poet and statesman, was born at Kasan, 1743. He rose from the ranks as a common soldier to high offices in the state under the empress Catharine II., and was made minister of justice by Alexander I. In 1803 he retired to private life and gave himself up to poetry. Died, 1816.

Descartes (*dā-kärt*), **Rene,** great French philosopher and mathematician, was born, 1596, at La Haye, in Touraine. He was educated at the Jesuit College of La Fleche, where he showed great talent. He entered the military profession and served in Holland and in Bavaria. In 1621 he left the army, and after a variety of travels finally settled in Holland, and devoted himself to philosophical inquiries.

Descartes, seeing the errors and inconsistencies in which other philosophers had involved themselves, determined to build up a system anew for himself, divesting himself first of all from the beliefs he had acquired by education or otherwise, and resolving to accept as true only what could stand the test of reason. Proceeding in this way he wrote *Meditationes de Prima Philosophia* in which he first enunciated that he could not doubt or divest himself of belief in himself as a thinking being, and this ultimate certainty he expressed in the celebrated phrase *Cogito, ergo sum* "I think, therefore, I am."

Here, then, he believed he discerned the test of truth. Starting from this point Descartes found the same kind of certainty in such propositions as these; that the thinking being or soul differs from the body (whose existence consists in space and extension) by its simplicity and immateriality and by the freedom that pertains to it; that every perception of the soul is not distinct; that it is so far an imperfect finite being; that this imperfection of its own leads it to the idea of an absolutely perfect being; and from this last idea he deduces all further knowledge of the truth.

Descartes also contributed greatly to the advancement of mathematics and physics. The higher departments of geometry were greatly extended by him. His system of the universe attracted great attention in his time, though long since exploded. It rested on the hypothesis of celestial *vortices,* immense currents of ethereal matter, by which he accounted for the motion of the planets (*Principia Philosophiae,* 1644). His works effected a great revolution in the principles and methods of philosophizing. In 1647 the French court granted him a pension of 3000 livres, and two years later, on the invitation of Christina of Sweden, he went to Stockholm, where he died, 1650.

References.—Fisher's *Descartes and His School;* Mahaffy's *Descartes;* Smith's *Studies in the Cartesian Philosophy;* Descartes' *Discourse on Method* and the *Meditations* are translated by Veitch.

Deschanel, Paul Eugene Louis, member of the French Academy, author, President of France, was born in 1856. His entire life was devoted to public work. President of the Commitee of Foreign and Colonial Affairs, Reporter of Budget of Foreign Affairs, etc. Died, 1922.

De Soto (*dā sō'tō*), **Hernando,** Spanish explorer, born about 1500, followed the path of Cortez and Pizarro, served under the latter in Peru. About 1536 he was made governor of Cuba; he conducted an expedition from Florida, which resulted in the discovery of the Mississippi. Died of fever in Louisiana about 1542.

Dessalines (*dā'sä'lēn'*), **Jean Jacques,** Haytien ruler, was born in Africa about 1758, and was originally a slave to a free black in St. Domingo. He became second in command to Toussaint l'Ouverture, and, after the imprisonment of that chief, he displayed so much talent and courage that in 1804 he was chosen emperor of Hayti, under the title of Jacques I. He fell the victim of a conspiracy in 1806.

De Stael, Mme. See **Stael.**

D'Estaing. See **Estaing.**

Detaille (*dē-tä'y'*), **Edouard Jean Baptiste,** French painter, was born in Paris in 1848. His pictures are chiefly of soldiers and battle-scenes, and have gained him much fame. Member of the French Institute, member of the Academie des Beaux Arts, etc. Died, 1912.

De Tocqueville. See **Tocqueville.**

De Vere (*dē vēr'*), **Aubrey Thomas,** Irish poet and political writer, was born in 1814. He first published, in 1842, *The Waldenses.* In 1872 he produced the *Legends of St. Patrick;* in 1879, *Legends of the Saxon Saints,* and in 1882, *The Foray of Queen Meave, and Other Legends of Ireland's Heroic Age.* He died in 1902.

De Vigny. See **Vigny.**

Devine (*dē-vīn'*), **Edward Thomas,** sociologist, educator, was born in Union, Iowa, 1877; graduated, Cornell College, Iowa, 1887; Ph.D.; LL.D. General Secretary of charity organization society, New York, since 1896; Schiff professor of social economy, Columbia University, since 1905. Author: *Economics; The Practice of Charity; The Principles of Relief; Efficiency and Relief.*

De Vinne (*dē vin'ē*), **Theodore Low,** printer, and writer, was born at Stamford, Conn., 1828; learned printer's trade. Was a leader in the improvement of typography, and received an honorary M.A., from both Columbia and Yale Universities. Died, 1914.

Dewar (*dū'ĕr*), **Sir James,** British scientist, Fullerian professor of chemistry, Royal Institution, London; was born in Kincardine, Scotland, 1842; D.Sc., Oxford. With Sir Frederick Abel, he invented cordite. He was the first to liquefy and solidify hydrogen. Received French Academy's Lavoisier gold medal, in 1894. Died, 1923.

De Wet (*dē vet'*), **Christian Rudolf,** Boer general, was born in 1853. He had acquired fame as a hunter before he became conspicuous in the Transvaal war of 1880-81; and in the Boer war of 1899-1902 he was of all the Boer commanders the most audacious, swift in movement, and fertile in expedients. Died, 1922.

De Wette (*dē vet'ē*), **Wilhelm Martin Leberecht,** German biblical critic, born at Ulla, near Weimar, 1780. He studied from 1799 at Jena, and became professor at Heidelberg in 1807, in 1810 at Berlin, and in 1822 at Basel, Switzerland, where he died, 1849. His reputation rests on his *Introduction to the Old Testament.*

Dewey, George, admiral in United States navy; born in Montpelier, Vt., 1837; appointed to naval

academy, September 23, 1854; graduated in 1858, as passed midshipman; LL.D., 1898; in Farragut's squadron which forced the passage of Fort St. Philip and Fort Jackson, April, 1862. Was afterward on several vessels in North Atlantic blockading squadron, then in European squadron, and later on various duties and at different stations, being promoted to commander, 1872; captain, 1884; commodore, 1896. In January, 1898, assumed command of Asiatic squadron. On May 1, 1898, in Manila bay, destroyed the Spanish Asiatic squadron under Admiral Montojo, destroying eleven and capturing all other vessels and all the land batteries, without the loss of a man on the American side. Immediately upon receipt of official news of victory he was promoted to rear admiral, and thanked by resolution of congress; promoted to admiral, 1899. Died, 1917.

Dewey, John, educator, professor of philosophy, Columbia University, since 1904; was born at Burlington, Vt., 1859; graduated, University of Vermont, 1879; Ph.D., Johns Hopkins, 1884. Was professor of University of Minnesota, 1888-89; University of Michigan, 1889-94; and professor of philosophy, University of Chicago, 1894-1904; professor of philosophy, Columbia, 1904—. Author: *Psychology Leibnitz; Critical Theory of Ethics; Ethics;* etc.

Dewey, Melvil, librarian, was born in Adams Center, N. Y., 1851; graduated, Amherst, 1874; LL.D., 1902. Acting librarian Amherst, 1873-76; chief librarian and professor of library economy, Columbia College, 1883-88. Founder and director, New York state library school, 1887-1906; state director of libraries, New York, 1904-06. Author: *Library School Rules; Decimal Classification and Relative Index.* Died, 1931.

De Witt (*dē vit'*), **Jan,** Dutch statesman, was born at Dort, 1625, son of Jacob De Witt, a vehement opponent of William II., prince of Orange. In 1654, on the conclusion of the war with England, a secret article was inserted in the treaty drawn up between De Witt and Cromwell, in virtue of which the house of Orange was to be deprived of all state offices. The Orange party carried their point in the elevation of William to the dignity of stadtholder. Subsequently his brother, Cornelius, accused of conspiracy against the life of the stadtholder, was imprisoned and tortured. De Witt went to see him on his release. As they were coming out of prison they were attacked and murdered, 1672.

De Young, Michael Harry, journalist, was born in St. Louis, Mo., 1848; removed to California with parents when five years old; with brother Charles he established, 1865, *The Dramatic Chronicle,* later changing it to the *San Francisco Chronicle,* projector and director-general of California mid-winter exposition, 1893-94; member of executive committee for relief and red cross funds. Died in 1925.

Diaz (*dē'ăs*), or **Dias, Bartolomeu,** Portuguese navigator, flourished in the fifteenth century. Driven by a violent storm, he sailed round the southern extremity of Africa, the cape of Good Hope, without immediately realizing the fact, and discovered Algoa bay. Was lost in a storm, May, 1500.

Diaz, Porfirio, Mexican statesman, president of Mexico, was born at Oaxaca in 1830. He studied law, and was an officer in the war between Mexico and the United States. In 1876 he rebelled and overthrew the president, Lerdo de Tejado, and was himself made president in the same year. He was elected again in 1884, 1888, 1892, 1896, 1900, 1904 and 1908. Mexico prospered under his administration and his career gave him a high place among the world's statesmen. Forced to resign by Madero, 1911. Died, 1915.

Diaz de la Pena (*dē'ăz' dē là pen'yà*), **Narcisse Virgile,** French painter, was born at Bordeaux of Spanish parentage, 1807. Left dependent, he was educated by a Protestant pastor at Bellevue, near Paris. In 1831 he began to exhibit in the salon. He died at Mentone, 1876.

Dicey (*di'si*), **Albert Venn,** British lawyer and writer, Vinerian professor of English law at Oxford since 1882, was born in 1835; graduated from Balliol College, Oxford; M.A., hon. D.C.L. Oxford; hon. LL.D., Cambridge, Glasgow, and Edinburgh; studied law and was made a barrister of the Inner Temple, 1863. Died 1922.

Dickens, Charles, English novelist and humorist, was born at Landport, England, 1812. After a literary apprenticeship on *The True Sun,* he attached himself to the staff of the *London Chronicle.* After a visit to the United States he published, in 1842, his *American Notes for General Circulation* but a much more admirable result of his visit was *Martin Chuzzlewit.* This was certainly the greatest of his humorous works since the *Pickwick Papers; Bleak House; Hard Times; Little Dorrit; The Tale of Two Cities; Great Expectations; Our Mutual Friend,* and other novels, equally celebrated, succeeded one another with almost periodical punctuality, and an audience larger than any English author ever had awaited each. In 1850 he commenced a weekly periodical entitled, *Household Words,* afterward merged in *All the Year Round.* In 1867 he again visited the United States, gave numerous readings, and met with a brilliant reception. He was until the last engaged in writing a new novel *The Mystery of Edwin Drood,* which was left unfinished at his death in 1870.

Dickinson, Don M., lawyer, was born at Port Ontario, N. Y., 1846, removed to Michigan in 1848. Graduated from the law department of the University of Michigan in 1866, and in 1867 became a practicing lawyer in the West. He later practised in New York, and Washington. He was postmaster-general of the United States, 1887-89. Member of many legal, municipal, financial, historical, and other associations. Died, 1917.

Dickinson, Jacob McGavock, lawyer, secretary of war, was born in Columbus, Miss., in 1851; graduated from the University of Nashville and studied law at Columbia College, New York, in Paris, and at the University of Leipzig; LL.D., Columbia University of New York and University of Illinois; was assistant attorney-general of the United States, 1895-97. He was secretary of war 1909-11. Died, 1929.

Dicksee, Francis Bernard, English painter and royal academician, was born in London in 1853. He was educated at Rev. G. Henslow's school, London. First exhibited at academy, 1876. Died, 1928.

Diderot (*dēd'rō*), **Denis,** celebrated French encyclopedist and philosophical writer, was born at Langres, France, 1713. His great work was the *Encyclopedie,* begun in 1749, of which he and D'Alembert were the joint editors. He died in 1784.

Dielman (*dēl'man*), **Frederick,** American artist, was born in Hanover, Germany, 1847, and came to United States in childhood; graduated at Calvert College. He was president of the National Academy of Design in 1899; member of art commission, New York, 1901-03. Professor of Art, C. C. N. Y., 1903-1918; Cooper Union 1903-1931. A modernist in art. Died, 1935.

Dilke (*dilk*), **Rt. Hon. Sir Charles Wentworth,** English statesman and writer, was born at Chelsea, near London, 1843. He was graduated at Cambridge, studied law and is a barrister of the Middle Temple. Was under-secretary of state for foreign affairs, 1880-82; chairman of royal commission for housing of the working-class, 1884-85; chairman of select committee on income tax, 1906. Died, 1911.

Dillmann (*dil'măn*), **Christian Friedrich August,** German orientalist and theologian, was born in Würtemberg, 1823. He studied at Tübingen. In 1854 he accepted a call to Kiel, where he became professor of oriental languages in 1860, but was transferred in 1864 to the chair of old testament exegesis at Giessen, which in 1869 he resigned to become Hengstenberg's successor at Berlin. Died in 1894.

Dinwiddie (*din-wid'i* or *din'wid-i*), **Robert,** governor of Virginia from 1752 to 1758, was born in Scotland about 1690. His rule as governor was not successful, his ill-temper and avarice making him very disagreeable to his subjects. He was the first to suggest to the British board of trade the taxing of the colonies. He discerned Washington's military ability, and made him adjutant-general of one of the four military districts of Virginia. He died in England in 1770.

Diocletian (*di'ō-klē'shan*), **Valerius Diocletianus,** Roman emperor, was born in Dalmatia in 245, and reigned from 284 to 305. After the death of Numerianus, he was chosen to succeed him by the troops at Chalcedon. In the year 305, Diocletian, being worn out by work, resigned his position as emperor and went to Salona, in Dalmatia, where he died eight years later. His reign has become memorable for the persecution of the Christians.

Diogenes (*dī-oj'ē-nēz*), philosopher of the school of cynics, was born in Asia Minor about 412 B. C. Becoming a citizen of Athens, he made himself notorious by his abnegation of all social laws and customs, lived upon alms, and took up his abode in a tub. Died at Corinth, 323 B. C.

Dionysius (*di'ō-nish'i-us*), **the Elder,** tyrant of Syracuse, in Sicily, was born about 430 B. C. Not content with his military renown, he wrote poems and tragedies, and at one time gained a prize at Athens for the tragedy *The Ransom of Hector.* He died at Syracuse in 367 B. C.

Dionysius of Halicarnassus, critic, historian, and rhetorician, was born about 66 B. C., went to Rome in 29 B. C., and died there about 7 B. C. His Greek *Archæologia,* a history of Rome down to 264 B. C., is a mine of information about the constitution, religion, history, laws and private life of the Romans.

Disraeli (*diz-rā'li* or *diz-rē'li*), **Benjamin,** earl of Beaconsfield, eminent statesman and novelist, was born in London in 1804. He entered the house of commons in 1837, and remained a member until his elevation to the house of lords in 1876. In 1852, and again in 1858 and 1866, he was chancellor of the exchequer under the earl of Derby, and carried the reform act of 1867. In 1868, on the retirement of Lord Derby, he became premier, but resigned the same year. In 1874 he was again in office, which he held until defeated by Gladstone in 1880. Lord Beaconsfield's career as an author was even longer than his political career. His first novel, *Vivian Grey,* appeared in 1826, when he was little more than twenty-one years of age; his last, *Endymion,* appeared in 1880, only a few months before his death. He died at London in 1881.

Dix, John Adams, American statesman and general, was born at Boscawen, N. H., 1798; entered the army in 1812, and rose to the rank of adjutant-general in 1830. From 1833 he was successively secretary of state, United States senator, and secretary of the treasury. He became minister to France, 1866-69, and became governor of New York in 1872. He died in 1879.

Dix, Morgan, Protestant Episcopal clergyman, was born in New York in 1827; graduated from Columbia, 1848; B.D., General Theological Seminary, 1852; S.T.D., D.C.L., D.D. Author: *Sermons, Doctrinal and Practical; Lectures on the Authority of the Church; Good Friday Addresses;* etc. Died, 1908.

Dixon, Joseph M., lawyer, United States senator, was born at Snow Camp, N. C., 1867; graduated from Guilford College, North Carolina, 1889; was admitted to the bar in 1892; member of the fifty-eighth and fifty-ninth congresses, and elected to the United States senate, to succeed Hon. W. A. Clark, for the term 1907-13.

Dixon, Thomas, Jr., lecturer and author, was born in Shelby, N. C., 1864; graduated at Wake Forest College, N. C., 1883; Greensboro, N. C., Law School, 1886; admitted to bar, 1886; member of North Carolina legislature, 1883-86; resigned to enter Baptist ministry, 1886; pastor at Raleigh, N. C., 1887; Boston, 1888-89; New York, 1889-99.

Doane (*dōn*), **Rt. Rev. William Croswell,** Protestant Episcopal clergyman, bishop of Albany, was born at Boston, Mass., 1832; graduate at Burlington College, N. J., 1850; D.D., LL.D., D.C.L.; established the sisterhood of the Holy Child Jesus. Author: *Mosaics of the Harmony of the Collects, Epistles, and Gospels; two volumes of Addresses* to the graduates of St. Agnes' school. Died, 1913.

Dobson, Henry Austin, English poet and man of letters, was born in 1840; educated at Coventry and Strassburg, and early turned his attention to literature. He contributed largely to the *Biographies of Great Artists.* Author: *Thomas Bewick and His Pupils; Four Frenchwomen; Eighteenth Century Vignettes; A Paladin of Philanthrophy; Sidewalk Studies;* etc. Died, 1921.

Dodge, Grenville Mellon, soldier, railway official, was born at Danvers, Mass., 1831; graduated C.E., Norwich University, Vermont, 1851; LL.D., 1892. Was engineer on Illinois Central and Rock Island roads; brigadier-general of volunteers, 1862, and major-general of volunteers, 1864, resigning in 1866; chief engineer of Texas and Pacific railway, 1871-81. Member of congress, second Iowa district, 1867-69. Succeeded General Sherman as president of society of army of Tennessee; commander-in-chief of military order of loyal legion, 1907-08. Died, 1916.

Dodge, Mary Abigail, American writer, was born in Massachusetts, 1830; wrote several books of merit, and contributed largely to the periodical press under the *nom de plume* of "Gail Hamilton." Died, 1896.

Dohme, Alfred Robert Louis, manufacturing chemist, was born in Baltimore, Md., 1867; graduated from Johns Hopkins University, 1886 Ph.D., 1889. Elected lecturer of pharmacy at Johns Hopkins University, medical department, 1901. In business as manufacturing chemist since 1891; member of numerous chemical and other scientific societies.

Dolci (*dōl'chē*), or **Dolce, Carlo,** or **Carlino,** Florentine painter, was born in 1616, died in 1686. He devoted himself chiefly to sacred subjects, and excelled in small pictures.

Dole, Nathan Haskell, American author, was born at Chelsea, Mass., 1852; graduated from Harvard, 1874; became literary and musical editor of Philadelphia *Press;* literary adviser of T. Y. Crowell & Co. Author: *Young Folk's History of Russia; Famous Composers* (2 volumes); *Not Angels Quite; Six Italian Essays;* etc. Died, 1935.

Dole, Sanford Ballard, statesman and jurist, was born in Hawaiian islands, 1844; educated at Oahu College, Hawaii, and Williams College, Mass.; studied law in Boston; became president of Hawaii by provision of constitution of 1894 that he should hold that office until 1901; was strong advocate of annexation of Hawaii to United States, and in 1898 visited the United States in that behalf. He was appointed governor of the territory in 1900, after its annexation to the United States; resigned the governorship in 1903, and has since been United States district judge of the territory. Died, 1926.

Dollinger (*dūl'ing-ĕr*), **Johann Joseph Ignaz,** eminent German theologian, was born at Bamberg in 1799. In 1826 he was appointed professor of ecclesiastical history and canon law at the University of Munich. He was very prominent in the struggle which took place in the Roman Catholic church over the dogma of the infallibility of the pope. Died at Munich, 1890.

Dolliver, Jonathan Prentiss, lawyer, orator, United States senator, was born near Kingwood, Preston county, W. Va., 1858; graduated from West Virginia University, 1875; LL.D. Admitted to bar, 1878; established practice at Ft. Dodge, Iowa. Member of congress from the tenth Iowa district, 1889-1901; appointed United States senator to succeed late Hon. J. H. Gear; elected in 1902, and reëlected in 1907. Died, 1910.

Dollond (*dol'und*), **John,** English optician, was born in London in 1706. He was originally a silk weaver of Spitalfields, London, but studied science, and with his son established a manufactory of optical instruments. Died, 1761.

Domenichino (*dō-mā'nē-kē'nō*), or **Domenico Zampieri,** Italian painter of the Bolognese school, was born in Bologna in 1581 and died at Naples in 1641.

Dominic (*dom'i-nik*), founder of the order of monks called Dominicans, was born in Castile, Spain, 1170. He studied at the University of Palencia, and in 1194 became canon of the cathedral at Osma. In 1204 he went to Languedoc, France, and preached with much vehemence against the Albigenses. As a result of this crusade against heresy he founded the order of the Dominicans, which was confirmed by papal order in 1216. He died in Bologna in 1221.

Donaldson, Henry Herbert, neurologist; graduated from Yale, 1879; Sheffield scientific school; fellow of Johns Hopkins, 1881-83; Ph.D., 1885; D.Sc.; professor and head of department of neurology, University of Chicago, 1892-1906; professor of neurology, Wistar Institution of Anatomy, Philadelphia.

Donatello (*don'ä-tel'lō*), properly **Donaro di Betto di Bardi,** one of the evivers of sculpture in Italy, was born in Florence in 1386. The "St. Peter" and "St. Mark" in the church of St. Michael in Florence were his first great works. Died in Florence, 1466.

Donizetti (*dō'nē-dzet'tē*), **Gaetano,** celebrated Italian composer, was born at Bergamo, Lombardy, 1797, and studied at Bologna. He devoted himself chiefly to dramatic music and produced over sixty operas; among the number *Lucia di Lammermoor*. He died in 1848.

"Dooley, Mr." See **Dunne, Finley Peter.**

Dora d'Istria (*dō'rä dēs'trē-ä*). See **Ghika, Helene.**

Dore (*dō'rā'*), **Paul Gustave,** French painter and book illustrator, was born in Strassburg in 1833, and educated at a Parisian lycée. He became known by his illustrations of *Rabelais* and *Don Quixote*, and for some years was a constant contributor to the *Journal pour Rire*. He afterward devoted himself to the production of large pictures on religious subjects. Died, 1883.

Doria (*dō'rē-ä*), **Andrea,** Genoese naval commander and admiral, who distinguished himself in the service of several states, but chiefly in that of the Genoese republic, was born in 1468. Died 1560.

Dorion (*dō'rē'ôN'*), **Sir Antoine Aime,** Canadian statesman and jurist, was born in the province of Quebec in 1818. He was educated at Nicolet College, early studied law and in 1842 was admitted to the bar; member of the Dominion parliament, 1862-67. From 1867 he served on the judiciary of the province of Quebec, first as associate and latterly as chief-justice. He was a member of the British privy council, and was knighted in 1877. Died at Montreal, 1891.

Dorr, Thomas Wilson, American politician, was born in Providence, R. I., 1805; graduated from Harvard, 1823. He died in 1854.

Dorsey, George, American anthropologist and journalist, was born in Ohio in 1868. He received his education at Harvard. In 1891-92 he conducted anthropological investigations in South America; was curator of the Field Museum of Natural History at Chicago from 1898-1915; was Associate Professor of Anthropology in Chicago University from 1908-15. Since 1925 he has been lecturer for the New School for Social Research, New York City. He is the author of *Why We Behave Like Human Beings*, a popular treatment of biology that has had a very wide circulation. Died, 1931.

Dostoevsky, Fyodor, Russian writer, born in a hospital at Moscow, 1822, the son of a poor doctor. In 1837 he began the study of engineering, but early turned to literature. After an absorption in the French and German romanticists, he immersed himself in the writings of Pushkin and Gogol. In 1846, he suddenly produced *Poor Folk*, and became recognized as one of those geniuses whose field lay between the old culture and the new. April 23, 1848, on the scaffold with other revolutionists, he was pardoned and banished to Siberia. Out of his prison sufferings, he wrote with keen psychological penetration and spiritual vision *The Idiot*, *Crime and Punishment*, *The Brothers Karamazof*, *The Possessed*, and a great number of short stories. He died in 1881, one of the lasting writers of all times.

Dougherty, Denis, Cardinal. Born in Girardville, Pa., 1865. Ordained priest in 1890. Bishop of Neura Segoria in 1903. Transferred to Buffalo, N. Y., in 1915. In 1918 made Archbishop of Phil., Pa. Created Cardinal in 1921.

Douglas, Stephen Arnold, American statesman, styled the "little giant," was born at Brandon, Vermont, 1813. In 1833 he went West and settled in Jacksonville, Ill., where he entered on the practice of law. He soon after was elected to the legislature, and in 1840 became secretary of state for Illinois. He was judge of the Illinois supreme court from 1841 to 1843. Douglas was elected to the senate in 1847, and it was as a member of the senate that he introduced, in 1854, the Kansas-Nebraska bill. In 1858 he was a candidate for the United States senate, and held a series of joint debates with Abraham Lincoln, his opponent. In 1860 the democratic party split into two divisions, one of which nominated Douglas for president, and the other John C. Breckenridge. He died in 1861.

Douglas, William Lewis, manufacturer, ex-governor of Massachusetts, was born in Plymouth, Mass., 1845; at age of seven he went to work for an uncle, who set him to pegging shoes; worked in cotton mill at Plymouth at fifteen, and later in factory at Chiltonville, Mass.; afterward went to Hopkinton and South Braintree, Mass., where he learned bootmaking; at Brockton, 1876, began with small shop, from which he built up a business with combined capacity of over 15,000 pairs of shoes daily, and owned seventy-five retail shoe stores in large cities selling the "Douglas" shoe. Member of Massachusetts house of representatives, 1883-84, and of Massachusetts senate, 1886-87; elected governor of Massachusetts, 1904. Died, 1924.

Douglass, Frederick, American orator, a mulatto slave, was born at Tuckahoe, near Easton, Maryland, in 1817. In 1838 he escaped from a Baltimore shipyard to the Northern states, and changed his name from Lloyd or Bailey to Douglass. In 1847 he started *Frederick Douglass's Paper*, a weekly abolition newspaper, at Rochester, New York, United States marshal for the District of Columbia 1876-81; recorder of deeds there, 1881-86; and United States minister to Hayti, 1889-91. He died at his home near Washington, 1895.

Dow, or **Dou, Gerard,** Dutch painter, was born at Leyden in 1613. He studied under Rembrandt, 1628-31, and at first mainly occupied himself with portraiture, but soon turned to genre. He died in 1675.

Dow, Neal, temperance reformer, was born in Portland, Me., 1804, of Quaker parentage. In 1851, while a member of the state legislature, he secured the passage of what is called the "Maine law," which, under severe penalties, prohibited the sale of intoxicating liquors. He was twice chosen mayor of Portland, and during the Civil War served as brigadier-general of volunteers, holding at different times three separate commands. Died, 1897.

Dowden (*dou'den*), **Edward,** British critic and editor, professor of English literature, University of Dublin, since 1867, was born in Cork, 1843; graduate of Dublin University; M.A., LL.D., D.C.L., Litt.D. Clark lecturer in English literature, Trinity College, Cambridge, 1893-96. He has written: *Shakespeare: His Mind and Art; Studies in Literature; Life of Shelley; A History of French Literature; Puritan and Anglican;* Wordsworth's *Poetical Works*, etc. Died, 1913.

Doyle, Sir A. Conan, Scottish novelist and physician, was born in Edinburgh, 1859, educated at Stonyhurst and in Germany. From 1882 until 1890 he practiced medicine at Southsea, writing all the while various short stories, some of which have been since published. After *A Study in Scarlet*, *Micah Clarke*, and *The Sign of Four* came *The White Company*, which led to the final abandonment of medicine for literature. *The Adventures of Sherlock Holmes* and *The Memoirs of Sherlock Holmes* formed a brilliant series of detective stories. He volunteered for service in the Boer war and was in the medical service. He wrote *The Great Boer War*. During his last ten years he lectured and wrote on spirit communication. Died, 1930.

Draco (*drā'kō*), archon of Athens and celebrated lawgiver, lived in the last half of the seventh century. He first gave stability to the state by committing the laws to writing and establishing the ephetae, or court of appeal, 621 B. C. Draco is said to have justified the severity of his code by maintaining that the smallest crime deserved death, and he knew no severer punishment for greater crimes.

Drake, Sir Francis, eminent English navigator, was born of obscure parentage in 1540, at Tavistock, England, and first served at sea under Sir John Hawkins, his relative. With five small vessels he sailed in 1577 to attack the Spaniards in the South seas. In this expedition he ravaged the Spanish settlements, coasted the North American shore as far as latitude forty-eight degrees north, and took possession of the country under the name of New Albion. Elizabeth dined on board his ship at Deptford, and knighted him in 1580. In 1585 he successfully attacked the Spaniards in the West Indies; in 1587 he destroyed many ships at Cadiz; and in 1588 as vice admiral, he participated in the destruction of the armada. He died at Nombre de Dios in 1596.

Drake, Joseph Rodman, American poet, was born in New York in 1795; graduated from Columbia College, 1815, and became an intimate friend of Fitz-Greene Halleck. He died in New York in 1820.

Drake, Samuel Gardner, American antiquarian and writer, was born in Pittsfield, N. H., 1798. He opened an antiquarian book-store in Boston in 1828, and wrote and published various works, including *Indian Biography*, *History and Antiquity of Boston*. Died, 1875.

Draper, Andrew Sloan, educator, commissioner of education, state of New York, 1904-13; was born in Westford, N. Y., 1848. Member of board of education, Albany, N. Y., 1878-80, 1890-92; member of state normal college board, 1882-86; judge of United States court of Alabama claims, 1885-86; superintendent of instruction, Cleveland, Ohio, 1892-94; president of University of Illinois, 1894-1904. Died, 1913.

Draper, Eben Sumner, manufacturer, governor of Massachusetts, was born in Hopedale, Mass. 1858. He became an active officer in the operations of the Draper company. Chairman of republican state committee, 1892. Director of Boston and Albany railroad, National Shawmut bank. Member of corporation of Massachusetts Institute of technology, Home Market club, etc. In 1898, through Massachusetts volunteer aid association, raised $200,000 for hospital ship *Bay State* for Spanish-American war. In 1907 he became lieutenant-governor of Massachusetts, and in 1909, governor. Died, 1912.

Dreiser, Theodore, American novelist and writer, born at Terre Haute, Ind., 1871. With little schooling, Mr. Dreiser began newspaper work on the Chicago Globe in 1892, subsequently serving as correspondent, dramatic critic and special editor for many publications. He was early impressed by the realistic attitude in letters, and toward this ideal he labored through stupendous obstacles of public prejudice and popular misunderstanding to a leading place among modern novelists. Although hampered by a loose and cumbersome style, the best of his books are already recognized as American classics, such as *Sister Carrie*, 1900; *Jennie Gerhardt*, 1911, and *An American Tragedy*. He also wrote *The Financier*, *The Genius*, *A Hoosier Holiday*, *Twelve Men* and the *Color of a Great City* (New York).

Drew, John, actor, was born in Philadelphia, Pa., 1853. First appearance, 1873, Arch Street theater, Philadelphia, as Plumper in *Cool as a Cucumber;* starred, 1892, playing Dr. Paul Blondet in *The Masked Ball*, and Frederick Ossian in *The Butterflies* with Maude Adams; starred in *The Bauble Shop*, *Rosemary*, *The Squire of Dames*, *The Tyranny of Tears*, etc. Died, 1927.

Dreyfus (*drā'fus'*), **Alfred,** French army officer, was born about 1859 at Mulhausen in Alsace, the son of a rich Jewish manufacturer; was taken in 1874 to Paris. He was an artillery captain, attached to the general army staff, when in 1893-94, he was accused of delivering to a foreign government documents connected with the national defense, he was court-martialed, degraded, and transported to Devil's island, French Guiana. The efforts of his wife and friends to prove him an innocent victim of malice, injustice, and forgery plunged France into a chaos of militarism and anti-Semitism. He was reinstated 1906. Died, 1935.

Dreyse (*drī'zē*), **Johann Nikolaus von,** German inventor, was born at Sommerda near Erfurt, Prussia, 1787. He founded ironworks in Sömmerda, and from 1824 manufactured percussion caps. In 1827 he invented a muzzle-loading and in 1836 a breech-loading needle gun—adopted in the Prussian army in 1841. He was ennobled in 1864, and died in 1867.

Drinkwater, John, English poet and playwright, was born in 1882. After graduation from Oxford University, he devoted the early part of his life to business. He gave this up, to found the Pilgrim Players in Birmingham, which developed into the Birmingham Repertory Theatre Company, of which he is now manager. He is best known through his play, *Abraham Lincoln*.

Driver, Samuel Rolles, biblical scholar, regius professor of Hebrew, and canon of Christ Church, Oxford, since 1883, was born in Southampton, England, 1846. He was educated at Winchester College, and New College, Oxford; Litt.D., D.D.; member of Old Testament Revision company, 1876-84; examining chaplain to bishop of Southwell, 1884-1904. Author: *A Treatise on the Use of the Tenses in Hebrew; Isaiah; His Life and Times*. Died, 1914.

Droysen (*droi'zen*), **Johann Gustav,** German historian, was born at Treptow, Prussia, 1808, and became lecturer on history in the University of Berlin in 1833. He published, *History of Alexander the Great*, *History of Hellenism*. Died, 1884.

Drummond, Hon. Sir George Alexander, Canadian legislator and financier, was born in 1829. He became a member of the upper house of the Dominion parliament in 1888. Died 1910.

Drummond, Sir George Gordon, British soldier, was born in 1772, died in 1854. He entered the British army as ensign, 1789; planned and effected the capture of Fort Niagara, and planned the successful attack on Black Rock and Buffalo; led a combined military and naval force against Oswego and destroyed the American works and stores, 1814; was in command of the British forces at the battle of Lundy's Lane, July 25. In 1815 he was appointed governor-general of Canada, resigned and returned to England.

Drummond, Henry, Scottish clergyman and author was born in Stirling, Scotland, 1851; educated at Edinburgh and Tübingen. He wrote *The Greatest Thing in the World*, intended to expound and commend the first principles of the Christian faith. His last work except one, published posthumously,

entitled *The Ideal Life*, was *The Ascent of Man*, in which he places an altruistic element in the process of evolution. Died, 1897.

Drummond, James, British biblical scholar, principal of Manchester College, Oxford, 1885-1906, was born in Dublin, 1835. He was educated at Trinity College, Dublin, and Manchester New College, London; LL.D., Litt.D., M.A., D.D. professor of theology in Manchester New College, London, 1869; succeeded Dr. Martineau as principal, 1885; removed with the college to Oxford, 1889; retired, 1906. Author: *Spiritual Religion*; *Sermons on Christian Faith and Life*; *The Jewish Messiah*; *Introduction to the Study of Theology*; *Via*; *Veritas*, *Vita*, etc. Died, 1918.

Drusus (*drōō'sus*), **Nero Claudius,** commonly called Drusus Senior, stepson of the emperor Augustus, and younger brother of the emperor Tiberius, was born in 38 B. C. In 13 B. C. he was sent into Gaul, then in revolt, and, after crushing the rebels there, pushed across the Rhine in pursuit of their German allies. From this time he made the business of his life to establish the Roman supremacy in Germany, partly by conquest and partly by the execution of great military works. A fall from his horse cut short his brilliant career in 9 B. C.

Dryden, John, English poet, was born in Northamptonshire, 1631. After graduating at Cambridge he entered upon a literary career and succeeded Sir William Davenant as poet laureate in 1670. His essay on *Dramatic Poesy*, according to Dr. Johnson, created the school of English criticism. Dryden, by his dramas and political satires—especially his *Absalom and Achitophel*—occupies a high place among English poets. He made numerous translations from the classics—especially Vergil, Juvenal, and Ovid—and his dramatic work almost equals his verse. Died, 1700.

Du Barry (*dü-bà'rē'*), **Marie Jeanne Gomard de Vaubernier, Comtesse,** favorite of Louis XV., was born in 1746, at Vaucouleurs, the daughter of a dressmaker. Her influence reigned supreme until the death of Louis in 1774, when she was dismissed from court. She was tried before the revolutionary tribunal for having wasted the treasures of the state and having worn mourning for the late king, and was guillotined, 1793.

Du Bois-Reymond (*dü-bwà'rā'mōn'*), **Emil,** German physiologist, was born in Berlin in 1818. His name is chiefly identified with animal electricity, the subject of his chief work, which has given him a commanding place among modern scientists. Two volumes of his collected memoirs and addresses appeared in 1885-87. Died, 1896.

Du Bose, William Porcher, Protestant Episcopal clergyman, was born in South Carolina, 1836. He was educated at the military academy of South Carolina and the University of Virginia; S.T.D., D.C.L., D.D. While a student for the ministry he entered the military service of the confederacy, 1861; became chaplain and professor, University of the South, 1871; after continuous service in this university for over thirty-six years he resigned active duties, in the summer of 1908.

Du Chaillu (*dü-shà'yü'*), **Paul Belloni,** American traveler, was born in Louisiana, 1835. In 1855 he sailed to West Africa, where he spent four years. His *Explorations in Equatorial Africa* gave important contributions to geographical, ethnological, and zoölogical science, but was received at first with much distrust. Died, 1903.

Dudevant (*düd'vän'*), **Aurore.** See **Sand, George.**

Dufferin (*duf'ĕr-in*), **Frederick Temple Hamilton Blackwood, Marquis of,** British statesman, was born in Florence, Italy, 1826. He graduated from Christ Church, Oxford, and in 1841 succeeded to his father's title. In 1860 he became British commissioner in Syria, and served as under-secretary of state for India from 1864 until 1866, and later, for a short time, was under-secretary of war. From 1868 until 1872 he was chancellor of the duchy of Lancaster; governor-general of Canada, 1872-79; ambassador to Russia, 1879-81; governor-general of India, 1884-88; ambassador to Italy, 1888-91; and ambassador to France, 1891-96. He was made an earl in 1871. Died, 1902.

Du Guesclin (*dü ge'klan'*), **Bertrand.** See **Guesclin.**

Dumas (*dü'mä'*), **Alexandre, the Elder,** French novelist and dramatist, was born in Villers-Cotterets, 1802, son of General Dumas, a Creole. His romances are numerous, but he reached the climax of his fame in *Monte Cristo*, in 1844, and the *Three Musketeers* the year after. Latterly he lived at Dieppe, broken in health and impaired in intellect, ministered to by his son and daughter. Died, 1870.

Dumas, Alexandre, the Younger, was born in 1824. He was a son of the preceding, and, like him, a novelist and dramatist. He accompanied his father on a voyage to the Mediterranean in 1846, and in 1848 produced the work which made his reputation *La Dame aux Camélias*. Subsequently his work was chiefly dramatic, and includes such plays as *Le Demi-Monde*, *La Princesse Georges*, *Monsieur Alphonse*, and *Denise*. In 1874 he was admitted to the French Academy. Died, 1895.

Dumas, Jean Baptiste, distinguished French chemist, was born at Alais, in the department of Gard, 1800. In 1821 he was appointed tutor in the polytechnic school at Paris and then professor of chemistry in the Ecole de Medicine. His researches in organic chemistry, on atomic weights, sulphuric ether, and the law of "substitutions" attracted the attention of all Europe. In 1848 he was a member of the legislative assembly; and in 1849-51 held the portfolio of agriculture and commerce. Died, 1884.

Du Maurier (*dü-mō'ryā'*), **George Louis Palmella Busson,** artist and draughtsman, was born in Paris in 1834; educated in London, Belgium and the Netherlands. For many years a valuable art contributor to *Punch*. In 1891 he published a novel, *Peter Ibbetson*, followed by *Trilby*, in 1894. Died, 1896.

Dumouriez (*dü'mōō'ryā'*), **Charles Francois,** French general, was born at Cambria, 1739; entered the army in 1757, and served in Germany during the Seven Years' War. In 1792 he overthrew the Austrians under the duke of Sachsen-Teschen and Clairfait at Jemappes; but at Neerwinden he sustained a severe defeat from the Austrians under Coburg, with whom he entered into a plot to restore the monarchy. Reports of his meditated treason, however, reached the government at Paris, and an order of arrest was issued against him. This he succeeded in evading and escaped across the border. He died an exile at Turville Park, near Henley-upon-Thames, 1823.

Duncker (*dōōng'kĕr*), **Maximilian Wolfgang,** German historical writer, was born at Berlin, 1811. He became professor of history at Halle in 1842; sat in the national assembly, 1848, and as a liberal in the Prussian chamber, 1849-52; was called to a Tübingen chair in 1857, and thence recalled in 1859 to Berlin to fill a post in the ministry of state. Died, 1886.

Dundonald (*dun-don'ald*), **Thomas Cochrane, tenth Earl of,** English seaman, was born in 1775. Entering the navy when a boy, he early distinguished himself by the destruction of the French fleet in Basque roads by fireships, 1809. In 1823, having offered his services to Brazil in her war against Portugal, he swept the Portuguese fleet from Brazilian waters. In 1827 he commanded the Greek navy in the war of independence. He died in 1860.

Dunglison (*dung'gli-sun*), **Robley,** medical professor and author, was born in England in 1798. Was professor of materia medica and therapeutics in the University of Maryland, 1833-36, and of the institutes of medicine in Jefferson Medical College, Philadelphia, 1836-68. He translated and edited a number of foreign medical works, published about twenty original volumes. Died, 1869.

Dunne (*dun*), **Finley Peter,** journalist, author, was born in Chicago, 1867; educated in Chicago public schools; entered newspaper life as reporter on editorial staff of Chicago *Evening Post* and *Times-Herald*, 1892-97; editor of Chicago *Journal*, 1897-1900. Author: *Mr. Dooley in Peace and in War*; *Mr. Dooley in the Hearts of His Countrymen*; *Mr. Dooley's Philosophy*; *Mr. Dooley's Opinions*; *Observations by Mr. Dooley*. Died, 1936.

Dunning, William Archibald, historian, educator, professor of history, Columbia University, 1891-1922, was born in Plainfield, N. J.; graduated from Columbia, Ph.D., LL.D.; was managing editor of *Political Science Quarterly*, 1894-1903. Died in 1922.

Dunois (*dü'nwä'*, **Jean, Count of Dunois and Longueville,** was born in Paris, 1402, the natural son of Louis, duke of Orleans, brother of Charles VI. His first great achievement was the defeat of the English at Montargis, 1427. In 1429 Dunois and the maid of Orleans won the battle of Patay. Shortly after Joan's tragical death, Dunois took Chartres, the key of Paris, forced Bedford to raise the siege of Lagny, chased the enemy from Paris, and soon deprived them of all their conquests except Norandy and Guienne. He died in 1468. No French hero is more popular than Dunois.

Duns Scotus (*dunz skō'tus*), **John,** famous Franciscan monk and divine, was born about 1265. He appears to have been educated at Oxford, where in 1301 he became professor of theology. Duns Scotus, as one of the most eminent of the Franciscans, was a chief opponent of the teachings of the Dominicans, the two parties representing at that time two different schools of theology.

Dunstan (*dun'stan*), **Saint,** English prelate, was born in 925, died in 988. Under several kings he wielded great influence. He was made archbishop of Canterbury in 959 by Edgar, whom he absolutely ruled. On Edgar's death he raised Edward to the throne, but on the accession of Ethelred his power was broken.

Du Pont, Henry Algernon, United States senator, soldier, was born near Wilmington, Del., 1838; graduated at West Point, 1861, at head of class, and served throughout the Civil War, in which he gained the rank of colonel. Elected United States senator, 1906, for one term. Died, 1926.

Dupont, Samuel Francis, American rear-admiral, was born at Bergen Point, N. J., 1803. In the summer of 1861 he was given command of the Atlantic blockading squadron. He also commanded the expedition which captured Port Royal harbor in the same year. He resigned his command in 1863, and died at Philadelphia in 1865.

Dupre (*dü'prā*), **Jules,** celebrated French painter, was born in 1812. He excels as a landscape painter, and his work is noted for its refined poetic taste as well as for its bold and vigorous drawing. He died in 1889.

Duquesne (*dü'kān'*), **Abraham, Marquis,** French naval officer, was born at Dieppe, France, 1610, and first distinguished himself in 1637-43 in the war with Spain. He defeated De Ruyter and Van Tromp several times in 1672-73, and the united fleets of Spain and Holland off Sicily in 1676. Died, 1688.

Durant, Will, American philosopher, was born at North Adams, Mass., 1885. He obtained his earlier education from the Jesuits at St. Peter's College, later taking graduate work at Columbia University, in philosophy, psychology, and biology. He received the degree of Ph.D. in 1917. Four years later he became director of the Labor Temple School, New York, an institution for adult education. His fame as a writer came through *The Story of Philosophy*, as popular and surprisingly readable as a novel.

Durer (*dü'rĕr*), **Albrecht,** German artist, was born at Nuremberg in 1471. He was apprenticed to a painter in this native town, and some years later began designing on wood and engraving on copper. In 1505 he proceeded to Venice, and after his return painted his *Adam and Eve*, and *Assumption of the Virgin*, one of his finest works. He died at Nüremberg in 1528. Besides being the founder of the German school of art, Dürer ranks even higher as an engraver on metal and designer of woodcuts.

Duse (*dōō'zā*), **Elenora** Italian actress, was born in Vigevano, 1859. She appeared about 1880 on the Italian, chiefly the Roman stage, as leading lady in the plays of Dumas and Sardou, but afterward played parts of greater depth. Her latest successes are D'Annunzio's *Gioconda* and *Francesca da Rimini*. Died, 1924.

Dvorak (*dvōr'zhăk*), **Antonin,** composer, was born at Muhlhausen, Bohemia, 1841. Brahms introduced his compositions to Vienna; but the work which won for him the ear of all Europe was his *Stabat Mater*, which was first performed in London in 1883. In 1892-95 he was director of the conservatory at New York, where he wrote an American symphony. He subsequently lived at Prague, where he died in 1904.

Dwight, Theodore William, jurist, professor and editor, was born in 1822 at Catskill, N. Y.; graduated at Hamilton College, 1840, and studied at Yale Law School. In 1858 he was chosen professor of municipal law in Columbia College. In 1874 he was appointed by Governor Dix, of New York, a judge of the commission of appeals. Died, 1892.

Dwight, Timothy, educator, theologian, was born at Northampton, Mass., 1752; graduated from Yale College. He was minister of Greenfield Hill, Conn., 1783, where he also successfully conducted an academy. In 1795 he was elected president of Yale College, which position he held until his death. Died, 1817.

Dwight, Timothy, educator, theologian, was born at Norwich, Conn., 1828; grandson of the above; graduated from Yale, 1849; D.D., LL.D.; studied theology at Yale, 1859-53; tutor at Yale, 1851-55; president of Yale University, 1886-99. Member of American committee for revision of English version of the Bible. Author: *Thoughts of and for the Inner Life*. Died, 1916.

Eadie (*ē-dĭ*), **John,** British clergyman and writer, was born at Alva, Scotland, 1810; studied at Glasgow, and in 1835 became minister of a Glasgow United Presbyterian congregation; from 1843 he also lectured on exegesis in the college of his church. Died at Glasgow, 1876.

Eads (*ēdz*), **James Buchanan,** American engineer, was born at Lawrenceburg, Ind., 1830. He constructed the steel bridge over the Mississippi river at St. Louis, completed in 1874; partly carried out a plan of deepening the Mississippi by means of jetties. Died, 1887.

Eames (*āmz*), **Emma,** American prima donna soprano, was born at Shanghai, China, of American parentage, 1867. Made her début at the Paris grand opera, 1889; Covent Garden, London, in rôle of Marguerite in *Faust*, 1891. She resides chiefly at Torre de Campiglioni Vallombrosa, Italy.

Earle, George H., Jr., banker, lawyer, manufacturer, was born in Philadelphia, Pa., 1856; graduated from Harvard, 1879, A.M., 1904; was admitted to the bar, 1879. He is president of the Finance Company of Pennsylvania at Philadelphia; is active in a number of other financial institutions.

Earle, John, English scholar, was born at Elston, South Devon, 1824; was educated at Magdalen hall, Oxford, and became professor of Anglo-Saxon at Oxford, 1849-54, and again permanently from 1876. Among his books are: *The Philology of the English Tongue*; *Anglo-Saxon Literature*, etc. Died at Oxford, 1903.

Early, Jubal Anderson, soldier and lawyer, was born in Virginia, 1816; was graduated at the United States Military Academy, 1837. At the opening of the civil war he was appointed a colonel in the confederate army; was promoted brigadier-

general, 1863; commanded a division at Fredericksburg and Gettysburg; was defeated by Sheridan near Winchester and at Fisher's Hill, Va., 1864, and was completely routed by General Custer at Waynesborough, 1865, after which he was relieved of his command. He subsequently practiced law in Richmond. Died, 1894.

East, Alfred, English landscape painter and etcher, was born at Kettering, 1849. He received his art education at the government school art, Glasgow, afterward at Ecole des Beaux Arts; exhibited at the Royal academy after 1882; became an associate in 1884, and later president of the Royal Society of artists. Died, 1913.

Eastlake, Sir Charles Lock, English painter, was born at Plymouth, 1793. From 1809 he studied under Haydon, in the Royal academy schools, and in Paris. When the *Bellerophon* put into Plymouth, Eastlake took a number of rapid sketches from a shore-boat, and produced two full-length portraits of Napoleon. He died at Pisa, 1865.

Eastman, George, inventor, was born in Waterville, N. Y., 1854; was educated in Rochester and New York, and first became an amateur photographer; began to manufacture dry plates on small scale, 1880; inventor of the kodak. Formed and managed Eastman Kodak Co. Gave laboratories and large endowment to Rochester College. Died, 1932.

Eaton, Wyatt, American artist, was born at Phillipsburg, Canada, 1849. He studied in New York, and in Paris with Gérome. After spending some years in study, sketching and traveling in France and England, he opened a studio in New York; was one of the founders and the first secretary of the society of American artists. Died at Newport, R. I., 1896.

Ebers (*ā'bĕrs*), **Georg Moritz,** German novelist and Egyptologist, was born at Berlin, 1837; studied jurisprudence at Göttingen, and oriental languages and archæology at Berlin. In 1870 he was made professor of Egyptology at Leipzig. He died at Tutzing, Bavaria, 1898.

Ebert, Friedrich, first president of the German Federated Republic, was born at Heidelberg, 1871. After an elementary school education, he prepared for the saddler's trade and settled at Bremen. He became interested in socialism, obtained a position on the Bremer Volkszeitung, and was ultimately elected to the citizen's committee as the Social Democratic representative. During the war he tried to bring about understandings between Germany and other countries, but his successful work was after the revolution, to help form the first provisional government and to act as its joint president, restoring peace and order. He was elected president of the Reich by the National Assembly, Nov. 12, 1919.

Eck (*ek*), **Johann Maier von,** German monk and theologian, was born at Eck, in Swabia, 1486. He was the son of a peasant, but raised himself by his abilities to the professorship of theology in the University of Ingoldstadt. He took a prominent part in opposition to Luther in the diet at Augsburg, 1530, and in the conferences of Worms and Ratisbon, 1540 and 1541. Died 1543.

Eckermann (*ek'ĕr-măn*), **Johann Peter,** German writer and literary executor of Goethe, was born in Winsen, Germany, 1792. The publication of his *Beiträge zur Poesie* in 1823 led to his removal to Weimar, where he assisted Goethe in preparing the final edition of his works. Died, 1854.

Eddy, Mary Baker, religious leader, founder of Christian Science, was born at Bow, N. H., 1821. She received an education from public schools and tutors and was connected with the Congregational Church until 1866, when she formulated the Principle of Christian Science. In 1867 she began to teach her religion, and in 1879 founded the Church of Christ, Scientist, in Boston, Mass. She established *The Christian Science Journal* in 1883; the *Christian Science Quarterly* in 1890; the *Christian Science Sentinel* in 1898; *The Christian Science Monitor* in 1908. She is the author of the Christian Science textbook, *Science and Health with Key to the Scriptures*, besides the Manual of The Mother Church, a biographical sketch of herself entitled "Retrospection and Introspection" and other works on Christian Science. Died 1910, Boston.

Edeson, Robert, actor, was born at Baltimore, Md., 1868. He was educated in the public schools at Brooklyn, N. Y., and made his first appearance on the stage in *Fascination*, at the Park theater, New York, 1887. Later he appeared in *A Night Off*; *The Dark Secret*; *Incog.*, and *Under the Red Robe.* He has also starred in *The Climbers*; *Soldiers of Fortune*; *Strongheart*, and *Classmates.* Died, 1931.

Edgeworth, Maria, English novelist, was born in Oxfordshire, 1767. She began to write fiction early in the nineteenth century, though she had previously taken an interest in educational topics. Her chief books treat mainly of the virtues and vices of humanity, with a high moral aim. Died in Ireland, 1849.

Edison, Thomas Alva, celebrated American inventor and electrican, was born at Milan, Ohio, 1847; invented many telegraphic appliances, including automatic repeater, quadruplex telegraph, etc. Established workshop at Newark, N. J., removing to Menlo Park, N. J., 1876, and later to West Orange, N. J. Was made chevalier, officer, and afterward commander of legion of honor, by French government; was given the honorary degree of Ph.D. by Union University, 1878, and has been variously honored by numerous scientific, educational, and other bodies. Died, 1931.

Edmund, or **Eadmund,** king of the English, known as Ironside, was born about 981. He was the son of Ethelred "the unready," and was chosen king by the Londoners on his father's death, 1016. By a compromise with Canute, the latter retained Mercia and Northumbria, Edmund all the South and the headship, the survivor to succeed to the whole. A few weeks afterward Edmund died, 1016.

Edmunds, George Franklin, American lawyer and statesman, was born at Richmond, Vt., 1828; removed to Burlington, 1851; was a member of the state legislature 1854-60; took his seat in the United States senate as a republican from Vermont, 1866. He was returned 1869, 1875, 1881, and 1887, and succeeded Vice-president Arthur as president *pro tem.* of the senate after the death of President Garfield, 1881. Declined the appointment of associate justice of the United States supreme court, 1882; elected president *pro tem.* of the senate, 1883, and was author of the act prescribing the manner in which electoral votes for president shall be counted, 1886. He resigned the senatorship in 1891, and practiced law in Philadelphia. Died, 1919.

Edward, or **Eadward,** "the confessor," king of the English, was born about 1004, son of Ethelred "the unready" was brought up at the Norman court, and after his accession, on the death of Hardicanute, in 1042, showed a preference for Norman customs and ideas. Edward codified the customary law of the Anglo-Saxons, which thus became known as the "laws of King Edward." Died, 1066.

Edward I., king of England, was born in 1239, succeeded his father, Henry III., in 1272. Imbued with high notions of feudal sovereignty, he sought to establish his supremacy throughout the island of Britain. A man of strictly legal, but somewhat narrow mind, he secured order and good government by the statutes of Winchester and Westminster and other enactments, and carried on Simon de Montfort's work of molding the English parliament, 1295, though, at the same time, somewhat inclined to strain the royal prerogative. His personal character was extremely high. Died, 1307.

Edward II., king of England from 1307 to 1327, son of Edward I., was born at Carnarvon, 1284. In 1301 he was created prince of Wales, being the first heir apparent to the English throne who bore that title. His reign was a succession of disputes with the nobles and with Charles IV. of France. Finally his queen and the nobles revolted against him successfully in 1327 and Edward was murdered in Berkeley castle, having been deposed by parliament several months previous. He was succeeded by his son, who had already been named as Edward III. by parliament.

Edward III., king of England, eldest son of Edward II. and Isabella of France, was born in 1312. He was proclaimed king, 1327, during his father's captivity, and soon after marched with more than 40,000 men against the invading Scots, but concluded an inglorious campaign by a treaty in which the entire independence of Scotland was recognized. In 1346 Edward gained over Philip the decisive battle of Crécy, which was followed by the siege and surrender of Calais and a truce which lasted until 1355. The war was renewed in France under his son Edward the Black Prince, who, in 1356, gained the memorable victory of Poitiers, in which he took King John of France prisoner. Edward was succeeded by his grandson Richard II. Died, 1377.

Edward IV., king of England, was born in Rouen in 1441 or 1442. He was the son of Richard, duke of York, led a force into London during the war of the Roses, 1461, and was proclaimed king by parliament while Henry VI. was still alive. In 1474 Edward formed an alliance with the duke of Burgundy, and made preparations for a war in support of his claim to the throne of France. He passed over to Calais, but the expedition proved fruitless through the dereliction of his ally Charles the Bold of Burgundy, with whom the kingdom was to have been divided. During the latter part of his life Edward was sunk in indolence and pleasure. He left five daughters, one of whom, Elizabeth, was afterward married to Henry VII., and two sons, the ill-fated princes, Edward and Richard. Died, 1483.

Edward VI., king of England, son of Henry VIII. by his third wife, Jane Seymour, was born in 1537. He succeeded to the throne at his father's death in 1547, his uncle, the earl of Hertford, being chosen protector and created duke of Somerset. Henry's famous six articles were repealed, and a new book of common prayer was issued. His reign was marked by the restoration of many of the grammar schools suppressed by Henry VIII.

Edward VII., king of the united kingdom of Great Britain and Ireland, and of all the British dominions beyond the seas, emperor of India, eldest son of Queen Victoria, was born at Buckingham Palace, 1841. He studied at Edinburgh, and subsequently at Oxford and Cambridge. As prince of Wales he bore his full name, Albert Edward. In 1860 he visited the United States and Canada; and in 1863 married the princess Alexandra. He made a visit to India in 1875-76. He constantly manifested a lively interest in exhibitions, charitable institutions, the housing of the poor, and agriculture. He assisted in promoting the Royal College of Music; and the Imperial Institute was due to his suggestion. On January 22, 1901, he succeeded his mother as Edward VII. By visits to continental capitals the king did much to allay international animosities and promote peace and goodwill, especially between Britain and France. Died, 1910, and was succeeded by his son George V.

Edward VIII. (1894—), king of England, eldest son of George V and Queen Mary, born June 24, 1894, at White Lodge, Sheen, 1907, entered Osborne College and trained as Naval Cadet. Later assigned to training ship Britannia at Dartmouth. Attended Magdalen College, Oxford, 1912 to 1914. 1914, appointed aide-de-camp to Sir John French. World War service on French, Egyptian and Italian fronts. After Armistice, returned to England and resumed his public duties. He has visited all parts of British Empire, also the United States, South America and Japan. Proclaimed king, January 23, 1936.

Edwards, Jonathan, celebrated American divine and metaphysician, was born at Windsor, Conn., 1703. He was graduated from Yale in 1720, and toward the close of 1723 was appointed tutor in Yale College. In 1726 he accepted an invitation to become colleague to his maternal grandfather, Mr. Stoddard, in a church at Northampton, Mass., and was ordained in 1727. Here he labored with intense zeal for more than twenty-three years, at the end of which period he was dismissed by his congregation. Edwards was a powerful and impressive preacher, somber, and even gloomy in his religious opinions and sentiments, but earnest, unaffected and nobly conscientious. After his dismissal in 1750 he became a missionary among the Indians of Massachusetts. While residing at Stockbridge, in that state, he composed his famous treatise on the *Freedom of the Will* and *Original Sin.* In 1757 he was chosen president of Princeton College, New Jersey, but died in 1758.

Egan (*ē'gan*), **Maurice Francis,** educator, author, diplomat, was born in Philadelphia, Pa., 1852; graduated at La Salle College; entered Georgetown College, 1875; LL.D., Georgetown, 1879; J.U.D., Ottawa University, 1891; was on the editorial staff of McGee's *Illustrated Weekly*, *Catholic Review* and *Freeman's Journal*; professor of English literature, University of Notre Dame, Ind., 1888-95; and at Catholic University of America, 1895-1907. In 1907 appointed, United States minister to Denmark. Died, 1924.

Eggleston (*eg'lz-tun*), **Edward,** American author, was born at Vevay, Ind., 1837. He became a Methodist preacher in 1856, and subsequently edited for various periods the New York *Independent*, *Hearth and Home*, etc. In 1879 he retired from the ministry, and devoted himself entirely to literature. Among his best known books are *The Hoosier Schoolmaster*; *The Graysons*; and *History of United States.* Died, 1902.

Egmont (*eg'mŏn'*; Eng. *eg'mont*), **Lamoral, Count of,** Dutch general, descended from the duke of Guilders, was born in 1522. As commander of the Spanish cavalry of Charles V., he defeated the French, 1557-58, but incurring the enmity of Philip II., through his lenient treatment of the Flemish protestants, he was put to death, 1568.

Ehrlich, Paul, German bacteriologist, was born in Silesia, 1854. He studied medicine at Strassburg, Frieburg, and Leipzig and eventually became director of the royal institute for experimental therapeutics at Frankfort. He improved laboratory methods of testing toxins, investigated immunities and the cancer problem, and discovered salarsan, an arsenical compound for the cure of syphilis. He received many honors from his government and from universities and scientific societies in other countries. He died in 1915.

Eichelberger (*ĭk'el-bĕr-ĸ'ĕr*), **William Snyder,** astronomer, was born in Baltimore, Md., 1865; graduated from Johns Hopkins, 1886; Ph.D., 1891. Professor of mathematics, United States navy, since 1900; head of division of meridian instruments, United States naval observatory, 1902-1907; director Nautical Almanac since 1910. Member of numerous scientific societies, and a frequent contributor to government publications.

Eichhorn (*ĭk'hôrn*), **Johann Gottfried,** German scholar, was born at Dörinzimmern, Germany, 1752, and studied at Göttingen. His scholarship was almost universal, and he left numerous treastises on a multitude of subjects, both ancient and modern, classical and oriental, but he is chiefly known in this country as a biblical critic, and a chief of what is called the rational school. His chief works are a *Universal Library of Biblical Literature.* Died, 1827.

Eiffel (*e'fel'*), **Gustave,** French engineer, was born at Dijon, 1832, and early gained a reputation for bridge construction; in the huge framework erected for Bartholdi's statue of Liberty may be seen the germ of the iron Eiffel tower, 984 feet high, erected in 1887-89. Died in 1923.

Einstein, Albert (1879). German of Jewish parents. Astronomer and physicist. Born in Ulm, Germany. Educated in Munich, Bavaria and Zurich, Switzerland. Professor in the Universities of Zurich and Prague, 1909-1914. Einstein built a new theory of light, gravitation, and general physics. His theory of relativity boldly challenged some of Newton's conclusions regarding gravitation, and brought the fourth dimension into physics. It has received wide acceptance from scientific thinkers of the first rank.

Eldon, John Scott, Lord, celebrated lawyer and jurist, was born at Newcastle, of humble parentage, 1751. He was noted for the shrewd equity of his judgments and his delay in delivering them. Died, 1838.

Eleanor of Aquitaine, queen of France and of England, was born about 1122, and died in 1204. She was so called because she was a daughter of the duke of Aquitaine. She first married Louis VII. of France, who divorced her in 1152, and she then married Henry II. of England. It was through her that the English kings claimed the duchy of Aquitaine.

Elgar, Sir Edward, composer, was born near Worcester, England, 1857. His father was an organist. He early learned to play several instruments, became conductor of the Worcester instrumental society and, in 1885, successor to his father as organist at St. George's church. Among his best known compositions are *The Dream of Gerontius*, *The Apostles*, his popular march *Pomp and Circumstance*, and a symphony produced in 1908. Died, 1934.

Elgin (*el'gin*) **and Kincardine** (*kin-kär'din*), **James Bruce, Earl of,** was born in London, 1811, and succeeded his father, the seventh earl, who in 1812 brought from Athens the Elgin marbles, and himself was first Baron Elgin in the United Kingdom peerage. He died, 1863.

Elijah, greatest of the prophets of Israel, was born at Tishbe, in Gilead, on the borders of the desert. He comes upon the scene at the same time as Ahab, in the ninth century B. C. After the death of Ahab he rebuked the idolatries of his son Ahaziah in a solemn fashion and also denounced the evil doings of his successor. The closing scene of his life on earth is vividly narrated. A chariot of fire and horses of fire appeared after Elisha and he had crossed the Jordan, and "Elijah went up by a whirlwind into heaven."

Eliot, Charles William, educator, ex-president of Harvard University, was born in 1834, and graduated from Harvard in 1853. He taught mathematics and chemistry at Harvard, and in 1865, he was chosen professor of analytical chemistry in the Massachusetts Institute of technology. In 1869 Dr. Eliot succeeded Dr. Thomas Hill as president of Harvard College, and continued at its head until 1909. During his administration many notable changes in the government of the college occurred, its scope was broadened and there was a great increase in the number of its professors and students, while its wealth by gifts and benefactions was greatly increased, so that now it more than successfully competes with the great European universities. Eliot was given the degree of LL.D. by Williams and Princeton Colleges in 1869, by Yale in 1870 and by Johns Hopkins in 1902. He was also an officer of the legion of honor of France, and member of many scientific and literary bodies; he published *American Contributions to Civilization; Educational Reform; Charles Eliot; Landscape Architect; More Money for the Public Schools; John Gilley; The Happy Life;* and *Four American Leaders.* Died, 1926.

Eliot, George, is the *nom de plume* of Mary Ann Evans, a distinguished English novelist, born at Arbury, in Warwickshire, 1819. She began her literary career by a translation of Strauss *'Life of Jesus,* and became, in 1851, a contributor to the *Westminster Review.* During this time she formed the acquaintance of George Henry Lewes, with whom she lived as his wife, though unmarried. Her first work was *Scenes from Clerical Life,* contributed to *Blackwood's* in 1856. The stories proved a signal success, and were followed by a series of seven novels, beginning in 1858 with *Adam Bede,* which attained an immense success, and at once secured for the writer almost undisputed rank with the most eminent novelists of the day. This was followed in 1859 by *The Mill on the Floss,* and in 1861 by *Silas Marner, the Weaver of Raveloe.* In 1861 the *Scenes of Clerical Life* were republished from *Blackwood's Magazine.* In 1863 *Romola* appeared; *Felix Holt* was published in 1866, and *Middlemarch* in 1872; *Daniel Deronda* and *Impressions of Theophrastus Such* appeared later. These, with two volumes of poems, make up her works. Lewes died in 1878, and two years later George Eliot formally married an old friend, John Cross, and after a few months of wedded life died of inflammation of the heart.

Eliot, John, the "Indian apostle," was born probably at Widford, Herts, England, in 1604; graduated from Jesus College, Cambridge, in 1622, and after taking orders quitted England for conscience' sake, and landed at Boston in 1631. In England a corporation was founded in 1649 for propagating the gospel among the Indians of New England. In 1674 the number of "praying Indians" was estimated at 36,000, but the decay of the "praying towns" was rapid after King Philip's war in 1675. Eliot died at Roxbury in 1690. His greatest work was the translation of the Bible into the Indian tongue.

Eliot, Samuel Atkins, clergyman, was born at Cambridge, Mass., 1862; graduated from Harvard, 1884; D.D., Bowdoin, 1900. Entered Unitarian ministry, 1889; minister Unity Church, Denver, Colo., 1889-93, Church of the Savior, Brooklyn N. Y., 1893-8; secretary 1898-1900, president since 1900, of the American Unitarian Association.

Elizabeth, queen of England from 1558 to 1603, was born at Greenwich in 1533. She was the daughter of Henry VIII. and Anne Boleyn. She was in her twenty-fifth year when she obtained the crown. Her first act was to release the imprisoned Protestants, and to reëstablish Protestantism. Very early in her reign she was troubled by the pretensions of the friends of Mary, queen of Scots who was now the next heir to the throne. As Mary was a most zealous Catholic, the counsellors of Elizabeth were anxious that she should marry in order to secure the Protestant succession, but while she negotiated and coquetted with one person after another, she yet finally refused to marry, though it is believed that she would have accepted her favorite, the earl of Leicester, for a husband, if she had not been prevented by her other counsellors, and especially by Cecil, Lord Burleigh, the greatest of them all. Twelve years after her accession, in 1570, Elizabeth was excommunicated by Pope Pius V. Sixteen years later, in 1586, the Babington conspiracy was formed, the object of which was to reëstablish the papacy, and to set Mary, queen of Scots, on the throne of England, but which led only to the loss of her life by Mary, after she had been imprisoned in England for nineteen years. Two years after this conspiracy, in 1588, Elizabeth had to contend with a more formidable enemy in Philip II. of Spain, who avowed his resolution to annihilate Protestantism, but whose threatened invasion of the country was prevented by the defeat and destruction of the armada. But the firmness and sagacity of Elizabeth's advisers, and especially of Burleigh, protected her against these dangers; and at the close of her reign, which lasted for forty-five years, England was stronger and greater than it had ever been before. Elizabeth was great mainly through her counsellors, among whom were some of the most eminent statesmen that England has produced. She died 1603, and was buried in Westminster abbey.

Elizabeth Petrovna (*pā-trôv'nà*), empress of Russia, was born in 1709, and died in 1762. She was a daughter of Peter the Great, and became empress through the deposition of Ivan in 1741. During her reign, in which throughout she was guided by favorites, a war with Sweden was brought to a successful conclusion by the peace of Abo.

Elliot, Daniel Giraud, naturalist, curator of zoölogy, Field Musuem, of Natural History, was born in New York, 1835. Led expedition into interior of East Africa in interest of Field Columbian museum, 1896, and into the recesses of the Olympic mountains, 1898, being first naturalist to penetrate that little-known range. Sc.D., Columbia, 1906. Author: *Monograph of the Pittidae, or Ant-Thrushes; The Grouse,* etc. Contributor of many papers to scientific publications in America and Europe. Died, 1915.

Elliott, Maxine, actress, was born in Rockland, Me., 1873, daughter of Thomas Dermot. Made début with E. S. Willard in small parts, 1890; soon after played leading parts in Rose Coglan's company; was under Augustin Daly's management playing leading rôles two seasons; starred in *Her Own Way,* 1903-04; *Her Great Match,* 1905-06.

Ellsworth, Oliver, American statesman and jurist, was born in Windsor, Conn., 1745. He became prominent in state affairs and in the continental congress, and was a member of the federal convention of 1787, which prepared the constitution of the United States. He led the federalist party in the senate, and was an earnest advocate of Jay's treaty with England in 1794. From 1796 to 1799 he was chief-justice of the United States supreme court, and in 1800 negotiated, with Patrick Henry and Governor Davie, a treaty with France. Died, 1807.

Elman, Mischa, violinist, born Stalnoje, Russia, Jan. 30, 1891. Pupil of Auer. Début, New York, 1908.

Elphinstone (*el'fin-stun*), **Mountstuart,** English statesman and historian, was born in 1779, educated at Edinburgh and Kensington, and entered the Bengal civil service in 1795. In 1803 he served with distinction on Wellesley's staff, and was appointed resident at Nagpur. He returned to England in 1829, and, declining the governor-generalship of India, lived in comparative retirement until his death at Hookwood, in Limpsfield parish, Surrey, 1859.

Elphinstone, William, Scottish prelate and statesman, was born in 1431. He took his M.A. at Glasgow in 1452, was ordained priest. He was engaged in embassies, and for four months before the death of James III., in 1488, was chancellor. It was chiefly through his influence that the first printing press—that of Chepman and Myllar—was established in Scotland. The University of Aberdeen (King's College) was founded by him in 1500. He died at Edinburgh in 1514.

Ely, Richard Theodore, educator, author, was born in Ripley, N. Y., 1854. He was graduated from Columbia, 1876; Ph.D., Heidelberg University, 1879; LL.D., Hobart College, 1892; president, 1899-1901, American economic association. Member of Baltimore tax commission, 1885-86; Maryland tax commission, 1886-88; founder, 1904, and director of American bureau of industrial research.

Emanuel I. (*e-man'ū-el*), king of Portugal, called "the great" or "the fortunate," was born in 1469, and became king in 1495. His reign is known as the golden age of Portugal. It was he who made Portugal the first naval power of the world, as well as its great commercial center. He died at Lisbon, 1521.

Emanuel, Filibert, duke of Savoy, son of Charles III., was born in 1528; was commander-in-chief of the imperial troops in Italy against the French. He applied himself to the administrative and military organization of his country, and is considered the founder of the Sardinian monarchy. Died, 1580.

Emerson, Ralph Waldo, celebrated American poet and essayist, was born in Boston, 1803 and graduated at Harvard College, 1821. Having turned his attention to theology, he was ordained minister of the Second Unitarian Church of Boston; but soon after formed peculiar views with regard to forms of worship, abandoned his profession, and, retiring to the quiet village of Concord, devoted himself to his favorite study—the nature of man and his relation to the universe.

In 1838 Emerson published *Literary Ethics, an Oration;* and in 1839, *Nature, an Essay.* In 1841, he published *The Method of Nature, Man the Reformer,* several lectures, and the first series of his *Essays,* the second series of which appeared in 1844. In 1846 he published a volume of poems. In 1848 he traveled in England, where he delivered lectures on *The Mind and Manners of the 19th Century,* and in 1849 delivered the series entitled *Representative Men.* In 1852, in connection with Mr. W. H. Channing, he published the *Memoir of Margaret Fuller, Marchioness d' Ossoli.* Emerson, in 1856, published a work entitled *English Traits,* and in 1860 *The Conduct of Life.* He delivered at Concord an oration on the death of President Lincoln in 1865, and received the degree of LL.D. from Harvard University in 1866. He also contributed largely to periodicals. Some of his works were translated into French and excited marked admiration among the Parisian transcendentalists. He is by common consent one of the most eminent modern philosophers of the Pantheistic school and one of the most remarkable personifications of American literary genius. He died 1882.

References.—Cabot's *Memoir; Emerson at Home and Abroad,* by Moncure D. Conway; *Ralph Waldo Emerson Biographical Sketch,* by A. Ireland; *Emerson,* by O. W. Holmes; *Emerson in Concord,* by E. W. Emerson, his son; and *Emerson,* by Richard Garnett. See also Stedman's *Poets of America;* Arnold's *Discourses in America* and Richardson's *American Literature.*

Emerton, Ephraim, educator, historian, professor of ecclesiastical history, Harvard 1882-1918, was born in Salem, Mass., 1851. He was graduated from Harvard in 1871; Ph.D., Leipzig, 1876. Member of Massachusetts historical society, American Academy of arts and sciences. Author: *Introduction to the Study of the Middle Ages; Synopsis of the History of Continental Europe; Mediaeval Europe,* 814-1300.

Emin Pasha (*ā'mēn pà-shà'*), or **Bey,** proper name Edward Schnitzer, was born at Oppeln, Silesia, in 1840. He studied medicine and in 1864 went to Turkey, where he became a well-known physician. In 1876 he joined the Egyptian service and proceeded as chief physician to the equatorial province, of which he was made governor in 1878 by "Chinese" Gordon. Here on the sudden uprising of the Madhi, his rescue reached him in May, 1888. He was killed, however, in 1892 by Arabs near Nyangwe.

Emmett, Robert, Irish enthusiast and revolutionist, was born at Dublin in 1778, the son of a Dublin doctor. He was expelled from Dublin University in 1798. His impulsive patriotism in 1803 led him to make an unsuccessful attack on Dublin castle, but he escaped into Wicklow. He was subsequently captured and was executed on Sept. 20, 1803.

Encke (*eng'kē*), **Johann Franz,** German astronomer, was born at Hamburg in 1791. In 1825, chiefly at the instigation of Bessel, he was called to Berlin as director of the observatory. In 1819 he showed that the comet discovered by Pons in 1818 revolved round the sun in the remarkably short time of 3.3 years. He was an indefatigable computer and did great service by developing and putting into convenient shape for use the new method of least squares discovered by Gauss. Died. 1865.

Endicott (*en'di-kot*), or **Endecott, John,** Puritan governor of Massachusetts, was born at Dorchester, England, about 1588. He landed as manager of a plantation near Salem in 1628; headed a sanguinary expedition against the Indians in 1636; was deputy-governor in 1641-44, 1650, and 1654, and governor six times from 1644 to 1665. He died at Boston, 1665.

Endlicher (*ent'liĸ-ĕr*), **Stephan Ladislaus,** Hungarian botanist and linguist, was born in Pressburg in 1804. In 1836 he was appointed keeper of the court cabinet of natural history, Vienna, and in 1840 professor of botany and director of the botanic garden of the University. He was a chief founder of the Vienna Academy and of the *Annalen des Wiener Museums.* Died, 1849.

Ennius (*en'i-us*), **Quintus,** Roman poet, the father of Roman literature, was born in 239 B. C. Cato "the elder" took him to Rome, where he taught Greek and Latin, and gained the friendship of the noblest Romans of his day. He died in Rome, 169 B. C.

Eotvos (*ât'vûsh*), **Jozsef,** distinguished Hungarian author, was born at Buda, 1813. In 1867 he was appointed minister of religion and education and in that capacity engaged actively in the work of reform. Died at Pesth, 1871.

Epaminondas (*ē-pam'i-non'das*), greatest of Theban generals and statesmen, was born about 418 B. C. and led a retired life until his fortieth year. After the stratagem by which his fellow citizens expelled the Spartans in 379, B.C. he joined the patriots; and, when sent to Sparta in 371 B. C. to negotiate peace, displayed as much firmness as eloquence. In 368 B. C. war was renewed, and Epaminondas made a somewhat unsuccessful invasion into the Peloponnesus. To atone for this he advanced with 33,000 men into Arcadia and near Mantinea broke the Spartan phalanx, but was mortally wounded. Died, 362 B. C.

Epee, de l' (*dē lā'pā'*), **Charles Michel Abbe,** one of the founders of the system of instruction for the deaf and dumb, was born at Versailles, France, 1712. At his own expense he founded an institution for the deaf and dumb and labored with unwearied zeal for its prosperity. Died, 1789.

Epictetus (*ep'ik-tē'tus*), celebrated stoic philosopher, who flourished in the first century, was born at Hierapolis, in Phrygia. Having obtained his freedom, he retired to a hut and gave himself up wholly to the study of philosophy. Being banished from Rome, with the other philosophers, by Domitiank he settled at Nicopolis, in Epirus.

Epicurus (*ep'i-kū'rus*), Greek philosopher, was born about 342 B. C. He taught at Colophon, Mitylene, and Lampsacus. He returned to Athens about 306, B.C. and remained there until his death. He was founder of the Epicurean school, who hold that the *summum bonum* consists in pleasure—chiefly mental pleasure. Died, 270 B. C.

Epinay, d' (*dā' pē'ne'*), **Madame,** French writer, was born about 1725. In 1745 she formed a close intimacy with Rousseau. An unfortunate jealousy, however, which Rousseau conceived for Grimm, another friend of Madame d'Épinay, was followed by an open rupture with his benefactress. Died, 1783.

Erasistratus (*er-a-sis'tra-tus*), one of the most famous physicians and anatomists of ancient times, flourished in the third century B. C. He founded a school of medicine, wrote several works on anatomy, practical medicine and pharmacy.

Erasmus (*ē-raz'mus*), **Desiderius,** one of the greatest scholars of the renaissance, was born in Rotterdam about 1467; on his parents' death he entered a monastery, which he left to become a teacher at Paris, and at the invitation of his pupil, Lord Mountjoy, came to England. He settled at Oxford. In 1506 he visited Italy, staying at Bologna and Rome, where he was warmly received, but returned to England, and was made Margaret professor of divinity and professor of Greek at Cambridge. He returned to the continent, and after a journey to the low countries, settled at Basel, where he published his edition of the new testament. Erasmus was in favor of moderate reform in the church. Died, 1536.

Eratosthenes (*er'â-tos'thē-nēz*), eminent Greek writer, called the philologist, was born at Cyrene about 276 B. C. By Ptolemy Euergetes he was called to Alexandria to superintend his great library. Here he died of voluntary starvation, at the age of eighty. As an astronomer he holds an eminent rank among ancient astronomers. A letter to Ptolemy, king of Egypt, on the duplication of the cube, is the only complete writing of his that we possess.

Erckmann-Chatrian (*erk'mân-shâ'trē'ăN'*) (Emile Erckmann and Alexandre Chatrian), two French men of letters, the first of whom was born at Phalsbourg, 1822; the second in the village of Soldatenthal, 1826. The two friends employed their pens in the same works, which they signed with the two names united in one; and it was only about 1863 that the authors informed their readers that the numerous works of fiction, which had obtained a widespread popularity and were supposed by the general public to be the work of a single writer, were the fruits of their friendly collaboration. Erckmann died in 1899; Chatrian 1890.

Eric (*er'ik*) **The Red,** Norwegian navigator, was born about 950. In 982 he located on the island of Iceland, and in 983 sailed from Bredifiord to reach some western shore said to have been visited by one of his countrymen in former times. Some of the ships were lost in a storm and others were driven home; but he succeeded in reaching the Greenland coast. About twelve years later his son Lief is said to have discovered the continent of North America.

Ericsson (*er'iĸ-sun*), **John,** Swedish-American engineer, was born in Lanzbanshyttan, Sweden, 1803. At the age of twelve he became cadet of engineers, and at seventeen entered the Swedish army. He produced in succession an instrument for sea-sounding, a hydrostatic weighing machine and a tubular steam boiler, besides other important devices. In 1853 the ship *Ericsson,* of 2,000 tons, was propelled by his motor. In 1839 he came to the United States, where, in 1841, he designed for the government the screw-propelled war ship *Princeton.* In 1861 he built for the United States government, in 100 days, the iron-clad *Monitor,* which, on March 9, 1862, in Hampton roads, defeated the confederate iron-clad ram *Merrimac.* Died, 1889.

Erigena (*ē-rij'ē-nâ*), **Joannes Scotus,** famous philosopher and scholar of the middle ages, was born probably in Ireland during the ninth century, and died about 897. In the controversies of his time regarding predestination and transubstantiation he took part. His philosophic opinions were those of a neo-Platonist rather than a scholastic. His chief work was *De Vivisione Naturae.*

Ernesti (*er-nes'tē*), **Johann August,** German biblical critic, was born at Tennstedt in Thüringia, 1707. He became professor of ancient literature at Leipzig in 1742, of rhetoric in 1756 and of theology in 1759. Ernesti was the chief founder of a correct exegesis of scripture by the laws of grammar and history. In his *Anti-Muratorius* he argues that a thorough investigation of the history of doctrines is the best polemic against Roman Catholicism. Died, 1781.

Erskine (*ûr'skin*), **Ebenezer,** founder of the secession church in Scotland, was born at Chirnside, Berwickshire, 1680. The popular preacher of Portmoak in Kinross-shire from 1703 on the rise of the Marrow controversy he took a prominent part on the evangelical side. He died in 1754.

Erskine, Thomas Lord, British jurist and orator, was born in Edinburgh, 1750. He purchased a commission in the first royals, and was stationed at Minorca, where he employed his leisure time in the study of English literature. An accidental interview which he had with Lord Mansfield influenced him to prosecute the study of law. He was admitted a student of Lincoln's Inn, 1775. After his first speech the attorneys actually flocked round him with their retainers. In 1786 he was made attorney-general to the prince of Wales. He was regarded as the defender of popular liberties and constitutional rights. Died, 1823.

Espartero (*es'pär-tā'rō*), **Baldomero,** Spanish general and statesman, was born at Granatula, Spain, 1792. He was destined for the priesthood, but in 1808, on the French invasion of Spain, joined a volunteer battalion. As captain-general of the Basque provinces, in 1836, he twice defeated the Carlists and drove Don Carlos into France; for this he was created duke of Vittoria; in 1856 he was supplanted by O'Donnell. Died, 1879.

Espy (*es'pi*), **James Pollard,** meteorologist, was born in Pennsylvania in 1785. His *Philosophy of Storms,* published in 1841, was commended by the Academie des Sciences. Appointed in 1842 to the Washington observatory, Espy laid the basis of the weather bureau. He died in 1860.

Esquirol (*es'kwē'rōl'*), **Jean Etienne Dominique,** French physician, was born at Toulouse, 1772. He served in the military lazaretto at Narbonne, 1794, and was appointed physician to the Salpetriere at Paris, 1811. In 1825 he became first physician to the *Maison des Alienes,* while managing his private asylum at Charenton. Died, 1840.

Essex (*es'eks*), **Robert Devereux, Earl of,** was born in 1567. His first service was in the Netherlands. At court he became a favorite of Queen Elizabeth, and was put in command of the forces sent to help Henry IV. against the league in 1591. To him was largely due the capture of Cadiz in 1596. After failing as lord-lieutenant of Ireland, he formed a wild scheme to get rid of Elizabeth's councilors, who were opposed to him. He entered London at the head of 300 men, expecting the people to rise in his favor, but was disappointed and forced to surrender. He was tried for treason, condemned, and beheaded in 1601.

Estaing (*es'taN'*), **Charles Hector, Count d,'** French admiral, was born in 1729. After serving in the army in India, under the Marquis de Bussy, he entered the navy and led an expedition to Sumatra, capturing several English forts. He was then placed in command of a squadron sent to aid the United States against England. He was guillotined in 1794 during the revolution.

Esterhazy (*es'tēr-hā'zē*), **Nicholas de,** Hungarian patron of arts and sciences, was born in 1765. He founded the splendid collection of pictures at Vienna. When Napoleon, in 1809, entertained the notion of weakening Austria by the separation of Hungary, he made overtures to Prince Esterhazy respecting the crown of Hungary, which; however, were declined. Haydn composed most of his works at the court of Prince Nicholas. Died, 1833.

Esterhazy, Prince Paul Anton, Austrian diplomat, was born in 1786. After the peace of Vienna he went as ambassador to the court of Westphalia. In March, 1848, he became minister of foreign affairs; but when the struggle between Austria and Hungary broke out he exhibited more prudence than heroism by retiring from public life altogether. He died in 1866.

Esther, the Persian name of Hadassah, daughter of Abihail, a Benjamite. She was an orphan, and brought up by her cousin Mordecai, an officer in the household of the Persian monarch, Ahasuerus. When the misconduct of Vashti had cost her her "royal estate," all "the fair virgins" of the kingdom were gathered together, that Ahasuerus might choose a successor. He selected Hadassah, who received the name of Esther on account of her loveliness.

Ethelbert (*eth'el-bĕrt*), first Christian king of Kent, England, was born about 552. He was converted by his wife, Bertha, of France, and by St. Augustine. He gave the English the first written code of laws. Reigned from 560 to 616.

Eucken (*oik'en*), **Rudolph Christoph,** German philosopher, was born at Aurich, Prussia, in 1846. He was educated at the University of Gottingen and at Berlin; Ph.D., Gottingen; D.D., Giessen, 1903; Glasgow, 1910. He was professor of Basel, Switzerland, 1871-4, and at the University at Jena. In 1908 he received the Nobel Prize for literature. His best known works in English translations are *Life's Basis and Ideal,* and *The Truth of Religion.* Exchange professor at Harvard University, 1912-13. Died, 1926.

Euclid (*u'klid*), eminent geometrician, is said by Pappus and Proclus to have been a native of Alexandria, in which city he taught mathematics, during the reign of Ptolemy Lagus, about 300 B. C. His most famous work is the *Elements of Geometry,* in thirteen books, six of which are still in use.

Eugene, Francois, usually called Prince Eugene of Savoy, celebrated Austrian general, was born in Paris, 1663. He was a son of Eugene Maurice, count of Soissons, but his application for a commission in the army of France having been refused, in consequence of a difference between Louis XIV. and Eugene's mother, he left France for Vienna, and offered his services to the emperor of Austria, in whose court and army he spent the whole of his remaining life. Died in Vienna, 1736.

Eugenie-Marie de Montijo (*û'zhā'nē mā'rē' de mōn-tē'hō*), ex-empress of the French, was born in Spain, 1826. Her mother, the Comtesse Teba, took her to Paris, where she attracted great attention at the balls given at the Tuileries by Louis Napoleon, who proposed to the charming young Spaniard, whom he married in 1853. She forced on the war with Germany, which she spoke of as "my war," and in many ways her influence was bad for France. She was appointed regent when Napoleon III. went to fight the Germans, and was in Paris when the revolution broke out after Sedan. In 1870 she escaped from the Tuileries and sought refuge in England. Died, 1920.

Euler (*oi'lēr*), **Leonard,** distinguished mathematician, was born at Basel, Switzerland, 1707, and at the time of his death in 1783 was director of the mathematical department of the Academy of St. Petersburg, having been previously professor of mathematics in the Academy of Sciences in Berlin.

Euripides (*û-rip'i-dēz*), the latest of the three Greek tragedians, was born at Salamis, 480 B. C., on the very day of the great victory gained by the Greeks over the Persians. In 441 B. C. he gained the first prize for tragedy, and continued to write for the Athenian stage until 408 B. C., when he accepted an invitation to the court of Archelaus, king of Macedonia. Among his works are the *Alcestis, Hecuba* and *Medea.*

Eusebius (*û-sē'bi-us*) **of Caesarea,** father of ecclesiastical history, was born in Palestine about 264 and died about 340. In 313 he succeeded Agapius as bishop of Cæsarea and took a prominent part in the council of Nice.

Eustachio (*â'ōōs-tā'kyō*), or **Eustachius, Bartolommeo,** Italian anatomist, was born in 1510. He was professor of medicine at the Collegio della Sapienza at Rome. Died, 1574.

Evans, Mary Ann or **Marian.** See **Eliot, George.**

Evans, Robley Dunglison, American admiral, was born in Floyd county, Va., 1846. He was appointed to the United States navy for Utah, and graduated from the United States naval academy in 1863; rear-admiral 1901. In war with Spain, commander of *Iowa* in Sampson's fleet off Santiago, taking active part in battle with Cervera's fleet, July 3, 1898; was president of board of inspection and survey; commander-in-chief at Asiatic station, October, 1902, and in command of the Asiatic expedition, 1908. Died, 1912.

Evarts, William Maxwell, American lawyer and statesman, was born at Boston, Mass., 1818, and died at New York City, 1901. He graduated at Yale, and was admitted to the New York bar in 1841, where he built up a notable practice.

He was United States counsel before the Alabama tribunal in 1872, and senior counsel for Henry Ward Beecher in 1875. In 1877-81 he was secretary of state, and United States senator from New York for the term 1885-91.

Evelyn, John, English author, was born at Wotton, in Surrey, 1620. He took part in political affairs during the reigns of Charles I., Charles II., and James II. He is now chiefly remembered for his *Diary*, which he kept during the greater part of his life, and which forms one of the most valuable collections of historical materials for the latter half of the seventeenth century. Died, 1706.

Everett, Charles Carroll, Unitarian theologian, was born at Brunswick, Me., 1829. He graduated at Bowdoin College, 1850, and continued his studies at the University of Berlin; dean of the Harvard Divinity School after 1878. Died, 1900.

Everett, Edward, American author, orator and statesman, was born at Dorchester, Mass., 1794. He was graduated from Harvard, 1811. He became professor of Greek at Harvard in 1815; became editor of the *North American Review*, and was a member of congress from 1824 to 1834; governor of Massachusetts from 1835 to 1839; and from 1840 to 1845, minister-plenipotentiary to England. He became secretary of state in 1852, and was elected to the United States senate in 1853. He was made D.C.L. by Oxford, and LL.D., by Cambridge and Dublin universities. Died, 1865.

Ewald (*ā'vălt*), **Georg Heinrich August von,** German orientalist and theologian, was born at Göttingen, 1803. He was dismissed with six others in 1837 for remonstrating against the unconstitutional proceedings of the king of Hanover and was professor at Tübingen from 1838 to 1848, when he was reinstated at Göttingen. Died, 1875.

Ewell (*ū'el*), **Richard Stoddard,** American soldier, was born in the District of Columbia in 1817. He graduated at West Point in 1840, and served in the Mexican war. In April, 1865, he surrendered to General Sheridan at Sailor's Creek, Va. Died, 1872.

Ewing (*ū'ing*), **Thomas,** American politician, was born in Ohio county, Va., 1789. He was admitted to the Ohio bar in 1816, and from 1831 to 1837 was United States senator from Ohio; in March, 1849, became the first secretary of the interior, which office he held until September 12, 1850. Died, 1871.

Eyck (*īk*), **Hubert,** and **Jan van,** two illustrious painters of the old Flemish school. Their birthplace was Maas-Eyck, and they chiefly resided at Bruges and Ghent, and became the founders of the Flemish school of painting. Hubert died in 1426, and Jan in 1440.

Ezekiel, one of the four great Hebrew prophets, was the son of Buzi, and one of the sacerdotal race. He was carried to Babylon as a captive by Nebuchadnezzar, 598 B. C. Favored by the Lord with the gift of prophecy, he soothed, comforted and admonished his countrymen, until at length he was stoned to death by order of the Babylonian authorities.

Ezekiel, Moses, American sculptor, was born at Richmond, Va., 1844; visited Berlin, Germany, 1869, where he studied at Royal academy of art; admitted into Society of Artists, Berlin. He executed the marble group representing religious liberty for the Centennial exhibition, now in Fairmount park, Philadelphia; monument to Jessie Seligmann for orphan asylum, New York. After 1886 his work became chiefly ideal. Died, 1917.

Ezra, the scribe, was living in Babylon during the reign of Artaxerxes Longimanus, who commissioned him to lead a band of his fellow countrymen from Babylon to Jerusalem in 458 B. C., there to reörganize the returned Jews. The book which bears his name was anciently and justly regarded as forming one book with *Nehemiah*; and in their present shape *Ezra* and *Nehemiah* are simply the continuation of *Chronicles*.

Faber (*fā'bĕr*), **Frederick William,** English hymn writer, was born at Calverley in Yorkshire, 1814; graduated from Balliol College, Oxford, and in 1834 was elected a scholar of University College, in 1837 a fellow. He founded a community of converts at Birmingham—"the Wilfridians"—he himself being Brother Wilfrid, from his *Life of St. Wilfrid*. He died in 1863. Faber wrote many theological works; but his fame will rest upon his hymns *The Pilgrims of the Night*; *The Land Beyond the Sea*, etc.

Fabius (*fā'bi-us*), **Maximus Quintus,** Roman general, was born about 275 B. C. He was surnamed Cunctator because, in 217 having been appointed dictator for the second time and intrusted with the defense of Italy against the victorious Hannibal, he pursued a course of cautious and patient generalship, never risking a general engagement with his opponent, but cutting off his supplies, and gradually wearing him out, and meeting with signal success. Died 203 B. C.

Fabricius (*fă-brish'i-us*), or **Fabrizio** (*fă-brēt'syō*) **Girolamo,** celebrated anatomist and surgeon, was born in 1537, and died in 1619. He graduated from the University of Padua, where, in addition to the usual instruction in the classics, he studied anatomy and surgery under the celebrated Fallopius. On the death of the latter in 1562, Fabricius was appointed to fill the vacant professorship. His chief work was his *Opera Chirurgica*.

Faed (*fād*), **John,** Scottish painter, was born in 1819. In 1841 he settled in Edinburgh, where his talents won him a high reputation. Died, 1902.

Faed, Thomas, brother of the preceding, and also an artist, was born in 1826. In 1849 he executed a work, entitled *Scott and His Friends at Abbotsford*. He was made an R.A. in 1864. Died, 1900.

Fahrenheit (*fä'ren-hīt*), **Gabriel Daniel,** physicist improver of the thermometer, was born at Dantzic, Germany, 1686. In 1720 he first conceived the idea of using quicksilver instead of spirits of wine in the construction of thermometers, by means of which the accuracy of the instrument was very much improved. Died, 1736.

Faidherbe (*fe-derb'*), **Louis Leon Cesar,** French general, was born at Lille, France, 1818, and entered the French army in 1842. His earliest service was in Algeria. During the Franco-Prussian war he was in command of the army of the North and fought several battles. He was the author of a number of works on military and archæological subjects. Died, 1889.

Fairbairn (*fâr'bârn*), **Andrew Martin,** Scottish theologian and principal of Mansfield College, Oxford, was born near Edinburgh, Scotland, 1838. In 1886 he was elected principal, on its foundation, of Mansfield College, Oxford, where his labors as a metaphysician and theologian have made him famous. His books embrace: *Studies in the Philosophy of Religion and History*; *Studies in the Life of Christ*; *The City of God*. Died, 1912.

Fairbairn, Sir William, Scottish engineer, was born at Kelso, Scotland, 1789. He was the first to use iron instead of wood in the shafting of cotton mills. Fairbairn built the tubular bridge across the Menai strait and more than a thousand other bridges. He also devised improvements for steam boilers and other steam machinery. In 1869 he was made a baronet. He died at Moor Park, Surrey, England, 1874.

Fairbanks, Arthur, educator, author, was born in Hanover, N. H., 1864; graduated from Dartmouth College, 1886; Yale Divinity School, 1887-88; professor of Greek and Greek archæology, University of Michigan, 1906-07; director of Boston museum of fine arts. Editor of *The Classical Journal*, 1905-1907.

Fairbanks, Charles Warren, lawyer, was born on a farm near Unionville Center, Union county, Ohio, 1852; graduated from Ohio Wesleyan University, 1872; admitted to Ohio bar, 1874, and established practice at Indianapolis. Elected United States senator from Indiana, 1897, and reëlected in 1903, vice-president of the Uni ed States, 1904-08. Died, 1918.

Fairbanks, Douglas (1883——), studied at Colorado School of Mines, but turned to motion picture drama, appearing with great success in *He Comes Up Smiling*, *Frenzied Finance*, *All For a Girl*, *Reaching for the Moon*, *His Majesty*, *The American*. His smile, his personality and his acrobatic feats make him one of the most popular movie actors. Address: Hollywood, Calif.

Falconio (*făl-kō'ni-ō*), **Diomede,** R. C. cardinal and former apostolic delegate to the United States, was born in Pesocostanzo, in the Abruzzi, Italy. He entered the Franciscan order, 1860; became citizen of United States, 1868; returned to Italy, 1883, and elected **provincial** of Franciscans in the Abruzzi; procurator-general Franciscan order and visitor-general in various provinces of the order, 1889-92. Consecrated, 1892, bishop of Lacedonia, and was raised in 1895 to be archbishop of Acerenza and Matera; apostolic delegate to United States, 1902-11; cardinal, 1911. Died, 1917.

Falkenhayn, Eric von, German general, born at Burg Belchau, 1853. Entered army in his youth; became lieutenant general in 1906; retired, 1910; recalled to actual service, 1914; succeeded Moltke as chief of general staff, 1914; supplanted by von Hindenburg, 1916. Died, 1922.

Fall, Albert Bacon, born Frankfort, Ky., 1861. School teacher, lawyer, farmer, ranchman, and miner. U. S. Senator from New Mexico, 1912-1921. Secretary of Interior in Harding Cabinet. Leader of U. S. Senate in Mexican affairs.

Fallieres (*făl'yâr'*), **Clement Armand,** French statesman, president of the French republic 1906-1913, was born near Agen, South France, 1841. Settled at Nérac as a barrister, and became mayor; has been minister of the interior, of justice, and of education, and prime minister, and was eight times reëlected president of the senate. He was elected president of France in 1906, in succession to M. Loubet. He is a lover of books and has written verse both in French and in the Languedocien dialect. Died, 1931.

Faneuil (*fan''l* or *fan'yel*), **Peter,** founder of Faneuil hall, Boston, Mass., was born in New Rochelle, N. Y., 1700. He was a rich merchant in Boston, and gave to the city a building for a market and town-hall. So many important patriotic meetings were held in Faneuil hall during the revolution that it has been called the "cradle of American liberty." Died, 1743.

Faraday (*far'a-dā*), **Michael,** distinguished English chemist and natural philosopher, was born in 1791 near London; in 1833 became professor of chemistry in the Royal Institution, London, where his lectures attracted the admiration of both Europe and America. Besides two sets on chemical subjects, we have his *Lectures on the Physical Forces*. But the great work of his life is the series of *Experimental Researches in Electricity*, published in the *Philosophical Transactions*. Died, 1867.

Farel (*fä'rel'*), **Guillaume,** Swiss reformer, was born in Dauphiné, in 1489, and studied at Paris. A convert to Protestantism, he, in 1524, put forth at Basel many Protestant theses. In 1557, together with Beza, Farel was sent to the Protestant princes of Germany to implore their aid for the Waldenses. In 1560 he was in Dauphiné preaching against Catholicism; and in 1561 was thrown into prison. He died at Neuchatel, 1565.

Farley, John Murphy, R. C. cardinal, was born in County Armagh, Ireland, 1842; was educated at St. John's College, Fordham, and St. Joseph's Seminary, Troy, N. Y., and at the American College, Rome; ordained priest at Rome, 1870. He was assistant rector of St. Peter's, New Brighton, Staten Island, 1870-2; secretary to Archbishop McCloskey, 1872-84; private chamberlain to Pope Leo XIII., 1884; domestic prelate of Pope Leo XIII., 1892; prothonotary apostolic, 1895; auxiliary bishop of New York, 1895; on death of Archbishop Corrigan, May 5, 1902, was appointed administrator of New York; fourth Archbishop of New York, 1902-1911. He was raised to the cardinalate, 1911. Died, 1918.

Farlow, Alfred, writer, was born at Orange, Ill., and graduated from the Mass. Metaphysical College, 1888; Christian Science teacher and lecturer, since 1888; located Christian Science Institution at Topeka, 1889, removed to Kansas City, 1894; pastor and reader Christian Science Church; member committee on publication Christian Science Church, Boston. Contributor to newspapers and magazines on Christian Science subjects.

Farnese (*fär-nā'sā*), **Alessandro.** See **Paul III., Pope.**

Farnum, William, actor, was born in Boston in the late seventies. Made his début at Richmond, Va., in *Julius Caesar*. In 1907 he starred in *Ben Hur* and *The Prince of India*, and appeared with his brother Dustin in *The Littlest Rebel* in 1911.

Farragut (*far'a-gut*), **David Glasgoe,** American admiral, was born near Knoxville Tenn., 1801. At the age of twenty-five he was made lieutenant and appointed to the Norfolk navy-yard. In 1862 he was appointed to the command of a naval expedition to act against the confederates in the gulf of Mexico. On April 24th, after a heavy cannonade, his squadron passed the forts at the mouth of the Mississippi, and on the 28th he received the surrender of New Orleans. Ascending the Mississippi he took Natchez. Raised to the rank of vice-admiral in March, 1863, he once more passed up the Mississippi, successfully ran past the confederate batteries of Fort Hudson, and aided General Grant in the combined attack on Vicksburg, which resulted in its capitulation, July 4th. In August, 1864, after a furious engagement between his fleet and the confederate forts and vessels at Mobile, in which the monitor *Tecumseh* was sunk by a torpedo, with the loss of all on board, he succeeded in capturing the forts, which led to the fall of the city. In 1866 he attained the rank of admiral. He died in 1870.

Farrar (*far'ar*), **Frederick William,** English clergyman and author, was born in Bombay, India, 1831; educated at London and Cambridge. In 1876 he became canon of Westminster, in 1883 archdeacon, and in 1895 dean of Canterbury. He ranks among the most eloquent of English pulpit orators, and published many works on educational, theological, and other subjects. Chief of these are: *Seekers After God*; *Witness of History to Christ*; *The Silence and Voices of God*; and the *Life of Christ*. Died, 1903.

Farrar, Geraldine, grand opera singer, was born at Melrose, Mass., 1882, daughter of Sydney and Henrietta (Barnes) Farrar; graduated at Melrose, Mass., public school, and received her musical education at Paris and Berlin. Made début, Royal opera house, Berlin; member Berlin Royal Opera since 1901; with Metropolitan opera 1906-1922, and has appeared frequently both in Europe and United States in concert.

Faunce (*fôns*), **William Herbert Perry,** educator, president of Brown University, was born at Worcester, Mass., 1859. He was graduated from Brown University, 1880; pastor of Fifth Avenue Baptist church, New York city, 1889-99; lecturer in University of Chicago, 1896-97; Lyman Beecher lecturer, Yale University, 1907-08. Died, 1930.

Faure (*fōr*), **Francois Felix,** former president of France, was born in Paris, 1841. He served as a volunteer in the Franco-German war, in 1881 became deputy for Havre, and after holding posts in several administrations, in January, 1895, succeeded Casimir-Perier as president. He died of apoplexy in 1899.

Favart (*fä-vär'*), **Charles Simon,** French dramatist, was born at Paris, 1710. After spending some time in Flanders in the army under Marshal Saxe, Favart returned to Paris and continued to write operas. His most celebrated pieces are *Le Coq du Village*; *Bastien et Bastienne*; *Ninette à la Cour*. Died, 1792.

Favre (*fä-vr'*), **Jules Claude Gabriel,** French statesman and orator, was born at Lyons, 1809, studied for the bar, and was engaged in the July revolution of 1830; he became one of the leaders of the republicans against Napoleon III. In September, 1870, after the fall of the empire, he was appointed minister of foreign affairs, and in 1871 settled the terms for the capitulation of the capital. He resigned office in July, 1871, resumed practice at the bar, and died in 1880.

Fawcett, Henry, English statesman, born at Salisbury, 1833. Graduated from Cambridge, 1856, and elected to the chair of political economy at this school in 1863, a post which he held until his death. Totally blinded while hunting in 1858. He was elected to Parliament in 1865 and again in 1868. He strongly opposed Gladstone's Irish University Bill in 1873. Gladstone offered him the postmaster-generalship, which he accepted. Here he instituted several reforms. He died in 1884.

Fawcett, Millicent Garrett, wife of the preceding from 1867, was born at Aldeburgh, Suffolk, 1847. She has taken a keen interest in the higher education of women and the extension of the franchise to women, and received the degree of LL.D. from St. Andrews University. Died, 1929.

Fechner (*fek'nĕr*), **Gustav Theodor,** physicist and psychophysicist, was born at Gross-Sarchen, in lower Lusatia, 1801; devoted himself to psychology; laid the foundations of the science of psychophysics in his *Elements of Psychophysics.* Died, 1887.

Felix (*fē'liks*), **Antonius,** or **Claudius,** Roman governor of Judea at the time of the apostle Paul. He was an energetic ruler, clearing the country of the robber bands that abounded and holding the seditious Jews in check.

Fenelon (*fā'ne'lôn'*), **Francois de Salignac de La Mothe,** eminent French preacher and author, archbishop of Cambray from 1695 to the time of his death, was born 1651, and died at Cambray, 1715. Before his elevation to the archbishopric, he was tutor to the grandsons of Louis XIV., for whom he composed several works, among them his best-known work, *Telemachus.*

Fenn, William Wallace, theologian, Bussey professor of theology at Harvard University, was born in Boston, Mass., 1862; graduated from Harvard, 1884; A.M., 1887; Harvard D.D., 1908. Entered the Unitarian ministry, 1887; Shaw lecturer biblical literature, Meadville theological school, 1892-1901, 1905-07; preacher to Harvard, 1896-98, 1902-05; dean of Harvard divinity school.

Ferber, Edna, American short story writer, was born at Kalamazoo, Mich., 1887. She began writing as reporter for various newspapers, including the Chicago *Tribune,* but later devoted herself to short stories which have appeared in foremost magazines. Her stories include: *Buttered Side Down, Roast Beef Medium, So Big,* and the famous *McChesney* stories.

Ferdinand I., emperor of Germany, son of Philip I. of Spain and younger brother of Charles V. of Germany, was born in 1503. In 1531 Ferdinand was elected king of the Romans, and in 1556 he succeeded Charles V. as emperor. He was tolerant to the Protestants, whom he tried to reconcile with Rome. Died, 1564.

Ferdinand I., the Great, king of Castile and Leon, was the second son of Sancho III., king of Navarre and Castile, and succeeded to the latter kingdom in 1035. He was one of the most powerful monarchs of his age. In 1056 he assumed the title of emperor of Spain. Died, 1065.

Ferdinand II., emperor of Germany and king of Hungary and Bohemia, was born in 1578. After the overthrow of Frederick in 1620, Ferdinand abolished the charter of Bohemia, oppressed the Protestants, and prosecuted the war under Tilly, Wallenstein and others. Died, 1637.

Ferdinand II., king of the Two Sicilies, grandson of the preceding, was born in 1810. He succeeded his father Francis I. in 1830, and at first introduced reforms and liberal measures, but soon adopted the principles of absolutism. His harsh treatment of political prisoners led in 1857 to a diplomatic rupture with Sardinia, France, and England. Died, 1859.

Ferdinand IV., king of Naples and afterward king of the Two Sicilies as Ferdinand I., was born in 1751. In 1812 he granted his Sicilian subjects a constitution, in 1815 was restored to his former throne, and in 1816 united Sicily and Naples into a single state. His despotism provoked the revolution of 1820, which was suppressed by Austrian intervention. Died, 1825.

Ferdinand V. of Castile, III. of Naples, and **II. of Aragon and Sicily,** surnamed the Catholic, son of John II., was born in 1452, and succeeded his father on the throne of Aragon and Sicily in 1466. In 1469 he was married to Isabella, sister of Henry IV. of Castile, and in 1479 became, through her, king of Castile. Ferdinand died in 1516, Isabella having died twelve years before him.

Ferguson (*fĕr'gu-sun*), **John,** senior physician, Toronto Western hospital, editor of *The Canada Lancet,* was born at Glasgow, Scotland, 1854. He was graduated from the University of Toronto, and later studied at Edinburgh and London; Besides editing *The Canada Lancet,* he has published numerous articles and addresses.

Fergusson, James, Scottish historian of architecture, was born at Ayr, Scotland, 1808. After ten years as an indigo planter in Bengal, he explored nearly every corner of India, studying the rock-temples, which were illustrated in his earliest works. His *History of Architecture* appeared first as a handbook in 1855. He died in 1886.

Ferrari (*fer-rä'rē*), **Giuseppe,** Italian philosopher, was born in Milan, 1812; studied law at Pavia, but afterward devoted himself to literature. He died at Rome in 1876.

Ferreira (*fer-re'ē-rä*), **Antonio,** Portuguese poet, was born at Lisbon in 1528. He is considered the reformer of the national poetry of Portugal, and as the Portuguese Horace. He obtained an important situation at court, and his *Inez de Castro* gave him great celebrity. He died in 1569.

Ferrero (*fer-rā'rō*), **Guglielmo,** Italian historian, was born in 1872. He lectured at Milan on militarism, and in the Collège de France, Paris, on Roman history, and while there received the cross of the legion of honor. Author: *Symbols, The Greatness and Decline of Rome.*

Ferry, Jules Francois Camille, distinguished French statesman, was born at Saint Dié, in the Vosges, 1832. Admitted to the Paris bar in 1854, he speedily plunged into the politics of the time, and offered uncompromising opposition to the party of Louis Napoleon; as prime minister in 1880 and again in 1883-85 he inaugurated a spirited colonial policy, which involved France in war in Madagascar, and brought about his own downfall. He was elected to the senate in 1890, and became its president one month before his death. Died, 1893.

Fesch (*fesh*), **Joseph,** cardinal archbishop of Lyons, was born in Ajaccio, 1763. He took holy orders, but became commissary to the revolutionary army of the Alps in Italy. In 1804 he was French ambassador to Rome, and two years later he was appointed successor of Dalberg, prince primate of the confederation of the Rhine. At the approach of the Austrians in 1814, he fled to Rome, where he died in 1839.

Fessenden (*fes'en-den*), **William Pitt,** American statesman, was born in New Hampshire in 1806. He graduated at Bowdoin College in 1823, and was admitted to the bar in 1827. United States senator, 1854-64; secretary of the treasury, 1864-65; and again United States senator, 1865-69. He ranked among the first lawyers of his time, and made a notable reputation before the United States supreme court. Died, 1869.

Fetter, Frank Albert, educator, economist, was born in Peru, Ind., 1863; graduated at Indiana University, 1891; Ph.M., Cornell, 1892; Ph.D.; LL.D.; professor of political economy and finance, Cornell. Author: *Relations Between Rent and Interest; The Principles of Economics.*

Feuerbach (*foi'ĕr-bäk*), **Ludwig Andreas,** German philosopher, was born at Landshut, 1804, and studied at Heidelberg. The leading principle of his philosophy, a naturalistic development of Hegelianism, is that there is no God distinct from nature and man. Died, 1872.

Feuerbach, Paul Johann Anselm von, jurist, father of the preceding, was born at Jena, 1775, where he studied law. He had made a brilliant reputation by his *Kritik des naturlichen Rechts,* and his *Anti-Hobbes.* In 1808-11 he published a great collection of criminal cases. Appointed a judge at Bamberg, 1814, and at Anspach, 1817. He died at Frankfort, 1833.

Feuillet (*fä'ye'*), **Octave,** French novelist, was born at Saint-Lo, in La Manche, 1821. He started his literary career as one of Dumas' assistants, but made his first independent success in the *Revue des Deux Mondes* by a series of tales and romances begun in 1848. In 1862 he was elected a member of the academy, and later became librarian to Louis Napoleon. Died, 1890.

Fichte (*fik'tē*), **Johann Gottlieb,** German philosopher, was born at Rammeau, in upper Lusatia, 1762. In 1794 he was appointed to the chair of philosophy at Jena, where he commenced to expound with extraordinary zeal his system of transcendental idealism. In 1805 he obtained the chair of philosophy at Erlangen, with the privilege of residing at Berlin in the winter. Here he delivered his celebrated lectures *On the Nature of the Scholar.* In 1810 the University was opened with a host of brilliant names, Fichte, Wolff, Muller, Humboldt, De Wette, Schleiermacher, Neander, Klaproth, and Savigny. By the votes of his colleagues Fichte was unanimously elected rector. He died in 1814.

Field, Cyrus West, founder of the Atlantic cable company, was born at Stockbridge, Mass., 1819. Devoting himself entirely to the work of uniting the old and new worlds, he crossed the ocean nearly thirty times in its prosecution; and on the laying of the first cable, 1858, was received by his countrymen with enthusiastic plaudits. He continued his exertions, and on the success of the cable of 1865 received a gold medal at Liverpool and a vote of thanks from the American congress. Died, 1892.

Field, David Dudley, American jurist, was born at Haddam, Conn., 1805, entered Williams College, 1821, studied law, and was admitted to the bar in 1828. He settled in New York, and soon made his way into the front rank of his profession. In 1867 he brought before the British association for social science a proposition to frame an international code. This led to the preparation by him of what was really a complete work on international law, though entitled *Draft Outlines of an International Code.* Died, 1894.

Field, Eugene, American poet and journalist, was born at St. Louis, Mo., 1850. He moved to New England, but was educated later in Missouri. He entered journalism at the age of twenty-three, ten years later becoming editor of the *Sharps and Flats* column of the *Chicago Daily News.* Among his works are: *Culture's Garden; Little Book of Western Verse; With Trumpet and Drum,* etc. He died in 1895.

Field, Marshall, merchant, philanthropist, was born at Conway, Mass., 1835. He was junior partner, 1860-65, then senior partner in house, which became, 1865, Field, Palmer & Leiter. Potter Palmer retired, 1867, and Levi Z. Leiter, 1881, Field becoming head of Marshall Field & Company, now having the largest wholesale and retail dry goods business in the world. Founded, with gift of $1,000,000, the Field Columbian museum of Chicago. Died in 1906, leaving an immense fortune.

Field, Stephen Johnson, American jurist, was born at Haddam, Conn., 1816, son of David Dudley Field. He studied law and took up its practice in California. Chief-justice of California, 1859-63; associate justice of the United States supreme court, 1863-97. Died at Washington, 1899.

Fielding, Henry, famous English novelist, was born near Glastonbury, England, 1707. He was early sent to school at Eton, and afterward to the University of Leyden. On his return from Leyden he commenced writing for the stage, and for ten years was a prolific play-writer. In 1737 he entered as a student of the Middle Temple, and in 1740 was admitted to the bar; but his new profession not proving remunerative he returned to literature, and in his remaining years produced the works with which his name is now principally associated. Chief of these are *Joseph Andrews; The History of Jonathan Wild; Tom Jones;* and *Amelia.* He died in 1754.

Fielding, William Stevens, Canadian statesman and journalist, minister of finance in the Canadian cabinet, was born at Halifax, Nova Scotia, 1848. He was educated at Halifax; D.C.L.; LL.D.; represented city and county of Halifax in the provincial legislature, 1882-96; member of the provincial cabinet a few months after his election, and prime minister, 1884-96. He was a representative of Canada at the colonial conference, London, 1902; one of his majesty's plenipotentiaries for the negotiation of the Franco-Canadian commercial treaty, Paris, 1907. Died, 1929.

Fiesole, Fra Giovanni Da. See **Angelico, Fra.**

Figueras (*fē-gā'rās*), **Estanislao,** Spanish statesman, was born at Barcelona, 1819. On the abdication of King Amadeus in 1873 he became president of the Spanish republic, but resigned soon after. He died in Madrid, 1882.

Fillmore, Millard, American statesman, thirteenth president of the United States, was born in Summerville, N. Y., 1800. Removed to Buffalo, N. Y., 1823, and there found entrance to the bar. He entered congress in 1832. He became comptroller of the state of New York, in 1844, was elected vice-president of the United States in 1848, and succeeded to the presidency on the death of General Taylor in 1850. By signing the act for the surrender of fugitive slaves he brought about the utter defeat of the whig party in 1853. In 1856 he was nominated for the presidency, but received only scanty support. Died, 1874.

Finch, Francis Miles, jurist and poet, was born at Ithaca, N. Y., 1827. He was graduated at Yale, 1849; studied law and entered upon its practice at Ithaca. He assisted materially in the organization of Cornell University, of which he was an original trustee. In 1892 he became dean of the Cornell Law School. Died, 1907.

Finck, Henry Theophilus, author, musical critic of *New York Evening Post,* was born at Bethel, Mo., 1854. He was graduated at Harvard in 1876. Author: *Romantic Love and Personal Beauty; Primitive Love and Love Stories; Songs and Song Writers; Fifty Mastersongs; Edward Grieg,* etc. Died, 1926.

Finegan, Thomas Edward, born West Fulton, New York, 1866; graduate New York State College for Teachers, 1889. Admitted N. Y. bar, 1894; Hamilton, M.A., 1894; Pd.D. State College for Teachers, 1909; Deputy Commissioner of Education of New York, 1917-1919; Supt. of Public Instruction of Pennsylvania, 1919-1923. Reorganized the Pennsylvania school system.

Finlay, George, distinguished English historian, was born at Faversham, Kent, 1799, of Scotch parents. He received a university training at Glasgow and Göttingen; his valuable history, published in various parts, traces the national life of Greece from 146 B. C. to A. D. 1864. Died at Athens, 1875.

Finley, John Huston, educator, was born at Grand Ridge, Ill.; 1863. He was graduated at Knox College, 1887; Ph.D., LL.D. He was secretary of State, Charities aid Organization, New York, 1889-92; president of Knox College, 1892-99; professor of politics, Princeton, 1900-03; president of college of the city of New York 1903. University of State of New York, 1913-1921; editor N. Y. Times since 1921.

Finley, William Wilson, president of Southern railway, was born at Pass Christian, Miss., 1853; chairman of Trans-Missouri traffic association, at Kansas City, 1889-90; chairman of Western passenger association, 1890-92; general traffic manager of Great Northern and Montana Central railroad, 1892-95; second vice-president of Southern railway, 1896-1906; president of same 1906-1913. Died, 1913.

Finney, Charles Grandison, American clergyman and educator, was born in Connecticut, 1792. He began to preach in the Presbyterian church in 1824. In 1835 he became professor of theology at Oberlin College, and from 1851 to 1866 was president of that institution. Died at Oberlin, Ohio, 1875.

Firdausi (*fĕr-dou'sē*), or **Firdusi** (*fĕr-dōō'sē*), pseudonym of Abul Kasim Mansur, the great poet of Persia, born near Tüs, in Khorassan, about 940. He spent thirty years in writing the *Shah Namah*, or *Book of Kings*, a national epic. He died about 1020.

Fischer, Emil, a noted German chemist, was born at Euskirchen, 1852. Educated at Strassburg. Professor at Munich, Erlangen, Würzburg and Berlin respectively. Died, 1919.

Fischer, Ernst Kuno Berthold, German historian of philosophy, was born at Sandewalde, Silesia, 1824. As a student of Erdmann at Halle he was smitten with the love of philosophy, and gave his life to the study of it. In 1856 he was elected to the chair of philosophy in Jena, and sixteen years later was called to Heidelberg as Zeller's successor. His chief work is a *History of Modern Philosophy*. Died, 1907.

Fischer, Louis Albert, physicist, was born at Washington, 1865; B.Sc., Columbian (now George Washington) University, 1884. In office of Weights and Measures, United States Coast and Geodetic Survey, 1891-1901; chief of weights and measures division, Bureau of Standards, with title of association physicist, 1901-1921. Author: *Recomparison of United States Prototype Meter; History of Weights and Measures;* etc. Compiler: *Laws Relating to Weights and Measures in United States;* etc. Died, 1921.

Fish, Hamilton, American diplomat, was born at New York in 1808. He graduated at Columbia in 1827. As secretary of state under Grant from 1869 to 1877, he signed the Washington treaty of 1871, and completed the settlement of the Alabama question. Died, 1893.

Fish, Stuyvesant, banker, railway official, was born in New York, 1851; graduated at Columbia, 1871, A.M., 1874; treasurer and purchasing agent of New Orleans, Jackson and Great Northern Railroad, 1877-82; president Illinois Central Railroad Company, May, 1887, to November, 1906; trustee of New York life insurance and trust company, vice-president and director of National Park bank, and director in other corporations; president of American railway association, 1904-06. Died, 1923.

Fisher, George Park, historian, theologian, professor of divinity, 1854-61, and professor of ecclesiastical history, Yale, 1861-1909, was born at Wrentham, Mass., 1827; graduated from Brown, 1847; LL.D., Yale. He was the author of a number of books on universal and church history. Died, 1909.

Fisher, Harrison, American illustrator, was born in Brooklyn, N. Y., 1875. He was educated in San Francisco, and soon evinced fine capabilities in drawing and illustration. Author: *The Harrison Fisher Book*. Died, 1934.

Fisher, Irving, economist, professor of political economy at Yale since 1898, was born at Saugerties, N. Y., 1867. Studied at Berlin and Paris, 1893-94. Member of many economic and other learned societies. Editor of *Yale Review* 1896-1910; contributor to economic journals. Author: *The Nature of Capital and Income; The Rate of Interest.*

Fisher, John, bishop of Rochester, was born about 1457 at Beverley, Yorkshire, England. In 1483 he entered Michælhouse, now part of Trinity College, Cambridge, of which he became a fellow in 1491, and master in 1497. In 1527 he pronounced firmly against the divorce of Henry VIII.; and, for refusing the oath of succession, was sent with More to the Tower. In May, 1535, Pope Paul III. made him a cardinal; on June 17th the old man, worn by sickness and ill-usage, was tried for denial of the king's supremacy; on the 22d he was beheaded on Tower hill.

Fisher, Sir John Arbuthnot, admiral of the British navy, was born in 1841; commander-in-chief of North American and West Indies station, 1897; commander-in-chief of the Mediterranean, 1899-1902; Portsmouth, 1903; first sea lord, 1904; and admiral of the fleet, 1905. He was a member of the Esher war office committee, 1903. He received the degree LL.D. from Cambridge University. Died, 1920.

Fisher, Sydney Arthur, minister of agriculture, Canada, was born at Montreal, Canada, 1850; graduated at Trinity College, Cambridge, and adopted farming at Knowlton, in eastern townships, province of Quebec; entered parliament of Canada as M. P. for County Brome, 1882.

Fiske, Harrison Grey, editor and proprietor *New York Dramatic Mirror*, was born at Harrison, N. Y., 1861. Was editorial writer and dramatic critic, *Jersey City Argus*, and later on *New York Star;* became contributor to *New York Dramatic Mirror*, 1879, 1883, and became sole proprietor, 1888. He was manager of Mrs. Fiske, Bertha Kalich, and the Manhattan stock company.

Fiske, John, whose original name was Edmund Fiske Green, was born at Hartford, Conn., 1842. He was graduated from Harvard in 1863, and from Harvard law school in 1865. His *Discovery of America* was but one of a long series of important works on American history. His chief works are: *Myths and Mythmakers; Outlines of Cosmic Philosophy; The Destiny of Man; The Idea of God; American Political Ideas,* and *The Critical Period of American History.* Died, 1901.

Fiske, Minnie Maddern, American actress, was born in New Orleans, La., 1865, daughter of Thomas W. and Elizabeth (Maddern) Davey. At fifteen became a star, under the name of Minnie Maddern. Married, 1890, Harrison Grey Fiske, journalist and playright in whose *Hester Crewe*, she returned to the stage; she has starredin various plays. Died, 1932.

Fitch, John, American inventor, was born in Connecticut, 1743. In 1793 he went to France, to find his projects frustrated by the revolution; but it is said that his plans of a steamboat were shown to Robert Fulton. Penniless, Fitch worked his passage back to America, and there poisoned himself, 1798.

Fitch, William Clyde, author and playwright, was born in New York in 1865. He was graduated at Amherst, 1886; A.M., 1902. Author: *The Smart Set; Nathan Hale; Captain Jinks of the Horse Marines; The Cowboy and the Lady; The Climbers; Lover's Lane; The Way of the World; The Girl With the Green Eyes; Her Own Way; The Woman in the Case; Girls,* etc. Died, 1909.

Fitzgerald, Edward, English scholar, was born at Bredfield house in Suffolk, 1809. He entered Trinity College, Cambridge, where he took his degree in 1830. About this time he took up Persian, and in 1856 published an anonymous version of Jami's *Salaman and Absal.* The quatrains of Omar Khayyam were then little known, but Fitzgerald at once recognized their beauty, and his and Omar's names will remain indissolubly linked together through his rendering of them. Died, 1883.

Fitzgerald, Lord Edward, Irish revolutionist, was born in 1763, son of the duke of Leinster. In 1791-92 he visited France, fraternized with the leading republicans, and married the reputed daughter of the Duc d'Orleans and Mme. de Genlis. In 1796 he joined the "society of united Irishmen." Arrested on a charge of high treason, he died in prison, 1798.

Fitzgerald, John Joseph, lawyer, congressman, was born in Brooklyn, N. Y., 1872. He was graduated from Manhattan College, New York; studied law at the New York law school, LL.B., and was admitted to the bar, 1893; member of Congress, 1899. An able and resourceful debater; resigned from Congress to resume practice of law in New York.

Fitzpatrick, Sir Charles, Canadian jurist, chief-justice of Canada and deputy of the governor-general since 1906, was born at Quebec in 1853. He was educated at Quebec seminary; crown-prosecutor for city and district of Quebec, 1879; resigned as provincial member for Quebec county, 1896; and was elected to sit as member for Quebec county in Dominion parliament; solicitor-general, 1901; minister of justice, Dominion of Canada, 1901-06.

Flagg, James Montgomery, American illustrator, was born 1877, at Pelham Manor, N. Y. He studied at the Art Students' League in New York and in Paris. His first accepted drawing appeared in *Life* when he was only fourteen. He is a very fine portrait painter as well as illustrator. His best known work is in charcoal and pen and ink, though he uses all mediums. He has also written and illustrated several volumes of prose and verse.

Flagler, Henry M., capitalist, was born at Canandaigua, N. Y., 1830. Owned Ponce de Leon and Alcazar hotels, Florida, also owned about 600 miles of railroad in Florida. Vice-president and director of Standard Oil Company; director Western Union Telegraph company, Morton Trust company and other corporations. Died, 1913.

Flammarion (*flà-mà-rē-'ôN*), **Camille,** French astronomer, was born at Montigny-le-Roi, 1842. He was educated at Langres, the Paris observatory, and at the Sorbonne, Paris; entered the Paris observatory in 1858. Died, 1925.

Flamsteed (*flam'stēd*), **John,** first astronomer-royal of England, was born at Denby near Derby, 1646. His success in mathematics and astronomy procured for him the appointment of astronomer to the king in 1675. Next year Greenwich observatory was built, and Flamsteed began the observations that mark the rise of modern practical astronomy. Died, 1719.

Flandrin (*flän'dran'*), **Jean Hippolyte,** French painter, was born at Lyons, 1809. In 1832 he won the prix de Rome, and during his five years' residence in Italy produced *St. Clare Healing the Blind*, now in Nantes cathedral. In 1842 he began his great frescoes in the church of St. Germain-des-Près, Paris. After this he was mainly engaged in fresco painting, although he executed many fine portraits. He died at Rome, 1864.

Flaubert (*flō'bâr'*), **Gustave,** French novelist, was born at Rouen, 1821. Flaubert's life was extremely uneventful; in his youth some obscure form of brain-disease to some extent arrested his intellectual development. He was a very late producer, and his works, when they did appear, were marked by a strong and morbid idiosyncrasy. Died, 1880.

Flaxman, John, greatest of English sculptors, was born at York, 1755. At the age of fifteen he became a student in the Royal academy, but never worked in the studio of any master. He was elected an associate of the Royal academy in 1797, royal academician in 1800, and in 1810 was appointed professor of sculpture to that institution. Died, 1826.

Fleming, Sir Sanford, chancellor of Queen's University, Canada, 1880, was born in Scotland in 1827. Moved to Canada in 1845; president of royal society of Canada, 1880-89. Author: *The Intercolonial, a History,* 1832-76; *England and Canada; The New Time Reckoning.* Died in 1915.

Fletcher, Andrew, Scotch patriot and publicist was born in Saltoun, East Lothian, 1655. After some years of travel he sat in the Scottish parliament in 1681, and offered so determined an opposition to the measures of the duke of York that he had to flee to England, and thence to Holland. After the union of Scotland, with England, he retired in disgust from public life, devoting himself to promoting agriculture. He died at London in 1716.

Fletcher, Horace, author, lecturer, was born at Lawrence, Mass., 1849. He devoted his attention to sociology, and especially to scientific research in human nutrition, in chemical-physiological laboratories of University of Cambridge, England and Yale University. Died, 1919.

Fletcher, John, English dramatist, whose name is inseparably associated with that of his friend and co-worker, Francis Beaumont, was born in Northamptonshire, in 1576. The chief piece of his own unaided composition is a dramatic pastoral entitled *The Faithful Shepherdess.* The collaborated plays, such as *The Scornful Lady,* and *Rule a Wife and Have a Wife,* were during two centuries the delight of the stage. Died, 1625.

Fleury (*flû'rē'*), **Andre Hercule de, Cardinal,** French statesman and prelate, was born at Lodève, 1653. He became almoner to Louis XIV., in 1698 bishop of Fréjus, and preceptor to Louis XV., who in 1726 made him prime minister. In the same year he received the cardinal's hat. Died, 1743.

Fleury, Claude, French historian and ecclesiastic, was born at Paris, 1640; was tutor to various princes, prior of Argenteuil, and confessor to young Louis XV. Died, 1723.

Flexner, Simon, American physician, was born at Louisville, Ky., 1863. He graduated at the University of Louisville, M.D., 1889; D.Sc., Harvard, 1906; director of Ayer clinical laboratory, Pennsylvania hospital, 1901; pathologist, University hospital and Philadelphia hospital, 1900, and director of laboratories of Rockefeller Institute for medical research, New York.

Flint, Austin, American physician and medical writer, was born at Petersham, Mass., 1812. After graduation from the medical department of Harvard, he settled to practice in his native state. He was president of the New York academy of medicine, 1872-85. He is the author of a treatise on the diseases of the heart, *Principles and Practice of Medicine,* and *Manual of Auscultation and Percussion.* Died, at New York, 1886.

Flint, Austin, American physician and physiologist, son of preceding, was born in Northampton, Mass., 1836. Graduate of Jefferson medical college, 1857; LL.D., 1885. One of founders and professor of physiology, 1861-98, Bellevue hospital medical college; professor of physiology, Long Island college hospital, 1862-68; Cornell University medical college. Author: *Physiology of Man,* five vols.; *Chemical Examination of the Urine in Disease; Physiological Effects of Severe and Prolonged Muscular Strain.* Died in 1915.

Flint, Robert, British educator and philosophical writer, was born in Dumfriesshire, Scotland, 1838. He was educated at Glasgow University, and became parish minister. Professor of divinity Edinburgh University, 1876-1903. Author: *Christ's Kingdom on Earth; Philosophy of History in Europe; Theism; Anti-Theistic Theories; Historical Philosophy in France; Socialism; Sermons and Addresses; Agnosticism.* Died, 1910.

Flotow (*flō'tō*), **Friedrich, Freiherr von,** German composer, was born at Teutendorf in Mecklenburg, 1812. He studied music under Reicha, in Paris, and made his reputation by *Le Naufrage de la Méduse, Stradella,* and *Martha,* the last two characterized by pleasing melody. From 1856 to 1863 he was director of the theater at Schwerin. He died at Darmstadt, Germany, 1883.

Flourens (*flōō'ràns'*), **Marie Jean Pierre,** French physiologist, was born at Maureilhan, France, 1794. He attracted attention by works on the nervous system, and, after lecturing for Cuvier, 1828-30, became perpetual secretary of the academy of sciences, 1833, professor at the Collège de France, 1855, and member of the academy, 1840. Died, 1867.

Foch, Ferdinand, b. 1851 at Tarbies in the Pyrenees. Educ. Rodez, Saint Etienne, Metz. At St. Etienne he formed religious habits which he has since retained; received military training at Ecole Polytechnique and Ecole de Guerre, afterwards as a teacher in Ecole de Guerre he emphasized the study of handling large bodies of men. Is given credit for a large part in defeating the Germans at the Marne in 1914 by a counter attack, and later holding the important line from Soissons to the coast. In 1918 his appointment to supreme command of allied armies turned the tide for victory for the allies. Died, 1929.

Folk, Joseph Wingate, lawyer, former governor of Missouri, was born in Brownsville, Tenn., 1869. He was graduated at Vanderbilt University, and was admitted to the bar in 1890. He was circuit attorney, St. Louis, 1900-04, and prosecuted numerous bribery cases. From 1905 to 1909 he was governor of Missouri. Died, 1923.

Fontana (*fŏn-tä'nä*), **Domenicho,** celebrated Italian architect, was born on the borders of Lake Como in 1543. He erected the obelisk near St. Peter's, Rome, in 1586, and built the Lateran palace and Vatican library. Other important works were also confided to him by the pope. He died in 1607.

Fontenelle (*fŏNt-nel'*), **Bernard le Bovier de,** eminent French writer, was born at Rouen, 1657. He was a nephew of Corneille, the great tragic poet, and in 1699 was appointed perpetual secretary of the Academy of Sciences. His long life, extending over nearly one hundred years, was filled with literary activities, and, as a man of the world, his brilliant, though somewhat cynical wit, gave him a great reputation among his contemporaries. Died, 1757.

Foote, Andrew Hull, American naval officer, was born in New Haven, Conn., 1806. After the outbreak of the Civil War, he acted with signal credit in the reduction of Forts Henry and Donelson, 1862. In the same year he was promoted to rear-admiral. Died, 1863.

Foraker (*fôr'ä-kẽr*), **Joseph Benson,** lawyer, jurist, United States senator, 1897-1909, was born in 1846, on farm near Rainsboro, Highland county, Ohio. Enlisted July 14, 1862, in the 39th Ohio volunteer infantry, and served to end of war; graduated at Cornell, 1869; admitted to bar and began practice at Cincinnati, 1869; elected governor in 1885 and 1887; delegate-at-large from Ohio to national republican conventions, 1884-1904; in conventions of 1892 and 1896, served as chairman of committee on resolutions, presented name of William McKinley to the conventions of 1896 and 1900. He was elected to the United States senate in 1896, reëlected in 1902, and served until 1909. Died, 1917.

Forbes, Archibald, British war correspondent, special correspondent of the *London Daily News*, was born at Boharm, Manse, Keith, Scotland, 1838. He was for some years in the royal dragoons but in 1870-71 went through the Franco-German war as war correspondent. He lectured in Great Britain, America and Australia, and wrote *Drawn From Life; Glimpses Through the Cannon Smoke; Chinese Gordon; Studi s of War and Peace; Napoleon III.*, etc. Died, 1900.

Forbes-Robertson, Johnston, English actor, was born in London in 1853. He was educated at Charterhouse, London, at Rouen, and at the Royal Academy of Arts. He has been theatrical manager since 1896. He played Romeo, Hamlet, and Macbeth, in a most impressive manner. He was the chief support of Mrs. Patrick Campbell in her tour of the United States.

Ford, Henry (1863—), auto manufacturer, has only a district school education, learned machinist's trade in Detroit. Designed practical automobile and organized Ford Motor Company, 1903, which grew phenomenally, and is now the largest plant in the world. Organized peace expedition, to end world war, 1915; expedition failed. Builder Ford Hospital, Detroit.

Ford, John, English dramatist, was born in Devon, 1586, studied at Exeter College, Oxford, and entered in 1602 the Middle Temple. His first work was an elegy on the earl of Devonshire entitled *Fame's Memorial*. Among those following were: *The Lover's Melancholy; The Fancies Chaste and Noble*, and *The Lady's Trial*. His two great tragedies, *'Tis Pity* and *the Broken Heart*, are not far inferior to Webster's masterpieces. Died, 1639.

Ford, Paul Leicester, American author, was born in Brooklyn, N. Y., 1865. He was educated privately, and early devoted himself to literature. Author: *The Honorable Peter Stirling; The True George Washington; The Many Sided Franklin; Janice Meredith; Wanted: A Chaperon*, etc. Died at New York, 1902.

Forgan, James Berwick, financier, late president of First national bank, Chicago, was born at St. Andrews, Scotland, 1852. He was educated at Madras College and Forres academy, Scotland. About 1888 he became cashier and manager of the Northwestern national bank; came to First national bank, Chicago, as vice-president, 1892. He succeeded Lyman J. Gage as president of the latter. Died in 1924.

Forrest, Edwin, celebrated American acter, was born in Philadelphia, Pa., 1806. He went on the stage at fourteen, and finally made his way to New York, where his rendering of Othello, at the age of twenty raised him to the front rank among actors. After his final appearance on the stage in 1871 he continued for a short time to give Shakespearean readings. He left a splendid library exceedingly rich in Shakespearean literature, which was destroyed by fire in 1873. Died 1872.

Forster, John, English political and historical writer, was born at Newcastle, 1812. He was educated for the bar, but in 1832 became the dramatic critic of the *True Sun*. He edited successively the *Foreign Quarterly Review*, the *Daily News* and the *Examiner*. He was the author of many admirable biographical and historical essays. He died in 1876.

Forster, William Edward, English statesman, was born of Quaker parentage at Bradpole, Dorsetshire, 1818. In 1861 he entered parliament for Bradford. In 1870 he accepted a seat in the cabinet, and carried the elementary education bill; in 1872 he piloted the ballot bill through the commons. Under the Gladstone administration of 1880 Forster was chief-secretary for Ireland in troublous times. He was attacked unceasingly in parliament by the Irish members, and his life was threatened by the "invincibles." A strong opponent of home rule, he died in London, 1886.

Forsyth (*fôr-sĭth'*), **John,** American statesman, was born in Virginia, 1780. He practiced law in Georgia, was elected attorney-general of that state in 1808, and sat in congress from 1813 to 1818, when he became United States senator. In 1834 he resigned and served as secretary of state under Jackson and his successor, Van Buren, until he died in 1841.

Fortescue (*fôr'tes-kū*), **Sir John,** English jurist, was born in Somerset about 1394, and educated at Exeter College, Oxford. He accompanied Margaret of Anjou and her son into Scotland, and there was probably appointed lord chancellor by Henry VI. In 1463 he embarked with them for Holland, and during his exile wrote his celebrated *De Laudibus Legum Angliae* for the instruction of Prince Edward. Died, 1476.

Fortier, Alcee, university professor, was born at St. James Parish, La., 1856; was educated at the University of Virginia and in Paris; Litt.D., Washington and Lee, and Laval University. Professor of romance languages, Tulane University of Louisiana, since 1880. Author: *Le Chateau de Chambord; Bits of Louisiana Folk-Lore; Histoire de la Littérature Française; Louisiana Studies; Louisiana Folk Tales; History of Louisiana; History of Mexico;* etc. Editor of a number of French texts for colleges. Died, 1914.

Fortuny (*fôr-tōō'nē*), **Mariano,** Spanish painter, was born at Reus in Tarragona, 1839. When Spain declared war against Morocco, Fortuny followed the army, and filled his portfolios with studies of eastern life. He died at Rome in 1874.

Foscari (*fos'kä-rē*), **Francesco,** was born about 1372. He was named procurator to St. Mark's at Venice in 1415, and became doge of that city in 1423. He was forced to abdicate in 1457. He survived his loss of power but two days. Died, 1457.

Fosdick, Harry Emerson, clergyman and religious writer, was born at Buffalo, N. Y., 1878. Educated at Colgate University and Union Theological Seminary. Became Baptist minister at Montclair. In 1908 removed to New York to be pastor of the First Presbyterian Church and to teach practical theology at the Seminary. Among his writings are *The Meaning of Faith, The Meaning of Prayer*, and *Twelve Tests of Character*.

Foster, George Eulas, member of the privy council of Canada; general manager of the Union Trust company, ltd., was born in New Brunswick, Canada, 1847; educated at the University of New Brunswick, Edinburgh University, and Heidelberg; became minister of marine in Sir John A. Macdonald's government, 1885; finance minister, 1888, in same ministry.

Foster, John Watson, lawyer, diplomat, was born in Pike county, Ind., 1836. He was graduated from Indiana University, 1855; student one year at Harvard Law School; LL.D., Princeton. Entered the Union army in 1861 as major of the 25th Indiana volunteers, and was promoted to lieutenant-colonel and colonel in Indiana regiments, and brevetted brigadier-general. Established, 1881, in practice in international cases in Washington, representing foreign legations before commissions, arbitration boards, etc. Minister to Spain, 1883-85; invited by emperor of China and participated in peace negotiations with Japan; agent for United States Alaskan boundary tribunal, London, 1903. Author: *A Century of American Diplomacy, American Diplomacy in the Orient; Arbitration and the Hague*. Died, 1917.

Foster, Sir Michael, English physiologist, was born at Huntington, 1836; practiced there, 1860-66; in 1870 became lecturer on physiology at Trinity College, Cambridge, and was professor of physiology in the university, 1883-1903. His best known work is his *Text-Book of Physiology*. He died in 1907.

Foster, Stephen Collins, American song writer, was born in Pittsburg, Pa., 1826. He first wrote negro melodies, *Old Uncle Ned*, and *Oh, Susanna*, which immediately gained a wide popularity. *Nelly Bly, My Old Kentucky Home*, and *O Boys, Carry me 'Long*, were just as popular. He died in New York, 1864.

Foucault (*fōō'kō*), **Jean Bernard Leon,** French physicist, was born at Paris, 1819. He demonstrated the rotation of the earth by means of a graduated disk, invented the gyroscope and introduced physics into the study of astronomy. Died, 1868.

Fouche (*fōō'shā'*), **Joseph,** duke of Otranto, French revolutionist and statesman, was born at Nantes in 1763. In 1792 he obtained a seat in the national convention, and on the trial of Louis XVI. voted for death without appeal. At a later period he became Napoleon Bonaparte's minister of police, and in 1809 was created duke of Otranto. Subsequently, Bonaparte having returned from Elba, Fouché again became minister of police. He advised Bonaparte to abdicate after the battle of Waterloo, was placed at the head of the provisional government by the chambers and negotiated with the allies. Died, 1820.

Foulke (*fōlk*), **William Dudley,** author, publicist, was born in New York, 1848. He was graduated from Columbia, 1869, and Columbia Law School, 1871. Removed to Indiana, 1876. United States civil service commissioner, 1901-03. Author: *Slav or Saxon; Life of Oliver P. Morton; Maya, a Story of Yucatan; Protean Papers;* frequent contributor to magazines on history and other subjects. Died, 1935.

Fouque (*fōō'kā'*), **Friedrich Heinrich Karl de la Motte,** famous German novelist and poet, was born in Brandenburg, 1777. He died in Berlin, 1843.

Fourier (*fōō'rē-ā'*), **Francois Charles Marie,** famous French socialist, was born in Besancon, 1772. In 1808 he disseminated his peculiar views on socialism by the publication of a work entitled *A Theory of Four Movements and General Destinies*, which in 1822 was reproduced in a completed form under the name of *A Treatise on Domestic and Agricultural Association*. Died, 1837.

Fourier, Jean Baptiste Joseph, baron, celebrated French geometrician, was born at Auxerre in 1768. In 1802 he was appointed prefect of the Isère, and in 1815 of the Rhône. Being afterward displaced, he gave himself up entirely to scientific studies; was admitted in 1817 a member of the academy of sciences. His chief works are *Annales de Physique, theorie de la Chaleur*, and the *'Analyse des Equations Déterminées*. He died in 1830.

Fox, Charles James, English statesman, was born in Westminster, 1749. He was educated at Eton and at Hertford College, Oxford, entered parliament at the age of nineteen as member for Midhurst. In 1782 he became secretary of state under Lord Rockingham, but on the latter's death, in the same year, refused to serve under Lord Shelburne. When his great rival, Pitt, formed his last administration, he wished Fox to join it, but the king gave a steady refusal. On Pitt's death, in 1806, the king was at last obliged to admit him to office, and Fox became foreign secretary in Grenville's ministry. His last motion in parliament was directed against the slave trade, and he died at Chiswick in 1806, a few months before the measure founded upon it passed into law. He was the first orator of his time.

Fox, George, founder of the society of Friends, was born in County Leicester, England, 1624. Early adopting the peculiar tenets and manners known as Quakerism, he suffered for many years continual persecution. His leading doctrines or convictions were the futility of learning for the work of the ministry, the presence of Christ in the heart as the "inner light" and the necessity of trying men's opinions and religious by the Holy Spirit, and not by the scriptures. He died in London, 1691.

Fox, John, English martyrologist, was born at Boston, in Lincolnshire, 1517. At sixteen he entered Brasenose College, Oxford, and was a fellow of Magdalen, 1538-45. On Queen Elizabeth's accession he was pensioned by his old pupil the duke of Norfolk, and received a prebend of Salisbury cathedral, 1563. He published numerous books, but the one upon which his fame rests is popularly known as *Foxe's Book of Martyrs*. Died, 1587.

Fox, John, Jr., American novelist, was born in Kentucky, 1863, and was graduated from Harvard in 1883. After some experience in journalism, he traveled in Southern states and California, and afterward engaged in business at Cumberland Gap, where he had ample opportunity for the study of mountain life. Died, 1919.

Fragonard (*frä-gō-närʹ*), **Jean Honore,** French painter, was born at Grasse, 1732, and gained the prix de Rome in 1752. In 1765 he received 2,400 francs, from Louis XV. for his *Callirrhoe*, commissioned for reproduction in Gobelins tapestry. Died, 1806.

France (*frăns*), **Jacques Anatole Thibault,** French author, member of French academy, was born in Paris, 1844, and educated at Collège Stanislaus. Author: *Le Crime de Sylvester Bonnard; L'Etus de Nacre; La Vie Littéraire; Le Mannequin d'Osier; Vie de Jeanne d'Arc*, etc. Died, 1924.

Francia (*frän'se-ä*), **Jose Gaspar Rodriguez,** dictator of Paraguay, was born near Asuncion, about 1757. Though politically despotic, he improved agriculture, promoted education, repressed superstition and enforced strict justice in his law

courts, however little he regarded it for himself. Died, 1840.

Francis I., king of France, was born at Cognac, France, 1494, and became king in 1515. His first act was to reconquer Milan. His reign is marked by the French renaissance, the beginning of the Protestant reformation, and the strengthening of the power of the monarchy. He fostered learning and art, invited painters and scholars to his kingdom, founded libraries, opened schools and built several of the finest palaces in France; but his persecution of the Vaudois has left a stain on his memory. He died in 1547.

Francis I., emperor of Germany, was born in 1708, eldest son of Leopold, duke of Lorraine. On the death of his father, 1729, Francis succeeded him in the dukedom, which in 1735, he ceded to Stanislaus Leszcynski, father-in-law of Louis XV., to revert after his death to the crown of France. Francis died at Innsbruck, 1765. His son Joseph succeeded him.

Francis II., emperor of Germany, and I. of Austria, was born at Florence, Italy, 1768, and succeeded his father, Leopold II., in 1792. His reign was a series of wars against Napoleon, in which, with the exception of the last, he was beaten. In 1806 he formally abdicated the crown of the holy Roman empire. He died at Vienna, 1835.

Francis Ferdinand of Austria, archduke, son of the late Archduke Charles Louis, by his second marriage with the Princess Maria Annonciata, daughter of Ferdinand II., king of the Two Sicilies, was born at Gratz, 1863. His murder in Bosnia, June, 1914, was the signal for the opening of the European war. The heirship of the thrones of Austria and Hungary then fell to Charles Francis Joseph.

Francis Joseph Charles, emperor of Austria and king of Hungary, was born in 1830, son of the Archduke Francis Charles, and grandson of the Emperor Francis I., and nephew of the Emperor Ferdinand I. He took part in the campaign against the Hungarians, and was present at the capture of Raab in June, 1849. Restored to the mastery of his dominions, he proceeded to undo the work of 1848. A dispute between Austria and Prussia as to Schleswig-Holstein led to war between the two nations in 1866. In this war the Austrians were completely defeated, and were compelled to accept the North German confederation under the leadership of Prussia, and to give up Venice to Italy. After these disasters the emperor restored national self-government to Hungary, and in June, 1877, was declared king of that country. By the suicide of Crown Prince Rudolph in 1889, Archduke Francis Ferdinand, the emperor's nephew, became heir. The murder of the archduke and his wife in Bosnia, June 28, 1914, precipitated the great European war. Francis Joseph died November, 1916, after reigning 68 years. The crown fell to his grand-nephew, Charles Francis Joseph, of Austria.

Francis, Charles Spencer, journalist, diplomat, was born in Troy, N. Y., 1853; graduated from Cornell University, 1877. On his father's death, 1897, succeeded to editorial direction and sole ownership of *Troy Times*; regent of University of the State of New York, 1903-06. United States minister to Greece, Roumania, and Servia, 1900-02; ambassador to Austria-Hungary. Died, 1911.

Francis, David Rowland, merchant, ex-governor of Missouri, was born at Richmond, Ky., 1850. He was graduated at Washington University 1870; LL.D.; in 1877 established what became Francis, Brother and Co., and D. R. Francis and Brother Commission company, grain merchants, of which he is president. Mayor of St. Louis, 1885-89; governor of Missouri, 1889-93; secretary of the interior, United States, 1896-97. Died, 1927.

Francis, Sir Phillip, reputed author of the *Junius Letters*, was born in Dublin, 1740. Leaving Ireland at twelve, he entered St. Paul's school in London, and at sixteen became a junior clerk in the secretary of state's office. In 1816 John Taylor wrote a book identifying Francis with *Junius*, but Francis never acknowledged having written the seventy letters, which appeared in the *Public Advertiser*, 1772. He died in 1818.

Francis de Sales (*frăn'sis de sāl*), **Saint,** an eminent theologian, orator, and writer, bishop of Geneva, was born at Sales, near Geneva, 1567, died in 1622, and was canonized in 1665. He was a Savoyard, coadjutor bishop, 1599; bishop of Geneva, 1602; and cofounder of the order of the Visitation, 1610.

Francis of Assisi, founder of the Franciscan order, one of the most extraordinary men of his age, was born 1182. His baptismal name was John; but from his familiarity with the Romance, or language of the troubadours, in his youth, he acquired the name of *Il Francesco*, "The little Frenchman."

He engaged eagerly in exercises of chivalry and of arms; and in one of the petty feuds of the time he was taken prisoner and detained for a year in captivity at Perugia. An illness which he there contracted turned his thoughts from earth; and although he again engaged in military pursuits, a second illness, at Spoleto, decided his career for life. He resolved to fulfill literally the counsels of the gospel, and he especially devoted himself to poverty. His father having in vain confined him in a dark room of his own house, cited him before magistrates, and, on Francis' declining all civil jurisdiction in such a case, before the bishop, in order to compel him to renounce his inheritance. Francis abandoned all, even to the very clothes he wore. This was in his 26th year, in 1208.

His enthusiasm by degrees excited emulation. Two of his fellow-townsmen, Bernard Quintavelle and Peter Cattano, were his first associates. They were followed, although slowly, by others; and it was not until 1210 that, for his brotherhood, now increased to eleven in number, he drew up a rule, selected in the true spirit of religious enthusiasm, by thrice opening at random the gospels upon the altar, and taking the passages thus indicated as the basis of the young institute. In common with the older forms of monastic life, the Franciscan institute is founded on the three vows of chastity, poverty, and obedience; but of these the second was, in the eyes of Francis, the first in importance and in spiritual efficacy.

Numbers now crowded to the standard of Francis and he sent them off in parties to different provinces of Italy. Five of the brotherhood repaired to Morocco to preach to the Moors, and, as the first martyrs of the order, fell victims to their holy daring. Success removed all the hesitation with which the institute at first was regarded, and in 1216 the order was solemnly approved by Pope Innocent. From this date it increased with extraordinary rapidity. At the first general assembly, held in 1219, 5,000 members were present. Francis himself inaugurated the future missionary character of his brotherhood by going (1223) to the East, and preaching the gospel in the presence of the sultan himself. It is after his return to Italy that his biographers place the celebrated legend, which, to friends or to enemies, has so long been a subject of veneration or of ridicule—his receiving, while in an ecstasy of prayer, the marks (*stigmata*) upon his own person of the wounds of our divine redeemer. Francis died in 1226.

References.—*Lives* by St. Bonaventura, Hase, Paul Sabatier, Mrs. Oliphant, Alemany, and Chérancé. Also Butler's *Lives of the Saints*; Milman's *History of Latin Christianity*; *Francis and Dominic*, by Professor Herkless; and Carmichael's *The Lady of Poverty*.

Francis of Paola (*pou'lä*), **Saint,** founder of the Minims, was born in 1416 at Paola in Calabria. At thirteen he was a Franciscan; and at nineteen he retired to a cave and inflicted on himself every species of self-mortification. He died at Plessis on Good Friday, 1507; and was canonized in 1519.

Francis Xavier, Saint. See **Xavier.**

Francke (*frăng'kē*), **Kuno,** educator, literary critic, curator of Germanic museum, Harvard University, was born at Kiel, Germany, 1855; graduated gymnasium, Kiel, 1873; Ph.D., University of Munich, 1878; LL.D., University of Wisconsin, 1904.

Frank, Glenn, university president, writer, lecturer, was born in Queens City, Mo., 1887. Graduated from Northwestern University, 1912; LL.D., 1926. Associate editor, *Century Magazine*, 1919-21, editor-in-chief, 1921-25. President of University of Wisconsin 1925——.

Frank, Henry, lecturer, author, was born at Lafayette, Ind., 1854; graduated from Phillips academy, Andover, Mass., 1874; founded, 1897, and since pastor of Metropolitan Independent church, Carnegie lyceum, New York. Actively engaged in social reform, and ethical forward movements. Associate editor of *Metaphysical Magazine*, 1901-02. Author: *Skeleton and the Rose*; *His Bold Experiment* (a sociological novel).

Frankland, Percy Faraday, English chemist, professor of chemistry, the university, Birmingham, since 1900, was born at London, 1858. He was educated at University college school, London, president of the institute of chemistry, 1906; member of council of Royal society, 1903.

Franklin, Benjamin, American writer and statesman, was born at Boston, 1706, died at Philadelphia, 1790. He was placed with his brother, a printer, to serve an apprenticeship to that trade, and his brother having started the *New England Courant*, Franklin secretly wrote some pieces for it and had the satisfaction to find them well received. But, on this coming to the knowledge of his brother, he was severely lectured for his presumption, and treated with great harshness. Soon after he quitted his brother's employment, and at the age of seventeen started for Philadelphia, where he obtained employment as a compositor.

Here he attracted the notice of Sir William Keith, the governor of Pennsylvania, who induced him to go to England for the purpose of purchasing types to establish himself in business. He got work in a printing office, and after a residence of eighteen months in London returned to Philadelphia. He again returned to his trade, and in a short time formed a partnership for the publication of a newspaper, which was managed with such ability that Franklin acquired much reputation. By his exertions, a public library, improved systems of education, a scheme of insurance, etc., were established in Philadelphia.

In 1732 he published his *Poor Richard's Almanack*, which continued to be issued till 1757. In 1746 he saw, for the first time, some experiments in electricity, which led him to begin those investigations which resulted in the identification of lightning and electricity, and the invention of the lightning conductor. As member of the provincial assembly of Pennsylvania he showed himself very active, and in 1757 he was sent to England as the agent of the province. His reputation was now such, both at home and abroad, that he was appointed agent of the provinces of Massachusetts, Maryland, and Georgia. Oxford and Edinburgh conferred on him their highest academical degrees, and the Royal society elected him a fellow.

In 1762 he returned to America; but was again appointed agent in 1764, and brought to England a remonstrance against the project of taxing the colonies. He opposed the stamp act, and in 1774 presented to the king the petition of the first American Congress. On his return he was elected member of the Congress, and exerted all his influence in favor of the Declaration of Independence. In 1776 he was sent to France as commissioner plenipotentiary, to obtain supplies from that court. After the surrender of Burgoyne he concluded with France the first treaty of the United States with a foreign power (1778), and was subsequently named one of the commissioners for negotiating peace with the mother country. On his return to his native country he filled the office of governor of Pennsylvania, served as a delegate in the Federal convention of 1787, and approved the constitution then formed. His works include his unfinished *Autobiography* and a great number of political, anti-slavery, financial, economic, and scientific papers.

References.—See *Lives of Franklin* by Sparks, Parton, and Morse. Also McMaster's *Benjamin Franklin as a Man of Letters*; Ford, *The Many-Sided Franklin*; Fisher, *The True Benjamin Franklin*; Hale, *Franklin in France*; and MacDonald, *Some Account of Franklin's Later Life, Principally in Relation to the History of His Times.*

Franklin, Sir John (1786-1847), arctic explorer, commanded expedition in 1845 for discovery of northwest passage. Expedition searching for the missing boats found only relics and skeletons, the men having perished by starvation and exposure in 1847.

Franklin, William Suddards, educator, electrician, was born in Geary City, Kan., 1863. He was graduated at the University of Kansas, 1887; M.S., 1888; professor of physics and electrical engineering, Iowa State College, 1892-97; Lehigh University, 1897-1903; professor of physics, Lehigh, 1903-1915; Died, 1930.

Franz (*frănts*), **Robert,** German composer, was born, lived, and died at Halle, 1815-92. Franz's best songs rank with those of Schubert and Schumann. His published works first appeared in 1843.

Franzen (*frăn-sān'*), **Frans Michael,** Swedish poet, was born in Uleaborg, Finland, 1772. After the conquest of Finland, he settled in Sweden as a clergyman, finally removing to Stockholm where he was made bishop. He wrote: *Emili, or an Evening in Lapland*; *Columbus*; *Gustav Adolf in Germany*. Died, 1847.

Franzos (*frăn'tsōs*), **Karl Emil,** Austrian novelist, was born in Russian Podolia of Jewish parentage, 1848. Among his principal works are *Aus Halbasien*, sketches of South Russia and Roumania, and the novel *Junge Liebe*. Died, 1904.

Fraser, Alexander Campbell, British author and educator, professor emeritus of logic and metaphysics in Edinburgh University, was born at Ardchattan manse, County Argyll, 1819. D.C.L., Oxford; LL.D., Princeton; Litt.D., Dublin. Author: *Essays in Philosophy*; *Essays, Philosophical and Miscellaneous*; *Collected Works of Bishop Berkeley*, annotated. Died, 1914.

Fraunhofer (*froun'hō-fĕr*), **Joseph von,** German optician, was born at Straubing in Bavaria, 1787. In 1807 he was employed to found an optical institute at Benediktbeuern, which, under his management, was in 1819 removed to Munich. He is most celebrated for his improvements in telescope prisms and in the mechanism for manipulating large telescopes, and above all for his discovery of the dark lines in the sun's spectrum. Died, 1826.

Frederick I., called Barbarossa or Redbeard, was born about 1121, and became emperor of Germany in 1152. At home he managed his vassals by a system of conciliation, and by keeping the balance of power among them equal. He asserted his power, moreover, over Poland, Hungary, Denmark, and Burgundy. At the height of his fame and influence, he took the cross to fight against Saladin. He defeated the Mohammedans in two battles, but was himself drowned in Pisidia, 1190.

Frederick II., of Germany, son of Emperor Henry VI., was born at Jesi near Ancona, 1194. In his fourth year his father died, leaving him king of Sicily. When eighteen he wrested the imperial crown from Otto IV., and was crowned in 1215. During his reign he was engaged in a harassing contest with the pope, whose hands were strengthened by the accession of the revolted Lombard cities and of several princes and towns of Germany, headed by his son, Henry. Disaster and misfortune were gathering around him, when he died at Fiorentino in 1250.

Frederick II. of Prussia, commonly called *Frederick the Great,* was born, 1712, and began to reign in 1740. He found himself in possession of a full treasury and a powerful army, which he soon employed in attacking Austria, and conquering the province of Silesia (1740-1742). In 1744 he engaged in a second war with Austria, which was terminated in 1745, and left him in possession of Silesia, but with no augmentation of power, though his military renown was raised throughout Europe.

The great struggle of the Seven Years' War began in 1756. Prussia was now attacked by the Austrians, the Russians, the French, the Saxons, and the Swedes, and its destruction and dismemberment seemed inevitable. England was Prussia's only ally; but the country went through the struggle and came out triumphant. When the peace of Hubertsburg was concluded in 1763, Prussia did not cede an inch of land or pay a dollar of money; and from that time forth was recognized as one of the five great powers of Europe. For this glorious result it was indebted to Frederick.

It is not merely the military genius of Frederick, as displayed during the sanguinary campaigns of the Seven Years' War, that demands our attention, but we must also admire his moral courage and his indomitable energy under reverses which would have crushed almost any other spirit. Though victorious at Prague, at Rosbach, and Lissa (1757), at Zorndorf (1758), at Liegnitz and Torgau (1760), he suffered heavy defeats at Collin (1757), at Hochkirchen (1758), at Kunnersdorf (1759); and his lieutenants, with the exception of Prince Ferdinand of Brunswick, were generally unsuccessful. But Frederick's firmness never failed him, even when all hope seemed lost. In a period of extreme danger, he wrote to Voltaire (who had advised him to beg mercy from his enemies), "I am a man, and therefore born to suffer. To the rigor of destiny I oppose my own constancy. Menaced with shipwreck, I will bear the storm; I will be king in spirit; and I will die, as I have lived, a king."

After the conclusion of the war Frederick exerted himself earnestly in relieving the suffering which so many years of carnage and devastation had brought upon Prussia. He died in 1786. He was fond of the society of literary men, and was himself an author of many works of considerable merit. During his struggles against Austria and France Frederick was regarded in England and America as the champion of Protestantism, and he was called a second Gustavus Adolphus. He ill deserved the title. The disciple of Voltaire, he is supposed to have had no religious faith whatever.

References.—Carlyle's *History of Frederick II.* Droysen's *Friedrich der Grosse*; Kugler's *Hist. of Frederick the Great*; Longman's *Frederick the Great and the Seven Years' War*; and Reddaway's *Frederick the Great.*

Frederick III., eighth king of Prussia and emperor of Germany, son of William I., was born near Potsdam, 1831. After arousing the world's best expectations by his goodness and wisdom no less than by his bravery, he ascended the throne in 1888, during his last illness, in which he suffered as heroically as he had fought. He died when fifty-seven years old, 1888. He was succeeded by his son, William II.

Frederick VI., king of Denmark, son of Christian VII. and the princess Caroline Matilda, was born in 1768. Frederick ascended the throne on the death of his father in 1808. In 1814 he was robbed of Norway, and was at last compelled to send a contingent of 10,000 men against the French. The country had become bankrupt in 1813, but by his wise measures financial order was finally restored. Died, 1839.

Frederick Charles, prince and field-marshal of Germany, was born in Berlin, 1828. He was the eldest son of Prince Charles, brother of Emperor William I. He was known as "the red prince" from the fact that he always wore a red hussar uniform. His daughter, Louise Margaret, married the duke of Connaught, son of Queen Victoria, in 1879. Died, 1885.

Frederick William, the great elector of Brandenburg, was born in 1620. On his accession in 1640 he found the state disorganized, exhausted and devastated by the Thirty Years' war. He strenuously regulated the finances, made a treaty of neutrality with Sweden, organized his army, and strove to repeople his deserted towns and villages. By the treaty of Westphalia, 1648, he recovered eastern Pomerania, Halberstadt, and Minden, with the reversion of the archbishopric of Magdeburg; and out of a quarrel between Sweden and Poland he contrived to secure the independence of the duchy of Prussia from Poland, 1657. He founded the royal library at Berlin, reörganized the universities, opened canals, established posts and greatly enlarged Berlin. He left a well-filled exchequer and a highly organized army. He made Brandenburg virtually an absolute monarchy, only less powerful than Austria. He died at Potsdam in 1688, and his son became King Frederick I. of Prussia.

Frederick William I., king of Prussia, son of Frederick I., was born 1688, and on his accession in 1713 became embroiled in the war waged by Sweden against Russia, Poland, and Denmark, at the end of which he acquired Pomerania with Stettin. The remainder of his reign was devoted to improving the internal condition of Prussia. He was sternly practical, blunt, and determined; he despised the arts and sciences, was rigidly economical and strict in his ideas of justice. At his death in 1740 he left a treasure of $5,750,000, and an army of more than 80,000 men, the best disciplined force in Europe, which made Prussia fourth in military power.

Frederick William II., king of Prussia, nephew of Frederick the Great, was born in 1744. The abolition of some of his predecessor's oppressive measures made him very popular at his accession in 1786. He acquired large areas of Polish Prussia and Silesia by the partitions of Poland in 1793 and 1795, as also Ansbach and Baireuth. He died in 1797.

Frederick William III., of Prussia, son of Frederick William II., was born in 1770. He was more than once embroiled with the pope on account of his violation of the concordat. He concluded the great German commercial league known as the *Zollverein,* which organized the German customs and duties in accordance with one uniform system. Died, 1840.

Freeman, Edward Augustus, eminent English historian, was born at Harborne, England, 1823. He was educated at Trinity College, Oxford. He wrote histories of the Saracens and of the Ottoman power in Europe; *General Sketch of European History*; *Growth of the English Constitution*; *Comparative Politics*; *Historical Geography of Europe*; *William the Conqueror*; and various other works. In 1884 he was appointed regius professor of modern history at Oxford. Died, 1892.

Freeman, John Ripley, civil and mechanical engineer, was born in West Bridgeton, Me., 1855; graduated at the Massachusetts institute of technology, 1876; honorary Sc.D.; chief engineer investigations Charles river dam, Boston harbor, 1903; engineer member of Massachusetts metropolitan water board, 1895-96. Consulting engineer to New York board of water supply since 1905; consulting engineer isthmian canal locks and dams, 1907.

Freeman, Mary E. Wilkins, author, was born at Randolph, Mass., 1862. She was educated there and at Mt. Holyoke seminary, 1874; came into prominence as a writer for magazines, poems, short stories, etc.; married Dr. Charles M. Freeman, 1902. Author: *A Humble Romance*; *Evelina's Garden*; *The Love of Parson Lord*; *By the Light of the Soul*; *Yates Pride.* Died, 1930.

Freiligrath (*frī'lĭg-rät*), **Ferdinand,** German poet, was born at Detmold, 1810, and was led by the success of a volume of poems published in 1838 to desert commerce for literature. Chief among his political poems are *Ca Ira,* and *Neuere Politische und Soziale Gedichte.* He translated Longfellow, Shakespeare, etc. His collected works appeared in 1870. Died 1876.

Frelinghuysen (*frĕ'ling-hī-zen*), **Frederick,** American statesman, was born in New Jersey, 1753. He raised a corps of artillery, fought in the Revolutionary war, was a member of the continental congress in 1778 and 1782-83, and a United States senator in 1793-96. He died in 1804.

Frelinghuysen, Frederick Theodore, nephew of above, was born in New Jersey, 1817. From 1866 to 1869 he served as United States senator. He was a member of the Hayes-Tilden electoral commission. In 1881 he became secretary of state in President Arthur's cabinet, and held office until his death in 1885.

Frelinghuysen, Theodore, son of Frederick, was born in New Jersey in 1787. He studied law, practiced in New Jersey. In 1829 he was chosen United States senator, and served until 1835. Afterward he was mayor of Newark, and in 1839 became chancellor of the University of New York. In 1850 he became president of Rutgers College, which position he held until his death in 1862.

Fremiet (*frā-mye'*), **Emmanuel,** noted French sculptor, was born at Paris, 1824. He studied at La Petite Ecole, and under Rude; made drawings at the Jardin des Plantes, and later drew plates for medical works. Died, 1910.

Fremont (*frē-mont'*), **John Charles,** explorer of the Rocky mountains, was born at Savannah, Ga., 1813. In 1842 he crossed the Rocky mountains, and demonstrated the feasibility of an overland route across the continent. During the Mexican war he cleared northern California of Mexican troops. In 1849 he settled in California; was United States Senator, 1850-1; and first Republican candidate for President in 1856. In 1861-62 he served in the regular army as major-general. He was governor of Arizona in 1878-82 and died in New York, 1890.

French, Alice, author, better known as Octave Thanet, was born at Andover, Mass., 1850, daughter of Hon. George Henry French. She was educated at Abbot academy there, but her life since then has been spent in the South and West. Author of *Man of the Hour, The Heart of Toil,* etc.

French, Daniel Chester, American sculptor, was born at Exeter, N. H., 1850. He was educated in Exeter, N. H., and Massachusetts institute of technology, Boston, one year; A.M., Dartmouth College; studied art with William Rimmer in Boston, and with Thomas Ball in Florence, Italy; occupied a studio in Washington, 1876-78; in Boston and Concord, Mass., 1878-87; and in New York, 1887-1900. Among his best-known works are: *The Minute Man of Concord,* at Concord, Mass. *John Harvard.* Died, 1931.

Freneau (*frē-nō'*), **Philip,** American poet, was born in New York City, 1752. After the return of peace Freneau became in succession editor of a newspaper, and captain of a ship. In 1790 he edited the New York *Daily Advertiser.* From that time until his death he rarely came before the public. Died, 1832.

Frere (*frâr*), **Pierre Edouard,** French painter, was born at Paris, 1819. He studied under Delaroche. His paintings are mostly figures and scenes from domestic life. He died at Ecouen, 1886.

Fresenius (*frā-zā'nē-ŏŏs*), **Karl Remigius,** noted German chemist, was born in 1818. He studied at Bonn and Giessen under Liebig, and in 1845 became professor of chemistry at Wiesbaden. Died, 1897.

Fresnel (*frā-nel'*), **Jean Augustin,** eminent French physicist, was born at Broglie, Eure, France, 1788. He was educated at the polytechnic school in Paris, and in 1816 received a permanent appointment there through the celebrated Arago. He invented the compound lighthouse lens. He died in 1827.

Freud, Sigmund, Austrian psychiatrist and founder of psychoanalysis, was born at Freiberg in 1856. He was educated at the University of Vienna and became assistant professor of neuropathology at that institution. He became widely celebrated for his method of treating nervous diseases through the "sub-conscious," formulating a unique theory of the significance of dreams. He visited the United States in 1909. His books include *Studies on Hysteria, Interpretation of Dreams,* and *The Introduction to Psychoanalysis.*

Freund (*froint*), **Wilhelm,** German philologist, was born of Jewish parents at Kempen in Posen, 1806. On his *Wörterbuch der lateinischen Sprache* most English-Latin dictionaries are based. Died, 1894.

Freycinet (*frā'sē'nē'*), **Charles Louis de Saulces de,** French statesman, was born at Foix, France, 1828. He was graduated at the Polytechnic school in Paris, 1848, and was originally an engineer. Elected to the senate in 1876, he became minister of public works in 1877, premier in 1879, 1882, 1886 and 1890, and in 1892 remained war minister under his successor, M. Loubet. Admitted to the academy of sciences in 1887, and to the French academy in 1890. Died 1923.

Freytag (*frī'täg*), **Gustav,** German novelist and dramatic writer, was born in Silesia, 1816. He studied at Breslau and Berlin, and lectured on German literature in the University at Breslau. He wrote poems, successful plays and novels. His best-known work is *Debit and Credit,* which has appeared in several English translations. He died at Wiesbaden, 1895.

Frick, Henry Clay, manufacturer, philanthropist, was born in West Overton, Pa., 1849. Was president, and chairman of board of directors of the H. C. Frick coke company, now the largest coke producer in the world, operating nearly 40,000 acres of coal and 12,000 coke ovens, with daily capacity of 25,000 tons. Died, 1919.

Frobisher (*frob'ish-ẽr* or *frō'bish-ẽr*), **Sir Martin,** famous English navigator, was born near Doncaster about 1535, and brought up to the sea. Persuaded that there was a northwest passage to the Indies, and after many fruitless efforts to enlist the merchants in his cause, he obtained in 1576 from the government of Queen Elizabeth three vessels, explored portions of the Arctic coast, and, passing through the strait which has since borne his name, he returned to England and was knighted. Died, 1594.

Froebel (*frū'bel*), **Friedrich Wilhelm,** founder of the famous kindergarten system, was born at Oberweissbach Germany, 1782. He founded a kindergarten at Blankenburg in 1837. His system was founded on that of Pestalozzi—under whom he worked from 1807 to 1809—which combined physical, moral, and intellectual training, commencing with the years of childhood. Died, 1852.

Frohman, Charles, theatrical manager, was born at Sandusky, Ohio, 1860. He was educated in the public schools of New York. In 1881 he saw *Shenandoah* at a Boston museum; organized a company and bought rights to that play, outside of Boston; made a great success with that and succeeding ventures; organized Charles Frohman stock company, 1890. Lost at sea, 1915.

Frohman, Daniel, theatrical manager, was born at Sandusky, Ohio, 1853. Manager of Fifth Avenue theater and Madison Square theater New York, 1879-85; manager of Lyceum theater, manager of Daly's theater, New York, and Daniel Frohman stock company. President of actors' fund of America.

Fromentin (*frō'mäN'tan'*), **Eugene,** French painter and author, was born at La Rochelle, France, 1820. He was a pupil of Rémond and Cabat; traveled in 1842-46 in Algeria, Egypt, and the East, and was made an officier of the legion of honor, 1859. Died, 1876.

Frontenac (Fr. *frôN'tē-nāk'*; Eng., *fron'tē-nak*), **Louis de Buade, Comte de,** French colonial officer, governor of Canada, was born in 1621. He served in the French army, and in 1672 was appointed governor of the French possessions in North America. He died at Quebec, 1698.

Frost, Arthur Burdett, illustrator, author, was born at Philadelphia, Pa., 1851. He was self-taught in art, and exhibited at the Paris exposition, 1900. Author: *Bull Calf and Other Tales; Golfers, Alphabet;* etc. Died, 1928.

Frost, Robert, American poet, was born at San Francisco in 1875. At the age of ten he came to the New England hills where his ancestors had lived. The routine of school was not to his liking, so he worked at various trades for several years, meanwhile writing verses, but receiving no recognition. In 1912 he went with his family to England, and in 1913 his first volume, *A Boy's Will,* was published, followed by *North of Boston,* both of which secured for Frost a high place among modern poets. In 1915 he published *Mountain Interval.* He taught in Amherst College for three years, then in the University of Michigan, but returned to Amherst in 1923.

Frothingham, Arthur Lincoln, Jr., university professor, was born at Boston, 1859. Educated at the Royal University, Rome, 1875-81; M.A., Ph.D., University of Leipzig, 1883. Professor of archæology and history of art, 1887-98, ancient history and archæology, since 1898, Princeton University. Author: *A History of Sculpture; Mediæval Art Inventories of the Vatican.* Author and reviewer of the departments of architecture, art and archæology in the *New International Encyclopædia* and many contributions to American, English, French and Italian periodicals. Died in 1923.

Frothingham (*froth'ing-am*), **Octavius Brooks,** clergyman and author, was born at Boston, Mass., 1822. He was graduated at Harvard in 1843, and became pastor of a Unitarian church in Salem, Mass. In 1855 he removed to New Jersey, and in 1859 to New York, where he acted as minister of an independent religious organization for twenty years. Died, 1895.

Frothingham, Paul Revere, clergyman, author, was born at Jamaica Plain, Mass., 1864. He was graduated from Harvard, 1886, Harvard divinity school, A.M., S.T.B., 1889; preacher to Harvard University, 1899-1902; minister of Arlington Street church, Boston, 1900. Author: *William Ellery Channing; The Temple of Virtue,* etc.

Froude (*frōōd*), **James Anthony,** eminent English historian and general writer, professor of history at Oxford from 1892 to his death, was born at Dartington, England, 1818. He was educated at Oriel College, Oxford. In literature his best-known works are those on the Carlyle family, and *Erasmus.* His accuracy has been greatly criticised in detail, but his brilliant yet simple style and power of presenting broad effects have secured for his histories great influence and popularity. Died, 1894.

Fry, Elizabeth, English philanthropist, was born near Norfolk, 1780, daughter of John Gurney, a banker. Mrs. Fry visited prisons in different parts of Great Britain and on the continent, everywhere effecting ameliorations. She died at Ramsgate, 1845.

Frye, William Pierce, lawyer, United States senator from Maine, was born in Lewiston, Me., 1831. He was graduated at Bowdoin college, 1850; LL.D., 1889; LL.D., Bates, 1881; member of congress, 1871-81; elected United States senator in 1881, reëlected for the period 1883-1913. President *pro tem.* during Roosevelt's administration, and reëlected in 1907. Died, 1911.

Fryer, John, Agassiz professor of oriental languages and literature, University of California; was born at Hythe, Kent, England, 1839; graduated from Highbury College, London, 1860; LL.D.; general editor and chairman of executive committee of educational association of China, 1887-96; hon. secretary of Chinese Polytechnic institution, Shanghai. Author: *Educational Directory for China; Translator's Vade-Mecum, or Vocabulary of Scientific Terms in Chinese and English,* etc. Died, 1920.

Fuhrich (*fōō'rix*), **Joseph von,** Austrian painter, was born at Kratzau, Bohemia, 1800. He became professor of painting in the academy of Vienna, and painted many scriptural subjects. Died, 1876.

Fukushima (*fōō'kōō-shē'mä*), **Baron,** Japanese general, was born at Matsumoto, 1853. General staff officer, 5th division, first army; then chief of administrative bureau of territory occupied by Japan during war with China; in command of Japanese contingent until fall of Tientsin, then attached to General Yamaguchi, then to Field-Marshal Waldersee as general staff officer during Boxer troubles, 1900-01; attended King Edward's coronation; general staff officer headquarters Manchurian army, Russo-Japanese war, 1904-05; succeeded General Kodama as vice-chief of general staff of the army, 1906. Died, 1919.

Fuller, George, American figure, portrait, and landscape painter, was born at Deerfield, Mass., 1822. He studied in Boston, New York, London and on the continent, and achieved his first success in 1857. Had notable exhibits at Boston and New York, 1876 and 1879, respectively. Died, 1884.

Fuller, Melville Weston, chief-justice of the United States supreme court, was born in Augusta, Me., 1833. He was graduated from Bowdoin College in 1853, and attended a course of lectures at Harvard law schools; LL.D. He became chief-justice of the United States on October 8, 1888; was chancellor of Smithsonian institution; chairman of trustees of Peabody education fund; member of permanent court of arbitration, The Hague; member of arbitral tribunal in the matter of the Muscat Dowhs, at The Hague, 1905. Died, 1910.

Fuller, Sarah Margaret, Marchioness Ossoli, transcendentalist, was born at Cambridgeport, Mass., 1810. In 1844 she published *Woman in the Nineteenth Century.* In 1847 at Rome she met the Marquis Ossoli and married him. In 1849, during the siege of Rome, she took charge of a hospital; and after the capture of the city by the French she and her husband sailed with their infant for America, 1850. On July 16th the vessel was wrecked on Fire island near New York.

Fulton, Robert, celebrated American inventor and engineer, was born at Little Britain, Pa., 1765. He was received as a civil engineer in 1795, and wrote a work on canals in which he developed his system. Accepting an invitation from the United State minister at Paris, he proceeded to that city in 1796, and remained there for seven years, devoting himself to new projects and inventions. In 1803 he constructed a small steamboat, and his experiments with it on the Seine were attended with great success. He returned in 1806 to New York and pursued his experiments there. In 1807 he launched his steam-vessel, the *Clermont,* upon the Hudson, which made a successful start, in the presence of thousands of astonished spectators. In 1815 he launched the war-steamer *Fulton,* and died the same year.

Funk, Isaac Kaufman, author, publisher, clergyman, was born at Clifton, Ohio, 1839. He was graduated at Wittenberg College: D.D., 1860; LL.D., 1896; editor-in-chief of *Standard Dictionary;* entered into partnership with A. W. Wagnalls in 1878, merging into the Funk and Wagnalls company, 1890. Author: *The Next Step in Evolution; The Widow's Mite,* etc. Died, 1912.

Funston, Fred, brigadier-general of United States army, was born in Ohio, 1865. He studied in Kansas State University; was captain, major, and lieutenant-colonel in the insurgent army in Cuba, 1896; served eighteen months; was wounded; returned to United States, commissioned colonel of 20th Kansas volunteers, 1898; went to Philippines; took part in several battles; for crossing the Rio Grande at Calumpit on small bamboo raft in face of heavy fire and establishing rope ferry, by means of which the United States troops were enabled to cross and win the battle, he was promoted to brigadier-general of United States volunteers, 1899. Continued in active service in Philippines. Organized and commanded expedition resulting in capture of Aguinaldo, head of Filipino insurrection, and was appointed brigadier-general of United States army, 1901; commanded Mexican punitive expedition, 1916. Died, 1917.

Furness (*fûr'nes*), **Horace Howard,** author, editor, Shakespearean scholar, was born in Philadelphia, Pa., 1833; graduated from Harvard, 1854; Ph.D., University of Halle; Litt.D., Columbia College and Cambridge (England); LL.D., University of Pennsylvania, Harvard, Yale, 1901. Died, 1912.

Furniss (*fûr'nis*), **Harry,** English caricature artist, author, and lecturer, was born at Wexford, 1854. Settled in London at nineteen; many years contributor to *Illustrated London News; The Graphic; Black and White; Illustrated Sporting and Dramatic News* and the principal magazines in England and America. Died, 1925.

Furnivall (*fûr'ni-val*), **Frederick James,** English philologist, was born at Egham, Surrey, England, 1825. He was educated at University College, London, and Trinity hall, Cambridge, where he took his degree, 1846; M.A., Ph.D., Litt.D. He devoted himself to English philology, and founded the Early English text society, 1864; the Chaucer society, 1868; the ballad society, 1868; and the New Shakespeare society, 1874; was active in starting the Browning society, 1881, and the Wycliffe society, 1882. He personally edited many works, chiefly through the medium of some one of the above societies; the most important being *Saint Graal;* Roberde of Brunne's *Handlyng Synne;* Walter Map's *Queste del Saint Graal; Political, Religious, and Love Poems;* Bishop Percy's *Folio MS. of Ballads and Romances.* His most valuable works are his splendid edition of Chaucer's *Canterbury Tales,* and the *Century Shakespeare* in 39 volumes. Died, 1910.

Fuseli (*fū'zē-li*), **John Henry,** Swiss painter, was born at Zürich in 1741. He was at first a clergyman and writer of Zürich, visited England, afterward studied art in Italy, returned to London in 1778, and executed pictures for Boydell's Shakespeare gallery. Died, 1825.

Fustel de Coulanges (*fus-tel' dē kōō-länzh'*), **Nuam Denis,** French historian, was born at Paris, 1830. He filled chairs at Amiens, Paris, Strassburg, and from 1875 at the Ecole Normale at Paris. After the war of 1870 he turned his attention to history, though he had written previously *Chic* and *Polybe.* His first historical work, *La Cité antique,* made its author famous. Member of the French institute. Died, 1889.

Fyffe (*fif*), **Charles Alan,** English historian, was born at Blackheath, England, 1845. In 1867 he took classical honors at Balliol College, Oxford, and was elected a fellow of University College. During the Franco-German war he was war correspondnet for the *London Daily News,* and was in Paris during the commune. Died, 1892.

Gabrilowitsch, Ossip, pianist and orchestra conductor, was born at Petrograd, 1878. He studied under Rubenstein, winning the Rubenstein prize in 1894, and under Leschetizky. After extended concert tours in Europe, he came to the United States, 1900. In 1918 he became conductor of the Detroit Symphony Orchestra. He married Clara Clemens, daughter of "Mark Twain." Died, 1936.

Gade (*gä'de*), **Niels Wilhelm,** Danish composer, was born, lived and died at Copenhagen, 1817-90. He was court organist at Copenhagen, and wrote several symphonies, overtures, and cantatas, as well as many choral and solo productions.

Gadsden (*gadz'den*), **Christopher,** American patriot was born in Charleston, S. C., 1724. He was a member of the first continental congress, 1774, became brigadier-general during the revolution and was lieutenant governor of South Caroiina at the time of the surrender of Charleston to Sir Henry Clinton in 1780. He died in 1805.

Gadsden, James, grandson of above, was born at Charleston, S. C., 1788. He served in the war of 1812 and against the Seminoles. In 1853 he was appointed minister to Mexico, and negotiated the purchase of part of Arizona and New Mexico, known as the "Gadsden purchase." He died in 1858.

Gadski (*Gahds'kee*), **Johanna,** one of the greatest sopranos, was born in 1871 at Anclam, Russia. She made her début in Kroll's Theatre, Berlin, as *Undine* in *Lortzing's Opera.* Her success was immediate, and has grown greater each succeeding year. Died, 1932.

Gage, Simon Henry, biologist, educator, was born in Otsego county, N. Y., 1851. He was graduated at Cornell; instructor, assistant professor and full professor of Cornell from 1878; studied in Europe, 1889, and is now one of the editors of *American Journal of Anatomy.*

Gage, Thomas, English general, last royal governor of Massachusetts, was born in 1721. In 1763 he was made commander-in-chief of the British forces in America. In 1774 he was nominated governor of Massachusetts, a post of peculiar difficulties. On June 17th the battle of Bunker Hill was fought, which resulted in a dearly bought victory to the English; but numerous complaints being lodged against Gage, he was recalled by the British government in October, 1775. Died, 1787.

Gagern (*gä'gern*), **Heinrich Wilhelm August,** German statesman, was born at Baireuth, Germany, 1799. He was educated at the military school at Munich. In 1821 he entered political life under the government of Hesse-Darmstadt. In

1832 he vigorously opposed the policies of the state governments and of the federal diet. In 1846 he published a work against the government of Hesse. Died, 1880.

Gailor, Thomas Frank, prelate, bishop of Tennessee since 1893, was born at Jackson, Miss., 1856. He graduated at Racine College, and the General theological seminary, New York; D.D., S.T.D. He became professor of ecclesiastical history, University of the South, 1882, and chaplain 1883; vice-chancellor of Univ. of South, '90-93. Died, 1935.

Gainsborough (*gānz'bŭ'rō*), **Thomas,** eminent English painter, was born at Sudbury, England, 1727. He excelled as a portrait painter, and more than two-thirds of his 300 pictures were portraits. His later years were devoted to landscape painting, especially after settling in London in 1774. At the creation of the Royal Academy he was chosen one of the first members. He died in 1788.

Gaius (*gā'yus*), or **Caius,** Roman jurist, flourished in the second century of our era. He was the author of more than fifteen works, of which the *Institutes* was the most important.

Galba (*gal'bà*), **Servius Sulpicius,** Roman emperor, was born B. C. 3. He was commander of the army in Spain when the emperor Nero died, in 68 A. D., and was so popular with the soldiers that they made him emperor when seventy-one years old. He was murdered after a reign of only seven months, in 69 A. D.

Galdos (*gäl-dōs'*), **Benito Perez,** Spanish novelist and dramatist, was born in the Canary islands, 1845, but was brought up at Madrid. His *Gloria Dona Perfecta, Trafalgar, Léon Roch, Marianela,* etc., have been translated into English, and entitle him to be classed among the most noted modern writers. Died, 1920.

Galen (*gā'len*), or **Claudius Galenus,** celebrated Greek physician, was born at Pergamus, in Mysia, 130 A. D., He first studied medicine at Pergamus, afterward at Smyrna, Corinth, and Alexandria. In his thirty-fourth year he went to Rome, where he stayed for about four years, and gained such a reputation that he was offered, but declined, the post of physician to the emperor. The place and time of his death are alike unknown, though the latter is believed to have been 201.

Galilei, Galileo (*gā'lle-lā'ō*), celebrated Italian astronomer and physicist, born at Pisa, 1564. While a student he had enunciated the law of vibrations or swings of a pendulum—i. e., its isochronism. In 1588 he was provided with a lectureship at Pisa University. At this period he invented the hydrostatic balance. Owing to veiled suspicion and hostility and the loss of court favor, he quitted Pisa and obtained the professorship of mathematics in Padua University in 1592.

In 1609 he constructed a telescope on the model of that of Hans Lippershey of Middleburg, Holland, and with it discovered four satellites of Jupiter, as well as the fact that they were not stationary, but actually revolved around the bright planet. The uneven configuration of the surface of the moon was demonstrated; and he detected sun-spots. The astronomer was invited to Florence, in 1610, by his patron, Cosimo, Grand Duke of Tuscany, and established as his philosopher and mathematician. Continued advocacy of Copernican principles and their Scriptural significance brought him under the ban of the church.

In 1632 appeared his *Dialogues on the Systems of the World,* after which he was peremptorily summoned to Rome by Pope Urban VIII. Stricken in years, and dreading imprisonment, Galileo publicly abjured his own philosophy. Accused of heresy, he was, among other penalties, to suffer detention, while his book was prohibited. At the close of 1633 he was permitted to return to Arcetri, Florence, where he thereafter lived in seclusion. An edition of Galileo's works and correspondence, including what is perhaps his most important production, *Dialogues of the New Sciences,* was undertaken by the Italian government in 1890. Died in 1642.

References.—See *Lives* by Viviani; T. Henri Martin; Favaro; and Fahie. Also Lodge's *Pioneers of Science;* Shelley's *Literary and Scientific Men of Italy;* Ball's *Great Astronomers.*

Gall (*gŏl;* Ger., *gäl*), **Franz Joseph,** German physician, founder of phrenology, was born at Tiefenbronn, on the borders of Baden and Würtemberg, 1758. In 1785 he established himself as a physician in Vienna, where for many years he carried on a series of elaborate investigations on the nature of the brain and its relation to the outer cranium. Died, 1828.

Gallait (*gäl-lā'*), **Louis,** Belgian historical painter, was born at Tournay, 1810, became famous by pictures on subjects from the history of the low countries. He died in 1887.

Galland (*gà-lăn'*), **Antoine,** French orientalist, was born at Rollot in Picardy, 1646. Attached in 1670 to the French embassy at Constantinople, he traveled in Syria and the Levant, 1673-79. In 1709 he became Arabic professor in the College de France. Is best known by his translation of the *Arabian Nights.* Died, 1715.

Gallatin (*gal'ā-tin*), **Albert,** American financier and statesman, was born at Geneva, Switzerland, 1761. He graduated there in 1779, came to the United States in 1780, taught French at Harvard, bought land in Virginia and Pennsylvania, and entered political life in 1789. In 1795 he entered congress from Pennsylvania, and in 1801-14 was secretary of the treasury. From 1827 he devoted his time to historical and ethnological researches, writing on finance, politics and the Indian tribes. He was one of the founders, and the first president, of the ethnological society of America. Died, 1849.

Galaudet, Thomas Hopkins, educator, philanthropist, was born in Philadelphia, Pa., 1787. He was graduated at Yale College, 1805; tutor there, 1808-10; founded and became superintendent of the American asylum for deaf mutes at Hartford. Died, 1851.

Galle (*gäl'lĕ*), **Johann Gottfried,** German astronomer, was born in Prussian Saxony in 1812. He studied at Berlin, 1830-33, became director of the Berlin observatory, and shares with Leverrier the honor of discovering the planet Neptune. He afterward became professor of astronomy at Breslau. Died in 1910.

Galli-Curci, Amelita, noted soprano, was born and trained in Italy. Fresh from her triumphs in Madrid and South America, where she sang with Caruso, she came to the United States, and made her debut in New York in 1918, where her singing created the wildest enthusiasm. Her voice is wonderfully pure, and amazingly flexible.

Galsworthy, John, English novelist and playwright, was born in Surrey, 1867. He was educated at Oxford, practiced law for a time, then turned to literature. His writings are of realistic nature and deal with social problems. Among them are *The Island Pharisees, The White Monkey, The Silver Spoon,* novels, and *The Silver Box, Justice, The Fugitive,* plays. Died, 1933.

Galt (*gŏlt*), **Sir Alexander Tillock,** Canadian statesman, was born at Chelsea, England, 1817, and emigrated to Canada when a boy. From July to November, 1867, he was finance minister of the Dominion. After 1857 he allied himself with the liberal-conservative party, and was considered one of the leading authorities on finances in the Dominion. He became grand commander of the order of St. Michael and St. George in 1878. He wrote *Canada from 1849 to 1859.* Died, 1893.

Galt, Sir Thomas, Canadian jurist, brother of the foregoing, was born in England in 1815, and educated in Scotland. He removed to Canada in 1832, and was admitted to the bar in 1845. In 1858 he became queen's counsel, in 1869 judge of the common pleas, and in 1887 chief justice of the court of common pleas. He was knighted in 1888. Died, 1901.

Galton (*gŏl'tun*), **Francis,** English scientist and traveler, was born near Birmingham, England, 1822; cousin of Charles Darwin. He was educated at King Edward's school, Birmingham, and King's College, London, studied medicine, and was graduated at Trinity College, Cambridge, 1844; D.C.L., Oxford; Sc.D., Cambridge. He was an officer and member of many scientific societies, and for his *Narrative of an Explorer in Tropical South Africa* received the gold medal of the Royal Geographical society. Died, 1911.

Galvani (*gäl-vä'nē*), **Luigi,** Italian physician and physicist, from whom "galvanism" derived its name, was born in Bologna, 1737. He made those discoveries, partly by means of experiments on the muscles of frogs, which he published to the world in 1791 in his treatise, entitled *De Viribus Electricitatis in Motu Musculari Commentarius.* The now fully-established doctrine of animal electricity owes its origin to the patient and laborious investigations of the Bologna professor. Died, 1798.

Gama (*gä'mà*), **Vasco da,** Portuguese navigator, was born about 1469 at Sines at Alemtejo. He early distinguished himself as an intrepid mariner and was selected by King Emanuel to discover the route to India around the cape. After rounding the cape, despite hurricane and mutinies, he made Melinda early in the following year. For twenty years Da Gama lived inactive at Evora, while the extended Portuguese conquests were presided over by five viceroys. The fifth was so unfortunate that John III. in 1524 despatched Da Gama to India, where he succeeded in making Portugal once more respected, but soon after his arrival he died at Cochin, 1524.

Gamaliel (*gà-mā'lĭ-el*), St. Paul's teacher, was a prominent Pharisee, and taught "the law" early in the first century. Tolerant and peaceful, he seems to have placed Christianity on a par with other sects; and he exhorts to long-suffering on all sides.

Gandhi (*gahn'dē*), **Mohandas Karamchand** (born 1869), the great Hindu leader of the Nationalist movement in India, called **Mahatma** ("Great Soul"), by his followers. Born in Porbandar, Western India, of middle-class well-to-do family. His father a native government employee. Gandhi studied at Gray's Inn, London, admitted to the bar, returned to India in 1893, ready for practice. Spent about 20 years in South Africa handling legal affairs of Asiatics unjustly treated by the whites. After many mental and physical hardships Gandhi won social and legal rights for his countrymen. In World War he raised volunteer ambulance corps in London. In 1919 Gandhi became outstanding leader of strong Nationalist movement in India. He lead millions of Mohammedans and Hindus in campaign of passive resistance to laws, and noncooperation, including a boycott on British goods. Sentenced to six years' imprisonment for sedition in 1922. Gandhi, ill, released in 1924. In 1930 he inaugurated a campaign of civil disobedience of salt tax, and was jailed at Yerrodo. He urged nonviolence. Released, Gandhi at London Round Table Conference demanded complete independence for India. Re-arrested in India in 1931. His life saintly and of extreme simplicity; his diet, fruit and goat's milk; his dress, a loin cloth, sandals and a shawl; his religious views, "There is only one God for us all." In 1933, undertook 21 day fast for untouchables.

Garcilaso de la Vega (*gär'thē-lä'sō dā là vä'gà*), Spanish soldier and poet, was born at Toledo about 1503. He wrote a number of sonnets and other poems, several eclogues, and is sometimes called the "Spanish Petrarch." Died at Nice, 1536.

Garcilaso de la Vega, Peruvian historian, known as "the Inca," was born at Cuzco, in Peru, about 1540. At the age of twenty he proceeded to Spain, and never again visited America. His first work was a *History of Florida,* containing an account of the conquest of the country by Hernando de Soto. Died, 1616.

Garden, Mary, soprano and opera director, was born, 1877, at Aberdeen, Scotland. She came to America at the age of six; studied violin and piano in Chicago; left for Paris in 1896. She appeared first in opera as a substitute; was enthusiastically received, and continued in this field as a member of the Chicago Opera Company, of which she became general director in 1921.

Gardiner, Samuel Rawson, English historian, was born in 1829; was educated at Winchester and Christ Church, Oxford. In 1884 he was elected fellow of All Souls', and was for some years professor of modern history at King's College, London. His historical works include *England Under the Duke of Buckingham and Charles I. The Personal Government of Charles I.* and the *Fall of the Monarchy of Charles I.* Died, 1902.

Garfield, Harry Augustus, educator, was born at Hiram, Ohio, 1863, the son of James Abram Garfield. He was graduated at Williams College, 1885; studied law at Columbia Law School one year, and at Oxford, England, and Inns of Court, London. He practiced law as a member of the firm of Garfield, Garfield, and Howe, Cleveland, 1888-1903; professor of politics, Princeton, 1903-08; elected president of Williams College, 1907, and assumed duties in June, 1908.

Garfield, James Abram, twentieth president of the United States, was born in Orange, Cuyahoga county, Ohio, 1831. He entered Williams College, Mass., and was graduated in 1856. He studied and practiced law, and was a member of the Ohio senate, 1859-60; entered the army in 1861 as colonel of the 42d Ohio volunteers; served in southeastern Kentucky, and was promoted to be brigadier-general of volunteers, 1862; promoted to major-general of volunteers. He resigned to occupy a seat in the thirty-eighth congress; elected United States senator in the spring of 1880. He was elected to the presidency at the close of 1880, and entered upon office in the spring of the following year; but on the 2d of July he was shot by the assassin Guiteau, while at the Washington station of the Baltimore and Potomac railway, and died at Elberon, N. J., after lingering for nearly three months. His untimely death was mourned, not only by his own countrymen, but by the whole civilized world. Died, 1881.

Garfield, James Rudolph, lawyer, former secretary of the interior, and son of James Abram Garfield, was born in Hiram, Ohio, 1865. He was graduated at Williams College, Mass., 1885; studied at Columbia Law School; was admitted to the bar in 1888; practiced law in Ohio, 1888, 1902; was member of Ohio senate, 1896 to 1900; was secretary of the interior, 1907-09.

Garibaldi (*gä-rē-bäl'dē*), **Guiseppe,** Italian patriot, was born at Nice, France, 1807. He associated himself enthusiastically with Mazzini for the liberation of his country. He took part in the defense of Rome against France, but, being defeated, fled to New York, to return to the isle of Caprera, biding his time. He joined the Piedmontese against Austria, and in 1860 set himself to assist in the overthrow of the kingdom of Naples and the union of Italy under Victor Emmanuel. Landing in Calabria, he entered Naples and drove the royal forces before him, after which he returned to his retreat at Caprera. In 1870-71 he commanded a French force in the Franco-German war. Died, 1882.

Garland, Hamlin, American novelist and short-story writer, was born of Scotch descent at West Salem, Wis., 1860. Since 1890 he has devoted himself to lecturing and writing. Besides a collection of verse, entitled *Prairie Songs,* he has published the following books: *Rose of Dutcher's*

Cooly; A Little Norsk; Jason Edwards; A Member of the Third House; Crumbling Idols; Wayside Courtships; Prairie Folks; Hesper; The Tyranny of the Dark; The Shadow World, etc.

Garnier (*gär'nyā*), **Jean Louis Charles,** French architect, was born at Paris, France, 1825. He studied at the school of fine arts, and began to exhibit water colors in 1853, after considerable travel in Italy and Greece. In 1854 he set up as an architect in Paris, and in 1861 competed for the design of the new opera house in Paris. Died, 1898.

Garrett, R. W., Canadian physician; professor of obstetrics, Queen's University, Kingston, Canada, was born in the county of North Ontario, 1853. He was educated at Ontario College, Picton; M.A., M.D.; appointed demonstrator of anatomy in the Royal College of Physicians and Surgeons, and later filled the chair of professor of anatomy. Senior surgeon in the Kingston general hospital, and surgeon-major in the 14th battalion princess of Wales' own rifles.

Garrick, David, English actor, son of a captain in the army, was born in Hereford in 1717. He made his first appearance, under the name of Lyddal, at Ipswich, in 1741, and soon after played *Richard III.* in the theater of Goodman's Fields. In 1743 he went to Dublin; in 1747 he became joint patentee of Drury Lane, two years later marrying Mademoiselle Violette. He acted at Drury Lane until 1776. He died in 1779 and was buried in Westminster abbey.

Garrison, Lindley M., lawyer, jurist, was born at Camden, N. J., Nov. 28, 1864. He received his academic education at Phillips Exeter Academy and Harvard, and was graduated in law from the University of Pennsylvania, 1886. He was admitted to the New Jersey bar, 1888, practised in Camden for ten years, from 1899-1904, was a member of the law firm of Garrison, McManus & Enright, Jersey City. He was vice-chancellor of the New Jersey supreme court, 1904-13, when he was appointed secretary of war by President Wilson. Resigned from Cabinet, 1916.

Garrison, William Lloyd, American abolitionist, was born at Newburyport, Mass., 1805. In 1831 he founded *The Liberator*, which he published at Boston during thirty-five years. His whole course was attended by the most malignant opposition from the pro-slavery party; his life was frequently threatened, and more than once he was assaulted and publicly handled; but his courage, energy, and ability were inexhaustible, and he lived to see the complete success of the movement which he had done so much to promote. Died, 1879.

Gary, Elbert H., chairman of board of directors and chairman of finance committee of United States steel corporation, was born at Wheaton, Ill., 1846; educated at Wheaton College and Chicago University; graduated from law school University of Chicago, 1867. Admitted to Illinois bar, 1867; bar of United States supreme court, 1878; practiced law in Chicago twenty-five years; president of Chicago bar association, 1893-94; Trustee of Northwestern University. Died, 1927.

Gaskell, Elizabeth Cleghorn Stevenson, English novelist, was born at Cheyne Row, Chelsea, 1810. She married in 1832 William Gaskell. In 1848 she published anonymously *Mary Barton*, followed by the *Moorland Cottage;* and *Cranford*. She died suddenly at Holybourne, Alton, in Hampshire, 1865.

Gassendi (*gä'sȧn'dē'*), or **Gassend, Pierre,** French philosopher and mathematician, was born at Champtercier in Provence, 1592. In 1645 appointed professor of mathematics in the Collège Royal at Paris, where he died, 1655.

Gates, Horatio, famous American general, was born in England, 1728. Sent to America in 1755, as captain of infantry; he served under General Braddock. In 1755 was made adjutant-general in the colonial army. He accompanied Washington to Massachusetts in July of the same year, where he remained until June, 1776, when he received the chief command of the army, which had just retreated from Canada. A brilliant success gained at Saratoga won him a great military reputation. In 1780 he was called by congress to the command of the army of the south. He was superseded, and was not acquitted of blame until 1782. He then retired to Virginia until 1790, when he emancipated all his slaves and settled in New York. Died, 1806.

Gates, Merrill Edwards, educator, author, was born at Warsaw, N. Y., 1848; graduated from University of Rochester, 1870; Ph.D., LL.D., L.H.D., president of Amherst College, 1890-99. He is a member of the American philosophical society, American history association, etc. Author: *Sidney Lanier, Poet and Artist; Land and Law as Agents in Educating the Indians*, etc. Died, 1922.

Gatling, Richard Jordan, American inventor, was born in North Carolina, 1818. He took his degree in medicine about 1849, but did not practice. His most celebrated invention was that of the revolving gun, which bears his name, the conception of which came to him in 1861. Among Dr. Gatling's later inventions were an improved method of casting steel cannon and a pneumatic gun for discharging explosives. Died, 1903.

Gauss (*gous*), **Karl Friedrich,** noted German mathematician, was born in Brunswick, Germany, 1777. He was graduated at the Collegium Carolinum in his native city in 1795, at the University of Göttingen in 1798. In 1807 he was called to the chair of mathematics and the directorship of the observatory in the University of Göttingen, positions which he held until his death. Died, 1855.

Gautama (*gô'tä-mä*), **Buddha.** See Buddha.

Gautier (*gō'tyā*), **Theophile,** French poet and novelist, was born at Tarbes, 1811. From painting he turned to literature, and became a "romanticist" of extreme type. His poetry reached its highest point in *Emaux et Camées*, 1856. In 1835 appeared his celebrated novel, *Mademoisell de Maupin*. Other works were an enlarged edition of his *Emaux et Camées; Les Grotesque*, on the writers of the sixteenth and seventeenth centuries; *Honoré de Balzac; Ménagerie Intime*, a kind of informal autobiography. He died at Neuilly, 1872.

Gay, John, English poet, was born in 1685. He wrote a large number of poems and ballads, besides several operas; but little of his poetry is now read. His greatest success was *The Beggar's Opera*, which ran sixty-two nights. Died, 1732.

Gay, Sydney Howard, American journalist and author, was born at Hingham, Mass., 1814. He became connected with the New York *Tribune* and was its managing editor from 1862 to 1866. In 1881, in conjunction with William Cullen Bryant, he wrote a *History of the United States*. Died, 1888.

Gay, Walter, American artist, was born at Hingham, Mass., 1856. He was educated in Boston public schools and Roxbury Latin school. Went to Paris, 1876, to study art, where he was a pupil of Bonnat. He received gold medals at Antwerp, Vienna, Berlin, Munich, Paris, and Hors Concours, Paris. Life fellow of the Metropolitan museum of fine arts, New York.

Gayarre (*gä'a'rā'*), **Charles Etienne Arthur,** American historian, was born in New Orleans, 1805. He was admitted to the Philadelphia bar in 1829. In 1835 he was elected to the United States senate, but on account of ill health resigned his seat. During the Civil War he supported the confederacy, and after its close became reporter of the state supreme court. Died, 1895.

Gay-Lussac (*gā'lü'sȧk'*), **Joseph Louis,** French chemist and physicist, was born at St. Leonard in Haute Vienne, 1778. He was educated at the Paris Polytechnic School, passed in 1801 to the department of ponts et chaussées, and began a series of researches on vapor, temperature and terrestrial magnetism. In 1808 he made the important discovery of the law of volumes. He was the first to form synthetically the hydriodic and iodic acids; and in 1815 he succeeded in isolating cyanogen. In 1818 he received the appointment of superintendent of the government gunpowder factories, and in 1829 was made chief assayer of the mint. In 1839 he was made a peer of France. Died, 1850.

Gaynor, William Jay, jurist, was born at Whitestown, Oneida county, N. Y., 1851; educated there and in Boston; worked on New York and Brooklyn newspapers, 1873-75, while studying law; admitted to bar and began practice, 1875. Justice of appellate division of supreme court; received democratic nomination for mayor of New York city, 1909, and was the only Democratic candidate on the ticket elected. Died, 1913.

Geddes (*ged'is*), **Patrick,** British biologist and botanist, was born at Perth, 1854. He was educated at the Normal school of science, London, and at several foreign universities; became professor of botany at Dundee. Died, 1932.

Geibel (*gī'bel*), **Emanuel von,** German poet, was born at Lübeck, 1815. He studied at Bonn and Berlin. His *Voices of the Time* appeared in 1841, a book of *Sonnets* in 1846, and *Songs of Junius*, 1848. He obtained a professorship at Munich, 1852, which he resigned, 1868. Died, 1884.

Geikie (*gē'ki*), **Sir Archibald,** British geologist, was born at Edinburgh, 1835. He was educated at the Edinburgh high school and university. Was director-general of the survey of the United Kingdom, and head of the geological museum, London, 1882-1901. Knighted, 1891. Died, 1924.

Geikie, James, British geologist, brother of preceding, professor of geology and mineralogy since 1882 and dean of the faculty of science, Edinburgh University, was born at Edinburgh, 1839. He was graduated at Edinburgh University; LL.D., D.C.L. one of the founders and president of the royal Scottish geological society, and editor of *Scottish Geographical Magazine*. Author: *The Great Ice Age; Prehistoric Europe*. Died, 1915.

Gelee, (*zhe'lā*), **Claude.** See **Claude of Lorrain.**

Gellert (*gel'ĕrt*), **Christian Furchtegott,** German poet and moralist, was born at Hainichen, Saxony, 1715. He was educated at Leipzig, and in 1751 became a professor there. He died in 1769.

Gellius (*jel'i-us*), **Aulus,** Latin author, supposed to have been born at Rome about 117 A. D. He practiced law there. He died about 180 A. D.

Gelon (*jē'lon*), tyrant of Gela and Syracuse, was the son of Deinomenes, and a native of the former city. In 485 B. C. made himself master of Syracuse. His influence soon extended itself over the half of Sicily. His clemency and the wisdom of his measures rendered him so generally beloved that when he appeared unarmed in an assembly of the people, and declared himself ready to resign his power, he was unanimously hailed as the deliverer and sovereign of Syracuse. Died, 478 B.C.

Genet, or **Genest** (*zhē-ne'*), **Edmond Charles Edouard,** French diplomat, was born in France in 1765. He entered the French diplomatic service as *chargé d'affaires* at St. Petersburg in 1789. He settled in New York, and married a daughter of Governor Clinton. He was the author of some historical works, and translated a Swedish history. Died at Schodak, N. Y., 1834.

Genevieve (*zhen'vyev'*), **Saint,** patroness of Paris, was born at Nanterre near Paris, about 422. She took the veil, and acquired an extraordinary reputation for sanctity, increased by her assurance that Attila and his Huns would not touch Paris, and by an expedition for the relief of the starving city during Childeric's Frankish invasion. Died, 512.

Genghis Khan (*jen'giz kȧn'*), celebrated Mongol conqueror, was born near Lake Baikal, 1162, the son of a Mongol chief. By his military skill and daring example he gradually raised his people to a position of supremacy in Asia, and established by means of them a kingdom which, at his death, stretched from the Volga to the Pacific, and from Siberia to the Persian gulf. Died, 1227.

Genseric (*jen'sĕr-ik*), king of the Vandals, son of Godigisdus, founder of the Vandal kingdom in Spain, and natural brother of Gunderic, whom he succeeded in 429, was born in 406 A. D. He continued master of the seas until his death in 477, despite strenuous efforts of the Roman emperors to crush his power.

Gentz, von (*fŏn gents'*), **Frederick,** German diplomat and publicist, was born at Breslau, 1764. In 1786 he entered the public service of Prussia, but in 1802 exchanged into that of Austria. He wrote bitterly against Napoleon. Died, 1832.

Genung (*jē-nung'*), **John Franklin,** educator, professor of rhetoric, Amherst College, was born at Willseyville, N. Y., 1850. He graduated at Union College, 1870, Rochester Theological Seminary, 1875; Ph.D., 1881; D.D., Yale. Author: *Tennyson's in Memoriam; The Working Principles of Rhetoric; Stevenson's Attitude to Life; The Hebrew Literature of Wisdom in the Light of Today*. Died, 1919.

Geoffroy Saint-Hilaire (*zhō'frwȧ' saN'tē'lâr'*) **Etienne,** French naturalist, was born at Etampes, 1772, became a pupil of Haüy at the College of Navarre, Paris, and in 1793 professor of zoölogy in the museum of natural history. He was the author of several valuable works illustrative of the science. Died, 1844.

George, Grace, actress, was born in New York, 1880. She received a convent education, and married William A. Brady, 1899. Made her début in *The New Boy*, New York, 1894; appeared in leading parts in *The Girl I Left Behind Me; Charley's Aunt;* starred in *The Princess Chiffon*, 1899.

George, Henry, American economist and sociologist, was born in Philadelphia, 1839. In 1876 he was state inspector of gas meters, but in 1880 removed to New York, and the next year visited Ireland, on his way to England. He wrote *Progress and Poverty* in 1879, and undertook lecturing tours in 1883 and 1889 in support of his principles. Besides this book he published *The Irish Land Question, Social Problems, Protection and Free Trade* and *The Science of Political Economy*. In 1886 and again in 1897 he was a candidate for the mayoralty of New York. Died, 1897.

George I., king of Great Britain from 1714 to 1727, was born in 1660. He was the son of Ernest Augustus, elector of Hanover, and of Sophia, the granddaughter of James I. of England; and on the death of Anne, he ascended the throne, being the first monarch of the house of Hanover. In 1727 the king set out on a visit to his Hanoverian dominions, but had only reached Osnabrück when he was struck down by apoplexy. By his marriage with Sophia Dorothea, a daughter of the duke of Zell, he left one son, George Augustus, who succeeded him.

George II., son and successor of George I., and king of Great Britain from 1727 to 1760, was born in 1683. Ascending the throne when forty five years of age, he had the advantage over his father of being able to speak English, which George I. could never do. In 1756 the Seven Years' War broke out, in which England sided with Prussia and the last years of the king's reign saw the British victors in India, Canada, and on the seas. He died in London, 1760.

George III., king of Great Britain from 1760 to 1820, and king of Hanover (elector from 1760 to 1815), eldest son of Frederick Louis, prince of Wales, was born in London, 1738. In 1761 he married Princess Charlotte Sophia of Mecklenburg-Strelitz, by whom he had fifteen children. More English in sentiment and education than his two predecessors, George's main interest was centered in his English kingdom, and never during his long life did he once set foot in his Hanoverian possessions. At his accession he found the Seven Years' war in progress, and he was later involved in the war of the American revolution and the Napoleonic wars. Died at Windsor, 1820.

George V., King of England, born 1865; married, 1893, Princess Victoria Mary of Tech. Acceded to the throne, 1910, on death of his father, Edward VII. A much loved king. Died, 1936.

George, Saint, the patron saint of England. His true history is not clearly known. Some say the real Saint George was a soldier in the army of Diocletian, 300 A. D., and that he suffered death

for the Christian faith. English crusaders brought home his fame from the East, and Edward III. made him patron of his new order of the garter.

Gerard (*zhā'rar'*), **Etienne Maurice, Count,** marshal of France, was born in Lorraine, 1773. He specially distinguished himself at Austerlitz, Halle, Jena, Erfurt, Lintz and Wagram. On the morning after this last battle he received the title of baron of the empire. In 1835 he was made grand chancellor of the legion of honor. Died, 1852.

Gerard, Francois Pascal, Baron, French painter, was born in Rome, 1770. Nearly the whole of his life was spent in Paris. Famous portraits were those of Napoleon, Talleyrand, Talma and Mme. Récamier. Died in Paris, 1837.

Gerhardt (*ger'härt*), **Karl Friedrich,** German chemist, was born at Strassburg in 1816. At the time of his death he was professor of chemistry in the University of Strassburg. Gerhardt and Laurent were the joint authors of the system of chemical notation now in use. All his suggestions and discoveries are embodied in his *Traité de Chimie Organique*. Died, 1856.

Gerhardt, Paul, Lutheran hymn-writer, was born at Grafenhainichen in Saxony, 1607. He became assistant pastor at St. Nicholas in Berlin in 1657, but for opposing the elector's attempted union of the Lutheran and Reformed churches was banished in 1666. Died, 1676.

Germanicus, Cæsar (*jẽr-man'i-kus*), son of Nero Claudius Drusus, and of Antonio, daughter of Mark Antony and niece of Augustus. In 12 A. D. he was consul, in 13 was appointed to the command of the eight legions on the Rhine, and in 14 quelled a great mutiny. Died, 19 A. D.

Gerome (*zhā-rōm'*), **Jean, Leon,** distinguished French painter, was born at Vesoul, Haute-Saone, France, 1824. After studying at Paris and traveling in the East he was appointed professor of painting in the school of the fine arts at Paris. Among the best known of his works are *Phryne Before Her Judges; Cleopatra and Cæsar*. Died, 1904.

Gerry, Elbridge, American statesman, fifth vice-president of the United States, was born in Marblehead, Mass., 1744. He was graduated at Harvard College, 1762. In 1776 he was elected a delegate to the continental congress, signed the declaration of independence, and was placed on the most important committees. He was a member of congress, 1789-93, and in 1797-98 special envoy to France, with Pinckney and Marshall. In 1812 he was elected vice-president of the United States. Died, 1814.

Gerson (*zher'sōn'*), **Jean Charlier de,** French theologian, was born at Gerson, in the diocese of Rheims, 1363. He became chancellor of the University of Paris, 1395, and used his great influence for church unity and ecclesiastical reform. Died at Lyons, 1429.

Gervais (*zher'vā'*), **Honore Hippolyte Achille,** member of Canadian house of commons for city of Montreal since 1904, was born at Richelieu, Quebec, 1864. Promoter of technical schools of Montreal and Quebec and high school of agriculture of Oklahoma; administrator of Laval University; corresponding member of La société de législation comparée de France; member of council of Montreal bar; Batonnier of the bar of Montreal, 1908, batonnier of the bar of the province of Quebec, 1908.

Gervinus (*ger-vē'nōōs*), **Georg Gottfried,** German critic and publicist, was born at Darmstadt, 1805, became in 1836 professor of history at Göttingen. In 1844 he was appointed honorary professor in Heidelberg, and from this period wrote in behalf of constitutional liberty. His great commentaries on Shakespeare were translated into English in 1862. He died in 1871.

Gesenius (*gẽ-sē'ni-us*), **Friedrich Heinrich Wilhelm,** German Hebraist and oriental scholar, was born at Nordhausen, 1786. He became professor of theology at Halle in 1811. His greatest work is his *Hebrew and Chaldee Lexicon*, left unfinished at his death. He died in 1842.

Gessner (*ges' nẽr*), **Salomon,** German pastoral poet, who also painted and engraved landscapes, was born at Zürich, 1730, where he was a bookseller. His landscape-paintings are all in the conventional classic style, but his engravings are of real merit. Died, 1788.

Ghiberti (*gē-ber'tē*), **Lorenzo,** Italian sculptor, was born in Florence about 1378. He was the sculptor of the bronze doors of the baptistry of San Giovanni, Florence. He died in Florence in 1455.

Ghika (*gē'kä*), **Helena,** or "Dora d'Istria," daughter of Prince Michael Ghika, was born at Bucharest, 1828. Her works include *La Vie Monastique dans l'Eglise Orientale; La Suisse Allemande Les Femmes en Orient*. She wrote much for the *Revue des Deux Mondes*. Died, 1888.

Ghirlandajo (*gēr'län-dä'yō*), otherwise called **Corradi,** or **Bigordi, Domenico del,** Florentine painter, was born in 1449. He assisted in the decoration of the Sistine chapel in Rome, and executed a series of frescoes in the Sassetti chapel in Santissima Trinita, Florence. Died, 1494.

Gibbon, Edward, celebrated English historian, was born at Putney in 1737. He was sent to Magdalen College, Oxford, where he became a convert to the Roman Catholic Church; and finally to Lausanne, where he renounced the Catholic faith, without embracing any other, and became a skeptic.

On returning to England he entered upon the duties of active life, but read much, and prepared himself for authorship. In 1763 he went to Italy; and while sitting, amidst the ruins of the Capitol at Rome, he conceived the idea of writing the history of the decline and fall of that city. In the meantime, he joined M. Deyverdun, a Swiss scholar, in publishing a journal called, *Memoires Litteraires de la Grand Bretagne*, which met with no success.

In 1770 he began his celebrated history of the *Decline and Fall of the Roman Empire*, the first volume of which appeared in 1776, the second and third in 1781, and the three concluding volumes in 1788. Previous to this undertaking, Gibbon was chosen member of Parliament for Liskeard; and when hostilities commenced between England and France, in 1778, he was employed to draw up the manifesto on that occasion, after which he was made commissioner of the board of trade, but lost his place on the change of administration, in 1783. He then went to reside at Lausanne, where he remained till the French Revolution obliged him to return to England; and died in 1794.

Gibbon's great history abounds with proofs of immense learning, of a mind penetrating and sagacious and of almost unrivalled talents for ridicule. No other proof of the substantial trustworthiness of the *Decline and Fall of the Roman Empire* is needed than the fact, perhaps unparalleled, that, notwithstanding the very great advance made in historical studies and criticism during the present century, it still holds its place as preeminently the history of the period it embraces.

References.—Milman's *Life and Correspondence of Gibbon;* the *Memoirs*, ed. by Emerson, and Morison's *Gibbon* in English Men of Letters Series.

Gibbons, Grinling, English sculptor and wood-carver, was born at Rotterdam, 1648. Died in *London*, 1720.

Gibbons, James, Roman Catholic cardinal, was born in Baltimore, Md., 1834. Entered St. Charles College, Maryland, 1855; transferred, 1857, to St. Mary's Seminary, Baltimore; ordained priest, 1861; later private secretary to Archbishop Spalding and chancellor of the arch-diocese; assistant chancellor, second plenary council of American Roman Catholic church, Baltimore, 1866; vicar apostolic of North Carolina; coadjutor archbishop of Baltimore, 1877; succeeded to the see, 1877; was nominated as cardinal; invested with the princely insignia, 1886. Died, 1921.

Gibbs, Josiah Willard, American physicist, was born at New Haven, Conn., 1839. Educated at Yale University and in Europe. Became professor of mathematical physics at Yale in 1869 where he remained till his death in 1903. In 1876-8 he published his paper *On the Equilibrium of Heterogeneous Substances*, which won him the name of "the founder of chemical energetics." It contained the famous Phase Rule. For this and other researches he was awarded the Copley medal in London, 1901, the Rumford medal of the American academy, and numerous honorary degrees.

Gibson, Charles Dana, illustrator, was born in Roxbury, Mass., 1867. He was educated at Flushing, L. I., and at the art students' league, New York, 1884-85. He has done much illustrating in principal magazines; also illustrated numerous books.

Gibson, John, British sculptor, was born a market-gardener's son, at Gyffin near Conway, North Wales, 1790. The innovation of tinting his figures he defended by a reference to Grecian precedents. He died at Rome in 1866.

Gibson, John Morison, lieutenant governor of Ontario since 1908, was born in 1842. He was graduated at the University of Toronto; LL.D., queen's counsel, 1890; bencher of law society of upper Canada, 1899; president of Dominion power and transmission company. Died, 1929.

Giddings, Franklin Henry, sociological writer, professor of sociology, Columbia, since 1894, was born at Sherman, Conn., 1855. He graduated at Union College, 1877; Ph.D., LL.D., professor of Bryn Mawr College, 1888-94. Member of Authors' and Century club.

Giers (*gērs*), **Nikolai Karlovitch de,** Russian diplomat and statesman, was born in Russia, of Swedish origin, 1820. He entered the diplomatic corps at eighteen years of age. In 1876, and again in 1877, during the war with Turkey, M. de Giers directed the affairs of the foreign office. He became a privy councillor, and when Prince Gortchakoff attended the Berlin congress M. de Giers for a third time took his place. Died, 1895.

Giesebrecht (*gē'zē-brekt*), **Friedrich Wilhelm Benjamin von.** German historian, was born in Berlin, 1814. He became professor of history at Königsberg in 1857, and in 1862 at Munich. Died, 1889.

Gifford, Robert Swain, American painter, was born in Massachusetts, 1840. He studied painting under Albert van Beest, and opened a studio in Boston, 1864. In 1866 he settled permanently in New York City and became an academician in 1878. Died in New York, 1905.

Gifford, Sandford Robinson, American painter, was born in Greenfield, N. Y., 1823. In 1854 he became a member of the National Academy, New York. Died, 1880.

Gifford, William, English critic and poet, was born at Ashburton, 1756. Gifford's editorship of the *Anti Jacobin* procuring him favor with the tory magnates, he was appointed to offices that brought him 900 pounds a year. He died in 1826.

Gigli, Beniamino, Italian tenor, was born in 1890. He studied under Rosati at Rome, began his operatic career in Italy in 1915 and after touring Spain and South America came to the Metropolitan Opera House, New York, in 1920. He has sung roles in Lucia, Lohengrin, Tosca, Boheme, etc.

Gil, Emilio Portes. See **Portes Gil, Emilio.**

Gilbert, Grove Karl, geologist, was born in Rochester, N. Y., 1843. He was graduated at the University of Rochester, 1862; LL.D. United States geological survey, 1879. Past president of American association for the advancement of science. Author: *Geology of the Henry Mountains*. Died, '18.

Gilbert, William Schwenck, English dramatist, was born in London, 1836. In conjunction with Sir Arthur Sullivan, besides *Thespis* and *Trial by Jury*, he has produced *The Sorcerer; H. M. S. Pinafore; The Mikado; Ruddigore; The Yeoman of the Guard; The Gondoliers*. Died, 1911.

Gilder, Jeannette Leonard, journalist, critic, was born at Flushing, N. Y., 1849. With brother, Joseph B. Gilder, started, 1881, *The Critic*, which she edited; was for eighteen years, over the pen-name "Brunswick," New York correspondent for *Boston Saturday Evening Gazette* and *Boston Evening Transcript;* later regular correspondent of *Chicago Tribune*. Died, 1916.

Gilder, Richard Watson, author, editor, was born in Bodentown, N. J., 1844 and educated at his father's seminary at Flushing, L.I.; LL.D., A.M. L.H.D., Yale, LL.D.; managing editor of *Scribner's Monthly*, 1870; editor-in-chief, 1881, under its present name, *The Century Magazine*. President of public art league of United States; member of council of national civil service reform league. Author: *The New Day; The Celestial Passion; Lyrics; In Palestine*. Died, 1909.

Gildersleeve, Basil Lanneau, professor of Greek in Johns Hopkins, 1876, was born in Charleston, S. C., 1831. He was graduated from Princeton, 1849; Ph.D., LL.D., 1869; Harvard, 1896, D.C.L., L.H.D. Editor of *American Journal of Philology* since it was founded, 1880. Author: *Latin Grammar*. Died, 1924.

Gill, Theodore Nicholas, zoölogist, educator, was born in New York, 1837. Assistant librarian, library of congress, 1866-75; LL.D., 1895, Columbian University. Adjunct professor of physics and natural history, 1860-61; head department zoölogy, Columbian (now George Washington) University. President of American association for the advancement of science, 1897. Author: *Principles of Zoögraphy: Scientific and Popular Views of Nature Contrasted*, etc. Died in 1919.

Gillette, William Hooker, actor, playright, was born at Hartford, Conn., 1855. Began theatrical work, 1877. Author of the following plays (unpublished): *The Professor; The Private Secretary; Held by the Enemy; Because She Loved Him So; Settled Out of Court; Secret Service*, and *Sherlock Holmes*.

Gillray, James, English caricaturist, was born a Lanark trooper's son, at Chelsea in 1757. He died in 1815.

Gilman, Daniel Colt, educator, was born in Norwich, Conn., 1831. He was graduated at Yale, 1852; LL.D., professor of physical and political geography, Yale, 1856-72; president of University of California, 1872-75; first president of Johns Hopkins University, 1875-1902; first president of Carnegie Institution, 1901-04; editor-in-chief, *New International Encyclopædia*. Died, 1908.

Gilman, Nicholas Paine, sociologist, professor of sociology and ethics of Meadville Theological School, 1895-1912, was born at Quincy, Ill., 1849. He graduated at Harvard Divinity School, 1871. Settled as Unitarian clergyman over three parishes in Massachusetts, 1872-84. Author: *Profit Sharing Between Employer and Employee; Methods of Industrial Peace*. Died, 1912.

Ginn, Edwin, publisher, was born at Orland, Me., 1838. Graduated at Tufts College, 1862. Head of the firm of Ginn and Company, publishers of school and college text-books. His first book was Allen's *Latin Grammar*, 1868. Died, 1914.

Giorgione (*jōr-jō'nā*), or **Giorgio Barbarelli,** Italian painter, was born at Castelfranco about 1478. Several early portraits by him have disappeared, but his *Enthroned Madonna* is an altar-piece at Castelfranco. Died, 1511.

Giotto (*jōt'tō*), or **Ambrogio** (or Ambrogiotto, shortened to Giotto), **di Bondone,** Italian painter and architect, was born in 1276. He was a pupil of Cimabue and friend of Dante, whose portrait he painted at Ravenna. Was employed at Padua

and Florence, where his frescoes in the Peruzzi chapel of Santa Croce were discovered in 1863. He also painted the *Miracle of the Loaves and Fishes*, at Naples, and designed the campanile of Florence. He died in 1336.

Girard (*ji-ärd'*), **Stephen,** American philanthropist, was born near Bordeaux, France, 1750. He was very eccentric in his habits, a freethinker, a liberal benefactor of public charities. During several yellow fever seasons in Philadelphia no citizen was more active in relieving distress; and at his death nearly all his estate was bequeathed to various charitable and municipal institutions. Died, 1831.

Gish, Dorothy (1896—), movie star was discovered by D. W. Griffith, and was first featured in *The Little Disturber* and *Hearts of the World*. Her piquancy and unique charm have made her a leading comedienne. Her best film, perhaps, is *Turning the Tables*.

Gissing, George Robert, English writer, born at Wakefield, 1857, was educated at Owens College, Manchester. Spent the early part of his life in poverty. He was among the first novelists to undertake realism in England. Of his early writings *New Grub Street* is his best. Dealing with the lower middle classes, he wrote painstakingly of life as he saw it, but, as he admitted before his death in 1903, his heart was in the Greek and Latin poets. Poverty forced him to more lucrative writing. *By the Ionian Sea* and *The Private Papers of Henry Ryecroft* are other works.

Gladden, Washington, author, Congregational clergyman, was born in Pottsgrove, Pa., 1836. He was graduated at Williams College, 1859. D.D., LL.D., University of Wisconsin and Notre Dame University, Ind. In 1882, pastor of First Congregationalist church, Columbus, Ohio. Author: *Plain Thoughts on the Art of Living; From the Hub to the Hudson; Parish Problems; Burning Questions; Santa Claus on a Lark; Christian Pastor; How Much Is Left*. Died 1918.

Gladstone (*glad'stun*), **William Ewart,** English statesman, orator, and man of letters, was born in Liverpool, 1809. He was graduated at Oxford, and entered the house of commons in 1832 for the borough of Newark. In 1838 he published his first work, *The State in Its Relations With the Church*. In 1847 he was elected a member of parliament for the University of Oxford, which he represented for eighteen years. In 1858 he accepted a special mission to the Ionian islands. In the same year he published an elaborate work on *Homer and the Homeric Age*. In 1866, now leader of the house of commons, he brought in a reform bill, the defeat of which caused Earl Russell to resign. Gladstone, in 1869, disestablished the Irish church; in 1870 carried his Irish land bill; and in 1872 carried the ballot bill. In 1874 he dissolved parliament, and on the unfavorable result of the ensuing election the Gladstone ministry resigned. On the defeat of the Disraeli administration at the polls, 1880, he became premier, but resigned in 1885. Early in 1886 after the shortlived administration of Lord Salisbury, Gladstone again came into power, and signalized his return to office by presenting in 1886 a dual scheme of Irish government—a land bill and a home rule bill. Intense and bitter opposition from liberals and conservatives alike greeted the measure, and the bill was rejected on its second reading, in 1886. In consequence parliament was dissolved, and Gladstone and his colleagues appealed to the country, but were defeated. During the succeeding years, 1887-91, Gladstone was in opposition, the chief incident in his career being his outspoken advocacy of home rule in Ireland and his consequent alliance with the Irish party. At the general election of 1892 his supporters obtained a slight majority in parliament, and he became prime minister for the fourth time. He resigned in 1894 on account of increasing years, and spent his last days chiefly in literary work. He died at Hawarden, 1898, and was buried in Westminster abbey.

Glanville, Ranulf de, chief-justiciary of England in 1180-89, and reputed author of the earliest treatise on the laws of England, the *Tractatus de Legibus et Consuetudinibus Angliæ*, was born at Stratford St. Andrew, near Saxmundham, about 1130. In 1174 he raised a body of knights to fight against William the Lion of Scotland. He died at the siege of Acre, 1190.

Glasgow, Ellen Anderson Gholson, American novelist, was born at Richmond, Va., 1874. Author: *The Descendant; Phases of an Inferior Planet; The Voice of the People*, etc.

Glauber (*glou'bĕr*), **Johann Rudolph,** German chemist and physician, was born at Karlstadt in Franconia, 1604. In 1648 he discovered hydrochloric acid. Died, 1668.

Glazebrook (*glāz'brŏŏk*), **Richard Tetley,** British educator and physicist, principal of University College, Liverpool, 1898-99, was born in 1854. He was educated at Liverpool College, and at Trinity College, Cambridge; Sc.D., Victoria and Heidelberg. Author: *Text-books of Physical Optics, and of Practical Physics; Cambridge Natural Science Manuals*. President of the Institute of Electrical Engineers, 1906. Died, 1935.

Glendower (*glen'dŏŏr*), or **Glendwr, Owen,** Welsh chief, claimed descent from Llewelyn, the last prince of Wales, and was born in Montgomeryshire about 1359. In 1402 he captured Lord Grey and Sir Edmund Mortimer, both of whom married daughters of the Welsh chieftain. In 1404 Glendower entered into a treaty with Charles VI. of France, who in 1405 sent a force to Wales; and the Welsh prince, though often defeated, kept up a desultory warfare until his death, about 1416.

Glinka (*gling'kä*), **Michael Ivanovitch,** composer, "The Russian Beethoven," was born near Novospaskoi, 1804. He studied under John Field in St. Petersburg. He died at Berlin in 1857.

Gluck (*glook*), **Alma,** a recognized soprano of wonderful talent, was born in Roumania, and came to America at the age of six. She made her debut in New Theatre as *Sophie* in "*Werther*," and awoke to find herself a phenomenal success.

Gluck (*glŏŏk*), **Christoph Willibald,** German composer, was born at Weidenwang, in Bavaria, 1714. He studied music at Prague, Vienna, and Milan, and began his career at Vienna at the age of twenty-two. His last years were passed in Vienna, where he died, 1787.

Godfrey of Bouillon. See **Bouillon.**

Goethals, George Washington, Army engineer: born Brooklyn, N. Y., June 29, 1858, graduated West Point, 1880. Chief Engineer, Volunteers, Spanish War. Major-General, March 4, 1915; retired, Nov. 15, 1916. Chief Engineer, Panama Canal, 1907-1914; first civil governor, Panama Canal Zone, 1914-1916. General Manager, Emergency Fleet Corporation, 1917. Chief, Division of Purchase, Storage and Traffic, 1918; member War Industries Board. D. S. M., 1918; Commander Legion of Honor (France), 1919. Died, 1928.

Goethe, (*gū'tĕ*), **Johann Wolfgang von** German author, born in Frankfort, 1749, died 1832. Before he was 10 years of age he wrote several languages, and had a considerable familiarity with works of art. In 1765 he was sent to Leipsic to begin his collegiate studies. Here he wrote two dramas. He was transferred in 1770 to the University of Strasburg, where he studied jurisprudence and the natural sciences.

In 1772 he went to Wetzlar to practice law, and in 1773 published *Götz von Berlichingen* a dramatic version of the story of Götz of the Iron Hand. It excited the greatest enthusiasm in the literary world, and romantic dramas for a time became the fashion. An unrequited love romance of his own, and the suicide of a friend on account of a similar passion, suggested the incidents of his novel called *Die Leiden des jungen Werther*, "The Sorrows of Werther," which met with an extraordinary success. The same year he wrote Clavigo.

An invitation from Charles Augustus of Saxe-Weimar in 1775 to visit his court resulted in his making Weimar his permanent residence. He was created a privy councillor of legation, but his principal public occupation seems to have been to superintend the artistic pleasures of the court. His first years there were spent in wild and tumultuous enjoyments, but his intellectual activity was too great to be long beguiled by frivolities. In 1779 he produced *Iphigenie auf Tauris*, and, after a visit to Switzerland the same year, composed a little opera called *Jery und Bätely*. Many of his best small poems were produced at this period (1780-83), and he also studied natural science.

In 1786 he went to Italy, and spent nearly two years in study and in the composition of the drama *Torquato Tasso*. On his return to Weimar in 1788, he published *Egmont*, a romantic drama. In 1792 he accompanied the Prussian army into France, and soon after appeared his metrical version of *Reinecke Fuchs*. The results of his scientific studies appeared in his *Beiträge zur Optik* and his *Farbenlehre*. The first part of *Wilhelm Meister* (the *Lehrjahre*) appeared in 1795. *Hermann und Dorothea*, a pastoral poem in hexameters, the most perfect of his minor productions, was written in 1797, and the *Achilleis* the same year; and he engaged in friendly rivalry with Schiller in bringing forth a series of ballads, which are among the masterpieces of German literature.

In 1805 appeared the first part of *Faust*, a work which raised Goethe to the highest pinnacle of fame, and he was universally acknowledged to be the first poet of his age. When the French occupied Weimar, he took refuge in his books and scientific experiments, and exhibited such impassiveness amid the political disturbances as to incur the reproach of a want of patriotism. He afterward accepted Napoleon's invitation to visit Paris. In 1809 Goethe printed the most exceptionable of his novels, the *Wahlverwandtschaften* ("Elective Affinities"). Next appeared the ballads *Der Todtenkranz*, *Der getreue Eckart*, and *Die wandelnde Glocke*, the *Dichtung und Wahrheit*, an autobiography, and the *Westöstlicher Divan*, a collection of oriental songs and poems. In 1816 he published an art journal, to which he contributed largely; and in 1818 the second part of *Wilhelm Meister*.

In 1831 the second part of *Faust* appeared, a continuation of the first part, obscure and mystical, but full of passages of rare splendor, profound thought, grotesque humor, and bewitching melody. One year after the completion of *Faust* Goethe was taken ill of a cold, which turned into a fatal fever; but he continued to work. His last writing was an essay on the dispute between Geoffroy Saint-Hilaire and Cuvier, on the question of unity of composition in the animal kingdom and his last words were, "More light."

References.—Grimm's *Goethe;* Heinemann's *Goethe;* Carlyle in *Miscellaneous Essays;* G. H. Lewes's *The Life of Goethe;* J. R. Seeley's *Goethe Reviewed After Sixty Years;* Caro's *La Philosophie de Goethe;* E. Lichtenberger's *Etudes sur les Poesies Lyrique de Goethe.*

Goff, Nathan, jurist, United States circuit judge since 1892, was born at Clarksburg, W. Va., 1843. He was educated at the Northwestern Virginia Academy, Georgetown College, and New York University. Admitted to bar, 1866; member of West Virginia legislature, 1867; secretary of the Navy, United States, 1881; member of congress, 1883-89; *U. S. Senator, 1913-19*. Died, 1920.

Gogol (*gō'gŏl-y'*), **Nikolai Vassilyevitch,** Russian novelist, was born at Sorochintsi in Poltava, 1809. In 1828 he settled in St. Petersburg, and became famous through two series of stories of *Little Russia*. He was the first great master of the Russian novel. Died at Moscow, 1852.

Goldmark, Karl, Austrian composer, was born at Keszthely, Hungary, of Jewish parents, about 1832, but he chiefly resided in Vienna. His *Landliche Hochzeit* (*Country Wedding*) symphony is a great favorite. Died, 1915.

Goldoni (*gōl-dō'nē*), **Carlo,** Italian dramatist, was born at Venice, 1707. A tragedy, *Belisario*, proved successful, but he soon discovered that his forte was comedy, and set himself to effect a revolution in the Italian comic stage. In 1761 he undertook to write for the Italian theater in Paris, and was attached to the French court until the revolution. He died in 1793.

Goldsmith, Oliver, British poet and novelist, was born in Ireland, 1728. He was graduated at the University of Dublin, 1749, and then went to Italy, where he took his degree of M.D. at Padua or Louvain, and returned to England in 1756. His first publication of note, an *Inquiry Into the Present State of Polite Learning in Europe*, was published in 1759. In 1764 *The Traveler* appeared, and at once placed him in the front rank of English authors. Two years after this he published the *Vicar of Wakefield*, which may be said to have indicated his proper rank in the literary world. In rapid succession he produced his other works: the comedy of the *Good-Natured Man*, in 1768; the *Roman History*, in 1769; and *The Deserted Village*—the sweetest of all his poems—in 1770. In 1773 his comedy *She Stoops to Conquer* was produced at Covent Garden with great applause. Although now in receipt of large sums for his works, Goldsmith had not escaped from pecuniary embarrassment. In 1774 returned to London, ill in body and harassed in mind, and took to bed on March 25th. He died April 4th, more sincerely lamented than any other literary man of his time.

Gomez y Baez (*gō'mās ē bä'ās*), **Maximo,** Cuban patriot, was born in San Domingo, 1826. He served in the Spanish army in San Domingo and in Cuba. In the insurrection of 1868-78 he became a colonel and later commander. In 1895, on the breaking out of the second revolution, he returned to Cuba, became general-in-chief of the Cuban army, and later put his force at the disposal of the American troops when they landed in Cuba. Died, 1905.

Gompers (*gom'pĕrz*), **Samuel,** labor leader, president of the American federation of labor, was born in England, 1850. He was a cigar-maker by trade. He was one of the founders of the American federation of labor and editor of its official magazine. Died, December, 1924.

Goncourt (*gôN'kōōr*), **Edmond** and **Jules de,** French novelists, born, the former at Nancy in 1822, the latter at Paris in 1830. Artists primarily, in 1849 they set out to traverse France for water-color sketches. The important work of the De Goncourt brothers commenced when they took to novel-writing. The first of these novels, *Les Hommes de Lettres*, was followed by *Soeur Philomene; Renée Mauperin; Germinie Lacerteux; Manette Salomon;* and *Madame Gervaisais*. After Jules' death in 1870, Edmond, who lived until 1896, issued the extraordinarily popular *La fille Elisa*.

Gonsalvo de Cordova (*gŏn-sāl'vō dā kôr'dō-vā*), "the great captain," Spanish commander, was born at Montilla near Cordova, Spain, 1453. Sent to assist Ferdinand II. of Naples against the French, 1495, he conquered the greater part of the kingdom of Naples, and expelled the French. When the partition of Naples was determined upon in 1500, Gonsalvo again set out for Italy, but first took Zante and Cephalonia from the Turks, and restored them to the Venetians. He then landed in Sicily, occupied Naples and Calabria, and demanded from the French that they should keep the compact. Recalled in 1506, and treated by the king with neglect, he withdrew to his estates in Granada, and died in 1515.

Goodale (*gōōd'āl*), **George Lincoln,** botanist, professor of botany, 1878, and Fisher professor of natural history and director of botanic garden, Harvard, was born at Saco, Me., 1839. He graduated at Amherst, 1860; M.D., professor at Bowdoin and in medical school of Maine, 1867-72; assistant professor of vegetable physiology, Harvard, 1873-78. He is author of various works on plant physiology and economic botany, and associate editor of *American Journal of Science.* Died, 1923.

Goodnow, Frank Johnson, educator, author, was born at Brooklyn, N. Y., 1859. He was graduated at Amherst College, 1879, and at Columbia Law School, 1882. Lyall professor of administrative law and municipal science, Columbia, since 1883. Author: *Comparative Administrative Law; Municipal Home Rule; Municipal Problems; Politics and Administration.*

Goodwin, Nathaniel Carl, American actor, was born in Boston in 1857; studied under Wyzeman Marshall, then manager of Boston theater; went to New York and played in *Law in New York,* 1876, and later as *Captain Crosstree* in *Black-eyed Susan,* a burlesque. Died, 1919.

Goodwin, William Watson, educator, Greek scholar, was born in Concord, Mass., 1831. He was graduated at Harvard, 1851; Ph.D., Göttingen, LL.D., Cambridge, England, 1883; Harvard, 1891; D.C.L., Oxford, 1890. Knight of Greek order of the Redeemer; professor of Greek literature, Harvard, 1860-1901; professor emeritus since 1901; overseer of Harvard, 1903. Author, *Greek Grammar.* Died, 1912.

Goodyear, Charles, inventor of vulcanized rubber, was born in New Haven, Conn., 1800. In 1839 he produced his new method of hardening rubber by means of sulphur. His patents latterly amounted to sixty, and both medals and honors were awarded him in London and Paris. Died, 1860.

Gordon, Charles George, British soldier, familiarly known as "Chinese Gordon," was born in 1833. In 1884 he proceeded to the Soudan, in lower Egypt, as an emissary of England to quiet the insurgent tribes under El Mahdi, the "false prophet of the Soudan." He was killed when Khartoum was captured by El Mahdi, 1885.

Gordon, Charles William, Canadian novelist, Presbyterian clergyman, was born in Indian Lands, Glengarry, Ontario, Canada, 1860; was graduated at Toronto University, 1883. He was a missionary to Banff, etc., Rocky Mountains, 1890-94; minister of St. Stephen's church, Winnipeg, since 1894. Author: *Black Rock; Beyond the Marshes; Gwen's Canyon; The Sky Pilot; The Prospector; The Doctor;* all under the pseudonym of *Ralph Conner.*

Gordon, George Angier, Congregational clergyman, religious writer, was born in Scotland, 1853. He was educated in common schools, Insch, Scotland, and was graduated at Harvard in 1881; D.D., Bowdoin and Yale, 1893, Harvard, 1895. Minister of Old South church, Boston, since 1884. Author: *The Witness to Immortality; The Christ of To-day; Immortality and the New Theodicy; The New Epoch for Faith;* etc. University preacher to Harvard, Yale.

Gordon, John Brown, American soldier, was born in Georgia, 1832. He served with distinction in the confederate army, 1861-65, and rose to the rank of lieutenant-general. From 1873 to 1879 and 1891 to 1897 he was a member of the United States senate; governor of Georgia, 1886-90. Died, 1904.

Gore, Christopher, American statesman and diplomat, was born in Boston, Mass., 1758. He was a graduate of Harvard, a lawyer by profession and the first United States district attorney for Massachusetts. He was governor of his state in 1809, and United States senator, 1814-17. Died, 1829.

Gore, Thomas Pryor, lawyer, United States senator, was born in Webster county, Miss., 1870. He lost the sight of both eyes by accident when a boy. Graduated from the law department of Cumberland University, Lebanon, Tenn., 1892, moved to Texas in 1896 and to Oklahoma in 1901. After serving one term in the territorial senate, he was appointed United States senator by the governor, 1907; was elected by the legislature, 1909, and was reëlected in the same year for the full term 1909-15.

Gorgas, William Crawford (1854-1920), son of confederate brigadier general, was educated at Belvue Hospital Medical College, New York, Captain Medical Corps, U. S. A., 1885, promoted to Colonel, 1903, Surgeon General, 1914. He was Chief Health Officer of the Isthmian Canal Commission, 1907, and made the canal zone a model of sanitary conditions, completely ridding it of malaria. Died in 1920.

Gorki (*gôr'kē*), **Maxim,** pen name of Alexei Maximovitch Pyeshkoff, a self-educated Russian novelist, was born in Nizhni-Novgorod, 1868 or 1869, the son of an upholsterer. After the death of his parents he was engaged in various occupations until, through the influence of his friend Kalushni, his attention was turned to literary work, and his first story, *Makar Chudra,* appeared in 1892.

Gortchakoff (*gôr'chä-kôf'*), **Prince Alexander Mikhailovitch,** Russian statesman, was born at St. Petersburg, 1798. As ambassador at Vienna, 1854-56, he displayed great ability during the Crimean war. As chancellor of the empire, 1863, he was, until Bismarck's rise, the most powerful minister in Europe. After the conclusion of the Russo-Turkish war, the repudiation of the treaty of San Stefano and the signing of the treaty of Berlin, his influence began to wane. He died at Baden-Baden, 1883.

Gosnold (*gos'nuld*), **Bartholomew,** English navigator, was born in England about the middle of the sixteenth century. In 1602 he left Falmouth with a ship and twenty colonists, attempting to cross the ocean in a direct line. Contrary winds took his vessel to the Azores, whence, after a tedious voyage of seven weeks, he reached the coast of Maine. Following the land-line in a southwesterly direction, he discovered Cape Cod and Martha's Vineyard. In 1606 Gosnold united with Captain John Smith to locate in Virginia. Through their joint efforts the settlement at Jamestown was established in 1607. He died in Virginia, 1607.

Cosse (*gos*), **Edmund,** English poet and writer, librarian to the house of lords, was born at London, 1849; died, 1928. M.A., Trinity College, Cambridge; LL.D., St. Andrews, 1899; translator to board of trade, 1875-1904; Clark lecturer in English literature at Trinity College, Cambridge, 1884-90, and lectured in United States, 1884-85. Author: *Collected Poems; Life of Gray; Seventeenth Century Studies; The Secret of Narcisse; Questions at Issue; History of Modern English Literature;* etc.

Gosse, Phillip Henry, British naturalist, was born at Worcester, 1810. In 1827 he went to Newfoundland, as a clerk, and was afterward farmer in Canada, schoolmaster in Alabama, and naturalist in Jamaica. Author: *The Birds of Jamaica; A Naturalist's Sojourn in Jamaica;* and *The Romance of Natural History,* his best-known work. He died at St. Mary Church near Torquay, 1888.

Gottschalk (*got'shälk*), **Louis Moreau,** American pianist and musical composer, was born in New Orleans, 1829. He studied in Europe, and from 1845 to 1852 made successful tours of the continent, returning to America in 1853 to tour this country; met with wonderful success, playing and conducting his own compositions. Died at Rio Janeiro, 1869.

Gough (*gof*), **John Bartholomew,** temperance lecturer, was born at Sandgate, Kent, England, 1817. He came at twelve to America, and in 1831 found employment in New York, but lost it by dissipation, and was reduced to singing comic songs at grog-shops. In 1842 he was induced to take the pledge; and, devoting the rest of his life to the cause of temperance, he became a singularly effective lecturer. He published an *Autobiography; Orations; Sunlight and Shadow,* etc. Died, 1886.

Gouin, Sir Lomer, prime minister, and attorney-general of Quebec since 1905, was born at Grondines, Quebec, 1861. He was admitted to the Quebec bar, 1884; elected member provincial parliament for Montreal, 1897; appointed member of public instruction council, 1898; minister of colonization and public works, Quebec, 1900; re-elected for Montreal (St. James division), 1900, 1904-1905; elected for Portneuf, 1908. Died, 1929.

Goujon (*gōō'zhôn'*), **Jean,** French sculptor and architect, was born in Paris about 1515. He was employed on the church of St. Maclou, at Rouen, 1540, and on the cathedral there, 1541; worked with Pierre Lescot, architect of the Louvre, on the restorations of St. Germain l'Auxerrois, 1542-44; was employed with Bullant on the Chateau d'Écouen; and on the accession of Henry II. entered the royal service. In the Louvre he executed the reliefs of the Escalier Henri II., the carvings at the southwestern angle of the court, and the Tribune des Cariatides and was the author of what is considered the masterpiece of French sculpture, the *Diane Chasseresse,* now in the Louvre collection. His death is believed to have occurred in the St. Bartholomew massacre, 1572.

Gould, Benjamin Apthorp, American astronomer, was born at Boston, Mass., 1824. He was graduated at Harvard College in 1844, afterward studied at Göttingen, where he took a degree in 1848, and was for some time an assistant in the observatory at Altona, Germany. In 1856 he was appointed director of the Dudley observatory at Albany, N. Y. In 1866 he established an observatory at Valentia, Ireland, and made the first determination of transatlantic longitude by telegraph cable. His principal works are: *Report on the Discovery of the Planet Neptune; On the Transatlantic Longitude,* and several charts of stars of scarcely less importance than those already noted. Died, 1896.

Gould, Elgin R. L., economist, was born at Oshawa, Ontario, 1860. He was educated at Victoria University and at Johns Hopkins University, Ph.D., 1886. Formerly lecturer at Johns Hopkins and professor at Chicago University; chamberlain of city of New York, 1902-04. He was very active in public, religious and philanthropic affairs. Author: *The Gothenburg System of Liquor Traffic; Housing of the Working People; Public Control of the Liquor Traffic; The Social Condition of Labor; Civic Reform and Social Progress,* etc.

Gould, George Jay, American capitalist and man of affairs, was born in New York, 1864, and received a private education. As trustee of the Gould estate he was a director in numerous large railroads and other corporations. Died, 1923.

Gould, Helen Miller, American philanthropist, was born in New York, 1868, daughter of the late Jay Gould. She has been identified with philanthropic work for many years; gave a library building, costing $310,000 to university of city of New York; $100,000 for cyclone sufferers, St. Louis; $100,000 to United States government for war purposes, 1898; $50,000 to naval branch of Brooklyn Y.M.C.A., and numerous other donations for educational and charitable purposes. She also established and maintains a home for children. Married Finley J. Shepard, 1913.

Gould, Jay, American financier, was born at Roxbury, N. Y., 1836; was brought up on his father's farm; attended Hobart academy a short time, and began his railroad career shortly after the panic of 1857. He first invested in bonds of the Rutland and Washington railroad, and became president, treasurer and superintendent of the road. Soon afterward he removed to New York, opened a broker's office and began dealing in Erie stocks and bonds. In association with James Fisk, Jr., he entered the directory of the company and was elected president, with Fisk as vice president and treasurer. He subsequently invested heavily in the various Pacific railroads, secured control of a number of important lines, built branches and effected combinations which resulted in the establishment of what is known as the "Gould system." He died in 1892, worth some $100,000,000.

Gould, John, English ornithologist, was born at Lyme Regis, 1804. He became curator of the zoölogical society's museum in 1827. His eighteen works include *A Century of Birds From the Himalaya Mountains; Icones Avium; The Birds of Europe; The Birds of Australia; The Mammals of Australia; The Family of Kangaroos; Humming Birds; The Birds of Great Britain,* etc. Died, 1881.

Gounod (*gōō'-nō'*), **Charles Francois,** French operatic composer, was born in Paris in 1818. He studied music at the Paris conservatoire, and in 1839 gained the prize for composition. He then visited Rome and Vienna, and in 1849 became an organist in Paris. His first opera, *Sappho,* was written in 1851. This was followed by *Sa Nonne Sanglante; le Médicine malgré lui; la Colombe; Philémon et Baucis; Mireille; la Reine de Saba; Roméo et Juliette,* and *Faust*—the two latter being the best known of his works. He was a member of the Academy of Fine Arts, and was decorated with the legion of honor. Died, 1893.

Gowan, Sir James Robert, jurist, member of Canadian senate, was born in Ireland, 1815. He settled in Canada, 1832; admitted to the upper Canada bar, 1839; appointed judge, 1843; one of the three judges appointed to frame a new procedure *in re* probate administration and guardianship, 1858; engaged in revision and consolidation of the whole statute law of United Canada and the provinces of upper and lower Canada (afterward enacted), 1859; chairman of board of judges, Ontario, 1869 to 1889; retired from bench, 1883, and was appointed by the crown a life member of the senate, 1885. He introduced a new procedure on bills of divorce before parliament, which was adopted and now governs in Canada. He was admitted to Irish bar, 1890, and created C. M. G., 1893, "in recognition of his long and valuable services in the Dominion of Canada." In 1855 he founded the *Canada Law Journal.* Died in 1909.

Graaf (*gräf*), **Regnier de,** Dutch physician and anatomist, was born in Schoonhove, 1641. He was specially distinguished by his discovery that all animals are oviparous. The Graafian vesicles were also discovered and named after him, though he mistook their functions. He rendered great service to anatomy through his use of the injections into the blood-vessels which Swammerdam and Ruysen afterward brought to a state of comparative excellence. Died at Delft, 1673.

Gracchus (*grak'us*), name of a distinguished Roman family, to which belonged the two celebrated tribunes, Tiberius Sempronius Gracchus (163-133 B. C.) and Caius Sempronius Gracchus (159-121 B. C.). The former was tribune of the plebs, 133 B. C., and the latter, 123-122 B. C. They were both the sons of Tiberius Sempronius Gracchus (who had been tribune of the plebs in 187 B. C.), and of Cornelia, the daughter of Publius Scipio Africanus the elder. Both the brothers fell victims to their zeal in attempting to contend with the growing corruptions of the Roman state.

Grady, Henry Woodfin, journalist, orator, was born at Athens, Ga., 1851. He was educated at the state university at Athens, and took a post graduate course at the University of Virginia. He became editor of the Rome, (Ga.) *Daily Commercial,* and afterward of the Atlanta *Herald,* and in 1880 became part owner and managing editor of the Atlanta *Constitution,* which he conducted until his death. He was an eloquent speaker, a man of

broad and liberal views; and, during his brief public life, did as much as any one man could to advance the interests of Georgia and the South. Died at Atlanta, Ga., 1889.

Grand, Sarah, assumed name of Frances Elizabeth Clarke, British novelist, was born in Ireland, of English parents; daughter of Edward John Bellenden Clarke, lieutenant, royal navy. She married at sixteen, brigade-surgeon Lieutenant-Colonel McFall, who died in 1898. She traveled for five years in the East, China and Japan, wrote *Ideala* at twenty-six, and has since interested herself in the woman's movement. She is vice president of the Central and Western society for woman's suffrage, vice-president of the Scottish association for the promotion of women's public work, vice-president of Garden City association, etc.

Grant, Frederick Dent, United States army officer, was born at St. Louis, Mo., 1850, son of President Ulysses Simpson Grant. He was graduated from the United States military academy, 1871; commissioned second lieutenant 4th cavalry, 1871, and served on the frontier, 1873-81. Appointed United States minister to Austria by President Harrison, 1885; police commissioner of New York, 1894-98; major-general of United States army, 1906. Served in Puerto Rico one year, and after war commanded military district of San Juan; in Philippine islands, 1899-1902; commanded department of Texas, 1902-04, department of the Lakes, January-September, 1904, department of the East, 1904-08. Died, 1912.

Grant, Robert, author, judge probate court and court of insolvency for Suffolk county, Mass., since 1893, was born at Boston, 1852. He was graduated at Harvard College, 1873; Ph.D., 1876; Harvard Law School, 1879; was water commissioner, Boston, 1888-93. Author: *The Confessions of a Frivolous Girl; The Little Tin God on Wheels* (verse); *The Lambs* (verse); *Yankee Doodle* (verse); *The Oldest School in America* (verse); *An Average Man; The Art of Giving; Search-Light Letters; Unleavened Bread; The Undercurrent; The Orchid; The Law-Breakers,* etc. He has been an overseer of Harvard College since 1895.

Grant (Hiram), Ulysses Simpson, eighteenth president of the United States, was born at Point Pleasant, Clermont county, Ohio, 1822; graduated at the military academy of West Point in 1843 and served under General Taylor in the war with Mexico, 1846, up to the capture of Monterey. In 1852 he served in Oregon; but in 1854 resigned his commission and settled in St. Louis, Mo., whence, in 1859, he moved to Galena, Ill., and engaged in the leather trade. At the beginning of the Civil War, in 1861, he volunteered his services, and was appointed colonel of an Illinois regiment. In August he was appointed brigadier-general, commanding the important post of Cairo, occupied Paducah, and led an expedition on the Mississippi. In February, 1862, he distinguished himself in the capture of Fort Donelson, on the Tennessee river, and was made major-general. On April 6th following, after a preliminary defeat, he won a great battle over the confederates at Pittsburg Landing, or Shiloh. Succeeding General Halleck in the West, he commanded the land forces which, in conjunction with the navy, reduced Vicksburg, July 4, 1863, soon followed by the fall of Fort Hudson, and the opening of the Mississippi. He then, in 1864, was appointed lieutenant-general and commander-in-chief, and personally directed the operations of the great final struggle in Virginia, in which the northern forces, though often repulsed with heavy losses, finally compelled the evacuation of Richmond, April 2, 1865, followed on the 9th by the surrender of the confederate army under General Lee, and soon after of the entire confederate forces. Congress, in recognition of his eminent services, passed an act reviving the grade of "general of the army of the United States," to which Grant was immediately appointed. In 1868 he was elected, on the republican platform, president of the United States; and having in 1872 been reëlected over a notable opponent, Horace Greeley of the *New York Tribune,* he retired in 1877, after his second term of office. In the latter year Grant visited Europe and toured the world. In England and France he received an enthusiastic welcome. Simple, reticent, earnest, and persevering in his character, he owed his military success not so much to strategy as to superior numbers and resources and hard fighting in which even a series of victories left his enemy less able to resist. Having lost his moderate fortune in an unfortunate speculation, Grant wrote an account of his life, which, being successful, to some extent relieved him. He died of cancer in 1885 after a year of severe suffering.

Grattan (*grat'an*), **Henry,** Irish orator and statesman, was born in Dublin in 1746. He was educated at Trinity College, Dublin; in 1772 was admitted to the Irish bar, and in 1775 was returned to the Irish parliament. Mainly to him was owing, among other things, the partial abolition of the heavy restrictions on Irish commerce. As an orator he stands in the first rank. His style is full of point, rapidity, antithesis, and poetic suggestiveness. His eulogy on Chatham and his invective against Bonaparte are not surpassed in British eloquence. Died, 1820.

Graves, Frank Pierrepont, born New York city, 1869; graduate of Columbia, 1890, M.A. 1891, Ph.D. 1912. Professor of Greek in Tufts College, 1891-1896; president University of Wyoming, 1896-1898; president University of Washington, 1898-1903. Dean Dept. of Education, University of Pennsylvania, 1913-1921. Commissioner of Education, State of New York, 1921—. Author of textbooks in Greek and in History of Education. Member of Phi Beta Kappa.

Graves, John Temple, journalist and orator, was born at Willington Church, Abbeville county, S. C., 1856. He was graduated at the university of Georgia, 1875; was editor of *Daily Florida Union,* Jacksonville, 1881-83; *Atlanta* (Ga.) *Daily Journal,* 1887-88; *Tribune* of Rome (Ga.), 1888-90; editor-in-chief and co-proprietor of *Atlanta Daily Georgian,* 1905-07; editor-in-chief of *New York American* since 1907. Presidential elector-at-large, Florida, 1884; was colonel on staff of Governor Northern of Georgia. Author: *History of Florida of To-Day; Twelve Standard Lectures; Platform of To-Day; Speeches and Selections for Schools; The Negro.* Contributor to various American periodicals as advocate of separation of black and white races, etc. Died, 1925.

Gray, Asa, American botanist, was born at Paris, N. Y., 1810. He was graduated in medicine at Fairfield College, and in 1843 received the appointment of botanist of the United States exploring expedition. He was afterward appointed professor of botany in the university of Michigan, but before he had entered upon the duties of that office he was elected, in 1842, Fisher professor of natural history at Harvard University. In addition to his prelections at Cambridge he delivered some lectures at the Lowell Institute in Boston. He ranked among the leading botanists, not only of America, but of the age. He wrote: *Elements of Botany; Flora of North America; How Plants Grow; Field, Forest and Garden Botany; Darwiniana; Synoptical Flora of North America; Natural Science and Religion,* etc. Died, 1888.

Gray, George, jurist, was born at New Castle, Del., 1840. He was graduated at Princeton, 1859; LL.D., 1889. Studied law at Harvard and was admitted to the bar, 1863; attorney-general of Delaware, 1879-85; United States Senator, 1885-99; member of peace commission, Paris, 1898; appointed by the President a member of the joint high commission at Quebec, 1898, and member of the international permanent court of arbitration under The Hague convention, 1900; judge of United States Circuit Court, third judicial circuit, since 1899; chairman of anthracite coal strike commission, 1902. Died in 1925.

Gray, Horace, American jurist, was born at Boston, 1828; was graduated at Harvard, 1845, and its law school, 1849; was admitted to the bar, 1851; Associate-justice of the Massachusetts supreme court, 1864-73, and chief-justice, 1873-81, when he was appointed successor to Judge Clifford in the United States supreme court. He remained a member of this tribunal until shortly before his death in 1902.

Gray, Thomas, English poet, was born in London, 1716. He was educated at Cambridge and appointed professor of history and modern languages there in 1769. He had a just appreciation of the natural beauty of his native country, made notes wherever he went, and wrote copious descriptions of what he had seen to his literary friends. He published his *Ode to Eton College* in 1747, and his *Elegy Written in a Country Churchyard,* by which he is best known, several years afterward. On the death of Colley Cibber he was offered, but declined, the post of poet laureate. Died, 1771.

Greeley, Horace, American journalist, was born at Amherst, N. H., 1811. He entered a printing office as an apprentice at East Poultney, Vt., 1825. On the completion of his apprenticeship he worked for some time as a journeyman printer, and in 1834 founded the *New Yorker,* a literary weekly paper, for which he wrote essays, poetry and other articles. After one or two other attempts at editorship he founded, in 1841, the New York *Tribune,* and became the leading editor. The *Tribune* under his leadership was an earnest advocate of temperance, woman's rights, the abolition of slavery and capital punishment and other reforms, and was recognized as the organ of the extreme, or radical party. His aspirations to political position were defeated by the more conservative party leaders, and he, in turn, influenced the election of Lincoln instead of Seward, in 1860. On the secession of several of the southern states from the Union, Greeley at first admitted their right to secede, in accordance with the principles of the declaration of independence; but, when the war began, he became its most zealous advocate, and is supposed to have caused the premature advance that resulted in the defeat at Bull Run, 1861. In 1872 he was an unsuccessful candidate for the presidency. Died, 1872.

Greely, Adolphus Washington, American general, was born at Newburyport, Mass., 1844. Entering the volunteer service, he attained the rank of captain during the Civil War, and at its close was transferred to the regular army with the rank of lieutenant. In 1868 he was placed in the signal service and in 1881 was assigned to the command of the Lady Franklin bay expedition to northern Greenland. After suffering extreme and terrible hardships, Greely and a few surviving members of his command were rescued in 1884 by an expedition sent to his relief by the United States Government. He published an account of the expedition in 1886, under the title of *Three Years of Arctic Service.* In 1887 he became chief of the United States signal service, and was head of the weather bureau from that time until it passed under control of the department of agriculture. Became major-general in 1906 and retired, 1908. Died, 1935.

Green, Hetty Howland Robinson, American financier, was born in New Bedford, Mass., 1835, daughter of Edward Mott Robinson, who died in 1865, leaving her a large fortune. She was said to be the richest woman in America, and probably the greatest woman financier in the world. She personally managed her large property in stocks, bonds and real estate in Chicago, New York, and elsewhere. Died, 1916.

Green, John Richard, English historian, was born at Oxford, England, 1837, and educated at Magdalen College school and Jesus College. He took orders in 1860, and was for some time vicar of St. Philip's, Stepney, becoming in 1868 librarian at Lambeth. Author: *A Short History of the English People; A History of the English People; The Making of England,* and *The Conquest of England.* The latter was published after his death by his wife, who assisted him in various works, and herself wrote *Henry II.* in the Twelve English Statesmen series. Died, 1883.

Green, Thomas Hill, English philosopher, was born in Yorkshire, 1836. Educated at Rugby and Balliol College, Oxford, 1859, he in 1860 was elected to a Balliol fellowship, and reëlected in 1872, became in 1877 Whyte professor of moral philosophy, and died in 1882. Green's noble character, contagious enthusiasm, philosophical profundity and strong interest in social questions drew around him many of the best men at Oxford. His *Prolegomena to Ethics,* left incomplete at his death, was edited by A. C. Bradley, and two "lay-sermons" by Arnold Toynbee in the same year. His scattered essays in *Mind* and elsewhere were edited as *The Works of T. H. Green,* by R. L. Nettleship.

Green, William Henry, American Presbyterian theologian, was born at Groveville, N. J., 1825. He was graduated from Lafayette College, 1840, and at Princeton theological seminary, 1846. In 1851 he was made professor of biblical and oriental literature at Princeton, and was chairman of the committee which revised the old testament. He wrote: *A Grammar of the Hebrew Language; Moses and the Prophets; The Hebrew Feasts,* etc. Died at Princeton, N. J., 1900.

Greene, Nathanael, American general, was born in 1742, at Potowhommet, Rhode Island. In 1774 he enlisted as private, and in 1775 was appointed to the command of the Rhode Island contingent to the army at Boston, with the rank of brigadier-general. He was promoted to major-general in 1775, and distinguished himself at the engagements of Trenton and Princeton. At the battle of Brandywine, he commanded a division and by his skillful movements saved the American army from utter destruction; and at Germantown he commanded the left wing. In 1778 he became quartermaster-general. In 1780 he succeeded Gates in the command of the army of the south and found the army in a wretched state, without discipline, clothing, arms or spirit. By dint of great activity he got his army into better condition and remained on the defensive for the remainder of the year. In 1781, with 5,000 new recruits, he entered upon more active operations and finally defeated the English at Eutaw Springs, the hardest fought field of the revolution, which put an end to the war in South Carolina. Congress struck and presented to him a medal in honor of this battle, and the Carolinas and Georgia made him valuable grants of land. When peace was restored in 1783, Greene returned to Rhode Island, where he received numerous testimonials of the public admiration. In 1785 he retired with his family to his estate in Georgia, where he died of sunstroke in 1786. He was one of the very best generals of the war of independence, second, perhaps, only to Washington, whose intimate friend he was.

Greenough (*grēn'ō*), **Horatio,** American sculptor, was born in Boston, Mass., 1805. He graduated at Harvard in 1825, and from that year till 1851 lived chiefly in Italy. His principal work is the colossal statue of Washington formerly in front of the capitol. Others are "Medora," "Venus Victrix," and a group of four figures, "The Rescue." He died at Somerville, Mass., 1852.

Greer, David Hummell, Protestant Episcopal clergyman, bishop coadjutor, was born at Wheeling, W. Va., 1844. He was graduated at Washington College, Pa., 1862; studied theology at Protestant Episcopal seminary, Gambier, Ohio; D.D., Brown university, LL.D., Washington and Jefferson College; S.T.D., Columbia; was ordained deacon, 186 priest, 1868; rector Grace church, Providence, R. I., 1871-88, St. Bartholomew's church, New York, 1888-1904; bishop of the diocese of New York since 1908. Died, 1919.

Gregoire (*grā'gwär'*), **Henri,** French ecclesiastic and revolutionist, was born near Lunéville, 1750. He took orders and lectured at the Jesuit College of Pont-a-Mousson. Curé of Emberménil in Lorraine, and an ardent democrat, he was sent to the states-general of 1789 as a deputy of the clergy, attached himself to the tiers-état party,

and acted a prominent part throughout the revolution. He was the first of his order to take the oaths, and was elected "constitutional bishop" of Loire-et-Cher. At the blasphemous feast of reason he refused, in the face of the infuriated rabble, to renounce Christianity. He became a member of the constituent assembly, 1789, but the concordat forced him to resign his bishopric. He died at Paris, unreconciled with the church, 1831.

Gregorovius (*greg'ō-rō'vi-ŭs*), **Ferdinand,** German historian, was born at Neidenburg in East Prussia, 1821. He studied theology, but devoted himself to poetry and literature. His great work—the standard work on the subject—is the *History of the City of Rome in the Middle Ages.* He wrote on Italian geography and history, also a tragedy on Tiberius, and *Euphorion.* Died, 1891.

Gregory I., Pope, called "the great," was born in Rome about 540. After being secretary to Pelagius II., he succeeded him as bishop of Rome; renounced communion with the eastern Christians because of the assumption of the title "universal bishop" by the patriarch of Constantinople; composed chants and established a musical school, in which he himself taught, and collected and arranged fragments of ancient hymns. He was the author of numerous sacred works, of which the chief was his *Morals From the Book of Job.* Died, 604.

Gregory VII., Pope, Hildebrand, son of a carpenter, was a native of Soano, Tuscany. He was the friend and counsellor of Leo IX. and the four succeeding popes, and on the death of Alexander II., 1073, succeeded him.

He obtained confirmation in his election from the Emperor Henry IV., and immediately applied himself zealously to reforms, ecclesiastical and political. He menaced the emperor and the king of France; the latter without effect. In 1074 he assembled a council, by which it was forbidden the prelates to receive investiture of a layman; and this was the first step in the quarrel with the emperor, which lasted so many years. Henry, disregarding the papal authority, was summoned to Rome; but he held a diet at Worms, and pronounced the deposition of the pope. To this Gregory replied by procuring the deposition of the emperor and the election of Rudolph of Suabia.

Henry now promised submission; and in the early winter of 1077 went with his wife and child to Italy. The pope was at the castle of Canossa, and there, after keeping the penitent king of Germany three days waiting at the gate he received and gave him absolution. The terms imposed on him were intolerable, and he soon broke them, made war on Rudolph, and defeated him, set up a rival pope in Guibert, archbishop of Ravenna, with the title of Clement III., and after several unsuccessful attempts entered Rome in 1084, had himself crowned emperor by his own pope, and besieged Gregory in San Angelo. The pope was delivered by Guiscard, and retiring to Salerno, died there in 1085.

Whatever may be said of the power in itself, or of the length to which it has at times extended, the occasion and the object of its exercise in the hands of Gregory were always such as to command the sympathy of the philosophical student of the history of the Middle Ages. By his firm and unbending efforts to suppress the unchristian vices which deformed society and to restrain the tyranny which oppressed the subject as much as it enslaved the Church, he taught his age "that there was a being on earth whose special duty it was to defend the defenceless, to succor the succorless, to afford a refuge to the widow and orphan and to be the guardian of the poor."

References.—See *Lives* by Gfrörer; W. R. W. Stephens, Delarc, and Vincent. Also, Neil's *Epoch Men;* and Villemain's *Gregory VII.*

Grenville, George, English statesman, was born in 1712. He entered parliament in 1741, in 1762 became secretary of state and first lord of the admiralty, and in 1763 succeeded Lord Bute as prime minister. In his administration befell the American stamp act, which excited the American colonies to resistance. He resigned in 1765. Died, 1770.

Gresham (*gresh'am*) **Sir Thomas,** English financier, philanthropist, was born at London in 1519. From Cambridge, in 1543, he became connected with the Mercers' company, and in 1551 was employed as King's agent at Antwerp. In two years he paid off a heavy loan and restored the king's credit. He was knighted by Queen Elizabeth in 1559, and was for a time ambassador at Brussels. In 1569, by his advice, the state borrowed money from London merchants instead of from foreigners. Having in 1564 lost his only son, Richard, in 1566-71 he devoted a portion of his great wealth to building an exchange, in imitation of that of Antwerp; he made provision for founding Gresham College, and left money for eight almshouses. Died, 1579.

Gresham, Walter Quinton, American politician and jurist, was born in Harrison county, Ind., 1832. He was admitted to the bar in 1853; was elected to the state legislature in 1860, but resigned to accept a commission in an Indiana regiment. He was severely wounded near Atlanta and received the brevet of major-general of volunteers for his gallantry. In 1869 he was appointed United States judge for the district of Indiana by President Grant, but in April, 1882, resigned from the bench to become postmaster-general under President Arthur. On the death of Secretary Folger, in 1884, he became secretary of the treasury. In October, 1884, he was appointed United States judge for the seventh circuit. In 1893 he became secretary of state in President Cleveland's cabinet. Died at Washington, 1895.

Greuze (*grûz*), **Jean Baptiste,** French painter, was born at Tournus near Macon, France, 1725. He studied under Gromdon at Lyons, and at the academy in Paris. His first notable works were historical; after a visit to Italy, 1775, he painted Italian subjects; but he is seen at his best in such studies of girls as "The Broken Pitcher," the "Girl with Doves," and "Girl with Dead Canary." His art, though full of delicacy and grace, is marred by its triviality and pursuit of mere prettiness. Died, 1805.

Grevy (*grā'vē'*), **Francois Paul Jules,** French statesman, was born at Mont-sous-Vaudry, in the Jura, near the boundary of Switzerland, 1807. When not yet twenty years of age he began his law studies at the capital, and, becoming interested in politics, took part in the revolution of 1830, which drove Charles X. from the French throne. The voters of his old department, the Jura, elected him to represent them in the constituent assembly of 1848, and he took a prominent part in the organization of the government. After Napoleon's downfall, he was chosen president of the national assembly, which met in 1871, and in 1873, when the young republic seemed to be headed toward another monarchy, Grévy earnestly advocated democracy as the only hope of France. In 1879 he was chosen president of the republic by an enormous majority. In 1886 he was re-elected, but on account of a scandal in which his son-in-law was implicated he was forced to resign, 1887. Died, 1891.

Grey, Albert Henry George, fourth Earl Grey. English statesman and administrator, governor-general of Canada beginning 1904, was born in 1851. He was the son of General Charles Grey; was educated at Harrow and Trinity College, Cambridge, and succeeded his uncle, the third Earl Grey, in 1894. He was a liberal member of the House of commons, 1880-86; administrator of Rhodesia, 1896-97; director of British South Africa company, 1898-1904; was lord-lieutenant of Northumberland, 1899-1904. He succeeded Lord Minto, as governor-general of Canada in 1904 and served until 1911. Died in 1917.

Grey, Charles, second Earl Grey, English statesman, was born at Falloden, Northumberland, 1764, and educated at Eton and King's College, Cambridge. In 1806 Grey (now Lord Howick), became first lord of the admiralty, and, on the death of Fox, foreign secretary and leader of the house of commons. In 1807 he succeeded his father as second Earl Grey. In 1830 he formed a government whose policy, he said, would be one of peace, retrenchment and reform. The first reform bill was produced in 1831; its defeat led to a dissolution and the return of a parliament still more devoted to reform. Early in 1832 another bill was carried in the commons, and it weathered the second reading in the house of lords, but when a motion to postpone the disfranchising clauses was adopted ministers resigned. The duke of Wellington failed to form an administration, and Grey returned to office with power to create a sufficient number of peers to carry the measure. Wellington now withdrew his opposition, and in June the reform bill passed the house of lords. He carried the act for the abolition of slavery in the colonies, as well as a number of minor reforms; but dissensions sprang up, and in consequence of his Irish difficulties he resigned in 1834. He died at Howick House, Alnwick, 1845.

Grey, Sir Edward, English statesman, secretary of state for foreign affairs in 1905; member of parliament for Berwick-on-Tweed after 1885; was born in 1862. He was graduated at Balliol College, Oxford, and succeeded to the baronetcy in 1882; was under-secretary for foreign affairs, 1892-95. He was a man of brilliant talents of whom Gladstone was alleged to have said: "I have never remembered so signal a capacity for parliamentary life and so small a disposition to it." Died, 1933.

Grey, Lady Jane, eldest daughter of Henry Grey, marquis of Dorset, afterward duke of Suffolk, and of Lady Frances Brandon, was born at Bradgate, Leicestershire, 1537. In 1553, Lady Jane Grey, now sixteen years old, was married to Lord Guilford Dudley, fourth son of the duke of Northumberland. The king, failing in body and weak in mind, and surrounded by selfish or fanatical advisers, was persuaded to make a deed of settlement, setting aside the right of succession of his sisters, Mary and Elizabeth, and Mary, queen of Scots, leaving the crown to Lady Jane, who was innocent of the conspiracy. After the king's death her ambitious relatives hailed her as "queen." The people of England resented the unscrupulous conduct of Suffolk and Northumberland, and, learned, brilliant and amiable as Lady Jane was, they rallied round Mary. Northumberland was defeated, sent to the Tower, and beheaded August 22, 1554; and in the following November Lady Jane and her husband were also condemned and she was executed in February, 1554.

Grey, Zane, American writer, was born at Zanesville, Ohio, 1875. He studied dentistry and practiced in New York City for several years, then devoted himself to literature. Among his best known works are *The Lost Trail, The Call of the Canyon, The Mysterious Rider,* and *Tales of the Lonely Trails.*

Grieg (*grēg*), **Edvard Hagerup,** Norwegian composer, was born at Bergen, Norway, 1843. His nationality became a strong element even in his earliest compositions. He spent the winter of 1865-66 and some months of 1870 in Rome, where he inaugurated a Norse music concert. In 1888 he went to London, where he both played and conducted, and this was followed by important engagements in Germany and elsewhere. Among his compositions are numerous pieces for the piano, songs, dances, and an opera. He died in 1907.

Griffis (*grif'-is*), **William Eliot,** lecturer, author, was born in Philadelphia, 1843. He served in the Civil War, graduated at Rutgers, Union Theological Seminary, Union College. In 1870 he went to Japan to organize schools; professor of physics in Imperial University, Tokio, 1873-4. Author of *Brave Little Holland* and several books on his Japanese experiences. Died, 1928.

Griffith, David Wark, motion picture director, on entering motion pictures was attracted to the technical side, in which he has won great distinction. He was the first to use "close-ups" and "cut-backs," and handles his players admirably. Noted for *The Birth of a Nation.*

Griggs, Edward Howard, lecturer, author, was born at Owatonna, Minn., 1868. He was graduated from Indiana University, 1889, A.M., 1890; special studies, university of Berlin; was instructor of English literature and professor of literature, Indiana University; professor of ethics and later head of combined departments of ethics and education Leland Stanford Jr., University; public lecturer. Author: *The New Humanism; A Book of Meditations, Moral Education, Human Equipment,* etc.

Griggs, John William, lawyer, United States attorney-general, 1898-1901, was born at Newton, N. J., 1849. He was graduated at Lafayette College, 1868; admitted to the bar, 1871; practiced at Paterson; member of New Jersey general assembly, 1876 and 1877; state senator, 1882-88; president of New Jersey senate, 1886; governor of New Jersey from January, 1896, until he resigned, January, 1898, to take office of attorney-general in President McKinley's cabinet; member of Hague permanent court. Died, 1927.

Grillparzer (*gril'pär-sĕr*), **Franz,** Austrian dramatic poet, was born at Vienna, 1791. He studied jurisprudence, and in 1813 entered the imperial civil service, in which he remained until 1856. He first attracted notice in 1817 by a tragedy, *Die Ahnfrau,* which was followed by *Sappho; Das goldene Vlies; Des Meeres und der Liebe Wellen; Der Traum ein Leben,* etc. He produced in lyric poetry much meritorious work, and one good prose novel, *Der Arme Spielmann.* Died at Vienna, 1872.

Grimm, Friedrich Melchior, Baron von, German-French critic and writer, was born at Ratisbon, 1723. He became acquainted with Rousseau in 1749, and through him with Diderot, Holbach, and Madame d'Epinay. His connection with the encyclopedists, added to his own acquirements, opened up a brilliant career. In 1776 he was made a baron by the duke of Gotha and appointed minister-plenipotentiary at the French court. At the revolution he withdrew to Gotha and afterward to the court of Catharine II., whence he was sent in 1795 as Russian minister to Hamburg. He died at Gotha, 1807.

Grimm, Jakob Ludwig Karl, German philologist and antiquary, was born at Hanau, in Hesse-Cassel, 1785. Though holding at various times important public offices, his life was devoted to philological and antiquarian studies. His German *Grammar,* in four volumes, is perhaps the greatest philological work of the age. After 1814, in company with his brother Wilhelm, he published numerous works of a more popular character, the best known of which is *Kinder- und Hausmärchen,* nursery and fireside stories. The greatest joint undertaking of the two brothers was the *Deutsche Wörterbuch,* begun in 1852. Jakob Grimm died in 1863. Wilhelm was born in 1786 and died at Berlin in 1859.

Grimston (*grim-stun*), **Mrs. Margaret B.** See **Kendal, Mrs.**

Grimston, William H. See **Kendal, Mr.**

Gros (*grō*), **Antoine Jean, Baron,** French historical painter, was born at Paris, 1771. He studied in the school of David, and acquired celebrity by

his great pictures of Napoleon's battles, "*Francis I. and Charles V. at Saint Denis*," "*Departure of Louis XVIII. for Ghent*," "*The Plague of Jaffa*," and "*Embarkation of the Duchess of Angouleme*." He drowned himself in the Seine, 1835.

Gross, Samuel David, American surgeon, was born in Pennsylvania, 1805. He was graduated from Jefferson Medical College, 1828; was professor of pathological anatomy in Cincinnati Medical College, 1835-39; professor of surgery in university of Louisville, 1839-50, and at univeristy of New York, 1850-51; professor of surgery in Jefferson Medical College, 1856-84. He wrote: *System of Surgery* (2 vols.); *American Medical Biography*, etc. He was the founder and chief editor of the *North American Medico-Chirurgical Review*, and was president of the American Medical Association, 1867. Died, 1884.

Grosscup (*grōs'kup*), **Peter Stenger,** jurist, judge of United States circuit court of appeals, 7th circuit, since 1899, was born at Ashland, Ohio, 1852. He was graduated from Wittenberg College, 1872, Boston Law School, 1874; practiced law at Ashland, Ohio, 1874-83, where he was city solicitor for six years; practiced in Chicago, 1882-92; United States judge of northern district of Illinois 1892-99. He was president of the John Crerar library, Chicago. Died, 1921.

Grosvenor, Edwin Augustus, educator, historian, was born in Newburyport, Mass., 1845. He was graduated from Amherst, 1867, Andover theological seminary, 1872; LL.D., Wabash, 1903. Professor of modern governments and their administration, 1898-1901, modern government and international law since 1901, Amherst College. Author: *The Hippodrome of Constantinople; Constantinople; The Permanence of the Greek Type; Contemporary History*, etc.

Grote (*grōt*), **George,** English historian and politician, was born at Clay Hill, Kent, England, 1794. He published many pamphlets on reform, and contributed to the *Westminster Review*. In 1833 he was elected to parliament for the city of London, for which he continued to sit until 1841, as one of the "philosophical radicals." His *History of Greece* appeared between 1846 and 1856, and was followed by *Plato and Other Companions of Socrates*. He died in 1871, and is buried in Westminster abbey.

Grotius, or **De Groot, Hugo,** eminent Dutch scholar and statesman, was born at Delft, Holland, in 1583. He was descended from a noble family, received an excellent education and gave early manifestations of surprising talents.

In 1599 he commenced his career as advocate; and was successively appointed historiographer, advocate-general of Holland and Zerland, a member of the states-general and envoy to England. Hitherto his life had been marked by splendor, but now it began to be clouded by the part which he took in the Arminian controversy. In 1613 he became syndic, or pensionary, of Rotterdam, and declaring himself on the side of Barneveldt, he supported him and the cause of the Arminians by his pen and influence. For this he narrowly escaped the fate of Barneveldt (who suffered on the scaffold) and received sentence of imprisonment for life in the fortress of Loewestein. He remained in prison 18 months; while there wrote his celebrated *Treatise on the Truth of the Christian Religion*, and then succeeded in escaping. This was effected by the management of his wife, who contrived to have him carried out of the castle in a chest that had been used for the conveyance of books and linen.

Grotius at first sought an asylum in France and it was during his residence there that he composed his great work, *De Jure Belli et Pacis* "On the Law of War and Peace." After an absence of 12 years, he returned to his native country, relying on the favor of Frederick Henry, prince of Orange, who had written him a sympathizing letter. But by the influence of his enemies he was condemned to perpetual banishment. He passed the remnant of his life in the diplomatic service of Sweden, and died at Rostock, in 1645.

With the talents of the most able statesman, Grotius united deep and extensive learning. He was a profound theologian, a distinguished scholar, an acute philosopher, a learned jurist and an erudite historian. Among his works not mentioned above may be noticed *De Antiquitate Reipublicae Batavicae*; a *History of the Goths*, etc.

References.—Burigny's *Life of Hugo Grotius;* Buller's *Life;* and *Grotius* trans. by D. P. de Bruyn.

Grouchy (*grōō-shē'*), **Emmanuel, Marquis de,** distinguished French marshal, was born in Paris, 1766. He entered the French army, 1781; was a lieutenant in the royal body-guard, 1787-93; served with Lafayette, was promoted brigadier-general, commanded the cavalry in the army of the Alps, aided in the conquest of Savoy, and after fighting in La Vendee, 1794, was cashiered with all other officers of the nobility. He then enlisted as a private soldier, and after the fall of Robespierre was reinstated and promoted general of division by a special decree. Defeated the Prussian cavalry at Zendenik, 1806; was governor of Madrid, 1808; took part in the battle of Wagram, 1809; distinguished himself at Borodino, 1812; and commanded Napoleon's body-guard on the retreat from Moscow. When Napoleon reappeared from Elba, Grouchy was given a command and made a marshal of France for his successes in the north. He then marched into Belgium, defeated the allied English and Prussian armies at Fleurus and Ligny, and by following Napoleon's orders to the letter to pursue Blücher is believed to have caused the French defeat at Waterloo. He was again banished by the Bourbons, lived five years in Philadelphia, was recalled to France, 1819, and after the revolution of 1830 was restored to rank as marshal and created a peer. Died, 1847.

Grove, Sir George, British engineer and writer on music, was born at Clapham, 1820. He was trained as a civil engineer, erected in the West Indies the first two cast-iron lighthouses and assisted in the Britannia tubular bridge, which unites Anglesey and Wales. He was made D.C.L. by Durham, LL.D. by Glasgow, and was knighted in 1883 on the opening of the Royal College of music, of which he was director until 1895. He died in 1900.

Grove, Sir William Robert, English lawyer and physicist, was born at Swansea, 1811. He studied at Oxford, was admitted to the bar, raised to the bench, 1871, knighted, 1872, and in 1875-87 was a judge in the high court of justice. He greatly distinguished himself in the subjects of electricity and optics, and in 1839 he invented the powerful voltaic battery known by his name. He published very important lectures, in which he propounded the theory of the mutual convertibility of the natural forces; the *Correlation of the Physical Forces; Voltaic Ignition*, and the *Continuity of Natural Phenomena*. Died, 1896.

Grundtvig (*grōnt'vēg*), **Nikolai Frederik Severin,** Danish poet and theologian, was born at Udby in Zealand, 1783. He first became known by his *Northern Mythology*, published in 1808, and *Decline of the Heroic Age in the North*, in 1809. These were followed by the *Rhyme of Roeskilde* and the *Roeskilde Saga*, and by a collection of patriotic songs. In 1818 he had begun the translation of Snorri Sturluson and Saxo Grammaticus; in 1820 published a Danish translation of *Beowulf*. After 1861 he had the title of bishop, though he held no see. He died in 1872.

Grundy (*grun'di*), **Felix,** American jurist and statesman, was born in Berkeley county, Va., 1777. In 1799 he was chosen a member of the Kentucky constitutional convention, and from that time until 1806 served as a member of the legislature. He was appointed judge of the supreme court of errors and appeals in 1806; in 1807, became chief justice, in 1811 was sent to congress, and reëlected in 1813, and in 1829 became United States senator, to fill the unexpired term of John H. Eaton. Later he was elected to fill that place as a partisan of Andrew Jackson. In 1838 he served for a few months as United States attorney general during the administration of Martin Van Buren; resigning this office he was immediately reëlected to the United States senate. Died at Nashville, Tenn., 1840.

Grunsky, Carl Ewald, civil engineer, was born in San Joaquin county, Cal., 1855. His first professional work was as topographer with river surveying party of state engineering department of California, 1878; member of San Francisco sewerage commission, 1892-93; city engineer, San Francisco, 1900-04; member of isthmian canal commission, 1904-05; consulting engineer, United States reclamation service, Washington, 1905-07; and, since 1907, consulting engineer, New York.

Guarini (*gwä-rē'nē*), **Giovanni Battista,** Italian poet and diplomat, was born at Ferrara, 1537. He was intrusted by Duke Alfonso II. with diplomatic missions to the pope, the emperor, Venice, and Poland. His chief work was the famous pastoral play, *Il Pastor Fido*, really an imitation of Tasso's *Aminta*. Died, 1612.

Guericke (*gā'ri-kē*), **Otto von,** German physicist, was born at Magdeburg, in Prussian Saxony, 1602. As a physicist he is chiefly known by his discoveries relative to nature and effects of air. The experiments of Galileo and Pascal on the weight of air led Guericke to attempt the creation of a vacuum. This resulted in the first air pump, invented about 1650. Guericke's invention soon became famous, and in 1654 he was summoned to the presence of the emperor Ferdinand III. of Germany at Ratisbon, at which time he made the famous experiment commonly known as the "Magdeburg hemispheres," in demonstration of atmospheric pressure. Died at Hamburg, 1686.

Guesclin (*ge'klaN'*), **Bertrand,** French general and the most famous French soldier of the age, was born in 1320. Becoming a soldier of fortune under Charles, he gained great distinction at the siege of Vannes, 1342. He was knighted, and in 1351 went, with the lords of Britanny to England to secure the release of his captive master. He soon took service under the French king and, after several brilliant actions, was made marshal of Normandy and count of Longueville. At the battle of Auray, 1364, he was taken prisoner, but was ransomed for a large sum of money and led his soldiers into Spain. He was afterward taken prisoner by the Black Prince, then in alliance with Pedro "the cruel." Being again ransomed, he restored Henry to the throne in 1369. In 1370 he was made constable of France, and for ten years was active and successful in driving the English from the south and west of France. In 1373 he seized and held most of the strongholds in the duchy of Brittany. He died while besieging the fortress of Chateauneuf-Randon, 1380.

Guest, Edgar Albert, American writer, was born in Birmingham, England, 1881. He came to the United States when ten. Since 1895 he has been a writer for the Detroit Free Press and has had his verse in countless newspaper columns. Among his volumes of collected poems are *A Heap o' Livin'*, *When Day Is Done*, *The Passing Throng*.

Guggenheim, Simon, capitalist, United States senator, was born in Philadelphia, Pa., 1867. He was graduated from public schools of Philadelphia, after which he studied languages in Europe two years. Went to Pueblo, Col., 1888, and engaged extensively in mining and smelting in the United States and Mexico. He was elected United States Senator from Colorado, 1907-13.

Guido Reni (*gwē'dō rā'nē*), Italian painter of the eclectic (Bolognese) school, was born near Bologna, 1575. He studied under Calvaert, but subsequently followed the more refined and ideal school of the Caracci, previous to finally striking out a style for himself. In 1608 he went to Rome, where he remained for twenty years, and was a rival of Caravaggio. The "Aurora" of Guido, on the ceiling of one of the halls of the Rospigliosi palace, a fresco of world-wide fame, is considered the greatest of his works. Died, 1642.

Guild, Curtis, Jr., journalist, ex-governor of Massachusetts, was born at Boston, 1860. He was graduated at Harvard, 1881; entered office of *Commercial Bulletin*, Boston, founded by his father; served from bill collector to editor, and, since 1902, sole owner of the paper. He was brigadier-general of state militia at outbreak of Spanish war; served as lieutenant-colonel, inspector-general on staff, 7th corps (General Fitzhugh Lee) until break-up of corps in Cuba; lieutenant-governor of Massachusetts, 1902-05; governor of Massachusetts, 1906-09. Died, 1915.

Guise (*gū-ēz'*), a ducal family of Lorraine, was so named from the town of Guise. The most prominent members historically are the following: Claude of Lorraine (1496-1550), fifth son of René II., duke of Lorraine, was born at the chateau of Condé, fought at Marignano in 1515, but after that campaign remained at home to defend France against the English and Germans. For suppressing the peasant revolt in Lorraine, 1527, Francis created him duke of Guise.

Mary of Lorraine (1515-60), his daughter, in 1534 married Louis of Orleans, duke of Longueville, and in 1538 James V. of Scotland, at whose death, in 1542, she was left with one child, Mary, Queen of Scots. During the troublous years that followed, the queen-mother acted with wisdom and moderation; but after her accession to the regency in 1554 she allowed the Guises so much influence that the Protestant nobles raised a rebellion, which continued to her death in Edinburgh castle.

Francis (1519-63), her brother, second duke, became one of the greatest generals of France. He and his brother Charles, the cardinal, afterward conspicuous at the council of Trent, managed to become all-powerful during the reign of Francis II. Heading the Roman Catholic party, they sternly repressed Protestantism. Guise and Montmorency won a victory over the Huguenots at Dreux, 1562, and Guise was besieging Orleans when he was assassinated by a Huguenot.

Henry (1550-88), third duke, fought fiercely against the Protestants at Jarnac and Moncontour, 1569, and forced Coligny to raise the siege of Poitiers. He was ambitious to succeed to the throne of France, when Henry III. procured his assassination at Blois.

Henry (1614-64), his grandson, fifth duke, at fifteen became archbishop of Rheims, but in 1640 succeeded to the dukedom. Having joined the league against Richelieu, he was condemned to death, but fled to Flanders. He put himself at the head of Masaniello's revolt in Naples as the representative of the Anjou family, but was taken by the Spanish, 1647, and carried to Madrid, where he remained five years. After another attempt to win Naples, 1654, he settled at Paris.

Guiteras, Juan, physician, professor of general pathology and tropical diseases, university of Havana, since 1900, was born at Matanzas, Cuba, 1852. He was educated at La Empresa, Matanzas; M.D., University of Pennsylvania, 1873; Ph.D. was professor of pathology, university of Pennsylvania; on staff of General Shafter as yellow fever expert in Santiago campaign, 1898. Editor of *La Revista de Medicina Tropical*, and member of many medical and scientific associations. Died, 1925.

Guizot (*gē'zō'*), **François Pierre Guillaume,** French statesman and historian, was born at Nimes, France, 1787. His first work, the *Nouveau*

Dictionnaire Universal des Synonymes de la Langue Francaise, appeared in 1809. He contributed to the dissolution of the *Chambre Introuvable* by writing a memorial which was placed in the hands of Louis XVIII. by Decazes. The latter committed to him the direction of the administration of the communes and departments in 1819. After the revolution of 1830 he became successively minister of public instruction, and minister of the interior, the latter office he held, with two interruptions, until 1836. In 1847 he became the official leader of the cabinet, which maintained its ground, as the organ of Louis Philippe's policy, until the revolution of 1848. Among his works are: *History of the English Revolution; Life of Oliver Cromwell; History of Civilization in Europe;* and *History of Civilization in France.* He died in 1874.

Gunsaulus (*gŭn-sô'lŭs*), **Frank Wakeley,** Congregational clergyman, educator, was born at Chesterville, Ohio, 1856. He was graduated at Ohio Wesleyan University, 1875; D.D., Beloit College, Wisconsin; Pastor of Memorial Congregational church, Baltimore, 1885-87; Plymouth church, Chicago, 1887-99; Central church, Chicago, 1899; president of Armour Institute of technology, since 1893; lecturer at Yale theological seminary, 1882; professorial lecturer of university of Chicago. Author: *Phidias and Other Poems; Songs of Night and Day; Transfiguration of Christ; Monk and Knight; Life of William Ewart Gladstone; Metamorphosis of a Creed; November at Eastwood; Loose Leaves of Song; The Man of Galilee; Paths to Power; Paths to the City of God; Higher Ministeries of Recent English Poetry,* etc. Died, 1921.

Gustavus Vasa (*gŭs-tā'vŭs vā'sā*), king of Sweden, was born of a noble house at Lindholmen in Upland, 1496, and in 1518, during the patriotic struggle with Christian II. of Denmark, was treacherously carried off to Denmark as a hostage. After a year he escaped to Lubeck, thence to Sweden, where he strove in vain to rouse a spirit of resistance against the Danes. Retreating to Delecarlia, he wandered for months with a price set on his head and worked on farms and in mines. At last the infamous "blood-bath" of Stockholm, 1520, roused the Swedes, and soon Gustavus had an army large enough to attack the enemy. His capture of Stockholm in 1523 drove the Danes from Sweden, and he was elected king. He found the whole country demoralized. Yet after a forty years' rule he left Sweden a peaceful and civilized realm with a full exchequer and a well-organized army. He died in 1560, and was succeeded by his eldest son, Eric.

Gustavus II., Adolphus, was born at Stockholm, 1594. He was the grandson of Gustavus Vasa by his youngest son, Charles IX., at whose death, in 1611, he succeeded to the throne of Sweden. He was acquainted with eight languages, five of which he spoke and wrote fluently, was well read in the classics and ancient history. He was proficient in music and excelled in all warlike and manly exercises. Having made various administrative reforms, and availed himself of the short interval of peace to promote the material prosperity of the country, he remitted the charge of the government to his chancellor, Oxenstiern, and set sail, in the summer of 1630, with an army of about 15,000 men, to aid the Protestants of Germany in their hard struggle against the Catholic league, which was backed by the power of the empire. With and for the Germans he fought until his death on the battlefield of Lützen, 1632. He made Sweden a power in northern Europe.

Gustavus III., king of Sweden, was born at Stockholm, 1746, and succeeded his father, Adolphus Frederick, in 1771. In 1792 he was mortally wounded by Ankarström at a masked ball in the opera house which he himself had built. Gustavus was a man of varied learning and the author of several dramatic works and poems of considerable merit.

Gustavus V., king of Sweden, was born in 1858, and married, in 1881, Princess Victoria of Baden, first cousin of the German emperor and a descendant of the old Swedish royal family of Vasa. He succeeded his father, King Oscar II., on December 8, 1907, having several times previously acted as regent. The king's eldest son, Prince Gustavus Adolphus, married Princess Margaret of Connaught, June, 1905. His majesty is a knight of the garter of Great Britain and received the royal Victorian chain in April, 1908.

Gutenberg, Johann, or **Henne** (*goo'tenbûrg*), the inventor of printing, was born in Mentz, Germany, about 1400, died 1468. His father's name was Gensfleisch or Gansfleisch, Gutenberg being the name of his mother, or of an estate belonging to his family, which was of noble lineage.

He became a citizen of Strasburg about 1420, where he appears to have devoted many years to mechanical experiments, and as early as 1438 he had a press, movable types, forms and other appliances for printing. After 1444 all trace of him is lost till 1448, when he was again in Mentz. In 1450 he entered into a partnership with Johann Faust of Mentz for the purpose of carrying on the business of printing, the latter undertaking to furnish the funds. The partnership terminated at the end of five years, most of the materials being taken by Faust for his advances and Gutenberg appears to have afterward carried on printing with considerable activity alone.

In 1465 he abandoned the business and entered the service of the archbishop-elector Adolphus of Nassau. In his own and in modern times he has been obliged to share with Faust and Peter Schöffer the credit of his invention; but in the preface to a German translation of Livy (Mentz, 1505) it is distinctly declared by Johann Schöffer that the "admirable art of printing was invented in Mentz in 1450 by the ingenious Johann Gutenberg." The opinion of most modern writers seems to be that Gutenberg not merely invented the art, but practiced it long before he became associated with Faust.

References.—Pearson's *Gutenberg and the Art of Printing;* Hessels's *Gutenberg;* Zatzman's *Gutenberg;* Lamartine's *Celebrated Characters.*

Gutzkow (*gŏŏts'kō*), **Karl Ferdinand,** German dramatist and author, was born in 1811. He started a newspaper in 1831; went to Stuttgart to assist in editing Menzel's *Literaturblatt;* was imprisoned three months and had all his writings suppressed for the atheistic and socialistic views expressed in his novel, *Wally, die Zweiflerin,* 1835, and in the same year elaborated his opinions in *Nero,* a dramatic work. To escape the surveillance of the Prussian government he went to Hamburg in 1837, thence to various German cities, and in 1870 made his permanent residence in Berlin. He was author of numerous comedies, tragedies, dramas and novels, which attained wide popularity. Died, 1878.

Guyot (*gē'yō*), **Arnold Henry,** Swiss geographer and geologist, was born at Neuchâtel, 1807. He came to America in 1848, and devoted his life to science; was professor of geology and physical geography at Princeton College, 1855-84. He formed an intimacy with Agassiz, and made numerous maps, mathematical tables and textbooks. His greatest works were *The Meteorological and Physical Tables,* issued by the Smithsonian Institution, and his *Earth and Man.* Died, 1884.

Haakon VII. (*hô'kŏn*), king of Norway, was born in 1872, and is the second son of King Frederik of Denmark and a nephew of Queen Alexandra of Great Britain. His baptismal name was Charles, but he assumed the above title on becoming king, November 18, 1905, on the separation of Norway and Sweden. King Haakon and Queen Maud made their formal entry into Christiania November 25, 1905, and the king took the oath before the Storthing on the 27th, and was crowned at Trondhjem on June 22, 1906. The king married Princess Maud Alexandra, daughter of King Edward VII., July 22, 1896. His son and heir-apparent is Prince Alexander, born July 2, 1903, and renamed Prince Olaf on his father's accession to the throne.

Hackett, James Keteltas, actor, was born at Wolfe island, Ont., 1869. He was graduated at the college of the city of New York, 1891, and studied at New York Law School. Made his début on stage in Palmer's stock company, 1892; was leading man at New York Lyceum at twenty-six. His most notable successes were *Prisoner of Zenda,* and its sequel, *Rupert of Hentzau,* and *The Pride of Jennico,* under the management of Daniel Frohman. Died in Paris, 1926.

Hading (*â'dan'*), **Jane,** stage name of Jeanne-Alfrédine Tréfouret, French actress, was born at Marseilles, France, 1859. At the age of three she played Blanche de Caylus in *Le Bossu,* her father at the same time playing the leading character. Some years later she was sent to the Marseilles conservatoiré, where she won considerable distinction. On leaving she entered upon an engagement at the Algiers theater, and when but fourteen played Zouella in *Le Passant,* Stefano in *Chef d'œuvre in Connu,* the blind girl in *Les Deux Orphilines,* and Pedro in *Girofié-Girofla.* At the Palais Royal she played La Chaste Susanna, and at the Renaissance she was the original Jolie Persane and Belle Lurette, and the heroine in *Hélöise and Abelard.* She again appeared in comedy as Paulette in *Antour de Nariage,* and as Claire de Beaulieu in *La Maitre de Forges.* She subsequently appeared in London at the Royalty theater, and in 1888 and 1894 made a successful tour of the United States, accompanied by M. Coquelin. One of her greatest successes was in *The Second Mrs. Tanqueray.*

Hadley, Arthur Twining, American educator and economist, president of Yale University, 1899-1921, was born in New Haven, Conn., 1856. He was graduated at Yale, 1876; was a student of University of Berlin; LL.D., Harvard, 1899; Columbia, 1900; Johns Hopkins, 1902. Tutor, 1879-83, lecturer, 1883-86, Yale; commissioner of labor statistics, Connecticut, 1885-87; professor of political science, Yale, 1886-99; president of American Economic Association, 1899-1900. Author: *Railroad Transportation: Its History and Laws; Connecticut Labor Reports,* 1885-86; *Economics; An Account of the Relations Between Private Property and Public Welfare; The Education of the American Citizen; Freedom and Responsibility; Baccalaureate Addresses; Standards of Public Morality,* etc. He was American editor of the tenth edition of *Encyclopedia Britannica.* Died, 1930.

Hadley, James, father of preceding, American classical scholar and writer, was born in Fairfield, N. Y., 1821. He was graduated at Yale College in 1842, became tutor in mathematics at Middlebury College, and in 1845 tutor of classical history at Yale. In 1848 he was appointed assistant professor, and in 1851 succeeded Theodore D. Woolsey as professor of Greek, which position he held until his death in 1872. He was a distinguished student of philology and civil law; was one of the American committee for the revision of the New Testament and a member of a number of learned societies.

Hadrian, or **Publius Ælius Hadrianus,** Roman emperor from 117 to 138, was born in 76 A. D. He was elected by the army successor of Trajan. His reign was one of the happiest periods in Roman history, the only important war which broke out during the reign being a rebellion of the Jews, which lasted for three years. After his death, which took place at Baiae, 138 A. D., he was succeeded by Antoninus Pius. The amusoleum which he built for himself in Rome forms the ground work of the present castle of St. Angelo.

Haeckel (*hek'el*), **Ernst Heinrich,** German naturalist and writer, was born at Potsdam, Prussia, 1834. He studied medicine and science at Würzburg, Berlin and Vienna, where he was appointed professor of zoölogy. Between 1866 and 1875 he traveled over the greater part of Europe, besides visiting Syria and Egypt. Later he visited India and Ceylon, and published a lively account of his travels. He is regarded in Germany as the foremost supporter of Darwin's theories. Among his works are *The History of Creation; The Origin of the Human Race; Life in the Deep Seas; The History of Man's Development; Popular Lectures on Evolution; Voyage of H. M. S. Challenger,* etc. Died in 1919.

Hafiz (*hâ'fiz* or *hă-fēz'*), **Mohammed Shamsuddin,** or **Shams-ud-Din,** better known by his poetical name of Hafiz, was the greatest of Persian lyrical poets. The name of Hafiz is a household word throughout Persia, and his songs are recited in every social assembly. The date of his birth is unknown, but he is said to have died at a good old age in 1388 A. D.

Haggard, Henry Rider, English novelist, barrister and social reformer, was born in England, 1856. He accompanied Sir Henry Bulwer, as secretary, to Natal in 1875, and formally hoisted the British flag over Transvaal territory, 1877. He retired from the colonial service in 1879; returned to England and became a barrister. His first book, published in 1882, of a political character, is named *Cetywayo and His White Neighbors.* Subsequently he published *She,* a novel of great power; *Ayesha,* or *the Return of She; Jess; Cleopatra,* etc. He also wrote *Rural England* and *A Farmer's Year,* and made extensive studies in socialistic settlements. Died, 1925.

Hague (*hag*), **Arnold,** American geologist, was born in Boston, Mass., 1840. He was graduated at the scientific school of Yale, 1863, and for several years studied in Germany. D.Sc., Columbia, 1901; LL.D., Aberdeen, 1906. He was assistant geologist of United States geological exploration of 40th parallel, 1867-77; secretary, national academy of sciences, since 1901, and member of many scientific societies. Author: *Descriptive Geology; Geological Exploration of 40th Parallel; Geology, Yellowstone National Park; Geological Atlas of Yellowstone Park, etc.* Died, 1917.

Hahnemann (*hâ'nē-măn*), **Samuel Christian** Friedrich, founder of the homeopathic system of medicine, born at Meissen, Saxony, in 1755. Degree of M.D. at Erlangen in 1779. In 1790, he noticed a similarity between the effects of cinchona upon a healthy person and the results of diseases for the cure of which that drug was used. He became convinced that the cure for a disease is the very drug that would in a healthy individual produce the symptoms of such disease. Further investigation caused him to conclude that the doses of his day were injurious, and to another principle, that of very minute doses, made by a process of "potentization," described by him at length in his *Organon,* 1810, which work was translated into many languages. He encountered opposition and was driven out of Leipzig, 1821. The grand duke of Anhalt, however, appointed him court physician, and he remained at Köthen, occupying that position until 1835, when he removed to Paris. He died in 1843.

Haig, Field-Marshal Sir Douglas, Commander in Chief British forces in Great War. b. 1861; m. 1905. Educ.: Clifton; Brasenose College, Oxford; served in Soudan, 1898; South Africa, 1899; inspector Gen. of cavalry India, 1903-6; Lt.-Gen. 1910; Gen., 1914, for distinguished service; field marshal, 1917, for distinguished service; stood the brunt of German Spring drive, 1918. Died, 1928.

Hakluyt (*hak'lŏŏt*), **Richard,** English author, was born about 1552. He was lecturer on cosmography at Oxford University, and was the first to teach the use of globes. He was afterward pro-

fessor of divinity, and in 1584-89 was in Paris, where he published several works. On his return he joined Raleigh's company of gentlemen adventurers and merchants for colonizing Virginia. His chief work is *The Principal Navigations, Voyages, and Discoveries of the English Nation*, commonly called *Hakluyt's Voyages*. Died, 1616.

Haldane (*hal'dān*), **Richard Burdon,** British statesman and writer, was born in 1856. He was educated at Edinburgh academy and university and at Göttingen; in 1879 was called to the chancery bar, and in 1890 was made a queen's counsel; hon. D.D.L., Oxford; LL.D. Edinburgh. He entered parliament in 1885 as member for Haddingtonshire; and became secretary of state for war, 1905-12; Lord High Chancellor of Great Britain, 1912-15 and 1924. In *Education and Empire*, 1902, he zealously insisted on educational reform as essential to national well-being. Died, 1928.

Haldeman (*hôl'dē man*), **Samuel Stehman,** American naturalist and philologist, was born near Columbia, Pa., 1812. He occupied the chair of natural history, and later of comparative philology, in the University of Pennsylvania, and was the author of numerous articles on philology, conchology, entomology, and paleontology. His work, *Analytic Orthography*, obtained in England the highest Trevelyan prize over eighteen competitors, 1858. Died, 1900.

Hale, Edward Everett, Unitarian clergyman, author, was born in Boston, Mass., 1822. He was graduated at Harvard University, 1839; S.T.D., 1879; LL.D., Dartmouth, 1901; Williams, 1904. Studied theology, and became minister of the church of the Unity, Worcester, Mass., 1846-56; minister of South Congregational (Unitarian) church, Boston, Mass., 1856-1909; chaplain United States Senate, 1902-09. He actively promoted the Chautauqua movement, assisted in the organization of "Lend-a-Hand" clubs, and was a prolific editor and writer. Author: (stories) *The Man Without a Country; In His Name; His Level Best; The Ingham Papers; Christmas Eve and Christmas Day; Christmas in Narragansett; Our Christmas in a Palace*, etc. Also: *Sketches in Christian History; The Story of Massachusetts; Sybaris and Other Homes; Ralph Waldo Emerson; We, the People; New England Ballads*, etc. Died, 1909.

Hale, Eugene, United States Senator from Maine, 1881-1911, was born in Turner, Oxford county, Me., 1836. He received an academic education; LL.D., Bates College, Colby University and Bowdoin College; was admitted to the bar, 1857; member of Congress, 1869-79; delegate to national Republican conventions, 1868, 1876, and 1880. He was elected to the United States senate to succeed Hannibal Hamlin in 1881, and continued in that until 1911. Died, 1918.

Hale, George Ellery, American astronomer, was born at Chicago, Ill., 1868. He was graduated at Massachusetts Institute of technology; studied at Harvard College Observatory, 1889-90, University of Berlin, 1893-94; Sc.D., Yale, 1905; LL.D., Beloit, 1904. Professor astrophysics, University of Chicago, 1897-1905, director Yerkes observatory, 1895-1905; director solar observatory of Carnegie Institution of Washington at Mt. Wilson, Cal. Joint editor *Astronomy and Astrophysics;* editor *Astrophysical Journal* since 1895. He has written many papers on the sun, stellar spectroscopy, etc.

Hale, Sir Matthew, English lawyer and jurist, was born at Alderley, England, 1609. He was graduated at Oxford, studied law at Lincoln's Inn, and was admitted to the bar in 1637. Became a judge of common pleas in 1653, and sat in parliament until the restoration, when he was made lord chief baron of the exchequer. In 1671 he became lord chief justice, and resigned shortly before his death, in 1676.

Hale, Nathan, American patriot, was born in Coventry, Conn., 1755. He was graduated at Yale College, in 1773, and devoted himself to the cause of the colonies in the contest with Great Britain. After the defeat of the patriot army of Long Island he endeavored to obtain knowledge of the enemy's plans and position for the information of Washington. He obtained the knowledge, but was arrested by the British before he could return, and, the papers containing the information being found on his person, he was hanged as a spy, by order of Sir William Howe, 1776. His sentence was carried into effect in the most unfeeling manner; he was refused the attendance of a clergyman, and the letters which he wrote to his mother a short time before his death were destroyed. His last words were, "I only regret that I have but one life to lose for my country."

Halevy (*á'lā'vē'*), **Jacques Francois Fromental,** French composer, was born at Paris, of Jewish parentage, 1799. The first work that brought him any considerable reputation was *La Juive*, produced at the Grand Opéra in 1835. The most important of his subsequent pieces were *La Reine de Chypre; Charles VI.; La Juive Errant*, and *La Magicienne*. Those executed for the Opera Comique are regarded as his most successful; the principal are: *Les Mousquetaires, L'Eclair*, and *Le Val d'Andorre*. He was a great favorite with his countrymen, but his style was so purely national that in spite of his great dramatic power he did not enjoy a great celebrity out of France until recently. Died, 1862.

Halevy, Ludovic, French novelist and dramatic author, was born at Paris, 1834, and received his education at the Lycée Louis le Grand. He was chief of the department for Algiers and the colonies, and in 1861 was appointed to edit the proceedings of the *corps législatif*. This position he resigned to devote himself to the drama. Under his own name, and with various collaborators, he produced *Ba-La-Clan; Rose et Rosette; Orphée aux Enfers; La Belle Hélene*, a burlesque of ancient Greek life, which had a great success; *La Barbe Bleue; Froufrou; L'Abbé Constantin; Karikari*, etc. In 1872 he published *L'Invasion*, personal recollections of the war; and in 1873, *Madame et Monsieur Cardinal*. He was a member of the French academy. Died, 1908.

Haliburton (*hal'i-bûr't'n*), **Thomas Chandler,** Canadian humorist, was born at Windsor, Nova Scotia, 1796. He was judge of the supreme court of Nova Scotia, but is best known as a satirical writer. In 1837 he published *The Clockmaker; or the Sayings and Doings of Samuel Slick of Slickville*, which became very popular. In 1856 he went to England to reside permanently, and in 1859 entered the house of commons as member for Launceston, which seat he held until within a few months of his death. Besides the works already mentioned, he wrote several other books. He died at Isleworth, Middlesex, England, 1865.

Halifax, Charles Montagu, Earl of, British poet and statesman, was born at Horton, England, 1661. He was educated at Trinity College, Cambridge. He was member of parliament for Maldon in 1689, and a lord of the treasury in 1692, and in that year proposed to raise a million sterling by way of loan—so the national debt was established. In 1694, Montagu founded the bank of England, as proposed by William Paterson three years earlier. His next work was the recoinage in 1695, appointing his friend, Newton, warden of the mint, and raising a tax on windows to pay the expense; and now he first introduced exchequer bills. In 1697 he became premier, but his arrogance and vanity soon made him unpopular, and he was impeached in 1701, but was protected by the lords and the proceedings fell to the ground. He was president of the royal society, 1695-98. Died, 1715.

Hall, Charles Cuthbert, American theologian, was born in New York city, 1852; graduated at Williams College, 1872; D.D., University of New York, 1890; Harvard, 1897; Yale, 1901; LL.D., Union, 1905. Studied theology at Union Theological seminary and in London and Edinburgh. Pastor of Union Presbyterian church, Newburgh N. Y., 1875-77; First Presbyterian church, Brooklyn, 1887-97. Barrows lecturer for the University of Chicago to the far East, 1902-03 and 1906-07; Cole lecturer, Vanderbilt University, 1905; Noble lecturer at Harvard, 1906. Was president of Union theological seminary from 1897 until his death. He did much to encourage higher criticism and to induce a more liberal and broadminded attitude on the part of the clergy. Author: *Christian Belief Interpreted by Christian Experience; Redeemed Life After Death; Universal Elements of the Christian Religion; Christ and the Human Race; The Witness of Oriental Consciousness to Jesus Christ*. Died, 1908.

Hall, Charles Martin, inventor, manufacturer, was born at Thompson, Ohio, 1863; graduated at Oberlin College, 1885, A.M., 1893. Invented the electrolytic process for the manufacture of aluminum, now universally used, 1886; commenced its commercial manufacture in 1888 with Pittsburg Reduction company, now the Aluminum Company of America. The Hall process has reduced the price of aluminum so as to make it a common metal of commerce, where it was formerly as costly as silver and little used. Member of many scientific societies; trustee of Oberlin College. Died in 1914.

Hall, Granville Stanley, American educator and psychologist, president of Clark University, 1888-1921, was born in Ashfield, Mass., 1846. He was graduated at Williams College, 1867; Ph.D., Harvard, 1878; LL.D., University of Michigan, 1888; Johns Hopkins, 1902; studied in Berlin, Bonn, Heidelberg and Leipzig; lecturer on psychology in Harvard and Williams, 1880-81; professor of psychology, Johns Hopkins, 1881-88. Author: *Hints Toward a Select and Descriptive Bibliography of Education* (with John M. Mansfield); *Adolescence* (2 vols.); etc. Editor and founder of *The American Journal of Psychology; The Pedagogical Seminary*, and *American Journal of Religious Psychology and Education*. Died, 1924.

Hall, Robert, British pulpit orator, was born at Arnsby near Leicester, England, 1764. He was appointed assistant minister and tutor in the Bristol Academy, where his eloquent preaching attracted overflowing audiences. He went in 1790 to Cambridge, where he rose to the highest rank of British pulpit orators. In 1807 he settled in Leicester, but returned in 1826 to Bristol. He died in 1831. Among his writings are *Apology for the Freedom of the Press* and *on Terms of Communion*.

Hallam, Henry, English historian and critic, was born at Windsor, England, 1777. He was graduated at Christ Church, Oxford, 1799, and subsequently called to the bar. LL.D., D.C.L., Cambridge and Oxford respectively. His first writings were published in periodicals; afterward he was distinguished among the literary men of Europe for his extensive and profound learning, powers of generalization, taste, judgment and conscientiousness, exhibited in a succession of great works, the principal of which are *Europe During the Middle Ages, The Constitutional History of England*, and *Introduction to the Literature of Europe*. Died, 1859.

Halleck, Fitz-Greene, American poet, was born in Guilford, Conn., 1790. He began life as a clerk in a store in Guilford, but when twenty-one years old he was employed in a banking-house in New York, where he remained many years. His earliest poem, *Twilight*, was printed in 1818. Five years after he visited Europe, and in 1827 a volume of his poetry, including *Marco Bozzaris*, appeared. He died in Guilford, 1867. A bronze statue of him has been erected in Central Park, New York.

Haller (*hal'ĕr*), **Albrecht von,** Swiss anatomist, botanist, physiologist and poet, was born at Bern, 1708. He started practice in 1729, but in 1736 was called to a chair at Göttingen. Here he organized a botanical garden, an anatomical museum and theater, and an obstetrical school; helped to found the academy of sciences; wrote anatomical and physiological works; and took an active part in the literary movement. His poems were descriptive, didactic, and (the best of them) lyrical. Died, 1777.

Halley, Edmund, English astronomer, was born in 1656. He went to St. Helena in 1676 to study the southern heavens, and in 1679 published his *Catalogus Stellarum Australium*, containing the positions of 360 stars, and numerous other observations. In 1681, near Paris, he discovered the comet known by his name; his prediction of its return was the first of the kind that proved correct. He prevailed on Sir Isaac Newton to complete his *Principia*, the first volume of which was printed by Halley at his own expense. In 1703 he was chosen Savilian professor of geometry at Oxford. In 1721, after the death of Flamsteed, he was appointed astronomer royal; and he continued for twenty years, without an assistant, to carry on the operations of the Greenwich observatory. In 1721 he published his method of finding the longitude at sea, and in 1725 drew up his tables for computing the places of the planets, which did not appear until 1749. Died, 1742.

Halliwell-Phillipps (*hal'i-wĕl-fil'ips*), **James Orchard,** English Shakespearean scholar and antiquary, was born at Chelsea, 1820. He studied at Jesus College, Cambridge. His studies embraced the whole field of our earlier literature, but gradually he concentrated himself upon Shakespeare alone, and more particularly upon the facts of his life, the successive editions of his *Outlines of the Life of Shakespeare* recording the growing results of his discoveries. In 1872 he added to Halliwell the surname of Phillipps, that of his first wife, a Worcestershire heiress. Besides his sumptuous folio edition of Shakespeare, he published *Nursery Rhymes and Tales of England* and *Dictionary of Archaic and Provincial Words*. Died, 1889.

Hals (*hāls*), **Frans,** the elder, portrait and genre painter, was born, probably at Antwerp, between 1580 and 1584. He settled in Haarlem about 1604, and is regarded as the founder of the Dutch school of genre-painting. His subjects of feasting and carousal are treated with marvelous vivacity and spirit. His works are distributed among the chief galleries of England and the continent. He died at Haarlem, 1666.

Hamerton (*ham'ĕr-tun*), **Philip Gilbert,** English writer on art, was born at Laneside, Oldham, the son of a solicitor at Shaw, 1834. He began as an art-critic by contributing to the *Fine Arts Quarterly* and *Saturday Review*. From 1869 he edited the *Portfolio*. *The Intellectual Life*, published in 1873, is a volume of letters of advice addressed to literary aspirants and others; *Human Intercourse* is a volume of essays on social subjects; *The Graphic Arts*, finely illustrated, is a treatise on drawing, painting and engraving. He died at Boulogne-sur-Seine, 1894.

Hamilcar Barca (*hă-mil'kär bär'kă*), Carthaginian general, was born shortly before the first Punic war. While very young he was appointed to the command of the Carthaginian forces in Sicily in 247 B. C., at which time the Romans had possession of almost all the land. His first care was to discipline his infantry thoroughly; he then established himself on Mount Ercte (now Pellegrino, near Palermo), and from this point made pillaging excursions in all directions, sending his privateers along the coast of Italy as far north as Cumae, thus obtaining abundant supplies for his troops. In 241 B. C., Hamilcar was compelled to abandon his fortress and evacuate Sicily. He was next appointed commander-in-chief of the Carthaginian army, and was engaged for some time in wars with the neighboring tribes, which were abruptly ended by his entering upon the Spanish campaign in (probably) 236 B. C. His great aim was to found a new empire in Spain, from which, as his basis, he might assail the Romans. He spent nine years in Spain, and at length, in 228 B. C., met his death on the field of battle while fighting against the Vettones. His military genius is considered scarcely inferior to that of his son Hannibal.

Hamilton, Alexander, celebrated American statesman, was born in the West India island of Nevis,

1757, son of a Scotch merchant who had married a young French widow. His father soon failed in business, and Alexander, at the age of twelve, had to enter the counting house of a rich American merchant. His extraordinary abilities, however, induced some of his friends to procure for him a better education than could be secured at home. He was accordingly sent to a grammar-school at Elizabethtown, N. J.; and shortly afterward entered Columbia College, New York. On the outbreak of the war he obtained a commission as captain of artillery, gained the confidence of Washington, was made his aide de-camp in 1777, and acquired the greatest influence with him as his friend and adviser. On the termination of the war he left the service with the rank of colonel, and, betaking himself to legal studies, soon became one of the most eminent lawyers in New York. In 1782 he was elected by the state of New York a representative to the continental congress; in 1786 he became a member of the New York legislature; and in 1787 he was appointed one of the delegates to the convention which met at Philadelphia for the purpose of revising the Articles of Confederation. In conjunction with Madison, he had the most important share in drawing up the constitution afterward adopted. He was a strong supporter of the federal, as opposed to the democratic party; and, along with Jay and Madison, defended the constitution against all attacks, by a series of letters in the New York *Daily Advertiser*, afterward collected and published under the title of *The Federalist*. On the establishment of the new government in 1789, with Washington as president, Hamilton was appointed secretary of the treasury. In order to re-establish public credit, he carried, in spite of much opposition, a measure for the funding of the domestic debt, founded a national bank, rearranged the system of duties, and altogether showed himself one of the greatest of American financiers. In 1795 he resigned his office, and resumed the practice of law in New York. When the war with France broke out in 1798, he was, according to the wish of Washington, made major-general of the United States army; and, on the death of Washington, he succeeded to the chief command. When peace was restored, he returned to his civil duties, but became involved in a political quarrel with Aaron Burr. This difference unhappily culminated in a duel, in which Hamilton received a wound from which he died the following day, 1804.

Hamilton, Allan McLane, American physician, great-grandson of General Philip Schuyler and grandson of Alexander Hamilton, was born in Brooklyn, N. Y., 1848. He was graduated at the college of physicians and surgeons, New York, 1870; became a health inspector, 1873; later was physician in charge of the New York state hospital for diseases of the nervous system, and visiting physician to the epileptic and paralytic hospital on Blackwell's island, N. Y.; professor of mental diseases in Cornell university medical college, New York. He was appointed health officer of the port of New York in 1889. Author: *Clinical Electro-Therapeutics; Nervous Diseases; Medical Jurisprudence; A System of Legal Medicine; Railway and Other Accidents.* Died, 1919.

Hamilton, Rt. Rev. Charles, bishop, 1896, was born at Hawkesbury, 1834. He was educated at Montreal high school and University College, Oxford; D.D., Bishop's College, 1885; D.C.L., Trinity College, Toronto, 1885; ordained, 1857; curate of Quebec cathedral, 1857-58; incumbent, St. Peters, Quebec, 1858-64; rector of St. Matthews, Quebec, 1864-85, and bishop of Niagara, 1885-96; first Bishop of Ottawa, 1896-1909; first Archbishop of Ottawa from 1909.

Hamilton, Sir William, Scottish metaphysician, was born at Glasgow, 1788. He studied at Glasgow and Oxford, was admitted to the bar, but rarely practiced. From 1836, he was widely known as a philosophical writer. His chief books were an edition of Reid's works, *Discussions in Philosophy; Literature and Education; Metaphysics, Logic,* and his *Lectures*, published after his death. He left his library to the University of Glasgow. Died, 1856.

Hamilton, Sir William Rowan, British mathematician, inventor of quaternions, was born in Dublin, 1805. He was educated at Trinity College, Dublin, and in 1827 was appointed professor of astronomy at Dublin and Irish astronomer-royal; in 1835 he was knighted. He published many important treatises and papers, and his memoir on *Algebra as the Science of Pure Time* was one of the first steps to his great invention of quaternions. On this subject he published in 1853 a large volume of *Lectures*. Died, 1865.

Hamlin, Hannibal, American statesman, was born in Paris, Me., 1809. He practiced as a lawyer many years, and became a member of the state legislature. In 1842 he was elected to congress; was United States senator from 1848 to 1857, when he was elected governor on the republican ticket, but resigned immediately on again being elected senator. In 1861 he became vice-president under Lincoln, whose views he shared. He was again senator from 1869 to 1881, when he was named minister to Spain, 1881-83. Died, 1891.

Hammer, William Joseph, consulting engineer, was born in Schuykill county, Pa., 1858. He was assistant to Edward Weston in Weston malleable nickel company, Newark, N. J., 1878; in 1880 became an assistant to Thomas A. Edison in the laboratory at Menlo Park, N. J., and was sent to England the following year to become chief engineer of the English Edison company; installed in London the first central station in the world for incandescent electric lighting. Was manager of the Boston Edison electric illuminating company for a year. Since 1890 he engaged in practice as a consulting engineer. Member of many scientific societies.

Hammerstein (*hăm'ĕr-shtin*), **Oscar,** theater manager, was born in Berlin, Germany, 1847. He came to the United States in 1863; invented and patented several labor-saving devices, wrote three one-act comedies in German, 1868, which were produced in New York. He became lessee and manager of Stadt theater, New York, 1870; built Harlem opera house, 1880; later Columbus theater, Manhattan opera house, Olympia (now the New York) theater, Victoria theater, Belasco theater and New opera house. Died, 1919.

Hammond, James Bartlett, typewriter inventor, was born in Boston, 1839. He was graduated at the University of Vermont, 1861; was newspaper correspondent during Civil War; graduate of Union theological seminary, 1865; devoted many years to mechanical experiments; patented, 1880, a typewriting machine made on scientific principles; introduced "ideal" keyboard and true alignment in the Hammond typewriter; put machine on market, 1884, and won highest honors in competition. Died, 1913.

Hammond, John Hays, mining engineer, was born in San Francisco, 1855. He was graduated at the Sheffield scientific school, Yale, 1876; M.A., Yale; pursued a mining course at royal school of mines, Freiburg, Saxony. He examined properties in all parts of the world; become consulting engineer for Barnato Bros., 1893, and later for Cecil Rhodes, of whom he became a strong supporter. Was consulting engineer of consolidated gold fields of South Africa, British South Africa company, and the Randfontein Estates gold mining company. Was one of four leaders in reform movement in the Transvaal, 1895-96; after Jameson raid (with which he was not in sympathy), he was arrested and sentenced to death. Sentence was afterward commuted to fifteen years' imprisonment; and later he was released on payment of a fine of $125,000. He then went to London and became interested in many large mining companies. Returned to the United States and traveled extensively, examining mines in U. S. and Mexico. Died, 1936.

Hammond, William Alexander, American physician, was born in Annapolis, Md., 1828. He was graduated from the medical department of the University of the city of New York, and entered the United States army in 1848 as assistant surgeon. At the beginning of the Civil War he entered the army as an assistant surgeon. When the medical bureau was organized, in 1862, he was appointed surgeon-general of the army, with the rank of brigadier-general, and served as such until 1864. In that year he was court-martialed and dismissed from the army, but in 1878 was reinstated. He practiced his profession in New York, where he made a specialty of nervous diseases. He published *Diseases of the Nervous System; Insanity in its Relation to Crime; On Certain Conditions of Nervous Derangement*, etc. Died at Washington, D. C., 1900.

Hampden, John, celebrated English patriot, was born in London in 1594. He graduated at Oxford, studied law, and in 1621 entered the house of commons as member for the borough of Grampound. In 1627, for refusing to pay his proportion of the general loan which the king attempted to raise on his own authority, Hampden was committed to close imprisonment in the Gatehouse. After the dissolution of the parliament of 1628-29 he retired to his estate, and devoted himself to study and to country sport and occupations. In the short parliament of 1640 he took a prominent part in the great contest between the crown and the house of commons; to the long parliament he was returned both for Wendover and the county of Buckingham. For his resistance to the king's proceedings he was one of the five members whom Charles, in 1642, rashly attempted in person to seize in the house of commons; and on the breaking out of the civil war he raised and became colonel of a regiment in the parliamentary army under the Earl of Essex. Prince Rupert having attacked a parliamentary force at Chinnor, near Thame, Hampden put himself at the head of a few cavalry that were rallied in haste to oppose him, and in the fight that ensued at Chalgrove Field received in the first charge a wound, from which he died, 1643.

Hampden, Walter, American actor, was born at Brooklyn, N. Y., 1879. He was educated at Brooklyn Polytechnic Institute and at Harvard University. From 1901 to 1907 he was in England, where he acted in many classic roles, including that of *Hamlet*. Upon his return to America he appeared in *A Doll's House, The Servant in the House*, and *Comtesse Coquette*. In 1923-24 he revived *Cyrano de Bergerac* at National Theatre, New York, which he leased for a year. His best known later roles are *Cyrano de Bergerac* and *Othello*.

Hampton, Wade, American politician and soldier, was born at Columbia, S. C., 1818. He was a grandson of General Wade Hampton, and, though opposed to secession, he joined the confederate army and raised a force called "Hampton's legion." These troops he led with distinction at the first battle of Bull Run. He attained the rank of lieutenant-general, and was thrice wounded. In 1877-79 he was governor of South Carolina; United States senator, 1879-91; and United States commissioner of railroads, 1893-97. He died in 1902.

Hancock, John, American patriot, was born in 1737. He was one of the leaders in the revolt in Massachusetts, the seizure of his sloop, *Liberty*, being the occasion of a riot in Boston. He was very active in denouncing the "Boston massacre," and was one of the persons whose seizure was attempted by the expedition which led to the battle of Lexington. He was president of the continental congress from 1775-77, and governor of Massachusetts, 1780-85, 1787-93, and the first signer of the declaration of independence. He presided at the constitutional convention of 1788, and favored the adoption of the proposed federal constitution. Died, 1793.

Hancock, Winfield Scott, American general, was born in Pennsylvania, 1824. After graduating at West Point in 1844, he served with great gallantry during the Mexican war. Appointed brigadier-general of volunteers in 1861, he took part in the campaign on the Potomac, fought at Antietam, and commanded a corps in the battle of Gettysburg, where he was wounded, 1863. In 1864 he became brigadier-general in the regular army, in 1866 a major-general. At his death, in 1886, he was in command of the department of the East.

Handel, Georg, Friedrich, noted German musician, was born at Halle, Saxony, 1685. At ten years of age he composed a set of sonnets. In 1703 he went to Hamburg, where he played a violin in the orchestra of the opera. He was soon its director, and composed his first opera, *Almira*, which was rapidly followed by *Nero, Florinda*, and *Daphne*. His violent temper involved him in a quarrel with a brother-composer, which resulted in a duel; the sword of his adversary was stopped by a button or a music score.

He next visited Italy. In Florence, he composed *Rodrigo*, 1709. His *Agrippina*, composed in Venice, had a run of 30 nights. At Rome he produced his *Il Trionfo del Tempo*. At Naples, he composed *Acis and Galatea*, and in 1710 returned to Germany, where he was appointed chapel-master to the Elector of Hanover, afterwards George I.

He afterwards went to England where he was patronized by Queen Anne and the nobility. He composed *Rinaldo, Pastor Fido, Theseus*, and in 1715, *Amadis da Gaula*, in which Nicolini and Valentini first sung in England. The opera was an exotic in England, and a plant of slow growth. A royal academy of music was formed, and after some competition was placed under Händel's management; but his overbearing temper could not cope with musical jealousies. An opposition house was started, and both soon failed, with a loss to Händel of $50,000. He now began the composition of his oratorios. *Esther* was produced in 1733; it was followed by *Deborah, Alexander's Feast*, and *Israel in Egypt;* and in 1740 appeared *L'Allegro e Penseroso*, and *Saul*. These were produced in the Lincoln's Inn Fields theatre, but with no profit. Even the *Messiah*, the most sublime of his compositions, was at first a failure. Tired of this titantic struggle, Händel went to Dublin, where he remained nine months, and received a generous support. On his return to London he composed his *Samson*, and produced his *Messiah* for the benefit of the Foundling Hospital. It was repeated annually for the same purpose, and from 1749 to 1777 brought to that charity $51,500.

Händel became blind, but he still composed, and played on the organ, being led to his seat, and forward to receive the plaudits of the audience. Died, 1759.

References:—Marshall's *Händel;* Rockstro, *Life of G.F. Handel;* and the German life by Chrysander.

Hanly, J. Frank, lawyer, ex-governor of Indiana, was born in St. Joseph, Ill., 1863. He was educated in common schools, Champaign county, Ill., taught school for nine years in Warren county, Ind., and was admitted to the bar in 1889. He practiced at Williamsport, Ind., 1889-96; was elected to the state senate, 1890; elected to congress, 1894, serving one term, and was a candidate for the United States senate, 1899. Governor of Indiana, 1905-09. Died, 1920.

Hanna, Marcus Alonzo, American politician and legislator, was born in New Lisbon, Columbiana county, Ohio, 1837. He began his career in his father's wholesale grocery house. In 1867 entered

the firm of Rhodes and company, dealers in coal and iron, and ten years later the firm name was changed to M. A. Hanna and company. He was appointed to the United States senate as a republican by Governor Bushnell, 1897, to fill a vacancy caused by the resignation of John Sherman, who resigned to accept the position of secretary of state in President McKinley's cabinet, and took his seat March 5, 1897. His term of service under the appointment expired in January, 1898, and he was elected for a full term. Died, 1904.

Hannibal, Carthaginian general, the famous son of Hamilcar Barca, was born in 247 B. C. At nine years he accompanied his father on his Spanish expedition, and before starting swore an oath of eternal hatred to the Roman name. He attacked Saguntum, a city in alliance with Rome, for making aggressions on the Torboletes, subjects of Carthage. After eight months' siege the city was taken, and the Romans, after unsuccessfully demanding the surrender of the general who had thus wantonly violated the treaty, declared war in 218 B. C. Hannibal started from New Carthage in 218 B. C. with 90,000 foot and 12,000 horse. From the Pyrenees he marched to the Rhone without opposition, since Scipio was at Massilia (Marseilles), four days' march from the point where Hannibal crossed the river in the face of the Celtic hordes who sided with the Romans. He effected the passage of the Alps in fifteen days, in spite of the attacks of the mountain tribes, the snow, storms, and other difficulties. Scipio, having returned from Massilia, took command of the army in the north of Italy, and first met Hannibal on the plain near the river Ticinus. The Romans were entirely routed, and Scipio, severely wounded, retreated across the Po. Hannibal next inflicted a severe defeat, near Lake Thrasymene, on the consul Flaminius. He wintered in Cannæ, and in June, or, according to others, in August, 216 B. C., almost annihilated a Roman army of 90,000 men under Terentius Varro and Æmilius Paulus. In this battle about 50,000 are said to have fallen, including Æmilius Paulus. Hannibal traversed Italy in all directions, surprised the Roman generals, defeated their armies, captured their towns. The defeat of Hasdrubal, his brother, at the river Metaurus, and the loss of his army, compelled Hannibal to confine himself to the mountainous peninsula of Brutium, where for four years he resisted all the efforts of the Romans to dislodge him. At length, after having maintained himself in Italy for upward of fifteen years, he was recalled to Africa, to defend his country against Scipio; but notwithstanding his utmost exertions and the bravery of his veteran troops he was defeated near Zama, with a loss of 20,000 men, 201 B. C. The surrender of Hannibal was one of the conditions of peace; but, foreseeing such a result, he fled to Bithynia, and, seeing no hope of escape he committed suicide by taking poison, 183 B. C.

Hapgood, Norman, editor, author, and critic, was born in Chicago, Ill., 1868. He was graduated at Harvard, 1890; LL.B., Harvard law school; A.M., 1893. Author: *Literary Statesmen; Daniel Webster; Abraham Lincoln; The Etage in America,* etc. He was dramatic critic of New York *Commercial Advertiser,* and *Bookman.* 1897-1902, and editor of *Collier's Weekly,* 1903-13; *Harper's Weekly,* 1913-16; *Hearst's International Magazine,* 1923-25.

Harahan, James Theodore, president of Illinois Central railroad company, 1906-1911, was born at Lowell, Mass., 1843. He rose step by step in the service of the Orange and Alexandria railroad, the Nashville and Decatur, and the Louisville and Nashville, from 1864 until he became general manager of the latter, 1885. He was then successively assistant general manager of the Lake Shore and Michigan Southern railway, general manager of the Chesapeake and Ohio, and later of the Louisville, New Orleans and Texas railway until 1890, when he became second vice-president of the Illinois Central railroad. Made president in 1906. Killed in railroad wreck, 1912.

Harben, William Nathaniel, American novelist, was born at Dalton, Ga., 1858. He was educated at high schools and privately. He has traveled extensively, and was associate editor of the *Youth's Companion,* Boston, 1891-93. Author: *Whit Marie; Almost Persuaded; A Mute Confessor; The Land of the Changing Sun; From Clue to Climax; The Caruthers' Affair; Northern Georgia Sketches; The Woman Who Trusted; Westerfelt; Abner Daniel; The Substitute; The Georgians; Pole Baker; Ann Boyd; Mam' Lindy; Gilbert Neal,* etc. Died, 1919.

Harden, Maximilian, German editor (1861-1927). His first writings were literary essays published in newspapers. Then came social and political essays written under the pen-name, Apostata. He founded a newspaper *Die Jukunft* in 1892 which influenced the public greatly and later caused him to be sentenced to six months' imprisonment for his criticism of the government. During the war he was very outspoken, especially in the case of the *Lusitania,* and often commended the Allies, for which his paper was suppressed more than once. He advocated a democratic form of government for Germany, but was not a revolutionist.

Hardenberg (*här'den-berg*), **Karl August, Prince von,** Prussian statesman, was born at Essenroda in Hanover, 1750. In 1791 he became a Prussian minister and in 1804 first Prussian minister. In 1810 he was appointed chancellor, and addressed himself to the task of completing the reforms begun by Stein. In the war of liberation he played a prominent part, and after the treaty of Paris, in 1814, was made a prince. He took part in the congress of Vienna and in the treaties of Paris. To Hardenberg Prussia is mainly indebted for the improvements in her army system, the abolition of serfdom and the privileges of the nobles, the encouragement of municipalities and the reform of education. Died, 1822.

Hardie, James Keir (1856-1915), British labor leader, member of parliament, editor of the *Cumnock News,* 1882-86, traveled widely in India and Australia, founded the *Labor Leader,* 1907, and was a frequent contributor to magazines and reviews.

Harding, Samuel Bannister, university professor, was born in Indianapolis, 1866; graduated from Indiana University, 1890; Ph.D., Harvard, 1898. Professor of history, Indiana University. Died, 1927.

Harding, Warren G., journalist, Senator, was born near Blooming Grove, Ohio, November 2, 1865. At 14 he entered Ohio Central College, from which he was graduated. As editor of the College paper he developed an exceptional talent for journalism. He learned the printers' trade and with the aid of his father bought "The Star" a diminutive daily paper, Marion, Ohio. He made "The Star" a brilliant success and because of his liberality and generosity, there never was a strike or threatened strike in "The Star" office. Within the last score of years Mr. Harding had been abroad three times studying the systems of government of the European countries and international economic problems with which the United States has to deal. He twice represented the Thirteenth Senatorial district of Ohio in the State Legislature; served one term as Lieut.-Gov., and elected United States Senator in 1915. November 2, 1920, he was elected President of the United States by an overwhelming majority. Died, Aug. 2, 1923.

Hardinge, Henry, Viscount (1785-1786), English General, Gov. General of India, was born in Wrotham, Kent. In 1844 he was appointed Gov.-General of India and after the peace of Labore was created Viscount and was granted a pension of 5,000 pounds by the East Indian Company and 3,000 pounds by Parliament. Returning to England, he succeeded Wellington as Commander-in-Chief in 1852 and in 1855 was made Field-Marshal.

Hardy, Arthur Sherburne, diplomat, author, was born at Andover, Mass., 1847. He was graduated at West Point, 1869; served one year in 3d United States artillery; was professor of civil engineering, Iowa college, 1871-73; was editor of the *Cosmopolitan Magazine,* 1893-95; United States minister and consul-general, Teheran, Persia, 1897-99; minister of United States to Greece, Roumania, and Servia, 1899-1901; to Switzerland, 1901-03, and to Spain, 1903-05. Author: *Elements of Quaternions; Elements of Calculus; Elements of Analytic Geometry; New Methods in Topographical Surveying; Imaginary Quantities;* also novels. Died, 1930.

Hardy, Thomas, English novelist, was born in Dorsetshire, 1840. He was educated as an architect. The scenes of his novels are chiefly laid in the south of England, the early Wessex. His chief works are: *Under the Greenwood Tree; Far From the Madding Crowd; The Return of the Native; The Trumpet Major; The Woodlanders.* Died, 1928.

Hare, Augustus John Cuthbert, English author, was born in Rome, 1834. He was educated at Harrow and at University College, Oxford. He wrote the famous and often reprinted *Walks in Rome; Wanderings in Spain; Days Near Rome; Cities of Northern and Central Italy; Walks in London; Cities of Southern Italy and Sicily; Sussex,* etc. Other works are his delightful biography of Maria Edgeworth; *Memorials of a Quiet Life and Letters of Baroness Bunsen; Two Noble Lives,* etc. Died, 1903.

Hare, John, English actor, was born in London, 1844. He was educated at Giggleswick grammar school, Yorkshire, and obtained an engagement at a London theater, 1865. In 1875 he became manager of the Court theater, and 1879-88 maintained a partnership with W. H. Kendal. From 1889 to 1895 his tenancy of the Garrick theater was important for his production of *La Tosca* and *A Pair of Spectacles,* the latter possibly his greatest success. He visited the United States, 1896-97 and again in 1900. Died, 1921.

Hargreaves (*här'-grēvz*), **James,** English mechanic and inventor, was born probably at Blackburn, England, about 1745. He was an illiterate weaver and carpenter of Stanhill near that town. In 1760 he invented a carding-machine, and about 1764 the spinning-jenny. He removed to Nottingham, where he erected a spinning-mill, but his patent proved invalid. He continued to carry on business as a yarn manufacturer until his death in 1778.

Harkness (*härk'-nes*), **Albert,** American classical scholar, was born at Mendon, Mass., 1822. He was graduated at Brown University in 1842, studied at Berlin, Bonn, and Göttingen, and became professor of Greek in Brown University in 1855. He published a series of Latin classics, and a standard *Latin Grammar* which has been widely used. Died, 1907.

Harlan (*här'-lan*), **John Marshall,** jurist, associate justice of the United States supreme court 1877-1911, was born in Boyle county, Ky., 1833. He was graduated at Centre College, Ky., 1850; LL.D., Bowdoin, 1883. Studied law at Kentucky University, practiced at Frankfort, Ky., removed to Louisville in 1867 and practiced law there. Colonel of 10th Kentucky regiment in Union army, 1861-63; attorney-general of Kentucky, 1863-67; his name was presented by republican convention of Kentucky for vice-president of United States in 1872; member of Louisiana commission, 1877; one of American arbitrators on Bering sea tribunal which met in Paris, 1893; was vice-moderator of the general assembly of the Presbyterian church in 1905; and had been for more than fifteen years, and was at time of his death, lecturer in George Washington University. Died, 1911.

Harley, Robert, earl of Oxford and Mortimer, British statesman, was born in 1661. He entered parliament which met under the chieftainship of Rochester and Godolphin in 1689, and in 1701, was, by a large majority, elected speaker. He retained this post until 1704, when he became secretary of state. The principal act of his administration was the treaty of Utrecht. When George I. was proclaimed, Oxford was sent to the Tower for conspiracy to restore the Stuarts and after two years' imprisonment brought to trial. The two houses quarreled as to the mode of procedure, and the commons having in anger refused to take any part in the trial, he was acquitted by peers and released. He spent the remainder of his life in retirement. Died, 1724.

Harmon, Judson, American lawyer and statesman, was born in Hamilton county, Ohio, 1846. He was graduated at Denison University, 1866, and from the Cincinnati law school, 1869; LL.D., Denison, 1892. He was judge of common pleas court, 1876-78; was attorney-general of the United States, 1895-97; president of Ohio bar association, 1897-98, and member of faculty law department, university of Cincinnati. In 1908 he was elected governor of Ohio, and re-elected 1910. Died, 1927.

Harmsworth (*härmz'wûrth*), **Sir Alfred Charles William,** Lord Northcliffe, first baron of the isle of Thanet, was born in Chapelizod, county of Dublin, 1865. He founded, 1888, the weekly periodical *Answers,* which had an immediate success. He bought the *London News* in 1894. Two years later founded the *Daily Mail.* He subsequently founded the *Glasgow Daily Record,* and acquired the *Leeds Mercury* and the *Birmingham Gazette.* He visited the United States in 1900 and 1909, and in 1906 was elevated to the peerage as Lord Northcliffe. Died in 1922.

Harnack (*här'nák*), **Adolf,** the foremost of living church historians, was born in Dorpat, Russia, 1851, educated at the University there, 1869-72; became privat-docent at Leipzig, 1874; professor extraordinary of church history there in 1876; ordinary professor of church history at Berlin in 1889. He is a man of strong and inspiring personality, and his lectures are attended by hundreds of students from Europe and America. Is the author of many standard works on theology, the most important of which are his *What is Christianity* and the *History of Dogma.* Since 1881 he has edited, with E. Schurer, the *Theologische Litteraturzeitung.* Died, 1930.

Harned (*här'ned*), **Virginia,** American actress, was born in Boston, Mass., 1868; joined George Clark's company at sixteen and appeared as Lady Despar in the *Corsican Brothers.* She made her début at Fourteenth street theater, 1890, in *A Long Lane, or Green Meadows.* She was engaged as leading woman for E. A. Sothern, under Daniel Frohman's management; subsequently played leading roles in A. M. Palmer's stock company. Created the title role in *Trilby,* Park theater, Boston, 1895, and starred in that play one season. She married E. H. Sothern in 1896, and subsequently appeared in leading parts in his company. The marriage was dissolved, 1910.

Haroun al Raschid (*hä-rōōn' ăr-rä-shēd'*), famous caliph of Bagdad, the fifth of the Abbasides dynasty, was born about 765. He invaded Greece, and obtained from the empress Irene 70,000 gold dinars; in 801 he sent presents to Charlemagne; he raised Bagdad to unprecedented eminence in learning, commerce and splendor, and it is around him that the tales of the *Arabian Nights* center. He died in 809, when on an expedition against Khorassan.

Harper, William Rainey, American educator and scholar, president of University of Chicago, 1891-1906, was born in New Concord, Ohio, 1856. He was graduated at Muskingum College, 1870; Ph.D., Yale, 1875; D.D., Colby, 1891; LL.D., Yale, 1901; Johns Hopkins, 1902. He was principal of Masonic College, Macon, Tenn., 1875-76; tutor, 1876-79; principal preparatory department Denison University, Granville, Ohio, 1879-80; professor of Hebrew, Baptist Union theological seminary, Chicago, 1879-86; professor of Semitic languages, Yale, 1886-91, and professor of biblical literature, 1889-91; principal Chatauqua college of liberal arts, 1885-91; head professor of Semitic languages and literature, University of Chicago, 1891-1906. Author of many textbooks. Died, 1906.

Harraden (*har'-ä-den*), **Beatrice,** English novelist, was born at Hampstead, 1864, youngest daughter of Samuel Harraden. She was educated at Dresden, Cheltenham College, Queen's College, Bedford College, and received a B.A. at London

university. Author: *Things Will Take a Turn* (for children); *Ships That Pass in the Night; In Varying Moods; Hilda Strafford; Untold Tales of the Past* (for children); *The Fowler; Katharine Frensham; The Scholar's Daughter*. Died, 1936.

Harriman, Edward Henry, capitalist, railroad administrator, was born at Hempstead, L. I., N. Y., 1848. He was the son of a clergyman, received a common school education, became a broker's clerk in Wall street at fourteen, and later a stock broker on his own account. He was a member of the New York stock exchange from 1870 until his death. Was president and director of the Southern Pacific railway; director of Union Pacific railway company, Delaware and Hudson railroad, Central Pacific railway, Illinois Central railway, Western Union telegraph company, Pacific Mail steamship company, Oregon railroad and navigation company, Wells-Fargo and Company, Colorado fuel and iron company, National city bank, etc., trustee Equitable trust company, and director in many other corporations. He was considered the greatest genius in railroad organization and administration in modern times. Died, 1909.

Harrington, B. J., Canadian educator and scientist, Macdonald professor of chemistry, McGill University, Montreal, was born at St. Andrews, Quebec, Canada, 1848; died, 1907. He was graduated at McGill University, 1869; Ph.D., Yale University, 1871; LL.D. McGill, 1899. He was appointed lecturer in chemistry at McGill 1871, and the following year succeeded Dr. T. Sterry Hunt as chemist and mineralogist to the geological survey of Canada. Was appointed David Greenshields professor of chemistry and mineralogy in 1883, and for many years also lectured on both mining and metallurgy. He was president of the national historical society of Montreal, president of the chemical and physical section of the royal society of Canada; vice-president, chemical section of British association, etc. Author: *Notes on Dawsonite, a New Carbonate; Notes on the Iron Ores of Canada and Their Development; The Sap of the Ashleaved Maple; Life of Sir William Logan, First Director of the Geological Survey of Canada*, etc.

Harris, George, American educator, president Amherst College, 1899-1912, was born at East Machias, Me., 1844. He was graduated at Amherst, 1866; D.D., Amherst, 1883, Harvard, 1899, Yale, 1901; LL.D., Dartmouth, 1899; and graduated at Andover Theological Seminary, 1869. Professor Christian theology, Andover Theological Seminary, 1883-99. Preacher to Dartmouth College, 1894-99; to Harvard 1897-99. Author: *Moral Evolution, Inequality and Progress*, etc., and was one of the editors of *Andover Review*, 1884-93. Died, 1922.

Harris, James Rendel, English biblical scholar, director of studies at the Friends' settlement for social and religious study, Woolbrooke, near Birmingham, England, since 1903, was born at Plymouth. Was professor at Johns Hopkins University, 1882-85; professor at Haverford College, 1886-92; university lecturer in palæography, Cambridge, 1893-1903; professor of theology, University of Leyden, 1903-04; president Free church council, 1907-08. He has traveled extensively in the East in search of MSS. Author: *The Teaching of the Apostles and the Sibylline Books; The Teaching of the Apostles; The Apology of Aristides; Union with God; The Gospel of the Twelve Apostles; Tract on Triune Nature of God; The Guiding Hand of God*, etc.

Harris, Joel Chandler, American author, was born in Eatonton, Ga., 1848. He served apprenticeship t. printing trade, and was one of the editors of the *Atlanta Constitution* twenty-five years. Author: *Uncle Remus: His Songs and His Sayings; Nights with Uncle Remus; Uncle Remus and His Friends; Mingo; Little Mr. Thimblefinger; On the Plantation; Daddy Jake, the Runaway; Balaam and His Master; Mr. Rabbit at Home; The Story of Aaron; Sister Jane; Free Joe; Stories of Georgia; Aaron in the Wild Woods; Tales of the Home Folks; Georgia, From the Invasion of De Soto to Recent Times; Evening Tales; Stories of Home Folks; Chronicles of Aunt Minerva Ann; On the Wings of Occasion; The Making of a Statesman; Gabriel Tolliver; Wally Wanderoon; a Little Union Scout; The Tar Baby Story and other Rhymes of Uncle Remus*, etc. Died, 1908.

Harris, William Torrey, American educator and philosophical writer, United States commissioner of education, 1889-1906, was born at North Killingly, Conn., 1835. Ph.D., Brown, 1893; University of Jena, 1899; LL.D., University of Missouri, 1870, University of Pennsylvania, 1894; Yale, 1895; Princeton, 1896; settled at Concord, Mass., in 1880 and became lecturer at school of philosophy. Established, in St. Louis, 1867 *Journal of Speculative Philosophy;* was chief editor of the Appleton school readers. Edited department of philosophy in *Johnson's Cyclopædia*, writing many important articles, and was editor-in-chief of *Webster's International Dictionary*. Author: *Introduction to the Study of Philosophy; The Spiritual Sense of Dante's Divina Commedia; Hegel's Logic, A Book on the Genesis of the Categories of the Mind*, and *Psychologic Foundation of Education*. Died, 1909.

Harrison, Benjamin, lawyer, twenty-third president of the United States, was born in North Bend, Ohio, 1833. He was a great-grandson of Benjamin Harrison, signer of the declaration of independence, and grandson of William Henry Harrison, ninth president of the United States. He was graduated at Miami University, 1852; studied law in Cincinnati; removed to Indianapolis, Ind., in 1854, and laid the foundation of a fine legal practice; entered the Union army in 1862, serving with conspicuous gallantry in the Atlanta campaign, finally returning to civil life at the close of the war with the rank of brevet brigadier-general; entered the United States senate in 1881, and in 1888 was nominated for the presidency of the United States; elected in the ensuing November, and inaugurated, 1889. His administration was quiet, successful, and measurably popular. In 1892 he received again the nomination in the national republican convention, but by this time the able and persistent attacks of the democracy on the high tariff policy led to a general revulsion against it, and he was defeated at the election by Grover Cleveland. He thereupon pursued a private law practice, occasionally giving public addresses. He died in Indianapolis, Ind., 1901.

Harrison, Charles Custis, American educator, provost University of Pennsylvania, 1895-1910, was born at Philadelphia, Pa., 1844. He was graduated at the University of Pennsylvania, 1862, LL.D., Columbia, 1895; Princeton, 1896; Yale, 1901. Was in active business as a manufacturer, 1863-92. He was a trustee since 1876, University of Pennsylvania. Died, 1929.

Harrison, Elizabeth, principal of Chicago Kindergarten College, was born in Kentucky, and educated in Iowa and Chicago. From 1880 to 1883 her time was devoted to kindergarten teaching and special instruction in kindergarten work and philosophy, under Mrs. Alice H. Putnam, Miss Susan E. Blow, Professor John Kraus and Madam Kras-Boelte, together with observation work in England and France. Kindergarten teacher Loring School, Chicago, 1884-1890; studied in Germany with Frau Schrader and Baroness Maren Holtz von Bulow. 1890, founder and principal Chicago Kindergarten College, 1890——. She was, also for two years, head of kindergarten department, Chicago Normal School, and for fifteen years was prominent as public speaker and lecturer on kindergarten subjects. Author of *A Study of Child Nature; In Storyland; Two Children of the Foothills; Christmas-tide; Kindergarten Building Gifts; Some Silent Teachers; Misunderstood Children*. Died, 1927.

Harrison, Francis Burton, lawyer, congressman, was born in New York City, 1873. He was graduated from Yale, 1895, from New York law school, 1897, and was instructor at New York law school, 1897-99. During the war with Spain he was a private, troop A, New York volunteer cavalry, and captain and assistant adjutant-general, United States volunteers. Was elected to the fifty-eighth congress from the thirteenth New York district; was democratic candidate for lieutenant governor of New York, 1904. He was elected to the sixtieth congress, and reëlected to the sixty-first congress, from 16th district.

Harrison, Frederic, English essayist and philosophical writer, was born in London, 1831. He was educated at Wadham College, Oxford, became fellow and tutor of his college, and was called to the bar in 1858. A positivist and an advanced liberal, he has written *The Meaning of History; Order and Progress; The Present and the Future; On the Choice of Books; Oliver Cromwell; Annals of an Old Manor House; William the Silent*, etc. From 1889 to 1892 he was an alderman of the London county council. Died, 1923.

Harrison, James Albert, American philologist, educator, was born at Pass Christian, Miss., 1848. He was graduated at the university of Virginia, 1868; studied in Germany, 1871; L.H.D., Columbia, 1887; LL.D., Washington and Lee University; professor of English and modern languages, Washington and Lee, 1876-95; professor of English and romance languages, 1895; was professor of Teutonic languages, university of Virginia; lecturer on Anglo-Saxon poetry, Johns Hopkins. Author: *Spain in Profile; French Syntax; History of Spain; Story of Greece*. Was one of the editors of the *Century Dictionary* and *Standard Dictionary*. Died, 1911.

Harrison, John, British inventor of the chronometer, was born at Foulby near Fontefract, 1693. By 1726 he had constructed a time keeper with compensating apparatus for correcting errors due to variations of climate. In 1713 the government had offered three prizes for the discovery of a method to determine the longitude accurately. After long perseverance Harrison made a chronometer which, in a voyage to Jamaica in 1761-62, determined the longitude within eighteen geographical miles. After further trials, he was awarded the largest prize of 20,000 pounds. He wrote five works on his chronometer, etc. Died, 1776.

Harrison, William Henry, ninth president of the United States, was born in Virginia, 1773, son of Benjamin Harrison, who signed the declaration of independence. On the death of his father he joined, in 1792, as ensign, the army which Wayne was leading against the Indians of the Northwest. He left the army in 1798. In the war against the Indians in 1811, and which soon became also a war against the English in Canada, Harrison, as commander-in-chief of the American army, showed great military talent. He defeated the Indians in an important battle at Tippecanoe, and by the victory of Perry on Lake Erie was enabled to pursue the British invaders into Canada, where, in 1813, he totally routed them in the battle of the Thames. In 1824 became a member of the United States senate. In 1828 he went as ambassador to Colombia, but was recalled in 1829, and the following few years he spent in retirement as clerk in a county court in Ohio. The whig party tried in vain to make him president of the United States in 1835, and succeeded in 1840. He died suddenly in 1841, after serving one month.

Hart, Albert Bushnell, American educator and historian, was born in Clarksville, Pa., 1854. He was graduated at Harvard, 1880; Ph.D., Freiburg, Baden, 1883; LL.D., Richmond College, 1902. In 1897 he was made professor of history at Harvard University. Author: *Introduction to the Study of Federal Government; Formation of the Union; Guide to the Study of American History* (with Edward Channing); *Foundations of American Foreign Policy; Actual Government; Essentials of American History*. Editor: *Epochs of American History* (3 vols.); *American History Told by Contemporaries* (4 vols.); *American Citizen Series; Source-Book of American History; Source Readers in American History* (4 vols.); *The American Nation*, etc. Joint editor: *American History Leaflets; Harvard Graduates' Magazine; American History Review*.

Hart, James McDougal, American landscape painter, was born in Kilmarnock, Scotland, 1828. When a child he removed with his family to America, and lived at Albany, N. Y. He was made an academician in 1859. His pictures are admired for their harmony of color and quiet peacefulness of tone. The best known among them are: *Woods in Autumn; Moonrise in the Adirondacks; Peaceful Homes; Coming Out of the Shade; Threatening Weather; Indian Summer*. Died at Brooklyn, N. Y., 1901.

Hart, Joel T., American sculptor, was born in Kentucky, 1810. While working as a stonecutter at Lexington he began modeling busts in clay. He soon attained a phenomenal success in portrait busts, and on receiving a commission for marble statue of Henry Clay, 1849, went to Florence to study and work. He executed many busts and statues of eminent men during his twenty-eight years' residence in Florence. He died in 1877, and his remains were removed from Florence to Lexington, Ky., 1884, where the state erected a monument over them.

Hart, Sir Robert, British diplomat, was born at Milltown, County Armagh, Ireland, 1835. He was educated at Queen's college, Taunton, Wesley college, Dublin, and Queen's College, Belfast, graduating from the latter in 1853; M.A., 1871; hon. LL.D., 1882. Secretary to the allied commissioners for the government of the city of Canton, 1858; granted special permission to resign and accept an appointment in the Chinese imperial maritime customs, 1859; officiating inspector-general, 1861-63; commissioner at Shanghai, with charge of Yangtze ports and Ningpo, 1863; inspector-general, 1863; gazetted minister plenipotentiary, 1885, but declined. Author of *These From the Land of Sinim*, etc. Died, 1911.

Hart, William, American painter, brother of James McDougal Hart, was born in Scotland, 1823. He came to Albany, N. Y., 1831, and, like his brother, developed a taste for landscape painting; in 1848 exhibited a specimen of his work in the national academy of design in New York. For several years he was president of the Brooklyn academy of design. Some of his most notable works are: *The Last Gleam; The Golden Hour; Sunset in Dark Harbor, New Brunswick; Opening in the Elands; Up in the Glen*. He was one of the founders, and for some years, president, of the water-color society, and was himself eminent in that branch of art. Died, 1894.

Harte (*härt*), **Francis Bret,** American writer, was born in Albany, N. Y., 1839. He was at different times a miner, school teacher, printer, and editor. From 1864 to 1870 he was in San Francisco as secretary of the United States mint, and, in 1869, he published *The Heathen Chinee*. He was named American consul at Grefeld in 1878, at Glasgow in 1880, and after leaving the latter in 1885, lived in London. Chief among his works are *Condensed Novels; The Luck of Roaring Camp and Other Sketches; Poetical Works; Tales of the Argonauts; The Twins of Table Mountains and Other Stories; By Shore and Sedge; A Millionaire of Rough and Ready and Devil's Ford; A Ward of the Golden Gate*, etc. Died, 1902.

Hartly, Sir Charles Augustus, British engineer, engineer-in-chief and consulting engineer to the European commission of the Danube, 1856-1907, was born at Heworth, in Durham, 1825. He served in Crimea as captain in the Anglo-Turkish contingent, 1855-56, and in 1867 reported to foreign office on important questions of engineering connected with the river Scheldt. He was appointed member of a board of engineers to report on the improvement of the Mississippi, 1875; was nominated by the British government member of international technical commission of Suez canal, 1884, and served until 1907; has been con-

sulted at various periods by the Indian, Austrian, Russian, Egyptian, Roumanian and Bulgarian governments. Author: *Delta of the Danube; Public Works in the United States and Canada; Finland Navigations in Europe; History of the Engineering Works of the Suez Canal*, etc. Died, 1915.

Hartley, David, British philosopher, was born near Halifax, 1705. A clergyman's son, at fifteen he entered Jesus College, Cambridge, and in 1727 became a fellow. He studied for the church, but dissenting from some points in the thirty-nine articles, abandoned his intention. As a medical practitioner he attained considerable eminence at Newark, Bury St. Edmunds, London, and Bath. His chief work is *Observations on Man.* Died, 1757.

Hartmann, Karl Robert Eduard von, German philosopher, was born at Berlin, 1842. His great work was *The Philosophy of the Unconscious*, followed by books on the ethical consciousness, the development of the religious consciousness, German æsthetics, Lotze, and Kant, besides a work on the self destruction of Christianity, criticisms of neo-Kantianism and contemporary philosophies, defenses of his own system and political and educational treatises. Died, 1906.

Harvard, John, founder of Harvard College, was born in Southwark, England, 1607. He was graduated at Emmanuel College, Cambridge, England, 1631; married and came to America, 1637; was made a freeman of Massachusetts, and given a tract of land in Charlestown, where he began preaching as a Congregational minister. In his will he bequeathed about 750 pounds and 320 volumes from his library for the establishment of a college. He died at Charlestown, Mass., 1638. A granite monument was erected over his remains in Charlestown, 1828, and a memorial statue on the delta at the university was unveiled in 1884.

Harvey, George Brinton McClellan, editor of the *North American Review*, and president of Harper and Brothers, publishers, was born in Peacham, Vt., 1864. He was educated at Peacham academy; was consecutively reporter on the *Springfield Republican*, *Chicago News* and the *New York World;* was later managing editor of the *New York World*, insurance commissioner, New Jersey, colonel and aide-de-camp of Governors Green and Abbett, New Jersey. He has been president of Harper and Brothers since 1900, and bought the *Metropolitan Magazine*, 1903. He was made honorary doctor of laws by Erskine College, South Carolina, 1905, and by the University of Nevada, 1908. Was Bromley lecturer on journalism at Yale, 1908. Ambassador to England. Died, 1928.

Harvey, William. English physician, and discoverer of the circulation of the blood, was born at Folkestone, 1578. He studied at the University of Cambridge, completing his medical studies and graduating M.D at Padua. After his return to England he became fellow of the Royal college of physicians, and physician to St. Bartholomew's Hospital. In 1623 he was named physician to James I., and held the same post under Charles I.

His great discovery, developed and completed by careful and laborious investigation, was published in 1628, in the treatise entitled *Exercitatio de Motu Cordis et Sanguinis.* It was at once generally accepted, and though controversy was excited and many opponents started up, many more books were written in favor of it than against it. No Englishman opposed it. The reputation of Harvey was European. The only reply he published to any of his opponents was that to Riolanus professor of anatomy, Paris. Harvey was author also of *Exercitationes de Generatione Animalium.* He wrote other works, the manuscripts of which were mostly burned during the English civil war; two only being preserved in the British museum. He died in 1657.

References.—Willis' *Life of Harvey;* Power's *William Harvey*, in *Masters of Medicine.*

Hase (*hä'zē*), **Karl August von,** German theologian, was born at Steinbach in Saxony, 1800. Became in 1823 tutor at Tübingen. From 1830 to 1883 he was professor of theology at Jena, after which he was ennobled. His chief writings are *Desalten Pfarrers Testament; Handbook of Dogmatics; Gnosis; Life of Jesus; Church History; Francis of Assisi; Handbook of Protestant Polemical Theology; Life of St. Catharine of Siena;* and lecture on church history. Died, 1890.

Haskell, Charles Nathaniel, ex-governor of Oklahoma, was born in Putnam county, Ohio, 1860. He was reared on a farm, taught school and read law, and was admitted to the bar in 1881. He began practice at Ottawa, Ohio; engaged in railway building and other construction work, 1888; went to Muskogee, I. T., 1901, and built many lines of railroad there. Was member of Oklahoma constitutional convention, and was elected first governor of the state of Oklahoma, 1907-1911.

Hassall (*has'al*), **Arthur,** British historical writer, was born at Bebington, Cheshire, 1853. He was graduated at Trinity College, Oxford; was lecturer and tutor of Keble College, 1880-83; student of Christ Church, 1884; censor of Christ Church, 1894-95, and student and tutor since 1895. Author: *Life of Bolingbroke; Louis XIV.; A Handbook of European History; The Balance of Power; A Class Book of English History; History of France; The French People; Mazarin; The Tudor Dynasty; War and Reform; The Expansion of Great Britain*, etc.

Hassam, Childe, American artist, was born in 1859. He was educated in Boston public schools and studied art in Boston and Paris, 1886-89. He exhibited widely in this country and in Europe, and follows generally the methods of the French impressionist school. His pictures are represented in the collections of the Pennsylvania academy of fine arts; Carnegie institute, Pittsburg; Cincinnati museum; Corcoran art gallery, Washington; Boston art club, etc.

Hastings, Warren, English statesman and administrator, in India, was born in 1732. He became a member of the council of Madras, and in 1772 governor of Bengal, a position, which, in 1774, became that of governor-general of India. He was now involved in quarrels with his council, and sent in his resignation, which, however, when accepted, he disavowed. The supreme court decided in his favor, and he was reappointed. During his first term of office he sold the vale of Rohilcund to Siraj-ud Dowlah and brought about the execution of Nucomar, his enemy. Three years after his return he was impeached before the lords for high crimes and misdemeanors, but, after a trial which proceeded at intervals for seven years, and in spite of the eloquence of Burke and Sheridan, he was acquitted in 1795. He was ruined by the expense, but was granted an annuity by the court of directors. To him the British government is largely indebted for its political and judicial organization in India and its method of Indian administration. Died, 1818.

Hauff (*houf*), **Wilhelm,** German novelist, was born at Stuttgart, 1802. He studied at Tübingen, was for two years a tutor, and had been editor of a paper for nearly a year when he died, 1827. His *Märchen* and his *Novellen* are admirable for their simplicity and playful fancy. His other works include: *Die Bettlerin vom Pont des Arts; Das Bild des Kaisers; Lichtenstein*, an imitation of Scott; and *Mitteilungen aus den Memoiren des Satans*, a a story rich in satiric humor.

Haupt (*houpt*), **Lewis Muhlenberg,** American civil engineer, was born at Gettysburg, Pa., 1844. He attended the Lawrence scientific school, Harvard, and graduated at the United States military academy, 1867. Member of the Nicaragua canal commission, 1897-99; Isthmian canal commission, since 1899; president Colombia Cauca arbitration, 1807; chief engineer survey for ship canal across New Jersey; consulting engineer of Lake Erie and Ohio River ship canal, etc. He edited *The American Engineering Register*, 1885-86. Author: *Engineering Specifications and Contracts; Special Report on Railway Plant of Paris Exposition; Canals and Their Economic Relation to Transportation; A Move for Better Roads;* and a number of pamphlets and other contributions to engineering.

Haupt, Paul, philologist, professor of Semitic languages, Johns Hopkins, since 1883, was born at Görlitz, Germany, 1858. He was graduated at Gymnasium Augustum, Görlitz, 1876; University of Leipzig, Ph.D., 1878; LL.D. University of Glasgow, 1902. Editor: *The Polychrome Bible, New Critical Edition of Hebrew Text of the Old Testament.* Co-editor: *The Assyriological Library; The Johns Hopkins Contributions to Assyriology and Comparative Semitic Grammar.* Author: *The Sumerian Family Laws; The Babylonian Nimrod Epic; The Cuneiform Account of the Deluge; The Book of Canticles; The Book of Ecclesiastes;* and numerous papers on biblical and Assyrian philology, history and archæology, comparative Semitic grammar, Sumeria, etc. Died, 1926.

Haussmann (*ōs'män'*), **George Eugene,** French magistrate, was born in Paris, 1809. He entered the public service, and under Napoleon III. became prefect of the Seine in 1853. He then began his task of improving Paris by widening streets, laying out boulevards and parks, building bridges, etc. For these services he was made baron and senator. In 1871 he was appointed director of the *Crédit Mobilier*, and in 1881 was elected to the chamber of deputies. He died in comparative poverty, 1891.

Havelock (*hav'lok*), **Sir Henry,** English general, was born at Bishop-Wearmouth, in Durham, 1795. He entered the army a month or two after the battle of Waterloo, went to India in 1823, and honorably distinguished himself in the Afghan and Sikh wars. In 1856 he commanded a division of the army that invaded Persia, and subsequently took an important part in quieting the Indian mutiny. After the relief of Lucknow Havelock was attacked by dysentery, and died in 1857.

Hawkins, Sir Anthony Hope, English novelist, born in London, 1863. He was graduated from Balliol College, Oxford; received his M.A. there, and was admitted as a barrister of the Middle Temple, 1887. Author: *The Prisoner of Zenda; The King's Mirror; Tristram of Blent; The Intrusions of Peggy; Double Harness; A Servant of the Public; Sophie of Kravonia; The Great Miss Drivers*, etc. Plays: *The Adventure of Lady Ursula, Pilkerton's Peerage.* He was knighted, 1918; died, 1932.

Hawkins, Sir John, English navigator, was born at Plymouth in 1532. He was one of the first Englishmen to carry on the slave trade, in which so little shame was seen in those days that Queen Elizabeth allowed him to use as the crest of his coat-of-arms a Moor bound. He afterward became noted in fighting the Spaniards, was a rear-admiral in the great struggle with the Spanish armada, and commanded expeditions with Frobisher and Drake. He died at sea in the West Indies, 1595.

Hawthorne, Nathaniel, celebrated American novelist, was born at Salem, Mass., 1804. He was graduated at Bowdoin College in 1825, and three years later published his first novel, *Fanshawe.* He then wrote a number of stories for the journals, which he afterward collected in 1837, and published under the title of *Twice-told Tales*, a second volume of which appeared in 1842. In 1843 he took up his residence at the charming village of Concord, in a manse which had formerly been the dwelling of Emerson, and which suggested the title of his next work, *Mosses From an Old Manse*, published in 1843. This sketch, in which he gives some interesting recollections of his boyhood, first made his name known in Europe. After a three years' residence at Concord he accepted a situation in the custom-house at Salem, and removed to that city. *The Scarlet Letter* appeared in 1850, and was received with universal approbation, as was likewise *The House of the Seven Gables*, published in 1851. His *Blithedale Romance*, published in 1852, may be regarded as a kind of autobiography so far as it goes and is founded on incidents in his own life. In 1853 he received the appointment of consul at Liverpool from his friend and classmate, President Pierce, whose biography he had written. He resided in Liverpool, discharging the duties of his office for five years, and afterward went to Italy to recruit his impaired health—a journey which furnished him with material for his fantastic romance, *The Marble Faun*, generally regarded as one of the best of his works. After his return to America he published a sketch of England and the English. He died suddenly at Plymouth, N. H., 1864. As a writer he combined a true poetic spirit with a charming style, and displayed a deep knowledge of human nature.

Hay, John, American statesman and writer, was born in Salem, Ind., 1838. He was graduated from Brown University, 1858, and settled in Illinois as a lawyer. He went to Washington in 1861, as one of Lincoln's private secretaries, acting also as his aide-de-camp. He was subsequently in the United States diplomatic service, stationed at Paris, Vienna, and Madrid. In 1897 he was made ambassador to England, and in 1898 secretary of state. In the latter capacity he inaugurated the important "open door" policy, for all nations, in China, and laid the foundation for subsequent diplomatic relations with the Orient. As secretary of state he gained a standing equal to that of the most eminent men who have held that high office. In coolness, foresight, and statesmanlike appreciation of current and coming events, he had no superior among contemporary diplomats. His literary reputation rests upon *Pike County Ballads, Castilian Days*, a volume of travel, and *Life of Abraham Lincoln* (with J. G. Nicolay). Died, 1905.

Haydn, Joseph, Austrian composer, was born at Rohrau, Austria, 1732. He was the son of a poor wheelwright, and, manifesting great musical talent, he was received, at the age of eight, into the choir of the cathedral of St. Stephen's at Vienna. In the latter part of 1750 he composed his first quartet for stringed instruments. In 1759 a certain Count Morzin engaged him as music director and composer, "with a salary of 200 florins, free lodging, and table with his secretaries and other officials." In 1760 Prince Esterhazy placed him at the head of his private chapel. For him Haydn composed his beautiful symphonies and the greater number of his magnificent quartets. He is often called "Father Haydn," as having been the inventor of the symphonic form as we now essentially know it. After the death of Prince Esterhazy, in 1790, Haydn accompanied Salomon, the violinist, to England, where, in 1791-92, he produced six of his "Twelve Grand Symphonies." In England he first obtained that recognition which afterward fell to his share in his own country. On his return to Austria he purchased a small house with a garden in one of the suburbs of Vienna. Here he composed his oratorios, the *Creation* and the *Seasons.* The former work, the harmonies of which are pervaded with the fire of youth, was written in his sixty-fifth year, and is considered by many to be equal to the finest productions of Handel; the *Seasons* was almost his last work. Died in Vienna, 1809.

Haydon, Benjamin Robert, English historical painter, was born at Plymouth, England, 1786. He exhibited his first picture at the academy in 1807, *Joseph and Mary Resting With Our Savior After a Day's Journey on the Road to Egypt.* "*Christ's Entry Into Jerusalem,*" "*Mock Election,*" and "*Napoleon Musing at St. Helena,*" are his most famous paintings. He forsook the brush for the platform, and his lectures on art, in London and the provinces, brought him fame Died, 1846.

Hayes, Patrick Joseph, (1867). Prelate in Roman Catholic Church. Born in New York City, graduated from Manhattan College, 1888. Ordained priest, 1892. President Cathedral College, 1903-1914. Consecrated Bishop, 1914; Archbishop, 1919; Cardinal, 1924.

Hayes, Rutherford Birchard, nineteenth president of the United States, was born at Delaware, Ohio, 1822. He was graduated at Kenyon College and at Harvard Law School, and began the practice of law at Lower Sandusky in 1845. At the outbreak of the Civil War he was appointed major of the 23d Ohio infantry, and shortly afterward lieutenant-colonel. He distinguished himself in the campaigns of West Virginia and in the battles around Winchester, and was severely wounded at South Mountain. In 1864 he was made brigadier-general and in 1865 brevetted major-general. He was elected to congress from Ohio, 1864-66, and was governor of that state, 1868-72 and 1876-77. He was the republican candidate for the presidency in 1876, and, after the memorable contest with Samuel J. Tilden, was inaugurated in 1877. As chief magistrate his career was marked with moderation, wisdom and a sympathy with all true reforms. His independence of character, however, was strongly shown by his vetoes, his steady adherence to principle and his refusal to pander to mere party politics. Died, 1893.

Hayne, Robert Young, American statesman, was born in South Carolina, 1791. He was admitted to the bar in 1812. He sat in the United States senate from 1823 to 1832. He was a vigorous opponent of protection, and in 1832 boldly supported in congress the doctrine of nullification. The great debates between Daniel Webster and Hayne on the principles of the constitution, the authority of the general government and the rights of the individual states are of unusual historical value. He was mayor of Charleston, 1835-37. Died, 1840.

Hays, Will H., born Sullivan, Ind., 1879; graduate Wabash College, 1900. Member Indiana Bar. Chairman Republican National Committee, 1918-1921. In 1922 became President of Motion Picture Producers & Distributors of America. Postmaster-General in Harding Cabinet.

Hazlitt (*haz'lit*), **William,** English essayist and miscellaneous writer, was born in Kent, England, 1778. In 1803 he went to London, and shortly after published his *Essay on the Principles of Human Action*. In 1813 he delivered a course of lectures on the history of English philosophy, and he subsequently delivered courses on the English poets. He wrote essays in the *Examiner*, in conjunction with Leigh Hunt, which were afterward republished in a volume entitled *The Round Table*. He also wrote *Characters of Shakespeare's Plays; View of the Contemporary English Stage; Life of Napoleon*, etc. Died, 1830.

Hearn, Lafcadio, writer, of Irish-Greek parentage, was born on the island of Leucadia, 1850. He came early to the United States and in Cincinnati, New York, and New Orleans lived by means of news reports and fine imaginative sketches, contributed to the city newspapers. His exquisitely beautiful tales, as in the volume *Fantastics and Other Fancies*, were created from Creole, French, and negro life of Louisiana. In 1902 he went to Japan to lecture at the University of Tokio. He became a naturalized Japanese and married a Japanese woman. *Appreciations of English Literature* and *Talks to Writers* contain the University lectures. On the manners and impressions of the Orient he wrote *Glimpses of Unfamiliar Japan*, *Gleanings in Budda-Fields*, and others. Died, 1904.

Hearst (*hûrst*), **Phoebe Apperson,** philanthropist, was born in 1840; became a teacher. In 1861 she married George Hearst, late United States senator from California, and a man of large wealth. Gave $200,000 to build National Cathedral school for girls; established working girls' clubs, San Francisco; erected and equipped a mining building at University of California as a memorial to her husband; built, endowed and gave thousands of volumes to free libraries at Lead City, South Dakota, and Anaconda, Mont. Her other charities extend to numerous objects and institutions. She was a regent of the University of California. Died, 1919.

Hearst, William Randolph, American newspaper publisher and politician, was born in San Francisco in 1863, son of late Senator George F. and Phoebe Apperson Hearst. He was educated in the public schools of San Francisco and at Harvard. He then became editor and proprietor of the *San Francisco Examiner*, 1886; bought *New York Journal*, 1895; later bought the *New York Advertiser*, to secure news franchise, and consolidated it with the *Journal*; started the *Chicago American*, 1900. In 1902 changed name of morning issue in Chicago to *The Examiner*, and morning issue in New York to *The American*. After 1904 he also acquired the *Boston American* and the *Los Angeles Examiner*. He was elected to the 58th and 59th congresses from the 11th New York district, as democrat. He was candidate for mayor of New York in 1905 and 1909.

Heber (*hē'bēr*), **Reginald,** English prelate and hymn writer, was born at Malpas, Cheshire, 1783. He entered Brasenose College, Oxford, 1800, and in 1803 wrote his prize poem *Palestine*. He was appointed a prebendary of St. Asaph in 1812. Bampton lecturer in 1815, and preacher of Lincoln's Inn in 1822. In 1823 he accepted the see of Calcutta; but an espicopate of apostolic zeal was terminated by his sudden death at Trichinopoly, 1826. He published sermons, *A Journey Through India*, etc., and edited Jeremy Taylor's *Works*. His fame rests upon hymns, which include *Lord of Mercy and of Might; From Greenland's Icy Mountains; Holy, Holy, Holy*, and *The Son of God Goes Forth to War*.

Hebert (*ā'bâr*), **Louis Philippe,** French-Canadian sculptor, was born in the province of Quebec, 1850. In early days he worked on a farm; obtained prize at provincial exhibition, Montreal, for wood-carving in 1873; afterward studied in Paris, and won prize given by Dominion government for full-length statue of George Cartier. His chief works consist of statues, among which are those to Maisonneuse and Chénier, in Montreal. Died, 1917.

Hecker, Isaac Thomas, founder and superior of the order of Paulist fathers, was born in New York in 1819. In 1843 he joined the Brook Farm community in West Roxbury, Mass. Later he established a similar society at Worcester, Mass., then took up the study for the Episcopal ministry, but in 1845 joined the Roman Catholic church, and became a Redemptorist father. Much of his time was devoted to literature. He founded the *Catholic World*, organized the Catholic publication society, and wrote *Questions of the Soul; Aspirations of Nature; The Church and the Age*, etc. Died, 1888.

Hedin (*he-dēn*), **Sven Anders,** Swedish traveler and geographer, was born in Stockholm, 1865. He was educated at Stockholm at Upsala, and in Germany; Ph.D., Halle. He began his explorations in Persia in 1885, and has traveled through Khorasan and Turkestan, several times through Tibet and other parts of central Asia. His books include: *Through Asia; Central Asia and Tibet; Scientific Results of a Journey in Central Asia; The Tarim River*, etc.

Hegan, Alice Caldwell. See **Rice, Alice Hegan.**

Hegel, Georg Wilhelm Friedrich, German thinker and founder of a new school of philosophy, was born at Stuttgart, 1770. He was professor successively at Jena, Heidelberg, and Berlin. He was at first the disciple of Schelling, with whom he was associated in the conduct of a philosophical journal in 1802-3. But his opinions gradually took a different turn. He rejected Schelling's intellectual intuition as an unwarrantable assumption, although he continued to maintain its leading idea—the unity of the subjective or ideal, and the objective or real—and in this idea endeavored to establish that absolute cognition and absolute truth, which alone, according to this school, can satisfy the demands of the philosophical spirit.

Hegel seems not to have perfected his system; and as he had no power of exposition or of lucid expression of his thoughts, it is impossible to give a clear view of his philosophy. Indeed, it would appear that he himself had the same notion; for he is said to have remarked, that, "of all his numerous disciples, only one had ever understood him, and even he had understood him falsely."

Be this as it may, his system has been the subject of much philosophical interest in the speculative world, chiefly from the widely discrepant deductions, political and religious, which his friends and enemies draw from it; some maintaining it to be favorable to the present order of things in church and state, others founding upon it conclusions at variance with all ordinary notions of religion or morality. Hegel died of cholera, at Berlin, 1831. A considerable portion of Hegel's system is accessible in translations; the *Logic* and *Philosophy of Mind* from the *Encyclopaedia*, translated by Wallace; the *Philosophy of Right*, by Dyde; part of the *Philosophy of Fine Art*, by Bosanquet; *Philosophy of History*, by Sibree; *Philosophy of Religion*, by Speirs and Sanderson; *History of Philosophy*, by Haldane.

References.—Caird's *Hegel*, in *Phil. Classics;* Wallace's *Prolegomena to Hegel's Logic;* Seth's *Hegelianism and Personality;* Ritchie's *Darwin and Hegel;* and Macintosh's *Hegel and Hegelianism*.

Hegenberger, Lieutenant Albert S., aviator, was born in Boston, Massachusetts, September 30th, 1895. Studied civil engineering at Massachusetts Institute of Technology. Was commissioned Second-Lieutenant on April 6th, 1918. Serving with the United States Army Air Corps, he was chosen to fly with Lieutenant Maitland on the first trans-Pacific flight from Oakland, California, to Hawaii. On June 29th, 1927, the two successfully completed this flight of 2,400 miles.

Heifetz (*High'-fetz*), **Jascha,** began playing the violin at three, completed the course at the Royal Music School in Vilna, Poland, at seven, and after finishing with Professor Leopold Auer in Petrograd was a mature artist at ten. His tour through Russia was a triumph. Coming to the U. S., he conquered America. Hardly twenty years old, he ranks with the greatest violinists of the day. His technique is flawless; the intonation perfect, the quality superb and individual.

Heine (*Hi'ne*), **Heinrich,** 1797-1856, German poet and wit, was born at Dusseldorf, of Jewish parents. Abandoning Judaism, he was baptized in the Lutheran Church. His *Buch der Lieder* was a brilliant success. Many of his songs are of the most exquisite and ethereal beauty, unmatched in German literature except by the lyrics of Goethe.

Helmholtz, Herman von, German scientist, was born at Potsdam, 1821. He was elected professor of physiology at Königsberg in 1849, at Bonn in 1855, and at Heidelberg in 1858. Although his earlier researches were mainly physiological, he took rank as a physicist and mathematician in 1847, when he published his striking tract on the *Conservation of Energy*.

Naturally gifted with a powerful mathematical mind and a profound physical intuition, he gave a new direction to physiological research in optics and sound. His *Sensations of Tone* and his *Physiological Optics* were epoch-making works. Meanwhile he had created a new field in hydrodynamics by his famous investigations on vortex motion; and his inquiry into the connection between sensation and knowledge led him to the study of the foundations of geometry.

He was called to Berlin in 1871, to fill the chair of physics. His contributions to the theory of electro-dynamics, in which he aimed at greater generality than was given by Maxwell's theory, are of great importance, and it was at his instigation that Hertz demonstrated the existence of Maxwellian electromagnetic waves. He enriched the theory of thermo-dynamics by his discussion of "monocyclic" systems, and in his later papers endeavored to get at the real essence of the principle of least action. Although the idea is tentatively put forth in Maxwell's writings, Helmholtz was the first to work out explicitly the notion of the electric atom or electron, as it is now called. From 1887 until his death in 1894, he was director of the technological institute at Charlottenberg, near Berlin.

References.—M'Kendrick's *Life* in Masters of Medicine Series; *Life*, in German by Konigsberger; and article by Prof. Rucker in the *Fortnightly Review* for Nov., 1894.

Helmont (*hel'mont*), **Jan Baptista van,** Belgian chemist, was born at Brussels, in 1577. In 1609 he settled at Vilvorde, near Brussels, where he practiced medicine gratuitously for thirty years. He was the first to point out the imperative necessity for employing the balance in chemistry. He paid much attention to the study of the gases, and is supposed by some authorities to have been the first to apply the term *gases* to elastic aëriform fluids. Of these gases he distinguished several kinds. His works were published under the title *Ortus Medicinæ*. Died, 1644.

Helps, Sir Arthur, English essayist and historian, was born at Streatham, 1813. He was graduated at Cambridge in 1835, and on leaving the university obtained a post in the civil service. He then resigned and retired to Bishop's Waltham, in Hampshire, where, in the possession of ample means, he enjoyed lettered ease. His first work of consequence was entitled *Essays Written in the Intervals of Business*. Died, 1875.

Helst (*helst*), **Bartholomeus van der,** Dutch painter, was born at Haarlem or Dordrecht, between 1611 and 1614. He was joint-founder in 1654 of the painters' guild of St. Luke at Amsterdam, where he attained great celebrity as a portrait-painter. His best-known work is *The Banquet of the Civic Guard*, now in the Amsterdam gallery. Died, 1670.

Helvetius (*hel-vē'shi-us*), **Claude Adrien,** French philosopher, was born at Paris, 1715. In 1758 appeared his celebrated work *De l'Esprit*, in which he endeavored to prove sensation to be the source of all intellectual activity, and that the grand lever of all human conduct is self-satisfaction. He visited England in 1764, and the year following was entertained by Frederick the Great at Potsdam. His complete works were published after his death. Died, 1771.

Hemans (*hem'anz*), **Felicia Dorothea,** English poet, was born in Liverpool, 1793, daughter of George Browne, a Liverpool merchant, and became the wife of Captain Hemans. Her best poem of any length is *The Forest Sanctuary;* but her shorter pieces, published under the title of *Songs of the Affections*, etc., are by far the most popular. Many of these shorter pieces have become stand-

ard English lyrics, and upon them, almost exclusively depends her claim to remembrance. She died in Dublin, 1835.

Henderson, Charles Richmond, American educator, sociologist, professor of sociology, University of Chicago, after 1892, was born at Covington, Ind., 1848. He was graduated at the University of Chicago, 1870; B.D., 1873; D.D., 1885, Baptist Union theological seminary; Ph.D., Leipzig, 1901. Associate editor of *American Journal of Theology* and *American Journal of Sociology*. Author: *Introduction to Study of Dependents; Social Spirit in America; Social Settlements;* Edited: *The Christian and Civic Economy of Large Towns; Modern Methods of Charity*. Died, 1915.

Henderson, William James, American writer, music critic, *New York Sun*, since 1902, was born at Newark, N. J., 1855. He was graduated at Princeton University, 1876. Was member of staff of *New York Tribune*, 1876; *Times*, 1883; music critic, 1887-1902. Author: *Story of Music; Preludes and Studies; Elements of Navigation; What is Good Music? How Music Developed; The Orchestra and Orchestral Music; Richard Wagner; Modern Musical Drift; Pipes and Timbrels, Poems; The Art of the Singer*, etc. Associate editor, *Standard Dictionary*.

Hendricks, Thomas Andrews, vice-president of the United States in 1885, was born in Muskingum county, Ohio, 1819. Graduated at Hanover College in 1841, and was admitted to the bar in 1843. He was a democratic member of the house of representatives, 1851-55, served as United States senator, 1863-69, and as governor of Indiana, 1873-77. In 1876 he was nominated for the office of vice-president of the United States by the democrats, but was defeated. In 1876, 1880, and 1884 he was a prominent candidate for the nomination for the presidency; and in 1884, when Cleveland was nominated, he consented to take the nomination for the vice-presidency and was elected. Died, 1885.

Heney, Francis Joseph, lawyer, was born in Lima, N. Y., 1859, and has been a resident of San Francisco practically since 1864. Was admitted to the bar, 1883. He engaged in cattle business in Arizona, 1885-89; practiced law, Tucson, Arizona, 1889-95; was attorney-general of Arizona, 1893-94; removed to San Francisco, 1895, and confined cases to civil business until urged by United States Attorney-General Knox to undertake land fraud cases at Portland, Ore.; discovered conspiracy of United States Attorney John H. Hall to protect guilty politicians in consideration of reappointment; secured removal and indictment of Hall, and indictment of Senator Mitchell, George C. Brownell, and others. He was then district attorney for San Francisco, but was defeated for reëlection in 1909. Special counsel for U. S. Senate committee investigating Internal Revenue Bureau, 1924.

Henley, William Ernest, English poet, playwright, critic, and editor, was born at Gloucester, 1849. Months of illness in Edinburgh infirmary, 1873-75, bore fruit in *Hospital Rhymes*, and *A Book of Verses*, which won much attention, and was followed by *Views and Reviews; The Song of the Sword; For England's Sake; Hawthorn and Lavender*, etc. He edited the *Magazine of Art*, the *Scots Observer*, and the *New Review*, besides an edition of Burns. He also collaborated with R. L. Stevenson in four plays, *Deacon Brodie; Beau Austin; Robert Macaire*, and *Admiral Guinea*. Died, 1903.

Hennepin (*hen'ē-pin*), **Louis,** French priest, missionary and traveler, was born in Belgium about 1640. When La Salle undertook his exploration of the Mississippi Valley, Father Hennepin was assigned to his command. They discovered Niagara Falls, travelling west as far as Mackinac, and thence to Peoria, on the Illinois river. Here La Salle was obliged to leave the party, and Father Hennepin and two men in a canoe went down the Illinois river to its mouth, and thence north up the Mississippi, a journey of some six weeks, when they fell into the hands of a party of Sioux Indians. Father Hennepin spent nearly a year among the Indians, and was finally rescued by Du Luth, after whom Duluth was named. Upon his return to Europe, Hennepin published a history of his travels, which is of the greatest value in dealing with the early explorations of the Mississippi valley. Died at Utrecht about 1706.

Henry I., king of England, youngest son of William the Conqueror, was born in 1068. He successfully held the crown against his brother Robert, at first negotiating with him, and granting him a pension to resign his pretensions, but finally making war against his badly governed duchy. Robert was defeated in a bloody battle before the walls of Tenchebray in 1106, taken prisoner, and shut up in Cardiff castle during the remaining twenty-eight years of his life. The acquisition of Normandy, the ancient patrimony of his family, had been a point of ambition with Henry, but he had some trouble in keeping it, as the French king, Louis VI., and the counts of Anjou and Flanders took part with William, Roberts' youthful son, whose virtues and misfortunes secured him friends. Henry, however, brought over to himself the count of Anjou; he rendered neutral, by his eloquence and fair promises, Pope Calixtus II. and defeated the French king and his mailed knights in the almost bloodless battle of Brenneville, 1119. Next year his successes in arms and intrigues were darkened for life by the death of his only son William, who was drowned at sea on his passage from Normandy to England. Henry was styled *Beauclerc*, or "the scholar," in honor of his learning, which, for a king in his age, was not undeserving of distinction. Died, 1135.

Henry II., king of England, grandson of Henry I., was born in 1133. He was crowned with his queen, Eleanor, who was countess of Poitou and duchess of Aquitane in her own right. Henry inherited from his father Anjou, Touraine and Maine, and his father and mother succeeded in keeping and taking possession of Normandy for themselves and him; so that, by one method and another he came to be possessed of a large portion of France as well as England. His chief rivals in power were the clergy. To aid him in reducing the church to subjection to the civil power he appointed his trusted chancellor, Thomas á Becket, to the see of Canterbury, and compelled him and the other ecclesiastics to agree to the constitutions of Clarendon. Becket, however, proved to be a true churchman, and the long and obstinate struggle between him and his monarch was only terminated by his murder. During his reign occurred the conquest of Ireland. This was a nominal conquest, for the majority of the Irish tribes and chieftains continued to be independent barbarians for centuries. Henry's sons, incited by their jealous mother, Queen Eleanor, rebelled against him, and their cause was espoused by the kings of France and Scotland. In the course of this filial rebellion Henry, the eldest, died of a fever, and Geoffrey was killed in a tournament at Paris. Richard, surnamed Cœur de Lion, with King Philip of France, obtained some advantages over his father. A treaty of peace was concluded between them, of which one of the stipulations was for an indemnity for all the followers of Richard. Died, 1189.

Henry III., king of England, grandson of Henry II., and eldest son of King John, was born in 1207. He came to the throne in 1216, when a minor, and in the course of a long reign provoked much hostility by his foreign favorites and his submission to papal exactions. This discontent culminated in the barons' war, 1262-65, in which he was defeated and compelled to submit to control of the government by De Montfort and his friends. During this reign the great charter (with important clauses omitted) was frequently renewed and Westminster abbey was almost entirely built. Died, 1272.

Henry IV., king of England, first king of the house of Lancaster, was born in 1367, and surnamed Bolingbroke, from his birthplace. About 1380 he was made earl of Derby, and married Mary de Bohun. In 1397 he supported Richard II. against Gloucester, and the following year was banished. Upon the death of his father, John of Gaunt, his estates were forfeited. In July, 1399, he landed in York with three small vessels, and on September 29th he obtained from Richard, then a prisoner in the Tower, an abandonment of his claims to the throne. On the next day, Henry arose in parliament and claimed kingdom and crown. In 1412 he sent two expeditions into France, but in his closing years he was afflicted with epileptic fits, in one of which he died at Westminster, 1413.

Henry V., king of England, was born at Monmouth, 1387, eldest son of Henry IV. by Mary de Bohun. He was crowned in 1413, and at the outset of his reign liberated the young earl of March, the true heir to the crown, restored Hotspur's son to his father's lands and honors, and had Richard II.'s body buried in Westminster. The great effort of his reign was an attempted conquest of France; and in 1414 he demanded the French crown, to which he seems to have believed that he had a valid claim through his great-grandfather, Edward III. In 1415 he sailed with an army of 30,000 men and in September took Harfleur. In October, at Agincourt, he gained a battle against such odd as to make his victory one of the most notable in history. In 1420 was concluded the "perpetual peace" of Troyes, under which Henry was recognized as regent and "heir of France," and married the French king's daughter, Catherine of Valois. In 1421 he took his young queen to England to be crowned; but in a month he was recalled by the news of the defeat at Beaugé of his brother, the duke of Clarence. Henry's wonted success was attending him, when he was seized with illness, and died at Vincennes, 1422, leaving an infant to succeed him.

Henry VII., king of England, was born about 1457, first of the Tudor dynasty. He was the son of Edmund Tudor and Margaret Beaufort, a descendant of John of Gaunt. He invaded England in 1485, and defeated Richard III. at Bosworth, after which he married Elizabeth, daughter of Edward IV. His reign was marked by three Yorkist risings, which he defeated, by the measures he enforced against the nobles, by his system of marriages with foreign princes, and the enactment of Poyning's law. Died, 1509.

Henry VIII., king of England, second son of Henry VII. and Elizabeth of York, was born in 1491. Betrothed at twelve, he was married in 1509, shortly after his succession, to Catharine of Aragon, his brother's widow, six years his senior. He chose his ministers wisely, and, leaving much to their discretion, nevertheless held the reins of government himself. Wolsey, archbishop of York, his chief minister, held almost unlimited power, dependent, however, on the king's will and favor. In 1521 Henry gained from the pope the title "defender of the faith," still borne by the English sovereign, for his *Assertio Septum Sacramentorum* against Luther. The appearance at court of Anne Boleyn, and the failure of a male heir, encouraged Henry to raise the old question as to the legality of the marriage with Catharine. Wolsey zealously aided him, seeing in a divorce the possibility of a breaking of ties with Charles V. and an alliance with France. The appeal to the pope in 1527 resulted only in the appointment of a commission. In 1533 Henry, impatient at the delay, was privately married to Anne, with whom he had long been living; three months later the marriage was announced, and Cranmer, calling a court, as the highest ecclesiastical authority in England, pronounced the divorce from Catharine and declared the marriage null and void from the beginning. A year later Clement decided in favor of Catharine, but not until Henry had severed all connections with Rome, by making it treason to deny his authority as head of the church of England. In quick succession came the translation of the Bible, its introduction into every church, the act of uniformity, and the ten articles of faith, later changed again to six articles, embodying substantially the old creed, with the penalty of death for denial. In 1536 Henry charged Anne Boleyn with infidelity, sent her to the block and married Jane Seymour, by whom he had a son, Edward VI. Jane died in 1537 and three years later he married Anne of Cleves, at Cromwell's suggestion. She proved far from handsome, was divorced, and Cromwell sent to the block. On the day of Cromwell's execution Henry married Catherine Howard, but she was soon found unfaithful and beheaded. In 1543 Henry married Catharine Parr, who survived him. He died, 1547.

Henry II., king of France, was born in 1519, son of Francis I., whom he succeeded in 1547. By his alliance with the German Protestants, he acquired Metz, Toul and Verdun, carried on his father's war with Spain, was defeated at St. Quentin in 1557, but in 1558 he regained Calais from the English. He died in 1559 of a wound inflicted in a tournament held to celebrate the conclusion of the war by the marriage of his daughter and Philip II. of Spain.

Henry III., king of France, third son of Henry II. and Catharine de' Medici, was born in 1551. In 1573 the intrigues of the queen-regent secured his election to the crown of Poland; but in 1575 he succeeded his brother, Charles IX., on the French throne. His reign was a period of almost incessant civil war between Huguenots and Catholics, the duke of Guise having formed the holy league to assert the supremacy of Catholicism and secure the reversion of the throne to the Guises. In 1588 the assassination of the duke of Guise roused the Catholics to the utmost pitch of exasperation; Henry threw himself into the arms of Henry of Navarre, and the two marched upon Paris at the head of a Huguenot army. But in August, 1589, Henry was stabbed by a fanatical Dominican named Jacques Clément; after nominating Henry of Navarre as his successor, he died, the last of the house of Valois, on the following day.

Henry IV., king of France, was born in 1553, son of Anthony of Navarre, a descendant of Louis IX. He was founder of the Bourbon dynasty, succeeding Henry III. in 1589. His marriage with Marguerite de Valois, in 1572, was the occasion of the Bartholomew massacres. In 1576 he quitted the court and became leader of the Huguenots and opponent of the league, being the rival of the Guises for the succession. He defeated them at Arques and Ivry, but was unable to conquer Paris without becoming a Roman Catholic, which he did in 1593. He concluded peace with Philip II. at Vervins, and issued the edict of Nantes. He was assassinated by Ravaillac, 1610.

Henry IV., emperor of the holy Roman empire, was born at Goslar, Prussia, 1050, son of Henry III. He was crowned emperor in 1084 by Clement III. The chief occurrence of his reign was the struggle with Gregory VII., with whom he began the investiture disputes. During this celebrated controversy he deposed Gregory, but was himself excommunicated and deposed, and was obliged to submit at Canossa in 1077. In 1084 he again invaded Italy and captured Rome. Died, 1106.

Henry, Joseph, American physicist, was born in Albany, N. Y., 1799; was appointed professor of natural philosophy in the college of New Jersey at Princeton, 1832, and, in 1846, was called to the office of secretary or director of the Smithsonian institution at Washington, to the organization and wide reputation of which he had mostly contributed. Henry made most important discoveries in electromagnetism, and disputed with Morse the invention of the electric telegraph. Died, 1878.

Henry, Patrick, American orator and statesman, was born in Virginia in 1736. After receiving a common school education and spending some time in trade and agriculture, he commenced the practice of law, after only six weeks of preparatory study. In spite of several years of poverty, he first rose to distinction in managing the popular cause in the controversy between the legislature and the clergy, touching the stipend which was

claimed by the latter. In 1765 he was elected a member of the Virginia house of burgesses, with express reference to an opposition to the British stamp act. He was one of the delegates sent by Virginia to the first general congress of the colonies, in 1774, and in that body distinguished himself by his boldness and eloquence. In 1776 he was appointed the first governor of the commonwealth, and to this office was repeatedly reëlected. In 1788 he was a member of the convention which met in Virginia to consider the constitution of the United States, and he exerted himself strenuously against its adoption. Without extensive information upon legal or political topics, he was a natural orator of the highest order, possessing great powers of imagination, sarcasm and humor, united with great force and energy of manner and a deep knowledge of human nature. Died, 1799.

Henry, king of Navarre. See **Henry IV.,** king of France.

Henry the Lion, duke of Saxony and Bavaria, was born in 1129. He was the son of Henry the Proud, a rebellious noble, who had been deprived of his estates by Conrad III. On his death these dukedoms were restored to the former's son, Henry the Lion, who became the greatest of all the German princes. Great improvements were made by him in his dominions and he became so powerful as to determine to be no longer a subject even to the emperor. Died, 1195.

Henry the Navigator, son of John I., king of Portugal, and the English Philippa, daughter of John of Gaunt, was born in 1394. He distinguished himself at the capture of Ceuta in 1415; took up his residence at Sagres, in Algarve; and during the war against the Moors his sailors reached part of the ocean before unknown. Henry's thoughts were now directed toward the gold-producing coasts of Guinea; and in 1434 one of his mariners sailed round Cape Nun, and touched Cape Bojador. Next year another expedition reached a point 120 miles beyond Cape Bojador. Up to this period the prince had borne the expense of these voyages himself; henceforth, societies for the purpose were formed under his guidance. In 1445 Henry's captain, Nuno Tristam, doubled Cape Verde, and in 1448 Gonzalez Vallo discovered three of the Azores. Henry died in 1460.

Henry, O.—See **Sydney Porter.**

Henson, Herbert Hensley, canon of Westminster abbey and rector of St. Margaret's since 1900 was born in London, England, 1863. He was educated privately and at Oxford; was a fellow of All Souls College, Oxford, 1884-91; reëlected 1896; B.D., 1898; hon. D.D., Glasgow, 1906. Author: *Light and Leaven; Apostolic Christianity; Cross Bench Views of Current Church Questions; Preaching to the Times; English Religion in the 17th Century; Moral Discipline in the Christian Church; Religion in the Schools; Christ and the Nation,* etc.

Hepburn, Alonzo Barton, banker, was born at Colton, N. Y., 1846. He was graduated at Middlebury College, Vermont, 1871; LL.D., St. Lawrence University, 1900; D.C.L., 1906. United States bank examiner for New York, 1888-92; comptroller of the currency, 1892-93; president Third National Bank, New York City, 1893-97; president Chase National Bank since 1899. He is also a trustee in the New York Life Insurance Company; director Bankers Trust Company, etc. Author of *History of Coinage and Currency,* and frequent contributor to magazines. Died, 1922.

Hepburn, James Curtis, American physician and medical missionary, was born at Milton, Pa., 1815. He graduated at Princeton College, 1832; University of Pennsylvania medical department, M.D., 1836; LL.D., Lafayette, 1872, Princeton, 1905. Went to China as medical missionary, 1840; went to Japan, 1859; lived in Yokohama until 1892; returned to United States, 1893, and retired. He compiled first English dictionary of Japanese language; published an *English-Japanese Dictionary;* wrote a grammar of the Japanese language; translated the Bible into the Japanese language, 1872-88, and published a Japanese *Dictionary of the Bible,* 1891. Died, 1911.

Hepburn, William Peters, lawyer, congressman, was born in Wellsville, Ohio, 1833. His parents removed to Iowa in 1841, where he was educated in local schools and in a printing office. He was admitted to the bar in 1854; in the Union army, 1861-65, as a captain, major, and lieutenant-colonel, 2d Iowa cavalry; was presidential elector, 1876 and 1888; member of congress, 1881-87, and 1893-1909 from the 8th Iowa district. While a member of congress he was chairman of committee on interstate and foreign commerce, and author of the Hepburn bill to regulate interstate commerce. He was regarded as one of the ablest debaters in lower house for many years. Died, 1916.

Heraclius (*her-ā-klī'us*), Byzantine emperor, was born in Cappadocia about 575. In 610 he headed a revolt against Phocas, slew him, and mounted his throne. After thirty years of almost incessant fighting, he died in 641.

Herbart (*her'bärt*), **Johann Friedrich,** German philosopher, was born at Oldenberg, Germany, 1776. He then studied at Jena, became the pupil of Fichté, and received his philosophy with enthusiasm; but after more reflection he found himself obliged to reject much of his system, and to form one of his own. In 1808 he was appointed professor at Göttingen, and in 1809 obtained the chair of philosophy at Königsberg. In 1833 he returned to Göttingen, where he remained until death. His collected works were published by his scholar, Hartenstein, 1850-52. Died, 1841.

Herbert, George, English poet, was born in Montgomery Castle, Wales, 1592. In 1609 he entered Trinity College, Cambridge, in 1615 was elected a fellow, and was public orator, 1619-37. He looked for advancement at court, but, by the gift of a prebend of Lincoln and the friendship of Nicholas Ferrar, he was drawn toward a religious life, and in 1630 was presented to the vicarage of Bemerton near Salisbury. He held it only three years, when he died in 1633. His *Country Parson* is generally considered to be a picture of himself; *The Temple, or Sacred Poems, and Private Ejaculations* contains some of the purest religious verse in the English language.

Herbert, Victor, conductor, composer, was born in Dublin, Ireland, 1859. He began his musical education in Germany at the age of seven, studying under leading masters, and gained his first position of prominence as principal violoncello player in court orchestra, Stuttgart. Subsequently he was connected with Theodore Thomas', Seidl's, and other orchestral organizations as soloist and conductor. Bandmaster of 22d regiment band, New York, since 1894; conductor of Pittsburg, Pa., orchestra, 1898-1904; Victor Herbert's New York orchestra, since 1904. Composer: *The Captive,* an oratorio; *Prince Ananias; The Wizard of the Nile; The Serenade; Cyrano de Bergerac; The Ameer; The Viceroy; The Idol's Eye; The Fortune Teller; The Singing Girl; Babette; Babes in Toyland; It Happened in Nordland,* etc., all comic operas. He also wrote several compositions for orchestra, songs, and a concert for violoncello and orchestra. Died, 1924.

Herder (*her'dĕr*), **Johann Gottfried von,** German critic and poet, was born at Mohrungen in East Prussia, 1744. He studied at Königsberg, and there became acquainted with Kant and Hamann. Between 1766 and 1769 he wrote two works, in which he maintained that the truest poetry is the poetry of the people. In 1769 he made the acquaintance of Goethe at Strassburg. In 1802 he was ennobled by the elector of Bavaria. He wrote many important works, among them: *Fragments of the More Modern German Literature; Origin of Language; The Oldest Record of the Human Race; Folk-Songs; Voices of the Nations in Songs; Letters for the Advancement of Humanity,* etc. He died at Weimar, 1803.

Herkomer (*hûr'kō-mĕr*), **Hubert von,** English artist, was born in Waal, Bavaria, 1849. His father, Lorenzo Herkomer, a skillful wood-carver, emigrated with his family to the United States, 1851, but in 1857 removed to England and settled in Southampton. At the age of thirteen Herkomer entered the art school at Southampton, and won a bronze medal there. He then studied at Munich, established himself in the village of Hythe, and there painted two pictures, which he exhibited at the Dudley gallery. He finally removed to London, where he occupied himself successfully with water-color painting and designing for wood engravings. Subsequently he turned his attention to etching and other branches of practice. He became a member of the royal academy, an honorary member of the imperial academy of Vienna, and succeeded Ruskin as Slade professor of art at Oxford, 1885-94. Died, 1914.

Hermes (*her'mās*), **Georg,** Roman Catholic philosopher, was born at Dreyerwalde in Westphalia, 1775. He sought to base the Catholic faith and doctrines on a critical theory of knowledge like Kant's. The Hermesian method departed widely from the old text-books of the schools; and although his substantial orthodoxy was not questioned, his doctrines were condemned by a papal brief in 1835 as heretical, and his followers were deprived of their chairs. Died, 1831.

Herne (*hûrn*), **James A.,** American actor and dramatist, was born at Troy, N. Y., 1840. He appeared chiefly in his own plays, the best of which are: *Hearts of Oak; Margaret Fleming; Shore Acres; Rev. Griffith Davenport; Sag Harbor.* He was an actor of great ability and a skillful stage manager. Died, 1901.

Herod (*her'ud*) **the Great,** king of Judæ, was born at Askalon, 63 B. C., became governor of Galilee about 47 B.C., and through the influence of Mark Antony ascended the throne of Judæ in 40 B.C. During his reign occurred the birth of the Messiah, and the consequent massacre of the innocents. Herod was so cruel by nature that for deeds of blood and violence his name became a proverb. Died, 4 B. C.

Herodotus, Greek historian, styled the father of history, was born in Halicarnassus, Asia Minor, about 484 B. C., and died about 420 B. C. He belonged to an illustrious family, received a high education and engaged in frequent and distant travel. He visited Babylon, Arderica near Susa, the remoter parts of Egypt, Cyrene, Colchis, Scythia, Thrace, Zante, Dodona, and Magna Græcia, thus ranging over a space more than 1,700 miles from east to west and 1,600 miles from north to south.

It is related that in 446 B. C. the Athenian assembly decreed a reward to him for his *History,* which he had read publicly; and that he made known his work by recitation not only at Athens but in other cities, and also before the assembled Greeks at the great Olympian festival. He went about 440 B. C. to Thurii, a colony newly founded by the Athenians near the site of the former Sybaris, where he is said to have passed the remainder of his life, perfecting his *History.* The abruptness of its close and occasional traces of incompleteness indicate that it was not entirely finished at his death.

The main subject of Herodotus' *History* is the Persian war of invasion, yet he takes every opportunity of diverging from it in order to introduce his various historical, geographical and antiquarian knowledge. In Egypt the priests took advantage of his ignorance of the language to magnify the antiquity of their nation and to modify inglorious portions of their history. His accounts of Babylon are correct in outline, but lack the fullness and precision of the narrative of Berosus. His Persian history is based in the main on authentic national records, diversified especially in the earlier part by circumstances and adventures from romantic chroniclers.

His chief defect as a historian is an undue love of the marvelous; but he is truthful and accurate whenever he speaks from his own observation. The simple beauty of his style, the grandeur of his historical combinations and the entertainment which his narrative furnishes have never been questioned; and he is esteemed by scholars the earliest and best of romantic historians.

References.—His *History,* with commentary, has been translated into English, by Rawlinson, by Sayce, and by Macan. There is also a good translation by G. C. Macaulay. See also Wheeler's *Life and Travels of Herodotus.*

Herrera (*er-rā'rā*), **Antonio de,** Spanish historian, was born at Cuellar near Segovia, 1549. Philip II. made him chief chronicler of America, and historian of Castile, which offices he filled for many years. He wrote a history of *Castilian Exploits in the Pacific,* a description of the West Indies, a history of England and Scotland in the time of Mary Stuart, etc. Died, 1625.

Herrera, Fernando de, Spanish lyric poet, was born at Seville about 1534, and took orders in the church. Many of his love-poems are remarkable for tender feeling, while his odes display a lofty enthusiasm. He wrote a prose history of the war in Cyprus, and translated from the Latin of Stapleton a *Life of Sir Thomas More.* Died, 1597.

Herrera, Francisco, "the elder," Spanish painter, was born in Seville, 1576. He painted historical pieces, wine-shops, fairs, carnivals and scenes from the life of the people, and was one of the most eminent Spanish painters of the school of Seville. The cupola of the church at St. Bonaventure displays his skill in fresco-painting. Some of his best works are in the Louvre at Paris. Died 1656.

Herrick, Myron T., financier, ex-governor of Ohio, was born at Huntington, Ohio, 1854. He was educated in the district schools in Ohio, at Oberlin College and Ohio Wesleyan University; was admitted to the bar, Cleveland, 1878. He retired from law practice, 1886. From 1903 to 1906 he was governor of Ohio, and later was influential in the politics. Ambassador to France. Died, 1929.

Herrick, Robert, English poet, was born in Cheapside, London, 1591, son of a goldsmith. He was educated at St. John's College and at Trinity Hall, Cambridge. After taking orders as a clergyman of the church of England, he was presented by Charles I. to the vicarage of Dean Prior. In 1648 he published his celebrated Collection of lyrical poems, entitled *Hesperides, or the Works Both Human and Divine of Robert Herrick, Esq.* About the same time he published *Noble Numbers, or Pious Pieces.* His poems, not fewer than thirteen hundred in number, include, though they are very unequal, some of the finest lyrical pieces in the language. Died, 1674.

Herrick, Robert, educator, novelist, was born at Cambridge, Mass., 1868. He was graduated at Harvard, 1890; was instructor in rhetoric, Massachusetts Institute of Technology, 1890-93; professor of English, University of Chicago. Author: *The Man Who Wins; Literary Love Letters and Other Stories; The Gospel of Freedom; Love's Dilemmas; Composition and Rhetoric* (with Professor L. T. Damon); *The Web of Life; The Real World; Their Child; The Common Lot; The Memoirs of an American Citizen,* etc.

Herschel (*hûr'shel*), **Caroline Lucretia,** sister of the astronomer, Sir (Frederick) William Herschel, was born in Hanover, 1750. When William was

appointed astronomer to George III. she acted as his assistant, and in that character received a small salary from the king. She discovered seven comets, for five of which she has the credit of priority of discovery. Several remarkable nebulæ and clusters of stars included in her brother's catalogues were described from her original observations. She was made an honorary member of the royal society. Died, 1848.

Herschel, Sir John Frederick William, English astronomer, son of Sir (Frederick) William Herschel, was born in 1792. About 1825 he began his observations in sidereal astronomy, to which he chiefly devoted himself. His great enterprise was his expedition toward the close of 1833 to the Cape of Good Hope to take observations of the southern firmament. In 1847 appeared his *Results of Astronomical Observations at the Cape of Good Hope*, one of the most notable works of our time. His residence at the cape gave not only valuable additions to astronomy, but also to meteorology. His observations on the milky way, on the brightness and the color of stars, on variable stars, on the sun's rays, on the atmospheric air, and on the Magellanic clouds, all possess great value. He also made noteworthy researches in light, sound and celestial physics. His best known work is *Outlines of Astronomy*. Died, 1871.

Herschel, Sir (Frederick) William, German-English astronomer, was born in Hanover, 1738. In 1757 he went to England. Here he turned his attention to astronomy. Wanting a telescope, and unable to afford a reflector, he made one for himself. In 1781 he discovered the planet Uranus, which discovery resulted in his appointment as private astronomer to George III., with a salary of 200 pounds a year. He was knighted by George III., and made a D.C.L. by the University of Oxford. He greatly added to our knowledge of the solar system; discovered six satellites of Uranus and two satellites of Saturn; detected the rotation of Saturn's ring, the period of rotation of Saturn itself and the existence of the motion of binary stars, the first revelation of systems besides our own. He threw new light on the milky way and the constitution of nebulæ, and, in fact, was the first to give the human mind a proper conception of the immensity of the universe. Died, 1822.

Hertz, Heinrich, German physicist, was born at Hamburg in 1857. He received his college training at the University of Berlin, but continued his researches as assistant to the great Helmholtz. In 1887 he invented an apparatus not only for the detection of electromagnetic waves but also for measuring their length and velocity. These radiations are now known as Hertzian waves. In 1889 he became professor of physics at the University of Bonn. Died, 1894.

Hertz (*hĕrts*), **Henrik,** Danish poet and dramatist, was born in Copenhagen, 1798. He was of Jewish descent, was educated at the University of Copenhagen, traveled abroad, and returned as a professor of the University. His first important work was *Letters of a Ghost*, a rhymed satirical poem. His subsequent works include: *Svend Dyring's House; The Saving's Bank; Love and Politics; The Heirs*, etc. Died, 1870.

Hervieu (*er'vyû*), **Paul Ernest,** French author and dramatist, was born at Neuilly-sur-Seine, 1857. He was educated at the Lycée Condorcet, Paris; and at the Ecole de Droit, and was admitted as an advocate, 1877. In 1900 he was elected to the French academy. He has written several novels, but his most notable achievements are his dramas, which are marked by keen observation of life and delicate fancy. Died, 1915.

Herzog (*her'tsōĸ*), **Johann Jakob,** German theologian, was born at Basel, 1805. He became professor at Lausanne, 1830, at Halle, 1847, and Erlangen, 1854. He wrote books on the Plymouth brethren and the Waldenses, lives of Calvin and Æcolampadius, a church-history, etc., and edited the great *Realencyklopädie für Protestantische Theologie und Kirche* (22 volumes). Died, 1882.

Hesiod (*hē'si-ŏd*), one of the earliest Greek poets, was born in Bœotia, lived in the eighth century B. C., chiefly at Orchomenos; probably of humble birth. Of the works ascribed to him the principal were the *Works and Days*, the *Theogony* and the *Shields of Hercules*. His poems treat of the quiet pursuits of ordinary life, the origin of the world, the gods and heroes, while those of Homer are occupied with the restless and active enterprises of the heroic age.

Hewlett, Maurice Henry, English historical writer and novelist, was born at London, 1861. He was educated at the London International College, at Spring Grove, Isleworth; was admitted as a barrister, 1891. Author: *Earthwork Out of Tuscany; The Masque of Dead Florentines; Songs and Meditations; The Forest Lovers; Pan and the Young Shepherd; Little Novels of Italy; Richard Yea-and-Nay; New Canterbury Tales; The Queen's Quair; The Road in Tuscany; Fond Adventures; The Fool Errant; The Stooping Lady; Half-way House*, etc. Died, 1923.

Heyne (*hī'nĕ*), **Christian Gottlob,** German classical scholar, was born in Saxony, 1729. In 1753 he obtained the situation of under-clerk in the Brühl library at Dresden. In 1756, unfortunately for Heyne, the Seven Years' war broke out. Frederick the Great marched against Dresden, and burned, among other things, the Brühl library, but not before Heyne had edited, from a *codex* there, the *Enchiridion* of Epictetus. In 1763, on the death of Gessner, professor of rhetoric at Göttingen, Heyne was appointed his successor. Died, 1812.

Heyse (*hī'zĕ*), **Paul Johann,** German poet, dramatist and novelist, was born in Berlin, 1830. He was educated at Berlin and Bonn, and settled at Munich in 1854. He published more than a score of collections of novelettes, good specimens of which are contained in *Das Buch der Freundschaft*. His poetic works include narrative poems, such as *Urica*, and epics, such as *Die Braut von Cypern* and *Thekla*. Died, 1914.

Hezekiah, king of Judah, son and successor of Ahaz, reigned from 726 to 696 B. C. There was "none like him among all the kings of Judah" is the praise bestowed upon him in the book of *Kings*. At the head of a repentant and united people Hezekiah returned to assume the aggressive against the Philistines, and in a series of victories not only re-won the cities his father had lost, but captured others. At length Sennacherib with a mighty host advanced against Jerusalem, but by some catastrophe 180,000 men in the Assyrian camp were killed in a single night, and Sennacherib was obliged to retreat. A second Assyrian invasion, however, under Moerdach-baladan, resulted in the capture and the end of Hezekiah's rule.

Hibben, John Grier, educator, president of Princeton University, was born at Peoria, Ill., 1861. He was graduated from Princeton, 1882; Princeton Theological Seminary, 1886; Ph.D. 1893; LL.D., LaFayette College, 1907. Pastor of Presbyterian church, 1887-91; instructor and professor of philosophy, Princeton, 1891-1912. President of Princeton after Jan. 1912. He was the author of several works on philosophy, chiefly logic, and also editor of *Epochs of Philosophy*, in twelve volumes, by English and American writers. Died, 1933.

Hick, Elias, American Quaker-preacher, was born at Hempstead, L. I., 1748. At twenty-seven he was a well-known and influential Quaker preacher, and for many years traveled through the United States and Canada. He exercised great influence among his co-religionists until his Unitarianism brought him into disfavor with orthodox Friends; but he defended his views with perseverance, and at eighty he still preached. The result was schism of the society into two divisions, known as orthodox and Hicksite Friends. He was a vigorous abolitionist. Died, 1830.

Higginson, Henry Lee, banker, was born in New York, 1834. He entered Harvard in 1851, but did not complete course. He served in United States volunteers in Civil War, becoming major and brevetted lieutenant-colonel of 1st Massachusetts cavalry, and was severely wounded at Aldie, Va., June, 1863. He later entered the firm of Lee, Higginson and Company, bankers, Boston. He devoted a considerable sum to organization of the symphony orchestra in Boston. Died, 1919.

Higginson, Thomas Wentworth, American writer, was born in Cambridge, Mass., 1823. He graduated at Harvard, 1841; LL.D., Harvard. After several years in the ministry he entered into the movement against slavery; took part in the Civil War as captain of the 51st Massachusetts volunteer militia, later colonel 1st South Carolina (Union) volunteers, and afterward of the 33d United States colored troops. Author: *Outdoor Papers; Army Life in a Black Regiment; Life of Margaret Fuller Ossoli; Larger History of the United States; The Monarch of Dreams; The New World and the New Book; Concerning All of Us; Such As They Are*, poems; *English History for Americans; Old Cambridge; Contemporaries; Henry W. Longfellow*, in American Men of Letters series; *John G. Whittier*, in English Men of Letters series; *A Reader's History of American Literature; Part of a Man's Life*, etc. Died, 1911.

Hildebrand (*hil'dĕ-brand*), **Saint.** See Gregory VII.

Hildreth (*hil'dreth*), **Richard,** American historian, was born in Deerfield, Mass., 1807. He was graduated at Harvard College in 1826; admitted to the bar in 1830, and became connected with the Boston *Atlas* and other newspapers. In 1861 he became United States consul at Trieste, Austria. Among his most notable works are the *White Slave*, an anti-slavery novel; *History of the United States* (6 volumes); *Banks, Banking and Paper Currency*; etc. He died at Florence, Italy, 1865.

Hilgard (*hil'gärd*), **Eugene Woldemar,** professor of agriculture, University of California, and director California agricultural experiment station since 1875, was born at Zweibrücken, Rhenish Bavaria, 1833. Was graduated at Heidelberg, Ph.D., 1853; LL.D., Columbia. He was state geologist, Mississippi, 1855-73; also professor of chemistry, University of Mississippi, and professor of geology and natural history, University of Michigan, 1873-75. Received the Liebig medal for distinguished achievements in agricultural sciences from academy of sciences, Munich; also gold medal, Paris exposition, 1900, as collaborator in agricultural science. Author: *Report on the Geology and Agriculture of Mississippi; Report on the Agricultural Features of the Pacific Slope; Reports and Bulletins California Experiment Station*, 1877-1903. Editor: *Cotton Culture in the United States, 10th Census*. Died, 1916.

Hill, Adams Sherman, educator, was born in Boston, Mass., 1833. He was graduated at Harvard College, 1853; Harvard Law School, 1855; LL.D., 1903. He was law reporter, correspondent, and editor, New York, Washington, and Chicago, 1856-68; assistant professor of rhetoric, 1872-76, Boylston professor of rhetoric and oratory, Harvard, 1876-1904, emeritus professor same until 1911. Author: *Principles of Rhetoric; Our English; Foundations of Rhetoric; Beginnings of Rhetoric and Composition*, etc. Died, 1911.

Hill, Albert Ross, educator, president University of Missouri, 1908-1922, was born in Nova Scotia, 1869; graduated at Dalhousie University, 1892; Ph.D., Cornell, 1895; LL.D., University of South Carolina, 1905, and director of psychological laboratories, University of Nebraska; professor educational psychology and dean of teachers' college, University of Missouri, 1903-07; professor philosophy of education, director of school of education and dean of college of arts and sciences, Cornell University, 1907-08. He was president of the Western philosophical association, 1904-05. director foreign operations, American Red Cross, 1921-23; gen. mgr. Ward Investment Co., Kansas City, Mo., since 1923.

Hill, Ambrose Powell, American soldier, was born in Virginia, 1825. He was graduated at West Point, 1847, served in the Mexican war, and entered the confederate army in 1861 as colonel. He served in Johnston's command at the first battle of Bull Run; became a major-general, 1862; commanded the right wing of Jackson's corps at Chancellorsville; was promoted to lieutenant-general, 1863; commanded a corps at Gettysburg; repelled, with Longstreet, the attack on Weldon railroad; was killed near Petersburg, Va., 1865, while reconnoitering.

Hill, David Bennett, American lawyer and politician, was born at Havana, N. Y., 1843. He was educated at the district schools and Havana Academy and was admitted to the bar in 1864. Delegate to national democratic conventions, 1876, 1884, 1896, 1900, 1904; seconded nomination of William J. Bryan for presidency, 1900; mayor, 1882, Elmira, N. Y., lieutenant-governor of New York, 1882-85; governor of New York, 1885-91; United States senator, 1891-97; prominent candidate for presidential nomination in national democratic convention, 1892; candidate for governor of New York, 1894; died, 1910.

Hill, David Jayne, American diplomat, scholar, was born in Plainfield, N. J., 1850. He was graduated at Bucknell University, Pa., 1874; LL.D., Colgate, University of Pennsylvania, President of Bucknell University, 1879-88; president of University of Rochester, 1888-96; resigned; spent nearly three years in study of public law of Europe; professor of European diplomacy in school of comparative jurisprudence and diplomacy, Washington. Assistant secretary of state of United States, 1898-1903, envoy extraordinary and minister plenipotentiary of United States to Switzerland, 1903-05; to the Netherlands, 1905-07; ambassador to Germany, 1908-1911. Author: *Life of Washington Irving; Principles and Fallacies of Socialism; Genetic Philosophy; International Justice; The Life and Work of Hugo Grotius; The Contemporary Development of Diplomacy; A History of Diplomacy in the International Development of Europe*, etc. Died, 1932.

Hill, James J., railway official, capitalist, was born near Guelph, Ont., 1838. He was educated at Rockwood Academy; left his father's farm for business life in Minnesota. He established in 1870 the Red River transportation company, which was the first to open communication between St. Paul and Winnipeg; organized, 1875, the Northwestern fuel company, and three years later sold out his interest, in the meantime having organized a syndicate which secured control of the St. Paul and Pacific railroad, from the Dutch owners of the securities. He reörganized the system as the St. Paul, Minneapolis and Manitoba Railway Company, and was its general manager, 1879-82; vice-president, 1882-83, and president after 1883. This railway became part of the Great Northern system, 1890. He became president of the entire Great Northern system, 1893; retired in 1907 and became chairman of the board of directors of same. He gave $500,000 toward establishing the Roman Catholic Theological Seminary at St. Paul, Minn. Died, 1916.

Hill, Sir Rowland, originator of penny postage, was born at Kidderminster, England, 1795, and was a teacher from an early age down to 1833. Sensible of the urgent need for reducing the high rates of postage, he advocated, in 1837, an adhesive postage stamp and a low and uniform rate between all places in the British isles in a pamphlet, *Post-office Reform*. Two years later Hill was attached to the treasury for the purpose of putting his projected reforms into execution; and in 1840 the present uniform penny rate came into force. In 1844 Hill became secretary to the postmaster-general, and in 1854 secretary to the post-office. In 1864 he resigned owing to ill-health, and was awarded a pension of 2,000 pounds for life, together with a parliamentary grant of 20,000 pounds. He died at Hampstead in 1879.

Hill, Thomas, American educator and writer, was born at New Brunswick, N. J., 1818. He graduated at Harvard, 1843, and from the divinity

school, 1845. He was pastor of the Unitarian church at Waltham, Mass., 1845-59; president of Antioch College, 1859-62; president of Harvard, 1862-68, resigning on account of poor health. He then accompanied Agassiz to South America on a scientific expedition, and in 1873 became pastor of a Unitarian church at Portland, Me. He was an able mathematician, an authority on natural sciences, and a gifted classical scholar. Died at Waltham, Mass., 1891.

Hillel (*hil'el*), surnamed Hababli, "the Babylonian," and Hazaken, "the elder," one of the greatest doctors of the Jewish law, was born in Babylonia about 60 B. C. He was president of the sanhedrim in Jerusalem, through appointment of Herod I., 30 B. C. to 9 A. D., and was distinguished for his humility, gentleness and humane spirit. He founded the Talmudic Judaism, and wrote extensively on law and morals. Died, 10 A. D.

Hillis (*hil'is*), **Newell Dwight,** clergyman, author, was born in Magnolia, Ia., 1858. He was educated at Iowa College, Lake Forest University and McCormick theological seminary; M.A.; D.D., Northwestern University. He entered the Presbyterian ministry; was pastor at Peoria, Ill., 1887-90; at Evanston, Ill., 1890-94; succeeded the late Professor David Swing as pastor of Central church, Chicago, 1894; pastor of Plymouth church, Brooklyn, since January, 1899. Author: *The Investment of Influence; A Man's Value to Society; How the Inner Light Failed; Foretokens of Immortality; Great Books as Life Teachers; Influence of Christ in Modern Life.* Died, 1929.

Hindenburg, Paul Ludwig Hans Anton von Beneckendorff und von, German general, born 1847; graduated from military academy at 16; lieutenant in Austro-Prussian war; received Iron Cross at Sedan in 1870; later, professor in the War Academy; retired, 1911; commander of Eastern armies in European War, 1914; chief of general staff, 1916. In 1925 he was elected President of the German Republic, reelected in 1932. Died 1934

Hipparchus (*hi-pär'kus*), first great Greek astronomer, was born at Nicæa in Bithynia, flourished between 160 and 125 B. C., and made observations at Rhodes. He discovered the precession of the equinoxes and the eccentricity of the sun's path, determined the length of the solar year, estimated the distances of the sun and moon from the earth, drew up a catalogue of 1,080 stars, and fixed the geographical position of places on the earth by giving their latitude and longitude.

Hippocrates (*hi-pok'rä-tēz*), Greek physician, the most celebrated of antiquity, was born in the island of Cos, probably about 460 B. C.; and thereafter visiting Athens, he settled in practice. He died at Larissa in Thessaly in 377 or 359 B.C. Seventy-two works bear his name. He seems to have gathered up all that was sound in the past history of medicine, was good in diagnosis and prognosis, and believed that the four fluids or humors of the body, blood, phlegm, yellow bile and black bile, are the primary seats of disease. His works were first printed in a Latin translation in 1525 A.D. The first Greek edition appeared in 1526 A.D

Hirsch (*hürsh*, Ger. *hirsh*), **Emil Gustav,** German American clergyman, educator, was born in Luxemburg, Germany, 1852. He received his education in Germany; was graduated at University of Pennsylvania, 1872; LL.D., Austin College, Ill., 1896; L.H.D., Western University of Pennsylvania, 1901. Minister of Sinai congregation, Chicago, since 1880. President and member of public library board, Chicago, 1888-97; professor of rabbinical literature and philosophy, University of Chicago, since 1892. Edited *The Reform Advocate*, Chicago. Edited biblical department, *Jewish Encyclopedia.* Author of various monographs on biblical and religious subjects, and was prominent as orator on public and patriotic occasions. Died, 1923.

Hitchcock, Charles Henry, American geologist, was born at Amherst, Mass., 1830. He was graduated at Amherst College, 1850; LL.D., 1896; Ph.D., Lafayette, 1870; professor of geology, Dartmouth College, since 1868. He headed the expedition occupying Mt. Washington, N. H., in winters of 1870-71, the first high mountain observatory in this country. Was one of the founders of the geological society of America. Author: *Mt. Washington in Winter; Report on Geology of New Hampshire*, etc. Died, 1919.

Hitchcock, Edward, American geologist, was born at Deerfield, Mass., 1793. He was educated at Yale and ordained to the Congregational ministry, 1821; professor of chemistry and natural history in Amherst College, 1825-45; president and professor of natural theology and geology, 1845-54, and subsequently held the chair of geology until his death. In 1824 he published *The Geology of the Connecticut Valley.* In 1850 he was appointed agricultural commissioner for his native state, visited and examined the chief agricultural schools of Europe, and subsequently published his *Report on the Agricultural Schools of Europe.* Died, 1864.

Hitchcock, Frank Harris, American politician, postmaster-general, was born at Amherst, Ohio, 1867. He was graduated at Harvard, 1891; the Columbian University Law School, 1894; LL.M. 1895; was admitted to bar of District of Columbia, 1894, and to that of the United States Supreme Court, 1897. He entered the government service in 1891; was chief of division of foreign markets, United States department of agriculture, and was first assistant postmaster-general, 1905-08. He was chosen chairman of the republican national committee in 1908, and conducted the presidential campaign of that year. He served as postmaster-general under President Taft, 1909-13. Resumed law practice, 1913. Died, 1935.

Hitler, Adolf (born 1889), a political leader, founder of the Fascist movement ("the Brown Shirts") in Germany. Of Austrian birth, Hitler became a naturalized citizen and aspired to the Presidency of the German republic. Organized the National Socialist party ("the Nazis"), the outgrowth of a military organization founded by him in 1919. In 1923 the Hitler volunteers engineered a revolt in Bavaria, for which their leader was sentenced to prison. Released after a few months, he began to build up his powerful Nazi party, the aims of which are not unlike those of the Italian Fascisti. Became Chancellor 1933, acquired tremendous power over army, labor unions, Reichstag, in fact, over all Germany. Suppressed Jews. Reichsfuehrer 1935

Hoar, George Frisbie, American statesman, lawyer, was born in Concord, Mass., 1826. He was graduated from Harvard College, 1846 and afterward from the Dane Law School, Harvard. He practiced law at Worcester, was member of congress, 1869-77, and United States senator from 1877 until his death. He was an able lawyer, a keen debater and a man of scholarly attainments. He left valuable *Memoirs* containing his observations during his long political career. In the senate he was a steadfast opponent of President McKinley's policy in the Philippines. Died in Worcester, Mass., 1904.

Hobart (*hō'bart*), **Garret Augustus,** American legislator and vice-president of the United States. He was educated in Rutgers College, studied law, member of the republican national committee. He was nominated and elected vice-president by the republican party in 1896, and to a greater extent, perhaps, than any of his predecessors made his office one of real influence and power. Died in office, 1899.

Hobbes (*hobz*), **John Oliver,** pseudonym of Mrs. Pearl Mary Teresa Craigie (*nee* Richards), novelist, was born at Boston, Mass., 1867, and died in 1903. She wrote *Some Emotions and a Moral; The Sinner's Comedy; A Study in Temptations; The Gods, Some Mortals, and Lord Wickenham; The Herb-moon; The Ambassador*, a play; *The School for Saints; Robert Orange*, etc.

Hobbes, Thomas, English philosopher, was born at Malmesbury, England, 1588. He was graduated at Oxford, and in 1610 went abroad with the earl of Devonshire as his pupil, and made a tour of France and Italy. His first original work, entitled *Elementa Philosophica de Cive*, was printed in Paris, 1642. After the meeting of the long parliament he went to Paris, because of his dread of the civil troubles. In 1647 he was appointed mathematical tutor to the prince of Wales, afterward Charles II. Then followed his *Leviathan*, embodying his famous "social compact" theory, and *Liberty and Necessity.* His last works were a translation of Homer and a history of the civil wars. Died, 1679.

Hobson, Richmond Pearson, congressman, lecturer, was born in Greensboro, Ala., 1870. He was graduated from the United States naval academy, 1889, studied at the Ecole National Superior des Mines and Ecole d'Application du Genie Maritime, Paris. Served on flagship *New York* in blockade duty, in bombardment of Matazas in expedition against San Juan de Puerto Rico, commanded collier *Merrimac* and sunk her in Santiago harbor to prevent the exit of the Spanish fleet. As a result was captured and made a prisoner in Spanish fortress, June 3 to July 6, 1898. He was then superintending naval construction of the Crescent shipyard, Elizabeth, N. J., May-June, 1902. He resigned from the United States navy, 1903, and was a member of congress from the sixth Alabama district, 1907-15; organizer, 1921, and general secretary American Alcohol Education Association organized 1923, and president International Narcotic Education Association. Author: *A Study of the Situation and Outlook in Europe; The Disappearing Gun Afloat; The Yacht Defender, and the Use of Aluminum in Marine Construction; The Sinking of the Merrimac*, etc.

Hodge, Charles, American theologian, was born in Philadelphia, Pa., 1797. He was graduated at Princeton College in 1815, and in 1822 became a professor in the Princeton Theological Seminary, where he remained until the close of his life. Author: *Commentaries on Romans, Corinthians, and Ephesians; History of the Presbyterian Church in America; What is Darwinism?* Died, 1878.

Hodges, George, American clergyman and writer, dean of the Episcopal Theological School, Cambridge, Mass., since 1894, was born in Rome, N. Y., 1856. He was graduated from Hamilton, 1877; D.D., Western University of Pennsylvania, 1892; D.C.L., Hobart, 1902. Was ordained priest, 1882. Author: *The Episcopal Church; Christianity Between Sundays; Fountains Abbey; The Human Nature of the Saints; Three Hundred Years of the Episcopal Church in America; The Administration of an Institutional Church; The Happy Family; The Pursuit of Happiness; The Year of Grace; Holderness*, etc. Died, 1919.

Hodgins (*hoj'inz*), **John George,** Canadian educator and writer, librarian and historiographer of the education department of Ontario since 1890, was born in Dublin, 1821. He removed to Canada, 1833, and was educated at Upper Canada academy, Victoria College, Coburg. He was graduated in law at Toronto University, 1860; LL.D., 1870; was admitted to the bar of Ontario, 1870. He was editor of the *Upper Canada Journal of Education* nearly thirty years; Lovell's *General Geography; First Steps in General Geography; School Manual; Lectures on the School Law.* Died, 1912.

Hodgins, Thomas, Canadian jurist, judge of the admiralty division of the exchequer court and master-in-ordinary, supreme court, Ontario, was born in Dublin, 1828. He emigrated to Canada, 1848, was graduated from Toronto University, 1856; LL.B., 1858; M.A., 1860; honorary LL.D., 1906; was admitted to the bar, 1858; queen's counsel for Dominion, 1873; member for West Elgin in the Ontario legislature, 1871-78; contested West Toronto, 1878, and West York, 1882, for the Dominion house of commons; declined the county judgeship of York, 1875. Author: *Bills of Exchange, Notes and Cheques; British and American Diplomacy Affecting Canada*, 1782-1899; etc. Died, 1910.

Hodgkin (*hoj'kin*), **Thomas,** English historian, was born at Tottenham, 1831. He was graduated at University College, London, and was a partner in the banking firm of Hodgkin, Barnett and Company, Newcastle-on-Tyne. Since 1874 he devoted his leisure time to historical writing, and retired from business. Author: *Italy and Her Invaders; Life of George Fox; Life of Charles the Great*, in Foreign Statesmen series; *Political History of England*, etc. Died, 1913.

Hodzumi, Nobushige, Japanese educator and law writer, professor of law in the Imperial University of Tokyo since 1881, was born in 1855. He was educated at Tokyo University, Middle Temple, London, England, and at Berlin University. He was a member of the house of peers, 1890-92, and with two colleagues drafted the present Japanese civil code. Author: *Ancestor Worship and Japanese Law; The New Japanese Civil Codes as Material for the Study of Comparative Jurisprudence; Gonin-gumi, or the System of Mutual Help and Supervision among Five Families*, etc.

Hoe, Robert, manufacturer, inventor, was born in New York, 1839. He was educated in the public schools, entered printing press factory of R. Hoe and Company, founded by his grandfather, Robert, and developed the printing press from the "Hoe cylinder" of the 1846 patent to the present double-sextuple Hoe. He was one of the founders of the Metropolitan museum of art. Died, 1909.

Hoeber, Arthur, painter; was born at New York. 1854; educated at the Art Student's League and at Ecole des Beaux Arts, Paris, under Gérôme, 1881-86. First exhibit at Salon, Sur la Grande Route, 1882; last exhibit Salon, Le Pain Quotidien, 1885, and contributor to most American exhibitions. Writer and lecturer on art; art critic *New York Times*, three years; associate editor of *Illustrated America*, one year; then art critic *The Globe and Commercial Advertiser*, New York. Member of American Newspaper Association. Author: *Treasures of the Metropolitan Museum of Art; Painting in XIX. Century in France, Belgium, Spain and Italy;* art contributor to the *New Encyclopædia Britannica;* etc. Died, 1915.

Hofer (*hō'fer*), **Andreas,** Tyrolese patriot, was born at St. Leonard, 1767. In 1796 he led a body of Tyrolese against the French on the lake of Garda; in 1808 secret deputies, among whom was Hofer, arrived at Vienna, to present to the archduke John the sufferings of the people, and their wish to be reunited to Austria. By the desire of the archduke, Baron von Hormayr sketched for them a plan of insurrection, which met with such success that, in three days, from the 11th to the 13th of April, 1809, nearly the whole country was liberated. Napoleon, however, at once marched three armies to the Tyrol, to subdue the rebellious peasantry. At first Hofer concealed himself in a cave, but when Spechbacher, Joachim Haspinger, a Capuchin, and Peter Mayer, at the head of the armed population, renewed the defense of the Tyrol, and repeatedly defeated the enemy, Hofer issued from his retreat, and took the leadership of the Tyrolese. At the battle fought August 12th on the Iselberg, Lefebyre was driven from the Tyrol. Hofer continued to conduct the civil and military administration until the peace of Vienna. The French and Bavarians poured into the country for the third or fourth time, and after a brief struggle Hofer was obliged to take refuge in concealment. After a lapse of two months he was betrayed into the hands of the French by a priest named Douay, conveyed to Mantua, tried and condemned to be shot. The sentence was carried into execution in 1810.

Hoff (*hof*), **Jakobus Hendrikus van't,** Dutch chemist, was born at Rotterdam, 1852. He was appointed professor of chemistry, mineralogy, and geology at Amsterdam, and in 1896 became professor of chemistry in the University of Berlin. He made notable researches in physical chemistry, and is the founder of stereo-chemistry. In 1901 he received the Nobel prize for the most important contribution to chemistry. Died, 1911.

Hoffding (*hŭf'deng*), **Harold,** Danish psychologist, philosopher and educator, professor of philosophy,

University of Copenhagen, was born in 1843. He graduated from the University of Copenhagen, and received his Ph.D. in 1870; D.Sc., Oxford; LL.D., St. Andrews, Aberdeen. He is a member of the royal Danish society of letters and sciences; Author: *Psychology; Ethics; History of Modern Philosophy; Philosophical Problems; Modern Philosophers; The Philosophy of Religion*. Died, 1931.

Hoffmann, Ernst Theodor Wilhelm, German writer, composer, critic and caricaturist, was born at Königsberg, 1776. In 1797 he was appointed assessor at Posen; but his love of caricature got him into trouble, and he was degraded to an inferior post. In 1815 he resumed his career in the Prussian service, and from 1816 until his death held a position in the supreme court at Berlin. His shorter tales were mostly published in collections. Died, 1822.

Hofmann, August Wilhelm von, German chemist, was born at Giessen, 1818. He became assistant there to Liebig, and, when the royal college of chemistry was established in London in 1845, Hofmann was made superintendent. In 1865 he went to Berlin as professor of chemistry and, ennobled in 1888.] Died there in 1892.

Hofmann, Josef Casimir, pianist: born, Cracow, Poland, Austria-Hungary, Jan. 20, 1876. Pupil of Rubenstein and of Moszkowski. Composer and concert soloist.

Hogarth (*hō'gärth*), **William,** English painter, engraver and pictorial satirist, was born at London, 1697; about 1720 began business for himself, first employed in engraving coats of arms, crests, etc., and designing plates for booksellers. He made the illustrations for Gray's edition of Butler's *Hudibras*. He secretly married the daughter of Sir James Thornhill in 1729, and in 1730 began the painting of his satires, among them being: *Harlot's Progress; A Midnight Modern Conversation; A Rake's Progress; The Distressed Poet;* and his master-piece, the famous *Marriage a la Mode*. He died at London, 1764.

Holbein (*hōl'bin*), **Hans,** or **Johann,** called "the younger," German painter, was born at Grünstadt, 1497. About 1526 he contracted an intimacy with Erasmus, whose portrait he painted, and soon after visited England, where he passed the remainder of his life. Henry VIII. made him court painter. As an engraver he is chiefly known by the celebrated "*Dance of Death*," a series of fifty-three woodcuts engraved from his own designs, although it is seldom found with more than forty-six. Died, 1543.

Holberg (*hol'berg*), **Ludvig, Baron,** creator of modern Danish literature, was born at Bergen in Norway, 1684. His first notable works were satirical poems, among them *Peder Paars*, in which he ridicules the pedantic stiffness and stupidity of contemporary life and thought. In 1721 the first Danish theater was opened at Copenhagen, and Holberg began to write comedies with marvelous success. After 1724 he turned to history. In 1741 he produced the romance *Niels Klim's Subterranean Journey;* and lastly the serious reflective works, *Moral Thoughts* and *Epistles* and his own *Autobiography*. Died, 1754.

Holden (*hōl-den*), **Edward Singleton,** American astronomer, was born in St. Louis, Mo., 1846. He was graduated at the scientific school in Washington University in 1866, at West Point in 1870, and was appointed second lieutenant of artillery. In 1873 he became professor of mathematics in the United States navy, and was ordered to the naval observatory at Washington, D. C. In 1881 he became professor of astronomy in the University of Wisconsin and director of the Washburn observatory, where he remained with brief intermission until 1885, and published four volumes of observations. He was chosen president of the University of California, 1885-88; director of the Lick observatory on Mt. Hamilton, 1888-98; and librarian of the United States military academy after 1901. Died, 1914.

Holland, Sir Henry, English physician and writer, was born at Knutsford, Cheshire, 1788. He was graduated at Edinburgh, 1811, and in 1815 published *Travels in Albania, Thessaly*, etc. He settled in London in 1816; became one of the most eminent members of his profession, in 1840 was appointed physician to the prince consort, in 1852 to the queen; and in 1853 was created a baronet. He died in London, 1873.

Holland, Josiah Gilbert, American writer was born at Belchertown, Mass., 1819. He studied medicine and practiced for some three years, and then became superintendent of public schools at Vicksburg, Miss.; was one of the founders of *Scribner's Magazine* in 1870, and remained editor of it and of its successor, the *Century Magazine*, until his death. He was a prolific author and all his books were of a high moral tone. Some of the best known of them are *Letters to Young People; Bitter-Sweet; Gold Foil; Arthur Bonnicastle; The Story of Seven Oaks*. Died at New York, 1881.

Holland, Thomas Erskine, English law writer and educator, professor of international law and diplomacy at Oxford, was born in 1835. He was graduated at Oxford, D.C.L., Oxford; LL.D., Bologna, Glasgow, Dublin. A fellow of the British academy; associate of the Royal academy of Belgium. He was British plenipotentiary at the Geneva conference, 1906; bencher, Lincoln's Inn, 1907. Author: *The Elements of Jurisprudence; The Institutes of Justinian; The Admiralty Manual of Naval Prize Law; Studies in International Law; The Laws and Customs of War on Land; Neutral Duties in a Maritime War*, etc. Died. 1926.

Holland, William Jacob, educator, naturalist, was born in Jamaica, West Indies, 1848, of American parentage. He was graduated at Amherst, 1869, and Princeton theological seminary, 1874; Ph.D., 1886, Sc.D., 1902, Washington and Jefferson; LL.D., St. Andrews University, 1905. He was chancellor Western University of Pennsylvania, 1891-1901; director of Carnegie institute, Pittsburg, Pa., 1898 to 1922. Regarded as an authority on zoölogy and museum administration. Author: *The Butterfly Book; The Moth Book*, and of many scientific papers published by the United States government, the zoölogical society of London, etc. Editor of the *Annals* and *Memoirs* published by the Carnegie museum.

Holmes, Oliver Wendell, jurist, was born in Boston, Mass., 1841. He was graduated from Harvard, 1861, and from Harvard law school, 1868; LL.D., 1895; Yale, 1886. He served three years in the 20th Massachusetts volunteers; was wounded at Ball's Bluff, 1861, at Antietam, 1862, and at Marye's Hill, Fredericksburg, 1863, and received brevets as major, lieutenant-colonel, and colonel. After the war he engaged in practice at Boston, and was editor of the *American Law Review*, 1870-73; was professor of law, Harvard law school, 1882; associate justice, 1882-99; chief-justice, 1899-1902, supreme judicial court of Massachusetts; associate justice of supreme court of United States since December, 1902. Author: *The Common Law*, lectures at Lowell institute, *Speeches*, etc. Edited *Kent's Commentaries*. Died 1935.

Holmes, Oliver Wendell, American physician and poet, was born in Cambridge, Mass., 1809. He was graduated at Harvard in 1829, studied law for a period, but subsequently devoted himself to medicine, and, after attendance in the hospitals of Europe for several years, received his degree in medicine in 1836. In 1838 he became professor of anatomy and physiology in the Dartmouth College, and in 1847 was appointed to the same chair at Harvard. He gained some reputation as an anatomist, and was, besides, an able microscopist and a skillful auscultator; but his widest fame is as a poet, a wit, and a man of letters. His wit and humor are transcendent, and all his literary efforts of rare originality and excellence. He was also a fascinating and instructive lecturer, while his admirable social qualities endeared him to the large and intellectual circle he so adorned. The first collection of his poems appeared in 1836 and attracted marked attention. Then followed his Phi Beta Kappa poems, *Poetry; Terpsichore; Urania;* and *Astræa*, all of which added to his reputation. In 1857 he contributed his *Autocrat of the Breakfast Table*, a connected series of prose essays, to the *Atlantic Monthly*, which was followed by *The Professor at the Breakfast Table; The Poet at the Breakfast Table;* and *Over the Teacups*. This brilliant series, which was in his happiest vein, was interspersed with poems, and was fraught with humor, pathos, practical wisdom and a healthy sentiment grateful and refreshing. His other works include *Currents and Counter-Currents in Medical Science; Elsie Venner*, a romance; *Songs in Many Keys; Soundings From the Atlantic; The Guardian Angel;* and *Mechanism in Thought and Morals*. Died, 1894.

Holmes, William Henry, American anthropologist, archæologist, was born in Harrison county, Ohio, 1846. He was graduated at McNeely Normal College, 1870; curator department aboriginal pottery, United States national museum, 1882-93; archæologist United States bureau ethnology, in charge of explorations, 1889-98; curator anthropology, Field Columbian museum and professor anthropic geology, University of Chicago, 1894-97; head curator department anthropology, 1898-1902; chief bureau American ethnology since 1902; curator prehistoric archæology, 1903, and national gallery of art, 1907, United States national museum. Member of numerous scientific societies, foreign and domestic. Author: *Archæological Studies Among the Cities of Mexico; Stone Implements of the Potomac-Chesapeake Tidewater Province*, etc.

Holmested, George Smith, Canadian lawyer and legal writer, was born in England 1841; educated in English private schools, studied law in Canada, and was admitted to the bar in 1864; registrar in Chancery, 1881, and following; senior registrar of the High Court of Justice of Ontario. Kings Counsel, 1902. Author: annotated editions of the *Ontario Mechanics' Lien Act; Workmen's Compensation Act; Ontario Judicature Act; Imperial Statutes Relating to Property and Civil Rights*, etc. Died, 1928.

Holst (*hōlst*), **Hermann Eduard von,** German-American historian, was born in Fellin, Livonia, Russia, 1841. He came to the United States in 1867, engaged in literary work and lectured for several years, returned to Europe, and became professor in the University of Strassburg, 1872, and at Freiburg, 1874. He was appointed professor of history in the University of Chicago, 1892, which post he retained until 1900, when he returned to Freiburg and retired. Died, 1904.

Holyoake (*hōl'yōk; hōl'i-ōk*), **George Jacob,** English reformer, founder of "secularism," was born at Birmingham, 1817. He taught mathematics for several years; was secretary to Garibaldi's British contingent, edited the *Reasoner* and promoted the bill leagalizing secular affirmations. Holyoake was the last person imprisoned in England on a charge of atheism. He wrote *The Rochdale Pioneers; Self-help a Hundred Years Ago; Trial of Theism; Sixty Years of an Agitator's Life*, etc. Died, 1906.

Homer, was the greatest poet of Greece and of the ancient world; he lived about the ninth century B. C., and was an Asiatic Greek. Seven cities disputed for the honor of being his birthplace; he was blind and poor and went about reciting his verses for bread; the *Iliad* and the *Odyssey* were his works; such are the main items of the almost universal and unquestioned belief respecting Homer in the ancient world. To sum up all doubts and denial on the matter in one word—no one knows even so much as the fact of the existence of the great poet.

The *Iliad* and the *Odyssey* are facts beyond doubt; their high antiquity, their immense importance as sources not only of later poetic inspiration, but even of the popular religious faith of the Greeks, and their incalculable influence on all subsequent literature, are also unquestionable. It is, however, established by recent criticism that the *Iliad* is not *one* poem; but that this work, in common with the *Odyssey*, is made up of a series of antecedent lays of heroic and mythological character, bearing on one subject, and skillfully welded together, perhaps in great measure re-written, by the unknown person who gave these works to the world.

The origin of these remarkable poems has been critically studied by many learned authors within recent time, whose conclusions generally agree with the statements given above.

Among the numerous English or American translations of Homer we must name the earliest and very spirited version by Chapman, afterward republished; those by Pope in heroic verse, and by Cowper in blank verse and, more recently, the *Iliad* in blank verse by the Earl of Derby, and in the same meter by Wright; the *Odyssey* in blank verse, by Musgrave; the excellent translation of the *Iliad* in blank verse by W. C. Bryant, published in 1870, and which is still generally considered the best. The *Odyssey* has been translated by Worsley, Morris and Butcher and Lang.

References.—Lang's *Homer and the Epic;* Jebb's *Introduction to Homer;* Leaf's *Companion to the Iliad;* Gladstone's *Studies on Homer;* Autenrieth's *Homeric Dictionary;* and Ridgeway's *Early Age of Greece*.

Homer, Louise, an American contralto, was the daughter of a Pittsburg clergyman. Her musical education began in Philadelphia with Alice Groff and W. L. Whitney. After two years of devoted study in Paris she accomplished wonders for her voice, and in 1898 made her debut as *Leona* in *Favorita*. An immediate engagement at Covent Garden, London, followed. In 1899 she was secured by the Theatre de la Monnie, in Brusssel, where she remained two years. The next year she returned to Covent Garden, and achieved an old-world triumph.

Homer, Sidney, American composer, was born in Boston, December 9, 1864. He studied in this country with George W. Chadwick, then in Germany. His chief music is of interpretative nature for the works of noted poets: *Thy Voice Is Heard* (Tennyson), *Requiem*, and *Sing Me a Song of a Lad That Is Gone* (Stevenson's *Underwoods*), *The Leaf* (Oliver Wendell Holmes), and a number of ballad songs. Louise Dilworth Beatty, the wife of Sidney Homer, is a noted soprano.

Homer, Winslow, American artist, was born at Boston, 1836. While young he worked at lithography in Boston, and in 1859 went to New York and became a student of art at the academy of design. He pursued his studies in Paris and won recognition as an artist of originality. Among his pictures are *Prisoners From the Front; Snap the Whip* and the marine paintings: *Northeaster; Stormbeater; The Maine Coast*, his masterpiece; and *Wood's Island by Moonlight*. Died in 1910.

Honorius (*hō-nō'ri-us*), **Flavius,** emperor of the West, was born at Constantinople, 384 A. D. He was the second son of Theodosius the Great, at whose death the empire was divided between his sons Arcadius and Honorius. The latter, when only ten years old, received the western half. Stilicho was the *de facto* ruler of the western empire until 408; and after his death Alaric the Goth overran Italy, and took Rome in 410. Honorius died at Ravenna, which he had made his capital, in 423.

Hood, John Bell, American general, was born in Kentucky, 1831. He was graduated from the United States military academy in 1853, and appointed lieutenant of infantry in the same year. He was actively engaged on frontier duty until 1861, when he entered the confederate army, where he served in every position from first lieutenant to that of division commander, with the rank of lieutenant-general. He took a conspicuous part in the Virginia peninsular campaign, at the second battle of Bull Run, Antietam, Gettysburg and Chickamauga, where he lost a leg, and in 1864 succeeded Johnston in command of the army, resisting Sherman's invasion of Georgia. He died in 1879.

Hood, Samuel, Viscount, English admiral, was born at Thorncombe, Dorset, 1724. He entered the British navy in 1741, and became post-captain in 1756. In 1778 he was made commissioner of the Portsmouth dockyard. In 1780, promoted to flag rank, he was sent to reinforce Rodney on the North American and West Indian stations. In the West Indies in 1782 he showed himself a masterly tactician in the series of maneuvres by which he outwitted De Grasse off St. Kitts; and he had a conspicuous share in the decisive victory of Dominica. For his services he was made Baron Hood in the Irish peerage; and in 1788 became a lord of the admiralty. In 1793, appointed to the Mediterranean, he directed the occupation of Toulon and the operations in the gulf of Lyons. In 1796 he was made Viscount Hood, and died at Bath, 1816.

Hood, Thomas, English poet and humorist, was born in London, 1798. In 1821 he was offered the post of sub-editor of the *London Magazine*, at once entered upon its duties and acquired an extensive literary acquaintance. He published *Whims and Oddities* in 1826, of which a second and third series appeared during the following two years. In 1829 he commenced *The Comic Annual*, and continued it for nine years. In 1831 he wrote his novel of *Tylney Hall*. In 1838 he commenced the publication of *Hood's Own*, to which his portrait was attached. In 1844 he started *Hood's Magazine*, and contributed to its pages until within a month of his death. His *Song of the Shirt* and *Bridge of Sighs* are among the most perfect poems of their kind in the English language. He died in 1845.

Hooke, Robert, English natural philosopher, was born at Freshwater, Isle of Wight, 1635. He was educated at Westminster and Christ Church, Oxford. He has justly been considered one of the greatest philosophical mechanics. His theory of gravitation subsequently formed part of Newton's; he anticipated the invention of the steam-engine. His other discoveries were the law of the extension and compression of elastic bodies, the simplest theory of the arch, the balance-spring of watches and the anchor-escapement clocks. The quadrant, telescope and microscope are also materially indebted to him. He died in 1703.

Hooker, Joseph, American general, was born in Hadley, Mass., 1814. He was graduated at West Point in 1837, and fought in the Florida and Mexican wars, being three times promoted for gallant conduct. In 1853 he resigned, and became a farmer in California. When the Civil War began he entered the army again and soon became a major-general. He fought under McClellan on the march to Richmond, and afterward in northern Virginia and Maryland, receiving a wound at the battle of Antietam. His bravery in action brought him the nickname "Fighting Joe Hooker." In January, 1863, he was made commander of the army of the Potomac, and in May he fought the bloody battle of Chancellorsville. Owing to a difference between Hooker and his commander-in-chief, General Halleck, the former resigned his command, June 27, 1863, but he still served as a major-general, and fought under Sherman at Atlanta. After the war he commanded in different departments, and in 1868 retired from the army. He died at Garden City, N. Y., 1879.

Hooker, Sir Joseph Dalton, British botanist, was born at Glasgow in 1817. He graduated as an M.D., but always devoted his attention to botany. In 1871 he made an expedition to Morocco, ascended the Great Atlas, the summit of which had never before been reached by a European, and secured a valuable collection of plants. He was appointed assistant-director at Kew gardens in 1855, and, on the death of his father in 1865, succeeded him as director, retiring in 1885. He was president of the British Association in 1868, and was elected president of the Royal Society in 1873. His great work, which he undertook in conjunction with George Bentham, is the *Genera Plantarum*, the first part of which appeared in 1862; and the first part of the second volume, bringing down the work to the *Compositae*, was published in 1873. Died, 1911.

Hooker, Richard, English theologian and writer, was born in Exeter, England, 1554. He was graduated from Oxford, 1574, was a fellow of Corpus Christi College, Oxford, and deputy professor of Hebrew. The archbishop of York promoted him to the mastership of the Temple in London, 1585. The morning and afternoon services belonged respectively to him and to Walter Travers, the one inclining to the Arminian view and maintaining the Anglican form of worship, the other maintaining Calvinistic opinions and inclining to the Presbyterian form. A controversy arose, which was the occasion of Hooker's great work on *Ecclesiastical Polity*. Died, 1600.

Hooker, Thomas, English clergyman and American colonist, was born at Markfield, Leicester, about 1586. He became a fellow of Emmanuel College, Cambridge, and was for three years a Puritan lecturer at Chelmsford. In 1630 he retired to Holland; in 1633 sailed for Massachusetts, and received a charge at Cambridge. In 1636 he removed with his congregation to Connecticut, and founded Hartford. Died, 1647.

Hoover, Herbert Clark, engineer, U. S. and World's Food Commissioner, was born at West Branch, Iowa, 1874. Graduated from Stanford University, 1895. Practiced mining engineering in the United States and the Far East and in London. Helped defend Tientsin during the Boxer uprising. During World War in charge of American relief in London and in Belgium. U. S. food administrator, 1917-18, and after armistice extended services to destitute European peoples. Secretary of Commerce, 1921-28. Prominent in radio broadcasting regulation, also in flood relief. President of United States, 1929-1933.

Hopkins, Mark, American educator, was born in Massachusetts, 1802. He was graduated at Williams College in 1824, and received the degree of M.D. in 1828; was professor of moral philosophy and rhetoric in Williams College from 1830 until his death in 1887; was president of the college, 1836-72; in 1857 became president of the American board of commissioners for foreign missions.

Hopkinson, Francis, American politician and author, was born in Philadelphia, Pa., 1737. He was a delegate to the continental congress from New Jersey, and was one of the signers of the declaration of independence. He wrote *The Battle of the Kegs; A Pretty Story; The Political Catechism*, and other works in prose and verse. His son, Joseph, judge of the United States district court, wrote *Hail Columbia*. Died, 1791.

Hopper, De Wolf, comedian, was born in New York, 1858. He made his first professional appearance in *Our Boys*, 1878; later with Daniel Frohman's Madison square company as *Pittacus Green* in *Hazel Kirke* and other rôles; studied vocal music and joined the McCaull opera company. For several years he starred in comedy rôles at the head of his own company; later with Weber and Fields company; then again starred at the head of his own company, playing *Mr. Pickwick*. He became famous. Died, 1935.

Horace, Quintus Horatius Flaccus, famous Roman poet, was born near Venusia, Italy, 65 B. C. Athens was at this time regarded as the university of the world, and thither Horace repaired in his nineteenth year to complete his education by a course of philosophy and science under Greek masters. But the civil wars which followed the death of Julius Cæsar, in 44 B. C., interrupted him in his studies. The arrival of Brutus at Athens roused the patriotic feelings of the youthful Romans, and along with others Horace ardently embraced the cause of the republic. Though entirely inexperienced in war, he was promoted to the rank of military tribune, with the command of a legion, and in this character shared in the defeat at Philippi, 42 B. C. After the battle he returned to Rome, and by acting as clerk in the quæstor's office he contrived to live until he found means of making himself known to the poets Varius and Vergil, by whom his name was first mentioned to Mæcenas. The friend of the prime minister found easy access to the emperor; Horace was soon on terms of familiarity with Augustus, and enjoyed his friendship and patronage during the remainder of his life. But the friendship of Mæcenas, who gave him an estate in the Savine territory, about thirty-four miles from Rome, made him independent for life. His works consist of two books of *Satires*, a book of *Epodes*, four books of *Odes*, two books of *Epistles*, and a treatise on the *Art of Poetry*. Died, 8 B. C.

Hornaday (*hôr'nā-dā*), **William Temple,** American naturalist, director of the New York zoölogical park since 1896, was born in Plainfield, Ind., 1854. He was educated at Iowa Agricultural College; studied zoölogy and museology. Chief taxidermist, U. S. National Museum, 1882-90. Director N. Y. Zoölogical Park, 1896-1926. Author *Two Years in the Jungle; The Extermination of the American Bison; The American Natural History; Camp-Fires in Canadian Rockies*, etc.

Hornblower, William Butler, American lawyer, was born in Paterson, N. J., 1851. He was graduated at Princeton University, 1871; LL.B., Columbia Law School, 1875; LL.D., Princeton, 1895, and was a member of the firm of Hornblower, Miller and Potter of New York; was appointed, 1893, by President Cleveland, associate justice of the United States supreme court, but was not confirmed by senate, owing to opposition by New York senators, for political reasons. He was a member of the board of commissioners of statutory consolidation which engaged in examining and consolidating all general statutes of New York from 1777. Died, 1914.

Horsford (*hôrs'fẽrd*), **Eben Norton,** American chemist, was born in Livingston county, N. Y., 1818. He studied engineering and was engaged on the geological survey of the state of New York. He studied in Germany, under Liebig, and, on his return to the United States in 1847, was elected Rumford professor of science at Harvard. After sixteen years' service there he resigned to engage in chemical manufactures. He wrote extensively on scientific subjects. Died, 1893.

Hoskin, John, Canadian lawyer, chairman of the board of governors of the University of Toronto, was born at Holsworthy, Devon, England, 1836. He was educated in London; went to Canada, 1854, and was admitted to the bar, 1863. He was made a queen's counsel in 1873; and was a member of the dominion senate for Toronto University; hon. LL.D., 1889; D.C.L., Trinity University. He was head of the firm of M'Carthy Osler, Hoskins and Harcourt; and director of many corporations.

Hosmer (*hoz'mẽr*), **Harriet,** American sculptor, was born in Watertown, Mass., 1830. She early showed a talent for sculpture by modeling figures in clay. To prepare herself for her chosen career she studied anatomy, first with her father, and afterward at the medical school at St. Louis. Returning to her home in 1851, she modeled her first work, *Hesper*, which had so decided a success that she was sent to Rome, where she became the pupil of Gibson. Her most ambitious work is a colossal statue of *Zenobia in Chains*. She devised a method for converting Italian limestone into marble. Died, 1908.

Hosmer, James Kendall, 1834-1927, American author, librarian of Minneapolis public library, 1892-1904, was born at Northfield, Mass. He was graduated at Harvard, 1855; Ph.D., University of Missouri; LL.D., Washington University. Served in Civil War as private in 52d Massachusetts volunteers; after the war was professor in Antioch College, in University of Missouri, and professor of English and German literature, Washington University, St. Louis, Mo., 1874-92. Author: *Color Guard; Short History of German Literature; Story of the Jews; Life of Samuel Adams*, in American Statesmen series; *History of the Louisiana Purchase; History of the Civil War in America*, etc.

Houdini, Harry (1874-1926), magician, was the son of a Wisconsin minister. He began trapeze performing at the age of eight, and made several tours of the world, appearing before many rulers and eminent people. In 1910 he made the first successful airplane flight in Australia. Was actively engaged in motion pictures of a most sensational and thrilling variety. Author: *The Right Way To Do Wrong, Handcuff Secrets*. Died, 1926.

Hough (*huf*), **Emerson,** American author, was born at Newton, Ia., 1857. He was graduated at the State University of Iowa, 1880. He traveled over the wildest portions of the West; explored Yellowstone park during the winter of 1895, and the act of congress protecting the park buffalo was due to this trip. He was for ten years writer of *Chicago and The West* department and western manager, beginning 1889, of *Forest and Stream*, New York. Author: *The Singing Mouse Stories; The Story of the Cowboy; The Law of the Land; Heart's Desire; The Story of the Outlaw;* etc. Died, 1923.

Houston, David Franklin, secretary of agriculture, educator, was born in Union county, N. C., Feb. 17, 1866. He was graduated from South Carolina College, 1887, and received the degree A.M. from Harvard, 1892; LL.D., Tulane, and University of Wisconsin. After his course at Harvard, he was professor of political science at the University of Texas, 1894-1902; president of the Agricultural and Mechanical College of Texas, 1902-05; president of the University of Texas, 1905-08; and chancellor, Washington University, St. Louis, Mo., 1908-13. Secretary of Agriculture and later Secretary of the Treasury in the Wilson Cabinet. He married Helen Beall, of Austin, Texas.

Houston (*hū'stun*), **Edwin James,** American electric engineer, was born at Alexandria, Va., 1844; emeritus professor of physical geography and natural philosophy, Central high school, Philadelphia, and of physics in Franklin institute, Philadelphia; for two terms president of the American Institute of Electrical Engineers, and received the degree Ph.D. from Princeton University. Author: *Outlines of Natural Philosophy; The Electric Transmission of Intelligence; Alternating Currents; Electric Railways; Electro-Dynamic Machinery; Telegraphy; Telephony; Electricity in Every Day Life*, etc. Died, 1914.

Houston, Sam, American soldier, was born in Virginia, 1793. He enlisted in the war of 1812, was chosen ensign, and fought under Jackson with a courage that won his lasting friendship. In 1823 he became a member of congress, and in 1827 governor of Tennessee. In 1829 he married the daughter of ex-Governor Allen and in the following April, for reasons never made public, abandoned wife, country and civilization; was adopted as a son by the chief of the Cherokee nation and was formally admitted as a chief. In 1832 he went to Washington and procured the removal of several United States Indian agents on charges of fraud. The Texan war offered a new field to his ambition, and he was made commander-in-chief; fought the remarkable and decisive battle of San Jacinto, 1836; at one blow annihilated the Mexican army and achieved the independence of Texas. The "hero of San Jacinto"

was elected first president of Texas, and reëlected in 1841, and on the annexation of Texas to the United States in 1845 was sent to the United States senate, where he remained until 1859, when he was elected governor of Texas. He opposed secession, but retired to private life when he found that opposition was fruitless. Died, 1863.

Howard, John, noted English philanthropist, was born at Enfield, near London, 1726. Appointed high sheriff of Bedford in 1773, his attention was called to the state of the prisons of the country. His sympathies once aroused, he extended his inquiries over the whole kingdom, bringing to light an amount of misery and degradation of which hitherto his countrymen had had no conception. In 1774 he was examined before a committee of the house of commons, and many reforms were the result. In 1777 after a tour through England, he published a volume entitled, *The State of the Prisons in England and Wales, With Preliminary Observations, and an Account of Some Foreign Prisons.* Died, 1790.

Howard, Leland Osslan, American entomologist, chief of bureau entomology, United States department of agriculture, since 1894, was born at Rockford, Ill., 1857. He was graduated at Cornell, 1877; Ph.D., Georgetown University, 1896; was assistant entomologist, United States department of agriculture, 1878-94. He was for some years editor of *Insect Life*, a journal of the department of agriculture; prepared definitions in entomology for *Century* and *Standard* dictionaries; is lecturer on insects at Swarthmore College, and in the graduate school Georgetown University. Author: *Mosquitoes—How They Live, Etc.; The Insect Book*, and many government publications.

Howard, Oliver Otis, American soldier, was born at Leeds, Me., 1830. He was graduated at Bowdoin College, 1850; at West Point, 1854; LL.D., Waterville College, 1865; Shurtleff College, 1865; Gettysburg Theological Seminary, 1866, and Bowdoin College. He served in the Civil War; lost an arm at the battle of Fair Oaks, 1862; was made major-general of volunteers, 1862; accompanied Sherman on his march to the sea. At the close of the Civil War he was placed at the head of the freedmen's bureau. From 1869-73 he was president of Howard University; became brigadier-general in the United States army, 1864; brevet major-general, 1865; superintendent of West Point military academy, 1881-82; commanded the department of the East, 1888. Founder, 1895, and president board of directors, Lincoln Memorial University, Cumberland Gap, Tenn.; chevalier legion of honor, France, 1884, commander's medal, legion of honor. 1904. Author: *Donald's School Days; Nez Perces Joseph; Our Wild Indians;* and *Autobiography*, 2 vols. Died, 1909.

Howe, Elias, inventor of the lock-stitch sewing-machine, was born at Spencer, Mass., 1819. He worked at Lowell and Boston as a mechanic. At the latter place he developed, constructed and patented the sewing-machine, 1846. By his royalties he in time obtained $200,000 per annum, and amassed a fortune of $2,000,000. During the Civil War he served as a private. Died, 1867.

Howe, Julia Ward, American author, was born in New York, 1819, daughter of Samuel Ward. She received a private education, and married in 1843 the eminent philanthropist, Dr. Samuel Gridley Howe. With him, she conducted the *Boston Commonwealth*, an anti-slavery paper, prior to the Civil War. After the slavery question was settled she became active in woman suffrage, prison reform, cause of peace, etc. She was a Unitarian preacher, lecturer and writer. Her *Battle Hymn of the Republic* is widely known. Author: *Passion Flowers; Words for the Hour; Life of Margaret Fuller; Modern Society; Is Polite Society Polite? Sketches of Representative Women of New England*, etc. Died, 1910.

Howe, Richard Earl, British admiral, was born in 1726. He was with Admiral Vernon in 1745, and took part in the siege of Fort William. He was commodore of the squadron which sailed in 1758 for St. Malo. In the same year he took Cherbourg. In 1578 he succeeded to the Irish title of viscount. He took part in the defeat of the fleet under the Marquis de Conflans, and captured the *Hero*. In 1756 he commanded a fleet on the American coast, and in 1778 defended the American coast against a superior naval force under D'Estaing. He received an English earldom in 1788. When war with France broke out in 1793 he took the command of the channel fleet, and next year gained a signal victory off Ushant. George III. visited him on board the *Queen Charlotte*, gave him a sword and made him knight of the Garter. Died, 1799.

Howe, Samuel Gridley, American philanthropist, was born in Boston, 1801. He was graduated from Brown University, 1821, and from Harvard Medical College, 1824. In 1831 he went to Paris to study the methods of educating the blind, and becoming involved in the Polish insurrection, spent five weeks in a Prussian prison. On his return to Boston he established schools for the blind and for idiots, and was the teacher of the famous Laura Bridgman. He was chairman of the Massachusetts state board of charities, 1865-74. Died, 1876.

Howe, Sir William, English general, was born in 1729. He served at Quebec under Wolfe and succeeded General Gage in command of the royal troops during the American revolution. In 1775 he was made commander-in-chief of the English army in North America; had command at the battles of Bunker Hill, Long Island, White Plains and Brandywine. He was superseded by Sir Henry Clinton in 1778, as he had failed to crush the rebellion. Died, 1814.

Howe, William Wirt, American jurist and law writer, was born at Canandaigua, N. Y., 1833; received an academic education, studied law and was admitted to the bar. He served in the Union army, 1861-65, becoming major. He was associate justice supreme court of Louisiana; president American bar association, 1898. Trustee Carnegie Institution, Washington; professor of Roman and civil law, George Washington and Tulane Universities, and United States district attorney of Louisiana, 1900-08. Author: *Municipal History of New Orleans; Studies in the Civil Law; Comparative Jurisprudence*, etc. Died, 1909.

Howell, William Henry, American physician and educator, dean of Johns Hopkins medical school since 1899, was born at Baltimore, Md., 1860. He was graduated at Johns Hopkins, 1881; Ph.D. 1884; M.D., University of Michigan, 1890; LL.D., Trinity 1901; was associate professor of physiology, Johns Hopkins University, 1888-89; professor of physiology and histology, University of Michigan, 1889-92; associate professor of physiology, Harvard University, 1892-93, and professor of physiology, Johns Hopkins University, 1893. Contributed widely to both American and foreign medical literature; is author of *Text-Book of Physiology*, etc.

Howells, William Dean, American novelist, was born at Martin's Ferry, Ohio, 1837. His early education was largely gained in newspaper offices, though he was given the degree A.M. by Harvard, 1877; Litt.D., Yale, 1901; Oxford, 1904; Columbia, 1905; LL.D., Adelbert College, 1904. He was United States consul to Venice, 1861-65; was editorial writer on *New York Nation*, 1865-66; editor, 1872-81, *Atlantic Monthly;* editorial contributor to *Harper's Magazine*, 1886-91; was writer of *Editor's Easy Chair* for *Harper's*. Author: *Life of Abraham Lincoln; A Chance Acquaintance; A Foregone Conclusion; Dr. Breen's Practice; A Modern Instance; A Woman's Reason; April Hopes; A Hazard of New Fortunes; The Shadow of a Dream; The Quality of Mercy; The Day of Their Wedding; Their Silver Wedding Journey; Literary Friends and Acquaintances; Between the Dark and the Daylight*, etc. Died, 1920.

Howlson (*how'i-sun*), **George Holmes,** American educator and writer, Mills professor of philosophy, University of California, beginning 1884, was born in Montgomery county, Md., 1834. He was graduated at Marietta College, 1852; Lane theological seminary, 1855; LL.D., 1883; professor of logic and philosophy of science, Massachusetts Institute of Technology, 1871-79; lecturer on ethics, Harvard, 1879-80; lecturer on philosophy, University of Michigan, 1883-84. Author: *Treatise on Analytic Geometry; Limits of Evolution and Other Essays in Philosophy.* Co-editor: *Psychological Review*, etc. Died in 1916.

Howitt (*how'it*), **William** and **Mary,** English authors, may properly be treated together. William Howitt was born in 1792, at Heanor, in Derbyshire. In 1823 he married Miss Mary Botham, a lady of literary acquirements, born 1799, and whose family, like his own, was attached to the principles of Quakerism. For three or four years they employed themselves in contributions to annuals and magazines, and in 1827 a selection from these fugitive pieces appeared under the title of *The Desolation of Eyam.* In 1837 they removed to Esher, in Surrey, and at that place William wrote *Rural Life in England; Colonization and Christianity; Boy's Country Book*, and *Visits to Remarkable Places*, first series. Mary at the same time employed herself in writing *Tales for Children*, many of which are popular. William died in 1879; Mary died in 1888.

Hoxie, Vinnie Ream, sculptor, was born in Madison, Wis., 1847. After modeling one year she received a commission from congress, in 1862, to execute a life-size statue of Abraham Lincoln. He sat for his bust at the White House, and his statue is now in the rotunda of the capitol. Later congress commissioned her to make the heroic statue of Admiral Farragut, which now stands in Farragut square, Washington. These are the only two statues ever ordered by the United States government from a woman. Married Colonel Hoxie, 1878. Died, 1914.

Hoyles, Newman Wright, Canadian lawyer and educator, principal of law school, Osgoode hall, Toronto, since 1894, was born at St. John's, Newfoundland, 1844. He was graduated from Trinity College, Cambridge, England, admitted to Ontario bar, 1872; queen's counsel, 1889. President of the corporation and chairman of the council of Wycliffe College, Toronto; member of the senate of the University of Toronto. Wrote numerous articles in legal magazines; prominent in the auxiliary work of the church of England.

Hubbard, Elbert, author, journalist, lecturer, was born in Bloomington, Ill., 1859, and received a common school education; hon. M.A., Tufts College. He was editor of *The Philistine*, and proprietor of *The Roycroft Shop*, devoted to making *de luxe* editions of the classics. Author: *Little Journeys to the Homes of American Authors; Little Journeys to the Homes of Famous Women; Old John Burroughs; Contemplations; Consecrated Lives; The Man of Sorrows*, etc. Lost at sea, 1915.

Huc (*ūk; hūk*), **Evariste Regis,** Roman Catholic missionary, was born at Toulouse, 1813. In 1839 he joined the mission of the Lazarist fathers to China. Huc's health having broken down, he returned to France in 1852. He wrote *Souvenirs* of his great journey; *L'Empire Chinois; Le Christianisme en Chine*, etc. Died, 1860.

Hudson, Henry, English navigator, of whose early life nothing is known. In 1607 he sailed in search of a short route to China and India by way of the northern ocean, but was stopped by the ice off the coast of Greenland and forced to return. In 1609; while in the service of the Dutch East India company, he discovered the Hudson river, and sailed up to where Albany now stands. On a fourth voyage, 1610, he discovered Hudson strait and bay, which are also named after him. Impeded by ice, he determined to spend the winter on the shores of the bay. Here he and his men suffered terribly from want of food and started to return in 1611. The men mutinied on the return voyage, got possession of the ship, put Hudson, his son John, and seven sailors into an open boat and turned them adrift. Nothing was ever known of their fate.

Hufeland (*hōō'fē-lānt*), **Christoph Wilhelm,** noted German physician, was born at Langensalza, in Thuringia, 1762. His *Makrobiotik*, or the art of prolonging life, has been translated into almost all the European languages; he also wrote a work on the physical education of the young, and an *Enchiridion Medicum.* Died, 1836.

Huggins (*hug'inz*), **Sir William,** English astronomer and spectroscopist, was born in London, 1824. Having in 1856 built an observatory near London, he began the study of the physical constitution of stars, planets, comets and nebulæ. He determined the amount of heat that reaches the earth from some of the fixed stars. He became a fellow of the royal society, 1865, and president of the royal society, 1900. Was president of the British and other associations, and received the order of merit in 1902. Died, 1910.

Hugh Capet (*hū kā'pet*), founder of the third, or Capetian dynasty of French monarchs, was born 939 and was king of France, 987-996. As count of Paris, on the death of Louis V., last of the Carlovingians, he usurped the throne and was confirmed in its possession by a confederacy of nobles. The race of Capet has given 118 sovereigns to Europe:—thirty-six kings to France, twenty-two to Portugal, five to Spain, eleven to Naples and Sicily, three to Hungary, and three to Navarre; three emperors to the East; seventeen dukes to Burgundy, thirteen to Brittany, two to Lorraine, and four to Parma. Died, 996.

Hughes, Charles Evans, jurist, was born in Glens Falls, N. Y., 1862. He was graduated from Brown University, 1881, LL.B., Columbia Law School, 1884; LL.D., Brown, 1906; admitted to New York bar, 1884; practiced in New York, 1884-91; prize fellow Columbia Law School, 1884-87. Professor of law Cornell University, 1891-93; active practice in New York, 1893-1906; Attorney for Armstrong Insurance Investigating Commission; associate justice United States supreme court, 1910. Resigned 1916 to accept republican nomination for president of the United States. He was defeated by a narrow margin by Woodrow Wilson. Returned to New York to take up practice of law, 1916. Secretary of State in Harding and Coolidge cabinets Appointed chief justice of the United States supreme court in January, 1930, after resignation of W. H. Taft.

Hughes, Rupert, author, was born at Lancaster, Mo., 1872; graduate of Western Reserve University, 1892; M.A., Yale, 1899. Was assistant editor *Godey's Magazine, Current Literature* and *The Criterion.* Author: *American Composers; The Musical Guide; The Whirlwind; Love Affairs of Great Musicians; Songs by Thirty Americans; Colonel Crockett's Coöperative Christmas;* etc., and numerous plays.

Hughes, Thomas, English author, was born at Uffington, Berks, 1823. He was educated at Rugby under the celebrated Dr. Arnold; entered Oriel College, Oxford, 1841; took his degree of B.A. in 1845. In 1856 he gave to the world *Tom Brown's School Days.* It was followed in 1858 by *The Scouring of the White Horse*, in 1861 by *Tom Brown at Oxford*, and in 1869 by *Alfred the Great.* He gained the confidence and goodwill of the working classes by endeavoring to promote a better understanding between masters and men, and by teaching the latter the value of coöperation as a means of social elevation. Died at Brighton, England, 1896.

Hugo, Victor Marie, Vicomte, distinguished French poet, politician, and man of letters was born at Besancon, 1802. He received a classical education in a religious house, and, in 1822, brought out the first volume of his *Odes and Ballads;* and his tales *Hans of Iceland*, and *Bug Jargal*, were also written about this time. In 1826 he published a second volume of the *Odes and Ballads*, which

exhibited a change in his political and literary opinions, and, in 1827, he composed his drama *Cromwell*. In 1829 he published his *Last Days of a Condemned Criminal*, a work which, owing to its fearful interest, gained an immense success.

Hugo now prepared a further attack on the classical style of French dramatic literature in his *Hernani*, first played at the Théatre Français in 1830, when it caused a scene of riotous confusion. The French academy went so far as to complain to the king against Hugo's attempted innovations. Charles X. sensibly replied, that "in matters of art he was no more than a private person."

Shortly after the revolution of July, 1830, his *Marion Delorme*, which had been suppressed under the restoration, was performed with success. *Le Roi's Amuse* was also performed at the Théatre Francais in 1832, but interdicted by the government the day after. His lyrical poems, *Les Orientales*, published in 1828, and *Les Feuilles d' Automne*, which appeared in 1832, were received with enthusiasm. Hugo, who published afterward a number of dramatic pieces of various merit, was, after much opposition, admitted into the academy in 1841, and was created a peer of France by Louis Philippe. In 1849 he was chosen president of the peace congress, of which he had been a leading member.

On the *coup d' etat* of December 2, 1851, Hugo, then a member of the legislative assembly, was among those deputies who vainly attempted to assert the rights of the assembly and to propose the constitution. His conduct led to his proscription. He took refuge in the island of Jersey, and subsequently in that of Guernsey, having steadfastly refused to avail himself of the general amnesties issued in 1859 and in 1869.

He wrote much after he had left France. His very trenchant satire, *Napolion le Petit* (Napoleon the Little), appeared at Brussels in 1852, and was rigorously suppressed in France, into which country it had been smuggled. *Les Châtiments* was brought out in 1852 also in Brussels; and in 1856 he published, under the title *Les Contemplations*, a collection of lyrical and personal poems which are among his best performances. Hugo's admirable romance *Notre-Dame de Paris* has been translated into most European languages, and is known in English under the title of the *Hunchback of Notre-Dame*. His social romance, *Les Miserables*, appeared in 1862.

On the fall of the empire in 1870 he returned to France, was elected to the national assembly, but soon resigned and repaired to Brussels, whence he was expelled by the government on account of the violence of his political writings and his sympathy with the communists. Returning to Paris, he was (1876) elected a senator for six years. Of his later works may be mentioned *The Man Who Laughs*, *The History of a Crime*, and *Les Quatre Vents de L'Esprit*, a volume containing some of his most charming lyrics. Died in Paris, 1885, and was buried in the Pantheon.

References.—Swinburne's *A Study of Victor Hugo;* Renouvier's *Victor Hugo, the Poet;* Marzial's *Life of Victor Hugo;* King's *French Political Leaders;* Barbou's *Victor Hugo and His Time.*

Hull, Isaac, American naval officer, was born in Derby, Conn., 1773. In 1812 he commanded the frigate *Constitution*, which was pursued by a British squadron for three days, but escaped by skillful sailing. While cruising in the gulf of St. Lawrence he met the British frigate *Guerēiere*, which after a bloody fight of half an hour, surrendered, August 19, 1812. This was the first naval battle of the war of 1812, and congress gave Captain Hull a gold medal for his services. He died in Philadelphia, Pa., 1843.

Humbert I. (*hum'bĕrt*), king of Italy, eldest son of King Victor Emmanuel, was born in 1844. When the war between Prussia and Austria became imminent, Prince Humbert was dispatched to Paris to ascertain the sentiments of the French government in reference to the alliance between Italy and Prussia. On the outbreak of hostilities he obtained command of a division of General Cialdini's army, with the title of lieutenant-general; and was present at the disastrous battle of Custozza, 1866. He succeeded to the throne on the death of his father, 1878. The most notable event in his reign was the formation of the triple alliance, 1887. He was assassinated at Monza, near Milan, 1900.

Humboldt (*hum'bōlt*), **Friedrich Heinrich Alexander, Baron von,** eminent German scientist and traveler, was born in Berlin, 1769. He became director-general of the mines of Bayreuth and Anspach in 1792. In 1799 he started with Bonpland for South America, and occupied four years in the exploration of that continent. After his return to Europe in 1804, he passed a period of twenty years in Paris, and was there admitted to the institute. His chief works are: *Journey to the Equinoctial Regions of the New Continent; Central Asia; Researches on the Chains of Mountains and the Comparative Climatology; Aspects of Nature;* and what is commonly esteemed his masterpiece, *Kosmos—Essay of a Physical Description of the Universe*—begun in his seventy-fourth year. He died in Berlin, 1859.

Humboldt, Karl Wilhelm von, elder brother of the preceding, was born at Potsdam, 1767. In 1801 he became Prussian minister at Rome, and was a most generous patron of young artists and men of science. Berlin University owes its existence to him. In 1810 he went to Vienna as minister plenipotentiary, and from this time took part in all important Prussian political affairs. He was the first to study Basque scientifically; he also worked much on the languages of the East and of the South Sea Islands. Died, 1835.

Hume, David, Scottish philosopher and historian, born at Edinburgh, 1711. After a short experience with merchandizing and law he turned to the life of a student. In 1734 he went for a time to France, and there wrote the important *Treatise of Human Nature* (1739-40). Hume then turned his pen to subjects of more general interest, and in 1742 published *Essays—Moral, Political, and Literary.*

During 1747-9 he served as secretary to an embassy, after which he settled down to literary work in Edinburgh. Two other philosophical works, which were really popular abridgments of parts of the *Treatise*, were published about this time—the *Inquiry Concerning Human Understanding*, in 1748, and the *Inquiry Concerning the Principles of Morals*, in 1751; and another volume of essays, the *Political Discourses*, followed in 1752.

With the exception of his *Natural History of Religion* (1755), his literary activity for the next ten years was mainly concentrated on his *History of England*. In 1763 he was again abroad, attached to an embassy to France; and on his return he was, for a short time, under-secretary of state. In 1769 he returned to Edinburgh, where he remained till his death in 1776. His *Dialogues Concerning Natural Religion* were published in 1779.

The philosophy of Hume was an extreme and thoroughgoing development of the sensationalism that was latent in Locke's account of the origin of knowledge. Applying Locke's method of analysis in all its strictness he set up as a general test for all ideas that they must be capable of being referred to a definite source or original in impressions. Ideas which cannot confirm to this test have no real or objective meaning; they are illusions produced in the mind by the workings of imagination.

Thus, to take a single instance, Hume reduces the conception of causal connection to a mere blind belief engendered by custom, the constant conjunction of two impressions (*e. g.* flame and heat) suggesting the idea of the so-called cause. The outcome of such criticism applied to the fundamental concepts on which knowledge rests was naturally a total scepticism.

References.—Huxley's *Hume* in *English Men of Letters;* Seth's *Scottish Philosophy;* his *Autobiography*, edited by Adam Smith; and Burton's *Life and Correspondence of David Hume.*

Hume, Martin Andrew Sharp, English educator and writer, lecturer in Spanish history and literature, Pembroke College, Cambridge, was born at London, 1847. He was attached to the Turkish army during the campaign on the Lom, 1878-79; traveled much in South America and Africa; later was prominently identified with the universities at Cambridge. London and Birmingham. Author: *Chronicle of Henry VIII.; Calendar of Spanish State Papers; Elizabeth*, 4 vols.; *The Love Affairs of Mary Queen of Scots; Cambridge Modern History*, vols. iii. and iv., *Queens of Old Spain; The Court of Philip IV.*, etc.; and many historical articles in the principal English and Spanish magazines and reviews. Died in 1910.

Humperdinck (*hōom'pĕr-dingk*), **Engelbert,** German composer, was born at Siegburg, near Bonn, Prussia, 1854. He studied music at Cologne, Frankfort, Munich and Berlin. In 1890-96 at Frankfort, he became famous as the composer of the musical fairy play, *Hänsel und Gretel*, which was phenomenally successful, compositions that have earned for him the title of the "modern Wagner." In 1900 he became professor of music at Berlin. Died in 1921.

Humphreys (*hum'friz*), **Milton Wylie,** American educator and scholar, professor of Greek, University of Virginia, beginning 1887, was born in Greenbrier county, Va. (now W. Va.), 1844. He was graduated at Washington and Lee, A.M., 1869; Ph.D., Leipzig, 1874; LL.D., Vanderbilt. He was professor of Greek, Vanderbilt University, 1875-83, and professor of Latin and Greek, University of Texas, 1883-87. President in 1882-83 of the American philological association, and was ten years American chief editor to *Revue de Philologie*, Paris. Edited, with notes: *The Clouds of Aristophanes, The Antigone of Sophocles*, etc. Died, 1928.

Huneker (*hun'e-kĕr*), **James Gibbons,** journalist, music critic, was born in Philadelphia, Pa., 1860. He was graduated at Roth's military academy, Philadelphia, 1873; studied law and conveyancing at law academy, Philadelphia, five years. Music and dramatic critic of *New York Recorder*, 1891-95, and of the *Morning Advertiser*, 1895-97. He was formerly music and dramatic; art editor, of the *New York Sun*. Author: *Mezzo-tints in Modern Music; Visionaries*, etc. He also wrote the article on music, *New International Encyclopædia*, and has been a contributor to leading magazines. Died in 1921.

Hunt, James Henry Leigh, English poet and essayist, was born at Southgate, near London, 1784. In 1813, as editor of *The Examiner*, he wrote some articles severely criticising the prince regent, afterward George IV., and for these he was prosecuted by order of the government, and sentenced to two years' imprisonment in the Surrey jail. While in jail he wrote *The Descent of Liberty, a Masque; The Story of Rimini*, an Italian tale in verse; and *The Feast of the Poets*. In 1828 he published *Lord Byron and Some of his Contemporaries*, in which, having quarreled with Byron during a visit to Italy, he indulged in some severe animadversions upon the character of that poet. Among his last works was his *Autobiography*. He died at Putney, England, 1859.

Hunt, Thomas Sterry, American chemist and geologist, was born in Connecticut, 1825. In 1845 he became assistant to Professor Silliman in his chemical laboratory at Yale College, and in 1847 was appointed chemist and mineralogist to the geographical survey of Canada. He held this post for more than twenty-five years, resigning in 1872 to accept the chair of geology in the Massachusetts Institute of Technology. He furnished many important articles in his specialty to Appleton's *American Cyclopedia*, and was a member of the leading societies of both continents. He died in New York, 1892.

Hunt, Walter, English painter, was born in Middlesex, England, 1861. He has been a constant exhibiter at the royal academy since 1881. The following are among his best pictures: *A Rainy Day; A Foster-Mother; The Orphan; The Otter Hunt—the Find; Motherless; An Old Offender; Home from Work*, etc.

Hunt, William Henry, creator of the English school of water-color painting, was born in London, 1790, the crippled child of a tinplate worker. He is ranked by Ruskin with the greatest colorists of that school. He generally chose very simple subjects for his pictures, such as: *Peaches and Grapes; Old Pollard; Wild Flowers; Too Hot; Fast Asleep*, etc., but they are conceived in a finely poetical spirit, and present the perfection of finish. Died, 1864.

Hunt, William Holman, English painter, was born in London, 1827. In 1845 he was admitted a student of the royal academy, and next year exhibited his first picture, *Hark!* He shared a studio with D. G. Rossetti, and the two, along with Millais and a few others, inaugurated the "pre-Raphaelite brotherhood," which aimed at detailed and uncompromising truth to nature. Among the first of his pre-Raphaelite works was *Rienzi*, in 1849. It was followed by *A Converted British Family Sheltering a Christian Missionary* and *The Light of the World*, now in Keble College, Oxford. In 1905 he was nominated to the order of merit, and was made a D.C.L. by Oxford. Died, 1910.

Hunt, William Morris, American genre and portrait painter, was born in Brattleboro, Vermont, 1824. He was educated at Düsseldorf, and under Couture at Paris; but made the technic of the French school subsidiary to his own original ideas, and was one of the first to introduce the characteristics of the French school into the United States. Among his productions are: *The Lost Kid; The Choristers; Bugle Call*, etc. He painted *The Flight of Night* and other decorations in the state capitol at Albany, N. Y. Died, 1879.

Hunter, John, noted British surgeon, anatomist, and physiologist, was born in Lanarkshire, Scotland, 1728. He spent five years at the University of Edinburgh, and went to London and studied at Chelsea hospital. His progress in anatomy and surgery was so rapid that in the second session he was able to undertake the directing of the pupils in their dissections. After ten years in the the dissecting room his health gave way, and in 1759 he applied for an appointment in the British army, was immediately made staff-surgeon, and

sent out to Belle Isle, and afterward to the Peninsula. In 1767 he was elected a fellow of the royal society, and in the following year was appointed surgeon to St. George's hospital. In 1776 he was appointed surgeon-extraordinary to the king. His famous operation for the cure of aneurism, that of simply tying the artery at a distance from the tumor, and between it and the heart, has been more fruitful in important results than any since Ambrose Pare's application of ligatures to divided arteries. He died in 1793.

Huntingdon (*hun'ting-dun*), **Selina, Countess of,** daughter of Earl Ferrers, was born in 1707. She married the earl of Huntingdon, 1728, and became a widow in 1746. Joining the Methodists in 1739, she made Whitefield her chaplain in 1748, and assumed a leadership among his followers, who became known as "the countess of Huntingdon's connection." She died in London, 1791, bequeathing to four persons her sixty-four chapels, most of which became identical with the Congregational churches.

Huntington, Daniel, American painter, was born in New York, 1816, and was educated at Hamilton College. In 1835 he began to study art under Morse, and still later with Inman. In 1839 he visited Italy; returned the next year and commenced work. Thereafter he became a permanent resident of New York and painted the portraits of many notable people. He is probably best known by his picture, *The Republican Court in the Time of Washington*, in which there are more than sixty figures. Died, 1906.

Hunyadi (*hōōn'yod-i*), **Janos,** Hungarian general, was born at Hunyad, Transylvania, about 1387. He was governor of Transylvania in 1442, and distinguished himself against the Turks, who at that time were the terror of the whole of Christendom. The most splendid of his deeds was the storming of Belgrade, where the monk John Capistran, carrying the holy cross, raised the enthusiasm of the Christian warriors to such a height that a most complete victory brought that fortress again into the possession of the Hungarians. Shortly after dysentery broke out in the camp, and Hunyadi, after a short illness, fell a victim to the disease, 1456.

Hurd, Henry Mills, American physician, superintendent Johns Hopkins hospital since 1889, was born in Union City, Mich., 1843. He was graduated at the University of Michigan, 1863; M.D., 1866; A.M., 1871; LL.D., 1895. Was superintendent eastern Michigan asylum, Pontiac, 1878-89, and professor psychiatry, 1889-1906, Johns Hopkins. Editor *American Journal of Insanity*, beginning 1897; of *Johns Hopkins Hospital, Bulletin* and of *Johns Hopkins Hospital Reports*, beginning 1890. Author: *Hints to Hospital Visitors*, with Dr. John S. Billings; also editor, with same, *Hospitals, Dispensaries and Nursing*, etc. Died, 1927.

Hurlbut, Jesse Lyman, Methodist Episcopal clergyman, editor, was born in New York, 1843. He was graduated at Wesleyan University, Connecticut, 1880. Was pastor Methodist Episcopal churches, 1865-79; editor of Sunday school literature and secretary of Sunday school union and tract society, 1888-1900. Author: *Outline Normal Lessons; Studies in the Four Gospels; Our Church; Hurlbut's Story of the Bible*, etc.

Hurst (*hûrst*), **John Fletcher,** American clergyman and writer, was born in Maryland, 1834. He was graduated at Dickinson College, and became a Methodist Episcopal clergyman. In 1871 he became professor of theology in Drew seminary, Madison, N. J., and from 1873 until 1880 was president of that institution. At Cincinnati, in the last-named year, he was elected bishop. In 1891 he was made chancellor of the American University at Washington. He died at Washington, 1903.

Huss, or **Hus** (*hus;* Ger., *hōōs*), **John,** Bohemian religious reformer, was born at Hussinecz, in Bohemia, about 1370. He studied at the University of Prague, was appointed dean of the philosophical faculty in 1401, and rector of the university, 1402. As a preacher he was greatly esteemed both by the common people and by the students, while as confessor to Queen Sophia he obtained access to the court. At this time he became acquainted with the writings of Wycliffe, which exercised a great influence over him. In 1412 Pope John XXIII. having published a bull of indulgence in order to organize a crusade against Ladislaus, the excommunicated king of Naples, whose kingdom the pope claimed as a papal fief, Huss boldly raised his voice against the whole procedure as unchristian, while Jerome of Prague also stood forth to condemn, in the strongest manner, both the bull and the venders of indulgences. An interdict against Huss in 1412 was the consequence. Huss, however, appealed from the pope to a general council and to Christ, and wrote a book *On the Church*, in which he condemned the abuses of the papacy, and denied the unconditional supremacy of the Roman pontiff. In 1414 he went to Constance to the general council, under a safe-conduct from the emperor, but his opponents procured his imprisonment as a heretic, and, on refusal to retract, he was burned at the stake, 1415.

Hutchins (*huch'inz*), **Harry Burns,** American educator, president of the University of Michigan, since 1910, was born at Lisbon, N. H., 1847. He was graduated at the University of Michigan, Ph.B., 1871; LL.D., University of Wisconsin. He was professor of law, 1884-87; professor of law, Cornell, 1887-95; acting president of University of Michigan, 1897-98, and again, beginning 1909. He revised and annotated five volumes *Michigan Supreme Court Reports*, under appointment of the supreme court, 1882-83; edited American edition of *Williams on Real Property*, and contributed to legal periodicals. Died, 1930.

Hutchins, Robert Maynard, educator, was born in Brooklyn, N. Y., 1899; graduated from Yale, 1921; secretary of Yale, 1923-1927; degree of LL.B. 1925; dean of Yale Law School, 1928-1929; inaugurated president of the University of Chicago, November 19, 1929.

Hutchinson (*huch'in-sun*), **Anne,** religious enthusiast, was born about 1590, and emigrated from Lincolnshire, England, to Boston, Mass., 1634. Banished from the colony for heresy, she and her friends now obtained from the chief of the Narrangansetts liberty to reside in Rhode Island, where they set up a community on the highly commendable principle that no one was to be "accounted a delinquent for doctrine." Died, 1643.

Hutchinson, John, Scotch sculptor, was born in Edinburgh, Scotland, 1832. He was apprenticed to a wood-carver in Edinburgh at the age of thirteen; executed wood carvings and other decorations in relief for the picture gallery at Hospitalfield, Arbroath, 1852, and studied in Edinburgh and in Rome. Principal works: *King Robert Bruce; John Knox*, a colossal bronze statue in Edinburgh, etc. Died, 1910.

Hutton (*hoot'en*), **Ulrich von,** German reformer and humorist, was born in 1488. When he was ten years of age he was placed in the monastery at Fulda; but, disliking this mode of life, he fled to Erfurt in 1506, where he associated with scholars and poets. In 1518 he accompanied Albert, archbishop of Mainz, to the diet of Augsburg, where Luther had his famous conference with Cajetan. He took sides with Luther, was persecuted by his enemies, and availed himself of the protection of Franz von Sickingen, but was soon forced to flee. From this time he was compelled to adopt a wandering life, and died in 1523 in the isle of Ufnau, in the lake of Zürich.

Hutton (*hut'n*), **Maurice,** Canadian educator, professor of Greek since 1887, and principal in 1901, University College, Toronto, was born at Manchester, England, 1856. He was educated at Magdalen College school and Worcester College, Oxford; M.A., Oxford; LL.D., Toronto and Queen's. He was fellow of Merton College, Oxford, 1879-86; lecturer on classics and ancient history at Firth College, Sheffield, 1880, and professor of classics in the University College, Toronto, 1880. Author of *Hellenism*, and various articles of a popular character on the classics and on Oxford.

Huxley (*huks'li*), **Thomas Henry,** noted English biologist and comparative anatomist, was born at Ealing, England, 1825. He was graduated at London University, 1845. Imbued with a passion for natural history, Huxley devoted himself with zeal and intelligence to the study of numerous marine animals collected from time to time and made them the subject of scientific papers. In 1851 papers on other branches of the same subject were printed in the *Philosophical Transactions*, and in the same year Huxley was elected a fellow of the royal society. In 1854 he was appointed professor of natural history in the royal school of mines, and among his lectures in that institution he delivered courses to workingmen with beneficial results. In 1874 he was made lord rector of Aberdeen University; was Rede lecturer at Cambridge in 1883, and president of the royal society, 1883-85. Among his many works, in addition to those mentioned, are: *Oceanic Hydrozoa; Evidence as to Man's Place in Nature; Physiography; Science and Culture; Evolution and Ethics*, etc. He died in Eastbourne, England, 1895.

Huygens (*hī'genz;* Dutch *hoi'gens*), or **Huyghens, Christian,** Dutch physicist and astronomer, was born at The Hague in 1629. He improved the telescope, and devised new methods for grinding and constructing lenses. He also invented the first pendulum clock; defined the rings of Saturn; and developed the wave theory of light. He was made a fellow of the royal society, 1663, and at the invitation of Louis XIV. lived for a number of years in Paris, where he produced many of his scientific works. Died, 1695.

Hyde, William De Witt, American educator and writer, president of Bowdoin College, beginning 1885, was born in Winchendon, Mass., 1858. He was graduated at Harvard, 1879; D.D., Harvard; LL.D., Syracuse. Author: *Practical Ethics; Social Theology; Practical Idealism; The Evolution of a College Student; God's Education of Man; The Art of Optimism; School Speaker and Reader; The Cardinal Virtues; Jesus' Way; The New Ethics; From Epicurus to Christ*, etc. Died, 1917.

Hypatia (*hi-pā'shi-ā*), Greek female philosopher, daughter of Theon, an astronomer of Alexandria. She was renowned for her knowledge of mathematics and of the Platonic philosophy, of which she was a teacher at Alexandria. Being accused by the clergy of undue influence over Orestes, prefect of Alexandria, against St. Cyril, then archbishop there, she was attacked by a mob led by priests, dragged into a church, stripped of her clothing and killed. This occurred about 415 A. D., when she was about sixty years of age. Hypatia has been made the subject of a romance by Charles Kingsley.

Hyrcanus (*hēr-kā'nus*), **John,** Jewish high priest, who lived about 135 B. C. He succeeded his father, Simon Maccabæus, in the high priesthood as one of the Asmonean rulers of Judea. His reign has been compared to that of Solomon. He was succeeded by his son, Aristobulus, a weak, irresolute character, who took the title of king of Judea. Died about 105 B. C.

Hyslop (*hīs'lop*), **James, Hervey,** American psychologist and psychic investigator, professor of logic and ethics, Columbia University, was born at Xenia, Ohio, 1854. He was graduated at Wooster University, 1877; Ph.D., Johns Hopkins, 1887. Author: *Elements of Logic; Ethics of Hume; Science and a Future Life; Enigmas of Psychical Research; Borderland of Psychical Research.* Editor of *Proceedings and Journal of American Society for Psychical Research.* Died in 1920.

Hyvernat, Eugene Xavier Louis Henry, French-American educator and orientalist, professor of oriental languages and archæology, Catholic University of America, since 1889, was born at St. Julien-en-Jarret, Loire, France, 1858. He was graduated at the University of France, Lyons, 1876; studied divinity, Séminaire de St. Sulpice, Issy, 1877-79, and at Paris, 1879-82; D.D., Pontifical University of Rome, 1882. He was chaplain at St. Louis of the French, Rome, 1882-85; professor interpreter of oriental languages for Propaganda, Rome, 1885-89; professor of Assyriology and Egyptology, Roman seminary, Rome, 1885-88; intrusted with scientific mission in Armenia by the French government, 1888-89; chief department Semitic and Egyptian literatures, Catholic University of America, since 1889. Author: *Les Actes des Martyrs de l'Egypte; Album de Paléographie Copte; Du Caucase au Golfe Persique*, with Dr. Paul Muller-Simonis; contributed to Vigouroux's *Dictionnaire de la Bible, The Jewish Encyclopædia*, and various American, French, and German reviews.

Ibanez, Vicente Blasco, Spanish writer and socialist, was born at Valencia, 1867. His revolutionary ideas made him several times a political prisoner, but this did not discourage him. He was at one time a Republican deputy in the Spanish parliament and wrote many novels in sympathy with the working classes. Perhaps his best known work is *The Four Horsemen of the Apocalypse.* He visited the United States in 1920-21. Died, 1928.

Iberville d' (*de'ber'vēl*), **Pierre le Moyne, Sieur,** French-Canadian commander, was born at Montreal, Canada, 1661, and was distinguished in the French service. Sailing from Brest in 1698 with two frigates he reached the mouth of the Mississippi with his brother Bienville; fortified Biloxi, the first outpost in Mississippi, and in 1700 ascended the river. In 1701, on account of the unhealthiness of the climate, he transferred the colony from Louisiana to Mobile, and began the settlement of Alabama. In 1702 he fortified Dauphin island, in Mobile bay. Died at Havana, Cuba, 1706.

Ibrahim Pasha (*ib'rà-hēm' pà-shà'*), Egyptian general, adopted son of Mehemet Ali, viceroy of Egypt, was born in 1789. Mohammed Ali having conceived the design of adding Syria to his dominions, Ibrahim crossed the Egyptian border with an army in 1831, took Acre by storm, and quickly made himself master of the whole of Syria. In 1848, when the aged viceroy reached absolute dotage, Ibrahim went to Constantinople and was installed viceroy of Egypt. Died, 1848.

Ibsen (*ib'sen; ip'sen*), **Henrik,** Norwegian poet and dramatist, was born at Skien, in south Norway, 1828. He studied medicine, was a chemist's assistant at Grimstad, 1842-50, but soon devoted himself wholly to literature. His first drama, *Katilina*, was a failure. In 1857 he became director of the national theater in Christiana. His next dramas were *The Warriors in Helgeland, The Pretenders, Love's Comedy.* The first two, reproducing the spirit of the old sagas, placed Ibsen in the foremost rank of Scandinavian dramatists; the last was a precursor of his satirical social dramas. In 1862 the national theater became bankrupt, and Ibsen, enraged because Norway held aloof from the Danes in their struggle against the Germans, forsook his country, 1864-92, living in Rome, Dresden and Munich. The Norwegian parliament granted him a pension in 1866. In 1866-67 appeared the lyric drama *Emperor and Galilean.* There followed *Pillars of Society; A Doll's House; Ghosts; Rosmersholm; Hedda Gabler; The Master Builder; Solness; When We Dead Awaken;* and *John Gabriel Borkman.* These plays aroused a storm of controversy in the literary world from 1889, because of their author's passionate advocacy of individual liberty. The interest and method of his plays are almost exclusively psychological. Died, 1906.

Ide, Henry Clay, governor, jurist, was born a Barnet, Vt., 1844. He was graduated at Dartmouth College, 1866; LL.D., 1900, Tufts College, 1903. He was a member of Vermont state senate, 1882-85; United States commissioner to Samoa, 1891; chief-justice of Samoa under joint appoint-

ment of England, Germany, and the United, States, 1893-97; member Taft commission on establishment of civil government in Philippine islands, 1900; secretary of finance and justice for Philippine islands, 1901; vice-governor, 1904-05; acting governor, 1905-06; governor-general beginning 1906, Philippine islands. Author: *Code of Procedure in Civil Actions and Special Proceedings in the Philippine Islands*, etc. Died, 1921.

Ignatieff (*ig-nä'tyef*), **Nikolai Pavlovitch,** Russian diplomat, was born at St. Petersburg, 1832. In 1856 he entered the diplomatic service, and in 1858 induced China to give up the Amur province. In 1864 he was made ambassador at Constantinople. An ardent panslavist, he intrigued with the Balkan Slavs, and took a principal part in the diplomatic proceedings before and after the Russo-Turkish war of 1878. Under Alexander III. he was minister of the interior, 1881-82, and subsequently retired to private life. Died, 1908.

Ihmsen, Maximilian Frederick, journalist, was born at Pittsburg, Pa., 1868. He was educated in the public schools in Stuttgart, Germany, in Allegheny, Pa., and the Pittsburg Catholic College. He became clerk in the Pittsburg postoffice, 1887; reporter *Pittsburg Post*, 1889; was first newspaper man to reach the dam above South Fork, Pa., which, by bursting, caused the Johnstown flood; Albany correspondent, *New York Journal*, 1895; city editor, 1896-98, and 1901-02; Washington correspondent, 1898-1900, and later political editor *New York American*. Was fusion nominee for sheriff of New York county, 1907.

Ihne (*ē'ne*), **Wilhelm,** German historian, was born at Fürth in 1821, and was educated at Bonn. He was a private tutor in England, 1843-47, later had charge of a school at Liverpool, 1849-63, and in 1873 became a professor at Heidelberg. He published his great *History of Rome*, in 8 vols. 1868-90; *Early Rome*, 1876; and a number of other historical works. Died, 1902.

Illington, Margaret (Mrs. Bowes), former actress, was born at Bloomington, Ill., 1881, daughter of I. H. and Mary Ellen Light. She was educated at Illinois Wesleyan University and studied at Chicago Musical College. In 1903 she married Daniel Frohman, from whom she was divorced in 1909; married in the same year Edward J. Bowes. She made her debut in *The Pride of Jennico* at the Criterion theater, New York, 1900; played in Daniel Frohman's stock company, Lyceum theater, New York; created leading rôle in *The Japanese Nightingale; The Two Orphans; Mrs. Leffingwell's Boots; The Lion and the Mouse; His House in Order; The Thief*, etc. Died, 1934.

Ingalls, John James, American lawyer, essayist, and statesman, United States senator, was born at Middleton, Mass., 1833. He was graduated at Williams College, studied law, and was admitted to practice in Massachusetts in 1857, and in 1858 settled in Kansas. He was elected United States senator from Kansas in 1873, and was again elected in 1879 and 1885. During his last senatorial term he was president *pro-tem* of the senate. He was the author of the famous sonnet *Opportunity*. He died at Las Vegas, New Mexico, 1900.

Ingalls, Melville Ezra, railroad president, was born in Harrison, Me., 1842. He was educated at Bridgeton academy, studied at Bowdoin College, and graduated at Harvard Law School, 1863. He practiced first at Gray, Me., but soon removed to Boston. President in 1870, receiver in 1871, of the Indianapolis, Cincinnati and Lafayette railroad, and from a bankrupt condition, with the aid of reörganizations in 1873 and 1880, he put its successor, the Cincinnati, Indianapolis, St. Louis and Chicago, upon a sound footing, consolidating it with other roads into the Cleveland, Cincinnati, Chicago and St. Louis railroad, comprising the "Big Four" system, of which he became president. He was president of the Merchants' National Bank, Cincinnati. Died, 1914.

Ingelow (*in'-jē-lō*), **Jean,** English poetess and novelist, was born at Boston, Lincolnshire, England, 1820. A great part of her poetry is of a devotional type, sweet and simple, and filled with beautiful thoughts. Among her noted works is the ballad, *The High Tide on the Coast of Lincolnshire*, and the larger poem, *A Story of Doom*. Her works of fiction are *Off the Skelligs; Fated to Be Free; Sarah de Berenger; Don John;* and others. She died, 1897.

Ingersoll (*ing'gĕr-sol*), **Robert Green,** American lawyer, orator, and writer, was born at Dresden, N. Y., 1833. He settled to the practice of law at Peoria, Ill., 1857; became colonel of the 11th Illinois cavalry, 1862, was captured and exchanged; resigned and retired to private life, and, in 1868 was attorney-general of the state. He was a well-known orator, lecturer, and religious controversialist. He published *The Gods, and Other Lectures; Some Mistakes of Moses; Great Speeches*, etc. Died at Dobbs Ferry, N. Y., 1899.

Ingraham (*ing'grā-am*), **Joseph Holt,** American clergyman and novelist, was born at Portland, Me., 1809. After some years spent at sea, he became a teacher of languages in Mississippi, and was ordained Episcopal clergyman in 1855; prior to his ordination he wrote stories of adventure, *Captain Kyd*, etc., but subsequently confined himself to biblical subjects. His best known work is *The Prince of the House of David*. He died at Holly Springs, Miss., 1860.

Ingram (*ing'gram*), **Arthur Foley Winnington,** bishop of London since 1901, dean of the Chapels Royal, was born in Worcestershire, 1858. He was educated at Marlborough College and Keble College, Oxford; chaplain to the archbishop of York and to the bishop of St. Albans, 1889; canon of St. Paul's cathedral, 1897-1901, and bishop of Stepney, 1897-1901. Author: *Work in Great Cities; Messengers, Watchmen, Stewards; The Men Who Crucify Christ; Christ and His Friends; Banners of the Christian Faith*, etc.

Ingres (*aN'gr'*), **Jean Dominique Auguste,** French painter, was born at Montauban, 1780. He studied under David, and after taking the *grand prix* in 1801, worked in Rome, 1806-20. To this period belong his best portraits, and his *Œdipus and the Sphinx; Venus Anadyomene; Vergil Reading the Æneid; Raphael and the Fornarina*, etc. Died, 1867.

Inman, Henry, American painter, was born in Utica, N. Y., 1801. He was noted for his skill as a portrait painter, and besides making portraits of Chief-Justice Marshall and many other distinguished Americans, he visited England and painted portraits of Wordsworth and Macaulay. In 1845 he began a series of historical paintings for the capitol at Washington, but before they were completed he died in New York, 1846.

Innes (*in'is*), **Cosmo,** Scottish historian and antiquarian, was born at Durris, Scotland, 1798. He was graduated both at Glasgow and Oxford, and in 1822 passed as an advocate. He became in 1846 professor of constitutional law and history in the University of Edinburgh. He is best known as the author of *Scotland in the Middle Ages* and *Sketches of Early Scotch History*. Died, 1874.

Inness (*in'es*), **George,** American artist, was born at Newburg, N. Y., 1825; studied in New York, France, and Italy. He excelled as a painter of American landscapes, and became a national academician in 1868; resided in Italy, 1871-75; died at Bridge of Allan, Scotland, 1894. Among his best paintings are: *Delaware Valley; American Sunset; Pontine Marshes; Niagara Falls; Sunset—Montclair; Autumn Oaks*, etc. Died, 1894.

Inness, George, Jr., artist painter, was born in Paris, France, 1854, son of the preceding. He was a pupil of his father in Rome, Italy, 1870-74; studied one year in Paris, 1875; after that lived in Boston and New York, where he occupied studio with his father, 1878. He resided with his family in Montclair, N. J., after 1880, but had his studio in Paris, 1895-99, and exhibited annually at the Paris salon. He received a gold medal at the 1899 Paris salon. Died in 1926.

Innocent III., one of the greatest of the popes, was born at Anagni, Italy, 1161, son of Count Trasimund, a Roman noble. He was educated at Paris, Rome and Bologna, and was elected pope in 1198. He aimed at making the papacy supreme in all European affairs; extended the territorial power of the church, and made nearly all Christendom subject to its sway; was zealous for the purity as well as supremacy of the church, and countenanced every movement that contributed to enhance its influence and stereotype its beliefs as well as its forms of worship. The papal power probably attained its greatest height during his pontificate. He died at Perugia, Italy, 1216.

Ireland, John, American prelate, Roman Catholic archbishop of St. Paul beginning 1888, was born in Ireland, 1838. He came to the United States in boyhood; was educated in the cathedral school, St. Paul; studied theology in France, and was ordained priest in 1861; LL.D., Yale, 1901. He was chaplain of the 5th Minnesota regiment in the Civil War; rector of the cathedral at St. Paul; secretary and later coadjutor to Bishop Grace, of St. Paul, and was consecrated archbishop in 1888. He had been active in establishing Roman Catholic colonies in the Northwest, and in the organization of total abstinence societies. Author *The Church and Modern Society*. Died, 1918.

Irene (Lat., *ī-rē'nē*; Eng., *ē-rīn'*), Byzantine empress, once a poor orphan girl of Athens, Greece, was born about 752. Her beauty and talents drew the attention and love of the emperor Leo IV., and he married her in 769. After his death she ruled as regent, during the minority of her son Constantine VI. She was banished to Lesbos in 802, where she died in the following year. The Greek church counts her among its saints.

Irving, Sir Henry (John Henry Brodribb), English actor, was born in Keinton, near Glastonbury, 1838. He acted at the Theater Royal, Edinburgh, 1856-59, and afterward for seven years at Manchester. He played in London, 1859, but attracted little notice until his appearance at St. James' theater, 1866. He soon established a connection with the Lyceum, of which he became manager in 1878. There he played his chief parts, in conjunction with Miss Ellen Terry, producing among other plays, *Hamlet; The Merchant of Venice; Faust; Macbeth; Henry VIII.; The Bells*, and other well-known productions. He first came to the United States in 1883, with Miss Terry and his Lyceum company, and made his début in New York, as Mathias, in *The Bells*. He died in England, 1905, and was buried in Westminster abbey.

Irving, Isabel, actress, was born at Bridgeport, Conn., 1871. She made her début as *Gwendolyn Hawkins* in *The Schoolmistress*, with Rosina Vokes company, 1887. She was selected by Charles Frohman to create the rôle of *Lady Jocelyn Leigh* in *To Have and To Hold*, at the Knickerbocker theater, New York; later starred under the management of James K. Hackett in *The Crisis;* was engaged by Clyde Fitch to play the comedy part in *The Toast of the Town*, 1906; and was starred by Liebler and Company in *Susan in Search of a Husband*, 1907. She married W. H. Thompson, 1899.

Irving, Washington, distinguished American author, was born in the city of New York, 1783. Irving, at the age of sixteen, entered a law office; but found greater profit from his father's well-stocked library, Chaucer and Spenser, being his favorite authors. New York, at this period, was a town of about 50,000 inhabitants, many of whom were descendants of the original Dutch settlers, having quaint manners and customs, of which Irving was a curious observer. In 1809 he wrote *A History of New York, From the Beginning of the World to the End of the Dutch Dynasty, by Diedrich Knickerbocker*, a burlesque chronicle written in so quiet a vein of humor that it has sometimes been taken for a veritable history. At the close of the war, in 1815, he visited England, where he was warmly welcomed by Campbell, whose biography he had formerly written, and was introduced by him to Walter Scott. In 1819 he published the well-known *Sketch Book*, containing *The Legend of Sleepy Hollow* and *Rip Van Winkle*. At the invitation of Edward Everett, American ambassador to Spain, he accompanied him to Madrid to tran late documents connected with the life of Columbus. With these materials he wrote his *History of the Life and Voyages of Columbus; Voyages of the Companions of Columbus; The Conquest of Granada*, and many Spanish works. In 1842 he was appointed United States minister to Spain. In 1846 was published his *Life of Goldsmith*, and his great work, the *Life of Washington*, was published in 1855-59. He spent the last years of his life with his nieces at Sunnyside, in his own "Sleepy Hollow," on the banks of the Hudson, near Tarrytown, where he died suddenly of disease of the heart, 1859.

Irwin, Wallace, author, was born at Oneida, N. Y., 1875. He studied at Stanford University, 1896-99, and was editor *San Francisco News Letter*, 1901; editor *Overland Monthly*, 1902. Burlesque writer, Republic theater, 1903; writer of topical verse, *New York Globe*, 1904-05, and on staff *Collier's Weekly*, 1906-07. Author: *The Love Sonnets of a Hoodlum; At the Sign of the Dollar; Chinatown Ballads; Random Rhymes of Odd Numbers*, etc. He is a prolific contributor to magazines and weeklies.

Isabella (*iz'ä-bel'ä*), queen of Castile, daughter of John II., was born in 1451, and united in 1469 to Ferdinand V., king of Aragon. When a union of the kingdoms of Aragon and Castile took place. Ferdinand and Isabella together assumed the royal title of Spain. She was a woman of fine intellect, a wise and humane ruler, was always present during the transaction of state business, and her name was placed beside that of the king in state ordinances. She proved also a stanch supporter of Columbus in his search for the western route to India. Died, 1504.

Isabey (*ē'zä'bē*), **Jean Baptiste,** court painter and favorite of Napoleon, was born at Nancy, 1767. He was a pupil of Girardet Claudet, Dumont, and David. He painted the portraits of Josephine, Napoleon, his marshals, and the chief personages of Europe. He visited the Russian court at the invitation of Alexander. Died at Paris, 1855.

Isaiah (*ī-zā'yä, ī-zā'yä*), one of the most eminent of the Hebrew prophets, flourished about 740-701 B. C. He was the son of Amoz, but of his personal history very little is known. His prophecies, though delivered later in point of time than several of those uttered by other prophets, occupy in our Bible, the first place, both on account of their bulk, and for the sublimity and importance of the predictions.

Isidore (*iz-i-dor*) **of Seville,** or **Isidorus Hispalensis,** one of the most distinguished ecclesiastics of the sixth century, was born at Cartagena, Spain, about 560. The episcopate of Isidore, which began in 600, is rendered notable by the half-ecclesiastical, half-civil counsels of Toledo, in 619 and 633, which were held under his presidency, and the canons of which may almost be said to have formed the basis of the constitutional law of the Spanish kingdoms, both for church and for state, down to the great constitutional changes of the fifteenth century. Died, 636.

Ismail Pasha (*is'mä-ēl'pä-shä*), khedive of Egypt, was born in 1830. He succeeded Said Pasha as fifth viceroy of Egypt, 1863; promoted the Suez canal project, and gained wealth by the cultivation of cotton during the American war. Financial disaster coming in 1879, he abdicated in favor of his son, Mohammed Tewfik, and lived after 1888 in Constantinople. Died, 1895.

Isocrates (*ī-sok'ra-tēz*), Greek orator and teacher, was born in Athens, 436 B. C. About 390 B. C. he set up as a teacher of oratory, though he professed also to give a general practical education. He drew to him pupils subsequently distinguished as statesmen, historians and orators. But he also wrote speeches intended to be practical; the

Archidamus may actually have been composed for the Spartan king Archidamus. As a politician, Isocrates' one idea was to unite all Greeks together in a joint attack upon the common foe, Persia. The outcome was the destruction of Greek freedom at Chæronea by Philip. Died, 338 B. C.

Israels (*ēs'rā-ēls'*), **Josef,** Dutch painter, was born at Groningen, 1824. He studied at Amsterdam, under Kruseman, and next at Paris, under Picquet, and received gold medals of honor at Paris, Brussels and Rotterdam. He also had conferred upon him the Belgian order of Leopold, and was nominated a member of the French legion of honor. Principal works: *The Shipwrecked Mariner; The Cradle; Interior of the Orphans' Home at Katwyk; The True Support.* Died, 1911.

Ito (*ē'tō*), **Marquis Hirobumi,** Japanese statesman, was born in the province of Choshu, 1841. In 1871 he visited the United States for the purpose of examining the coinage system, and on his return to Japan was successful in establishing a mint at Osaka. He became prominent in the Japanese cabinet in 1886, made many reforms, and in 1888 prepared the written constitution of Japan, which was promulgated in 1889. In 1900, on the resignation of the Yamagata ministry, he was summoned by the emperor to form a cabinet. Assassinated, 1909.

Ito, Count Yuko, Japanese admiral, chief of the naval general staff, was born in Satsuma province, 1843. He was educated at the Tokyo Kaisei College. Entered the imperial Japanese navy, 1868; attained the rank of lieutenant-commander, 1872; was promoted rear-admiral and commander of the standing squadron, 1886; vice-admiral and chief of Yokosuka naval station, 1892; fought the battle of Yalu with all the combined squadrons under his command, 1894; chief of the naval general staff, 1895; created viscount for services in the war, and made a full admiral in 1898. Died, 1914.

Ivan, III. (*ē-vän', i'van*), **Vasilevitch,** czar of Russia, sometimes named "the great," may be regarded as the founder of the Russian empire. He was born in 1440, was at first only grand-duke of Moscow, but succeeded in shaking off entirely the yoke of the Tartars, and in subjecting a number of the Russian principalities to his own sway. In 1472 he married Sophia, a niece of Constantine Palæologus, assumed the title of "ruler of all Russia," and adopted the two-headed eagle of the Byzantine empire. Died, 1505.

Ivan IV., Vasilevitch, czar of Russia, called "the terrible," was born in 1530. He did much for the advancement of his country in arts and commerce, as well as for its extension by arms. But his hand fell with merciless cruelty upon the boyars of his kingdom, and upon some of his towns, as Moscow, Tver and Novgorod. Ivan died of sorrow for his son, whom three years before he had slain in a mad fit of rage. Died, 1584.

Ives (*īvz*), **Frederic Eugene,** American inventor, was born at Litchfield, Conn., 1856. He was educated in the public schools at Litchfield, Norfolk, Newton, Conn. In charge of photographic laboratory, Cornell University, 1874-78. His experiments in color photography on the so-called trichromatic principle, commenced in 1878, culminated in the three-color printing process in the typographic press, now an important industry, and in the Kromskop system. Author: *Isochromatic Photography With Chorophyll, A New Principle in Heliochromy.* Contributor to technical and educational journals on photographic processes.

Ixtlilxochitl (*ēsh'tlil-shō'chēt'l*), **Fernando de Alva,** Mexican antiquarian, was born in Mexico, about 1568. He was a descendant of the kings of Tezcuco, was interpreter of the native languages to several viceroys of Mexico and a laborious collector of the ancient MSS. and traditions of his country. Died, 1648.

Jackson, Abraham Valentine Williams, American educator and scholar, professor Indo-Iranian languages, Columbia University, since 1895, was born in New York, 1862. He was graduated at Columbia, 1883; L.H.D., 1885; Ph.D., 1886; L.L.D., 1904. He traveled in India, 1901, and Persia and Central Asia, 1903 and 1907. Author: *A Hymn of Zoroastier; An Avestan Grammar; Persia, Past and Present.* He edited *A History of India,* 9 volumes, and the Columbia University Indo-Iranian series, in three volumes.

Jackson, Andrew, seventh president of the United States, was born in North Carolina, 1767. His father, a Scotch-Irishman, emigrated to America in 1765. When Jackson grew up he was sent to study for the church, but on the outbreak of the American revolution he and his brothers were summoned to the field. In 1784 he commenced the study of law, and in 1788 was appointed solicitor for the western district of North Carolina, now the state of Tennessee. In 1813, at an outbreak of hostilities with the Creek Indians, he raised a volunteer force of 3,000 men and defeated them. Jackson's final victory on March 27, 1814, broke the power of the Indian race in North America. He was appointed major-general of the United States army; defended New Orleans against the attack of the British under General Packenham, December, 1814. The result of this action gave General Jackson a great and enduring popularity. After Spain had ceded Florida to the United States he was made governor of the territory, and subsequently was chosen United States senator from Tennessee. Elected president of the United States by the democratic party in 1828, and in 1832 reelected by an overwhelming majority. His administration was marked by singular firmness. He vetoed important measures against large majorities, destroyed the bank of the United States, and took the first steps toward a specie currency and an independent treasury. He retired with undiminished popularity after the election of President Van Buren. Died, 1845.

Jackson, Helen Hunt, American author and poet, was born in Amherst, Mass., 1831. Her maiden name was Helen Maria Fisk. She studied at Ipswich female seminary, and in 1852 was married to Major E. B. Hunt, of the United States engineers. She afterward married William S. Jackson, and lived most of the latter part of her life at Colorado Springs, Colo. She began to write verses about 1870 over the signature "H. H.," which soon became familiar to magazine readers. In 1883 Mrs. Jackson was made a commissioner by the government to look into the condition of the Mission Indians of California. Her last book, *Ramona,* which deals with Indian life, leaped at once into great popularity. She died at San Francisco, 1885. Buried near Colorado Springs.

Jackson, John Price, electrical engineer, was born at Philadelphia, 1868; graduated at Pennsylvania State College, 1889, M.E., 1892, E.E., 1901; was electrical engineer with Sprague and Edison electrical companies, 1890-2; professor electrical engineering, 1893-1907; dean school of Engineering 1907-15, Pennsylvania State College. Member electrical jury, St. Louis Exposition, 1904; member American Institute Electrical Engineers, American Society Mechanical Engineers, etc. Joint Author: *Alternating Currents and Alternating Current Machinery; Elementary Electricity and Magnetism;* etc.

Jackson, Samuel Macauley, American educator and writer, professor of church history, New York University, was born in New York City, 1851. He was graduated from the college of the city of New York, 1870; Union Theological Seminary, 1878; LL.D., Washington and Lee University, 1892; D.D., New York University, 1893. He has been editor of numerous church dictionaries and encyclopædias. His other publications include: *Huldreich Zwingli, Handbooks for Practical Workers in Church and Philanthropy,* etc.

Jackson, Thomas Jonathan, better known the world over as "Stonewall Jackson," American general, was born in Lewis county, Virginia (now West Virginia), 1824. He was graduated at West Point academy in 1846, and after serving with distinction in the Mexican war, he became a professor in the military institute at Lexington, Va. At the outbreak of the Civil War he was appointed brigadier-general in the confederate service. At the battle of Bull Run, July, 1861, his command on that occasion "stood like a stone wall," hence the sobriquet; captured Harper's Ferry with 11,000 federal prisoners; commanded a corps at Antietam; and was made lieutenant-general for his services in largely contributing to the federal defeat at Fredericksburg. In 1863, by a clever flank movement, he defeated the 11th corps of General Hooker's army at Chancellorsville; and on the evening of the same day was fired at by a patrol party of his own men, who mistook him and his staff, in the darkness, for a detachment of Union cavalry. He died of his wounds on May 10, 1863.

Jacobi (Ger. *yä-kō'bē*), **Abraham,** American physician, was born at Hartum, Westphalia, 1830. He studied at the Universities of Gricfswald and Göttingen; was graduated from Bonn, M.D., 1851; LL.D., University of Michigan, 1898; Columbia, 1900; Yale, 1905; Harvard, 1906. He settled in practice in New York, 1853; was professor of diseases of children, New York Medical College, 1860-65, and at New York University, 1865-70; later professor of diseases of children, College of Physicians and Surgeons. Author: *Dentition and Its Derangements; The Raising and Education of Abandoned Children in Europe; Therapeutics of Infancy and Childhood; Intestinal Diseases,* etc. Died in 1919.

Jacobi, Friedrich Heinrich, German philosopher, was born at Düsseldorf, 1743. He was trained for a mercantile career, but in 1772 was appointed finance officer for Jülich and Berg, and devoted himself to literature and philosophy. He elaborated no system of philosophy, but criticised all other philosophies from his special doctrine that by the "reason," not the understanding, we have immediate conviction or belief not only of the reality of objects perceived by the senses, but also of the reality of the highest verities that lie beyond the apprehension of sense. Died, 1819.

Jacobi, Karl Gustav Jakob, celebrated German mathematician, was born in Prussia, 1804. In 1829 he became a professor at Königsberg, and published his celebrated work, *Fundamenta nova Theoriae Functionum Ellipticarum,* for which he received the great medal of the Academy of Sciences of Paris. He also wrote a great number of memoirs on the different branches of the higher mathematics, chiefly on *Series and Definite Integrals,* and was a regular contributor to the celebrated *Journal für reine und angewandt Mathematik* of Crelle. Died, 1851.

Jacotot (*zhä'kō'tō'*), **Jean Joseph,** inventor of the "universal method" of education, was born at Dijon, France, 1770. The principles of his system are that the mental capacities of all men are equal; the unequal results of education depend almost exclusively upon will; everyone is able to educate himself, provided he is once started in the right way; knowledge should first be acquired through instinctive experience, or by the memory. He expounded his views in *Enseignement Universel.* Died, 1840.

Jacquard (*zhä'kär'*), **Joseph Marie,** French inventor, was born at Lyons, 1752. He attempted to establish a manufactory for weaving figured fabrics, planned several ingenious improvements in machinery, and brought to perfection the apparatus for figured weaving, which now perpetuates his name—the Jacquard loom. He resided at Lyons for many years, encountering much opposition from a prejudice excited against machinery, but eventually triumphed. He passed his latter years in tranquil retirement, and died in 1834. During his life he received the cross of the legion of honor, and in 1840 a public statue was erected to his memory at Lyons.

Jahn (*yän*), **Friedrich Ludwig,** the "Turnvater" or father of gymnastics, was born at Lanz in Prussia, 1778. In 1811 he started the first gymnasium in Berlin. His system, meant to revive patriotism, attracted the Prussian youth, and to the training thus obtained must be largely attributed the expulsion of the French. But the gymnasiums began to witness political gatherings, too liberal to please the Prussian government, and they were closed in 1818. Jahn, who had taken a prominent part in the movement, was arrested in 1819 and suffered five years' imprisonment. He was elected to the Frankfort national assembly in 1848. Died, 1852.

Jahn, Otto, German philologist, archæologist and classical editor, was born at Kiel, 1813. He lectured at Kiel, Griefswald and Leipzig. Deprived of his chair in 1851 for his part in the political movements of 1848-49, he became in 1855 professor of archæology at Bonn. He published works on Greek art, representations of ancient life on vases, a number of Latin and Greek classics, besides a *Life of Mozart,* and a number of masterly essays on music. Died, 1869.

James I. of England, VI. of Scotland, the only son of Mary, queen of Scots, and Henry, Lord Darnley, was born in Edinburgh, 1566. When his mother was forced to resign the crown, James was proclaimed king of Scotland, 1567. In 1578 the earl of Morton, then regent, was driven from power, and James assumed full control. In the winter of 1589 James went to Denmark, where he married Princess Anne, daughter of Frederick II., king of that country. By the death of Elizabeth, in 1603, James succeeded to the throne of England. He soon became unpopular with his new subjects. He really governed through his favorites, Kerr and Buckingham, both of them unpopular; and England's prestige as a power, which had been gained under Elizabeth, soon disappeared. The so-called King James Bible was completed during his reign. He has been described as two men in one—"a witty, well-read scholar, who wrote, disputed and harangued, and a nervous, driveling idiot who acted." Died, 1625.

James II. of England and **VII. of Scotland,** son of Charles I. and Henrietta Maria, was born in 1633. In 1648, during the civil war, he made his escape to France. He then entered the military service of Spain. At the restoration he was made lord high admiral of England. On the death of Charles II., 1685, James succeeded to the crown without opposition. On becoming king he promised to maintain the church and to respect the liberties of the people, but his government, nevertheless, was arbitrary and tyrannical; he paraded his Catholicism, persecuted the covenaters, subordinated English interests to French, permitted the "bloody assize," suspended the test act, violated the rights of the Universalists, gave church offices to Roman Catholics, and by these and many other acts of despotism made his deposition necessary; leading statesmen invited William of Orange to assume the throne, and James fled to France; an invasion of Ireland in 1689 ended in his defeat at the battle of the Boyne. He retired again to France, and lived at St. Germains until his death, 1701.

James IV. of Scotland, son of James III. and Margaret of Denmark, was born in 1473. His rule gave promise of being both vigorous and popular, while the personal beauty he possessed and his open frankness won the hearts of his people. In 1503 the king married Margaret, eldest daughter of Henry VII. of England, an alliance which led to the union of the two crowns just one hundred years later. Henry VIII. came to the English throne in 1509, and, in the disputes which followed, James invaded England with an army. He was met by the earl of Surrey, and in the battle which took place at Flodden, 1513, the king and many of his nobles were killed. He was forty-six years old, and had reigned twenty-six years.

James, Edmund James, American educator, was born in Jacksonville, Ill., 1855. He was educated at the Illinois state normal school and at Northwestern and Harvard Universities: Ph.D.,

1877, University of Halle; LL.D., Cornell College, Wesleyan, Queen's College, professor of political and social science, University of Pennsylvania, 1884-95; professor of public administration, and director of extension division of the University of Chicago, 1896-1901; president of Northwestern University, 1902-04, and president University of Illinois 1904-20. Died, 1925. Author *Relation of the Modern Municipality to the Gas Supply; The Legal Tender Decisions; Charters of City of Chicago; Growth of Great Cities in Area and Population; Government of a Typical German City—Halle;* etc.

James, George Payne Rainsford, English historical novelist, was born in London, 1801. He was educated at Putney and in France, and by seventeen had written some Eastern tales, which found favor with Washington Irving. In all he published seventy-seven works, historical romances mostly, but also biographies, poems, etc. Died, 1860.

James, Henry, American author, was born in New York, 1843. He was educated in France and Switzerland, and at Harvard law school. He began his literary career as contributor to periodicals, 1866, and from 1869 he lived in England. Author: *Confidence; Diary of a Man of Fifty; Washington Square; The Portrait of a Lady; Siege of London; Portraits of Places; Tales of Three Cities; A Little Tour in France; The Author of Beltraffio; The Bostonians; The Lesson of Balzac; American Scenes,* etc. Died, 1916.

James, William, eminent American psychologist and philosophical writer, was born in New York, 1842. He was educated in private schools and by tutors, and at Lawrence scientific school, 1861-63; M.D., Harvard medical school, 1870; Ph.D. and Litt.D., Padua, 1893; LL.D., Princeton, 1896, Edinburgh, 1902, Harvard, 1905. He was professor of psychology, 1889-97, and professor of philosophy, 1897-1907, Harvard University. He was Gifford lecturer on natural religion, University of Edinbrugh, 1899-1901. Corresponding member of the French institute, Paris, royal Prussian academy of sciences; member National Academy of Sciences, etc. Author: *Principles of Psychology,* 2 vols.; *The Will to Believe, and Other Essays in Popular Philosophy; Human Immortality—Two Supposed Objections to the Doctrine; The Varieties of Religious Experiences; Pragmatism—A New Name for Some Old Ways of Thinking,* etc. Died, 1910.

Jameson (*jām'sun*), **Mrs.** (Anna Brownell Murphy), British writer, was born in Dublin, 1794. She was the daughter of an artist, and many of her books are about pictures, painters and other art matters. In 1823 she married Robert Jameson, and went with him to Canada, where he held a government office. Among her books are: *Memoirs of Celebrated Female Sovereigns; Characteristics of Women; Memoirs of Italian Painters; The History of Sacred and Legendary Art;* and *Legends of the Madonna.* She died in London, 1860.

Jameson, John Franklin, American educator, historian, was born in Boston, 1859. He graduated at Amherst College, 1879; Ph.D., Johns Hopkins, 1882; LL.D., 1902; Amherst, 1898; was head of department of history, University of Chicago, 1901-05, and director department of historical research, Carnegie institution, Washington, since 1905. He was managing editor of *American Historical Review,* 1895-1901 and again in 1905; president American historical associations, 1907-08. Author: *Willem Usselinx, Founder of the Dutch and Swedish West India Companies,* etc. He edited the *Correspondence of John C. Calhoun;* Editor of the historical publications of the Carnegie institution since 1905.

Jameson, Leander Starr, South African politician, was born at Edinburgh, 1853. He studied medicine there and at London, and began practice at Kimberley in 1878. Through Cecil Rhodes he engaged in pioneer work, was in 1891 made administrator of the South African company at Fort Salisbury, and won enormous popularity. During the troubles at Johannesburg between the Uitlanders and the Boer government, Jameson, who by order of Rhodes had concentrated the military forces of Rhodesia at Mafeking on the Transvaal frontier, started with five hundred troopers to support the Uitlanders, 1895. At Krugersdorp they were overpowered by an overwhelming force of Boers, and, sleepless and famishing, were compelled after a sharp fight to surrender, January 2, 1896. Handed over to the British authorities, Jameson was in July condemned to fifteen months' imprisonment, but was released in December. In 1900 he was elected to the legislative assembly, and was, from 1904 to 1908, premier of Cape Colony. Died, 1917.

Janet (*zhā'nē'*), **Paul,** French philosopher, was born in Paris, 1823. In 1864, he became professor of the history of philosophy at the Sorbonne, and a member of the Academy of Moral and Political Sciences. Died, 1899.

Janeway, Edward Gamaliel, physician, born in New Jersey, 1841. Graudated from Rutgers College, 1860, and received LL.D. from College of Physicians and Surgery, N. Y., 1864. Identified with Bellevue Hospital Medical College, first as curator, then as professor of pathological anatomy and later as dean. Died, 1911.

Jansen (*jan'sen;* D., *yän'sen*), **Cornelius,** sometimes called Jansenius, bishop of Ypres, in the Netherlands, and founder of the Jansenists, was born at Acquoi, near Leerdam in Holland, 1585. In 1636 he was made bishop of Ypres. He died in 1638, just as he had completed his great work, the *Augustinus,* in 3 vols., which sought to prove that the teaching of St. Augustine against the Pelagians and semi-Pelagians on grace, free-will, and predestination was directly opposed to the teaching of the Jesuit schools. On the publication of the *Augustinus* in 1640, it was received with loud clamor, especially by the Jesuits, and was prohibited by a decree of the inquisition in 1641; in the following year it was condemned by Urban VIII. in the bull *In Eminenti.*

Jastrow (*yās'trō*), **Joseph,** American educator, professor of psychology, University of Wisconsin. 1888-1928, was born at Warsaw, Poland, 1863. He was graduated at the University of Pennsylvania, 1882; Ph.D., Johns Hopkins, 1886. Author: *Time-Relations of Mental Phenomena; Epitomes of Three Sciences,* part author; *Fact and Fable in Psychology; The Subconscious,* etc.

Jastrow, Morris, Jr., American orientalist, professor of Semitic languages, and librarian, University of Pennsylvania, was born in Europe, 1861. He was graduated at the University of Pennsylvania, 1881; Ph.D., University of Leipzig, 1884, and also studied at other universities of Germany and France. He is a recognized authority on Semitic religions, languages and literatures. Author: *Religion of the Babylonians and Assyrians,* Editor: *Jewish Encyclopædia; Encyclopædia Britannica; Hastings' Dictionary of Religions; Journal American Oriental Society* and various other technical publications. Died, 1921.

Jay, John, American statesman and jurist was born in New York City, 1745, and was there admitted to the bar in 1768. In 1774, as a member of the first continental congress, he formed one of the committee of three which drew up the celebrated address to the people of Great Britain. He largely assisted in framing the New York state constitution; in 1777 was appointed chief-justice of New York, and in the following year became president of congress. He next took part in negotiating the treaty of peace entered into at Paris, 1783, between Great Britain and the United States. On his return he was appointed secretary of foreign affairs and in 1789 chief-justice of the United States supreme court. In 1794 he proceeded on a special mission to England, where he concluded a treaty which met with violent opposition from the anti-federalist party. He afterward held the governorship of New York state, and, after refusing a second nomination to the chief-justiceship, died, 1829.

Jebb, Sir Richard Claverhouse, British Greek scholar, was born at Dundee, Scotland, 1841. He was graduated from Trinity College, Cambridge, as senior classic in 1862, and was elected fellow. In 1869 he became public orator of the University, in 1875 professor of Greek at Glasgow, and in 1889 regius professor of Greek at Cambridge. In 1891 he was elected member of parliament for Cambridge University. His books include *Characters of Theophrastus; The Attic Orators; Primer of Greek Literature;* and his *Bacchylides.* But his greatest work is his translation of Sophocles. Died, 1905.

Jeejeebhoy (*jē-jēb-hoi'*), **Sir Jamsetjee,** Hindu philanthropist, was born at Bombay, India, 1783. He was taken into partnership by his father-in-law, a Bombay merchant, in 1800. By 1822 he had amassed 2,000,000 pounds, and began to exhibit a magnificent liberality. He contributed generously to various educational and philanthropic institutions in Bombay, and spent upward of a quarter of a million pounds in benevolence. Queen Victoria knighted him in 1842, and in 1857 he was made a baronet. Died, 1859.

Jefferson, Charles Edward, Congregational clergyman, was born at Cambridge, Ohio, 1860. He was graduated at Ohio Wesleyan University, 1882; School of Theology, Boston University, 1887; D.D., Oberlin, 1898; Union, 1898, Yale, 1903. He was ordained to the Congregational ministry, 1887; now pastor of Broadway tabernacle, New York. Author: *Quiet Talks With Earnest People in My Study; The Minister as Prophet; Faith and Life; The World's Christmas Tree; The Old Year and the New; The New Crusade,* etc.

Jefferson, Joseph, American actor, was born at Philadelphia, Pa., 1829. He came from a family of actors, and made his first appearance as a child in *Pizarro.* From 1856 to 1858 he played minor parts, and managed several theaters in the South, meanwhile visiting London. Shortly after he made his first substantial success as *Dr. Pangloss* in *The Heir at Law,* at New York. He toured Australia and New Zealand, 1861-65, returned by way of London, and played an engagement at the Adelphia theater in that city in an adaptation of *Rip Van Winkle.* He presented the same play in New York, 1866, and confined himself almost solely to it for fifteen years. In 1880 he produced *The Rivals* with himself as *Bob Acres,* and in the two last-named characters his great reputation was made on the American stage. He died at Palm Beach, Fla., 1905.

Jefferson, Thomas, third president of the United States, was born at Shadwell, Va., 1743. He graduated from William and Mary College, and studied law. In 1773, as a member of the assembly, he took a prominent part in the measures which resulted in the calling of the continental congress, to which he was sent as a delegate, and where he drew up the declaration of independence. During the war in defense of this declaration, he was governor of Virginia, and in 1784 was sent as minister to France. Returning in 1789, he was appointed, by Washington, secretary of state. In this capacity Jefferson led the party in favor of states' rights and a federal government of restricted and carefully defined powers. The other party took the name of Federalists; the former were first called Anti-Federalists, then Republicans, and finally adopted the title first given them as a reproach of Democrats.

When Washington retired, after eight years as president, Jefferson became the vice-president in 1797 under John Adams. The strife of these parties culminated in 1800, when Jefferson and Aaron Burr were elected president and vice-president, against John Adams the federal candidate. The most importance act of his administration was the purchase of Louisiana from France.

Though born and educated in the first rank of colonial life, he was a democrat in theory and practice; he held that "the world is governed too much," and that "that government is best which governs least." Though a large slaveholder, he labored for the prohibition of the slave trade and of slavery in the territory beyond the Ohio river, and advocated emancipation in Virginia.

His writings consist mostly of state papers and letters. His only literary work was his *Notes on Virginia,* published in 1782. His death occurred on the 4th of July, 1826, while the nation was celebrating the fiftieth anniversary of the declaration of independence, which he had writen.

References.—The best edition of his *Writings* is that edited by P. L. Ford in 10 volumes. See biographies by Randall, Parton, Morse, in the "American Statesmen" series, and Schouler in the "Makers of America" series.

Jeffrey, Francis, Lord, Scottish critic and jurist, was born at Edinburgh, 1773. He studied at Glasgow and Oxford, and in 1794 was admitted to the Scottish bar, but as a whig made little progress for many years. In 1820 and again in 1823 he was elected lord rector of Glasgow University; in 1829 dean of the faculty of advocates. After the passing of the reform bill he was returned for Edinburgh, which he represented until 1834, when he was made a judge of the court of sessions. From 1815 he lived at Craigcrook, where he died in 1850. It is as literary critic and leader in a new departure in literary enterprise that Jeffrey holds his title to fame. Together with Sydney Smith, Francis Horner, and a few others, he established the *Edinburgh Review,* of which he was editor until 1829. His own contributions were very numerous and brilliant, if biased.

Jeffreys, George, Baron, English judge, was born at Acton near Wrexham, 1648, and was called to the bar in 1668. Hitherto nominally a Puritan, he now began to intrigue for court favor, was made solicitor to the duke of York, was knighted in 1677, and became recorder of London in 1678. His first exploit was the judicial murder of Algernon Sidney, but in every state-trial he proved subservient to the crown, thus earning the favor of James, who raised him to the peerage in 1685. Among his earliest trials were those of Titus Oates and Richard Baxter; later he was sent to try the followers of Monmouth, and hanged 331, transported 849 to the American plantations, and whipped or fined thirty-three others. He was lord chancellor from 1685 until the downfall of James. On James' flight he tried to follow his example, but was caught at Wapping, disguised as a sailor and sent to the Tower to save him from the mob. Here he died four months after, in 1689.

Jelliffe, Smith Ely, American physician, was born in New York, 1866. He was graduated at the Brooklyn polytechnic, 1886; medical department of Columbia University, 1889; Ph.D., Columbia, 1900. He began practice, 1889, spent one year in Europe, and since 1895 has practiced in New York. He is professor of mental diseases at Fordham University; visiting neurologist to the city hospital; and an authority in mental and nervous diseases. Author: *Nervous Diseases in Butler's Diagnostics; Outlines of Pharmacognosy.*

Editor and translator: *Dubois' Psychoneuroses;* and contributor to medical, botanical and pharmaceutical press.

Jenkin, Henry Charles Fleeming, British engineer and electrician, was born in Scotland, 1833. In 1859 he began experiments in conjunction with Sir William Thompson (Lord Kelvin) in electricity, and was specially occupied with practical work in cable telegraphy, 1858-73. He was made fellow of the royal society, 1865, became professor of engineering in University College, London, same year, and in 1868 professor at Edinburgh University. Died, 1885.

Jenks, Jeremiah Whipple, American economist and educator, professor of economics and politics, New York University since 1912. Was born in St. Clair, Mich., 1856. He was graduated from the University of Michigan, 1878; LL.D., 1903; Ph.D., University of Halle, 1885. Studied law, and was admitted to the Michigan bar. Expert agent of United States industrial commission on investigation of trusts and industrial combinations in the United States and Europe, 1899-1901; and consulting expert of United States department of labor on same subject. Special commissioner of war department, United States, to investigate questions of currency, labor, internal taxation and police in the Orient, 1901-02. Author: *The Trust Problem; Citizenship and the Schools; Government Action for Social Welfare,* etc.; also a member of the United States immigration commission. Died, 1929.

Jenner (*jen'ẽr*), **Edward,** English physician, discoverer of vaccination, was born at Berkeley vicarage Gloucestershire, 1749. He was apprenticed to a surgeon at Sodbury, in 1770 went to London to study under John Hunter, and in 1773 settled at Berkeley, where he acquired a large practice. In 1775 he began to investigate the truth of the traditions respecting cow-pox, became convinced that it was efficacious as a protection against small-pox. Many investigations delayed the actual discovery of the prophylactic power of vaccination, and the crowning experiment was made on May 14, 1796. This experiment was followed by many others; and in 1798 Jenner published his *Inquiry Into the Causes and Effects of the Variolae Vaccinae.* Yet the practice met with violent opposition for a year, when upward of seventy of the principal physicians and surgeons in London signed a declaration of their entire confidence in it. Parliament voted him in 1802 a grant of 10,000 pounds, and in 1807 a second grant of 20,000 pounds. He died at Berkeley, 1823.

Jeremiah, one of the four great prophets of Israel, author of the book in the Bible which bears his name, and of the book of *Lamentations,* flourished about 629-580 B. C. The writings of this prophet, dictated by him to Baruch, although arranged with little regard to order, exhibit great tenderness and elegiac beauty of sentiment, but lack the sublime grandeur of Isaiah. He often borrows from his poetic predecessors. Several of the *Psalms* have been attributed to him, especially by modern critics.

Jeritza, Maria, opera singer, born in Morania, Czecho-Slovakia. She studied, besides voice, the violin, cello, harp, and piano. She made her debut in Olmutz, Austria. After about ten years of opera at Vienna she came to New York and joined the Metropolitan Opera Company, in 1922. Since then she has appeared with great success in *The Jewels of the Madonna, Tosca, Thais,* and other opera, and has made extensive concert tours.

Jeroboam (*jer-ō-bō'am*), first king of the divided kingdom of Israel, ruled about 937-915 B. C. After Solomon's death he headed the successful revolt of the northern tribes against Rehoboam, and, as their king, established idol shrines at Dan and Bethel to wean away his people from the pilgrimages to Jerusalem. He reigned twenty-two years.

Jerome (*jē-rōm'*), **Jerome Klapka,** English humorist, writer, and lecturer, was born at Walsall, England, 1859. He has been at various times clerk, school-master, actor, journalist, and editor of *Idler,* with Robert Barr, 1892-97, and of *To-day* 1893-97. Author: *Idle Thoughts of an Idle Fellow; Three Men in a Boat; Ruth; Wood Barrow Farm; Prude's Progress; The Second Thoughts of an Idle Fellow; Three Men on the Bummel; Tea Table Talk; Passing of the Third Floor Back; The Angel and the Author,* etc. Died, 1927.

Jerome of Prague, the friend of Huss, was born at Prague between 1360 and 1370. He studied at Oxford, became a convert there to Wycliffe's doctrines, and zealousy taught them after his return home in 1407. Jerome entered with his whole soul into the contest carried on by Huss. When Huss was arrested at Constance, Jerome hastened to his side to defend him, but, being refused a safe-conduct, he set out to return to Prague, was arrested in Bavaria, 1415, and was brought back to Constance. He recanted, but withdrew his recantation, and went to the stake, 1416.

Jerome, Saint, Sophronius Eusebius Hieronymus, was born at Stridon, Dalmatia, at some period between 331 and 345. In 379 he was ordained and went in 382 to Rome, where he resided until 384, as secretary to the pope Damascus, and where, although already engaged in his great work of the revision of the Latin version of the Bible, he attained to great popularity and influence by his sanctity, learning and eloquence. Many pious persons placed themselves under his spiritual direction, the most remarkable of whom were Lady Paula and her daughter Eustochium. These ladies followed him to the holy land, whither he returned in 384. He permanently fixed his residence at Bethlehem in 386, Lady Paula having founded three convents and a monastery, the latter by Jerome himself. He is universally regarded as the most learned and eloquent of the Latin fathers. He died in 420.

Jerome, William Travers, American lawyer, was born at New York, 1859. He was educated at Williston seminary and Amherst college; was graduated at Columbus law school, 1884; admitted to the bar, 1884. He was justice of special sessions, 1895-1902. District attorney, New York county, 1901-09. During his career as district attorney he appeared in many noted trials, and attained a high rank as a lawyer and pleader. Author: *Liquor Tax Law in New York.*

Jerrold (*jer'uld*), **Douglas William,** English journalist, author, and wit, was born in London, 1803. He is chiefly remembered for his contributions to *Punch,* with which he was connected from 1841 until within a short time of his death. His best play is *Black-eyed Susan,* published in 1829; his best novels are *St. Giles and St. James,* and *The Chronicles of Clovernook.* An edition of his *Works* was published during his lifetime; and his *Life and Remains* was edited by his son, Blanchard Jerrold, about a year after the father's death in 1857.

Jerrold, William Blanchard, son of Douglas Jerrold, was born in London, 1826. He was a writer for many of the principal newspapers of London, and wrote also many plays, novels, books of travel and other works. Among his best books are *Trips Through the Vineyards of Spain; The Story of Madge and the Fairy Content: London,* illustrated by Doré, and *Life of Napoleon III.* He died in 1884.

Jevons (*jev'unz*), **Frank Byron,** English classical writer, subwarden of Durham University beginning 1902, was born in 1858. He was graduated at Wadham College, Oxford, and was University treasurer, 1898-1902. Author: *Plutarch's Romance Questions; A Manual of Greek Antiquities; An Introduction to the History of Religion; Religion in Evolution,* etc.

Jevons, William Stanley, English economist and logician, was born in Liverpool, 1835. He studied there and at University College, London. In 1866 he became professor of logic and political economy at Owens College, Manchester, and 1876-81 held the chair of political economy at University College, London. He was drowned in 1882 while bathing at Bexhill, near Hastings. He popularized the mathematical methods of Boole, and wrote many works on logic.

Jewett, Sarah Orne, American author, was born at South Berwick, Me., 1849, daughter of the late Dr. Theodore H. Jewett. She was educated at Berwick academy; Litt.D., Bowdoin College. Author: *Country By-Ways; The Mate of the Daylight and Friends Ashore; Betty Leicester—A Story for Girls; Strangers and Wayfarers; The Life of Nancy; The Country of the Pointed Firs,* etc. Died, 1909.

Joan of Arc (*jō-an'; jōn uv ärk'*) **or Jeanne d' Arc,** was born at Domremy, 1412. A prophecy was current in Lorraine, that the kingdom should be saved by a virgin, which with her visions helped to define her mission. She dressed in a suit of white armor, mounted a black charger, bearing a banner of her own device. Her sword was one that she divined would be found buried behind the altar in the church of St. Catherine de Fierbois. Thus equipped she put herself at the head of an army of 6,000 men and advanced to Orleans. Her arrival fired the French, and, on April 29, 1429, she threw herself into the city. The English were compelled to retreat. On May 24, 143, with a handful of men she forced her way into Compiegne, which was then besieged by the forces of Burgundy; was left behind by her men, taken prisoner, and sold to the English by John of Luxembourg. She was carried to Rouen, the headquarters of the English, and flung into prison, arrainged before spiritual tribunal of Pierre Cauchon. Trial was disgraced by brutality. Burned at stake on May 30, 1431.

Joffre, Joseph Jacques Cesaire, Marshal of France, b. Rivesaltes, 1852; Educ. College of Perpignan; Ecole Polytechnic; 2d Lt. Franco-Prussian war; Capt. 1876; Major 1889; Lt.-Col. 1894; Col. 1897; Brigadier 1901; en. Div. 1905; served in China; organized defenses of Formosa; chief en. staff 1914; Com.-in-Chief, 1914-17; defeated Germans at the Marne. Visited U. S. in 1917 and received with great enthusiasm. He died in 1931.

John, Saint, the apostle, was born about 4 A. D., and was one of the earliest of Christ's disciples. During the crucifixion our Lord commended His mother to his care, and the apostle "took her to his own home." John afterward became bishop of Ephesus. According to Tertullian, he was plunged into a caldron of boiling oil during the persecution under Domitian, but received no injury. He was subsequently exiled to the island of Patmos, where he is said to have written the book of *Revelation.* He was also author of the gospel and epistles which bear his name. Died about 99.

John the Baptist, forerunner of Christ, was the son of the priest Zacharias and Elizabeth, the cousin of Mary, mother of our Lord. He baptized and preached repentance and forgiveness of sins. He had denounced Herod Antipas for taking Herodias, his brother Philip's wife, was flung into prison, where he was executed at the request of Salome, daughter of Herodias.

John II., Casimir, king of Poland, was born in 1609, the younger son of Sigismund III. During his reign Poland was attacked by Russia and Sweden, resulting in wars which terminated in the cessation of several provinces on the Baltic and Dnieper. His wife, intriguing for the son of the prince of Condé as successor to the throne, and the nobles contending among themselves, he abdicated at the diet of Warsaw, 1668, and retired to France, where he was kindly received by Louis XIV. Died, 1672.

John III., Sobieski, king of Poland, was born about 1624. He was sent to Paris to complete his education, and entered the musketeers of Louis XIV. under Condé; but in 1648 he returned to combat the revolted Cossacks. He fought bravely against them and against the Swedish and other invaders, and next to Czarniecki he was foremost in saving the country from ruin. In 1672 he defeated the Turks and Tartars, and when King Michael, being besieged by the Turks in Kamenetz, concluded an ignominious treaty, he caused its rejection by the senate, hastened to Podolia, and routed the Turks at Khotin, 1673. The king had died a few days before, and Sobieski was elected his successor in 1674. He resumed the war, and rescued the fortress of Trembowla, but subsequently at Zurawno, barely escaped surrender. In 1683 he hastened to the rescue of Vienna, which was besieged by an army of 300,000 Turks. Sobieski, after a triumphal entry into Vienna, pursued the enemy into Hungary, which was soon restored to the emperor. He afterward made attempts to conquer Wallachia, but failed. The last years of his life were embittered by civil as well as domestic troubles. Died, 1696.

John, king of England, surnamed Lackland, was born in 1166. He was the youngest son of Henry II., and the successor, in 1199, of Richard I., his brother. In 1203 he murdered his nephew Arthur at Rouen, and imprisoned Arthur's sister Eleanor, known as the damsel of Brittany, in Bristol castle. In 1215, on the demand of his barons, who were headed by Stephen Langton, now archbishop of Canterbury, he signed *Magna Charta.* Though John thus accepted the charter which has been solemnly ratified on thirty-eight different occasions by subsequent kings, yet he had no intention of being bound by it. He actually procured from the pope a bull annulling the charter, and introduced foreign soldiers to fight against the barons, who immediately offered the throne to Louis, son of Philip of France, an offer which was readily accepted, but which led to no result. During this reign the English lost nearly all their French possessions, even Normandy falling to the crown of France. Died, 1216.

John, king of Saxony, was born in 1801. He was the youngest son of Duke Maximilian of Saxony and Princess Carolina of Parma. His brother, Frederick Augustus II., dying without issue, in 1854, he became king. In the war of 1866 he took the side of Austria. The Prussians entered Saxony, and the Saxon army, having withdrawn to Bohemia, fought against them in the battle of Königgratz. Subsequently Saxony entered the North German confederation, and her troops took part in the Franco-Prussian war of 1870-71. Under the pseudonym Philalethes, John published a translation of Dante's *Divina Commedia,* with critical and historical notes, and left manuscript translations of seventy English poems. Died, 1873.

John II., king of France, surnamed "the good," the second son of the Valois family, was born in 1319. He succeeded his father, Philip VI. of Valois, in 1350. He commenced his reign by acts of despotism and cruelty. England, being appealed to by the friends of those whom he had slain, invaded France, when John was defeated by Edward, the Black Prince, at Poitiers in 1356, and carried to Bordeaux and then to London, where he was a prisoner for three years. He died in 1364.

John of Austria, or **Don Juan d'Austria,** natural son of the emperor Charles V., was born at Regensburg, about 1547. He was early taken to Spain, and after the death of his father was acknowledged by his half-brother Philip II. In 1570 he was sent with an army against the Moors in Granada, whom he completely expelled from the country. He sought to win the favor of the people by mildness; hard pressed for a time by William the Silent, he, with the help of Parma's troops, won the victory of Gembloux in 1577. But Philip now feared he might make himself king of the Netherlands, and Don John's death at Namur, 1578, was not without suspicion of poison.

John of Gaunt (*gänt; gônt*), or **Ghent,** fourth son of Edward III., who made him duke of Lancaster, was born in 1340, at Ghent. In the French wars he served with great bravery under his brother, Edward, the black prince. In 1359 he married

Blanche, heiress of the duke of Lancaster, and himself became duke in 1362. Toward the end of his father's reign he became the chief man in the kingdom, and perhaps wished to succeed him; at any rate, the young king, Richard II., distrusted him and sent him on another wild expedition to recover his Castilian kingdom. This resulted in a treaty between John and Henry Trastamara, who had possession of the throne, by which John's daughter Catharine should succeed as queen of Castile. John of Gaunt died at London, 1399.

John of Salisbury, English schoolman, by Bishop Stubbs styled "for thirty years the central figure of English learning," was born at Old Sarum, about 1118. He studied at Paris and Chartres, and from 1150 lived at Canterbury, meanwhile often visiting Italy. From 1164 to 1170 he had to take refuge at Rheims, but he returned in time to witness Becket's murder. In 1176 he became bishop of Chartres. His Latin works include over 300 letters, the *Policraticus*, etc. Died, 1180.

John XXII., pope, otherwise, Jacques d'Use, was born at Cahors, France, about 1244. Attempting, after his election as pope in 1316, to carry out the vast policy of Gregory VII., he interposed his authority in the contest for the imperial crown between Louis of Bavaria and Frederick of Austria, supporting the latter and excommunicating his rival. He died at Avignon in 1334, having accumulated 18,000,000 gold florins.

John XXIII., pope, a Neapolitan named Balthazar Cossa, was born at Naples about 1360. He became chamberlain to Boniface IX., who in 1402 made him a cardinal. He succeeded Alexander in 1410. By the decree of a council held at Constance in 1414, John was deposed and imprisoned for four years, under charge of Lewis, duke of Bavaria. At the end of that time he was liberated, and found such favor with the existing pope, Martin V., that he was created by that pontiff cardinal-bishop of Tusculum, and dean of the sacred colleges, and allowed precedence over the other cardinals. He died at Florence, Italy, 1419.

Johnson, Andrew, seventeenth president of the United States, was born at Raleigh, N. C., 1808. He was self-educated, a tailor by trade, and made his entry into politics in 1840 as a presidential elector in Tennessee for Van Buren, the democratic candidate. In 1843 he became a member of congress, where for ten years he supported the policy of the democratic party. In 1853 he was elected governor of Tennessee, and again in 1855. In 1857 he was elected to the United States senate, and on the occupation of Nashville by the federals, 1862, was appointed by President Lincoln military governor of Tennessee. In this position he gave such satisfaction to the North that in 1864 he was nominated by the republican party for the office of vice-president, and was elected with President Lincoln, then reëlected for his second term. On April 14, 1865, by the assassination of President Lincoln, he succeeded to the presidency. Some indiscreet and violent speeches, during a tour to Chicago and St. Louis, turned the tide against him, and in the congressional elections his opponents triumphed by increased majorities. His vetoes were generally nullified by the two-thirds vote of both houses. In 1867 Johnson suspended Stanton, secretary of war, who was reinstated by the senate the following year. An attempt to gain possession of the war department during this quarrel led to the impeachment of the president in 1868, but he was acquitted by a single vote. Chief-Justice Salmon P. Chase, one of the most eminent American statesmen and jurists, presided at this remarkable trial. His term of office expired in 1869; and afterward he was elected United States senator, taking his seat in 1875. Died, 1875

Johnson, Clifton, author, illustrator, was born at Hadley, Mass., 1865. He was educated in the common schools there, 1870-80, and ten years later entered upon a literary career. Author: *The New England Country; The Country School; The Farmer's Boy; Highways and Byways of the South; Highways and Byways of the Mississippi Valley.* Illustrator: White's *Natural History of Selbourne;* Barrie's *Window in Thrums;* Burroughs' *Year in the Fields*, etc.

Johnson, Eastman, American artist, was born in Lovell, Me., 1824. He studied two years in royal Academy, Düsseldorf. Among many notable genre pictures are: *The Kentucky Home; Husking Bee* and several portraits of distinguished persons. He is represented in the Metropolitan museum of art and Lenox galleries, New York; Corcoran gallery, White House and treasury building, Washington; capitol at Albany; Knickerbocker, Century, and Union League clubs, chamber of commerce, etc., New York. Died, 1906.

Johnson, Sen. Hiram Warren (1866—), was born in California, studied law, admitted to bar, 1888. Elected Governor of California, 1911-19, on platform designed to free the state of the domination of the Southern Pacific Railroad; resigned to take seat in Senate, 1917-23. With Roosevelt, founded Progressive Party, 1912.

Johnson, Joseph French, American educator and economist, was born at Hardwick, Mass., 1853, and graduated at Harvard. He was engaged on the *Springfield Republican, Chicago Tribune, Spokane Spokesman.* Professor of Political Economy, New York University. Author: *Money and Currency, Syllabus of Money and Banking.* Editor. Died in 1925.

Johnson, Reverdy, American lawyer and politician, was born in Annapolis, Md., 1796. He began to practice in upper Marlboro, and in 1817 removed to Baltimore. From 1845 to 1849 he sat in the United States senate as a whig, but he supported the Mexican war beyond the lines of the political party to which he belonged. Later he was appointed attorney-general in President Taylor's cabinet. He again entered the United States senate in 1863, sustained the government throughout the Civil War, and, when peace was restored, argued in favor of the prompt readmission of the southern states. In 1868-69 he was minister to Great Britain. On his return from England he renewed his law practice. Died, 1876.

Johnson, Samuel, English writer and lexicographer, was born at Lichfield, 1709, where his father was a bookseller. He was educated partly at Litchfield and partly at Sowbridge, and entered Pembroke College, Oxford, 1728. Here he remained for three years, and was compelled to leave the university without a degree. In 1731 Johnson became usher in a school in Market Bosworth, Leicestershire. Disgusted with the ill-treatment he received there he left, and was next employed in Birmingham in translating for a bookseller. Here in 1736 he married the widow of Mr. Porter, a mercer. His wife was twenty years his senior, but this disparity she compensated for by bringing her husband 800 pounds. Relying upon this capital he opened a classical boarding school, but procured only three pupils, one of whom was the celebrated Garrick. Disappointed in this enterprise, he started, in company with Garrick, for London. They reached the metropolis in 1737, where Johnson was employed by Cave, the founder and proprietor of the *Gentleman's Magazine.* In 1738 his poem *London*, an imitation of the third satire of Juvenal, was published. From 1740 to 1743 he wrote the parliamentary debates for the *Gentleman's Magazine*, and in 1747 issued the prospectus of his *English Dictionary*, for which he was to receive 1,575 pounds. In 1750 he commenced his periodical, *The Rambler*, and in 1755 his great *Dictionary* appeared. For this work the University of Oxford awarded him the degree of M.A. On the death of his mother in 1759, Johnson wrote the story of *Rasselas* to pay her funeral expenses. In 1762 a pension of 300 pounds per annum was granted to him by the king, and subsequently he received the title of doctor of laws from both the Universities of Dublin and Oxford. In 1781 he published his *Lives of the Poets*, and, after a life spent in incessant literary labor, died at his house in Bolt-court, Fleet street, London, 1784.

Johnson, Tom Loftin, American politician and reformer, was born at Georgetown, Ky., 1854. He became clerk in street railway office, Louisville, Ky., 1869-75. He invented several street railway devices; bought a street railway in Indianapolis; later acquired large street railway interests in Cleveland, Detroit, and Brooklyn. He also engaged in the business of iron manufacturing in Cleveland. Was member of congress, 1891-95, prominent advocate of the *Single-tax* theories of late Henry George; he gave much attention to taxation questions and municipal reform. He was mayor of Cleveland, 1901-10, and during his tenure of office gained national prominence by his campaign for a three-cent fare on the Cleveland street railway system, which, however, failed in 1909. Died, 1911.

Johnston, Albert Sydney, American general, was born in Kentucky, 1803, and was graduated at West Point, 1826. In 1837 he superseded General Houston as commander-in-chief of the Texan army. In 1857 he commanded the expedition sent against the Mormons of Utah; and in 1860 was made military commander of the department of Kentucky and Tennessee by the confederate government. After the surrender of Fort Donelson he formed a junction with the army of General Beauregard, and fell in the battle of Shiloh, 1862.

Johnston, Alexander, Scottish painter, was born at Edinburgh, 1815, and first exhibited at the royal academy in 1836. His earlier pieces were derived from Scottish song and story: *The Covenanter's Burial.* Then followed: *The Arrest of John Brown the Lollard; The Pressgang; John Bunyan in Bedford Jail; The Cotter's Saturday Night*, etc. He died at Hampstead, 1891.

Johnston, Alexander, American historian, was born at Brooklyn, N. Y., 1849. He was graduated at Rutgers College, 1870; was admitted to the bar, 1876; was professor of political economy and jurisprudence at Princeton from 1883 until his death in 1889. He wrote: *History of American Politics; The Genesis of a New England State; History of the United States; The United States: Its History and Constitution*, etc.

Johnston, Sir Harry Hamilton, English traveler and writer, was born at Kennington, London, 1858. He was graduated at King's College, London; was a student at the royal academy of arts, 1876-80. He traveled in North Africa, 1879-80; explored Portuguese West Africa and River Kongo, 1882-83; commanded a scientific expedition of the royal society to Mount Kilimanjaro, 1884; made an expedition to Lakes Nyasa and Tanganyika, which led to the founding of the British Central Africa protectorate, 1889; commissioner and consul-general, 1891; consul-general of regency of Tunis, 1897-99; special commissioner, commander-in-chief and consul-general for Uganda protectorate, etc., 1899-1901. Author: *Essays on the Tunisian Question; The Uganda Protectorate; British Mammals; The Nile Quest; Liberia; George Grenfell and the Congo*, etc. Died. 1927.

Johnston, Joseph Eggleston, American soldier, was born in Virginia, 1807. He was graduated at West Point, 1829; served in the Mexican war, 1846-47; and was commissioned quartermaster-general of the United States army, 1860. He joined the confederate army as a brigadier-general at the outbreak of the Civil War, served with distinction throughout that conflict, and in 1865 was in command of the army of the Tennessee. He published a volume of memoirs, chiefly military, in 1874. Died, 1891.

Johnston, Joseph Forney, lawyer, United States senator, was born in North Carolina, 1843. He left school to join the confederate army as a private in 1861; served during the war, was wounded four times, and rose to the rank of captain. After the war he was admitted to the bar; practiced law seventeen years; was a banker ten years; and was elected governor of Alabama in 1896, reëlected in 1898, serving four years. He was unanimously elected to the United States senate from Alabama to fill out the unexpired portion of the term of Hon. E. W Pettus, deceased, ending 1909, also for the term 1909-15. Died, 1913.

Johnston, Mary, American novelist, was born at Buchanan, Botetourt county, Va., 1870, daughter of John William Johnston. She was educated at home, and exhibited literary talent at an early age. Author: *Prisoners of Hope; To Have and To Hold; Audrey; Sir Mortimer; The Goddess of Reason*, etc. Died, 1936.

Joinville (*zhwaN'vēl*), **Jean, Sire de,** French historical writer, was born in 1224, and became sénéschal to the count of Champagne and king of Navarre. When almost eighty he undertook his delightful *Vie de Saint Louis.* His style conforms closely to his character; it is veracious, flowing, naïve, often singularly expressive. Died, 1317.

Jokai (*yō'ko-ē*), **Maurice,** Hungarian novelist, was born at Komorn, Hungary, 1825. He published his first book in 1845, and took part as a journalist in the revolution of 1848. In 1863 he entered the Hungarian parliament, and during his long career there was one of the principal supporters of Koloman Tisza, 1875-90. He wrote about 200 novels. Died, 1904.

Joliet (Fr. *zhō'lyā'*; Eng., *jō'li-et*), **Louis,** French-Canadian explorer, one of the early explorers of the Mississippi, was born at Quebec, 1645. He studied for the priesthood at the Jesuit College, Quebec. With Marquette he was selected to explore the western country and to push through to the Mississippi. They started West in May, 1673, reaching the Mississippi at the mouth of the Wisconsin in June. They floated down the Mississippi, passing the mouths of the Missouri and the Ohio, and going far enough to be sure that the river flowed into the gulf of Mexico. Joliet upset his canoe on his way back, losing all his maps and papers, so that the only accurate report of the expedition was Marquette's. Few men have contributed more to the geography of that time than did Joliet. Died, 1700.

Jolly, Philipp von, physicist, was born in 1809 at Mannheim, Germany. He was educated at the universities of Vienna, Berlin, and Heidelberg, and was later professor at Heidelberg and Munich. His inventions were numerous, including the Jolly or spring balance for determining specific gravity, the air thermometer and the mercury air pump. He died in 1884.

Jolson, Al., actor, was born in Washington, D. C., May 26, 1886. He made his first appearance on the stage in 1899 as a member of a mob. He worked up to his present exalted position at the height of the entertainment stage through vaudeville, minstrel shows. He made his first Winter Garden (New York) appearance in 1911 in *La Belle Paree.* He has starred in talking moving pictures, including *The Jazz Singer* and *The Singing Fool.*

Joly de Lotbiniere, Sir Henry Gustave, Canadian statesman, was born in 1829. He was educated at the Sorbonne, Paris, France, and admitted to the bar of Quebec, 1855; queen's counsel, 1878; premier of Quebec, 1878-79; leader of opposition, 1883-85; vice-chairman, Dominion liberal convention, 1883; minister of inland revenue for Dominion of Canada, 1896-1900; and lieutenant-governor of British Columbia, 1900-06. He always took an active interest in forestry, and was vice-president of the American forestry congress, 1885. He published various writings on forestry and on the metric system. Died in 1908.

Jomini (*zhō'mē'nē*), **Henri, Baron,** noted Swiss soldier and military writer, was born at Payernes Switzerland, 1779. When very young he entered the Swiss guard of Louis XVI., but when it was disbanded returned to his own country, and before he was twenty years old was made head of the war department. In 1812 he was invited by Napo-

leon to join the campaign against Russia, and was appointed historian of the grand army. When the cause of Napoleon was almost lost he resented an affront he had received by going over to the allies. Napoleon bore him no ill-will for this course, saying, "He was not a Frenchman, and there was no love of country to retain him." He is known now chiefly by his works on military history and the art of war. He died at Passy, near Paris, 1869.

Jones, Henry Arthur, English dramatic author, was born at Grandborough, England, 1851. He was educated at Winslow, Bucks; hon. M.A. from Harvard University, 1907. Author: *A Clerical Error; The Rogue's Comedy; The Physician; The Liars; The Manœuvres of Jane; Carnac Sahib; The Lackey's Carnival; Mrs. Dane's Defence; The Princess's Nose; The Idol; Whitewashing Julia; Joseph Entangled; The Chevalier; The Heroic Stubbs; The Hypocrites; The Evangelist; The Renascence of the English Drama;* essays. Died, 1929.

Jones, Inigo, English architect, was born in London about 1573. At Venice his attention was drawn to the works of Palladio, which awoke in him a passion for architecture, to which his attention was thenceforward wholly directed. Having been appointed first architect to Christian IV. of Denmark, when that monarch visited James I. in England, Jones attended him, remained there, and became architect to the queen. In 1620 he was named one of the commissioners for repairing St. Paul's cathedral, and in the following reign he erected the banqueting-house at Whitehall. He wrote a book on *Stonehenge.* Died, 1652.

Jones, Jenkin Lloyd, independent minister, editor, and lecturer, was born at Cardiganshire, South Wales, 1843. He served as a private in the 6th Wisconsin battery for three years in the Civil War; was graduated from Meadville, Pa., theological seminary, 1870; was nine years pastor of All Souls church, Janesville, Wis.; secretary of western Unitarian conference for nine years; organized and was first secretary of western Unitarian Sunday-school society; in 1878, with others, established *Unity,* a weekly paper, now organ of the congress of religions, and was its editor since 1879; organized and until 1882 was pastor of All Souls church, Chicago. Died, 1918.

Jones, John Paul, American naval commander, was born at Arbigland, in Scotland, 1747. His original name was John Paul. He settled in Virginia, assuming the name of Jones. When the congress, in 1775, resolved to fit out a naval force, he offered his services; and, visiting the British coast in a brig of eighteen guns, performed some remarkably bold exploits and took advantage of his familiarity with the scenes of his boyhood to make a hostile visit to the shores of the Solway Firth. In 1779 he was appointed to the command of a small squadron of French ships, displaying the American flag, with which he again visited the British coasts, causing great alarm and taking some prizes. Off Flamborough he fell in with a fleet of forty-one British merchantmen, convoyed by the forty-gun *Serapis* and the twenty-gun *Countess of Scarborough.* Jones lashed his *Bon Homme Richard* to the *Serapis* and after three hours of desperate fighting compelled her surrender, after which, his own ship sinking, he transferred his crew to the *Serapis.* In 1787 he accepted an appointment in the Russian service, and the command of a fleet at the mouth of the Dnieper, with which he took an active part in the Turkish war. He died at Paris, 1792.

Jones, Samuel Milton, American olitical reformer, known as "Golden Rule" Jones because of his persistent advocacy of that practice in politics and in business, was born in Wales, 1846. Brought to America in 1849, he worked as a boy in the oil fields. He established large manufacturing plants at Toledo, Ohio, and gained an immense fortune and a splendid reputation in business. Elected as a republican mayor of Toledo in 1897, he was reëlected on an independent ticket in 1899, 1901, and 1903; used his office to defeat graft and dishonesty and to secure the rights of the common citizen. Died, 1904.

Jones, Wesley L., lawyer, United States senator, was born near Bethany, Ill., 1863. He was graduated at Southern Illinois College, 1886; read law in Chicago, and moved to the territory of Washington just before its admission as a state, 1889. He first worked in a real estate office; began law practice, 1890. He took part as speaker in Blaine campaign, 1884, and Harrison campaign, 1888, in Illinois, and after that in every campaign in Washington. He was member of congress from the state-at-large, 1899-1909, and was elected to the senate for the terms 1909-27. Died, 1933.

Jones, Sir William, English orientalist, was born in London, 1746. In 1765 he became tutor to the son of Earl Spencer; in 1774 was called to the bar, and in 1776 became commissioner of bankrupts. In 1783 he obtained a judgeship in the supreme court of judicature in Bengal, and was knighted. He at once devoted himself to Sanskrit, whose startling resemblance to Latin and Greek he was the first to point out in 1787. He established the Asiatic society of Bengal in 1784, and was its first president. He died at Calcutta, 1794. There is a monument to his memory, erected by the East India company, in St. Paul's cathedral.

Jonson, Benjamin, or **Ben,** English dramatist, was born at Westminster, about 1573, and was educated at Westminster school. The first piece that brought him into prominence was *Every Man in His Humor,* published in 1598. The best of his subsequent productions are *Volpone, or the Fox, The Silent Woman,* and *The Alchemist.* He also composed two tragedies, *Sejanus* and *Catiline's Conspiracy.* His *Masques,* written for the courts of James and Charles, are very graceful. Jonson had a pension from these monarchs, but his improvidence involved him in difficulties, and he died in poverty, 1637.

Jordaens (*yôr'dăns*), **Jakob,** Flemish painter, was born at Antwerp, 1593. He ranks next to Rubens among Flemish painters, and was master in the guild of St. Luke. He excelled in humorous scenes of Flemish life, also painted scriptural and mythological subjects. Among his numerous works are: *Jesus in the Midst of the Doctors; The Adoration of the Shepherds; The Satyr and the Man Who Blew Hot and Cold,* etc. Died, 1678.

Jordan, David Starr, American naturalist and educator, was born at Gainesville, N. Y., 1851. He was graduated at Cornell University, M.S., 1872; M.D., Indiana Medical College, 1875; Ph.D., Butler University, 1878; LL.D., Cornell, 1886, Johns Hopkins, 1902; president of Leland Stanford University 1891-1913; chancellor 1913, now emeritus. He was also United States commissioner in charge of fur seal investigations, etc. Author: *A Manual of Vertebrate Animals of Northern United States; Standeth God Within the Shadow; The Philosophy of Despair; The Blood of the Nation; Food and Game Fishes of North America,* with B. W. Evermann; *A Guide to the Study of Fishes; Highlights of Geography; N. America, Europe.* Died, 1931.

Joseph, favorite son of Jacob by his wife Rachel, who excited the envy of his elder brothers and was by them sold into Egyptian slavery, was born in Haran and died in Egypt. He flourished about the nineteenth century B. C. Having acquired the confidence of Pharaoh through his successful interpretation of dreams, he was placed as viceroy at the head of the arrangements for provisioning the kingdom during seven consecutive years of famine, and was thus enabled to preserve, in the persons of his father and brothers, with their families, the future Israelitish nation. After his death his body was embalmed and carried up into Canaan by the Israelites at their exodus.

Joseph I., emperor of Germany, was born at Vienna, 1678, and was crowned king of Hungary in 1687. He then succeeded his father, Leopold I., as emperor of Germany in 1705. He granted privileges to the Protestants, and, in alliance with Britain, prosecuted successfully the war of the Spanish succession against France, under command of Prince Eugene and the duke of Marlborough. He died in 1711.

Joseph II., emperor of Germany, son of Francis I. and Maria Theresa, was born in 1741. In 1764 he was elected king of the Romans, and after his father's death, in 1765, emperor of Germany. As soon as he found himself in full possession of the government of Austria he declared himself independent of the pope, and prohibited the publication of any new papal bulls without his *placet.* He suppressed 700 convents, reduced the number of the regular clergy from 63,000 to 27,000, prohibited papal dispensations as to marriage, and in 1781 published the edict of toleration for Protestants and Greeks. He also abolished serfdom, reörganized taxation, and curtailed the feudal privileges of the nobles. In 1788 he engaged in an unsuccessful war with Turkey; and the vexation caused by this, and by revolts in his dominions, hastened his death, 1790.

Josephine, Marie Josephe Rose Tascher de la Pagerie, first empress of the French, was born in Martinique, 1763. She married first the Vicomte de Beauharnais, by whom she became mother of Eugene Beauharnais, and Hortense, mother of Napoleon III. Her husband perished during the reign of terror, and she married, in 1796, Napoleon Bonaparte, the newly-appointed commander-in-chief of the army of Italy. Sharing her husband's fortunes, she became in time the occupant of an imperial throne, which she adorned by her beauty, grace and womanly virtues. Failing, however, to afford an heir to the new monarchy, Napoleon resolved to divorce her, which act was consummated in 1809. Josephine thereupon retired to her château at Malmaison. Died, 1814.

Josephus (*jō-sē'fus*), **Flavius,** celebrated Jewish historian, was born at Jerusalem, 37 A. D. As a dependent of the Flavian family, he assumed his name of Flavius. His *Antiquities of the Jews,* in twenty books, gives an account of Jewish history from the creation of the world to 66 A. D. A remarkable passage in this work relating to Jesus Christ is now believed to be spurious. His other works are: *History of the Jewish War* and an *Autobiography.* He died about 100 A. D.

Joshua (*josh'ū-a*), celebrated Hebrew warrior under whose leadership the land of Canaan was conquered, was the son of Nun, of the tribe of Ephraim, and was born in Egypt. The so-called book of *Joshua,* in its present form, containing an account of the conquest and division of the "land of promise," is of composite structure. The compiler made copious use, especially in the earlier chapters, of documents drawn up during the period of the conquest. He died about 1425 B. C.

Josiah (*jō-sī'a*), king of Judah, succeeded his father Amon at eight years of age, and flourished about 649-609 B. C. He reëstablished the worship of Jehovah, and instituted the rites in the newly-discovered "book of the law." He fell at Megiddo attempting to check Pharaoh-Necho's advance against the Assyrians.

Joubert (*you'bert*), **Petrus Jacobus,** Boer general and statesman, was born in Cape Colony, 1831. He was a farmer and ranchman; became a member of the Volksraad; was attorney-general in 1870; and in 1874 was acting-president. He was one of the triumvirate who organized a Transvaal revolt against the British government in 1880, held the chief command in the engagements at Laing's Nek, Ingogo river, and Majuba hill. In 1899 he was commander-in-chief of the Boer forces in the war with England. He conducted the siege of Ladysmith, but was forced to retire on account of ill-health. He died 1900.

Jouffroy (*zhoo'frwä'*), **Theodore Simon,** French philosopher, was born at Pontets in the Jura, 1796. He studied under Cousin, and from 1817 taught philosophy in Paris, until in 1838 he exchanged his chair for the post of librarian to the university. The lucid interpreter of the Scottish philosophers, Reid and Dugald Stewart, he translated their works. His own best books were *Mélanges Philosophiques, Cours au Droit Natural,* and *Cours d'Esthétique.* Died, 1842.

Joule (*joul*) **James Prescott,** English physicist, was born at Salford, England, 1818. He was a pupil of Dalton's, and devoted his time to physical and chemical research, made discoveries in connection with the production of heat by voltaic electricity, demonstrated the equivalence of heat and energy, and established on experimental grounds the doctrine of the conservation of energy. Died, 1889.

Jourdan (*zhoor'dăn'*), **Jean Baptiste, Comte,** French marshal, was born at Limoges, France, 1762. In 1797 he became president of the council of five hundred, but was expelled in 1799, owing to his opposition to Bonaparte, by whom, however, he was afterward employed. He subsequently followed the fortunes of Joseph Bonaparte in Naples and Spain. He owed his title to Louis XVIII., but joined in the revolution of 1830. Died, 1833.

Jowett (*jou'et*), **Benjamin,** English classical scholar, master of Balliol College, Oxford, was born at Camberwell, 1817. He was a fellow and tutor of his college until his election to the mastership in 1870. He wrote *On the Interpretation of Scripture,* a commentary on certain epistles of St. Paul; but he achieved his greatest literary successes by his translation of Plato's *Dialogues,* the *History* of Thucydides, and the *Politics* of Aristotle. Died, 1893.

Joy, George William, British artist, was born at Dublin, Ireland, 1844. He was educated at Harrow, and studied at Kensington, the royal academy, and at Paris under Charles Jalabert and Bonnat. Pictures: *Domenica; Chess-players; Laodamia; Young Nelson's First Farewell; Wellington at Angers; The Death of General Gordon,* and many portraits. He obtained gold medals at Paris, Munich and Berlin, and also the Chicago medal.

Joyce, James, Irish writer and leader of the modern school of psychological impressionism, was born in Dublin, 1882. He was educated at Royal University, Dublin. Forced into exile for his religious, anti-national, and artistic opinions, he has lived in Rome, Trieste, and Paris; in the latter city he finished and brought out his valuable work of fiction, the radically conceived and executed *Ulysses,* February, 1922. His other works include *Dubliners,* short stories, *A Portrait of the Artist as a Young Man,* the introductory study to Ulysses, and *Exiles,* a play.

Juarez (*hwä'rās*), **Benito,** Mexican politician, was born in Oaxaca, 1806, of Indian parents. He became an advocate, and was governor of his native state in 1847-52. In 1861 he entered the capital, and was elected president for four years. In 1866 the French emperor declared war against Juarez, who retreated to the northern frontier; but, on the withdrawal of the French, he reëntered Mexico City in 1867, the emperor, Maximilian, having meanwhile been shot by court-martial. Juarez was elected president again in 1871, though the risings became fiercer and more frequent. He died in 1872.

Juch (*yōōk*), **Emma Johanna Antonia** (Mrs. Francis L. Wellman), operatic singer, was born during the sojourn of her parents in Vienna, Austria-Hungary, 1863, daughter of Justin Juch. She studied three years with Murio-Celli; made her début in concert at Chickering hall, N. Y., and her operatic début in her majesty's grand Italian opera, London, 1881, as *Felina* in *Mignon.* Later she sang during three seasons under Colonel Mapleson in soprano rôles, alternating with Nilsson as *Elsa* in *Lohengrin,* under management of Theodore Thomas. Was prima donna with the American opera company three seasons, and since then has sung in concerts, and in the Emma Juch English opera company.

Judson, Harry Pratt, American educator, president of the University of Chicago, after 1907, was born

in Jamestown, N. Y., 1849. He was graduated at Williams College, 1870; LL.D., 1893; LL.D., 1903, Queens University, Canada. He was teacher and principal of high school, Troy, N. Y., 1870-85; professor of history, University of Minnesota, 1885-92; and head professor of political science and dean of the faculties of arts, literature and science, Chicago University, 1892-1907. Author: *The Latin in English; The Mississippi Valley,* in Shaler's *United States of America; The Young American; The Government of Illinois.* Died, 1927.

Julian (*jōōl'yan*) *jōō'li-an*), or **Julianus, Flavius Claudius,** surnamed the Apostate, Roman emperor, 361-63, was born in Constantinople, probably 331 A. D. In 355 he was declared Cæsar, and sent to Gaul, where he obtained several victories over the Germans; and in 316 the troops in Gaul revolted from Constantius and declared for Julian. He took from the Christian churches their riches and divided them among his soldiers. He sought likewise to induce the Christians, by flattery or by favor, to embrace paganism. His malice was further evinced by extraordinary indulgence to the Jews, and an attempt to rebuild the temple at Jerusalem, that the prophecy of Christ might be falsified; but the design was frustrated. He did not long survive his disappointment, being killed in 363 in his expedition against the Persians.

Julien (*zhü'lyaN'*), **Stanislas Aignan,** Chinese scholar, was born at Orleans, France, 1799. He became at twenty-one assistant professor at the Collège de France. He gave himself with such zeal to the study of Chinese that in less than a year he was able to make a Latin translation of Mencius. He succeeded Abel Rémusat as professor of Chinese at the Collège de France, 1832. Julien produced admirable French versions of specimens of the Chinese drama and of Chinese romances, as well as a collection of Indian novels. His *Syntaxe Nouvelle de la Langue Chinoise* appeared 1869-70. Died, 1873.

Julius II., Pope (Cardinal Giuliano della Rovere), was born in Italy, 1443, became pope in 1503. He endeavored to extend the papal territory, and, after driving Cæsar Borgia from the Romagna, formed the league of Cambrai with Maximilian and Louis XII. against Venice in 1508. In 1511 the holy league was formed, and the French army driven back over the Alps. He sanctioned the marriage of Henry VIII. with Catharine of Aragon, commenced to rebuild St. Peter's at Rome, and was the patron of Michelangelo and Raphael. Died, 1513.

Junot (*zhü'nō'*), **Andoche,** marshal of France, was born at Bussy-le-Grand, 1771, and distinguished himself in the early wars of the republic. In 1804 he was made governor of Paris; in 1807 was appointed to the command of the army of Portugal. He quickly made himself master of all the strong places in the kingdom, was created Duc d'Abrantès, and appointed governor of Portugal. He served in Germany and Russia, and, made one of the scapegoats for the Russian disaster, was sent to govern Illyria. Becoming deranged, he was taken to his father's house near Dijon, threw himself from a window, 1813, and died soon afterward.

Jusserand (*zhü's'-rāN'*), **Jean Adiren Antoine Jules,** French diplomat and man of letters, French ambassador at Washington since 1902, was born at Lyons, 1855. He was educated at Lyons and Paris, and entered the foreign office in 1876. LL.D., Harvard. He was councillor of the French embassy at London, 1887-90; member of the legion of honor, 1883, and minister at Copenhagen, 1898. Author: *Les Anglais au moyen âge; La Vie Nomade et les Routes d'Angleterre au xiv. siecle; Le Roman au temps de Shakespeare; Histoire littéraire du Peuple anglais; Les sports et jeux d'exercice dans l'ancienne France,* etc. Died, 1932.

Jussieu (*zhü'syü'*), **Antoine Laurent de,** French botanist, was born at Lyons, France, 1748. He reformed the arrangement of the gardens and collections of plants under his uncle's ideas in regard to the natural method. For thirty years he continued to develop his novel views; and when his *Genera Plantarum,* which he began in 1778, was completed in 1789, the natural system was finally established as the true basis of botany. In 1793 he became professor of botany in the newly organized Jardin des Plantes, where he continued to teach until 1826, when blindness compelled him to resign his chair to his son Adrien. Died in Paris, 1836.

Justin, surnamed the Martyr, was born at Shechem in Samaria about 100 A. D., and was successively a stoic and a Platonist; and after his conversion to Christianity wandered about, arguing for the truth of the new faith. At Rome, between 150 and 160, he wrote the *Apologia* of Christianity addressed to the emperor, followed by a second one. He is said to have been martyred about 165 A. D.

Justinian (*jus-tin'i-an*) **the Great** (Flavius Anicius), nephew of the emperor Justin, was born 483 A. D., in the village of Tauresium. His reign, which extended from 527 over a period of thirty-eight years, was the most brilliant in the history of the eastern empire. Immediately on his accession he compiled a code which comprised all the constitutions and laws of his predecessors, now known as the *Code of Justinian.* He died in 565.

Juvenal, or **Juvenalis, Decimus Junius,** celebrated Latin poet and satirist, was born in Aquinum, about 60 A. D. His satires, sixteen in number, are written in indignant scorn of the vices of the Romans under the empire, in the descriptions of which the historian finds a portrait of the manners and morals of the time. He practiced at Rome as an advocate, and, it is thought, also visited Egypt. Died about 128 A. D.

Kalakaua (*kä'lä-kou'ä*), **David,** king of the Hawaiians, 1874-91, was born in Honolulu, 1836, and was descended from Keawe, an ancient king of the islands. In 1860 he visited California. On the death of Lunalilo, who appointed no successor, Kalakaua was elected king in 1874 by the legislature, over Emma, queen dowager and relict of Kamehameha IV. In 1887 he granted a new constitution. Died, 1891.

Kames (*kāmz*), **Henry Home, Lord,** Scottish philosopher and critic, was born at Kames in Berwickshire, 1696. He was admitted to the bar in 1723, and appointed to the bench as Lord Kames in 1752. Besides books on Scotch laws, he published *Essays on Morality; An Introduction to the Art of Thinking; Elements of Criticism,* his best-known work; and *Sketches of the History of Man.* Died, 1782.

Kamimura, Hikonojo, Japanese admiral, was born in Satsuma, 1850. He commanded a cruiser in the China-Japanese war, 1894-95, was promoted vice-admiral, 1903, and at the outbreak of the Russo-Japanese war was placed in command of the second Japanese squadron. In 1904 he sank the Russian cruiser *Rurik* off Ulson, Korea, and gained a decisive victory over the Russian squadron. Died, 1916.

Kane, Elisha Kent, arctic explorer, was born in Philadelphia, Pa., 1820. He entered the United States navy as a surgeon, in which capacity he visited China, India, the East Indies, and, under leave of absence, Arabia, Egypt, Greece, and western Europe. In 1850 he commenced his career of arctic discovery as surgeon, naturalist, and historian to the first Grinnell expedition. In the spring of 1853 he was again sent out, this time as commander of a second Grinnell expedition, in which he achieved important results. Died, 1857.

Kant, Immanuel, celebrated German philosopher, the founder of the "critical" or Kantian philosophy, was born at Konigsberg, Prussia, 1724, died at the same place 1804. He early showed great application to study, and was sent to the Collegium Fredericianum, and then to the university of his native city. Leaving the university after three years, he engaged in teaching, and it was not till 1755 that he took his doctor's degree.

Soon after this he was appointed to a place in Konigsberg University, and lectured on logic, metaphysics, mathematics, and natural philosophy, to which, at subsequent periods, he added natural law, moral philosophy, natural theology, and physical geography. In 1770 he became a full professor, obtaining the chair of logic and metaphysics, a post that he occupied till 1797.

The philosophy of Kant profoundly influenced all subsequent philosophical speculations. Dissatisfied with the dogmatisms of Wolff and the skepticism of Hume, he set out to investigate the field of metaphysics for himself, and in the first place proceeded to the examination of the origin, extent and limits of human knowledge. According to him, part of our knowledge is knowledge *a priori,* or original, transcendental, and independent of experience; part of it is *a posteriori priori,* or based on experience. What he calls the "pure reason" has to do with the former.

His great work named the *Kritik der reinen Vernunft*—"Critique of Pure Reason," contains the foundation for his whole system of philosophy. In 1790 he published a supplementary work, the *Kritik der Urtheilskraft*—"Critique of the Power of Judgment." Far from rejecting experience, Kant considers the work of all our life but the action of our innate faculties on the conceptions which come to us from without. He proceeds in a similar way with morality; the idea of good and bad is a necessary condition, an original basis of morals, which is supposed in every one of our moral reflections, and not obtained by experience. He treats this part of his philosophy in his *Kritik der praktischen Vernunft*—" Critique of Practical Reason."

References.—The works of Kant above referred to are translated: *The Critique of Pure Reason* by Max Müller, by Meiklejohn, and by Morris; *Kant's Theory of Ethics,* by Abbott; the *Critique of Judgment* by Bernard. The fullest English account of Kant's philosophy is Caird's *Critical Philosophy*—a more compendious view. See also Adamson's *Philosophy of Kant;* Watson's *The Philosophy of Kant as Contained in Extracts From His Own Writings;* Wallace's *Kant;* Paulsen's *Immanuel Kant;* and Mahaffy's *Kant's Critical Philosophy for English Readers.*

Katsura (*kä'tshoo-rä*), **Marquis Taro,** Japanese statesman, premier of Japan, was born in the province of Coshiu, 1847. During the restoration era, in 1867, he distinguished himself in the civil war. In 1891 he was promoted to lieutenant-general, and in the following year was appointed to the command of the third division of the army. During the China-Japanese war he marched with his division through Korea to Manchuria; and later on served under General Nodzu. For his services he was created a viscount, and two years after promoted to the rank of general. He was premier of Japan from 1901 until 1906, covering the period of the war with Russia, and in 1906 was appointed a member of the high military council of Japan. Created marquis, 1907. He became premier again in 1908. Died, 1913.

Kauffman (*kouf'mān*), **Angelica,** Swiss historical and portrait painter, was born at Coire, Grisons, in the Tyrol, 1741. In 1781 she married the Italian painter Zucchi, and, returning to Rome, spent the remainder of her life in a circle of poets, artists and scholars. Died at Rome, 1807.

Kaulbach (*koul'bäk*), **Wilhelm von,** German painter, was born at Arolsen, 1805. He studied at Düsseldorf, Munich, and Rome, and from 1849 was director of the Munich Academy of Painting. For several years he was painting the vestibule of a new museum at Berlin with a cycle illustrating the progress of civilization. His last gigantic painting was the *Sea-fight of Salamis* at Munich. Died, 1874.

Kaunitz (*kou'nits*), **Wenzel Anton, Prince von,** Austrian statesman, was born at Vienna, 1711. He distinguished himself in 1748 at the congress of Aix-la-Chapelle, and as Austrian ambassador at the French court in 1750-52 converted old enmity into friendship. In 1753 he was appointed chancellor, and for almost forty years had the principal direction of Austrian politics. He took an active part in the ecclesiastical reforms of Joseph II., and was a liberal patron of arts and sciences. Died, 1794.

Kean, Charles John, British actor, was born in Waterford, Ireland, 1811, son of Edmund Kean. He was educated at Eton, and made his début at Drury Lane, 1827, but did not establish his reputation until 1838, when he acted as *Hamlet, Richard III.* and *Sir Giles Overreach.* In 1842 he married Miss Ellen Tree, a celebrated actress. His last appearance was as *Louis XI.* at Liverpool in 1867. Died, 1868.

Kean, Edmund, English actor, was born in London 1787, son of Nance Carey, a strolling actress. A stage cupid and a cabin-boy to Madeira, he, when about sixteen, turned a "stroller," and after ten years in the provinces made his first appearance as *Shylock* at Drury Lane in 1814. He at once took rank as the first actor of the day. A period of wonderful success followed. He was cordially received in 1827, after a twelve-months' visit to America; but both mind and body gave way, and, breaking down hopelessly in 1833, he died at Richmond in May of that year.

Keane, Augustus Henry, British ethnologist and geographer, emeritus professor of Hindustani, University College, London, was born at Cork, Ireland, 1833. He was educated in Jersey, Italy, Dublin, and Hanover, Germany, and traveled extensively in Europe, Asia, and North America. LL.D., St. Andrews University. Author and editor: Stanford's *Asia, Africa, Central and South America; Ethnology; Man, Past and Present; The Gold of Ophir; The Boer States; The World's Peoples.* Died in 1912.

Keane, John Joseph, American scholar and educator, Roman Catholic archbishop of Dubuque, Ia., beginning 1900, was born in Ballyshannon, Ireland, 1839. He came to the United States in 1846; was educated at St. Charles' College and St. Mary's seminary, Baltimore, Md. Ordained priest, 1866. Was active in organizing Roman Catholic societies, and was rector of the Catholic University of America, at Washington, 1886-97, when he resigned and went to Rome. Upon his return to America he was installed as bishop. Died, 1918. Author: *Onward and Upward,* etc.

Kearny (*kär'nē*), **General Philip,** American soldier, was born in New York, 1815. He was attached to the staff of General Scott, 1841-44, and distinguished himself in the Mexican war. Commanded the cavalry of the army of the Potomac in the peninsula campaign during the Civil War, in which he won an enviable reputation for courage and gallantry. He took an active part in the second battle of Bull Run and also at Chantilly, Va., where he was killed in 1862, by a confederate soldier while reconnoitering in front of his command.

Keats, John, English poet, was born in London, 1795. He was apprenticed to a surgeon at Edmonton, near London, and found time to cultivate that taste for poetry which he had exhibited from his boyhood; in 1817 he published a volume of juvenile poems, having already made several contributions to the *London Examiner,* then under the editorship of Leigh Hunt. In 1818 appeared his *Endymion,* a poetic romance, founded in part on the model of Fletcher's *Faithful Shepherdess.*

This work, though the production of a youth of little more than two-and-twenty, was severely criticised in the *Quarterly Review*, and in *Blackwood's Magazine*, the wrath of the reviewers being probably inspired by their hatred of the political party with which Keats had identified himself, and which was represented by Keat's friends, Hazlitt and Hunt. He profited, however, by the criticisms of his reviewers and in 1820 published his *Eve of St. Agnes*; his odes to *The Nightingale* and *The Grecian Urn*; and the fragments of *Hyperton*, taken, like *Endymion*, from mythological sources, and written in an airy strain of classic imagery, characterized by much pensive quiet beauty. But already consumption had taken hold of the poet; he went to Naples, from there to Rome, where he died, 1821.

Keble (*kē'b'l*), **John,** English clergyman and poet, was born in 1792. At the age of fifteen he entered Corpus Christi College, Oxford, where he won several prizes and otherwise distinguished himself. In 1827 he published his volume of sacred poetry, entitled the *Christian Year*, which attained a very large circulation and an influence that can hardly be overestimated. He was one of the leading spirits in what was known as the "tractarian movement" in the English church, and for several years was actively engaged with Pusey, Newman and others in issuing *Tracts for the Times*. He died at Bournemouth, 1866.

Keen, William Williams, American surgeon, was born in Philadelphia, Pa., 1837. He was graduated at Brown University, 1859; M.D., Jefferson Medical College, Philadelphia, 1862; LL.D., Brown, 1891, Northwestern, Yale, 1906. He was assistant surgeon of 5th Massachusetts regiment, 1861; since 1866 in practice in Philadelphia; professor of artistic anatomy at Pennsylvania academy of fine arts, 1876-90; and was professor of surgery at Jefferson Medical College since 1889. Member of many medical and other bodies. Author: *Keen's Clinical Charts; History of the Philadelphia School of Anatomy.*

Keifer (*kē'fer*), **Joseph Warren,** congressman, ex-speaker of United States congress, was born in Clark county, Ohio, 1836. He was educated at Antioch College, and since 1858 practiced law at Springfield, Ohio. He served in the Ohio volunteers in the field, 1861-65; four times wounded. Was department commander of Ohio G. A. R., 1868-70; member of congress, 1877-85, and again in 1905; speaker of congress 1881-83. He was appointed and served, 1898-99, as major-general of volunteers in the war against Spain. Author: *Slavery and Four Years of War.*

Keith (*kēth*), **George Keith-Elphinstone, Viscount,** British admiral, son of the tenth Lord Elphinstone, was born at Elphinstone Tower, Stirling, 1746. He commanded the expedition in 1795-97 which took Cape Town, and the fleet landed Abercromby's army in Aboukir bay in 1801. He was made Baron Keith in 1797 and a viscount in 1814. Died, 1823.

Keller, Helen Adams, American authoress, was born at Tuscumbia, Ala., 1880, daughter of Captain Arthur H. Keller. She is descended on her father's side from Alexander Spottswood, colonial governor of Virginia, and through her mother related to Adams and Everett families of New England. She has been deaf and blind since the age of nineteen months as result of illness. When seven years old she was placed under the instruction of Miss Anne Mansfield Sullivan, her teacher from the beginning of her education to the present time. She entered Radcliffe College, 1900, and graduated, A.B., 1904. She has contributed occasional papers to *Century Magazine; Youth's Companion; Ladies' Home Journal; McClure's Magazine*, etc., and is the author of *The Story of My Life; Optimism*, an essay, etc.

Kellerman (*kel'ẽr-măn*), **Francois Christopher,** French soldier, was born in Bavaria, 1735, and entered a regiment of French hussars at the early age of seventeen. When the revolution broke out he had risen to the rank of major-general. For his services in Italy, he was made duke of Valmy and marshal of the empire by Napoleon. The Bourbons, whose party he joined at the restoration, confirmed his title of duke, and also created him a peer of France. He died in 1820.

Kellogg, Clara Louise, American prima donna, was born at Sumpterville, S. C., 1842. She made here debut in opera, 1861-62, as *Gilda* in *Rigoletto* at the academy of music, New York, and from that time rose steadily and securely in the estimation of the public. She sang repeatedly in London and once or twice before Queen Victoria at Buckingham palace. She sang in Italian opera for several years and organized her own English opera company. She married, 1887, Carl Strakosch, nephew of the well-known impressarios, Max and Maurice Strakosch. Died, 1916.

Kellogg, Frank B., American lawyer, was born at Potsdam, N. Y., 1856. He went to Minnesota with his parents in 1865; studied law, and was admitted to the bar. He removed to St. Paul in 1887. He was general counsel of the Chicago, Great Western Railway Company; Iron Range Railroad Company; Minneapolis Iron Company; Oliver Iron Mining Company, etc.; U. S. senator, 1917-23. U. S. ambassador to England, 1923-25. Secretary of State, 1925-29. In 1930 he was awarded the 1929 Nobel prize for peace in recognition of his work on the Kellogg-Briand multilateral peace pact which renounced war as a national policy.

Kelly, Howard Atwood, American physician, was born at Camden, N. J., 1858. He was graduated at the University of Pennsylvania, 1877; M.D., 1883; LL.D., Aberdeen, 1905, Washington and Lee, 1906, University of Pennsylvania, 1907; F.R.C.S., Edinburgh. He was founder of the Kensington hospital, Philadelphia; now professor of gynecology, Johns Hopkins University, and gynecological surgeon, Johns Hopkins hospital. He is a member of many medical and scientific societies, both foreign and American. Author: *Operative Gynecology*, 2 vols.; *The Vermiform Appendix and Its Diseases*, etc.

Kelly, James Edward, American sculptor, was born at New York, 1855. He studied art at the National Academy of design. His first piece of sculpture was *Sheridan's Ride*, 1878; forty generals, including Grant, Sherman, Sheridan and Hancock, gave him sittings for a series of bronzes. Prominent works: *Monmouth Battle Monument, Call to Arms*, Troy, N. Y., equestrian figures of General Sherman, Colonel Roosevelt at San Juan hill; busts from life of Admirals Dewey, Sampson and C. E. Clark, and President Roosevelt as colonel of the Rough Riders; panels from life of Dewey's captains, Sampson's captains, etc. He was one of the founders of the art students' league.

Kelvin, William Thomson, Lord, was born at Belfast in 1824. After graduating at Cambridge, he was appointed, 1846, to the chair of natural philosophy in Glasgow University, a post he retained till 1899.

His research work includes all branches of mathematical and practical physics. In heat, his principal work has been in extending thermodynamical principles—notably in devising a method of arriving at an absolute scale of temperature, in discovering the "Joule-Thomson effect," and in enunciating the principle of the dissipation of energy. In general physics, he has done much to apply mathematics as a means of expressing the relations of observed facts; and in particular he has worked out most fertile ideas as to the nature of the ether, of inertia, and the application of vortex motion to explain the properties of atoms.

His principal work, however, is probably in the field of electricity and magnetism, the first fruit of which appeared in the paper he published in 1845 on the laws of electrostatics, and which was greatly developed in his researches on electrodynamics and submarine telegraphy. These theoretical investigations he applied to the Atlantic and other cables from 1857 to 1879, and used in his invention of many instruments of the highest precision for the use both of the investigator and of the practical man.

Among the best known of these appliances are the reflecting galvanometer, the siphon recorder, several forms of electrometer, the ampere balance, electrostatic voltmeter and electric supply meters. He has also taken much interest in navigation, and in this connection invented an improved form of mariner's compass and an invaluable sounding-machine, besides working out methods for compass correction and for the investigation of tidal phenomena. In addition to three series of monographs—(1) *Electrostatics and Magnetism*, (2) *Mathematical and Physical Papers*, and (3) *Popular Addresses*—he has also published *Baltimore Lectures on Molecula Dynamics and Wave Theory of Light*, and, in collaboration with Professor P. G. Tait, *A Treatise on Natural Philosophy*. He was given a peerage in 1892. Died in 1907.

References.—Fitzgerald's *Lord Kelvin;* S. P. Thomson's *Life of Lord Kelvin.*

Kemble, Charles, English tragedian, was born at Brecknock, in South Wales, 1775. In 1794 he made his first appearance at Drury Lane, London, in the character of *Malcolm* in *Macbeth*. He visited the United States in 1832. Appointed examiner of plays in 1836, he performed the duties of his office by proxy until he relinquished the stage in 1840. Died, 1854.

Kemble, Frances Anne, English actress and Shakespearean reader, was born in London, 1809. She was the daughter of the celebrated Charles Kemble, and was commonly known by the name of "Fanny." She made her début at Covent Garden in 1829, and in 1832 came to the United States with her father, where she met with great success. In 1860 she returned to England and from that date divided her time between England and the United States. Died, 1893.

Kemble, John Philip, English tragedian, was born at Prescott, 1757. His first appearance was at Wolverhampton, in 1776. The success of his sister, Mrs. Siddons, gave him his opportunity, and in 1783 he played *Hamlet* at Drury Lane, and aroused the keenest interest. In 1802 he purchased a share in Covent Garden theater, became manager, and made his first appearance there in 1803 as *Hamlet*. He retired in 1817, and afterward settled at Lausanne, where he died, 1823.

Kempis, Thomas a, German mystic and writer, so called from Kempen, a town in the Prussian Rhine provinces, where he was born about 1379. He was educated at Deventer, and in 1400 entered an Augustinian convent in the diocese of Utrecht. His death took place in 1471, at which time he certainly had attained his ninetieth year, and most probably his ninety-second. The character of Kempis for sanctity and ascetic learning stood very high among his contemporaries, but his historical reputation rests almost entirely on his writings, which consist of sermons, ascetical treatises, pious biographies, letters and hymns. Of these, however, the only one which deserves special notice is the celebrated ascetical treatise, *Imitation of Christ*, a work that in the regard of many ranks second to the Bible, and is thought likely to survive in the literature of the world as long as the Bible itself.

Kendal, Mr. (William Hunter Grimston), English actor and manager, was born in London, 1843. He commenced his career on the stage at Glasgow in 1862, where he remained until 1866, in which year he made his first appearance in London at the Haymarket theater in *A Dangerous Friend*. He became lessee and manager with John Hare, of St. James' theater, 1879-88. He produced there *The Queen's Shilling; The Squire; Impulse; The Iron Master; A Scrap of Paper; Lady of Lyons; As You Like It; William and Susan; Ladies' Battle*, etc. He toured with Mrs. Kendal in the United States and Canada, 1889-95, with phenomenal success. Died, 1917.

Kendal, Mrs. (Margaret Brunton Robertson), English actress, was born at Cleethorpes, Lincs, 1849. She married William Hunter Kendal (Grimston), 1869. She made her début in London, in 1865, as *Ophelia* to the *Hamlet* of Walter Montgomery, and in the following month she played at the same theater, *Desdemona* to the *Othello* of Ira Aldridge. The creation of the character of *Lilian Vavasour* in *New Men and Old Acres* gave Mrs. Kendal a position among the leading comédiennes of the day. In 1875 she began a short engagement at the Opera Comique. During the period 1889-95, Mr. and Mrs. Kendal played highly successful engagements in the United States and Canada. Died, 1935.

Kennan (*ken'an*), **George,** American author and lecturer, was born at Norwalk, Ohio, 1845. He became telegraph operator and later manager of the Western Union office, Cincinnati, 1863-64; went to northeast Siberia as explorer and telegraphic engineer, 1865; investigated Russian exile system in Siberia, 1885-86, and later he became a lecturer in the United States and Great Britain. In 1898 he went to Cuba on the steamship *State of Texas*, with American national Red Cross society, and as special commissioner for *The Outlook*. Went to Japan, 1904, to report on Russo-Japanese war for *The Outlook*, and joined the staff of *McClure's Magazine*, 1907. Author: *Tent Life in Siberia; Siberia and the Exile System*, 2 vols.; *Campaigning in Cuba*, etc. Died, 1924.

Kent, Charles Foster, American biblical scholar, Woolsey professor of biblical literature, Yale University since 1901, was born at Palmyra, N. Y., 1867. He was graduated at Yale University, 1889, Ph.D., 1891; Berlin University, 1891-92. Author: *Outlines of Hebrew History; The Wise Men of Ancient Israel and Their Proverbs; Narratives of the Beginnings of Hebrew History; Israel's Historical and Biographical Narratives; Origin and Permanent Value of the Old Testament; Israel's Laws and Traditional Precedents; Work and Teachings of the Earlier Prophets*, etc. Died in 1925.

Kent, Charles William, university professor, was born at Louisa C. H., Va., 1860; graduated from the University of Virginia, 1882; student Göttingen, Berlin, Leipzig, 1884-7; Ph.D., 1887; LL.D., University of Alabama, 1906. Was professor of English and modern languages, University of Tennessee, 1888-93; professor English literature, rhetoric and belles lettres, Linden Kent Memorial School of English Literature, University of Virginia, since 1893. Author: *Shakespeare Note Book; Graphic Representations of English and American Literature.* Editor: Cynewulf's *Elene; Idyls of the Lawn; Selected Poems from Burns;* Tennyson's *Princess; Poe Memorial Volume; Poe's Poems; Library of Southern Literature*, 15 vols., etc.

Kent, James, American lawyer and jurist, was born in Philippi, N. Y., 1763. He was graduated at Yale College, 1781, was admitted to the bar when twenty-two years old, and soon became noted for his legal learning. He was several times elected to the New York legislature, and in 1793 became professor of law in Columbia College. He is best known for his *Commentaries on American Law*, which were published from 1826 to 1830, and are now used by every American lawyer, as well as by many in other countries. He died in New York, 1847.

Kepler, Johann, great German mathematician and astronomer, was born 1571, near Weil (Würtemberg), died at Ratisbon 1630. He studied at the University of Tübingen, and in 1593 he was appointed a teacher of mathematics at Gratz, Styria.

Here he devoted himself with much ardor to the study of astronomy; but in 1599 the religious persecutions commenced in Styria and Kepler, being a protestant, gladly accepted Tycho Brahe's invitation to Prague, to assist in the preparation of the new astronomical tables, called the Rodolphine tables. Tycho died in 1601, and Kepler continued the work alone, being appointed imperial mathematician and astronomer. After twenty-five years' incessant labor the tables were published in 1627 at Ulm. Kepler had become the happy possessor of all Tycho's papers, and the mass of observations made by that astronomer during twenty years, with a precision till then unsurpassed, enabled Kepler to establish his three laws which have proved so fruitful in the development of astronomical science.

Kepler enjoyed the patronage of the Emperors Rodolph and Ferdinand, the Dukes of Würtemberg and Wallenstein, but his life was a continued struggle; he was exposed to much religious persecution, and his domestic relations were equally unfortunate. The latter part of his life was chiefly passed at Linz as professor of mathematics. He wrote much, but the work that has rendered him immortal is his *Astronomia Nova, seu Physica Cœlestis tradita Commentariis de Motibus Stellæ Martis*—"New Astronomy, or Celestial Physics Delivered in Commentaries on the Motions of Mars."

References.—Brewster's *Lives of Galileo, Tycho Brahe, and Kepler;* Muller's *Johannes Kepler;* and Gunther's *Johannes Kepler.*

Kerensky, Alexander Federovich (1881—). Graduated from law, University of Petrograd, and married in 1904. Patriot, orator, popular leader, he was ever fervently and eloquently striving for better conditions. He was active in events that led up to the overthrow of the monarchy, 1917. Was Minister of Finance and Premier in the provisional government. He successfully thwarted Gen. Korniloff's rebellion, but lost the capital to the Bolsheviki.

Kern, John Worth, United States Senator, lawyer, was born in Howard county, Ind., 1849. He was graduated from the University of Michigan, 1869; was reporter of the supreme court of Indiana, 1885-89; state senator, 1892-96; city attorney, Indianapolis, 1897-1901; was the democratic candidate for vice-president of the United States, 1908; elected U. S. Senate 1910. Died, 1917.

Key, Francis Scott, American poet, author of "*The Star Spangled Banner,*" was born in Maryland, 1780. He was a lawyer of note, and brother-in-law to Chief-Justice Taney. Being detained by the British during the bombardment of Fort McHenry, September 13, 1814, his feelings found vent in the verses which have become our national lyric. They were printed on his return to Baltimore, and soon diffused widely through the country. Died, 1843.

Kidd, Benjamin, English philosopher and sociologist, was born in 1858. He first entered the British civil service, and was little known until the publication of *Social Evolution,* in 1894. He also published: *The Control of the Tropics; Principles of Western Civilization;* and was the author of articles on the application of the doctrine of evolution to sociological theory and sociology in the supplement to the 9th edition of *Encyclopaedia Britannica.* He delivered the Herbert Spencer lecture before the University of Oxford, 1908. He traveled for economic study in the United States and Canada in 1898. Died, 1916.

Kilmer, Joyce, American poet, was born at New Brunswick, New Jersey, in 1886. He was educated at Rutgers College and at Columbia University and subsequently worked for several years as teacher and journalist. In 1917 he entered the 165th infantry regiment of the U. S. Army and was killed in action at the Battle of the Ourcq in 1918. His poetry includes *Summer of Love, Trees and Other Poems, Main Street and Other Poems.* His later poems are intensely religious.

Kilpatrick, Hugh Judson, American cavalry officer, was born in New Jersey, 1836. He was graduated at West Point in 1861, and was appointed to the first United States artillery. He was wounded at the battle of Big Bethel, and received rapid promotion, being a colonel of cavalry in 1862, and commissioned brigadier-general of volunteers the following year. He was commissioned major-general in 1865, and resigned from the regular army in that year and from the volunteer service, 1866. From 1865 to 1868, and again in 1881, he was United States minister to Chili. Died, 1881.

King, Charles, American soldier and author, was born at Albany, N. Y., 1844. He was graduated at West Point, 1866, and served in artillery and cavalry until retired as captain, 1879, for wounds received in action. He was inspector and instructor of Wisconsin national guard, 1882-89. In 1898 he was appointed brigadier-general of the United States volunteers in the war against Spain; served in the Philippines under General Lawton, and was commandant of Michigan Military Academy, 1902. Author: *Famous and Decisive Battles; Between the Lines; The Iron Brigade; Medal of Honor;* and others, over fifty in all.

King, Henry Churchill, American educator, president of Oberlin College, 1902-27, was born at Hillsdale, Mich., 1858. He was graduated from Oberlin, 1879; Oberlin Theological Seminary, 1882; post-graduate at Harvard, 1882-84; A.M., 1883; Berlin, 1893-94; D.D., Oberlin, 1897, Western Reserve, 1901, Yale. Author: *Outline of Erdmann's History of Philosophy; Outline of the Microcosmus of Hermann Lotze; The Appeal of the Child; Reconstruction in Theology; Theology and the Social Consciousness; Personal and Ideal Elements in Education; Rational Living;* and various pamphlets on philosophy, etc.

King, Rufus, American statesman, was born in Scarborough, Me., 1755. He was graduated at Harvard College in 1777, immediately entered as a student at law in the office of Theophilus Parsons, at Newburyport, and was admitted to the bar, 1780. In 1787 he was appointed a delegate to the general convention assembled at Philadelphia, and in 1788 removed from Massachusetts to the city of New York. In 1796 he was appointed minister to the court of Great Britain, and remained there for seven years, with equal honor to the country and himself. In 1813 he was chosen by the legislature of New York as United States senator, and continued until the expiration of the term in 1825. Upon his retirement from the senate, he accepted from President Adams an invitation again to represent the United States at the court of Great Britain. During the voyage to England his health was seriously impaired, his illness induced him to return in about a year, and he died in 1827.

King, Thomas Starr, American clergyman and author, was born in New York City, 1824. He studied theology and became pastor of a Unitarian church at Charlestown, Mass., 1846. He gained wide popularity as a lecturer, and his activity in the presidential campaign of 1860 had an important part in preserving California to the union. Died, 1864.

King, William Frederick, chief astronomer of the department of the interior of Canada since 1890, was born at Stowmarket, England, 1854. He was graduated from the University of Toronto, 1875; LL.D., 1904. Was Dominion land and topographical surveyor, 1876; her majesty's commissioner for the international boundary between Canada and the United States under treaties of 1892, 1903, 1906 and 1908; and also under agreement entered into in 1899, 1901, and 1906; member of the international waterways commission, 1904-07, and director of the Dominion astronomical observatory from its opening in 1905. Died, 1916.

King, William Rufus, American statesman, was born in North Carolina, 1786. He was a member of the North Carolina legislature for three years; entered congress from North Carolina in 1810; represented Alabama in the United States senate, 1820-44. He was then minister to France from 1844 to 1846; and again United States senator from 1848 to 1853, when, shortly before his death, he became vice-president of the United States. He died in Alabama, 1853.

Kinglake, Alexander William, English historian, was born in Taunton, 1809. He was educated at Cambridge, was called to the bar in 1837; went to Algiers in 1845, and in 1854 followed the fortunes of the British army in Crimea until the siege of Sebastopol. He represented Bridgewater in parliament, 1857-68. Died, 1891.

Kingsley, Charles, English divine and author, chaplain-in-ordinary to Queen Victoria, was born in Devonshire, 1819. He was educated at King's College, London, and at Cambridge University, and in 1842 became curate and shortly after rector of Eversley. In 1851 he published *Yeast, a Problem,* in which he handles the condition of the English agricultural laborer; and in 1853 *Hypatia, or New Foes with an Old Face,* a most vigorous and brilliant delineation of Christianity. Two years after he published *Westward Ho!,* probably the greatest of his works. He was appointed professor of modern history at Cambridge in 1860, and after resigning was made canon of Chester, 1869. Died, 1875.

Kingsley, John Sterling, biologist, was born at Cincinnatus, N. Y., 1854; graduated at Williams College, 1875; S.C.D., Princeton, 1885; University of Freiburg, 1891-92. Was professor of zoölogy, Indiana University, 1887-89; professor of biology, University of Nebraska, 1889-91; Tufts College, 1892-1913; professor of zoology, University of Illinois, 1913-21; now emeritus professor of zoölogy Editor: *Standard Natural History.* Author: *Elements of Comparative Zoölogy; Vertebrate Zoölogy; Guides for Vertebrate Dissection.* Translator: *Hertwig's Manual of Zoölogy,* etc. Died, 1929.

Kipling, Joseph Rudyard, English author, was born in Bombay, India, 1865. He was educated in United Services College, North Devon, England, and was assistant editor of *Civil and Military Gazette* and *Pioneer* in India, 1882-89. LL.D., McGill University, 1899; Litt.D., Durham, Oxford, and Cambridge. He was awarded the Nobel prize for literature in 1907. He has traveled extensively in Japan, China, Africa, and Australia. Author: *Departmental Ditties; Plain Tales From the Hills; Soldiers Three; In Black and White; The Light That Failed; Barrack-Room Ballads; The Jungle Book; Second Jungle Book; The Seven Seas; The Day's Work; Stalky and Company; The Brushwood Boy; Just So Stories; The Five Nations; Puck of Pook's Hill,* etc. Died, 1936.

Kirk, Sherman, educator, was born in Belmont county, Ohio, 1865, and was graduated from Bethany College, W. Va., 1888; M.A., Drake University, 1898; held pastorates in Kansas, Nebraska and Missouri, 1891-96; professor of Greek, Drake University, since 1897, and, in 1911, dean of the College of the Bible, in that institution. Delegate to and speaker before the National Congress of the Disciples of Christ.

Kitchener (*kich'en-ẽr*), **Horatio Herbert, Lord,** British general, was born in Ireland, 1850. He was educated at the Royal military academy at Woolwich, and entered the British army in 1871. In the action at Hundub, in 1888, he led the Egyptian troops against Osman Digna, and for his gallantry was made aide-de-camp to the queen. For subsequent service in Sudan campaigns he was made companion of the bath. In 1888 he was made adjutant-general in the Egyptian army, and held that position until 1892. He commanded at the taking of Dongola in 1896, and was then made K. C. B. In 1898 he was in command of an English and Egyptian army near Omdurman, opposite the site of Khartum, where he gained a notable victory. He was chief of staff of forces in South Africa, 1899-1900; commander-in-chief, 1900-02; later created viscount. Lost in North Sea, 1916.

Kitchin, George William, English historian, was born at Naughton rectory, Suffolk, 1827. He was educated at Ipswich, King's College, London, and Christ Church, Oxford. He became dean of Winchester in 1883, and of Durham in 1894. His chief work is his *History of France.* Died in 1912.

Klaw, Marc, theatrical manager, was born at Paducah, Ky., 1858. He was educated in the public and high schools of Louisville, Ky.; studied law and was admitted to the bar. Since 1881 he has been engaged as theatrical manager, and is now a member of the theatrical firm of Klaw and Erlanger of New York.

Kleber (*klā'bār'*), **Jean Baptiste,** French general, was born at Strassburg, 1753, and in 1776 obtained a commission in the Austrian army. In 1794 he led the left wing at Fleurus, and captured Maestricht; in 1796 he gained the victory of Altenkirchen. He accompanied Bonaparte to Egypt, was wounded at Alexandria, and won the battle of Mount Tabor, 1799. When Bonaparte left Egypt he intrusted the chief command to Kléber, who concluded a treaty with Sir Sidney Smith for its evacuation; but on Admiral Keith's refusal to ratify it Kléber resolved to reconquer Egypt, and destroyed the Turkish army at Heliopolis. In the course of an attempt to conclude a treaty with the Turks, he was assassinated by a Turkish fanatic at Cairo, 1800.

Klein (*klīn*), **Charles,** playwirght, was born in London, England, 1867, and was educated at North London College. He was formerly censor of plays for Charles Frohman. Author: *A Mile a Minute; El Capitan; Heartsease; The Hon. John Grigsby; Dr. Belgraff; A Royal Rogue; The Music Master.* Lost at sea, 1915.

Klopstock (*klōp'shtōk*), **Friedrich Gottlieb,** German poet, was born at Quedinburg, 1724. Incited by Virgil's *Æneid* and Milton's *Paradise Lost,* he resolved to write a great epic, and as a student at Jena, in 1745, he began *The Messiah.* The last cantos of *The Messiah* were published in 1773. Regarded in his own time as a great religious poet, he helped to inaugurate the golden age of German literature. *The Messiah* was translated into both English verse and prose. Died, 1803.

Knapp, Martin Augustine, American lawyer and jurist, chief justice of the U. S. Court of Commerce, was born in Stafford, N. Y., 1843. He was graduated from Wesleyan University, Connecticut, 1868; LL.D., 1892; hon. A.M., Syracuse University, 1892. He was interstate commerce commissioner 1891-1910; chairman of the commission, 1898-1910, and appointed chief justice of the new U. S. Commerce Court, established 1910. For a number of years he lectured on interstate commerce law at George Washington University. Died, 1923.

Kneisel (*k'ni'zel*), **Franz,** German-American musician, director of Kneisel quartette, was born in Roumania, of German parentage, in 1865. He studied violin instruction under Grün and Hellmesberger; was concertmaster of Hofburg theater orchestra, Vienna; later of Bilse's orchestra, Berlin, and concertmaster of the Boston symphony orchestra. He was especially prominent as violin soloist. From 1905 to 1926 he was head of violin department in the Institute of Musical Art, New York. Died, 1926.

Kneller (*nel'ẽr*), **Sir Godfrey,** noted portrait-painter, was born at Lübeck, 1646. He studied at Amsterdam and in Italy, went to London, 1675, and in 1680 was appointed court-painter. In 1693 William III. knighted him, and in 1715 George I. made him a baronet. His best-known works are the *Beauties of Hampton Court*, painted for William III.; his portraits of the *Kit-Cat Club;* and of fourteen sovereigns. He died at Twickenham, 1723.

Knight, Charles, English publisher and author, was born at Windsor, 1791. He early turned his attention to publishing. In 1823 he started *Knight's Quarterly Magazine*, and continued it for some time in London. The whole of his noteworthy career was devoted to popular literature, of which he was one of the earliest and most accomplished advocates. Among the works which he published or edited are the *Penny Magazine*, which was started only a month or two after *Chambers' Edinburgh Journal* and the *British Almanac*. Died, 1873.

Knowles, James Sheridan, British dramatist, was born at Cork, 1784. His *Caius Gracchus* was first performed at Belfast. *Virginius*, his most effective play, had been a success in Glasgow before Macready in 1820 produced it at Covent Garden. Besides *William Tell*, in which Macready achieved one of his greatest triumphs, Knowles' other best plays are *Love*, *The Hunchback*, *The Love Chase*, and *The Wife*. He appeared with fair success in many of his own pieces; but about 1844 became a Baptist preacher, drew large audiences to Exeter hall, and published two anti-Roman Catholic works. He died at Torquay, 1862.

Knox, Henry, American general, was born in Boston, Mass., 1750. He was an officer in a military company, and, when the revolution broke out, he escaped from the city with his wife, who hid his sword in the folds of her dress, and took part in the battle of Bunker Hill. He soon attracted the attention of Washington by his skill in planning fortifications and his knowledge of artillery, and throughout the war he commanded the artillery in various battles. Congress made him a major-general, and from 1785 to 1795 he was secretary of war. Died, 1806.

Knox, John, Scottish divine and reformer, was born at Giffordgate, in Haddingtonshire, 1513. He became a priest and notary in the diocese of St. Andrews before he had attained the age of twenty-five. He renounced Catholicism about 1543, and openly preached the new faith. In the reign of Mary, he retired to Frankfort, and thence to Geneva, where he became acquainted with Calvin. Having returned to his own country in 1559, he denounced the priesthood, and especially the mass and image-worship, and declaimed against the queen of Scots, whom he called Jezebel. With tireless perseverance and vehement eloquence he labored until his death for the establishment of Protestantism in Scotland. The person of Knox was diminutive, and his frame wasted and feeble, but his energy was inexhaustible. He was the author of several works, notably of a *Historie of the Reformation of Religion in Scotland*. But the influence he exerted was by the tongue rather than by the pen. Died, 1572.

Knox, Philander Chase, American lawyer and statesman, was born in Brownsville, Pa., 1853. He was graduated at Mt. Union College, Ohio, 1872; LL.D., University of Pennsylvania, 1905; Yale, 1907. He was admitted to the bar, 1875; was assistant United States district attorney, Western district of Pennsylvania, 1876-77. He was attorney-general of the United States 1901,-04; United States senator from Pennsylvania 1904-09, and secretary of state 1909-13. Died, 1921.

Kobbe (*kob'ē*), **Gustav,** American author and journalist, was born in New York, 1857. He was graduated at Columbia University, 1877; Columbia Law School, 1879. He engaged in newspaper and magazine work, chiefly on musical and dramatic subjects. Author: *The Ring of the Nibelung; Wagner's Life and Works*, 2 volumes; *Opera Singers; Signora, a Child of the Opera House*, a novel; *Wagner's Music Dramas Aanalyzed; Wagner and His Isolde; Famous American Songs; How to Appreciate Music; The Pianolist*, etc. Died, 1918.

Koch (*kōK*), **Robert,** German physician and bacteriologist, was born at Klausthal, in the Hartz mountains, 1843. He studied medicine at Göttingen, receiving his doctor's degree in 1866. His first substantial achievement was the result of the penetration, skill, and thoroughness of his researches on the contagion of splenic fever in cattle. In 1879 he had begun his investigations into the causes of consumption, and in 1882 he announced the discovery of the tubercle bacillus before the physiological society of Berlin. He discovered the comma bacillus, or cholera germ, in 1884. He was rewarded with a gift of 100,000 marks by the government, and imperial titles and honors were showered upon him. In 1885 he was appointed a professor in the University of Berlin, the new chair of hygiene being created for him, and was made director of the hygienic institute. In 1905 he was awarded the Nobel prize for achievements in physiology. Died, 1910.

Kohlsaat (*kōl'sät*), **Hermann Henry,** capitalist, journalist, was born in Albion, Ill., 1853. He was educated in the common schools at Galena, Ill. He was traveling salesman for two other firms, and, 1875-80, for Blake, Shaw and company, wholesale bakers; became junior partner, 1880, and had charge of a bakery lunch established by this firm. He bought that branch of the business, 1883, greatly enlarged it, and the firm of H. H. Kohlsaat and company now owns several large establishments devoted to the wholesale bakery business. He was part owner of the *Chicago Inter-Ocean*, 1891-93; was editor and publisher of *Chicago Times-Herald*, 1894; also of *Chicago Evening Post*, 1894-1901. He purchased control of the *Chicago Record-Herald* in 1910, and has been largely identified with local real estate operations. Died, 1924.

Komura (*kō'moo-rä*), **Count Jutaro,** Japanese statesman, minister for foreign affairs since 1908, was born at Hyuga, 1855. He was educated at the University of Tokyo, and at Harvard University Law School. Was *chargé d'affaires* in China, 1893-94; minister to United States, Russia, China, 1898-1901; minister for foreign affairs, 1901-06; senior plenipotentiary to the peace conference, and signed, with Mr. Takahira, peace treaty at Portsmouth, N. H., 1905; Japanese ambassador to Great Britain, 1906-08. Died, 1911.

Korner (*kûr'nẽr*), **Karl Theodore,** German lyric poet, was born at Dresden, 1791. He studied at Freiburg, Leipzig, and Berlin, and in 1811 settled at Vienna. Here he was dramatist to a Vienna theater, and wrote some light comedies, among them *Der Grüne Domino* and *Der Nachtwächter*, and some tragedies, of which *Zriny* was the most successful. The most famous song, *Das Schwert-Lied*, was dashed off in a pause of battle only a few hours before the author fell at Gadebusch near Schwerin, 1813.

Kosciusko (*kos'i-us'kō*), **Thaddeus,** Polish general and patriot, was born in Minsk, West Russia, 1746. He became a captain in the Polish army, came to America and served in the war of independence, and returned to Poland in 1786, with the rank of general. With 20,000 regular troops and 40,000 ill-armed peasants he resisted for months the united Russian and Prussian army of 150,000 men. Overpowered by superior numbers in the battle of Maciejowice, 1794, he was captured and kept a prisoner until after the accession of the emperor Paul. When Napoleon, in 1806, formed a plan for the restoration of Poland, Kosciusko felt himself restrained from taking an active part in it by his promise to the emperor Paul. He released from servitude, in 1817, the peasants on his own estate in Poland. His death took place in 1817, in consequence of a fall from his horse.

Kossuth (*kosh'oot*), **Francis,** son of Louis Kossuth, leader of the independence party in the Hungarian parliament, was born in 1841. He suffered exile with his father, was partly educated in England, and lived in France and Italy. After his father's death in 1894 he went back to Hungary, took the oath of allegiance as a Hungarian subject, and soon became leader of those aspiring to national independence. When the coalition came into office in 1906 he became minister of commerce in the Wekérle cabinet. Died, 1914.

Kossuth, Louis, Hungarian patriot, orator and leader, was born at Monok, 1802. In 1832 he commenced his political career as editor of a liberal paper. To his speeches must in part be ascribed not only the Hungarian revolution, but the insurrection in Vienna in 1848. To put an end to all the hopes and schemes of the moderate party he induced the national assembly at Bebreczin, in 1849, to declare the independence of Hungary, and that the Hapsburg dynasty had forfeited the throne. He was then appointed provisional governor of Hungary. In 1849 he was compelled to abandon his position, and to flee into Turkey, where, however, he was made a prisoner. In 1851 he landed in the United States, where he met with a most enthusiastic reception. He returned in 1852 to England, and there he chiefly resided until the Italian war broke out against Austria, when he organized an Hungarian legion in Italy. Later he lived in Turin until his death in 1894.

Kotzebue (*kōt'se-bōō*), **Augustus Frederic Ferdinand von,** German dramatist and historic writer, was born at Weimar, 1761, and was educated at Jena and Duisburg. In 1801 he left Russia, where for several years he had resided, and spent the remainder of his life in innumerable literary productions and in politics. The emperor Alexander subsequently employed him in various posts, and in 1817 appointed him his literary correspondent in Germany. This invidious office Kotzebue is said to have filled in a manner hostile to the freedom of his native country; and for this supposed crime he was assassinated in 1819 by a youthful fanatic named Sand. His dramas number nearly three hundred. Among his other works are: *History of the German Empire*, *History of Ancient Prussia*, and various narratives and recollections of his travels.

Kreisler, Fritz, violinist born, Vienna, Austria, Feb. 2, 1875. Educated, Vienna Conservatory, and Paris Conservatory, where he won Premier Prix de Rome at 12. M. Harriet Lies of New York City, 1902. Début, Berlin, 1899. Owns famous violin—Josef Guarnerius del Gesu, 1737. Capt. Austrian Army, 1914-15.

Kropotkin (*krō-pōt'kēn*), **Prince Peter,** Russian socialist, writer, was born at Moscow, 1842. In 1871 he explored the glacial deposits of Finland and Sweden; in 1872, while on a visit to Belgium and Switzerland, he associated himself with the extremest section of the International. In 1874, after his return to Russia, he was arrested, but in 1876 effected his escape to England. In France at Lyons he was condemned, in 1883, to five years' imprisonment for anarchism, but was released in 1886 and returned to England. Author: *In Russian and French Prisons; Mutual Aid, a Factor of Evolution; Modern Science and Anarchism; The Great Revolution*, 1789-1903, etc. Died in 1921.

Krouskopf (*krous'kopf*), **Joseph,** rabbi, lecturer and author, was born in Ostrowo, Prussia, 1858. He came to America in 1872, worked as clerk at Fall River, Mass. He was graduated at the University of Cincinnati, 1883, and as rabbi from Hebrew Union College, 1883; D.D., 1885. He founded the Jewish Publication Society of America; founded, and was president at organization of the National Farm School, in which Jewish boys are trained in practical and scientific agriculture. Author: *The Jews and Moors in Spain; Evolution and Judaism; Some Isms of To-day; Gleanings From Our Vineyard; The Service Manual; The Service Ritual*, etc. Died, 1923.

Kruger (*krōō'ger*), **Stephanus Johannes Paulus,** Boer statesman, was born at Rastenburg in Cape Colony, 1825. With his family he "trekked" to Natal, the Orange river free state, and the Transvaal and won such a reputation for cleverness, coolness, and courage that in the war against England, in 1881, he was appointed head of the provisional government. *Oom Paul* was the soul of the policy that issued in the so-called Boer war of 1899-1902, showed consummate resolution and energy, and, after the tide had fairly turned against the Boers, went to Europe to seek alliances against Britain. He died, 1904.

Krupp (*krōōp*), **Alfred,** German ironmaster, was born at Essen, 1812. Krupp established the first Bessemer steel works and the first forging-hammer erected in Germany. The first steel gun manufactured by him, in 1847, was a 3-pounder muzzle-loader; in 1880 at the Düsseldorf exhibition he showed the first 100-ton steel gun. These factories are not permitted by other Powers to manufacture guns. Krupp died in 1887.

Kubelik (*kōō'be-lik*), **Johann,** Bohemian violinist, was born in 1880 at Miehle, near Prague. He was very successful at concerts in Austria-Hungary prior to appearing in Berlin with the Philharmonic orchestra, 1900. He was then invited to England by Dr. Richter, and made his début at St. James' hall. In 1905 he began a two years' tour round the world, and met with high favor throughout Europe and America.

Kuenen (*kū'nen*), **Abraham,** Dutch theologian, was born at Haarlem, 1828 He studied at Leyden and became, in 1853, a professor there. His first important work was his *Historical-Critical Inquiry into the Old Testament*, the result of which was to reconstruct the history of Israel, the priestly code and the historical portions connected with it being made the latest element in the pentateuch. This view was developed further in a succeeding volume. He died at Leyden, 1891.

Kugler (*kōōg'lẽr*), **Franz Theodor,** German historian of art, was born at Stettin, 1808, and studied at Heidelberg and Berlin. In 1833 he became a professor at the art academy in Berlin. His most valuable work is the *Manual of the History of Art*. He is also favorably known as a poet and as the author of several dramas. Died, 1858.

Kuroki (*kōō'rō-kē*), **General, Count,** noted Japanese general, was born at Satsuma, 1844. He commanded the first army in the Russo-Japanese war, 1904-05, and was victorious at Yalu, Liulien-ling, Liao-Yang, Mukden, etc. In 1906 he became inspector-general of the Japanese army, and subsequently made a tour of the United States. Died, 1923.

Kuropatkin (*kōō-ro-pät'kin*), **Alexei Nicholaevitch,** Russian general, was born in the government of Pskov, 1848. After receiving an excellent education in the Russian military schools, he entered the army and distinguished himself in the war against the Bokharans. In 1904 he was made commander-in-chief of the Russian army during the Russo-Japanese war. In 1905 he was succeeded by General Linievitch, and was appointed to command the first Manchurian army. He commanded the Russian armies on the northern front Feb.-Aug., 1916, and then was governor of Turkestan until 1917. Died, 1925.

Kutusoff (*kōō-tōō'zōf*), **Mikhail, I. G.,** prince of Smolenskoi, Russian field-marshal, was born in 1745. He was appointed in 1805 to the command of the first *Corps d'armée* against the French. In that year he was victorious over Marshal Mortier at Dürenstein. In 1811-12 he commanded the Russian army in the war against the Turks, and, notwithstanding his advanced age, succeeded Barclay de Tolly in 1812 as commander-in-chief of the army against the French, and obtained a great victory over Davout and Ney at Smolensk. Died, 1813.

Kuyper (*koi'pĕr*), **Abraham,** Dutch theologian, statesman and writer, was born at Maassluis, 1837. He was graduated at the University of Leyden; D.Sc., Delft; LL.D., Princeton; D.D., Leyden. He founded the free university at Amsterdam, 1880; became professor of theology and literature there; founded the daily *Standard* and became its chief editor, 1872; the *Heraut*, 1878; and founded the Reformed Free church, 1886. He lectured in America, England, and Belgium, and in 1897 was president of Netherland press association He edited the *Encyclopœdia of Sacred Theology* and is the author of the following works: *The Work of the Holy Spirit; Calvinism; Socialism and Christianity; The Evolution; The South African Crisis; Varia Americana; Around the Old Word*, etc. Died, 1920.

Lackaye, Wilton, actor, was born in Virginia, 1864. He studied law for one year; began his stage career, in *Francesca da Rimini* in New York, 1883. His principal rôles have been *Prince Saviana*, in *Jocelyn; Don Stephano*, in *Featherbrain; Jefferson Stockton*, in *Aristocracy; Solomon Strong*, in *The Idler; Svengali*, in *Trilby; Curtis Jadwin*, in *The Pit; Jean Valjean*, in *The Law and the Man; John Haggleton*, in *The Battle*. Died. 1932.

Lacordaire (*lă'kôr'dâr'*), **Jean Baptiste Henri,** French divine, was born at Recey-sur-Ource, 1802. He went to Paris in 1821 to continue his legal studies. He assisted Lamennais and Montalembert to found the *Avenir*, and was once summoned for opposing the government In 1834 Lacordaire gave a series of "conferences" or lectures to students which attracted great attention, and led the way to his famous conferences in Notre Dame, Paris, in 1835-36. In 1839 he entered the Dominican order, and in 1840 reappeared in the pulpit of Notre Dame, where, from 1843 to 1851 he continued his conferences. His last conferences, delivered at Toulouse in 1854, are the most eloquent of all. Thenceforward until his death, in 1861, he was director of the military school of Sorrèze. He was a member of the academy.

Lacretelle (*lă'krē-tel'*), **Jean Charles Dominique de,** French historian and journalist, was born at Metz, 1766. He was attracted to Paris on the outbreak of the revolution. In 1809 he was made professor of history at the University of Paris, where he remained until 1848. In 1810 censor of the press, and in 1808-12 published his *History of France in the Eighteenth Century*, a work of high merit. From 1811 a member of the French Academy, he became its president in 1816. He died near Mâcon, 1855.

Lacroix (*lă'krwă*), **General de,** French general, vice-president of the supreme council of war and commander-in-chief of the French army, was born in 1844. In the Franco-Prussian war he was taken prisoner at Sedan. He served in the French expedition to Tonquin, and in 1902 succeeded General Bonnal at the Ecole de Guerre. In 1903 he was appointed military governor of Lyons and commander of the fourteenth army corps. He succeeded General Hagron in his present post in 1907.

Lactantius (*lak-tan'shĭ-us*), **Lucius Caelius, Firmianus,** Christian apologist, was born in the latter part of the third century. He was brought up in Africa, and settled as a teacher of rhetoric in Nicomedia in Bithynia, where he was converted by witnessing the constancy of the Christian martyrs under the persecution of Diocletian. His most important work is *Divinarum Institutionum libri vii.*, which is a vindication of Christianity, and an exposure of the paganism he had formerly professed. Died, 325.

Ladd, George Trumbull, American educator, professor of philosophy at Yale University beginning 1881, was born in Painesville, Ohio, 1842. He was graduated at Western Reserve College, 1864; Andover Theological Seminary, 1869; D.D., 1879; LL.D., 1895, Western Reserve; LL.D., Princeton, 1896; lecturer on church polity and on systematic theology, Andover theological seminary, 1879-81; lectured on philosophy before University of Bombay, India, 1899-1900, and on philosophy of religion at Calcutta, Madras, Benares, etc. Author: *Principles of Church Polity; Doctrine of Sacred Scripture*, 2 vols.; *Lotze's Outlines of Physiology*, translated to 6 vols.; *Elements of Physiological Psychology; What Is the Bible? Introduction to Philosophy; Outlines of Physiological Psychology; Philosophy of Mind* Several of his books have been translated into Japanese and into the language of the blind. Died, 1921.

La Farge (*lă färzh'*), **John,** American artist, was born in New York, 1835. He studied architectural decoration, then painting with Couture and William M. Hunt. He began painting with religious subjects and decorative work; then devoted himself to mural painting and stained glass windows mostly of religious or ecclesiastical character. Much of his work was in churches and residences in Boston, New York, Chicago, Cleveland, Philadelphia, Washington, Detroit, and elsewhere. Author: *Lectures on Art, Letters from Japan*, etc. Died, 1910.

Lafayette (*lă'fā-yet'*), **Marie Jean Paul Roche Yves Gilbert du Motier, Marquis de,** French general and statesman, descended from an ancient family of Auvergne, and was born in the castle of Chavagnac, now in the department of upper Loire, 1757. He became a soldier at an early age, and in 1777 came to America to take part with the colonists in the war of independence, and was intrusted by congress with the defense of Virginia, where he rendered important services. He had imbibed liberal principles, and on his return to France eagerly sought to promote a thorough reform in his native country. He was called to the assembly of notables in 1787, and was one of those who most earnestly urged the summoning of the states-general. He took part also in the movements which converted the assembly of the states into the national assembly in 1789. The extreme French republicans soon came to dislike him, because he advocated a constitutional kingdom; and the court-party, especially the queen, did the same—in spite of the services he rendered them—because of his zeal for the new order of things. Along with Bailly, he founded the club of the Feuillants. After the adoption of the constitution of 1790 he retired to his estate of Lagrange until he received the command of the army of Ardennes, with which he won the first victories at Philippeville, Maubeuge, and Florennes. Nevertheless, the calumnies of the Jacobins rendered him exceedingly unpopular, and he was accused of treason, but acquitted. After several efforts to maintain the cause of rational liberty, he left Paris for Flanders, but was taken prisoner by the Austrians, and detained at Olmütz until Bonaparte obtained his liberation in 1797. He sat in the chamber of deputies from 1818 to 1824, and from 1825 to 1830. In 1824 he revisited America, by invitation of congress, which voted him a grant of $200,000 and a township of land. In 1830 he took an active part in the revolution, and commanded the national guards. Died, 1834.

Laffitte (*lă'fēt'*), **Jacques,** French banker and statesman, was born at Bayonne, France, 1767. He acquired great wealth as a Paris banker, and in 1814 became governor of the bank of France. In 1830 his house was the headquarters of the revolution, and he supplied a great part of the funds needed. In November he formed a cabinet, but he held power only until March. As the government became less liberal, Laffitte became more active in opposition; in 1843 he was elected president of the chamber of deputies. Died, 1844.

La Follette (*lă fol'et*), **Robert Marion,** lawyer, statesman, was born in Primrose, Wis., 1855. He was graduated at the University of Wisconsin, 1879; LL.D., 1901; was admitted to the bar, 1880, and became district attorney of Dane county, 1880. He was a member of congress, 1885-91. He was elected governor of Wisconsin in 1901, 1903, and 1905; and led the movement to nominate all candidates by direct vote, adopted by his state, 1904; to tax railway property by same system and at same rate as other taxable property, adopted, 1903; and also for the control of railway rates within the state by state commission, enacted into a law by the legislature of 1905. He was elected United States senator in 1905 and again in 1910. He made important contributions to railroad and other public reforms. Was candidate for President of United States in 1924. Died, 1925.

Lafontaine (*lă-fôn'tēn'*), **Jean de,** French poet and fabulist, was born at Chateau Thierry in Champagne, 1621. In 1654 he published a verse translation of the *Eunuchus of Terence*, and then went to Paris, where Fouquet awarded him a pension of 1,000 francs for a piece of verse quarterly. His *Contes et Nouvelles en Vers* appeared in 1665, his *Fables Choisies mises en Vers* in 1668, and his *Amours de Cupid et Psyche* in 1669. In 1684 on his reception by the academy, he read an admirable *Discourse en Vers*. The subjects of the *Contes* are taken from Boccaccio, Ariosto, Machiavelli, Rabelais, the *Heptameron*, Apulcius, Athenæus, and other writers. He was a brilliant writer, but not a great poet. Died, 1695.

Lagrange (*lă'grănzh'*), **Joseph Louis, Count,** mathematician, was born in Turin, 1736, of French extraction. He became professor of mathematics in Turin at the age of nineteen. In 1766 he succeeded Euler as director of the Academy of Berlin. Removing to Paris in 1787, he remained there during the revolution, was afterward patronized by Napoleon, and created by him a count and a senator. Died, 1813.

Lalande (*lă'lănd'*), **Joseph Jerome Le Francais de,** French astronomer, was born at Bourg-en Bresse, 1732. He devoted himself with such success to mathematics and astronomy that the French Academy sent him to Berlin, 1751, to determine the moon's parallax, at the same time that Lacaille was sent to the Cape of Good Hope. His chief work is *Traité d'Astronomie*. Died, 1807.

Lally-Tollendal (*lă'lē' tō'lăn'dăl'*), **Thomas Arthur, Comte de Lally** and **Baron de Tollendal,** French general; of Irish descent, was born at Romans in Dauphiné, 1702. His father, Sir Gerard Lally, was an Irish Jacobite refugee in the French service. Lally in 1756 became commander-in-chief in the French East Indies. He commenced vigorous hostilities against the British, and besieged Madras; but, being defeated, retreated to Pondicherry, which was attacked in 1760 by a superior British force. Lally capitulated in 1761, after ten months' siege, and was conveyed to England. Accused of cowardice, he returned to France, and was thrown into the Bastile. The parliament of Paris at last condemned him, and he was executed in 1766. But his son, supported by Voltaire, procured a royal decree in 1778, declaring the condemnation unjust, and restoring all the forfeited honors.

Lamar, Joseph Rucker, lawyer, jurist, was born at Ruckersville, Ga., October 14, 1857, educated at the University of Georgia, Washington and Lee Universities, and Bethany College; admitted to bar, 1879, and practised at Augusta, Ga., 1879-1903. Member Georgia house of representatives, 1886-9; commissioner to codify the laws of Georgia, 1895; associate justice supreme court of Georgia, 1903-10; associate justice of the United States supreme court, 1910-1916. Died, 1916.

Lamar (*la-măr'*), **Lucius Quintus Cincinnatus,** American lawyer and statesman, was born in Putnam county, Ga., 1825. Removed to Mississippi, 1854, and was a member of congress from that state, 1857-60; served in the confederate army during the Civil War, and was sent to Europe as agent of the confederacy. In 1866 he was made professor of political economy at the University of Mississippi; was a member of congress, 1872-77, and of the United States senate, 1877-85. President Cleveland made him secretary of the interior and, in 1888, associate justice of the United States supreme court. He died at Macon, Ga., 1893.

Lamarck (*lă'märk'*), **Jean Baptiste Pierre Antoine Monet de,** celebrated French naturalist and pre-Darwinian evolutionist, was born at Bazentin, 1744. In 1778 he published a *Flore Francaise*. In 1779 he became a member of the French Academy and keeper of the royal garden, afterward the nucleus of *Jardin des Plantes*, and here he lectured for twenty-five years on invertebrate zoölogy. About 1801 he had begun to think about the relations and origin of species, expressing his conclusions in his famous *Philosophie Zoölogique*, in 1809. His *Historie des Animaux sans Vertèbres* appeared in 1815-22. He broke with the old notion of species, expressly denied the unchangeableness of species, sought to explain their transformation and the evolution of the animal world, and prepared the way for the now accepted theory of descent. Died, 1829.

Lamartine (*lă'mär'tēn'*), **Alphonse,** French author and politician, was born at Mâcon, 1790. He exercised a most important influence upon the revolution of 1848, restraining the populace from many excesses into which they might otherwise have been led. The greater part of his career was devoted to literature, in which he obtained eminence. His *History of the Girondists*, published in 1847, undoubtedly did much to hasten the revolution and his *History of the Revolution of* 1848, which appeared in the following year, is a deeply interesting account of a movement which if it had not been turned into another direction by the temporarily successful ambition of Louis Napoleon, might have gained for France at once that free government that France obtained only after the fall of the empire. Died, 1869.

Lamb, Charles, English essayist and poet, was born in London, 1775. He was the son of a clerk to one of the benchers at the Inner Temple, and was educated at Christ's Hospital, where he was the schoolfellow and friend of Samuel Taylor Coleridge. From 1792 to 1825 he was a clerk in the accountant's office of the East India company, retiring at last on a pension; but, during most of these years, and indeed up to the close of his life, he devoted himself, in a spirit of noble self-sacrifice, to the care of his sister Mary, who, like himself, had inherited a taint of insanity. Lamb's earliest literary efforts were in verse. In 1807 he published, in conjunction with his sister, a series of *Tales from Shakespeare;* and in 1808 two volumes of *Specimens of English Dramatic Poets Who Lived About the Time of Shakespeare*, with short but felicitous notes. On the establishment of the *London Magazines* in 1820, he began that series of essays, signed *Elia*, which are the chief foundation of his fame. He died in 1834, his sister Mary surviving him until 1847.

Landor, Arnold Henry Savage, English artist and traveler, was born at Florence, Italy, 1865, and was educated there and at Paris. He traveled in the East several years, also in America, Australia, Azores and northern Africa. He was the first white man to reach both sources of the great Brahmaputra river and establish their exact position; to settle the geographical problem that no range higher than the Himalayas existed north of the Brahmaputra river. He held the world's record in mountaineering for many years, but later climbers of Mount Everest have reached much higher altitudes. Author: *Alone With the Hairy Ainu, or 3,300 Miles on a Pack-saddle; Corea, or the Land of the Morning Calm; The Gems of the East; Tibet and Nepal; Across Widest Africa*, etc. Died, 1924.

Landor, Walter Savage, English poet and prose writer, was born at Ipsley Court, Warwickshire, 1775. He studied at Oxford, where he won high reputation as a scholar, and in 1808 raised a body of men, at his own expense, and joined the Spanish patriots under Blake. He was made a colonel in the service of Spain, but resigned his commission on the restoration of King Ferdinand. He first became known as the author of a poem called *Gebir*, in 1798, which was followed by *Count Julian*. In 1824-29 appeared his *Imaginary Conversations of Literary Men and Statesmen*, in 5 vols. He was a thorough classical scholar, and his Greek and

Roman characters speak as we should expect the ancient heroes to have spoken. "He has," says Emerson, "an English appetite for action and heroes." Died in Florence, Italy, 1864.

Landseer, Sir Edwin, English painter, was born in London, 1802. The first work that brought him prominently before the public was *Dogs Fighting*, exhibited in 1819. It was succeeded by the *Dogs of St. Gothard*, the popularity of which was very great. In 1830 he was elected a royal academician, and in 1850 was knighted. Among this most celebrated achievements are: *The Return From Deerstalking; The Illicit Whiskey-still; Night; Morning; The Children of the Mist; Saved; Flood in the Highlands; Windsor Park; Squirrels Cracking Nuts.* He was elected president of the Royal Academy in 1865, but declined the honor. He was the most superb animal-painter of his time. Died, 1873.

Lane, Edward William, English orientalist and Arabic scholar, was born at Hereford, 1801, the son of a prebendary. The result of Egyptian visits was his *Manners and Customs of the Modern Egyptians*, still a standard authority. This was followed by the annotated translation of the *Thousand and One Nights*, which was the first accurate rendering. His later years in Egypt were devoted to the great work of his life, the *Arabic-English Lexicon.* Died, 1876.

Lane, Franklin Knight, Secretary of the Interior, lawyer, was born Prince Edward Island, July 15, 1864. He was graduated from the University of California, 1886, and began the practice of law in San Francisco, 1889. Was corporation council of San Francisco, 1897-1902; candidate for governor of California, 1902, and for United States senator 1903; and member of the Interstate Commerce Commission, 1905-13. He was appointed Secretary of the Interior by President Wilson, 1913. On April 11, 1893, he married Anne Wintermute, of Tacoma, Wash. Died, 1921.

Lane-Poole, Stanley, English historian and archaeologist, professor of Arabic at Trinity College, Dublin, 1898-1904, was born in London, 1854. M.A., Oxford, and Dublin; Litt.D., Dublin. Visited Australia, 1890; employed by Egyptian government on archaeological research at Cairo, 1895-97; lecturer at the royal institution, 1900, and examiner in Arabic to the University of Wales, 1901-02. Author: *Catalogue of the Oriental and Indian Coins in the British Museum*, 14 vols.; *Social Life in Egypt; Studies in a Mosque; The Art of the Saracens of Egypt; Speeches and Table-talk of Mohammed; Essays in Oriental Numismatics*, 3 vols., etc. Edited: Lane's *Arabic Lexicon*, *The People of Turkey*, 2 vols., Lane's *Koran; Arabian Society in the Middle Ages, etc.*

Lanfranc (*lan'frangk*), prelate and scholar, archbishop of Canterbury, was born in Pavia, Italy, about 1005. In 1045 he was chosen prior of the Benedictine Abbey of Bec. William of Normandy appointed him a counsellor of state, and in 1066 abbot of a monastery in Caen, where he established a school. Afterward William caused him to be elected to the see of Canterbury, and he was consecrated in 1070. His works consist of commentaries, letters and sermons. Died, 1089.

Lang (*lang*), **Andrew,** Scottish writer and critic, was born at Selkirk, Scotland, 1844. He was educated at St. Andrews University and Balliol College, Oxford. Litt.D., Oxford, LL.D., St. Andrews. He was elected a fellow of Merton College, 1868, and shortly became one of the busiest and brightest writers in the world of London journalism. He wrote *Ballads and Lyrics of Old France; Helen of Troy; Rhymes a la Mode; Customs and Myth; Modern Mythology;* contributions to the study of the philosophy and religion of primitive man. Among his other works are: *The Library Life of Lockhart; Pickle the Spy; Companions of Pickle; History of Scotland*, 2 vols.; *Prince Charles Edward; The Mystery of Mary Stuart; Homer and His Age*, etc. He translated Theocritus and, with others, Homer, besides editing the *Fairy Books*, etc. Died, 1912.

Langevin (*länzh'van'*), **Louis Philip Adelard,** Canadian prelate, Catholic archbishop of St. Boniface, Manitoba, since 1895, was born at St. Isadore, La Prairie, province of Quebec, Canada, 1855. He was educated at Montreal College, completed his course of theological study at St. Mary's College, Montreal; entered the order of oblates of Mary Immaculate, 1881, and was ordained priest, 1882. Professor of moral theology in the Catholic University of Ottawa, where he soon became vice-dean of the theological faculty, 1885; D.D., 1892. He visited England, France, Belgium, Germany, in 1890; Rome in 1896, 1898, and 1904, and the same year visited the Holy Land. Has founded twenty-eight parishes, twenty-four educational convents, three hospitals, two orphanages, six Indian boarding schools, and doubled the number of priests and the number of missionaries among the Indians.

Langton, Stephen, English prelate, was born about 1160. He studied in Paris and there became canon of Notre Dame and chancellor of the University. In 1207 was consecrated archbishop of Canterbury. In 1213 he joined the barons opposed to the misgovernment of John, and his name stands first among the subscribing witnesses to Magna Charta. He again placed himself at the head of the barons, in 1823, to demand from Henry III, the confirmation, of their liberties. Died, 1228.

Lanier (*la-nēr'*), **Sidney,** American poet, was born in Macon, Ga., 1842. He was graduated at Oglethrope College, Ga., 1860, and served in the confederate army during the Civil War. From 1868 to 1872 he practiced law in company with his father at Macon. In 1876 he prepared an ode for the centennial exhibition at Philadelphia, and in 1877 settled in Baltimore, where he delivered lectures on English literature. In 1879 he was appointed lecturer on English literature at Johns Hopkins University. In the summer of 1880, enfeebled by consumption, he sought relief in the mountains of North Carolina, where he died, 1881. His two notable books are *Science of English Verse*, and *Poems.*

Lankester (*lang'kes-tēr*), **Sir Edwin Ray,** English zoölogist, was born in London, 1847. He was educated at Downing College, Cambridge, and at Christ Church, Oxford; D.Sc., Oxford and Leeds; LL.D., Cambridge. He was fellow and tutor of Exeter College, regius professor of natural history, Edinburgh, 1882; Linacre professor of comparative anatomy, Oxford, 1891-98, and director of the natural history departments of the British museum, 1898-1907. Author: *A Monograph of the Cephalaspidian Fishes; Degeneration.* Died, 1929.

Lannes (*lan*), **Jean,** duke of Montebello, French marshal, was born at Lectoure, 1769. He entered the army in 1792, and by his conspicuous bravery in the Italian campaign fought his way up to the rank of brigadier-general, 1795. He rendered Napoleon important service, and on the 9th of June, 1800, won the battle of Montebello. In 1809 he commanded the center at Aspern, where he was mortally wounded, and died in that year.

Lansdowne (*lanz'doun*), **Henry Charles Keith Petty-Fitzmaurice, fifth Marquis of,** English statesman, was born in 1845. He was educated at Eton and Balliol College, Oxford; D.C.L., Oxford. He succeeded to the marquisate in 1866, from 1868 held minor offices in the liberal administration, and in 1872-74 was under-secretary of war. In 1880 he became under-secretary for India, but resigned owing to a difference with Gladstone over the compensation for disturbance bill. He was governor-general of Canada, 1883-88, of India, 1888-94, war secretary in 1895-1900, and in 1900-1905 foreign secretary, promoting the *entente* with the United States and France and the treaties with Japan. Died, 1927.

Lansing, Robert, diplomatist, born at Watertown, N. Y., 1864, represented United States in Behring Sea Arbitration, Behring Sea Claims Commission, Alaskan Boundary Tribunal, and Atlantic Fisheries Commission. He was considered one of the great authorities on International Law. In 1919 he was one of the American delegates to the International Peace Conference at Versailles. Secretary of State, 1917-1920. Dismissed by President Wilson, February, 1920, on claim of usurpation of presidential powers. Since then member firm Lansing & Woolsey; counsel for Chinese government; he died in 1928.

Laotse (*la'o-tsu'*), Chinese sage, founder of Taoism, was born about 604. He was a contemporary of Confucius, and wrote the celebrated *Tao-te-King* canon, one of the sacred books of China.

Laplace (*là'plàs'*), **Pierre Simon, Marquis de,** eminent French mathematician and astronomer, was born at Beaumont-en-Auge, in Normandy, 1749. He was for some time a teacher of mathematics in the military school there, and afterward went to Paris. He was gifted with wonderful scientific sagacity and solved several problems which had for many years defied the attempts of geometers. He was the author of the nebular hypothesis, and together with Lagrange did much to verify Newton's theory. His *Traité de la Mécanique Céleste*, and supplements to it, are, next to Newton's *Principia*, the greatest of astronomical works. Died at Paris, 1827.

Lardner, Ring, American writer, was born at Niles, Michigan, in 1885, and received his training at the Armour Institute of Technology, Chicago. He wrote for newspapers in Boston, Chicago, and St. Louis until 1919, when he began work for the Bell Syndicate. His humorous writings include *Gullible's Travels, You Know Me, Al; The Big Town*, and *My Four Weeks in France.* Died, 1933.

Larned, Josephus Nelson, author and journalist, was born in Chatham, Ont., 1836. He was educated in the public schools of Buffalo; was on editorial staff of *Buffalo Express*, 1859-72; superintendent of education, Buffalo, 1872-73; and superintendent of Buffalo library, 1877-97. Author: *A Multitude of Councilors; Primer of Right and Wrong; History of the United States for Secondary Schools; Seventy Centuries—a Survey.* Died, 1913.

La Rochefoucauld (*là rōsh'fōō'kō*), **Francois, Duc de,** French moralist, was born at Paris, 1613. He joined the Frondeurs and was wounded at the siege of Paris. In 1652, wounded again, he retired to the country. On Mazarin's death in 1661 he repaired to the court of Louis XIV. A surreptitious edition of his *Mémoiers*, written in retirement, was published in 1662; as it gave wide offense he disavowed its authorship. His *Réflexions, ou Sentences et Maximes Morales* appeared in 1665. His last years were brightened by his friendship with Mme. de La Fayette, which lasted until he died, in 1680.

Larrey (*là'rā*), **Dominique Jean, Baron,** noted French surgeon, was born at Baudéan in 1766. He went to Paris, and entered the navy as surgeon, and afterward became a surgeon in the army. He served under Napoleon in the wars of Egypt, Germany and Spain, and was much loved by the soldiers because of his bravery and skill as surgeon. Once he killed his own horses to make soup for the wounded men under his care. Napoleon said of him: "If the army ever erects a monument of gratitude, it should be to Larrey"; and in his will said: "I leave 100,000 francs to the surgeon-chief Larrey, the most virtuous man I know." There is a bronze statue of Larrey in Paris, in which he is shown standing and holding Napoleon's will in his hand, open at these words. Died, 1842.

La Salle (*là sal'*), **Rene Robert Cavelier, Sieur de,** noted French navigator, was born in Rouen, 1643. He came to America in 1667. After a voyage of exploration from Lake Erie to Lake Superior and down the Mississippi, he took possession of the land around the gulf of Mexico, called it Louisiana, after the French king, and went to France to get men and means to colonize it. But quarrels arose between him and the commander of the fleet, which ended in the return of the ships, and fifty of the people, to France. With the others La Salle kept on his way, but failed to find the Mississippi again, and wandered from place to place, until his followers were nearly all dead. At last, he started for Canada with sixteen men in 1687. On the way in 1687 two of the men, who hated La Salle, shot him. He was the first European to travel from the headwaters to the mouth of the Mississippi.

Lassalle (*là'sàl'*), **Ferdinand,** founder of socialism in Germany, was born in Breslau, 1825, of Jewish parents. He became a disciple of Hegel, took part in the revolution of 1848, and was sent to prison for six months. In 1861 his *System of Acquired Rights* started an agitation of labor against capital, and he was again thrown into prison. Returning to Switzerland, he conceived a passionate affection for a lady betrothed to a noble, whom she was compelled to marry, and whom he challenged; the noble mortally wounded Lassalle in a duel in 1864.

Latimer, Hugh, English bishop and martyr, was born at Thurcaston, in Leicestershire, about 1485, the son of a yeoman. He was educated at Christ's College, Cambridge. He was made bishop of Worcester, 1535, by Henry VIII. The bishopric, however, he resigned, on the passing of the act of the six articles; and was punished by being imprisoned during the remainder of Henry's reign. The accession of Edward VI. set Latimer at liberty, and he resumed his preaching, but refused to resume the mitre. On Mary's ascending the throne he was again incarcerated; and, in 1555, was brought to the stake, where he suffered with unshaken courage. Ridley was his fellow martyr.

Latour D'Auvergne (*là'tōōr' dō'vern'y'*), **Theophile Malo Corret de,** noted French soldier, was born at Carhaix Brittany, 1743. He entered the French army when twenty-four years old. He was a man of extraordinary bravery, became distinguished in the wars of 1792-1800, and was commander of the troop called the "infernal column." When peace came, Latour went to his home and lived quietly until the war again broke out; then he joined the army in place of the only son of a friend. After his death his name was called at roll for many years, and the oldest sergeant used always to answer for him; "Died on the field of honor." He fell in battle at Oberhausen, Bavaria, 1800.

Latrobe (*la-trōb'*), **Benjamin Henry,** American architect and engineer, was born in Yorkshire, England, 1764. In 1785 he entered the Prussian army in a regiment of hussars, and was twice wounded in battle. In 1796 he came to the United States, when he was made engineer of the James river and Appomattox canal, and superintended the building of the penitentiary in Richmond. In 1798 he settled in Philadelphia, where he designed the bank of Pennsylvania, the old academy of art and the bank of the United States. In 1811 he completed the capitol at Washington, and after its destruction by the British in 1814, superintended its reconstruction. Died at New Orleans, 1820.

Laud (*lôd*), **William,** 1573-1645, English prelate, Archbishop of Canterbury, was born at Reading, the son of a clothier. He rose to the primacy, but declined offer of a cardinal's hat, and became a chief advisor of Charles I. His advice did not benefit the king, and on Towerhill he was beheaded for treason.

Lauder, Harry, one of the most popular Scottish comedians, is declared to be among the greatest entertainers now before the public. The secret of his success is that he is simply natural, bubbling over with wit and melody because he cannot help it.

Laughlin (*làf'lin*), **James Laurence,** American educator, economist, head professor of political economy, University of Chicago, 1892-1916; and since emeritus professor same. Was born at Deerfield, Ohio, 1840. He was graduated at Harvard, 1873; Ph.D., 1876. He taught in

Hopkinson's classical school, Boston, 1873-78; was instructor, 1878-83, assistant professor, 1883-87, of political economy at Harvard; president of Manufacturers' Mutual Fire Insurance Company, Philadelphia, 1887-90; and professor political economy; Cornell, 1890-92. Author: *Anglo-Saxon Legal Procedure in Anglo-Saxon Laws; Elements of Political Economy; Gold and Prices Since 1873; Facts About Money; Principles of Money; Reciprocity; Industrial America*, etc. He was lecturer in Berlin on invitation of Prussian cultus ministerium, 1906.

Laurens (*lô'ens*), **Henry,** American statesman, was born in Charleston, S. C., 1724. He was educated for a merchant, was very successful and accumulated a large fortune. In 1776 he became a member of the continental congress from South Carolina, and in the following year was elected its president. In 1779 he was sent on important state business to Holland, but was captured on the way by a British ship-of-war, and taken to London, where he was kept prisoner in the Tower for fifteen months. When the war ended, he was freed and became one of the ministers to Paris, 1782, to conclude the terms of peace. He died in Charleston, 1792.

Laurie (*lou'rē*), **Simon Somerville,** Scotch educator, was born at Edinburgh, 1829. He was educated at the University of Edinburgh; LL.D., Edinburgh, Aberdeen, and St. Andrews. He was secretary to the endowed schools of Scotland commission, 1872; and at one time president of the teachers' guild. He was Gifford lecturer at Edinburgh, 1905-06, and professor emeritus of the institutes and history of education. Author: *Philosophy of Ethics; Primary Instruction in Relation to Education; Institutes of Education; Historical Survey of Pre-Christian Education;* and many philosophical and educational articles. Died in 1909.

Laurier (*lo'ri-ā'*), **Sir Wilfrid,** Canadian statesman, first French-Canadian premier of the Dominion since 1896, was born in St. Lin, 1841, and educated for the bar at L'Assomption College, 1864; D.C.L., LL.D. He rose rapidly in his profession, and in 1871 was elected as a liberal to the Quebec provincial assembly. In 1874 he was elected to the federal assembly. On the retirement of Blake in 1891 he was chosen leader of the liberal party, and at the general election of 1896 he led his followers to a notable victory. His tariff legislation during 1897, giving Great Britain the benefit of preferential trade with Canada, aroused much enthusiasm both in the colony and at home, and he was warmly welcomed when he went to London to attend the jubilee festivities. He was then appointed a member of the privy council and made a G. C. M. G. In 1900 he again secured the approval both of the Dominion and of the empire by the prompt despatch of Canadian troops to aid the mother country in South Africa, and led his party to another victory at the polls in November. He attended the colonial conference and the coronation in England in 1902. He was again returned to power in 1904 and 1908. Died in 1919.

Laveleye (*lav'le'*), **Emile Louis Victor de,** Belgian political economist, was born at Bruges, 1822. He studied at Ghent, and in 1864 became professor of political economy at Liége. His works include *De la Propriété Lettres d'Italie; Le Socialisme Contemporain; Elements d'Economie Politique; La Péninsule des Balkans;* and works on rural economy in the Netherlands, and on current topics of the day. He was made a baron a few weeks before his death in 1892.

Lavelle, Michael J., American Roman Catholic priest, was born in New York, 1856. He was graduated at Manhattan College, 1873, St. Joseph's Seminary, Troy, N. Y., 1874, and was ordained to the priesthood, 1879. He was assistant, of St. Patrick's cathedral, 1879-86, and rector since 1886; was appointed vicar general, New York, 1902, and domestic prelate to Pope Pius X., 1903. He has been prominent in educational and philanthropic movements.

Lavoisier, Antoine Laurent, celebrated French chemist, was born at Paris, in 1743. He was educated at Mazarin College, and on quitting it, devoted himself wholly to the sciences, but more particularly to chemistry. To obtain the means of more fully prosecuting his researches, he accepted, in 1769, the office of farmer-general. In 1768, he was made an academician; in 1776, discovered a way of greatly improving the quality of gunpowder; and made other beneficial discoveries in economics, and in the application of chemistry to agriculture.

Availing himself of the discoveries of Black Priestly, and Cavendish, and making many experiments and discoveries himself, he was led to connect the discovery of gas, oxygen, with the phenomena of combustion and of acidity; and in 1783, he proved that water can be formed by burning oxygen and hydrogen together, and that it can be decomposed into the same elements. Another great contribution to science by Lavoisier was the chemical nomenclature which he is understood to have invented, and which is still retained, having served as the basis of all subsequent improvements in this important branch of the literature of the science in general.

Notwithstanding his talents and virtues, he was condemned to death by the revolutionary tribunal of Paris, on the frivolous charge of having adulterated the tobacco with ingredients obnoxious to the health of the citizens, and was guillotined, 1794. His principal work is his *Traité Elementaire de Chimie*, "Treatise on the Elements of Chemistry."

References.—*Life* by *Grimaux*; Thorpe's *Essays in Historical Chemistry;* Brougham's *Lives of Philosophers.*

Lawrence, Abbott, American merchant and philanthropist, was born at Groton, Mass., 1792. He was elected to congress in 1839, and in 1842 was one of the commissioners to settle the northeast boundary question with Great Britain. He founded the Lawrence scientific school at Harvard University, and made a bequest for model lodging houses. Died at Boston, Mass., 1855.

Lawrence, Amos, American philanthropist, and brother of Abbott, was born at Groton, Mass., 1786. Having acquired an immense fortune in trade, he devoted over $700,000 of it to charities and donations, among other institutions to Kenyon and Williams Colleges and the theological seminary at Bangor, Me. He died at Boston, Mass., 1852, and his son published his *Life and Correspondence* in 1855.

Lawrence, James, American naval officer, was born at Burlington, N. J., 1781. In the war of 1812 he served under Commodore Decatur, and by brave conduct rose rapidly. In 1813, after a short engagement, he captured the British ship *Peacock*, and soon after was made commander of the frigate *Chesapeake*. After he had been in command of its undisciplined crew for only a few days, in June, 1813, he met the British frigate *Shannon* just out of Boston, and during a hard fight he was mortally wounded and his ship was captured. It was here that he uttered the words, "Don't give up the ship!"

Lawrence, Sir Thomas, English portrait painter, was born in Bristol, 1769; succeeded Sir Joshua Reynolds in 1792 as first painter to King George III. In 1820 he became president of the Royal Academy. He painted nearly all the monarchs and notabilities of Europe; his pictures are distinguished by fidelity of touch and by a peculiar softness and grace of finish. Died, 1830.

Lawrence, William, American prelate, Protestant Episcopal bishop of Massachusetts since 1893, was born in Boston, 1850. He was graduated at Harvard, 1871; D.D., 1893; S.T.D., Hobart, 1880; LL.D., Princeton, 1904. He was rector of Grace church, Lawrence, Mass., 1876-84; professor of homiletics and pastoral theology, Episcopal theological school, Cambridge, 1884-93; dean of same, 1888-93. Author: *Life of Amos A. Lawrence; Visions and Service; Life of Roger Wolcott; Study of Phillips Brooks*, etc.

Lawson, Thomas William, American banker, yachtsman and author, was born in Charlestown, Mass., 1857. He was educated at the public schools of Cambridge, was in business as banker and broker since 1870, and was formerly senior member of the firm of Lawson, Arnold, and company, members of Boston and New York stock exchanges. He was prominent as yachtsman and as a contributor to magazines, reviews and newspapers. Author: *The Krank; History of the Republican Party; Secrets of Success; Frenzied Finance; Friday the Thirteenth*, etc. Died in 1925.

Layard (*lā'ard*), **Sir Austen Henry,** English diplomat, was born in Paris, 1817. Traveling along the Tigris on his way to Ceylon in 1840, he was struck with the ruins of Nimrud, the supposed site of Nineveh; and in 1845-47 carried on excavations there, finding the remains of four palaces. He published *Nineveh and Its Remains, Monuments of Nineveh*, etc. He was presented with the freedom of the city of London, was made D.C.L. by Oxford, and was lord rector of Aberdeen University, 1855-56. He was member of parliament for Aylesbury, 1852-57, foreign under-secretary 1861-66, chief commissioner of works, 1868-69, and in 1869 went as British ambassador to Spain, from 1877 to 1880 to Constantinople, being made K.C.B. in 1878. Died, 1894.

Lea (*lē*), **Henry Charles,** American author and historian, was born in Philadelphia, 1825. He received private education; LL.D. University of Pennsylvania, Harvard and Princeton, and was made a member of many learned societies in Europe and the United States. He was in the publishing business, 1843-80; then retired and devoted himself to literary and historical research. Author: *A History of the Inquisition of the Middle Ages; Chapters From the Religious History of Spain; Formulary of the Papal Penitentiary in the Thirteenth Century; History of the Inquisition of Spain;* and also many articles in periodicals. Died, 1909.

Learned, Marion Dexter, university professor, was born near Dover, Delaware, 1857; graduated at Dickinson College, 1880; L.H.D., 1904; studied in Germany, 1885; Ph.D., Johns Hopkins, 1887. He was instructor associate and associate professor of German, Johns Hopkins, 1886-95; professor of German, University of Pennsylvania, since 1895. President Modern Language Association of America, 1909. Author: *The Saga of Walther of Aquitaine; German Grammar; Herder and America; German Diaries of the American Revolution*, etc.

Le Brun (*lē brun'*), **Charles,** French historical painter, was born in Paris, 1619. He studied four years in Rome, and for nearly forty years, 1647-83, exercised a despotic influence over French art and artists, being usually considered the founder of the French school of painting. From 1668 to 1683, he was employed by Louis XIV. in the decoration of the palace of Versailles; but, being superseded, he became ill and died, 1690.

Le Brun, Marie Anne Elisabeth Vigee, French painter, was born in Paris, 1755, daughter of one Vigée, a painter. In 1776 she married J. B. P. Le Brun, picture dealer and grand-nephew of Charles Le Brun. Her portrait of Marie Antoinette in 1779, led to a lasting friendship with the queen. She painted numerous portraits of the royal family. In London she painted portraits of the prince of Wales, Lord Byron, and others. Died, 1842.

Lecky (*lek'i*), **William Edward Hartpole,** British historian and philosopher, was born near Dublin, Ireland, 1838. He was graduated in 1859 at Trinity College, Dublin. In 1861 he published anonymously *The Leaders of Public Opinion in Ireland*, four brilliant essays on Swift, Flood, Grattan and O'Connell. His later works were *Rationalism in Europe; History of European Morals; History of England in the 18th Century;* and *Democracy and Liberty* with a volume of poems in 1891. He was elected to parliament for Dublin University in 1895 and again in 1900. Died, 1903.

Le Conte (*lē kont'*), **Joseph,** American naturalist and physicist, was born in Liberty county, Ga., 1823. He was graduated at Franklin College, University of Georgia, in 1841, and the New York College of Physicians and Surgeons in 1845, and practiced his profession at Macon, Ga. In 1850 he went to Cambridge, Mass., where he studied under Agassiz. He subsequently held several professorships, and in 1869 became professor of geology and natural history in the University of California. He published several essays on education and the fine arts: *The Mutual Relations of Religion and Science; Elements of Geology; Sight; A Compend of Geology; Evolution*, etc. He died in the Yosemite valley, California, 1901.

Lee, Fitzhugh, American soldier, nephew of Robert E. Lee was born in Fairfax county, Va., 1835. He was graduated at West Point military academy 1856, and became a lieutenant in the second United States cavalry. At the opening of the Civil War he resigned and entered the confederate service, advancing to the rank of major-general. In 1885 he was elected governor of Virginia, serving until 1890. He was appointed consul-general to Havana by President Cleveland, and was retained at that post by President McKinley. He administered his office with signal ability during the investigation of the explosion of the battleship *Maine*, and throughout the trying times preceding the Spanish-American war. In that war he served as major-general of volunteers and after peace was declared he was made governor of the province of Havana. He was later appointed brigadier-general in the regular army, retiring in 1901. Died, 1905.

Lee, Henry, distinguished American general, was born in Virginia, 1756. He was one of the most daring, vigilant and successful cavalry officers on the side of the colonists. "Lee's legion" was probably the most effective and courageous body of troops raised in America. At the battles of Guilford Court House and Eutaw, at the sieges of Forts Watson, Motte, and Granby and Augusta, and, at the storming of Fort Grierson, Lee particularly signalized himself. After the war he was sent to congress as a delegate from Virginia, advocated the adoption of a federal constitution, and in 1792 was chosen governor of Virginia. When Washington died Lee was chosen by congress to write a eulogy of him; in it occurs the famous words "First in war, first in peace, and first in the hearts of his countrymen." Died, 1818.

Lee, Richard Henry, eminent American patriot, and signer of the declaration of independence, was born in Virginia, 1732, and received his education in England. He returned to his native country in his nineteenth year. In 1764 he was appointed to draft an address to the king, and a memorial to the house of lords, which are among the best state papers of the period. The memorial of congress to the people of British America, and the second address of congress to the people of Great Britain, were both from his pen. In June, 1776, he introduced the measure that declared the colonies free and independent states, and supported it by a speech of the most brilliant eloquence. He continued to hold a seat in congress until 1780, when he declined a reëlection until 1784. In that year he was chosen president of congress, but retired at its close, and in 1786 was chosen a member of the Virginia assembly. He was a member of the convention which adopted the present constitution of the United States, and one of the first senators

under it. In 1792 he again retired from public life, and died in 1794.

Lee, Robert Edward, American general, was born in Westmoreland county, Va., 1807. At eighteen he entered West Point, was graduated second in his class in 1829, and received a commission in the corps of engineers. In the Mexican war he was chief-engineer of the central army in Mexico, and at the storming of Chapultepec was severely wounded. In 1852-55 he was superintendent of the United States military academy, and greatly improved its efficiency. He was in command in Texas in 1860, but was recalled to Washington in March, 1861, when seven states had formed the southern confederacy. Virginia seceded on April 17th, and Colonel Lee, believing that his allegiance was due to his state, sent in his resignation. Within two days he was made commander-in-chief of the forces of Virginia. At Richmond he superintended the defenses of the city until the autumn, when he was sent to oppose General Rosecrans in West Virginia. His masterly strategy in the seven days' battles around Richmond defeated McClellan; his battles and strategy in opposing General Pope, his invasion of Maryland and Pennsylvania and other achievements are cardinal to the history of the war. On April 9, 1865, Lee surrendered his army to General Grant at Appomattox Court House, Virginia, and the war was practically ended. After the close of the war he frankly accepted the result, and, although deprived of his former property at Arlington on the Potomac, and the White House on the Pamunky, he declined proffered offers of pecuniary aid, and accepted the presidency of what came to be called the Washington and Lee University, at Lexington, Va., at whose head he remained until his death in 1870. Numerous military critics regard Lee as the greatest military leader produced by the Civil War, and one of the very first produced by the nineteenth century.

Le Gallienne (*lē gal'i-en'*), **Richard,** journalist, was born in Liverpool, England, 1866. He was educated at Liverpool College, and engaged in business seven years, but abandoned it for literature. For a few months he was private secretary to Wilson Barrett, then became literary critic for several papers, and settled in London. For some years his journalistic and literary work has been confined to the United States. Author: *My Ladies' Sonnets; Volumes in Folio; George Meredith; The Book-Bills of Narcissus; English Poems; The Religion of a Literary Man; Prose Fancies; Robert Louis Stevenson and Other Poems; The Beautiful Life of Rome; Rudyard Kipling, a Criticism; The Life Romantic; Sleeping Beauty; Mr. Sun and Mrs. Moon; Odes from the Diran of Hafiz; Painted Shadows; Little Dinners With the Sphinx,* etc.

Legare (*lē-grē'*), **Hugh Swinton,** American statesman, was born in Charleston, S. C., 1797. He studied law, traveled in Europe, and was a member of the South Carolina legislature, 1820-22 and 1824-30. In 1830 he was elected attorney-general. He was *chargé d'affaires* at Brussels, 1832-36, and took his seat as a member of congress during the session of 1837. After the accession of President Tyler in 1841, Legaré was appointed attorney-general of the United States, and in the spring of 1843 he succeeded Webster as secretary of state. He was distinguished as a scholar, and contributed largely to periodicals. Died, 1843.

Leibnitz, Gottfried Wilhelm, von, perhaps the most extraordinary example of universal scholarship upon record, was born, 1646, at Leipzig. In 1672 he submitted to Louis XIV. an essay entitled *Consilium Ægyptiacum,* containing a plan for the invasion of Egypt, which is by some supposed to have led to the Egyptian expedition of Bonaparte in 1798. Died, 1716.

He was the chief organizer of the academy of Berlin, of which he was the first president, and originated both at Dresden and Vienna a project for the establishment of similar bodies. It was to him, likewise, that Peter the Great owed the plan of the since celebrated academy of St. Petersburg. He was eminent in languages, history, divinity, philosophy, political studies, experimental science, mechanical science, and even belles-letters. But it is through his philosophical reputation that he lives in history.

The principal metaphysical speculations of Leibnitz are contained in his *Theodicee Nouveaux Essais, Systeme nouveau de la Nature, De Ipsa Natura, Monadologie,* and in portions of his correspondence. He controverted Locke's rejection of innate ideas, holding that there are necessary truths which cannot be learned from experience, but are innate in the soul, not, indeed, actually forming objects of knowledge, but capable of being called forth by circumstances. Authorities seem generally agreed that Leibnitz discovered the differential calculus independently of any knowledge of Newton's method of fluxions, so that each of these great men in reality attained the same result for himself.

References.—Guhrauer's *G. W. F. Leibnitz;* Dewey's *Leibnitz's New Essays Concerning the Human Understanding;* Stein's *Leibnitz and Spinoza;* Merz's *Leibnitz;* Latta's *Leibnitz, The Monadology and Other Philosophical Writings;* Russell's *A Critical Exposition of the Philosophy of Leibnitz.*

Leighton (*lā'tun*), **Frederick, Lord,** English painter, was born at Scarborough, England, 1830. His early years were spent in the study of art, under the best masters in Rome, Florence, Frankfort, Paris and Brussels. His famous picture, *"Cimabue's Madonna Carried in Procession Through the Streets of Florence"* was his first appearance in the Royal Academy in 1755, and was at once purchased by the queen. Among his other paintings are *Ariadne; Romeo and Juliet; Wedded,* etc. In 1878 he became president of the Royal Academy, was made a baronet in 1885, and raised to the peerage in 1896. In his lifetime he received almost every honor possible to an artist. Died, 1896.

Lemieux, Rodolphe, French statesman, postmaster-general, and minister of labour of Canada since 1906, was born at Montreal, 1866. He was educated at the seminary of Nicolet, and at Laval University, Montreal; barrister, 1891; Q. C., Quebec, 1898, and K. C., Ottawa, 1904. He was a member of parliament for Gaspé, 1896; reëlected, 1900 and 1904; represented Canada before the privy council in England, 1904; solicitor-general of Canada, 1904-06; fellow of the royal society, Canada, 1908. Author of several works on law and a number of addresses.

Lenbach (*len'bäκ*), **Franz von,** noted German portrait painter, was born at Schrobenhausen, Bavaria, 1836. He studied at the Munich Academy under Gräfle and Piloty, and in 1858 went to Rome. In 1860 he become professor of art at Weimar, but resigned in 1862 and went to Italy and Spain. On his return to Munich he devoted himself exclusively to portraiture, but after 1872 spent much time in travel and work in Vienna, Morocco and Egypt. His portraits of Bismarck are specially famous. Died, 1904.

Lenin, Nikolai, Russian Soviet leader, was born at Simbirsk, 1870. When he was seventeen his elder brother was hanged for a conspiracy against the czar. Lenine studied law at the university of Kazan from which he was expelled for his revolutionary agitations and at Petrograd. In 1896 he was arrested but escaped and went abroad, where he wrote much in favor of Marxism and social upheaval, advocating terrorism and violence. At the beginning of the World War he was a leader in socialist circle. He soon saw that his cause would be helped by Russia's defeat and worked to this end, with the financial aid of the German secret service. He was made president of the Soviet Republic in 1918. His health failed in 1923 and he died, 1924.

Leo I., the Great, pope of Rome 440-461, was born about 390. He succeeded Sixtus III. in 440; zealously opposed the Manichæans and Pelagians, and secured the condemnation of the Eutychian heresy at the general council of Chalcedon; extended the Roman see, and induced Attila to spare Rome. He published several volumes of letters and sermons. Died at Rome, 461.

Leo X., Pope (Cardinal Giovanni de Medici), son of Lorenzo the Magnificent, was born in Florence, Italy, 1475. He was banished, with his family, in 1497; traveled in Germany and Flanders, and formed a friendship with Erasmus. On his return to Italy he became legate to Julius II; was taken prisoner at Ravenna in 1512, escaped and became pope in 1513. In 1515 he signed the famous concordat with Francis I. His pontificate is one of the most brilliant periods in the history of art and literature, and is also memorable as the time when the reformation began. Died, 1521.

Leo XIII., Pope (Gioacchino Pecci), son of Count Ludovico Pecci, was born in Carpineto, in the papal states, 1810. He was educated at the Collegio Romano and the Academy of Noble Ecclesiastics; appointed by Gregory XVI. a domestic prelate in 1837. He was made archbishop of Damietta *in partibus* and sent to Belgium as nuncio in 1843, nominated archbishop of Perugia in 1846, and in 1853 created a cardinal by Pius IX. Upon the death of Pius IX., in 1878, he was elected to the papacy under title of Leo XIII. He restored the hierarchy in Scotland and composed the difficulty with Germany. He regarded himself as the despoiled sovereign of Rome, and as a prisoner at the vatican; and persistently declined to recognize the law of guarantees. He protested against heresy and "godless" schools, and in his encyclicals affirmed that the only solution to the socialistic problem is the influence of the papacy. In 1894 he constrained the French clergy and the monarchists to accept the republic. In 1883 he opened the archives of the vatican for historical investigations, and made himself known as a poet, chiefly in the Latin tongue. The jubilee of his episcopate in 1893 was marked by pilgrimages, addresses, and gifts, as was that of his priesthood in 1887. In 1896 he issued an encyclical pronouncing Anglican orders null and void. Died, 1903. Down to the time of his death he was one of the foremost figures of modern times, and a potent force in religion, education and morals.

Leonardo da Vinci (*lā'ônär'dō dä vēn'chē*). See Vinci.

Leonidas I. (*lē-ŏn'idas*), king of Sparta, succeeded his brother, Cleomenes I., 491 B. C. When the Persian monarch, Xeres, approached with an immense army, Leonidas opposed him at the narrow pass of Thermopylæ, 480 B. C., with a force of 300 Spartans and more than 5,000 auxiliaries. The treachery of one Ephialtes having made it impossible to bar any longer the progress of the foe, Leonidas and his little band threw themselves on the swarming myriads and found a heroic death.

Lepsius (*lep'sē-oos*), **Karl Richard,** noted German Egyptologist, was born at Naumburg, 1810. In 1836 at Rome he studied Egyptology, Nubian, Etruscan, and Oscan, writing numerous treatises. In 1842-45 he was at the head of an antiquarian expedition sent to Egypt by the king of Prussia, and in 1846 was appointed professor in Berlin. His *Chronologie der Aegypter* laid the foundation for a scientific treatment of early Egyptian history. His other works consist of letters from Egypt, Ethiopia, and Sinai, 1852; the *Konigsbuch* and the *Todtenbuch,* or the Egyptian *Book of the Dead.* Died, 1884.

Lesage (*le'säzh'*), **Alain Rene,** French novelist and dramatist, was born in Sarzeau, in Brittany, 1668, and studied at the Jesuits' College at Vannes. After having held a situation under the farmers-general in his native province, he went to Paris in 1692, tried the bar for a short time, and then adopted the profession of an author. For some years he continued to be little known as a writer: but in 1707 he rose at once into popularity by his comedy of *Crispin the Rival of His Master,* and his romance of *Le Diable Boiteux.* The comedy of *Turcaret,* in 1709, added to his fame, which subsequently was rendered imperishable by his admirable *Gil Blas.* He composed twenty-four dramatic pieces, and had a share in the composition of seventy-six others. He died in Paris, 1747.

Lesseps (*lē-seps'*), **Ferdinand, Viscount de,** French engineer and diplomat, was born at Versailles, 1805. He held various consular offices; in 1854 proposed to the viceroy of Egypt the cutting of the Suez canal, and completed the work in 1869. He entered upon the construction of the canal across the isthmus of Panama, afterwards completed by the United States. The sentence of imprisonment pronounced upon him by the French government in 1893, as one of the officers of the French Panama Canal Company, was never enforced. Died, 1894.

Lessing, Gotthold Ephraim, German critic, dramatist and scholar, was born, 1729, at Kamentz, in upper Lusatia. He entered the University of Leipzig in 1746 to study theology, but his love of the drama and his intimacy with Schlegel, Mylius, Weisse and other young men of literary tastes, led him to abandon his intention.

After a short stay in Wittenberg he went in 1748, with Mylius to Berlin, where he wrote for magazines and booksellers. He also undertook, with Mylius, in 1750, a publication entitled *Beiträge zur Historie und Aufnahme des Theaters* "Contributions to the History and Improvement of the Theater;" published some poems under the title of *Kleinigkeiten* ("Trifles"); translated a work of the Spanish philosopher Huarte; and wrote some articles in *Voss' Gazette.* He entered at this time into friendly relations with Moses Mendelssohn and the bookseller Nicolai, in conjunction with whom he established the critical journal, *Briefe die neueste Literatur treffend* ("Letters on the Newest Literature").

In 1755 appeared *Miss Sara Sampson,* a tragedy dealing with English life. In 1760 Lessing became secretary to General Tauenzien in Breslau for five years, when he returned to Berlin and published the *Laokoon oder uber die Grenzen der Malerei und Poesie* ("Laocoon, or on the Limits of Painting and Poetry,") and his comedy *Minna von Barnhelm.* About 1767 he became director of the National Theater at Hamburg. While here he wrote his *Dramaturgie.* His criticisms made him enemies, and having been compelled to quit Hamburg, the Duke of Brunswick appointed him his librarian at Wolfenbüttel.

In 1775 he went to Vienna and accompanied Prince Leopold of Brunswick to Italy. He married in 1776, but his wife died in little more than a year. At this period he was involved in fierce theological disputes, which his philosophical drama *Nathan der Weise* did nothing to allay. Besides those men-

tioned, he wrote another drama, *Emilia Galotti*. He died at Brunswick in 1781.

References.—Biographies by Danzel and Guhrauer, Erich Schmidt, Borinski, Sime, Helen Zimmern, Rolleston; and Stahr's *Life and Works of Lessing*.

Leutze (*loit'sĕ*), **Emanuel,** German-American painter, was born at Gemünd in Würtemberg, 1816. He was brought up in America, studied in Europe, 1841-59, then settled in New York. Among his works are: *Washington Crossing the Delaware; Washington at Monmouth; Landing of the Norsemen; Cromwell and His Daughter*, etc. Died at Washington D. C., 1868.

Lever (*lē'vĕr*), **Charles James,** Irish novelist, was born at Dublin, 1806. He was graduated at Trinity College in that city, 1827; studied medicine at Göttingen, and then returned to Dublin. His most popular work, *Charles O'Malley*, is a reflex of his own college life at Dublin, and many of the incidents in this novel are no doubt drawn from his own experience in the world. He died at Trieste, Italy, 1872.

Levermore, Charles Herbert, authority on world peace, was born in 1856. He was graduated from Yale University then taught for several years at the University of California and the Massachusetts Institute of Technology. He was principal of Adelphi Academy and president of Adelphi College, Brooklyn. From 1913 he was active in societies for the promotion of peace and was made secretary of the New York Peace Society in 1917. He won the Bok Peace Prize of $50,000 for the best plan for maintaining peace among the nations.

Lewes (*lū'is*), **George Henry,** English philosopher and critic, was born in London, 1817. He was educated partly at Greenwich under Dr. Burney, and partly in Jersey and Brittany; left school early to enter first a notary's office, and then the house of a Russian merchant. In 1838 he proceeded to Germany, and remained there nearly two years, studying the life, language and literature of the country. He was married unhappily and had children when his connection with George Eliot began in 1854; it ended only with his death at their house in Regent's Park, 1878. Lewes was one of the best of critics and biographers; as a popularizer of philosophy he was inferior to none, as a popularizer of science he was inferior to few. His works, besides a tragedy and two novels, include: *Biographical History of Philosophy; Physiology of Common Life; Studies in Animal Life; Aristotle; On Actors and the Art of Acting; Problems of Mind, Life*, etc.

Lewis, Edwin Herbert, college professor, was born at Westerly, R. I., 1866. Graduated from Alfred University, 1887; Ph.D., Syracuse University, 1892; University of Chicago, 1894; studied in Italian libraries, 1888-89; professor of Latin, Alfred University, 1890-92; assistant in rhetoric, 1893-94; instructor in English, 1895-6, University of Chicago; associate professor of English, 1896-99, University of Chicago and Lewis Institute; professor of English since 1899, dean college students since 1906, Lewis Institute, Chicago. Author: *The History of the English Paragraph; A First Book in Writing English; A First Manual of Composition; An Introduction to the Study of Literature; A Second Manual of Composition; Specimens of the Forms of Discourse; Applied English Grammar*, etc.

Lewis, Meriwether, American explorer, was born near Charlottesville, Va., 1774. In 1803-06 he was engaged with Captain William Clarke in an expedition to the Pacific Ocean, the results of which were important to geographical science; and in 1807 he was made governor of the territory of Louisiana. He was subject to periods of mental depression, in one of which he is said to have taken his own life near Nashville, Tenn., 1809. His memoir by Jefferson was published, together with Biddle and Allen's *Narrative of the Lewis and Clarke Expedition*, in 1804.

Lewis, Sinclair, American novelist, was born in Minnesota in 1885. He was educated at Yale, and began his literary work by writing editorials and short stories for magazines. His first novel, *Our Mr. Wren*, appeared in 1914, followed by *The Trail of the Hawk, Free Air, Main Street, Babbitt, Arrowsmith, Elmer Gantry, Dodsworth*, etc. He was awarded the Nobel prize in literature in 1930, being the first American writer to receive this award.

Lewis, William Draper, American educator and law writer, dean of the law department, University of Pennsylvania, since 1896, was born in Philadelphia, Pa., 1837. He was graduated at Haverford, 1888; University of Pennsylvania, LL.B., Ph.D., 1891. Author: *Federal Power Over Commerce and Its Effects on State Action; Our Sheep and the Tariff; Restraint of Infringement of Incorporeal Right.* Editor: Lewis' *Greenleaf's Evidence*, 3 vols.; Wharton's *Criminal Law;* Lewis' *Blackstone's Commentaries*. 4 vols.; *Digest of Decisions of United States Supreme Court and Circuit Court of Appeals*, etc.

L'Hopital (*lō'pē'tal'*), **Michel de,** French statesman, was born about 1507. He was president of the court of accounts, 1554-60, and afterward chancellor of France until 1568. He promoted the edict of Romorantin, which excluded the inquisition from France; the ordinance of Orleans, an administrative, judicial and religious code; the edict of acification, for the free exercise of Protestant worship; and the ordinance of Moulins, to reform the administration of justice. He died in 1573.

Liddon (*lid'un*), **Henry Parry,** English clergyman, was born at North Stoneham, Hampshire, 1829. He was graduated at Christ Church, Oxford, 1850; was ordained in 1852 as senior student of Christ Church; from 1854 to 1859 was vice-principal of Cuddesdon theological college, and in 1864 became a prebendary of Salisbury, in 1870 a canon of St. Paul's, and Ireland professor of exegesis at Oxford, until 1882. In 1886 he declined the bishopric of Edinburgh, and in 1887 visited the Holy Land. Canon Liddon was the most able and eloquent exponent of liberal high church principles. He died suddenly at Weston-super-Mare, 1890.

Lieber (*lē'ber*), **Franz,** German-American publicist, was born in Berlin, 1800. After suffering imprisonment for his political opinions, he came to America in 1827, and was made professor of history in South Carolina College, 1835-56, of political economy in Columbia College, 1857-60, and of political science in Columbia law school, 1860-72. He edited the *Encyclopædia Americana*, and wrote *Political Ethics; Civil Liberty and Self-Government, Guerilla Parties*, etc. Died, 1872.

Liebig (*lē'biɛ*), **Justus, Baron von,** German chemist, was born in Darmstadt, 1803. He studied at Bonn and Erlangen; then went to Paris, and attracted the attention of Humboldt by a paper on the fulminates. He was appointed professor at Giessen in 1824, where he established a laboratory celebrated for researches in organic chemistry and the application of chemistry to agriculture, food, etc. Among his chief works are: *Organic Chemistry in Its Application to Agriculture; Animal Chemistry in Its Application to Physiology and Pathology.* He died at Munich, 1873.

Li Hung Chang (*lē'hoong'chäng'*), Chinese statesman, was born in 1823, and studied at Hanlin College. In 1853, in the Taiping rebellion, he joined the imperial army as secretary. In 1864 he was appointed governor-general of the Kiang provinces, and in 1872 of Chih-li, and senior grand secretary. He founded the Chinese navy and promoted a native mercantile marine. On the outbreak of the war with Japan in 1894, Li, in supreme command of the military and naval forces in Corea, was thwarted by the incompetence, dishonesty and cowardice of inferior officers, The Chinese forces were swept out of Corea, and Li, whose policy was that of peace, was deprived of his honors and summoned to Pekin. With this last command he refused to comply, and the disastrous course of events soon compelled the emperor to restore him to honor. Through his efforts the war was brought to a termination in 1895, China ceding Formosa and paying a war indemnity of $175,000,000. Professedly friendly to foreigners, and well aware of the value of western culture and industry, he visited Russia, Germany, France, England and America in 1896. He died in 1901.

Lincoln, Abraham, American statesman and the sixteenth president of the United States of America, was born in Kentucky 1809. He removed with his family in 1816 to Spencer county, Indiana, and for the next ten years was engaged in laborious work of various kinds, having only about a year's schooling at intervals.

At the outbreak of the Black Hawk war in 1832 he joined a volunteer company, and as captain he served three months in the campaign. He next opened a country store, was appointed postmaster of New Salem, Illinois, began to study law, and at the same time turned amateur land surveyor. In 1834 he was elected a member of the Illinois legislature, to which he was again returned at the three following biennial elections, and in 1836 he was licensed to practice law.

In 1846 he was elected a representative in congress from Illinois, and voted steadily in congress with the anti-slavery party. In 1849 and again in 1858 he was unsuccessful in attempts to enter the United States Senate. In the Republican national convention held at Chicago in May, 1860, he was nominated as a candidate for the presidency, and after several votes he gained a majority, and was eventually chosen unanimously. The southern states alarmed at the aggressive anti-slavery policy which many of the leading Republicans had proclaimed their determination to follow, refused to acquiesce in Lincoln's election, and began one after another to announce their secession, and to organize the means of resisting the enforcement of the claims of the central government.

The election of Lincoln took place in November, 1860, and he assumed office on the 4th of March, 1861. It was the intention of Lincoln to use every means of conciliation consistent with the policy he deemed essential to the national interest to pursue. On one point, however, his resolution was steadfast, to admit no secession, and before his assumption of office secession was as resolutely determined on the other side. On the 4th of February the southern confederacy had been constituted, and on the 14th of April the first blow in the Civil War was struck by the capture of Fort Sumter by the Confederates.

The events of the Civil War during the next four years in Lincoln's career belong to the history of the United States. Lincoln's persistence in raising and pouring in fresh troops after every disaster finally enabled the Federal government to subdue the secession. The toleration of slavery was always in Lincoln's opinion an unhappy necessity; and when the southern states had by their rebellion forfeited all claim to the protection of their peculiar institution, it was an easy transition from this view to its withdrawal. The successive stages by which this was effected—the emancipation of the slaves of rebels, and the offer of compensation for voluntary emancipation, followed by the constitutional amendment and unconditional emancipation without compensation—were only the natural steps by which a change involving consequences of such vast extent was reached.

The determination of the northern states to pursue the war to its conclusion on the original issue led to the reelection of Lincoln as president in 1864. The decisive victory of Grant over Lee on April 2d, 1865, speedily followed by the surrender of the latter, had just afforded the prospect of an immediate termination of this long struggle, when, on the 14th of the same month, President Lincoln was shot in Ford's Theater, Washington, by the assassin, John Wilkes Booth, and expired on the following day. In the affections of America Lincoln holds a place second only to Washington.

References.—Nicolay and Hay, *Abraham Lincoln: A History;* the same authors edited the *Complete Works of Abraham Lincoln.* See also *Lives* by Morse, Arnold, Herndon and Weik, Lamon, and Tarbell. Also see Rhodes' *History of the United States From the Compromise of* 1850.

Lincoln, Robert Todd, American lawyer, was born at Springfield, Ill., 1843, eldest son of Abraham Lincoln. He was graduated at Harvard, 1864; entered Harvard Law School, but left to enter the army, serving until end of war as captain on staff of General Grant. He then finished his law studies, was admitted to the Illinois bar, 1867, and practiced at Chicago. He was presidential elector, 1880; secretary of war, 1881-85, and United States minister to Great Britain, 1889-93. He was also vice-president of the Commonwealth Edison Company; Central Union Telephone Company, Commercial National Bank, Pullman Loan and Savings Bank, etc. Died in 1926.

Lind, Jenny (Madame Otto Goldschmidt), the Swedish singer, was born in Stockholm, Sweden, 1820. At three years of age she could sing correctly any piece she had once heard, and at nine was placed under Croelius, a famous teacher of music. She visited New York in 1850, under the auspices of P. T. Barnum, and was enthusiastically received, but dissolved the engagement prematurely in 1851, was married to M. Otto Goldschmidt, a skillful pianist and conductor, and retired from the stage. She reappeared in 1855, in 1861, in 1863, and in 1880 for a limited period. She was professor of singing at the Royal College of Music. Wiesbaden, 1883-86. She died in Wynd's Point, Malvern, England, in 1887.

Lindbergh, Charles Augustus (1902-), born in Detroit, Mich., son of later Congressman from Minnesota. He became a "barnstorming" airplane pilot, then joined the reserve corps and became an air-mail pilot. On May 20, 1927, he flew non-stop from New York to Paris in 36 hours 30 minutes, gaining world acclaim. Later became technical adviser to an airplane company and with his wife (former Anne Morrow), studied world air routes in long flights.

Lindsay, Nicholas Vachel, American writer, was born at Springfield, Illinois, in 1879. He attended Hiram College, and studied art in Chicago and New York, but eventually devoted himself to writing. He has a theory that strongly emphasized rhythm can convey moods to people not reached by conservative verse. So one finds in his works the monotonous beat of the tom-tom, the rhythm of the Ford car, or the martial drum beats of the Salvation Army. Among his works are *The Congo and Other Poems; General William Booth Enters Heaven; The Santa Fe Trail; Adventures While Preaching the Gospel of Beauty*, was written after some of his walking tours. Died, 1931.

Lindsey, Benjamin Barr, jurist, reformer, was born in Jackson, Tenn., 1869. He was educated in the public schools studied law and was admitted to the bar. Judge of the county court and juvenile court of Denver, Colo., beginning 1900. He is the originator of the juvenile court system and has an international reputation as an authority on juvenile delinquency. In 1906 he was a candidate for governor of Colorado. Author: *The Beast and the Jungle.*

Linevich (*li-nev-ich*), **Nicolay Petrovich,** Russian general, was born in the government of Techrnigoff in 1838. He served in the Russo-Turkish war and in 1900 succeeded to the command of the Siberian troops in Manchuria. In 1904 he commanded the Russian left at the battle of Mukden in the Russo-Japanese war and succeeded General Kuropatkin in 1905 as commander-in-chief in the far East. Died, 1908.

Linne (*lin'nā*), **Karl Von,** commonly called Linnæus, the greatest botanist of his age, was born at Rsahult, Sweden, 1707, and died at Upsala in 1778. He was the son of a clergyman, who had him educated at the grammar-school and the gymnasium of Wexiö. He showed an early interest in botany; entered the University of Lund, where his botanical tastes were encouraged; and removed to Upsala in 1728, where he undertook the supervision of the botanic garden. Here he made the acquaintance of the botanist Rudbeck, whose assistant he became.

Aided by the academy of sciences at Upsala, Linné made a journey through Lapland, the result of which was shown in his *Flora Lapponica,* published 1735. In this year he went to the University of Harderwyk in Holland and took an M.D. degree; afterward visited Leyden, where he published the first sketch of his *Systema Naturæ* and *Fundamenta Botanica.* In 1736 he visited England, went to Paris in 1738, and afterward settled in Stockholm as a physician.

He became professor of medicine at Upsala in 1741, and then of botany and natural history; was made a knight of the Polar Star, with the rank of nobility; and died on his estate near Upsala from apoplexy.

The great merit of Linné as a botanist was that he arranged plants on a simple system of sexual relationship and prepared the way for the more natural and satisfactory classification which has superseded the Linnæan system. Nor must it be forgotten that he was eminent not only in botany, but in all the sciences of his time. His chief works, besides those already mentioned, were: *Genera Plantarum; Classes Plantarum; Flora Suecica; Fauna Suecica, Philosophia Botanica,* and the *Species Plantarum.*

References.—Sach's *History of Botany;* Caru's *History of Zoölogy;* Stoever's *Life of Sir Charles Linnaeus;* Caddy's *Through the Fields with Linnaeus.*

Lipton, Sir Thomas Johnstone, British sportsman and merchant, was born in Glasgow, of Irish parentage, 1850. He started life as a retail merchant, acquired extensive tea, coffee and cocoa estates in Ceylon, and accumulated a large fortune. He is chairman of Lipton, Ltd., and is also largely interested in business enterprises in the United States and Canada. He owned the yachts *Erin, Shamrock,* and *Shamrock III.,* and challenged for the American cup on many occasions. He was knighted in 1898, created a baronet in 1902. Died, 1931.

Lister, Joseph, Lord, English surgeon, was born in Upton, England, 1827. He was graduated at London University in 1847, and in medicine, 1852. He was successively lecturer on surgery, Edinburgh; regius professor of surgery, Glasgow; professor of clinical surgery, Edinburgh; professor of clinical surgery, King's College hospital, London, and surgeon-extraordinary to Queen Victoria. In addition to important observations on the coagulation of the blood, inflammation, etc., his great work has been the introduction, since 1860, of the antiseptic system, which has revolutionized modern surgery. He received many foreign honors, and was made a baronet in 1883 and a peer in 1897. Died, 1912.

Liszt (*list*), **Franz,** noted Hungarian pianist and composer, was born at Raiding, 1811. In 1849 he became conductor of the court theater at Weimar; in 1861 was made commander of the legion of honor, and in 1865 took orders and received the tonsure. In 1871 his native country granted him a pension of 600 pounds a year, and in 1875 he was named director of the Hungarian academy of music. One of his two daughters married Richard Wagner, his lifelong friend. Though Liszt's fame as a pianist overshadows his name as a composer, yet he was the creator of the symphonic poem, and his *Hungarian Rhapsodies* for the piano are unrivaled. He died at Bayreuth, Bavaria, 1886.

Litman, Simon, educator, economist, was born in Odessa, Russia, 1873. He was educated at Odessa Commercial College, School of Political Science, Paris, at the University of Zurich, and University of Munich; lecturer at the Russian School of Social Science, in Paris, 1902; instructor in commerce University of California, 1903-1908; associate in commerce, 1908-1910, and assistant professor in economics, 1910, University of Illinois. Member of the American Economic Association, American Statistical Association, American Association for Labor Legislation and National Geographic Society. Author of *Trade and Commerce; Die Lohnfondstheorieu,* and of many articles on industry, commerce and transportation.

Littleton, Martin W., American lawyer, was born in Roane county, Tenn., 1872. He was practically self-educated and began practicing law in 1891. He was assistant prosecuting attorney, Dallas, Texas; delegate from New York to national democratic convention, 1904; and has appeared in many famous legal trials. He was elected to Congress 1910.

Littleton, Sir Thomas, English jurist, was born in Worcestershire, England, 1402. He was recorder of Coventry in 1450, king's sergeant in 1455, in 1466 judge of common pleas, and in 1475 a knight of the bath. His reputation rests on his treatise on *Tenures,* written in law French, and turned into English about 1500. It was the text that Coke commented on in his *Coke Upon Littleton.* Died, 1481.

Littre (*lē-trā'*), **Maximilien Paul Emile,** French philosopher and philologist, was born in Paris, 1801. He studied at the Lycée Louis-le-Grand, then graduated in medicine and finally turned to philology. He fought on the barricades in 1830, was one of the principal editors of the *National* down to 1851, and became an enthusiastic follower of Comte. His *La Poésie Homerique et l'Ancienne Poésie Francaise* was an attempt to render the first book of the *Iliad* in the style of the Trouvères. His splendid *Dictionnaire de la Langue Francaise* did not prevent the academy in 1863 from rejecting its author, whom Bishop Dupanloup denounced as holding impious doctrines. In 1871 the academy at last admitted him. He was one of the first linguists and scientists of this century. Died, 1881.

Livingston, Edward, American jurist and statesman, was born at Livingston, N. Y., 1764. He was elected a member of congress in 1794, and became federal attorney and mayor of New York in 1801. In the dispute with England in 1814-15 he became aide-de-camp and secretary to General Jackson. In 1821 he was appointed to draw up a code of civil procedure for Louisiana. It was the simplest known up to that time, and received the warmest approval from Bentham and other jurists. He was thereafter United States senator for Louisiana, 1829-31; secretary of state, 1831-33; minister to France, 1833-35, and supported the demand of $5,000,000 made by the United States government for indemnity on account of French spoliations, and succeeded in securing its payment. Died at his own estate on the Hudson, 1836.

Livingstone, David, African explorer and missionary, was born at Blantyre, in Lanarkshire, Scotland, 1813. Was sent to southern Africa by the London missionary society in 1840; resided for several years at various stations near the Limpopo, discovering Lake Ngami in 1849, and penetrating to the Makola Country in 1851; in 1853-54 and in 1854-56 made his way from Loando to Quilimane, following the course of the Zambesi, and discovering the Victoria falls. He returned to England in 1856, and published *Missionary Travels,* 1857; returned to Africa as consul at Quilimane in 1858; explored the country north of the Zambesi, 1858-64, discovering Lakes Shirwa and Nyassa, and in 1865 published a narrative of the journey. He undertook his third expedition in 1866, and spent the remainder of his life endeavoring to ascertain whether the Nile flowed from the water-system west of Lake Tanganyika. In 1871 he was found by Stanley at Ujiji. He died in central Africa, 1873.

Livy, or **Titus Livius,** Roman historian, was born at Patavium (Padua), in the north of Italy, 59 B. C. He was the most eminent of the Roman historians. His history of Rome was written partly at Rome and partly at Naples, under the patronage of the emperor Augustus. It consisted originally of 142 books; but of these only thirty-five have come down to us and some of these in a very imperfect state. Of all but two, however, we possess fragments, with short epitomes from another hand. The history, or as it was called by its author, *The Annals of the Roman People,* begins with the foundation of the city, and ends with the death of Drusus, the younger brother of the emperor Tiberius, 9 B. C. Died, 17 A. D.

Lloyd-George, Rt. Hon. David, Premier of England, was born at Manchester, 1863, of Welsh stock. Elected to Parliament in 1890; appointed Privy Councillor, 1905; president of Board of Trade, 1905-08; Chancellor of the Exchequor, 1908-15; Minister of Munitions, 1915-16; came into power at downfall of Asquith ministry, 1916; called to premiership by King. Resigned, 1922.

Locke, George Herbert, Canadian educator, professor of education and dean of training school for teachers, Macdonald College, McGill University, Montreal, Canada, since 1907, was born in Ontario, Canada, 1870. He was educated at Victoria College, University of Toronto, and University of Chicago; instructor in history and art of teaching, Harvard University and Radcliffe College, Cambridge, Mass., 1897-99; associate professor of education, University of Chicago, 1899-1905; in editorial department of Ginn and Company, Boston, 1905-07; associate editor of *The Quarterly Journal of Pedagogy,* 1907. He is the author of many contributions to educational periodicals.

Locke, John, eminent English philosopher, was born at Wrington, in Somersetshire, 1632, and died, 1704, at Oates in Essex. He was sent to Christ Church, Oxford, where he took the degrees of B.A. and M.A., and applied himself to the study of medicine. In 1666 Locke made the acquaintance of Lord Ashley, afterward earl of Shaftesbury, and held various offices in the patronage of that nobleman. When in 1682 his patron was obliged to retire, for political reasons, to Holland, Locke accompanied him in his exile. Owing to the troubled condition of his country, and the continued triumph of the party which he had opposed, Locke continued to reside abroad.

He returned to England at the revolution, and was appointed commissioner of appeals under the new government. As early as 1670 he had formed the plan of his famous *Essay on the Human Understanding,* a plan which he had carefully elaborated in his exile, and which he published in its completed form in 1690. It was received with much opposition, notably by the University of Oxford, which resolved to discourage it; but despite this it acquired a great reputation throughout Europe, and was translated into French and Latin. Locke was made a commissioner of trade and plantations in 1695, but retired when unable to perform its duties, and lived with his friend Sir F. Masham until his death.

Briefly, it may be stated that the chief purpose of Locke's celebrated *Essay* was to find the original sources and the scope of human knowledge. The conclusions he arrived at were that there is no such thing as an "innate idea;" that the human mind is a sheet of white paper prepared to be written upon; that the knowledge thereon written is supplied by experience; and that "sensation" and "reflection" are the two sources of all our ideas.

Among other works of Locke are his *Letters on Toleration; Thoughts Concerning Education; Reasonableness of Christianity; Two Treatises on Government; Notes Upon St. Paul's Epistles to the Galatians, Corinthians, Romans, and Ephesians;* and *Treatise on the Conduct of the Understanding.*

References.—Stewart's *Philosophical Essays;* King's *Life of John Locke;* Scharer's *John Locke;* Cousin's *Philosophy of John Locke;* Bourne's *Life of Locke;* Fowler's *Locke;* Fraser's *Locke;* and Russell's *The Philosophy of Locke.*

Lockhart, John Gibson, Scottish biographer, was born in Scotland, 1794. He was graduated at Oxford, studied law at Edinburgh, and was admitted to the Scottish bar in 1816. He and John Wilson were long the chief supporters of *Blackwood's Magazine.* It was this connection which led to his acquaintance with Sir Walter Scott. In 1820 he married Sophia Scott, eldest daughter of Sir Walter. After the publication of other works, and from 1837-39, appeared his *Life of Scott,* a production of undoubted merit, but which has given rise to much bitter controversy. In 1843 Lockhart was appointed auditor of the duchy of Cornwall. Died, 1854.

Lockyer (*lok'yēr*), **Sir Joseph Norman,** English astronomer, was born at Rugby, 1836. He became a clerk in the war office, 1857; in 1869 was made a fellow of the royal society; in 1870 lecturer on astronomy at the normal school of Science at South Kensington; in 1894 a C. B., and in 1897 a K. C. B. He headed eclipse expeditions to Sicily, India, Egypt, and the West Indies. He wrote *Elementary Lessons in Astronomy; The Chemistry of the Sun; The Dawn of Astronomy,* etc. Died, 1920.

Lodge, Henry Cabot, American author, statesman, was born in Boston, Mass., 1850. He was graduated from Harvard College, 1871; from Harvard law school in 1875, was admitted to the Suffolk bar in 1876, and received the degree of Ph.D. from Harvard University for his thesis on *The Land Law of the Anglo-Saxons;* LL.D., Williams, Yale, Harvard; editor *North American Review,* 1873-76; university lecturer on American history, Harvard, 1876-79, and lecturer before Lowell Institute, Boston, 1880. He was elected a member of congress, 6th Massachusetts district, 1887-93, and United States senator in 1893 and re elected for several terms. Editor: *Complete Works of Alexander Hamilton.* Author: *Life and Letters of George Cabot; Life of Washington, History of Boston; Certain Accepted Heroes and Other Essays in Literature and Politics; Story of the Revolution,* etc. Died, 1924.

Lodge, Sir Oliver Joseph, British educator and physicist, principal of the University of Birmingham since 1900, was born at Penkhull, Staffordshire, 1851. He was graduated at University College, London; D.Sc., London, Oxford, Victoria, and Liverpool; LL.D., St. Andrews, Glasgow, and Aberdeen. Was professor of physics, University College, Liverpool, 1881-1900. Author: *Elementary Mechanics; Modern Views of Electricity; Pioneers of Science; Signalling Without Wires; Ministers and Stewards; Man and the Universe,* etc.

Loeb (*lōb*), **Jacques,** German-American physiologist, professor of physiology, University of California, beginning 1902, was born in Germany, 1859. He studied medicine at Berlin, Munich, and Strassburg; M.D., Strassburg, 1884; assistant professor of physiology and experimental biology, 1892-95; associate professor, 1895-1900; professor, 1900-02, University of Chicago. Author: *The Heliotropism of Animals and Its Identity With the Heliotropism of Plants; Studies in General Physiology,* etc. Died, 1924.

Logan, John Alexander, American soldier, was born in Illinois, 1826. He served in the Mexican war, was admitted to the bar in 1852, and was elected to congress as a democrat in 1858. He raised an Illinois regiment in the Civil War, and retired at its close as major-general. He returned to congress as a republican in 1866, was United States senator from Illinois, 1871-86. He was nominated for the vice-presidency in 1884, but was defeated with the rest of the Blaine ticket. Died, 1886.

Lombroso (*lōm-brō'zō*), **Cesare,** famous Italian alienist and criminologist, was born at Verona, Italy, 1836. He was educated at the University of Turin, became professor of mental diseases at the University of Pavia, 1862, and finally professor of forensic medicine and psychiatry at Turin. Lombroso was the author of many books on his special subject, particularly the pathology of genius, and his investigations of insanity and criminology led the way to great reforms in the treatment of these classes in Europe and elsewhere. He visited England in 1908, and died in 1909.

London, Bishop of. See **Ingram, A. F. W.**

London, Jack, American author and socialistic lecturer, was born in San Francisco, Cal., 1876. He was educated at Oakland high school and the University of California. He left college to go to the Klondike and never completed his course; went to sea before the mast, 1892; went to Japan and seal hunting in Bering sea, 1893; tramped throughout the United States and Canada for sociological and economic study, 1894, and traveled widely at various times. Author: *The Son of the Wolf; A Daughter of the Snows; The Children of the Frost; The Call of the Wild; The Faith of Men; The Sea Wolf; White Fang; Before Adam; The Road; Martin Eden,* etc. Died, 1916.

Long, George, English scholar, was born at Poulton, Lancashire, England, 1800. He was graduated at Trinity College, Cambridge, 1822, and in 1826 was made fellow, over Macaulay's head. He was professor of Latin at University College, London, 1824-46, reader in jurisprudence to the Middle Temple, and classical lecturer at Brighton College, 1849-71. His great work was the editing of the *Penny Cyclopædia.* He died at Portfield, Chichester, 1879.

Long, John Davis, American lawyer and publicist, was born at Buckfield, Me., 1838. He was graduated at Harvard, 1857; LL.D., Harvard, 1880; he practiced law at Buckfield, Me., 1861-62, and since then at Boston, Mass.; was a member of the Massachusetts legislature, 1875-78; speaker, 1876-78; lieutenant-governor of Massachusetts, 1879; governor, 1880-82; secretary of the United States navy, 1897-1902. Was senior member of the law firm of Long and Hemenway, Boston, and president of the board of overseers of Harvard College. Author: *After-Dinner and Other Speeches; The Republican Party—Its History; Principles and Policies.* Died, 1915.

Long, John Luther, lawyer, author, was born in Pennsylvania, 1861. He studied law, was admitted to the Pennsylvania bar, traveled extensively, and about 1898 turned to dramatic writing. Author: *Madam Butterfly; Miss Cherry-Blossom of Tōkyō; The Fox-Woman; The Prince of Illusion; Naughty Nan; Heimweh, and Other Stories; Billy Boy; The Way of the Gods,* etc. Died, 1927.

Longfellow, Henry Wadsworth, distinguished American poet, was born in Portland, Me., 1807, at which period Maine formed part of the commonwealth of Massachusetts. He was graduated in 1825 from Bowdoin College, when but eighteen years old, and began his poetical career while he was in college. When nineteen he was made professor of modern languages and literature in Bowdoin College, and passed the next three years in Europe, preparing himself for his professional duties. That time was spent in Germany, France, Spain and Italy. He then held the chair to which he had been appointed from 1830 until 1835. *Outre-Mer: A Pilgrimage Beyond the Sea,* came out two years later, and after its publication he was appointed to the professorship of modern languages and belles-letters in Harvard College. He began his official duties at Cambridge in 1837, and held the professorship until 1854, when he resigned. Meantime his career as an author went steadily on. *Ballads and Other Poems* dates from 1841. *The Spanish Student* was published in 1843, and in 1845 he prepared *Poets and Poetry of Europe,* a critical compilation. Then came *The Belfry of Bruges, and Other Poems,* in 1846, and *Evangeline* in 1847. *The Golden Legend* has the date of 1851. In 1855 he published *The Song of Hiawatha.* Three years later, in 1858, *The Courtship of Miles Standish* met with the applause it deserved, *Tales of a Wayside Inn* appeared in 1863, *Flower-de-Luce* in 1867, and *New England Tragedies* in 1868. The publication of his translation of Dante took place in 1867, and filled three superb and massive volumes. His *Three Books of Song* appeared in 1872, *The Hanging of the Crane* in 1874, and *Morituri Salutamus* in 1875. In 1869 he received the degree of D.C.L. from Oxford University, and in 1874 a large complimentary vote for the lord rectorship of the University of Edinburgh. Died, 1882.

Longford, Joseph Henry, British scholar, professor of Japanese, King's College, London, beginning 1903; was born in 1849, in County Dublin, Ireland. He was graduated at Queen's College, Belfast, Ireland, entered the British consular service in Japan as student interpreter, 1869, and was subsequently called to the British bar. After many years of service in Japan he retired on a pension in 190..

Longinus (*lon-jī'nus*), **Dionysius Cassius,** one of the greatest of Greek critics and philosophers, flourished during the third century. The only work which has been preserved of this eminent writer is the celebrated treatise *On the Sublime.* Died, 273 A. D.

Longstreet, James, American general, was born in South Carolina, 1821. He was graduated at West Point, 1842. He resigned his commission to take part with the South in the Civil War, 1861. In 1862 he was made major-general, and after the battle of Fredericksburg, 1862, Longstreet was promoted to the command of a corps, with the rank of lieutenant-general. He surrendered with General Lee in April, 1865. In 1875 he took up his residence in Georgia, and in 1880 was sent as minister to Turkey, where he remained until 1881. He was United States marshal for the northern district of Georgia, 1881-84; and United States railroad commissioner from 1898 until his death in 1904.

Longworth, Nicholas, congressman, capitalist, was born at Cincinnati, Ohio, 1869. He was graduated at Harvard, 1891, Harvard Law School, 1893, Cincinnati Law School, 1894, and was admitted to the bar in the same year. He was a member of the board of education, Cincinnati, 1898; Ohio house of representatives, 1899-1901, Ohio senate, 1901-03, and member of congress, 1st Ohio District, 1903-13. 1915-31. Died, 1931.

Loomis, Elias, American mathematician and physicist, was born in Connecticut, 1811, and was graduated from Yale College in 1830. He published a series of text books embracing the whole range of mathematics, natural philosophy, astronomy and meteorology. His *Treatise on Analytical Geometry and Calculus* has been translated into the Chinese language, and his *Treatise on Meteorology* into Arabic. His scientific papers embrace the various departments of meteorology, the phenomena of auroral exhibitions and atmospheric electricity, territorial magnetism, astronomical observations, shooting-stars, solar-spots, etc. Died, 1889.

Lope de Vega (*lō'pā dā vā'gā*), **Felix.** See **Vega.**

Lorenz (*lō'rents*), **Adolf,** Austrian surgeon, surgeon-in-chief of the orthopedic department in the imperial royal general hospital, Vienna, was born in Silesia, 1854. He was graduated at Vienna University, M.D., 1880; professor of general surgery in Vienna University, since 1889. He is especially famous for his bloodless methods in orthopedic surgery, and has taught the cure of hip-deformities and all forms of club foot in a rapid bloodless way, without bone resections. In 1895 he published a treatise on *Dislocation of the Hip* which has received wide scientific approval. He visited the United States on several occasions since 1902.

Lorenzo de Medici. See **Medici.**

Lorimer (*lor'i-mēr*), **George Horace,** American journalist and writer, editor-in-chief of the *Saturday Evening Post* since 1899, was born in Louisville, Ky., 1868. He pursued a college course at Colby and Yale, and immediately entered upon a journalistic career. Author: *Letters From a Self-Made Merchant to His Son; Old Gorgan Graham; The False Gods; Jack Spurlock—Prodigal,* etc.

Lossing (*los'ing*), **Benson John,** watchmaker, wood-carver, journalist, editor, and historian, was born in Dutchess county, N. Y., 1813. He edited some magazines and prepared several illustrated works, among which are an *Outline History of the Fine Arts, Lives of the Signers of the Declaration of Independence,* and *Pictorial Field-Book of the Revolution.* Died, 1891.

Lotze (*lōt'sē*), **Rudolf Hermann,** German philosopher, was born in Bautzen, Saxony, 1817. He was educated at Leipzig, where he studied medicine and philosophy, and was appointed to a professorship there in 1842. He ranks among the first metaphysicians, and gave a strong impulse to the development of physiological psychology. Died in Berlin, 1881.

Loubet (*lōō'be'*), **Emile,** French statesman, ex-president of France, was born at Marsanne, in the department of the Drôme, 1838. He became a barrister, practicing at Montélimar, and steadily rose step by step from the municipal council of Montélimar to the presidency. As president of the senate in 1896 he was kept more or less outside of parties, though he was known to be a moderate with radical tendencies. On the sudden death of President Faure, in 1899, he was elected by a large majority to succeed him, and held office until 1906. His uprightness, patriotism, and simplicity of demeanor made him the most popular president France has ever had. Died, 1929.

Louis IX. (Fr., *lōō'ē'*), or **Saint Louis,** of France, was born in Poissy, 1215, and succeeded his father, Louis VIII., in 1226. When he attained his majority he became involved in a war with Henry III. of England, and defeated the English at Taillebours, at Saintes, and at Blaye, 1242. During a dangerous illness he made a vow that if he recovered he would go in person as a crusader, and accordingly, having appointed his mother regent, he sailed in 1248 with 40,000 men to Cyprus, whence, in the following spring, he proceeded to Egypt. He embarked on a new crusade, 1270, and proceeded to Tunis; but a pestilence breaking out in the French camp carried off the greater part of the army and the king himself. Died, 1270.

Louis XII. of France, son of Charles, duke of Orleans, was born in 1462, and succeeded Charles VIII. in 1498. In 1499 he invaded Italy, and gained possession of Milan. In 1508 he united with Ferdinand, Pope Julius II., and the emperor in the league of Cambrai against the Venetians. In 1511 Ferdinand joined Julius in the holy league against the French, who were finally driven out of Italy by means of the Swiss in 1513. By his good government he earned the title of "Father of His People." Died, 1515.

Louis XIII., king of France, was born at Fontainebleau, 1601. When his father, Henry IV., was assassinated in 1610, he succeeded to the throne, but his mother, Marie de Medici, was regent during his youth. Under the guidance of his great minister, Richelieu, the king gradually increased the power of the monarchy, at the expense of the Protestant nobles, ending in the overthrow of the Huguenots by the capture of La Rochelle in 1628. His possession of Alsace and Roussillon was confirmed in the next reign. Died, 1643.

Louis XIV., king of France, 1643-1715, was born in 1638. He inherited from his father the war with Spain, and this was followed by the civil war of the Fronde, which lasted from 1649 to 1653. He changed the feudal monarchy of France into an absolute one, and his favorite motto, *L'etat c'est moi,* "I am the state" was at once the expression of the ruling principles of his life, and a description of his policy. On the death of Philip IV., the father of his queen, he laid claim to Holland, which he invaded; but this led to the alliance against him of England, Sweden and Holland, usually called "the triple alliance," and Louis was speedily compelled to make peace. Several other wars followed, notably the war of the Spanish succession, in which Louis sought to secure the Spanish monarchy for his grandson, the duke of Anjou. Two years afterward, 1715, Louis died at Versailles, in his seventy-seventh year. He left several children. Many of the most famous names in French literature belong to this reign.

Louis XV., surnamed "the well-beloved," king of France, 1715-74, was born at Fontainebleau, 1710. He was the son of the duke of Burgundy, and the successor of his great-grandfather, Louis XIV. On the death of Augustus, king of Poland, 1733, Louis supported the pretensions of his father-in-law to the vacant throne, and was opposed by the emperor of Germany, who upheld the claims of the elector of Saxony. Afterward, in 1755, a new war was kindled between England and France, about their possessions in Canada; and this war was not terminated until 1763, when, by the treaty signed in Paris in that year, France formally ceded to England, Canada, Nova Scotia and its other North American colonies, besides Granada, Dominica and Tobago, in the West Indies. During his later years, Louis suffered himself to be governed wholly by favorites, among whom were the Marchioness de Pompadour and Madame Du Barry. He died at Versailles, 1774.

Louis XVI., king of France, 1774-93, was born at Versailles, 1754. He was the grandson of Louis XV., whom he succeeded, having already, in 1770, married Marie Antoinette of Austria, daughter of Maria Theresa, and sister of the emperor Joseph. The first acts of Louis, after his accession, endeared him to his people, for he gave them immunities to which they had been hitherto unaccustomed, and effected many reforms in the administration; but he soon became embarrassed by financial difficulties, and was not fortunate in his choice of ministers. In October a mob of armed women from Paris made an attack on the palace of Versailles, after which the king and queen were forcibly removed to Paris. In 1789 the states-general of the kingdom was convoked at Versailles. Within a few days it was superseded by the national assembly, which assumed the whole legislative authority; and then began the revolution, which culminated, as far as the king was concerned, in the insurrection of 1792, and in his execution on the scaffold in January, 1793.

Louis XVIII., king of France, a younger brother of Louis XVI., was born at Versailles, 1755. He fled from Paris on the same night as the king, Louis XVI., and reached the Belgian frontier in safety. After the execution of his brother, he proclaimed the dauphin king, under the title of Louis XVII., and in 1795 took the title of king himself. The fall of Napoleon opened the way for him to the French throne and in 1814 he landed at Calais after twenty-four years of exile. He ruled by "the divine right of kings." The revolution had taught him nothing, and his treatment of the protestants, republicans and the followers of Napoleon, opened the way for Napoleon's return from Elba, when he fled into exile until after the battle of Waterloo. He was restored to the throne by the allied powers in 1815, and ruled until his death at Paris, 1824.

Louis Philippe (*lōō'ĕ'fĕ'lĕp'*), king of France, was born at Paris, 1773, eldest son of Louis Philippe Joseph, duke of Orleans. He sought, during the revolution, in Switzerland a place of security for his sister Adelaide, wandered about for four months, and accepted a situation as teacher of geography and mathematics in a school at Reichenau, near Chur, assuming the name of Chabaud-Latour. On the fall of Napoleon he hastened to Paris, where he was received with distrust by Louis XVIII. After the second restoration, when he returned to France, he recovered his great estates. He was very popular in Paris. He kept aloof, however, from political intrigues; and the three bloody days of the revolution of 1830 were nearly over before he was brought forward, the banker Laffitte proposing, in the provisional committee, his appointment as lieutenant-general of the kingdom, from which he proceeded to the acceptance of a constitutional throne, August 9, 1830. Insurrectionary movements caused by a demand for a more liberal suffrage, ensued in the streets of Paris in February, 1848; and the "citizen king" saw with alarm that the national guard could not be expected to support him. On February 24th Louis Philippe, deserted by his courtiers, fled to the coast of Normandy with his queen, concealed himself for some days, and at length found opportunity of escaping in a British steamboat to Newhaven under the name of Mr. Smith. He died at Claremont, 1850.

Louise, queen of Prussia, was born in 1776, at Hanover, where her father, Duke Karl of Mecklenburg-Strelitz, was commandant. She was married to the crown prince of Prussia, afterward Frederick William III., in 1793, and was the mother of Frederick William IV. and William III. afterward emperor. Died, 1810.

Lounsbury (*lounz'bĕr-i*), **Thomas Raynesford,** American educator and scholar, professor of English since 1871, and librarian at Sheffield scientific school, Yale, was born at Ovid, N. Y., 1838. He was graduated at Yale, 1859; LL.D., Yale, 1892, Harvard, 1893, Aberdeen, 1903; L.H.D., Lafayette, 1895, Princeton, 1896. He was engaged on the *American Cyclopædia*, 1860-62; was first lieutenant 126th New York volunteers, 1862-65; instructor at Yale, 1870-71. He edited Chaucer's *Parliament of Foules*, and is the author of: *History of the English Language; Studies in Chaucer; Shakespeare as a Dramatic Artist, etc.* Died, 1915.

Lovett, Robert Scott, lawyer, president of Union Pacific railroad, was born in San Jacinto, Texas, 1860. He was educated in the public schools; studied law, and was admitted to the bar in 1882; attorney for Houston East and West Texas railroad, 1884-89; assistant general attorney, 1889-91, and general attorney, 1891-92, Texas and Pacific railroad; general counsel for Harriman railroads, 1904-09; succeeded Edward H. Harriman as president and chairman of board of directors, Union Pacific railroad, 1909.

Low, A. Maurice, journalist, author, was born in London, England, 1860. He was educated at King's College, London, and in Austria. Since 1886 he has been Washington correspondent of *The Boston Globe;* chief American correspondent of the *London Morning Post.* Author: *The Supreme Surrender.* Died, 1929.

Low, Seth (1850-1916), American educator and publicist, graduated from Columbia, 1870, and held LL.D. degree from many other colleges. Was elected mayor of Brooklyn, 1881-85, on independent ticket, held presidential chair at Columbia University, 1890-1901, and was elected mayor of New York, 1902-03. In 1895 he erected the Columbia University Library, at a cost of $1,175,000. President McKinley appointed him a member of the United States delegation to the International peace conference at The Hague. Died, 1916.

Lowden, Frank Orren (1861—), American public official, received degree of LL.B. at Union College of Law, Chicago, 1887. He practised law in Chicago for many years, held seat in Congress 1906-11, and was elected governor of Illinois for the term 1917-21.

Lowell, Abbott Lawrence, American educator and writer, president of Harvard University since 1909, was born in Boston, Mass., 1856. He was graduated at Harvard, 1877; Harvard Law School, 1880; practiced law in Boston, 1880-97. He was lecturer at Harvard, 1897-99; professor of the science of government, Harvard, 1900; trustee of the Lowell Institute of Boston, 1900, and was elected president of Harvard to succeed Dr. Charles W. Eliot, who resigned, in 1908. He is an accepted authority in the field of government and comparative politics. Author: *Essays on Government; Governments and Parties in Continental Europe.* Resigned Harvard presidency, 1933.

Lowell, Amy, American poet and critic, was born in Brookline, Mass., in 1874. She attended private school and travelled abroad. In 1912 she published *A Dome of Many Colored Glass*—a volume of conventional poetry—which was followed in 1914 by *Sword Blades and Poppy Seed,* containing many poems which immediately identified her with the imagist school of free verse. Her later volumes include *Men, Women,* and *Ghosts; Can Grande's Castle; Pictures of a Floating World,* and many translations of Chinese and Japanese poetry. *Fir Flower Tablets*—poems translated from the Chinese, —appeared shortly before her death in 1925.

Lowell, James Russell, American poet and diplomat, was born in Boston, Mass., 1819. He was educated at Harvard University, spent several years abroad studying languages, and, in 1855, succeeded Longfellow as professor at Harvard. LL.D., Harvard, and Cambridge, England; D.C.L., Oxford. Was United States minister to Spain, 1877-80, and ambassador to Great Britain, 1880-85. In 1869 he published *Under the Willows, and Other Poems,* and *The Cathedral,* an epic; in 1870; a collection of essays; in 1871, *My Study Windows,* in 1887, *Democracy;* in 1888, *Political Essays. Heartsease and Rue,* etc. Among his poems, the best known are *The Vision of Sir Launfal; The First Snowfall,* and the *Commemoration Ode.* He died in Cambridge, 1891.

Lowell, Percival, author, astronomer, was born in Boston, Mass., 1855. He was graduated at Harvard, 1876; LL.D., Amherst, 1907. He went to Japan in 1883, and lived there from time to time until 1893; established the Lowell observatory, 1894, and undertook an eclipse expedition to Tripoli, 1900. He received the Janssen medal of the French astronomical society, 1904, for researches on Mars, and made discoveries on the planets, especially Mars; was appointed non-resident professor of astronomy, Massachusetts Institute of Technology. Author: *Annals of the Lowell Observatory; The Solar System; Mars and Its Canals,* etc. Died, 1916.

Lowther (*lou'thĕr*), **James William,** British statesman, speaker of the House of Commons since 1905, was born in 1855. In 1883 he was elected to parliament for Rutland; contested Mid-Cumberland, 1885; was under-secretary for foreign affairs, 1891; represented Great Britain at International conference at Venice, 1892; chairman of committee on ways and means and deputy speaker, 1895-1905.

Loyola, Ignatius (*lō-yō'lä*), original name Inigo Lopez de Recalde, the founder of the order of the Jesuits, was descended from a noble Biscayan family, born at the castle of Loyola, Guipuscoa, in 1491, and died 1556. He was attached in his youth as a page to the court of Ferdinand and Isabella, and trained up in all the vices and frivolities peculiar to his position.

When still a young man he entered the army, and during the defence of Pampeiuna in 1521, against the French, he was severely wounded, and a long and tedious confinement was the result. The only books he found to relieve its tedium were books of devotion and the lives of saints. This course of reading induced a period of mystical devotion in which he renounced the world, made a formal visit to the shrine of the Virgin at Montserrat, and vowed himself her knight.

After his dedication he made a pilgrimage to Rome and Jerusalem, and from 1524 to 1527 attended the schools and universities of Barcelona, Alcala and Salamanca. In 1528 he went to Paris, where he went through a seven years' course of general and theological training. Here in 1534 he formed the first nucleus of the society which afterwards became so famous. Francois Xavier, professor of philosophy, Lainez, and others joined with Loyola and bound themselves together to devote their lives to the care of the church and the conversion of infidels.

Rome ultimately became their headquarters, when Loyola submitted the plans of his new order to Paul III., who, under certain limitations, confirmed them, 1540. Loyola continued to reside in Rome and govern the society he had constituted till his death. He was beatified in 1607 by Paul V., and canonized in 1622 by Gregory XV.

References.—Of the complete *Lives,* the best in English are those by Genelli, and Stewart Rose. In French, the *Life* by Bartoli. See also Druffel's *Ignatius v. Loyola;* Gothein's *Ignatius v. Loyola und die Gegenreformation;* and Joly's *Ignace de Loyola.*

Lubbock (*lub'uk*), **Sir John, Lord Avebury,** English naturalist and politician, was born in London, 1834. He was educated at Eton College, then entered his father's banking house, and in 1858 became a member of parliament, where he served at intervals until elevated to the peerage, in 1900, as Lord Avebury. He is the author of *Prehistoric Times; The Origin of Civilization and the Primitive Condition of Men; Fifty Years of Science: Pleasures of Life,* etc. Died, 1913.

Lucretius (*lu-krē'shi-us*), or **Titus Lucretius Carus,** Roman poet of the first rank, was born about 99 B. C. His principal work, *De Rerum Natura,* in six books, appeared 56 B. C. and is still unequaled as a philosophical didactic poem. Died about 55 B. C.

Lucullus (*lū-kul'us*), **Lucius Licinius,** celebrated Roman general, was born about 110 B. C. He twice defeated Tigranes of Armenia; but his legions became mutinous, and he was superseded by Pompey, in 66 B. C. He attempted to check Pompey's power, and was consecutively edile and consul, but soon withdrew from politics. He died about 57 B. C.

Luini (*lōō-ē'nē*), or **Luvino, Bernardino,** painter of the Lombard school, was born at Luino, about 1475. His skill was developed in the school of Leonardo da Vinci; indeed, many of his works were at one time attributed to that great artist. He is one of the five great painters whose "supremacy" Ruskin affirmed. Died about 1533.

Lummis (*lum'-is*), **Charles Fletcher,** American author, explorer, was born at Lynn, Mass., 1859. He was graduated at Harvard, 1881; Litt.D., Santa Clara College. Edited newspaper in Ohio, 1882-84. He was city editor *Los Angeles Daily Times,* 1885-87; lived five years in Indian Pueblo of Isleta, New Mexico, learning Indian languages and customs; traveled all over the southwest on horseback; also in Mexico and South America; has explored entire continent from Canada to Chili. Editor: *Out West Magazine; The King of the Broncos; The Enchanted Burro; The Awakening of a Nation; Mexico To-Day,* etc. Died, 1928.

Lurton, Horace Harmon, American jurist, was born at Newport, Ky., 1844. He was graduated at Cumberland University, Tennessee, 1867; D.C.L., University of the South, 1899. Judge of the United States circuit court, 6th judicial circuit, 1893-1909, and became associate justice of the United States supreme court in 1909. He was for a number of years professor of constitutional law and dean of the law department, Vanderbilt University. Died, 1914.

Luther, Martin, great German religious reformer, was born at Eisleben, 1483, and died there 1546. At school he made rapid progress in Latin and other studies and in 1501 entered the University of Erfurt; here in 1505 he received a master's degree.

About this time he discovered in the library of the university a Latin Bible, and found, to his no small delight, that it contained more than the excerpts in common use. He was destined by his father to the law, but his more intimate acquaintance with the Bible induced him to turn his attention to the study of divinity, with the view of entering monastic life. Contrary to the wishes of his father, he entered the monastery of the Augustines at Erfurt in 1505. In 1507 he was consecrated priest, and in 1508, by the influence of his patron, Staupitz, who was provincial of the order, he was made professor of philosophy in the new University of Wittenberg.

In 1510 he visited the court of Pope Leo X. at Rome on business connected with the order. Returning to Wittenberg he was made a doctor of theology in 1512, and here his profound learning and powerful eloquence drew large audiences. At that time he had no controversy with the pope or the church, but the arrival in 1517 of John Tetzel in Wittenberg selling indulgences for sins roused the fiery energy of Luther, and caused him to draw up his famous protest in ninety-five propositions, which he nailed to the church-door in Wittenberg. The result was that the sale of indulgences ceased, Tetzel fled, and a great religious commotion spread rapidly through Germany.

Luther was summoned to Rome to explain his heretical proceedings, but refused to go; nor were the efforts of Cardinal Cajetan able to effect a reconciliation between him and the pope. His dispute with Dr. Eck at Leipzig in 1519, in which he denounced indulgences, and questioned the authority of the pope, was followed in 1520 by a bull of anathema—a document which Luther straightway burned publicly in Wittenberg.

This open defiance of Rome required him to vindicate his conduct, which he did in a

pamphlet addressed to the *Christian Nobles of Germany*, with the result that many rallied to his aid. When summoned to appear before the German emperor, Charles V., at the Diet of Worms (1521), Luther appeared, acknowledged his writings, made an eloquent defence, but refused to recant. When he retired from Worms he was met by a friendly troop of soldiers belonging to Frederick the Elector of Saxony, who conveyed him to the castle of Wartburg, where he remained for nearly a year. Here he employed his time in translating the New Testament into German, but when he heard that disturbances had been excited in Wittenberg on the question of images, he could no longer bear the restraint of inaction. Returning suddenly, Luther succeeded in quieting the people by means of a wise and patient moderation.

In 1524 he laid aside his cowl as a priest of the Roman church, and in 1525 married Catharina von Bora, one of nine nuns who had renounced their religious vows under his teaching. The wisdom of this marriage was doubted by his friends, but his home-life and the birth of six children, contributed greatly to the happiness of the reformer.

From the year 1521 Luther had been busy translating the Bible into German with the aid of Melanchthon and others, and the great task was completed in 1534. This important work, taken in connection with the protestant confession made at Augsburg in 1530, served to establish the reformer's doctrines in Germany, and closed the important part of his public life. He continued, however, till the end his private work of teaching, preaching and writing.

The massive character of the German reformer lay along simple lines and found its full and direct expression in his work. The learning of Calvin, and the balanced judgment of Melanchthon were not his, but a vivid practical insight enabled him to mark the abuses of the Roman church, and his fervid energy urged him to reform them. Behind all the zeal of the reformer he had much lowly human sympathy, humor, tenderness and a love of homely things. This side of his character is most clearly seen in his *Letters* and *Table-Talk*. His German writings were varied and extensive.

References.—Luther has been the subject of numerous biographies, including those of Melanchthon, Michelet, Koestlin, Freytag, Kolde, Jacobs, and T. M. Lindsay. See also Seiss' *Luther and the Reformation*.

Luxembourg (*luk'sĂN'bōōr'*), **Francois Henri de Montmorency-Bouteville, Duke of,** marshal of France, was born in Paris, 1628. In 1667 he served under Conde in Franche-Comte; in 1672 he successfully invaded the Netherlands and, driven back in 1673, conducted a masterly retreat. During the war he stormed Valenciennes and twice defeated the prince of Orange. Made a marshal in 1675, soon after the peace of 1678, he quarreled with Louvois, and was not employed for twelve years. Died, 1695.

Lyall (*lī'al*), **Edna,** pen-name of Ada Ellen Bayly, English novelist, daughter of a London barrister and bencher of Gray's Inn. She was born at Brighton, Sussex, and at an early age took to writing as a profession. Her first story, *Won by Waiting*, was published in 1879, and was followed by *Donovan; We Two; In the Golden Days; Knight Errant;* and *A Hardy Norseman*, etc. Her books have attained a wide-spread popularity. Died, 1903.

Lycurgus (*lī-kûr'gus*), lawgiver of Sparta, flourished in the ninth century B. C. He was uncle of the young king Charilaus, and governed wisely during his nephew's infancy, then traveled in Crete, Ionia and Egypt. On his return, finding Sparta in anarchy, he redivided property, and remodeled the constitution, military and civil. Lycurgus was afterward honored as a god at Sparta. His laws remained in force for about seven hundred years.

Lyell, Sir Charles, British geologist, was born in Scotland, 1797. He was graduated at Oxford, and studied law, but left his practice and gave himself to the study of geology, to which he had been attracted by Alexander Buckland's lectures when he was at Oxford. He made geological tours in 1824, and again in 1828-30, over various parts of Europe, and published the results of his investigations in the *Transactions of the Geological Society* and elsewhere. The first volume of his great work, *The Principles of Geology*, appeared in 1830, the second in 1832, and the third in 1833. Died, 1875.

Lyon, Mary, American educator, founder of Mount Holyoke College, was born at Buckland, Mass., 1797. In 1837 she founded the famous seminary, now Mount Holyoke College, at South Hadley, Mass., upon the plan of uniting domestic service with intellectual culture. She died at South Hadley, Mass., 1849.

Lysander (*lī-san'dĕr*), Spartan soldier, son of Aristoclitus. In 407 B. C., he became commander of the Spartan fleet in the Ægean, and defeated the Athenian fleet off Notium. As the Lacedæmonian law did not allow the office to be held twice by the same person, he was there named vice admiral, nominally subordinate to Aracus. He captured, at Ægospotami in the Hellespont, the entire navy of Athens, except eight or nine galleys, which escaped with Conon to Cyprus, and in 404 B. C. ended the Peloponnesian war by the capture of Athens. Died, 395 B. C.

Lysias (*lis'i-as*), Greek orator, was born about 450 B. C., son of a rich Syracusan, who settled in Athens about 440 B. C. The first use to which Lysias put his eloquence was, on the fall of the Thirty in 403 B. C., to prosecute Eratosthenes, the tyrant, chiefly to blame for his brother's murder. His thirty-four surviving speeches show Lysias delightfully lucid in thought and expression, and strong in character drawing. Died, 380 B. C.

Lysimachus (*lī-sim'a-kus*), Greek general, king of Thrace, was born about 360 B. C. On the division of the provinces, after the death of Alexander in 323 B. C., Thrace and the region bordering on the Danube were allotted to him. In 306 B. C. he assumed the title of king. Lysimachus so improved and enlarged New Ilium and the Mysian Alexandria that he came to be regarded as their founder. In 288 B. C. he formed a confederacy with Ptolemy, Seleucus, and Pyrrhus against Demetrius Poliorcetes, and acquired Macedonia. Having consented to the death of his son Agathocles at the instigation of his new wife Arsinoë, daughter of Ptolemy, his Asian subjects rebelled, and with the aid of Seleucus defeated and slew Lysimachus at Corus in Phrygia, 281 B. C.

Lytton, Edward George Earle Lytton, Bulwer, Lord, eminent English novelist, was born in Norfolk, of an ancient family, 1803. In 1826 he was graduated at Cambridge, and published in 1827 his first novel, *Falkland*. In the year following *Pelham* appeared—a work which placed him at once in the first rank of contemporary writers of fiction. Thenceforward his literary career was one of meteoric brillancy; novel after novel, drama after drama, flowed from his pen almost without intermission. In 1866 he was created a peer of the realm. Among his principal novels are: *The Disowned; Devereux; Paul Clifford; Eugene Arm; Night and Morning; Zanoni; The Last of the Barons; Harold, the Last of the Saxon Kings; The Caxtons; Kenelm Chillingly*, etc. He is also author of the plays, *The Lady of Lyons, Richelieu*, and *Money*, and of the poems, *The New Timon*, and *King Arthur*. Died, 1873.

Lytton, Edward Robert, Earl of, "Owen Meredith," poet, diplomat and statesman, was born at London, 1831. He was educated at Harrow and at Bonn. In 1849 he came to Washington as an attaché and private secretary to his uncle, Sir Henry Bulwer. In 1873 he succeeded his father as second Lord Lytton, and in 1876 became viceroy of India. In 1892 he was appointed English ambassador to France. His literary works, of which perhaps the most popular is *Lucile*, have been published under his pseudonym. He also wrote *Clytemnestra; The Wanderer; The Ring of Aamsis;* and *Fables in Song*. Died, 1891.

Maartens (*mär'tens*), **Maarten,** pen name of J. M. W. van der Poorten-Schwarz, Dutch author, was born at Amsterdam, 1858. He attended school in Germany, and studied law at Utrecht University. He is the author of a series of powerful novels, including *The Sin of Joost Avelingh; A Question of Taste; My Poor Relations; Dorothea; The Jailbird*, a one-act play; *The Healers; The Woman's Victory; The New Religion*, etc. Died in 1915.

Mabie, Hamilton Wright, American journalist and writer, associate editor of *The Outlook*, was born at Cold Spring, N. J., 1846. He was graduated at Williams College and Columbia Law School; L.H.D., Williams; LL.D., Union College and Western Reserve University. Author: *Norse Stories Retold From the Eddas; Nature in New England; My Study Fire; Works and Days; Parables of Life; Backgrounds of Literature; Myths Every Child Should Know*. Died, 1916.

Mabillion (*mà'bē'yôn'*), **Jean,** French scholar and historian, was born at St. Pierremont in Champagne, 1632. In 1653 he entered the Benedictine order, in 1663 became keeper of the monuments at St. Denis, and from 1664 worked in the abbey of St. Germain-des Prés at Paris. He edited St. Bernard's works, and wrote a history of his order: also *De Re Diplomatica; Vetera Analecta; Musæum Italicum*, etc. Died, 1707.

Macaulay (*mà-kô'lī*), **Thomas Babington, Lord,** British historian and statesman, was born at Rothley Temple, Leicestershire, 1800. He entered Trinity College, Cambridge, at the age of eighteen, where he acquired a brilliant reputation both as a scholar and debater. In 1825 he contributed to the *Edinburgh Review* his famous essay on Milton, the eloquence, brilliancy of fancy, and generous enthusiasm of which quite fascinated the educated portion of the public. He was elected to parliament in 1830, where he made a brilliant reputation; and in 1834 went to India as legal adviser of the supreme council. In 1839 he was appointed war secretary. While holding this office he composed the *Lays of Ancient Rome*, and in the following year published a collected series of his *Essays*, in three volumes. In 1848 appeared the first two volumes of his *History of England from the Accession of James II*. The third and fourth volumes of his *History* were published in 1855. Died, 1859.

McAdoo (*mak-à-dōō'*), **William Gibbs,** lawyer, public official, was born near Marietta, Ga., 1863, and was educated at the University of Tennessee. He was deputy clerk of United States circuit court of Tennessee, 1882; studied law and was admitted to the bar, 1885; practiced at Chattanooga. He removed to New York to practice in 1892. In 1902 he was elected president of the Hudson and Manhattan railroad, and completed in 1909 the fourth tunnel under the Hudson River. Appointed Secretary of the Treasury by President Wilson in 1913.

MacArthur, Arthur, American soldier, was born in Springfield, Mass., 1845. He was educated in the public schools of Milwaukee and by private tutors. He entered the union army in 1862 as first lieutenant, served throughout the Civil War, and entered the United States army, 1866. Awarded medal of honor, 1890, for seizing colors of regiment at critical moment and planting them on captured works on the crest of Missionary Ridge, 1863. He commanded the third expedition to Manila, and took part in the battle of Manila, August, 1898. He was subsequently commander of the division of the Philippines and military governor, 1900-01, and was created lieutenant general of the U. S. army, 1906. Died, 1912.

MacArthur, Robert Stuart, American clergyman, was born at Dalesville, Quebec, Canada, 1841. He was graduated at the University of Rochester, 1867; Rochester Theological Seminary, 1870; LL.D., Columbian, Washington, 1896. He was correspondent for years of the *Chicago Standard;* long editorially connected with *Christian Inquirer*, and *Baptist Review*, and was also a well-known lecturer on foreign travel. He was pastor of Calvary Baptist church, New York. Died, 1923.

McBurney, Charles, American surgeon, was born in Roxbury, Mass., 1845. He was graduated at Harvard, 1866, and from the College of Physicians and Surgeons, New York, 1870. He was in practice as surgeon in New York from 1870; was professor of clinical surgery, College of Physicians and Surgeons, beginning 1896, and was consulting surgeon to President McKinley after the President was shot by an assassin in 1901. Died, 1913.

McCall, Samuel Walker, American congressman, lawyer, was born in East Providence, Pa., 1851. He was graduated at Dartmouth College, 1874, and was admitted to the bar, 1876. Member of the Mass. house of representatives, 1888, 1889, and 1892; member of Congress, eighth Massachusetts district, 1893-1913. Died, 1923.

McCarthy, Justin, British novelist and historian, was born at Cork, Ireland, 1830. He was educated privately at Cork, and engaged in journalism there, 1848-52; in Liverpool, 1852-60; and London, 1880. Was chairman of Irish parliamentary party, 1890-96. Author of many novels including: *Miss Misanthrope; Dear Lady Disdain; Donna Quixote; Maid of Athens; Red Diamonds; Mononia*, etc.; histories: *A History of Our Own Times; Reminiscences*. Died, 1912.

McClellan, George Brinton, American general, was born at Philadelphia, Pa., 1826. He was graduated at West Point, 1846. In 1861 he was commissioned major-general of the United States army, and appointed in command of the department of the Ohio. He subsequently commanded the army of the Potomac, but after indecisive engagements, was superseded by General Burnside, 1862. In 1865, as a democrat, he was the unsuccessful opponent of Lincoln for the presidency. Died, 1885.

McClellan, George Brinton, lawyer, public official, was born at Dresden, Saxony, 1865, during the residence of his parents, General George Brinton and Ellen M. McClellan, in that city. He was graduated at Princeton, 1886; LL.D., 1905; LL.D., Fordham University, 1905, Union College, 1906. Admitted to the bar, 1892; president of board of aldermen, New York, 1893 and 1894; member of congress, 1895-1903, and mayor of New York, 1903-10; Democrat. Hon. Chancellor Union U., 1906; Stafford Little lecturer on public affairs, 1908-10; university lecturer public affairs, 1911-12, prof. econ. history Princeton University since 1912.

McCloskey, John, American prelate, first cardinal of the Roman Catholic church in America, was born at Brooklyn, N. Y., 1810. He was the first president of St. John's College (now Fordham University), Fordham, N. Y., 1841-42; was consecrated bishop of Albany in 1847; archbishop of New York in 1864, and in 1875 was created cardinal. He built the cathedral at Albany, the Theological Seminary at Troy, was an effective preacher, and otherwise noted as an able executive and administrator. He died at New York, 1885.

McCormack, John, a recognized tenor of superior quality, was born in Athlone, Ireland, 1885. Winning in a musical competition at the Dublin Musical Festival inspired and enabled him to go to Italy to study. His success was so complete that he was engaged for Covent Garden, 1907. Has appeared in most of large cities of the United States.

McCormick, Cyrus Hall, American inventor, was born at Walnut Grove, Va., 1809. He invented a reaping machine, patented in 1831, which possessed all the essential points of modern machines and in 1847 established the McCormick Harvesting Machine Company (Chicago) in partnership with his brother. He made large gifts to education and endowed a chair at Washington and Lee University. He had only a common school education. Died in 1884.

McCormick, Robert Sanderson, American diplomat, was born in Rockbridge county, Va., 1849. He was graduated at the University of Virginia; envoy extraordinary and minister plenipotentiary, 1901-02, and first ambassador, 1902, to Austria-Hungary; United States ambassador to Russia, 1902-05, to France, 1905-07. Died. 1919.

McCosh, James, 1811-1894, educator and philosopher, was born in Ayrshire, Scotland. Educated at the University of Glasgow and Edinburgh, he was appointed to the chair of logic and metaphysics in Queen's College. In 1868 was elected president of College of New Jersey at Princeton, which position he held for twenty years. He wrote *First Fundamental Truths* and *Religious Aspects of Evolution.*

MacCracken, Henry Mitchell, American educator, chancellor of New York University 1891-1911, was born at Oxford, Ohio, 1840. He was graduated at Miami University, 1857; D.D., Wittenberg, 1878; LL.D., Miami, 1887; chancellor of Western University, Pittsburg, Pa., 1881-84; vice-chancellor and professor of philosophy, New York University, 1884-91; deputy to general assembly, Free church of Scotland, 1867, and to Irish Presbyterian general assembly, 1884. Author: *Tercentenary of Presbyterianism; Kant and Lotze; A Metropolitan University,* etc. Died, 1918.

McCrea, James, American railway president, was born in Philadelphia, 1848. He entered the railway service in 1865; with Pennsylvania railroad, 1871-82, consecutively as assistant engineer and division superintendent; manager, general manager, and fourth vice-president, Pennsylvania lines west of Pittsburg, 1882-90; second vice-president, 1890-91; first vice-president, 1891-1907; and president of Pennsylvania railroad company, 1907-1913. Died, 1913.

McCumber, Porter James, lawyer, United States senator from North Dakota, was born in Illinois, 1858. Taught school for a few years, and took a law course in the University of Michigan, graduating in 1880. He removed to Wahpeton, North Dakota, 1881, where he practiced his profession. He was a member of the territorial legislature, 1895 and 1897; was elected to the United States senate, 1899, and reslected in 1905 and 1911.

McCutcheon, George Barr, journalist, author, was born on a farm in Tippecanoe county, Indiana, 1866. He was graduated at Purdue University, and was city editor of the *Lafayette Courier,* 1893. Author: *Graustark; Beverly of Graustark,* etc., and numerous short stories. Died, 1928.

Macdonald, George, Scottish poet and novelist, was born at Huntley, 1824; was educated at Aberdeen and the Independent College at Highbury, and became pastor at Arundel and at Manchester. His first book was one of verse, and a long series of novels followed, including *David Elginbrod; The Portent; Alec Forbes; Annals of a Quiet Neighborhood; Malcolm; St. George and St. Michael.* In 1872-73 he made a lecturing tour in the United States; in 1877 received a pension of 100 pounds. Died, 1905.

Macdonald, J. A., Canadian journalist, managing editor of *The Globe,* Toronto, beginning 1902, was born in Middlesex, county of Ontario, Canada, 1862. He was graduated at Knox College, Toronto, 1887; was ordained to ministry of the Presbyterian church, and inducted pastor of Knox church, St. Thomas, Ontario, 1891. He was principal of the Presbyterian Ladies' College, 1896-1901; and was appointed by Ontario government to serve for six years on first board of governors of the University of Toronto, 1906. Died in 1923.

Macdonald, Sir John Alexander, distinguished Canadian statesman, was born in Glasgow, 1815. His parents settled in Canada during his childhood, and he was educated at Kingston Grammar School, studied law, and was admitted to the Canadian bar in 1836. He entered the Canadian parliament in 1844; attorney-general, 1854-62 and 1864-67; prime minister, 1858. He was chairman of the London colonial conference 1866-67, and more than any other person was responsible for Canadian federation. After its establishment, he was head of the new Dominion government, as minister of justice and attorney-general, 1867-73, when he resigned from the cabinet. From 1878 until his death he was premier of the Dominion. He died at Earnscliffe Hall, near Ottawa, 1891.

MacDowell, Edward Alexander, composer, was born in New York City, 1861. He studied at home, then in Europe, at Paris and in Germany, where he lived for eight years. At this time he met Raff and Liszt and gave many concerts. He returned to America in 1888 and in 1896 was made the first professor of music at Columbia University. He suffered a mental breakdown from overwork in 1905 and died in 1908. Among his best known compositions are *Woodland Sketches* and *Sea Pieces* for the piano, the orchestral *Indian Suite,* sonatas and symphonic poems.

McGee, Anita Newcomb, American physician, was born at Washington, D. C., 1864, daughter of Professor Simon Newcomb. She was educated in private schools, and graduated at Columbian University, M.D., 1892. In 1888 she married W. J. McGee, the anthropologist. She was appointed, in 1898, acting assistant surgeon of United States army, being the only woman to hold such a position. In 1904, she took a party of trained nurses, formerly in the United States army, to serve gratuitously in the Japanese army for six months.

McGiffert, Arthur Cushman, American Theological writer and critic, professor of church history, Union Theological Seminary, New York, since 1893, was born at Sauquoit, N. Y., 1861. He was graduated at Western Reserve College, 1882; Union Theological Seminary, 1885; University of Marburg, Germany, Ph.D., 1888; studied in Germany, 1885-87, and in France and Italy, 1887-88.

McGrath, Harold, journalist, author, was born in Syracuse, N. Y., 1871, and has been engaged in journalism since 1890. Author: *Arms and the Woman; The Man on the Box; Hearts and Masks; Half a Rogue; The Best Man; The Lure of the Mask; The Puppet Crown; The Grey Cloak; The Princess Elopes; Enchantment; The Watteau Shepherdess,* an operetta; *The Goose Girl;* and numerous magazine stories. Died, 1932.

McGraw, John J., baseball player and manager, was born at Truxton, N. Y., 1873. He started playing professionally with the Olean Club in 1890, played with Baltimore from 1891 to 1899, when he became manager, then went with St. Louis. In 1901-02 he managed the Baltimore Orioles, then became manager of the Giants (New York National League). The Giants have held the highest record of victories in the national league.

Machiavelli (*mä'kyä-vel'lē*), **Niccolo di Bernardo del,** Italian statesman and author, was born in Florence, Italy, 1469, son of a jursit of good family. He was secretary of state at Florence from 1498 to 1512, went on several important missions, but was deprived of office and exiled in the latter year by the Medici. His chief works were *Il Principe; Istorie Fiorentine; Arte della Guerra,* some comedies and poems; and *Discorsi sulle Deche di Tito Livio.* In 1521 he again took part in public affairs for a short time, but died in poverty, 1526.

Mack, Norman Edward, American journalist and politician, editor and publisher of the *Buffalo Times,* was born in Canada, 1858. He was a delegate to the national democratic conventions of 1892, 1896, 1900, 1904, 1908, 1912, 1916, 1920 and 1924; is a member of the national democratic committee and member executive committee of the same, since 1900; and was chairman in 1908.

McKenna, Joseph, American lawyer and jurist; born at Philadelphia, Pa., 1843; educated at the College of St. Augustine, Benicia; studied law and was admitted to the bar in 1865. Assisted in the framing of the McKinley tariff of 1890. Appointed to the United States circuit bench of the Pacific slope in 1893; attorney-general of the United States, 1897-98; appointed associate justice of the United States supreme court, 1898. Died, 1926.

Mackensen, August von, German general, born at Haus Leipnitz, Saxony, 1849. Served as volunteer in the Franco-Prussian war; raised to nobility, 1899; in European war directed the Austro-German drive, which swept Russians from the Carpathians in 1915; honored for signal victories in Balkan campaign in 1916. Autnor of a military history.

Mackenzie, Alexander, Canadian statesman, born near Dunkeld, Scotland, 1822; moved to Canada in 1842 and engaged in contracting. Elected to the assembly, 1861-67, and remained a member for twenty-five years. Became premier of the Dominion and minister of public works. Resigned upon election of a conservative majority in 1878. Died, 1892.

McKenzie, Alexander, Congregational clergyman, was born at New Bedford, Mass., 1830. He was graduated at Harvard, 1859; Andover Theological Seminary, 1861; D.D., Amherst, 1879, Harvard, 1901; pastor First church, Cambridge, beginning 1867. He was a trustee of Phillips Academy, Andover, and Hampton Institute, Virginia; lecturer at Andover Theological Seminary, and president of trustees of Wellesley College. Author: *Two Boys; A Door Opened; Now,* etc. Died, 1914.

McKim, Charles Follen, American architect, was born in Chester county, Pa., 1847. He was educated at Lawrence Scientific School, Harvard, 1866-67. He began practice, 1872, joined in partnership by William R. Mead, 1877, and by Stanford White in 1879 as McKim, Mead and White. Among the notable buildings erected by the firm are: Columbia University; state capitol, Rhode Island; music hall, public library, Boston; Newport casino; University, Harvard, Century clubs, New York, etc. He was a member of the congressional commission for the improvement of Washington park system. He was awarded the royal gold medal by King Edward for promotion of architecture, 1903. Died, 1909.

McKinley, William, American statesman, twenty-fifth president of the United States, was born in Niles, Ohio, 1843. He was educated in the public schools, at the Poland, Ohio, Academy. In 1861 he volunteered in the Union army, and entered the 23rd Ohio infantry as a private. He served four years, rising by merit and faithfulness to the captaincy of his company, and to the rank of major when mustered out in 1865. He then at once began the study of law; in 1867 he was admitted to the bar, and commenced practice at Canton, Ohio, where he afterward had his residence. Elected to congress in 1876, and for six successive terms. In 1882 his election was contested, and he was unseated, but triumphantly returned at the next election. His reputation in congress rests chiefly on the tariff bill that bears his name. It was drawn by him as chairman of the ways and means committee, and passed by the fifty-first congress. In 1891 he was elected governor of Ohio by a large plurality over former Governor James E. Campbell, a very popular democrat, and re-elected in 1893 in the reactionary tidal wave of politics, following a contrary tariff policy, that carried the republican party back to power in congress. By this time his name was frequently mentioned as future candidate for the presidency. He was nominated and elected by an electoral majority of ninety-five, after a campaign of more intense interest than was displayed in any election since the Civil War. President McKinley's first term is memorable chiefly for the occurrence of the Spanish-American war and its unexpected results. That his policies during 1896-1900 were acceptable was shown by his unanimous renomination and reëlection in 1900 by an electoral majority of 137. His second term began most auspiciously and ended tragically. On September 5, 1901, he visited the Pan-American exposition in Buffalo, N. Y., that day having been set apart in his honor and called the "President's Day." On the afternoon of the following day, while holding a public reception in the temple of music, he was shot twice by Leon F. Czolgosz, an anarchist, who was at once arrested. The wounded president was taken first to the emergency hospital on the exposition grounds for immediate treatment, and then removed to the residence of John G. Milburn, president of the exposition. Hopes of his recovery were entertained for several days, but on September 13 he began to sink rapidly and died at 2.15 A. M., September 14. His remains were removed to Washington on September 16, lay in state in the capitol on the 17th, and were taken to his home city, Canton, Ohio, where they were interred on the 18th.

Mackintosh, Sir James, Scotch philosopher and politician, was born in Inverness-shire, 1765. He was recorder at Bombay, 1803; judge of admiralty, Bombay, 1806; returned to England, 1811, and entered parliament, 1813. Contributed a masterly preliminary *Disertation on Ethics* to the *Encyclopædia Britannica;* wrote the *History of the Revolution in England in* 1688, etc. Died at London, 1832.

Maclaren, Ian, pseudonym of John Watson, Scotch preacher and writer, was born at Manningtree, Essex, 1850, of Scottish parents. He was educated at Edinburgh University and at Tübingen. In 1893 he acquired great distinction and a wide fame by a series of Scottish prose idylls, written for the *British Weekly,* and afterward published under the title of *Beside the Bonnie Brier Bush.* This work won deserved praise for the fidelity with which he portrayed humble and reverent Scottish life and scenes. The volume was followed by *The Days of Auld Lang Syne.* Died, 1907.

McLaughlin (*mak-lôf'lin*), **Andrew Cunningham,** American historian and educator, was born at Beardstown, Ill., 1861. He was graduated at the University of Michigan, 1882; law department, 1885; A.M., 1895. Professor of American history, 1891-1906, University of Michigan, and professor of history, University of Chicago, since 1906. He was director of the bureau of historical research, Carnegie Institution, Washington, 1903-05. Author: *Lewis Cass,* in American Statesmen series. Editor: Cooley's *Principles of Constitutional Law; The Study of History in Schools,* etc.

MacLean, George Edwin, American educator, was born at Rockville, Conn., 1850. He was graduated at Williams College, 1871; Yale theological seminary, 1874; University of Leipzig, Ph.D., 1883. Chancellor University of Nebraska, 1895-99; and president of the University of Iowa, 1899-1911. Author: *A Chart of English Literature; Old and Middle English Reader; A Decade of Development in American State Universities.*

MacMahon (*mak'ma'ôn'*), **Marie Edme Patrice Maurice de,** French general and statesman, was born at Sully near Autun, 1808. In 1859 was made marshal and duke of Magenta. In the Franco-Prussian war, 1870-71, he commanded the first army corps, but was defeated at Worth, and captured at Sedan. After the war, as commander of the army at Versailles, he suppressed the commune. In 1873 he was elected president of France for seven years, and was suspected, perhaps not unjustly, of reactionary and monarchical leanings. He resigned in 1879, and died at Château la Foret, 1893.

McMaster, John Bach, American Historian, professor of American history in the University of Pennsylvania since 1883, was born in Brooklyn, N. Y., 1852. He was graduated at the College of the city of New York, 1872; Ph.D., Litt.D., LL.D., was a civil engineer, 1873-77, and instructor in civil engineering at Princeton, 1877-83. Author: *A School History of the United States; A Primary School History of the United States.* Died, 1932.

MacMillan, Donald Baxter, explorer and ethnologist, was born in 1874 and educated at Bowdoin College. He taught for several years, then joined the Peary expedition to the North Pole, 1909. In 1910 he went with Cabot, remaining for two years to study among the Esquimos. He led the Crocker land expedition, 1913-1917; the Baffin land expedition, 1920-1922; the North Greenland expedition, 1923-1924; the Polar expedition, 1925; and the Labrador expedition, 1926. He has written many scientific articles and a book, *Four Years in the White North.*

MacMonnies (*mak-mun'iz*), **Frederick William,** American sculptor, was born in Brooklyn, N. Y., 1863. He studied under Augustus St. Gaudens at the Academy of Design and Art Students' League, and completed his art education at Munich. He has received many prizes and decorations, and executed the following works, among others: Sir Henry Vane, Boston Public Library, 1893, central bronze doors and statue of Shakespeare, Congressional library; etc.

McMurry, Charles Alexander, educator, was born at Crawfordsville, Ind., 1857, graduate of Illinois Normal University, 1876; University of Michigan, 1876-80; Ph.D., University of Halle, 1887. Principal of practice school, Illinois State Normal University and lecturer Teachers' College, University of Chicago, 1899, 1900; Principal Practice School, Northern Illinois Normal School, 1900-01; professor of elementary education, George Peabody College of Teachers, Nashville, Tenn., since 1915.

McReynolds, James Clark, Associate Justice U. S. Supreme Court, lawyer, was born at Elkton, Kentucky, February 3, 1862; son of Dr. John O. and Ellen (Reeves) McReynolds. He was graduated from Vanderbilt University, 1882; and from the law department of University of Virginia, 1884. He practiced at Nashville, Tennessee, many years; was professor of law at Vanderbilt University, 1900-3; Assistant Attorney-General of the United States, 1903-07; Attorney-General, 1913; engaged in private practice in New York until 1914; then made an Associate Justice of U. S. Supreme Court. He was long especially retained by the Government in matters relating to enforcement of anti-trust laws, particularly in proceedings against the tobacco trust and the combination of the anthracite coal railroads.

MacSwiney, Terence, Lord Mayor of Cork, assumed that office upon the death of Lord Mayor MacCurtain, who was murdered by the constabulary. After he became prominent in the Sinn-Fein movement, his life consisted mainly of arrests, his first being in May 1916. Deported without trial, released without explanation only to be re-arrested, re-deported and re-released without explanation, he was arrested on August 12, 1920, and for the fourth time deported to England where he died after a sixty-four day hunger strike.

McVeagh, Franklin, merchant, secretary of the treasury, was born in Chester county, Pa. He was graduated from Yale, 1852, Columbia Law School, New York, 1854; abandoned the practice of law because of ill health and went to Chicago, 1866; established firm of Franklin MacVeagh & Co., wholesale grocers of which he remained head until 1909; again president since 1925. He was president of the bureau of charities and municipal art league; member of the executive committee, national civic federation, and vice-president of the American Civic Association, 1905. He was secretary of the treasury, 1909-1913.

McVeagh, Wayne, American lawyer, was born near Phoenixville, Chester country, Pa., 1833, He was graduated from Yale, 1853, and was admitted to the bar, 1856. United States minister to Turkey, 1870-71; member of Pennsylvania constitutional convention, 1872-74; head of "McVeagh commission" sent to Louisiana, 1877, by President Hayes amicably to adjust disputes of contending parties there; United States attorney general in cabinet of President Garfield, 1871, was ambassador to Italy, 1893-97, and chief counsel of the United States in the Venezuelan arbitration before the Hague tribunal, 1903. Died in 1917.

Madison, James, fourth president of the United States, was born in King George county, Va., 1751. He was graduated at Princeton, N. J., 1771, and studied law. He was sent to the federal congress, 1780; in 1784, to the legislature of Virginia, in which he supported the measures of Jefferson in the revision of the laws, and placing all religious denominations on an equality of freedom without state support. He supported the adoption of the constitution, but opposed the financial policy of Hamilton, and became a leader of the republican, or Jeffersonian party. In 1801, Jefferson having been elected president, Madison was made secretary of state, which post he held during the eight years of Jefferson's administration. In 1809 he was elected president of the United States. The European wars of that period, with their blockades and orders in council, were destructive to American commerce. The claim of the English government to impress seamen from American vessels was violently resisted. Madison vainly endeavored to avoid a war with England, which, nevertheless, was declared in 1812, and continued for two years, at a cost of 30,000 lives and $100,000,000. In 1817 he retired to his seat at Montpelier, Va., where he served as a rector of the University of Virginia, and a promotor of agriculture and public improvements. Died at Montpelier, 1836.

Maecenas (*mē-sē'nas'*), **Gaius Cilnius,** Roman statesman, was born about 70 B. C. He was the friend of Vergil and Horace, and was celebrated for his patronage of letters. In 31 B. C. Maecenas proved himself an able and vigilant governor of Rome by crushing a conspiracy of the younger Lepidus, and thereby preventing a second civil war. Died, 8 B. C.

Maeterlinck (*mā'tĕr-lingk*), **Maurice,** Belgian author, was born at Ghent, 1862. He was greatly influenced in his thought by Novalis and Emerson, and his first writings were poetical. The following is a list of his chief works, some of which have been translated into English and have attracted considerable attention: *La Princesse Maleine; Pélleas et Mélisande; Alladine et Palomides; Aglavaine et Selysette; Douze Chansons; Le Trésor des Humbles.*

Magellan, Ferdinand, Protuguese navigator, was born about 1480 Under Charles V.'s patronage he and Ruy Falero set out to reach the Moluccas by the west in 1519, reached the Philippines, and died in battle in Matan. On this voyage he discovered the Magellan strait, 375 miles long and 15 miles wide, between the South American mainland and Tierra del Fuego. Died, 1521.

Mahan (*ma-han'*), **Alfred Thayer,** American naval officer and writer, was born at West Point, N. Y., 1840. He was graduated at the United States naval academy, 1859; served in the Civil War; visited Europe in command of the *Chicago*, 1893, receiving many honors, among them degrees from both Oxford and Cambridge. He was retired at his own request in 1896. During the war with Spain he was a member of the naval board of strategy; and in 1899 was appointed by President McKinley one of the American delegates to the universal peace conference at The Hague. Author: *The Gulf and Inland Waters; Influence of Sea Power Upon History; Life of Nelson*, 2 vols.; *Lessons of Spanish War; Retrospect and Prospect; Sea Power in Its Relations to the War of 1812; From Sail to Steam.* Died, 1914.

Mahomet (*ma-hom'et*). See **Mohammed.**

Maine, Sir Henry James Sumner, celebrated English lawyer and writer, was born in 1822. He was educated at Cambridge University, where, in 1847, he became regius professor of comparative jurisprudence at Oxford. In 1847 he was elected Whewell professor of international law at Cambridge. He introduced wise reforms into Indian law, but his work in the origin and growth of legal and social institutions is the work on which his fame mostly rests. His publications include: *International Law; Dissertations on Early Law and Custom*, etc. He died at Cannes, France, 1888.

Major, Charles, American lawyer, author, was born in Indianapolis, Ind., 1856. He was educated in the common schools at Shelbyville and Indianapolis; studed law and practiced at Shelbyville. Author: *When Knighthood Was in Flower; Dorothy Vernon of Hadden Hall*, etc. Died, 1913.

Malebranche (*mäl'brănsh'*), **Nicholas,** French philosopher, was born in Paris, 1638. At the age of twenty-two he entered into the congregation of the Oratory, and he devoted himself to the study of Bible History and of the fathers of the church. He subsequently devoted much attention to Descartes' *Traite de l' Homme*, which led him to the study of philosophy, and called forth his famous work, *De la Recherche de la Verite.* Died at Paris, 1715.

Malherbe (*mäl-erb'*), **Francoi de,** French poet, was born at Caen, 1555. In 1605 he became court poet, and is called the founder of classic poetry in France. Died in Paris, 1826.

Malibran (*mal'i-bran*), **Maria Felicita,** celebrated mezzo-soprano singer, was born at Paris, 1808. She very early showed extraordinary talent, and made her debut in Italian opera, 1628, in London. In New York she married M. Malibran, a French banker. After her husband's failure in business she returned to the stage, and was recieved with great enthusiasm in France, England, Germany and Italy. She was one of the most popular and successful prima donnas of modern times. Died 1836.

Malpighi (*mäl-pē'hē*), **Marcello,** Italian anatomist, was born near Bologna, Italy, 1628. He lectured in Bologna, Pisa and other places, and wrote works on the anatomy of plants, the physiology of the silkworm and medical subjects. His name was given to the Malpighian genus. In 1691 he became physician to Pope Innocent XII., but died in 1694.

Malthus (*mal'thus*), **Thomas Robert,** English political economist, was born near Guilford, England, 1766. He was graduated at Cambridge, 1788; was for some time fellow of Jesus College, Cambridge; published in 1798, his *Essay on Population*, in which he maintained that population tends to increase out of porportion to the increase of means of subsistence. Died, 1834.

Mann, Albert Russel, educator, agricultural writer, was born at Hawkins, Pa., 1880, and graduated from the College of Agriculture, Cornell University, 1904; assistant superintendent Boston Farm School, 1904-5; assistant on Bailey's *Cyclopedia of American Agriculture*, 1905-8; successively assistant professor of dairy industry, secretary and professor of agricultural editing, New York State College of Agriculture, Cornell University, since 1908. Author: *Beginnings in Agriculture*, etc.

Mann, Horace, American statesman and educator, was born at Franklin, Mass., 1796. He was graduated at Brown University, 1819, studied law, and was admitted to the bar, 1823. Member of congress, 1840-53; and from 1853 to 1859 president of Antioch College, Ohio. He wrote: *Lectures on Education; Report of an Educational Tour of Germany, Great Britain, and Ireland;* and was untiring in his efforts in the cause of educational extension and reform, in the suppression of slavery and in the promotion of temperance. Died, 1859.

Mannering, Mary, actress, was born in London, England, 1878, daughter of Richard and Florence Firend. She was educated in private schools; studied for the stage under Herman Vezin; went on the stage at the age of fifteen. She came to the United States under management of Daniel Frohman; made her American debut at Parsons' theater, Hartford, Conn., 1896, in *The Courtship of Leoni;* New York debut, Lyceum theater, four days later. She has since appeared in leading roles in modern drama.

Manning, Edward Henry, English prelate, was born in Hertfordshire, England, 1808. He was graduated at Oxford in 1830, studied theology, and was appointed rector of Lavington and Graffham, Sussex, 1834. He became archdeacon of Chicester, 1840; in 1851 resigned his preferments in the church of England, and joined the Roman Catholic Church; was ordained a priest in 1857; nominated archbishop of Westminster, 1865, and created cardinal, 1875. Died, 1892.

Mansfield, Richard, American actor, was born in Heligoland, Germany, 1857. He studied in England for the East Indian Civil Service; came to Boston and opened a studio, and later entered theatrical profession. He was very successful in a wide repertoire, from *Koko* in *Mikado* to *Richard III*, Was head of his own company, and created such parts as *Beau Brummel, Baron Chevrial*, and the titular roles in *Dr. Jekyll and Mr. Hyde.* Appeared as *Cyranno de Bergerec* in 1899, and played *Shylock, Henry V., Beaucaire*, and *Brutus* in *Julius Cæsar.* Died, 1907.

Mantegna (*măn-ān'yă*), **Andrea,** Italian painter, was born in or near Padua, 1431. A precocious genius, he set up a studio of his own when only seventeen years old. His greatest works were nine pictures representing the *Triumph of Cæsar*, now at Hampton Court, England. He did not aim at grace and beauty in his pictures, but his technical excellences greatly influenced Italian art. Died, 1506.

Mantell (*man'tel*), **Robert Bruce,** actor, was born in Irvine, Ayrshire, Scotland, 1854. He made his professional debut at Rochdale, England, as the Sergeant in *Arrah-na-Pogue*, 1876; came to the United States and played juvenile roles with Mme. Modjeska, 1878; returned to England, and for three years supported Miss Wallis as leading man. Later appeared in New York as *Lord Ippanhoff* in *Fedora* with Fanny Davenport; afterward became a star, and has since been at the head of his own company in classic and romantic plays. Died, 1928.

Manzoni (*măn-dzō'nē*), **Alexandro,** Italian novelist and poet, was born at Milan, 1785. He published his first poems in 1803, married happily in 1810, and spent the next few years in writing sacred lyrics and a treatise on the religious basis of morality. His noble ode, *Il Cinque Maggio*, was inspired by the death of Napoleon. In spite of his Catholic devotedness, he was a strong advocate of a united Italy. Died at Milan, 1873, leaving the memory of a great writer and singularly nobleman.

March, Francis Andrew, American philologist, professor of English language and comparative philology, Lafayette College, 1856-1911, was born at Millbury, Mass., 1825. He was graduated at Amherst, 1845; LL.D., Princeton, 1870; Amherst, 1871; L.H.D., Columbia, 1887; D.C.L., Oxford, England, 1896; Litt.D., Cambridge, England, and Princeton, 1896. Author: *Method of Philological Study of the English Language; Comparative Grammar of the Anglo-Saxon Language.* Died, 1911.

Marconi (*mär-kō'nē*), **Gugliemo,** electrical engineer and pioneer of wireless telegraphy, was born in Girffone, near Bologna, 1874. His father was an Italian, his mother an Irish woman. He was educated at Leghorn and Bologna Universities; LL.D., Glasgow, Aberdeen, and University of Pennsylvania; D.SC., Oxford. He began in 1890, on his father's estate, experiments to test the theory that the electric current is capable of passing through any substance, and, if started in any given direction, of following an undeviating course without need for a wire or other conductor. Soon afterward he succeeded in sending messages from Spezia to a steamer fifteen kilometers distant; also sent messages from Queen Victoria ashore to the prince of Wales on royal yacht, 1897; came to the United States, 1899; used his method in reporting election, 1900; succeeded in establishing wireless telegraphic communication across the Atlantic ocean, 1902; daily ocean news service by wireless telegraphy inaugurated by him on trans-Atlantic liners, 1904.

Marcus Aurelius Antoninus, son of Annius Verus and Domitia Cavilla, was born at Rome, 121 A. D. His qualities attracted the notice of the emperor, Hadrian, who used to term him not *Verus*, but *Verissimus*, and who conferred high honors on him, even while a child. When only seventeen years of age he was adopted, with Lucius C. Commodus, by Antoninus Pius, the successor of Hadrian; and Faustina, daughter of Pius, was selected for his wife. He was made consul in 140 A. D., and from this period to the death of Pius, 161 A. D., he continued to discharge the duties of his various offices with the greatest promptitude and fidelity. He studied oratory under Herodes Atticus and Cornelius Fronto, and his love of learning was insatiable. Even after he had attained to the highest dignity of the state he did not disdain to attend the school of Sextus of Chæronea. Men of letters were his most intimate friends, and he received the highest honors both when alive and dead. His death in 180 A. D., was felt to be a national calamity; he was deified, and for more than a hundred years his image was found among the household gods of the Romans.

Margaret of Angouleme (*ärʹgōōʹlȧmʹ*), queen of Navarre, and daughter of Charles of Orleans, was born in 1492. In 1527 she was married to Henri d'Albert, king of Navarre, to whom she bore a son, who died in infancy, and a daughter, Jeanne d'Albert, mother of the great French monarch, Henry IV. She encouraged agriculture, the arts and learning, and to a certain extent embraced the cause of the reformation. She died at Odos, 1549.

Margaret of Anjou (*ärʹzhōōʹ*), daughter of René of Anjou, was born in 1430. In 1445 she was married to Henry VI. of England. In the wars of the Roses, Margaret, after a brave struggle of nearly twenty years, was finally defeated at Tewkesbury, in 1471, and was kept in the Tower four years, until ransomed by Louis XI. She then retired to France, and died at the castle of Dampierre near Saumur, 1482.

Margaret of Austria, daughter of the emperor Maximilian and Mary of Burgundy, was born at Ghent, Belgium, 1480. She married first John of Castile, and second Philibert of Savoy; was made governor of the Netherlands in 1507, and negotiated both the league of Cambria, in 1508, and the "pair des dames," in 1529. She died at Mechlin, Belgium, 1550.

Margaret of Denmark, daughter of Waldemar IV. of Denmark, was born in 1353. She succeeded her father, became queen also of Norway on the death of her husband, Hakon VIII., but was soon expelled. She recovered Norway in 1387, and, having defeated Albert of Mecklenburg in 1389, united the three Scandinavian kingdoms by the union of Kalmar in 1397. Died, 1412.

Maria Christina, queen-dowager of Spain, was born at Naples, 1806, daughter of Francis I., king of the Two Sicilies. In 1829 she became the fourth wife of Ferdinand VII. of Spain. In 1834 a revolution expelled her from the country, and she took refuge in France, but returned to Spain in 1864, only to retire again in 1868. Died, 1878.

Maria Theresa (*mȧ-rīʹȧ te-rēʹsȧ*), daughter of the emperor Charles VI. of Germany, was born at Vienna, 1717. By the "pragmatic sanction," for which the principal European powers became sureties, her father appointed her heir to his hereditary thrones. Frederick II. of Prussia claimed Silesia, and poured his armies into it; Spain demanded the Austrian dominions in Italy; and the Bavarians, assisted by the French, invaded Bohemia, the elector of Bavaria being crowned emperor as Charles VII., in 1742. The young queen was saved by the chivalrous fidelity of the Hungarians, supported by Great Britain. The empress-queen lost Silesia to Prussia, Parma and Piacenza to Spain, and some Milanese districts to Sardinia. She joined with Russia and Prussia in the first partition of Poland, 1772, securing Galicia and Lodomeria; while from the porte she obtained Bukowina, 1777, and from Bavaria several districts. She died in 1780. A woman of majestic figure and an undaunted spirit, she combined feminine tact with masculine energy; and not merely won the affection and even enthusiastic admiration of her subjects, but raised Austria from a wretched condition to a position of assured power. Of her ten surviving children, the eldest son, Joseph II., succeeded her.

Mariana (*mȧ-rē-ȧʹnȧ*), **Juan,** Spanish historian, was born in 1536. He was a Jesuit, taught theology in Rome, Sicily, and Paris, and finally lived in retirement in Toledo. In 1609 he published at Cologne *Seven Theological and Historical Treatises*, two of which were censured by the inquisition, and the author was subjected to imprisonment and penance. His chief work is his *History of Spain*, which extends to the accession of Charles V. with a summary of later events down to 1621. Died, 1623.

Marie Antoinette (*mȧ-rēʹ ȧn-twȧ-nетʹ*), **Josephe Jeanne,** wife of Louis XVI. of France, youngest daughter of Francis I., emperor of Germany, was born at Vienna, 1755. Soon after the accession of Louis XVI. libels were circulated by her enemies, accusing her of constant intrigues, not one of which has ever been proved. From the first hour of the revolution she was an object of fanatical hatred to the mob of Paris. At last she resolved on flight. Her husband long refused to abandon his country, and she would not go without him. A dim sense of kingly duty and honor was not wanting in Louis, but after the mob stopped his coach in 1791, and would not let him go to St. Cloud, he consented. The flight took place on the night of the 20th of June. Unfortunately the royal fugitives were recognized and captured at Varennes. From this time Marie's attitude became heroic, but the French people could not rid themselves of the suspicion that she was secretly plotting with enemies for the invasion of the country. On August 1, 1793, she was removed to the conciergerie by order of the convention, condemned by the revolutionary tribunal October 16, and guillotined next day.

Marie de'Medici (*mȧ'rēʹ dā mā'dē-chēʹ*), queen of France, daughter of Francis of Tuscany, was born in 1573. She married Henry IV. of France in 1600, and became the mother of Louis XIII., during whose minority she was regent. She was overthrown by Richelieu after a long contest, and left France in 1631. Died, 1642.

Mario (*mȧ'rē-ō*) **Giuseppe,** famous Italian operasinger, was born at Cagliari, Italy, 1810, son of General di Candia. In 1838 he made his first appearance in opera as *Robert* in *Robert le Diable*. In this he achieved the first of many successes in Paris, London, St. Petersburg, and America. Mario married the famous singer, Giulia Grisi, and retired from the stage in 1867. Died, 1883.

Marion, Francis, American general and patriot, was born near Georgetown, S. C., 1732. He received a scanty education, and, after a trial of seafaring life, in which he was wrecked and with difficulty rescued, engaged in farming. His first active service was in Charleston harbor, and later in the defense of Fort Moultrie, 1776. He was present at the siege of Charleston, 1780, raised several companies of volunteers among the country lads, or "cowboys" as the British called them, and with this force marched to the relief of General Gates, at that time in North Carolina. Among the most noted engagements in which he took part may be named Fort Moste, Fort Wilson, Granby, Parker's Ferry and Eutaw. At the close of the war Marion resumed his former occupation and remained on his plantation until his death, 1795.

Marion Harland. See **Terhune, Mary V.**

Marius (*mȧ'ri-us*), **Caius,** Roman general, was born near Arpinum, 157 B. C. He served with distinction at Numantia under the younger Scipio Africanus, and in 119 B. C. was tribune of the plebs. Meanwhile an immense horde of Cimbri and Teutons had burst into Gaul and repeatedly defeated the Roman forces. Marius, consul for the second third, fourth and fifth times, 104-101 B. C., annihilated them after two years' fighting in a terrible two days' battle near Aix, in Provence, where 100,000 Teutons were slain. Marius was declared the saviour of the state, the third founder of Rome, and was made consul for the sixth time in 100 B. C. Marius and Cinna were elected consuls for the year 86 B. C., but Marius died a fortnight afterward.

Mark, Edward Laurens, American naturalist and educator, professor of anatomy, Harvard, was born at Hamlet, Chautauqua county, N. Y., 1847. He was graduated at the University of Michigan, 1871; Ph.D., University of Leipzig, Germany, 1876; LL.D., University of Michigan, 1897, University of Wisconsin, 1904. Hersey professor of anatomy since 1885, director of zoölogical laboratory since 1900, Harvard University.

Markham, Edwin, American poet, writer, lecturer, was born in Oregon City, Ore., 1852. He went to California, 1857, worked at farming, blacksmithing, herded cattle and sheep during his boyhood, and earned his way through the common school. He wrote poems, since early boyhood, for California papers and received recognition of best Eastern magazines; was principal and superintendent of schools in California until 1899. Author: *The Man with the Hoe, and Other Poems; Lincoln, and Other Poems.*

Marlborough, John Churchill, first **Duke of,** soldier and diplomat, was born in 1650. He obtained a commission, through the influence of his sister, with the duke of York, and first served under Turenne; deserted James II. at the revolution, but, though created earl and commander-in-chief by William III., intrigued with his former master; was appointed captain-general and duke under Queen Anne, and won the victories of Blenheim, 1704, Ramillies, 1703, Oudenarde, 1708, and Malplaquet, 1709, but was recalled in 1710, and dismissed on a charge of peculation. Died, 1722.

Marlowe, Christopher, British dramatic writer, was born about 1564. He belonged to the generation immediately preceding that of Shakespeare, and is considered by many to be second only to Shakespeare among the dramatists of the time. His chief plays are: *Tamerlane the Great; The Tragical History of Dr. Faustus*, to which Goethe acknowledged his obligations; *The Jew of Malta;* and *Edward the Second*. He died in a tavern brawl at the age of twenty-nine, in 1593.

Marlowe, Julia, American actress, was born in England, in the village of Caldbeck, Cumberlandshire, 1870. She came to the United States with her parents at the age of five; lived in Kansas two years; moved to Ohio, locating finally in Cincinnati; attended public schools until her twelfth year, then joined juvenile opera company which gave *Pinafore, Chimes of Normandy*, and other light operas. She then retired from the stage and studied three years in New York. Married Robert Taber, who has been leading man in her company; married E. H. Sothern, 1911. Metropolitan debut as *Parthenia* in *Ingomar*, and since 1888 has starred in Shakespearean and other tragic and romantic roles.

Marmontel (*mär'mōn'tel'*), **Jean Francois,** French writer, was born at Bort, 1723. He wrote *Les Incas; Belcsaire*, and *Contes Moraux*, and made his way into Parisian society by gentleness, wit and a dainty and candid literary power. He was elected to the French Academy in 1763. Died, 1799.

Marquette (*mär'ketʹ*), **Jacques,** French Jesuit missionary and American explorer, was born at Laon, France, 1637. He founded Sault Ste. Marie and Kaskaskia Missions; accompanied Joliet in his exploration of the Mississippi, and died while attempting to establish a mission among the Illinois Indians, 1675.

Marryat (*mar'i-at*), **Frederick,** English author, was born in Westminster, 1792. He served in the navy for many years, becoming a post captain, and wrote many novels, including: *Frank Mildway; Midshipman Easy; Peter Simple; Snarleyyow; The Little Savage;* and *Valerie*. He also published a *Code of Signals for Vessels Employed in the Merchant Service*, adopted in England and other countries, and *Dairy in America*, in 6 vols. Died, 1848.

Marsh, George Perkins, American diplomat and philologist, was born at Woodstock, Vt., 1801. He studied law, was elected to congress in 1842, was United States minister to Turkey, 1849-53, and to Italy, 1861-82. He was made LL.D. by Harvard in 1859. He died at Vallonbrosa in Italy, 1882.

Marshall, Alfred, English economist, was born in London, 1842. He was educated at Merchant Taylors' and St. John's, Cambridge; D.Sc., Oxford and Cambridge; honorary LL.D., Edinburgh; hon. Dr. Jur., Cracow University; professor of political economy, Cambridge University, 1885-1908; member of royal commission on labor, 1891; vice-president of the royal economic society; fellow of the British Academy, 1902, and member correspondent de l'Institut de France, 1908. Author: *Economics of Industry; Curriculum in Economics*, etc. Died, 1924.

Marshall, Henry Rutgers, American architect and author, was born in New York, 1852. He was graduated at Columbia in 1873; L.H.D., Rutgers, 1904; in practice as architect since 1878. *Pain, Pleasure, and Æsthetics; Æsthetic Principles, Instinct and Reason*, etc. He was a contributor to art, psychological and philosophical journals and literary magazines and reviews, and was the principal speaker on æsthetics at the congress of arts and sciences, St. Louis Exposition.

Marshall, John, American jurist, chief-justice of the United States, was born in Fauquier county, Va., 1755. He was privately educated, and his law studies were interrupted by the revolution, in which he served under his father, Colonel Marshall, 1775-79, rising to the rank of captain. In 1781 he began to practice law in Fauquier county, Va. He was sent to France with Pinckney and Gerry as an envoy in 1797, and with Pinckney was ordered to leave the country when they had declined Tallyrand's request for a loan. In 1799 he was elected to congress, and in 1800 became secretary of state. He was made chief justice of the United States in 1801 by President John Adams, and held this position until his death, which occurred at Philadelphia, Pa., 1835. His great legal learning and judicial poise dominated the supreme court for thirty-four years, during which his decisions on constitutional questions established precedents in the interpretation of the constitution that have been accepted ever since.

Marshall, Thomas Riley, Vice-President of the United States, lawyer, was born at North Manchester, Ind., March 14, 1854, son of David M. and Martha A. (Patterson) Marshall. He was graduated from Wabash College, 1873, and subsequently received the degree LL.D. from Wabash, Notre Dame and University of Pennsylvania. He was admitted to the bar, 1875; 1876-92, was member of the law firm, Marshall & McNagny of Columbia City, Ind.; and, 1892-1909, of Marshall, McNagny & Clugston. He was governor of Indiana, 1909-13; July 3, 1912, received the Democratic nomination for vice-president at the Baltimore convention; and was elected at the ensuing election. He took his seat as vice-president, March 4, 1913. On Oct. 2, 1895, he married Lois I. Kinsey, of Angola, Ind. Died, 1925.

Martel, Charles. See **Charles Martell.**

Martens (*mär'tenz*), **Frederic de,** Russian diplomat and international lawyer, late professor of international law, University of St. Petersburg, 1871-1907, was born at Pernau, in the Russian Baltic provinces, 1845. He was graduated at the University of St. Petersburg, 1867; doctor of international law, 1873; LL.D., Edinburgh, Cambridge and Yale Universities; D.C.L., Oxford. He was Russian delegate at the peace conference at The Hague, 1899, and president of the second commission; Russian delegate at the peace negotiations between Russia and Japan in Washington, 1905. Author: *La Paix et la Guerre; On Consular Jurisdiction in the East*, etc. Died, 1909.

Martin (*mär'tăN'*), **Bon Louis Henri,** French historian, was born in 1810, at Saint Quentin. He studied law, but later abandoned it, and, after publishing a series of historical novels, gained celebrity by his *Histoire de France.* In 1870 he became mayor of Paris, and in 1871, a member of the national assembly. In 1876 he was elected a senator, and in 1878 a member of the French Academy. Died, 1883.

Martin, William Alexander Parsons, American missionary and Chinese scholar, was born at Livonia, Ind., 1827. He was graduated at the Indiana University, studied theology at Presbyterian Seminary, New Albany, Ind.; D.D., Lafayette, 1860; LL.D., University City of New York, 1870. Went to Peking, China, and Yeddo, Japan, with John E. Ward, United States minister, 1859. Missionary at Peking, 1863-68; president and professor of international law at Tung Wen College, thirty years. Was adviser Chinese authorities on matters of international law in several disputes with European powers; and was made a mandarin of the third class, 1885, and of the second class, 1898. Author: *Lore of Cathay; Siege in Peking; A Cycle of Cathay; Chinese Legends; Awakening of China.* Died, 1916.

Martineau (*mär'ti-nō*), **Harriet,** English writer of Huguenot descent, was born at Norwich, in 1802. She visited the United States in 1834, and the East in 1846, publishing descriptive works on her return. She wrote *Deerbrook, The Hour and the Man,* and other novels, and many tales for children. She was also author of a condensation of Comte, and *History of England During the Thirty Years' Peace.* Died, 1876.

Martineau, James, English theologian, brother of the preceding, was born at Norwich, 1805. In 1841 he was appointed professor of mental and moral philosophy at Manchester new college. He was principal of the college, 1868-85. As one of the profoundest thinkers and most effective writers of his day, he received degrees from Harvard, Leyden and Edinburgh. Died, 1900.

Marx, Heinrich Karl, German socialist, was born in Trèves, 1818, son of a lawyer. He was educated at Bonn and Berlin, took an active part in the liberal movement of 1840, and, after the suppression of the *Rhenish Gazette,* edited by him, he went to Paris. Later he settled in London, where he engaged in literary work, and took an active part in the international working men's association. After the secession of the anarchist section in 1873, he took but little part in affairs, and died at Hampstead ten years later, 1883. His chief work was *Das Kapital.*

Mary, Queen of England, 1553-58, was born at Greenwich, 1516. She was the daughter of Henry VIII. and Catharine of Aragon, and succeeded to the throne on the death of her half-brother, Edward VI. In 1554 she was married to Philip II. of Spain; and in the following year, having already repealed all the laws enacted in favor of Protestantism, and reëstablished Catholicism, she began, probably reluctantly, that series of persecutions of the Protestants which have earned for her the title of the "bloody Mary." During her short reign of four years, no fewer than 284 persons, of all ages, and sexes, were put to death. She died 1558, succeeded by her half-sister, Elizabeth.

Mary, Queen of Scots, daughter of James V. and Mary of Lorraine, was born at Linlithgow, Scotland, 1542. She became, by her father's death, queen before she was a week old. She was educated in France, and married the dauphin, Henry II., 1558, who died, 1560. In 1561 she returned to Scotland, her Kingdom, and, in 1565, married her cousin, Lord Darnley. Refraining from interference with the Protestant movement she retained her own Catholic faith, but chose Protestant advisers. Her only son, afterward James VI., was born in 1566. Darnley was murdered by Hepburn, Earl of Bothwell, almost certainly with Mary's connivance, and her marriage with Bothwell, in May, alienated the nobles. They rose, took the queen prisoner at Carberry, carried her to Edinburgh, then to Loch Leven, where they forced her to abdicate in July. Next year, escaping, she fled to England, and was there for many years a prisoner. Catholic plots were formed to liberate her and put her in place of Elizabeth on the English throne, by virtue of the fact that she was next in order of succession, being great-granddaughter of Henry VII. At last she was accused of complicity in Babbington's conspiracy, tried, found guilty, and executed in Fotheringhay castle, 1587.

Masaryk, Thomas Garrigue, president of the Republic of Czecho-Slovakia, was born in Moravia, 1850. He was educated at the University of Leipzig and in 1882 was made professor of philosophy at the University of Prague. In 1893 he came to the United States, where he was for a time a member of the faculty at the University of Chicago. After his return to Bohemia in 1907 he became a leader in the effort to free Bohemia from the dominance of Austria. Through his efforts the republic of Czecho-Slovakia was recognized by European powers, just before the close of the war. Elected president, 1920; re-elected, 1927.

Mascagni, Pietro, Italian operatic composer, was born at Leghorn in 1863. While studying for the law he took secret music lessons and had a symphony and other compositions produced at the Instituto Luigi Cherubini and through the attention he aroused became endowed to study at the Milan Conservatoire. He soon abandoned his work at the conservatoire and after a haphazard time suddenly achieved a brilliant success by the production of *Cavalleria Rusticana.* But his fame was to live by this alone, for none of his later work was successful. He became the director of the Pesaro Conservatoire from 1895 to 1903.

Masefield, John, poet and playwriter, was born at Ledbury, England, in 1874. While still quite young he ran away to sea, where he worked as a common sailor for many years, visiting numerous countries. This fact probably accounts for the vividness of his *Salt Water Poems and Ballads.* But fame came to him through *The Everlasting Mercy* (awarded the Edmond de Polignac prize in 1912), *The Widow in the Bye Street, Dauber,* and *The Daffodil Fields.* Made poet laureate in 1930, succeeding Robert Bridges.

Mason, George (1725-1792), American statesman, born in Virginia. He was a member of the Continental Congress and took part in framing the Constitution in 1787. He was opposed to slavery. He was chosen as Virginia's first United States senator, but refused to serve.

Mason, James Murray (1798-1871), American jurist and statesman, born in Virginia. He was elected United States senator from Virginia in 1847 and retained that place until the Civil War, when he withdrew and cast his lot with the Confederacy. With John Slidell, Mason left in November, 1861, on a mission to secure aid for the South in Europe. They were captured on the steamer *Trent* by a United States warship and imprisoned. Upon the demand of the English government, Mason and Slidell were given up Jan. 1, 1862.

Mason, Walt, newspaper poet, was born in Canada in 1862. He came to the United States in 1880 and engaged in newspaper work. His prose poems have become regular and well-known features in more than 200 newspapers. His published books include *Uncle Walt, Rippling Verse, Terse Verse* and *Walt Mason—His Book.*

Maspero (*mȧs'pē-rō'*), **Gaston Camille Charles,** French Egyptologist, was born at Paris, 1846, of Italian parents. In 1874 he became professor of Egyptology at the Collège de France, and after 1881 keeper of the Boulaq museum and director of explorations in Egypt. Author: *Egyptian Archæology; Life in Ancient Egypt and Assyria; Dawn of Civilization; The Struggle of the Nations; The Passing of the Empires,* etc. Died, 1916.

Massasoit (*mas'ȧ-soit'*), chief of the Pokanoket, or Wampanoag Indians, ruled over most of south Massachusetts from Cape Cod to Narragansett Bay. In 1621, three months after Plymouth had been founded, Massasoit and sixty warriers, armed and painted, came to the settlement and made a treaty of peace. His home was where now stands the town of Warren, R. I., and here he entertained Roger Williams for several weeks, when on his way to Providence after being banished from Massachusetts. Massasoit was honest, kept his word and loved peace. He died in 1661.

Massena (*mȧ'sā'nȧ'*), **Andre,** prince of Essling, and duke of Rivoli, one of the most celebrated of Napoleon's marshals, was born at Nice, 1758. He entered the army in 1775, and retired from it after having served for fourteen years. The revolution, however, again roused his military ardor. His rise was rapid, and he attained the rank of general of division, 1793. In 1810 he was appointed to command the army which invaded Portugal, but was foiled by Wellington, and compelled to abandon the Portuguese territory. After this period Massêna did not again appear in the field. Died, 1817.

Massenet (*mȧ's'nē'*), **Jules Emile Frederic,** French composer, was born at Montaud, 1842. He was educated at Lycée, Saint-Louis, and Le Paris conservatoire, under Laurent, Reber, Savard, and Ambroise Thomas. He was professor of composition at the conservatoire, 1878-96. He wrote the following operas: *La Grande Tante; Werther; Thais; Le Portrait de Manon; Le Jongleur de Notre Dame,* etc. Died, 1912.

Massillon (*mȧ'sē'yŏN'*), **Jean Baptiste,** one of the most eloquent of French pulpit orators, was born at Hijères, 1663. He entered at the age of eighteen into the congregation of the oratory, and became so celebrated as a preacher that he was summoned to court to display his powers. His success there was complete. Louis XIV. complimented him in the strongest terms. His sermons and other theological works form fifteen volumes. Died, 1782.

Massinger (*mas'in-jĕr*), **Philip,** English dramatist, was born at Salisbury, England, 1583. He studied at Oxford, 1602, and in 1606 went to London. Eighteen of his plays are still extant. Notwithstanding his genius and the popularity of his plays, he lived in obscurity; and the course of his life in London is not easily traced. Among his best-known works are: *Duke of Milan; Fatal Dowry,* and *A New Way to Pay Old Debts,* which latter is still in use upon the stage. He was found dead in his bed in 1640, and was entered upon the book of the parish church simply as "a stranger."

Masters, Edgar Lee, American poet, was born in Garnet, Kansas, in 1869. After graduating from Knox College, he studied law in his father's office, and was admitted to the bar in 1891. Although he published *A Book of Verses* in 1898, his first notable work was *Spoon River Anthology,* a series of over two hundred epitaphs purporting to be a frank revelation of village history. Its success was immediate and permanent. Other writings include *Songs and Satire, Starved Rock, Domesday Book,* and *Althea,* a play.

Mather (*maтн'ĕr*), **Cotton,** American colonial divine, was born in Boston, 1663. The phenomenon termed "Salem witchcraft" having appeared in the colony, he investigated it, and wrote, in 1689, his *Memorable Providences Relating to Witchcraft and Possessions.* He found that devils or possessed persons were familiar with dead and foreign languages, etc., and eagerly advocated the adoption of desperate remedies for the diabolical disease. Despite his bitter bigotry and narrow-mindedness, he was an able man, and, with remarkable industry, wrote 382 works. Died, 1728.

Mather, Increase, American colonial divine, father of the preceding, was born at Dorchester, 1639. He was for about sixty years pastor of the North church, Boston. In 1684 he was also chosen president of Harvard College, for which he obtained the right to confer the degrees of B. D. and D.D. His influence was so great in the colony that he was sent to England in 1688 to secure a new charter, and had the appointment of all offices under it. Died, 1723.

Mathew, Theobald, "Father Mathew," apostle of temperance, was born at Thomastown in Tipperary, Ireland, 1790. He took priest's orders in the Capuchin order in 1814; and in his ceaseless labors at Cork, seeing how much of the degradation of his people was due to drink, became in 1838 an ardent advocate of total abstinence. His success was marvelous, and everywhere he roused enthusiasm and secured warm affection. But overwork ruined his health, and he died in 1856.

Mathews, Shailer, theologian, editor, was born at Portland, Me., 1863; graduated from Colby College, 1884; graduate of Newton Theological Institution, 1887; University of Berlin, 1890-01, D.D., Colby, 1901, Oberlin College, 1908. Has been associate professor of New Testament history and interpretation, 1894-7, professor, 1897-1905, professor systematic theology, 1905-6, history and comparative theology since 1906; junior dean divinity school, 1899-1908, dean since 1908, University of Chicago. Editor: *The World To-Day,* 1903-1912. Author: *The Social Teaching of Jesus; A History of New Testament Times in Palestine; Constructive Studies in the Life of Christ* (with E. D. Burton), *The French Revolution—A Sketch; The Church and the Changing Order; The Social Gospel; The Gospel and the Modern Man,* etc.

Matsukata (*mät'sōō-kä'tä*), **Marquis Masayoshi,** Japanese statesman, was born at Kagoshima, 1835. He received a military and literary education, and naval training from foreigners in Nagasaki. He visited Europe as president of the Japanese section of the Paris exposition of 1878; was appointed minister of home affairs, 1880; minister of finance, 1881. The redemption of inconvertible notes was the most important work accomplished during his more than ten years' service as minister of finance. He was created count, 1884; premier, 1891-92, and 1896-98; minister of finance in October of the latter year until October, 1900. The adoption of the gold standard, for which the count was mainly responsible, has been the most important incident in the history of Japan in recent years. He visited America and Europe, 1902; received an honorary D.C.L. from Oxford, 1902. Author: *Report on the Adjustment of Paper Currency.* Died, 1924.

Matthews, Franklin, American journalist, editor of the *New York Sun* beginning 1890, was born at St. Joseph, Mich., 1858. He was graduated at Cornell University, 1883. He was reporter and editor of *Philadelphia Press,* 1886-90. Author: *Philadelphia; Our Navy in Time of War; The Newborn Cuba.* Died, 1917.

Matthews, James Brander, American author, professor of dramatic literature, Columbia, was born at New Orleans, 1852. He was graduated at Columbia College, 1871; LL.B., 1873; D.C.L., University of the South, 1899, Litt.D., Yale, 1901; LL.D., Columbia, 1904. He was admitted to the New York bar, but turned to literature. Author: *The Theatres of Paris; French Dramatists of the Nineteenth Century; Introduction to the Study of American Literature; A Confident To-Morrow; The Action and the Word; The Historical Novel; Parts of Speech, Essays in English; Development of the Drama.* Legion of honor, 1907. Died, 1929.

Matthias (*mȧ-thī'as*), **Corvinus,** king of Hungary, was born in 1443. He was proclaimed king in 1458, soon after his release from imprisonment at Prague; maintained the throne against the emperor, Frederick III., and, after having engaged in successful wars with the Turks, received the Bohemian crown from the pope on condition of extirpating the Hussites. After this he engaged in two wars with the emperor, and captured Vienna in 1485, living there until his death in 1490.

Maupassant, Henri Rene Albert Guy De, French novelist and short story writer, was born in 1850 at the Chateau of Miromesnil. Under the severe tutorship of Flaubert he became a master of short story writing. Strength and simplicity in both substance and style are characteristic of all

Maupassant's writings. In 1891 his reason began to give way, and he died in 1893. Among his best known stories are *The Necklace, The Piece of String; Sisters of Randoli*, and *Tales of Day and Night*. His very first story, *Boule Je Suif*, was a masterpiece. His best known novels are *Pierre and Jean* and *Strong as Death*.

Mauptertuis (*mō'per'twē'*), **Pierre Louis Moreau de,** French geometrician and astronomer, was born at St. Malo, 1698. He studied at the college of La Marche, at Paris, and, after having served for four years in the army, devoted himself to science and literature. In 1745, invited by Frederick the Great, he settled at Berlin, and was made president of the royal academy there. Died, 1759.

Maurice (*mō'ris*), prince of Orange and count of Nassau, one of the most skillful and distinguished generals of his age, was born at Dillenburg, 1567, son of William I. In 1597, with the help of some English auxiliaries, he defeated the Spaniards at Turnhout in Brabant, and in 1600 won a splendid victory at Nieuwport. Finally, in 1609, Spain was compelled to acknowledge the united provinces as a free republic. Died, 1625.

Maxim, Sir Hiram Stevens, American inventor, was born at Sangerville, Me., 1840. He received a common school education, and his sicentific knowledge was obtained by study and attending lectures. He was for four years an apprentice to coach-building; worked in various iron works; patented numerous inventions in the United States and went to England in 1881, where he became a naturalized citizen. He has patented many electrical inventions, including incandescent lamps, self-regulating current machines, etc.; invented the Maxim gun, automatic system of firearms, which makes the recoil of the gun serve as the power for reloading. Chevalier légion d'honneur. France, and knighted by Queen Victoria in 1900, Died, 1916.

Maximilian I., German emperor, was born in 1459, son of Frederick III. In his nineteenth year he married Maria, only child and heiress of Charles the Bold, duke of Burgundy, and was soon involved in a war with Louis XI. of France, who attempted to seize some of her possessions. Subsequently he married the daughter of the duke of Milan, and, although inclined to peace, he became involved in war with the Swiss, the Venetians and the French. Died, 1519.

Maximilian, Ferdinand Maximilian Joseph, archduke of Austria and emperor of Mexico, was born in Vienna, 1832. He was the brother of the former emperor of Austria-Hungary. In 1863 Napoleon III. had it in mind to conquer Mexico and set up an empire, and he offered the crown to Maximilian, who went to Mexico in 1864. But he pleased no one, and in 1866, when the French troops left the country, the empire fell to pieces. Maximilian tried to form a native army for his own defense, but he was captured by the republicans, and, after a trial, shot near Queretaro, in his thirty-fifth year, 1867.

Max O'Rell. See **Blouet, Paul.**

Maxwell, James Clerk-, British physicist, was born at Edinburgh, 1831. He was educated at the University of Edinburgh. In the great work of his life, *Electricity and Magnetism*, 2 volumes, he constructed a theory of electricity in which "action at a distance" should have no place. He was the first to make color-sensation the subject of actual measurement. But he was best known to the public by his investigations on the kinetic theory of gases. In 1879 he edited Cavendish's *Electrical Researches*, and died in the same year.

Maxwell, William Henry, American educator, superintendent of schools of Greater New York beginning 1898, was born at Stewartstown, Ireland, 1852. He was educated at royal academical institution, Belfast, and Queen's Colleges, Galway and Belfast. He was teacher in the public schools, Brooklyn, N. Y., 1880-82; assistant superintendent of schools, Brooklyn, N. Y., 1882-87, and superintendent, 1887-98; superintendent, public schools, Greater New York, 1898, then emeritus. He was author of a series of text-books on English grammar and composition, etc. Died, 1920.

May, Sir Thomas Erskine, English jurist and writer, was born in London, 1815. He was educated at Bedford school. He was created successively C. B. and K.C.B., and was on his retirement, in 1886, created Baron Farnborough. His *Treatise on the Law, Privileges, Proceedings, and Usage of Parliament* has been translated into various languages; his *Constitutional History of England*, 1760-1860 is a continuation of Hallam; and his *Democracy in Europe* shows great learning and impartiality. Died, 1886.

Mayer, Henry ("Hy Mayer"), caricaturist, was born at Worms-on-Rhine, 1868. He was educated in England and Germany, and came to the United States, 1886. He began his career as an artist in Cincinnati, 1887, and has resided in New York since 1893. He has been illustrator for *Fliegende Blaetter; Figaro Illustré: Le Rire; Pall-Mall Magazine; Punch; Life, New York Times, Herald*, etc. Author: *Autobiography of a Monkey; A Trip to Toyland; Alphabet of Little People*, etc.

Mayo Brothers, William James (1861——) and **Clarence Horace** (1865——), American surgeons, were born in Minnesota. In 1889 they organized the Mayo Clinic, in St. Mary's Hospital, Rochester, Minn., which has become famous throughout the world for the number and success of its operations. Beginning in 1912, graduate courses in medicine were offered in this clinic. In 1915, the Mayo Foundation for Medical Education and Research was established, to which the brothers contributed $1,500,000. In 1917 the foundation became a department of the University of Rochester.

Mazarin (*ma'zà'raN'*), **Jules,** cardinal and chief minister of France during the minority of Louis XIV., was born at Rome, 1602. Having accompanied a papal legate to the court of France, he became known to Richelieu about 1628. The latter perceived his great political talents, and engaged him to maintain the French interests in Italy, which he did while still employed by the pope as vice-legate to Avignon, in 1632, and nuncio to the French court. Under him the influence of France among the nations was increased, and in the internal government of the country those principles of despotism were established on which Louis XIV. afterward acted. The administration of justice, however, became very corrupt, and the commerce and finances of the country sunk into deep depression. Died, 1661.

Mazzini (*mät-sē'nē*), **Guiseppe,** Italian patriot and revolutionist, was born at Genoa, 1805. The organization of a new liberal league, "Young Italy," was Mazzini's first work. A new association, entitled "New Europe," and based on principles of European rights and enfranchisement, was inaugurated by the exertions of Mazzini in Switzerland. In 1837 he quitted Switzerland and finally took up his abode in London. From there his labors in the Italian revolutionary cause were unremitting. After an ineffective scheme for a republican rising, he ventured to enter Italy, and was arrested at Gaeta, where he remained a prisoner until Rome was taken by the Italian army. On his death, 1872, the government honored him with a public funeral.

Mead, Larkin Goldsmith, American sculptor, was born at Chesterfield, N. H., 1835. His early years were spent in Vermont. He studied art at Brooklyn, N. Y., and in Italy. The colossal statue of "Vermont" on the dome of the statehouse, and of "Ethan Allen" in the portico of the same building in Vermont, and one of the same hero, given by the state of Vermont to the hall of representatives at Washington, are all his work, also a colossal statue, "The Mississippi River"; colossal marble group representing Columbus appealing to Isabella, Sacramento, Cal., high relief portraits in bronze of Henry James, William D. Howells, and John Hay. Died, 1910.

Meade, George Gordon, American general, was born in Cadiz, Spain, where his father was an agent of the United States navy, 1815. He was graduated at West Point, 1835, and, after serving one year in the army, resigned to begin practice as a civil engineer. At the outbreak of the Civil War he was placed in command of a brigade of volunteers, soon rose to the command of a division, and joined his fortunes permanently to those of the army of the Potomac. At Chancellorsville he commanded the fifth corps; and when Hooker resigned the command of the army, and while the army itself was in hasty movement northward to check Lee's invasion of the North in 1863, Meade was appointed to the command. He accepted it with the greatest reluctance, and altogether from a sense of duty. He had inclined to fight on the line of Pipe creek, to the south of Gettysburg; but Reynolds fell into collision with Lee's support, and Gettysburg became historical. At the close of the war he was made major-general in the regular army, and commanded the military division of the Atlantic at the time of his death, 1872.

Medici (*mā'dē-chē*), **Lorenzo de',** surnamed "the magnificent," was born in 1448. He was a member of an illustrious Florentine family, which for centuries exerted great influence in Italy and in Europe. In 1478 a conspiracy was formed against him and his brother Giuliano, by the Pazzi, another distinguished family of Florence, who were instigated by Pope Sixtus IV., and aided by Salviati, archbishop of Pisa. The result was that Giuliano was assassinated and Lorenzo wounded; whereupon Salviati was hung out of his palace window in his archiepiscopal robes, and Giacopo de Pazzi, with one of his nephews, shared the same fate. The pope now excommunicated Lorenzo and the magistrates of Florence laid an interdict upon the whole territory, and, forming a league with the king of Naples, prepared to invade the Florentine dominions. Hostilities followed, and were carried on with varying success during two campaigns. The remainder of Lorenzo's administration was unmarked by any great public events; but his regard for literature was manifested by the extraordinary attention he paid to the augmentation of the Laurentian library, which had been founded by his grandfather. Died, 1492.

Meighan, Thomas, actor, born in Pittsburg, 1879. Played on the New York stage and in London. Since 1916 he has been appearing in moving pictures, starring in *Out of a Clear Sky, The Miracle Man, Male and Female, Don't Change Your Wife*, and many other films. He is a past president of the Lambs Club, New York. Died, 1936.

Meissonier (*me'sō-nyā'*), **Jean Louis Ernest,** French painter, was born in Lyons, 1815. He was a pupil of Cogniet, and became a member of the Beaux Arts in 1861. His best pictures distinguished for minute detail are probably the "*Napoleon Cycle*," among which the picture called "*1814*" was sold, in 1887, for the highest price ever obtained during an artist's lifetime, $170,000. He served in the Italian campaign and the early part of the Franco-Prussian war, and was colonel at the siege of Paris. Died, 1891.

Melanchthon (*mē-langk'thun*), **Philip,** Luther's fellow-laborer, in the reformation, was born at Bretten, in the palatinate of the Rhine, 1497. In 1521 he published his *Loci Communes Rerum Theologicarum*, the first great Protestant work on dogmatic theology. In 1530 he made a most important contribution to the cause of Protestantism in the Augsburg confession. After Luther's death, he lost in some measure, the confidence of some of the Protestants, by those concessions to the Roman Catholics which his anxiety for peace led him to make. Died, 1560.

Melba, Madame, nee Helen Porter Mitchell, operatic vocalist, was born in Melbourne, Australia, 1865. She studied under Madame Marchesi in Paris, and made her stage début in 1887 in *Rigoletto*, at the théâtre de la Monnaie, Brussels. Next year she appeared as *Lucia* at Covent Garden. In 1889 played *Ophelia* at Paris grand opera. For her Bemberg specially wrote *Elaine*, produced in London in 1892. She has taken a prominent part in opera in London and New York, and proved herself equally successful in concert. In 1925 she published *Melodies and Memories*. Died, 1931.

Mellen, Charles Sanger, American railway official, was born in Lowell, Mass., 1851. He was in the railway service, 1869, beginning as clerk in the cashier's office of the Northern New Hampshire railroad, general manager of New York and New England railroad at Boston, 1892; second vice-president New York, New Haven and Hartford railroad, 1892-96; president of Northern Pacific railway company, 1896-1903; president, New York, New Haven and Hartford railroad company, 1903-13; president B. & M. R. R. Co., 1910-13. Died, 1925.

Mellon, Andrew William, born Pittsburgh, Pa., 1852. Banker and director of numerous financial institutions. Trustee Carnegie Institute. Secretary of the Treasury under Harding, Coolidge and Hoover.

Mencius (*men'shi-us*), **Meng-tse,** Chinese sage, was born in Shan-tung, about 371 B. C. He founded a school on the model of that of his great predecessor Confucius. After his death his disciples collected his conversations and exhortations and published them as the *Book of Mengtse*. The philosophic root of his system is belief in the ethical goodness of man's nature. In his liberal and enlightened system of political economy, he advocated freedom of trade, the deposition of unworthy rulers, division of labor, inspection of work by government, maintenance of good roads and bridges, poor-laws, education and the abolition of war. Chinese ethics are based on his writings. Died about 287 B. C.

Mendelssohn-Bartholdy (*men'del-sōn bär'tōl'dē'*), **Felix,** German composer, was born at Hamburg, 1809. In 1835 he accepted the directorship of the Leipzig concerts. Here he was in the center of the musical world of Germany and was stimulated to his highest and most brilliant efforts. His oratorios, *St. Paul* and *Elijah*, are his two best works. Died, 1847.

Mengs (*mengks*), **Anton Raphael,** modern German artist, was born in Aussig, Bohemia, 1728. From his sixth year he was compelled to exercise himself in drawing daily and hourly, and a few years later was instructed by his father in oil, miniature and enamel painting. In 1761 Charles III. invited him to Spain, where his principal works at this time were an *Assembly of the Gods*, and a *Descent from the Cross*. In 1776 he returned once more to Rome, where he died in 1779.

Menzies, Wilfrid Granbrook, university professor, was born in Edinburgh, Scotland, 1877. M.A., Edinburgh, 1897, B.Sc., 1898; studied at Leipzig and Aberdeen; Ph.D., Chicago, 1910. Assistant professor chemistry, Heriot-Watt College, Edinburgh, 1898-1901; professor of chemistry, St. Mungo's College, Glasgow, 1902-08; secretary Medicial Faculty, 1907-08; research associate instructor, Chicago University since 1908. Fellow Royal Society Edinburgh. Author: *Sensitiveness of a Thermoregulator; Phosphoric Acid Hydrates; Molecular Weight Determination of Dissolved Substances; New Methods for Measuring Vapor Pressure; Vapor Pressure of Mercury, and of Sulphur; Vapor Density Apparatus; Constitution of Calomel Vapor; Calomel and Abegg's Anomaly; Critical Temperature of Mercury; Calculation of Critical Temperatures; Physical Constants Formic Acid; Pure Lithiumand Its Cofft. of Expansion; High Temperature Oven*, etc.

Mercator (*mẽr-kā'tẽr*), **Gerardus,** Flemish geographer of the sixteenth century, was born at Rupelmonde, Flanders, 1512, his real name being Kraemer, "merchant," of which Mercator is the Latinized form. He took his degree as bachelor of philosophy at Louvain, but devoted his later years to the study of geography. He published several important works, including maps and descriptions of France, Germany, and Great Britain. Some of his later works were of a religious character and were supposed to favor the reformed doctrines. He died in Prussia, 1594.

Meredith, George, English poet and novelist, a native of Hampshire, was born in 1828. After studying for some time in Germany he commenced his literary career with the publication of a volume of poems. This was followed by the *Shaving of Shagpat*, an Arabian entertainment; *Farina*, a legend of Cologne; *The Ordeal of Richard Feverel; Poems of the English Roadside; Emilia in England; Rhoda Fleming; Vittoria; Beauchamp's Career; Diana of the Crossways; A Reading of Earth; One of Our Conquerors; Empty Purse; Jump to Glory Jane; The Amazing Marriage; The House on the Beach; Comedy, and the Uses of the Comic Spirit; Selected Poems*, etc. Died, 1909.

Meredith, Owen. See **Lytton, Edward Robert, Earl of.**

Mergenthaler (*mer'gen-tä'lĕr*), **Ottmar,** inventor of the type-setting machine bearing his name, was born in Würtemberg, Germany, 1854. He came to the United States in 1872, and received a government position in Washington, D. C., to care for the mechanism of bells, clocks and signal service apparatus. Died at Baltimore, Md., 1899.

Merimee (*mā'rē'mā'*), **Prosper,** French novelist, historian and archæologist, was born at Paris, 1803. After several anonymous efforts, wrote *Clara Gazul*, and *La Guzla*, Spanish comedies and Illyrian songs; *La Chronique du Règne de Charles IX.*, his most famous historical novel; *Colomba; Carmen; Tamango*. He became a member of the French academy in 1844, was made a senator in 1853, president of the commission for reorganizing the bibliotheque inperiale in 1858, and commander of the legion of honor, 1860. Died at Cannes, 1870.

Merivale (*mer'i-vāl*), **Charles,** English historian, dean of Ely, was born in Exeter, 1808. He was graduated at Cambridge. He wrote a history of Rome from its foundation in 752 B. C. to the fall of Augustus in 476 A. D., but his chief work is the *History of the Romans Under the Empire*, indispensable as an introduction to Gibbon. Died, 1893.

Merle d'Aubigne (*merl-dō'bēn'yā*), **Jean Henri,** ecclesiastical historian, was born near Geneva, Switzerland, 1794. In 1823 he was appointed court preacher at Brussels; but after the revolution of 1830 he declined the post of tutor to the prince of Orange; returning to Geneva, he took part in the institution of the new Evangelical College, and filled its chair of church history until his sudden death in 1872. His *History of the Reformation in the 16th Century* has enjoyed immense popularity.

Merrill, George Perkins, American geologist and educator, was born at Auburn, Me., 1854. He was graduated at the Maine State University, B.S., 1879; Ph.D., professor of geology and mineralogy, George Washington University, 1893-1915; curator dept. geol. U. S. Nat. Mus. beginning 1897. Author: *Stones for Building and Decoration; Rocks, Rock-weathering and Soils; The Non-Metallic Minerals; The Non-Metallic Minerals—Their Occurrence and Uses*, etc. Died, 1929.

Merritt, Wesley, American general, was born in New York, 1836. He was graduated from West Point in 1860; was commissioned brigadier-general of the United States volunteers, 1863; major-general of United States volunteers, 1865; and since the Civil War regularly promoted from lieutenant-colonel to major-general, United States army. He served in the army of the Potomac until June, 1864; was superintendent of United States military academy, 1882-87; assigned, May, 1898, to command of United States forces in the Philippine islands; was in command of department of the East, Governor's island, until retirement in 1900. Died, 1910

Merry del Val (*mer'rē del vāl'*), **Raphael,** pontifical secretary of state, was born in London, of Spanish parents, in 1865. He was at first attached to the diocese of Westminster, acted for many years as *Camerieri Segreto* to Pope Leo XIII., and was appointed president of the Accademia Pontificia in 1899, and Italian archbishop of Nicosia in 1900. He visited England as papal envoy on the occasions of Queen Victoria's jubilee and King Edward's coronation, and was sent to Canada on an educational mission. He celebrated the twenty-fifth anniversary of his entry into the college of Cardinals in 1928 and was secretary of state under Pope Pius X. Died, 1930.

Mesmer, Friedrich Anton, or Franz, founder of mesmerism, was born near Constance, Switzerland, 1733. About 1772 he took up the opinion that there existed a power of extraordinary medicinal influence on the human body, which he called animal magnetism. In 1778 he went to Paris, where he created a great sensation. He refused an annual pension of 20,000 livres to reveal his secret; but in 1785 a commission of physicians and scientists reported on him unfavorably. He fell into disrepute, and after a visit to England spent the rest of his life in obscurity at Meersburg in Switzerland. Died, 1815.

Metastasio (*mā'täs-tä'zyō*), **Pietro Bonaventura,** Italian poet, whose real name was Trapassi, was born in Rome, 1698. His tragedy of *Giustino* was produced when he was only fourteen. In 1724 he published one of his most celebrated dramas, *La Didone*, which, with *Il Catone* and *Il Siroe*, conferred on the poet a European name. In 1730 he accepted the post of poet laureate to the imperial court of Vienna. During his sojourn in Vienna he composed his *Giuseppe Riconosciuto, Il Demofoonte*, and the *Attilio Regolo*, his masterpiece. Died at Vienna, 1782.

Metchnikoff (*mech'ni-kŏf*), **Illya,** Russian physiologist and cytologist, was born at Livanovka, Russia, 1845. He studied at Kharkov, and afterward at Giessen and at Munich. He became chief assistant to Pasteur in 1892, and, at the latter's death in 1895, succeeded him as director of the Pasteur Institute at Paris. He is the author of *The Nature of Man; Immunity in Infective Diseases; The Prolongation of Human Life; Optimistic Essays*, etc. Died, 1916.

Metternich (*met'ĕr-nix*), **Clemens Wenzel, Prince von,** Austrian diplomat and statesman, was born in Coblentz, 1773. After a distinguished diplomatic career he became foreign minister of the empire in 1809. This high office he held with consummate ability for a period of thirty years, exercising, almost without control, the highest authority in Austria. Died, 1859.

Meyer, Adolf, pathologist, alienist, was born in Niederweningen, near Zürich, Switzerland, 1866. LL.D., Glasgow, 1901. He came to the United States in 1892, became a fellow and later docent in neurology, University of Chicago, 1892-95. He is now director of pathology, New York state hospitals; professor of psychiatry, Cornell Medical College, and has been an extensive contributor on neurology, pathology, psychiatry, etc.

Meyer, George von Lengerke, American diplomat and cabinet officer, was born in Boston, Mass., 1858. He was graduated at Harvard, 1879, and then engaged in business as merchant and trustee of Provident Institution for Savings. He was United States ambassador to Italy, 1900-05; ambassador to Russia, 1905-07; postmaster-general, 1907-09; secretary of the navy under President Taft, 1909-13. Died, 1918.

Meyerbeer, Giacomo, German composer, was born in Berlin, 1791. He began to study dramatic composition under Bernhard Anselm Weber; and in 1806 entered the school of Vogler at Darmstadt, where he formed an intimate friendship with Carl Maria von Weber. He subsequently composed an opera, *Jepthah's Vow*, produced at Munich in 1812. His subsequent works include: *Romilda e Constanza; L'esule di Granata; Il Crociato in Egitto; Robert le Diable; Les Huguenots*, in which he reached the climax of his fame; *Le Prophète; Pierre le Grand; Dinorah*. Died, 1864.

Michelangelo Buonarotti, (*mē'kel-än'je-lō bwo'när-rō'tē*), in an age when Christian art had reached its zenith, stood almost unrivaled as a painter, sculptor and architect. He was born in 1475 at Chiusi, in Italy. He learned the rudiments of painting from Bertoldo, a pupil of Domenico Ghirlandaio, and having been admitted as a student into the school which was established by Lorenzo the Magnificent for the study of ancient art, in connection with the collections of staturary, in the Medicean Gardens, he attracted the attention of Lorenzo by the artistic skill with which he had restored the mutilated head of a laughing faun, and was received into the palace of the Medici, where he spent several years.

Pope Julius II. called him to Rome, and commissioned him to make his monument, which was to be erected within St. Peters'. Although this work was never completed on the scale on which it had been designed, and was ultimately erected in the Church of St. Pietro ad Vincula, it is a magnificent composition, and is memorable for having given occasion to the reconstruction of St. Peter's on its present sublime plan, in order the better to adapt it to the colossal dimensions of the proposed monument.

The pope insisted upon Michelangelo painting with his own hand the ceiling of the Sistine Chapel, and he began in 1508 and completed within less than two years his task, which proved one of the most marvelous of his works. The subjects of these cartoons are taken from the book of *Genesis*, while between these and the representations of the persons of the Savior's genealogy are colossal figures of prophets and sibyls.

His great picture of the *Last Judgment* was painted for the altar of the Sistine Chapel. This immense fresco, nearly 70 feet in height, which was completed in 1541, was regarded by contemporary critics as having surpassed all his other works. After its completion Michelangelo turned to the perfecting of St. Peter's, which, by the touch of his genius, was converted from a mere Saracenic hall into the most superb model of a Christian church. He refused all remuneration for his labor, which he regarded as a service for the glory of God. Michelangelo died in 1563 in Rome, but his remains were removed to Florence.

References.—*The Life of Michelangelo*, by J. A. Symonds; *Sonnets of Michelangelo and Campanella*, by J. A. Symonds; *Life and Work of Michelangelo Buonarroti*, by C. Heath Wilson; *Life of Michel Angelo Buonarroti*, by John Harford; *Illustrations, Architectural and Pictorial, of the Genius of Michel Angelo*, by Canina, C. R. Cockerell, and John Hartford.

Michelet (*mēsh'lĕ'*), **Jules,** French historian, was born in Paris, 1798. In 1843-46 he became widely known, not only in his own country, but also in England, by his attacks upon the Jesuits in his three works: *The Jesuits; Priests, Women, and Families*, and *The People*. He was the writer of many other works, several of them of considerable interest. Died, 1874.

Michelson (*mī'kel-sun*), **Albert Abraham,** scientist, educator, was born at Strelno, Germany, 1852. He was graduated at the United States naval academy, 1873; was midshipman of United States navy, 1873; instructor of physics and chemistry, United States naval academy, 1875-79; Sc.D., University of Cambridge, 1890; LL.D., Yale, 1901; University of Pennsylvania, 1906. He was professor of physics at the Case school, Cleveland, Ohio, 1883-89, Clark University, 1889-92, and professor and head of the department of physics, University of Chicago, beginning 1892. Was awarded the Nobel prize for physics ($40,000) by the Swedish academy of sciences, 1907. Died, 1931.

Mifflin, Thomas, American general and statesman, was born in Philadelphia, 1744; was originally a merchant of his native city. He was elected to the continental congress of 1774, joined the revolutionary forces, and rose to be major-general in 1777, but was removed for his connection with the Conway cabal, 1778. In 1782 he was sent to the federal congress, and in 1783 became its president; governor of Pennsylvania, 1790-99. Died, 1800.

Milburn, John George, American lawyer, was born near Sunderland, England, 1851. Was admitted to the bar, 1374, and practiced in Buffalo. Member of the firm of Carter, Ledyard & Milburn since 1904. He was president of the Pan-American exposition, 1901. He was a trustee of the New York life insurance company and member of the board of commissioners of statutory consolidation.

Miles, Nelson Appleton, American general, was born in Westminster, Mass., 1839. At the outbreak of the Civil War he was engaged in mercantile pursuits in Boston, Mass.; entered the service as first lieutenant of the 22d Massachusetts regiment in 1861. In 1862 he was commissioned colonel of the 61st New York regiment, which he led at Fredericksburg and Chancellorsville, where he was severely wounded. He was promoted brigadier-general, 1864, and brevetted major-general for gallantry at Ream's station in December, 1864. At the close of the war he was commissioned colonel of the 40th United States infantry. He was promoted brigadier-general in 1880; major-general in 1890; and succeeded Lieutenant-General John M. Schofield as commander of the army in 1895. On the reorganization of the army in 1901, the grade of lieutenant-general was revived and he was promoted to it. Retired 1903. Died, 1925.

Mill, James, British historian and political economist, was born near Montrose, Scotland, 1773. He studied at the University of Edinburgh, where he distinguished himself in Greek and in moral and metaphysical philosophy. He wrote much of standard value, including *History of British India; Liberty of the Press; Law of Nations; Elements of Political Economy*; and *Analysis of the Phenomena of the Human Mind*. Died, 1836.

Mill, John Stuart, English philosopher and economist, son of the preceding, was born in 1806. He was educated at home by his father. In 1820 he went to France, where he made himself master of the French language and occasionally attended public lectures on science. In 1823 he entered the India house as a clerk in the examiner's office, where his father was assistant examiner. His first publication consisted of articles in the *Westminster Review*. He established his reputation, in 1843, by the publication of *A System of Logic, Ratiocinative and Inductive*, a work the success of which paved the way for *The Principles of Political Economy*. He was a member of parliament, 1865-68. Died, 1873.

Millais (*mi-lā'*), **Sir John Everett,** English painter, was born of Jersey parentage, at Southampton, 1829. He studied at the royal academy, and at seventeen exhibited a notable historical work. He then early associated with Rossetti and Hanolm Hunt, and remained for over twenty years under their influence. His chief subsequent work, in which technical interest predominates, was mostly portraiture, including Gladstone and Beaconsfield. He was made R. A. in 1863, a baronet in 1885, and became president of the royal academy in 1896. Died, 1896.

Millay, Edna St. Vincent, was born at Rockland, Maine in 1892. She was graduated from Vassar College in 1917 and since then has lived in New York City. Probably her greatest poem and one

of the most remarkable of modern times is "*Renascence,*" written when she was but nineteen years old. She has published two volumes of poetry, *Figs from Thistles* and *Second April*, and a poetic play, *Aria de Capo*, first performed by the Provincetown Players in New York City.

Miller, Hugh, Scottish geologist, was born at Cromarty, 1802. In 1829 he published *Poems Written in the Leisure Hours of a Journeyman Mason*, followed by *Scenes and Legends of the North of Scotland*, in 1835. His editorial labors, during the heat of the religious disruption struggle were immense, and, worn out by overwork, he shot himself dead in 1856.

Miller, Joaquin, pen-name of Cincinnatus Heine Miller, American poet. He was born in Indiana, 1841, became a miner in California, fought in the Indian wars, was an express messenger, practiced law in Oregon, edited a paper suppressed for disloyalty, in 1866-70 was a county judge in Oregon, was a Washington journalist, and in 1887 settled in California as a fruit-grower. His works include: *Songs of the Sierras; Songs of the Sunlands; Songs of Italy; Songs of the Mexican Seas; '49 or the Goldseekers of the Sierras.* Died, 1913.

Millet (*mē'le'*), **Jean Francois,** French painter, was born in the village of Gruchy, France, 1814. He first worked as a farm laborer, but his taste for painting was so evident that he was sent to study with Mouchel, a painter in Cherbourg. He painted small pictures, portraits and signboards in his first efforts to support himself. Some of his best known works are: *The Gleaners; Waiting; The Angelus; The Man With the Hoe.* His most celebrated picture, *The Angelus*, sold for over $100,000. He died in 1875 at Barbizon, which, under his influence, had become an artist colony.

Millikan, Robert Andrews, American physicist, was born at Morrison, Illinois, in 1868. He studied at Oberlin College, and at Columbia, Berlin and Gottingen universities. He was on the faculty of the University of Chicago from 1896 to 1921, when he was appointed director of the laboratory of physics at the California Institute of Technology, Pasadena. Through his investigations, the electrical theory of atoms has been put on a sound experimental basis. He was awarded the Nobel prize for physics in 1923.

Mills, Clarke, American sculptor, was born in Onondaga county, New York, 1815. In 1850 he completed a model of an equestrian statue of Jackson, for Lafayette square, Washington. He produced a perfect cast in 1852, and the statue was set up the following year. He made also the equestrian statue of Washington, dedicated in Washington on February 22, 1860, and the colossal statue of Liberty, from a design by Crawford, which crowns the dome of the capitol, finished in 1863. He died at Washington, D. C., 1883.

Mills, Roger Quarles, American lawyer, ex-United States senator, was born in Todd county, Ky., 1832; was admitted to the bar at twenty years of age. He was elected to the Texas house of representatives, 1859. After the fall of General James Deshler, he took command of the brigade at the battles of Missionary Ridge, 1863; New Hope church, and Atlanta, 1864, where he was twice wounded. He was a member of congress, 1873-92; United States senator, 1892-93, and 1893-99, and was author of the Mills' tariff bill. Died, 1911.

Mills, William Lennox, bishop of Ontario since 1901, was born at Woodstock, Ontario, and was graduated at the Western University, London, 1872; D.C.L., LL.D., Queen's University, Kingston; rector of the crown rectory of St. John's, province of Quebec, 1875; rector of Trinity church, Montreal, 1882; archdeacon of St. Andrew's, diocese of Montreal, 1896; bishop coadjutor of Ontario, with title of bishop of Kingston, 1900.

Milman, Henry Hart, poet and church historian, was born in London, 1791. He was educated at Greenwich, Eton, and Brasenose College, Oxford, where in 1812 he won the Newdigate prize with his *Belvidere Apollo*, best of Oxford prize poems; 1849, dean of St. Paul's. His *Poems an Dramatic Works* comprise *Fazio, a Tragedy; Samor;* and—his masterpiece—*The History of Latin Christianity to the Pontificate of Nicholas V.* Died, 1868.

Miltiades (*mil-tī'a-dēz*), Athenian general, "tyrant of the Chersonese," yet, as Byron sings, "freedom's best and bravest friend," was born about 540 B. C. He particularly distinguished himself by the great victory which he gained at Marathon with a small body of Athenians and 1,000 Plateans, 490 B. C., over the Persians. He failed in an expedition against Paros, was fined fifty talents, which he was unable to pay, and consequently died in prison, 489 B. C.

Milton, John, English poet, was born in London 1608. He took his degree of M.A. at Cambridge, and, having relinquished the idea of following divinity or law, he left in 1632, and went to live at his father's house at Horton, in Buckinghamshire. There, he lived five years, reading the Greek and Latin poets, and composing *Comus, Lycidas, Arcades, L'Allegro,* and *Il Penseroso.* On the death of his mother, in 1637, he went abroad, visiting the chief Italian cities, and making the acquaintance of Grotius and Galileo.

In 1641 he engaged in the controversies of the times, and in the course of that and the following year he issued the treatise *Of Reformation; The Reason of Church Government Urged against Prelacy; Prelatical Episcopacy;* and *An Apology for Smectymnuus.* After the execution of Charles he was appointed Latin secretary to the council of state. In his new position his pen was as terrible as Cromwell's sword. In *Eikonoklastes*, he made a savage but effective reply to the famous *Eikon Basilike;* and in his *Pro Populo Anglicano Defensio* he assailed his opponent, Claude de Saumaire, better known as *Salmasius*, with such a storm of eloquence and abuse, that the latter, who died in Spain 1653, is believed to have lost his life through chagrin. Milton at least flattered himself with having "killed his man."

In 1643 he married Mary Powell, who left him in a few weeks, which led to his writing four treatises on divorce, although he afterward became reconciled to her. His second wife, whom he married in 1656, was a daughter of Captain Woodcock, of Hackney. She died, 1658, and her husband has enshrined her memory in an exquisitely pure and tender sonnet.

Unceasing study had affected his eyesight, and about 1654 Milton became totally blind. After the restoration, he retired from affairs; he was obnoxious to the reigning power, and it is said that he was once in custody of the sergeant-at-arms. On the publication of the Act of Oblivion, he married his third wife, Elizabeth Minshull, and shortly after removed to a house in Artillery Walk, London, where he was busy with *Paradise Lost.*

This great poem was originally planned as a mystery, then some idea of treating it as a drama haunted the author's mind; finally however, he resolved to write an epic poem on the *Fall of Man.* The poem was published in 1667. He received five pounds from his publisher, and a promise of five pounds more when 1,300 copies should have been sold. In 1670 he published his *History of England.* Next year he printed *Paradise Regained* and *Samson Agonistes.* He died 1674, and was buried in St. Giles Church, London.

References.—Masson's *Life of Milton* and his edition of the *Poems;* also the *Life* by Mark Pattison; concordance to the *Poems* by Dr. Bradshaw; Trent's *A Short Study;* and Raleigh's *Study.*

Mirabeau (*mē'rà'bō'*), **Gabriel Honora Riquetti, Comte de,** French orator, was born at Bignon, near Nemours, 1749. He wrote many effective political pamphlets, particularly against the financial administration of Calonne. When the states-general was convened, he sought to be elected a representative of the nobles of Provence, but was rejected, and left them with the threat that, like Marius, he would overthrow the aristocracy. To suppress insurrection, he effected in 1789 the institution of the national guard. In 1790 he was elected president of the club of the Jacobins, and, in 1791, of the national assembly. Both in the club and in the assembly he displayed great boldness and energy; but soon after his appointment as president of the latter he died, 1791.

Mitchell, Donald Grant, "Ik Marvel," American novelist and essayist, was born at Norwich, Conn., 1822. He was graduated at Yale College, and pursued law studies in New York City. In 1853 he was appointed United States consul at Venice, and in 1858 became editor of the *Atlantic Monthly.* His best known works are: *Dream Life; Reveries of a Bachelor; My Farm at Edgewood; English Lands, Letters, and Kings;* and *American Lands and Letters.* Died, 1908.

Mitchell, John, American labor leader, was born at Braidwood, Ill., 1870. He began work in coal mines, 1882, and later, as worker or labor leader, was identified with mines and mining. His official connection with the United Mine Workers of America began in 1895, and from 1899 to 1908 he served as president of that organization. He directed the strikes of the anthracite miners in 1900 and 1902, and was vice-president of the American Federation of Labor in 1898, and reelected in 1900. He was the author of a book, *Organized Labor, Its Problems, Purposes.* Died, 1919.

Mitchell, Maria, American astronomer, was born at Nantucket, Mass., 1818. In 1847 she was awarded a gold medal by the king of Denmark for the discovery of a comet. She was employed in observations connected with the coast survey, and in compiling the nautical almanacs. In 1865 she became professor of astronomy at Vassar College, and held that position until the year before her death at Lynn, Mass., 1889.

Mitchell, Silas Weir, American physician, poet and novelist, was born at Philadelphia, Pa., 1830. He studied at the University of Pennsylvania, was graduated at Jefferson Medical College, 1850; LL.D., Harvard, Edinburgh, Princeton. He established a practice in Philadelphia, became prominent as a physiologist and especially as neurologist, and stood at the head of the profession in that department of medical science. Author: *Treatise on Neurology; Serpent Poisons; Poems; Hephzibah Guinnes; Adventures of Francois; The Autobiography of a Quack.* Died, 1914.

Mitford, Mary Russell, English author, was born at Alresford, Hants, 1786. She was sent to school in Chelsea, and her first volume of poems appeared in 1810, and was followed by two more in 1811-12. Her charming sketches of country manners scenery, and character were rejected by several editors, but at length found a place in the *London Magazine*, and were collected as *Our Village* in 5 volumes. She died in 1855 at Swallowfield.

Mithridates (*mith'ri dā'tēz*), **The Great,** 132-63 B. C., King of Pontus, Armenia, and Parthia. He became king when about 13 years old. He conquered the Roman provinces in Asia Minor, sent armies against the Greeks, but finally made a treaty with Sulla. In desperation he committed suicide. Though a despot he favored culture and art.

Mix, Tom, movie actor, is a screen star of high order. Brought up on the western plains, his best work is in cowboy roles. He was discovered by Otis Turner, and sprang rapidly into prominence.

Modjeska (*mo-jes'kà*), **Helena,** (Mme. Chlapowski, née Opido), actress, was born in Cracow, Poland, 1844. She made her début in Bochnia, Poland, 1861; soon became leading actress in her native country; married G. O. Modjeska in 1860, and, in 1868, Charles Bozenta Chlapowski, compatriot. Her first appearance in English was at San Francisco, 1877, in *Adrienne Lecouvreur.* She returned here after two London engagements, and played leading Shakespearean parts, *Camille, Mary Stuart,* etc. She retired from the stage in 1905 and died, 1909.

Mohammed, (*mō-ham'ed*), or **Mahomet,** the founder of the Mussulman religion, was born in Mecca in 570 or 571, died in Medina, 632. His family (Hashem), of the distinguished tribe of Koreish, were hereditary guardians of the Caaba, yet his parents were poor. His father Abdallah, a merchant, died two months after his birth. At the age of six years he lost his mother, and was carried to his grandfather Abd-el-Mottalib. Two years later he lost also his grandfather, and was then adopted by his uncle, Abu Taleb, who held the key of the Caaba.

With his uncle, young Mohammed (in his ninth or twelfth year) made journeys through Syria and other countries, and became acquainted with a Christian monk (probably Nestorian), who predicted his greatness. In his twenty-fifth year he was a shepherd near Mecca, and then joined the business of a linen trader named Saib. At Hajasha, a market, six days' journey south of Mecca, Mohammed entered the service of a rich widow named Khadijah, whom he finally married, although she was sixteen years his senior. They had four daughters and two sons; both sons died young.

From his thirtieth to his fortieth year Mohammed frequently resorted to a solitary cave of Mt. Hara for religious contemplation. There, amid spasmodic convulsions, he had his first vision, in which the angel Gabriel commanded him to recite what he (the angel) said. The revelations continued henceforth to the end of his life, and were dictated by Mohammed to several secretaries, and after his death collected.

His wife was his first convert. During the first three years of his mission only his relatives and friends acknowledged him as a prophet. In the fourth or fifth year he proclaimed himself a prophet, but met only with imprecations. To protect him he was removed by his uncle Abu Taleb to a fortified castle outside of Mecca, where he remained three years. The Koreishites outlawed him and his disciples. When the interdict was removed he returned to Mecca. After another brief expulsion from Mecca he reported his celebrated journey to heaven.

Some pilgrims from Yathreb were converted in 621, and the new faith was established on a firm basis. The era of the Moslems begins with the flight of the prophet, the Hegira. The name of Yathreb was changed into Medinet en-Nebi, "the city of the prophet" (Medina). During the first year of the Hegira he built a mosque at Medina, and proclaimed war against the unbelievers. In an engagement at Bedr be-

tween 314 Moslems and 600 Meccans, under the chief of Mecca, the Moslems were victors. In the following years Mohammed was defeated by the Koreishites in the battle of Mt. Ohod, and besieged for a time in Medina. Failing to gain admittance into Mecca with his followers as pilgrims, he led them against several Jewish tribes, with some success. He now sent written demands to Chosroes II. of Persia, the Abyssinian king, the Byzantine emperor Heraclius, the governor of Egypt, and the chiefs of several Arab tribes. He punished the Meccans, who had broken faith with him and compelled them to acknowledge him as a sovereign and a prophet. The possession of Mecca decided the victory of the new religion in Arabia, and the subjection of a majority of the inhabitants of Arabia to Mohammed's rule and religion became complete.

In 631 he proclaimed a holy war against the Byzantine empire, which proved a complete failure. In the following year Mohammed made his last pilgrimage to Mecca at the head of at least 40,000 pilgrims. Three months after his return to Medina he was taken seriously ill. He himself announced in the mosque the approach of his death, and he expired in the arms of Ayesha, his favorite wife. His only surviving child was Fatima, the wife of Ali, and the ancestress of all the sherifs or nobles of the Mohammedan world. Mohammed possessed natural eloquence, a keen intellect, an overwhelming fluency and great courage.

References.—Muir's *Life of Mahomet*, and *Mahomet and Islam;* Ameer Ali's *The Life and Teachings of Mohammed;* and Margoliouth's *Mohammed and the Rise of Islam.*

Moliere (*mo-lyār*), the assumed name of Jean Baptiste Poquelin, French dramatist, was born at Paris in 1622. His father was a tradesman connected with the court, and he received a good education. He studied law but gave it up for the career of an actor, assuming the name of Molière.

After gaining great success in the provinces he settled in Paris in 1658, having previously produced his two comedies *L'Étourdi* and *Le Depit Amoureux*. In the following year his reputation was greatly advanced by the production of the *Precieuses Ridicules*, a delicate satire on the prevailing affectation of the character of *bel esprit*, on the pedantry of learned females, and on affectation in language, thoughts and dress. It produced a general reform when it was brought forward in Paris. Continuing to produce new plays and performing the chief comic parts himself he became a great favorite both with the court and the people, though his enemies, rival actors and authors, were numerous. Louis XIV. was so well pleased with the performances of Molière's company that he made it specially the royal company, and gave its director a pension.

In 1662 Moliere made an ill-assorted marriage with Armande Béjart, upward of twenty years younger than himself, a union that embittered the latter part of his life. Among his works, other than those mentioned, may be noted: *L'Ecole des Maris, L'Ecole des Femmes, Le Mariage Force, Don Juan, Le Misanthrope, Le Medecin Malgre lui, Le Tartuffe, L'Avare, George Dandin, Les Fourberies de Scapin, Le Bourgeois Gentilhomme,* and *Le Malade Imaginaire.*

Moliere died in 1673 of an apoplectic stroke, a few hours after playing in *Le Malade Imaginaire.* As a player he was unsurpassed in high comic parts; and in the literature of comedy he bears the greatest name among the moderns, after Shakespeare. He borrowed freely from Latin, Spanish and Italian writers, but whatever materials he appropriated he so treated them as to make the result entirely his own and original. The archbishop of Paris at first refused him burial as being an actor and a reviler of the clergy; but the king himself insisted on it.

References.—*Life* by Despois and Mesnard prefixed to his works; and also those of Taschereau, Trollope, and Hatton.

Moltke (*mōlt'kĕ*), **Hellmuth Karl Bernhard, Count von,** chief marshal of the German empire, was born in Parchim, in Mecklenburg, 1800. He was graduated from the military academy at Copenhagen, 1818, and entered the Prussian service in 1822. He became lieutenant-general of the Prussian army in 1859, and sketched the plans of the campaigns against Denmark, 1864, and Austria, 1866. He was the commander-in-chief in the Franco-German war, 1870-71, and to his brilliant strategy are ascribed the splendid victories of the German arms. He was generally regarded as the first strategist of his day; was created a count in 1870, and chief marshal of the German empire in 1871. Died at Berlin, 1891.

Mommsen (*mōm'zen*), **Theodor,** German historian, was born at Garding in Sleswick, 1817, son of a pastor. In 1852 he became professor of Roman law at Zürich, in 1854 at Breslau, and in 1858 of ancient history at Berlin. He edited the monumental *Corpus Inscriptionum Latinarum,* helped to edit the *Monumenta Germaniae Historica,* and from 1873 to 1895 was secretary of the academy of science. His fine library was burned in 1880. His greatest work, the *History of Rome,* was followed by *The Roman Provinces.* Died, 1903.

Monet, Claude, French painter, was born in Paris, 1840. He did little at school but draw in the margins of his books. At twenty he joined the regiment of the Chasseurs d'Afrique and spent two years in the desert, till he was sent home with fever. He entered the studio of the classical painter Gleyre, but soon left and associated with "impressionists," painters who were striving to catch fleeting aspects rather than to record in detail. He became a "plein air" painter, producing remarkable effects of light in his works, and a recognized leader of the Impressionistic School. Among his works are views of cathedrals (Rouen under different lights), "*Le Bassin des Nympheas,*" *Saule Pleureur,*" and a view of the Seine at Giverny. Died, 1926.

Money, Hernando De Soto, lawyer, ex-United States senator, was born in Holmes county, Miss., 1839. He was educated at the University of Mississippi, Oxford, Miss.; served in the confederate army from the beginning of the war until 1864. In 1897 was appointed to the United States senate to fill a vacancy caused by the death of Hon. J. Z. George. In 1898 he was elected to fill out the unexpired term ending 1899, and was then elected to succeed himself, 1899-1911. Died, 1912.

Monge (*mōnzh*), **Gaspard,** French mathematician and physicist, was born at Beaune, 1746. After he had helped to found the Ecole Polytechnique, he was sent by the directory to Italy. Here he formed a close friendship with Bonaparte, followed him to Egypt, and was made successively professor in the Ecole Polytechnique, a senator and count of Pelusium. He died at Paris, 1818.

Monk, George, duke of Albemarle, English general, was born in County Devon, 1608. After a brief service in Holland he fought at first on the side of Charles I. during the English civil war; then, changing to the other side, he commanded a republican army in Ireland, 1646-50, and in 1651 reduced Scotland to submission to Cromwell. After the death of the protector in 1658, Monk proclaimed the former's son, Richard Cromwell, his successor, and himself retained command of the army in Scotland. With that army, in 1660, he marched upon London, and declared for the restoration of Charles II. After gaining a great victory at sea over the Dutch in 1666, Monk died in 1670.

Monmouth, James Fitzroy, Duke of, English general, was born at Rotterdam, 1649. He was a natural son of Charles II. and Lucy Walters, and as such was loaded with rank and honors. In time he became the idol of the English nonconformists. In 1684 he went to Antwerp, and remained abroad until the death of the king, when he resolved to embark for England. He landed, in 1685, with a small force, at Lyme-Regis, and issued a manifesto declaring James to be a murderer and usurper, and asserting his own legitimacy and right by blood to be king of England. On the fifth day, however, his force consisted only of a rabble of some 2,000 rudely armed peasants and farmers. He was completely defeated at the battle of Sedgemoor, the last great fight on English soil, was taken prisoner, and, on July 15, 1685, was brought to the scaffold and beheaded on Tower hill.

Monroe, James, fifth president of the United States, was born in Westmoreland county, Va., 1758. He was graduated at William and Mary College, served in the revolutionary army, was present at several battles, and in 1783 entered the general congress as a delegate from his native state. During the years 1799-1802, he filled the office of governor of Virginia. In 1802, as the associate of Livingston, he was dispatched on a special mission to negotiate for the purchase of Louisiana. In 1803, in England, and in 1805, in Spain, he performed special diplomatic services for his country. In 1816 he was elected president of the United States by the republican (democratic) party, and made himself very popular. His most noteworthy acts, perhaps, were the recognition of the independence of Mexico and the South American republics, and the promulgation of what has since been called the "Monroe doctrine." After being twice president, he was justice of the peace, a visitor of the University of Virginia, and member of a state convention. He died in 1831—like his predecessors, Adams and Jefferson—on the 4th of July.

Montagu, Lady Mary Wortley, English beauty, wit and writer, was born at Thoresby, in Nottinghamshire, about 1689, eldest daughter of Evelyn Pierrepont, duke of Kingston. She was carefully educated, and manifested precocious talents. Pope was among her friends, but he at length quarreled with and libeled her. In 1739 her declining health induced her to settle on the continent, whence, however, she returned in 1761. She died in the following year. Her *Letters* place her at the head of feminine epistolary writers in Great Britain, and leave her few rivals in other countries.

Montaigne (*mon-tān'* Fr. pron. *mon-tan-y'*), **Michel Eyquem de,** famous French essayist, was born in 1533 at the castle of Montaigne, in Périgord. He learned Latin conversationally before he could speak French, and Greek was also an early acquisition. At the age of six he became a pupil at the Collége de Guienne at Bordeaux, and at thirteen he began to study law. Little is known of his youth and early manhood.

He was a parliamentary counsellor from 1554 till 1567; he seems to have seen some military service in 1556; he married the daughter of a fellow counsellor; and at some period was appointed a gentleman of the chamber to the king. In 1571, however, he retired to his ancestral chateau and devoted himself to peaceful study and meditation. In 1580 he published the first two books of his *Essais,* and immediately afterward set out on a journey through Germany, Switzerland and Italy to restore his health, which had been shattered by the attacks of a hereditary disease.

In 1582 and 1584 he was chosen mayor of Bordeaux. In 1588 he republished his *Essais,* with the addition of a third book. After a last visit to Paris (in the course of which he was thrown into the Bastille for a short time by the Leaguers) Montaigne seems to have dwelt quietly in his chateau. He died of quinsy in 1592.

Montaigne's *Essais* have at all times been one of the most popular books in the French language. They embrace an extraordinary variety of topics, which are touched upon in a lively entertaining manner, with all the raciness of strong native good sense, careless of system or regularity. Sentences and anecdotes from the ancients are interspersed with his own remarks and opinions, and with stories of himself in a pleasant strain of egotism, and with an occasional license, to which severer moralists can with some difficulty reconcile themselves.

His *Voyages,* a diary of his journeys in 1580-82 were published in 1774.

References.—See *Life,* by Alphonse Grun and Bonnefon; and Dowden's *Montaigne.*

Montalembert (*mōn'tà'lăn'bâr'*), **Charles Forbes, Comte de,** French historian, orator and publicist, was born in London, 1810, his mother being a Scotchwoman. He became a peer of France on the death of his father. In 1858 he published a pamphlet entitled, *Un Dèbat sur l'Inde,* eulogizing English institutions, and depreciating those then existing in France. For this pamphlet he was summoned before the bar of the correctional police, and was sentenced to imprisonment for six months, and to pay a fine of 3,000 francs; and, though this penalty was immediately remitted by the emperor, Montalembert appealed against the decision of the court, was again condemned, and once more pardoned, very much to his own disgust. He died at Paris, 1870.

Montcalm (*mont-kăm'*), **Louis Joseph St. Veran, Marquis de,** commander-in-chief of the French troops in Canada, 1756-59, was born near Nimes, France, 1712. He captured Fort Ontario at Oswego, 1756; Fort William Henry in 1757; repulsed the British under Abercrombie at Ticonderoga in 1758; repelled Wolfe's attack on Quebec, 1759; and was defeated and mortally wounded in the battle of Quebec, September 13 of the same year.

Montesquieu (*mon'tes-ku'*; Fr. *mon'tes'ke-u*) **Charles de Secondat, Baron de la Brede et de,** French philosophical writer was born in the Chateau de la Bréde, near Bordeaux, 1689. In 1716 he became president of the Parlement of Bordeaux. His first published work, the *Lettres Persanes,* was a daring and subtle satire on the follies of the day, disguised in the form of letters from a Persian noble.

He gave up his president's office in 1726, and then visited Germany, Hungary, Italy, Holland and England. In England he stayed for eighteen months, and imbibed a deep admiration for its social and political insti-

tutions. He returned to France in 1731, and in 1734 he published his *Considerations sur les Causes de la Grandeur et la Decadence des Romains*. In 1748, *L'Esprit des Lois*, the result of twenty years of labor, was published, and at once placed its author among the greatest writers of his country. Among his lesser works are *Dialogue de Sylla et d'Eucrate; Le Voyage de Paphos; Essai sur le Gout* (unfinished); *Arsace et Ismenie* (probably a work of his youth); and *Lettres Familieres*. He died 1755.

References.—Ilbert's *Montesquieu* (Romances Lecture, 1904), and Vian's *Hist. de Montesquieu, sa Vie et ses Wuvres;* Lowell's *Eve of the French Revolution*.

Montessori, Maria, Italian educator, was born in 1870. She was so successful in her teaching of feeble-minded children that she determined to apply the same method to the education of normal children. The central idea of her system is "self education," allowing the child to choose those activities in which he is most interested. The system is widely used throughout the United States.

Montfort, Simon de, English general and statesman, was born in France about 1208, son of a French count. He went to England in 1230. He here attached himself to Henry III., married the king's sister, and was sent to govern Gascony in 1248. He returned in 1253, and passed over to the side of the barons, whom he ultimately led in the struggle against the king. He sketched a constitution for the country, and summoned the most representative parliament that had yet met, but as he aimed at the welfare not of the barons only, but of the common people as well, the barons began to distrust him. He was slain at Evesham, 1265.

Montgolfier (*mōn'gōl'fyā'*), **Jacques Etienne,** and **Joseph Michel,** two brothers, distinguished as the inventors of balloons, were the sons of a celebrated paper manufacturer at Annonay, France. The former was born in 1745, and the latter in 1740. Joseph was a man of much genius and little education; but the two brothers were fitted to supplement each other's deficiencies, and together they made many discoveries, and were both received as members of the French academy. Joseph invented the hydraulic screw, the calorimeter, etc., and in the latter part of his life filled a post in the department of arts and manufactures. He died at Paris in 1810, eleven years after his brother.

Montgomery, James, British poet, was born in Scotland, 1771. He was intended for a Moravian preacher, but, showing little aptitude, became a shop boy. In 1797 he published a small volume of poems, *Prison Amusements*, followed by *The Wanderer of Switzerland*. Died, 1854.

Montgomery, Richard, American general, was born in Ireland, 1736. In 1772 he resigned his commission in the British service, and settled in Dutchess county, N. Y., representing it in the continental congress, 1775. As brigadier in the colonial army he took Montreal, and was killed in the assault on Quebec, December, 1775.

Moody, Dwight Lyman, American preacher and revivalist, was born in Massachusetts, 1837. He renounced Unitarianism, became a Congregationalist, served during the Civil War on the Christian commission, and from 1865 entirely abandoned business and devoted himself to religious work in Chicago and elsewhere. His church and schoolhouse at Chicago having burned down in 1871, he went to England to raise funds for rebuilding them, and was successful in his object. He established a school for Christian workers at Northfield, Mass., and a Bible institute at Chicago. Died, 1899.

Moody, William Vaughn, American poet and playwright, was born at Spencer, Indiana, in 1869. He was educated at Harvard, and taught English there in 1894-5, leaving to become instructor and later assistant professor in the University of Chicago. *The Fire Bringer*, a lyrical drama, *The Masque of Judgment*, and *Poems* place him among the foremost American poets. *The Great Divide*, 1907, is among the best American plays. Moody died in 1910.

Moore, George Foot, American scholar and educator, professor in Harvard University since 1902, was born at West Chester, Pa., 1851. He was graduated at Yale College, 1872; D.D., 1897; Union theological seminary, N. Y.; Tübingen, LL.D., Western Reserve, 1903; Harvard, 1906. Author: *The Book of Judges in Hebrew, Index to the Journal of the American Oriental Society*. He was appointed Roosevelt lecturer at Berlin University, 1909.

Moore, Sir John, British general, was born in Glasgow, Scotland, 1761. He served in the British army during the American war; became a member of parliament in 1784; served in Corsica, 1793-94. In 1798 he was made major-general. On his return from an expedition in aid of Sweden, he was sent to Portugal to command an army to coöperate with the Spaniards, 1808. He was obliged to retreat from Salamanca to the sea, won the victory of Corunna in 1809, but fell in the battle.

Moore, John Bassett, American publicist, was born in Smyrna, Del., 1860. He was graduated at the University of Virginia, 1880; LL.D., Yale, 1901. He studied law at Wilmington, Del., and in 1885, was appointed law clerk in the state department at Washington, D. C. In 1886 he became third assistant secretary of state, and was retained in that position until he resigned, 1891, to become professor of international law and diplomacy at Columbia University. In 1913, appointed counsellor of the department of state by President Wilson. He is an authority on international law. Author: *Report of Extra-territorial Crime; Report on Extradition; Extradition and Interstate Rendition*.

Moore, Thomas, Irish poet, was born in 1779. He was graduated at Trinity College, Dublin, 1798, and in 1799 went to London to study law, taking with him a translation of the *Odes of Anacreon* which he published in 1800. In 1801 he published *The Poetical Werks of the Late Thomas Little, Esq.*, a pseudonym suggested by his diminutive stature. His *Irish Melodies* have enjoyed a popularity surpassing that of any similar poems in the language. In 1817 he completed *Lalla Rookh*, the most elaborate of his works. His most important prose work was his *Notices of the Life of Lord Byron*. His remaining works comprise: *The Summer Fête*, a poem; *Memoirs of Lord Fitzgerald*. Died, 1852.

Moran, Thomas, American artist, was born at Bolton, in Lancashire, England, 1837. His early life was spent at Philadelphia, where he learned engraving. He then studied painting in England, France, and Italy. His large paintings, the *Grand Canon of the Yellowstone*, and the *Chasm of the Colorado*, were bought by congress for $20,000. His other works are mostly of the same class. Died, 1926

More, Hannah, English writer, daughter of the village schoolmaster of Stapleton, near Bristol, was born in 1745. In 1774 she was introduced to the Garricks, Johnson, Burke, Reynolds and the best literary society of London. Led by her religious views to withdraw from society, she retired, on the publication of her *Sacred Dramas*, to Cowslip Green near Bristol, where she did much to improve the condition of the poor, and still helped by her writings to raise the tone of English society. In 1828 she settled at Clifton, where she died in 1833.

More, Sir Thomas, English statesman, was born at London, 1478. He was educated at Oxford, and at Lincoln's Inn. In 1514 and 1515 he was sent on commercial embassies to the Netherlands, and after his return became a privy councillor. In 1521 he was knighted and made treasurer of the exchequer. In 1523 he was chosen speaker of the house of commons. He constantly refused to lend his authority to Henry VIII.'s project of divorce and second marriage. In 1534 he refused to swear allegiance to the act of succession for securing the throne to the offspring of Anne Boleyn, and was committed to the Tower. In July, 1535, he was brought to the bar of the high commission charged with traitorously attempting to deprive the king of his title as supreme head of the church, and was condemned. He was executed July 6th. He wrote *Utopia*, and several other works, most of them in Latin.

Moreau (*mō'rō'*), **Jean Victor,** celebrated French general, was born at Morlaix, 1763, and educated for the bar. He entered the army before he was eighteen, but was taken from it by his father. The revolution enabled him to gratify his wishes, and he made his first campaign under Dumouriez, 1792. He gained the rank of brigadier-general in 1793, and that of general of division in 1794. In the latter year he commanded the right wing of Pichegru's army, and obtained great successes in the Netherlands. Having engaged with Pichegru, Georges, and other royalists in a plot against the consular government, he was brought to trial, 1804, and sentenced to two years' imprisonment, but was allowed to come to America. Here he remained until 1813, when he was prevailed upon to join the allied sovereigns, and appear in arms against his country. He was, however, mortally wounded at the battle of Dresden, and died September 1, 1813.

Morgagni (*mōr-gän'yē*), **Giovanni Battista,** Italian anatomist, was born at Forli, Italy, 1682. He was professor at Padua from 1715, and is the reputed founder of pathological anatomy, to which his most celebrated works refer. His chief book is *On the Seats and Causes of Diseases Investigated by Anatomy*. He died at Padua, 1771.

Morgan, John Pierpont, American banker, financier, and art collector, was born in Hartford, Conn., 1837. He was graduated at English high school, Boston; studied at the University of Göttingen, Germany, and entered the bank of Duncan, Sherman and Company, 1857. Became a member, 1871, of the firm Drexel, Morgan and Company, now J. P. Morgan and Company, leading private bankers of the United States, with important branch houses in London and Paris. Gave site, buildings and funds amounting to about $1,500,000 to Lying-in hospital, New York, and large donations to the New York trade schools, the cathedral of St. John the Divine, Harvard Medical College, and many other institutions. He made valuable gifts to the American museum of natural history, Metropolitan museum of art, and New York public library, and owned famous collections of pictures, books, manuscripts, curios, etc. He was president of the Metropolitan museum of art, and member of many societies, clubs, etc. Died in Rome, Italy, 1913.

Morgan, John Tyler, American soldier, lawyer and statesman, was born at Athens, Tenn., 1824. He removed to Alabama in 1833; was admitted to the bar in 1845. After the Civil War he resumed practice of law at Selma, Ala.; was a presidential elector, 1876; and from 1877 to 1907 was one of the ablest members of the United States senate. He was appointed by President Harrison as arbitrator on Behring sea fisheries, 1892, and was appointed by President McKinley, in 1898, one of the commissioners to organize government in Hawaii, after passage of annexation bill. Died, 1907.

Morley, Christopher, American author and editor, was born at Haverford, Pa., in 1890. He was an undergraduate at Haverford College, and Rhodes scholar at Oxford from 1910 to 1913. He edited successively *The Ladies Home Journal, The Philadelphia Public Ledger*, and *The New York Evening Post*. He wrote essays, travel notes, poetry, short stories and novels. Among his works are *Hide and Seek, Parnassus on Wheels, Chimney Smoke, Where the Blue Begins*, and *Thunder on the Left*.

Morley, John, British statesman and writer, was born in Blackburn in 1838, and educated at Cheltenham and Oxford. He edited, among other publications, the *Fortnightly Review*, from 1867 to 1882; the *Pall Mall Gazette*, from 1880 to 1883, and *Macmillan* in 1883-85, and, after two unsuccessful candidatures, in 1869 and 1880, entered parliament in 1883, as member for Newcastle. From the first, he advocated home rule for Ireland, and his articles in favor of it, followed up by speeches in 1885, made him Gladstone's most conspicuous supporter. His best known books are: *Edmund Burke; Critical Miscellanies; Voltaire*, and an authoritative *Life of Mr. Gladstone*. He was created a viscount, 1908. Died, 1923.

Morrill, Justin Smith, American legislator was born in Strafford, Vt., 1810, and devoted himself to mercantile pursuits until his election to congress. He sat in the house of representatives from 1855 to 1867, and in the senate from 1867 until his death, the longest term of service up to that time. In 1861 he succeeded in securing President Lincoln's approval of a bill, previously vetoed by Buchanan, for the reëstablishment through public land grants of state colleges for the teaching especially of agriculture and the mechanic arts. By virtue of this bill there had been established up to 1899 in the various states sixty-four institutions giving instruction to 36,000 students. Senator Morrill was also the author of the famous Morrill tariff bill of 1861. He died in 1898.

Morris, Clara, American actress, was born in Toronto, Canada, 1849. She was taken to Cleveland when a child, and grew up there; became a member of the ballet in academy of music, Cleveland, 1861, and rapidly advanced to leading lady. Soon became prominent in emotional rôles and appeared as a star in the principal American theaters. Leading rôles: *Camille, Alixe, Miss Multon, Mercy Merrick* in *The New Magdalene, Cora* in *L'Article 47*, etc. She married Frederick C. Harriott in 1874. Author: *A Silent Singer; Life on the Stage; The Trouble Woman; Life of a Star*, etc. Died, 1925.

Morris, George Pope, American journalist and poet, was born in Philadelphia, 1802. He edited *American Melodies*, and, with N. P. Willis, *The Prose and Poetry of America*. His best known poem is *Woodman, Spare That Tree*. In 1837 he produced a drama entitled *Briarcliff*, which ran forty nights. Died, 1864.

Morris, Gouverneur, American statesman, was born in 1752. He became a member of the provincial congress of New York, and was one of those who drew up the state constitution in 1776. He was also a prominent member of the continental congress in 1777-80, the colleague of Robert Morris as superintendent of finance, and the organization of the bank of North America was largely due to him. In 1787 he was one of the committee to draft the federal constitution; was minister to France during the revolution, and became United States senator on his return. Died, 1816.

Morris, Robert, American financier, was born in Liverpool, England, 1734. He came to America at an early age and settled in Philadelphia, becoming a partner in the counting-house of C. Willing. Signed the declaration of independence, and greatly helped the American cause from his own purse, both during the revolution and afterward. He founded the bank of North America, was superintendent of finance from 1781 to 1784, but declined the secretaryship of the treasury. Died, 1806.

Morris, William, English poet and artist, was born near London, 1834. He was educated at Marlborough school and at Oxford. In an artistic capacity he did much to elevate the taste of the public in domestic decoration, designing wallpapers, fabrics and furniture. He published *The Earthly Paradise* and many other works, and rendered into English the Anglo-Saxon *Beowulf*, the *Odyssey, Æneid*, etc. He also carried on for a time the *Kelmscott Press*, which reprinted various choice works. His works include, besides the above: *Defense of Guenevere and Other Poems; The Life and Death of Jason*, etc. He died at London, 1896.

Morse, Samuel Finley Breese, American painter and inventor, was born at Charlestown, Mass., 1791. After graduating at Yale college in 1810, he studied painting under Washington Allston and Benjamin West. He is one of the best of our earlier American portrait painters, and was one of the founders and the first president of the national academy of design. In 1835 he was appointed professor of the history of art at the university of New York.

It was while returning from Europe in 1832, on board the *Sully*, that Morse worked out roughly a plan for employing electromagnetism in telegraphy. It was not until 1835, however, that he was able to exhibit an instrument that was found to work well. Thereafter he associated with him in his work Prof. Leonard Gale and Alfred Vail, and was assisted by the published discoveries of Prof. Joseph Henry. Credit should be given to these three men in particular, and to others for material assistance in bringing the telegraph to practical success, but Morse was the inventor in the only true meaning of the word.

In 1843, after many discouragements Congress voted $30,000 for an experimental line between Washington and Baltimore. More hardships were encountered before the line was finally completed, but at last, on May 24, 1844, the first public message was sent over the line, the now historic words, "What hath God wrought?"

Morse died 1872, in New York City, after successfully defending his rights through a long series of lawsuits and after many honors had been bestowed upon him by his own countrymen and by foreign nations. It seems not unlikely that the idea of the submarine Atlantic cable originated with Morse; at all events, he laid in New York harbor the first submarine telegraph line, in 1842. With Prof. John Draper he also took the first daguerreotype to be made in this country.

References.—Prime's *Life of S. F. B. Morse;* Jeans' *Lives of Electricians;* Hubert's *Inventors;* Denslow and Porter's *World's Workers.*

Morton, Oliver Perry, American statesman and jurist, was born in Wayne county, Ind., 1823. He was graduated at Miami University in 1843; was admitted to the bar in 1847, United States senator from Indiana, 1867-77. He declined the post of United States minister to England in 1870. In 1877 he was a member of the United States electoral commission, and died the same year.

Moscheles (*mōsh'e-lās*), **Ignaz,** German pianist and composer for the piano, was born at Prague, 1794, of Jewish parents. He made frequent tours throughout Europe from 1815; from 1844 he was a professor at the Leipzig conservatory until his death, 1870. He edited in English Schindler's *Life of Beethoven,* and wrote numerous concertos, sonatas, and studies for the piano.

Moses, Hebrew leader, prophet, and legislator was born in Egypt about 1600 B. C., during the time of the oppression of the Hebrews. His father, Amram, and mother, Jochebed, both of the race of Levi, were obliged to expose him in obedience to a royal edict, but placed him in a basket of bulrushes on the river border, where he was found by the daughter of the Egyptian king as she went to bathe. She adopted him as her son, and in all probability had him educated for the duties of the priesthood, the means of instruction thus afforded him being the best which his time possessed.

His expedition into Ethiopia, in his fortieth year, as leader of the Egyptians, when he subdued the city of Saba (Meroe), won the affections of the conquered Princess Tharbis. That he married her, rests only on the tradition preserved by Josephus. An outrage committed by an Egyptian on a Hebrew excited his anger, and he secretly slew the Egyptian. The deed became known, and he escaped the vengeance of the king only by a hasty flight into Arabia. Here he took refuge with Jethro, a Midianitish prince and a priest, and espoused his daughter Zipporah.

The promises of God that his race would become a great natior occupied much of his thoughts, and at last God appointed him the chosen deliverer from the bondage in Egypt. Being slow of speech, and possessing none of the arts of an orator, God therefore gave him power to prove his mission by miracles, and joined to him his elder brother Aaron, a man of little energy, but of considerable eloquence. Thus prepared, Moses returned to Egypt at the age of eighty years to undertake the work.

At first he had the greatest obstacles to overcome, but after the visitation of ten destructive plagues upon the land, Pharaoh suffered the Hebrews to depart. Moses conveyed them safely through the Red Sea, in which Pharaoh, who pursued them, was drowned with his army. New difficulties arose however. The distress of the people in the desert, the conflicts with hostile races, the jealousies of the elders, often endangered his authority and even his life, despite the miraculous attestations of his mission.

During the term of the encampment at Sinai he received the Ten Commandments and the laws for the regulation of the lives of the Israelites. When they were already near the end of their journey toward Canaan Moses saw himself compelled, in consequence of new evidences of discontent, to lead them back into the desert, for forty years more of toilsome wandering. He was not himself permitted, however, to see the Israelites settled in their new country on account of a murmur which, in the midst of his distresses, he allowed to escape against his God.

After appointing Joshua to be the leader of the Hebrews he ascended a mountain beyond Jordan, from which he surveyed the land of promise, and so ended his life in his 120th year. All superstitious reverence for his bones or his place of sepulture was prevented by the secrecy of his burial, and its effectual concealment from the people.

References.—See, for traditional view of his life, Rawlinson's *Moses, His Life and Times;* for personality and work, W. R. Smith's *Old Testament in Jewish Church;* Schultz's *Old Testament Theology;* Kittle's *History of the Hebrews;* Rothstein's *Moses as Man and Prophet.*

Motley, John Lothrop, American historian and diplomat, was born in Massachusetts, 1814. He was graduated at Harvard College in 1831, and studied at Göttingen and Berlin; D.C.L., Oxford, 1858. After traveling for some years in Europe he returned to the United States, studied law and was admitted to the bar. In 1869 he was appointed American minister to the court of St. James, a post from which he was removed in 1871. The three great works upon which Motley built up one of the foremost literary reputations of the age are: *The Rise of the Dutch Republic*—a *History;* its sequel, *The History of the United Netherlands From the Death of William the Silent to the Synod of Dort;* and *John of Barneveld.* Died in England, 1877.

Mott, Lucretia, née Coffin, Quaker philanthropist and reformer, was born in Nantucket, 1793. She was a delegate to the world's anti-slavery convention in London, 1840, but was not allowed to take a seat as delegate because of her sex. She published a *Sermon to Medical Students* in pamphlet form, and also a *Discourse on Women,* delivered in Philadelphia, 1849. Died at Philadelphia, 1880.

Moulton, Ellen Louise Chandler, American novelist and poet, was born in Pomfret, Conn., 1835, daughter of Lucius L. Chandler. She married William U. Moulton in 1855. Author: *This, That, and the Other; Juno Clifford; My Third Book; Bed-Time Stories; More Bed-Time Stories; Some Women's Hearts; Swallow Flights; Poems.* Died, 1908.

Moulton, Forest Ray, astronomer, was born at LeRoy, Michigan, in 1872. He was educated at Albion College and at the University of Chicago, where he became professor of Astronomy in 1912. Through his extensive researches, especially in mathematical calculations, he has placed himself in the front rank of modern scientists.

Moulton, Richard Green, educator, author, was born in Preston, England, 1849. He was graduated from London University, 1869; Cambridge, 1874; Ph.D., University of Pennsylvania, 1891. Was professor of literary theory and interpretation, University of Chicago. Author: *Shakespeare as a Dramatic Artist; The Ancient Classical Drama; The Literary Study of the Bible; A Short Introduction to the Literature of the Bible;* Editor: *The Modern Reader's Bible,* in 21 volumes. Died in 1924.

Moultrie, William, American revolutionary general, was born in South Carolina, 1731. He repulsed an attack on Sullivan's island, Charleston harbor, where Fort Moultrie now stands, in 1776, for which he received the thanks of congress; defended Charleston in 1779. In 1785 and again in 1794 he became governor of his native state, and died in 1805.

Mozart(*mo-zart* "German; pron. *mōtsart*), **Johann Chrysostomus Wolfgang Amadeus,** great German composer, was born at Salzburg, 1756; died at Vienna, 1791. At the age of four years his father, Leopold Mozart, a violinist of repute, began to teach him some minutes and other small pieces on the harpsichord.

From this period he made rapid progress, and a concerto for the harpsichord, which he wrote in his fifth year, was so difficult that only the most practiced performer could play it. In his sixth year Mozart was taken by his father, along with his sister, to Münich and Vienna, where the little artists were received at court with great favor. In 1763 the family made a journey to Paris, where Mozart published his first sonatas for the harpsichord; and in the following year they proceeded to England, where the child-musician performed before the court the most difficult compositions of Bach and Handel. Returning to Salzburg, after visiting Holland, the family again went to Vienna in 1767. where the boy received a commission from the emperor to write the music of a comic opera, but owing to the opposition of the court musicians the work was never performed.

In 1769 Mozart, who had been made master of the concerts at the court orchestra at Salzburg, commenced a journey to Italy, in company with his father. In Rome he wrote down, on hearing it, the famous *Miserere,* annually sung in the Sistine chapel during the holy week. At Milan in 1770 he composed, in his fourteenth year, his first opera *Mithridates,* which was performed more than twenty times in succession. Henceforth he resided chiefly in Salzburg, but also visited Paris, Munich, and finally Vienna. In the latter city, although he was appointed composer to the court, he found it necessary to maintain himself by giving lessons in music and writing waltzes.

Notwithstanding this poverty it was here that most of his best work, such as his famous operas, *Le Nozze di Figaro* ("The Marriage of Figaro,") *Don Giovanni, La Clemenza di Tito* ("Clemency of Titus"), *Die Zauberflöte* ("The Magic Flute"), and his last work the *Requiem,* were written. It was here also that the best pianist and greatest composer of his time—perhaps of the world—died in obscurity and was buried in a pauper's grave.

The extent of work done by Mozart during his short life is almost incredible, and in every department of composition, whether vocal or instrumental, he excelled. In the history of music he stands most prominently forward as an operatic composer, his *Don Giovanni, Magic Flute,* and *Marriage of Figaro* being works previously unequaled and never since surpassed. In his character he was kind hearted, guileless, cheerful, void of envy, almost boyish to the last.

References.—See *Lives,* by Otto Jahn, which contain a summary of everything heretofore written on Mozart; Fischer, Holmes, Nohl's *Life,* translated by Lalor; *Correspondence,* edited by Nohl; article in Grove's *Dictionary of Music.*

Muhlenberg, Heinrich Melchior, clergyman, founder of the German Lutheran church in America, was born in Germany in 1711. In 1748 he was instrumental in forming the first American Lutheran synod. Died, 1787.

Muhlenberg, John Peter Gabriel, American general, son of preceding, born in Pennsylvania, 1746. He was a pastor and later became a major-general in the army. Died, 1807.

Muir, John, geologist, naturalist, inventor, explorer, was born in Scotland in 1838 and died in Martinez, California, in 1914. From his boyhood he was deeply interested in nature. In 1850 he came to America and spent four years at the University of Wisconsin. Finally he went to California and made the Yosemite his home. He lived as a hermit for years. He discovered many glaciers in the High Sierras. Author: *The Mountains of California; Our National Parks; The Yosemite;* 150 shorter articles.

Muller (*mül'ĕr*), **Friedrich Max,** British philologist and orientalist, was born in Dessau, 1823, son of a German poet, Wilhelm Müller. He was educated at Leipzig; studied at Paris, and settled in England in 1846. He was appointed Taylorian professor at Oxford in 1854, and 1868-75 was professor of comparative philology there. Besides editing the *Rig-Veda,* he has published *Lectures on the Science of Language; The Origin and Growth of Religion; Comparative Mythology; Lectures on the Science of Language; Chips From a German Workshop.* Died, 1900.

Mulock (*mŭ'lok*), **Dinah Maria,** (Mrs. Craik), English author, was born at Stoke-upon-Trent, 1826. Settling in London, at twenty, she published *The Ogilvies; Olive; The Head of the Family,* and *Agatha's Husband.* She never surpassed or

even equaled her *John Halifax, Gentleman*, published in 1857. In 1856 she married George Lillie Craik, and spent a period of quiet happiness and literary industry at Corner House, Shortlands, Kent, where she died, 1887.

Mulock, Sir William, Canadian jurist, chief-justice of the exchequer division of the high court of justice for the province of Ontario since 1905, was born at Bond Head, Canada, 1843. He was graduated at the University of Toronto, 1863, barrister, 1868, and Q. C., 1888. He was first elected to the parliament of Canada, 1882; was postmaster-general of Canada, 1896-1905, and minister of labor, 1900-05; chief justice of Ontario in 1923. He also introduced and carried through the house of commons a bill establishing the Canadian department of labor, 1900. He represented the Dominion of Canada at proceedings connected with inauguration of federal parliament of Australia.

Munchhausen (*müngk'hou-zen*), **Hieronymus Karl Friedrich, Baron von,** member of an ancient and noble German family, who attained a remarkable celebrity by false and ridiculously exaggerated tales of his exploits, adventures. Died, 1797.

Mundelein, George William, (1872-). Graduated Manhattan College, New York City, 1889. Ordained Roman Catholic priest, 1895. Consecrated Auxiliary Bishop of Brooklyn in 1909; Promoted Archbishop of Chicago, 1916; Created Cardinal, 1924.

Munroe, Charles Edward, American chemist, educator, was born at Cambridge, Mass., 1849. He was graduated at Harvard, S.B., 1871; Ph.D., Columbian, 1894; professor of chemistry at United States naval academy, 1874-86; chemist to torpedo corps, United States Naval Torpedo Station and War College, 1886-92; head professor of chemistry 1892-1918, and dean of faculty of graduate studies, George Washington University, 1893-1913; emeritus since 1918. He is the inventor of smokeless powder and an authority on explosives.

Munsey, Frank Andrew, American publisher, was born in Mercer, Me., 1854. He was educated in the public schools of Maine, and started his business career in a country store. He became manager of the Western Union telegraph office, Augusta, Me.; went to New York, 1882, and started *The Golden Argosy*, a juvenile weekly, now the adult monthly, *The Argosy;* in 1889 he launched *Munsey's Weekly*, converted in 1891 into *Munsey's Magazine.* He was also the owner of the Baltimore *News*, Washington *Times*, and Philadelphia *Evening Times.* Died, 1925.

Munsterberg (*mün'ster-bĕrg*), **Hugo,** German-American psychologist, educator and author, was born at Danzig, Germany, 1863. He was graduated at Danzig gymnasium, 1882; pursued post-graduate studies in philosophy, natural sciences, and medicine in Leipzig and Heidelberg, 1882-87; Ph.D., Leipzig, 1885, M.D. Professor of psychology beginning 1892, and director of psychological laboratory, Harvard. Author: *Psychology and Life; American Traits; The Americans; Principles of Art Education.* Died, 1916.

Murat (*mü'rä'*), **Joachim,** celebrated French marshall, was born at La Bastide, near Cahors, France, 1771. He was one of the best generals of Napoleon I., by whom he was created King of Naples. In 1812 he accompanied the great army to Moscow, in command of the cavalry, and again commanded the cavalry at the battle of Leipzig, in the following year. After the return of Napoleon from Elba, he led an army against the Austrians, whom he encountered at Tolentino, in upper Italy, but was signally defeated—losing at once his army and his throne. Subsequently he landed with a few followers on the coast of Calabria, but was again defeated, captured, and, after trial by court-martial, shot at Pizzo in 1815, dying with the same bravery he had exhibited during life.

Murfree, Mary Noailles (Charles Egbert Craddock), author, was born in Murfreesboro, Tenn., 1850, daughter of William L. Murfree. For years she concealed her identity and sex under her pen-name. Author: *In the Tennessee Mountains; The Young Mountaineers; The Story of Old Fort Loudon; The Bush-whackers and Other Stories; The Champion; A Spectre of Power; Storm Centre; The Frontiersman; The Windfall*, etc. Died, 1922.

Murillo (*mōō-rēl'yō*), **Bartolome Esteban,** Spanish painter, was born in Seville, Spain, 1618. In 1646 he finished painting the little cloister of St. Francis; and the manner in which he executed it produced the greatest astonishment among his countrymen. He enriched the churches and convents of Seville and other cities with numerous works. His greatest picture is probably the "*Immaculate Conception.*" Having been invited to Cadiz to paint the grand altar of the Capuchins, he there executed his celebrated picture of the "*Marriage of St. Catherine.*" Died in Seville, 1682.

Murray, Sir James Augustus Henry, British philologist, was born at Denholm, 1837. He was graduated from the London University. His *Dialect of the Southern Counties of Scotland* established his reputation as a philologist. The great work of his life, the editing of the philological society's *New English Dictionary*, was begun at Mill Hill, 1879, and was continued at Oxford. He was knighted in 1908. Died, 1915.

Murray, John Clark, Canadian educator and writer, professor of moral philosophy, McGill University, Montreal, beginning 1872, was born in 1836. He was educated at the Universities of Glasgow, Edinburgh, Heidelberg, and Göttingen, and was appointed to the professorship of philosophy in Queen's University, Kingston, Canada, 1862. Author: *Outline of Sir W. Hamilton's Philosophy; A Handbook of Psychology; An Introduction to Ethics.* Died, 1917.

Murray, Lindley, American grammarian, was born at Swatara, Pa. 1745. He was educated at a Quaker school at Philadelphia. At first in a New York counting-house, he studied law, and was admitted to the bar; but during the revolutionary war he amassed a fortune in commerce. In 1785 he was crippled by a fever. Author: English Grammar, etc. Died, 1826.

Mussolini, Benito, born 1883 in Doria, Province of Forli, Italy. His father, Alessandro, the village blacksmith, was a socialist. While a bricklayer in Switzerland, he studied at night. After urging Italy to join the Allies in the World's War, he entered the war, served on the Italian front, and was seriously wounded. In the midst of the post-war depression he organized and led the Fascisti Party. Without the firing of a gun the Fascisti took control of Italy and Mussolini was made dictator. During his administration crime was suppressed, agriculture encouraged, business and commerce increased, an alliance with the Vatican formed, and a remarkable improvement effected throughout the whole of Italy.

Mutsuhito (*moot-soo-he'to*), emperor of Japan, was born in 1852, ascended the throne in 1867, and married Princess Haruko in 1869. His reign was marked by great reforms. Under the rule of this noted emperor, Japan entered upon an unprecedented era of prosperity. Civilization made rapid progress, and secured for Japan the foremost place among Asiatic nations. Died, 1912.

Myers, Philip Van Ness, author, historian, was born at Tribes' Hill, N. Y., 1846. He was graduated at Williams College, 1871; LL.B., Yale, 1890; L.H.D., Miami University, 1891. He was president of the Farmer's College, Ohio, 1879-90; professor of history and political economy, University of Cincinnati, 1890-1900; dean academic faculty, University of Cincinnati, 1896-97. Author: *Life and Nature Under the Tropics; Remains of Lost Empires; Ancient History; Mediæval and Modern History; General History*, etc.

Myrick, Herbert, publisher, editor, author, was born at Arlington, Mass., 1860. He was graduated at the Massachusetts Agricultural College, Amherst, Mass., 1882. He is now president and editor of Phelps publishing company; director of *Good Housekeeping*, 1901-1911; was vice-president of the Orange Judd Company and managing editor of *American Agriculturist* at New York, and *Orange Judd Farmer* at Chicago, 1888-1920.

Nadir Shah (*nä'dēr shä*), Persian ruler, belonging to the Afshars, a Turkish tribe, was born near Kelat, in Khorassan, Persia, 1688. Having been degraded and punished for some real or supposed offense, he betook himself to a lawless life, and for several years was the daring leader of a band of 3,000 robbers, who levied contributions from almost the whole of Khorassan. He invaded India, took Delhi in 1739, and seized the Koh-i-noor diamond and the peacock throne. His last years were marked by rapacity and oppression, and he fell at last under the hand of an assassin, 1747. He is still reckoned by the Persians, however, as one of their great national heroes.

Nagel, Charles, lawyer, secretary of commerce and labor, 1909-13, was born in Colorado county Texas, 1849. He was graduated from the St. Louis Law School in 1872; and was admitted to the bar in 1873. President of the St. Louis city council from 1893 to 1897; was a member of the St. Louis Law School faculty beginning 1886. He took an active part in politics for many years. Member of the Taft Cabinet.

Nansen (*năn'sen*), **Fridtjof,** Arctic explorer, was born in Norway, 1861, and was graduated from the University of Christiania, Ph.D., 1888. He started on his first Arctic expedition in 1882, and in May of the same year undertook his celebrated journey across Greenland, which he accomplished in forty-six days. In 1893 Nansen sailed in the *Fram* to make an examination of the entire polar regions, and penetrated farther north than any of his predecessors. He then became professor of zoölogy at Christiania University, took an active part in the separation of Norway and Sweden in 1905, was minister for Norway at the court of St. James, 1906-08; and professor of oceanography, Oslo University, 1908. Author: *Farthest North; Scientific Results; Norway and the Union with Sweden.* Died, 1930.

Napier (*nāp'yĕr; nā-pēr'*), **Sir Charles,** British admiral, was born at Merchiston hall near Falkirk, 1786, cousin to the hero of Sind. Commanding the *Thames* in 1811, he inflicted great damage upon the enemy in the Mediterranean. In 1814 he led the way in the ascent of the Potomac and took part in the operations against Baltimore. He also commanded the Baltic fleet in the Russian war; but the capture of Bomarsund failed to realize expectations, and he was superseded. He twice sat in the British parliament, and, until his death at his Hampshire seat, Merchiston hall, in 1860, he labored to reform the naval administration.

Napier, Sir Charles James, British general, the conqueror of Sind, was born at London, 1782. He served during the Irish rebellion, and at the battle of Corunna was five times wounded and taken prisoner. He also took part in the Anglo-American war of 1812. From 1822-30 he was governor of Cephalonia; in 1838, a K.C.B., and in 1841 was sent to India to command the army of Bombay against the Ameers of Sind. Here he destroyed the fortifications of Emaun Ghur, 1843, followed by the battle of Meanee (Miani), where, with 2,800 English and Sepoys, he defeated 22,000 Baluchs. After the annexation he was appointed governor of Sind. He died near Portsmouth, 1853.

Napier (*nā'pĕr*), **John,** Scottish mathematician, inventor of logarithms, was born at Merchiston castle, Edinburgh, in 1550. He made a contract with Logan of Restalrig for the discovery of treasure in Fast castle, in 1594, devised warlike machines for defense against Philip of Spain, and recommended salt as a fertilizer of land. He described his famous invention of logarithms in *Mirifici Logarithmorum Canonis Descripto*, in 1614, and the calculating apparatus called "Napier's bones" in *Rabdologiæ seu Numerationis per Virgulas libri duo*, 1617. Died at Merchiston, 1617.

Napier of Magdala, Robert Cornelis Napier, Lord, British general, was born at Colombo, Ceylon, 1810. During the Indian mutiny he was chief engineer in Sir Colin Campbell's army, distinguished himself at the siege of Lucknow, and was made K.C.B. He received the thanks of parliament for his services in the Chinese war of 1858. In 1870 he became commander-in-chief in India and a member of the Indian council, and was subsequently governor of Gibraltar, field-marshal, and constable of the Tower. He died in 1890, and was buried in St. Paul's.

Napier, Sir William Francis Patrick, brother of Sir Charles, was born near Dublin, 1785. He served in the peninsular campaign and retired as a lieutenant-general. He also wrote a famous *History of the War in the Peninsula, The Conquest of Scinde*, and the *Life of Sir Charles Napier.* He died at Clapham, London, 1860.

Napoleon I. (Napoleon Bonaparte), emperor of the French, was born at Ajaccio, 1769. He was, at the age of eleven, sent to the military school of Brienne, in Champagne, and in 1784, to the military school of Paris.

In 1785 he was appointed junior lieutenant in the army. He was in Paris on June 20, 1792, and saw the mob invade the Tuileries. He also witnessed the overthrow of the monarchy on August 10. In 1793 he took a leading part in ousting the English from Toulon, and in 1794 was appointed general of the artillery of the army of Italy, and drove back the Sardinians.

He was married to Joséphine Beauharnais in 1796, and two days later left to assume command of the army in Italy. He first overthrew the Austrians and Sardinians at Millesimo and Dego, and forced the Sardinians to make the armistice of Cherasco. He then turned against the Austrians, whom, after a severe struggle at the bridge of Lodi, he drove across the Adda. Then ensued the celebrated fights for Mantua, Castiglione Arcola, and Rivoli. Mantua fell on January 16, 1797, and the Emperor Francis II. agreed to preliminaries of peace at Leoben. Bonaparte had already organized Lombardy as a republic and had forced the Pope to make the peace of Tolentino.

On his return to Paris Bonaparte obtained leave of the directory to attempt the conquest of Egypt, which was meant to be the prelude of the restoration of the French supremacy in India. Sailing from Toulon in 1798, he captured Malta, and landed in Egypt. On July 2 he captured Alexandria, on July 21, the French won the battle of the Pyramids, and the conquest of Egypt was effected. But Nelson's victory on August 1 in the battle of the Nile (Aboukir) was a bitter reverse, destroying his fleet.

In 1799, he invaded Syria, but failed to take Acre, which was defended by Sir Sidney Smith's squadron. He then massacred 2,500 prisoners at Jaffa, and returned to Egypt, where he defeated the Turks in the battle of Aboukir. Hearing of the successes of the second coalition in Europe, of the French loss of Italy, and of the state of France, he left Kélber in command in Egypt and returned to his native land. The revolution of November 9, 1799, arranged by Siéyes, followed, and the consulate was established.

Austria and England were now the chief foes of France. Early in 1800, Bonaparte crossed the Alps, occupied Milan, and on

June 14 won the great battle of Marengo. On December 3, Moreau won the battle of Hohenlinden, and on February 9, 1801, the Emperor Francis II. agreed to the treaty of Lunéville. The terms were in the main the same as those of Campo-Formio. On March 27, 1802, the peace of Amiens was signed with Britain; on August 1 Bonaparte was proclaimed consul for life. The concordat with the pope had already been signed, and Napoleon, as he was henceforth called, gave to the nation the bank of France and the code Napoléon, reformed its educational system, conciliated many of the old nobles and instituted the Legion of Honor.

During the years 1802 and 1803, however, Napoleon made preparations for a fresh development in foreign policy. He proposed to found one colonial empire in the New World and another in India. But his schemes with regard to America were frustrated when fever destroyed his army in Haiti in 1803. In the same year he sold the territory of Louisiana to the United States for $15,000,000.

He then determined to rearrange the map of Germany and to destroy Britain's commerce. Early in June, 1802, he became President of the Italian republics, and in September and October he annexed Piedmont, Parma and Piacenza. In February, 1803, he reconstituted Switzerland, and sent secret agents to stir up rebellion in Ireland. Further, he persisted in demanding the British evacuation of Malta. On May 18, 1803, war between France and England broke out, and Hanover was occupied by French troops.

The discovery of a plot, headed by Georges Cadoudal, strengthened Napoleon's position, and on May 18, 1804, he became emperor of the French. Then he made elaborate preparations at Boulogne for conveying troops across the channel and capturing London. In 1805 he incorporated the Ligurian Republic with France, and forced Naples to make a treaty. But the defeat of Villeneuve by Calder off Cape Finisterre in July destroyed all chance of a successful invasion of England, and in September he invaded Germany.

The fall of Ulm opened the way to Vienna; and though Nelson's victory at Trafalgar, on October 21, destroyed the Spanish and French fleets, Napoleon defeated the Austrians and Russians on December 2 at Austerlitz, and on December 26 forced the Emperor Francis II. to make the treaty of Pressburg. Austria being humbled and deprived of much territory, an opportunity was given Napoleon of forming in July, 1806, the confederation of the Rhine. Bavaria, Baden, Würtemberg, Hesse-Darmstadt, and other states placed themselves under Napoleon's protection. The Holy Roman Empire ceased to exist, and on August 6, 1806, the Emperor Francis II. formally renounced his title of German Emperor.

Prussia, however, declared war on October 1, 1806; on the 14th of the same month her army was totally defeated at Jena; on the 25th the French occupied Berlin. England and Russia were alone left unsubdued. Against the former Napoelon issued the famous Berlin decree of November 21, 1806, and at the same time prepared to attack the Russians. In February, 1807, he fought the battle of Eylau, and on June 15 he won a decisive victory at Friedland. In July the Czar Alexander and Napoleon agreed to the treaties of Tilsit, which enabled them to dominate Europe. In October, 1807, France and Spain agreed to conquer Portugal, and in November Junot entered Lisbon. No sooner had Napoleon made Joseph Bonaparte king of Spain (June, 1808) than the Spanish people rose, and an English expedition landed in Portugal (August) and Wellington won the battle of Vimeiro. The peninsular war proved one of the principal causes of the fall of Napoleon. War with Austria again broke out in April, 1809; but after the battles of Aspern and Wagram, the Emperor Francis was forced to sign the humiliating treaty of Vienna (Schönbrunn), October, 1809.

In seeking to strengthen his position, Napoleon was led to divorce Joséphine, and in 1810 to marry Marie Louise of Austria. At the same time he made almost superhuman efforts to ruin England by means of his continental system. But on Decmeber 31, 1810, the czar intimated that he intended to modify his adhesion to the continental system, and Napoleon resolved to invade Russia. His disastrous campaign to Moscow in 1812, undertaken while he had the Spanish War on his hands, encouraged Europe to rise, and in 1813 the war of liberation began. Russia and Prussia joined forces, and though Napoleon won the battles of Lutzen (May 2, 1813) and Bautzen (May 20), the adhesion of Austria to the ranks of his enemies was followed by the total defeat of the French at Leipzig (October 16-19, 1813).

After showing consummate but unavailing skill in the campaign in France during the spring of 1814, Napoleon was forced to abdicate in April, and Louis XVIII. entered Paris. After a short sojourn in Elba, Napoleon escaped and landed in France on March 2, 1815, and his reign of a hundred days began. The battle of Waterloo (June 18) completed the downfall of his hopes and he ended his days on the Island of St. Helena.

That Napoleon often showed himself in his earlier days kind, generous and affectionate is undoubted; that he was patient during his last captivity is equally true. His temperament was Italian, his passionate feelings Corsican, but he was by nature neither bloodthirsty nor cruel. The code Napoléon witnesses to the boldness and clearness of his statesmanship; while, as Marbot tell us, the soldier who understands Napoleon's strategy has nothing more to learn. He waged war on a scale never before witnessed, and neither France nor any other country has produced a greater military genius. His body was conveyed to France in 1840 and laid in the Hotel des Invalides in Paris.

References.—Fournier's *Napoleon I.;* Rose's *Life of Napoleon I.;* Sloane's *Life of Napoleon Buonaparte;* Rosebery's *Napoleon:* the *Last Phase;* Lanfrey's *The History of Napoleon the First;* Seeley's *A Short Life of Napoleon;* Lévy's *Napoleon In Time;* and Browning's *Napoleon: the First Phase.*

Napoleon III., or **Charles Louis Napoleon Bonaparte,** emperor of the French, was born in the palace of the Tuileries, Paris, 1808. In 1830, he took part in a revolutionary movement in Italy, and in 1836 entered France; but, seeking to arouse the soldiery at Strassburg in his favor, he was taken prisoner and transported to the United States. In 1840 he landed at Boulogne, again hoping to arouse the French soldiery in his favor; for this second attempt he was tried for his high treason before the chamber of peers and received a sentence of perpetual imprisonment in the castle of Ham. In 1846 he escaped from Ham in the disguise of a workman. In 1848, on the abdication of Louis Philippe, the provisional government permitted his return to France. In June of that year he was elected to the national assembly for the department of Seine and for three other departments; and in the following December he was elected by an immense majority president of the newly-constituted republic. In December, 1852, the famous *coup d'etat* took place, and Louis Napoleon secured his election as president for ten years; but a year later he again appealed to the people, and obtained an almost unanimous vote for the restoration of the empire. In 1870 the Franco-Prussian war broke out, which led to the surrender of the emperor and his army at Sedan, and to the ultimate reëstablishment of the republic. He died at Chiselhurst, England, 1873.

Narses (*när'sēz*), statesman and general, lived in the 6th century. He was a eunuch. He led an army into Italy, took possession of Rome and completely extinguished the Gothic power in that country. Justinian appointed him exarch of Italy, which post he held until his death, 568.

Navarro (*nä-vär'rō*), **Mary Anderson de,** American actress, was born in Sacramento, Cal., 1859. She made her début as *Juliet* at McAuley's theater, Louisville, 1875. She had great success in leading legitimate roles in the United States and England until 1889, when she married Antonio de Navarro, and retired from the stage. She has since lived in England. Author: *A Few Memories.*

Nazimova, Madame Alla (1879——), Mrs. Charles Bryant, was born in Yalta, Crimea. She was a skilled violinist at 12, but preferred the drama, in which she was successful before she was 21. Appeared in New York, 1905, becoming famous in Ibsen's *A Doll's House.*

Neander (*nā-ān'dĕr*), **Johann August Wilhelm,** noted German ecclesiastical historian, was born at Göttingen, 1789, of Jewish parents, named Mendel. He received his early education at the Johanneum in Hamburg. In 1811 he took up his residence at Heidelberg University as a privat docent; in 1812 he was appointed professor of theology and the following year was called to the newly established University of Berlin as professor of church history. Here he remained until his death in 1850. The most important work of his life was his *Universal History of the Christian Religion and Church,* in 5 volumes.

Nearchus (*nē-är'kus*), Macedonian naval commander, was a native of Crete, who settled in Amphipolis during the reign of Philip, and became the companion of the young Alexander the Great. In 329 B. C. he joined Alexander in Bactria with a body of Greek mercenaries, and took part in the Indian campaigns. Having built a fleet on the Hydaspes, Alexander gave Nearchus the command. He left the Indus in November, 325 B. C., and, skirting the coast, reached Susa in 324 B. C. His narrative is preserved in the *Indica* of Arrian.

Nebuchadnezzar (*neb'ū-kad-nez'ar*), king of ancient Babylon, was born about 645 B. C. In 604 B. C. he became king, took Jerusalem about 606 B. C. and made Zedekiah king as his vassal. Zedekiah soon rebelled, and Nebuchadnezzar again took Jerusalem, after a terrible siege, destroyed the temple, threw down the walls of the city, and carried the people captives to Babylon. Among the captives was the Hebrew prophet Daniel, who tells much about him in the book of *Daniel.* He died about 561 B. C.

Necker (*ne'kâr'*), **Jacques,** French financier and statesman, was born at Geneva, 1732, and was for many years a banker at Paris. His *Eulogy on Colbert,* his *Treatise on the Corn Laws and Trade,* and some *Essays on the Resources of France* inspired such an estimate of his talent for finance, that in 1776, he was appointed director of the treasury, and, shortly after, comptroller-general of France. He died at Copet, in Switzerland, 1804. The whole of his works form fifteen volumes.

Nehemiah, Jewish reformer, was a Jew of the captivity, of royal degree and in high favor. He received a commission from the king to repair to Jerusalem and restore the Jewish worship, and ruled over it for twelve years, until he saw the walls of the city, amid much opposition, restored. He subsequently returned to superintend the reform of the worship, of which the book of the old testament, named after him, relates the story.

Neill, Charles P., American economist and educator, United States commissioner of labor, was born at Rock Island, Ill., 1865. He was educated at the University of Notre Dame, Ind., 1885-88, instructor and associate professor and professor of political economy, Catholic University, Washington, 1897-1905, and United States commissioner of labor, 1905-1913, and member of the United States immigration commission, 1907-1910. Manager bureau of information, Southeastern Railways since 1915.

Neilson (*nēl'sun*), **Lillian Adelaide,** English actress, was born in Leeds, Yorkshire, England, 1848. She made her début as *Juliet* when only seventeen years old; appeared as *Amy Robsart* in 1870, in London, with immense success, and in 1878 stood at the head of her profession. In 1872 she came to the United States, playing in Booth's theater, New York, and in Boston, where she was equally successful. She died in Paris, France, 1880.

Nelson, Horatio, Viscount, famous English admiral, was born at Burnham Thorpe, Norfolk, 1758. He entered the navy as a midshipman in 1770, and after voyages to the West Indies, the Arctic regions, and the East Indies, was promoted to a lieutenancy in 1777. While in command of the *Boreas* on the Leeward islands station, he involved himself in trouble through his severe and arbitrary enforcement of the navigation act against American traders. His conspicuous bravery at the engagement with the Spaniards off Cape St. Vincent in 1797 brought him to the rank of rear-admiral. In the same year he lost his right arm at Santa Cruz, and in the following year, with an inferior force, annihilated the French fleet in the bay of Aboukir, for which he was raised to the peerage as Baron Nelson, and created duke of Bronte by the king of Naples. During the scare of a Napoleonic invasion he kept a vigilant watch in the channel, and, on the resumption of war, he in 1805, crowned his great career by a memorable victory off Trafalgar over the French fleet commanded by Villeneuve, but was himself mortally wounded at the very height of the battle, dying in 1805.

Nelson, Knute, lawyer, United States senator, was born in Norway, 1843. He came to the United States in 1849, and resided in Chicago, Ill., until the fall of 1850; removed to the state of Wisconsin, and from there to Minnesota, 1871. He was admitted to the bar in the spring of 1867; was a member of the assembly in the Wisconsin legislature, 1868 and 1869; member of the forty-eighth, forty-ninth, and fiftieth congresses for the 5th district of Minnesota; elected governor of Minnesota in the fall of 1892 and reëlected in the fall of 1894; elected United States senator for Minnesota, 1895, and reëlected 1901, 1907 and 1912. Died, 1923.

Nepos (*nē'pos*), **Cornelius,** Roman historian, was born probably at Verona, Italy, and flourished during the time of Julius Cæsar and the first six years of the reign of Augustus. He enjoyed the friendship of Cicero, and his only extant work, *Vitae Excellentium Imperatorum,* is held in high esteem as an educational classbook.

Nernst (*nernst*), **Walther,** German chemist and physicist, was born at Briesen, Prussia, 1864. He was educated at Zürich, Berlin, and Würzburg; appointed professor of physics at Göttingen in 1891, where in 1895 he organized the institute for physical and electro-chemistry, of which he became director in 1905. Inventor Nernst electric lamp. Won Nobel prize in chemistry, 1920.

Nero, Claudius Cæsar Drusus Germanicus, Roman emperor, was born at Antium, in Latium, A. D. 37. He was adopted by the emperor Claudius, who married Agrippina, A. D. 50, and four years later he succeeded Claudius on the throne, which he occupied for fourteen years. Nero's whole reign was characterized by licentiousness, brutality, and cruelty. The great fire in Rome happened in Nero's reign, and it is asserted by some writers that the city was set on fire by the order of Nero, who attributed the fire to the Christians and persecuted them with the most unrelenting cruelty. The philosopher Seneca, who had been his tutor, and the poet Lucan were put to death by his order. At length a formidable conspiracy was raised against him, and he fled to a house about four miles from Rome, where he put an end to his own life on hearing the trampling of the horses on which his pursuers were mounted, 68 A. D.

Nesselrode (*nes'el-rō-dye*), **Karl Robert, Count,** Russian diplomat, was born at Lisbon, Portugal, 1780, son of a Russian ambassador. He gained the confidence of Emperor Alexander, took a principal part in the negotiations which ended in the peace of Paris and in the congress of Vienna, and was one of the most active diplomats of the holy alliance. Died, 1862.

Nestorius (*nes-tō'ri-us*), celebrated heresiarch, was born in Syria. He was made patriarch of Constantinople in 428, deposed for heresy by the council of Ephesus, 431, and banished to the Lybian desert, where he died after 439.

Nethersole (*neтн'ėr-sōl*), **Olga,** English actress, was born in London, 1870, daughter of Henry Nethersole. She joined the Garrick theater under John Hare's management in 1889; visited Australia on starring tour, 1890; several times visited the United States on starring tours, and as manager of her own company; was manager of Her Majesty's theater, London, 1898, when she produced *The Termagant*, and was manager of the Adelphi theater, London, during 1902, where she produced *Sapho*, and also of the Shaftesbury theater, 1904. 1904. Made her own debut in Paris under her own management, 1907; joined British Red Cross, 1916; on nursing staff of Hampstead military hospital as V. A. D., 1916-19.

Nevada (*ne-vä'dä*), **Emma,** née Emma Wixon, prima donna, was born at Austin, Nev., 1861. She studied under Mme. Marchesi, Paris; and made her début at Her Majesty's theater, London, 1880, as *Amina* in *La Somnambula*. She subsequently sang here and in Europe. In 1885 she married Dr. Raymond Palmer, and now lives in Paris.

Nevin, Ethelbert, American composer, was born at Edgeworth, Pa., 1862. From 1887 to 1893 he taught in Boston, then went to southern Europe to study until 1900, when he returned and associated himself with H. N. Parker at Yale. *Narcissus*, among a group entitled *Water Scenes*, and a song, *The Rosary*, are perhaps his most popular productions. He died in 1901 at New Haven.

Newcomb (*nū'kum*), **Simon,** American astronomer and mathematician, was born in Wallace, N. S., 1835. He came to the United States in 1853; was graduated at Lawrence Scientific School, Harvard, 1858; LL.D., Columbian, Yale, Harvard, Columbia. He was assigned to duty at United States naval observatory; professor of mathematics and astronomy, Johns Hopkins, 1884-94, and editor of *American Journal of Mathematics*. In 1874 he was made correspondent, and after 1893 was one of the eight foreign associates of the Institute of France; made officer of legion of honor of France, 1893. Author: *Secular Variations and Mutual Relations of the Orbits of the Asteroids; Investigation of the Orbit of Neptune; Researches on the Motion of the Moon*. Died, 1909.

Newlands, Francis Griffith, lawyer, United States senator, was born in Natchez, Miss., 1848. Was admitted to the bar by the supreme court of the District of Columbia and went to San Francisco, where he entered upon the practice of law and continued in the active practice of his profession until 1888. He was elected to the fifty-third, fifty-fourth, fifty-fifth, fifty-sixth, and fifty-seventh congresses; and the United States senate from Nevada, in 1903 and 1908 Died, 1917.

Newman, John Henry, English prelate and author, was born at London, 1801, son of a London banker. He was graduated from Trinity College, Oxford, 1820, and took orders in 1824. He took a leading part in the tractarian movement, and in 1841 wrote *Tract XC.*, which was severely condemned. After living at Littlemore for some years in seclusion, he was received into the Roman Catholic church, 1845. He was created cardinal in 1879. Chief among his works are *Apologia pro Vitâ suâ;* and *The Dream of Gerontius*. Died, 1890.

Newton, Sir Isaac, English natural philosopher, was born at Woolsthorpe, Lincolnshire, 1642. In 1665-7 he invented the binomial theorem, the method of tangents, and the fluxional calculus.

The story seems to be authentic that the fall of an apple in the garden at Woolsthorpe late in 1665, started the train of thought which led him to the discovery of universal gravitation. He certainly then deduced the rule of inverse squares from Kepler's third law, and attempted to verify it by the observed motion of the moon. It was not, however, until 1685, when Picard's improved value for the terrestrial radius was at his disposal, and he had overcome the difficulty of calculating the attraction of a sphere upon an adjacent particle, that he ascertained the agreement to be exact.

The great work embodying his conclusions was published in 1687, with the title *Philosophiae Naturalis Principia Mathematica*. The first book expounded generally the dynamical results of the law. The second treated of motion in a resisting medium, hydrostatics, hydrodynamics, and the theory of the tides. Finally, Book III. showed the working of the attractive principle in the solar system and demonstrated the subjection to it of comets.

Newton's optical researches began in 1666, when he resolved white light into its constituent colors. Two years later he constructed the first reflecting telescope, and in papers communicated to the Royal Society, in 1672 and 1675, described his prismatic experiments and the phenomena of thin plates. His results were collected in a volume on *Optics*, in which the emission theory of light was advocated. Newton was made Lucasian professor of mathematics at Cambridge in 1669.

He represented the university in the convention of 1689; but though again elected to parliament in the Whig interest in 1701, he was rejected at the polls in 1705. He was knighted by Queen Anne in 1705, and acted as president of the Royal society from 1703 until his death. The controversy between Newton and Leibniz regarding their respective claims to priority in the discovery of the differential calculus dragged on for a score of years, from 1705. The facts elicited left no room for doubt of Newton's originality.

He was engaged in 1694-5 on the laborious task of perfecting his lunar theory, for which purpose Flamsteed's observations were indispensable. They were communicated partially and reluctantly, and the annoyances involved caused Newton to abandon his pursuit of the moon's inequalities. This contest embittered seven years of his life. He died at Kensington, 1727, and was buried in Westminster abbey.

References.—See *Lives*, by Sir David Brewster, and A. de Morgan; also Lodge's *Pioneers of Science;* and Hawthorne's *True Stories*.

Ney (*nā*), **Michel,** French marshal, was born in Saarlouis, now in Prussia, 1769, the son of a cooper. He entered the army as a private hussar in 1788; became a general of brigade in 1796, and distinguished himself by his bravery. When Napoleon abdicated in 1814 he attached himself to Louis XVIII., but on the former's return from Elba he joined his old master, and stood by him during the hundred days. He was defeated by Wellington at Quatre-Bras, in 1815, and commanded the Old Guard at Waterloo on June 18th. On the second restoration he was arrested, tried by his peers, and shot, December 7, 1815.

Nicholas I., emperor of Russia, third son of Paul I., was born at St. Petersburg, 1796. In 1828 the war with Persia began, and on its close occurred the war with Turkey. This was followed by the rising of Poland, which he subdued, and reduced the kingdom to a mere province. His rule now became despotic and fierce. Died, 1855.

Nicholas II., czar of Russia, was born in St. Petersburg, 1868, son of Alexander III., whom he succeeded in 1894. During the famine of 1891, he was, at his own request, made president of the committee of succor, and worked hard in the organization of relief. He married Princess Alix of Hesse-Darmstadt in 1894. The coronation of the czar took place with impressive ceremonial at Moscow in May, 1896, and in August of the same year he commenced a tour which included visits to the emperor of Austria and Germany, to the king of Denmark, to Queen Victoria and to the president of France. His reign was marked by the construction of the trans-Siberian railroad to the Pacific coast, by the Russo-Japanese war, by adroit diplomacy with China, by a strong and conservative attitude toward Turkey, as well as toward the European powers, and by the granting of a constitution in 1905. Assassinated, 1918.

Nicholas V., pope, Tommaso Parentucelli, was born near Pisa, Italy, 1397. He was educated at Bologna and Florence, went to Rome in 1426 and entered the ecclesiastical service. He was chosen pope in 1447. A liberal patron of scholars, he despatched agents east and west to purchase or to copy important Greek and Latin manuscripts, and may almost be said to have founded the Vatican library. Died, 1455.

Niclas (*nish'i-as*), Athenian statesman and general of the Peloponnesian war, was the son of the wealthy Niceratus. In 427 B. C. he defeated the Spartans and Corinthians, and ravaged Minoa, Melos and Locris. In 415 B.C. he was appointed one of the commanders against Sicily, and in the autumn laid siege to Syracuse. At first successful, later his fleet was destroyed, his army began a retreat and he was captured and put to death in 413 B. C.

Nicoll (*nik'ul*), **De Lancey,** American lawyer, was born at Bayside, L. I., N. Y., 1854. He was graduated at Princeton, 1874; Columbia Law School, 1876; was admitted to the bar, and practiced law in New York City. He was nominated by the Tammany organization for district attorney, 1887; was elected and served three years. Is now senior member of the firm of Nicoll, Anable, Fuller & Sullivan, and has appeared in numerous corporation cases. Died, 1931.

Niebuhr (*nē'bōōr*). **Barthold George,** German historian and critic, was born in Copenhagen, 1776, where his parents then resided. He was educated at Kiel and Edinbrugh, held several appointments under the Danish government, and entered the Prussian civil service in 1806. At the opening of the University of Berlin, in 1810, he became connected with that institution. His great work is is his *History of Rome*, upon which he was engaged for many years. His *Lecturers on Roman History*, and several other works, were published after his death by Dr. Schmitz and others, from notes on Niebuhr's *viva voce* lectures. Died, 1831.

Niehaus (*nē'hous*), **Charles Henry,** American sculptor, was born at Cincinnati, Ohio, 1855. He was educated in the Cincinnati schools, and at the Royal Academy, Munich, Germany. Among his works are: equestrian statue of General Forrest, Memphis, Tenn.; statue of McKinley and lunette for tomb at Canton, Ohio; Benjamin Harrison monument, Indianapolis; pediment, state capitol, Frankfort, Ky., etc.

Nielsen (*nēl'sen*), **Alice,** American opera singer, was born at Nashville, Tenn., daughter of Erasmus Ivarius. She received her musical education in San Francisco, under Mlle. Ida Valerga, and made her first stage appearance with an opera company at Oakland, Cal., 1893, as *Yum Yum* in *Mikado*. She studied grand opera in Rome, and made her first appearance in grand opera at Bellini theater, Naples, Italy, as *Marguerite* in *Faust;* appeared at San Carlo opera house, Naples, in *La Traviata*, and at Covent Garden, London, in *Don Giovanni*, *The Marriage of Figaro*, *La Boheme*, and *Rigoletto*. She toured the United States in grand opera from 1906-11, successively with the Don Pasquale Co., San Carlo Co. and Boston Opera Co.; then for several years with Metropolitan Opera Co.

Nietzsche, Friedrich, German philosopher, was born near Leipzig, 1844. When thirty-five, he was forced on account of illness to leave Basle, where he was professor of classical philology. Owing as much to his abnormal mind and poor digestion as to the contemporary thought of several German writers, he became the classical exponent of the Superman theory, attacking Christianity, marriage and the general idea of democracy. Among his works are *Beyond Good and Evil*, *Thus Spoke Zarathustra*, *The Will To Power*, and *The Geneology of Morals*. He died insane in 1900.

Nightingale, Florence, a famous philanthropic nurse, was born at Florence, Italy, 1820, of wealthy English parentage. At the age of twenty-two she entered the institution of Protestant deaconesses at Kaiserswerth, to be trained as a nurse, and afterward studied the methods of nursing and hopsital management with the sisters of St. Vincent de Paul, Paris. In 1854 she volunteered to organize a staff of nurses during the Crimean war, and, during the terrible winter of 1854-55, she ministered with unwearied devotion to the suffering soldiers. Died, 1910.

Nikisch (*nik'ish*), **Arthur,** noted Hungarian orchestral conductor, was born in Lébény Szent-Miklos, 1855, and at an early age disclosed extraordinary musical talent. He remained at the Vienna conservatory for eight years; was appointed first violinist at the royal opera; and, in 1878, went with Neumann to Leipzig, where he was made assistant conductor and conductor in the Old opera house. In 1889 he succeeded Herr Gericke as conductor of the Boston symphony orchestra, and in 1895 accepted the post of director of the royal opera at Budapest. He was one of the greatest conductors of our time. Died, 1922.

Nilsson (*nil'sun*), **Christine** (Comtesse de Miranda) Swedish operatic singer, was born at Wexiö. Sweden, 1843, daughter of a peasant. She made her début at Paris in 1864, in London, 1867. She repeatedly visited the United States. In 1872 she married M. Rouzand, who died in 1882; and in 1887, at Paris, she became the wife of the Count de Miranda, and retired. Died, 1921.

Nixon, Lewis, shipbuilder, was born in Leesburg, Va., 1861. He was graduated at the United States Naval College, 1882. He was sent to the Royal Naval College, Greenwich, England, by navy department, and transferred to construction corps of navy, 1884. In 1890 he designed the battle-ships *Oregon*, *Indiana* and *Massachu-*

setts, and then resigned from navy to become superintending constructor of the Cramp shipyard, Philadelphia, Pa., and in 1895 founded the Crescent shipyard, Elizabeth, N. J. He was appointed by Mayor Van Wyck, president of East river bridge commission, 1898; appointed, 1902, New York commissioner to Louisiana Purchase exposition, St. Louis. He succeeded Richard Croker as leader of Tammany Hall, 1901-02.

Nobel (*nō-bel'*), **Alfred Bernhard,** Swedish chemist and engineer, was born at Stockholm, 1833. His father, a mechanician, settled in 1837-59 in St. Petersburg, and in 1862 began to manufacture nitroglycerine. In 1867 Alfred, who assisted him, discovered through the accidental escape of some nitroglycerine from a cask into the siliceous sand of the packing, how to make a safe and manageable explosive—dynamite. He also invented blasting-jelly and several kinds of smokeless powder. At his death at St. Remo, Italy, in 1896, he left a fortune of over 2,000,000 pounds, most of which he destined to go for annual prizes for those making the most important discoveries in physics, chemistry, physiology, writing the best literature, and accomplishing the most for humanity and peace.

Nodzu (*nō'dzûû*), **Michitsura, Count,** Japanese general, was born in Satsuma, 1840. He fought on the side of the mikado in the war of restoration, and with imperialists in the Satsuma rebellion. During the war with China he captured Pinyang; was placed in command of the 5th division; later on appointed commander-in-chief of the first army, and, during the Japanese and Russian war, commander-in-chief of the fourth army. He was created a baron, 1895. Died in 1908.

Nogi (*nō'gē*), **Kiten, Baron,** Japanese general, was born in Choshu, Japan, 1849. He served in the Satsuma rebellion of 1877, and was twice severely wounded. He commanded the third army in the Russo-Japanese war, capturing Port Arthur, 1905. Suicided, 1912, on death of Emperor.

Nordau (*nōr'dou*), **Max Simon,** German physician and writer, of Jewish descent, was born at Budapest, 1849, but is a Prussian subject. He received his university education at Budapest, Berlin, and Paris. He was co-founder and for many years vice-president of the Association Littcraire et Artistique Internationale, Paris; a member of the Hellenic National Academy, Athens. His first book on Paris appeared in 1878; others, more especially two in English translation, *Conventional Lies of the Children of Culture*, and *Degeneration*, were much criticised and led to considerable discussions. Died, 1923.

Nordenskjold (*nō'ren-shûl'*), **Nils Adolf Eric, Baron,** Swedish explorer, geologist, was born at Helsingfors, Finland, 1832. In 1858 he was appointed state mineralogist at Stockholm, obtained letters of naturalization as a Swedish subject, and was a member of the chamber of nobles during the last two assemblies of the Swedish states. After several successive voyages and explorations in the Arctic sea, he, in 1878-79, discovered the northeast passage. He was created baron in 1880. Died, 1901.

Nordhoff (*nōrd'hof*), **Charles,** American author, was born at Erwitte, Prussia, 1830. He came to the United States with his parents when a child of five years. From 1861 to 1871 he was editorial writer for the *New York Evening Post*. The next two years he spent in travel through California and the Hawaiian islands. He then became Washington correspondent for the *New York Herald*. His principal works are: *A Man of War Life; The Merchant Vessel*. Died, 1901.

Nordica (*nōr'di-ka*), **Lillian,** née Lillian Norton, stage name of Mrs. Zoltan F. Döme, American prima donna, was born at Farmington, Me., 1859. Her earlier education was pursued at the New England conservatory, Boston, and her later studies at Milan, Italy. She made her début as an opera singer at Brescia, Italy, in *La Traviata*. She sang leading soprano parts in forty operas and in all the standard oratorios, but she was best known in Wagnerian parts. She appeared in grand opera in the United States several seasons. Died, 1914.

Norman, Sir Henry (1858—), English journalist, author and traveler, graduated from Harvard in 1881. He was given important commissions abroad, largely because of his proficiency in modern languages. Made extensive reports upon the Armenian massacres, and the status of the Monroe doctrine. Elected to parliament, 1900.

North, Frederick, eighth Lord North and second earl of Guilford, English statesman, was born in 1732, and educated at Oxford. He entered the house of commons at the age of twenty-two, and was made junior lord of the treasury in 1759. In 1770 he became prime minister, and his course, to a large extent, caused England to lose America. He resigned in 1782, and became blind five years before his death, which occurred in 1792.

Norton, Charles Eliot, American educator, critic and scholar, professor of art at Harvard, 1874-98, was born at Cambridge, Mass., 1827. He was graduated at Harvard, 1846; Litt.D., Cambridge, 1884; L.H.D., Columbia, 1885; LL.D., Harvard, 1887, Yale, 1901; honorary D.C.L., Oxford, 1900. In 1864-68 he was joint editor with Lowell of the *North American Review*. In 1874 he was appointed professor of the history of art at Harvard, and in 1879 became president of the Archæological Institute of America, holding that office for eleven years. Editor: *Letters of James Russell Lowell; Correspondence of Carlyle and Emerson; Correspondence of Goethe and Carlyle; Reminiscences and Letters of Thomas Carlyle; Letters of John Ruskin;* and translator of Dante's *Vita Nuova* and *Divina Commedia*. Died, 1908.

Novalis (*no-vā'lis*), German lyric poet and philosopher, was born in Saxony, 1772. His real name was Friedrich Ludwig von Hardenberg. His principal works are *Lehrlinge zu Sais, Hymnen an die Nacht* and an unfinished art romance entitled *Heinrich von Ofterdingen*. He died of consumption, 1801.

Noyes, Alfred, English poet, was born at Staffordshire in 1880 and was educated at Oxford. In 1914 he became Professor of Modern English Literature at Princeton University. His most pretentious work is an epic in blank verse, *Drake* (1908). It is the dramatic story of England's struggle upon the sea, interspersed with lyrics and songs. Of his numerous poems and ballads perhaps the best known are *The Barrel Organ* and *Forty Singing Seamen*, both extremely lilting in their quality.

Noyes, George Rapall, American biblical scholar, was born in Massachusetts, 1798. He was graduated at Harvard College, 1818, and studied theology at Cambridge Divinity School. In 1840 he was made professor of Hebrew and oriental languages and Dexter lecturer on biblical literature at Harvard University. Died, 1868.

Nye, Edgar Wilson, American writer and humorist, who wrote largely under the pseudonym of "Bill Nye," was born at Shirley, Me., 1850. He studied law and later went to Wyoming, where he was admitted to the bar and elected to the legislature. On account of ill health he returned to the East and settled in New York, having already achieved wide popularity through his humorous contributions to the press. In connection with James Whitcomb Riley, he made frequent tours of the country, giving entertainments consisting of lectures and readings. Died, 1896.

Oberlin (*ō'bĕr-lin*), **Jean Friederic,** German clergyman and philanthropist, was born in Strassburg, 1740. He was educated at Strassburg University, studied theology, became a German Lutheran clergyman, and was celebrated for his philanthropy. Oberlin College, Ohio, is named after him. Died at Waldbach, 1826.

Obregon, Alvaro (1880-1928), Mexican statesman, born in the State of Sonora. After many years spent as a farmer and stockraiser, he took up arms to assist Carranza in 1913. Two years later he lost an arm fighting against Villa. He was minister of war under President Carranza. In 1920 Obregon was chosen President, serving until 1924. In 1928 he was again elected President but was assassinated before taking office.

O'Brien, Morgan Joseph, American lawyer and jurist, born in New York, 1852. Senior member of firm O'Brien, Boardman, Parker & Fox, trustee of Equitable life assurance society.

O'Brien, Thomas J., American lawyer and diplomat, was born at Jackson, Mich., 1842. He was graduated from the law department, University of Michigan, 1865, and was admitted to the bar, 1864. Candidate for judge of the supreme court of Michigan, 1883; E.E. and M.P. to Denmark, 1905-07, American ambassador to Japan, 1907-11 and to Italy, 1911-13.

Ocam (*ok'am*), or **Ockham, William of,** English scholastic, was born at Ockham in Surrey, between 1270 and 1280. He entered the Franciscan order, studied at Oxford and Paris, and headed the Franciscans' revolt against Pope John XXII.'s denunciation of evangelical poverty. His views on civil government are expounded in his *Dialogues;* his philosophical views in *Summa Logicse*, in his commentaries on Porphyry and Aristotle, and the commentary on the *Sententiae* of Peter the Lombard; and his theological views in this last, and the *Tractatus de Sacramento Altaris*.

Ochs (*oks*), **Adolph S.,** newspaper publisher, was born in Cincinnati, Ohio, 1858. He received a common school education at Knoxville, Tenn., established *The Tradesman*, 1879, of which he is still principal owner. He became publisher and owner of the *New York Times*, 1896. Died, 1935.

Ochs, George Washington, journalist, was born at Cincinnati, Ohio, 1861. He was educated at the University of Tennessee, Knoxville; was twice mayor of Chattanooga, Tenn., was decorated chevalier of legion of honor by French government. Became general manager of *Philadelphia Times*, 1901; in 1902 the *Public Ledger* and the *Philadelphia Times* consolidated under the name of *Public Ledger*, and he was its publisher and general manager, 1901-2; editor-in-chief, *Public Ledger*, 1902-15; editor *Current History Magazine*, etc., after 1915. Died, 1931.

O'Connell, Daniel, Irish orator and "liberator," was born in County Kerry, Ireland, 1775. Was admitted to the Irish bar in 1798. His large practice, worth, he said, $35,000 a year, was sacrificed for his country, when he took a leading part in Irish politics. He was head of the Catholic party and contended for the admission of Catholics to parliament, and himself entered parliament in 1829. In 1844 he, with his son and five others, was tried for sedition and sentenced to imprisonment for one year, and a fine of $10,000, and, though the house of lords soon set aside the verdict, the fourteen weeks he was in prison brought on the ailment of which he died. Worn out with the struggle, he left Ireland for Rome, but only reached Genoa, where he died in 1847.

O'Connell, Dennis J., American educator, was born at Charleston, S. C. He was educated at St. Charles' Seminary and St. Mary's College, Charleston; S.T.D., Propaganda, Rome, 1877. He was for some time secretary to Cardinal Gibbons; was head of the American College in Rome sity of America, 1903-09. Appointed Bishop of Richmond, 1912.

O'Connell, William Henry, R. C. cardinal, was born at Lowell, Mass., 1859. He was graduated from Boston College, 1881; studied at the American College, Rome, 1881-84; ordained priest at Rome, 1884; rector American College, Rome, 1895; bishop of Portland, Me., 1901; assistant at pontifical throne, Rome, and special envoy to the emperor of Japan, 1905; and archbishop of Boston, 1907-1911. In 1911 he was made cardinal by Pius X.

O'Connor, Thomas Power, journalist and parliamentary leader, popularly known as "Tay Pay," was born at Athlone, Ireland, 1848. He took up journalism in Dublin and went to London later, where he was appointed a sub-editor on the *Daily Telegraph*. He was afterward employed in the London office of the *New York Herald*, and entered parliament as member for Galway, 1880. He was returned for both Galway and Liverpool, 1885; chose the latter, and was again returned in 1886, 1892, 1895, 1900. Author: *Lord Beaconsfield, a Biography; Gladstone's House of Commons*. Died, 1929.

O'Conor, Charles, American lawyer, was born in New York City, 1804. At the age of twenty he was admitted to the bar of New York, and soon gained high rank in the profession. He was counsel in many important cases; was prosecuting lawyer in the "Tweed ring" cases; and in 1872 was nominated, in the face of his absolute refusal, for the presidency by the labor reform party, and by a convention of democrats, dissatisfied with the nomination of Horace Greeley. Died, 1884.

Octavia (*ok-tā'vi-ā*), sister of the Roman emperor Augustus, and wife of Mark Antony, was born about 70 B. C. Her first husband was C. Marcellus, to whom she was married, 50 B. C. He died in 41 B. C., shortly after which she consented to marry Antony, to make secure the reconciliation between him and her brother. In 32 B. C. war, long inevitable, broke out between Antony and Octavian, and the former crowned his insults by sending Octavia a bill of divorcement. But no injury was too great to be forgiven, and after her husband's death she brought up with maternal care not only her own children, but Cleopatra's also. Her death took place 11 B. C.

Odoacer (*ō'-dō-ā'sĕr*), king of the Germanic tribe of the Heruli, ruler of Italy from 476 to 493, was the son of Ædico, a secretary of Attila, and one of his ambassadors to the court of Constantinople. He entered the military service of the Western Roman empire, rapidly rose to eminence, and took part in the revolution by which Orestes, in 475 drove the emperor Julius Nepos from the throne. He extinguished the Western Roman empire, and showed himself to be a wise and politic ruler. But on March 5th, 493, Odoacer was assassinated at a feast, either by Theodoric himself or by his command.

Œhlenschlager (*û'len-shlâ'gĕr*), **Adam Gottlob,** Danish poet and dramatist, was born at Copenhagen, 1779. In 1803 appeared his first collection of poems, including one longer dramatic piece, *The Play of St. John's Eve*, which attracted favorable notice for the lively fancy with which national habits and local characteristics were portrayed. His poetical works comprise over thirty volumes. He ranks among the Danes as does Goethe among the Germans, and his death in 1850 was felt by the whole nation.

Oersted (*ûr'stetH*), **Hans Christian,** Danish physicist, was born at Rudkjöbing, in the island of Langeland, 1777. He studied at the University of Copenhagen and received the degree of Ph.D. there in 1799. In 1819 he published his famous essay entitled *Experiments on the Effect of Opposing Electricity Upon the Magnetic Needle*, in which he showed the identity of the forces of magnetism, electricity, and galvanism, and thus opened the way for the wonderful development of knowledge in respect to those forces, which was one of the chief scientific glories of the nineteenth century. Died at Copenhagen, 1851.

Offenbach (*ōf'en-baK*), **Jacques,** French composer of comic operas, was born in Cologne, 1819, of German-Jewish parents. In 1835-37 studied at the Paris conservatory. He was installed manager of the Gaité theater in 1873, and sank some millions of francs in the experiment. He afterward visited the United States. Died at Paris, 1880.

Oglethorpe (*ō'g'l-thôrp*), **James Edward,** English general and founder of Georgia, was born at London, 1696. He served in the British army, and was thirty years in parliament. He planned a colony in America, as a refuge for debtors, who were then imprisoned in English jails, and also for persecuted German Protestants. George II.

gave the land, which was named Georgia, after him, and parliament contributed $50,000, and in 1733 he took out 130 persons, and founded the city of Savannah, in 1733. He left the colony in 1743, and surrendered the charter to the British government in 1752. Died in England, 1785.

Ohm (*ōm*), **Georg Simon,** German physicist, was born at Erlangen, Bavaria, 1787. He was educated at the University of Erlangen, held the chair of physics at Cologne from 1817 to 1826. "Ohm's law" was a result of his researches in electricity, and the measure of resistance, called the *ohm*, was so named in honor of his achievements by the Paris congress of physicists in 1881. Died, 1854.

Ohnet (*ō'nĕ'*), **Georges,** French novelist of great popularity, was born in Paris, 1848. He was educated at Sainte Barbe, and at the Lycee Bonaparte. Under the general title of *Les Batailles de la Vie* he published a series of novels, some of which have reached a hundredth edition. Chief of these are: *Serge Panine; Le Maitre des Forges; La Comtesse Sarah; Lise Fleuron.* Died, 1918.

Oken (*ō'ken*), **Lorenz,** German naturalist, was born at Bohlsbach, Swabia, 1779. He became professor of medicine at Jena in 1807, and in 1816 issued a journal called *Isis*, which led to government interference and his resignation. Died, 1851.

Oku (*ō'kōō*), **General Hokyo, Count,** Japanese soldier, a Samurai of Ko-Kura, was born in 1845. He entered the army in 1871; was major in the imperial forces during the Satsuma rebellion of 1877. He was commander of the second army during the Russo-Japanese war, 1904-05, which landed on the east coast of the Liao-tung peninsula in May, 1904, won the brilliant victory at Kinchau, and did splendid service in the subsequent fighting in Manchuria. He was made chief of general staff, 1906, and count, 1907. Chief of general staff, 1906-12; field marshal, 1911.

Okuma (*ō'-kōō-mä*), **Count Shigenobu,** Japanese statesman, was born at Saga, Hizen, 1838. He was a retainer of Lord Nabeshima; was one of the founders of the new government; finance minister, 1869-81; foreign minister, 1888-89; minister of agriculture and commerce, 1896-97; prime minister and foreign minister, 1898. Died, 1922.

Olaf (*ō'läf*), **Saint,** king of Norway, was born in 995, and, having made his name a terror on the coasts of Normandy and England, succeeded, in 1015, in securing the throne of Norway. He died in 1030, fighting for Christianity, and his body, laid in the cathedral of Trondhjem, was said to have wrought many miracles. Olaf was later proclaimed patron saint of Norway.

Olcott, Chauncey, otherwise Chancellor John Olcott, singer and actor, was born in Buffalo, N. Y., 1860. He was educated in the Buffalo public schools; was brought out as a singer by late R. M. Hooley, 1880. He was with Hooley's company for two years, sang two years in England in comic opera, then succeeded W. J. Scanlan as star in Irish musical dramas. He has since appeared in various leading roles in the United States and England. Died, 1932.

Oliphant, Laurence, English traveler, diplomat, and writer, was born at Cape Town in 1829. He was called to the Scottish bar; later to the English bar. He became private secretary to the earl of Elgin, then governor-general of Canada. He died at Twickenham, 1888. His later mystical views he published in *Sympenumata* and *Scientific Religion.* He also wrote: *The Transcaucasian Campaign Under Omar Pasha.* Died, 1914.

Oliphant, Margaret (née Wilson), British novelist and biographical writer, was born at Wallyford, Midlothian, 1828. In 1849 she published her first work, *Passages in the Life of Mrs. Margaret Maitland of Sunnyside*, which instantly won attention and approval. It is, however, on the *Chronicles of Carlingford* that her reputation as a novelist most securely rests. Died, 1897.

Oliver, George Tener, manufacturer, newspaper publisher, United States senator, was born in County Tyrone, Ireland, 1848, while his parents were visiting in that country, they at the time being residents of Allegheny City, Pa. He was graduated at Bethany College, West Virginia, 1868; studied law and was admitted to the bar of Allegheny county, 1871. In 1900 he purchased the *Pittsburg Gazette*, and acquired the controlling interest in the *Pittsburg Chronicle-Telegraph*, and in 1906 merged the former with the *Pittsburg Times*, under the name of the *Gazette-Times.* He was elected in 1909 to the United States senate to fill the unexpired term of Hon. P. C. Knox, who resigned to accept the office of secretary of state. Died, 1919.

Olney, Richard, American lawyer and statesman, was born at Oxford, Mass., 1835. He was graduated at Brown, 1856, and at Harvard Law School, 1858; LL.D., Harvard, 1893, Brown, 1894, Yale, 1901. He was admitted to the bar in 1859. He was a regent of the Smithsonian Institution, Washington; member of American philosophical society, etc. While secretary of state in Cleveland's cabinet he evinced great ability, and his state papers are among the most vigorous documents of those offices. Died, 1917.

Oman, Charles William Chadwick, British historian, Chichele professor of modern history at Oxford, since 1905, was born at Mozufferpore, India, 1860. He was graduated at Oxford, has been a fellow of All Souls College since 1883, and is author of the following works: *A History of Greece; Warwick the King-maker; Short History of the Byzantine Empire*, etc.

Omar (*ō'mär*), **Abu-Hafsa-ibn-al-Khettab,** second caliph of the Moslems, was born about 581. After Mohammed's death he caused Abu-Bekr to be proclaimed caliph, and was himself appointed prime minister. On the death of Abu-Bekr, Omar succeeded as caliph, and pushed on the wars of conquest with increased vigor. He was summoned to Jerusalem, in 637, to receive the keys of that city, and before leaving gave orders to build a mosque, now called by his name, on the site of the temple of Solomon. He instituted the practice of dating from the hegira. He died in 644.

Omar Khayyam (*ō'mär ki-yäm'*), astronomer-poet of Persia, was born at Nishapur about 1050, and is said to have died there in 1123, or 1124. Omar was the poet of agnosticism, though some see nothing in his poetry save the wine cup and roses, and others read into it that sufi mysticism with which it was largely adulterated long after Omar's death. He was a true poet; yet Fitz-Gerald's translation is far finer than the original.

Omer Pasha (*ō'mĕr pä-shä'*), Turkish general, was born at Piaski, in Croatia, a province of Austria, 1806. When Medjid became sultan, he made Omer Pasha governor of Lebanon. When the Russians invaded the European dominions of Turkey, he was sent with an army of 60,000 men against them, and successfully held his ground at Kalafat, and, after their withdrawal from the country, entered Bucharest in triumph, August, 1854. He was governor-general of Bagdad, and also minister of war at different periods. Died, 1871.

Ontario, Bishop, of. See **Mills, William Lenox.**

Oppenheim, Nathan, American physician, medical author, was born at Albany, N. Y., 1865. He was graduated at Harvard, 1888, and from the College of Physicians and Surgeons, New York, 1891. Attending physician, children's department, Lebanon hospital. Author: *The Development of the Child; The Medical Diseases of Childhood; The Care of the Child in Health; Mental Growth and Control;* and various scientific essays. Died, 1916.

Opper, Frederick Burr, American artist, was born at Madison, Ohio, 1857. He left school at fourteen. He was on the art staff of *Frank Leslie's* three years; an artist on *Puck* for eighteen years, and severed his connection with *Puck*, to accept an offer from Hearst's *New York Journal*, 1899. Illustrator for Bill Nye, Mark Twain, Hobart (Dinkelspiel), Dunne (Doolcy) etc.

Optic, Oliver, American writer of books for young folks, was born in Medway, Mass., 1822. His real name was William T. Adams, and he was for several years a public school teacher in Boston. He wrote a large number of books which are published in several series, *Oliver Optic's Magazine for Boys and Girls* was edited by him for many years, but it was discontinued in 1875. He died at Boston, 1897.

Orange, Prince of. See **William I., the Silent; William III.,** king of England.

Orcagna (*ōr-kän'yä*), **Andrea di Cione,** Italian painter, sculptor, architect and poet, was born at Florence about 1308. He was chief architect of the cathedral at Orvieto. The frescoes of the *Last Judgment* and *Christ and the Virgin*, in the church of Santa Maria at Florence, still survive as examples of his painting. His work was studied by succeeding painters, especially by Michelangelo and Raphael. He died about 1376.

O'Reilly, John Boyle, Irish-American poet, was born at Dowth, Ireland, 1844. He passed through the various stages of journalism from type-setting to the writing of editorials. He was tried for treason, convicted, and banished to Australia in 1866. Escaping from that country, he reached the United States in 1869, and became the editor of the *Boston Pilot.* Died, 1890.

Origen (*or'i-jen*), Greek church father, was born at Alexandria, about 185. Much of his life was spent in Alexandria, in which city he obtained great reputation as a teacher, but, which he was compelled, by persecution, to leave finally in 231. His writings are said to have amounted to six thousand, but by far the greater number are lost. As to the learning of Origen and his ability as a teacher, we possess the most ample testimony. He died at Tyre, 254.

Osler (*os'lĕr*), **William,** Canadian physician, educator, and author, was born at Bond Head, Ontario, 1849. He was graduated at McGill University, Montreal, 1872; LL.D., McGill, Toronto, University of Edinburgh. He was professor of the institutes of medicine, McGill University, 1874-84, professor of clinical medicine, University of Pennsylvania, 1884-89, and at Johns Hopkins University, 1889-1905; was regius professor of medicine, Oxford University, beginning 1905. Author: *The Cerebral Palsies of Children; Chorea and Chreiform Affections; Lectures on Abdominal Tumors; Angina Pectoris and Allied Stages;* etc. Died, 1919.

Osman I. (*ōs'män*) or **Othman** (*ōth'män*), surnamed "the conqueror," was born in Bithynia, 1259. When the Mongols overthrew the sultanate of Iconium, 1299, he seized a portion of Bithynia. From his name the terms Ottoman and Osmanli are derived. He died in 1326.

Ossian (*osh'an*), Celtic bard, supposed to have lived in Scotland or Ireland about fifteen hundred years ago. He was the son of Fingal, king of Morven, a famous hero, and was blind. His poems are remarkable for their grandeur and wild beauty, and are very different from all other poetry. They have been published in nearly all European languages.

Ossoli (*ōs'ō-lē*), **Marchioness.** See **Fuller, Sarah Margaret.**

Otho I., the Great, emperor of the West, son of the emperor Henry I., of Germany, was born in 912, and in 936 formally crowned king of the Germans. He consolidated the disjointed power of the German emperors, and established Christianity at many different points in the Scandinavian and Slavonic lands which lay beyond the circuit of his own jurisdiction. Died, 973.

Otis, James, American patriot and orator, was born at West Barnstable, Mass., 1725, and became a leader of the Boston bar. He was advocate-general in 1760. In 1761, elected to the Massachusetts assembly, he was prominent in resistance to the revenue acts. In 1769 he was savagely beaten by revenue officers and others, and lost his reason. In 1783 he was killed by lightning. His fame chiefly rests on *The Rights of the Colonies Asserted*, published by him in 1764.

Ottawa, Bishop of. See **Hamilton, Charles.**

Otter, William Dillon, Canadian general, chief of the general staff, Canada, was born in 1843. He was educated at Upper Canada College, Toronto; served for twenty-two years in active militia; beginning 1883 in the permanent militia, and saw active service during Fenian raids of 1866 and 1870, Northwest rebellion of 1885, and during the Boer war of 1899-1900; commanded Western Ontario district, 1905-08; chief of general staff headquarters, 1908-10; inspector general, 1910-12; director, Internment Operations since 1914. He is the author of *The Guide, a Manual of Interior Economy, etc., for Canadian Infantry.* Died, 1929.

Oudinot (*ōō'dē'nō*), **Charles Nicolas,** duke of Reggio, French marshal, was born at Bar-le-Duc, 1767. He served in the revolutionary wars, and in 1805 obtained the grand cross of the legion of honor and the command of ten reserve battalions, the "grenadiers Oudinot." In 1810 he was charged with the occupation of Holland, and took part in the Russian campaign and in the battles of 1813 with Russians and Austrians. In 1823 he commanded in Spain; became grand chancellor of the legion of honor in 1839, and succeeded Marshal Moncey as gov. of the Invalides, 1842. Died, 1847.

Ouida (*wē'da*). See **De la Ramee, Louise.**

Overbeck, Johann Friedrich, German painter, was born at Lübeck, 1789. He studied art at Vienna, 1806-10, and settled in Rome, where he allied himself with the like-minded Cornelius, Schadow, Schnorr, and Veit, who, from the stress they laid on religion and moral significance, were scoffed at as church-romanticists, pre-Raphaelites, etc. His oil-pictures are inferior to his frescoes. Died, 1869.

Overman, Lee Slater (1854-1930), lawyer, United States senator, born in Salisbury, N. C. He was graduated at Trinity College, N. C., 1874; member of North Carolina legislature, 1883, 1885, 1887, 1893, 1900; and speaker, 1893. He was elected United States senator, 4 terms, 1903-27.

Ovid (*ov'id*), or **Publius Ovidius Naso,** Roman poet and writer, was born at Sulmo, Italy, 43 B. C. He belonged to a noble family, and was brought up to the law; but his love for poetry and his natural indolence led him to desert the practice of the law, though he occupied one or two judicial positions. He died in banishment at Tomi, 18 A. D. Besides the *Metamorphoses*, consisting of all the transformations recorded in legend from the creation of the world to the time of Julius Cæsar, he was the author of a poem called *Ars Amatoria*, or the "Art of Love."

Owen, Sir Richard, British naturalist, was born at Lancaster, England, 1804. He studied medicine at Edinburgh and London, but soon began his work in zoölogy and comparative anatomy by preparing catalogues of the collections in the museum of the Royal College of Surgeons and lecturing on comparative anatomy. Owen's researches in zoölogy number nearly 400; they are largely devoted to structure, and embrace every class of animals from a sponge to man. Among his voluminous writings are: *Comparative Anatomy of Invertebrates; Comparative Anatomy and Physiology of Vertebrates.* Died, 1892.

Owen, Robert, English social reformer, was born in Wales, 1771. In 1799 he married the daughter of David Dale, from whom, with others, he bought the village and cotton mills of New Lanark, Scotland. Here he introduced a system of reform, which proved for a time highly successful. He came to the United States in 1824, and tried to found a communist society at New Harmony, Ind.; but the scheme failed, and in 1827 he returned to Great Britain, where experiments of a similar nature, attended by a similar result, were made at Orbiston in Lanarkshire, and at Tytherley in Hampshire. He finally became a spiritualist. Died, 1858.

Owen, Robert Latham, lawyer, United States senator, was born at Lynchburg, Va., 1856. Began practice of law, 1880; United States Indian agent for the five civilized tribes, 1885-89. He is the owner of extensive banking, real estate, farming and cattle interests. As attorney for Choctaws and Cherokees he recovered from the United States government, in money, nearly $9,000,000; drew up the act of congress of 1891, giving United States citizenship to every Indian in Indian territory. He was elected United States senator from Oklahoma for the terms 1907-1925.

Oxenstjerna (*ŏk'sen-sher'nä*), **Axel, Count,** Swedish statesman, was born at Fano, in Upland, 1583. He was made chancellor by Gustavus Adolphus in 1611; succeeded him as leader of the Protestant party in Germany, 1632-35; acted as regent throughout the minority of Christina, and became her chief minister when she assumed the government in 1644. Died, 1654.

Oyama (*ō'yä-mä*), **Iwao, Prince,** Japanese field-marshal, was born in Kagoshima, 1844. He entered the Japanese army, was appointed colonel in 1871, promoted major-general in the same year, lieutenant-general in 1877, general in 1891, and in 1898 was raised to the rank of field-marshal. Having served as military attaché during the Franco-Prussian war, upon his return to Japan, he entered the ministry of war, and assisted in the work of reorganizing the army. In 1904 he was chief of the general staff, and when war broke out with Russia he was appointed commander-in-chief in Manchuria, defeating the Russians at the three great battles of Liau-Yang, the Shaho and Mukden. He received the order of merit, 1906, and resigned his post as chief of the general staff in April. Created prince in 1907. Died, 1916.

Packard, Alpheus Spring, American naturalist, was born at Brunswick, Maine, 1839, was graduated from Bowdoin in 1861, and became assistant to Agassiz at Cambridge. After taking part in several scientific expeditions, he became state entomologist of Massachusetts, and professor of zoölogy and geology at Brown University. Besides many technical papers, he published *Guide to the Study of Insects; Our Common Insects; Zoölogy; Entomology for Beginners; Text-Book of Entomology*, etc. Died, 1905.

Paderewski (*pä'de-ref'skē*), **Ignace Jan,** Polish pianist and composer, was born in Podolia, Russian Poland, 1860. In 1872 he went to Warsaw, studied under Roguski, and subsequently pursued his studies under the late Frederick Kiel of Berlin. In 1884 he resolved to adopt the career of a virtuoso, removed to Vienna, placed himself under his fellow-countryman, Theador Leschetizky, and at the expiration of three years' hard study made his début. Afterward he visited Germany, and in the autumn of 1889 made his first appearance before a Parisian audience. His first appearance in England took place at St. James' hall, London, 1890. He has written *Manru*, an opera; *Suits for Orchestra in G*, etc. Premier of Poland, 1918-1919.

Paganini (*pä'gä-nē'nē*), **Nicolo,** Italian violinist, son of a commission broker at Genoa, was born in 1782. His musical talent showed itself in his childhood; in his ninth year he had instructions from Costa at Genoa, and afterward from Rolla at Parma, and from Ghiretti. In 1831 his violin playing created an equal furor in Paris and London. His mastery over the violin has never been excelled. He died at Nice, 1840.

Page, Thomas Nelson, American author, was born on Oakland plantation, Hanover county, Virginia, 1853. He was educated at Washington and Lee University; LL.B., University of Virginia, 1874; Litt.D., Washington and Lee, 1887, Yale, 1901; LL.D., Tulane University, 1899. He practiced law at Richmond, Va., 1875-93, but subsequently turned to literature and lecturing. Author: *In Ole Virginia; Two Little Confederates; On Newfound River; The Old South; Among the Camps: Elsket and Other Stories*. Died, 1923.

Page, Walter Hines, American journalist and writer, editor of *The World's Work* beginning 1900, was born at Cary, N. C., 1855. He was educated at Randolph-Macon College, Virginia, and Johns Hopkins University; LL.D., Randolph-Macon, and Tulane. He was literary adviser to Houghton, Mifflin and Company, 1895-99; editor of *The Atlantic Monthly*, 1896-99. Ambassador to Great Britain, 1913-1918. Author: *The Rebuilding of Old Commonwealths*, etc. Died, 1918.

Paget (*paj'it*), **Sir James,** English surgeon, was born at Yarmouth, England, in 1814. He entered the Royal College of Surgeons in 1836, became member of the council in 1865, president in 1875, and Bradshawe lecturer in 1882. He was made a baronet in 1871, and also an LL.D. by the University of Edinburgh. His works are *Lectures on Surgical Pathology, Clinical Lectures*, etc. Died at London, 1899.

Paine, John Knowles, American composer and organist, professor of music, Harvard, from 1875, was born in Portland, Maine, 1839. He studied music under Herman Kotzschmar there; made his first appearance as organist, 1857; studied in Germany under Haupt and others, 1858-61; and made an artistic tour there, 1866-67. He was instructor in music, Harvard, 1862-73 and became professor there in 1876; A.M., Mus.D. He composed the music for the *Œdipus Tyrannus* of Sophocles performed in Greek at Cambridge, 1881; *Hymn of the West*, words by Stedman, sung at the opening of the St. Louis exposition, 1904; the oratorio, *St. Peter*; cantatas, *Realm of Fancy, Phœbus Arise*, etc. Died, 1906.

Paine, Thomas, Anglo-American writer, was born, 1737, at Thetford, England. In 1774 he came to America, was favorably received by a bookseller in Philadelphia, and in 1776 published a pamphlet entitled *Common Sense*, in which he maintained the cause of the colonies against the mother country. The success and influence of this publication were extraordinary, and it won him the friendship of Washington, Franklin and other distinguished American leaders. In 1791 he published *The Rights of Man*, the most famous of all the replies to Burke's *Reflections Upon the French Revolution*. In 1792 the department of Pas-de-Calais elected him a deputy to the national convention, where he usually voted with the Girondists. At the trial of Louis XVI. he proposed that the king should be spared and afforded an opportunity of seeking an asylum in America. In 1802 returned to the United States, and died, 1809.

Palestrina (*pä'lās-trē'nä*), **Giovanni Pierluigi da,** distinguished Italian composer was born near Rome about 1514. In 1581 he was made master of the Julian chapel, Rome, and in 1554 published a collection of masses, so highly approved by Pope Julius III., to whom they were dedicated, that he appointed their author one of the singers of the pontifical chapel. During the remaining years of his life the number and the quality of the works of Palestrina were remarkable. He died in 1594.

Paley (*pā'li*), **William,** English divine and writer, was born at Peterborough in 1743. He was educated at Christ's College, Cambridge, of which he became a fellow in 1766, and for ten subsequent years he resided at the University. In 1785 he at once attained high reputation by his *Principles of Moral and Political Philosophy*. He was successively made vicar of Stanwix, a prebendary of St. Paul's, subdean of Lincoln, a doctor of divinity, and rector of Bishop's Wearmouth. Died, 1805.

Palissy (*pa'le'sē*), **Bernard,** French artist and philosopher, was born about 1510. He was apprenticed in a glass work at Agen, where he learned the art of painting on glass. Having completed his apprenticeship he set out on a tour of France and Germany, in 1528, maintaining himself by practicing his craft of glass painter and by land surveying. During his travels he studied attentively all the books within his reach, and acquired an extensive knowledge of natural science.

In 1535 he returned to France, married and settled at Saintes. Shortly after his return his attention was attracted by a fine specimen of enameled pottery, and he thereupon resolved to discover for himself the secret of the enamel. Being ignorant of the potter's art he had to grope his way, and labored on year after year without success, almost starving, and reducing his family to the depths of poverty. At length, after sixteen years of unremunerated labor (1538-54), he obtained a pure white enamel, affording a perfect ground for the application of decorative art.

He was now able to produce works in which he represented natural objects grouped and portrayed with consummate skill, and his enameled pottery and sculptures in clay became recognized as works of art.

In 1562 he went to establish himself at Paris, where he continued to work at his art, and also delivered scientific lectures, which were attended by the most distinguished men in Paris, and contained views far ahead of his time. He suffered persecution as a Huguenot, and was arrested in 1589 and thrown into the Bastille, where he is said to have died in 1590. He left several philosophical works.

References.—Morley's *Palissy the Potter*, and *Lives* in French by Burty and Dupuy; Lamartine's *Celebrated Characters*; Hood's *Peerage of Poverty*.

Palladio (*pal-lä'dyō*), **Andrea,** famous Italian architect, was born at Vicenza, 1518. After having studied with the greatest care the writings of Vitruvius and the monuments of antiquity at Rome, he settled in his native city, and first acquired a reputation by his restoration of the basilica of Vicenza. He died at Vicenza, 1580.

Palma (*päl'mä*), **Tomas Estrada,** Cuban patriot, was born about 1836 in Bayomo, Cuba; studied law at University of Seville, but never practiced; took part in the Cuban revolution of 1868-78. He became president of the Cuban republic, but was captured, 1877, and imprisoned until hostilities ceased, 1878. During the last Cuban revolution he was delegate-at-large and minister plenipotentiary for Cuban republic, and subsequently president of Cuba, 1902-06. He died 1908.

Palmer, Edward Henry, English explorer and orientalist, was born, 1840, at Cambridge. He graduated from Cambridge in 1867. In 1881 he turned journalist, writing principally for the *Standard*. In 1882, on the eve of Arabi's Egyptian rebellion, sent by government to win over the Sinai tribes, he, Captain Gill and Lieutenant Charrington were on August 11th murdered in the ravine of Wady Sadr. Among Palmer's works are the *Desert of the Exodus; Persian Dictionary*.

Palmer, Erastus Dow, American sulptor, was born at Pompey, N. Y., 1817. He was a joiner by trade, and made carvings first of animals and leaves in wood. Seeing a cameo head, he cut on a shell a portrait of his wife, and his success induced him to try working in marble. He executed busts of Alexander Hamilton, Washington Irving, Commodore Perry and others. *The Landing of the Pilgrims*, in the capitol at Washington, is one of his largest works. Died, 1904.

Palmer, George Herbert, American educator and scholar, Alford professor of natural religion, moral philosophy and civil polity, Harvard, since 1889, was born in Boston, 1842. He graduated at Harvard, 1864; LL.D., University of Michigan, 1894, Union, 1895, Harvard, 1906; Litt.D., Western Reserve, 1897. He was tutor in Greek at Harvard, 1870; assistant professor, 1873-83, and professor of philosophy, 1883-89. Author: *The Odyssey*, an English translation in rhythmic prose; *The Life and Works of George Herbert; Life of Alice Freeman Palmer*, etc. Died, 1933.

Palmerston (*päm'-ėr-stun*), **Henry John Temple,** Viscount (1784-1865), British statesman, was elected to parliament in 1807, and in 1811 became member of the University of Cambridge, which he represented until 1831. In 1852 he was appointed home secretary and was made first lord of the treasury in 1855. In 1858 he was defeated and compelled to resign office owing to a conspiracy bill arising out of Orsini's attempt to assassinate Napoleon III. The following year he returned to power, and remained prime minister until his death.

Pankhurst, Mrs. Emmeline (1854-1928), English "suffragette" leader, began in 1908 the "militant" movement for promoting woman suffrage in England. She and her small group of followers were a great annoyance to the government; repeated arrests and imprisonments failed to curb the movement; the "hunger strike" was their best weapon.

Paoli (*pä'ō-lē*), **Pasquale,** famous Corsican patriot, was born in 1725 at Morosaglia, in Corsica. In 1755 he was elected captain-general of the island. In 1794, he joined the British in driving out the French. He then surrendered the island to George III., but, becoming dissatisfied with the government, he quarreled with the British viceroy. He therefore retired from the island in 1796, and spent the remainder of his life in the neighborhood of London. Died, 1807.

Pape, Eric, American artist, illustrator, was born in San Francisco, 1870. He received his art education in Paris. He exhibited at Paris salon, 1890-1900, World's Columbian exposition, 1893, Munich Kunst Austellung, 1897, Omaha exposition, 1899, Paris exposition, 1900, Pan-American exposition 1901, St. Louis exposition, 1904, and at various art museums and exhibitions in the United States and abroad, and has illustrated many important works.

Papin (*pä'pan'*), **Denis,** French physicist, was born at Blois, 1647. He studied medicine in Paris, where, after receiving his degree, he practiced for some time as a physician. To Papin undoubtedly belongs the high honor of having first applied steam to produce motion by raising a piston. Papin's sagacity led him to many other discoveries, among which was the principle of action of the siphon. Died at Marburg, Germany, 1712.

Papinianus (*pa-pin-i-ā'nus*), **Emilius,** Roman jurist, was born about 146. He held offices at Rome under Septimus Severus, but was put to death by Caracalla in 212. He was remarkable for his juridical genius, the lucidity of his decisions and his high sense of right and morality. Nearly 600 excerpts from his legal works were incorporated in Justinian's *Pandects*.

Pappenheim (*päp'en-him*), **Gottfried Heibrich, Count von,** a great imperialist general in the Thirty Years' war, was born, 1594, at Pappenheim, Bavaria, of an old and distinguished Swabian family. He served under the king of Poland against the Russians and the Turks, and then joined the Catholic league, defeating the Bohemians at Prague in 1620. At Lützen, in 1632, he arrived in time to save Wallenstein from defeat by the Swedes, but was mortally wounded in the second charge and died at Leipzig, 1632.

Paracelsus (*par-ä-sel'sus*), otherwise **Theophrastus Bombastus von Hohenheim,** German-Swiss physician and alchemist, was born in Switzerland in 1493. He entered Basel University at sixteen, studied alchemy and chemistry with Withemina, bishop of Wurzburg, and next at the mines in Tyrol learned the properties of metals and minerals. He acquired fame as a medical practitioner, was made town physician at Basel, and lectured on medicine at the University, but flouted at Galen and Avicenna, and justified the furious enmities that pursued him by his own vanity, arrogance, aggressiveness and intem-

perate habits. Of some 250 works attributed to him, the critics admit only from ten to twenty-four as genuine, the others being by his followers the "Paracelsists." In spite of his attraction to alchemy and mysticism, he made new chemical compounds, and improved pharmacy and therapeutics. Died, 1541.

Paris (*pá'rē'*), **Comte de, Louis Philippe Albert d'Orleans,** grandson of King Louis Philippe, was born in Paris, 1838. He was educated in England. In 1862 he returned to France, entered the national assembly, but was expelled in 1886, and went to England, where he occupied himself in writing a *History of the American Civil War*. He was the head of the Orleans family and a claimant to the French throne. Died, 1894.

Park, Roswell, American physician, was born at Pomfret, Conn., 1852. He was graduated from Racine College; A.M., Harvard; M.D., medical department of Northwestern University, 1876; honorary M.D., Lake Forest University; LL.D., Yale, 1902. 1883 professor of surgery, medical department, University of Buffalo, and surgeon to Buffalo general hospital. He was a member of all national and several foreign surgical societies; and was director of the New York state pathological laboratory in Buffalo. Died, 1914.

Parker, Alton Brooks, American lawyer, jurist, was born in Cortland, N. Y., 1852. He was educated at the Cortland Academy, Cortland Normal School, and graduated at the Albany Law School; LL.D., Union University. Appointed justice of supreme court of New York, 1885, elected, 1886; justice court of appeals, second division, 1889-92. Chief justice of court of appeals, 1898-1904. He resigned to accept democratic nomination for the presidency, made on first ballot, July 9, 1904. He was president of the American bar association, 1906-07, and practiced law as a member of the firm of Parker, Hatch and Sheehan. Died, 1926.

Parker, Edward Wheeler, statistician, was born at Point Deposit, Md., 1860; was educated at Baltimore, and in City College, Baltimore. Statistician United States Geological Survey since 1891, in charge Division of Mineral Resources, 1907-1915. Expert special agent twelfth United States Census; member Anthracite Coal Strike commission, 1902; expert in charge of history of mining in United States for department of economics and sociology, Carnegie Institute. Author: *Annual Reports on Production of Coal in United States; Production of Coke in United States;* also reports on coal mining, coke manufacture and petroleum refining for United States Census, etc.

Parker, Sir Horatio Gilbert, Anglo-Canadian novelist, was born in Canada, 1862. He was educated at Trinity College, Toronto; D.C.L., Toronto. He was trained to journalism in Australia, and there first began his literary and dramatic works: *When Valmond Came to Pontiac; The Seats of the Mighty; The Battle of the Strong; The Lane That Had No Turning; The Right of Way; History of Old Quebec; The Weavers*, etc. He was returned to parliament for Gravesend as a Unionist in 1900, and was knighted in 1902. Died, 1932.

Parker, Horatio William, American composer and, organist, professor of the theory of music, Yale, beginning 1894, was born at Auburndale, Mass., 1863. He was educated at Auburndale and in Europe; graduated at Royal Conservatoire, Munich, 1885; M.A., Yale, 1892; Mus.D., Cambridge University, England, 1902. Organist at Trinity church, Boston beginning 1893. His *Hora Novissima* was performed at the Chester (England) festival July, 1899, and, in September, 1899, at festival of the three choirs, Worcester, England. He was author of the cantatas, *King Trojan* and *The Kobolds;* and of the oratorios, *Hora Novissima* and *St. Christopher*. Died, 1919.

Parker, Joseph, English preacher and author, the son of a stonecutter, was born at Hexham, 1830. He studied at University College, London, and became pastor of Congregational chapels at Banbury, Manchester, and, in 1869, of that now represented by the City Temple in London. *Ecce Deus* is his most noted work. Died, 1902.

Parker, Matthew, second Protestant archbishop of Canterbury, was born at Norwich, England, 1504. He studied at Corpus Christi College, Cambridge, and was ordained a priest in 1527. On the accession of Queen Mary he refused to conform to the reëstablished order of things, and was deprived of his preferments, and even obliged to conceal himself. The death of Mary, and the accession of Elizabeth called him from his compulsory retirement, when he was appointed by the queen archbishop of Canterbury. "The subsequent history of Archbishop Parker," it has been justly remarked, "is that of the church of England." It was under his presidency that the thirty-nine articles were finally reviewed and subscribed to by the clergy, 1562. Died, 1575.

Parker, Theodore, American clergyman and scholar, was born at Lexington, Mass., 1810. He entered Harvard College in 1830, and during his collegiate course supported himself by teaching private classes and schools. He then graduated from Harvard Divinity School in 1836 and the next year became a Unitarian minister at West Roxbury. His complete works, in twelve volumes, edited by F. P. Cobbe, were published in 1863-65. After a trip to Europe for his health, he returned in 1844 and for years preached to immense congregations at Melodeon and Music halls, Boston. His health compelled him to go to Mexico, thence to Italy, where he died at Florence, 1860.

Parkhurst, Charles Henry, American Presbyterian clergyman, was born in Framingham, Mass., 1842. He graduated from Amherst, 1866; D.D., LL.D., Amherst. After 1880 pastor of Madison Square Presbyterian church, New York. He became president in 1891 of the society for prevention of crime, and his assertion of partnership of police with criminals led to an investigation of the New York police by the New York legislature. Author: *What Would the World Be Without Religion? The Swiss Guide; Our Fight With Tammany; The Sunny Side of Christianity*, etc. Died, 1933.

Parkman, Francis, American historical writer, was born in Boston in 1823, and graduated at Harvard, 1844. He then began the study of law, but abandoned it to devote himself to historical literature. He lived some time among the Indians of the Rocky Mountains, and wrote *The Conspiracy of Pontiac; The Old Regime in Canada; Count Frontenac and New France under Louis XIV.; Montcalm and Wolfe; A Half Century of Conflict; The California and Oregon Trail*, etc. He died at Jamaica Plain, Mass., 1893.

Parmenides (*pär-men'i-dez*), Greek philosopher, and greatest member of the Eleatic school, was born at Elea, and flourished about the fifth century B. C. In his didactic poem *On Nature* he sought to demonstrate the reality of absolute being.

Parnell (*pär'nel*), **Charles Stewart,** Irish statesman, was born in 1846, in Avondale, Ireland, and was educated at Cambridge. He entered public life as member for Meath in 1875. At the general election he was elected for three constituencies, but chose Cork, and as the head of the land league was prosecuted in 1880, by the Gladstone government, the result being a disagreement of the jury. At the general election of 1885, he nominated every home rule candidate, and subsequently entered into an alliance with the followers of Gladstone. In the next parliament he proposed a bill to suspend evictions and reduce rent, after the rejection of which the agitation continued. In 1888 a special commission was appointed to examine the charges made against Parnell and others by the *London Times*, the result being his acquittal. He then brought suit for libel against the *Times* and recovered 5,000 pounds damages. Died, 1891.

Parrhasius (*pa-rā'shi-us*), celebrated Greek painter, was the son of Evenor, also an artist, and was born at Ephesus in the fifth century B. C. According to Pliny, he was the first to establish a true proportion between the different parts of a picture, and delineated with elegance and precision all the minutiæ of the features.

Parrish, Maxfield, American painter and illustrator, was born in 1870 at Philadelphia. He studied at the Pennsylvania Academy of Arts, and with Howard Pyle. In 1900 he received honorable mention at the Paris Exposition, and in 1901 a silver medal at the Pan American. He became a member of the National Academy in 1906.

Parrott, Robert Parker, American inventor, was born in New Hampshire in 1804, graduated at West Point in 1824. He became captain in the ordnance corps in 1836, and soon afterward superintendent of the West Point iron and cannon foundry. Here he invented the Parrott system of rifled guns and projectiles, which were first introduced into actual use at the battle of Bull Run, 1861. Died, 1877.

Parsons, Alfred William, English landscape painter, was born at Beckington, Somersetshire, 1847. He was educated in private schools; was a clerk in the savings bank department of a London post office, 1865-67, after which he has devoted himself to painting. He executed illustrations for *Harper's Magazine* and other publications; with E. A. Abbey, illustrations for *Herrick's Poems; She Stoops to Conquer;* etc. Died, 1920.

Parsons, William Barclay, American engineer, was born in New York, 1859. He was graduated at Columbia University, 1879; as chief engineer of the New York rapid transit commission, designed and constructed underground railway system in New York; was a member of the Isthmian canal commission.

Partridge, William Ordway, American sculptor, author, was born at Paris, France, 1861. He studied at Columbia College, and received his art education in Rome, Florence and Paris. His works include statue of Shakespeare, Lincoln park, Chicago; equestrian statue General Grant for Union League club, Brooklyn; *Pocahontas*, Jamestown exposition, 1907, etc. He has been an exhibitor at the salon, Paris: Royal Academy, London, and Berlin. Died, 1930.

Pascal (*pás'kál'*), **Blaise,** French philosopher and scholar, was born at Clermont, in Auvergne, 1623. When he was in his thirty-fourth year he devoted himself wholly to religious meditation, mortification and prayer. The last five years of his life were spent in retirement at Port Royal, near Paris. But his retirement did not prevent his noticing what was passing in the world and he took an interest in the controversy between the Jesuits and the Jansenists, which led to the publication of the *Provincial Letters*, in favor of the latter. His *Thoughts on Religion* has been translated into most European languages, and has been many times republished. Died at Port Royal, 1662.

Pasteur (*pás'tûr'*), **Louis,** distinguished French chemist and bacteriologist, born in 1822 at Dôle. He received the degree of doctor of science in 1847; in 1857 director of the Ecole Normale Supérieure, Paris; in 1863 professor of geology, physics and chemistry at the School of Fine Arts; and 1867-75 professor of chemistry at the Sorbonne, Paris. From 1886 on, his researches were made in connection with the Pasteur Institute. At a very early date he became celebrated for researches on isomeric crystals and their behavior in polarized light, which obtained for him the London royal society's Rumford medal in 1856. He subsequently spent four years in studying and successfully combating the contagious silkworm disease; then the diseases of fowl-cholera and anthrax, which he successfully treated by vaccino of diluted virus. In 1882 he was elected to the French Academy. His latest work was connected with a vaccine treatment for hydrophobia. Pasteur must be regarded as the parent of the whole modern science of bacteriology. Died, 1895.

Pater (*pá'tĕr*), **Walter Horatio,** English essayist and critic, was born near London, 1839, educated at Oxford, and became a fellow at Brasenose College. He came early under the influence of Keble, Jowett and Ruskin, and succeeded the latter as the high priest of æsthetic thought. His *Studies in the History of the Renaissance* in 1873 revealed him as a penetrating critic with a beautiful prose style. Among his other works are: *Marius the Epicurean; Imaginary Portraits; Plato and Platonism; The Child in the House;* and *Greek Studies*. Died, 1894.

Paton (*pā'tun*), **Sir Joseph Noel,** British painter, born 1821; died, 1901. His themes were taken from legends and religious allegories. His paintings include *Luther at Erfurt, The Fairy Raid, Gethsemane* and *The Man of Sorrows*.

Patrick, Saint (387?-493), patron saint of Ireland, born at Bannaventa, England. Carried to Ireland by Irish raiders about 405; escaped after six years' bondage; fled to Gaul; became a monk and returned to Christianize Ireland; established the see of Armagh.

Patten (*pat''n*), **Simon Nelson,** American economist and writer, professor of political economy, University of Pennsylvania, beginning 1888, was born at Sandwich, Ill., 1852. He graduated at Halle, Germany, 1878, with the degree of Ph.D. Author: *Premises of Political Economy; Economic Basis of Protection; Heredity and Social Progress; The New Basis of Civilization*, etc. Died, 1922.

Patterson, Thomas Macdonald, lawyer, journalist, United States senator, was born in Ireland, 1840. He was brought to the United States in childhood, and received his education at Asbury (now De Pauw) University, and Wabash College; was admitted to the bar, and practiced at Denver, Colorado. He was elected United States senator from Colorado, 1901-07. Died, 1916.

Patti (*pat'ē*), **Adelina Maria Clorinda** (Baroness Rolf Cederström), noted operatic singer, was born at Madrid, Spain, 1843. She studied under Ettore Barili, and made her début at the Academy of Music, New York, 1859. Her voice was a high soprano, of rich bell-like quality and remarkable evenness of tone. Her greatest success is generally considered to have been in the part of *Marguerite* in Gounod's *Faust*. She appeared in the United States, South America and Mexico at various times. Died, 1919.

Pattison, Mark, English writer and scholar, was born at Hornby, in Yorkshire, England, in 1813. He studied at Oxford and became a fellow of Lincoln College in 1839. He contributed articles to the *Quarterly*, the *Westminster*, and the *Saturday Review*, and wrote biographies of Isaac Casaubon and Milton, the latter one of the best lives in the *English Men of Letters* series. In 1861 he was made rector of Lincoln College. He died at Harrowgate, 1884.

Patton, Francis Landey, American educator, theologian, was born in Warwick Parish, Bermuda, 1843. He was educated at Knox College, Toronto, and University of Toronto; graduated from Princeton theological seminary, 1865; LL.D., Wooster University, 1878, Harvard, 1889, Toronto, 1894, Yale, 1901, Johns Hopkins, 1902. He was professor in McCormick theological Seminary, Chicago, 1872-81; pastor of Jefferson Park Presbyterian church, Chicago, 1874-81; and beginning 1888 professor of ethics, Princeton University. He was president of Princeton University, 1888-1902, and president of Princeton Theological Seminary, 1902-13. Died, 1932.

Paul, the apostle, commonly called Saint Paul, was born of Jewish parents at Tarsus, in Cilicia, and inherited the rights of a Roman citizen. He was highly educated and early went to Jerusalem to study under Gamaliel, one of the most celebrated Jewish rabbis.

Thus prepared for the office of teacher, he joined the sect of the Pharisees, and became a perseeutor of the Christians, to crush whose

the sanhedrin employed him in and out of Jerusalem. He was present at and encouraged the stoning of Stephen, and it was only when he was overtaken by a vision on his way to Damascus that he became a convert to Christianity.

His sudden conversion was indicated by the change of his name from *Saul* to *Paul*, and he engaged in the work of an apostle with an ardor that overcame every difficulty. Arabia, Syria, Asia Minor, Greece and the islands of the Mediterranean were the scenes of his labors. The churches of Philippi in Macedonia, of Corinth, Galatia and Thessalonica, honored him as their founder; and he wrote epistles to these churches and to the churches in the chief cities of Greece and Asia Minor.

By admitting the gentiles to the church he incurred the hatred of the Jews, who persecuted him as an apostate. Undismayed, the apostle went to Jerusalem and was there arrested and brought to Cæsarea, where he was kept a prisoner for two years by the Roman governors Festus and Felix. He appealed, as a Roman citizen, to the emperor; and on his way to Rome, where he arrived in the year 62, he was shipwrecked on the island of Melita. At Rome he was treated with respectful kindness, and there is reason to believe that he for some time regained his liberty. According to the tradition of the early church the apostle suffered martyrdom during the reign of Nero.

References.—Conybeare and Howson's *Life and Epistles of St. Paul;* Baur's *Paul, His Life and Works;* Pfleiderer's *Paulinismus;* Lewin's *Life and Epistles of St. Paul;* Sabatier's *L'Apôtre Paul;* Bruce's *St. Paul's Conception of Christianity;* Steven's *The Pauline Theology;* Ramsay's *St. Paul the Traveller and the Roman Citizen;* Cone's *Paul the Man, the Missionary, and the Teacher;* Weinel's *St. Paul: the Man and his Work.*

Paul III. (Alessandro Farnese), pope from 1534 to 1549, was born in Tuscany in 1468. Though ambitious to advance his family, making cardinals of two grandsons while they were yet boys, he was, however, a wise ruler and surrounded himself with good cardinals. His bull, or decree of excommunication against Henry VIII. of England, issued in 1538, and the one forming the order of the Jesuits, 1540, are the most important edicts of his reign. He died suddenly, 1549.

Paulding, James Kirke, American author, was born at Pleasant Valley, N. Y., 1779. He was self-educated, early developed a tendency to literature, was a friend of Washington Irving, and wrote a portion of *Salmagundi*. He held at one period the post of navy agent at New York, and was appointed by President Van Buren secretary of the navy. At the close of Van Buren's presidency, in 1841, Paulding retired to a country residence at Hyde Park, N. Y., where he wrote *The Old Continental*, a novel; *The Puritan and His Daughter*. Died, 1860.

Paur (*pour*), **Emil,** German musical director, director of New York philharmonic society, was born in Austria, 1855. He was appointed first violin of Vienna imperial opera house; court conductor at Cassel, Hanover, 1876-80; conductor of Boston symphony, 1893-98; 1898 to 1900 leader of philharmonic society, New York. He has also appeared with leading concert organizations, and as solo pianist, and was conductor of the Pittsburg orchestra, 1904-10.

Paxton, Sir Joseph, English architect, was born in Bedfordshire, England, 1801. He began life as a gardener in the service of the duke of Devonshire. His care of the great glass conservatories of the duke at Chatsworth suggested to him the use of glass and iron for the building, in Hyde Park, London, for the great exhibition of 1851. Paxton was knighted for his successful design. He sat in parliament for nine years, and died at Sydenham, near London, 1865.

Payne, John Howard, American dramatist, was born at New York, 1792. His first appearance as an actor was in that city in 1809. He was a successful actor for thirty years and also wrote several plays, of which the best known are *Brutus, Charles II.*, and *Clari*. The song, *Home Sweet Home*, for which he is remembered, is in *Clari*, which was produced as an opera. Died, 1852.

Payne, Sereno Elisha, lawyer, congressman, was born at Hamilton, N. Y., 1843. He graduated at the University of Rochester, 1864; LL.D. Colgate, 1902, University of Rochester, 1903. He was admitted to the bar, 1866 and practiced at Auburn, N. Y. Member of congress for 26th New York district, 1883-85, 27th district, 1885-87, and again, 1889-1900, 31st New York district. He was chairman of the committee on ways and means. He was a member of the high joint commission to negotiate a treaty with Canada, 1898. Died, 1914.

Paynter, Thomas H., lawyer, United States senator, was born in Lewis county, Ky., 1851. He was educated at Rand's Academy, and at Center College, Danville, Ky.; studied law and was admitted to the bar in 1872. Elected judge of the court of appeals of Kentucky in 1894 for an eight-year term which he resigned, in 1895; was elected to the United States senate for the term 1907-13.

Peabody, Elizabeth Palmer, American educator, was born at Billerica, Mass., 1804. She taught in the celebrated school of Bronson Alcott and was one of the first to introduce the methods of Frœbel into American schools and to use object lessons in teaching. Among her best known works are: *The Kindergarten in Italy; Letters to Kindergartners; Guide to the Kindergarten*, etc. She died at Jamiaca Plain, Mass., 1894.

Peabody, Francis Greenwood, American clergyman and educator, Plummer professor of Christian morals, Harvard, 1886-1913; was born at Boston, 1847. He graduated at Harvard, 1869; Harvard Divinity School, 1872; D.D., Yale; LL.D., Harvard. Author: *Mornings in the College Chapel; Afternoons in the College Chapel; Jesus Christ and the Social Question*, etc.

Peabody, George, American merchant and philanthropist, was born at South Danvers, Mass. 1795. In 1827 he first visited England, where he settled permanently ten years later. In 1851 he supplied the sum required to fit up the American department at the great exhibition in London. He contributed £1,400,000 to the city of Baltimore for an institute of science, literature and the fine arts; and $8,000,000 for the promotion of education, endowment of libraries, etc., in the United States. He died in London, 1869.

Peabody, George Foster, American banker, was born at Columbus, Ga., 1852. He was educated in private schools there, and subsequently engaged in banking in New York. Member of board of managers of American Bible society; trustee of Hampton Normal and Agricultural Institute, Colorado College; general vice-president of American civic federation, 1905, etc.

Peale, Charles Wilson, American portrait-painter, was born at Chestertown, Maryland, 1741. He received his art education from Copley and Benjamin West. In 1785 he formed a collection of natural curiosities, and founded Peale's museum at Philadelphia. During the revolutionary war he commanded a company of soldiers at Trenton and at Germantown. Died, 1827.

Peale, Rembrandt, American painter, the son of Charles W. Peale, was born in Pennsylvania, 1778. Besides his many portraits, he painted several historical pictures, among them the well-known *Roman Daughter*, and *The Court of Death*. He published *Notes on Italy*, and *Portfolio of Art and Artists*. He died at Philadelphia, 1860.

Pearsons, Daniel Kimball, American philanthropist, was born at Bedford, Vt., 1820. He graduated in medicine at Woodstock, Vt., and practiced in Chickopee, Mass., until 1857. He then became a farmer in Ogle county, Illinois, in 1857, but in 1860 he removed to Chicago, where he rapidly accumulated a large fortune in real estate. He is best known through his large gifts to educational and eleemosynary institutions, the Presbyterian hospital of Chicago and the Chicago Theological Seminary being especially favored. There are but few of the smaller colleges to which he did not give from $25,000 to $250,000, and his gifts run well up into the millions. Died, 1912.

Peary, Robert Edwin, Arctic explorer, officer of United States navy, born at Cresson, Pa., 1856. Graduated at Bowdoin, 1877; entered United States navy as civil engineer, 1881; Chief of Arctic expedition of Academy of natural sciences of Philadelphia; 1891-92, to northeast angle of Greenland; discovered and named Melville Land and Heilprin Land, lying beyond Greenland. Commander of Arctic expedition under auspices of Peary Arctic club of New York City, 1898-1902, and attained latitude 84° 17′ north. In 1908-09 made an eighth expedition, and reached the pole in April, 1909. Promoted to Rear Admiral and given thanks of congress by special act of congress, March, 1911. Made Grand Officer of Legion of Honor by President of France, June, 1913. Author: *Northward Over the Great Ice, Nearest the Pole, The North Pole*. Died, 1920.

Peck, Harry Thurston, American educator, scholar and writer, professor of Latin, Columbia University, 1888-1912, was born at Stamford, Conn., 1856. He graduated at Columbia, 1881; Ph.D., L.H.D.; LL.D.; and studied in Berlin, Paris and Rome. He was literary editor of *The Commercial Advertiser*, 1897-1901; and editor of *The Bookman*, 1895-1907. Author: *The Personal Equation; The Semitic Theory of Creation; Latin Pronunciation*, etc. Died, 1914.

Peckham, Rufus Wheeler, American jurist, was born at Albany, N. Y., 1838. He was educated at the Albany Academy and in Philadelphia; studied law, and was admitted to the bar, 1859; LL.D., Union College, 1894, Yale, 1896, Columbia, 1901. Justice of supreme court of New York, 1883-86; associate justice of court of appeals, New York, 1886-95; and associate justice of United States supreme court from 1895 until his death in 1909.

Pedro I. (*pā'drō*), emperor of Brazil, was the second son of John VI. of Portugal, and was born in 1798. He declared for Brazilian independence in 1822, and was crowned as Pedro I. The new empire did not prove successful under his rule, and Pedro in 1831 abdicated, withdrew to Portugal, where, after securing the throne for his daughter, he died, 1834.

Pedro II., son of the preceding, was born, 1825, became emperor of Brazil on his father's abdication, and, distinguished by his love of learning and scholarly tastes, reigned in peace until the revolution of 1889 drove him to Europe. He died at Paris, 1891.

Peel, Sir Robert, English statesman, was born near Bury, Lancashire, 1788. He graduated at Oxford in 1808, and next year entered parliament as tory member for Cashel; afterward sat for Oxford University, and after 1832 for Tamworth. Opposed to reform, he became leader of the conservative opposition in the parliament of 1833, and was called to the premiership in 1834. He could not maintain his administration, however, and it was not until 1841 that the victory of protection over the free-trade agitation gave him a stable majority in the house of commons. His "conversion" split the tory party and he retired from office, becoming a supporter of the whig ministry in its economical and ecclesiastical policy. His death, in 1850, was the result of a fall from horse back.

Peelle, Stanton Judkins, American jurist, was born in Wayne county, Indiana, 1843. He was educated at Indiana University; served in the Civil War; judge of the United States court of claims, 1892-1905; and chief justice, 1906-12, of United States court of claims. He was professor of the law partnership, and bailment in the law department of George Washington University, 1901-11, and a trustee of Howard University. Died, 1928.

Peirce, Benjamin, American mathematician, was born at Salem, Mass., 1809. He graduated at Harvard in 1829; in 1833 became professor at Harvard; in 1849 astronomer to the American *Nautical Almanac;* and in 1867-74 was superintendent of the United States coast survey. His papers on the discovery of Neptune, in 1848, and on Saturn's rings brought him membership in many learned societies in Europe and America. He died at Cambridge, Mass., 1880.

Pelagius (*pē-lā'ji-us*), author or systematizer of the doctrine known as Pelagianism, was born about the middle of the fourth century, in Britain, or, according to some authorities, in Bretagne. He settled in Rome; at the end of the fourth century had already acquired a considerable reputation for sanctity and for knowledge of the scriptures and the spiritual life. Of his after life nothing is known in detail.

Pelissier (*pā'lē'syā*)', **Amable Jean Jacques,** a marshal of France, was born at Maromme, near Rouen, 1794. He entered the French army at the age of twenty; and after thirty-six years' service attained the rank of general, in 1850. On the 8th of September he stormed the Malakoff, for which he was rewarded with a marshal's baton, and after the fall of Sebastopol he also was created Duc de Malakoff, and rewarded with a grant of $20,000. He became governor-general of Algiers in 1860 and died there in 1864.

Pellico (*pel'lē-kō*), **Silvio,** Italian patriot and poet, was born at Saluzzo, in Piedmont, 1789. In 1819 he became connected with a liberal periodical which was published in Milan under the title of *Il Conciliatore*. Arrested in the following year on a charge of conspiracy against the Austrian government, he was imprisoned from 1822 to 1830 in the subterranean dungeons of the fortress of Spielberg, near Brunn, being at last liberated by the command of the emperor. He died at Turin, 1854.

Pelopidas (*pē-lop'i-das*), Theban general of noble descent, was noted among his fellow citizens for his disinterested patriotism. In 382 B. C. he was driven from Thebes by the oligarchic party, who were supported by the Spartans, and forced to seek refuge at Athens, whence he returned secretly with a few associates, 379 B. C., and recovered possession of the Kadmeia, or citadel, slaying the Spartan leader, Leontiades, with his own hand. In 364 B. C., he won the battle of Cynoscephalæ, but was himself killed.

Pelz, Paul Johannes, German-American architect, was born in Seitendorf, Germany, 1841. He studied architecture, 1859-66, in New York, under Detlef Lienau; was connected with United States lighthouse board as architect and civil engineer, during which service he designed many lighthouses. He was one of the architects of the Congressional library building, Washington, D. C.; architect of Georgetown College Academic building and many other structures.

Penn, William, celebrated Quaker, and the founder of Pennsylvania, was born in London, 1644. He studied at Oxford, early gave evidence of strong religious impulses, and adopted the new doctrines of the so-called society of Friends. In 1681, Penn, who had inherited from his father a claim against the government of 16,000 pounds, obtained from the king in satisfaction therefor a grant of an extensive tract of country lying west of the Delaware river and north of Maryland, in the American plantations, and which in the royal patent was called *Pennsylvania*. This territory Penn resolved to form into a commonwealth based upon perfect religious toleration, and accordingly set sail

thither, arriving in Delaware bay on the 27th of October, 1682. In November he entered into a league with the Indians, and next founded the city of Philadelphia. In 1684 he returned to England, where he enjoyed the confidence of James II. In 1699 he paid a second visit to Pennsylvania, and his stay, which lasted two years, was marked by many useful measures, and by efforts to ameliorate the condition, both of the Indians and the negroes. In 1701 he returned to England, and died, 1718.

Pennell (*pen'el*), **Joseph,** American artist, illustrator, author, was born in Philadelphia, 1860. He was a pupil of the Pennsylvania Academy of fine arts and Pennsylvania School of Industrial Art. His works are represented in the national collections of France, at Dresden, Budapest, Melbourne, Perth, Adelaide, and in many state and municipal collections in Europe and America. He was chairman of the international jury of awards, St. Louis exposition, 1904. Author: *The Illustration of Books; The Alhambra; The Work of Charles Keene; Lithography and Lithographers; The Life of James M' Neill Whistler*, etc. Died in 1926.

Penrose, Boies, politician, United States senator, was born in Philadelphia, 1860. He graduated from Harvard College in 1881, and was admitted to the bar in 1883. He practiced his profession in Philadelphia for several years; was elected to the Pennsylvania house of representatives in 1884; to the Pennsylvania state senate in 1886, 1890, and 1894; and to the United States senate, 1897, and reëlected in 1903 and 1909. Died, 1921.

Pepin le Bref (*pē'pan' le bref'*), king of the Franks and father of Charlemagne, was born in 714, the youngest son of Charles Martel. On the death of his father in 741, he received Neustria and Burgundy; deposed Childeric III., and founded the Carlovingian dynasty in 751. He was the first Frankish monarch whose election received the sanction of the Pope, and who was consecrated to his high dignity. He died, 768.

Pepper, Charles M., American journalist, was born in Ohio, 1859. He graduated at Wooster University, 1881. Appointed by President Roosevelt a delegate to the Pan-American congress at the city of Mexico, 1901; and foreign trade commissioner, department of commerce and labor, 1906-07. He was correspondent from Hawaii to the *Chicago Tribune* and *New York Herald*, 1897. Author: *Tomorrow in Cuba; Panama to Patagonia*, etc.

Pepper, William, 1843-1898, physician, benefactor, was born at Philadelphia, and educated at U. of Pa. He was elected provost of the University in 1881, and during his incumbency it became a new institution. On account of ill health he retired and moved to California, where he died, 1898. He edited *Pepper's System of Medicine by American Authors.*

Pepperell, Sir William, American general, was born in Maine in 1696. He was a member of the British council for the province of Massachusetts for thirty-two years from 1727, and in 1730 was appointed chief-justice of the court of common pleas. He commanded the successful expedition against Louisburg in 1745, and was made a baronet. He published an account of a *Conference With the Penobscot Tribe.* Died, 1759.

Pepys (*pēps, pep'is, peps*), **Samuel,** English politician and diarist, officer of the English admiralty during the reigns of Charles II. and James II., was born, 1632. For two years he was president of the Royal society. He wrote *Memoirs of the Royal Navy*, 1690; left to Magdalen College, Cambridge, his large collection of books, manuscripts and prints, including about 2,000 ancient English ballads, forming five folio volumes; but his reputation is founded on his *Diary* from 1659 to 1669, which affords a curious insight into the manners and court life of his day. Died, 1703.

Pericles (*per'i-klēz*), greatest of Athenian statesmen, and a general and orator, was born at Athens, 495 B. C. He soon gained the position of head of the more democratic party in the state, in opposition to Cimon, the son of Miltiades, who was at the head of the aristocratic party. He led the Athenians against Samos in 440 B. C., and was their principal adviser and commander during the first two years of the Peloponnesian war. Phidias was the friend of Pericles, and the public buildings erected by the latter during the administration of Pericles made Athens the admiration of Greece. To Pericles Athens was indebted for the Parthenon. He died, 429 B. C.

Perkins, George Walbridge, financier, was born at Chicago, 1862. He received a common school education, and started business career in the Chicago office of the New York life insurance company, 1877. Second vice-president, 1898; chairman of the finance committee, New York Life, 1900; and vice-president, 1903. He became partner in the banking firm of J. Pierpont Morgan and company, 1901. Died, 1921.

Perry, Bliss, editor, author, educator, editor of the *Atlantic Monthly* 1899-1909, was born in Williamstown, Mass., 1860. He graduated at Williams, 1881; L.H.D., Princeton, 1900; Williams, 1902; Litt.D., Bowdoin, 1904; LL.D., Lake Forest, 1906. He was professor of English at Williams, 1886-93; at Princeton, 1893-1900; and is now professor of English literature at Harvard. General editor of Cambridge editions of the poets. Author: *The Broughton House; Salem Kittredge, and Other Stories; The Plated City; The Powers at Play; A Study of Prose Fiction; The Amateur Spirit; Walt Whitman; Whittier.*

Perry, Oliver Hazard, American naval commander, was born in South Kingston, Rhode Island, 1785. During the war of 1812 fitted out a fleet on Lake Erie. With nine vessels he sailed against the British fleet. The English attacked the *Lawrence*, Perry's flag ship, so fiercely that out of 101 men on it only eighteen were uninjured. Perry left the *Lawrence* in a small boat and was rowed to the *Niagara.* He captured all the English ships. In 1819 he commanded a fleet which sailed to Columbia and ascended the Orinoco river. Died, 1819, Trinidad. In 1860 a marble statue of him was erected at Cleveland, Ohio.

Pershing, Gen. John Joseph, Commander-in-Chief, Americans in France. b. Linn Co., Mo., 1860; m. d. Senator Warren of Wyoming. Lost wife and three daughters in Presidio fire, 1915. Educa. Kirksville Normal; West Point, served Apache Indian campaign, 1886; Sioux campaign, 1890-91; miltary instructor Nebr. 1891-95; instructor in tactics West Point, 1897-98; Santiago campaign, 1898; Philippines 1899-1903; general staff, 1903-6; miltary attache Tokio, 1905-6; with Kuroki's army in Manchuria, 1905; duty in Philippines, 1909-13 as military governor of Moro Province; command border troops in 1914-16; sent into Mexico pursuit Villa, 1916. Commanded American forces at the St. Mihiel drive, took many prisoners and threatened the German fortress Metz. His vigorous pressure here and in the Argonne were strong factors in bringing the Great War to an abrupt close. His soldiers in the army of occupation on the Rhine set an example to the world of fulfilling their duty as masters of a conquered people with firmness, courtesy and consideration.

Pestalozzi (*pes'tä-lōt'sē*), **Johann Heinrich,** Swiss educationist, born at Zürich, 1746. He studied at Zürich; in 1775, established on his estate, Neuhof, a school. The idea of his system was that nothing should be treated except in a concrete way. Almost all Pestalozzi's methods are now substantially adopted by the instructors of elementary teachers in the schools of Europe and America, and to no other man has primary instruction been so largely indebted. His chief works were *How Gertrude Instructs Her Children* and his *Leonard and Gertrude.* During the last two years of his life he wrote also his autobiography. He died at Brugg, Switzerland, 1827.

Petain, Henri Philippe, French general, was born in 1856. Though only a colonel at the beginning of the world war, his services were so meritorious during the early months of that struggle that he was promoted to the command of an army corps in 1914. In 1916, after the Germans had taken the outer defenses of Verdun, through his energy and new methods of defense, he saved that stronghold. For this he was made grand officer of the Legion of Honor. In April, 1917, he was appointed chief of the General Staff of the army, and in May of the same year, Commander-in-Chief of the French armies. During the subsequent allied offensive directed by Foch, Petain was most successful in co-ordinating the movements of his troops with those of England and America. At the conclusion of the war he was created Marshall of France, and has received many high honors from allied governments.

Peter I., The Great, Alexeievitch, emperor of Russia, was born **1672.** In 1682 Ivan renounced the crown, and Peter was declared czar, with his mother, the Czarina Natalia Kirilovna, as regent. Sophia, third daughter of Alexis, succeeded in having Ivan proclaimed czar jointly with Peter, and herself regent. Peter was relegated to private life, his education purposely neglected and his bad habits encouraged.

In 1689 Peter became virtually sole emperor. He now determined to raise his country out of its barbarism, and to place its people in the ranks of civilized nations. He journeyed to Holland and England (1796-98), worked in shipyards, and the knowledge he there gained was amply profited by on his return.

Peter not only created a navy, but gave Russia a sea-board and sea-ports by wresting the Baltic provinces from Charles XII. of Sweden. Young Russian nobles were obliged to travel; schools of navigation were founded; agriculture was improved. Peter established manufactories and distributed metallurgicists through the mining districts of Russia; roads and canals were built.

In 1703 he laid the foundation of St. Petersburg, and twenty years later of its academy of sciences. Laws and institutions which in any way interfered with his projects, he either abolished or altered. In his zeal to do good he was too frequently injudicious in choosing times and seasons, and the least show of opposition irritated him into ferocity. He repudiated his wife a few years after marriage for her reactionary leanings; for the same reason his son Alexis was ill treated, compelled to renounce the succession, and condemned to death, but died suddenly before sentence could be carried out.

Peter died in 1725, the immediate cause being inflammation, contracted while assisting in the rescue of some soldiers in Lake Ladoga.

References.—Oscar Browning's *Life of Peter the Great* and Schuyler's *Peter the Great.*

Peter, St., one of the foremost of the twelve apostles, originally called Simon, was the son of Jona, and a resident at Bethsaida. Peter was a man of ardent temperament, affectionate and generous. He was favored with special manifestations of his Master's confidence, and performed a more prominent part in the sacred history than any other of the twelve disciples. He was crucified with his head downward, in the persecution under Nero, about A. D. 64.

Peter the Hermit, French monk and preacher, was born at Amiens, about the middle of the eleventh century. He made a pilgrimage to the holy land about 1093, and having witnessed the cruelties there inflicted upon the Christians by the Mohammedans, communicated on his return with Pope Urban II., by whom he was authorized to preach the first crusade for the recovery of Jerusalem from the hands of the Turks. His last years were spent in obscurity, in a monastery which he had founded at Huy. Died, 1115.

Peters, John Punnett, American clergyman and orientalist, was born in New York, 1852. He graduated from Yale, 1873; studied philology and theology, Yale; Ph.D., 1876; D.D., 1895; Sc.D., University of Pennsylvania, 1895; rector of St. Michael's church, New York, 1893-1904; canon residentiary, cathedral of St. John the Divine beginning 1904. Author: *Scriptures, Hebrew and Christian.* Translator of *Political History of Recent Times*, and editor of *Diary of David McClure.* Died, 1921.

Peters, Madison Clinton, Baptist clergyman, was born in Lehigh county, Pennsylvania, 1859. D.D., Heidelberg University and Ursinus College. He was ordained to the ministry of the Reformed church, 1880. He preached as an independent in the Majestic theater, New York. Author: *Justice to the Jew; Will Our Republic Live; The Man Who Wins; The Love Affairs of Great Poets; The True St. Patrick;* etc. Died, 1918.

Peterson, William, Canadian educator, principal of McGill University, was born in Edinburgh, 1856. He was educated at the University, Edinburgh. LL.D., St. Andrews; Princeton, New Jersey; University of New Brunswick; Yale; Johns Hopkins, Pennsylvania. Principal of University College, Dundee, 1882-95. Author: *Quintilian's Institutes of Oratory; Dialogues of Tacitus.* Died, 1921.

Petrach (*pē'trārk*), **Francis,** Italian poet, was born in 1304 at Arczzo in Tuscany. Having settled at Avignon, he became deeply attached, in 1327, to the beautiful Laura de Noves, in whose honor were written those sonnets and odes which have rendered his name immortal. He was invited to Naples, to Paris and to Rome; and received the laureate crown in the capitol of the latter city. Among his warmest friends and patrons was the Colonna family. In 1348 his feelings were deeply grieved by the death of Laura. He survived her, however, nearly thirty years, during which period he was admired and honored by his own countrymen, and by foreign princes. He died, 1374.

Petrie (*pē'tri*), **William Matthew Flinders,** English Egyptologist, was born at Charlton, 1853. He was educated privately, and his earliest explorations bore fruit in his *Stonehenge*, 1880. He next turned his attention to the pyramids and temples of Gizeh, and subsequently, with the aid of the Egypt exploration fund, to the mounds of Said and Naukratis, and founded the Egyptian research account, 1894, enlarged as the British school of archæology in Egypt, 1905. Author: *Pyramids and Temples of Gizeh; Racial Portraits; Ten Years' Digging; History of Egypt; Egyptian Tales*, etc.

Pfleiderer (*plī'der-er*), **Otto,** German theologian, was born at Steeten in Wurtemberg, 1839. He studied at Tübingen, 1857-61. In new testament criticism Pfleiderer belongs to the younger critical school which has grown out of the impulse given by Baur. He was an independent thinker, acute, suggestive and profoundly learned, and made his name as well known in England and America as in Germany. His chief works are: *The Philosophy and Development of Religion; Evolution and Theology*, etc. Died, 1909.

Phelps, Edward J., American jurist and diplomat, was born at Middlebury, Vt., 1822. He studied at Middlebury College, graduated in law at Yale in 1843, and was admitted to the bar in the same year. President of the American bar association in 1880. He became a professor in the law School of Yale in 1881, where he served until appointed minister to Great Britain in 1885. Phelps remained at the court of St. James until 1889. He died at New Haven, Conn., 1900.

Phelps, William Lyon, American educator and writer, was born in 1865, at New Haven, Conn. He was educated at Yale and Harvard, and has been instructor and professor of English at Yale since 1892. He is popular as a lecturer. Besides editing

many books, he has written volumes of criticism, including *Essays on Modern Novelists, A Dash at the Pole, Human Nature in the Bible, The Twentieth Century Theatre.*

Phelps-Ward, Elizabeth Stuart, American author, was born at Andover, Mass., in 1844. Besides lecturing, writing for magazines and engaging in various kinds of work for the advancement of women, she has written: *Gates Ajar; The Silent Partner; Poetic Studies; An Old Maid's Paradise; Beyond the Gates; The Madonna of the Tubs; A Singular Life; The Story of Jesus Christ; The Man in the Case;* etc. In 1888, she married Rev. Herbert D. Ward. Died, 1911.

Phidias, Greek sculptor, was born about 490 B. C. He is said to have studied painting before he devoted himself to statuary. He became famous probably about 460 B. C., when he produced the bronze statue of Athena Promachos, the Lemnian Athena, and other works. From 444 B. C. to 438 B. C. he was superintendent of the building of the Parthenon at Athens, and the production of the statue of Athena for that temple. From about 437 B. C. to 433 B. C. he was in Elis, working on the statue of Zeus for the temple at Olympia.

On his return to Athens in 432 B. C. he was charged with embezzling money entrusted to him in connection with the building of the Parthenon, or, as other stories say, for impiety in introducing his own likeness and that of Pericles in the battle of the Amazons on the shield of Athena. In any case, it was as a friend of Pericles that he was attacked; condemned, and died in prison, 432 B. C.

By the general consent of antiquity Phidias was the greatest of Greek sculptors. His chief characteristics were largeness, dignity and magnificence; all his work was marked by a certain repose; he realized that violent action cannot be represented in sculpture. His principal works were what are called chryselephantine statues—that is, there was an inner core of wood or stone, which was covered with plates of polished ivory, for the parts representing flesh, while the gold was used for the drapery.

The Emperor Theodosius I. took the statue of Zeus to Constantinople about 390 A. D. and it perished there in a fire in 475. It is only the remains of the external sculptures of the Parthenon, especially the frieze (of which the Elgin marbles are a part), that survive to give us an idea of Phidias' skill; but it is not certain that they are actually his own work.

References.—Waldstein's *Essays on the Art of Phidias;* Collignon's *Phidias;* Mitchell's *History of Ancient Sculpture;* and *Phidias,* in Masters in Art series.

Philip II., king of Macedon, father of Alexander the Great, was born in 382 B. C., and came to the throne in 359 B. C. He first undertook the thorough union of his kingdom, and then speedily entered upon a policy of aggression, his object being to reduce all the Grecian states to his supremacy. In 339 B. C., the Amphictyonic council, composed of several Grecian states, declared war against the Locrians, and the next year appointed Philip commander-in-chief of all their forces. The Athenians were at last alarmed at his approach into Greece in this capacity, and formed a league with the Thebans against him; but their united forces were utterly defeated at the battle of Chæronea, 338 B. C.; and Philip was now master of all Greece. Philip was faithless in the observance of treaty obligations, and utterly unscrupulous as to the means by which he gained his end; but his great ability both as a king and a soldier is conceded by all historians. Assassinated, 336 B. C.

Philip II., of France, called Philip Augustus, on account of his great abilities and successful administration, was born, 1165. He was crowned joint king with his father, Louis VII., in 1179, and on the death of the latter, in the year following, he came into full possession of the kingdom. He was one of the greatest monarchs of the Capet dynasty. The crusade against the Albigenses occurred in his reign, and he granted the first charter to the University of Paris. He died at Nantes, 1223.

Philip II., king of Spain, only son of the emperor Charles V., was born in 1527 at Valladolid. His first wife was Mary of Portugal; he then married Mary Tudor in 1554; spent over a year in England, and in 1555 succeeded his father in the sovereignty of Spain, Sicily, Milan, the Netherlands, Franche Comtè, Mexico and Peru. He greatly injured Spain by crushing her chivalrous spirit, by persecuting the industrious Moors and by destroying her commerce by heavy taxation. He died, 1598.

Philip IV., "the fair," king of France, was born at Fontainebleau in 1268. He succeeded to the throne in 1285, and by his marriage with Queen Joanna of Navarre obtained Navarre, Champagne and Brie. The chief feature of his reign was his contest with Pope Boniface VIII., which grew out of his attempt to levy taxes upon the clergy, which the pope directed them not to pay. In 1305 Philip obtained the elevation of one of his own creatures to the papal chair as Clement V., and seated him at Avignon, which place was the residence of the head of the church for seventy years thereafter. This period of papal history is often called "the seventy years' captivity." Philip suppressed the order of the Templars and confiscated their lands. He died, 1314.

Philip VI., of Valois, king of France, was born, 1293, and succeeded Charles IV., in 1328. Edward III. of England contested his claim, contending that the Salic law, though it excluded females, did not exclude their male heirs. Edward was son of a daughter, Philip son of a brother, of Philip IV.; thus began the Hundred Years' war between France and England, 1337. The king afterward purchased Majorca. Died, 1350.

Philip, King, sachem of the Wampanoag tribe of Indians, was the second son of Massasoit, who for nearly thirty years had been the stanch ally of the pilgrim settlers. In 1662 Philip succeeded his elder brother and kept the treaties of his father for several years. But, at length, goaded by the encroachments of the whites, he formed a confederation of tribes, amounting to nearly 10,000 warriors, and in 1670 the war known as "King Philip's war," broke out. The Indians surprised and murdered a great many colonists, but were eventually overcome, and in 1676 Philip himself was captured and slain in Rhode Island.

Philips, Andrew Wheeler, American educator, professor of mathematics and dean of the graduate school of Yale University, was born at Griswold, Conn., 1844. He graduated at Yale, 1873; PhD., 1877; and dean of the graduate school at Yale. Joint author: *Transcendental Curves; Graphic Algebra; The Elements of Geometry; Trigonometry and Tables; The Orbit of Swift's Comet,* etc. Died, 1915.

Phillips, Stephen, English poet, was born at Somertown, near Oxford, 1868; studied for the civil service, but abandoned this and went on the stage, playing various parts with Frank Benson's company. Author: *Marpessa; Eremus; Christ in Hades; Poems; Paolo and Francesca; Herod; Ulysses; The Sin of David; Nero; The Last Heir,* drama, etc. Died, 1915.

Phillips, Wendell, American orator and abolitionist, was born in Boston, Mass., 1811. He was graduated at Harvard in 1831, studied law there and was admitted to the bar in 1834. A timely speech in Faneuil hall in 1837 made him at once the principal orator of the anti-slavery party; and henceforth, until President Lincoln's proclamation of January 1, 1863, he was William Lloyd Garrison's loyal and valued ally in the struggle for abolition. He died in Boston, Mass., 1884.

Phillpotts (*fil'pots*), **Eden,** English novelist, was born at Mount Aboo, India, 1862. He was educated at Plymouth, England; went to London and studied for the stage, but abandoned it on finding his ability did not justify perseverance, and adopted literature. Author: *Some Everyday Folks; Down Dartmoor Way; Lying Prophets; Children of the Mist; The Human Boy; Sons of the Morning; The Striking Hours.*

Philo Judæus (*fi'lō jōō-dē'us*), philosopher of the first century, born in Alexandria; studied the Greek philosophy, and found in it, particularly in the teaching of Plato, the rationalist explanation of the religion of Moses, which he regarded as the revelation to which philosophy was but the key. He died about 54 A. D.

Phipps, Henry, American manufacturer and philanthropist, was born in Philadelphia, 1839. He worked in stores in Pittsburg, 1852-56; later associated with Thomas M. and Andrew Carnegie in iron and steel manufacture, building up large fortune, and having, next to Carnegie, largest interest in United States steel corporation. He was a director of United States steel corporation, Carnegie company. He gave $1,000,000 to the Johns Hopkins University endowment fund in 1909. Died, 1930.

Phocion (*fō'shi-on*), an Athenian general and statesman, born about 402 B. C., studied under Plato and Xenocrates. As a soldier he was several times sent against Philip of Macedon, though in politics he sided with him against Demosthenes. Forty-five times he was elected strategus. Implicated in a plot to hand over the Piræus to the enemy, he was sentenced to death by the Athenians, 317 B. C. A revulsion of feeling later led to the erection of a statue in his honor.

Piccolomini (*pēk'kō-lō'mē-nē*), **Octavio,** German general, was born in Italy, 1599, died in Vienna in 1656. He was a favorite of Wallenstein, who intrusted him with a knowledge of his projects, when he purposed to attack the emperor. In spite of this he made himself the chief instrument of Wallenstein's overthrow, and, after the latter's assassination in 1634, was rewarded with a portion of his estates. He was defeated by Torstensohn at Leipzig in 1642.

Pickering, Edward Charles, American astronomer was born at Boston, 1846. He graduated at the Lawrence Scientific School, Harvard, 1865; LL.D., University of California, 1886, Michigan, 1887, Chicago, 1901, Harvard, 1903, Pennsylvania, 1906; PhD.; Thayer professor of physics, Massachusetts Institute of Technology, 1867-76; and professor of astronomy and director of the Harvard College observatory. He established the first physical laboratory in the United States, and under his administration the work of the observatory was devoted mostly to the new fields of photometry and photography as applied to astronomical observation. Author: *Elements of Physical Manipulation,* and various volumes of annals and other publications of Harvard College observatory. Died, 1919.

Pickering, Timothy, American statesman, was born in Massachusetts, 1745. He served as colonel in the American revolution; became Washington's adjutant-general in 1777; he was a delegate to the Pennsylvania constitutional convention of 1787 and 1789. Secretary of war, 1795; secretary of state, 1795-1800; United States senator, 1803-11. He was the author of several political pamphlets, and paid much attention to agriculture. He died in 1829.

Pickett, George Edward (1825-1875,) American soldier, was born at Richmond, Va., graduated at West Point, and entered army during war with Mexico. At outbreak of the Civil War he resigned his commission in the United States Army and entered the Confederate as Colonel. Fought under Lee and won special distinction at Gettysburg.

Pickford, Mary (1893——), actress, first public appearance at 5; initial success in pictures as "*Hearts Adrift.*" Since 1920, member United Artists Corporation. Some of her best performances are *Tess of the Storm Country, Cinderella, Poor Little Rich Girl, Rebecca of Sunnybrook Farm, Sparrows.* Married Douglas Fairbanks, 1920.

Pierce, Franklin, fourteenth president of the United States, was born in Hillsborough, N. H., 1804. Franklin Pierce was educated at Bowdoin College, Maine, and was an officer in the college military company, in which his biographer, Nathaniel Hawthorne, was a private. In 1837 he was elected to the United States senate, of which he was the youngest member. In 1852, in consequence of the conflicting claims of the leaders of the democratic party at the Baltimore convention, he was nominated as a compromise candidate for the presidency against General Scott, the whig nominee, and received the votes of all but four states. He appointed an able cabinet, including Jefferson Davis as secretary of war. During his administration the Missouri compromise was repealed, the treaty for reciprocity of trade with the British American colonies was made, and a treaty with Japan negotiated. He died in 1869.

Pillow, Gideon Johnson, American soldier, was born in Williamson county, Tennessee, 1806. He graduated at the University of Nashville in 1827, was admitted to the bar. He practiced law in his own state until the beginning of the Civil War, to avert which he had proposed various compromises. But having entered the confederate service in 1861, he was rapidly advanced to the command of a brigade, and took part in the battles of Belmont and Fort Donnelson. He was second in command when the latter was taken by the federal troops. He died in Lee county, Arkansas, 1878.

Pinchot (*pin'shō*), **Gifford,** American forester, was born in Simsbury, Conn., 1865. He graduated from Yale, 1889; M.A., Yale, 1901, Princeton, 1904; LL.D., McGill, 1909. Studied forestry in Europe; Chief of the U.S. Forestry Dep't, 1898-1910; Member of U.S. Food Administration, 1917-1918; Negotiated settlement of Anthracite Coal Strike, 1923; Reform Governor of Pennsylvania, 1923-1927, 1931-1935. Writer of many books on forestry.

Pinckney (*pingk'ni*), **Charles Cotesworth,** American statesman, was born in South Carolina, 1746. He fought during the revolution; assisted in framing the constitution of the United States; was special envoy to France, 1796-97. He was a lawyer of eminence, and author of the famous sentiment, "Millions for defense, but not one cent for tribute." He died, 1825.

Pindar (*pin'dăr*), greatest Greek lyric poet, was born at Cynoscephalæ, a village in the territory of Thebes, about 522 B. C. He commenced his career as a poet at an early age, and was employed for many years in various courts and by many of the princes of Greece to compose for them choral songs for special occasions. Of his many works—which consisted of hymns, poems, odes, songs, dirges, and encomiums on princes—only his *Epinicia,* or *Odes,* have come down to us entire. These were composed in commemoration of victories in the public games. Died at Thebes, 442 B. C.

Pinero (*pi-ner'ō*), **Sir Arthur Wing,** English dramatist, was born in London, 1855. He was educated in private schools; was an actor from 1874-81; and from that time until the present, a dramatic author. Author: *The Magistrate; The School-mistress; The Profligate; The Second Mrs. Tanqueray; Trelawny of the Wells; The Gay Lord Quex; His House in Order,* and many other plays.

Pinkerton, Allan, Scottish-American detective, was born in Glasgow, 1819, and emigrated to America in 1842. He located in Illinois, where he captured a gang of counterfeiters and became a deputy sheriff four years later. In 1850 he opened a detective agency in Chicago; recovered $40,000 for the Adams express company, and, discovering a plot to murder Abraham Lincoln on his inaugural journey to Washington, was authorized to protect the president-elect. He then organized the United States secret service, of which he became the head, and conducted it until the close of the Civil War. He wrote several books connected with his work before his death in 1884.

Pinkney, William, American lawyer and diplomat, was born at Annapolis, Maryland, 1764. He was admitted to the bar in 1786. In 1806 he was sent to England as minister extraordinary, and remained as minister resident, 1807-11. He was attorney-general of the United States, 1811-18; served in the war of 1812 as commander of a volunteer corps; was elected to congress in 1815; was a member of the United States senate, 1820-22. Died, 1822.

Pisistratus (*pi-sis'tra-tus*), tyrant, or ruler of Athens, was born about 612 B. C., the son of Hippocrates, who left him a large fortune. He usurped the throne in 560 B. C., and although he was twice expelled, he regained it and ruled with mildness and justice. He enforced the laws of Solon, who was his friend and relative; founded the first public library at Athens, and collected and arranged the poems of Homer. He died about 527 B. C.

Pitman, Benn, Anglo-American stenographer, was born at Trowbridge, Wilts, England, 1822. He settled in the United States, 1853, and founded the phonographic institute, Cincinnati. He was inventor of the electro-process of relief engraving, 1856; military recorder of state trials during the Civil War. Author: *The Reporter's Companion; Manual of Phonography,* etc. Died, 1910.

Pitney, Mahlon, Jurist, Associate Justice U. S. Supreme Court from 1912 to 1922, was born at Morristown, N. J., 1858. He was graduated from Princeton University, 1879; LL.D., 1908; admitted to the bar, 1882; practiced law, 1882-1901; member of Congress, 1895-9, when he resigned and became State Senator; served in latter body, 1899-1901, being president of Senate in latter year. He was Associate Justice N. J. Supreme Court, 1901-08, and Chief Justice of the N. J. Court of Chancery, 1908-12. Died, 1924.

Pitt, William, first earl of Chatham, a famous English statesman, often referred to as the elder Pitt, was born in Westminster, 1708. Educated at Oxford, he entered parliament in 1735. He later became a member of the privy council, and was called upon to form a new cabinet in 1756, of which the duke of Devonshire was prime minister. He resigned in 1761, but five years later was called upon to form another cabinet, in which he became Viscount Pitt and earl of Chatham. Ill health forced his retirement in 1768, but he kept up an active interest in public affairs, opposed Lord North's policy of taxing the colonies, and, upon the alliance of the colonies and France, protested, in a last great effort, against the proposal to make peace. At the close of his speech, he fell into the arms of his friends, and died a few days later, 1778.

Pitt, William, British statesman, son of the preceding, was born at Hayes, England, 1759. He was educated at Cambridge, studied for the bar at Lincoln's Inn, and entered parliament in 1781. At the age of twenty-three he became chancellor of the exchequer, and at twenty-five was regarded as one of England's most powerful ministers. For seventeen years he held his great position without a break. In 1784 he established a new constitution for the East India company. In 1788-89 he maintained against Fox the right of parliament to supply the temporary defect of royal authority occasioned by the incapacity of the king. Until 1801 he continued to hold the reins of government during one of the most stormy periods of British history; and his admirers have conferred on him the title of "the pilot that weathered the storm." In 1799 he effected the union with Ireland. It was part of his scheme to relieve the Roman Catholic laity from civil disabilities, and to grant a public maintenance to their clergy; but the obstinacy of the king frustrated his design. Chagrined by this failure, Pitt resigned office in 1801. In 1804 he returned again to the head of the treasury, which position he continued to hold until his death in 1806.

Pius VI., Giovanni Angelo Braschi, pope, 1775-99, was born at Cesena, Italy, 1717. He was elected pope in succession to Clement XIV. Soon after came the French revolution and the confiscation of church property in France. The pope launched his thunders in vain, and ere long the murder of the French agent at Rome in 1793, gave the Directory an excuse for an attack. Bonaparte took possession of the legations, and afterward of the march of Ancona, and extorted in 1797 the surrender of these provinces from Pius. Pius was called on to renounce his temporal sovereignty, and on his refusal was seized, carried to Siena, and later to Certosa, Grenoble, and finally Valence, where he died, 1799.

Pius IX., Giovanni Mastai Ferretti, pope, 1846-78, was born near Ancona, Italy, 1792. He was elected in 1846, and his pontificate covers one of the most eventful periods of the papacy. After the insurrection at Rome, 1848, he fled to Gæta, but was restored by French aid two years later. The same year he established a Catholic hierarchy in England, and in 1854 defined the doctrine of the immaculate conception. In 1870 the infallibility dogma was promulgated by the ecumenical council held at Rome. In that year, when the French left the city, it was declared the capital of Italy, occupied by the troops of Victor Emmanuel and the Pope was practically held a captive in the vatican until his death in 1878.

Pius X., 258th Roman pontiff, was born in 1835 at Riese, near Treviso, Italy. His name was Giuseppe Sarto, and he was the son of a minor municipal official. He was educated at Castelfranco and the Diocesan Seminary of Padua, and ordained priest, 1858. In 1884 he was appointed bishop of Mantua, and Leo XIII. made him a cardinal and patriarch of Venice in 1893. His charity and tact brought him unbounded popularity, and he was more than once instrumental in settling serious strikes and labor disputes. On the death of Leo XIII., 1903, the conclave met, and, at the seventh scrutiny, elected him pope, and he chose to be known as Pope Pius X. As priest and bishop his life was spent in the pastoral and episcopal service of the church rather than in diplomatic and official service. He was constantly zealous in the reform of church music and in other matters of ecclesiastical discipline. In 1907 he issued a decree intrusting the revision of the *Vulgate Bible* to the Benedictine Order, and later an encyclical against the modernist movement in the church. Died, 1914.

Pius XI—Achill Ratti, born at Desio near Milan, March 31, 1857. His father, Francesco Ratti, director of silk factory. The son was thoroughly educated and prepared for the priesthood. His scholarly tastes led to teaching; became Professor in Seminary at Milan; director of the Ambrosian Library; director of the Vatican Library; papal nuncio to Poland in 1918; archbishop of Milan in 1921; elected Pope, February 6, 1922.

Pizarro (*pē-thär'rō*), **Francisco,** Spanish conqueror of Peru, was born at Trujillo, Spain, about 1470. He received little education, was of an adventurous spirit, entered the army, and embarked with other adventurers for America.

Plato, who, with Aristotle, represents to modern times the whole compass of Greek philosophy, was born at Athens in the year 429 B. C. When he was twenty years old the political troubles, of which the death of Socrates was only one terrible symptom, forced him to leave Athens for a season, and he resided at Megara, with Euclid, the founder of the Megaric sect. That he visited Italy is extremely probable; at all events, he was most closely connected with Archytas and the Pythagorean philosophers.

After returning from his first visit to Sicily, being then in his fortieth year, he began teaching philosophy publicly in the Academia, a pleasant garden in the most beautiful suburb of Athens, and there gathered around him a large school of distinguished followers, who maintained a regular succession after his death under the name of the philosophers of the academy. He lived to the age of eighty-two; was never married and must have possessed some independent property, as he expressed himself strongly against teaching philosophy for fees, and we nowhere read of his having held any public office from which he could have derived emolument.

The distinctive character of the Platonic philosophy is expressed by the word idealism, as opposed to realism, materialism, or sensationalism, using these words in their most general and least technical sense. We should err greatly, however, if we looked on Plato as a man of mere speculation and a writer of metaphysical books. Neither Plato nor any of the great Greeks looked on their intellectual exercises and recreations as an end in themselves. With them, philosophy did not mean mere knowledge or mere speculation, but it meant wisdom, and wisdom meant wise action, and wise action meant virtue.

References.—Jowett's translation of the *Dialogues of Plato;* Ritchie's *Plato;* Nettleship's *Lectures on the "Republic";* Grote's *Plato;* histories of philosophy by Zeller and Gompers; Lutoslawski's *Origin and Growth of Plato's Logic;* and also Emerson's essay in *Representative Men.*

Platt, Thomas Collier, American politician, was born in Oswego, N. Y., 1833. He was a member of class of 1853, Yale, but was compelled to give up his course because of ill health; M.A., 1876. Member of congress, 1873-77; elected United States senator, 1881. President of board of quarantine commissioners, New York, 1880-88; was president of Southern Central railroad and of Addison and Northern Pennsylvania railroad; and was the recognized leader in New York republican politics for years. He was again United States senator from 1897 to 1909. Died, 1910.

Plautus (*plô'tus*), **Titus Maccius,** the greatest comic poet of ancient Rome, was born about 254 B. C. at Sarsina in Umbria. Of the twenty-one comedies legitimately assigned him twenty are still extant. They present great vivacity, well-constructed plots and humorous, life-like characters and situations. He has found noteworthy imitators in Shakespeare, Molière, Dryden, Addison, and Lessing. His literary career continued uninterrupted until his death in 184 B. C.

Pliny (*plin'i*), the name of two famous Romans, usually distinguished as Pliny the Elder and Pliny the Younger. Pliny the Elder, Caius Plinius Secundus, was born probably at Como, Italy, A. D. 23, and was a famous naturalist. Of his many works, his *Historia Naturalis* is the only one that has come down to us. He perished in the great eruption of Vesuvius, which overwhelmed Herculaneum and Pompeii, 79 A. D.

Pliny the Younger, Caius Plinius Cæcilius Secundus, was born at Como, A. D. 61, was the nephew of the elder Pliny, and is celebrated chiefly for his *Letters,* of which ten books are extant. In 103 he was appointed governor of the provinces known as Bithynia and Pontus; and in this capacity he wrote his well-known letter to the emperor Trajan respecting the Christians in his province, which called forth the emperor's equally well-known reply. He died about 116 A. D.

Plutarch (*plu'tark*), celebrated Greek biographer and moralist, was a native of Chæronea, in Boeotia. In A. D. 66 he was a pupil of the philosopher Ammonius at Delphi. He visited Italy, and spent some time at Rome, lecturing there on philosophy as early as the reign of Domitian; but his name is not mentioned by any of the eminent Roman writers, his contemporaries. He returned to his native town, where he held various magistracies, and was appointed priest of Apollo. He was still living in 120, but the time of his death is not known.

His great work is entitled *Parallel Lives,* and consisted of biographies of forty-six eminent Greeks and Romans, arranged in pairs, each pair accompanied by a comparison of characters. They are written with a moral purpose and present not orderly narratives of events, but portraitures of men, drawn with much graphic power, with great good sense, honesty and kindheartedness.

Few books of ancient or modern times have been so widely read, so generally admired, as these *Lives.*

The English translation by the Langhornes is well known; less known, but more spirited is that by North. A new edition of the translation called Dryden's, revised by Clough, appeared in 1859. Most of Plutarch's other writings are ethical, and are entitled *Moralia.*

References.—Trench's *Four Lectures on Plutarch;* Volkmann's *Leben, Schriften und Philosophie von Plutarch.*

Pobyedonostsev (*pō-bye-dō-nōs'tsef*), **Konstantin Petrovich,** Russian jurist and statesman, was born at Moscow, 1827. He studied at St. Petersburg, became an official of the senate in Moscow, and in 1858 a professor of civil law there. In 1872 he was made a member of the council of the empire, and as procurator of the holy synod, from 1880 to 1905, was the most uncompromising champion of the autocracy and of the supremacy of the orthodox Greek church. He died in 1907.

Pocahontas (*pō'ka-hon'tas*), the celebrated Princess Pocahontas, of American colonial history, was born about 1595, the daughter of Powhatan, an Indian chief of Virginia. In 1613 she married John Rolfe, one of the settlers of Jamestown, afterward secretary and recorder-general of Virginia. She died in England in 1617, leaving a son, Thomas Rolfe. Her descendants include some of the leading families of Virginia, the celebrated John Randolph being one of them.

Poe, Edgar Allan, famous American poet and romancer, was born in Boston, Mass., 1809. He was adopted by John Allan of Richmond; entered the University of Virginia in 1826, but left after a term and spent two years as a private in the regular army. He expressed a wish to remain in the army, and Mr. Allan secured him a cadetship in the Military Academy at West Point. Here he neglected his studies and was cashiered in 1831. In 1833, the publisher of a Baltimore magazine having offered prizes for the best prose story and the best poem, Poe competed and won both prizes. In 1835 he married Virginia Clemm. In 1837 he removed to New York, where he lived by contributing to the *New York Quarterly Review* and other periodicals, and where in 1838 he pub-

lished *The Narrative of Arthur Gordon Pym.* In 1839 he became the editor of *The Gentleman's Magazine* at Philadelphia, and published a collection of his best stories, with the title *Tales of the Arabesque and Grotesque.* The year 1845 was marked by the appearance of his famous poem, *The Raven.* In 1847, after the death of his wife, he began to deteriorate, and died at Baltimore, Md., in 1849. His was perhaps the most original poetical genius which America has produced.

Polk (*pōk*), **James Knox,** eleventh president of the United States, was born in North Carolina, 1795. He was educated at the University of North Carolina, and was admitted to the bar at Columbia, Tenn., in 1820. Governor of Tennesee, 1839-41; and was elected as a democrat to the presidency in 1844. The principal feature of Polk's administration, which extended from 1845 to 1849, was the Mexican war, by which the United States acquired the great states of Texas and California and the territory of New Mexico. On the expiration of Polk's term he retired to Nashville, Tenn., where he died a few months afterward, 1849.

Polk, Leonidas, general in the Confederate army, and bishop of the Protestant Episcopal church, was born at Raliegh, N. C., 1806. He graduated at West Point in 1827, and received a commission in the artillery, but resigned and studied for the ministry. Soon after the outbreak of the Civil War, Polk tendered his services to the confederate government, and was appointed major-general by Jefferson Davis. He commanded an army corps at the battle of Shiloh, and in October following was made lieutenant-general. He was killed by a cannon-shot while reconnoitering on Pine mountain, 1864.

Pollock, Sir Frederick, English legal writer and educator, was born in London, 1845. He was graduated at Trinity College, Cambridge, and was admitted to the bar in 1871. LL.D., Cambridge; D.C.L., Oxford. Corpus professor of jurisprudence, University of Oxford, 1883-1903; and honorary fellow of Corpus Christi College, Oxford, 1906. Author: *Principles of Contract; The Law of Torts; The Land Laws; Essays in Jurisprudence and Ethics; Introduction to the History of the Science of Politics; Indian Contract Act,* etc.

Polo (*pō'lō*), **Marco,** Italian traveler, was born in Venice, of a noble family, about 1255. In 1271 he accompanied his father and uncle to the court of the Tartar emperor of China, by whom he was received with favor and employed on several embassies. He was then captured by the Genoese, put in prison, and dictated to another captive, *Rusticiano,* the story of his adventures, which proved to be the first account that opened up to wondering Europe the magnificence of the eastern world. He died about 1323.

Polybius (*pō-lib'i-us*), Greek historian, was born at Megalopolis, in Arcadia, about 204 B. C. He was educated and trained for a public career, was one of the thousand distinguished Archæans who were carried as prisoners to Rome, 168 B. C. After his return to Greece, he undertook numerous journeys into foreign countries, and wrote his celebrated *History.* His death was caused by a fall from his horse, about 122 B. C.

Polycarp (*pol'i-kärp*), bishop of Smyrna and, Christian martyr, was born about 69 A. D. He was brought up at Smyrna, was taught the doctrine of christianity by the apostles, particularly by John, with whom he had "familiar intercourse." He was burned alive. Polycarp wrote several *Epistolæ,* of which only one has been preserved, the *Epistola ad Philippenses,* valuable for its numerous quotations from the new testament.

Polygnotus (*pol'ig-nō'tus*), early Greek painter, was born in Thasos, and settled in Athens 463 B. C. He is considered the founder of historical painting, and is praised especially by Aristotle, who pays a high tribute to him. He was the first to attempt portrait painting and to exhibit character by his art. He was identified with Cimon in the reconstruction of Athens, and his school did much to adorn Athens' famous temples.

Pombal (*pōm-bäl'*), **Marquis of, Dom Sebastiano Jose de Carvalho,** one of the greatest of Portuguese statesmen and one of the ablest men of his time, was born in 1699. On the accession of Maria, he was, under Jesuit influence, dispossessed of power, and died in poverty, 1782.

Pompey, Cneius Pompeius Magnus, called the Great, famous Roman general, was born 106 B. C. He early evinced his military talents by siding with Sulla against Marius, and defeating Brutus, in 83 B. C. In 72 B. C. he reduced Spain to subjection, and on his return was elected to the consulship, with Crassus as his colleague. In this capacity, he restored the power of the tribunes and exterminated the Mediterranean pirates. He next successfully put an end to the Mithridatic war, occupied Syria, besieged and took Jerusalem, and subjugated Pontus and Bithynia. In 59 B. C. he, with Cæsar and Crassus, formed the triumvirate; and, in 51 B. C. identified himself with the aristocratic party, which brought him into armed antagonism with Cæsar. He was overthrown by Cæsar on the field of Pharsalia, 48 B. C., escaped to Egypt and was assassinated.

Ponce de Leon (*pōn'thā dā lā-ōn'*), **Juan,** Spanish explorer, was born in Leon, Spain, 1460. Having heard of the existence of a fountain that could restore youth and beauty, he set out in search of it in 1512, and discovered and named Florida on an Easter Sunday. At the end of a subsequent voyage he died, 1521.

Poniatowski, Joseph Antony, born at Warsaw, 1762, was trained in the Austrian army. When the duchy of Warsaw was constituted, in 1807, he was appointed minister of war and commander-in-chief. Five years later, with a large body of Poles, he joined Napoleon in his invasion of Russia, and distinguished himself at Smolensk, at Borodino, and at Leipzig, where, in covering the French retreat, he was drowned in the Elster, 1813.

Poniatowski (*pō'nyä-tôf'skē*), **Stanislaus Augustus,** last king of Poland, was born at Wolczyn, Lithuania, 1732. He tried, too late, to introduce reforms. The intrigues of discontented nobles led to Russian and Prussian intervention, and King Stanislaus resigned his crown and died at St. Petersburg, 1798.

Pontiac (*pon'ti-ak*), chief of the Ottawa Indians, was born about 1740. After the French had surrendered Canada, his hatred of the English prompted him to organize a combined attack upon all the English garrisons and settlements, with a view to the extermination of what he called "those dogs dressed in red." Pontiac resorted to every means familiar to savages to reduce Detroit, but was unsuccessful. Peace was finally made in 1766, Pontiac being forced to submit to British rule. He was killed at Cahokia, Illinois, by a drunken Indian in 1769.

Pope, Alexander, celebrated English poet, was born, 1688, in Lombard Street, London. Pope was deformed, small in size and delicate in constitution. The groundwork of learning he acquired at two private schools, and from two priests, who were employed as his tutors; for the rest he was indebted to his own persevering studies. He was a poet almost from infancy. His pastorals and some translations appeared in Tonson's *Miscellany* in 1709, but were written three or four years earlier. These were followed by the *Essay on Criticism,* 1711, and *Rape of the Lock,* 1712-17. From 1715-26 Pope was chiefly engaged on his translations of the *Iliad* and the *Odyssey.* In 1728-29 he published his greatest satire, the *Dunciad,* an attack on all poetasters and pretended wits. Died, 1744.

Pope, John, American general, was born at Louisville, Ky., 1822. He graduated at West Point in 1842, entered the engineer corps of the United States army, served in the Florida war of 1842-44 and afterward in the Mexican war. During the Civil War he was appointed brigadier-general of volunteers, and in 1862 highly distinguished himself by the capture of New Madrid, Mo., and "Island No. 10," in the Mississippi river. On account of these signal successes he was transferred to the east and placed in command. In 1882 Pope was made a major-general in the regular army, and retired in 1886. He died at Sandusky, Ohio, 1892.

Porson (*pôr's'n*), **Richard,** eminent English Greek scholar, was born in Norfolk, England, 1759. He was graduated at Cambridge, held a professorship of Greek there, and proved to be a prodigy of learning and critical acumen. After his death, several of his works left in manuscript were published. Died, 1808.

Porter, David D., American admiral, born at Chester, Pa., 1813; entered navy as midshipman, 1829; stationed at naval base during Mexican war. As commander of the *Pouhatan* in Civil War won great honors at capture of New Orleans; cooperated with Farragut in attack on Vicksburg; raised to rank of rear admiral, 1862; head of naval academy, 1865; vice-admiral, 1866; admiral, 1870. Died, 1891.

Porter, Gene Stratton, author and naturalist, born in Wabash County, Ind., 1868; married C. D. Porter, 1886. Novels popular for their idealistic treatment of characters in close association with nature. Author: *The Song of the Cardinal, Freckles, What I Have Done With Birds, At the Foot of the Rainbow, A Girl of the Limberlost, Birds of the Bible, Music of the Wild, The Harvester, Moths of the Limberlost, Laddie, Michael O' Halloran.* Died, 1924.

Porter, Horace, American diplomat and soldier, was born at Huntingdon, Pa., 1837. He graduated at West Point, 1860; LL.D., Union, 1894, Princeton, 1903. He served in the Civil War; was lieutenant colonel and aide-de-camp to General Grant, 1864. He was assistant secretary of war, 1866; and executive secretary to President Grant, 1869-73. United States ambassador to France, 1897-1905; Author: *West Point Life; Campaigning With Grant,* etc. Died, 1920.

Porter, Jane, English novelist, was born at Durham, England, 1776. Her first novel was *Thaddeus of Warsaw,* which was translated into several languages. In 1810 she published *The Scottish Chiefs,* which was also very popular. In 1841 she visited St. Petersburg, and died, 1850, at Bristol, England.

Porter, Noah, American educator and philosophical writer, was born at Farmington, Conn., 1811. He graduated at Yale college in 1831, and, after teaching for a number of years, studied theology and became pastor of a Congregational church at New Milford, Conn. He was professor of metaphysics and moral philosophy at Yale college, 1846-71; president of Yale, 1871-86; and died at New Haven, Conn., 1892. Among Dr. Porter's numerous works are: *The Human Intellect; Books and Reading; Elements of Intellectual Science; Elements of Moral Science.* He was the editor of Webster's *Unabridged* and of the *International* Dictionaries.

Porter, William Sydney (1862-1910), known as "O. Henry," after varied years of journalism and travel, settled down in New York in 1901, where he became one of the most popular short story writers in America. Author: *The Four Million; Roads of Destiny,* etc.

Portes Gil, Emilio, was born in Victoria, State of Tamaulipas, Mexico, in 1891. He received a legal training. He was war secretary under Obregon. He became governor of Tamaulipas in 1920. In 1922-24 he sat in congress. He was secretary of state under Calles. In 1928 he was elected by congress as provisional President for the period Nov. 30, 1928 to Feb. 4, 1930.

Potter, Henry Codman (1834-1908), American protestant Episcopal prelate, was born in Schenectady, N. Y. After various pastorates, he became bishop of New York in 1887. Author: *Thirty Years Reviewed; Our Threefold Victory; The Church and Her Children; The Religion of Today.*

Potter, Paul, celebrated Dutch animal-painter, was born, a painter's son, at Enkhuizen in 1625. He left Amsterdam and established himself at The Hague at an early age, where he studied painting under Jacob de Weth. Here he resided until 1653, when he returned to Amsterdam. His best pictures are pastoral scenes with animal figures, the *Young Bull* being especially celebrated. The Rijks museum at Amsterdam possesses the *Bear-hunt* and seven other pictures, and England is rich in his works. Died, 1654.

Poussin (*pōō'saN'*), **Nicholas,** French painter, was born in Normandy in 1594. He was a pupil of Varin, Lallemont, and others, and in 1624 went to Rome, where he studied with Dufresnoy the sculptor. His reputation mainly rests on his success in the classic style. Upward of two hundred prints have been engraved from his works. The national gallery in London has several of Poussin's pictures. Died, 1665.

Powell, Edward Payson, American journalist and author, was born at Clinton, N. Y., 1833. He graduated at Hamilton College, 1853, and from the Union theological seminary, 1858. He was editorial writer on the *St. Louis Globe-Democrat* for several years; and editorial writer of *The Independent.* Author: *Our Heredity From God; Liberty and Life.* Died, 1915.

Powers, Hiram, American sculptor, was born at Woodstock, Vt., 1805. While still a boy he went to Cincinnati, Ohio, where he became an apprentice to a clockmaker, and about the same time formed the acquaintance of a German sculptor, who taught him to model in plaster. In 1835 he went to Washington, where he executed the busts of the most distinguished persons of his day. In 1837 he went to Italy to study his art, and resided in Florence until his death. In 1838 he produced his statue of *Eve,* which excited the admiration of Thorwaldsen, and in 1839 the still more popular *Greek Slave.* Died, 1873.

Poynter, Sir Edward John, English painter, was born of Huguenot ancestry in Paris, 1836. Was educated at Westminster and Ipswich; studied, 1853-54, at Rome and, 1856-60, in Paris and elsewhere. His water colors are numerous, and he was elected to the royal water color society in 1883, was R. A. from 1876. In 1871 he became Slade professor of art, University of London; in 1876-81 was director of art at South Kensington; from 1894 to 1905 was director of the national gallery, London; and beginning 1896 president of the Royal academy. In 1869-70 he designed the cartoons for a mosaic of St. George in the British house of parliament. He was knighted, 1887, and created a baronet in 1902. Died, 1919.

Praxiteles (*prak-sit'ē-lēz*), famous Grecian sculptor, is believed to have been a native of Athens, to have flourished early in the fourth century B. C. and to have died at the age of eighty. He executed statues in both bronze and marble, and was unrivaled in the exhibition of the softer beauties of the human form, especially the female figure, his most celebrated being the marble statue of Aphrodite at Cnidus.

Prentice, George D., American journalist, was born at Preston, Conn., 1802, and graduated at Brown University in 1823. After studying law he edited the *New England Review* for two years, and in 1831 became editor of the *Louisville Journal,* which position he continued to hold until his death in 1870. He also achieved considerable reputation as a public lecturer and was the author of a number of poems.

Prescott, William Hickling, American historian, was born at Salem, Mass., 1796. During his college course he lost the sight of an eye by being struck by a piece of bread playfully thrown at him by a fellow student, and his studies so affected the other eye, that he became nearly blind. He was then sent abroad for his health, and traveled in England, France and Italy. On his return to America he turned his attention to literature, and, in 1825, selected materials for his *History of Ferdinand and Isabella,* which appeared in 1837. He

next devoted six years to the *History of the Conquest of Mexico* and four years to the *Conquest of Peru*. From 1855 to 1858 he published three volumes of his *History of Philip II*, but left it unfinished. He was made D.C.L. at Oxford in 1850. Died, 1859.

Price, Sterling, American general, was born in Virginia, 1809. He was a democratic member of congress, 1845-46; was made brigadier-general in the Mexican war; was governor of Missouri, 1853-57; became a noted leader of the secession party; was appointed major-general in the confederate service in 1862, and rendered distinguished service to the confederacy in the southwest throughout the Civil War. Died, 1867.

Priestly, Joseph, eminent English clergyman and experimental philosopher, was born in 1733, at Fieldhead, in Yorkshire, England. In 1774 he announced his discovery of oxygen. At Birmingham he proceeded actively with philosophical and theological researches, became the associate of Boulton, Watt, and Dr. Darwin, grandfather of Charles Darwin, and was also appointed pastor of a Unitarian congregation. In 1791, however, the scene changed. His religious principles and his avowed partiality to the French revolution excited the hatred of the high church and tory party, and, in the riots which took place in July, his house, library, manuscripts and apparatus were committed to the flames by the infuriated mob and he was exposed to great personal danger. He fled to Northumberland, Pennsylvania, at which place he died, 1804. His works include between seventy and eighty volumes. Among them are: *Lectures on General History; Theory and History of Language; Principles of Oratory and Criticism; Charts of Biography and History; Disquisitions Relating to Matter and Spirit*, etc.

Prim (*prēm*), **Juan,** Spanish general and statesman, was born, 1814. Entered Spanish army very young; colonel in 1837; aided Navaraez, 1843, overthrow Espartero in effecting the return of Queen Maria Christina, was banished, 1864, after helping overthrow Isabella; welcomed back to Spain and occupied high posts. He furnished the pretext for the Franco-Prussian war by offer of the Spanish crown to Prince Leopold. Assassinated in 1870 for having procured election of Amadeus to the Spanish throne.

Prinzip Gavriola, Serbian assassin of Austrian Archduke Francis Ferdinand, June 28, 1914. Died in Austrian fortress, 1918.

Pritchett, Henry Smith, American educator, was born at Fayette, Mo., 1857. He graduated at Pritchett College, Glasgow, Mo., 1875; Ph.D., Munich, 1894; LL.D., Hamilton, 1900; Pennsylvania, Harvard, Yale, 1901; Johns Hopkins, 1902; Williams, Michigan, 1905; Sc.D., Tufts, 1906. Professor of astronomy and director of observatory, Washington University, St. Louis, 1883-97; superintendent of United States coast and geodetic survey, 1897-1900; president of the Massachusetts Institute of Technology, 1900-06; and president of the Carnegie foundation for advancement of teaching, 1906. Author of various scientific papers.

Proctor, Richard Anthony, English astronomer and mathematician, was born at Chelsea, England, 1837. He was a graduate at St. John's College, Cambridge, in 1860. About 1885 he settled in St. Louis, and later moved to Florida, leaving there just before he was seized with his fatal illness in New York. His principal popular books were: *Saturn and Its System; Gnomonic Star Atlas; Half-hours with the Telescope; Half-hours with Stars; Other Worlds Than Ours; Light Science for Leisure Hours; Elementary Astronomy; Border Land of Science.* Died, 1888.

Protagoras (*prō'-tag'ō-ras*), the first of the Greek sophists, was born about 480 B. C., and died about 411 B. C. A native of Abdera, he settled in Athens, and gained a reputation as a paid teacher of philosophy. His doctrine was a form of agnosticism; his favorite saying was that "man is the measure of all things."

Proudhon (*prōō'dôN'*), **Pierre Joseph,** French socialist, was born at Besançon, 1809. By his vigorous advocacy of extreme and democratic opinions he became one of the leading figures of his day. His economic views are expounded in his *Qu'est-ce que la propriété* and his *Système des contradictions économiques*. He died at Passy, 1865.

Ptolemy I. (*tol'ē-mi*), king of Egypt, known by his surname Soter, or "the preserver," was born, 367 B. C. Ptolemy acted as one of Alexander's generals in his eastern campaigns; and when the possessions of the latter were divided, after his death at Babylon, 323 B. C., Egypt fell to Ptolemy. Two years before his death, which occurred in 283 B. C., he abdicated in favor of his son, Ptolemy Philadelphus. Ptolemy's reign extended from 323 B. C. to 285 B. C.

Ptolemy II., surnamed Philadelphus, son of Ptolemy I., was born, 309 B. C., in the island of Cos. His reign is remarkable for the successful cultivation of the arts of peace rather than the practice of war. He enriched the library of Alexandria with all the literary treasures of his own and of earlier times, and the museum was crowded with the learned from all countries. He also expended large amounts on public works; was the builder of the famous lighthouse on the island of Pharos and constructed a royal mausoleum, to which he removed the remains of Alexander from Memphis. Altogether, under Ptolemy Philadelphus Egypt rose to a high rank among the nations in power and wealth. He reigned from 285 B. C. to 247 B. C.

Ptolemy, celebrated astronomer and geographer, whose proper name is Claudius Ptolemaeus, was a native of Egypt, though it is uncertain whether he was born at Pelusium or at Ptolemais in the Thebaid; flourished 139-161 B. C. Ptolemy, both as an astronomer and geographer, held supreme sway over the minds of almost all the scientific men from his own time down until about the fifteenth century; and in astronomy especially he seems to have been not so much an independent investigator as a corrector and improver of the work of his predecessors.

Puccini, Giacomo, composer of operas, was born at Lucca, Italy, in 1858, of a family known for generations for musical accomplishment. He studied at Milan Conservatory and became a professor there. In that year he brought out his first opera, *Manon Lescaut*. Following this, with three and four year regularity, came *La Boheme, La Tosca, Madame Butterfly* and a number of other operas less well known. Puccini has several times visited the United States. His recent works include *The Girl of the Golden West, Le Rondine, Il Tabarro, Suor Angelica*. Died, 1924.

Pugin (*pū'jin*), **Augustus Welby,** English architect, was born in London, 1812, the son of a French architect, Augustin Pugin, in whose office he was trained, chiefly by making drawings for his father's books on Gothic buildings. He was associated with Sir Charles Barry, architect of the British houses of parliament, and designed and modeled a large part of the decorations and sculpture for those structures. Died, 1832.

Pulaski (*poo-lás'kē*), **Casimir,** Polish count and general, who fell in the American revolutionary war, was born in Podolia, 1748. On account of the active part he took in the Polish war against Russia, he was stripped of his estates and outlawed in the partition of Poland in 1772. In 1777 he offered his services to the American colonies in their contest against England, and for his gallant conduct at the battle of Brandywine was given a brigade of cavalry, which he commanded until March, 1778. At the siege of Savannah, in October, 1779, he fell in an assault at the head of the cavalry, and died on board the brig *Wasp* two days later.

Pulitzer (*pū'lit-sēr*), **Joseph,** American journalist, proprietor of *New York World* 1883-1911, was born at Budapest, Hungary, 1847. He was educated by private tutor; came to United States, 1864; served until end of Civil War in a cavalry regiment. In 1878 he bought the *St. Louis Dispatch* and united it with *The Evening Post*, as the *Post-Dispatch*, which he still owned at the time of his death. He sat in the Missouri legislature, 1869; Missouri state constitutional convention, 1874; was elected to congress in New York for term 1885-87, but resigned after a few months' service. In 1903 he endowed with $1,000,000 Columbia University school of journalism, with agreement to give an additional $1,000,000 when the school should be in successful operation. Mr. Pulitzer died in 1911. His will ratified the previous gift to Columbia of $7,000,000 and also ratified the agreement that the additional $1,000,000 be paid.

Pullman, George M., American inventor and business man, was born at Brocton, Chautauqua county, N. Y., 1831. He made his home in Chicago in 1859, and in the same year prepared models of sleeping cars, which became the foundation of his fortune. In 1863 he began building the coaches that are called by his name the world over. A few years later he organized the Pullman palace car company which was to build them. In 1880 he founded the town of Pullman, near Chicago, where the coaches are built. He died in 1897, having amassed a large fortune from his inventions and his various business enterprises.

Pupin (*pū-pēn'*), **Michael Idvorsky,** physicist, electrician, professor of electro-mechanics, Columbia, beginning 1889, was born in Ivard Banat, Hungary, 1858. He graduated at Columbia University, 1883; Ph.D., Berlin. His researches in electrical resonance and wave propagation have made possible distance telephony, multiplex telegraphy. D. 1935.

Purcell (*pûr'sel*), **Henry,** noted English composer, was born at Westminster in 1658, and in 1664 became a chorister in the Chapel Royal. He wrote many anthems and other church music and many dramatic and chamber compositions. Among them are his opera *Dido and Æneas*, written at seventeen; his music to the *Tempest*, his songs in Dryden's *King Arthur*, his music to Howard's and Dryden's *Indian Queen*. His greatest work is the *Te Deum* and *Jubilate*. His church music was edited from the original manuscript by Vincent Novello in 1829-32, with an essay on his life and works. Purcell died, 1695, and was buried in Westminster abbey.

Pusey (*pū'zi*), **Edward Bouverie,** English divine, was born at Pusey, in Berkshire, in 1800 and graduated at Oxford in 1822. In 1828 he was appointed professor of Hebrew at Oxford, a position he held until his death. In private life, Pusey was a man of warm affection and was widely known for his gentleness, sincerity and humility. His charity was limited only by his income; besides abundant gifts to the poor, he spent large sums in helping to provide churches in East London and in founding and supporting sisterhoods. He died at Oxford, 1882.

Pushkin (*poosh'kin*), **Alexander Sergeyevitch,** Russian poet, was born in 1799. He was the son of a nobleman and when quite young became a government clerk. Among his writings are the poems: *The Gypsies; Poltava; Dubrovski*; and *The Captain's Daughter*, a novel. Pushkin was killed in a duel at St. Petersburg when thirty-seven years old, 1837.

Putnam, George Haven, publisher, head of G. P. Putnam's Sons, was born in London, England, 1844. He was educated at the Sorbonne, Paris, and University of Göttingen; A.M., Bowdoin College; Litt.D., Western Pennsylvania. He left Göttingen without graduating to enter 176th New York volunteers, 1862; served from private to major, until 1865. President, G. P. Putnam's Sons, publishers, New York. He died in 1930.

Putnam, Herbert, librarian of congress since 1899, was born at New York, 1861. He graduated at Harvard, 1883; Litt.D., Bowdoin, 1898; LL.D., Columbian, 1903; Illinois, 1903; Wisconsin, 1904; Yale, 1907. He took a partial course at Columbia law school, and was admitted to the Minnesota bar, 1886; to the bar of Suffolk county, Mass., 1892; and practiced law, Boston, 1892-95. Minneapolis public library, 1887-91, and Boston public library, 1895-99. He was president of the American library association, 1898, 1904, and overseer of Harvard, 1902.

Putnam, Israel, American general, born at Danvers, Mass., 1718. In 1755 he helped as a captain to repel a French invasion of New York and was present at the battle of Lake George. In 1759 he received a regiment, in 1762 went on the west India campaign and in 1764 helped to relieve Detroit, then besieged by Pontiac. In 1775, after the battle of Concord, he was given command of the forces of Connecticut, was at Bunker Hill, held the command at New York, and in August 1776, at Brooklyn Heights, where he was defeated by Howe. Died, 1790.

Pyle, Howard, American artist, author, was born at Wilmington, Del., 1853. He was educated in private schools and at the art students' league, New York. Author and illustrator: *The Merry Adventures of Robin Hood; Pepper and Salt, or Seasoning for Young Folks; Within the Capes; The Wonder Clock; The Story of Sir Launcelot and His Companions*. Died, 1911.

Pym (*pim*), **John,** English orator and statesman, was born at Brymore, in Somersetshire, in 1584. He was for many years member of parliament for Tavistock. In 1641 he led the impeachment of the earl of Strafford; and in the following year he was one of the "five members" the attempt to seize whom, on the part of Charles I., immediately preceded the English civil war. Scarcely had the great conflict begun, however, when toil and anxiety brought his career to a close. He died at Derby House, 1643, and was buried in state in Westminster abbey.

Pyrrhus (*pir'us*), Greek general, king of Epirus, was born about 318 B. C.; came to the throne in 306 B. C. He was expelled a few years later, but restored by the help of Ptolemy Soter in 296 B. C.; held the kingdom of Macedonia for a short time, and, in 281 B. C., went to Italy to help Tarentum against the Romans. He was at first successful, through his elephants and the phalanx, but was finally defeated in 275 B. C. Died, 272 B. C.

Pythagoras (*pi-thag'ō-ras*), celebrated Greek philosopher, was born about 586 B. C., at Samos. He began to travel at the age of eighteen. On his return he taught geometry at Samos, after which he settled at Crotona, in Magna Græcia, and established a school of philosophy, which became famous. Persecution at length drove him thence, and he took refuge in the temple of the Muses at Metapontum, where he is said to have been starved to death, about 497 B. C. Besides being an illustrious metaphysical philosopher. Phthagoras was a great geometrician and astronomer, discovered the numerical relations in music and propounded the theory of the "harmony of the spheres."

Quatrefages de Breau (*ka'tr'-fâzh' dē brā'ō'*), **Jean Louis Armand de,** French naturalist, was born at Berthezème, France, 1810. In 1850 he was elected professor in the *Lycee Napoleon* and in 1855 at the natural history museum, Paris. His chief works are: *Souveniers d'un Naturaliste; Unité de l'Espèce Humaine; L'Espèce Humaine; Crania Ethnica; Les Pygmées; Darwin et ses Precurseurs Francais*; and *Théories Transformistes*. Died, 1892.

Quay, Matthew Stanley, United States senator and republican politician, was born at Dillsburg, Pa., 1833. He entered the state legislature in 1865, was twice state secretary, state treasurer; chairman of the republican national committee during the Harrison campaign of 1888. In 1887 he was made United States senator for Pennsylvania, reëlected in 1893, and two years later was tried for alleged misappropriation of public funds, but was acquitted. He was again elected in 1901, but died in 1904.

Quesnay (*ke'ne'*), **Francois,** French economist and physician, was born at Méré, France, 1694. He studied medicine at Paris, and at his death was the first physician to the king. But the fame of the "European Confucius" depends on his essays in

political economy. Quesnay's principles are well known from his contributions to the *Encyclopedie*, and from his *Maximes du Gouvernement Economique*, *Le Droit Naturel*, etc. He died in 1774.

Quesnel (*kĕ'nĕl*), **Pasquier,** French Roman Catholic theologian, was born in Paris, 1634. He studied at the Sorbonne, became in 1662 director of the Paris oratory, and here wrote *Réflexions Morales sur le Nouveau Testament*. Having refused to condemn Jansenism in 1684, he fled to Brussels, where his *Réflexions* were published 1687-94. His book was condemned in the bull *Unigenitus* in 1713. He spent his last years at Amsterdam, and died there in 1719.

Quigley, James Edward, Roman Catholic archbishop of Chicago beginning 1893, was born at Oshawa, Canada, 1854, and moved with his parents to Lima, N. Y. He was educated at St. Joseph's College, Buffalo, N. Y., and at the University of Innspruck and the College Propaganda, Rome. Bishop of Buffalo, 1897-1903, when he was installed in Chicago. Died, 1915.

Quiller-Couch, Arthur Thomas, British novelist and essayist, was born in Cornwall, 1863. He was graduated at Trinity College, Oxford. Author: *Dead Man's Rock; The Blue Pavilions; The Warwickshire Avon; The Delectable Duchy; Verses and Parodies; Shakespeare's Christmas; From a Cornish Window*, etc. In 1897 he was commissioned to finish R. L. Stevenson's uncompleted novel, *St. Ives*.

Quincy, Josiah, American statesman, was born in Boston, Mass., 1772. He was graduated at Harvard, 1790, and adopted the law as a profession. In 1805-13 he was a member of congress. In 1813 he was elected to the Massachusetts state senate, and joined in the protest of the legislature against the war and the admission of Louisiana. He was mayor of Boston, 1823-28, and president of Harvard, 1829-45. He published *History of Harvard University; The Municipal History of the Town and City of Boston During Two Centuries; The Life of John Quincy Adams;* and other works. Died, 1864.

Quinet (*kē'nĕ'*), **Edgar,** French philosopher and author, was born at Bourg, France, 1803, and first studied at Lyons and at Paris. From this early period he formed an intimate friendship with Michelet. He then became a contributor to the *Revue des Deux Mondes*, in which *Ahasvérus*, perhaps his finest work, first appeared. From 1839 to 1842 he held the chair of foreign literature at Lyons. From here he passed to a chair at the Collège de France. He threw himself eagerly into the reform agitation that brought about the revolution of 1848, and was elected a member of the constitution and legislative assemblies, but was expelled from France. On the fall of the empire he returned to France, and was reïnstalled in his chair at the Collège de France, 1870. In 1871 he was elected a member of the assembly, and died in 1875.

Quintilian (*kwin-til'i-an*), or **Marcus Fabius Quintilianus,** Latin rhetorician, was born at Calagurris, now Calahorra, in Spain, about 35 A. D. The work by which he is known is entitled *De Institutione Oratoria*, or sometimes *Institutione Oratoria*, and is comprised in twelve books. This work, which contains all that Quintilian considered most valuable in the earlier treatises, both Greek and Latin, on the subject, was discovered by Poggio Bracciolini in the monastery of St. Gall in 1417. Quintilian died probably in Rome about 97 A. D.

Rabelais (*rà'b'-lē'*), **Francois,** the great French humorist, was born at Chinon, in Touraine, about 1490. In 1530 he settled at Montpellier and, taking a medical degree at the university was appointed lecturer. His romance, in which are narrated the wonderful adventures of Gargantua and Pantagruel, continues to take rank as one of the world's masterpieces of humor and grotesque invention. Lord Bacon called Rabelais "the great jester of France"; others have called him a "comic Homer." Died in Paris, 1553.

Rachel (*rà'shel'*), or **Elisa Rachel Felix,** celebrated actress, was born at Munf, in the canton of Aargau, Switzerland, 1821, daughter of poor parents, of the Jewish race. She began her career by singing in the streets of Lyons, and subsequently of Paris. Although her life was spent chiefly in Paris, she visited London, St. Petersburg, Amsterdam and many other European cities, and in all of them her genius for tragedy was recognized as of the highest order. She died, near Toulon, France, 1858.

Rachmaninoff, Sergei Vasilievich, Russian composer and pianist, was born in 1873 in the province of Novgorod. He received his musical education at Petrograd and Moscow, and won a gold medal for his opera *Aleka* in 1892. Besides being a skillful pianist and conductor, he has been a prolific composer. His works include concertos, symphonies, preludes, sonatas, devotional music and the operas *Aleka, The Miser Knight, Francesca da Rimini*. He visited the United States in 1909-1910, appearing as pianist and conductor of his own works. In 1912 he wrote *The Bells*, produced in Liverpool in 1921. He is probably most popularly known through his preludes.

Racine (*rà'sēn'*), **Jean Baptiste,** distinguished French dramatist, was born at La Fertè Milon, 1639, and completed his education at the seminary of Port Royal. His first dramatic efforts *The Thebaid*, and *Alexander the Great*, gave but faint indications of superior talent, but his tragedy of *Andromache* placed him far above all his contemporaries except Corneille. He increased his fame by the production of *Britannicus, Berenice, Iphigenia* and other tragedies, and by his comedy, *The Pleaders*. After a lapse of twelve years, he wrote, by desire of Madame de Maintenon and Louis XIV., the dramas of *Esther* and *Athalie*, to be performed at the Seminary of St. Cyr. The latter is now considered, very generally, to be his finest play. Died, 1699.

Radcliffe, Ann (née Ward), noted English novelist, was born in London, 1764. In her twenty-third year she married William Radcliffe, a student of law, who became proprietor and editor of a weekly newspaper, the *English Chronicle*. Among her works are: *The Castles of Athlin and Dunbayne; A Sicilian Romance; The Romance of the Forest; Mysteries of Udolpho*, etc. She died in 1823.

Radcliffe, John, English physician and the founder of the Radcliffe library at Oxford, was born at Wakefield, Yorkshire, England, 1650. To University college he left his estate in Yorkshire. He left 40,000 pounds for the erection of a public library in Oxford, since known as the Radcliffe library, which he endowed with 150 pounds per annum for a librarian. The Radcliffe infirmary and Radcliffe observatory, at Oxford, were both erected out of this fund. Died, 1714.

Rae, John, British author and journalist, was born in Wick, Scotland, 1845. He was graduated at Edinburgh University; M.A., Edinburgh; honorary LL.D., Edinburgh. He did much writing for the leading reviews, especially on social and economic subjects, and is the author of *Contemporary Socialism; Eight Hours for Work; Life of Adam Smith*, etc. Died, 1915.

Raeburn, Sir Henry, Scottish portrait painter, was born at Stockbridge, near Edinburgh, 1756. At twenty-two he married the widow of Count Leslie, a lady of means, studied two years in Rome, 1785-87, then settled in Edinburgh, and soon attained preëminence among Scottish artists. In 1814 he was elected A.R.A., in 1815, R.A.; was knighted by George IV. in 1822, and appointed king's painter for Scotland a few days before his death, 1823. His style was to some extent founded on that of Reynolds.

Raff (*ráf*), **Joachim,** German composer, was born at Lachen on the lake of Zürich, 1822. In 1850-56 he lived near Liszt in Weimar, taught music at Wiesbaden until 1877, and was then director of the conservatory at Frankfort-on-Main. Among his operas the chief are *König Alfred* and *Dame Kobold*. Died, 1882.

Raglan (*rag'lan*), **Lord** (Fitzroy James Henry Somerset), British general, was born in 1788. He entered the army in his sixteenth year, and after serving on the staff of Sir Arthur Wellesley in the Copenhagen expedition and the peninsular war, became his secretary in 1812. In 1852 he was made master-general of the ordnance, and entered the house of lords as Baron Raglan. When war was declared against Russia, in 1854, Lord Raglan was appointed commander of the English forces in the Crimea, and, at the desperate battle of Inkerman, he won the baton of a field-marshal. Raglan died before Sebastopol, 1855.

Raikes (*rāks*), **Robert,** English publisher and philanthropist, founder of the modern Sunday schools, was born at Gloucester, England, 1735. He early interested himself in the pitiable condition of prisoners in the jails; and then his consideration for the misery and ignorance of many children in his native city led him, in 1780, to start a Sunday school where they might learn to read and understand the Bible. Died, 1811.

Raleigh (*rô'li; ral'i*), or **Ralegh, Sir Walter,** English courtier, colonizer and man of letters, was born at Budleigh, in Devonshire, 1552, and was educated at Oriel College, Oxford. Shortly after returning from a voyage to America he seems to have attracted the attention of Queen Elizabeth, with whom he speedily rose high in favor. In 1584 a patent having been granted him to take possession of lands to be discovered by him on the continent of North America, he fitted out two ships at his own expense and shortly achieved the discovery and occupation of the territory known as Virginia. It was through him that the potato and tobacco were introduced into England at this time. With the death of Elizabeth in 1603 ends the brilliant and successful portion of his career. Her successor, James, from the first regarded him with a suspicion and dislike, which he was at no pains to conceal. He was accused of complicity in a plot against the king. Sentence of death was passed, but James did not venture to execute him, and he was sent to the Tower, where for thirteen years he remained a prisoner. During his imprisonment he wrote his *History of the World*, a noble fragment, still notable to the student as one of the finest models of the quaint and stately old English style. In 1615 he procured his release and sailed for Guiana. After his return, in 1618, he was infamously executed, nominally on the sentence passed on him sixteen years before, but really there is reason to suppose in base compliance on James' part with the urgenices of the king of Spain, who resented Raleigh's persistent hostility.

Rambaud (*rän'bō'*), **Alfred Nicolas,** French historian, was born at Besançon, 1842. He was a member of the French cabinet, 1879-80, and in 1896 became minister of public instruction. He was appointed, in 1883, professor of history in the University of Paris, and became a member of the academy of moral and political sciences in 1897. He wrote works on Russia, French civilization, colonial France, etc., and, with Lavisse, *Histoire Générale du IVme Siecle*, in 12 volumes. Died, 1905.

Rameses I. (*răm'ē-sēz*), ruled about 1355 B. C., and was king during the nineteenth Egyptian dynasty, formed a treaty with the Hittites and maintained the conquests of Egypt as far as Wady Halfa. He subjected Ethiopia, which had revolted, established a fleet in the Mediterranean and erected some of the largest of the Egyptian edifices. It is usual to identify the warrier king Rameses II. with the Pharaoh of the oppression, and Merenptah, his son, as the Pharaoh of the Exodus.

Ramsay, Sir William, British chemist, was born at Glasgow, 1852. He was educated at Glasgow University, and at Tübingen; M.D., Ph.D., LL.D., D.Sc. In 1887 accepted the chemistry chair at University College, London. In conjunction with Lord Rayleigh, he discovered argon in 1894, and in 1895 obtained helium from clèveite. In 1904 he was awarded the Nobel prize for chemistry. He is the author of numerous papers, the most important of which are perhaps *The Molecular Surface-Energy of Liquids; Argon, A New Constituent of the Atmosphere* (in conjunction with Lord Rayleigh), and *Helium, A Constituent of Certain Minerals*. Died, 1916.

Ramsay, Sir William Mitchell, professor of humanity at Aberdeen University, 1886-1911, was born at Glasgow, 1851. He was educated at the Universities of Aberdeen, Oxford and Göttingen; honorary D.C.L., Oxford; LL.D., St. Andrews and Glasgow; Litt.D., Cambridge. Author: *The Historical Geography of Asia Minor; The Church in the Roman Empire; St. Paul the Traveler and the Roman Citizen; Impressions of Turkey; Was Christ Born at Bethlehem?*

Randall, Samuel J., American statesman, was born at Philadelphia, Pa., 1828. After spending a number of years in mercantile business in his native city, he was elected to congress as a democrat, in 1862. He held this position up to the time of his death at Washington, D. C., 1890. He was elected speaker of the house of representatives, 1876, 1877 and 1879. Throughout his congressional career his ability and integrity were conceded by men of all parties, and he was held in the highest esteem by his fellow-congressmen.

Randolph, Edmund Jennings, American statesman, was born at Williamsburg, Va., 1753, and was admitted to the Virginia bar. Was governor of Virginia from 1786 to 1788, and a member of the convention which framed the constitution of the United States. In 1789 he entered Washington's cabinet as attorney-general, and in 1794 was appointed secretary of state, to succeed Jefferson. He died in Virginia, 1813.

Randolph, John, of Roanoke, American orator and statesman, was born in Chesterfield county, Va., 1773. He was United States senator, 1825-27; United States minister to Russia in 1830; and again elected to congress in 1832. Randolph prided himself on his descent from Pocahontas, and his marked Indian features bore witness to his origin. He died in Philadelphia, Pa., 1833.

Ranke (*răn'kē*), **Leopold von,** eminent German historian, was born at Wiehe, Thuringia, 1795. He was educated at Leipzig, and at twenty-three became head master of the gymnasium at Frankfort-on-the-Oder, where he devoted his leisure to historical studies. Six years later he published *A Critique Upon the Later Historians*, and the *History of the Roman and Germanic Peoples From 1495 to 1535*, which attracted wide attention and won him the chair of history at Berlin in 1825; this he retained until 1871. His most complete and elaborate effort, however, is his *German History in the Time of the Reformation*. In 1880, in his eighty-fourth year, he published the first volume of his *Welt-Geschichte*, or *History of the World*, writing a volume annually. Probably no man of his time, even in his own land, toiled more indefatigably or laid up greater stores of knowledge. Died, 1886.

Raphael, Santi or Raffaello Sanzio (*raf'ā-el*) the greatest Italian painter of the Roman school, was born at Urbino, 1483. Timoteo Viti was his first master, and he entered Perugino's atelier in 1499 or 1500, where he was also under Pinturicchio's influence. To his Urbino period belong *The Vision of a Knight* and *St. Michael*. To the Peruginesque period belong, among other paintings, two madonnas in Berlin and one in the Hermitage, St. Petersburg, and *The Marriage of the Virgin*, in the Brera at Milan.

He went to Florence in 1504, and came under the influence of Leonardo da Vinci and

Michelangelo. His extraordinary talents developed rapidly. With an eager power of assimiliation, he put one master after another under contribution for some special power of drawing, grace of design, use of color. He carried the efforts of his predecessors to perfection rather than introducing anything new.

His distinguishing qualities were mastery of workmanship, perfection of design and of form, harmonious beauty and serenity of expression, balanced by refinement of taste and purity of color. To his Florentine period belong *The Ansidei Madonna*, the Madonnas called *Del Granduca, Del Cardellino, La Belle Jardiniére, St. Catherine*, and *The Entombment of Christ*.

In 1508 he was summoned to Rome by Pope Julius II. to decorate the state apartments in the vatican. The proximity of Michelangelo, working in the Sistine Chapel, and the world of classical antiquity around him, gave a noble direction to his mind and ripened his powers to full perfection. Works by older masters were destroyed to give him wall-space; he collected a school of artists to aid him. Prominent among these pupil-assistants were Giulio Romano, Gianfrancesco Penni, "Il Fattore"; Perino del Vaga; and Giovanni da Udine.

He decorated the ceilings and walls of four apartments, and received 1,200 gold scud for each wall painting. The subjects testify to the range and fertility of his creative genius—(1). *Poetry, or the Parnassus; The Dispute of the Sacrament; Philosophy, or the School of Athens; Jurisprudence.* (2). *Expulsion of Heliodorus from the Temple; The Mass of Bolsena; Attila at the Head of His Army; The Deliverance of Peter from Prison* (3). *L'Incendio del Borgo; Victory at Ostia Over the Saracens; Charlemagne Crowned by Leo III.; Oath of Leo III.* (4). *Victory of Constantine Over Maxentius at Ponte Molle.* The famous loggia in the vatican were decorated with biblical scenes and arabesque ornamentations designed by Raphael.

To his Roman period also belong the various cartoons for tapestries, the Chigi *Sibyls*, the graceful and beautiful paintings in the Chigi chapel, the Farnesina designs, and the superb *Galatea*, full of the sense of life and enjoyment. Of his many madonnas the finest are, exclusive of those mentioned above, the *Garvagh, Di Casa d' Alba, Di Foligno*, and the magnificent *San Sisto* at Dresden. His madonnas were conceived with a graceful freedom delicately controlled, guided by a fine feeling for the laws of art and the sacred relationships of life, and were painted in a spirit of dreamy fancy or a cheerful outlook on life.

Among his finest portraits are *Julius II. La Donna Velata* and *Joanna of Aragon*. So beloved was he that all classes mourned his death. His body lay in state with his unfinished *Transfiguration* suspended above it, and he was buried in the Pantheon at Rome

References.—Vasari's *Life;* Eugene Muntz's *Raphael: His Life, Work and Times;* Crowe and Cavalcaselle's *Raphael; His Life and Work;* Minghetti's *Raffaello;* Julia Cartwright's *Early Work of Raphael;* and *The Works of Raphael in the Royal Library at Windsor;* and Berenson's *Central Italian Painters.*

Rauch (*rouk*), **Christian Daniel,** noted German sculptor, was born at Arolsen, in the principality of Waldeck, 1777. He was a pupil of Canova and of Thorwaldsen. His greatest effort was the colossal monument to Frederick the Great, which was dedicated in the city of Berlin in 1851. The greater portion of his long life was spent in Berlin, but he died at Dresden, 1857.

Rawlinson, George, English historian and orientalist, brother of Henry Rawlinson, was born at Chadlington, Oxfordshire, 1815. He was graduated at Oxford; was elected a fellow and tutor of Exeter College; canon of Canterbury cathedral in 1872; and rector of All Hallows, London, 1888. In 1860 he published his notable Bampton lectures on the *Historic Evidence for the Truth of the Christian Records.* He died at Canterbury, 1902.

Rawlinson, Sir Henry Creswicke, 1810-1895; entered the East India military service in 1827; served in the Bombay presidency until 1833; then appointed to assist in reorganizing Persian army. During six years spent in Persia, he studied the cuneiform inscriptions, and translated the famous Behistun inscription of Darius. His principal works are: *England and Russia in the East; The Cuneiform Inscriptions of Western Asia; Outline History of Assyria*, etc.

Rayleigh (*rā'li*), **John William Strutt, Lord,** distinguished English physicist, was born in 1842, graduated at Trinity College, Cambridge, in 1865, and became a fellow in the following year. He succeeded to the title of baron in 1873, was professor of experimental physics at Cambridge, 1879-84, and of natural history at the royal institution, London, 1887-1905. Died, 1919.

Raymond, Henry J., American journalist, was born at Lima, N. Y., 1830. He was graduated at the University of Vermont in 1840, and after serving for a number of years on the staff of the *New York Tribune* and other papers, he in 1851 founded the *New York Times*, which speedily took rank among the leading journals of the country. Died, 1869.

Rayner, Isidor, lawyer, United States senator, was born in Baltimore, Md., 1850. He was educated at the University of Maryland and at the University of Virginia, where he completed the academic and law courses. He was admitted to the Baltimore bar in 1871; member of congress, 1886-92, and attorney-general of Maryland in 1899. He was council for Rear Admiral Schley before invesitgation commission in 1901, and United States senator from Maryland, beginning 1904. He was recognized as one of the leading lawyers of the senate, was a finished orator, and an authority on constitutional law. Died, 1912.

Read, Thomas Buchanan, American poet and painter, was born in Chester county, Pa., 1822. He entered a sculptor's studio in Cincinnati, afterward studied painting, and in 1841 settled in Boston, where he began to paint portraits. In 1846 he returned to Philadelphia, and in 1850 went to Florence, where he spent most of the rest of his life. He died at New York, 1872.

Reade, Charles, distinguished English novelist, was born in Oxfordshire, England, 1814. Was graduated at Oxford, secured a fellowship there, and in 1847 was admitted to the bar as a member of Lincoln's Inn. He began his literary career by play-writing; studied the art of fiction for fifteen years and first made his mark as novelist in 1852, when he was nearly forty, by the publication of *Peg Woffington.* This was followed in 1856 by *It Is Never Too Late to Mend*, and 1861 by *The Cloister and the Hearth*, the last, his best, and the most popular. He died in London in 1884.

Reaumur (*rā'ō'mūr'*), **Rene Antoine Ferchault de,** French naturalist and physicist, was born at La Rochelle, France, 1683. He was educated at Poitiers, Bourges and Paris, and was elected a member of the academy of sciences in 1708. He discovered the method of tinning iron and invented the Réaumur thermometor. He died in 1757. leaving behind him a voluminous array of works, the most important of which is the *Mémoires pour servir à l' Historie des Insectes.*

Recamier (*rā'kà'myā*), **Mme.** (née **Jeanne Francoise Julie Adelaid Bernard**), French woman of society, was born at Lyons, France, 1777. At fifteen she was married to Jacques Récamier, and attracted to her salon at Paris a brilliant circle during the consulate and empire. A record of the splendid social triumphs of Mme. Récamier would involve notice of nearly all who were distinguished in Paris during a space of about fifty years. She became a power in the whole of France, and so continued in spite of changes of fortune which ordinarily would have involved the extinction of even more solid celebrity. Died, 1849.

Reclus (*rē'klü'*), **Jean Jacques Elisee,** French geographer, was born at Ste-Foix-la-Grande, France, 1830. He was educated at Montauban and Berlin. An extreme democrat, he left France after the *coup d' état* of 1851. In Switzerland he began his masterpiece, *Nouvelle Géographie Universelle;* wrote also a physical geography, *La Terre; Histoire d'un Ruisseau; Les Phénomènes Terrestres,* In 1983 he became a professor at Brussels. Died, 1905.

Redfield, William Cox, Secretary of Commerce, manufacturer, was born in Albany, N. Y., June 18, 1858. His parents removed to Pittsfield, Mass., in 1867, where he was educated in the grammar and high schools of that city. He removed to New York City in 1877, thence to Brooklyn in 1883, engaging in the manufacture of iron and steel forgings, tools, etc., and in the manufacture of ventilating, heating and dry apparatus, engines, etc. He was vice-president of the American Blower Co., 1907-11. In 1902 and 1903 he was commissioner of public works for the Borough of Brooklyn, New York City. He was a member of the Sixty-second Congress, and appointed Secretary of Commerce by President Wilson, 1913-1919, retired.

Red Jacket, or **Sa-go-ye-wat'-ha,** "He keeps them awake," a noted chief of the Seneca tribe of Indians, was born at Old Castle, on Seneca lake, New York, about 1751. He was a friend of the whites, though he wished to have the Indians keep their own lands; and, when the six nations made a treaty to sell theirs, he opposed the treaty in an eloquent speech, 1784. Some years after this he visited General Washington, who gave him a silver medal. In later life he visited New York and Washington, and the speeches that he made there are among the finest specimens of Indian eloquence. He died at Seneca village, near Buffalo, N. Y., 1830.

Reed, Thomas Brackett, American lawyer and legislator, was born at Portland, Me., 1839, and was graduated from Bowdoin College in 1860. He was a member of the Maine legislature; attorney-general of the state; and was elected to congress in 1876. His ability was so clearly recognized that he soon become the acknowledged leader of the republican party on the floor; and when his party secured a majority of the house of representatives in the fifty-first congress, Reed was chosen speaker. His name was presented to the Republican National Convention in 1896, but he was defeated by McKinley. He served in congress until 1899, and was elected speaker of the fifty-fourth and fifty-fifth congresses. Died, 1902.

Reed, Walter, American surgeon and bacteriologist, was born in Virginia, 1851. Received his medical education at University of Virginia and at Bellevue hostpital in New York. Reed demonstrated that typhoid fever is spread in camps through flies and personal contact, rather than by infected water, and that yellow fever is caused only by the bite of a certain kind of mosquito. By means of the precautions he urged after the Spanish war, yellow fever was practically exterminated in Cuba. He died, 1902.

Reeves, John Sims, English tenor, was born at Shooter's Hill, Kent, 1822. He went to Paris, 1843, in order to perfect his voice and style, and on his return to England, 1847, was recognized as the first tenor in that country, a position which he maintained for a number of years. In 1892 he became professor of the Guildhall school of Music, London, and retired from the stage, returning to concert work, however, in 1896. He died at Worthing, Sussex, 1900.

Regiomontanus (*rē-ji-ō-mon-tā'nus*), the name given from his birthplace at Königsberg (*Mons Regius*) to the mathematician and astronomer Johann Müller. He was born in 1436, studied at Vienna, and in 1461 accompanied Cardinal Bessarion to Italy to learn Greek. In 1471 he settled in Nuremberg, where, with Bernard Walther, he labored at the "Alphonsine tables," and published *Ephemerides 1475-1506*, in 1473. Died, 1476.

Regnard (*re'nyär'*), **Jean Francois,** French dramatist, was born at Paris, France, 1655. After a roving and adventurous life in various countries, he returned to France about 1683, and became prominently connected with the ministry of finance. Regnard was one of the best followers of Molière, and is regarded as second only to that great master as an exponent of French comedy. Died, 1709.

Regnault (*rē'nyō'*), **Henri,** French figure and genre painter, was born in Paris, 1843. He studied there and at Rome, later making a study of Velasquez in Madrid. His equestrian portrait of Marshall Prim was one of the finest of the century. Regnault enlisted in the army during the Franco-Prussian war and was killed at Buzevenal, 1871.

Regnault, Henri Victor, French chemist and physicist, was born at Aix-la-Chapelle, 1810. In 1841 he succeeded Dulong as professor of physics in the Collège de France; in 1847 he became chief engineer of mines, and in 1854 director of the porcelain factory at Sevres. He rendered distinguished service to science by his exact determination of physico-chemical constants, and his criticism of the law of Boyle and Mariotte. Died, 1878.

Regnier (*rā'nyā*), **Mathurin,** French poet, was born at Chartres, 1573. After a life of dissipation he became, in 1609, canon of the cathedral of Chartres, and was called "the good Régnier," on account of his amiability. Boileau called him the best satirical poet before Moilère. He died at Rouen, 1613.

Regulus (*reg'ū-lus*), **Marcus Atilius,** Roman general, was consul in 267 B. C., when he took Brundusium, and received a triumph. In 256 B. C. he was a second time consul, and in conjunction with his colleague, Manlius, defeated the Carthaginian fleet of 350 ships under Hanno and Hemilcar, landed at Clypea, and ravaged the enemy's territory. The Carthaginians at last defeated him and took him prisoner. After five years' captivity he was sent in 250 B. C. to Rome as an ambassador. In the same year he returned to Carthage, where he was put to death about 250 B. C.

Reid, Sir James, British physician, physician-in ordinary to King Edward and to the prince of Wales, was born at Scotland, 1849. He was graduated at Aberdeen University, M.A., 1869; M.D., 1875; LL.D., 1895; honorary LL.D., Glasgow, 1901. He studied at Vienna, 1876-77; practiced in Scotland, 1877-81; resident physician to Queen Victoria, 1881-1901; physician extraordinary, 1887-89; physician-in-ordinary, 1889-1901. Died, 1923.

Reid, Robert Gillespie, Canadian railway builder and capitalist, was born in Scotland, 1840. In 1871 he came to America and had charge of the construction of the international railway bridge at Niagara Falls, the international bridge over the Rio Grande and the Lachine bridge over the St. Lawrence. Died, 1908.

Reid, Thomas, 1710-1796, Scottish philosopher, was born at Strachen, Scotland. Professor of moral philosophy in the University of Glasgow, 1763-1781. Author: *Inquiry Into the Human Mind*, and *Active Powers of the Human Mind.*

Reid, Wallace (1892-1923), motion picture actor, son of a playwright, gave up newspaper work to enter

motion pictures in 1910. He played with Geraldine Farrar in *Carmen*. His athletic, happy-go-lucky personality quickly made him popular. His best star parts have been *The Valley of the Giants*, *Hawthorne of the U. S. A.*

Reid, Whitelaw, American diplomat and journalist, was born at Xenia, Ohio, 1837. He was graduated at Miami University, 1856; LL.D., Miami, 1890, Princeton, 1899, Yale, 1901, Cambridge, 1902; D.C.L., Oxford, 1907; aide-de-camp on the staffs of Generals Thomas A. Morris and W. S. Rosecrans in West Virginia. In 1868 he was attached to the editorial staff of *New York Tribune;* managing editor, 1869, editor-in-chief and chief proprietor, 1872-1905; was United States minister to France, 1889-92; special ambassador of the United States to Queen Victoria's jubilee, 1897; member of peace commission to Paris, 1898, special ambassador for coronation of Edward VII., 1902, and United States ambassador to England in 1905. Author: *After the War, A Southern Tour; Ohio in the War; Schools of Journalism; Newspaper Tendencies; Town Hall Suggestions; Two Speeches at the Queen's Jubilee; Some Consequences of the Last Treaty of Paris*, etc. Died, 1912.

Reinsch (*rīnsh*), **Paul Samuel,** American educator and author, professor of political science, University of Wisconsin, beginning 1899, was born at Milwaukee, Wis., 1869; was graduated at the University of Wisconsin, 1892; PhD., 1898. Author: *The Common Law in the Early American Colonies; World Politics at the End of the Nineteenth Century as Influenced by the Oriental Situation; Colonial Government; Colonial Administration* and *American Legislatures*. Died, 1923.

Rejane (*rā'zhän'*), **Madame** (Gabrielle Reju), French actress, was born in Paris, 1857. She married M. Porel, Director of the Vaudeville theater, Paris. She was educated at the Paris Conservatoire, under Regnier, and made her début at the Vaudeville theater in *Revue des Deux Mondes*, 1875. She toured in America in 1895, and obtained an enormous success. She afterwards managed her own theater in Paris, the Théâtre Rèjane. Died, 1920.

Rembrandt (*ram'brănt*), **Van Ryn, Paul Harmens,** a Dutch painter, was born in Leyden, 1607, and died 1669. He studied in Leyden and Amsterdam, and about 1623 fitted up a studio in his father's windmill on the bank of The Rhine. In 1628 he executed his first great work, a portrait of his mother, and in 1630 settled in Amsterdam, where he gained great celebrity, and founded a school of art based on the natural style.

His paintings and etchings, exhibiting the most powerful effects of light and shade, brought great prices, and he taught a large number of pupils. He preferred the imitation of vulgar nature to the cultivation of ideal beauty; and his manner depends upon the elaboration of a single element of art, that of chiaroscuro.

Among his historical pictures are *The Sacrifice of Abraham, The Woman Taken in Adultry,* and *The Descent from the Cross;* his portraits include *The Jew Merchant* and the *Night Watch*. His pecular style is perhaps most strikingly displayed in his etchings, especially in his *Christ Healing the Sick*. He was twice married; his second marriage involved him in difficulties, and he became bankrupt in 1656. He executed over 600 paintings, now variously valued at from $500 to $31,000.

References.—Bell's *Rembrandt;* Michel's *Rembrandt, His Work, His Life, His Time;* Middelton's *Decriptive Catalogue of the Etched Work of Rembrandt;* Memphis' *Rembrandt;* and *Study of His Work*, by E. Michel.

Remington, Frederic, American artist, illustrator, sculptor and author, was born in St. Lawrence county, N. Y., 1861. He early studied at Yale art school, and at the art students' league of New York, after which he led the life of a cowboy and stockman on ranches in Montana and Wyoming, where he became notable as an animal painter and illustrator of western scenes and modes of life on the plains. He subsequently came into note as an illustrator for magazines, treating of military subjects and of ranching life, and, after the Spanish-American war, of Cuban scenes and characteristics. Died, 1909.

Remsen, Ira, American chemist and educator, president, 1901-1912; and professor of chemistry 1876-1913; Johns Hopkins University, was born in New York, 1846. He was graduated at the college of the city of New York, 1865; M.D., Ph.D., Göttingen; LL.D., Columbia. He was professor of chemistry, Williams College, 1872-76; founder, 1879, and editor of the *American Chemical Journal;* president of national academy of sciences, 1907-08. Author: *The Principles of Theoretical Chemistry; Inorganic Chemistry*. Died, 1927.

Renan (*rē-nän'*), **Joseph Ernest,** French philologist, historian and critic, was born at Trèguier, in Brittany, 1823. At twenty-five he received his doctorate at the University of Paris, and in 1850 obtained a post in the Bibliothèque Nationale. In 1862 he was chosen professor of Hebrew in the Collège de France; but the emperor, inspired by the clerical party, refused to ratify the appointment; and it was not until 1870 that he was established in the chair. In 1878 he was elected to the academy. His first work of importance was published in 1854, but his European reputation dates from the publication of the *Life of Jesus*, in 1863. None of the other volumes excited the extraordinary interest of the first. Of the volumes that followed, those on St. Paul, 1869, and Marcus Aurelius, 1882, are specially noteworthy. He died in 1892.

Rennie (*ren'i*), **John,** British civil engineer, was born at Phantassie farm, East Lothian, 1761. After working as a millwright he studied at Edinburgh University. In 1780 he entered the employ of Boulton and Watt, and in 1791 started in London on his own account as an engineer and bridge-builder, at which he won great fame. He died in 1821 and was buried in St. Paul's.

Repplier, Agnes, American essayist, was born in Philadelphia in 1858. She was educated at Sacred Heart Convent, Torresdale, Pa. Besides critical essays on contemporary life, published in various magazines, she is the author of *Americans and Others, Points of Friction, Essays in Miniature, Essays in Idleness, Boo. s and Men.*

Reuter (*roi'tĕr*), **Baron Paul Julius,** German journalist, was born in Cassel in 1821. In 1849 he established an office at Aix-la-Chapelle for supplying news by telegraph, and thereby revolutionized the press of Europe. He laid several important telegraphic cables. Died, 1899.

Revere (*rē-vēr'*), **Paul,** American patriot, was born in Boston, Mass., 1735, and learned the business of a goldsmith. He was conspicuous for his zeal against the mother country, and one of the first actors in the revolt. He became famous in history and song for his ride from Boston to Lexington to arouse the minute-men, April 18-19, 1775. He died at Boston, 1818.

Reynolds, John Fulton, American general, was born in Lancaster, Pa., 1820. He was graduated at West Point, 1841, and entered the artillery; served in the Mexican war and on the frontier; in 1861 took command of a brigade of the Pennsylvania reserve corps, and led them in McClellan's peninsular campaign in 1862 until he was taken prisoner at Glendale, June 30. Encountering the van of the confedcrate army at Gettysburg, he had already selected the ground for the impending battle, when at the opening of the fight he was killed by a rifle-shot, July 1, 1863. A monument was erected to him at Gettysburg, and a bronze equestrian statue of him by Rogers stands in Philadelphia in front of the city hall.

Reynolds, Sir Joshua, eminent English painter, was born at Plympton, in Devonshire, 1723. He studied under Thomas Hudson, a portrait painter, and when about twenty years old began his career as a portrait-painter, at Plymouth Dock, now Devonport. On the institution of the royal academy in 1769, he became president and was knighted by George III. His works are very numerous. He was especially famous for his portraits, though his historical paintings, of which upward of sixty are catalogued, show him to have been qualified to excel in both departments of his art. He was the friend of Johnson, Burke, Goldsmith, and the most eminent literary men of his time. He died at London, 1792, and was buried in St. Paul's cathedral.

Rhees, Rush, American educator, president of University of Rochester since 1900, was born at Chicago, 1860. He was graduated at Amherst, 1883; LL.D., 1900; Hartford Theological Seminary, 1888; D.D., Colgate University, 1901. Associate professor of new testament interpretation, Newton Theological Institution, Newton Centre, Mass., 1892-94, and professor in the same, 1894-1900. Author: *The Life of Jesus of Nazareth, a Study; St. Paul's Experience as a Factor in His Theology*.

Rhodes, Cecil John, South African statesman, was born at Bishop Stortford, England, 1853. He was sent for his health to Natal, and subsequently made a fortune at the Kimberly diamond mines. He entered the Cape Colony house of assembly as member for Barkly, and in 1884 occupied a place in the Cape Colony cabinet. In 1890 he became prime-minister of Cape Colony; but even before this he had become a ruling spirit in the extension of British territory, and secured, in 1889, the charter for the British South Africa company, of which until 1896 he was managing director. This territory is now known as Rhodesia. In 1896 he resigned the Cape premiership in consequence of complications arising from the raid of Dr. Jameson, the chartered company's administrator, into the Transvaal, in aid of the Uitlanders' claims. In 1899 he was made D.C.L. at Oxford. He was a conspicuous figure during the war of 1899-1902. Died, 1902, and was buried in the Matoppo hills, leaving a remarkable will which, besides making great benefactions to Cape Colony, founded rich scholarships at Oxford.

Rhodes, James Ford, American historian and essayist, was born at Cleveland, Ohio, 1848. He was educated in the public schools, at the University of New York and the University of Chicago, but was not graduated; LL.D., Western Reserve University, 1893, Harvard, 1901, Yale, 1901, Wisconsin, 1904; Litt.D., Kenyon, 1903. He received the Loubet prize of the Berlin Academy of Science in 1901. Author: *History of the United States from the Compromise of 1850*, in 7 volumes, *Historical Essays*, etc. Died, 1927.

Ricardo (*ri-kär'dō*), **David,** British political economist, of Jewish extraction, was born in London, 1772, and entered upon a mercantile life, after having received a common school education. He gained a large fortune by commerce, obtained a seat in parliament for Portarlington, 1819, and acquired a high reputation as an economist and writer. Died, 1823.

Ricciarelli (*rēt'chä-rel'lē*), **Daniele,** known also by the name of Daniele da Volterra, Italian painter, was born at Volterra, 1509. He studied painting at Siena, and afterward repaired to Rome, where he was much indebted to the friendship of Michelangelo, who not only instructed him, but gave him designs for some of his most celebrated works. His fame rests chiefly on a series of frescoes in the church of La Trinité de' Monti, Rome; and of these the "*Descent From the Cross*" is well known by Toschi's admirable engraving. He died at Rome in 1566 or 1567.

Rice, Alice Hegan, American author, was born at Shelbyville, Ky., 1870, daughter of Samuel W. Hegan. She was educated at Hampton College, Louisville, and in 1902 married Cale Young Rice. Author: *Mrs. Wiggs of the Cabbage Patch; Lovey Mary; Sandy; Captain June*, etc., and a number of short magazine stories.

Richard I., surnamed Cœur de Lion, king of England from 1189 to 1199, was born at Oxford, 1157. He was the third son and successor of Henry II. He spent his early years in Poitou and Aquitaine, in 1190 joined his forces with Philip Augustus of France in the third crusade; captured Cyprus, and won great renown in the holy land, particularly by his defeat of Saladin. After shipwreck on the coast, on his way home, he was captured by the archduke of Austria, and handed over to the emperor Henry VI. in 1193. He was ransomed at a heavy price by his subjects, and landed in England in 1194. He died of an arrow wound at the siege of Chalus in 1199.

Richard II., king of England, was born at Bordeaux, France, in 1367. He was the son of Edward the Black Prince, and the grandson of Edward III., whom he succeeded. Being only eleven years old at his accession, a council of regency was appointed to govern the kingdom during his minority. Quarrels with his uncles, with the commons and with his parliaments, on behalf of worthless favorites with whom he was surrounded, fill up the years of Richard's reign. The noted John of Gaunt, duke of Lancaster, and Thomas, duke of Gloucester, tried to bend their royal nephew to their own purposes. He resisted them successfully, but the murder of Gloucester, who was arrested near London, and slain at Calais in 1397, fixes an indelible stain upon his memory. Two years afterward he was defeated and deposed by his cousin, Henry of Bolingbroke, duke of Hereford, who succeeded him. He is believed to have been murdered in Pontefract castle, Yorkshire, in the following year.

Richard III., king of England 1483-85, surnamed Crookback, was born at Fotheringay castle, 1452, youngest son of Richard, duke of York, a brother of Edward IV., and uncle of Edward V., whom he murdered. Scarcely had he placed himself securely, as he thought, upon the throne, than a plot broke out, in which the duke of Buckingham took a leading share, in favor of Henry Tudor, earl of Richmond. The plot disastrously failed so far as Buckingham was concerned, for he was apprehended, condemned and executed at Salisbury, 1483; but in 1485 the earl of Richmond landed at Milford Haven with a force of a few thousand men, and a few days later defeated the king in the battle of Bosworth field, in Leicestershire. In this battle Richard was killed. He was buried in Grey Friars' church, Leicester. The house of York and the Plantagenet line of kings ended with the death of Richard, who was succeeded by Henry VII., the first of the Tudor line.

Richardson, Samuel, English novelist, was born in Derbyshire, 1689. He was early apprenticed to a printer in London. It was not until he was more than fifty years of age that he published his first novel, *Pamela, or Virtue Rewarded*. In 1749 appeared his second work, *The History of Clarissa Harlowe*, which greatly increased his reputation; and in 1753 he published *The History of Sir Charles Grandison*. All his novels are in the epistolary style. He may be said to be the originator, after De Foe, of the English novel. He died in 1761.

Richelieu (*rēsh'ē-lyū'*), **Armand Jean Duplessis, Duc de,** celebrated French statesman and cardinal, was born of a noble family at Paris, 1585. He pursued ecclesiastical studies, and underwent the preliminary examination for his degree at the Sorbonne. In 1607 he was consecrated bishop of Lucon at Rome in the presence of Pope Paul V., and for some time devoted himself zealously to the discharge of his duties in his diocese. In 1622 he became a cardinal, and from 1624 to 1642 was the principal minister of Louis XIII. The administration of Richelieu forms an epoch in the history of France and her relations with other countries. It is memorable for several great measures, or series of measures. Of these the first and most

lasting in its results was that by which the absolute authority of the sovereign was established. By a succession of vigorous and energetic, and, it must be added, not unfrequently unscrupulous measures, Richelieu succeeded in breaking down the political power and subduing the arrogant assumptions of the great families, the heads of several among which were brought to the scaffold, while not a few were condemned to life imprisonment. Another of the great enterprises of his ministry was the overthrow of the Huguenot party as a political power and a rival of the throne in France. The siege and capture of Rochelle, which he conducted in person in 1628, was followed by the submission of the other Huguenot strongholds. In the external relations of France the great object of all his measures was the overthrow of the preponderance of Austria. He died at Paris in 1642.

Richter (*rik'tĕr*), **Johann Paul Friedrich** or "Jean Paul," German humorist and sentimentalist, was born at Wunsiedel, in Bavaria, 1763. He studied at Leipzig, and began his literary career in 1783 with *The Greenland Lawsuits*. In 1789 appeared *Selections From the Papers of the Devil*, and, in 1793, *The Invisible Lodge*. This was followed by *Hesperus*, the work by which he is perhaps best known outside of Germany. He died at Bayreuth, 1825.

Ridder, Herman, American journalist, was born in New York, 1851, of German parentage. He attended the New York schools, and began business at eleven as errand boy. He was an insurance agent at twenty; president, 1907, of the *New York Staats-Zeitung*. As an independent democrat he was active in Cleveland campaigns and reform movements, especially in German-American reform union. Member of the chamber of commerce, American museum of natural history, Metropolitan museum of art; director of the associated press and treasurer of New York publishers' association. Died, 1915.

Ridley, Nicholas, English reformer, was born in Northumberland, about 1500. He was appointed bishop of Rochester in 1547, and of London in 1550; took a leading part in composing the liturgy and drawing up the thirty-nine articles; favored the attempt to place Lady Jane Grey on the throne, and was imprisoned in the Tower. He was condemned to death for heresy and burned, with Latimer, at Oxford, 1555.

Ridpath (*rid'păth*), **John Clark,** American historian and educator, was born in Putnam county, Indiana, 1840. He was graduated at Asbury, now De Pauw University, 1863, and in 1869 was appointed professor of literature at Asbury and ten years later became vice-president of that university. He was editor of *The Arena*, 1897-98. Author of an academic history and a popular history of the United States; *A Cyclopœdia of Universal History* and a compendious treatise on *The Great Races of Mankind*. Died at New York, 1900.

Rienzi (*ri-en'zē*), **Nicola Gabrini,** Italian patroit, commonly called "the last of the Roman tribunes," was born in Rome about 1313. He proved an excellent leader at first, but soon became elated by success, caused himself to be crowned with seven crowns and lived in great splendor and extravagance. In a few months the people became tired of him and he was obliged to escape from the city in the dress of a monk. He was afterward recalled to Rome and was assassinated in 1354, while making a speech to the people.

Riggs, Mrs. George C. See **Wiggin, Kate Douglas.**

Riis (*rēs*), **Jacob August,** American journalist, author, was born in Ribe, Denmark, 1839. He was educated at the Latin school there; came to New York, and was subsequently active in the small parks and playgrounds movement and in tenement house and school reform. He was secretary of the New York small parks commission, 1897, and executive officer of Good Government clubs, 1896-97. Author: *How the Other Half Lives; The Children of the Poor; The Making of an American; The Battle With the Slum; Children of the Tenements;* and magazine articles on social and economic subjects. Died, 1914.

Riley, James Whitcomb, American poet, writer, and lecturer, was born at Greenfield, Ind., 1853. He received a public school education; M.A., Yale, 1902; Litt.D., Pennsylvania, 1904; M.L.D., Indiana, 1907. He began contributing poems to Indiana papers, 1873. For a number of years he appeared on the lecture platform throughout the country and gave readings from his works. Author: *The Old Swimmin' Hole and 'Leven Other Poems; The Boss Girl and Other Sketches; Afterwhiles; Old-Fashioned Roses; Pipes o' Pan at Zekesburg; Rhymes of Childhood*, etc. Died, 1916

Rimsky-Korsakoff, Nicholas Andreyevitch, Russian composer, was born in the province of Novgorod in 1844. Although he showed an unusual talent for music at an early age, he was sent to the naval academy at Petrograd, where he remained until he completed his course. During a world tour as midshipman he composed his first symphony, which was produced upon his return. He then devoted himself entirely to music, basing many of his works on Russian folk melodies. Besides symphonies, overtures and piano compositions, he wrote thirteen operas. The best known are *Czar Or, The Snow Maiden, Sadko, The Czar's Betrothed*, and *Pan Voyevoda*. In 1871 he became professor of composition in the conservatory at Petrograd, where he remained until his death in 1908.

Rinehart, Mary Roberts, American novelist, was born in Pittsburgh, 1876, educated in Pittsburgh High School and Pittsburgh Training School of Nurses. Visited western battle front, under protection of Allies, 1915, and after the United States entry into war, volunteered as a nurse. Author: *Circular Staircase; Window at the White Ca; Street of Seven Stars; Altars of Freedom; The Amazing Interlude, Dangerous Days*, etc.

Rinehart, William Henry (1825-1874), American sculptor, began his carer as a marble worker in Baltimore in 1846. In 1855 he studied in Italy. He completed Crawford's bronze doors for the capitol at Washington, and executed a fine bronze statue of Chief-Justice Taney, 1872. He died in Rome, leaving his property as a fund for needy students of art.

Ripley, George (1802-1880), American scholar and critic, graduated from Harvard, 1823. During his pastorate of a Unitarian Church at Boston, which he held until 1841, he became one of the leading spirits in the transcendental movement. The first meeting of the club was held at his home in 1836. He was the originator of the Brook Farm experiment, and co-editor of the *New American Cyclopedia*.

Ristori (*rēs-tō'rē*), **Adelaide,** Italian actress, was born in 1821, the child of strolling players. In America she played with Edwin Booth. Her leading parts were: *Francesca da Rimini, Marie Stuart, Phædra, Lady Macbeth, Judith*, etc. She retired from the stage in 1885 and died in 1906.

Ritter, Karl, German geographer, was born at Quedlinburg, Prussia, 1779. He studied at Halle, became professor of geography at Berlin in 1820, and afterward member of the academy and director of studies in the military school. With Ritter as the founder of comparative geography, began a new epoch in the history of geographical science. He died at Berlin, 1859.

Rives (*rēvz*), **Amelia,** Princess Amélie Troubetzkoy, American novelist, was born at Richmond, Va., 1863. Her earliest production was a series of stories entitled *A Brother to Dragons*. This was followed by a sensational work called *The Quick or the Dead?* which met with considerable popularity.

Riviere (*rē'vyâr'*), **Briton,** English painter, was born in London, 1840, of Huguenot ancestry. He was graduated at Oxford in 1867, M.A., D.C.L. He had exhibited at the royal academy in 1858, and from the appearance of *The Poacher's Widow*, 1866, he was regularly represented there and at various international exhibitions. He became A.R.A. in 1878, R.A. in 1881. Died, 1920.

Robbia (*rŏb'bya*), **Lucca della,** Italian sculptor, was born at Florence, about 1400. He decorated the campanile of the cathedral at Florence; made a bronze door for the sacristy of the same and was famous for his work in enameled terra cotta, since known as "della Robbia" ware. Died, 1482.

Robert I., king of Scotland. See **Bruce, Robert.**

Roberts, Charles George Douglas, Canadian author, was born at Douglas, N. B., Canada, 1860. He was graduated at the University of New Brunswick, 1879; was editor of the *Week*, Toronto, 1883-84; editor of the *Illustrated American*, in New York, 1897. Author: *New York Nocturnes; The Book of the Rose; The Heart of the Ancient Wood; The Kindred of the Wild; Barbara Ladd; The Prisoner of Mademoiselle; The Heart That Knows; In the Deep of the Snow; The Young Acadian*, etc.

Roberts, Frederick Sleigh, baron of Kandahar and Waterford, distinguished British general, was born at Cawnpore, India, 1832. He was educated at Eton College, at Addiscombe and at Sandhurst; D.C.L., Oxford, LL.D., Cambridge. At the age of nineteen he joined the Bengal artillery and served through the Indian mutiny. For his heroism he received the Victoria cross. In 1868 he took part in the Abyssinian war and was made a C.B. In the Afghan war of 1878 he commanded the Kuram field force and in this affair he made his famous march from Kabul to Kandahar, effecting the relief of the latter place. For his great military feat in this war he was created a baronet, and earned from his soldiers the familiar sobriquet of "Little Bobs" or Bobs Bahadur. In 1892 he was raised to the peerage. In 1895 he was made field-marshal and commander of the forces in Ireland. In 1899 he proceeded to South Africa to take supreme command during the Boer war, where he invaded the Orange Free State and the Transvaal and turned the fortunes of that struggle in favor of the British. In the autumn of 1900 he returned to England to succees Lord Wolseley as commander-in-chief of the army, retiring in 1904. He is the author of the *Rise of Wellington* and *Forty-one Years in India*. Died, 1914.

Roberts, Morley, English novelist and journalist, was born in London, 1857. He was educated at Owens College, served before the mast on Australian sheep-runs, worked on Texan ranches, on California railways and British Columbian sawmills, and multiplied his experiences in the South Seas, the Transvaal, Rhodesia and Corsica. Between 1887 and 1904 he published some forty works, mostly novels and has written continuously since then.

Roberts, Theodore, actor; born San Francisco, 1861, married Clyde Harron. First appeared in *Richelieu*, and in 1881 in New York in *Our Bachelors*, in London at the Adelphi Theatre, Feb. 3, 1902, in *Arizona;* later in many well-known plays, including *"The Right of Way."* Died, 1929.

Roberts, William Henry (1844-1920), Presbyterian clergyman, graduated from the College of the City of New York, 1863, and Princeton Theological Seminary, 1873. He was statistician of the Treasury Department at Washington, 1863-65, and assistant librarian of Congress, 1866-71. After twenty years' connection with divinity institutions he was made acting pastor at Fourth Church, Trenton, N. J., 1895-1900. He occupied many important church organization offices, was moderator of the general assembly in 1907, and as its secretary edited its minutes, 1884-1914. Author: *History of the Presbyterian Church, Laws Relating to Religious Corporations*, etc.

Robertson, Frederick William, English pulpit orator and writer, was born in London, 1816. He was educated for the army at Tours and Edinburgh, but subsequently studied at Oxford, 1837-40, and devoted himself to the church. In 1842 he was settled at Cheltenham; in 1847 became incumbent of Trinity chapel, Brighton, where his earnestness, originality and wide sympathy arrested attention, but provoked suspicion. He resigned in 1853 because his vicar had refused to confirm his nomination of a curate, and died the same year. His *Sermons* were published complete in 1870.

Robertson, William, British historian, was born in Borthwick, Midlothian, 1721. He distinguished himself in the general assembly of the church and became leader of the moderate party. He was one of the ministers of Greyfriars church, Edinburgh, and principal of the university from 1762. He wrote *History of Scotland During the Reigns of Mary and James VI.; History of the Reign of the Emperor Charles V.;* and *History of America*. He died near Edinburgh when nearly seventy-two years old, 1793.

Robespierre (*rō'bes-pyâr'*), **Maximilien Marie Isidore,** noted French revolutionist, was born at Arras, France, 1758. He was elected to the national convention as head of the Paris deputies, and as recognized chief of the extreme party he was one of the main agents in procuring the execution of the king, which took place in December, 1792. A period of terror followed; Marie Antoinette and the infamous duke of Orleans were the first victims; Pètion, Danton and Camille Desmoulins were next immolated, on a suspicion of having favored a reactionary policy; and for months, under the so-called committee of public safety, Paris became the scene of an indiscriminate quasi-judicial slaughter, in which some thousands of lives were sacrificed. A conspiracy was organised against "the tyrant," and after a scene of fierce tumult in the convention his arrest was accomplished. A rescue by the populace followed, but he lacked the courage and promptitude to turn the opportunity to account; while he hesitated his enemies acted, and in July, 1794, he closed his career on the scaffold.

Robie, Virginia Huntington, author and editor, was born at Salmon Falls, N. H., of an old colonial family, and educated in Boston, Mass.; has specialized as a writer on furniture, ceramics and interior decoration; associate editor of *The House Beautiful*. Author of *Interior Decorations; Shamrock and Thistle; Historic Styles in Furniture;* etc.

Robinson, Edwin Arlington, American poet, was born at Head Tide, Maine, in 1869. He was educated at Harvard University and is a member of the National Institute of Arts and Letters. His poems include *The Children of the Night, The Town Down the River, Merlin, The Three Taverns*, and *Collected Poems*. He is a shrewd analyst of character and a master of technique. Died 1934.

Robinson, James Harvey, American historian and educator, professor of history, Columbia University, 1895-1919, was born at Bloomington, Ill., 1863. He was graduated at Harvard, 1887; Ph. D. Freiburg, 1890. Acting dean, Barnard College, 1900-01; an organizer and lecturer, New School for Social Research, 1919-21. Author: *The German Bundesrath; Petrarch, The First Modern Scholar and Man of Letters*, with Rolfe; Died, 1936.

Robinson, William Callyhan, American educator, and legal writer, dean of law school, Catholic University of America, beginning 1895, was born at Norwich, Conn., 1834. He was graduated at Dartmouth College, 1854; graduated in divinity, General Theological Seminary, Protestant Episcopal church, 1857; studied law, and was admitted to the bar in 1864; LL.D., Dartmouth, 1879. He practiced law at New Haven, Conn., 1865-95; judge of city court, New Haven, Conn., 1869-71; judge of court of common pleas, New Haven county, Conn., 1874-76; member of the legislature of Connecticut, 1874. Author: *Notes of Elementary Laws; Elementary Law; Clavis Rerum; Law of Patents; Forensic Oratory; Elements of American Jurisprudence*. Died, 1911.

Robson, Eleanor Elsie, American actress, was born at Wigan, Lancashire, England, daughter of Charles Robson. She was graduated at St. Peter's Academy, Staten Island, New York, 1897, and made her professional debut at California theater, 1897. She played *Juliet* to the *Romeo* of Kyrle Bellew, 1903; starred in *Merely Mary Ann*, 1903-05, and headed an "all-star" cast in a special production of *She Stoops to Conquer*, at the New Amsterdam theater, New York, under Liebler and company, 1905. Married August Belmont, 1910, and retired from stage.

Rochambeau (*rō'shăn'bō'*), **Jean Baptiste Donatien de Vimeur, Comte de,** marshal of France, was born in 1725. He served in the war of the Austrian succession; distinguished himself in the

Seven Years' war, coöperated with Washington at the siege and capture of Yorktown, during the American war of independence. In 1791 he became commander of the French army of the north, but resigned in 1792, and narrowly escaped execution during the reign of terror. Died, 1807.

Rochefoucauld. See **La Rochefoucauld Francois Duc de.**

Rockefeller, John Davison, American capitalist and philanthropist, was born at Richford, N. Y., 1839, and moved to Cleveland, Ohio, 1853. He received a public school education; was clerk in a forwarding and commission house, and at nineteen a partner in the firm of Clark and Rockefeller, commission merchants. Subsequently the firm became Andrews, Clark and Company, and engaged in the oil business. In 1865 the firm, then William Rockefeller and Company, built the Standard Oil works at Cleveland, and this was consolidated with others in the Standard Oil Company, 1870. Other interests were later acquired and the Standard Oil trust was formed, 1882, but dissolved, 1892. The various Standard oil companies were then operated separately, with Rockefeller at the head of the entire business until 1911, when he retired. He has given a total of more than $500,000,000 to philanthropies.

Rockefeller, John Davison, Jr., capitalist, son of preceding, was born in 1877. He was graduated at Brown University, and married in 1901, Abby Green Aldrich, daughter of Nelson W. Aldrich, United States senator from Rhode Island. He is associated with his father in his various business enterprises, and is a trustee of the University of Chicago.

Rockefeller, William, capitalist, brother of John Davison, was born at Richford, N. Y., 1841. He was educated at Owego, N. Y., and Cleveland, Ohio; was bookkeeper and late partner in produce commission trade; soon after joined his brother John Davison, in oil business. Died, 1922.

Rodin (*rō'dan'*), **Auguste,** French sculptor, was born at Paris, 1840. He studied under Barye, and began to exhibit in the salon in 1875. He produced a number of great scriptural and symbolical groups, but is best known by his portrait busts and statues, notably the bust and the monument of Victor Hugo. Acknowledged greatest sculptor of his time. Died, 1917.

Rodney, George Brydges, Lord, English admiral, was born in 1719. In 1759, after twenty-eight years of active service, he was made rear admiral. In 1762 he became vice admiral and in 1764 was made a baronet. During the Seven Years' war he accomplished the relief of Cibraltar and Minorca and defeated, near Martinique, the French fleet, under Ccunt de Guichen; took Eustatia from the Dutch, with 250 ships and other booty. He was elevated to the peerage as Baron Rodney, and received a pension of 2,000 pounds per annum for himself and his successors. Died, 1792.

Roebling (*rōb'ling*), **John Augustus,** American civil engineer, was born in Mühlhausen, Prussia, 1806. He emigrated to the United States in 183 and in course of years became the designer and constructor of many great public works, among them the canal aqueduct across the Allegheny river, and the Monongahela suspension bridge, both at Pittsburg; the suspension bridge at Niagara; the Ohio bridge at Cincinnati, etc. He died in 1869, having just before projected the Brooklyn Bridge.

Roebling, Washington Augustus, American engineer, was born at Saxonburg, Pa., 1837. He was graduated at Rensselaer Polytechnic Institute, 1857; joined his father in construction of Pittsburg suspension bridge across Allegheny river. The Brooklyn bridge, was undertaken by his father, but the latter's death in 1869 left the entire construction in his hands, and he directed it to completion. He was president and director of the John A. Roebling's Sons Company, Trenton, N. J. Died in 1926.

Roentgen (*rūnt'gen*), **Wilhelm Konrad,** eminent German scientist, distinguished investigator of physical problems and discoverer of the "X" or Rœntgen rays, was born in the province of Dusseldorf, Prussia, 1845. In December, 1895, he communicated to the Würzburg physico-medical society his remarkable discovery of the new and powerful "X-rays," since known by his name, and in the following month he described his discovery at the celebration of the semi-centennial of the founding of the Berlin physical society. Later he demonstrated the rays in the presence of the emperor of Germany, who decorated him, and Prince Ludwig of Bavaria created him a baron. In 1901 he received the Nobel prize for physics. Died, 1923.

Rogers, Henry Wade, American educator, dean of the law department of Yale University, 1903-16, was born at Holland Patent, N. Y., 1853. He was graduated at the University of Michigan, 1874; LL.D., Wesleyan University, Conn. He was admitted to the bar, 187- was professor of law, University of Michigan, 1883-85; dean of same, 1885-90; president of Northwestern University, 1890-1901, and professor of law at Yale, 1901-03. U. S. Circuit Judge, beginning 1913. Author *Illinois Citations; Expert Testimony.* Died, 1926.

Rogers, Randolph (1825-1892), American sculptor, studied the art in Rome. He is distinguished for many memorial statues throughout the country.

Rogers, Will, motion picture actor, first played on the vaudeville stage, then in Ziegfeld's "Follies," finally entering motion pictures with the Goldwyn Company. His perfect ease, spontaneity and humor, are shown in *Almost a Husband, Laughing Bill Hyde,* and *Jubilo.* Humorous writer. Died, 1935.

Roland (*rō'lan'*), **Marie Jeanne,** wife of Jean Marie Roland de la Platière, daughter of Pierre Gratien Philipon, was born at Paris, France, 1754. Her husband was obliged to flee from Paris, May 31, 1793, and the same night she was arrested and imprisoned in the Abbaye. Summoned before the revolutionary tribunal in the beginning of November, she was condemned, and on the 9th was guillotined amid the shoutings of an insensate mob. Most celebrated is her apostrophe to the statue of Liberty, at the foot of which the scaffold was erected: "O Liberty, what crimes are committed in thy name!"

Rolland, Romain, French writer, born in 1868 at Clamecy, Burgundy, which province he has celebrated in *Colas Breugnon,* 1919. He was educated in Paris, where he developed a passion for music. He was professor of the History of Music at the Sorbonne from 1903-1910. *Jean-Christophe,* 1904-1912, a ten volume novel, is his masterpiece. It is the biography of a German musician, depicting the artistic temperament against a panorama of modern civilization. *Au-dessus de la Melée,* 1915, made Rolland unpopular in France, as the book was too international and pacifistic for the patriotic spirit of the time. After its publication, Rolland retired to Switzerland, where he is still living. Other works include *L'Ame Enchanéte* (The Soul Enchanted), 1922; several studies of musicians, and a number of plays. He was awarded the Nobel prize in literature, 1915.

Rollin (*rō'lan'*), **Charles,** French historian, was born at Paris, 1661. He studied at the College of Duplessis; acquired there a knowledge of languages and philosophy, and studied theology for three years at the Sorbonne. In 1694 he was appointed rector of the University of Paris, and in 1696, coadjutor of the College of Beauvais; but was at length driven from it by the intrigues of the Jesuits. Thenceforth he gave his time wholly to literature. His principal works are: *Ancient History; Roman History;* and *Treatise on the Mode of Studying.* Died, 1741.

Romanes (*rō-ma'nes*). **George John,** naturalist, was born at Kingston, Canada, 1848, and was graduated in 1870 from Caius College, Cambridge. While still at the university he formed a friendship with Darwin, and he powerfully re-inforced his master's arguments in his Croonian, Fullerian and other lectures. He wrote: *Animal Intelligence; Scientific Evidences of Organic Evolution; Mental Evolution in Animals; Jelly-fish, Star-fish, and Sea-urchins; Mental Evolution in Man,* etc. Died, 1894.

Romney (*rum'ni*), **George,** English painter, was born at Dalton, in Lancashire, 1734. After receiving some lessons from a country artist, he studied art in London in 1762; visited France in 1764, and Italy, 1773-75; and on his return to England became the rival of Reynolds as a portrait painter. He also gained distinction as a painter of historical pictures; assisted in preparing the Boydell Shakespeare gallery. Died at Kendal, 1802.

Ronsard (*rōn'sär'*), **Pierre de,** French poet, was born at the Château de la Poissonnière in Vendôme, 1524. Becoming deaf, he abandoned arms for letters, and at the Collège Coqueret studied with Du Bellay and other members of the famous Pléiade. His seven years of study bore its first fruit in his *Odes,* 1550, which excited violent opposition from the older national school. In 1552 appeared his *Amours* and the fifth book of his *Odes,* his *Hymns* in 1555, the conclusion of the *Amours* in 1556, in 1560, *Complete Works.* He died at his priory of St. Cosme at Tours, in 1585.

Roosevelt, Franklin Delano (1882——). Thirty-second President of U. S. Graduated from Harvard, 1904, and in law at Columbia Univ., 1907. Admitted to New York Bar, 1907. Member of New York Senate, 1910-13. Assistant Secretary of the U.S. Navy, 1913-1920. Democratic Vice-Presidential Candidate, 1920. Athletically inclined. In August, 1921, at his summer home in Campobello, New Brunswick, stricken with infantile paralysis, which by years of almost super-human patience and hard work he partially overcame. Governor of New York, 1929-1932. President of U.S. 1933——. An unusual orator, statesman, executive, gifted with remarkable courage, determination and initiative, he quickly acquired almost dictatorial power, which he used for the betterment of the nation, as revealed by results by 1934. Married Anna Eleanor Roosevelt, March 17, 1905. They have one daughter and four sons.

Roosevelt (*rōz'velt*), **Theodore,** American soldier, writer, statesman, twenty-sixth president of the United States. was born in New York City, 1858, son of Theodore and Martha (Bullock) Roosevelt. He entered Harvard University at eighteen, and was graduated in 1880; LL.D., Harvard, Yale, etc. The year following he began the study of law, but in the same year was elected to the New York legislature. In 1884 he was chosen a delegate to the republican national convention, and later in the year went to North Dakota, where he spent two years on a ranch, raising cattle. President Harrison appointed him a member of the United States civil service commission in 1889, in which capacity he served until 1895, when he resigned to accept the presidency of the police commission of New York city, under Mayor Strong. President McKinley appointed him assistant secretary of the navy in April, 1897, and upon the outbreak of the Spanish-American war, in 1898, he resigned the post to assist in organizing the 1st United States volunteer cavalry. In September, 1898, he was mustered out, with his regiment, at Montauk, L. I. Shortly following he was nominated for governor of New York, and elected November, 1898. Two years later he was unanimously nominated for vice-president of the United States by the republican national convention, at Philadelphia, and elected. He succeeded to the presidency September 14, 1901, upon the death of President McKinley, and at the close of the term was unanimously nominated by his party to succeed himself, and elected for the term 1904-09. He had long been an advocate of administrative, political, and social reforms, and contributed widely to periodicals and general literature. Among his important publications are: *The Winning of the West; History of the Naval War of 1812; Hunting Trips of a Ranchman; Life of Gouverneur Morris; American Ideals and Other Essays; The Rough Riders; Life of Oliver Cromwell; The Strenuous Life.* His efforts in bringing about the treaty of peace between Japan and Russia in 1905 were important and effective; and, in 1906 he was awarded the Nobel peace prize of $40,000. Was an enthusiastic hunter of big game, and after his retirement from the presidency on March 4, 1909, he led a scientific expedition to East Africa for the purpose of adding rare faunal specimens to the Smithsonian and national museums at Washington. Unsuccessful candidate of the Progressive party for President in 1912. Died, 1919.

Root (*rōōt*), **Elihu,** American statesman and lawyer, was born in Clinton, N. Y., 1845. He was graduated at Hamilton College in 1864; was graduated at the law school of New York University, 1867; LL.D., Yale, Harvard, etc. He was appointed by President Arthur United States attorney for the southern district of New York, 1883-85. On August 1, 1899, he was appointed secretary of war by President McKinley, and on March 5, 1901, was re-appointed. In August, 1903, he resigned the office of secretary of war, his resignation to take effect in January, 1904, and during 1903 he was a member of the Alaskan boundary tribunal. In 1905 President Roosevelt appointed him secretary of state, and while discharging the duties of that office he did much to unify the Pan-American countries. In 1908 he was elected United States senator from New York for the term 1909-15. He is probably the ablest lawyer at the American bar.

Root, George Frederick, American musical composer, was born at Sheffield, Mass., 1820. After studying music a year in Paris, he returned to write numerous popular songs, among which are: *Music in the Air; Battle Cry of Freedom; Just Before the Battle, Mother; Tramp, Tramp, Tramp, the Boys are Marching.* He died in 1895.

Rosa (*rō'zä*), **Salvator,** Italian painter, was born at Arenella near Naples, 1615. At Rome his social talents—he was a skillful musician, improvisatore, actor, and poet—and his princely generosity rendered him a great favorite. But he made powerful enemies by his satires, and withdrew to Florence for nine years. After that he returned to Rome, and died in 1673. Salvator owes his reputation mainly to his landscapes of wild and savage scenes, though his masterpiece is considered to be the "Conspiracy of Catiline."

Roscoe, Sir Henry Enfield, noted English chemist, was born at London, 1833. He was graduated at University College, London, and received his Ph.D. from Heidelberg University, 1853. He was professor of chemistry at Owens College, Manchester, 1857-87; member of parliament for Manchester, 1885-95; vice-chancellor of the University of London, 1896-1902; officer of the legion of honor. Author: *Lessons in Elementary Chemistry; Treatise on Chemistry; Primer of Chemistry,* etc. Died, 1915.

Rose, John Holland, English educator and historian, was born at Bedford, 1855. He was educated at Owens College, Manchester, and at Christ's College, Cambridge; Litt.D., Cambridge. For many years he was lecturer on modern history to the Cambridge University local lectures syndicate, and to the London University's board for the extension of university teaching. Author of numerous historical works.

Rosebery, Archibald Philip Primrose, fifth Earl of, was born in 1847. He was graduated from Oxford; under-secretary for home affairs, 1881-83; lord privy seal, 1885; secretary for foreign affairs, 1886 and 1892-94; prime minister and lord president of council, 1894-95, and lord rector of Glasgow University, 1899. He retired from the leadership of the liberal party, 1896, and then supported Lord Salisbury; delivered many notable speeches on literary and social subjects. Author: *Appreciations and Addresses; Sir Robert Peel; Napoleon; The Last Phase; Oliver Cromwell,* etc. Died, 1929.

Rosecrans, William Starke, American general, was born at Kingston, Ohio, 1819. He was trained as an engineer, and had settled down to coal-mining when the Civil War broke out; joined the army in 1861; highly distinguished himself during

the campaigns of 1862-63. He was afterward minister to Mexico, a member of congress, and, 1885-93, register of the United States treasury. He died near Los Angeles, Cal., 1898.

Ross, George William, Canadian educator, was born near Nair, Middlesex county, Ontario, 1841. He was educated at the Normal School, Toronto, and at the law department of the Albert University, LL.B., 1883; LL.D., St. Andrews, Toronto, Victoria, McMaser, and Queen's Universities. He was admitted to the bar in 1887; was member of parliament for West Middlesex, 1872-74-78-82; minister of education, 1883-99; premier and treasurer of the province of Ontario, 1899-1905, and a member of the senate of Canada. Died in 1914.

Ross, James Clark, English Arctic and Antarctic explorer, was born in 1800. He made five successive voyages to the Arctic regions, made himself famous by his sledge journeys, and determined the position of the north magnetic pole, 1831. He was knighted in 1844, commanded an expedition in search of Sir John Franklin in 1848, and was made rear-admiral in 1856. Died, 1862.

Rossetti (*rō'set'ē*), **Dante Gabriel,** British painter and poet, was born in London in 1828. His name was first brought prominently forward by his association with Millais and Holman Hunt in the pre-Raphaelite brotherhood. As an author he is well known by his *Early Italian Poets, Ballads and Sonnets, The Blessed Damozel*, etc. He played a distinguished part in the resuscitation of Gothic art in England. Died, 1882.

Rossini (*rōs-sē'nē*), **Gioacchino Antonio,** celebrated Italian composer, was born at Pesaro, Italy, 1792. He was the son of a strolling musician. When little more than twenty-one, he produced his opera of *Tancredi*, which was performed for the first time in Venice. Three years later he produced *The Barber of Seville*. After *Guillaume Tell*, which appeared in 1829, he published only his *Stabat Mater*. He died in 1868.

Rostand (*rōs'tänⁿ'*), **Edmond,** French poet and dramatist, member of the Académie Francaise beginning 1901, was born at Marseilles, 1868. He was educated at the Lycée de Marseilles, and at the College Stanislass. His first successful drama was *Les Romanesques*, which was produced in 1894. It was followed by *La Princesse Lointaine: La Samaritaine; Cyrano de Bergerac; L'Aiglon*, and during 1917 by the remarkable *Chantecler*, etc. His poetical works include: *Les Musardises; Pour la Grèce: Un Soir à Hernani; Les Mots;* etc. Great modern dramatist. Died, 1918.

Rothschild (*roths'child'*), the name of a celebrated Jewish family of bankers and financiers. The founder of the family, Mayer Anselm, named from his father's signboard, the "Red Shield," was born at Frankfort-on-the-Main, 1743. He was educated for a Jewish rabbi, but founded a business as a money-lender and became the financial adviser of the landgrave of Hesse. At his death, in 1812, the founder left five sons, all of whom were made barons of the Austrian empire in 1822. Mayer Anselm, 1773-1855; eldest son, Solomon, 1774-1855; Nathan, 1777-1836; Karl, 1788-1855; and Jacob, or James, 1792-1868. They negotiated many of the greatest government loans of Europe in the nineteenth century, and Nathan raised the house to be first among the banking-houses of the world. His son Lionel, 1808-79, did much for the civil and political emancipation of the Jews in Great Britain. Lionel's son, Nathan, born in 1840, succeeded to the baronetcy conferred in 1847 on his uncle Anthony, and was made Baron Rothschild in 1885. Died, 1915. His niece Hannah (1851-90), in 1878 married the earl of Rosebery.

Rouget de Lisle (*rōō'zhe' de lēl'*), **Claude Joseph,** French soldier and poet, was born at Lons-le-Saunier, France, 1760, and wrote the *Marseillaise* when stationed in 1792 as captain of engineers at Strassburg. In 1796 he published a volume of *Essais en Vers et en Prose*. The *Marseillaise*, by its author called *Chant de l'Armee du Rhin*, was made known in Paris by troops from Marseilles. He died at Choisy-le-Roi, near Paris, 1836.

Roussaeu (*rōō'sō'*), **Jean Jacques,** French philosopher and prose writer, was born in 1712, son of a watchmaker at Geneva. In 1750 he gained a prize, offered by the academy of Dijon for an essay attacking the influence of the arts and sciences on society. The main significance of Rousseau was as a renewer of the force of the imagination and the feelings in an artificial time. He loved nature and praised its beauties; he broke with the arid traditions of the past, and formed a new ideal of the future with an eloquence and a warmth that had great influence on the French revolution. He wrote on education and modified its narrowing tendencies, and in literature led the way to the romantic reaction against classicism. The most famous of his productions are: *Discourse sur l'Origine et les Fondements de l' Inegalite parmi les Hommes; Julie, ou la Nouvelle Héloise; Du Contrat Social, ou Principes du Droit Politique; Émile, ou de l'Education; Les Confessions;* and *Réveries d'un Promeneur Solitaire*. Died, 1778.

Rowe, Leo S., American economist, educator, was born at McGregor, Iowa, 1871. He was graduated from the University of Pennsylvania, 1890; LL.B., 1895; Ph.D., University of Halle; LL.D., National University of La Plata, Argentine, 1906; head professor of political science, since 1903, in the University of Pennsylvania. In 1906 he was United States delegate to the third international conference of American states, Rio Janeiro Author: *Report of the United States Commission to Revise the Laws of Porto Rico; The United States and Porto Rico.*

Royce, Josiah, American philosophical writer, professor of the history of philosophy at Harvard beginning 1892, was born at Grass Valley, Cal., 1855. He was graduated at the University of California, 1875; Ph.D., Johns Hopkins, 1878; LL.D., University of Aberdeen, Scotland, 1900; LL.D., Johns Hopkins, 1902. Author: *Religious Aspect of Philosophy; The Conception of Immortality; Studies of Good and Evil; Outlines of Psychology; Herbert Spencer*. Died, 1916.

Rubens, Peter Paul, greatest of Flemish painters, was born probably at Siegen, in Westphalia, 1577. His parents settled in Cologne in 1578, where they remained till 1587, when Rubens' father died, and his mother removed with her family to Antwerp.

He was first placed under Verhaagt, a landscape painter; however, inclining more to historical painting, he became a pupil of Van Noort, but soon quitted his school for that of Otho Van Veen, or Venius, who then enjoyed a high reputation; and after studying four years with that painter went to Italy, in 1600.

Recommended to Vincenzo Gonzago, Duke of Mantua, he was sent on a mission by the duke to Philip III. of Spain, and on that occasion painted several portraits of Spanish noblemen. He also spent considerable time at Venice and Rome making copies for the duke, and executing independent works, which added largely to his reputation. In 1608, after an absence of eight years, Rubens returned to Antwerp on account of the illness of his mother, but she died before he had accomplished the journey. He intended to return to Mantua, but was induced to remain by the Archduke Albert, governor of the Netherlands.

In 1621 he visited Paris by invitation of Maria d' Medici; and in 1625 completed the series of sketches for the pictures destined to adorn the palace of the Luxembourg. Rubens was sent by the Infanta Isabella, widow of the Archduke Albert, on a diplomatic mission to Philip IV. of Spain in 1628; and in the following year on a similar mission to Charles I. of England, by whom he was knighted in 1630. He died very rich in 1640.

References.—Stevenson's *Peter Paul Rubens;* article in *North American Review* (November, 1900) by Benjamin Constant; *Early Flemish Painters*, by Sir J. A. Crowe; and *Original Unpublished Papers, Illustrative of the Life of Sir Peter Paul Rubens*, by W. Noel Saintsbury.

Rubinstein (*rōō'bin-stīn*), **Anton Gregor,** Russian composer and pianist, was born at Wechwotynetz, near Jassy, in Russian Bessarabia, 1829. At Berlin he studied composition under Dehn. In 1872-73 he visited America, and after 1867 he spent his time in traveling and composing. As a pianist he was the only rival, technically, that Liszt ever had, and as a composer his works are characterized by the most wonderful fertility of imagination, and many of them by a gorgeous oriental coloring. Died, 1894.

Rudolf, or Rudolph I., founder of the Hapsburg imperial dynasty, was born at Schloss Limburg in the Breisgau, 1218, and, becoming a warm partisan of Frederick II., increased his possessions by inheritance and marriage, until he was the most powerful prince in Swabia. In 1273 the electors chose him German king. Rudolf did much to suppress the robber knights. He died at Spires in 1291.

Rudolf, or Rudolph II., born at Vienna, 1552, eldest son of the emperor, Maximilian II., became king of Hungary in 1572; king of Bohemia, with the title "king of the Romans," in 1575; and emperor on his father's death in 1576. He died in 1612 after an inefficient reign.

Runeberg (*rōō'ne-ber'y'*), **Johan Ludwig,** national poet of Finland, was born at Jacobstad, 1804. He was educated at the University of Abo, where he afterward lectured. His epic idylls, *The Elk Hunters, Christmas Eve*, his epic *King Fjalar, Fänrik Stals Sagner*, etc., are the finest poems in the Swedish language, and are characterized by reprose, simplicity, artistic finish and the warmth of national life. He died in 1877.

Rupert, Prince, British general, third son of the elector palatine Frederick V., and Elizabeth, daughter of James I. of England, was born at Prague, 1619. In 1642 he returned to England, and for the next three years the "mad cavalier" was the life and soul of the royalist cause, winning many a battle by his resistless charges, to lose it as often by a too headlong pursuit. In 1645 his surrender of Bristol so irritated Charles, who in 1644 had created him duke of Cumberland and generalissimo, that he dismissed him. A court martial, however, cleared him, and he resumed his duties, only to surrender at Oxford to Fairfax in 1646. He now took service with France, but in 1648 accepted the command of that portion of the English fleet which had espoused the king's cause, and acquitted himself with all his old daring and somewhat more caution. He died in 1682.

Rush, Benjamin, American physician, was born near Philadelphia, Pa., 1745. He was graduated at Princeton in 1760, studied medicine at Edinburgh and at Paris, and became professor of chemistry in the Philadelphia Medical College. He was a founder of the Philadelphia dispensary, the first in America, and of the college of physicians, and was given several medical professorships besides the one he already held at Philadelphia. Among his medical writings are: *Medical Inquiries and Observations; Essays;* and *Diseases of the Mind*. He died at Philadelphia, 1813.

Ruskin, John, distinguished English critic and writer on art, was born in London, 1819. He studied at Christ Church, Oxford, where he gained the Newdigate prize for English poetry in 1839, and took his degree in 1842. The year following appeared the first volume of his *Modern Painters*, the primary design of which was to prove the superiority of modern landscape painters, especially Turner, to the old masters. In 1849 appeared *The Seven Lamps of Architecture*, and in 1851 to 1853 *The Stones of Venice*, both being efforts to introduce a new and loftier conception of the significance of domestic architecture. About 1860 he became deeply interested in the social problems of the age, and published *Unto This Last* and *Munera Pulveris*. Among his later works are: *Sesame and Lilies; The Ethics of the Dust; The Crown of Wild Olives;* and *Præterita*, a charming autobiography, completed in 1888. He was also selected Slade professor of fine arts at Oxford, being thrice reëlected. He was obliged to resign the post in 1884 on account of failing health. For several years prior to his death he lived in retirement at Brantwood, Coniston. Died, 1900.

Russell, Annie, actress, was born in Liverpool, England, 1869, and made her first stage appearance at Montreal when seven. She afterward appeared at New York in *Pinafore*, went to South America and West Indies in varied repertory. She has since appeared as a star in *Miss Hobbs; A Royal Family; The Girl and the Judge; Mice and Men; Jimmy the Carrier; Brother Jacques; Major Barbara; Midsummer Night's Dream*, etc. She married Oswald Yorke, in 1904. Died, 1936.

Russell, James Earl, American educator, dean of Teachers College, Columbia University, since 1898, was born at Hamden, N. Y., 1864. He was graduated at Cornell in 1887; Ph.D., Leipzig, 1894; professor of education, Teachers' College, since 1897; and Barnard professor of education, Columbia, since 1904. Author: *The Extension of University Teaching in England and America; German Higher Schools.*

Russell, John Earl, British statesman, third son of the sixth duke of Bedford, was born in 1792. He was educated at Westminster and Edinburgh; entered parliament as a whig in 1813; became an advocate of parliamentary reform; was instrumental in the repeal of the test and corporation acts in 1828, and the passing of the Catholic relief act in 1829; led the opposition, 1841-46; was prime minister, 1846-52; went as British plenipotentiary to the Vienna conference, 1855; was foreign secretary under Lord Palmerston, 1859-65; again became prime minister in 1865 but resigned on the defeat of his reform bill in 1866. Died, 1878.

Ruth, George (*Babe*), born in Baltimore and educated in an orphanage there. The record holder in the national game of baseball as a batter.

Ruyter (*roi'tĕr; rī'tĕr*), **Michael Adriaanszoon de,** Dutch admiral, was born at Vlissingen in 1607, of poor parents, who sent him to sea as a cabin-boy when only eleven years old. He became a warrant officer, and in 1637 rose to be captain in the Dutch navy. After serving several years in the Indian seas he was, in 1641, made rear admiral. He had his legs shattered in an engagement off the coast of Sicily, and died of his wounds in 1676.

Ryan, Patrick John, American prelate, Roman Catholic archbishop, was born at Thurles, County Tipperary Ireland, 1831. He was graduated at Carlow College, 1852; LL.D., University of New York and University of Pennsylvania. He was chaplain of the Gratiot state military prison and hospital, St. Louis, during the Civil War; and while rector of Annunciation church, delivered lenten lectures in English at Rome, 1868, on invitation of Pope Pius IX. He was consecrated, 1872, titular bishop of Tricomia in Palestine and made coadjutor bishop of St. Louis; was promoted to archbishop, 1883, and in June, 1884, was transferred to the see of Philadelphia. Died, 1911.

Ryan, Thomas Fortune, American financier, was born in Nelson county, Va., 1851. He began business life, 1868, in a Baltimore dry goods house; entered Wall street, 1870, and became a member of the New York stock exchange, 1874; been identified with the Morton Trust company, the Seaboard Air Line railway, American Tobacco company, Fifth Avenue Trust company, Industrial Trust company of Providence and many other

corporations; and purchased a controlling interest of the stock of the Equitable Life Assurance Society of the United States in 1905. Died, 1928.

Sachs (*zăks*), **Hans,** noted German poet, was born at Nürnberg, 1494. He was the son of a tailor, and by trade a shoemaker. He learned "the mystery of song" from a weaver. He wrote over 6,000 pieces, among them 208 tragedies and comedies. Died 1576.

Sachs, Julius von, botanist, was born at Breslau, 1832. In 1867 he became professor of botany at Freiburg, and in 1868 at Würzburg. There he carried on important experiments, especially as to the influence of light and heat upon plants, and the organic activities of vegetable growth. He wrote extensively on botany, and is considered the founder of experimental vegetable physiology. Died at Würzburg, 1897.

Sacy (*sá'sē'*), **Antoine Isaac, Baron Silvestre de,** French orientalist, was born at Paris, 1758. Was appointed in 1795 professor of Arabic in the school of oriental languages, and in 1806 of Persian in College de France, besides which he held various other appointments. He founded the Asiatic society in 1822; was created a baron by Napoleon I., and entered the chamber of peers in 1832. His writings gave a stimulus to oriental research throughout Europe. He died in 1838.

Sadi-Carnot. See **Carnot.**

Sadi (*sä-dē'*), Persian poet, was born at Shirza, about 1184. He studied science and theology at Bagdad, and from there made the first of fourteen pilgrimages to Mecca. He is called the "nightingale of a thousand songs," and the catalogue of his works contains twenty-two different kinds of writing in prose and poetry, in Arabic and Persian. Died, 1291.

Sagasta (*sä-gäs'tä*), **Praxedes Mateo,** Spanish statesman, was born in 1827. He was obliged to leave the country for his share in the rising of 1856, and again, ten years later, to seek refuge in France. After the accession of Alfonso XII., he became president of the cortes, formed a liberal constitutionalist party, and having, in 1880, joined a new liberal combination, formed a coalition with Campos, which lasted until 1883. Died, 1903.

Sage, Margaret Olivia Slocum, philanthropist, was born at Syracuse, N. Y., 1828, daughter of Joseph Slocum; in 1869 married Russel Sage, at Watervliet, N. Y. Gave many millions of dollars to charitable and educational institutions. Died, 1918.

Sage, Russell, American capitalist, was born in Oneida county, New York, 1816. Educated in the public schools, he became a grocer's clerk and established himself as a wholesale grocer in Troy, 1839. He was a member of congress, 1852-56, removed to New York in 1863, purchased a seat on the stock exchange and associated himself with Jay Gould in extensive railway operations, gaining a wide reputation by his close bargaining and successful speculation. His fortune was variously estimated at from $60,000,000 to $100,000,000. Died, 1906.

Saint Ambrose. See **Ambrose.**

Saint Augustine. See **Augustine St.**

Saint Basil. See **Basil.**

Saint Benedict. See **Benedict.**

Saint Bernard. See **Bernard.**

Saint Clair, Arthur, American general, was born in Scotland, 1735. In 1777 he became major-general, and entered congress in 1785, of which body he was elected president two years later. In 1789 he was made governor of the Northwest territory, and two years afterward suffered a defeat with heavy loss, at the hands of the Miami Indians. Died, 1818.

Saint Columba. See **Columba.**

Saint Francis of Assisi. See **Francis St.**

Saint Gaudens (*sānt gô'denz*), **Augustus,** American sculptor, was born in Ireland in 1848, and was brought to the United States in infancy. During 1861-66 he was a student at Cooper institute, and at the academy of design, New York; went to Paris and studied at the École des Beaux Arts under Jouffroy. He executed a number of notable works, of which the most important are: *The Puritan; Farragut; Lincoln; Peter Cooper,* New York; *Colonel R.G. Shaw,* Boston. He was awarded medals at the Paris, Buffalo and St. Louis expositions, and made an officer of the French legion of honor. Died, 1907.

Saint Jerome. See **Jerome.**

Saint Louis IX. See **Louis IX.**

Saint Patrick. See **Patrick.**

Saint Paul. See **Paul.**

Saint Pierre(*sañ'pêr'*) **Jacques Henri Bernardin de,** French writer, was born in Havre, France, 1737. He is best known for his beautiful story, *Paul and Virginia,* which has been translated into many languages. He died in 1814.

Saint-Saens (*sañ'sāns'*), **Charles Camille,** French composer and pianist, was born at Paris, 1835. He wrote his first symphony at the age of sixteen, and studied at the Paris conservatoire under Benoit, Halévy, and Gounod; LL.D., Cambridge; Mus.D., Oxford. His works include the operas: *La Princesse Jaune; Le Timbre d'Argent; L'Anctere;* the sacred drama, *Samson and Delila.* The strongest originality, sometimes becoming eccentricity, pervades his music, which is of the most modern school. Died, 1921.

Saintsbury (*sānts'bĕr-i*), **George Edward Bateman,** English critic, was born at Southampton, 1845. He was educated at Merton College, Oxford. In 1868-76 he was a schoolmaster at Manchester, Guernsey, and Elgin, but soon after established himself as one of the most active critics of the day; professor of English literature at Edinburgh University, 1895-1915. Among his books are: *Short History of French Literature; History of Elizabethan Literature; Essays in English Literature, 1780-1860; History of Nineteenth-Century Literature; History of Criticism; The Earlier Renaissance; Minor Caroline Poets; A History of English Prosody, A History of the French Novel,* etc.

Saint Simon, Claude Henri, Comte de, French social philosopher, was born at Paris, 1760. At sixteen he entered the army, served in America, and distinguished himself. In 1817-18 he published *L'Industrie ou Discussions Politiques, Morales et Philosophiques.* The third volume is the work of Auguste Comte. The last and by far the most remarkable work of Simon is his *Nouveau Christianisme,* which contains his final and matured convictions. Died, 1825.

Saint Thomas Aquinas. See **Aquinas.**

Sainte-Beuve (*sañt'bûv'*), **Charles Augustin,** French literary critic, was born at Boulogne-sur-Mer, 1804. In 1827 he became acquainted with Victor Hugo, whose commanding influence drew him into the romantic movements, and determined for him a literary career. In 1837 he lectured at Lausanne on Port-Royal, and these lectures contain some of his finest writings; was elected in 1845 to the academy; and three years later lectured for a session at Liege University. During 1849-69 he contributed to the *Constitutionel.* These contributions form his famous *Causeries du Lundi* and *Nouveaux Lundis,* which, for variety of human interest, critical insight and breadth of sympathy, remain unsurpassed. He was elected a senator in 1865, and his popularity revived by his eloquent advocacy of freedom of thought. In precision, in subtlety and in delicacy, his works, fifty-three volumes in all, stand alone in the literature of criticism. Died, 1869.

Saionji (*sī'ōn-jē*), **Marquis,** Japanese statesman, was born at Kioto in 1849. At the age of eighteen he gathered volunteers and fought for the emperor in the revolution of 1868. Subsequently he became minister to Austria-Hungary and then to Germany. On his return to Japan he joined the first Ito cabinet as minister of education, a post which he again occupied in the second Ito cabinet, having been minister of foreign affairs in the interval. He assisted Ito in forming the constitutional association of 1900, and became its leader in 1903. At three difficult crises the mikado called him to be prime-minister, his last term of office being from 1906 to 1908.

Saladin (*sal'ä-din*) or **Salah-ed-Din,** celebrated sultan of Egypt, flourished between 1137 and 1193. He was one of the great conquerors of his time; and in 1187 defeated the Christians in a great battle near Tiberias, afterward storming and capturing Jerusalem. He was, however, defeated by Richard Coeur-de-Lion in 1191, and died, broken down by disease and toil, in the spring of 1193.

Salisbury (*sôlz'bĕr-i*), **Robert Arthur Talbot Gascoyne-Cecil, Marquis of,** British statesman, was born at Hatfield, 1830. He was graduated from Christ Church, Oxford, 1853, and sat in parliament for Stamford, 1853-68. In 1878 he was appointed foreign secretary, and, with Lord Beaconsfield, took a prominent part in the congress of Berlin. After the latter's death he became the principal leader of the conservatives in the house of lords, and was prime-minister in 1885-1886, 1886-1892, and 1895-1902. Died, 1903.

Sallust (*sal'ust'*) or **Sallustius, Caius Crispus,** Roman historian, of equal talents and profligacy, was born at Amiternium, 86 B. C. He rose from a plebeian to a senator. Cæsar successively made him quæstor and prætor, and governor of Numidia. In the last of these offices he amassed an enormous fortune by acts of rapine. His *History of the Roman Republic* is lost, with the exception of some fragments; but his masterly *Histories of the Jugurthine War,* and the *Conspiracy of Catiline* are extant, and bear ample testimony to his genius. Died, 34 B. C.

Salmon (*săl'mun*), **George,** British mathematician and theological writer, was born in Dublin, 1819. He was graduated at Trinity College in 1839, and became a fellow in 1841, regius professor of divinity in 1866, and provost in 1888; also F.R.S., D.D., LL.D. and D.C.L. Died, 1904.

Sampson, William Thomas, rear admiral of United States navy, was born at Palmyra, N. Y., 1840. He was graduated at Annapolis in 1861. He served six years as instructor at Annapolis, then became chief of bureau of ordinance and gained an international reputation by his work in building up the new navy. On the outbreak of the war with Spain he was appointed acting rear admiral, 1898, and placed in command of the North Atlantic squadron operating against Spain in Cuban waters. When the Spanish fleet under Cervera took refuge in the harbor of Santiago de Cuba, Sampson established a close blockade of that port, resulting in the destruction of the Spanish fleet when it attempted to escape from the harbor, July 3, 1898. At the close of the war he was made rear admiral. Died, 1902.

Sand, George, pseudonym of Amantine Lucile Aurore Dudevant, French author, was born at Paris, 1804. She was descended on her father's side from the famous Marshal Saxe, and her maiden name was Dupin. After receiving a strict conventual education, she married M. Dudevant in 1822, but separated from him in 1831. Her best known works are: *Indiana; Valentine; Rose et Blanche; Lelia; La Comtesse de Rudolstadt; Consuelo; Jacques; Mauprat,* etc. Died, 1876.

Sandburg, Carl, American poet, born in 1878 at Galesburg, Illinois. His early life was such as to especially fit him to become the poet of industrial America. He was from time to time milk-driver, porter, scene shifter, truckman, dish-washer, harvest hand, advertising manager, salesman, newspaper man. His first volume of verse appeared in 1904, but he was unknown to the literary world until 1914, when one of his poems, *Chicago,* was awarded the Levinson prize of $200. *Cornhuskers* appeared in 1918.

Sankey, Ira David, American evangelist and singer, was born at Edinburgh, Pa., 1840. He united with the Methodist Episcopal church at fifteen; became choir leader, Sunday school superintendent, and president of the Y. M. C. A. at New Castle, Pa. In 1870 he met Dwight L. Moody, and became associated with him as a solo singer in evangelistic work in the United States and abroad. He composed many of the most popular gospel songs of his day. He lost his sight in 1903, and died in 1908.

Santa Ana (*sän'tä ä'nä*), **Antonio Lopez de,** Mexican general, was born in Jalapa, 1795. The separation of Texas from the Mexican union was vigorously but unavailingly opposed by him, but he recognized the independence of Texas, and defended Vera Cruz against the French in 1839. In 1847, war having been declared by Mexico against the United States, he took command of the Mexican forces, and when the war came to an end, he retired from Mexico. He afterward resided on Staten Island, N. Y. After the death of Juarez in 1872, he returned to Mexico, where he died in 1876.

Sappho (*saf'ō*), celebrated lyric poetess of Greece, was a native, probably, of Mitylene, in Lesbos. She flourished about 600 B. C., and was a contemporary and friend of Alcæus. Except some fragments, only two of her compositions have come down to us, the *Ode to a Young Female,* and *Hymn to Venus.*

Sardou (*sär'dōō'*), **Victorien,** French dramatist, was born in Paris, 1831. He studied medicine at the College Henri IV., but subsequently turned to literature. He won a reputation by *M. Garatt* and other pieces, produced at the Déjazet theater and was admitted to the academy in 1877. Among his best known plays are: *Les Paties de Mouche; La Taverne; Les gens Nerveux; Candide; La Famille Benoiton; Theodora; Cleopâtra; Thermidor; Pamela; Robespierre; Dante,* etc. Died, 1908.

Sargent (*sär'jent*), **Dudley Allen,** former director Hemenway gymnasium, Harvard, was born at Belfast, Me., 1849. He was graduated at Bowdoin, 1875, A.M., 1887, Sc.D., 1894; M.D., Yale, 1878. He invented the modern system of gymnasium apparatus; was director of the normal school of physical training, Cambridge, Mass., and president of the American association for the promotion of physical education. Died, 1924.

Sargent, John Singer, American artist, was born in Florence, Italy, 1856, of American parents. He was educated in Italy and Germany; studied painting at the academy of fine arts, Florence, Italy, and in Paris, under Carolus Duran; removed to London in 1884. R.A., 1897; officer of legion of honor. He painted many portraits, English and American, one of recent note being that of ex-President Roosevelt, painted in 1903; also various other pictures, of which his "Japanese Dancing Girl" was awarded a grand medal at the Paris exposition, 1889. Died, 1925.

Sarto (*sär'tō*), **Andrea del,** Italian painter, was born in Florence, Italy, 1487. He painted two series of frescoes in Florence, the best of the first series being *Nativity of the Virgin* and *Journey of the Three Kings.* The most celebrated of his single pictures are the *Last Supper,* the *Madonna with the Harpies,* and *Fathers of the Church Disputing.* He was a rapid worker, and excelled in accurate drawing. He died at Florence in 1531.

Saul, the first king of Israel, was the son of Kish, and began his reign about 1050 B. C. His victories over the Philistines were unmistakable proof of his vigorous military capacity; but gradually there showed itself a wild perversity, culminating in paroxyms of insane rage, which led him to commit frightful deeds. Nothing availed to stay his downward career, and at last he fell in a disastrous and bloody battle with the Philistines on Mount Gilboa. He was succeeded by David.

Savigny (*sä-vēny'e*), **Frederick Karl von,** 1779-1831, one of the most distinguished of modern European jurists, the founder of the modern historical school of jurisprudence, was born at Frankfort-on-the-Main.

Savonarola (*sav'ō-na-rō-la*), **Girolamo,** 1452-1498, Italian monk and reformer, was born at Ferrara. He became a Dominican Monk in 1475, and later prior of St. Mark's. He inveighed against the

corruption of the church, for which he was excommunicated in 1497, and arrested and put to death, 1498.

Saxe, Maurice, French marshal, natural son of Augustus II., elector of Saxony and king of Poland, was born at Goslar, 1696. He took a brilliant part in the siege of Philippsburg, 1734, and in the war of the Austrian succession he invaded Bohemia and took Prague by storm. In 1744, now marshal of France, he commanded the French army in Flanders, showed splendid tactical skill, and took several fortresses. For the third time, at Laffeld, 1747, he defeated Cumberland and captured Bergen-op-zoom. He then retired to his estate of Chambord, and died in 1750. His work on the art of war, *Mes Rêveries*, was published in 1751.

Say, Jean Baptiste, eminent French economist, was born at Lyons, 1767. In 1819 he became professor of industrial economy at the Conservatoire des Arts et Métiers, and in 1830 professor of political economy at the College de France. His chief work was his *Traite d'economie politique*. Say died in 1832.

Sayce (*sās*), **Archibald Henry,** English philologist, was born at Shirehampton, near Bristol, 1846. He was graduated from Queen's college, Oxford, 1869. He was deputy-professor of comparative philology, 1876-90, and professor of Assyriology, 1891-1919. Among his works are *Comparative Philology; The Science of Language; The Ancient Empires of the East; Herodotus; Patriarchal Palestine; Assyrian Grammar; Israel and the Surrounding Nations; Egyptian and Babylonian Religion; The Archæology of Cuneiform Inscriptions*, etc.

Scaliger (*skal'i-jĕr*), **Joseph Justus,** French scholar was born in Guienne, 1540, and educated at Bordeau. In large part, however, he educated himself, mastering Latin, Greek, Syrian, Hebrew, Persian and most of the modern European languages, and at his death, in 1609, was recognized as the greatest scholar of his time. From 1793 until his death he was professor of literature at Leyden.

Schaeffer, Nathan C., American educator, state superintendent of public instruction, Pennsylvania, beginning 1893, was born in Berks county, Pa., 1849. Ph.D., D.D., LL.D. He was professor at Franklin and Marshall College, 1875-77, and principal of Keystone state normal school, 1877-93; president of National educational association, 1905-07. Died, 1919.

Scheele (*shā'le*), **Carl William,** Swedish chemist—was born at Stralsund, in the Prussian province of Pomerania, 1742. Although by profession only an apothecary, and to a large extent self-taught, he made many important chemical discoveries, with which his name will always be associated. He discovered oxygen gas, independently of Priestly, in 1774, and in the same year discovered the element chlorine. Died, 1786.

Scheffer (*shef'ĕr*), **Ary,** French painter, was born at Dordrecht, Holland, 1795, and studied under Guérin of Paris. He first made a reputation as a painter of genre pieces, which have been popularized in France by engravings. It was not until the romantic movement reached art, however, that he began to feel conscious of his peculiar power. The influence of Goethe and Byron became conspicuous in his choice of subjects. Toward the year 1836 his art underwent its third and final phase—the religious. He also executed some remarkable portraits; among others those of Lafayette, Béranger and Lamartine. Died, 1858.

Schelling (*shel'ing*), **Friedrich Wilhelm Joseph,** German philosopher, was born in Würtemburg, 1775. He studied theology and philosophy at Tübingen and science and mathematics at Leipzig. He began as a follower in philosophy of Fichte and Hegel, with whom he ranks among German philosophers, but later was influenced by Spinoza and Boehme. The large number of his philosophical works include the *Enquiry Into the Nature of Human Freedom; On the Possibility of Any Form of Philosophy; Philosophy of Nature.* He died in Switzerland, 1854.

Schiller, von, Johann Christoph Friedrich, great German poet and dramatist, was born at Marbach, Würtemberg, 1759. In 1773 the duke of Würtemberg, who had formed a favorable opinion of Schiller, educated the boy, free of expense, at the military academy founded by him, under the name of Karls-schule. In 1780 he passed as a military surgeon, but meanwhile, in 1778, had completed the first sketch of his memorable drama, *Die Räuber*, ("The Robbers"). In October, 1782, Schiller fled from the harsh service of the duke into Franconia, and lived for a year under a feigned name at Baurbach, near Meiningen, where he completed his *Fiesco* and *Cabale und Liebe*. *Don Carlos* was also sketched in outline here.

In 1783 he went to Mannheim, and was for some time closely connected with actors and theatrical life. To this period belong several of his lesser poems. With the *Cabale und Liebe* above mentioned ended the first poetic period in Schiller's career, otherwise known as the *sturm und drang* period. In 1785 he left Mannheim, and proceeded to Leipzig, where he wrote *Lied an die Freude;* whence after a few months he went to Dresden, where he began the practice of composing during the night, which so fatally assisted in shortening his life. *Der Geister-seher* was written here, and the drama of *Don Carlos* was completed.

In 1787 he was invited to Weimar, where Goethe and he became the closest friends. Henceforth Schiller owed more to Goethe than to all other men. His *History of the Thirty Years' War* originally appeared in the *Taschenkalender fur Damen*. On the occasion of the poet's marriage in 1790 with Charlotte von Lengefeld, the Duke of Meiningen made him a privy-councilor; the French republic also conferred on him the right of citizenship; and in 1802 the emperor raised him to the rank of nobility.

While staying for a year with his relatives in Würtemberg, he wrote his exquisite letters on aesthetic culture. After 1795 the finest of his lyrics and dramas were produced—as *Der Spaziergang* and the *Lied von der Glocke* (Song of the Bell), *Wallenstein, Maria Stuart, Die Jungfrau von Orleans, Braut von Messina* and finally his *Wilhelm Tell*. He died, 1805.

References.—In English we have the famous biography by T. Carlyle, and those by Lord Lytton, James Sime, H. Nevinson, and T. Calvin. For criticism the following are of importance—E. Dowden's *Schiller's Friendship With Goethe;* F. Werner's *The Characteristics of Schiller's Dramas;* E. Fischer's *Schiller's Works Illustrated by the Greatest German Artist.*

Schlegel (*shlā'gel*), **August Wilhelm von,** German critic, poet and scholar, was born at Hanover, 1767. In 1800 he published his first volume of poems; and, in company with his brother, the *Charakteristiken und Kritiken*. His most valuable and most widely popular work was his *Lectures on Dramatic Art and Literature*, originally delivered at Vienna, in the spring of 1808, and translated into most European languages. In 1818 Schlegel, now ennobled, was appointed professor of history in the University of Bonn, and devoted himself to the history of the fine arts and to philological research. He was one of the first students of Sanskrit in Germany, established a Sanskrit printing office at Bonn, and an *Indische Bibliothek*. Died, 1845.

Schlegel, Karl Wilhelm Friedrich, German critic and author, brother of the preceding, was born at Hanover in 1772. He studied at Göttingen and Leipzig, and in 1797 published his first work, *The Greeks and Romans*, followed in the course of a year by his *History of Greek and Roman Poetry*. In 1808 he went to Vienna, where, in 1811, appeared his *Lectures on Modern History*, and in 1815 his *History of Ancient and Modern Literature*. Died, 1829.

Schleiermacher (*shlī'ĕr-mäkĕr*), **Friedrich Ernst Daniel,** German philosopher and theologian, was born at Breslau, 1768. In 1794 he became assistant clergyman at Landsberg-on-the-Warthe, where he remained for two years. The first work that won for him general celebrity was his *Discourses on Religion*, which startled Germany from its spiritual torpor. He was professor at Halle, 1804-06, and in 1810 was called to a theological chair in the new University of Berlin. In 1811 appeared his *Brief Outline of the Study of Theology;* in 1817 his *Critical Essay on the Writings of Luke;* and in 1821-22 his greatest work, *An Exhibition of the Christian Faith, According to the Principles of the Evangelical Church*. Died, 1834.

Schley (*shlī*), **Winfield Scott,** American admiral, was born near Frederick, Md., 1839. He was graduated from the United States Naval Academy, 1860; served in West Gulf blockading squadron from 1861. In 1872 he was placed at the head of the department of modern languages at Annapolis. In 1884 took command of Greeley relief expedition and rescued Lieutenant Greeley and six survivors at Cape Sabine. He was placed in command of the "flying squadron" on duty in Cuban waters in war with Spain; was in immediate command at the destruction of Cervera's fleet off Santiago, July 3, 1898. Promoted to rear-admiral, August, 1898; was presented with a gold sword by the people of Pennsylvania; a silver sword by the Royal Arcanum; a gold and jeweled medal, with the thanks of the Maryland legislature. He retired at the age limit in 1901. Author: *Rescue of Greeley, Forty-five Years Under the Flag*, etc. Died, 1911.

Schliemann (*slē'män*), **Heinrich,** German traveler and archæologist, was born at Mechlenburg-Schwerin, 1822. He excavated the ancient city of Troy in 1870, and in 1876 he began excavations on the side of the ancient city of Mycenæ, in Greece, and the treasures found there are now preserved at Athens. He wrote an account of his work in *Mycenæ, Tiryns, Ilios, Troja*, and other volumes. He died at Naples, 1890, and was buried at Athens.

Schofield (*skō'fēld*), **John McAllister,** American general, was born in Gerry, N. Y., 1831. He was graduated at West Point, 1853, and was made a professor there in 1855; LL.D., Chicago University. When the Civil War broke out he entered the army as major of the 1st Missouri volunteers. He shared Sherman's southern campaign, and was in most of the battles which ended with the taking of Atlanta, when he returned to Tennessee, defeating Hood at Franklin, and was with General Thomas at the battle of Nashville. In 1868 he became secretary of war, and major-general in the regular army. Upon the death of General Sheridan, 1888, he succeeded to the command of the United States army. Previous to his retirement, he was, by act of congress, made lieutenant-general, 1895. He published a biographical narrative entitled *Forty-six Years in the Army*. Died, 1906.

Schoolcraft, Henry Rowe, American ethnologist and explorer, was born at Watervliet, N. Y., 1793. After studying at Union College, he visited the mining region west of the Mississippi, and also acted as geologist in an exploring expedition to Lake Superior and the upper Mississippi, under General Cass. While Indian agent he made treaties that gave the United States 16,000,000 acres. As a member of the legislature of Michigan territory, from 1828-32, he founded its historical society. An expedition which he commanded in 1832 discovered the sources of the Mississippi. His works include narratives of his journeys: *Notes on the Iroquois; The Red Race of America; Thirty Years With the Indian Tribes;* and *The Indian in His Wigwam*. He died at Washington, D. C., 1864.

Schopenhauer (*shō'pen-hou'ĕr*), **Arthur,** German philosopher, was born at Dantzig, Germany, 1788. He studied first at Göttingen and afterward at Berlin and Jena. He then proceeded to Dresden, where he published a treatise, *Sight and Color*, which was followed three years later by his great work, *The World as Will and Idea*. Died, 1860.

Schouler (*shōō'lĕr*), **James,** American lawyer and historian, was born at Arlington, Mass., 1839. He was graduated at Harvard, 1859; LL.D., National University, 1891, Johns Hopkins, 1902. He was admitted to the Massachusetts bar, 1862, and to the supreme court of the United States, 1867; and lecturer, Johns Hopkins, Baltimore Author: *The Law of Domestic Relations; The Law of Bailments*. Died, 1920.

Schubert (*shōō'bĕrt*), **Franz Peter,** Austrian composer, was born at Vienna, 1797. His talent for composition soon revealed itself, and by 1813 his supreme gift of lyric melody showed itself in the song *The Erlking*, the *Mass in F*, etc. His output of work was remarkable for its variety and quantity, embracing some 500 songs, ten symphonies, six masses, operas, sonatas, etc.; but his fame rests on his songs, which are infused by an intensity of poetic feeling. Died, 1828.

Schumann (*shōō'män*), **Robert,** German composer, was born in Zwickau, 1810. He studied at Heidelberg, 1828-30, and then at Leipzig, under Wieck. Up to 1840 nearly all his compositions had been for the piano, but he subsequently produced 138 songs, many of which have become classic. In 1850-53 he was director of music at Dusseldorf. Died, 1856.

Schumann-Heink (*shōō'män hingk'*), **Ernestine,** née **Roessler,** German dramatic contralto, was born at Lieben, 1861. She studied at Gratz, and made her début at Dresden, 1878. In 1883 she went to Hamburg; in 1896 sang at Bayreuth She married Heink in 1883, and Paul Schumann in 1893. She made her American début in 1898; since then she has devoted herself largely to concert work. In 1905 she bought a large estate at Montclair, N. J. Died 1936.

Schurman (*shōōrman*), **Jacob Gould,** American educator, ex-president of Cornell University, 1892-1920, was born at Freetown, Prince Edward island, 1854. He was graduated at the University of London, 1877, studied at Paris and the University of Edinburgh, 1877-78; D.Sc., Edinburgh; LL.D., Columbia University, 1892, Yale University, 1901, University of Edinburgh, 1902, and 1886-92 Sage professor of philosophy, and later part of time dean, of Sage school of philosophy, Cornell. Envoy extraordinary and minister plenipotentiary to China, 1921-25, similar post in Germany since 1925. Author: *Kantian Ethics and the Ethics of Evolution; The Ethical Import of Darwinism; Belief in God; Agnosticism and Religion; A Generation of Cornell; Report of the Philippine Commission*. Ambassador to China.

Schurz (*shōōrts*), **Carl,** American publicist, was born in Liblar, near Cologne, Germany, 1829. He was educated at the gymnasium, Cologne, and University of Bonn; LL.D., Harvard; took part in a revolutionary movement in 1848-49; joined the revolutionary army, but finally had to flee to Switzerland. Came to the United States, 1852; settled in Watertown, Wis.; United States minister to Spain, 1861; resigned to enter the Union army; appointed brigadier-general, 1862; major-general, 1863; and commanded a division at the second battle of Bull Run and at Chancellorsville, and a corps at Gettysburg. After the war he was Washington correspondent of the *New York Tribune*, 1865-66; and United States senator from Missouri, 1869-75. He was one of the organizers of the liberal party, 1872; supported Hayes, 1876; was secretary of the interior, 1877-81. Author: *Speeches; Life of Henry Clay; Abraham Lincoln, an Essay*,

and an autobiography published in *McClure's Magazine*, interrupted by his death in 1906.

Schwab (*shwŏb*), **Charles M.,** American capitalist, ex-president of the United States steel corporation, was born in Williamsburg, Pa., 1862. He was educated in the village school and at St. Francis College; entered service of Carnegie Company as stake-driver in engineering corps of Edgar Thompson steel works; became superintendent of Homestead works and finally president of Carnegie Steel Company, limited. He built a new Catholic church, costing $150,000, at Loretto, Pa.; established an industrial school at Homestead, Pa., etc.

Schwanthaler (*shvän'tä-lĕr*), **Ludwig von,** German sculptor, was born at Munich, 1802. He studied under his father, and after a visit to Rome was charged by King Louis of Bavaria to execute bas-reliefs and figures for the public buildings of Munich. Among his works are the colossal statue of *Bavaria;* statues of Goethe, Jean Paul Richter, Mozart, etc. Died, 1848.

Scipio (*sip'i-ō*), **Æmilianus Publius,** surnamed Africanus Minor, was born about 185 B. C. After distinguishing himself in Spain, he proceeded to Africa to take part in the third Punic war. Here he laid siege to Carthage, took it by storm, and leveled it with the ground in 146 B. C. He was afterward sent to Spain, where he captured Numantia, after a stubborn resistance, to the extension of the sway of Rome. Died, 129 B. C.

Scipio, Publius Cornelius, surnamed Africanus Major, celebrated Roman general, was born about 237 B. C. In 212 B. C. he was elected ædile, and in the following year proconsul, with command of the Roman forces in Spain. He defeated Hasdrubal at Baesula, with heavy loss. In 205 B. C. he returned to Rome, where he was elected consul, and in the following year sailed from Lilybæum, in Sicily, at the head of a large army, for the invasion of Africa. His success compelled the Carthaginian senate to recall Hannibal from Italy. Peace was concluded the following year, when Scipio returned to Rome, and enjoyed a triumph. His laurels, however, did not protect him from the intrigues of his enemies in Rome. Various charges were brought against him, and he at length retired in disgust to his country seat at Liternum, where he died, 183 or 185 B. C.

Scott, Sir George Gilbert, British architect, was born at Gawcot., near Buckingham, England, 1811. He was indentured to a London architect, 1827-30, and eventually became the leading architect of the Gothic restoration in England. He was elected A.R.A. in 1855, R.A. in 1861; held the professorship of architecture at the London Academy; and was knighted in 1872. He died in 1878, and was buried in Westminster abbey.

Scott, James Brown, American lawyer and educator, was born at Kincardine, Ontario, 1866. He was graduated at Harvard, and studied international law, 1891-94; J.U.D., Heidelberg, 1894. He practiced law at Los Angeles, Cal., 1894-99; professor of law, Columbia Law School, 1903-06; professor of law, 1905-06, and of international law, 1906-11, in George Washington University. He was solicitor for the department of state, 1906-11. Editor-in-chief American Journal of International Law, 1907-24. Author: *Cases on International Law; Cases on Quasi-contracts; Cases on Equity Jurisdiction; Cases on Equity Pleading.*

Scott, Richard William, Canadian senator and Dominion secretary of state beginning 1896, was born at Prescott, Canada, 1825. He was educated at Prescott, became member of parliament for Ottawa, 1857-63; speaker of the house of commons, 1871; appointed to senate, 1873; secretary of state, 1873-78; and leader of the opposition in the senate, 1879-96. He carried through parliament the school bill giving the Roman Catholics right to establish separate schools, 1863, and the Canada temperance (local option) act, 1875. Died, 1913.

Scott, Sir Walter, Scotch novelist and poet, was born in Edinburgh, 1771. He came of the old border family. Though he matured into a man of robust health, as a child he was feeble and sickly, and was smitten with a lameness which remained with him through life. In 1783 he entered Edinburgh University, and remained there three years. In 1786 he was articled apprentice to his father, in whose office he worked as a clerk till 1792; in the same year he was called to the bar.

In his profession he had fair success, and in 1797 he was married to Charlotte Margaret Carpenter, a lady of French birth and parentage. Toward the end of 1799, through the interest of his friends Lord Melville and the Duke of Buccleuch, he was made sheriff-deputy of Selkirkshire, an appointment which brought him 300 pounds a year, with not very much to do for it. Meantime, in a tentative and intermittent way, his leisure had been occupied with literature, which more and more distinctly announced itself as the main business of his life.

His first publication, a translation of Burger's ballads, *Lenore* and *The Wild Huntsman,* was issued in 1796. In 1798 appeared his translation of Goethe's drama of *Goetz von Berlichingen;* and in the year following he wrote the fine ballads, *Glenfinlas,* the *Eve of St. John,* and the *Gray Brother.* In the year 1802 he published the first two volumes of his *Border Minstrelsy,* which were followed in 1803 by a third and final one. This work at once won for him a prominent place among the literary men of his time. In 1804 he issued an edition of the old poem *Sir Tristram.* By the publication in 1805 of *The Lay of the Last Minstrel* Scott became at a bound the most popular author of his day.

During the next ten years, besides a mass of miscellaneous work, he gave to the world the poems *Marmion, The Lady of the Lake, The Vision of Don Roderick, Rokeby, The Bridal of Triermain* (anonymously published), *The Lord of the Isles,* and *The Field of Waterloo.* In *Waverly,* which appeared without his name in 1814, he achieved the first of a new and more splendid series of triumphs. *Guy Mannering, The Antiquary, The Black Dwarf, Old Mortality, Rob Roy,* and *The Heart of Midlothian* rapidly followed, and the "Great Unknown," as he was called, became the idol of the hour.

In 1820, to set a seal upon all this distinction, a baronetcy was bestowed upon him as a special mark of the royal favor. Financial misfortune led him to redouble his efforts, and he literally wrote for money. He produced upward of twenty novels in the next ten years, and the strain was terrific. In 1830 he was smitten down with paralysis, from which he never thoroughly rallied. It was hoped that the climate of Italy might benefit him; and by the government of the day a frigate was placed at his disposal in which to proceed thither. But in Italy he pined for his home. He died at Abbotsford, 1832, and was buried beside his wife in the old Abbey of Dryburgh.

References.—Lockhart's *Life* is the main source for Scott's biography. See also Hutton's *English Men of Letters;* Lang's *Sir Walter Scott;* Norgate's *Life;* and Crockett's *The Scott Country.*

Scott, William Amasa, university professor, was born at Clarkson, Monroe County, N. Y., 1862; graduated at University of Rochester, 1886; Ph. D., Johns Hopkins, 1892. Professor of history and political science, University of South Dakota, 1887-90; graduate student and instructor of history, Johns Hopkins, 1890-2; assistant professor political economy, 1892-3, associate professor, 1893-7, professor since 1897; director School of Commerce since 1900, University of Wisconsin. Author: *Repudiation of State Debts; Money and Banking.* Translator: Bohm-Bawerk's *Recent Literature on Interest,* etc.

Scott, Winfield, American general, was born near Petersburg, Va., 1786. He studied at William and Mary College, and first became a lawyer, but in 1808 entered the army as captain. In the war of 1812 he was sent to the Canadian border, where he fought at Queenstown and at Lundy's Lane. He was wounded in both the battles, having two horses shot under him at Lundy's Lane. He was made a major-general for his services. As commander-in-chief of the United States army, 1841-47, he took command of the invasion of Mexico. He captured Vera Cruz, and defeated Santa Anna at Cerro Gordo, taking Jalapa and Puebla; took the castle of Chapultepec by storm, and September 14, 1847, marched into the City of Mexico, where he commanded until the treaty of peace was signed in February, 1848. At the beginning of the Civil War he was in charge of the army, but soon yielded his position to younger men. He died at West Point, 1866.

Seamen, Owen, English humorist and editor of *Punch* since 1907, was born in 1861. He was educated at Shrewsbury and at Clare College, Cambridge; was professor of literature at Durham College of science at Newcastle-on-Tyne, 1890; and began writing for *Punch,* 1894. He was made a barrister of Inner Temple, 1897, joined the staff of *Punch* in the same year, and was assistant editor in 1902. Died, 1936.

Seawell, Molly Elliot, American author, was born in Gloucester county, Va., 1860, daughter of John Tyler Seawell. She was educated privately, and began writing sketches and stories in 1886. In 1890 her *Little Jarvis* took a prize of $500, offered by the *Youth's Companion,* for the best story for boys, and in 1895 her *Sprightly Romance of Marsac* took a prize of $3,000 offered by the *New York Herald.* Died, 1916.

Seegar, Alan, American poet, was born in New York City in 1888. He entered Harvard in 1906, and became an editor of the Harvard monthly. After graduation he spent the years 1910 to 1914 in Paris. At the very beginning of the world war he enlisted in the foreign legion of France, serving on various fronts until he was killed in 1916. He showed great literary promise, though his fame rests almost entirely on his poem "*I Have a Rendezvous with Death,*" published in 1916. His letters from the front, published in 1917, show developing power.

Seeley, Sir John Robert, English historian, was born in London, 1834. He was educated at Christ's College, Cambridge, and was elected a fellow of his college in 1858. His *Ecce Homo* appeared anonymously in 1865, and excited an extraordinary commotion in the religious world. It was followed by *Natural Religion,* 1882. He was created a K.C.M.G. in 1894 and died, 1895.

Seerley, Homer Horatio, college president, was born near Indianapolis, Indiana, 1848; graduated at the State University of Iowa, 1873, Bachelor of Didactics, 1875, M.A., 1876; LL.D., Pennsylvania College, 1898, State University of Iowa, 1901. Was teacher, 1873-5, and superintendent city schools, 1875-86, Oskaloosa; president of Iowa State Teacher's College beginning 1886; president department normal schools, N.E.A., 1898; etc. Author: *History and Civil Government of Iowa; The Common Schools,* etc.

Seligman (*sel'ig-man*), **Edwin Robert Anderson,** American economist, McVickar professor of political economy, Columbia University, since 1904, was born in New York, 1861. He was graduated at Columbia, 1879. He was adjunct professor at Columbia, 1888-91; president of the American economic association, 1902-04, and was president of the Tenement house building company. He is editor of the *Political Science Quarterly.* Author: *Railway Tariffs; Finance Statistics of American Commonwealth; Economic Interpretation of History; Principles of Economics,* etc.

Selous (*se-lōōs'*, or *lōō*), **Frederick Courtney,** English traveler and writer, was born in London, 1851, and was educated at Rugby, in Switzerland and in Germany. He first visited South Africa in 1871, and published *A Hunter's Wanderings in Africa; Travel and Adventure in Southeast Africa.* Died, 1917.

Sembrich (*zem'brĭk*), **Marcella,** Austrian soprano, was born in 1858. She studied under Stengel, whom she afterward married; Epstein, and Rokitansky in Vienna, and made her début at Athens in 1877, in *I Puritani.* In 1879 she sang in Dresden and afterward at Vienna, Dresden, London and New York. Besides possessing a voice of high quality, she is also an excellent actress. Died, 1935.

Semmes (*semz*), **Raphael,** American naval officer, was born in Maryland, 1809. He served in the Mexican war; in 1861 joined the naval service of the confederate states, and was appointed to the command of the war steamer, *Sumter.* He also commanded the famous *Alabama* during her destructive cruise. After the war he practiced law at Mobile, Ala. Died, 1877.

Seneca, Lucius Annaeus, Roman stoic philosopher, was born at Corduba, Spain, about 3 B. C. On the accession of Emperor Claudius, A. D. 41, he was banished to the island of Corsica. On the marriage of Claudius to his second wife, Agrippina, Seneca was through her influence recalled, and was appointed tutor to her son Domitius, afterward the emperor Nero. Five years later his pupil ascended the throne, and Seneca became one of the chief advisers of the young emperor. All his influence failed, however, to restrain the vicious propensities of Nero; and, after the murder of Agrippina by the latter, A. D. 59, Seneca asked permission to retire from court. He now wholly avoided public life, and devoted himself to his philosophical studies; but the emperor, who both disliked and feared him, followed him into his retirement, and is said to have sought to compass his death by poison. After the conspiracy of Piso, A. D. 65, Seneca was mentioned by one of the conspirators as having shared in the plot, and without further proof, was ordered to put himself to death. He died with all the courage of a stoic, and his wife, Pompeia Paulina, attempted, though vainly, to die with him. Of Seneca's writings which have come down to us, the greater part are on moral and philosophical subjects.

Sennacherib (*se-nak'ĕr-ĭb*), celebrated king of ancient Assyria, reigned from 705 to 681 B. C. He seems to have been the first who fixed the seat of government permanently at Nineveh, which he adorned with splendid buildings.

Septimius Severus. See **Severus.**

Sergel (*ser'gel*), **John Tobias,** eminent Swedish sculptor, was born at Stockholm, 1740. He was a pupil of L'Archevecque, and subsequently completed his studies at Rome; rose to great eminence, and was ennobled after his return to Sweden. Died, 1814.

Servetus (*sĕr-vē'tus*), **Michael,** Spanish physician and controversialist, was born in Spain, about 1511. He studied law at Saragossa and Toulouse, was graduated in medicine at Paris, and afterward studied theology at Louvain. He maintained a vigorous correspondence with Calvin, who endeavored for sixteen years to convince him of his errors; and the failure of the endeavor irritated Calvin, whose anger was doubtless increased by the trenchant styles in which Servetus replied to his argument. Was so imprudent as to pass through Geneva, where Calvin obtained intelligence of his arrival, and gave

information of it to the magistrates. He was thereupon seized, imprisoned, tried for heresy, and ultimately burned by a slow fire, 1553.

Service, Robert William, Canadian poet and novelist, was born at Preston, England, in 1874. He came to Canada in 1907, where he traveled extensively in British Columbia and in the Yukon country. His first success, *Songs of a Sourdough*, was followed by *The Spell of the Yukon, Ballads of a Cheechako, Rhymes of a Rolling Stone, The Pretender*, and *Rhymes of a Red Cross Man*. He was a war correspondent and ambulance driver during the world war.

Seton (*sē'tun*), **Ernst Thompson,** artist, author, lecturer, was born at South Shields, England, 1860. He lived in the back woods of Canada, 1866-70; on western plains, 1882-87. He was educated at Toronto Collegiate Institute and the Royal Academy, London, England, and studied art in Paris, 1890-96. He was one of the chief illustrators of *The Century Dictionary*. Author and illustrator: *Wild Animals I Have Known; The Trail of the Sandhill Stag; The Biography of a Grizzly; Krag and Johnny Bear; Two Little Savages; Monarch, the Big Bear*.

Severus (*sē-vē'rus*), **Lucius Septimius,** Roman emperor, was born near Leptis Magna, in Africa, 146. He rose to be prætor in 178, and commander of the army in Pannonia and Illyria. After the murder of Pertinax in 193, he was proclaimed emperor, marched upon Rome, utterly defeated his two rivals in 195 and 197, and between these dates made a splendid campaign in the East, and took Byzantium. To protect south Britain from the Caledonian invasions, he repaired Hadrian's wall, sometimes called after Severus, and died soon after at Eboracum (York), 211.

Sevigne (*sā'vēn'yā'*), **Madame de,** nêe **Marie de Rabutin Chantal,** one of the most charming of letter writers, was born at Paris, 1626. At eighteen she married the dissolute Marquis Je Sévigné, who left her a widow at twenty-five. Her fame rests on her *Letters*, written chiefly to her daughter in Provence, which reflect the brightest and purest side of Parisian life, and contain the tender outpourings of her mother's heart in language of unstudied grace. Died, 1696.

Seward, William Henry, American statesman, was born in Florida, N. Y., 1801. He was graduated at Union College in 1820, was admitted to the bar in 1822, and settled at Auburn, N. Y. He was elected to the state senate in 1830; was elected governor of New York in 1838, and in 1849 was elected to the United States senate, where he became the acknowledged leader of his party. In 1860 he was the most prominent candidate of the republican party for nomination for the presidency, but personal and local interests finally secured the election of Abraham Lincoln. Seward afterward accepted the important post of secretary of state, in Lincoln's cabinet, in which he guided the diplomacy of the federal government through the perils of the Civil War. He resigned in 1869, on the accession of U. S. Grant. He published *Speeches and Orations* (in 4 volumes), *Life of John Quincy Adams*, and *Life of De Witt Clinton*. Died, 1872.

Seymour, Sir Edward Hobart, English admiral, was born in 1840. He was educated at Radley, and entered the British navy in 1852. He served through the Crimean war in the Black sea; the China war, 1857-60; operations against Chinese rebels and in the Egyptian war of 1882, taking part in most of the naval fighting in connection with those wars. As commander he was badly wounded in action on the river Congo. He became captain in 1873, rear-admiral, 1889, and vice-admiral, 1895, and was commander-in-chief of the China station, 1898-1901. Commander-in-chief, Devonport, 1903-05. Author: *My Naval Career and Travels*. Died, 1929.

Seymour, Horatio, American statesman, was born at Pompey, N. Y., 1810. He studied at a military school; was admitted to the bar, 1832; entered New York legislature, 1841; and was chosen speaker, 1845. He was elected governor in 1852 and 1862, and came into great prominence as one of New York's "war governors." He was Democratic candidate for President, in 1868. Died, 1886.

Shaftesbury, Anthony Ashley Cooper, Earl of, British statesman, was born at Winborne, in Dorsetshire, 1621. He was educated at Exeter College, Oxford, and studied law at Lincoln's Inn. He entered parliament in 1640. He was chancellor of the exchequer in 1661, and in 1372 was created an earl and lord chancellor, but, hoodwinked by Charles in the secret treaty of Dover, he went over to the opposition and lost his chancellorship. His virulent attacks on James and espousal of Monmouth's cause brought about his arrest on a charge of high treason in 1681, and although released he retired to Holland, where he died in 1683. He is the *Achitophel* of Dryden's great satire.

Shaftesbury, Anthony Ashley Cooper, seventh Earl of, English statesman and philanthropist, was born in London, 1801. He was graduated at Oxford, and entered parliament as a conservative in 1826. His name lives, by virtue of his noble and lifelong philanthropy, which took shape in numerous acts of parliament, such as the mines and collieries act of 1842, excluding women and boys under thirteen working in mines; the better treatment of lunatics act, 1845, called the *magna charta* of the insane; the factory acts, 1867, and the workshop regulation act, 1878. Died, 1885.

Shahan, Thomas Joseph, American educator, rector of the Catholic University of America, since 1909, was born at Manchester, N. H., 1857. He was educated at Montreal College, Canada, 1872, American College, Rome, 1878-82; D.D., College of the Propaganda, Rome, 1882; J.U.L., Roman Seminary, 1889. He was ordained to the Roman Catholic priesthood in the cathedral of St. John Lateran, Rome, 1882; professor of church history and patrology, Catholic University of America, beginning 1891. Author: *The Blessed Virgin in the Catacombs; The Middle Ages; The House of God, and Other Addresses and Studies*, etc.

Shah Jehan (*shä' je-hän'*), fifth of the Mogul emperors of Delhi, was born about 1592, and succeeded his father in 1627. He was a man of great administrative ability and a skilled warrior. He founded the modern city of Delhi, built the Taj Mahal and other magnificent buildings at Agra. Died in prison in 1666, a victim to the perfidy of his usurping son, Aurungzebe.

Shakespeare, William, the chief literary glory of England, was born at Stratford-on-, Avon, in Warwickshire, 1564. His father, John Shakespeare, seems to have belonged by birth to the class of yeoman. His mother, Mary Arden, was of more distinguished origin, and came of a good old Warwickshire family. Of a family of four sons and four daughters born to them, William was the third child. At the free grammar school of Stratford there can be little doubt the young Shakespeare received his entire education.

In 1582 Shakespeare, a lad of nineteen, was married to Anne Hathaway of Shottery, a girl about eight years older tnan himself. The children born of the marriage were a girl, and twins, a boy and a girl. The boy Hamnet died in his twelfth year.

At the age of twenty-two, Shakespeare went to London. No certain details have come down to us as to his earlier relations with the London theater. According to one tradition, he was content at first to turn a penny by holding horses at the door. According to another—which seems a natural sequence with the foregoing—we find him admitted inside on his promotion, though as yet only in the humble capacity of prompter's attendant. If at any time he was thus occupied it could have been only for a brief period, as very speedily we have note of him as a man of some importance, at once dramatist, actor and shareholder in the Blackfriars theater.

In the year 1592 we find a contemporary and brother dramatist, Henry Chettle, apologizing to Shakespeare for an offense given, in terms most respectfully appreciatory of his excellences at once as a man and an author, and in 1698 Francis Meres, in his *Wits, Treasury*, writes of him as the "most excellent among the English for both kinds of tragedy and comedy." We have ample evidence of the unrivaled acceptance his works obtained from all classes; they brought him special marks of favor and approval from Queen Elizabeth and her successor James, and procured him the patronage and friendship of some of the most accomplished men of rank of his time, more notably, Henry Wriothesly, earl of Southampton, to whom he dedicated his *Venus and Adonis*, and *Rape of Lucrece*, and William Herbert, earl of Pembroke, to whom his *Sonnets* are addressed.

His visits to Stratford now became more and more frequent; and prior to the year 1613 he had ceased to reside in London, and finally established himself at Stratford. Of his last years there spent, further than that they lapsed peacefully in honor, and the exercise of a liberal and kindly hospitality, nearly nothing is known. There is a good reason to believe that, though withdrawn from other active concernment with the stage, he still continued to write for it. His death took place on his fifty-third birthday, 1616, and he was buried in Stratford church-yard.

He was essentially a man of noble and estimable character, and was obviously of most kindly and lovable disposition; his pleasurable wit and good nature made him delightful as a companion; and it was as "gentle Will Shakespeare" that he was familiarly known to his contemporaries. The lofty eulogy of Dryden, "he was the man who, of all modern and perhaps ancient poets, had the largest and most comprehensive soul," has been generally acquiesced in. As dramatist, he is admittedly in the world without a peer; as poet, there are but one or two names in literature even to be named beside his; and dismissing his claims in either kind, we have in his works such a treasury of gnomic wisdom on all matters of human concernment as no other writer has ever left to the world.

References.—Halliwell-Philipp's *Outlines of the Life of Shakespeare*; Sidney Lee's *Life*; Hazlitt's *Characters of Shakespeare's Plays*; Ulrici's *Shakespeare's Dramatic Art*; Hudson's *Shakespeare: His Life, Art and Characters*; Dowden's *Shakespeare, His Mind and Art*; Bayne's *Shakespeare Studies*; Swinburne's *Study of Shakespeare*; White's *Studies in Shakespeare*; Moulton's *Shakespeare as a Dramatic Artist*; Brandes' *William Shakespeare*; Smith's *Eighteenth Century Essays on Shakespeare*; Stopford Brooke's *Ten Plays of Shakespeare*; Gervinus's *Shakespeare*.

Shaler (*shā'ler*), **Nathaniel Southgate,** American scientist, author, was born in Newport, Ky., 1841. He was graduated at Lawrence Scientific School, Harvard, 1862; Sc.D., 1865; served two years as artillery officer in Union army during the Civil War. Professor of palæontology, 1868-87, and afterward professor of geology, Harvard; and from 1884 to 1906 was geologist in charge of the Atlantic division of the United States geological survey. Author: *A First Book in Geology; Kentucky, a Pioneer Commonwealth; Sea and Land; The United States of America; A Study of the American Commonwealth; American Highways; Features of Coasts and Oceans; Domesticated Animals: Their Relation to Man; The Individual; Study of Life and Death*; etc. Died, 1906.

Sharpless, Isaac, American educator, president of Haverford College beginning 1887, was born in Chester county, Pa., 1848. He was graduated at the Lawrence Scientific School, Harvard, 1873; Sc.D., University of Pennsylvania; LL.D., Swarthmore College; professor of mathematics and astronomy, 1879-84, and dean, 1884-87, of Haverford College. Author: *Astronomy; Geometry*. Died, 1920.

Shaughnessy, Sir Thomas George, Canadian railway president, was born at Milwaukee, Wis., 1853. He received a common school education; entered the railway service in 1869, in the purchasing department of the Chicago, Milwaukee and St. Paul railroad. Vice-president and director, 1891-98, and president beginning 1898 of the Canadian Pacific railway. He was knighted by Queen Victoria, 1901. Died, 1923.

Shaw, Albert, editor of the *American Review of Reviews*, was born in Shandon, Ohio, 1857. He was graduated at Iowa College, Grinnel, Ia. 1879; Ph.D., Johns Hopkins, 1884; LL.D., University of Wisconsin, 1904. He is a member of numerous learned societies, and has lectured in many Universities and colleges. Is president, Review of Reviews Corporation. Author: *Icaria—A Chapter in the History of Communism; Municipal Government in Continental Europe*, etc.

Shaw, George Bernard, British dramatist, critic and novelist, was born in Dublin, Ireland, 1856, and went to London in 1876, where he engaged in newspaper work. He published a few novels, wrote musical critiques in the *London Star*, 1888-90, and in the *World*, 1890-94; and, in 1895, began his work as a dramatic critic, writing in the *Saturday Review*. In 1898 he published *Plays, Pleasant and Unpleasant*. Since then his chief literary work has been writing for the stage. His plays include *Man and Superman; John Bull's Other Island; Major Barbara; The Doctor's Dilemma; Cæsar and Cleopatra; Getting Married*, etc.

Shaw, Henry Wheeler, American humorist, was born in Lanesborough, Mass., 1818. In 1859 he began to write, and, in 1860, sent *An Essa on the Muel, bi Josh Billings* to a New York paper. It was reprinted in several comic journals, and extensively copied. His most successful literary venture, however, was his *Farmer's-Allminax* a travesty on the *Old Farmer's Almanac*. He began to lecture in 1863, and, for twenty years previous to his death, contributed regularly to the *New York World*. Died in Monterey, Cal., 1885.

Shaw, Leslie Mortier, American financier and lecturer, was born at Morristown, Vt., 1848. He was graduated at Cornell College, Mt. Vernon, Ia., M.S., 1874; LL.D. He was admitted to the Iowa bar in 1876, and began practice at Denison, Ia.; subsequently engaged in banking at Denison, Manilla, and Charter Oak, Ia. Was twice elected governor of Iowa, 1898-1900, 1900-02; secretary of the treasury, 1902-07, and president of the Carnegie trust company, N. Y. '07-8. Died, 1932.

Shays, Daniel, American insurgent, was born in Hopkinton, Mass., 1747. He served as ensign at the battle of Bunker Hill; attained the rank of captain in the continental army, and took a leading part in the popular movement in western Massachusetts for the redress of alleged grievances due to misgovernment. In 1786 he appeared before Springfield, Mass., at the head of 1,000 men, to prevent the session of the supreme court at that place. He died in Sparta, N. Y., 1825.

Shelley, Mary Wollstonecraft Godwin, wife of the poet, was born in London in 1798, and married

Shelley in 1816. In 1818 she produced a remarkable novel entitled *Frankenstein*. She likewise wrote *Rambles in Germany and Italy*, etc., and carefully edited her husband's poems. Died, 1851.

Shelley, Percy Bysshe, famous English poet, was born at Field Place, near Horsham, England, 1792. In 1808 he left school, and after two years passed at home was sent to Oxford. A pamphlet entitled *The Necessity of Atheism*, which circulated during the second year of his college course, led to his expulsion from Oxford. In 1811 he married Harriet Westbrook, daughter of a retired innkeeper, but in 1814 a separation took place between him and his wife. His second wife was Mary Godwin. In 1813 appeared his poem *Queen Mab*, which was printed only for private circulation. In 1818 he left England for Italy, and during that and the following year, chiefly while a resident at Rome, he produced what may rank as his two finest poems—the grand lyrical drama of *Prometheus Unbound* and the tragedy of *The Cenci*. His other works of chief importance are *Rosalind and Helen*, *The Witch of Atlas*, written in 1819; *Epipsychidion*, *Adonais*, on the death of Keats, and *Hellas*—all produced in 1821. He perished in 1822 by the capsizing of his boat, while sailing in the gulf of Leghorn.

Shepard, Edward Morse, American lawyer and publicist, was born in New York, 1850. He was graduated at the college of the city of New York, 1869, studied law and was admitted to the bar. He was civil service commissioner of Brooklyn, 1883-85; New York state forestry commissioner, 1884-85, and democratic candidate for mayor of Greater New York, 1901. Author: *Martin Van Buren*, in American statesmen series; *Memoirs of Dugdale*; and many review, magazine and other articles and addresses on political, industrial and educational topics. Died, 1911.

Shepherd, F. J., Canadian physician, professor of anatomy, 1883-1913, and dean of the medical faculty, McGill University, Montreal, 1908-1913, was born at Cavagnol, province of Quebec, 1851. LL.D., Edinburgh and Harvard. He was demonstrator of anatomy in McGill University, 1875; president of the Montreal medico-chirurgical society, and vice-president of the international dermatological congress, 1894 and 1907. Author: *American Text-Book of Surgery; Retrospect of Surgery, 1881-94*, etc.

Sheridan, Philip Henry, American general, was born at Albany, N. Y., 1831. He was graduated at West Point in 1853. At the beginning of the Civil War he was a captain in the 13th infantry, was made quartermaster of the federal army in Missouri, and rapidly passed up through the various grades to major-general in 1863 for brilliant service in the battles of Perryville and Stone river. For his decisive victory over Early at Cedar Creek—the occasion of his famous ride—he was promoted to major-general in the regular army, and received the thanks of congress. Returning to the army of the Potomac, in 1865, he was conspicuous under Grant in the operations before Petersburg, and in the final battles preceding Lee's surrender. When Sherman was made general, Sheridan was made lieutenant-general, and when Sherman was retired, a special act of congress conferred the further rank of general upon Sheridan, who became commander-in-chief of the army. He died at Nonquitt, Mass., 1888.

Sheridan, Richard Brinsley, British dramatist and politician, was born in Dublin, 1751. He was educated at Harrow, and became a student of the Middle Temple, London, though he was never called to the bar. In 1775, produced *The Rivals* successfully at Covent Garden. In 1777 he became part proprietor of Drury English theater, in which he produced *The School for Scandal* and also *The Critic*, one of the wittiest farces. During the whole time of Pitt's ascendancy the talents of Sheridan were displayed in combating that great statesman, by whom however, his eloquence was acknowledged, and especially his eloquence on the occasion of the Warren Hastings' trial. He died in 1816, and was buried in Westminster abbey.

Sherman, James Schoolcraft, lawyer, banker, vice-president of the United States beginning 1909, was born in Utica, N. Y., 1855. He was graduated from Hamilton College in 1878, and was admitted to the bar in 1880; LL.D., Hamilton, 1903. Was mayor of Utica, 1884; chairman of New York state republican convention in 1895 and again in 1900; and chairman of the national republican congressional committee, 1906-09. He was a member of congress, 1887-91, 1893-1903, and 1903-09; elected vice-president of the United States, 1908, taking his seat, March 4, 1909. Died, 1912.

Sherman, John, American statesman, brother of William Tecumseh, was born at Lancaster, Ohio, 1823. He was employed for a time at surveying, and was admitted to the bar in 1844, entering into partnership with his brother. He became an anti-slavery whig, and as such entered congress in 1855. He was reëlected to congress and continued in the house until 1861, the recognized leader of the republicans. He was then United States senator, 1861-77, and 1881-97; secretary of the treasury under President Hayes, 1877-81; and secretary of state under President McKinley, 1897-98. He supported the reconstruction measures, defended the protective tariff, and took a leading part in the legislation for the restoration of specie payments and the refunding of the national debt, and was author of the famous Sherman anti-trust law. Died, 1900.

Sherman, Roger, American statesman, was born at Newton, Mass., 1721. He was a shoemaker by trade, then a surveyor of lands, and finally a lawyer and judge; served in both the continental and the United States congresses from 1774 to 1791; was one of the committee that drafted the declaration of independence, one of the signers of it. He was United States senator, 1791-93. Died, 1793.

Sherman, William Tecumseh, American general, was born in Lancaster, Ohio, 1820. He was graduated at West Point in 1840, and received a commission as first lieutenant in the United States army in 1841. During the war with Mexico he was promoted to the rank of captain. In 1861, was appointed colonel of infantry. Raised to the rank of brigadier-general. He distinguished himself at the battle of Shiloh, and as major-general in the siege of Vicksburg. Raised to an independent command, he marched across the state of Mississippi, took command of the army of Georgia, forced General Hood to evacuate Atlanta, and captured Savannah and Charleston, from which point he moved north, and, by cutting off the resources of General Lee, compelled the evacuation of Richmond, and the surrender of General Lee to General Grant, April 9, 1865. No Northern general acquired greater popularity than Sherman. He was appointed lieutenant-general in 1866, and in 1869 became general and commander-in-chief. In point of daring originality of design, fertility of resource, brilliant strategy, and untiring energy, General Grant pronounced him "the best field officer the war had produced." He retired from the command of the army of the United States, 1884. Died, 1891.

Shorey, Paul, university professor, was born at Davenport, Ia., 1857; graduated from Harvard, 1878; University of Leipzig, 1881-2, University of Bonn, 1882, American School of Classical Studies, Athens, 1882-3; Ph.D., University of Munich, 1884; LL.D., Iowa College, 1905; admitted to bar, Chicago, 1880. Professor of Greek, Bryn Mawr College, 1885-92; professor of Greek beginning 1892, head department since 1896, University of Chicago. Annual associate director of American School Classical Studies, Athens, 1901-2; president American Philological Association, 1910. Author: *De Platonis Idearum Doctrina; The Idea of Good in Plato's Republic; The Odes and Epodes of Horace; The Unity of Plato's Thought*, etc.

Siddons, Sarah, noted English tragic actress, was born at Brecon, 1755, daughter of Roger Kemble, manager of a company of itinerant players. In her eighteenth year she married William Siddons, an actor, and in 1775 made her first appearance in London as *Portia*. She appeared at Drury Lane, 1782, in the character of *Isabella* in *The Fatal Marriage*. In 1785 she appeared as *Lady Macbeth*, her greatest rôle, and in 1788 as *Queen Catherine*. Thenceforth her course was a continual triumph. She died in 1831. In 1783 Sir Joshua Reynolds painted her as *The Tragic Muse*.

Sidgwick, Henry, English moralist and economist, was born in Yorkshire, 1838, and educated at Trinity College, Cambridge, where he lectured from 1859 to 1875, becoming professor of moral and political philosophy in the latter year and professor of moral philosophy in 1883. His chief works comprise *The Methods of Ethics; The Principles of Political Economy; History of Ethics*, and *The Elements of Politics*. Died, 1901.

Sidney, Sir Philip, English writer and soldier, was born in Kent, 1554. He was educated at Oxford, traveled throughout Europe and returned to become a favorite at the court of Elizabeth, who called him "the jewel of her dominions." For her entertainment he wrote his celebrated *Arcadia* and several minor poems. Among his works are also his *Apologie for Poetrie* and *Defense of Poetrie*. He was killed at the battle of Zutphen, 1586.

Siemens, Ernst Werner von, German engineer and electrician, was born at Lenthe, in Hanover, 1816. In 1838 he entered the Prussian artillery, and in 1844 took charge of the artillery workshops at Berlin. He developed the telegraphic system in Prussia, and discovered the insulating property of gutta-percha, and was the first to explode a submarine mine by electricity. Besides devising numerous forms of galvanometers and other electrical instruments, Siemens was one of the discoverers of the self-acting dynamo. He determined the electrical resistance of different substances, the Siemens unit being called after him. He died at Berlin in 1892.

Siemens, Sir William (Karl Wilhelm), German scientist, was born at Lenthe, Manover, 1823, brother of the preceding. He studied at Göttingen, giving special attention to science. As manager of the house of Siemens Brothers, he was engaged in constructing telegraph lines, the steamship *Faraday* being designed by him for cable laying. He invented a water meter, a bathometer for measuring ocean depths, an electrical thermometer, and a process of hastening the growth of plants by electric light. He was president of the three principal telegraphic societies of Great Britain, and of the British association, and in 1883 was knighted. Died, 1883.

Sienkiewicz (*shen-kyā'vich*), **Henryk,** Polish novelist, was born at Wola Okrzejska, in Lithuania, 1846, and was educated at the University of Warsaw. In 1876 he came to the United States, and for a time, in company with Madame Modjeska, his countrywoman, he resided in California, where he designed to establish a Polish colony. He returned to Poland and in 1880 wrote a work on *Tartar Slavery*, following this, a few years later, by his masterly novel, *With Fire and Sword*. To this succeeded *The Deluge*, *Pan Michael*, *Without Dogma* and *Children of the Soil*. In 1895 appeared his masterpiece, *Quo Vadis*—a tale of the time of Nero. His later works include *The Knights of the Cross*, *Monte Carlo*, etc. In 1905 he received the Nobel prize for literature. Died, 1916.

Sieyes (*syā'yes'*), **Emmanuel Joseph,** better known as the Abbé Sieyès, French revolutionist, was born in Frejus, France, 1748. He studied for the church at Paris; during the reign of terror he withdrew into the country; but after Robespierre's downfall returned to the convention, took an active part in affairs, and became president of the national assembly in 1790. He retired with the title of Count, and obtained grants of land and property to the value of at least $250,000. He was exiled at the restoration, but returned to Paris during the revolution of 1830, and died there in 1836.

Sifton, Sir Clifford, Canadian statesman, born in Middlesex county, Ontario. He was graduated at Victoria University, Coburg, 1880; was admitted to the Manitoba Bar, 1882; practiced in Brandon; was created queen's counsel by Dominion patent, 1895. He was a member of the Manitoba legislature, 1888-96. He was first elected to the Dominion house of commons for Brandon, Manitoba, 1896, and reelected in 1900 and 1907. Member Alaskan Boundary Commission. Died, 1929.

Sigel (*sē'gel*), **Franz,** American general, was born in Germany, 1824. He was in the service of the grand-duke of Baden, and became minister of war in the revolution of 1848, but was obliged to flee, and came to the United States. He entered the federal army as colonel in 1861, during the Civil War, and by gallant service rose to the rank of major-general. He was register of New York city, 1871-74. Died, 1902.

Sigismund (*sij'is-mund*), emperor of Germany was born about 1368. He was terribly defeated in an expedition against the Turks at Nicopolis in 1396. Some years later he conquered Bosnia, Herzegovina and Servia, and became emperor of Germany in 1411. Died, 1437.

Silliman, Benjamin, American physicist, was born at Trumbull, Conn., 1779. He was educated at Yale College, and admitted to the bar in 1802, but soon after received from the college the appointment of professor of chemistry, and held that chair over half a century. In 1818 he founded the *American Journal of Science*, better known as *Silliman's Journal*, of which he was for twenty years editor. Died, 1864.

Simon (*sē'mōn'*), **Jules Francois,** French statesman and publicist, was born at Lorient, France, 1814. He was educated at Lorient and at Vannes, and in 1839 became professor of philosophy at the Sorbonne, Paris. He was then member of the corps législatif, 1863-70; minister of public instruction, 1871-73; senator and member of the French Academy, 1875, and prime minister, 1876-77. Amidst the general corruption he remained poor, supporting his family by his pen, and preserving an absolutely stainless character to the last. Died, 1896.

Simpson, Sir James Young, noted Scottish physician, was born at Bathgate, Scotland, 1811. He was graduated at the University of Edinburgh as doctor in medicine in 1832, and in 1840 was appointed to the chair of obstetrics there. In this field he introduced the use of chloroform and other anæsthetics, and made improvements in the old methods of practice. Died, 1870.

Simpson, Matthew, 1811-1884, American Methodist Episcopal clergyman, was born in Cadiz, Ohio. President Indiana Asbury University; editor *Western Christian Advocate*; author: *A Hundred Years of Methodism*, and *Cyclopedia of Methodism*. Was an eminent orator.

Sims, William Sowden (1858———), graduate U. S. Naval Academy, 1880, commissioned Commander, 1907, Captain, 1911, and Rear Admiral, 1917, Admiral, 1918, reverting to permanent rank upon relinquishment of command U. S. naval forces operating in European waters, 1919; pres. Naval War College, since 1919; retired 1922. Died, 1936.

Sinclair, May, English author, was born in Cheshire and educated at the Ladies College, Cheltenham. Her first novel, *Audrey Craven*, appeared in 1896, followed by *Mr. and Mrs. Neville Tyson* (1898) and *Two Sides of a Question* (1900). But it was through her novel, *The Divine Fire* (1904), that she became widely known. Other works are: *The Helpmeate*, *Kitty Tailleur*, *The Creators*, *The Combined Maze*, *The Tree of Heaven*, *Mary Olivier*, and *The Romantic*. She also wrote *Journal of Impressions in Belgium*, a story of her experiences as a member of an advance field ambulance in 1914.

Sinclair, Upton, author, was born in Baltimore, 1878, and graduated from the College of the City of New York, 1897. He assisted the government in the stockyard investigation in Chicago, and has taken a leading part in socialist movements. Author: *Springtime and Harvest; Prince Hagen*,

a Phantasy; Manassas; The Jungle; The Industrial Republic; The Overman, etc.

Sinclair, William Macdonald, English prelate, archdeacon of London and canon of St. Paul's beginning 1889, was born at Leeds, 1850. He was graduated at Balliol College, Oxford, and became assistant minister of Quebec chapel, 1876. He was resident chaplain to the bishop of London, 1877; chaplain to the order of St. John of Jerusalem, 1900, and chaplain-in-ordinary to Queen Victoria. Hon. chaplain to King Edward VII. Author: *The Servant of Christ; Simplicity in Christ*, etc. Died, 1917.

Sismondi (*sis-mon'di*), **Jean Charles Leonard Simonde de,** distinguished Swiss historian of Italian descent, was born at Geneva, 1773. Before he had completed his education the pecuniary reverses of his father made it necessary for him to enter a counting-house. In 1803 appeared a work on political economy, followed by his *History of the Italian Republics*. In 1813 appeared his *Literature of Southern Europe*, and in 1819 he began his greatest work, the *History of the French*, with which he was occupied until his death, in 1842.

Sixtus IV., Pope, Francesco della Rovere, was born in a small village near Savona, Italy, 1414. He had a great reputation as a preacher throughout Italy, and became pope in 1471. Learning, and especially the improvement of the city, owed much to him. He built the Sistine chapel and the Sistine bridge across the Tiber, increased the vatican library, and patronized the great painters of his time. Died, 1484.

Sixtus V., Felice Peretti, one of the ablest of the Popes, was born near Montalto, Italy, 1521. He was a professor of theology at Rimini and Siena, an eloquent preacher, vicar-general and cardinal, and succeeded Gregory XIII. His pontificate was notable for vigorous administration. He also fixed the number of cardinals at seventy. Died, 1590.

Skeat (*skēt*), **Walter William,** English philologist, was born in London, 1835. He was graduated from Christ's College, Cambridge, 1858, became a fellow in 1860, and in 1878 professor of Anglo-Saxon; Litt.D., LL.D., Ph.D., D.C.L. He was the first director of the dialect society, established in 1873, and contributed more than any scholar of his time to a sound knowledge of Middle English and English philology generally. His works include: *Piers Plowman;* Barbour's *Bruce;* Chaucer's *Treatise on the Astrolabe*, etc.; editions of Chatterton's *Poems;* Chaucer's *Minor Poems;* his admirable *Etymological English Dictionary; Principles of English Etymology;* his great edition of Chaucer, in 6 volumes, etc. Died, 1912.

Skinner, Otis, American actor, was born in Cambridge, Mass., in 1858. He made his professional début as *Jim* in *Woodleigh*. He has played important roles with Booth, Modjeska, Barrett and Daly. His later plays include *Kismet, Sire, A Celebrated Case, The Honor of the Family*, and sundry character sketches in dialect, such as *Mr. Antonio*. Almost the last survivor of the school of clean romantic comedy.

Skobelev (*skō'be-lyef*), **Mikhail Dimitrievich,** Russian general, was born in 1844. He fought against the Polish insurgents in 1863, and in 1875-71 was at the conquest of Khiva and Khokand. In 1881 he stormed the Turkoman stronghold Geok-Tepe. He died near Moscow, in 1882. He was an ardent Panslavist.

Slicer, Thomas Roberts, Unitarian clergyman, was born at Washington, 1847. He was educated in Baltimore; A.M., Dickinson College; D.D., Harvard. He was a Methodist Episcopal minister ten years in Maryland, Colorado and New York; entered Unitarian ministry, 1881; held pastorates in Providence, R. I., and Buffalo, N. Y.; and beginning 1897 was pastor of the church of All Souls, New York. Died, 1916.

Slidell (*sli-del'*), **John,** American lawyer and politician, was born in New York city about 1793. From 1853 to 1861, was a member of the United States senate; and in the Civil War, when Louisiana seceded, he withdrew, and was appointed confederate minister to France. In company with James M. Mason, who was named minister to England, he was taken on the high seas by Captain Wilkes, of the United States navy, and both brought as prisoners to the United States, where they were confined in Fort Warren. On the demand of England, they were released, however, and proceeded on their respective missions. After the war closed he settled in England and resided there until his death in 1871.

Sloane, William Milligan, American historian, Seth Low professor of history, Columbia, beginning 1896, was born at Richmond, Ohio, 1850. He graduated at Columbia, 1868; Ph.D., Leipzig 1876; L.H.D., Columbia; professor at Princeton University, 1876-96; and editor *Princeton Review*, 1886-89. Author: *Life of James McCosh; The French War and the Revolution; Napoleon Bonaparte, A History* (4 volumes); *French Revolution and Religious Reform*, etc. Died, 1928.

Slocum, Henry W., American general, was born 1827, at Delphi, N. Y. He graduated from West Point in 1852. On the outbreak of the Civil War, he was commissioned colonel of the 27th New York volunteers and took part in the first battle of Bull Run, where he was wounded. In 1861 he was made brigadier-general. He distinguished himself at the battles of Gaines' Mill, Glendale and Malvern Hill and was promoted to major-general of volunteers. Later he was transferred, with his corps, to the army of the Cumberland, succeeded to the command of the 20th eorps and was the first to enter Atlanta. In Sherman's march to the sea and through the Carolinas he commanded the left wing, taking part in the action of that campaign. After the war he took up the practice of law at Brooklyn, was elected to congress in 1870, and again in 1884. Died, 1894.

Smeaton, John, English civil engineer, was born near Leeds, England, 1724. He began his career as a maker of mathematical instruments, but continued his studies and experiments, inventing, in 1751, a machine for measuring a ship's path at sea. He was also the builder of the famous Eddystone light-house. He died, 1792.

Smiles, Samuel, Scottish writer, was born at Haddington, Scotland, 1812. He was graduated in medicine at Edinburgh, at twenty, and practiced medicine in Haddington. He wrote *Life of George Stephenson; Self-Help*, which had an extraordinary success, and was translated into a score of languages; *Character; Thrift; Duty; Life and Labor; Lives of the Engineers*. He died at London, 1904.

Smith, Adam, Scottish political economist, founder of the modern science of political economy, was born at Kirkcaldy, in Fifeshire, 1723. In 1764 he accompanied the duke of Buccleuch to the continent as traveling tutor and governor, and this engagement occupied him for two years; but at the end of that time he returned to Kirkcaldy, where he lived until he was appointed a commissioner of customs in 1778, when he took up his residence in Edinburgh. In 1776 he produced his great work, *An Inquiry Into the Nature and Causes of the Wealth of Nations*, and upon this work his reputation rests. In 1787 he was elected lord rector of the University of Glasgow, and died, 1790.

Smith, Alexander, chemist, was born at Edinburgh, Scotland, 1865; graduated from the University of Edinburgh, 1886; Ph.D., University of Münich, 1889. Assistant in chemistry, University of Edinburgh, 1889-90; professor chemistry and mineralogy, Wabash College, 1890-4; assistant professor chemistry, 1894-8; associate professor, 1898-1903; professor and director of general and physical chemistry, 1903-11, University of Chicago, and professor of chemistry, Columbia University, beginning 1911. Author: Lassar-Cohn *Laboratory Manual of Organic Chemistry; Laboratory Outline of General Chemistry; The Teaching of Chemistry and Physics* (with E. H. Hall); *Introduction to General Inorganic Chemistry; General Chemistry for College*, etc. Died, 1923.

Smith, Alfred Emanuel, American politician, was born in New York City in 1873. His father's death compelled him to leave school at thirteen, and he is therefore a marked example of the self-made man. He was a member of the New York assembly from 1903 to 1915, speaker of the assembly in 1913, sheriff of New York county, 1915-17, president of the board of aldermen of Greater New York in 1917, and governor of New York State for four terms. He was the Democratic nominee for President in 1928.

Smith, Benjamin Eli, American editor, was born in Beirut, Syria, 1857. He graduated at Amherst College, 1887; A.M., L.H.D. Died, 1913. Editor and translator: Schwegler's *History of Philosophy; Century Cyclopædia of Names; Century Atlas;* Cicero's *De Amicitia;* Franklin's *Poor Richard's Almanac; Selections From Marcus Aurelius; Epictetus*, etc.

Smith, Charles Emory, American journalist, was born at Mansfield, Conn., 1842. He removed to Albany, N. Y., with parents, in 1849; graduated at Union College, 1861. He was actively engaged during the Civil War in raising and organizing Union volunteer regiment. He was United States minister to Russia, 1890-92; postmaster-general of United States, 1898-1902. Died, 1908.

Smith, Ellison DuRant, United States senator, was born, 1866, at Lynchburg, S. C. He graduated at Wofford College, Spartanburg, S. C., in 1889; was a member of the South Carolina legislature, 1896-1900. He became a national figure on account of addresses on the cotton industry at New Orleans, Birmingham, Dallas, and Shreveport, and was elected to the United States senate, for the terms 1909-27.

Smith, Francis Hopkinson, American artist, author and engineer, was born at Baltimore, 1838. When quite young he was clerk in iron works, and was later educated as a mechanical engineer; L.H.D., Yale, 1907. He built the government sea-wall around Governor's island; another at Tompkinsville, S. I.; the Race Rock lighthouse off New London; foundation for Bartholdi statue of Liberty, etc. Author: *A Gentleman Vagabond and Some Others; Tom Grogan; Gondola Days; Venice of To-day; Caleb West; At Close Range; The Wood Fire in No. 3; The Tides of Barnegat; The Veiled Lady; The Romance of an Old-Fashioned Gentleman; Peter*, etc. Died, 1915.

Smith, Goldwin, English author and educator, was born in Reading, England, 1823; graduated from Magdalen College, Oxford, 1845; D.C.L., Oxford, 1882; LL.D., Princeton, 1896; and was called to the English bar, 1847. He was regius professor of modern history, Oxford, 1858-66; was an active champion of the North during the American Civil War; visited United States, 1864; was lecturer, 1868-71, and later honorary professor of English and constitutional history, Cornell; he resided in Toronto, Ont., 1871-1910. Author: *Irish History and Irish Character; Lectures on Modern History; Rational Religion and the Rationalistic Objections of the Bampton Lectures for 1858; Shakespeare, the Man; Commonwealth or Empire; In the Court of History; The Founder of Christendom; Lines of Religious Inquiry; My Memory of Gladstone; Labor and Capitol*, etc., and numerous articles in magazines. Died, 1910.

Smith, Captain John, English adventurer and colonist, founder of Virginia, was born in Lincolnshire, England, in 1580. He traveled in France and Holland, and, when on his way to join the Christian army fighting against the Turks in Hungary, was robbed by four adventurers. In 1605 he joined an expedition of three vessels and one hundred five men, to found a colony in Virginia. On one of his journeys into the country for corn he was captured by the Indians, under the chief Powhatan, and his life saved by the chief's daughter Pocahontas. On his return to Jamestown he found the colony reduced to about forty men, who were anxious to return to England, but were induced by Smith to remain until others arrived. He then explored the coasts of the Chesapeake bay in two voyages, and made a map of the country. In 1614 he explored the coast of New England, and undertook the founding of a colony in New England in 1615, but his vessel was captured by a French warship and he was carried to La Rochelle. After his escape, he wrote an account of his voyages to New England. He died in London, 1631.

Smith, Munroe, American educator, was born in Brooklyn, N. Y., 1854. He graduated at Amherst College, 1874; Columbia Law School, 1877; J.U.D., Göttingen, 1880; LL.D., Columbia, 1904. Professor of Roman law and comparative jurisprudence, at Columbia, 1891-1922; Bryce professor of European legal history, 1922-24, emeritus, 1924. Author: *Bismarck and German Unity; Selections from Cicero*. Died, 1926.

Smith, Sydney, English clergyman and essayist, was born at Woodford, England, 1771. He graduated from Oxford, and entered the church; in 1802 resided in Edinburgh, and joined Brougham, Jeffrey, and others, in establishing the *Edinburgh Review*, of which he was the first editor. From 1831 until his death in 1845 he was a canon of St. Paul's, London. He was a universal favorite in society and distinguished for brilliant wit and graceful and forcible English.

Smith, William Alden, lawyer, United States senator, was born at Dowagiac, Mich., 1859. Was a newsboy, and messenger boy in Western Union telegraph office; appointed page in the Michigan house of representatives, 1879; studied law, and was admitted to the bar, 1883; A. M., Dartmouth, 1901; was a member of congress, 1895-1907, fifth Michigan district; and was elected United States senator, 1907, and in 1913 for term expiring 1919.

Smith, William Robertson, British theologian and orientalist, was born at Keig, Scotland, 1846, and graduated at Aberdeen in 1865. He afterward studied theology at Edinburgh, Bonn, and Göttingen; and in 1870 became professor of Hebrew and old testament exegesis in the Free Church College, Aberdeen. In 1881 he became associated with Professor Baynes in the editorship of the *Encyclopædia Britannica*, and in 1887 succeeded him as editor-in-chief. At Cambridge he was successively Lord Almoner's professor of Arabic, in 1883; university librarian, 1886, and Adams professor of Arabic, 1889. He died at Cambridge, 1894.

Smollett, Tobias George, English novelist, was born, 1721. He was educated at the University of Glasgow, and was afterward apprenticed to a surgeon. In 1748 he produced his *Roderick Random*. In 1751 appeared *Peregrine Pickle*, a more ambitious and not less successful work; and in 1753 *Ferdinand Count Fathom*. In 1758 he published his *History of England*. Another novel appeared in 1760-1, *The Adventures of Sir Launcelott Greaves*, in 1766; two volumes of *Travels in France and Italy*; in 1771 *The Expedition of Humphrey Clinker*, the best of all his novels. Died at Leghorn, 1771.

Smoot, Reed, United States senator, banker, Mormon apostle, was born at Salt Lake City, 1862. He graduated at Brigham Young Academy, Provo, Utah, 1879. He was appointed one of the presidency of the church of Jesus Christ of Latter Day Saints, 1895, and apostle, 1900. He was elected by Utah legislature, 1903, United States senator since 1903.

Snorri Sturluson (*snor'rē stōōr'lōō-sun*), Icelandic poet and historian, born in 1179. Tracing his descent from the kings of Norway, he early turned his attention to the history of their doings, and made a collection of sagas entitled the *Heimskringla*, or the "Ring of the World," in which are interspersed songs of his own composing. Snorri became chief judge of Iceland, but his ambitious and intriguing character led to his assassination in 1241.

Snow, Francis Huntington, American educator, was born at Fitchburg, Mass., 1840. He graduated at Williams College, 1862; Ph.D., 1881. He was president of the faculties, 1889-90, chancellor, 1890-1901, and professor of organic evolution,

systematic entomology and meteorology in the University of Kansas. Died in 1908.

Sobieski (*sō-byes'kē*). See **John III.**, king of Poland.

Socinus (*sō-sī'nus*), **Faustus,** Italian theologian, was born at Siena, Italy, 1539; in 1574 took up his residence at Basel, where he busied himself in elaborating into a system the scattered hints and views in the writings of his uncle. In 1577 he appeared in open debate, maintaining that the Trinity was a pagan doctrine, and that Christ was a created and inferior being. The Socinians were long a powerful religious body in Poland, Hungary, and Transylvania; their peculiar catechism is known as Racovian, from its place of publication, Rakow in Poland. He died near Cracow, 1604.

Socrates, celebrated Greek philosopher, was born at Athens, 469 B. C. His father, Sophroniscus, was a sculptor, and he followed the same profession in the early part of his life. His physical constitution was robust to an extraordinary degree, enabling him to endure the hardest military service and to live his own chosen life of superiority to all wants above the barest necessaries of life.

He had the usual education of an Athenian citizen, which included not only readings in the Greek poets, but also the elements of arithmetic, geometry and astronomy, as then known. As a young man, he frequented the society of the physical philosopher, Archelaus, a disciple of Anaxagoras.

Excepting in connection with his philosophical career, few circumstances of his life are known. He served as a foot-soldier at Potidæa, at Delium and at Amphipolis and his bravery and endurance were extolled. Somewhere about the middle period of his life he gave himself up to the career that made him famous. Deservedly styled a philosopher, he neither secluded himself for study nor opened a school for the regular instruction of pupils. He disclaimed the appellation of teacher; his practice was to talk or converse.

Early in the morning he frequented the public walks, the gymnasia for bodily training and the schools where youths were receiving instruction; he was to be seen in the market-place at the hour when it was most crowded, among the booths and tables where goods were exposed for sale. He talked with any one, young or old, rich or poor, that sought to address him, and in the hearing of all who stood by. He died 399 B. C. Socrates was not a writer, and what we know of his teaching is derived from the representations of his pupils, Xenophon (in his *Memorabilia*) and Plato (in his *Dialogues*, in the majority of which Socrates is the chief interlocutor). The relation of these two divergent representations to the original has been a problem for historical criticism.

References.—Zeller's *Socrates and the Socratic Schools;* Forbes' *Socrates;* Gildersleeve's *Essays and Studies; Lamartine's Homer and Socrates.*

Solomon, king of Israel, born about 1033 B. C., was the son of David and Bathsheba. By his remarkable judicial decisions and his completion of the political institutions of David, Solomon gained the respect and admiration of his people; while by the building of the temple, which gave to the Hebrew worship a magnificence it had not hitherto possessed, he bound the nation more strongly to his throne. Toward the close of his reign troubles arose and the growing discontent, coming to a head after his death, resulted in the division of the kingdom, which his feeble son Rehoboam could not prevent. The writings attributed to Solomon are *The Book of Proverbs, Ecclesiastes,* and the *Song of Solomon,* with the apocryphal book, the *Wisdom of Solomon.*

Solon (*sō'lun*), famous legislator of Athens, and one of the seven sages of Greece, was born, about 638 B. C., at Salamis, of an ancient family. As archon, he framed a new code of laws, and, having obtained from the citizens an oath that they would observe them for ten years, he departed from Greece, and visited Egypt and Cyprus, and, perhaps, Lydia. On his return he found the tyranny of Pisistratus established, and he withdrew to Cyprus, where he is said to have died at the age of eighty, about 559 B. C.

Solyman, or **Soliman II.,** surnamed The Magnificent, greatest of the Turkish sultans, was born about 1496, and succeeded in 1520 his father Selim I., who had carefully initiated him into the Ottoman policy. He drove the knights of St. John from Rhodes, 1522; and for three years following devoted himself to improvements in the administration. By 1541 the long and desultory contest between the Turks and the imperialists for Hungary was ended in favor of the former, who took complete possession of the country. A brilliant naval victory, 1561, over the knights of Malta and their allies, the Spaniards, and an expedition to Hungary, 1566, were the chief events of the remainder of his reign. Died, 1566.

Somerville, Mary Fairfax, Scotch scientist, was born at Jedburgh, Scotland, 1780. In 1812 she attracted attention by some experiments on the violet rays of the solar spectrum. She was granted a pension in 1835 and made a member of the royal astronomical society of England and of many foreign societies. She died at Naples, 1872.

Sonnino (*sōn-nē'nō*), **Baron Sidney,** Italian statesman, was born at Florence, 1847, and educated at the University of Pisa. In 1887 he joined the Crispi administration as under-secretary for the treasury, and first as finance minister, 1893, and then as minister of the treasury, he worked a great reform in the country's finances. After Crispi's fall in 1896, he became one of the opposition leaders, and in 1906 was prime minister of Italy. Died in 1922.

Sophocles (*sof'o-klez*), Greek tragic poet, was born in the Attic demus, or village of Colonus, B. C. 495, thirty years later than Æschylus. He received a good education and at an early age gained the prize in music and gymnastics. He was fifteen when the battle of Salamis was fought, and for his remarkable beauty and skill in music, he was chosen to lead the chorus which sang the pæan of victory.

His first appearance as a dramatist was in 468, B. C. when, under memorable circumstances he had Æschylus for his rival, and won the victory. Of the next twenty-eight years of his life nothing is recorded; but it is known that he made poetry his vocation and that he composed a great many plays during that period.

The *Antigone,* the earliest of his extant tragedies, was brought out in 440 B. C. and won the prize. The number of plays attributed to him, without question, was one hundred and thirteen, of which eighty-one were probably produced after the *Antigone.* Seven only are extant, viz., *Antigone, Electra, Trachinian Women, King Oedipus, Ajax, Philoctetes,* and *Oedipus at Colonus.*

These exhibit his art in its maturity and sustain the verdict of ancient and modern critics that Sophocles carried the Greek drama to its highest perfection. He effected a complete change in the constitution of tragedy as Æschylus left it; loosening the connection between the parts of the trilogy and the satyric drama, and making them not one great poem, but four distinct ones; introducing a third actor; and for subject selecting, not a series of heroic and mythical actions, but for each play one leading fact of real human interest and lasting significance.

Sophocles lived to be nearly ninety and in his latest years most probably wrote the *Oedipus at Colonus,* so full of sweetness and tender melancholy, and consoling hopes, which was not presented on the stage till five years after the poet's death. He died 406 B. C.

References.—Campbell *Life of Sophocles;* His translators are Web, Whitelaw and Campbell.

Sorley, William Ritchie, British educator and philosophical writer, Knightbridge professor of moral philosophy, University of Cambridge, since 1900, was born at Selkirk, 1855. He was educated at Edinburgh, and Trinity College, Cambridge; professor of logic and philosophy at University College, Cardiff, 1883-04; and professor of moral philosophy, Aberdeen, 1894-1900. Edited: *Development of Modern Philosophy; Recent Tendencies in Ethics,* etc.

Sothern (*suтн'ėrn*), **Edward Hugh,** actor, was born in New Orleans, 1859. He received an academic education in England; first appeared, 1879, in small part at Abbey's Park theater, New York. He first took leading rôle, Lyceum theater, New York, 1887, as *Jack Hammerton* in *The Highest Bidder,* and starred with his own company in *Lord Chumley; An Enemy to the King; The Adventures of Lady Ursula; The Song of the Sword; The Sunken Bell; Hamlet; Richard Lovelace; If I Were King,* etc. Died, 1933.

Soult (*sōōlt*), **Nicholas Jean de Dieu,** duke of Dalmatia and marshal of France, was born at Saint-Amans-la-Bastide in 1769. In 1785 he entered the army. He achieved brilliant success in the campaign against the Austrians, closed by the battle of Austerlitz. In 1809 he became commander-in-chief in Spain, gained a brilliant victory at Ocaña, and overran and subdued Andalusia; on his return from Elba he abandoned Louis XVIII., and became major-general of the imperial army. After Waterloo he rallied the army at Laon, and on July 3d, at the council of war, coincided with Carnot as to the uselessness of further resistance. He died, 1851.

Sousa (*sōō'zȧ*), **John Philip,** American musician, was born at Washington, 1854. He studied music, was a conductor at seventeen, and one of the first violins of Jacques Offenbach's orchestra when the latter was in the United States. He was then music director of the United States marine corps, 1880-92, and since 1892 director of Sousa's band. Composed: *Washington Post; Stars and Stripes Forever; Hands Across the Sea; The Bride-Elect; El Capitan; Three Quotations; At the King's Court; Looking Upward; The Chariot Race;* and the operas: *The Smugglers; Desire; The Queen of Hearts; El Capitan; The Free Lance,* etc. Author: *The Fifth String.* Died, 1932.

Southey, Robert, English poet and writer, was born, 1774, at Bristol, England. He was educated at Oxford, but left without a degree in 1794, and during the next two years traveled in Spain and Portugal. In 1804 he settled at Greta Hall, in Cumberland, where he spent the remainder of his life, happy in his family relations and his unremitting daily round of congenial, though continuous, toil. In 1813, on the death of Pye, he succeeded him as poet-laureate. His chief poetical works are *Madoc; Thalaba; The Curse of Kehama;* and *Don Roderick.* Of all his writings his *Life of Nelson* seems most likely to survive as a classic. He died, 1843.

Spargo, John, socialist author, was born at Stithians Cornwall, England, 1876. He publicly opposed the Boer war; came to the United States, 1901, and has been active as socialistic lecturer, writer and worker; and was one of the founders of the Prospect House social settlement, Yonkers, N. Y.

Sparks, Edwin Erle, American educator, historian, president of Pennsylvania State College, 1908-1920, was born in Licking county, Ohio, 1860. He graduated from the Ohio State University, 1884, Ph.D., LL.D. He was a member of the American historical association; Illinois historical association and councilor of the American institution of civics. Author: *The Men Who Made the Nation; Formative Incidents in American Diplomacy; Foundations of National Development,* etc. Died in 1924.

Sparks, Jared, American historian, was born at Willington, Conn., 1789. He graduated at Harvard in 1815; settled as a Unitarian minister at Baltimore, and finally became editor of the *North American Review.* He was ten years a professor at Harvard, and for four years president. His writings include *Life of John Ledyard; Life of Gouverneur Morris.* He died at Cambridge, Mass., 1866.

Spencer, Herbert, English philosopher, was born at Derby, 1820. He was educated by his father, a teacher of mathematics, and his uncle, a clergyman; was apprenticed as a civil engineer, and worked several years on railways. In 1842 he contributed several professional papers to the *Civil Engineer and Architect's Journal,* besides a series of letters, on the *Proper Sphere of Government,* to *The Nonconformist.* In 1848 he became sub-editor of *The Economist* and published *Social Statistics,* 1850.

About the year 1859 he projected his scheme of philosophy, based on the principle of evolution in its relation to life, mind, society and morals. This extensive scheme was latterly completely expounded in the following works: *First Principles; Principles of Biology; Principles of Psychology;* a revised form of a work published in 1855; *Principles of Sociology;* and *Principles of Ethics.*

Portions of this great work are known under separate titles, as *Data of Ethics; Ceremonial Institutions; Political Institutions; Ecclesiastical Institutions,* etc. His other works include *Education; Essays, Scientific, Political and Speculative; Classification of the Sciences; The Study of Sociology; Man versus the State; Facts and Comments;* and an *Autobiography.* He published also an elaborate *Descriptive Sociology* compiled by other writers, but classified and arranged by himself. He died in 1903.

References.—Spencer's *Autobiography;* Hudson's *Herbert Spencer;* Collier's *Epitome of the Synthetic Philosophy;* and Macpherson's *Herbert Spencer—the Man and His Work.*

Spenser, Edmund, English poet, was born in London, about 1552. He was of humble origin, studied at Pembroke College, Cambridge, and was brought under the notice of Queen Elizabeth by the earl of Leicester. In 1579 he published *The Shepherd's Calendar,* sounding the note of the Elizabethan outburst. Through the influence of Leicester he was then appointed chief secretary to Lord Grey de Wilton, the lord-lieutenant of Ireland; and Queen Elizabeth conferred on him an estate at Kilcolman, near Cork. It was while he was at Kilcolman that he wrote *The Faërie Queene,* his greatest work. The first part was published in 1589-90, the second part about six years later; and on the publication of the first part the queen conferred on the poet a pension of fifty pounds a year. In 1598 a rebellion broke out; the castle of Kilcolman was burned, an infant child of the poet

perished in the flames, and Spenser returned to London, impoverished and broken-hearted, to die within three months after his arrival. He was buried near Chaucer in Westminster abbey.

Speyer (*spīr*), **James,** American banker, was born in New York, 1861. He was one of the founders and ex-president of the Provident loan society; now senior member Speyer & Co., New York; trustee, Central Savings bank; and director numerous corporations.

Spinoza, (*spi-no'za*), **Benedict,** celebrated philosopher, was born at Amsterdam, 1632. He was the son of a Portuguese Jew, and was early remarkable for an ardent love of truth, and a keen and logical intellect. His first serious studies were the Bible and the Talmud. He made no secret of the doubts which grew up in his mind, and was exposed to much persecution on account of them.

He was at last excommunicated, and being driven from Amsterdam, lived for a time near Leyden, and afterward at The Hague. He devoted himself wholly to philosophy, earning such a livehood as contented him by the trade of polishing glasses for optical instruments. His character was most estimable and endeared him to his personal friends.

His system of philosophy has been made odious by the vulgar accusation of atheism, which is the very reverse of the truth. To his thought God is the only being, the only substance, infinite, eternal—before whom all things else have but a phenomenal existence. And his aim was to build up, on the knowledge of God as a foundation, a system of morals by a rigorously mathematical method. With more reason, Spinoza has been called the father of modern Pantheism. Spinoza has of late been more fairly judged, and both his merits and errors impartially discussed. His influence on the mind of Goethe was overpowering.

His works are: *Renati Des Cartes Principiorum Philosophiae, pars Prima et Secunda more Geometrico Demonstratae; Cogitata Metaphysica; Tractatus Theologico—Politicus, Ethica* (perhaps the most important of his treatises); *Tractatus Politicus; De Intellectus Emendatione;* and *Epistolae.* The last four form his *Opera Posthuma.* The works written in defence and refutation of the system of Spinoza are very numerous. Died, 1677.

References.—Translations of the Works by Elwes, and of the *Ethica* and *De Intell. Emend,* by Hale White; expositions by Caird; Martineau, Pollock, Joachim, and of his ethico-political doctrine by Duff. See also Fullerton's *The Philosophy of Spinoza* and Fullerton's *On Spinozistic Immortality.*

Spohr (*shpōr*), **Ludwig,** German composer and violinist, was born at Brunswick, 1784. In 1804 he became music director at the court of Saxe-Gotha, and held afterward for several years the office of music director of a theater in Vienna. In 1823 he became chapelmaster at the court of Hesse-Cassel. He wrote *The Violin School,* a standard book of instruction. Died, 1859.

Spooner, John Coit, American lawyer ex-United States senator, was born at Lawrenceburg, Ind., 1843, and removed to Madison, Wis., 1859. He graduated at the University of Wisconsin, 1864; LL.D., Wisconsin, etc. He served as captain and brevet major 50th Wisconsin infantry. He was admitted to the bar, 1867; was regent of the University of Wisconsin, 1882-85; member of the Wisconsin assembly, 1872; United States senator, 1885-91, and 1897-1907. Died, 1919.

Spreckles, Rudolph, civic reformer, banker, sugar king, was born in San Francisco, 1872. At 22 became president Hawaii Sugar Co. Organized and financed San Francisco graft prosecution in 1906. President, United Bank & Trust Co. of California and of other financial corporations.

Spurgeon, Charles Haddon, 1834-1892, was born at Kelvedon. When twenty years of age he became pastor of the New Park Street Chapel, London. His followers built for him the great London Tabernacle in 1861, wherein he continued to preach to thousands, until 1891.

Squair, John, Canadian educator, professor of French, University of Toronto, was born at Bowmanville, Ontario, 1850. He graduated from the University of Toronto, 1883, and has been fellow ,lecturer, associate professor and professor of French in University College, Toronto; Emeritus, 1916; president of the higher education section of the Dominion educational association. He is joint author with W. H. Fraser of *French Grammar;* joint author with J. H. Cameron of *Exercises in French Prose.* Died, 1928.

Stael (*stäl*), **Madame de,** or **Anne Louise Germaine de Stael-Holstein,** celebrated French writer, was born in Paris, 1766. In 1788 she published *Letters on the Works and Character of Rousseau;* and in 1793, having been compelled by the revolution to leave France, she published a defense of Marie Antoinette, then upon trial. In Italy she gathered the materials for her novel of *Corinne* and in Germany she gathered the materials for her celebrated work entitled *De l' Allemagne,* a description of the habits, literature and political tendencies of the German people, which was printed in Paris in 1810, but by the order of Bonaparte was immediately suppressed. Soon afterward she visited England, where she wrote her *Ten Years of Exile,* an impassioned denunciation of Bonaparte and his arbitrary rule. After the fall of the empire she returned to Paris, but never again interferred in politics. Died, 1817.

Stalin, Joseph V. (Born 1879——). Real name, Iosiph Dzhugashvili, all powerful communist dictator of Russia, son of a cobbler in Gori. Expelled for radicalism from Theological Seminary at Tiflis. Led life of mountain brigand. As member of Russian Social Democratic Party aided in overthrow of Kerensky Gov't, 1917. Sec.-Gen. of Communist Party. Showed peasantry favoritism rather than city inhabitants. Later ruled as absolute Dictator of Russia, secluded behind the walls of Kremlin, a symbol of greatness and cruelty. Had two sons and one daughter.

Standish, Miles, early New England colonist, was born in Lancashire, England, about 1584. He served in the army in the Netherlands and sailed with the pilgrims in the *Mayflower* in 1620. On reaching Massachusetts he was chosen captain by the Pilgrims and commanded expeditions against the Indians. Died, 1656.

Stanford, Leland, American capitalist and philanthropist, was born at Watervliet, N. Y., 1824. He was one of the organizers of the Central Pacific Railroad Company, and, entering political life, was republican governor of California, 1861-63; and from 1885 to 1893 United States senator from California. Out of his large fortune he gave property to the value of $20,000,000 to found, in memory of a deceased son, a University at Palo Alto, to be known as the Leland Stanford Junior University. He died at Palo Alto, California, 1893.

Stanley, Arthur Penrhyn, English scholar and divine, was born at Alderley, England, 1815. He graduated at Oxford. From 1856 to 1863 he was professor of ecclesiastical history at Oxford, canon of Christ church, and chaplain to the bishop of London. In 1864 he succeeded Archbishop Trench as dean of Westminster. Stanley was one of the most accomplished and liberal theologians of his age, and may be regarded as the leader of the "broad church" party. His principal writings are: *The Unity of Evangelical and Apostolical Teaching; Lectures on the Eastern Church; Lectures on the Jewish Church; Historical Memorials of Westminster Abbey,* etc. Died, 1881.

Stanley, Sir Henry Morton, African explorer, was born near Denbigh, Wales, in 1840. He reached Zanzibar early in 1871; there organized a large expedition, and found Livingstone, November 10, 1871. In 1874 he set out on a second African expedition for the New York *Herald* and London *Daily Telegraph.* He reached Victoria Nyanza in February, 1875; was the first to circumnavigate Victoria lake, and discovered the Shimeeyu river; and reached England again in February, 1878. Near the close of 1886 Stanley, under the auspices of the Egyptian government and of English societies and individuals, undertook an expedition for the relief of Emin Pasha. He wrote *How I Found Livingstone; Through the Dark Continent; Congo and the Founding of Its Free State;* and *In Darkest Africa.* He was made a D.C.L. by Oxford University in 1890. He was a member of parliament, 1895-1900, and was knighted, 1899. Died, 1904.

Stanton, Edwin McMasters, American statesman, was born in Steubenville, Ohio, in 1814. He practiced law with success in his native town until 1847, when he settled in Pittsburg, Pa., and there became leader of the bar. In 1857 he took up his abode in Washington, in 1860 was made attorney-general of the United States, and, in 1862, secretary of war; he was suspended by President Johnson, who appointed General Grant in his place *ad interim.* In May he definitely retired from the secretaryship. In December, 1869, he was appointed an associate justice of the supreme court of the United States, and died during the same month.

Stanton, Elizabeth Cady, reformer and suffragist, was born at Johnstown, N. Y., 1815. She signed the call for the first woman's rights convention, at Seneca Falls, 1848, and became president of the national woman's suffrage association there formed, retaining the office until 1893; was the author of *A History of Woman Suffrage.* Died, 1902.

Stark, John, American soldier, was born at Londonderry, N. H., 1728. At Bunker Hill he was colonel of a regiment in which he had enlisted. On August 16, 1777, he fought the battle of Bennington, which brought him the thanks of congress and the rank of general; he cut off Burgoyne's retreat from Saratoga, and, after serving in Rhode Island and New Jersey, had charge, in 1781, of the northern department, with headquarters at Saratoga. He died, 1822.

Starr, Frederick, anthropologist, was born at Auburn, N. Y., 1858; graduated from Lafayette College, 1882; Ph.D., 1885; Sc.D., 1907; professor of biological sciences, Coe College, 1884-5; in charge of ethnology, American Museum of Natural History, 1889-91; assistant professor anthropology, 1892-5. Associate professor and curator anthropology section, Walker Museum, University of Chicago, 1895-1923. Has done extensive anthropological work in Japan, Africa, Mexico and other parts of the world. Author: *On the Hills; Some First Steps in Human Progress; American Indians; Indians of Southern Mexico; Strange Peoples; Readings From Modern Mexican Authors; The Truth About the Congo.* Died, 1932.

Stead, William Thomas, English journalist and writer, was born at Embleton, England, 1849, and educated at Wakefield. He was editor of the *Northern Echo* at Darlington, 1871-80; assistant editor of the *Pall Mall Gazette* until 1889, and editor from 1883 to 1889. In 1890 he founded the English *Review of Reviews,* of which he was editor. Author: *Her Majesty the Queen; Satan's Invisible World; A Study of Despairing Democracy; The Conference at The Hague; The Americanization of the World,* etc. Died on Titanic, 1912.

Stedman, Edmund Clarence, American poet and critic, was born in Hartford, Conn., in 1833. He graduated at Yale, 1853; L.H.D., Columbia; LL.D., Yale. He was editor of the *Norwich Tribune,* 1852-53; *Winsted Herald,* 1854-55; on staff of *New York Tribune,* 1859-61; war correspondent for the *New York World,* 1861-63; and was a member of the New York stock exchange, 1869-1900. Author: *Poems Lyric and Idyllic; The Nature and Elements of Poetry,* etc. Editor: *A Victorian Anthology; An American Anthology* co-editor, *History of New York Stock Exchange,* etc. Died in New York in 1908.

Steele, Sir Richard, British man of letters, was born in Dublin, 1672. He was educated at the Charterhouse with Addison, and at Oxford. In 1709 he founded the *Tatler,* a periodical published thrice a week, succeeded by *The Spectator,* a daily literary journal of a higher tone and character. He was then elected to parliament, was expelled for libel, but afterward re-instated. Died, 1729.

Stefansson, Vilhjalmur, Canadian explorer, was born at Arnes, Manitoba, in 1879, of Icelandic parentage. He studied at the universities of North Dakota and Iowa, and later at Harvard, where he became instructor in anthropology. In 1904 and 1905 he made archeological expeditions into Iceland. In 1903 and 1907 he studied the Esquimo of northern Alaska, and from 1908 to 1912 he explored the Arctic shores of Canada. Since that date, he has conducted various expeditions into northern Canada and Alaska, crossing moving ice fields and discovering new lands. Besides many scientific articles and anthropological reports, he has published *My Life With the Esquimo* and *The Friendly Arctic.*

Stein (*shtīn*), **Heinrich Friedrich Carl, Baron von,** Prussian statesman, was born at Nassau, 1757. As Superintendent of the Prussian excise he abolished the last relics of serfdom, did away with the privileges of caste, created peasant proprietors, extirpated monopolies and hindrances to free trade, promoted municipal government. Napoleon insisted upon his dismissal, and Stein withdrew, 1808, to Austria, but not before issuing his *Political Testament.* From the battle of Leipzig to the congress of Vienna he was the ruling spirit of the opposition to the emperor. He died in 1831.

Steinmetz (*shtīn'mets*), **Charles Proteus,** electrician, General Electric Company, was born in Breslau, Germany, 1865, and educated at Breslau, Berlin, Zürich, and in Switzerland. He was the consulting engineer for the General Electric Company, and a leading authority in mathematics and engineering. Died, 1923.

Stelwagon, Henry Weightman, American physician, was born at Philadelphia, 1853. He graduated at Andalusia College, Pennsylvania, 1872; was dermatologist to Philadelphia hospital since 1888, to Northern dispensary since 1882; Howard hospital since 1885. Author: *Essentials of Diseases of the Skin; Treatise on Diseases of the Skin.* Died, 1919.

Stephen, Sir James Fitzjames, British jurist, was born at Kensington, England, 1829. He graduated at Trinity College, Cambridge, 1852; was admitted to the bar in 1854; professor of common law at the Inns of Court, 1875-79; and judge of the high court of justice, 1879-91. On his retirement he was created a baronet. Died, 1894.

Stephen, Sir Leslie, English man of letters, was born at Kensington, 1832. He was educated at Eton, King's College, London, and at Trinity Hall, Cambridge, where he was fellow and tutor. He was editor of the *Cornhill Magazine,* 1871-82, and of the first twenty-six volumes of the *Dictionary of National Biography.* His works include: *History of English Thought in the Eighteenth Century; Johnson; Pope; Swift; The Science of Ethics; Life of Henry Fawcett; Studies of a Biographer.* Died, 1904.

Stephens, Alexander Hamilton, American statesman, was born in Georgia in 1812. He graduated at the University of Georgia, 1832. Was admitted to the bar in 1834 and sat in Congress, 1843-59. In 1860 he opposed the secession of his state, but in the Confederate States of America. After the collapse of the latter, Stephens suffered a brief imprisonment at Fort Warren, and in 1866, after being reëlected United States senator, was not allowed to take his seat. He was, however, member of the house of representatives, 1873-

82, and governor of Georgia, 1882-83. In 1869he published *A History of the War of Secession*. Died, 1883.

Stephens, Henry Morse, British historical writer and educator, was born at Edinburgh, Scotland, 1857. He graduated at Balliol College, Oxford, 1880; M.A., 1892. Lecturer on Indian history, Cambridge, England, 1892-94; and professor of history and director of University extension at University of California beginning 1902. Died, 1919. Author: *History of the French Revolution; Albuquerque; Revolutionary Europe; Colonial Civil Service*, etc.

Stephenson, George, the founder of the steam railway system of Great Britain, and perfecter of the locomotive engine, was born in Northumberland, 1781. At the age of 14, he joined his father in his work as fireman in a colliery, where, by a close attention to all he saw and a constant study of every piece of mechanism that came in his way, he acquired a large amount of sound practical knowledge; while by mending boots, clothes and cleaning clocks he was enabled to add a trifle to his weekly earnings.

In 1812 he was appointed engineer to the colliery, at a salary of $500 a year. Soon after this he built his first traveling engine to draw the wagons along the tramway, which, though clumsy and weak in power, was immensely superior to any engine then in use. The following year he constructed a second, as superior to his first as that had been to all others before it.

From this time improvement followed on improvement in rapid succession, not only in the form of the locomotive, but in the rails and in every department to which steam was applicable, till, from mere tramways, the whole beautiful system of railway locomotion, with all its complications of stations, signals, tenders, and carriages, was at last completed by the opening of the Liverpool and Manchester railway in 1830.

From that time the name of Stephenson became one of the most popular among men of science in Europe. In 1845 he retired from all railway undertakings and devoted his time to his collieries and other sources of business and, after having been instrumental in establishing all the foreign and home lines, he died in 1848, leaving his fortune and his fame to his only son, Robert.

References.—Smiles' *Lives of the Engineers*, and his *Life of George Stephenson;* Allen's *Biographies of Working Men;* Lewis' *Heroes of Science.*

Stepniak (*styep-nyäk'*), pseudonym of Sergius Michaelevitch Kravtchinski, Russian revolutionary leader and writer, born, 1841. Among his works were: *Underground Russia; Russia Under the Tzars; Nihilism as It Is; King Stork and King Log.* He was run over by a train in a London suburb, and killed, 1895.

Sternberg, George Miller, American physician, surgeon-general of the United States, 1893-1902, was born at Hartwick seminary, Otsego county, N. Y., 1838. He graduated at the College of Physicians and Surgeons, New York, 1860; LL. D., Michigan, 1894; and was a member of many medical societies and president, 1898, of the American Medical Association. Died, 1915. Author: *Photo-Micrographs, and How to Make Them; Bacteria;* and many government reports, etc.

Sterne, Laurence, British novelist, was born at Clonmel, Ireland, 1713. He studied at Cambridge and became a clergyman. In 1759 he wrote the first two volumes of the *Life and Opinions of Tristram Shandy.* The rest of the work, which reached nine volumes, was written at Coxwold. *The Sentimental Journey Through France and Italy*, published in 1768, was the result of a tour through those countries in 1765. Died, 1768.

Steuart, William Mott, statistician, was born at Corpus Christi, Texas, 1861; graduated, LL.B., LL.B.,Columbian(now George Washington) university 1884, LL.M., 1885. Admitted to bar, 1884; practiced in D. C., Md., and Detroit; became connected with Census of Manufactures, 1880, chief of division, 1890 and 1900, chief statistician for manufactures, since 1902-17, assistant director of the census, 1919-21, and director since 1921, Bureau of Census. Supervised the canvass and preparation of reports of various censuses.

Steuben, Frederic William Augustus, Baron, general in the American revolutionary army, was born at Magdeburg, Prussia, 1730. He came to America in 1778 and offered his services to Washington, who gladly accepted them during the dark days of Valley Forge. He was appointed inspector-general; remodeled the army; took part in the siege of Yorktown. Congress in 1790 voted him $2,400 yearly and a township of land near Utica, N. Y., where he died, 1794.

Stevens, John F., American civil engineer, was born at West Gardiner, Maine, 1853. He was assistant engineer Spokane Falls and Northern Railway, 1889; assistant chief engineer, second vice-president, 1904-05, Chicago, Rock Island and Pacific Railway Company; chief engineer of Panama Canal, 1905-07; chairman of isthmian canal commission, 1907; and vice-president of New York, New Haven and Hartford Railroad, in charge of operation, beginning 1907.

Stevens, Thaddeus, American statesman, was born at Peacham, Vt., 1792. He graduated in 1814 at Dartmouth College. He served in congress, 1849-53 and 1859-68, and meanwhile rose to a prominent position at the bar. He took an active part in the unsuccessful impeachment of President Johnson. Died at Washington, 1868.

Stevenson, Adlai Ewing, American lawyer and politician, was born in Kentucky, 1835. He was educated at Centre College, Kentucky; admitted to the bar of Illinois in 1859. Member of congress, 1875-77 and 1879-81. He was vice-president of the United States, 1893-97. After his term as vice-president he was appointed, 1897, a member of the commission to Europe to try to secure international bimetallism. Died, 1914.

Stevenson, Robert, Scottish engineer, was born at Glasgow, 1772. In 1796 he became engineer and inspector of lighthouses, and, during his forty-seven years' tenure of that office planned and constructed twenty-three lighthouses. He built the Britannia tubular bridge over Menai strait, Victoria tubular bridge near Montreal, etc. Died, 1850.

Stevenson, Robert Louis Balfour, Scottish novelist and essayist, born at Edinburgh, 1850. He was educated at Edinburgh University, and in 1875 was admitted to the bar; but soon abandoned law for the profession of letters. In 1878 appeared his first book, *An Inland Voyage*, quickly followed by *Travels With a Donkey, Virginibus Puerisque, Familiar Studies,* and *Treasure Island.* As a writer of adventure and romance, he established himself permanently in the public favor with *Kidnapped, The Master of Ballantrae, Dr. Jekyll and Mr. Hyde*, etc. His versatility in letters was further revealed in his charming, *A Child's Garden of Verse, Ballads, Memories and Portraits,* and *A Footnote to History.* In 1890 failing health induced him to make his home in the island of Samoa, where he died and was buried, 1894.

Stewart, Alexander Turney, American merchant and capitalist, was born at Lisburn near Belfast, Ireland, 1800. He settled in New York in 1823. He was a leader in the building of street railways and other municipal improvements. Died, 1876.

Stewart, Balfour, British physicist, was born at Edinburgh, 1828. He became director of Kew observatory, 1859, and professor of physics at Owens College, Manchester, 1870. He made his first reputation by his work on *Radiant Heat* in 1858. With Professor Tait, he published *The Unseen Universe* in 1875. He died, 1887.

Stewart, Dugald, eminent Scottish philosopher and writer, was born, in 1753, at Edinburgh. In 1780 he began to receive pupils into his house, and many young noblemen, who afterward became celebrated, received their knowledge under his roof. In 1792 he published the first volume of the *Philosophy of the Human Mind.* Among his other works are: *Outlines of Moral Philosophy; Philosophical Essays.* He died, 1828.

Stimson, Henry Lewis, American lawyer and statesman, was born in New York City, 1867. He was educated at Yale and at Harvard and entered the practice of law. He was secretary of war under Taft. He represented the President in Nicaragua in 1927. Governor-general of the Philippines1927-8. In 1929 he became secretary of state under Hoover. Author: *American Policy in Nicaragua.*

Still, Andrew Taylor, osteopath: founder of new school of therapeutics. Born, Aug. 6, 1828; died, Dec. 12, 1917.

Stirling, James Hutchison, Scottish philosophical writer, was born at Glasgow, 1820, and was educated at the University of Glasgow, and in France and Germany; LL.D., Edinburgh and Glasgow. He was the first appointed Gifford lecturer at the University of Edinburgh, 1888-90. Author: *The Secret of Hegel; The Community of Property; Thomas Carlyle's Counsels; Darwinianism; What Is Thought?* etc. Died, 1909.

Stockton, Francis Richard, American novelist, was born at Philadelphia, 1834. He was an engraver and journalist, became assistant editor of *St. Nicholas*, and first attracted notice by his stories for children. He is now best known as author of *Rudder Grange; The Lady, or the Tiger; The Squirrel Inn; The Hundredth Man; Personally Conducted*, etc. He died at Washington, D. C., 1902.

Stoddard, Richard Henry, American poet, critic, and man of letters, was born at Hingham, Mass., 1825. His chief published volumes embrace; *The Book of the East; Poems; The Lion's Cub and Other Verse; The King's Bell.* He also edited *The Bric-à-Brac*, and the *Sans Souci* series. Died in New York, 1903.

Stokes, George Gabriel, British mathematician and natural philosopher, was born at Skreen, Ireland, 1819. He graduated at Cambridge in 1841; and was elected in 1849 to fill the Lucasian chair of mathematics at Cambridge. In 1854 he was appointed secretary to the Royal Society, of which he became president in 1885. To mathematicians and natural philosophers he is known by a number of admirable papers in the *Cambridge Philosophical Transactions.* He was made baronet, 1889. Died at Cambridge, 1903.

Stolypin (*sto-lï'pin*), **Peter Arkadievitch,** Russian prime minister, was born in 1863. He graduated at the University of St. Petersburg, in 1884. He served as marshal of the district nobility; was president of the arbitration board; justice of the peace. He was appointed vice-governor of Grodno in 1902. When Goremykin resigned in 1906, Stolypin succeeded him as premier, and was thanked by the czar for his services and appointed a member of the council of the empire, January, 1907. He suppressed the second duma. Assassinated, 1911.

Stone, Lucy Blackwell, American reformer and advocate of woman's rights, was born at West Brookfield, Mass., 1818. She graduated at Oberlin College in 1847. She aided in organizing, in 1850, the first national woman's rights convention, at Worcester, Mass., and was always zealous in that cause. She died at Dorchester, Mass., 1893.

Stone, Melville Elijah, American journalist, general manager of the associated press, was born at Hudson, Ill., 1848; was editor of several Chicago dailies, 1871-74; and established, with a partner, the *Chicago Daily News*, in 1875. Stone's health failing in 1888, he sold out his entire interest and spent three years in Europe; was general manager of the associated press, 1893-1921; counselor, 1921 until his death in 1929.

Stone, William Joel, lawyer, United States senator, was born in Madison county, Kentucky, 1848. He graduated at the University of Missouri, and was admitted to bar, 1869; governor of Missouri, 1893-97; member and vice-chairman of the democratic national committee, 1896-1904; and was elected United States senator for terms 1903-09 and 1909-15. Died, 1918.

Storey, Moorfield, American lawyer, was born at Roxbury, Mass., 1845. He graduated at Harvard, 1866; studied at the Harvard Law School; and was admitted to the bar, 1869; overseer of Harvard College, 1877-78 and 1892-1910; and president of the American bar association, 1896. Author: *Life of Charles Sumner; Politics as a Duty and as a Career; The American Legislature; A Year's Legislation; The Government of Cities.* Died, 1929.

Story, Emma Eames, American operatic prima donna, was born in Shanghai, China, 1867, of American parentage. Her childhood was spent in Boston, where she studied music, and sang in choirs and concerts. She subsequently studied in Paris, and mader her début at the Paris grand opera house, 1889. She has sung in regular opera seasons in London and the United States. She was made an officer of the French academy and received an English jubilee medal. Has lived in Paris since 1923.

Story, Joseph, distinguished American jurist and legal writer, was born at Marblehead, Mass., in 1779. He graduated at Harvard College in 1798; was an associate justice of the United States supreme court, 1811-45. He was professor of law at Harvard, 1829-45, and attained unusual eminence as a law lecturer and writer. Died, 1845.

Stowe, Harriet Elizabeth Beecher, was born at Litchfield, Conn., 1811. She married Professor Calvin Ellis Stowe in 1836. In 1851 she commenced in *The National Era*, an antislavery paper at Washington, D. C., a serial tale entitled *Uncle Tom's Cabin.* In 1856 she published *Dred, a Tale of the Great Dismal Swamp*, followed in 1859 by *The Minister's Wooing*, a story of New England life in the eighteenth century. In 1868-70 she was joint editor of *Hearth and Home.* Died, 1896.

Strabo (*strā'bō*), noted Greek geographer, was born at Amasia, in Pontus, about 63 B. C. He does not appear to have followed any professional calling, but to have spent his life in travel and study. He died about 21 A. D.

Stradivari (*strä'dē-vä'rē*) or **Stradivarius, Antonio,** celebrated Italian violin maker, was born at Cremona, Italy, in 1644. His instruments are known for their finish and fine tone. He was the first to finish them neatly on the inside. They are carefully preserved by those possessing them, and bring great prices, ranging from $1,000 to $15,000. He died at Cremona, 1737.

Strafford, Thomas Wentworth, Earl of, English statesman, was born in London, 1593. In 1622 he felt compelled to side with the king, and strove to put down with a firm hand all opposition to the royal authority. After the meeting of the long parliament he was impeached for high treason, and as a result was bchcaded on Tower hill, 1641.

Strathcona (*strath-kō'na*), **Baron, Donald Alexander Smith,** high commissioner for Canada, 1896-1914 was born in Scotland, 1820. He was educated in Scotland; Hon. LL.D., Cambridge. He was special commissioner during first rebellion in Red River settlements, 1869-70; member of parliament for Selkirk in Dominion house of commons, 1871-72, 1874, and 1878; for Montreal West, 1877-96. He was governor of the Hudson Bay Company, director of the St. Paul, Minneapolis and Manitoba Railway. He was also chancellor of McGill University, and was lord rector of Aberdeen University, 1899. He was raised to the peerage in 1897. Died, 1914.

Straus (*strous*), **Oscar Solomon,** American merchant, diplomat and publicist, was born at Otterberg, Germany, 1850. Graduated at Columbia University, 1871; LL.B. He practiced law, 1872-

81; entered the mercantile life as a member of L. Straus and Sons, importers of pottery and glassware; was United States minister to Turkey, 1887-89, 1898-1901; appointed, 1902, by president Roosevelt, a member of the permanent court of arbitration at The Hague; and was secretary of commerce and labor, 1906-09. Author: *The Origin of Republican Form of Government in the United States; United States Doctrine of Citizenship; Our Diplomacy with Reference to our Foreign Service*, etc. Died, 1926.

Strauss, Johann, Austrian composer and conductor, was born at Vienna, 1825. In 1872 he conducted an orchestra of 1,000 performers at the Boston peace jubilee; he was for a time also musical director to the emperor Joseph at Vienna. His most famous waltz pieces are *Wiener Blut, Künstlerleben,* and *An der schönen blauen Donau.* Of his operettas, the following are best known: *Cagliostro; La Tsigane; Die Fledermaus; Eine Nacht in Venedig.* Died, 1899.

Strauss, Richard, German composer, conductor at the royal opera house, Berlin, was born, 1864, at Munich. From 1889 to 1894 he was chapelmaster, with Eduard Lassen, at Weimar, later conductor at the Munich opera house; and since 1898 conductor of the royal opera, Berlin. Works: *Salome; Tod und Verklarung; Don Juan; Till Eulenspiegel; Don Quixote,* etc. He was made chevalier of the legion of honor, 1907.

Strong, Charles Augustus, American psychologist, educator, was born at Haverhill, Mass., 1862. He graduated at Harvard, 1885; lecturer in psychology, 1895-1903, and professor of psychology, 1903-1910, Columbia University. Author: *Why the Mind Has a Body,* etc.

Stuart, Gilbert Charles, American portrait painter, was born at Narragansett, R. I., 1755. In 1778 he made his way to London, where his talent was recognized by Benjamin West, president of the Royal Academy, who took him into his family, and whose full length portrait he painted for the national gallery. In 1792, in the fullness of his powers and fame, he returned to America and painted portraits of Washington, Jefferson and many of the distinguished men of the period. Died at Boston, Mass., 1828.

Stuart, James Ewell Brown, confederate cavalry general, was born in Patrick county, Virginia, 1833. When the Civil War broke out, he held a captaincy in the Union army, but resigned this to enter the confederate service. He was mortally wounded at Ashland, and died, 1864, at Richmond, Va.

Stubbs, William, English historian, was born Knaresborough, England, 1825. In 1866 he was appointed professor of modern history at Oxford, changed to the see of Oxford in 1889. He edited a large number of ancient histories and chronicles. His historical works include *Constitutional History of England; The Early Plantagenets.* Died, 1901.

Stuyvesant (*stī've-sant*), **Peter,** director-general of the New Netherlands, 1647-64, and last Dutch governor of New York, was born in Holland, 1592. Forced to surrender the city of New York to the English, 1664. He died in 1682.

Suchet (*sü'shē'*), **Louis Gabriel,** duke of Albufera, celebrated French marshal, was born in 1770 at Lyons. In 1808 he was appointed to the command of the French forces in the southeast of Spain, and this command he retained until the termination of the war. When Napoleon returned from Elba, he intrusted Suchet with the defense of the departments bordering on the frontier of Savoy. Died, 1826.

Sudermann (*zōō'dĕr-mān*), **Herman,** German dramatist and novelist, was born in Matziken, Prussia, 1857. He published a series of tales of which *Frau Sorge, Der Katzensteg,* and *Es War* are the most impressive. The drama *Sodom's Ende* was produced in 1890, and was followed by *Die Heimath.* In 1906 *Das Blümerbott* was produced in Berlin, and *Rosen* at Vienna in 1907. Other plays are *Es Leben das Leben, Stein unter Steinen, Die Raschoffs,* etc. Died, 1928.

Sue (*su*), **Marie-Joseph Eugene,** French novelist, was born in Paris, 1804. In 1850 he was elected to the legislative assembly, as one of the deputies for the department of Seine. His writings extend over many volumes. His reputation as a writer rests mainly on *The Wandering Jew* and *The Mysteries of Paris.* He died in Savoy, in exile, 1857.

Sulla, Lucius Cornelius, Roman general and dictator, was born, 138 B. C. After holding the dictatorship for about two years, he resigned his office in 79 B. C., and retired to an estate he possessed at Puteoli, where he died in the following year.

Sullivan, Sir Arthur Seymour, English composer, was born in London, 1842. He studied in London and at Leipzig, and in 1862 composed incidental music for *The Tempest; Pirates of Penzance; Patience; Iolanthe; The Mikado; The Yeomen of the Guard; The Gondoliers,* etc. He also wrote cantatas, overtures, oratorios, church music and ballads. He became a member of the legion of honor, 1878, and was knighted in 1883. Died, 1900.

Sully, James, English educator and philosophical writer, Grote professor of philosophy of mind and logic, University College, London, was born at Bridgewater, 1842. Wrote on psychology and pessimism. Died, 1923. Author *Sensation and Intuition; Pessimism; Illusions; Outlines of Psychology; Children's Ways; An Essay on Laughter,* etc.

Sully, Maximilien de Bethune, Duke of, French soldier and statesman, noted minister of Henry IV., of France, was born at Rosny, near Nantes, 1560. In 1601 he was sent on a confidential mission to Queen Elizabeth of England. He was created duke of Sully in 1606, and was made marshal of France in 1634. He died at Villebon, near Charters, 1641.

Sully, Thomas, American painter, was born in Lincolnshire, England, in 1783. As a portrait painter he enjoyed a great reputation, Jefferson, Lafayette, Madison, Jackson, and many other of the most illustrious personages of the time being among his sitters. Died, 1872.

Sumner, Charles (1811-74), American statesman, was born in Boston and educated at Harvard. He studied law and was admitted to the bar in 1834. He entered the U. S. Senate in 1851, retaining his seat until his death. He was prominent in debate, especially on the repeal of the Missouri Compromise and on the contest in Kansas. His speech on "The Crime Against Kansas" incensed Preston S. Brooks of South Carolina, who assaulted Sumner at his desk. Author: *White Slavery in the Barbary States; Orations and Speeches,* etc.

Sumner, William Graham (1840-1910), American educator, was born in Paterson, N. J. He was educated at Yale. He was professor of political and social science at Yale, from 1872 to his death. Author: *A History of American Currency; Robert Morris,* etc.

Sunday, William ("Billy") Ashley, American evangelist, was born in Iowa in 1863. He was educated in the public schools. He was a successful baseball player in the National League, 1883-90. He was assistant secretary of the Y. M. C. A., Chicago, 1891-95. Successful evangelist since 1896. Ordained Presbyterian minister 1903. Died, 1935.

Sutherland, George, lawyer, United States senator, was born in Buckinghamshire, England, 1862, attended the law department of the University of Michigan, 1882-3, and was admitted to the bar, 1883, was a member of congress, Utah, 1901-03; and was elected to the United States senate for the terms, 1905-11, 1911-17; appointed associate justice of Supreme Court of U. S., 1922.

Suvaroff (*sōō-vä'rŏf*), **Prince Alexel,** celebrated Russian field marshal, was born in 1729, at Suskoi, in Finland. In the war against the Turks, from 1787 to 1790, he gained the battle of Rymnik, took Ismail by storm, and obtained other important advantages. When Russia joined the continental coalition, in 1799, he was placed at the head of the combined army in Italy, and, after several sanguinary battles, succeeded in wresting that country from the French. Died, 1800.

Swain, Joseph, American educator, president of Swarthmore College, 1902-1921, was born at Pendleton, Ind., 1857. He graduated at Indiana University, 1883; A.M., LL.D.; professor of mathematics in Leland Stanford Jr. University 1891-93; and president of Indiana University, 1893-1902. Emeritus president, Swarthmore College, 1921. Member of the national council of education; and of religious education. Died, 1927.

Sweatman, Arthur, archbishop of Toronto, and primate of Canada since 1907, was born in 1834. He was graduated at Christ's College, Cambridge; rector of Grace church, Brantford, Ontario, 1872-76; secretary of the diocesan synod, 1872-79; secretary to Canadian house of bishops, 1873-79; archdeacon of Brant and rector of Woodstock, Ontario, 1876-79; and bishop of Toronto, 1897 1907; primate of all Canada 1907 until he died 1909.

Swedenborg (*swē'den-borg*), **Emanuel,** Swedish philosopher and mystic, the founder of the New church, was born in 1688, at Stockholm. In 1743 he claimed a divine commission to disclose the internal or spiritual sense of scripture by the correspondence existing between natural and spiritual things, and thereby to make known its true doctrines. He also stated that for the purpose of his mission he was intromitted as to his soul into heaven, hell, and the intermediate state between them. Of these he treats in *Heaven and Its Wonders, The Last Judgment,* and *The Earth in the Universe.* Died, 1772.

Sweet, Henry, English philologist, was born in London, 1845. Author: and Editor *Student's Dictionary of Anglo-Saxon, Primer of Spoken English, History of English Sounds, Phonetics,* and *The Practical Study of Language.* Died, 1912.

Swift, Charles Henry (1872——), packer, educated Chicago Business School, Vice-President Director, Swift & Company, Director, Libby, McNeil & Libby, etc. During World War was made Commanding Major U. S. R., 1917, and served actively in the Ordnance Department at Washington.

Swift, Jonathan, British satirist, was born in Dublin, of English parents, 1667. He was educated at Trinity College, Dublin, and then removed to London, and was admitted into the house of Sir William Temple. Before 1700 he had written the most powerful satirical work of the eighteenth century, the *Tale of a Tub,* in 1704. He then wrote papers for the *London Examiner, The Conduct of the Allies,* and innumerable pasquinades against the whigs, and became a formidable power in the state. His *Drapier Letters,* 1724, compelled the government to abandon a scheme for supplying Ireland with copper coinage. The triumphant author made his last visit to England in 1726, and published his *Gulliver's Travels,* the most popular of all his works. Died, 1745.

Swinburne, Algernon Charles, English poet and prose writer, was born in London, 1837. He was educated at Balliol College, Oxford. His first productions were the plays, *Queen Mother* and *Rosamond,* which were followed by two tragedies; *Poems and Ballads; A Song of Italy;* essay on *William Blake;* and *Songs Before Sunrise.* His subsequent works include *Bothwell, a Tragedy; Songs of Two Nations; Century of Roundels; A Study of Victor Hugo; Studies in Prose and Poetry; The Duke of Gardia,* etc. Died, 1909.

Sybel (*zē'bel*), **Heinrich von,** German historian, born at Düsseldorf, 1817. He studied at Berlin under Ranke; became professor of history at Bonn, 1844; and in 1875 was made director of the state archives at Berlin. Then came his great work, *Geschichte der Revolutionszeit,* 1789-95, a history of the French revolution based upon official documentary evidence. He died at Marburg, 1895.

Symonds (*si'munz*), **John Addington,** an English man of letters, was born at Bristol, England, 1840. He was graduated at Oxford. His chief writings are an *Introduction to the Study of Dante; Studies of the Greek Poets; Sketches in Italy and Greece; The Renaissance in Italy; Italian Byways; Shakespeare's Predecessors in the English Drama. The Renaissance in Italy* is his chief work. He died at Rome, 1893.

Synge, John Millington, Irish dramatist, born near Dublin in 1871. His efforts to become a literary critic in Paris were halted by William Butler Yeats, who persuaded him to return to Ireland and study his native folk-lore. For the Abbey theatre in Dublin he wrote *The Playboy of the Western World*—one of the finest comedies of a hundred years— *Riders to the Sea, The Tinker's Wedding,* and *The Well of the Saints.* Died, 1909.

Tacitus (*tas'-i-tus*), **Gaius Cornelius** (55-120 A. D.) Roman historian, orator and author, was appointed consul of Rome and became an initimate friend of Pliny. His works are *Life of Agricola, Germania.*

Taft, Lorado, sculptor, born in Elmwood, Ill., 1860, a graduate of University of Illinois, studied at Ecole des Beaux Arts, Paris, L.H.D., Northwestern University, Instructor in Chicago Art Institute, professional lecturer on art, University of Chicago; non-resident professor of art, University of Illinois since 1909. Author: *The History of American Sculpture; Recent Tendencies in Sculpture.* D., 1936.

Taft, William Howard, twenty-seventh president of the United States, born at Cincinnati, Ohio, 1857; graduated at Yale, 1878; law school, Cincinnati College, 1880; solicitor general of the United States, 1890-92; first civil governor of the Philippines, 1901-04; secretary of war, 1904-08; president of the United States, 1909-13; Kent professor of law, Yale, 1913-21. Chief Justice U. S. Supreme Court, 1921-1930. Died, 1930.

Tagore, Sir Rabindranath, Hindu poet, philosopher and educator, was born at Calcutta, 1860. Completed education in Europe. Later founded a university of Bengal. His poems in Bengali and their English versions possess remarkable charm and spiritual beauty. Winner of the Nobel prize for literature in 1913. Knighted by King George in 1915. Author: *Crescent Moon; The Fugitive,* etc.

Taine, Hippolyte Adolphe, French historian and critic, was born at Vouziers, France, 1828. One of his first essays was crowned by the French academy. Among his most important works is his *History of English Literature,* a clear and valuable criticism, written in brilliant style; 1878 was elected to membership, French Academy. Died 1893.

Tait, Peter Guthrie, British mathematician and physicist, was born in 1831. He was educated at Edinburgh University, and St. Peter's College, Cambridge; was elected professor of natural philosophy at Edinburgh, 1860. He resigned his chair early in 1901, and died the same year.

Takahira (*tä'kä-hē'rä*), **Kogoro,** Japanese diplomat, was born in Japan, 1854. He was educated in Tokyo, and entered the foreign office as student attache, 1876; acting consul-general, 1888-89 consul-general at New York, 1892; envoy extraordinary and minister plenipotentiary to Italy, 1894-95 and 1906-07, to Austria and Switzerland, 1896-99; and envoy extraordinary and minister plenipotentiary to the United States, 1900-06, and 1907-09. Made by Imperial nomination a member of House of Peers, 1917. Died, 1926.

Talleyrand-Perigord (*tä'le'rän'pā'rē'gōr'*), **Charles Maurice, Prince de,** was born in Paris, 1754. As bishop of Auntun he was a member of the States-general which was convoked in 1789. The progress of the revolution led to his retirement to England and afterward to America; but on the fall of Robespierre he returned to Paris, and, through the influence of Madame de Staël with Barras, was appointed foreign minister. In return for his services he was made grand chamberlain, and prince of Bénévento. After the fall of Napoleon he became for a time prime minister under Louis XVIII., but ceased to hold this position subsequent to the battle of Waterloo. Died, 1838.

Talmadge, Norma (1898——), motion picture actress, stars in emotional, humorous and dramatic parts. Played since sixteen years old, successively with the Vitagraph, Triangle and Select companies. Noted for *The Isle of Conquest, The Moth.*

Talmage, Thomas De Witt (1832-1902), American Presbyterian minister and orator, edited for several years *The Christian at Work* and *Christian*

Herald. Traveled extensively, especially through Palestine. Pastor First Presbyterian Church, Washington.

Tamerlane, or **Timur** (*tē-mōōr'*), oriental conqueror, was born at Sebz, near Samarkand, about 1336. His whole career was one of conquest, though he was frequently interrupted by revolts in his own dominions, and in the provinces he had brought under his rule. He was preparing for the conquest of China, but died on his march to that country, 1405.

Taney (*tô'ni*), **Roger Brooke,** American jurist, was born in Calvert county, Md., 1777. He was graduated at Dickinson College; he succeeded John Marshall as chief-justice of the United States supreme court in 1836. His most famous decision was that in the Dred Scott case, in 1857. He died at Washington, D. C., 1864.

Tarbell, Ida Minerva, American author and editor, was born in Erie county, Pa., 1857. She was graduated from Allegheny College; editor on staff, and associate editor of *McClure's Magazine*, 1894-1906, and associate editor of the *American Magazine* beginning 1906. Author: *Early Life of Abraham Lincoln*, with J. McCan Davis; *History of the Standard Oil Company.*

Tarkington, Newton Booth, American novelist, was born in Indianapolis, Ind., 1869. He was graduated at Princeton, 1893; A.M., 1899. Author: *The Gentleman From Indiana; Monsieur Beaucaire; The Two Vanrevels; The Conquest of Canaan; His Own People*, etc.

Tarr, Ralph Stockman, American educator, was born at Gloucester, Mass., 1864. He was graduated at Lawrence scientific school, Harvard, 1891; assistant professor of geology at Harvard, 1892-97; professor of physical geography, Cornell University. Author: *Economic Geology of United States; Elementary Physical Geography; New Physical Geography.* Died, 1912.

Taschereau (*tăsh'rō'*), **Sir Henri Elzear,** Canadian jurist, chief-justice of the supreme court of Canada, 1902-06, was born in 1836. He was admitted to the Quebec bar, 1857; was appointed a judge of the Quebec superior court, 1871; judge of the supreme court of Canada, 1878. Died, 1911.

Tasso (*tăs'sō*), **Torquato,** Italian poet, was born in Sorrento, 1544. In 1565 he entered the service of cardinal Luigi d'Este, and was invited to the court of the latter's brother, Alfonso, duke of Ferrara. While there he wrote his pastoral drama, *Aminta*, and in 1575 finished his great epic, *Jerusalem Delivered*, describing the first crusade. In 1594 Pope Clement VIII. summoned him to Rome to receive a laurel crown, but he died soon after his arrival, 1595.

Taylor, Charles, H., American journalist, editor and manager of the *Boston Daily Globe* beginning 1873, was born in Boston, Mass., 1846; member of the Massachusetts legislature, 1872. He served during the Civil War in the 38th Massachusetts regiment, was wounded at Port Hudson, La., 1863; and brigadier-general of Governor Russell's staff, 1891-93. He long held a prominent place among American journalists and publicists. Died, 1921.

Taylor, Hannis, American lawyer, diplomat, was born in New Bern, N. C., 1851. He was educated at the University of North Carolina; LL.D.; professor of constitutional and international law, George Washington University, 1892-98, and was special counsel for the government of the United States before the Spanish treaty claims commission and before the Alaskan boundary commission. Died, 1922.

Taylor, James Bayard, American author and traveler, was born at Kennett Square, Pa., 1825. In 1862-63 he was connected with the embassy at St. Petersburg, and in 1874 he was in Iceland and Egypt. For several years he resided in Germany. He was appointed United States minister to Berlin in 1878, where he died the same year. He was an industrious worker and wrote many volumes. Some of his best travesties are in his *Echo Club.* Among the finest of his poems are *Bedouin Song, The Quaker Widow* and *The Old Pennsylvania Farmer.* His masterpiece is the translation of Goethe's *Faust.*

Taylor, James Monroe, American educator, professor of ethics and president of Vassar College beginning 1886, was born in Brooklyn, 1848. He was graduated at the University of Rochester, 1868; D.D.; LL.D. Author: *Psychology; New World and Old Gospel*, etc. Died, 1916.

Taylor, Jeremy, English divine, was born in Cambridge, England, 1613. He was graduated at Cambridge. He soon afterward became chaplain to Charles I., was rector of Uppingham, 1638-42. He removed to Ireland in 1657, and, after the restoration, was made bishop of Down and Connor. His chief works are: *Holy Living*; *Holy Dying.* Died, 1667.

Taylor, Robert Love, lawyer, United States senator, was born in Happy Valley, Tenn., 1850; was governor, 1887-91; practiced law at Chattanooga, 1891-96; again governor, 1897-99; and United States senator, 1907-12. Died, 1912.

Taylor, Zachary, American general, and twelfth president of the United States, was born in Orange county, Va., 1784. After defeating the Seminoles at Okechobee, in 1837, he was given the chief command in Florida in the following year. In 1846 he was intrusted with the command of the army which entered Mexico. There he won the battles of Palo Alto, Resaca de la Palma, and Buena Vista, and brought the campaign to a successful conclusion in 1847. In the following year he was nominated as whig candidate for the presidency, elected, and inaugurated in 1849. Died, 1850.

Tecumseh (*tē-kum'se*), famous Shawnee chief, was born on the Scioto river, Ohio, about 1775. In the war of 1812 he became an ally of the English, obtained the rank of brigadier-general in their service, and commanded the right wing in the battle of the Thames, in 1813, where he fell mortally wounded.

Tell, William, Swiss patriot, was born at Bürglen, near Altdorf, toward the close of the thirteenth century. His renown rests upon his resistance to the Austrians in 1307 and afterward. The story of Tell has been the subject of numerous poems and dramas. The most notable is the *Wilhelm Tell* of Schiller.

Temple, Sir William, English diplomat and writer, was born in London, 1628. He studied at Cambridge. His great diplomatic success was the triple alliance, in 1668, of England, Holland, and Sweden, against France. In 1677 he helped to bring about the marriage of the prince of Orange with the princess Mary. He twice refused the secretaryship of state offered him by Charles II., and gave the remainder of his days, after 1681, to letters and gardening. Died, 1699.

Teniers (*te-nērs'*), **David, the Younger,** celebrated Flemish painter, was born at Antwerp, 1610. He was the most popular of all the Flemish painters. He died at Brussels, 1690.

Tennyson, Alfred, English poet, was born in Somersby, Lincolnshire, England, 1809, of which parish his father was rector. He was educated at Louth grammar school and at Cambridge University. At Cambridge he gained the chancellor's medal by a poem in blank verse entitled *Timbuctoo;* but his literary career properly dates from 1830, in which year a volume appeared of *Poems, Chiefly Lyrical.* The publication, in 1842, of *Poems, by Alfred Tennyson,* in two volumes, raised him to the position of supremacy, which he continued to occupy until his death. In 1847 appeared *The Princess, a Medley,* and in 1850 *In Memoriam.* On the death of Wordsworth, in 1850, Tennyson succeeded him as poet laureate, in which capacity he issued, in 1852, his *Ode on the Death of the Duke of Wellington.* In 1855 appeared *Maud, and other Poems.* The *Idylls of the King* at once took rank as one of the noblest poems in the language. It was followed in 1864 by a volume containing *Enoch Arden; Aylmer's Field; Tithonus,* and a few other poems. He lived for the most part a retired life. In 1884 he was made an hereditary peer, with the title of Baron Tennyson. Died, 1892.

Terence (*ter'ens*) or **Terentius, Publius,** Latin comic writer, is believed to have been a native of Carthage, and to have been born about 185 B. C. By birth or purchase he became the slave of the Roman senator P. Terentius Lucanus, who educated him highly, and finally manumitted him. Six comedies are extant under the name of Terence, which are, perhaps, all he produced. He died about 159 B. C.

Terhune (*tēr-hūn'*), **Mary Virginia,** "Marion Harland," was born in Amelia county, Va., 1831. In 1854 she published *Alone*, which at once created a sensation; and in 1855 she produced *The Hidden Path.* In 1857 her *Moss-Side* appeared, and this was followed in rapid succession by *Nemesis; Husks; Husbands and Homes; Sunnybank and Christmas Holly.* Died, 1922.

Terry, Ellen Alicia (Mrs. James Carew), English actress, was born at Coventry, England, 1848, and made her first appearance on the stage with Charles Kean's Shakespearean revivals, in 1858; reappeared on the stage in 1867 for the first time with Henry Irving. In 1864 she married the noted painter, G. F. Watts, and in 1868 E. A. Wardell. In 1878 she was again associated with Irving, with whom she continued throughout the greater part of his subsequent career. She produced Ibsen's *The Vikings* in 1903, and Shakespearean plays with her own company at the Imperial theater. Died, 1928.

Tesla (*tes'lă*), **Nikola,** American electrical inventor, was born in Smiljan, Austria-Hungary, 1857. He came to the United States in 1884, and for several years was employed at Edison's laboratory, near Orange, N. J. He invented many methods and appliances for the use of electricity, among them the production of efficient light from lamps without filaments, and the production and transmission of power and intelligence without wires. In 1898 he announced the discovery of, and in 1900 patented, a method of transmitting electrical energy without wires. Chiefly engaged since 1903 in development of system of telegraphy and telephony.

Tetrazzini (*Tet-trah-tzee'nee*), **Luisa,** was first brought to public notice by the management of the Tivoli Opera House, in San Francisco. Her first concert tour, through twenty of the largest cities, was a series of ovations. She met with an almost unparalleled reception during her engagements at the Manhattan and Metropolitan Opera Houses in New York. Her voice is a soprano of most remarkable beauty, purity and range. Her colorature work is extremely brilliant. She now lives in Italy.

Thackeray, William Makepeace, eminent English novelist, was born at Calcutta, India, 1811. His first profession was that of an artist; but he soon abandoned art for literature. He afterward contributed largely to *Punch.* In 1846-48 *Vanity Fair* appeared, and Thackeray's reputation was at once established. In 1849 *Pendennis* appeared; in 1852, *The History of Henry Esmond;* in 1855, *The Newcomes.* In 1851 he delivered and published his *Lectures on the English Humorists of the Eighteenth Century* and in 1856 his *Lectures on the Four Georges.* Died, 1863.

Thales (*thā'lēz*), early Greek philosopher, founder of the Ionic, or physical school of philosophy, and one of the seven wise men, was a native of Miletus, in Asia Minor, and flourished during the first half of the sixth century B. C. He is regarded by some as the first Greek that speculated on the constitution of the universe.

Themistocles (*thē-mis'tō-klēz*), Athenian statesman, was born at Athens, about 514 B. C., fought at Salamis, and devoted the succeeding years to the upbuilding of the Athenian navy. In 481 B. C. he was chief archon, and added greatly to the naval power of Athens. He later rebuilt the walls and fortified the Piræus. Being in danger of arrest on a charge of treason, in concert with Pausanias, he fled to Asia. He lived securely in Magnesia until his death, 449 B. C.

Theocritus (*thē-ok'ri-tus*), celebrated Greek poet, flourished in the time of Ptolemy Philadelphus, 285 to 247 B.C. The compositions of Theocritus bear the name of *Idyls*, of which there are thirty extant, though the genuineness of some of them is doubtful.

Theodoric (*thē-od'ō-rik*) **the Great,** founder of the monarchy of the Ostro, or East Goths, son of Theodemir, the Ostrogothic king of Pannonia, was born about 454. He was the most powerful of the Gothic kings, with an empire embracing Italy, Sicily, and Dalmatia, besides German possessions. As a ruler he proved himself as wise as he was strong; became in after years one of the great heroes of German legend, and figures in the *Nibelungenlied.* Died, 526.

Thiers (*tyâr*), **Louis Adolphe,** French statesman and historian, and president of the French republic, was born in Marseilles, 1797. Between the years 1823-27 appeared his *History of the French Revolution*, a work which stamped him as a historian of the first order. In 1871 he succeeded in effecting peace although practically on the terms dictated by Germany, and, in the same year, was elected president of the new republic. In 1873 after an adverse vote of the legislative body, he resigned, and was succeeded by Marshal MacMahon. Died, 1877.

Thomas, Ambroise, French composer, was born at Metz, 1811. He studied at the Paris conservatoire, 1828-32. His first success in opera was with *La Double Echelle*, in 1837, followed by *Mina, Betty, Le Caïd, Le Songe d'une Nuit d'Eté, Le Carnaval de Venise.* He became a member of the French institute in 1851, professor of composition, 1852, director of the conservatoire, 1871, and received the grand cross of the legion of honor, 1880. Died, 1896.

Thomas, Augustus, American playwright, was born at St. Louis, Mo., 1859. He was educated in the public schools there; studied law two years. Author: *Alabama; Arizona; The Man Upstairs; The Earl of Pawtucket; Mrs. Leffingwell's Boots; The Embassy Ball; The Witching Hour.* Died 1934.

Thomas, a Becket. See **Becket, Thomas a.**

Thomas, George Henry, American general, was born in Southampton county, Va., 1816. He was graduated at West Point. He began his career in the Civil War as cavalry colonel in the Shenandoah valley. In 1861 he was appointed brigadier-general of volunteers, and at Chickamauga rendered the victory a barren one for the confederates. In October, 1863, he was given the command of the army of the Cumberland, and in November captured Mission Ridge; in December he won the battle of Nashville, and received the thanks of congress. Died, 1870.

Thomas a Kempis. See **Kempis, Thomas a.**

Thomas, Martha Carey, American educator, was born in Baltimore in 1857. She graduated at Cornell University, 1877. She studied at Johns Hopkins and at Leipzig and received the Ph.D. degree there in 1883. She was professor of English and dean at Bryn Mawr College, 1885-95; president, 1897-1922; since, president emeritus. Author: *Sir Gawaine and the Green Knight; Education of Women; The College*, etc.

Thompson, Ernest Seton. See **Seton, Ernest Thompson.**

Thompson, Launt, American sculptor, was born in Ireland, 1833, but was brought up in Albany, N. Y. A statue of General Winfield Scott, a colossal statue of Napoleon, and a statue of the first president of Yale, on the college grounds, are some of his larger works. He died at Middletown, N. Y., 1894.

Thompson, William Oxley, American educator, president of Ohio State University, was born at Cambridge, Ohio, 1855. He was graduated from Muskingum College, 1878; LL.D. He was ordained to the Presbyterian ministry, 1882; was president of Miami University, 1891-99, and was president of Ohio State University, 1899-1925, president emeritus, 1925.

Thomson, Elihu, American electrician, was born in Manchester, England, 1853. He was graduated from Central high school, Philadelphia, 1870; Ph.D., Tufts College. He is the inventor of

electric welding, which bears his name, and many other important devices in electric lighting, power, etc.

Thomson, James, British poet, was born in Roxburgshire, Scotland, 1700. He studied six years at Edinburgh. His fame rests upon his poems, *The Seasons*, the first of which, *Winter*, appeared in 1726, followed by *Summer*, *Spring*, and *Autumn*. He died near Richmond, England, 1748.

Thomson, Joseph John, English physicist, professor of experimental physics at Cambridge University, England, 1884-1918, was born near Manchester, 1856. In 1899 he accomplished the important achievement of dividing the hydrogen atom.

Thomson, Sir William. See **Kelvin, Lord.**

Thoreau (*thō'rō, thō-rō'*), **Henry David,** American naturalist, friend of Emerson, and a member of the transcendental school of New England, was born at Concord, Mass., 1817. He was graduated at Harvard College in 1837, and became a surveyor; lived the simplest of lives in the study of nature, and in writing. He gave an account of his experiences in perhaps his finest book, *Walden*, published in 1854. Others were *Cape Cod*, *The Maine Woods*, *A Yankee in Canada*. Died, 1862.

Thorpe, Thomas Edward, English chemist, director of the government laboratories, London, was born near Manchester, 1845. He was president of tae society of chemical industry, 1895. Author: *Chemical Problems; Inorganic Chemistry; Quantitative Analysis; Qualitative Analysis; Joseph Priestley*. Died, 1925.

Thorwaldsen (*tōr'wōld-sen*), **Albert Bertel,** Danish sculptor, was born at Copenhagen, 1770. He studied at the academy of Copenhagen, where he gained the first gold medal in sculpture, and was sent by that body to Rome in 1796. His masterpieces include the *Entry of Alexander Into Babylon; Cupid and Psyche;* the *Dying Lion* at Lucerne, and busts of Byron and the Danish poet, Oehlenschlager. Died, 1814.

Thucydides (*thū-sid'i-dēz*), great Greek historian, was born at Athens, about 471 B. C. He belonged to a noble Athenian family, and was himself a person of great influence and wealth. During exile he wrote his *History of the Peloponnesian War*. Among the Romans, Sallust is believed to have taken Thucydides for his model. He died about 401 B. C.

Thurman, Allen Granberry, American statesman, was born at Lynchburg, Va., 1813. When six years old his family moved to Ohio, where he became a lawyer and was chosen a representative in the 29th congress. He served as United States senator, 1869-81, and was one of the ablest and most prominent members of that body. Died 1895.

Thwing, Charles Franklin, university president, was born at New Sharon, Me., 1853; graduated from Harvard, 1876; graduate Andover Theological Seminary, 1879; S.T.D., Chicago Theological Seminary, 1889; LL.D., Marietta, 1894, Illinois College, 1894, Waynesburg College, 1901, Washington and Jefferson, 1902. Ordained Congregational ministry, 1879; president Western Reserve University and Adelbert College, 1890-1921; Associate editor *Bibliotheca Sacra* beginning 1884. Author: *American Colleges—Their Students and Work; Within College Walls; The American College in American Life; The Best Life; College Administration; The Youth's Dream of Life; God in His World; The Choice of a College; College Training and the Business Man; A History of Higher Education in America*, etc.

Ticknor, George, American author, was born at Boston, 1791. He was graduated at Dartmouth; in 1819 became professor of French and Spanish in Harvard College. His *History of Spanish Literature* was published in 1849, and at once took high rank, and was translated into Spanish, German and French. He was one of the founders of the Boston public library. Died, 1871.

Tiffany, Charles Louis, American merchant, was born at Killingly, Conn., 1812. In 1837 he established a stationery and fancy goods store next door to A. T. Stewart's establishment. In 1847 Tiffany began the manufacture of gold jewelry; in 1850 made immense purchases of diamonds in Europe, selling them in the United States at tremendous profit. The firm later established branches in several European centers. Died, 1902.

Tiffany, Louis Comfort, American artist, was born in New York, 1848. He studied art under George Inness and Samuel Coleman, New York, and Léon Bailly, Paris; devoted himself chiefly to oriental scenes in oil and water colors. Discovered the formulas for making decorative glass known as "Tiffany Favrile glass."

Tilden, Samuel Jones, American statesman, was born at New Lebanon, N. Y., 1814. He was educated at Yale and New York University, and admitted to the bar in 1841. By 1868 he attacked and destroyed the "Tweed Ring" and in 1876 was Democratic candidate for president, resulting in the famous contest before the Electoral Commission. He died in 1886, leaving a great part of his large fortune to found a free library in New York City.

Tilly, Johann Tserklaes, Count of, Belgian general, one of the great leaders of the Thirty Years' war, was born near Gembleaux, Belgium, 1559. He reorganized the Bavarian Army, and, devoted to the Catholic cause, was given command of the Catholic army at the outbreak of the Thirty Years' war. Tilly was mortally wounded in the battle of Lech, 1632.

Tintoretto (*tēn'tō-ret'tō*), Venetian historical painter, was born in 1518. His real name was Jacopo Robusti. He rose to high reputation and was employed by the Venetian government to paint a picture of the victory gained over the Turks in 1571. Most of his finest compositions are at Venice. He died at Venice, 1594.

Tischendorf (*tish'en-dōrf*), **Lobegott Friedrich Konstantin von,** German biblical scholar, was born at Lengenfeld in Saxony, 1815. His labors in search of the best and most ancient manuscripts of the new testament, especially those in 1844, 1853 and 1859, resulted in the discovery of the fourth century *Sinaitic Codex* at the monastery on Mount Sinai; count of the Russian empire, LL.D., D.C.L., etc. He died in Leipzig, 1874.

Tissot (*tē'sō'*), **James Joseph Jacques,** French genre painter, was born at Nantes, France, 1836. He was educated at the Ecole des Beaux Arts, in Paris, and under Lamothe and Flandrin. He made his first appearance in the Paris salon in 1859, with a number of fine water colors. He then turned his attention to his series of religious subjects illustrating the *Life of Christ*. Died, 1902.

Titchener (*tich'en-ēr*), **Edward Bradfrod,** American educator, professor of psychology at Cornell 1895-1910, was born at Chichester, England, 1867. He was graduated at Brasenose College, Oxford, 1890; Ph.D., D.Sc.; LL.D.; assistant professor of psychology, Cornell, 1892-95; professor of music, 1892-95; Sage professor psychology, in the Graduate School, 1910. American editor of *Mind;* associate editor of *American Journal of Psychology*, etc. Author: *An Outline of Psychology; A Primer of Psychology*. Died, 1927.

Titian (*tish'i-an*), or **Tiziano Vecellio** (*tit-si-ä'no ve-chel'li-ō*), great Italian painter, and head of the Venetian school, was born at Pieve de Cadore, in the Carnic Alps, in 1477. He studied under Giovanni Bellini of Venice, and in 1507 was associated with the painter Giorgione in executing certain frescoes.

In 1511 he was invited to Padua, where he executed three remarkable frescoes, still to be seen. In 1512 he completed the unfinished pictures of Giovanni Bellini in the Sala del Gran Consiglio at Venice, and the senate was so pleased that it gave him an important office. To this period are attributed his pictures of the *Tribute Money* and *Sacred and Profane Love*.

In 1514 he painted a portrait of Ariosto at Ferrara, and after his return to Venice, in 1516, he painted an *Assumption of the Virgin*, considered one of the finest pictures in the world. About 1528 he produced his magnificent picture, *The Death of St. Peter the Martyr*—"a picture," says Algarotti, "in which the great masters admitted they could not find fault"; picture was unfortunately destroyed by fire in 1867.

In 1530 the Emperor Charles V. invited him to Bologna to paint his portrait and execute various other commissions. In 1532 he again painted the emperor's portrait, and he is said to have accompanied Charles to Madrid, where he received several honors. He remained, it is said, three years in Spain, in which country many of his master-pieces, such as *The Sleeping Venus*, *Christ in the Garden*, *St. Margaret and the Dragon*, are still to be found. In 1537 he painted an *Annunciation*, and in 1541 he produced *The Descent of the Holy Ghost on the Apostles*, *The Sacrifice of Abraham*, and *David and Goliath*. In 1543 he painted his picture of *The Virgin and San Tiziano;* and in 1545 he visited Rome, where he painted the famous group of *Pope Paul III*. the *Cardinal Farnese*, and *Duke Ottavio Farnese*. He was patronized as warmly by Philip II. as by his father Charles V.

Of Titian's private life but little is known. He died of the plague in 1576, aged ninety-nine, having painted to the last with almost undiminished powers.

Titian excelled as much in landscape as in figure-painting, was equally great in sacred and profane subjects, in ideal heads and in portraits, in frescoes and in oils; and though others may have surpassed him in single points, none equaled him in general mastery. As a colorist he is almost unrivalled, and his pictures often reach the perfection of sensuous beauty.

References.—Crowe and Cavalcaselle's *Life and Times of Titian;* Claude Phillips' *The Early Work of Titian* and *The Latter Work of Titian;* Morelli's *Italian Painters;* Ruskin's *Modern Painters*.

Tittmann, Otto Hilgard, American scientist, was born at Belleville, Ill., 1850. He entered the United States coast and geodetic survey in 1867. United States delegate to international geodetic conference, Berlin, 1895; and superintendent, 1909-1915; United States Coast and geodetic survey. He was appointed to represent the United States in the demarkation of the boundary between Alaska and Canada in 1899, and was United States-Alaska boundary commissioner, 1904.

Tocqueville (*tok'vil*), **Alexis Charles Henri Clerel de,** French statesman and writer, was born at Verneuil, 1805. He studied at Metz and at Paris, was admitted to the bar in 1825. He became successively a member of the academy of moral sciences and of the French academy. After 1848 he was the most formidable opponent of the socialists and extreme republicans, and as strenuously opposed Louis Napoleon. He became vice-president of the assembly in 1849, and from June to October was minister of foreign affairs. He wrote *Democracy in America*. Died, 1859.

Todd, David P., astronomer, was born at Lake Ridge, N. Y., 1855; graduated from Amherst, 1875; Ph.D., Washington and Jefferson College, 1888; chief assistant on United States nautical almanac, 1878-81; professor astronomy and navigation and director of observations, Amherst College, 1881-1920. Astronomer in charge Lick observatory observations, transit of Venus, 1882; professor astronomy and higher mathematics, Smith College, 1882-7; astronomer in charge American eclipse expedition to Japan, 1887; chief United States scientific expedition to West Africa, 1889-90; chief Amherst eclipse expedition to Japan, 1896, to Tripoli, Barbary, 1900, to the Dutch E. Indies, 1901, and to Tripoli, 1905; chief Mars expedition to the Andes, 1907; professor, emeritus (Carnegie Foundation), 1920. Author: *A New Astronomy; Stars and Telescopes; Lessons in Astronomy;* etc. Designed and erected new observatories at Smith College, Northampton, 1886-7, and at Amherst College, 1903-5.

Togo (*tō'gō*), **Admiral Count Heihachiro,** Japanese admiral, was born at Kogoshima, 1847. He first came into prominence as commander of the *Naniwa*, which sank the transport *Kowshing* and forced on the war with China. He was then a rear-admiral and third in command of the fleet. At the close of January, 1904, he was selected to command the entire Japanese fleet in the hostilities against Russia. The battle of the sea of Japan was fought May 27-28, 1905, when of the Baltic fleet twenty ships were sunk, six captured, two demolished and six disarmed and interned. Togo was made count in 1907. Admiral 1912. Died 1935

Tolstoi (*tol-stoi'*), **Count Lyoff Nikolayevitch,** Russian author and social reformer, was born at Yasnaia Poliana in 1828. Studied at the University or Kazan; entered the army when twenty-three, and served in the Caucasus and at Sebastopol. Leaving the army soon after the close of the Crimean war, he devoted himself to literature. His *War and Peace*, a tale of the invasion of Russia by Napoleon, in 1812, is regarded as his masterpiece; but his *Anna Karenina*, which appeared in 1876, is better appreciated. He made "Resist not evil" the keystone of the Christian faith, and insisted that the literal interpretation of the Sermon on the Mount is the only rule of the Christian life. In 1892 he deposited his *Memoirs and Diaries* with the curator of the Rumyanzoff museum on the condition that they should not be published until ten years after his death. He was excommunicated by the holy synod in 1901, and the same authority enjoined all true believers to refrain from celebrating his eightieth birthday in 1908. Died, 1910.

Toombs, Robert, American politician, was born in Wilkes county, Ga., 1810. From 1853 to 1861 he was a member of the United States senate. In 1861 he became secretary of state under the confederate government, but resigned to accept the commission of brigadier-general in the confederate army. After the war he lived abroad until 1867, and on his return to the South refused to take the oath of allegiance to the United States government. He died in 1885.

Toothaker, Charles Robinson, curator, was born at Philadelphia, 1873; graduate Central Manual Training High School, Philadelphia, 1890; special course in zoölogy under E. D. Cope; other special courses. Mineralogist, in employ of A. E. Foote, Philadelphia, 1890-7; assistant curator, 1898-1904, curator since 1904, Philadelphia museum; lecturer on commercial geography; special instructor in commercial geography, Temple University, 1907-8. Consul for Republic of Colombia in Philadelphia. Author: *Commercial Raw Materials*, etc.

Toronto, Archbishop of. See **Sweatman, Arthur.**

Torricelli (*tor'rē-chel'lē*), **Evangelista,** Italian physicist and mathematician, was born probably at Piancaldoli, in the Romagna, 1608. He is celebrated as the inventor of the barometer, and for his improvements in lenses for telescopes. He died at Florence, 1647.

Torstensson (*tōr'sten-son*), **Lennard,** count of Ortala, Swedish general, was born at the castle of Torstena, Sweden, 1603. He accompanied Adolphus to Germany in 1630, and in 1641 was appointed to the command of the Swedish army in Germany. Died, 1651.

Totleben (*tat-lye-ben*), or **Todleben, Franz Eduard Ivanovitch,** Russian general and military engineer, was born 1818. Until he was severely

wounded in 1855, he conducted with skill and energy the defense of Sebastopol. During the Turkish war of 1877-78 he was called to besiege Plevna, which he took. He died in 1884 and was buried at Sebastopol. He wrote an admirable account of the defense of Sebastopol.

Tourgee (*toor-zhā'*), **Albion Winegar,** American author, was born at Williamsfield, Ohio, 1838. Moved to North Carolina, where he was prominent in the reconstruction of the state, drawing up the constitution, and aiding in the revision of the laws. For some years prior to his death in 1905 he was United States consul at Bordeaux, France, and Halifax, Canada.

Toussaint L'Ouverture (*tōō'saN' lōō-ver'tür*), **Francois Dominique,** Haitian general, was born in 1743, son of African slaves, in San Domingo. In 1796 he was appointed by the French directory chief of the army of San Domingo. When Bonaparte sought to restore slavery in San Domingo in 1801, Toussaint resisted, but was forced to surrender, and was sent to France, where he died in prison in 1803.

Tower, Charlemagne, American capitalist and diplomat, was born in Philadelphia, Pa., 1848. He was graduated at Harvard in 1872; LL.D. He lived in Duluth, Minn., 1882-87; was president of Duluth and Iron Range Railroad and managing director of Minneapolis Iron Company. He was United States minister to Austria-Hungary, 1897; ambassador to Russia, 1899-1902; and ambassador to Germany, 1902-08. Author: *The Marquis de La Fayette in the American Revolution.* Died, 1923.

Trajan (*trā'jan*), **Marcus Ulpius Crinitus,** Roman emperor, surnamed Optimus, was born at Italica, in Spain, about 52 A. D. On the death of Nerva, 98 A. D., Trajan was invested with the imperial purple. In his civil capacity, he ruled for the welfare of his people; in his military character, he sustained the glory of Rome. The column which bears his name was raised in the Roman capital to commemorate his victories. Died 117 A. D.

Tree, Herbert Beerbohm, English actor and manager, was born in London, 1853. His first success was as the timid curate in *The Private Secretary.* He managed the Comedy theater in 1887, and produced *The Red Lamp;* and in the autumn of the same year assumed charge of the Haymarket theater. In 1897 he opened his new theater, His Majesty's, in the Haymarket. Here he produced the greatest of his successes: *Herod; Twelfth Night; The Merry Wives of Windsor; King Richard II.; Colonel Newcome,* etc. In 1907 he produced several of Shakespeare's plays in Berlin, and was received by the emperor. Died, 1917.

Trench, Richard Chenevix, British prelate and writer, was born at Dublin, 1807. He was graduated at Trinity College, Cambridge, 1829. During 1835-46 he published six volumes of poetry, re-issued in 1865. In 1845 he became rector of Itchenstoke; in 1847 professor of theology in King's College, London; and in 1863 archbishop of Dublin, an office which he resigned in 1884. His principal works are: *Notes on the Parables; English Past and Present; Life and Genius of Calderon; Select Glossary of English Words;* and *Lectures on Mediæval Church History.* He died in 1886, and was buried in Westminster abbey.

Trent, William Peterfield, American educator and critic, professor of English literature at Columbia University beginning 1900, was born at Richmond, Va., 1862. He was graduated at the University of Virginia, A.M.; LL.D. He was professor of English, 1888-1900, and dean of the academic department, 1894-1900, University of the South, and editor of the *Sewanee Review,* 1892-1900. Author: *English Culture in Virginia; Robert E. Lee; The Progress of the United States in the Century; A History of American Literature,* 1607-1865; *Greatness in Literature; Daniel Defoe,* etc.

Tripler, Charles E., physicist, inventor, made special study of physical sciences and phenomena in his own physical laboratory. His greatest achievement was the manufacture of liquid air, at a temperature 300° (F.) below zero. Died, 1906.

Trollope, Anthony, English novelist, was born in London, 1815. He was educated at Winchester school. He produced a long series of novels, among which are: *Barchester Towers; Doctor Thorne; The Bertrams; The Claverings; Castle Richmond;* and *The Golden Lion of Granpere.* Besides these he published several volumes of travel. He also wrote the *Life of Cicero,* one of Cæsar, and sketches of Thackeray. Died, 1882.

Tromp, Martin Harpertzoon, Dutch admiral, was born at Briel, 1597. In 1652 he was worsted by an English fleet under Blake. In November he again encountered Blake in the strait of Dover, this time successfully. In June another terrific battle took place off the North Foreland, the Dutch being defeated. In the final battle with Monk, July 31, 1653, off the coast of Holland, the Dutch lost thirty men-of-war, but their greatest loss was the heroic admiral. He was buried at Delft.

Trotsky, Leon, Russian communist leader, was born of Jewish parentage at Odessa, in 1877. He was twice deported to Siberia for revolutionary activities, but escaped each time, and continued his socialistic campaigns in Germany, France, Switzerland, and finally in the United States, where he assisted in the publication of *Novy Mir,* a Russian socialistic paper in New York City. In 1917 he returned to Russia, where, in conjunction with the more moderate Lenin, he was prominent in organizing the Bolshevist party. Later, Trotsky came to represent the extreme wing of the Soviet government. He signed the treaty of Brest-Litovsk, and became commander in Chief of the red army, but was later brought into eclipse by factional struggles.

Troubetzkoy (*trōō-bets'koi*), **Princess.** See **Rives, Amelia.**

Trowbridge, John Townsend, American novelist, poet, and editor, was born at Ogden, N. Y., 1827. He removed to Boston, and there contributed to magazines and journals and took actively to authorship. His chief works are: *Neighbor Jackwood; The Silver Medal* series; *The Tide Mill* series; and *Start in Life* series. Died, 1916.

Trumbull, John, American painter, was born at Lebanon, Conn., 1756. He was graduated at Harvard College, and studied art at Boston. His first American historical pictures were *Battle of Bunker Hill,* and the *Death of Montgomery.* He painted portraits of Washington and other revolutionary characters. He died at New York, 1843.

Tschaikowsky (*chī-kôf'skē*), **Petr Ilich,** musical composer, was born in the Ural mining region, 1840. In 1866 he became teacher of harmony at the Moscow conservatory. He visited America in 1891, and died at St. Petersburg in 1893. His best work is found in his *Manfred, Roméo et Juliette, The Tempest, Francesca da Rimini,* and his remarkable symphonies. Died, 1893.

Tunney, Gene, boxer and sportsman, was born in New York in 1898. At the age of 19 he enlisted in the marines and was shortly afterwards sent to France, where he stayed until the end of the war. In 1926, by defeating "Jack" Dempsey, he became world champion heavy-weight boxer.

Tupper, Sir Charles, Canadian statesman, was born in Amherst, Nova Scotia, 1821. He studied medicine at Edinburgh University; practiced his profession in his native town; and was prime minister of Nova Scotia, 1864-67. In 1884 he was appointed high commissioner for Canada in London. In 1895 he represented Canada at the international railway conference in London. In 1896 he was prime minister of Canada. Died, 1915.

Turenne (*tü'ren'*), **Henri de la Tour d'Auvergne, Vicomte de,** French general, was born in 1611. After his conquest of Roussillon, in 1642, he was made a marshal of France and given chief command on the Rhine. In the civil wars in France, the two greatest generals of the period, Condé and Turenne, were on opposite sides, and Turenne, with inferior forces was uniformly victorious, finally driving Condé from France. Louis XIV. made him marshal-general of France, and only his Protestantism prevented his being appointed constable. He was killed at the battle of Sasbach, while viewing the preparations for the attack, 1675.

Turgenieff (*tōōr-gen'yef*), **Ivan Sergyevitch,** Russian novelist, was born in Orel, Russia, 1818. On account of his liberal ideas he was banished for a period from Russia, but was finally allowed to return. Among his best known novels are: *Fathers and Sons; Liza; Smoke; Dimitri Rudin; Journal of a Useless Man.* Died, 1883.

Turgot (*tür'gō'*), **Anne Robert Jacques,** French statesman and economist, was born in Paris, 1727. He was educated for the church, and was prior of the Sorbonne in 1749. Under Louis XVI. he was put in charge of the finances of the country, and, if his plans had been received with favor by the nobility and statesmen, France might have been spared the horrors of the revolution. Among his writings are, *Reflections Upon the Formation and Distribution of Riches,* and a work on *Usury.* He died at Paris in 1781.

Turner, Joseph Mallord William, British landscape painter, was born in London, 1775. In 1799 he was elected an associate of the Royal academy, and three years afterward attained the full dignity of academician. To the exhibitions of the Royal Academy he contributed in all 259 pictures. In 1808 he commenced the publication of his famous *Liber Studiorum,* a series of engravings from original designs. Among his finest paintings are: *Dido Building Carthage; The Sun Rising in a Mist; The Slave Ship,* etc. Died, 1851.

Twain, Mark. See **Clemens, Samuel Langhorne.**

Tycho Brahe. See **Brahe.**

Tyler, John, tenth president of the United States, was born at Greenway, Va., 1790. He was graduated at William and Mary College, 1807; studied law, and was admitted to the bar. In 1825 and again in 1827 he was chosen governor of Virginia; and in 1833 was elected United States senator. From this time he acted with the whig party, being an active partisan of Henry Clay, and in 1840 was elected by that party vice-president of the United States, with Harrison as president. The death of President Harrison, a month after his inauguration, made Tyler president in 1841. The annexation of Texas in 1845, and the passing of a protective tariff law in 1842, were among the important acts of Tyler's administration. He afterward joined the confederate cause, and was a member of the confederate congress at his death, which occurred at Richmond, Va., 1862.

Tyndale, William, English divine, was born in Gloucestershire, about 1484. He studied at both Oxford and Cambridge. Having become impressed with the importance of giving to the English people the Bible in their own language, he devoted himself to that work in private for many years; until, in 1523, finding it no longer safe to prosecute his labors in his own country, he sailed for Hamburg and from that port proceeded to Wittenberg. There he completed his version of the new testament, which was published at Antwerp, 1526. He then undertook a translation of the old testament, in which he was assisted by Miles Coverdale. Executed by Henry VIII. for heresy, 1536.

Tyndall, John, British physicist, was born in County Carlow, Ireland, 1820. He published lectures on *Light, Sound,* and *Heat, a Mode of Motion,* are well known; he also wrote on glaciers, the physics of crystals and many essays on other subjects. He was, however, best known as a popular exponent of physical science. Died, 1893.

Uhland (*ōō'länt*), **Johann Ludwig,** German poet, was born at Tübingen, 1787, and studied at the University of his native city. He began to publish ballads and other lyrics in various periodicals, collected under the title of *Gedichte,* in 1815. It is on these and his songs, such as *Der gute Kamerad* and *Das Schloss am Meer,* that his fame rests. He died at Tübingen, 1862.

Ulfilas (*ul'fi-làs*), translator of the Bible into Gothic, was born about 311. He was made bishop in 341. Familiar with Latin, Greek and Gothic, and accustomed to write in each of them, he rendered the whole Bible, with the exception of *Kings,* into Gothic. Died, 381.

Ulrich, Edward Oscar (1857—), is perhaps the most eminent palaeontologist in America. He has assisted on many textbooks, geological journals. Geologist, U. S. Geological Survey since 1897; associate in paleontology U. S. National Museum since 1914.

Untermyer, Samuel, American lawyer, was born in Lynchburg, Va., 1858. He was educated at the college of the City of New York, and was admitted to the bar, 1879. He has since practiced in New York; member of the law firm of Guggenheimer, Untermyer and Marshall.

Urban VIII., Pope, 1623-44, the successor of Gregory XV., whose family name was Maffeo Barberini, was born at Florence in 1568. He was the founder of the celebrated College of the Propaganda and to him Rome is indebted for many public works, including large and important additions to the vatican library. He died in 1644 and was succeeded by Innocent X.

Usher (*ush'ĕr*), **James,** Irish prelate, theologian and scholar, was born 1580. In 1607 he was chosen to the chair of divinity in the University of Dublin, a post which he held for thirteen years. In 1623 he was constituted privy councilor of Ireland, and two years later was raised to the highest ecclesiastical dignity in the kingdom, the archbishopric of Armagh. Died, 1656.

Valentino, Rudolph, actor, was born in Castellaneta, Italy, in 1895. He came to the United States in 1913, and began his career as a dancer. He subsequently entered musical comedy, and finally moving pictures, scoring triumphs in *The Four Horsemen, Camille, The Sheik, Blood and Sand, Monsieur Beaucaire, The Eagle's Feather.* Died, 1926.

Van Alstyne, Mrs. Frances Jane. See **Crosby, Fannie.**

Van Buren, Martin, American statesman, eighth president of the United States, was born in Kinderhook, N. Y., 1782. In 1821 Van Buren entered the United States senate, and was reëlected in 1827. In 1830 he took office as secretary of state in President Jackson's cabinet, resigning the same in April of the following year; and in 1836 became the successful democratic candidate for the presidency. During his tenure of office occurred the financial crisis of 1837, and the suspension of specie payments by the banks. Died, 1862.

Vanderbilt, Cornelius, American capitalist, was born near Stapleton, Staten Island, N. Y., 1794. He early engaged in steamboat transportation between Staten Island and New York. In 1864 he withdrew his capital from shipping and invested it in railroads. In 1861 he presented the steamship *Vanderbilt* to the U. S. government to be used for the capture of confederate privateers, and in 1872 founded Vanderbilt University at Nashville, Tenn. which he gave about $1,000,000. Died, 1877.

Vanderbilt, George Washington, capitalist, was born at New Dorp, Staten Island, N. Y., 1862; presented New York College for the training of teachers, its site on Morningside Heights, adjoining site selected for Columbia College; and presented American fine arts society of New York the room in their building known as the Vanderbilt gallery. Died, 1914.

Vanderbilt, William Kissam, capitalist, was born in Staten Island, 1849. He received an academic education, and studied several years in Geneva, Switzerland. He subsequently learned railroading and became second vice-president of the New York Central and Hudson River Railroad, 1877-83; was chairman of the board of directors of the Lake Shore and Michigan Southern Railway, beginning 1883; and officer or director in numerous railway and financial corporations. Died, 1920.

Vanderlip, Frank Arthur, banker, president of the National City Bank, New York, beginning 1908, was born in Aurora, Ill., 1864. He studied at the University of Illinois and University of Chicago;

assistant secretary of the treasury, 1897-1901; and vice-president of National City Bank, New York, 1901-08; is trustee of Carnegie foundation; member of council of New York University. Author: *Chicago Street Railways; The American Commercial Invasion of Europe*, etc.

Vanderlyn, John, American painter, was born at Kingston, N. Y., 1775. He studied painting under Gilbert Stuart. The *Landing of Columbus*, placed in the rotunda of the national capitol and engraved on the five dollar note, was designed by Vanderlyn. He died at Kingston, N. Y., 1852.

Van Devanter, Willis, jurist, associate justice, United States Supreme court, was born at Marion, Ind., 1859; was educated at Indiana Asbury (now DePauw) University, 1875-8; LL.B., Cincinnati law school, 1881. Practiced law at Marion, 1881-4, Cheyenne, Wyoming, from 1884; commissioner to revise Wyoming Statutes, 1886; city attorney, 1887-8; member Territorial Legislature (chairman judiciary committee), 1888; chief justice Supreme Court of Wyoming, 1889-90; assistant attorney-general of United States (assigned to Dept. Interior), 1897-1903; United States circuit judge, 8th Judicial Circuit, 1903-10; associate justice United States Supreme court since 1910. Professor equity pleading and practice, 1898-1903, equity jurisprudence, 1902-3, Columbian (now George Washington) University.

Van Dyck, or **Vandyke, Sir Anthony,** Flemish painter, was born in Antwerp, 1599. In 1632 he became court painter to Charles I. of England. His *Christ on the Cross* at Antwerp is his greatest historical work, and his full-length picture of *Charles I. on Horseback*, now at Warwick castle, his best example of portraiture. Died, 1641.

Van Dyke, Henry Jackson, American educator and writer, was born in Germantown, Pa., in 1852. He was graduated at Princeton University in 1873, at the Princeton Theological Seminary in 1877; pastor of the Brick Presbyterian church, New York, 1883-1900. Professor of English literature, Princeton, 1900-13 and 1917-23; minister to Holland, 1913-17. Author: *The Reality of Religion; The Gospel for an Age of Doubt; The First Christmas Tree; The Builders, and Other Poems; Ships and Havens; Fisherman's Luck; The Poetry of the Psalms; The Friendly Year; The Blue Flower; The Open Door; The Spirit of Christmas*. Died, 1933.

Van Dyke, John Charles, author, educator, art critic, was born in New Brunswick, N. J., 1856. L.H.D., Rutgers, 1899. He was admitted to the New York bar, 1877, but turned attention to literature, and beginning 1878 became librarian of the Sage library, New Brunswick, N. J., professor of history of art, Rutgers College, beginning 1889. Editor: *The Studio*, 1883-84; *Art Review*, 1887-88. Author: *Books and How to Use Them; Modern French Masters; Nature for Its Own Sake; The Desert; The Meaning of Pictures; Studies in Pictures*, etc.

Vane, Sir Henry, English statesman, colonial governor of Massachusetts, was born in 1612; in 1635 came to America to join the Puritans in Massachusetts. The next year he was chosen governor. In 1640 he was elected to parliament and was knighted. He was always opposed to Cromwell, and, after the latter's death, was the leader of the republican party. On the restoration of the king, Charles II., Vane was arrested, tried on a charge of high treason and condemned to die, 1662.

Van Hise (*van-hīz'*), **Charles Richard,** American educator, geologist, was born in Fulton, Wis., 1857. He graduated at the University of Wisconsin, 1879; Ph.D., LL.D.; professor mineralogy, 1888-90; professor geology, 1892-1903; president beginning 1903 of the University of Wisconsin. He was a member of many scientific societies. Author: *Principles of North American Pre-Cambrian Geology; A Treatise on Metamorphism*. Died, 1918.

Van Horne, Sir William Cornelius, Canadian railway official, was born in Will county, Illinois, 1843. Southern Minnesota, general manager, 1874-77, continuing as president to 1879; Chicago and Alton, general superintendent, 1877-79; Canadian Pacific, general manager, 1882-84, vice-president and general manager, 1884-88, president, 1888-99; and was chairman of the board of the Canadian Pacific railway company beginning 1899. Died, 1915.

Vasari (*vä-zä'rē*), **Giorgio,** Italian art historian, painter and architect, was born at Arezzo, 1511. His greatest service to art is his world-renowned *Lives*, by which we gain our chief knowledge of the artists of the Italian renaissance.

Vassar, Matthew, American philanthropist and founder of Vassar College, was born in Norfolk county, England, 1792. Four years later he accompanied his father to America and amassed a fortune. In 1861 he donated $400,000 to the institution in Poughkeepsie that became known as Vassar College. On his death, in 1868, he provided in his will for a further donation of $400,000 to Vassar.

Vauban (*vō'bäN'*), **Sebastien le Prestre de,** French marshal, one of the greatest of military engineers, was born in 1633, at Saint Leger de Foucheret, in Burgundy. He died in 1707. Vauban wrote various works, principally on fortification.

Veblen, Thorstein, educator, author, was graduated at Carleton College, 1880; Ph.D., Yale, 1884. Taught at various universities and later at school for social research, New York. Author: *The Theory of the Leisure Class* and *The Theory of Business Enterprise*. Died, 1929.

Vedder (*ved'ėr*), **Elihu,** American painter, was born at New York, 1836. He studied at Paris and in Italy, and made Rome his ultimate residence. His subjects are mostly ideal. He has illustrated Edward FitzGerald's *Omar Khayyám*, etc. Died, 1922.

Vega Carpio (*vä'gō kär'pyō*), **Lope Felix de,** noted Spanish dramatist, was born at Madrid, 1562. The mere list of Lope's works presents a picture of unparalleled mental activity. His first work of length was a poem, the *Angelica*. Then followed *Arcadia*, a story, and *Dragontea*, an expression of exultation, in ten cantos, over the death of the dragon. The more notable of his miscellaneous works are: the *Rimas; Peregrino en su Patria*, a romance; *Jerusalem Conquistada*, an epic in competition with Tasso; a collection of lighter verse, with the *Gatomaquia*, a mock-heroic; and *Dorotea*, in form a prose drama, the story of his own early love adventures. Died, 1635.

Velasquez, (*vā-lä'kath*), **Diego Rodriguez de Silva y,** greatest of Spanish painters and one of the greatest of all painters, was born in Seville. 1599. He studied under Herrera, then under Pacheco, whose daughter he married and at whose house he met Cervantes and other notables.

In 1623 Olivares, the great minister, invited him to Madrid, and persuaded the king to sit for his portrait. Velasquez then became the favorite of Philip IV.; was elected court painter, and held various offices at court. In his own country his influence was not wide; but he has become the dominating influence of schools of French, English and American artists of to-day.

In 1623 Charles I. of England, then Prince of Wales, sat to him. In 1630, by the advice of Rubens, he visited Italy, and in Venice he studied Tintoretto. In 1648 he again went to Italy, commissioned by Philip to buy pictures in order to form a Spanish academy. While in Rome he painted the magnificent portrait of *Innocent X*. On his return he was made marshal of the court. It was in fulfilment of this office during the conference at Irun, on the "Island of Pheasants," that he caught the fever from which he died, 1660.

A superb colorist, an admirable draughtsman, intensely truthful in his statements, synthetic in the approach to and handling of his subject, he selected the salient characteristics of the person or scene, and eliminated all non-essentials; he had a keen sense of the unity of impression, emphasized by a carefully realized harmony of color. His best works are to be found in Madrid; but fine examples are to be seen of him in Rome, the Louvre, and the National Gallery, London. His *Venus With a Mirror* was bought by the National Gallery in 1906 for $225,000. His most famous pictures are: *The Water Carrier; Expulsion of the Moriscos; Surrender of Breda; Maids of Honor; The Topers; Forge of Vulcan;* and *Portrait of Philip IV.*

References.—Stevenson's *Velasquez;* Stirling-Maxwell's *Velasquez and His Works;* Curtis' *Velasquez and Murillo;* Bernete's *Velasquez;* and Hinde's *Days with Velasquez.*

Vendome (*vāN'dōm'*), **Louis Joseph, Duc de,** French general, was born at Paris, 1654, and saw his first service in the Dutch campaign of 1672. In 1702 he fought an undecided battle with Prince Eugene at Luzzara, then burst into the Tyrol, returning to Italy to check the united Savoyards and Austrians. The defeat at Oudenarde, 1708, cost him his command, but in 1710 he was sent to Spain to aid Philip V. His appearance turned the tide of diaster; he brought the king back to Madrid, and defeated the English at Brihuega. He died at Tinaroz, in Valencia, 1712.

Verdi (*vär'dē*), **Giuseppe,** Italian operatic composer, was born in 1813, at Rancola, in the duchy of Parma. He was a member of the Italian parliament in 1860 and senator in 1875. He was a member of many artistic societies and was decorated by the rulers of Russia and Egypt. His works comprise a long list of popular favorites, including *Ernani, Rigoletto, Il Trovatore, La Traviata, Aida, Othello*, etc. He died at Milan, 1901.

Verestchagin (*vye-re-shchä'gin*), **Vassili,** Russian painter, was born in 1842, at Tcherepovetz, in Novgorod. In 1884 he made a journey to India, Syria and Palestine; and produced a series of pictures of the life of Christ. He painted gigantic pictures of the execution of mutinous sepoys by English soldiers and of nihilists by the Russian authorities. He was blown up on Makaroff's flagship off Port Arthur, 1904.

Vergil, or **Virgil,** full name, Publius Vergilius Maro, the most distinguished epic, didactic and pastoral poet of ancient Rome, was born at Andes (probably *Pietola*), a little village near Mantua, 70 B. C. His father possessed a farm there, which he cultivated himself, and Vergil received a good education.

He appears to have gone to Rome about 41 or 40 B. C., when his estate was lost at the time of the agrarian division. It was restored to him, however, on application to Augustus, who henceforward became his patron. He also enjoyed the patronage of Mæcenas, and was intimate with Horace. His health was delicate, and his retiring nature led him to reside for the most part outside Rome, either at Tarentum or Naples.

His *Eclogues*, a series of bucolic, or pastoral poems, were written about 41-39 B. C. His *Georgics*, a poem on agriculture, was completed in B. C. 31. The *Aeneid*, an epic in twelve books on the fortunes of Æneas, was probably begun about B. C. 29. It occupied the author many years and never received his finishing touches.

In B. C. 20 Vergil appears to have engaged in a tour in Greece. But Augustus, having arrived at Athens on his return from the East, Virgil determined to accompany him home, At Megara, however, he fell sick, and he died at Brundusium, B. C. 19.

His poems exhibit a remarkable command of language, and great taste and skill in the management of all the materials of poetry. He is unrivalled in beauty of vertification. He was amiable and modest, free from envy and jealousy, and of irreproachable character. Mediæval legends represent him as a benevolent enchanter, in which character many stories were current regarding him in Italy.

References.—Translations have been made into English verse by Dryden, Palmer (*Bucolics*), Bowen (*Bucolocs* and *Æneid*), Conington (*Æneid*), Morris (*Æneid*), and into English prose by Conington and Mackail. See also Nettleship's *Introduction to the Study of Vergil* and *Ancient Lives of Vergil;* Sellar's *Roman Poets of the Augustan Age;* Tunison's *Master Vergil;* Boissier's *The Country of Horace and Vergil;* and Leland's *Legends of Vergil.*

Verne (*vern*), **Jules,** French author, was born at Nantes, 1828. He studied law, but turned to literature, producing his *Cinq semaines en ballon* in 1863. Among his works are: *Twenty Thousand Leagues Under the Sea; Around the World in Eighty Days; From the Earth to the Moon*. Died, 1905.

Vernet (*ver'ne'*), **Emile Jean Horace,** French battle painter, was born in Paris, 1789. He studied under Moreau and Vincent, and achieved a success hitherto unequaled as a painter of battles. In 1842 he was made commander of the legion of honor, and declined the rank of baron. He died in 1863.

Veronese (*vā'rō-nā'sā*), **Paolo.** See **Cagliari, Paolo.**

Verrazano (*ver'rät-sä'nō*), **Giovanni da,** Florentine navigator, was born at Florence, Italy, about 1480, and died, probably, about 1527—being executed as a pirate, it is said, in New Castile. It was on a second voyage to the new world, in 1527, that it is alleged he was captured by Spaniards and hanged as a corsair.

Vesalius (*vē-sā'li-us*), **Andreas,** Belgain anatomist and physician, was born in Brussels in 1514. He died in 1564, in Zante, where he had been wrecked on his return from Jerusalem. His great work was *De Corporis Humani Fabrica*.

Vespasian (*ves-pā'zhi-an*), **Titus Flavius Vespasianus,** Roman emperor from 70 to 79, was born 9 A. D. In the reign of Claudius he was appointed to a military command in Britain, when he conquered the Isle of Wight. After the death of Vitellius he was proclaimed emperor by the soldiers; and the widsom, moderation, and firmness of his reign showed the propriety of the choice. The most important events of the reign were the destructure of Jerusalem by Titus, A. D. 70, and the conquest of North Wales and the island of Anglesea by Agricola. Died, 79.

Vespucci (*ves-pōōt'chē*), **Amerigo,** Italian navigator, was born at Florence, 1451. In 1497 he embarked at Cadiz in one of a fleet of five ships commanded by Alonso de Hojeda, and after thirty-seven days' sailing reached America, coasted along the continent for several hundred leagues, and returned to Spain the same year. In 1506 he was recalled to the court of Spain, and two years afterward was appointed chief pilot, which office he retained until his death in 1512.

Vlaud (*vyō*), **Louis Marie Julien,** "Pierre Loti," French writer, was born at Rochefort, 1850. He traveled extensively and produced, in 1879, his first work of importance, *Aziyadé*, a series of pictures of life on the Bosphorus. This was followed by *Le Mariage de Loti; Le Livre de la Pitie et de la Mort; Fantôme d'Orient; L'Inde sans les Anglais; Madame Prune*, etc. Died, 1922.

Victor Emmanuel II., first king of modern Italy, was born at Turin, 1820. With the help of the French, the battles of Solferino and Magenta were fought against Austria, but the peace of Villafranca between Austria and France left Italy still distant from its hoped for unity. But Tuscany, Modena, Parma, and the Romagna voted for annexation to Sardinia, and the Prussian alliance in 1866 gave Venice to Italy. The French withdrew from Rome, and on December 31, 1870, Victor Emmanuel entered Rome and became king of a united Italy. He reigned eight years, dying at Rome, 1878.

Victoria, Alexandrina, queen of Great Britain and Ireland, empress of India, born in 1819, died in 1901; she succeeded to the throne in 1837. In 1840 she married Albert, prince of Saxe-Coburg-Gotha, who died in 1861, and by whom she had nine children. She assumed title of empress of India in 1877. The chief events of her reign were the establishment of the penny post; the repeal of the corn laws; the annexation of the Punjaub; the Crimean war; the Indian mutiny, followed by the assumption of sovereignty over India; the second and third reform bills; wars in Afghanistan, China, South Africa and Egypt; and the Fenian and home rule agitations in Ireland. Queen Victoria was strictly impartial in the party politics of her reign, and was remarkable for her wisdom, knowledge of foreign affairs, unselfishness and uprightness of character. Died, 1901.

Vigny (*vēn'yē'*). **Alfred Victor, Comte de,** French poet and novelist, was born at Loches, France, 1799. In 1822 he published anonymously a small volume of verse. After 1830 he published chiefly works in prose, including *Stello; Grandeur et Servitude Militaire;* and a drama, *Chatterton.* In 1845 he was elected to the academy. He died in 1863.

Villa, Francisco, revolutionist, born at Las Nieves, Mexico, 1877. A goatherd, of no education; later turned bandit and outlaw. Joined with Madero in revolution gainst Diaz in 1910. Served successively under Huerta and Carranza. Later led a new revolt. Remained, throughout the Mexican crisis the irrepressible and incorrigible leader of the malcontents among the lower classes. Died, 1925.

Vincent de Paul (*vaN'sāN' dē pōl'*), **Saint,** French philanthropist and ecclesiastic reformer, was born in Landes in 1576. He established a foundling hospital at Paris in 1638; organized the congregation of the Missions and instituted the order of Sisters of Charity. Died in 1660, and was canonized by Pope Clement XII. in 1737.

Vincent, John Heyl, bishop of the Methodist Episcopal church and chancellor of the Chautauqua system, was born in Tuscaloosa, Ala., in 1832. S.T.D., Ohio Wesleyan and Harvard; LL.D. He was one of the founders, in 1874, of the Chautauqua assembly; founder, 1878, of the Chautauqua literary and scientific circle, and was its chancellor; in 1900 was made resident bishop in charge of European work of Methodist Episcopal church. Author: *The Modern Sunday School; Studies in Young Life; Little Footprints in Bible Lands; Our Own Church; Outline History of England; Outline History of Greece; Family Worship for Every Day in the Year,* etc. Died, 1920.

Vinci (*dā ven'che*) **Leonardo da,** Italian painter, was born at the village of Vinci, near Florence, 1452. He was the head of the Umbrian Lombard School of painting. Was educated in Florence, where he studied painting under Verrocchio. His unfinished *Adoration of the Kings* and his *Medusa's Head* belong to his Florentine period. In 1482 he settled in Milan and to his Milanese period are ascribed his most celebrated productions—the two versions of *Our Lady of the Rocks,* and *The Last Supper.* He also founded an academy of arts, for which he wrote *Notes for a Treatise on Painting.*

Owing to the French occupation of Milan, in 1499, Leonardo returned to Florence and was commissioned, with Michelangelo, to decorate the council hall of the Signoria—paintings subsequently destroyed. The famous *Mona Lisa,* was painted in 1504. For ten years (1506-16) he spent his time between Florence, Rome and Milan, and painted his *St. Anne* and *St. John the Baptist.* Thereafter he accompanied Francis I. to France, and died 1519 in the Chateau de Cloux, Amboise, 1519.

A man of extraordinary physical beauty and of physical strength, his endless invention, his curiosity in science and his ceaseless quest after the ideal and the marvelous are reasons for the small number of pictures finished by him. Of these, the *Last Supper* is practically destroyed through his experimentation with oil methods. But he created a symbolical type of ideal female beauty, subtle, enigmatic, with the mysterious smile that has haunted and perplexed his students of succeeding generations.

References.—Brown's *The Life of Leonardo da Vinci;* Rio's *Léonard de Vinci et son Ecole;* Heaton and Black's *Léonardo da Vinci and His Works;* Houssaye's *Histoire de Léonard de Vinci;* Richter's *Literary Works of Leonardo da Vinci.*

Vinogradoff (*vē'nō-grä'dôf*), **Paul,** Russian educator and writer, professor of jurisprudence, Oxford University, beginning 1903, was born at Kostroma, Russia, 1854. He resigned his chair in consequence of a conflict with bureaucratic authorities and settled in England, where he resumed his interrupted studies in English social and legal history. He was elected Corpus professor of jurisprudence in 1903. Author: *Villainage in England; Inquiries in the Social History of England; English Society in the Eleventh Century,* etc. Died, 1925.

Virchow (*fēr'kō*), **Rudolf,** German pathologist, was born in Prussia, 1821. He was a member of the Prussian diet, 1862-1902; of the German Reichstag, 1880-93; became leader of the liberal opposition in the Prussian diet. In 1878 he retired from public life. His master work was *Cellular Pathology,* which laid the foundation of that branch of science. Died, 1902.

Virgil. See **Vergil.**

Vittoria Colonna. See **Colonna.**

Vladimir (*vlä-dyē'mēr*) **the Great,** Russian emperor, who reigned from 980 to 1015. He added largely to the kingdom by conquest, but is best known for the introduction of Christianity into the empire. He died in 1015.

Volta (*vōl'tä*), **Alessandro,** Italian physicist, was born at Como, 1745. He invented the voltaic arc, electrophore, electroscope, and condenser; discovered several new properties in electricity; and was for thirty years professor of natural philosophy at Pavia. Died, 1827.

Voltaire (*vōltar'*), the assumed name of Francois Marie Arouet, French poet, historian and philosopher, and the most celebrated writer of the eighteenth century, was born at Chatenay, near Paris, 1694; died there, 1778. His father was Francois Arouet, a notary, and he was destined for the legal profession, but abandoned the law for letters.

In 1718 a tragedy named *Oedipe* was brought out by him, and was a great success. It is said that this play was finished, and that two cantos of his epic the *Henriade* were written in the Bastille, where he was confined from May, 1717, to April, 1718, for writing certain satirical verses on the regent. It was about this time that he adopted the name of Voltaire. In 1726 he was again imprisoned in the Bastille for sending a challenge to the Chevalier Rohan, by whom he had been grossly insulted. He was liberated within a month, and went to England on the invitation of Lord Bolingbroke. Here he resided till 1729 and acquired some knowledge of English literature. His *Henriade* was completed and published by subscription in England.

After his return to France he lived chiefly at Paris till 1734. During this period he raised himself from very moderate circumstances to a condition of affluence by successful monetary speculations. From 1734 to 1749 he resided with the Marchioness de Chatelet at Cirey, in Lorraine. She died in 1749, and Voltaire then accepted the oft repeated invitations of Frederick the Great to come and live at his court at Potsdam. Here he was received with great honor, but a series of disagreements with the king ended in Voltaire's retirement from the Prussian court in 1753. He then resided for a short time at Strasburg, Colmar, and Lyons, removing at the end of 1754 to Geneva. For almost the whole of the remainder of his life he lived in Switzerland, or close to its borders.

In 1760 or 1761 he fixed his residence with his niece, Madame Denis, at Ferney, where he received a constant succession of distinguished visitors, and maintained a correspondence which included in its range most of the crowned heads of Europe. In 1778 he went to Paris, where he was received with enthusiasm by all classes. But the excitement of the occasion hastened his death.

His works embrace almost every branch of literature; poetry, the drama, romance, history, philosophy, and even science. Hatred of fanaticism and superstitution was his chief characteristic, and nearly all his works are strongly animated by a spirit of hostility to the religion of his age. He upheld theism, however, with as much zeal as he denounced Christianity and priestcraft.

Voltaire's literary fame chiefly rests on his philosophical novels: *Zadig. Candide, L'Ingénu,* etc; his histories: *Siecle de Louis XIV., Histoire de Charles XII;* his correspondence, and more than all, perhaps, on his poetical epistles, satires, and occasional light poems, which all exhibit wit, gaiety, vivacity and grace. Several of his tragedies, such as *Zaire, Alzire, Merope* and *Mahomet,* had great success in their day, but are not assigned a high place in French literature. His comedies, the best of which is *L'Enfant Prodigue,* were less successful. His *Henriade,* an epic poem, had great success, and exercised a powerful influence when it first appeared, but is not highly esteemed now.

References.—The best *Lives* are those by Desnoiresterres, James Parton and Tallentyre. See also Morley's *Voltaire;* biographies by Hamley, Espinasse, and Lounsbury's *Shakespeare and Voltaire.*

Wade, Benjamin Franklin, American statesman, was born at Springfield, Mass., 1800. He studied law in Ohio, becoming United States senator in 1851, 1857 and 1863. He opposed all the measures proposed as compromises between the North and the South, and was influential in getting the homestead bill through congress. After the death of President Lincoln, Wade was acting vice-president of the United States. Died at Jefferson, Ohio, 1878.

Wadlin, Horace Greeley, librarian of Boston public library, was born at Wakefield, Mass., 1851; Litt.D.; began practice as an architect in Boston, 1875. He was a member of the Massachusetts house of representatives, 1884-88; supervisor of United States census, 1895-1900. Author: *Annual Statistics of Manufactures of Massachusetts,* 1886-1901; *The Decennial Census of Massachusetts for* 1895, etc. Died, 1925.

Wagner, Wilhelm Richard, the most celebrated of modern composers, was born at Leipzig 1813, died at Venice, 1883. He received his education at Leipzig and Dresden. From 1834 he filled various musical engagements at Magdeburg, Riga and Königsberg. In 1839-41 he went to Paris and London, and composed his operas *Rienzi* and the *Flying Dutchman.* The brilliant success of these operas secured him the conductorship at the royal opera of Dresden in 1843.

He joined the insurrectionary movement of 1848-49, and was compelled to exile himself. Until his return to Germany in 1864 he spent most of his time in Switzerland, Italy, Paris and London. His *Tännhauser* and *Lohengrin* appeared in 1845 and 1850, respectively. The king of Bavaria, Louis II., became an enthusiastic and liberal patron of Wagner, and the theater at Baireuth, especially built for Wagner, was chiefly supported from the king's purse. Here his famous tetralogy *Der Ring des Nibelungen,* consisting of *Das Rheingold, Die Walkure, Siegfried,* and *Götterdämmerung,* was first performed in 1876 before an unusually brilliant and appreciative audience.

About a year before his death he produced his last creation, *Parsifal.* In 1870 he had married, as second wife, Cosima von Bülow, a daughter of the Abbé Liszt. Wagner labored to reform dramatic music according to the ideas of Gluck and Weber and gave his creations a national character by selecting his subjects from old German heroic legends. His theory was that in a perfect musical drama the three arts, poetry, music and dramatic representation, should be welded together into one well balanced whole. This theory he demonstrated with consummate ability and unsurpassed magnificence. His particular views on music are embodied in a well-known work entitled *Oper und Drama.*

References.—Perhaps the best *Life* is Julien's. See also the *Lives,* in German, by Glasenapp, Pohl, Tapert, and Wolzogen; Krehbiel's *Studies in Wagnerian Drama;* Newman's *A Study of Wagner;* Praeger's *Wagner as I Knew Him;* and Hueffer's *Richard Wagner and the Music of the Future.*

Wainwright, Richard, American naval officer, was born at Washington, D. C., 1849. He was graduated from the Naval academy in 1868; was executive officer on the battleship *Maine,* when destroyed in Havana harbor, February 15, 1898. After this he did good service at the battle of Santiago as commander of the gunboat *Gloucester;* was superintendent of the naval academy, 1900-02; became a captain in 1903. Died, 1926.

Waite, Morrison Remick, American jurist, chief-justice of the supreme court of the United States, 1874-88, was born at Lyme, Conn., 1816. He was graduated from Yale, 1837; studied law and practiced in Ohio. He was nominated by President Grant chief-justice of the United States

supreme court, 1874, and served until his death in 1888.

Waldersee (*vȧl'dĕr-zā'*), **Count Alfred von,** German general, was born in Potsdam, Prussia, 1832, and entered the German army in 1850, and was chief of the general staff in the Franco-Prussian war; succeeded Moltke as chief of staff in 1888. In 1900 he was created field-marshal, and was appointed to the chief command in China of the allied armies engaged in suppressing the Boxer disturbances. Died, 1904.

Waldstein, Charles, See **Walston, Charles.**

Walker, Francis Amasa, American political economist, was born at Boston, Mass., 1840. He was graduated from Amherst in 1860, took part in the Civil War, and in 1865 rose to the brevet rank of brigadier-general. From 1873 to 1881 he was professor of political economy in the Sheffield scientific school at Yale and in 1881 became president of the Massachusetts institute of technology at Boston. Author: *The Indian Question; The Wages Question; Money; Bimetallism;* and *History of the Second Army Corps.* Died, 1897.

Wallace, Alfred Russel, English naturalist and traveler, was born in Monmouthshire, England, 1822. He visited South America and the Malay archipelago, published the results of his observations on his return. Among his other works are: *Contributions to the Theory of Natural Selection; Geographical Distribution of Animals,* etc. Died, 1913.

Wallace, Henry Cantwell, born Rock Island, Ill., 1866. Graduate Iowa State College of Agriculture, 1892. Farmer and breeder of live stock. Editor and publisher. Secretary of Agriculture in Harding Cabinet. Died, 1924.

Wallace, John Findley, American civil engineer, was born at Fall River, Mass., 1852. He was educated at Monmouth College, C. E.; chief engineer of the Panama canal, 1904; isthmian canal commissioner, 1905; president of Electric Properties company beginning 1906. He was chairman of the board of directors of Westinghouse company. Died, 1921.

Wallace, Lewis, American general, diplomat, and author, was born at Brookville, Ind., 1827; entered the Union service during the Civil War; became a brigadier-general in 1861, and served throughout the war. He was governor of New Mexico, 1878-81, and from 1881 to 1885 was United States minister to Turkey. Author: *Ben Hur,* etc. Died, 1905.

Wallace, Sir William, Scottish patriot, was born about 1272. He headed the rising of 1297 against the English. The next year, however, he was defeated by Edward I. at Falkirk. After being imprisoned in France he was declared an outlaw, in 1304, was captured the next year, sent to London and hanged.

Wallenstein (*vȧl'en-shtin*), **Albrecht Wenzel Eusebius,** duke of Friedland, celebrated German general, was born in Bohemia, 1583. At the head of a formidable army, raised by him for the service of the emperor, and paid from his own resources and from unlimited plunder, he, for several years, distinguished himself by his successes in Moravia, Bohemia and northern Germany. Died, 1634.

Walpole, Horace, English author, was born in 1717, and in 1791 succeeded to the title of earl of Orford. In 1747 he purchased the famous estate of Strawberry Hill, Twickenham. In this house he collected works of art and curiosities of every description, and likewise established a private printing-press, at which several of his own works and some others were printed. He wrote: *Anecdotes of Painting in England; The Castle of Otranto;* and subsequently, *Reminiscences of the Courts of George I. and II.* He is now remembered chiefly for his *Letters.* Died, 1797.

Walpole, Sir Robert, English statesman, was born at Houghton, England, 1676. He was graduated from Cambridge, and entered parliament in 1701. He was secretary of war, 1708; treasurer of the navy, 1709; chancellor of the exchequer, 1715-17; and prime minister, 1721-42. He was one of the first to urge the establishment of a sinking fund for the purpose of reducing the national debt. He was an enemy of war, and a strong supporter of the Protestant succession. On his retirement in 1742 he was created earl of Orford. Died, 1745.

Walston (formerly Waldstein), **Charles,** American archæologist, was born in New York, 1856. He was educated at Columbia College and at Heidelberg. Slade professor of fine arts at Cambridge University, 1895-1901 and 1904-11, and professor, 1895-97, American school of classical studies, Athens, Greece. Author: *Excavations at the Hereion of Argos; The Surface of Things; The Jewish Question; The Argive Heræum,* etc. Died, 1927.

Walter, Thomas Ustick, American architect, was born in Philadelphia, Pa., 1804. In 1848 his design for the extension of the capitol at Washington, D. C., was adopted. While in Washington he also designed the extensions of the patent office, treasury and post-office buildings, the dome of the capitol, and the government hospital for the insane. He died in Philadelphia, Pa., 1887.

Walton, Izaak, English writer, was born at Stafford, England, 1593. He is chiefly remembered as the author of *The Compleat Angler, or The Contemplative Man's Recreation,* which was published in 1655. He was a linendraper in the city of London, first in Cornhill, and afterward in Fleet street. He was also the author of a *Life of Dr. Donne; Life of Richard Hooker; Life of George Herbert.* Died, 1683.

Wanamaker, John, American merchant, was born at Philadelphia, Pa., 1838. He was educated in the public schools until 1852; established, 1861, with Nathan Brown, clothing house of Wanamaker and Brown, Philadelphia; established, 1876, department store in Philadelphia, and a similar business in New York in 1896, in succession to the business of A. T. Stewart, now among the largest in the country; was postmaster-general of the United States, 1889-93. Died, 1922.

"Ward, Artemus." See **Browne, Charles Farrar.**

Ward, Elizabeth Stuart Phelps. See **Phelps-Ward, Elizabeth Stuart.**

Ward, Mrs. Humphry (Mary Augusta Arnold), English novelist, and writer, was born at Hobart, in Tasmania, 1851, daughter, Thomas Arnold, second son of Dr. Arnold of Rugby. She began early to contribute to *Macmillan's Magazine.* The translation of Amiel's *Journal Intime,* prepared the way for the spiritual romance of *Robert Elsmere,* in 1888. After that she published : *The History of David Grieve; Marcella; The Marriage of William Ashe; Fenwick's Career;* etc. Died, 1920.

Ward, John Quincy Adams, American sculptor, was born at Urbana, Ohio, 1830. From 1861 he made his home in New York. His *Indian Hunter, A Private of the Seventh Regiment,* and *Shakespeare* are in Central park, New York; his colossal statue of Washington is on the steps of the sub-treasury building in Wall street. Died, 1910.

Warfield, David, American actor, was born at San Francisco, 1866. He went to New York in 1890; played in Casino theater and Weber and Field's music hall, 1895-98; was starred by David Belasco in *The Auctioneer, The Music Master, A Grand Army Man.*

Warner, Charles Dudley, American author, was born at Plainfield, Mass., 1829. He was graduated at Hamilton College, 1851. In 1884 he became coëditor of *Harper's Magazine,* in which his papers on the South, Mexico, and the great West appeared. In 1873 he wrote with "Mark Twain" *The Gilded Age.* His other works include: *My Summer in a Garden,* etc. Died, 1900.

Warren, Francis Emroy, United States senator, was born in Hinsdale, Mass., 1844; enlisted in 1862 in the 49th Massachusetts regiment of infantry, and served as private and non-commissioned officer; early in 1838 he moved to Wyoming; was appointed governor of Wyoming by President Arthur in 1885. He was elected to the United States senate in 1890, and had been regularly reelected since 1894. Died, 1929.

Warren, Henry White, senior bishop of the Methodist Episcopal church, was born at Williamsburg, Mass., 1831; graduated from Wesleyan University, Conn., 1853; D.D., Dickinson; LL.D., Ohio Wesleyan. Ordained M. E. ministry, 1855; pastor Worcester, Mass., 1855-7, Boston, 1857-61, Lynn, 1861-3, Westfield, 1863-5, Cambridge, 1865-8, Charlestown, 1868-71, Philadelphia, 1871-4, Brooklyn, 1874-7, Philadelphia, 1877-80; elected bishop 1880. Member Massachusetts House of Representatives, 1863. Author of *Sights and Insights; Studies of the Stars; Recreation in Astronomy; The Bible in the World's Education; Among the Forces,* etc. Died, 1912.

Warren, Joseph, American soldier, was born at Roxbury, Mass., 1741. He was graduated at Harvard in 1759, and became a physician in Boston, 1764. In 1774 he was a member and president of the Massachusetts congress, and chairman of the committee of public safety. He had much to do with the success at Lexington, and in 1775 was commissioned major-general; he went to Bunker Hill as a volunteer, refusing to take the chief command offered to him by both Prescott and Putnam. As he was leaving the field he was killed by a ball in the forehead, 1775.

Warren, Samuel, English novelist, was born in Denbigshire, 1807. He was recorder of Hull, 1854-74; conservative member of parliament for Midhurst, 1856-59. He is chiefly remembered by his *Passage From the Diary of a Late Physician,* and *Ten Thousand a Year.* Died, 1877.

Warwick, Richard Neville, Earl of, surnamed the "king-maker," was born about 1428. After joining the Yorkists in the commencement of the calamitous war of the Roses, and taking King Henry VI., prisoner, Warwick, following his victory of Towton, placed Edward, duke of York, on the throne, as Edward IV. He was killed in the battle of Barnet, 1471.

Washington, Booker Taliaferro, principal of Tuskegee Normal and Industrial Institute beginning 1881, was born near Hale's Ford, Va., about 1859, the son of a mulatto slave and a white man. He was graduated from Hampton Institute, Virginia, 1875; A.M., Harvard, 1896; LL.D., Dartmouth, 1901. He was a teacher at Hampton institute until elected by the state authorities head of Tuskegee Institute. Author: *Sowing and Reaping; Up From Slavery; Future of the American Negro; Character Building; Story of My Life and Work; Working With Hands; Tuskegee and Its People,* etc. Died, 1915.

Washington, George, hero of American independence and first president of the United States, was born in Westmoreland county, Virginia, 1732; died at Mount Vernon, 1799. He was the great-grandson of John Washington, an Englishman, who emigrated in 1657; and the son of Augustine Washington, a substantial farmer, being the eldest of a second family.

His education was limited to the elementary subjects, but he acquired a fair knowledge of mathematics and surveying, chiefly by self-study, and when his widowed mother prevailed upon him to abandon the idea of entering the British navy, he adopted surveying as a profession.

His military career commenced at the age of nineteen, when he was appointed adjutant-general of Virginia militia; and before long he showed in operations against the French that he united in an eminent degree the qualities belonging to a successful commander, though in 1754, when in command of his regiment, he had to capitulate to a superior French force. In 1755 he accompanied General Braddock as a volunteer, and was almost the only officer who returned safe from the disastrous expedition. In 1758 he took an important part in the expedition that captured Fort Du Quesne, where, Pittsburg now stands.

In the meantime extensive estates and plantations at Mount Vernon had come into his possession through the death of his half-brother. To these possessions he added largely by marrying, in 1759, Mrs. Martha Custis, a wealthy young widow. He also sat for some years in the Virginia assembly.

Shortly after the outbreak of the war of independence, Washington was elected commander-in-chief of the American forces and hastened to the camp. His career henceforth is part of American history. He was compelled by superior forces at times to retreat, and reduced to the most desperate straits by disaffection, lack of men and supplies, and even cabals against his authority; but by his mildness, calm courage, prudence, firmness and perseverance he brought the war, with the aid of powerful allies, to a successful termination. After the independence of the thirteen colonies was achieved, he retired from the army to Mount Vernon, which he had, during the eight years of war, but once visited. He refused to accept pay, but kept a minute account of his personal expenses, which were reimbursed by Congress.

In 1784 he crossed the Alleghenies to see his lands in West Virginia, and planned the James river and Potomac canals. The shares voted him by the state he gave to endow Washington college, at Lexington, Virginia, and for a university. The early federation of states having failed to give an efficient government, Washington proposed conventions for commercial purposes, which led to the convention of 1787, of which he was a member. This body formed the present federal constitution, considered by him as the only alternative to anarchy and civil war.

Under this constitution he was chosen president, and inaugurated at New York, April 30, 1789. At the second presidential election in 1792 he desired to retire, but yielded to the solicitations of the people, and served for four years longer. In 1796 he positively declined a reelection, and on March 4, 1797, returned to Mount Vernon for the quiet of home life. In 1798, when war was threatened with France, the illustrious chief yielded to the demands of his country, and accepted the post of commanding general of the United States forces, with the rank of lieutenant-general, but a treaty of peace rendered his services unnecessary, and he again returned to his Mt. Vernon home.

On December 12, 1799, he was exposed in the saddle for several hours to cold and snow, and attacked with acute laryngitis, sunk rapidly, and died December 14. His last words were characteristic. He said: "I die hard, but I am not afraid to go." After some instructions to his secretary about his burial he became easier, felt his own pulse, and died without a struggle. He was mourned by the whole nation, and amply deserved the immortal epitaph: "First in peace, first in war, and first in the hearts of his countrymen."

References.—The most important biographies of Washington are those of Marshall, Ramsay, Irving and Lodge. Editions of his collected

writings have been issued by Sparks, and W. G. Ford. See also Guizot's *Character and Influence of Washington;* and Parker's *Historic Americans.*

Watson, John. See **Maclaren, Ian.**

Watson, Thomas E., American lawyer and politician, was born in Georgia, 1856. He was a member of the Georgia legislature, 1882-83; member of congress, 1891-93; began the publication of *Tom Watson's Magazine,* in New York, 1905. U. S. Senator, 1921. Author: *The Story of France.* Died, 1923.

Watson, William, English poet, was born at Burley-in-Whartedale, 1858; honorary LL.D., Aberdeen, 1904. His early poems were published in the *Liverpool Argus* in 1875, and his first book, *The Prince's Quest,* appeared in 1880. Since then have appeared: *Epigrams of Art, Life, and Nature; Odes, and Other Poems; The Purple East; Ode on the Coronation of King Edward VII.;* etc. Died, 1935.

Watt, James, Scotch engineer and, generally accredited inventor of the steam engine, was born at Greenock, 1736; and died at his seat of Heathfield, Staffordshire, 1819. His father was a merchant and magistrate of Greenock and James received a good education there. Having determined to adopt the trade of mathematical-instrument maker, he went to London in 1754, for instruction, but ill-health compelled him to return after a year's apprenticeship. Shortly after he endeavored to establish himself in Glasgow, was appointed in 1757 mathematical-instrument maker to the university and resided within its walls till 1763.

From this time till 1774 he acted as a civil engineer—made surveys for canals and harbors, and some of his plans were afterward carried out. It was during this period that he gave shape to his chief improvements on the steam engine. In order to produce the improved machine he associated himself (1775) in business with Mathew Boulton—the firm of Boulton and Watt having their engine works at Soho, Birmingham. He retired from business in 1800.

Watt was a fellow of the Royal societies of London and Edinburgh and member of the national institute of France. He was twice married, and was survived by one son, who carried on the establishment at Soho, in partnership with a son of Mr. Boulton's. Besides improving the steam engine, Watt invented or improved a variety of mechanical appliances, including a letter-copying press. Was an ardent student of chemistry, and it was long maintained on his behalf that he discovered the composition of water. He was a man of high mental powers generally and possessed a wide and varied knowledge of literature and science.

References.—Smiles' *Lives of Boulton and Watt;* Muirhead's *Mechanical Inventions of James Watt;* Thurston's *The Growth of the Steam Engine;* and Pemberton's *James Watt.*

Watterson, Henry, American journalist and orator, was born at Washington, D. C., 1840. He served with distinction in the confederate army as chief of scouts under General Joseph E. Johnston. He subsequently settled at Louisville, Ky., where he founded and edited the *Courier-Journal,* which he made one of the foremost democrat newspapers. At Chicago, in 1893, he delivered the dedicatory oration at the opening of the World's Columbian exposition. He published a *History of the Spanish-American War; Oddities of Southern Life and Character; Abraham Lincoln,* etc. Died, 1921.

Watts, George Frederick, English artist, sculptor, portrait painter, and delineator of historical subjects, was born at London, 1820. He first exhibited at the Royal academy in 1837, and gained a reputation for the size, artistic excellence and beauty of coloring of his pictures. His chief exhibits included: *Caractacus; Cymbeline; Fata Morgana; Life's Allusions; Sir Galahad.* Died, 1904.

Watts, Isaac, English hymn writer and theologian, was born at Southampton, England, 1674. His theological works were numerous, and his treatise on *Logic* had a considerable reputation. His reputation has been chiefly perpetuated by his well known hymns. Died, 1748.

Wayne, Anthony, famous general in the war of the revolution, was born in Pennsylvania, 1745. Led the attack at Germantown; captured supplies for the distressed at Valley Forge; achieved a brilliant victory in the storming of Stony Point, 1779. His courage and skill saved Lafayette in Virginia, 1780. By his dash and audacity he acquired the sobriquet of "Mad Anthony." He became major-general and commander-in-chief in 1792. Died, 1796.

Weber (*vā'bĕr*), **Karl Maria von,** German composer, was born at Eutin near Lübeck, 1786, of a famed musical family. His first great production was *Der Freischütz,* which established his fame, and was followed by *Oberon,* his masterpiece; *Das Waldmädchen,* etc. Died, 1826.

Webster, Daniel, great American statesmen and orator, was born at Salisbury, New Hampshire, 1782. Daniel was the second son of Ebenezer Webster, a small farmer and justice of the county court. He entered Dartmouth College in 1797, and taught school in winter to pay his expenses. He graduated in 1801, and in 1804, went to Boston, and entered the law office of Mr. Gore. In 1805 he was admitted to the Boston bar, passed one year in the practice of his profession at Boscawen and, on the death of his father, established himself at Portsmouth, N. H., and married in 1808.

Having engaged in politics as a member of the federalist party, he was elected to congress, where he immediately took rank with the foremost men of the country. He took his seat in the special session of May, 1813, and on June 10, delivered his maiden speech on the repeal of the Berlin and Milan decrees. This, and his mastery of the question of currency and finance, secured him a high position. At the close of the session, however, Webster removed to Boston, where, during a period of seven years, he devoted himself exclusively to the practice of his profession, and occupied a preeminent position as a counsellor and advocate.

In 1822, he was a member of the Massachusetts constitutional convention; and on December 22, 1822, he pronounced at Plymouth, on the anniversary of the landing of the Pilgrims, the first of that remarkable series of discourses, or orations, which put him in the first rank among American orators. In 1825, he delivered an oration at the laying of the corner stone of the Bunker Hill monument; in 1843, one on its completion. In 1826, he pronounced the eulogy of John Adams and Thomas Jefferson, two fathers and presidents of the American republic, who died on the same semi-century anniversary of the declaration of independence; and in 1851, a patriotic discourse on the laying of the corner stone for the extension of the capitol at Washington.

In 1822 he was elected to Congress from Boston and distinguished himself by his speeches on the holy alliance and the Greek revolution and his labors in the revision of the criminal laws of the United States. In 1826 he was chosen United States senator; and in 1830 rose to the height of his forensic renown in a speech of two days, in the debate with Mr. Hayne, of South Carolina, on the right of "nullification." Webster and Clay were the leaders of the opposition during the administrations of Jackson and Van Buren.

In 1841 he became secretary of state under President Harrison; remained in the administration of President Tyler until 1843; and was a third time secretary of state in 1850, in the cabinet of Mr. Fillmore. On various occasions Webster had been an unsuccessful candidate for the presidency. He aspired again to that position in 1852, but his advocacy of compromises on the slavery question had given offense to the abolitionists, and the choice of the convention assembled at Baltimore fell upon General Scott. The great orator died a few months after, October 24, 1852.

Webster's figure was commanding; his countenance was remarkable even in repose, but when animated by the excitement of debate, it "spake no less audibly than his words." His gestures were vehement, without being undignified; and his voice was unrivalled in power, in clearness and in modulated variety of tone.

References.—The *Writings and Speeches of Daniel Webster* have been published in 18 volumes and his *Works* in 6 volumes. See also Curtis' *Life of Daniel Webster;* Harvey's *Reminiscences of Daniel Webster;* Lodge's *Daniel Webster;* McMaster's *Daniel Webster;* Wheeler's *Daniel Webster, the Expounder of the Constitution.*

Webster, John, English dramatist, was born about 1580. He collaborated with a number of writers of the period, and then produced the tragedy of *The White Devil,* one of his two great masterpieces, about 1610; and about 1616 his famous *Duchess of Malfy.* He died about 1625.

Webster, Noah, author and philologist, was born at Hartford, Conn., 1758, and was educated at Yale College; admitted to the bar in 1781. While employed in teaching at Goshen, N. Y., he prepared his *Grammatical Institutes of the English Language.* In 1807 he published *A Philosophical and Practical Grammar of the English Language,* and commenced his American *Dictionary of the English Language;* but finding difficulties in etymology, he devoted ten years to its study, and prepared a *Synopsis of Words in Twenty Languages;* then began his dictionary anew, and in seven years completed it. Died in New Haven, Conn., 1843.

Weed, Thurlow, American journalist, was born at Cairo, N. Y., 1797. He served as a volunteer in the war of 1812. In 1865 he moved to New York city and became editor of the *New York Times,* and afterward of the *Commercial Advertiser.* In 1861-62 he was sent to Europe on a special mission by President Lincoln. Died at New York in 1882.

Weeks, John Wingate, born Lancaster, N. H., 1860. Graduate U. S. Naval Academy, 1881. Member 59th to 62nd Congresses. U. S. Senator, 1915-1919. Member Society of the Cincinnati. Secretary of War in Harding Cabinet. Died, 1926.

Weismann (*vīs'mān*), **August,** German biologist, was born at Frankfort, 1834. He contended that natural selection was the dominant factor in evolution. He published, besides the Romanes lectures of 1894, *The Evolution Theory* and works on kindred problems. Died, 1914.

Welch, William Henry, American physician and pathologist, professor of pathology at Johns Hopkins, was born at Norfolk, Conn., 1850. He was graduated from Yale in 1870; M.D.; LL.D.; professor of pathology, Johns Hopkins, 1884-1916; director, School of Hygiene and Public Health beginning 1916, and pathologist to the Johns Hopkins hospital, 1889-1916. Author of *General Pathology of Fever.*

Wellington, Arthur Wellesley, Duke of, celebrated British general, was born at Dangan Castle, Ireland, 1769; entered the army as ensign in 1787, and became lieutenant-colonel in 1793. He was then appointed commander of the British forces on the continent of Europe, and from Vienna joined the army at Brussels. The battles of Ligny and Quatre Bras were succeeded on June 18, 1815, by the great battle of Waterloo. In 1827 he succeeded the duke of York as commander-in-chief of the British army, and from 1828 to 1830 was prime minister. Died, at Walmer Castle, in 1852.

Wells, Carolyn, author, was born at Rahway, N. J., daughter of William E. Wells; and has been engaged in literary work beginning 1895. Author: *At the Sign of the Sphinx; The Gordon Elopement; Marjorie's Vacation; Rainy Day Diversions,* etc.

Wells, David Ames, American economist, was born at Springfield, Mass., 1828. He was graduated from Williams College. Among his published works are text-books on *Science of Common Things; Recent Economic Changes; The Principles of Taxation; Our Merchant Marine.* Died at Norwich, Conn., 1898.

Wells, Herbert George, English novelist, was born at Bromley, Kent, 1866. He was graduated at the Royal college of science, 1888. Author: *The Time Machine; The Stolen Bacillus and Other Stories; The Invisible Man; The Food of the Gods; In the Days of the Comet; The War in the Air,* etc.

Wendell, Barrett, American educator, writer, and critic, professor of English at Harvard, was born at Boston, 1855. He was graduated at Harvard, 1877; professor beginning 1898, and lecturer at the Sorbonne and other French Universities, 1904-05. Author: *English Composition; Life of Cotton Mather; Stilligeri and Other Essays Concerning America; The Temper of the Seventeenth Century in English Literature; History of Literature in America; The France of To-day,* etc. Died, 1921.

Wenley, Robert Mark, American educator, head of philosophical department, University of Michigan, since 1896, was born at Edinburgh, Scotland, 1861. He was graduated at the University of Glasgow, M.A., 1884; Ph.D., Sc.D., LL.D. Author: *Socrates and Christ; Aspects of Pessimism;* co-editor *Dictionary of Philosophy,* etc. Joint editor: *The Psychological Review.* Died, 1929.

Werner (*ver'nĕr*), **Abraham Gottlob,** German mineralogist and geologist, was born at Wehrau, in upper Lusatia, 1750. In 1792 he was appointed councilor of mines in Saxony, and his lectures soon extended his reputation throughout Europe. In his mineralogical system minerals were distinguished and arranged chiefly according to their external characters. He died at Dresden in 1817.

Wesley, Charles, English hymn writer, was born at Epworth, England, 1708, and was associated with his brother John in the whole Methodist movement. He is the author of a great number of hymns, many of which are among the best and most admired in the English language. He died in 1788.

Wesley, John, English divine, who, with Whitefield, founded Methodism, was born at Epworth, 1703. In 1730, while at Oxford University, he and his brother, with a few other students, formed themselves into a society for the purpose of mutual edification in religious exercises. So singular an association excited considerable notice, and, among other names bestowed upon the members, that of *Methodists* was applied to them. Wesley with some others, chiefly Moravians, came to Georgia in 1735, but the strictness of discipline which he attempted to introduce proved

very distasteful to the colonists. After a residence of less than two years in America he returned to England, preaching to open air meetings, and gathered many followers. He built spacious meeting houses in London, Bristol and other places.

For some time he was associated with George Whitefield; but, differences arising on account of the doctrine of election, which was zealously espoused and preached by the latter, they separated, and the Methodists were denominated according to their respective leaders.

Wesley was indefatigable in his labors, and was almost continually engaged in traveling over England, Wales, Scotland and Ireland. No man ever labored more zealously or continuously in the cause which he had undertaken. Every moment of his life was devoted to the organization of the great sect of Methodists, and he preserved his influence over it to the last. His preaching was extemporaneous, but not vehement. He dwelt much upon practical religion, though he taught his followers to seek inspiration of the Holy Spirit, and to aspire to a state of sinless perfection. Died in London, 1791.

References.—Perhaps Wesley's best single treatises were his *Notes on the Old and New Testaments*, and his *Doctrine of Original Sin*. His complete *Works*, with a *Life* by T. Beecham, and preface by J. J. Jackson, has been published in 15 volumes. *Lives* of John Wesley have been written by Southey, Tyerman, Wedgwood, Telford, Overton, Snell and Winchester. See also *Wesley and his Century*, by Dr. Fitchett.

West, Benjamin, American painter, was born at Springfield, Pa., 1738. He began to paint at seven years of age, worked in Philadelphia and New York, studied in Italy, 1760-63, and settled in England in the latter year. Among his best paintings are: *The Death of Wolfe; Christ Healing the Sick; Death on the Pale Horse*, etc. Died in London in 1820.

Westcott, Brooke Foss, English prelate, writer and biblical scholar, was born near Birmingham in 1825; regius professor of divinity at Cambridge and in 1890 was appointed bishop of Durham. His writings embrace: *History of the Canon of the New Testament; The Gospel of Life; Social Aspects of Christianity; Characteristics of the Gospel Miracles; The New Testament in the Original Greek*. Died, 1901.

Westinghouse, George, American inventor and manufacturer, was born in New York in 1846. In 1868 invented and successfully introduced the Westinghouse air-brake, which he later greatly improved. He was the pioneer in introducing alternating current machinery in America; built the great generators at Niagara Falls and those for elevated railway and rapid transit system in New York. Died, 1914.

Weygand, M. General, French strategist; shared with Foch the glory of defending the Lorraine front. After the war he was ordered to Poland and by his distinctive strategy saved Poland from the incursions of Russia.

Wheatstone, Sir Charles, English physicist and electrician, was born at Gloucester, England, 1802. Invented the telegraph thermometer and barometer; secured first patent for an electric telegraph; and an apparatus for conveying instructions to engineers and steersmen on board large steam-vessels. He is well known for the Wheatstone bridge. Died, 1875.

Wheeler, Benjamin Ide, American educator and philologist, president of the University of California, 1899-1919, was born at Randolph, Mass., 1854. He was graduated at Brown University, 1875; Ph.D., LL.D., Harvard, 1900; professor of Greek, 1888, at Cornell. Now president emeritus and professor comparative philology, University of California. Author: *The Greek Noun-Accent; Analogy in Language; Organization of Higher Education in the United States*. Died, 1927.

Wheeler, Joseph, American general was born in Augusta, Ga., 1836. He was graduated at the United States military academy in 1859; served in the cavalry until the outbreak of the Civil War, when he entered the confederate army, in which he was later commissioned major-general and senior commander of cavalry; was made major-general of volunteers during the Spanish-American war in 1898; appointed brigadier-general in the United States army, 1900, and was retired in September. Died, 1906.

Whistler, James Abbott McNeill, noted American painter, was born in Lowell, Mass., 1834. He entered the United States military academy, but was dismissed; studied drawing and painting in Paris, France, and in 1863 settled in London, England. He gained celebrity as an etcher. His paintings include many portraits, among which are: *The White Girl; Portrait of My Mother; Nocturne in Blue and Gold*. Died, 1903.

White, Andrew Dickson, American diplomatist and educator, was born in Homer, N. Y., 1832. He was graduated at Yale in 1853. He was appointed by President Hayes, minister to Berlin, 1879-81; by President Harrison, minister to St. Petersburg, and continued under President Cleveland, 1892-94; appointed member of the Venezuelan commission, 1896-97; ambassador to Berlin under President McKinley, 1897-1902; and was president of the American delegation to the international peace congress at The Hague in 1899. He wrote *Warfare of Science With Theology; Studies in General History*, etc. Died, 1918.

White, Edward Douglas, American jurist, was born in the parish of Lafourche, La., 1845. He was educated at Mount St. Mary's College, Maryland, and at the Jesuit College in New Orleans. During the Civil War he served in the confederate army. United States senator in 1891-94; he was appointed associate justice of the United States supreme court in 1894 and chief justice, 1910. Died, 1921.

White, Henry, diplomat, was born at Baltimore, 1850. He was educated by private tutors and schools. He has represented the United States in England, Austria, Italy, Morocco, France, Argentina and Chile. Died, 1927.

White, Horace, American journalist, was born in Colebrook, N. H., 1834. He was graduated at Beloit College, Wis., 1853; from 1883 to 1903 was connected with the *New York Evening Post*, as president of the company, editorial writer and editor-in-chief. Author: *Money and Banking Illustrated by American History; The Roman History of Appian*, etc. Died, 1916.

White, Richard Grant, American author and critic, was born in New York City, 1821. He was educated at the college of the City of New York. The result of his studies and writings on music and art was a volume on *Christian Art*. His other works include: *National Hymns; Poetry of the Civil War; Life of Shakespeare; Studies in Shakespeare*, etc. Died, 1885.

White, Stewart Edward, author, was born in Grand Rapids, Mich., 1873; Ph.B., University of Michigan, 1895. He is a frequent contributor to magazines, and author of *The Westerners; The Blazed Trail; The Forest; Blazed Trail Stories; The Pass; Camp and Trail*.

White, William Allen, American journalist and author, owner and editor of the Emporia *Daily and Weekly Gazette*, was born 1868. Author: *The Real Issue, and Other Stories; Stratagems and Spoils; A Certain Rich Man*, etc.

Whitefield, George (1714-1770), born in Gloucester, and educated at Oxford, was one of the founders of Methodism. He made several visits to America, a number of which lasted two or three years.

Whitlock, Brand, lawyer, diplomat, born in Urbana, Ohio, 1869, began his career as a newspaper reporter, then as a clerk. Studied law and was admitted to the bar, 1894. Twice elected Mayor of Toledo on the Independent ticket, he secured many reforms. In 1913 was appointed U. S. Minister to Belgium, where he made a strenuous but futile intercession for Edith Cavell. Ambassador, 1919-1922. Brown University conferred a degree of LL.D. upon him in 1916, and the Ohio Wesleyan in 1917.

Whitman, Walt (1819-1892), American poet, was born at Westhills, L. I. A printer by trade, he wrote for newspapers and magazines, and later became editor of the *Brooklyn Eagle*. He wrote *Democratic Vistas; Two Rivulets;* and *Specimen Days and Collect*.

Whitney, Eli, American inventor, was born in Westborough, Mass., 1765. In 1792 he was graduated at Yale; invented the cotton gin, 1796, but owing to litigation growing out of the claims of fraudulent imitators, and despairing of obtaining his rights in the South, Whitney went to New Haven, Conn., 1798, near which city he became engaged in the manufacture of firearms. He died at New Haven, 1825.

Whitney, Josiah Dwight, American geologist was born at Northampton, Mass., 1819. He was graduated at Yale in 1839; in 1865 was made professor at Harvard. He wrote extensively on geological topics, and died in 1896.

Whitney, William Dwight, American philologist, was born at Northampton, Mass., 1827. In 1854 he became professor of Sanskrit at Yale, and in 1870 also of comparative philology. He waged war with Max Müller on fundamental questions of the science of language. Among his works were: *Material and Form in Language, Life and Growth of Language; Mixture in Language*, etc. He was editor-in-chief of the *Century Dictionary*. Died at New Haven, 1894.

Whittier, John Greenleaf, American poet, was born of Quaker parents at Haverhill, Mass., 1807. In his younger days he worked on his father's farm and learned the shoemaking trade. He carried on the farm himself for five years, and in 1835-36 was a member of the legislature of Massachusetts and always remained an ardent abolitionist. Among the numerous volumes of poetry which he published from time to time are: *Molly Pitcher; The Voices of Freedom; The Chapel of the Hermits; Snow Bound; In War-Time; Hazel Blossoms; The King's Missive; Poems of Nature*, etc. He is best known for his poems, *Barbara Frietchie, The Barefoot Boy, Maud Muller*, and *The Pipes at Lucknow*. Died, 1892.

Wickersham, George Woodward, American lawyer, attorney-general of the United States, 1909-13, was born in Pittsburg, Pa., 1858. He was graduated at the University of Pennsylvania, 1880; member firm Strong and Cadwalader, 1887-1909; attorney general of United States, 1909-13, in the cabinet of President Taft; member firm Cadwalader, Wickersham and Taft. Died, 1936.

Wieland (*vē'lant*), **Christoph Martin,** noted German poet, was born at Oberholzheim, near Biberach, 1733. His views on the subject of love are most fully and worthily expounded in the didactic poem *Musarion*, a work of singular grace and harmony of treatment. At Weimar in 1772 he wrote *The Choice of Hercules*. Died, 1813.

Wiggin, Kate Douglas, American author, was born in Philadelphia, Pa., 1857. She was graduated at Abbott Academy, Andover, Mass., 1878, and married Samuel Wiggin in 1880 and George C. Riggs in 1895. Author: *The Birds' Christmas Carol; The Story of Patsy; Polly Oliver's Problem; The Village Watch Tower; The Diary of a Goose Girl; Rebecca; The Affair at the Inn*. Died, 1923.

Wilberforce, William, English statesman and philanthropist, was born at Hull, England, 1759. He was educated at St. John's College, Cambridge. He entered parliament as the representative of his native town. In 1789 he first proposed in the house of commons the abolition of the slave trade, and, with the aid of Charles James Fox, this measure was carried in 1806. Died 1833 and was buried in Westminster abbey.

Wilcox, Ella Wheeler, American poet and writer, was born near Madison, Wis., 1855, and was educated at the State University in that city. For many years she was on the staff of the *New York American*. Died, 1919.

Wilde, Oscar Fingall O'Flahertie Wills, Irish author and dramatist, was born at Dublin, Ireland, 1856. Educated at Trinity College, Dublin, and at Oxford. While yet in college he became a leading exponent of the aesthetic movement, and in 1882 he toured the U. S., lecturing on this subject. By 1890 had become widely known as writer and dramatist. His chief prose work, *The Picture of Dorian Gray*, and a volume of essays, *Intentions*. Among his plays are: *Duchess of Padua; Lady Windermere's Fan; A Woman of No Importance; The Ideal Husband;* and *Importance of Being in Earnest*. His play *Salome* was produced by Bernhardt in Paris in 1894. Other books include *Ballad of Reading Gaol* and *De Profundis*, the former written while he was serving a prison sentence after conviction for immoral practices. Died, 1900.

Wiley, Harvey Washington, chemist, writer, was born at Kent, Ind., 1844. Graduated from Hanover College, 1867; M.D., Indiana Medical College; D.Sc. Lafayette College, 1912. Professor of Chemistry Purdue University and State Chemist of Indiana, 1874-83. Chief Chemist, United States Department of Agriculture, 1883-1912. Professor of Agricultural Chemistry, George Washington University, 1899-1912. Commissioned in 1906 to frame regulations for pure food in New York. Contributing editor to *Good Housekeeping*, 1912-1930. Author *Principles and Practice of Agricultural Chemistry; Foods and Their Adulterations* and *History of a Crime Against the Food and Drugs Act*. He died in 1930.

Wilhelmina (*vil'hel-mē'nä*), **Helene Pauline Marie,** queen of the Netherlands, was born at The Hague, Holland, 1880. She succeeded to the throne of the Netherlands on the death of her father in 1890, though she only attained legal age in 1898, when she was inaugurated as queen. In 1901 she married Prince Henry, youngest son of the late grand duke of Mecklenburg-Schwerin.

Willard, Emma C., American educator, born at Berlin, Conn., 1787. In 1808 she married Dr. John Willard. In 1830 she traveled in Europe and by her efforts a school for the training of native women teachers was founded in Greece. Among her books are: *History of the United States; Universal History in Perspective*. Died, 1870.

Willard, Frances Elizabeth, temperance reformer, was born at Churchville, N. Y., 1839. After some years spent in teaching, she became professor of æsthetics in the Northwestern University, and was made dean of the Woman's College in 1871. She began her active temperance work, in 1874, as secretary of the National Woman's Christian temperance union; in 1879 was made president of that organization, and held the office until her death. She died in New York, 1898.

Willcox, Walter Francis, American educator and statistician, was born in Reading, Mass., 1861. He was graduated at Amherst, 1884; Ph.D., LL.D.; is now professor of political economy and statistics, Cornell; statistical expert for war department upon censuses of Cuba and Porto Rico, 1899-1900. Author: *The Divorce Problem—a Study in Statistics*, and numerous census bulletins.

William I., commonly called the Conqueror, was born in Normandy, 1027. He laid claim to the sovereignty of England on the death of Edward the Confessor. In 1066 he landed at Pevensey, in Sussex; defeated Harold II. at the battle of Hastings; and was crowned king of England in Westminster abbey on the Christmas day following. The Channel islands, being part of Williams' duchy of Normandy, became attached to England on his accession. He died at the abbey of St. Gervais, 1087.

William III., king of England, 1689-1702 was born at The Hague, 1650. In 1678, being then stadtholder of Holland, he went to England and

married Mary, youngest daughter of the duke of York, afterward James II. In 1688 he landed with a Dutch army at Torbay, in Devonshire, and was soon after invited by a convention parliament to accept the throne, which James had vacated. In 1690 he defeated James at the battle of the Boyne. He died at Kensington palace in 1702.

William IV., king of Great Britain and Ireland, third son of George III., was born in 1765. By the death of the Duke of York, 1827, he became heir-presumptive to the throne, to which he succeeded on the death of his brother, George IV., in June, 1830. The great event of the reign of William IV., was the passing of the reform bill. He died in 1837, and was succeeded by his niece, Queen Victoria.

William I. Friedrich Ludwig Wilhelm, king of Prussia and emperor of Germany, was born in 1797, second son of Frederick William III. of Prussia. In 1857, the king having become incapacitated for business, William was commissioned to act as regent, a commission which was renewed from time to time until his permanent installation, in 1858. In 1861 he ascended the throne, and became the head of the North German confederation in 1867. He found in Bismarck an able minister who could rule without a parliamentary majority. At Ems, in July, 1870, the memorable interviews, between William and the French ambassador, Benedetti, took place, which resulted in the Franco-Prussian war of 1870-71. William commanded at the decisive battles of Gravelottee and at Sedan. In 1871 he was proclaimed emperor of Germany in the palace of the French kings at Versailles. Died, 1888.

William II., Friedrich Wilhelm Viktor Albrecht, king of Prussia and emperor of Germany, was born in 1859, eldest son of Frederick III. and Victoria, princess royal of England. He succeeded his father in 1888. He showed his versatility as yachtsman, poet, composer, painter and war lord. His strong initiative in political matters led to the dismissal of Bismarck in 1890. His manner of prosecuting the great war of 1914-18 brought the downfall of the Hohenzollern dynasty. He was forced to abdicate Nov. 9, 1918, and took refuge in Holland.

William I., Frederik Willem, first king of the Netherlands, grand duke of Luxemburg, was born in 1772. In 1815 he was declared king, as William I., under a limited constitution. The Belgians having established their independence with the aid of France in 1830-32, he was obliged to acknowledge it in 1839. Died, 1843.

William I, called the Silent, prince of Orange, was born in Dillenburg, 1533. In 1576 the five provinces which had belonged to Spain, joined the states-general at Ghent, and formed a league under William. William formed in 1579 a league among Holland, Zealand, Utrecht, Friesland, Gelderland, Gronigen and Overyssel, which was the foundation of the Dutch republic. Two years later the united provinces declared themselves independent. William twice refused to rule the new country. He was assassinated at Delft, 1584.

Williams, George Fred, American lawyer, was born in Dedham, Mass., 1852. He was graduated at Dartmouth College, 1872. He edited *Williams' Citations of Massachusetts Cases* and volumes 10 to 17 *Annual Digest of the United States.* He was a member of the Massachusetts legislature in 1889, member of congress, 1891-93; minister to Greece, 1913-14. Resigned.

Williams, John Sharp, American legislator and publicist, was born in Memphis, Tenn., 1854. He studied law at the University of Virginia and in Memphis, Tenn., and was admitted to the Tennessee bar, 1877. He was temporary chairman of the St. Louis convention, 1904; member of congress, 1893-1903; United States senator from Mississippi, 1893-1923. Died, 1932.

Williams, Roger, English colonist and founder of Rhode Island, was born probably in London, about 1604. He emigrated to New England in 1631. On account of his religious opinions he was ordered to leave the colony in 1635, and in 1636 founded Providence. He was the first president of the colony established by himself; and the uniform justice and kindness with which he treated the native Indians is frequently referred to in the records of his time. Died, 1683.

Williston, Samuel, lawyer, and legal educator, was born at Cambridge, Mass., 1861; graduated from Harvard, 1882; LL.B., 1888; LL.D., 1910. Began practice at Boston, in 1888; assistant professor of law, 1890-5, professor, 1895-1903, Weld professor 1903-1919 and Dane professor since 1919; acting dean, 1909, Harvard Law School. Lecturer, Law School, University of Chicago, 1902-3, University of California, 1909. Author: *The Law of Sales.* Editor: *Parsons on Contracts,* eighth edition; *Cases on Contracts; Cases on Sales; Stephen on Pleading; Cases on Bankruptcy; Wald's Pollock on Contracts,* etc.

Wilson, Henry, American statesman, was born of poor parents in Farmington, N. H., 1812. He was elected to the Massachusetts legislature by the whig party in 1840, and largely contributed to the formation of the free-soil party in 1843. In 1855 he succeeded Edward Everett as United States senator, and became one of the leaders of the republican party. In 1872 he was elected vice-president of the United States. Died, 1875.

Wilson, Thomas Woodrow, twenty-eighth president of the United States, educator, publicist, historian, was born in Staunton, Va., Dec. 28, 1856, son of Rev. Joseph R. and Jessie (Woodrow) Wilson. He was graduated from Princeton University, 1879; from the University of Virginia Law School, 1882; and Ph.D., Johns Hopkins, 1886. He received the degree of LL.D. from Tulane, Johns Hopkins, Harvard, University of Pennsylvania and other universities, and that of Litt.D. from Yale. On June 24, 1885, he married Helen Louise Axson of Savannah, Ga., and had three daughters, Margaret, Jessie and Eleanor. During 1882-83 he practiced law at Atlanta, Ga.; 1885-88, was professor of history and political economy at Bryn Mawr College, Pa.; 1888-90, professor of same subject at Wesleyan University, Conn.; 1890-1902, professor of Jurisprudence and politics, and 1902-10, president of Princeton University. During the latter year he was elected governor of New Jersey, for the term 1911-14, and, after a notable contest, was nominated as the Democratic candidate for president of the United States, at Baltimore, on July 2, 1912. At the succeeding presidential election, he was elected president over William H. Taft, republican, and Theodore Roosevelt, progressive, by the largest electoral plurality ever accorded any presidential candidate. He was inaugurated March 4, 1913, and shortly following called congress in special session to consider tariff and other reforms. Mrs. Wilson died August 6, 1914. On December 18, 1915, he was married to Edith Bolling Galt. Renominated for president at convention of his party held in St. Louis, June, 1916. There followed one of the most strenuous campaigns in the history of this country. At the November election, 1916, he was re-elected over Charles E. Hughes, Republican nominee, by an electoral vote of 276 to 255. Author of *Congressional Government, The State, George Washington, History of the American People, The New Freedom, When a Man Comes to Himself.* Died, 1924.

Wilson, William Bauchop, secretary of labor, 1913-1921, farmer, was born at Blantyre, Scotland, April 2, 1862; came to this country with his parents in 1870 and settled at Arnot, Tioga County, Pa. In 1871, he began working in the coal mines; in 1873, became member of the Mine Workers' Union; has taken an active part in trade-union affairs from early manhood; was international secretary-treasurer of the United Mine Workers of America, 1900 until 1908. He was a member of Congress, 1907-13.

Winsor (*win'zĕr*), **Justin,** American historian and librarian, was born at Boston, Mass., 1831. He studied at Harvard and Heidelberg, was superintendent of the Boston library, 1858-77, passing then to the librarianship of Harvard. His chief publications embrace: *The Readers' Handbook of the American Revolution; Narrative and Critical History of America.* Died at Cambridge, Mass., 1897.

Winthrop, John, governor of Massachusetts colony, was born at Gorton, Suffolk, England, 1588; was chosen governor by the Massachusett Bay company in 1629. The next year he came over, bringing with him 900 emigrants. His *Journal* is one of the most important sources of early American history. He died at Boston, 1649.

Wirt, William, American lawyer, was born at Bladensburg, Md., 1772. He was admitted to the bar in 1792, and settled to practice in Virginia; and in 1817 became attorney-general of the United States. Died, 1834.

Wise, Stephen Samuel, Jewish Rabbi, was born in Buda Pest, Hungary, in 1872. He was educated at Columbia University, receiving a Ph.D. degree in 1901. He was pastor of synagogues in New York and Portland, Oregon, from 1893 to 1907, when he established and became rabbi of the Free Synagogue of New York. He is one of the leaders in the Zionist movement, and has been a prominent figure in charitable associations, in the liberalization of dogma and in the promotion of international peace. He is head of an institution for training social and religious workers in New York City.

Wiseman, Nicholas Patrick Stephen, English cardinal and Roman Catholic archbishop of Westminster, was born at Seville, Spain, 1802. He was subsequently appointed vice-rector of the English College, and professor of oriental languages in the University of the Sapienza. In 1828 he published his *Horæ Syriacæ;* was named president of St. Mary's College of Oscott. In 1850 he was named archbishop of the see of Westminster and at the same time created cardinal. He wrote *Influence of Words on Thought and Civilization; The Real Presence,* etc. He died in London, 1865.

Wister, Owen, American author, was born in Philadelphia, Pa., 1860. He was graduated from Harvard, 1882; from Harvard Law School, 1888; was admitted to the Philadelphia bar, 1889. He engaged in literary work, 1891. Author: *The Dragon of Wantley: His Tail; U. S. Grant, a Biography; The Virginian; Philosophy 4;* and much prose and verse in magazines.

Witte (*vit'ĕ*), **Count Sergei Yulievitch,** Russian statesman, of German origin, was born at Tiflis, 1849. He was educated at Odessa. He was called to St. Petersburg for employment there in 1879, and appointed in 1886 director of the Russian southwest railways. In 1903 he was removed from the ministry of finance and made president of the committee of ministers. He was one of the Russian plenipotentiaries in the negotiations for peace with Japan in 1905, and was afterward made a count and appointed president of the new ministry. Died, 1915.

Wolfe, Charles, British clergyman and poet, was born at Dublin, 1791. In 1814 he took his B.A. at Dublin. His *Burial of Sir John Moore,* in 1817, won for itself a secure place in the heart of the British nation. Died, 1823.

Wolfe, James, English general, was born at Westerham, in Kent, England, 1727. In the effort to drive the French out of Canada, Pitt, in 1759, gave the charge of the invading army to Wolfe, who had been made major-general. The story of his attack on Quebec, how he scaled the cliffs with his army by night, and died in the moment of victory is well known. He died in 1759.

Wolseley (*wŏŏlz'li*), **Garnet Joseph, Viscount,** English field-marshal, was born in County Dublin, Ireland, 1833; was governor of Natal. He commanded the Egyptian expedition, 1882; Gordon relief expedition, 1884; and while commanding in Ireland was made field-marshal in 1894, and commander-in-chief, 1895. He retired in 1906. Died, 1913.

Wolsey (*wŏŏl'zi*), **Thomas,** English statesman and cardinal, was born at Ipswich, about 1475. On the accession of Henry VIII. he became the king's almoner, and obtained several other preferments. In 1515 he was consecrated archbishop of York; at about the same time was appointed lord chancellor and prime minister and cardinal. From this time he was one of the foremost men in Europe, and, as his revenues were immense, his pride and ostentation were carried to the greatest height. In 1530 he was arrested on a charge of high treason, and was ordered to be conveyed to London for trial. He reached Leicester abbey and died there a few days afterward, in 1530.

Wood, Leonard, army officer, was born at Winchester, N. H., 1860. He was graduated from the Harvard Medical School, 1884; LL.D., Harvard. He became assistant surgeon in the United States army in 1886, captain in 1891; major-general, December 7, 1898; brigadier-general, United States regular army, 1901; major-general, 1903; commander of Philippines division, 1906-08; governor general Philippine Islands beginning 1921 and until his death in 1927.

Woodberry, George Edward, American author and critic, was born at Beverly, Mass., 1855. He was graduated at Harvard in 1877. He was professor of English at Nebraska University, 1877-78, 1880-82, and professor of comparative literature, Columbia, 1891-1904. Author: *History of Wood Engraving; Edgar Allen Poe; Nathaniel Hawthorne; America in Literature; Ralph Waldo Emerson; The Appreciation of Literature; Great Writers.* Died, 1930.

Woodhull, John Francis, University professor, was born at Westport, N. Y., 1857; graduated from Yale, 1880; Ph.D., Columbia, 1899; professor natural science, N. Y. State Normal School, 1887; professor physical science, Teachers' College (Columbia); became professor emeritus, 1922. Author: *Simple Experiments for the School Room; First Course in Science; Chemical Experiments, a Laboratory Manual; Physical Experiments, Physics, a Text-book; Simple Experiments in Chemistry,* etc.

Woodward, Calvin Milton, educator, was born at Fitchburg, Mass., 1837; graduated from Harvard, 1830; Ph.D., 1883, LL.D., 1905, Washington University; LL.D., University of Wisconsin, 1908. Professor descriptive geometry, 1870-1, dean School of Engraving, 1871-96, dean School of Engraving and Architecture, 1901-10; professor mathematics and applied mechanics beginning 1871, Washington University. Originator and director after organization, 1879, of St. Louis Manual training school. Author: *The Manual Training School; Manual Training in Education,* etc. Died, 1914.

Woodward, Robert Simpson, American physicist and educator, was born at Rochester, Mich., 1849. He was graduated at the University of Michigan, C.E., Ph. D.; LL.D.; Sc.D.; assistant United States coast and geodetic survey in 1890-93; professor of mechanics and mathematical physics, 1893-1905, and dean of the school of pure science, 1895-1905, Columbia, and director of the Carnegie Institution of Washington beginning 1905. Died, 1924.

Woolley, Mary E., American educator, president of Mt. Holyoke College beginning 1900, was born at South Norwalk, Conn., 1863. She was graduated at Wheaton seminary, 1884; Litt.D., L.H.D., Amherst, 1900. She was head of the department of biblical history and literature of Wellesley College, 1895-1900.

Woolman, John, American Quaker preacher, was born at Northampton, N. J., 1720. He was a famer's son, and was for some time a tailor. He spoke and wrote against slavery and published *The Journal of the Life and Travels of John Woolman in the Service of the Gospel.* He died at York on a visit to England, 1772.

Woolsey, Theodore Dwight, American scholar, was born at New York city, 1801. He was graduated at Yale in 1820, studied at Princeton and for three years in Germany; from 1846 to 1871 was the president of Yale. He was an authority on questions of international law. Died, 1889.

Among his works are: *Introduction to the Study of International Law; Divorce and Divorce Legislation*, etc.

Woolworth, Frank W.—American business man, was born in 1852. He was educated in the public schools and in business college. He began his career in 1879 with a five-cent store in Utica, N. Y. It was not a success, and the same year he removed to Lancaster, Pa. and opened a five- and ten-cent store. This store flourished and Woolworth opened another in Harrisburg. From this start the Woolworth chain of five- and ten-cent stores grew until today they are numbered by hundreds. They are located in the United States, Canada and England. The Woolworth Building in New York City was erected in 1911, and was for many years the highest office building in the world. Died in 1919.

Worcester (*wo͝os'tẽr*), **Joseph Emerson,** American lexicographer, was born at Bedford, N. H., 1784. He taught at Salem, Mass., and then turned to authorship. His works were gazetteers, manuals of geography and history, etc. He abridged Webster's *Dictionary* in 1829; printed his own *English Dictionary* in 1830, and quarto *Dictionary of the English Language*, 1860. Died, 1865.

Wordsworth, William, celebrated English poet, was born at Cockermouth, Cumberland, 1770, and died, 1850. In 1787 he was sent to St. John's college, Cambridge. He left the university after taking his degree, but without having otherwise distinguished himself, and lived aimlessly in London and elsewhere.

He crossed to France in 1791, and exhibited vehement sympathy with the revolution, remaining in France for nearly a year. After his return, disregarding all entreaties to enter upon a professional career, he published his *Evening Walk* and *Descriptive Sketches* (1793). Two years afterwards he received a legacy of 900 pounds from Raisley Calvert, a friend, whom he had nursed in his last illness. With this sum and the consecrated helpfulness of his sister Dorothy, he contrived to keep house for eight years, while he gave himself to poetic effort as his high "office upon earth."

For the first two years the brother and sister lived at Racedown in Dorset, where the poet, among other experiments, began his tragedy of *The Borderers*. In this retreat they were visited by Coleridge, who had already recognized an original poetic genius in the author of *Descriptive Sketches*. Coleridge was at this time living at Nether Stowey, in Somerset, and during this visit he induced the Wordsworths to go into residence at Alfoxden, in his immediate neighborhood. Here the two poets held daily intercourse, and after a year they published *Lyrical Ballads* in literary copartnership. Although this volume was received with almost complete public indifference, yet Wordsworth felt that he had found his mission, and after a winter spent in Germany, he and his sister settled at Grasmere, in 1799, where he proposed to write a great philosophical poem on man, nature and society.

Thenceforth his life was marked by few incidents. Those worth noting are his marriage, in 1802, with his cousin, Mary Hutchinson; a removal from Grasmere to Allan Bank in 1808; his appointment in 1813 to an inspectorship of stamps, and his removal to Rydal Mount; several journeys into Scotland and to the continent; his acceptance of a D.C.L. degree, conferred upon him in 1839 by the University of Oxford; and his accession in 1843 to the laureateship on the death of Southey.

Wordsworth's great philosophic poem, which, in his own phrase, was to be the Gothic cathedral of his labor, received only a fragmentary accomplishment in *The Prelude*, *The Excursion* and *The Recluse*. Yet enough was achieved in his smaller poems to justify his own conception of himself as a "dedicated spirit," and to set him apart among the greatest of England's poets.

References.—The principal *Lives* are those of Christopher Wordsworth; F. W. H. Myers, J. M. Sutherland, Elizabeth Wordsworth and Professor Knight. See also Knight's *English Lake District:* and *Through the Wordsworth Country;* Stopford Brooke's *Theology in the English Poets;* Hudson's *Studies in Wordsworth;* Masson's *Wordsworth, Shelley,* etc. J. R. Tutin's *Wordsworth Dictionary of Persons and Places;* and Raleigh's *Wordsworth.*

Wrangel, Lieut. Gen. Baron Peter, Russian military leader and mining engineer, born at St. Petersburg of a noble family in 1879. He was educated at a mining institute in St. Petersburg. As an anti-Bolshevist leader, he rose to distinction in 1914. Later became commander-in-chief in the Crimea, but was finally defeated by the overwhelming Bolshevist army in November, 1920. He went to Yugoslavia. In 1926 he went to Belgium as a mining engineer, and died there in 1928.

Wren, Sir Christopher, noted English architect, born in 1632. He was educated at Oxford being, a student of mathematics and astronomy. He became a professor of astronomy in 1660. Through scientific work for the dean at Saint Paul's Cathedral, Wren became deeply interested in architecture. When the cathedral was burned, in 1666, the eager student of architecture was chosen as the architect of the new cathedral, which became his greatest work. For many years thereafter he designed important buildings in London. He built also Royal Exchange, Temple Bar, Buckingham Palace, Greenwich Hospital, Marlborough House, the towers at the west front of Westminster Abbey, etc. In 1672 he was knighted. Died, 1723.

Wright, Sir Almroth Edward, English physician and bacteriologist, was born at Middleton Tyas, Yorks., in 1861. He was trained at Dublin University, and at the universities of Leipzig, Strasbourg and Marburg. In 1877 he was demonstrator of pathology at Cambridge. In 1889 he became lecturer in physiology at Sydney, Australia. From 1892 to 1902 he was professor at the Army Medical School at Netly; then professor of experimental pathology in the University of London. He gained great prominence through his researches in parasitic diseases. He perfected a method of typhoid inoculation, and made extensive studies of other toxins. He was consulting physician to the army in France from 1914 to 1919. His published works include *System of Anti-Typhoid Inoculation, Principles of Microscopy, Studies in Immigration* and *The Unexpurgated Case Against Woman Suffrage.*

Wright, Harold Bell, author; born Rome, N. Y., May 14, 1872. He was a student for two years in the preparatory department, Hiram College, Ohio. Author: *The Shepherd of the Hills; The Calling of Dan Matthews; Their Yesterdays; The Eyes of the World; When a Man's a Man,* etc.

Wright, Orville, American aëronaut and inventor, was born at Dayton, Ohio, 1871. With his brother Wilbur he was the first to fly with a heavier-than-air machine, 1903, and with his brother was the inventor of the system of controls used in flying machines today. He has made flights at home and abroad. He was present, Dec. 17, 1928, when a memorial tablet was unveiled at Kitty Hawk, N. C., commemorating the first flight twenty-five years previously.

Wright, Wilbur, aëronaut, brother of Orville, was born near Millville, Ind., 1867. From 1903, with his brother Orville, he devoted his time to the heavier-than-air flying machine. Died, 1912.

Wright, Silas, American lawyer and political leader, born in 1795 at Amherst, Mass. He graduated at Middlebury College and took up the practice of law in upper New York. He was elected to the New York legislature and later to the United States Congress, first as a representative and later as a senator. He was governor of the state of New York, 1844-46. Died, 1847.

Wundt (*vo͝ont*), **Wilhelm Max,** German physiologist and psychologist, was born at Neckarau in Baden, Germany, 1832. He studied at Tübingen, Heidelberg and Berlin; in 1875 became professor of physiology at Leipzig. He became distinguished in the field of experimental psychology, and wrote on the nerves and the senses, the relations of physiology and psychology, etc. Died, 1920.

Wu Ting-Fang (*wo͞o'ting'fäng'*), Chinese diplomat, was born in Hsin-hui district, Kwangtung, China. He was appointed by the imperial government codirector in the railway bureau, constructing railways in north China; assisted in negotiating, at Peking, the Chino-Japanese treaty of commerce and navigation, ratified in 1896; was minister of China to the United States, Spain, and Peru, 1897-1902. He was made LL.D., by U. of Pa., 1900. Died, 1922.

Wyant, Alexander H., American landscape painter, born in Port Washington, Ohio, in 1836. He studied under George Inness, American, and later he continued his studies in Europe. After his return from abroad, Wyant lived in New York City. He was made a National Academician in 1869. His work is faithfully realistic, and refined in its delineation. Some of his paintings are in the Metropolitan Museum, New York. They include *Looking Toward the Sea, Silent Valley* and *A View in County Kerry.* He died in 1892.

Wycliffe (*wik'lif*), **John,** English religious reformer, was born at Wycliffe, near Richmond, in Yorkshire, about 1320. He is frequently called "the morning star of the reformation." His last years were spent as rector of Lutterworth, in Leicestershire, where, a short time before his death, in 1384, he completed his translation of the Bible. He also wrote a large number of tracts in exposition or defense of the doctrines he preached.

Wylie (*wi'li*), **Elinor Hoyt** (Mrs. William Rose Benêt), American poet, novelist and editor, was born in 1887 at Rosemont, Pa. She was educated in private schools. After 1919 her residence was in New York City. She wrote literary reviews and was for a time an associate editor on *Vanity Fair.* She is best known as a poet. Her books of poetry include *Nets to Catch the Wind, Black Amour, Trivial Breath* and *Angels and Earthly Creatures.* Four of her popular novels are *Jennifer Lorn, The Venetian Glass Nephew, The Orphan Angel* and *Mr. Hazard.* She died in 1928.

Wythe, George, American political leader, born in the colony of Virginia and educated at home. He was admitted to the bar, became a member of the House of Burgesses, and drew up a rigorous petition protesting against the English Stamp Act. He was a member of the Continental Congress and a signer of the Declaration of Independence. He was a member of the Constitutional Convention and of the Virginia Convention which ratified the Constitution. He became a judge and was for a time a professor of law in William and Mary College. He published his *Decisions.* He died in 1806.

Xantippe, wife of the Greek philosopher, Socrates. Although it has been disputed, she is commonly reputed to have been of a quarrelsome, nagging disposition, and the name has become symbolical for that type of a woman.

Xavier (*zav'i-ẽr*), **Francisco de,** Jesuit missionary styled usually the "apostle of the Indies," was born in 1506, of a noble family, in the north of Spain. He visited Malacca, the Banda Islands, Amboyna, the Moluccas and Ceylon, where he converted the king of Kandy. The mission he next founded in Japan flourished for a hundred years. He died, 1552, soon after reaching the island of Sanchian near Canton. His body was ultimately buried in Goa. He was canonized in 1622.

Xenophon (*zẽn'ō-fŏn*), Greek historian, philosopher and military commander, born at Athens, about 434 B. C. He was a pupil and friend of Socrates; joined the expedition of Cyrus against his brother, Artaxerxes, and on its failure conducted the ten thousand Greeks. His principal works are the *Anabasis,* an account of the expedition of Cyrus and his own conduct of the retreat; the *Memorabilia,* and account of the life and teaching and a defense of his master Socrates. He died about 355 B. C.

Xerxes (*zûrk'zēz*), king of Persia, son of Darius I., whom he succeeded on the throne in 485 B. C., was born about 519 B. C. In 481 B. C., he attempted to subdue Greece both by sea and land; checked for a time at Thermopylae by Leonidas and his five hundred; advanced to Athens to see his fleet destroyed at Salamis by Themistocles; was assassinated in 465 B. C. by Artabanus, the captain of his bodyguard.

Ximenes (*zi-mē'nēz*), (Jiménez de Cisneros), Spanish cardinal and statesman, was born at Torrelaguna, in Castile, in 1437. His reputation for piety and learning led Queen Isabella to choose him, in 1492, for her confessor. As confessor, Ximenes was the guiding spirit of Spanish affairs. In 1506-07 he was provisional regent of Castile, and was regent of Spain, 1516-17. Died, 1517.

Yale, Elihu, English colonial official, was born at or near Boston, Mass., 1648. When four years old he was taken to England by his father, and never returned to America. Yale College received his name in the charter of 1745. Previously the building and, before that, the school at Saybrook, had been called by the name. He donated many books and about $2,500 in money to the school. He died in England in 1721.

Yamagata (*yä'mä-gä'tä*), Prince Yamagata Aritomo, Japanese field-marshal, president of the privy council of Japan, was born at Choshu, 1838; commanded first army in the China-Japan war; was prime minister, 1889; became field-marshal, 1898; chief of general staff, 1904; and was created prince, 1907. Died, 1922.

Yancey (*yăn'sĭ*), **William Lowndes,** American politician and lawyer, was born in Georgia, 1814; was greatly instrumental in bringing about the Civil War. Died near Montgomery, Ala., 1863.

Yeats, William Butler, Irish poet and dramatist, winner of the Nobel prize in literature for 1923, was born in Dublin, 1865. He attended Erasmus Smith School in Dublin. At twenty-one, he turned from painting to a study of ancient Irish life and became the chief writer of the new school of Irish poetry. Several of his plays were produced at the Abbey Theater. His works include *The Countess Kathleen, The Kings' Threshold, Deidre, Reveries over Childhood and Youth, The Pot of Broth, October Blast,* and *The Tower. The Cutting of the Agate* and *The Trembling of the Veil* are among his best reminiscent and critical works.

Yeats is also a politician and a senator of the Irish Free State.

Yerkes, Charles T., American business man, was born in Philadelphia in 1837. He exerted important control of the street railway systems in Philadelphia and Chicago and later in the London underground railway. He endowed the observatory which bears his name, at Williams Bay, Wis. Died, 1905.

Yonge, Charlotte Mary, English novelist, was born at Otterbourne, England, in 1823. Most of her life was spent at the place of her birth. She wrote on religious and educational subjects and produced many novels which deal with rural life in England. They are filled with much sentiment and romance. For over thirty years she edited *The Monthly Packet.* Among her novels are *The Heir of Redclyffe, The Daisy Chain, The Clever Woman of the Family* and *The Trial.* She died in 1901.

Yoshihito (*yō'shē-hē'tō*), **Harunomia,** Emperor of Japan from 1912 to the time of his death, in 1926, was born in Tokio. He received a good education and was able to speak several languages. He ascended the throne as the first liberal constitutional monarch, and his reign was proclaimed the era of Taisho (Righteousness). Due to continued illness, Yoshihito relinquished the throne to his son, Hirohito, in 1921, and the latter ruled as prince regent to the time of his father's death. The rule of Hirohito is called the era of Showa (Light and Peace).

Youmans (*yo͞o'mănz*), **Edward L.,** American scientist, was born at Coeymans, N. Y., 1821. Although suffering for some years from almost total blindness, he pursued his studies in physics and chemistry with marked zeal and proficiency, his sister conducting experiments for him. In 1872 he established and, until his death, edited the *Popular Science Monthly.* Died in New York, 1887.

Young, Brigham, founder of Utah, and president of the Church of Jesus Christ of Latter-Day Saints, called "Mormon" Church because of a belief in the Book of Mormon, was born at Whittingham, Vt., 1801. In 1832 he joined the Mormons and was made an elder and began to preach. He was later chosen one of the Twelve Apostles of the Church and after the death of Joseph Smith became president. He

led his people from Nauvoo, Ill., to Utah, having been forced out of Illinois by people antagonistic to the Mormon faith, and crossing the plains and the Rocky Mountains under many difficulties and hardships founded Salt Lake City. He was the first Governor of Utah and was succeeded by Alfred Cumming during the administration of President James Buchanan. Died, 1877.

Young, Charles Augustus, American astronomer, born in 1834 at Hanover, N. H. He graduated at Dartmouth College. He was a professor at Western Reserve College, later at Dartmouth and still later at Princeton University. He conducted several astronomical expeditions. He was the first to study the spectrum of the sun's corona. In addition to textbooks, he wrote *The Sun, Lessons in Astronomy,* etc. Died, 1908.

Young, Edward, English poet, was born at Upham rectory near Bishops, Waltham, 1683. He was educated at All Souls, Oxford, and in 1730 became rector of Welwyn, in Hertfordshire. His chief poetical work is *Night Thoughts.* He also wrote *Love of Fame, The Universal Passion;* and the dramas, *Busiris, The Revenge,* etc. Died, 1765.

Young, Ella Flagg, American educator, was born at Buffalo, N. Y., 1845, daughter of Theodore Flagg. She was graduated at the Chicago Normal school and received the degree of Ph. D. at the University of Chicago. She was professor of education, University of Chicago, 1899-1905; principal of the Chicago Normal school, 1905-08; and superintendent of the Chicago public schools, 1908. Died, 1918.

Young, Francis Brett, English poet and novelist, was born in 1884. He was educated for medicine at Epsom College and at the University of Birmingham. He practiced medicine and served in a medical unit in the World War. Entering later the field of letters, he lectured extensively, coming in 1926 and in 1928 to the United States. His *Portrait of Clare* (1917) won the James Tail Black Memorial Award, and was published in America as *Love is Enough.* His other books include *Marching in Tanga, The Crescent Moon, Poems, Sea Horses* and *Black Roses.*

Young, Mahonri M., American sculptor, born in 1877 at Salt Lake City. He studied his art in Salt Lake City and later in New York and in Paris. His work is simple and dignified and of exquisite craftsmanship. His small figures are notable and include laborers and cowboys which were his especial study. Among his productions are *Man With Pick, A Laborer, Rolling His Own* and the bird monument in Temple Square, Salt Lake City.

Young, Owen D., American lawyer and administrator, member Dawes reparation commission to Germany, was born at Van Hornesville, New York, in 1874. He was educated at St. Lawrence University and Boston University Law School, and until 1913 was connected with the law firm of Tyler and Young in Boston. In 1918 he was chosen chairman of the board of the General Electric Company at Schenectady, N. Y., and when the Radio Corporation of America was organized, he became chairman of the international trusteeship for the control of radio patents. He was a member of the first committee of experts on reparation in 1924. His business sagacity has led to his appointment as director in many important enterprises.

Younghusband, Sir Francis Edward, English soldier, explorer and writer, was born at Murree, India, 1863. He traveled in Manchuria, 1886; from Peking to India through Chinese Turkestan, 1887; on the Pamirs and in Hunza, 1889; and was British commissioner to Tibet, 1903-04. In the latter year he headed the expedition which forced its way into Lhassa, sacred city of Tibet. Author: *Heart of a Continent.*

Ysaÿe (*ē-zä'yĕ*), **Eugene,** Belgian violinist, was born in 1858 at Liege. He received his musical education in Brussels and Paris. He was professor and head of the department of violin at the Conservatory in Brussels, 1886-97. He has composed many pieces for the violin, including the well-known *Poème Elégiaque.* He organized the famous Ysaÿe quartet. He was conductor of the Cincinnati orchestra for a time during the World War. He toured Europe and in the United States. Died, 1931.

Yuan Shih-K'ai (*yōō-än'shē-kī'*), Chinese political leader, born in Honan province in 1859. His diplomatic career began with service in Korea, and later in Chihli. He supported the empress dowager and the conservative Manchu party. He became governor of Shantung. Then he was made viceroy of Chihli. Upon the overthrow of the monarchy, Yuan was made provisional president in 1912, and the following year was elected president for five years. In 1915 he had himself proclaimed emperor, but when this aroused a storm of protest he again became head of the republic. He died in 1916.

Zaghlul Pasha (*zăg'lōōl-pä-shä'*), **Saad,** Egyptian Nationalist leader, was born about 1860 of fellahin stock. He was educated in the university of El Azhar at Cairo. He was an editor, lawyer, judge and held the office of Minister of Education and of Minister of Justice. He opposed British rule in Egypt, and after the World War became very active in the cause of Egyptian independence. He was made prime minister in 1924 but was forced to resign. Later he became President of the new Chamber of Deputies. Until his death, in 1927, he was the recognized leader of the Nationalists in Egypt.

Zahm (*tsäm*), **John Augustine,** American scientist and provincial of order of Holy Cross in United States beginning 1897, was born at New Lexington, Ohio, 1851; was president of the board of trustees, Notre Dame University. He was a member of numerous scientific societies and lectured widely on scientific and allied topics. Author: *Evolution and Dogma; Scientific Theory and Catholic Doctrine; Science and the Church,* etc. Died in 1921.

Zamenhoff (*zä'mĕn-hôf*), **Lazarus L.,** Russian oculist and linguist, was born in 1859. He received his education at the universities in Moscow and in Warsaw. He practised as an oculist in Warsaw, and worked for the adoption of an international language. In 1887 he published his treatise on Esperanto, which attracted worldwide attention. He died in 1917.

Zangwill (*săng'wĭl*), **Israel,** British man of letters, was born in London, 1864. He received the degree of B. A. from London University; wrote many novels, essays, poems and plays; lectured in Great Britain and Ireland, Jerusalem, Holland and the United States, and was president of the international Jewish territorial organization, or Zionist movement. Author: *The Premier and the Painter: Merely Mary Ann; The Master; They That Walk in Darkness; Plaster Saints; The Forcing House,* etc. Died, 1926.

Zeeman, Pieter, Dutch physicist, born in Zeeland in 1865. He studied at Leyden. He became professor of physics at Amsterdam in 1900 and director of the Physical Institute at Amsterdam in 1908. His greatest work was in splitting up the spectral lines in a magnetic field, the so-called "Zeeman effect." He was awarded the Nobel prize in 1902.

Zeisler (*zīs'lĕr*) **Fannie,** American pianist, born in Austria, 1866, came to America in 1868 and lived in Chicago. Displaying great musical talent as a child, she returned to Vienna to pursue her musical education. She has appeared as a concert artist in the leading cities of Europe and America. She was a great pianist. Died, 1927.

Zeiss (*tsīs*), **Carl,** German optician and technician, was born at Weimar in 1816. In the university he pursued the study of medicine. In 1864 he founded at Jena the optical works which has become famous and which still bears his name. He died in 1888.

Zeno, founder of the stoic philosophy, was born at Citium, in Cyprus, the date of his birth and death both being uncertain. He flourished in the early part of the third century B. C., and was a contemporary of Epicurus. The Athenians honored Zeno's memory with a golden crown and a public burial, and his countrymen erected a monumental pillar in his honor. He died about 264 B. C.

Zeno, Greek philosopher of Elea, in Italy, was born about 490 B. C. He was a favorite disciple of Parmenides, visited Athens, and the illustrious Pericles was one of his pupils. He devoted his great powers of argumentation to enforce the doctrines first broached by Xenophanes, and more systematically developed by Parmenides.

Zenobia (*zē-nō'bĭ-ä*), **Septimia,** queen of Palmyra, 267-272 A. D., succeeded her husband Odenathus. Aurelian marched against her with a large army, and after defeating her in several battles besieged her in Palmyra. She attempted to escape by flight, but was captured and brought to Rome to adorn the triumph of her conqueror. She was a woman of great courage, high spirit and remarkable beauty.

Zeppelin (*tsĕp'ĕ-lēn*), **von, Ferdinand, Count,** German general and aëronaut, was born in 1838. He was educated at the polytechnic school in Stuttgart and at the University of Tübingen, also at the military school at Ludwigsburg. He went to the United States and fought with the Union army during the Civil War. He fought in the German army against France. Always interested in the problems of flying, von Zeppelin began to experiment with dirigible balloons, and in 1892 manufactured his first ship. He continued the construction of his airships, which have been named "Zeppelins" after him, at his factory in Friedrichshafen. He died in 1917.

Zeuxis (*zūk'sĭs*), a Greek painter, who flourished in the latter half of the fifth century B. C., was a native of Heraclea, and later lived in Ephesus. He studied and excelled the works of Apollodorus. He was noted for his skill in expression and coloring. Among his great paintings were *Pan, Alcmena, Helena* and *Penelope.* He is said to have painted a bunch of grapes so realistically that birds swooped down to it to eat.

Ziegfeld, Florenz, Jr., theatrical producer, born in Chicago, 1869. He entered the theatrical business in Chicago in 1892, but is most famous for his productions of *Ziegfeld's Follies.* Among his other most noted productions are: *Papa's Wife; The French Maid; The Little Duchess; The Parisian Model; Miss Innocence; The Pink Lady; Sally; Kid Boots; Show Boat.* Married Billie Burke. Died, 1932.

Zimbalist (*zĭm'bä-lĭst*), **Efrem,** Russian violinist and composer, was born at Rostow-on-Don in 1889. He studied first under his father who was an orchestra conductor. Later he studied under Leopold Auer. He made his début in Berlin in 1907. He has toured Europe and America. In 1914 he married the dramatic soprano singer, Alma Gluck.

Zinzendorf (*tsĭn'tsĕn-dôrf*), **Nikolaus Ludwig, Count von,** religious leader, was born at Dresden, 1700. He accidentally met a wandering carpenter named Christian David, a member of the old sect of Moravian brethren, who described the persecutions to which the sect was exposed; and Zinzendorf invited him and his friends to settle on his estate. They accepted the proposal, and the colony received the name of "Herrnhut." In 1737, at the request of King Frederick William I. of Prussia, he was ordained bishop of the Moravians. In 1741 he went to America and founded the celebrated Moravian colony at Bethlehem, Pa. Died, 1760.

Ziska (*zĭs'kä*), **Ján,** leader of the Hussites, was born at Treeznoy, Bohemia, about 1360. He was an adherent of the Hussite doctrine. Died, 1424.

Zola (*zō'lä*; Fr. *zō-lä'*), **Émile,** French novelist, was born at Paris, 1840. He was educated at the Lycée Saint-Louis. His first important work of fiction was *Les Mystères de Marseille.* Soon after this he formed, with Flaubert, Daudet and the Goncourts, the naturalistic school of fiction. The fruit in part of this was the series known as *Les Rougon-Macquart Family.* His latest work, written in exile, occasioned by his courageous advocacy of the famous Dreyfus case, was entitled *Fécondité.* He was a knight of the French legion of honor. Died, 1902.

Zorn (*tsôrn*), **Anders,** Swedish painter, etcher and sculptor, was born in 1860. He studied in Stockholm and later in London. He traveled widely, but did most of his work at his birthplace, Mora. His earliest work was in water colors, followed by oil paintings and etchings. His fame rests chiefly on his portraits, among which are his *Dance at Dalecarlia, Baking in Mora, Midsummer Dance* and *Watering the Horse.* His painting represents the matured impressionistic group. Zorn excelled also in sculpture, and his work includes the *Faun and Nymph* and the *Broken Pitcher.* He died in 1920.

Zoroaster, (*zō-rō-ăs'tẽr*), (Old Persian *Zarathustra,* later Per. *Zerdusht*), was one of the great religious teachers of the East, the founder of the Persian religion, now known as Zoroastrianism. He has been represented by eminent authorities as purely mythical, but it seems more reasonable to believe that he was a real historical personage. If this view be accepted, he was probably a native of the east of Persia, but there is great uncertainty as to the time in which he appeared as a religious teacher. He is supposed by some to have been a contemporary of Moses, by others his date is assigned to the tenth century before Christ.

The legends about Zoroaster are exceedingly numerous. He is said to have begun to laugh the day he was born; that he lived for twenty years in the wilderness and subsisted upon a single huge cheese which never grew stale; that as he came down from meditation on a mountain, fire from heaven broke out without injuring him; that in response to his expressed wish, he was killed by a bolt of thunder.

His doctrines are to be found in the Parsee scriptures, called the *Zend-Avesta,* and the *Gothâs,* which is the oldest part of that work; these are declared to contain his authentic utterances. The fundamental idea of his doctrine was the existence, since the beginning, of a spirit of good, Ahuro Mazdao (Ormuzd), and a spirit of evil, Angro Mainyush (Ahriman). These two are in perpetual conflict, and the soul of man is the great object of the war. Ormuzd created man free, so that if he allows himself to fall under the sway of Ahriman he is held to be justly punishable. When he dies his good and evil deeds will be weighed against each other, and accordingly as the balance is struck he will be sent to heaven or to hell. If they are exactly equal, the soul passes into an intermediate state, and remains there until the day of judgment. Ormuzd is to triumph ultimately, and then there will be one undivided kingdom of God in heaven and on earth.

The religion of Zoroaster, when it became that of Persia, was expounded by a widely spread priesthood, and these provided for it a ritual and ceremonial. Minutely elaborated laws for the purification of soul and body were laid down. They included a prohibition of the burning or the burying of the dead bodies of believers, which, by the Parsees in Bombay and elsewhere, are still left to be devoured by vultures. Zoroastrianism prophesied the coming of a Savior (Saoshyant).

References.—Jackson's *Zoroaster, the Prophet of Ancient Iran;* Windischmann's *Zoroastrische Studien* and *Die Iranische Religion;* Max Müller's series of translations of books of the orient, especially the *Zend-Avesta*

Zurbarán, de (*dā thōōr'bä-rän'*) **Francisco,** Spanish painter, born in Estremadura, 1598. He pursued his art studies in Seville, and became an intensely realistic painter of Spanish character. He became painter to the King of Spain in 1633. He painted remarkable portraits of religious men and is ranked among Spanish artists next to Velásquez and Murillo. Among the best paintings of Zurburan are *St. Francis of Assisi, A Franciscan, Immaculate Conception, Crucifixion* and a series of scenes from the *Life of Saint Buenaventura.* Died, 1662.

Zuloaga (*soō'lō-ä'gä*), **Ignacio,** Spanish painter, was born in the Basque region in 1870. He studied in Rome and Paris, later returning to his native Spain where he has painted a wide variety of typical Spanish subjects including bull fights, gypsies, beggars, water carriers and fruit venders. His work is strong and full of life and intensity. His paintings may be seen in the galleries of the leading cities of Europe and in America.

Zwingli (*tsvĭng'lē*), **Ulrich,** Swiss protestant reformer and patriot, was born at Wildhaus, 1484. In 1519 he was appointed to the cathedral at Zürich, having previously opposed the sale of indulgences by Sansom. Attempts were made to prohibit his preaching, but the reformation grew at Zürich. In 1529 Zwingli met Luther and Melanchthon at Marburg, but two years later he fell in the battle of Kappel in the war with Berne. Died, 1531.

· *Book* · *IX* ·

MULTIPLEX DICTIONARY

GENERAL DICTIONARY, INCLUDING DEFINITIONS, PRONUNCIATION, SYNONYMS AND ANTONYMS OF WORDS, AND INCLUDING MISPRONOUNCED WORDS, PERSONAL NAMES, LATINIZED WORDS, DERIVATIONS, PHONETIC SPELLING AND GEOGRAPHICAL NAMES. Page 633

CURRENT GLOSSARY, INCLUDING NEW WORDS AND NEW MEANINGS. . . . . Page 787



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BIRDS

1 Blue-and-Red Macaw.
2 Incomparable Bird of Paradise.
3 Golden Bird of Paradise.
4 Resplendent Trogon.
5 King Bird of Paradise.
6 Fire Weaver.
7 Paradise Flycatcher.
8 Broad-Shafted Whidah Bird.
9 Marsh Hawk.
10 Bald Eagle.
11 Barred Owl.
12 Golden Pheasant.

BOOK IX

MULTIPLEX DICTIONARY

Giving the definition, pronunciation, synonyms and antonyms of the words occurring in our common speech. Containing also the following valuable features: Proper syllabication, parts of speech, capitalization, words most often mispronounced, and a copious vocabulary of geographical, personal and curious names, with their pronunciation, origin and meaning. The cognates in other languages of personal names are also given.

KEY TO THE VOWEL SOUNDS

ä, as in farm, father; *à*, as in ask, fast; *a*, as in at, fat; *ā*, as in day, fate; *â*, as in care, fare; **a**, as in final; *e*, as in met, set; *ē*, as in me, see; *ēr*, as in her, ermine; *i*, as in pin, sin; *ī*, as in pine, line; *o*, as in not, got; *ō*, as in note, old; *ô*, as in for, fought; *ŏ*, as in sole, only; *ō*, as in fog, orange; *ŏ*, sound cannot be exactly represented in English. The English sound of *u* in *burn* and *burnt* is perhaps the nearest equivalent to *ò*; *oo*, as in cook, look; *o͞o*, as in coon, moon; *u*, as in cup, duck; *ū*, as in use, amuse; *ů*, as in fur, urge; *ů* sound cannot be exactly represented in English. The English sound of *u* in *luke* and *duke* resembles the original sound of *ů*. The letter N represents the nasal tone of the preceding vowel, as in *encore* (*äN-kōr'*).

ABBREVIATIONS

Arab., Arabic or Arabian; A.-S., Anglo-Saxon; Boh., Bohemian; Eng., English; Fr., French; Gael., Gaelic; Ger., German; Gr., Greek; Heb., Hebrew; Hind., Hindustani; Hung., Hungarian; Ind., Indian; It., Italian; Lat., Latin; M. H. G., Middle High German; N. H. G., North High German; Nor., Norwegian; O. E., Old English; O. F. or O. Fr., Old French; O. G., Old German; O. H. G., Old High German; Pers., Persian; Port., Portuguese; Russ., Russian; Sp., Spanish; Sw., Swedish; Teut., Teutonic; Turk., Turkish.

NOTE.—Groups of synonyms are indicated thus: **Syn.** ABANDON; the word in brackets *following the groups* refers to the key word of related groups: words in brackets following *definitions* refer to the key words of the respective groups of synonyms. The *key word* is the *first word* in each group of synonyms. Words often mispronounced are marked thus: **★Aaron; ★abdomen.**

A a (*ā* or *à*), *indef. art.* (contraction of *an*) one; any; used before words beginning with a consonant or the sound of *h*.

★Aaron (*âr'un* or *ā'run*). From the Hebrew *'Aharon*, perhaps the same as *hārōn*, "a mountaineer"; Arab., *Haroon* or *Harun*; Fr., *Aaron*; Ger., *Aaron* or *Aron*; It., *Aronne*; Lat., *Aaron*; Port., *Aarao*; Sp., *Aron*.

ab-a-ca (*ab'ä-kä*), *n.* manila hemp.

ab-a-cist (*ab'ä-sist*), *n.* a calculator; accountant.

a-back (*ä-bak'*), *adv.* backward; pressed back against the mast; said of sails; taken by surprise.

ab-a-cus (*ab'ä-kus*), *n.* a contrivance of beads or balls strung upon rods used for arithmetical computation.

a-ban-don (*ä-ban'dun*), *v. t.* to give up; desert or forsake utterly: *n.* unrestraint.

Syn. ABANDON, abdicate, desert, forego, forsake, give up, leave, quit, relinquish, renounce, resign, surrender. A sinking ship is *abandoned;* a king *abdicates* his throne; a soldier *deserts;* we *forego* pleasures; a reformed man *forsakes* his evil ways; the miner *relinquishes* his claim; the monk *renounces* the world; his very name is *resigned* to oblivion. [See *leave*.]

Ant. ADOPT, claim, keep, maintain, pursue, support, vindicate.

a-ban-doned (*ä-ban'dund*), *adj.* given up entirely; shamelessly profligate.

Syn. ABANDONED, depraved, dissolute, forsaken, hardened, profligate, reprobate, unprincipled, vicious, vile. We speak of *depraved* beings; *dissolute* men; the *forsaken* child; the *hardened* criminal; the *profligate* son; the *reprobate* gamester; the *unprincipled* politician; the *vicious* classes of our large cities; the *vile* wretches that plot crime. [See *corrupt, profligate, addicted*.]

Ant. CARED FOR, controlled, holy, virtuous.

a-ban-don-ment (*ä-ban'dun-ment*), *n.* the act of abandoning; the state of being abandoned.

a-base (*ä-bās'*), *v. t.* to humble or degrade; dishonor.

Syn. ABASE, bring low, debase, degrade, disgrace, dishonor, humble, mortify, reduce, shame. These words are usually applied to *persons* only. *Debase* and *reduce*, however, have other applications. The penitent man *humbles* himself; the vicious man *disgraces* himself; metal may be *debased;* weight may be *reduced*. [See *dishonor*.]

Ant. ADVANCE, dignify, honor, raise.

a-base-ment (*ä-bās'ment*), *n.* the act of abasing or humiliating.

a-bash (*ä-bash'*), *v. t.* to put to confusion; to make ashamed by consciousness of guilt or error.

Syn. ABASH, confuse, confound. To *abash* is to abase thoroughly in spirit; it expresses more than *confound*, and confound more than *confuse*. A haughty man is *abashed* when he is humbled; a modest person is *confused* in the presence of superiors; the ways of Providence *confound* us. [See *embarrass*.]

Ant. ANIMATE, embolden, reassure.

a-bat-a-ble (*ä-bāt'ä-bl*), *adj.* that may be abated.

a-bate (*ä-bāt'*), *v. t.* to lessen; suppress: *v. i.* to decrease; moderate; subside.

Syn. ABATE, decline, decrease, diminish, lessen, recede, sink, slacken, subside, wane. With the exception of *decrease* these words are used in a transitive and an intransitive sense. A commotion *subsides;* storms *abate;* evils may *lessen;* sorrow *diminishes*. [See *abridge*.]

Ant. ANIMATE, augment, foment, rage.

a-bate-ment (*ä-bāt'ment*), *n.* the act of abating; the state of being abated; diminution. [DEDUCTION.]

a-bat-toir (*ä-bät-twär'*), *n.* a public slaughterhouse.

abb (*ab*), *n.* the yarn of the warp in weaving.

ab-ba-cy (*ab'bä-si*), *n.* the office and jurisdiction of an abbot.

ab-bé (*ab-bā'*), *n.* an ecclesiastic devoted to literature.

ab-bess (*ab'bes*), *n.* the lady superior of a convent or nunnery.

ab-bey (*ab'bi*), *n.* [*pl.* abbeys (*-biz*)], an establishment for religious devotees of either sex.

ab-bot (*ab'but*), *n.* the superior or head of an abbey.

ab-bre-vi-ate (*ab-brē'vi-āt*), *v. t.* to shorten, as by contraction of a word or the omission of words in a sentence; reduce a quantity to its lowest terms.

Syn. ABBREVIATE, contract, reduce, shorten. A long word is *abbreviated;* a stream in time of drought is *contracted;* the course of study is *shortened;* the size of the army is *reduced*. [See *abridge*.]

Ant. AMPLIFY, enlarge, lengthen.

ab-bre-vi-a-tion (*ab-brē-vi-ā'shun*), *n.* shortening or abbreviating; as, M. D. for doctor of medicine.

ab-di-cant (*ab'di-kant*), *adj.* renouncing; abdicating: *n.* one who renounces or abdicates.

ab-di-cate (*ab'di-kāt*), *v. t.* to renounce; relinquish the crown in favor of a successor. [ABANDON.]

ab-di-ca-tion (*ab-di-kā'shun*), *n.* the act of relinquishment or resignation.

★ab-do-men (*ab-dō'men*, not *ab'dō-men*), *n.* the belly; the cavity containing the digestive apparatus or viscera.

ab-dom-i-nal (*ab-dom'i-nal*), *adj.* pertaining to the abdomen.

ab-duct (*ab-dukt'*), *v. t.* to carry off by stealth or force; kidnap.

Syn. ABDUCT, abstract, carry off, deprive, kidnap, seize. Money may be unlawfully *abstracted;* the child was *abducted* or *kidnaped;* criminals are *deprived* of liberty; we *seize* opportunities. [See *abstract*.]

Ant. RESTORATION, restitution, replacement.

ab-duc-tion (*ab-duk'shun*), *n.* the act of abducting or kidnaping.

ab-duc-tor (*ab-duk'tĕr*), *n.* one who, or that which, abducts; a muscle moving certain parts.

a-beam (*ä-bēm'*), *adv.* at right angles to the keel of a ship.

a-bed (*ä-bed'*), *adv.* in bed; to bed.

Abel (*ā'bl*). From the Hebrew *Hebhel*, which St. Jerome translates "vanity" or "vapor." Gesenius renders the name "breath," and says the son of Adam was probably so called from the shortness of his life. Arab., *Habeel* or *Habīl*; Fr., *Abel*; Lat., *Abel*.

★Aberdeen (*ab-ĕr-dēn'*, not *ab'ĕr-dēn*). The ancient orthography of this name was *Aberdon*, from *aber*, the mouth, and *Don*, the name of the river upon whose banks the city is built.

★ab-er-rant (*ab-ĕr'rant*), *adj.* departing from the usual path, type, or standard.

ab-er-ra-tion (*ab-ĕr-rā'shun*), *n.* the act of departing from the usual path, type, or standard; mental derangement; the unequal refraction of rays of light from a lens so that they do not converge to a single point.

a-bet (*ä-bet'*), *v. t.* to encourage; to aid or assist in the performance of an act, usually criminal.

Syn. ABET, advocate, aid, assist, back, connive at, countenance, egg on, foment, second, set on, support, sustain. The bad official *abets* crime and *sanctions* law-breaking; *advocates* less restraint, *backs* gamblers, *foments* trouble, *supports* questionable policies, and *aids* his faction.

Ant. DETER, disapprove, frustrate, forbid.

a-bet-ment (*ä-bet'ment*), *n.* the act of abetting or instigating to action or crime.

a-bet-ter or **abettor** (*ä-bet'tĕr*), *n.* one who aids or abets in the commission of a crime. [ACCOMPLICE, ACCESSORY.]

a-bey-ance (*ä-bā'ans*), *n.* state of being held, kept back, or held over; a state of suspension.

ab-hor (*ab-hôr'*), *v. t.* to hate, loathe, execrate, abominate; be strongly averse to.

Syn. ABHOR, abominate, detest, loathe. These terms equally denote a sentiment of aversion. We *abhor* what is base and ungenerous; we *detest* hypocrisy; we *abominate* profanation and open impiety; we *loathe* food when we are sick. [See *hate*.]

Ant. ADMIRE, crave, esteem, love.

ab-hor-rence (*ab-hor'rens*), *n.* detestation; extreme hatred. [ANTIPATHY, ABOMINATION.]

a-bide (*ä-bīd'*), *v. t.* to await, endure, tolerate: *v. i.* to dwell, reside, continue.

Syn. ABIDE, sojourn, dwell, live, reside, inhabit. *Abide* is to make a partial stay. *Sojourn* signifies to pass the day—that is, a certain portion of one's time—in a place. *Dwell* implies a stay in a place by way of residence, which is expressed in common discourse by the word *live*. *Reside* conveys the full idea of a settlement. *Inhabit* signifies to have or occupy for a permanency. The length of stay implied in these terms is marked by a certain gradation. *Abide* denotes the shortest stay; to *sojourn* is of longer continuance; *dwell* comprehends the idea of perpetuity in a given place, but *reside* and *inhabit* are partial and local. [See *permanent*.]

Ant. AVOID, depart, move, reject, resist.

ab-i-gail (*ab'i-gāl*), *n.* a waiting-maid, so called from Abigail, "thine handmaid."

a-bil-i-ty (*ä-bil'i-ti*), *n.* power to perform; skill to achieve; capability for carrying out; capacity to devise, receive, retain, or make use of.

Syn. ABILITY, capacity, capability, efficiency, faculty, talent. *Ability* comprehends the power of doing in general, without specifying the quality or degree; *capacity* is a particular kind of ability. *Ability* respects action, *capacity* respects thought. *Ability* always supposes something able to be done; it may vary in degree and quality with times, persons, and circumstances. *Faculty* is a gift of nature directed to a certain end, and following a certain rule. *Talent* imitates but does not originate. [See *power, acquirement*.]

Ant. FEEBLENESS, incapability, inefficiency.

ab-ject (*ab'jekt*), *adj.* worthless; mean; low; despicable; in a sunken or degraded condition.

ab-jec-tion (*ab-jek'shun*), *n.* the act of being cast down; cast away; degradation.

ab-ju-ra-tion (*ab-jū-rā'shun*), *n.* an oath of renunciation, as of allegiance; the act of renouncing.
ab-jure (*ab-jūr'*), *v. t* to renounce upon oath; forswear allegiance to; repudiate or recant.
ab-la-tive (*ab'lă-tiv*), *n.* one of the cases of Latin nouns, expressing chiefly separation and instrumentality.
a-blaze (*ă-blāz'*), *adv.* or *adj.* on fire; well alight; in a blaze; eager; inflamed with desire; resplendent.
a-ble (*ā'bl*), *adj.* possessed of power, means, or ability; qualified, competent.
a-ble-bod-ied (*-bod'id*) *adj.* possessed of physical strength; capable or efficient for duty.
a-bloom (*ă-blōōm'*), *adv.* and *adj.* in bloom.
ab-lu-ent (*ab'lū-ent*), *adj.* cleansing: *n.* that which cleanses; a substance which purifies the blood.
ab-lu-tion (*ab-lū'shun*), *n.* a washing or cleansing of the body by water; moral purification.
ab-lu-tion-a-ry (*ab-lū'shun-ă-ri*), *adj.* pertaining to cleansing. [reject.
ab-ne-gate (*ab'nē-gāt*), *v. t.* to refuse or deny; to
ab-nor-mal (*ab-nôr'mal*), *adj.* irregular; deformed; unnatural; departing from a type or standard.
ab-nor-mal-i-ty (*ab-nôr-mal'i-ti*), *n.* [*pl.* abnormalities (*-tiz*)], the state or condition of being abnormal or irregular.
a-board (*ă-bōrd'*), *adv.* on or within a vessel: *prep.* into a ship.
a-bode (*ă-bōd'*), *n.* a place of continued residence.
a-bol-ish (*ă-bol'ish*), *v. t.* do away with; put an end to.

Syn. ABOLISH, abrogate, annul, cancel, countermand, do away with, end, make void, nullify, quash, repeal, revoke, vacate. This group conveys the idea of *extinction*. Anything which is entirely done away with, so that it is as if it had never been, may be said to be abolished. The law was *abolished*, or it may have been *abrogated;* a contract may be annulled; obligations are *canceled;* orders are *countermanded;* the day is *ended;* legislation is *nullified;* an indictment is *quashed;* a legislative act is *repealed;* an edict is *revoked;* an order of court is *vacated.* [See *abate, destroy, abandon.*]

Ant. AUTHORIZE, continue, promote, restore, revive, sustain.

ab-o-li-tion (*ab-ō-lish'un*), *n.* the act of abolishing; the state of being abolished.
Abolitionists. A term denoting the antislavery party in the United States, which appeared soon after the founding of *The Liberator* by William Lloyd Garrison in 1831.
a-bom-i-na-ble (*ă-bom'i-nă-bl*), *adj.* hateful; odious; offensive; unclean.
a-bom-i-nate (*ă-bom'i-nāt*), *v. t.* to abhor; regard with feelings of disgust or hatred. [ABHOR.]
a-bom-i-na-tion (*ă-bom-i-nā'shun*), *n.* excessive hatred; the act of abominating.

Syn. ABOMINATION, abhorrence, abuse, annoyance, aversion, crime, curse, detestation, disgust, evil, execration, hatred, horror, iniquity, nuisance, offense, plague, shame. *Abomination* signifies something very much disliked, or that deserves to be. Appetizing food may be an object of *aversion* and *disgust* to the sick vile food would be an *abomination;* *abomination* is used of such crimes as are especially brutal, shameful, or revolting; theft is an *offense;* infanticide is an *abomination.* [See *antipathy.*]

ab-o-rig-i-nal (*ab-ō-rij'i-nal*), *adj.* original; primitive; existing from the beginning.
★ab-o-rig-i-nes (*ab-ō-rij'i-nēz*), *n. pl.* the first or primitive inhabitants of a country.
a-bor-tion (*ă-bôr'shun*), *n.* untimely birth; miscarriage.
a-bor-tive (*ă-bôr'tiv*), *adj.* born imperfect; arrested in development; without issue or result.
a-bound (*ă-bound'*), *v. i.* to have in plenty or abundance.
a-bout (*ă-bout'*), *adv.* around; on every side; circuitously; near to; intending: *prep.* concerned in.
a-bove (*ă-buv'*), *adv.* overhead; in heaven; before; besides: *prep.* superior; in excess of.
a-bove-board (*ă-buv'bōrd*), *adj.* and *adv.* in open sight; without trickery.
ab-rade (*ab-rād'*), *v. t.* to wear or rub away; to remove as by friction or abrasion; to corrode.
ab-ra-sion (*ab-rā'zhun*), *n.* the act of wearing or rubbing away; a chafe.
a-breast (*ă-brest'*), *adv.* side by side; in line with; opposite to; at the same level.
a-bridge (*ă-brij'*), *v. t.* to curtail, shorten, condense, epitomize
a-bridg-ment (*ă-brij'ment*), *n.* the state of being contracted or curtailed; an epitome.

Syn. ABRIDGMENT, compendium, epitome, digest, summary, abstract. The first four terms are applied to a distinct work, the two latter to parts of a work An *abridgment* is the reduction of a work into a smaller compass. A *compendium* is a general and concise view of any science, as geography or astronomy. An *epitome* is a compressed view of all the substantial parts of a thing, or, in other words, the whole of any matter brought into a small compass. A *digest* is any materials digested in order. A *summary* comprehends the heads and subdivisions of a work. An *abstract* includes a brief but comprehensive view of any particular proceeding. It is necessary to make abstracts of deeds or judicial proceedings.

a-broad (*ă-brawd'*), *adv.* widely; expansively; beyond the limits of house or country; wide of the mark
ab-ro-gate (*ab'rō-gāt*), *v. t.* to abolish, annul, or repeal by authority. [ABOLISH.]
ab-rupt (*ab-rupt'*), *adj.* broken; terminating suddenly; steep; precipitous; rough; unceremonious.
Ab-sa-lom (*ab'să-lom*). From the Heb. *Abshalom*, signifying "father of peace"; from *abh*, "father," and *shalom.* Fr., *Absalon.*
ab-scess (*ab'ses*), *n.* [*pl.* abscesses (*-ez*)], a collection of morbid matter or pus in the tissues of the body.
ab-scis-sion (*ab-sizh'un*), *n.* the act of severance; the breaking off in a sentence.
ab-scond (*ab-skond'*), *v. i.* to flee or retire in haste from the place of one's residence or post of duty.
ab-sence (*ab'sens*), *n.* the state of being absent; the period of being absent.
ab-sent (*ab'sent*), *adj.* not present; away; wanting; regardless; abstracted. [ABSTRACTED.]
ab-sent (*ab-sent'*), *v. t.* to retire or keep away from.
ab-sen-tee (*ab-sen-tē'*), *n.* one who is absent or absents himself purposely from home or duty.
★ab-sinthe (Eng. *ab'sinth*, Fr. *ab-sant'*), *n.* a bitter aromatic liquor compounded of brandy and wormwood.
ab-so-lute (*ab'sō-lūt*), *adj.* free as to condition; perfect in itself; unlimited in power.

Syn. ABSOLUTE, despotic, arbitrary, tyrannical. Absolute power is independent of and superior to all other power; an *absolute* monarch is uncontrolled, not only by men, but things. When this absolute power is assigned to any one according to the constitution of a government, it is *despotic.* Despotic power is something less than absolute power; a prince is absolute of himself; he is despotic by the consent of others. With *arbitrariness* is associated the idea of caprice and selfishness. With *tyranny* is associated the idea of oppression and injustice.

Ant. ACCOUNTABLE, dependent, limited, submissive, yielding.

ab-so-lu-tion (*ab-sō-lū'shun*), *n.* the act of absolving from the consequences of sin.
ab-so-lu-tism (*ab'sō-lū-tizm*), *n.* the state of being absolute.
ab-so-lu-tist (*ab'sō-lū-tist*), *n.* a supporter or advocate of despotic or absolute government.
ab-solve (*ab-solv'*), *v. t.* to release or set free; clear of crime or guilt; to forgive or remit.

Syn. ABSOLVE, acquit, clear, discharge, exculpate, exempt, exonerate, forgive, free, liberate, pardon, release, set free. To *absolve* is to *set free* from any bond. One may be *absolved* from a promise by a breach of faith on the part of one to whom the promise was made. To *absolve* from sins is formally to remit their condemnation and penalty, regarded as a bond upon the soul. To *acquit* of sin or crime is to *free* from the accusation of it; the innocent are rightfully *acquitted;* the guilty may be mercifully *absolved.* [See *forgive.*]

Ant. ACCUSE, blame, condemn, impeach, to hold guilty.

ab-sorb (*ab-sôrb'*), *v. t.* to drink in; imbibe; suck or swallow up; engross or engage wholly.

Syn. ABSORB, consume, drink in, drink up, engross, exhaust, imbibe, suck up, swallow, swallow up, take in, take up. Wood *absorbs* moisture, iron *absorbs* heat; fuel is *consumed* in the fire, food in the body. A great talker *engrosses* the conversation. A credulous person *swallows* the most preposterous statements. [See *abstracted.*]

Ant. CAST OUT, disgorge, emit, radiate, vomit.

ab-sorb-ent (*ab-sôrb'ent*), *adj.* absorbing: *n.* that which has the capacity for absorbing.
ab-sorp-tion (*ab-sôrp'shun*), *n.* the act or process of absorbing.
ab-stain (*ab-stān'*), *v. t.* to forbear; refrain; hold aloof; keep away from.
★ab-ste-mi-ous (*ab-stē'mi-us*, not *ab-stem'i-us*), *adj.* moderate and sparing in the use of food and drink.
ab-ster-gent (*ab-stēr'jent*), *adj.* possessing cleansing or purging properties: *n.* that which cleanses or purges.
ab-sti-nence (*ab'sti-nens*), *n.* the act or practice of abstaining: self-denial. [indulgence.
ab-sti-nent (*ab'sti-nent*), *adj.* refraining from over-
ab-stract (*ab-strakt'*), *v. t.* to take or draw away; separate; purloin or steal; epitomize.

Syn. ABSTRACT, separate, distinguish. We *abstract* what we wish to regard particularly and individually; we *separate* what we wish not to be united; we *distinguish* what we wish not to confound. The mind performs the office of *abstraction* for itself; *separating* and *distinguishing* are exerted on external objects. Arrangement, place, time, and circumstances serve to *separate;* the ideas formed of things, the outward marks attached to them, the qualities attributed to them, serve to *distinguish.* [See *abduct.*]

Ant. ADD, append, combine, restore.

ab-stract (*ab'strakt*), *n.* an epitome; a summary, or abstract, comprising the essence or principal parts of a larger work: *adj.* considered or conceived apart from its concrete or material nature. [ABRIDGMENT.]
ab-stract-ed (*ab-strakt'ed*), *p. adj.* separated; disjoined; refined; abstruse; mentally absent.

Syn. ABSTRACTED, absent, absent-minded, absorbed, inattentive, indifferent, listless, oblivious, preoccupied, thoughtless. *Absorbed, abstracted,* and *preoccupied* refer to the cause, in mental action, *absent* or *absent-minded* to the effect; a man *absorbed* in one thing will appear *absent* in others; one *preoccupied* may seem *listless* and *thoughtless,* but the really *listless* and *thoughtless* have not mental energy to be *preoccupied;* an *absent-minded* man is *oblivious* of ordinary matters; a *preoccupied* one is intensely busy in thought. [See *abstract.*]

Ant. ALERT, prompt, thoughtful, wide-awake.

ab-strac-tion (*ab-strak'shun*), *n.* the act of separating or drawing away. [ner.
★ab-stract-ly (*ab'strakt-li*), *adv.* in an abstract man-
ab-stra-hent (*ab'strā-hent*), *adj.* abstract.
★ab-struse (*ab-strūs'*, not *ab-strōōs'*), *adj.* obscure; hidden. [OBSCURE, MYSTERIOUS.]
ab-surd (*ab-sērd'*), *adj.* contrary to reason or sense.

Syn. ABSURD, anomalous, chimerical, erroneous, false, foolish, inconclusive, incorrect, irrational, ludicrous, monstrous, nonsensical, paradoxical, preposterous, ridiculous, senseless, stupid, unreasonable, wild. Anything is *absurd* which is contrary to the first principles of reasoning; anything *paradoxical* appears at first thought contradictory or *absurd,* while it may be really true; *irrational* is that which is clearly contrary to sound reason, *foolish* when contrary to practical good sense, *silly* when petty and contemptible in its folly, *erroneous* when containing error that vitiates the result, *unreasonable* when there seems a perverse bias or an intent to go wrong. *Monstrous* and *preposterous* refer to what is overwhelmingly *absurd.* The *ridiculous* or the *nonsensical* is worthy only to be laughed at. [See *incongruous, irrational.*]

Ant. DEMONSTRABLE, established, logical, sagacious, sound, true, wise.

ab-surd-i-ty (*ab-sērd'i-ti*), *n.* [*pl.* absurdities (*-tiz*)], the state of being absurd; that which is absurd.
a-bun-dance (*ă-bun'dans*), *n.* in great plenty; an overflowing quantity; affluence.
a-bun-dant (*ă-bun'dant*), *adj.* plentiful; fully sufficient; abounding.
a-buse (*ă-būz'*), *v. t.* to use ill; treat rudely or wrongfully; to defile or violate.

Syn. ABUSE, aggrieve, damage, defame, defile, disparage, harm, impose on or upon, injure, malign, maltreat, misuse, molest, oppress, persecute, pervert, prostitute, rail at, ravish, reproach, revile, ruin, slander, victimize, vilify, violate, vituperate, wrong. Everything is *abused* which receives any sort of *injury;* it is *disused* if not used at all, *misused* if turned to a wrong use. It is possible to *abuse* a man without *harming* him, as when the criminal *vituperates* the judge; or to *harm* a man without *abusing* him, as when the witness tells the truth about the criminal. *Defame, malign, rail at, revile, slander, vilify,* and *vituperate* are used always in a bad sense. One may be justly *reproached.* To *impose on* or to *victimize* any one is to *injure* him by *abusing* his confidence. To *persecute* is to *ill-treat* for opinion's sake; to *oppress* is generally for political or pecuniary motives. A dissolute youth *misemploys* his time, *misuses* his money and opportunities, *harms* his associates, *perverts* his talents, *wrongs* his parents, *ruins* himself. [See *abomination.*]

Ant. APPLAUD, cherish, consider, favor, praise, protect, respect, uphold.

a-buse (*ă-būs'*), *n.* ill-treatment; the excessive or injudicious use of anything; insult; violation.
a-bu-sive (*ă-bū'siv*), *adj.* practicing or containing abuse.
a-but (*ă-but'*), *v. i.* [*p. t.* and *p. p.* abutted, *p. pr.* abutting], to border upon (used with *on, upon, against*). [ADJACENT.]
a-but-ment (*ă-but'ment*), *n.* that which borders, or abuts, upon something else.
a-buzz (*ă-buz'*), *adv.* filled with buzzing sounds.
a-bysm (*ă-bizm'*), *n.* an abyss; a gulf.
a-bys-mal (*ă-biz'mal*), *adj.* pertaining to an abyss; bottomless.
a-byss (*ă-bis'*), *n.* a bottomless gulf; that which is unfathomable; hell.
★Ab-ys-sin-i-a (*ab-is-sin'i-ă*). A country of Africa, named from the rivers *Abai* and *Hawash,* or, according to Bruce, from *habesch,* "mixed."
ac-a-dem-ic (*ak-ă-dem'ik*) or **academical** (*'i-kal*), *adj.* belonging or appertaining to a college or university
ac-a-de-mi-cian (*ak-ă-dē-mish'an*), *n.* a member of an academy or society for promoting the arts, sciences, and literature.
a-cad-e-my (*ă-kad'ē-mi*), *n.* a private school or seminary for the teaching of the higher branches of education.
★A-ca-di-a (*ă-kā'di-ă*) or **Acadie** (*ă-kā-dē'*). The name originally given to Nova Scotia, but now only the poetical designation.
a-can-thus (*ă-kan'thus*), *n.* a plant having sharp-toothed leaves; ornamentation used in the capitals of the Corinthian and Composite orders.
ac-cede (*ak-sēd'*), *v. i.* to come or attain to; to agree or yield to. [AGREE.]
ac-cel-er-ate (*ak-sel'ēr-āt*), *v. t.* to hasten; to cause to move or progress faster. [HASTEN.]
ac-cel-er-a-tion (*ak-sel-ēr-ā'shun*), *n.* the act of accelerating; the state of being accelerated.
ac-cent (*ak'sent*), *n.* the stress laid by the voice upon a particular syllable or word, so as to render it more prominent than the rest; the emphasis placed upon certain notes of a bar of music: *v. t.* to ex-

press the accent, or note the vocal division of a word by stress or modulation of the voice.

ac-cen-tu-al (*ak-sen'tū-al*), *adj.* belonging to accent; rhythmical.

ac-cen-tu-ate (*ak-sen'tū-āt*), *v. t.* to speak, pronounce or mark with an accent.

ac-cept (*ak-sept'*), *v. t.* to take or receive with approbation; entertain; agree to.

ac-cept-a-ble (*ak-sept'a-bl*), *adj.* to be accepted; pleasing; agreeable.

Syn. ACCEPTABLE, grateful, welcome. *Acceptable* signifies worthy to be accepted. *Grateful*, pleasing, signifies altogether pleasing; it is that which recommends itself. The *acceptable* is a relative good; the *grateful* is positive; the former depends upon our external condition, the latter on our feelings and taste; *welcome* signifies come well or in season for us. It refers to whatever happens according to our wishes. It is a *grateful* task to be the bearer of *welcome* intelligence to our friends.

ac-cept-ance (*ak-sept'ans*), *n.* the act of accepting; the fact of being accepted.

ac-cep-ta-tion (*ak-sep-tā'shun*), *n.* the act of accepting, or state of being accepted or acceptable.

★**ac-cess** (*ak-ses'* or *ak'ses*), *n.* admittance or approach to a person or place; means of approach or admission.

ac-cess-i-ble (*ak-ses'i-bl*), *adj.* capable of being approached; easy of access; attainable.

ac-ces-sion (*ak-sesh'un*), *n.* a coming to, as by succession or by right; entrance or attainment.

ac-ces-so-ry (*ak-ses'ō-ri*),*adj.* aiding;contributing to some result or effect: *n.* [*pl.* accessories (*-riz*)], one who aids in the commission of a felony.

Syn. ACCESSORY, abetter or abettor, accomplice, ally, assistant, associate, attendant, coadjutor, colleague, companion, confederate, follower, henchman, partner, retainer. In law, an *abettor* is always present, either actively or constructively, at the commission of the crime; an *accessory* never. An *accomplice* is usually a principal; an *accessory* never. If present, though only to stand outside and keep watch against surprise, one is an *abettor*, and not an *accessory*. An *accessory* implies a principal, and can not be convicted until after the conviction of the principal; the *accomplice* or *abettor* can be convicted as a principal. Members of Congress from the same state are *colleagues;* an *associate* is a person of equal or nearly equal rank; an *assistant* to a physician is a medical student who shares in the treatment and care of patients; his *attendant* is one who rolls bandages; *follower*, *henchman*, *retainer*, are persons especially devoted to a chief; *partner* denotes almost exclusively a business connection. [See *auxiliary*.]

Ant. ANTAGONIST, commander, foe, leader, opponent, principal, rival.

ac-ci-dent (*ak'si-dent*), *n.* an event which is unexpected, or the cause of which was unforeseen.

Syn. ACCIDENT, adventure, calamity, casualty, chance, disaster, fortuity, hap, hazard, incident, misadventure, misfortune, mishap, possibility. An *adventure* is that which may turn out ill, a *misadventure* that which does turn out ill; a slight disturbing *accident* is a *mishap;* an *accident* is that which happens without any one's direct intention; a *chance* that which happens without any known cause; an *incident* is subordinate to the main purpose, or design; the slaughter of men is an *incident* of battle; unexpected defeat, the *fortune* of war. Since the unintended is often the undesirable, *accident* tends to signify some *calamity* or *disaster*, unless the contrary is expressed, as when we say a fortunate or happy *accident*. [See *event*.]

Ant. APPOINTMENT, calculation, decree, fate, foreordination, law, plan, preparation.

ac-ci-den-tal (*ak-si-den'tal*), *adj.* happening by chance or unexpectedly; fortuitous; nonessential: *n.* that which happens unexpectedly.

ac-claim (*ak-klām'*), *v. i.* to shout applause: *n.* a shout of joy or praise; acclamation.

ac-cla-ma-tion (*ak-klā-mā'shun*), *n.* a shout of applause, or other demonstration of hearty approval.

★**ac-cli-mate** (*ak-klī'māt*, not *ak'klim-āt*), *v. t.* to accustom a person to a foreign climate.

ac-cli-ma-tion (*ak-kli-mā'shun*), *n.* the process of acclimatizing.

ac-com-mo-date (*ak-kom'mō-dāt*), *v. t.* to adapt or make fit or suitable; adjust, settle.

ac-com-mo-da-tion (*ak-kom-mō-dā'shun*), *n.* the act of accommodating; or the state of being accommodated.

ac-com-mo-da-tive (*ak-kom'mō-dā-tiv*), *adj.* disposed or tending to accommodate.

★**ac-com-pa-ni-ment** (*ak-kum'pa-ni-ment*, not *ak-kump'nim-ent*), *n.* something which is added to or attends the original or principal thing.

ac-com-pa-nist (*ak-kum'pa-nist*), *n.* one who plays an accompaniment.

ac-com-pa-ny (*ak-kum'pa-ni*), *v. t.* to keep company with; escort; join in movement or action.

ac-com-plice (*ak-kom'plis*), *n.* an associate or companion in crime. [ACCESSORY.]

ac-com-plish (*ak-kom'plish*), *v. t.* to bring to completion, or to an issue; fulfill.

Syn. ACCOMPLISH, achieve, effect, execute. To *accomplish* an object signifies more than simply to *effect* a purpose, both as to the thing aimed at and the means employed in bringing it about. Extraordinary means are requisite for *accomplishing*, and ordinary means for *effecting*. To *accomplish* is properly said of that which a person sets before himself; but to *effect*, *execute*, and *achieve* do not relate to the views of a person acting, but to the thing brought about. What is *executed* is complicated in its nature, as to *execute* a design or project; what is *achieved* is grand, as to *achieve* an enterprise.

Ant. CEASE, fail, leave, neglect, rest.

ac-com-plish-ment (*ak-kom'plish-ment*), *n.* the completion of an act or undertaking; fulfillment. [QUALIFICATION.]

ac-cord (*ak-kôrd'*), *v. t.* and *v. i.* to be in agreement with; reconcile; agree; give; grant; concede.

ac-cord-ant (*ak-kôrd'ant*), *n.* the state of being in harmony or accord. [CONSONANT.]

ac-cord-ing (*ak-kôrd'ing*), *p. adj.* agreeing, harmonious: *adv.* in accordance (*with*) or agreeably (*to*).

ac-cor-di-on (*ak-kôr'di-un*), *n.* a small wind instrument, having keys and metallic reeds.

ac-cost (*ak-kost'*), *v. t.* to draw near, or come face to face with; speak to; salute: *n.* the act of accosting; manner. [ADDRESS.]

★**ac-couche-ment** (*ak-kōōsh'măn*), *n.* delivery in childbed; parturition; a lying-in.

ac-count (*ak-kount'*), *v. t.* to reckon or hold to be; compute; count: *v. i.* to assign an explanation: *n.* reckoning; a financial statement or memorandum.

ac-count-a-ble (*ak-kount'a-bl*), *adj.* answerable; responsible; liable to be called to account.

ac-count-an-cy (*ak-kount'an-si*), *n.* the art or practice of an accountant.

ac-count-ant (*ak-kount'ant*), *n.* one skilled in the keeping or examination of accounts.

★**ac-cou-ter** (*ak-kōō'tẽr*, not *ak-kow'tẽr*), *v. t.* to dress; equip; to array in military dress.

ac-cred-it (*ak-kred'it*), *v. t.* to give credit to; have confidence in; authorize.

ac-crete (*ak-krēt'*), *v. i.* to adhere; be added: *v. t.* to cause to grow or unite.

ac-cre-tion (*ak-krē'shun*), *n.* increase by natural growth; the addition of external parts.

ac-cre-tive (*ak-krē'tiv*), *adj.* adding to or increasing by growth.

★**ac-crue** (*ak-krū'*, not *ak'krōō*), *v. i.* to come to happen or result to naturally as an increment, as of profit or loss.

ac-cru-er (*ak-krū'ẽr*), *n.* the act of accretion.

ac-cu-mu-late (*ak-kū'mū-lāt*), *v. t.* to collect or bring together; amass; heap up. [HEAP.]

ac-cu-mu-la-tion (*ak-kū-mū-lā'shun*), *n.* the act of accumulating or amassing.

ac-cu-mu-la-tive (*ak-kū'mū-lā-tiv*), *adj* tending to accumulate.

ac-cu-mu-la-tive judg-ment (*juj'ment*), a second judgment which takes effect against a person after the first sentence has expired.

ac-cu-mu-la-tor (*ak-kū'mū-lā-tẽr*), *n.* one who, or that which, accumulates; an apparatus for equalizing pressure.

ac-cu-ra-cy (*ak'kū-rā-si*), *n.* the quality of being accurate; exactness or correctness.

★**ac-cu-rate** (*ak'kū-rāt*, not *ak'kẽr-it*), *adj.* in exact conformity with the truth. [CORRECT.]

ac-curs-ed (*ak-kẽrs'ed*) or **ac-curst** (*ak-kẽrst'*), *p. adj.* under or subject to a curse.

ac-cu-sa-tion (*ak-kū-zā'shun*), *n.* a charge or imputation of wrongdoing. [COMPLAINT.]

ac-cu-sa-tive (*ak-kū'za-tiv*), *adj.* accusing: *n.* the objective case.

ac-cuse (*ak-kūz'*), *v. t.* to charge with guilt or blame.

Syn. ACCUSE, charge, impeach, arraign. The idea of asserting something to the prejudice of another is common to these terms; but *accuse* is said of acts, *charge* of moral qualities constituting the character; we *accuse* a person of murder; we *charge* him with dishonesty. High officials are *impeached;* criminals are *arraigned*.

ac-cus-er (*ak-kūz'ẽr*), *n.* one who accuses; one who formally charges an offense against another.

ac-cus-tom (*ak-kus'tum*), *v. t.* to habituate or familiarize by custom or use. [ADDICTED.]

ace (*ās*), *n.* [*pl.* aces (*-ez*)], a unit; in playing cards or dice, a card or die marked with a single pip.

A-ceph-a-la (*a-sef'a-la*), *n. pl.* a term applied to all bivalves, as the oyster, having no distinct head.

ace-point (*ās'point*), the single mark of the ace card and of the die marked with one spot.

a-cer-bi-ty (*a-sẽr'bi-ti*), *n.* [*pl.* acerbities (*-tiz*)], sourness; sharpness. [ACRIMONY.]

★**ac-et-an-i-lide** (*as-et-an'i-lid* or *-līd*), *n.* a pungent white powder, formed by the action of acetyl chloride on aniline.

ac-e-tate (*as'ē-tāt*), *n.* a salt of acetic acid.

★**a-ce-tic acid** (*a-sē'tik* or *a-set'ik as'id*), a clear liquid, with a strong acid taste and peculiar sharp smell.

a-cet-i-fy (*a-set'i-fī*), *v. t.* [*p. t.* and *p. p.* acetified, *p. pr.* acetifying], to turn into vinegar; make acetose.

ac-e-tin (*as'ē-tin*), *n.* a combination of acetic acid with glycerine.

ac-e-tone (*as'ē-tōn*), *n.* a clear volatile liquid, composed of carbon, hydrogen, and oxygen.

ac-e-tose (*as'ē-tōs*) or **a-ce-tous** (*a-sē'tus*), *adj.* of the nature of vinegar; sour; causing acetification.

★**a-cet-y-lene** (*a-set'i-lēn*), *n.* a brilliant illuminating gas.

ache (*āk*), *n.* pain, more or less continuous; *v. i.* to suffer, or be in, pain.

a-chiev-a-ble (*a-chēv'a-bl*), *adj.* possible to achieve; capable of being performed.

a-chieve (*a-chēv'*), *v. t.* to perform, carry out, accomplish. [ACCOMPLISH.]

a-chieve-ment (*a-chēv'ment*), *n.* the act of achieving; accomplishment.

ach-ing (*āk'ing*), *p. adj.* enduring or causing pain; painful: *adv.* with aching; painfully. [ation.

ach-ro-mat-ic (*ak-rō-mat'ik*), *adj.* free from color-

a-chro-ma-tize (*a-krō'ma-tīz*), *v. t.* to deprive of the power of transmitting color; to render achromatic.

ac-id (*as'id*), *adj.* sour and sharp or biting to the taste, as vinegar: *n.* anything sour.

a-cid-i-fi-ca-tion (*a-sid-i-fi-kā'shun*), *n.* the process of acidifying.

a-cid-i-fy (*a-sid'i-fī*), *v. t.* [*p. t.* and *p. p.* acidified, *p. pr.* acidifying], to make acid.

a-cid-i-ty (*a-sid'i-ti*), *n.* the quality of being acid or sour.

a-cid-u-late (*a-sid'ū-lāt*), *v. t.* to render slightly acid.

★**ac-i-er-age** (*as'i-ẽr-āj*), *n.* the term given to the process of electrically depositing iron on an engraved copper plate.

ac-i-form (*as'i-fôrm*), *adj.* needle-shaped.

ac-i-na-ceous (*as-i-nā'shus*), *adj.* consisting of, or full of, kernels, as the grape, mulberry, etc.

ac-knowl-edge (*ak-nol'ej*), *v. t.* [*p. t.* and *p. p.* acknowledged, *p. pr.* acknowledging], to admit or own to be true.

ac-knowl-edg-ment (*ak-nol'ej-ment*), *n.* the act of acknowledging; the admission or recognition of a truth.

ac-me (*ak'mē*), *n.* the highest point; the utmost reach; the crisis of a disease.

ac-ne (*ak'nē*), *n.* a pustular eruption of the body.

a-cock (*a-kok'*), *adv.* in a cocked or turned up manner.

a-col-o-gy (*a-kol'ō-ji*), *n.* the science of remedies.

★**ac-o-lyte** (*ak'ō-līt*), or **acolyth** (*ak'ō-lith* or *-lith*), *n.* the highest of the minor orders in the Roman Catholic church.

ac-o-nite (*ak'ō-nīt*), *n.* the plant wolfsbane or monkshood; the drug prepared from the plant.

a-con-i-tine (*a-kon'i-tin* or *-tēn*), *n.* the narcotic drug prepared from the roots and leaves of several species of aconite.

★**a-corn** (*ā'kẽrn*), *n.* the fruit of the oak.

a-cou-me-ter (*a-kou'mē-tẽr* or *a-kōō'mē-tẽr*) *n.* an instrument to test the power of hearing.

★**a-cous-tic** (*a-kous'tik* or *a-kōōs'tik*), *adj.* belonging to the science of sound: *n.* a remedy for deafness.

a-cous-tics (*a-kous'tiks* or *a-kōōs'tiks*), *n. pl.* the science of sound.

ac-quaint (*ak-kwānt'*), *v. t.* to familiarize or make one's self conversant with; furnish information.

ac-quaint-ance (*ak-kwānt'ans*), *n.* the state of being acquainted with a person or subject.

Syn. ACQUAINTANCE, association, companionship, experience, familiarity, fellowship, friendship, intimacy, knowledge. *Acquaintance* between persons supposes that each knows the other; there may be *association* in business without *intimacy* or *friendship*. *Friendship* includes *acquaintance* with some degree of *intimacy*, and ordinarily *companionship; fellowship* involves not merely *acquaintance* and *companionship*, but sympathy as well. [See *love*.]

Ant. IGNORANCE, ignoring, unfamiliarity.

ac-quaint-ed (*ak-kwānt'ed*), *p. adj.* having personal knowledge; familiar with; well known. [KNOW.]

ac-qui-esce (*ak-kwi-es'*), *v. i.* to agree; comply passively; assent (followed usually by *in*). [AGREE.]

ac-qui-es-cence (*ak-kwi-es'ens*), *n.* the act of submitting; silent assent.

ac-quire (*ak-kwīr'*), *v. t.* to gain or obtain possession of.

ac-quire-ment (*ak-kwīr'ment*), *n.* the act of acquiring; that which is acquired.

ac-qui-si-tion (*ak-kwi-zish'un*), *n.* the act of acquiring.

ac-quit (*ak-kwit'*), *v. t.* [*p. t.* and *p. p.* acquitted, *p. pr.* acquitting], to release; set free. [ABSOLVE.]

ac-quit-tal (*ak-kwit'tal*), *n.* the act of releasing or acquitting; the state of being acquitted.

ac-quit-tance (*ak-kwit'tans*), *n.* a discharge or release from debt or other liability.

a-cre (*ā'kẽr*), *n.* a superficial measure of land containing 4,840 square yards.

ac-rid (*ak'rid*), *adj.* sharp or biting to the taste; pungent; irritating; stinging.

ac-ri-mo-ni-ous (*ak-ri-mō'ni-us*), *adj.* bitter; caustic; stinging.

ac-ri-mo-ny (*ak'ri-mō-ni*), *n.* sharpness of temper.

Syn. ACRIMONY, acerbity, asperity, bitterness, malignity, severity, sharpness, unkindness, virulence. *Acrimony* in speech or temper springs from settled character or deeply rooted feeling of aversion or unkindness. One might speak with momentary *asperity* to a child, but not with *acrimony; acerbity* is *sharpness*, with a touch of *bitterness; asperity* denotes distinct irritation or vexation; in speech *asperity* is often manifested by the tone of voice; *malignity* is the extreme of settled ill-intent; *virulence* is an envenomed hostility. *Virulence* makes language seem as if exuding poison. *Virulence* is outspoken; *malignity* may be covered with smooth and courteous phrase. We say intense *virulence*, deep

malignity. Severity carries ordinarily the implication, true or false, of justice. [See *anger; enmity.*]

Ant. Amiability, gentleness, mildness.

ac-ro-bat (*ak'rō-bat*), *n.* a performer on the tight-rope; one who practices tumbling.

ac-ro-lith (*ak'rō-lith*), *n.* a sculptured figure, the head and extremities of which are of stone and the rest of wood.

★**a-crop-o-lis** (*ȧ-krop'ō-lis*), *n.* the highest part or citadel of a Grecian city.

a-cross (*ȧ-krôs'*), *adv.* and *prep.* from side to side.

a-cros-tic (*ȧ-kros'tik*), *n.* a composition, usually in verse, in which the first or last letters of the lines, or other letters taken in order, form a motto, phrase, name, or word.

act (*akt*), *n.* an action; process of doing; a decree, edict, or enactment; the judgment of a court.

ac-tin-i-um (*ak-tin'i-um*), *n.* a recently discovered radio-active element.

ac-tin-oid (*ak'tin-oid*), *adj.* having the form of rays; resembling a starfish.

ac-tion (*ak'shun*), *n.* the state of being active, as opposed to rest; the effect of one body upon another (used in *sing.*).

Syn. ACTION, gesture, gesticulation, posture, attitude. All these terms are applied to the state of the body; the three former indicating a state of motion; the two latter a state of rest. *Action* respects the movements of the body in general; *gesture* is an action indicative of some particular state of mind; *gesticulation* is a species of artificial *gesture*. Raising the arm is an *action*; bowing is a *gesture*. Actions may be ungraceful; gestures indecent. *Posture* and *attitude* both imply a mode of placing the body, but the *posture* is either natural or assumed; the *attitude* is always assumed or represented. We assume a sitting *posture* or an *attitude* of prayer.

ac-tion-a-ble (*ak'shun-ȧ-bl*), *adj.* giving grounds for an action at law.

ac-tive (*ak'tiv*), *adj.* endowed with or exercising the power or quality of action; constantly active.

Syn. ACTIVE, agile, alert, brisk, bustling, busy, diligent, energetic, expeditious, industrious, lively, mobile, nimble, officious, prompt, quick, ready, sprightly, spry, supple, vigorous. Both quickness and constancy of action are implied in *active*; in the former sense it is allied with *agile, alert, brisk*, etc.; in the latter with *busy, diligent, industrious*. The *restless* are *active* from inability to keep quiet; their activity may be without purpose, or out of all proportion to the purpose contemplated. The *officious* are undesirably *active* in the affairs of others.

Ant. Dull, idle, inert, lazy, slow, sluggish, stupid.

ac-tor (*ak'tĕr*), *n.* one who acts or performs; a stage-player.

ac-tress (*ak'tres*), *n.* a female actor.

ac-tu-al (*ak'tū-al*), *adj.* real; existing; present.

ac-tu-al-i-ty (*ak-tū-al'i-ti*), *n.* [*pl.* actualities (*-tiz*)], the state of being real or actual.

ac-tu-a-ry (*ak'tū-ā-ri*), *n.* [*pl.* actuaries (*-riz*)], a registrar or clerk of a court.

ac-tu-ate (*ak'tū-āt*), *v. t.* to move or incite to action.

a-cu-le-ate (*ȧ-kū'lē-āt*), *adj.* having sharp points; prickly.

★**a-cu-men** (*ȧ-kū'men*, not *ȧk'ū-men*), *n.* quickness of perception; penetration; discrimination.

a-cu-mi-nate (*ȧ-kū'mi-nāt*), *adj.* ending in a sharp point.

a-cute (*ȧ-kūt'*), *adj.* sharp-pointed; intellectually sharp; quick of perception; severe, as pain.

Syn. ACUTE, keen, shrewd. In the natural sense, a fitness to pierce is predominant in the word *acute*, and that of cutting, or a fitness for cutting, in the word *keen*. The *shrewd* man exposes follies. Arguments may be *acute*, reproaches *keen*, and replies or retorts *shrewd*. A *shrewd* understanding is rather quicker in discovering new truths than in distinguishing truth from falsehood. [See *sharp.*]

Ada (*ā'dȧ*). According to some, this name has been corrupted from *Adama*, feminine of Adam. Others derive it from the name *Ead*, which is from A.-S. *ead*, "happy"; or from the name *Eadith*. Littleton gives *Eada* (Saxon), *Auda, Ada*, and *Idonea*, which he translates, "fit," "meet," "proper"; also "pious," "honest," "rich."

ad-age (*ad'āj*), *n.* an ancient proverb or pithy saying.

Adam (*ad'am*). From the Hebrew *Adham*, signifying "man"; literally, "earthy," "red earth." Rudolph, however, says the name in Ethiopic means "to be fair," "beautiful." Arab., *Adam;* Danish, *Adam;* Dutch, *Adam;* Fr., *Adam;* Ger., *Adam;* It., *Adamo;* Lat., *Adamus;* Port., *Adão* (ȧ-down'); Sp., *Adan.*

ad-a-mant (*ad'ȧ-mant*), *n.* a substance of extreme hardness: the diamond: *adj.* formed of adamant.

★**ad-a-man-tine** (*ad-ȧ-man'tin*, not *ad-ȧ-man'tēn*), *adj.* made of adamant; impenetrable.

a-dapt (*ȧ-dapt'*), *v. t.* to make to correspond; fit by alteration or adaptation.

a-dapt-a-bil-i-ty (*ȧ-dapt-ȧ-bil'i-ti*), *n.* the quality of being adaptable.

ad-ap-ta-tion (*ad-ap-tā'shun*), *n.* the act of adjusting or adapting; the state of being adapted.

add (*ad*), *v. t.* to join, unite, sum up; increase; affix.

Syn. ADD, adjoin, affix, amplify, annex, append, attach, augment, cast up, enlarge, extend, increase, join on, make up, subjoin, sum up. To *add* is to *increase* by *adjoining* or *uniting;* to *augment* is to *increase* by any means; but we rather *enlarge* a house, a farm, or an empire; *extend* influence or dominion; *augment* riches, power or influence; *attach* or *annex* a building; *affix* a seal or a signature; a speaker or writer may *amplify* a subject, or may *append* or *subjoin* certain remarks; we *add up* and *make up* an account.

Ant. Deduct, diminish, lessen, remove.

ad-den-dum (*ad-den'dum*), *n.* [*pl.* addenda (*'dȧ*)], an appendix.

ad-der (*ad'ĕr*), *n.* the popular name for the viper.

ad-dict (*ad-dikt'*), *v. t.* to devote or give one's self up to: *adj.* addicted, devoted or abandoned to.

Syn. ADDICTED, abandoned, accustomed, attached, devoted, disposed, given, habituated, inclined, prone, wedded. *Abandoned*, relates to one who has surrendered to wickedness; *addicted* may be used in a good, but more frequently is used in a bad sense, as, *addicted* to study, *addicted* to drink; *devoted* is used chiefly in the good sense, as, a mother's *devoted* affection; one may be *accustomed* to labor, *attached* to his profession, *devoted* to his religion, *given* to study or to gluttony, *inclined* to luxury, one may become *habituated* to poverty, *wedded* to science or to art. *Prone* is used only in a bad sense, as, our hearts are *prone* to evil.

Ant. Averse, disinclined, unaccustomed.

ad-di-tion (*ad-dish'un*), *n.* the act or process of adding together; increase; the result of addition.

ad-dle (*ad'l*), *adj.* rotten; *v. t.* to make corrupt or putrid, as eggs: *v. i.* to become addled.

ad-dle-head-ed (*ad-l-hed'ed*), or **ad-dle-pa-ted** (*ad-l-pā'ted*), *adj.* stupid; weak-brained; muddled.

★**ad-dress** (*ad-dres'*, not *ad'dres*), *v. t.* to straighten; to bring into line; to arrange, redress, as wrongs, etc.; *n.* a speech, delivered or written.

Syn. ADDRESS, accost, apostrophize, appeal, approach, court, greet, hail, salute, speak to, woo. *Address* is slightly more formal than *accost* or *greet;* one may *address* another at considerable length or in writing, he *accosts* orally and briefly; to *accost* is to speak first, to friend or stranger; *greet* is not so distinctly limited, since one may return another's *greeting; greet* and *hail* may imply but a passing word; *greeting* may be altogether silent; to *hail* is to *greet* in a loud-voiced and commonly hearty and joyous way; to *salute* is to *greet* with special token of respect, as a soldier his commander; to *apostrophize* is to solemnly *address* some person or personified attribute; a poet may *apostrophize* virtue, beauty, love, or even the deity; to *appeal* is strictly to call for some form of help or support. [See *direction.*]

Ant. Avoid, ignore, overlook, shun.

ad-duce (*ad-dūs'*), *v. t.* to bring forward or cite in proof or substantiation. [ALLEGE.]

ad-du-ci-ble (*ad-dū'si-bl*), *adj.* capable of being adduced.

★**Adela** (*ad'ē-lȧ*). A female name Latinized from Old German *edel*, "noble," "noble descent or lineage."

Adelaide (*ad'ē-lād*). From the Old German male name *Adalheid* (in Middle High German *Adalhait*, North High German *Adelheid*), signifying "a noble person."

ad-e-noid (*ad'ē-noid*), *n.* a tumor affecting a gland.

★**a-dept** (*ȧ-dept'*, not *ȧd'ept*), *adj.* well skilled.

ad-e-qua-cy (*ad'ē-kwȧ-si*), *n.* sufficiency for a particular purpose.

ad-e-quate (*ad'ē-kwāt*), *adj.* equal to requirement or occasion; fully sufficient. [PROPORTIONATE.]

ad-here (*ad-hēr'*), *v. i.* to stick fast; become firmly attached to.

ad-her-ence (*ad-hēr'ens*), *n.* the act or state of adhering.

ad-her-ent (*ad-hēr'ent*), *adj.* adhering; sticking. [FOLLOWER.]

ad-he-sion (*ad-hē'zhun*), *n.* the state or act of adhering.

★**a-dieu** (*ȧ-dū'*, French *ȧd-yō'*), *n.* [*pl.* adieus, adieux (*ȧ-dūz'*)], good wishes at parting. [FAREWELL.]

Adirondack (*ad-i-ron'dak*). Mountains in New York and village in Warren county of the same state. Indian word compounded from *doran*, "a people who eat bark," and *dak*, "trees," with the French article *la* prefixed.

ad-it (*ad'it*), *n.* an entrance or passage; an entrance to a mine more or less horizontal.

ad-ja-cent (*ad-jā'sent*), *adj.* near; close to.

Syn. ADJACENT, abutting, adjoining, attached, beside, bordering, close, contiguous, near, neighboring, next, nigh. *Adjacent* farms may not be connected; if *adjoining*, they meet at the boundary line; *contiguous* may be used for either *adjacent* or *adjoining; abutting* refers to the end of one building or estate; buildings may be *adjacent* or *adjoining* that are not *attached; near* is a relative word, places being called *near* upon the railroad which would elsewhere be deemed remote; *neighboring* always implies proximity; *next* views some object as the nearest of several or many.

ad-jec-ti-val (*ad-jek-tī'val*), *adj.* of the nature of an adjective.

ad-jec-tive (*ad'jek-tiv*), *n.* a word used with a substantive or noun to express a quality or attribute of the thing named. [EPITHET.]

ad-join (*ad-join'*), *v. t.* to unite or join: *v. i.* to lie next to. [ADJACENT, ADD.]

ad-journ (*ad-jĕrn'*), *v. t.* to put off to another day.

ad-journ-ment (*ad-jĕrn'ment*), *n.* the act of adjourning; the postponement of a meeting.

ad-judge (*ad-juj'*), *v. t.* to determine in a controversy.

ad-ju-di-cate (*ad-jū'di-kāt*), *v. t.* to try and determine a case, as a court.

ad-ju-di-ca-tion (*ad-jū'di-kā'shun*), *n.* the act of determining judicially; a judicial sentence.

ad-ju-di-ca-tor (*ad-jū'di-kā-tĕr*), *n.* one who adjudicates.

ad-junct (*ad'jungkt*), *n.* something added to another thing, but not an essential part of it.

ad-ju-ra-tion (*ad-jū-rā'shun*), *n.* the solemn charging on oath.

ad-jure (*ad-jūr'*), *v. t.* to command on oath under pain of a penalty; to charge solemnly.

ad-just (*ad-just'*), *v. t.* to fit, or make exact; to make correspondent; to make accurate.

ad-just-ment (*ad-just'ment*), *n.* the act of adjusting.

ad-ju-tan-cy (*ad'jū-tan-si*), *n.* the office of an adjutant.

ad-ju-tant (*ad'jū-tant*), *n.* a regimental staff officer who assists the commanding officer.

ad-ju-tant gen-er-al (*jen'ĕr-al*), [*pl.* adjutants general], the chief staff officer of an army.

ad-meas-ure (*ad-mezh'ūr*), *v. t.* to measure dimensions; apportion.

ad-min-is-ter (*ad-min'is-tĕr*), *v. t.* to manage as chief agent or minister, as a king or president.

ad-min-is-tra-tion (*ad-min-is-trā'shun*), *n.* the act of administering, as government, justice, or medicine. [GOVERNMENT.]

ad-min-is-tra-tive (*ad-min'is-trā-tiv*), *adj.* pertaining to administration.

★**ad-min-is-tra-tor** (*ad-min-is-trā'tĕr*), *n.* one who administers affairs.

ad-min-is-tra-trix (*ad-min-is-trā'triks*), *n.* a female administrator.

★**ad-mi-ra-ble** (*ad'mi-rȧ-bl*, not *ad-mi'rȧ-bl*), *adj.* worthy of admiration; excellent.

ad-mi-ral (*ad'mi-ral*), *n.* the chief commander of a fleet.

Ad-mi-ral-ty (*ad'mi-ral-ti*), *n.* [*pl.* admiralities (*-tiz*)], the department of the English government having authority over naval affairs.

ad-mi-ra-tion (*ad-mi-rā'shun*), *n.* wonder excited by beauty or excellence.

ad-mire (*ad-mīr'*), *v. t.* to regard with strong approval.

Syn. ADMIRE, adore, applaud, approve, delight in, enjoy, esteem, extol, honor, love, respect, revere, venerate, wonder. *Admire* expresses a delight and approval, in which the element of wonder unconsciously mingles; we *admire* beauty in nature and art, *delight in* the innocent happiness of children, *enjoy* books or society; *approve* what is excellent, *applaud* heroic deeds; *esteem* the good, *love* our friends; *honor* and *respect* noble character, *revere* and *venerate* it in the aged; *extol* the goodness and *adore* the majesty of God.

Ant. Abhor, despise, dislike, execrate, hate, ridicule, scorn.

ad-mis-si-ble (*ad-mis'i-bl*), *adj.* worthy of being admitted.

ad-mis-sion (*ad-mish'un*), *n.* the power or permission to enter.

ad-mit (*ad-mit'*), *v. t.* [*p. t.* and *p. p.* admitted, *p. pr.* admitting], to permit to enter.

Syn. ADMIT, allow, permit, suffer, tolerate. We *admit* by simply not refusing or preventing; we *allow* by positively granting or complying with; we *admit* that which concerns ourselves, or is done toward ourselves; we *allow* that which is for the convenience of others, or what they wish to do; what is *suffered* may be burdensome to the *sufferer*, if not morally wrong; what is *tolerated* is bad in itself, and *suffered* only because it cannot be prevented; no earthly power can *permit* that which divine law prohibits. [See *consent.*]

ad-mit-tance (*ad-mit'tans*), *n.* the power or permission to enter.

ad-mix (*ad-miks'*), *v. t.* to mix with something else.

ad-mix-ture (*ad-miks'tūr*), *n.* a compound of substances mixed together.

ad-mon-ish (*ad-mon'ish*), *v. t.* to reprove gently; warn; instruct.

ad-mo-ni-tion (*ad-mō-nish'un*), *n.* friendly reproof or warning.

ad-mon-i-to-ry (*ad-mon'i-tō-ri*), *adj.* conveying reproof or warning.

ad-nate (*ad'nāt*), *adj.* with organic cohesion of unlike parts.

a-do (*ȧ-dōō'*), *n.* bustle; trouble.

★**a-do-be** (*ȧ-dō'bā*) *n.* unburnt brick dried in the sun, used for building in Central America and Mexico.

ad-o-les-cence (*ad-ō-les'ens*), *n.* the period of life between puberty and maturity; youth.

ad-o-les-cent (*ad-ō-les'ent*), *adj.* growing to maturity.

Adolphus (*ȧ-dol'fus*). The same as the Old German name *Atalphus*, which Wachter renders "helper of happiness," from *od*, "happiness," and *hulf*, "help" or "helper." It is commonly defined as "noble wolf." Danish, *Adolf;* Dutch, *Adolf;* Fr., *Adolphe;* Ger., *Adolf* or *Adolph;* It., *Adolfo;* Lat., *Adolphus;* Sp., *Adolfo;* Sw., *Adolf.*

a-dopt (*ȧ-dopt'*), *v. t.* to choose or take to one's self, as a child, an opinion, or a course of action.

a-dop-tion (*ȧ-dop'shun*), *n.* the act of adopting; the state of being adopted.

a-dor-a-ble (*ȧ-dōr'ȧ-bl*), *adj.* worthy of worship.
ad-o-ra-tion (*ad-ō-rā'shun*), *n.* act of worship.
a-dore (*ȧ-dōr'*), *v. t.* to pay divine honors to; honor highly; love intensely. [ADMIRE.]
a-dorn (*ȧ-dôrn'*), *v. t.* to beautify; dignify; ornament; embellish. [tion.
a-dorn-ment (*ȧ-dôrn'ment*), *n.* ornament; decora-
ad-re-nal-in (*ad-rē'nal-in*), *n.* a hemostatic astringent principle of the suprarenal gland; the most powerful astringent known.
★**Adrian** (*ā'dri-an*) or **Hadrian** (*hā'dri-an*). From the German name *Adrias*, so called from the capital of the Prætutii, on the coast of the Adriatic, where the family of the Emperor Adrian, according to his own account, had its rise. Danish, *Adrian;* Dutch, *Adriaan;* Fr., *Adrien;* It., *Adriano;* Lat., *Adrianus;* Port., *Adriano;* Sp., *Adrian.*
a-drift (*ȧ-drift'*), *adj.* and *adv.* floating at random.
a-droit (*ȧ-droit'*), *adj.* exhibiting skill; dexterous. [CLEVER.]
ad-u-la-tion (*ad-ū-lā'shun*), *n.* interested praise; flattery.
★**a-dult** (*ȧ-dult'*, not *ad'ult*), *adj.* grown up to full age, size, and strength. [admixture.
a-dul-ter-ate (*ȧ-dul'tẽr-āt*), *v. t.* to corrupt by baser
a-dul-ter-a-tion (*ȧ-dul'tẽr-ā'shun*), *n.* the debasing by admixture; deterioration.
a-dul-ter-y (*ȧ-dul'tẽr-i*), *n.* [*pl.* adulteries (*-iz*)], violation of the marriage bed.
ad-um-brate (*ad-um'brāt*), *v. t.* to shadow forth.
ad-vance (*ad-vȧns'*), *v. i.* to go forward: *v. t.* to further; to make a payment of beforehand: *n.* a moving forward. [ALLEGE.]
ad-vance-ment (*ad-vȧns'ment*), *n.* furtherance; progress; promotion.
ad-van-tage (*ad-vȧn'tāj*), *n.* a state of advance or forwardness; a benefit.
ad-van-ta-geous (*ad-vȧn-tā'jus*), *adj.* of advantage; beneficial.
ad-vent (*ad'vent*), *n.* a coming or arrival.
Advent, *n.* the period including the four Sundays before Christmas.
ad-ven-ti-tious (*ad-ven-tish'us*), *adj.* happening by chance; casual; fortuitous.
ad-ven-tu-al (*ad-ven'tū-al*), *adj.* relating to the season of Advent.
★**ad-ven-ture** (*ad-ven'tūr*), *n.* an event the issue of which is determined by chance. [ACCIDENT.]
ad-ven-ture-some (*ad-ven'tūr-sum*), or **adventurous** (*ad-ven'tūr-us*), *adj.* inclined to incur risk. [ENTERPRISING, FOOLHARDY.]
ad-verb (*ad'vẽrb*), *n.* a word used to modify the sense of a verb or adjective.
ad-ver-bi-al (*ad-vẽr'bi-al*), *adj.* of the nature of an adverb.
ad-ver-sa-ry (*ad'vẽr-sā-ri*), *n.* [*pl.* adversaries (*-riz*)], an opponent.
★**ad-verse** (*ad'vẽrs*), *adj.* opposed to. [verse.
ad-ver-si-ty (*ad-vẽr'si-ti*), *n.* a state of things ad-
ad-vert (*ad-vẽrt'*), *v. i.* to turn one's attention to; refer.
ad-vert-ence (*ad-vẽrt'ens*), *n.* attention.
ad-vert-en-cy (*ad-vẽrt'en-si*), *n.* the habit of being attentive.
ad-vert-ent (*ad-vẽrt'ent*), *adj.* attentive.
★**ad-ver-tise** (*ad-vẽr-tīz'*), *v. t.* to turn the attention of others to. [ANNOUNCE.]
★**ad-ver-tise-ment** (*ad-vẽr'tiz-ment* or *ad-vẽr-tīz'-ment*), *n.* a notice in a public print.
ad-vice (*ad-vis'*), *n.* an opinion given for the practical direction of conduct. [INFORMATION.]
ad-vis-a-bil-i-ty (*ad-vīz-ȧ-bil'i-ti*), *n.* the quality of being advisable.
ad-vis-a-ble (*ad-vīz'ȧ-bl*), *adj.* fit to be advised.
ad-vise (*ad-vīz'*), *v. t.* to offer an opinion to; counsel.
ad-vised (*ad-vīzd'*), *p. adj.* acting with caution.
ad-vis-ed-ly (*ad-vīz'ed-li*), *adv.* with advice.
ad-vi-so-ry (*ad-vī'zō-ri*), *adj.* having power to advise.
ad-vo-ca-cy (*ad'vō-kȧ-si*), *n.* the act of pleading for.
ad-vo-cate (*ad'vō-kāt*), *n.* one called to the aid of another. [ABET.] [supporter.
ad-vo-ca-tor (*ad'vō-kā-tẽr*), *n.* an advocate; a
ad-y-na-mi-a (*ad-i-nā'mi-ȧ*), *n.* great debility; physical weakness.
adz or **adze** (*adz*), *n.* a cutting tool having a curved blade at right angles to the handle. *adz-plane,* a tool for molding and rabbeting.
æ-o-li-an harp (*ē-ō'li-an hȧrp*), a stringed instrument, the wires of which are set in motion by air. [tion.
★**æ-on** or **eon** (*ē'on*), *n.* a period of immense dura-
★**a-ër-ate** (*ȧ'ẽr-āt*, not *ā-rē'āt*), *v. i.* to combine or charge with carbonic-acid gas, or with air.
a-ër-a-ted bread (*ȧ'ẽr-ā-ted bred*), bread raised by charging the dough with carbonic-acid gas.
a-ër-a-tion (*ā-ẽr-ā'shun*), *n.* the act of aërating.
★**a-ē-ri-al** (*ā-ē'ri-al*), *adj.* belonging to the air.
ae-rie (*ē'ri*), *n.* an eagle's nest; a brood of eagles or hawks.
★**a-ër-i-fi-ca-tion** (*ā-ẽr-i-fi-kā'shun*), *n.* the state of being made aëriform.
a-ër-i-form (*ȧ'ẽr-i-fôrm*), *adj.* having the form of air; gaseous.
a-ër-i-fy (*ȧ'ẽr-i-fī*), *v. t.* [*p. t.* and *p. p.* aërified, *p. pr.* aërifying], to infuse or combine with air.
a-ër-o-cyst (*ȧ'ẽr-ō-sist*), *n.* one of the air bladders of algæ.
a-ër-o-drome (*ȧ'ẽr-ō-drōm*), *n.* a mechanism for gliding on the air; a place for testing flying machines.
a-ër-o-dy-nam-ics (*ā-ẽr-ō-di-nam'iks*), *n.* the science which treats of air in motion.
a-ër-o-gram (*ȧ'ẽr-ō-gram*), *n.* a wireless telegraph message.
a-ër-o-lite (*ȧ'ẽr-ō-līt*), *n.* a meteorite.
★**a-ër-om-e-ter** (*ā-ẽr-om'ẽ-tẽr*), *n.* an instrument for weighing the air.
a-ër-o-mo-tor (*ā-ẽr-ō-mō'tẽr*), *n.* a flying machine driven through the air by a motor; a motor designed for use on an aëroplane.
★**a-ër-o-naut** (*ȧ'ẽr-ō-nawt*), *n.* an aërial navigator.
a-ër-o-phone (*ȧ'ẽr-ō-fōn*), *n.* an instrument invented by Edison for increasing the intensity of sound.
a-ër-o-phyte (*ȧ'ẽr-ō-fīt*), *n.* an air plant; a parasitical plant.
a-ër-o-plane (*ȧ'ẽr-ō-plān*), *n.* a flying machine, kept afloat by the force of its motor and the air.
a-ër-o-stat (*ȧ'ẽr-ō-stat*), *n.* a balloon; a flying machine.
a-ër-o-stat-ics (*ā-ẽr-ō-stat'iks*), *n.* the science which treats of the equilibrium of bodies sustained in air.
æs-the-si-om-e-ter (*es-thē-si-om'ẽ-tẽr*), *n.* an instrument for determining sensibility of touch.
æs-thet-ic or **esthetic** (*es-thet'ik*), *adj.* pertaining to æsthetics.
æs-thet-ics or **esthetics** (*es-thet'iks*), *n.* the science or theory of the beautiful.
a-far (*ȧ-fȧr'*), *adv.* at, to, or from, a distance.
af-fa-ble (*af'fȧ-bl*), *adj.* easy to be addressed; courteous.
af-fair (*af-fȧr'*), *n.* that which is done, or is to be done; business.
af-fect (*af-fekt'*), *v. t.* to produce an effect upon. [MOVING.]
af-fec-ta-tion (*af-fek-tā'shun*), *n.* the assuming a manner which is not one's own. [PRETENSE.]
af-fec-tion (*af-fek'shun*), *n.* having the feelings affected; inclination; attachment; fondness. [LOVE.]
af-fec-tion-ate (*af-fek'shun-āt*), *adj.* having affection; kind.
★**af-fer-ent** (*af'fẽr-ent*, not *af-fẽr'ent*), *adj.* conveying inward or to a part.
af-fi-ance (*af-fī'ȧns*), *n.* trust; a marriage-contract: *v. t.* to betroth.
af-fi-da-vit (*af-fi-dā'vit*), *n.* a sworn statement in writing. [TESTIMONY.]
af-fil-i-ate (*af-fil'i-āt*), *v. t.* to assign a child to its father; *v. i.* to be intimately connected or associated (followed by *with*).
af-fin-i-ty (*af-fin'i-ti*), *n.* [*pl.* affinities (*-tiz*)], nearness of kin.
af-firm (*af-fẽrm'*), *v. t.* to confirm, as a judgment: *v. i.* to assert strongly. [ALLEGE.]
af-fir-ma-tion (*af-fẽr-mā'shun*), *n.* an averment. [TESTIMONY.]
af-firm-a-tive (*af-fẽrm'ȧ-tiv*), *n.* that which affirms: *adj.* affirming or asserting.
af-fix (*af-fix'*), *v. t.* to fix to; attach; *n.* a letter or syllable added to end of a word. [ADD.]
af-fla-tus (*af-flā'tus*), *n.* a breath or blast of wind; inspiration.
af-flict (*af-flikt'*), *v. t.* to cause prolonged pain to body or mind; to distress.
af-flic-tion (*af-flik'shun*), *n.* prolonged pain of body or mind; state of distress.
Syn. AFFLICTION, grief, sorrow. *Affliction* lies deeper in the soul than *grief.* It is too deep to be vehement. Continued sickness of our friends will cause *affliction;* the failure of our favorite schemes will occasion *grief;* our own mistake will cause *sorrow.* [See *grief.*]
af-flu-ence (*af'flū-ens*), *n.* an abundant supply, as of thoughts, words, riches; wealth.
★**af-flu-ent** (*af'flū-ent*, not *af-flōō'ent*), *n.* a tributary stream: *adj.* abundant.
af-flux (*af'fluks*), *n.* an increase; an influx.
af-ford (*af-fôrd'*), *v. t.* to supply; produce; yield; be capable of bearing the expense of.
af-fray (*af-frā'*), *n.* the fighting of two or more persons in a public place. [FEUD.]
af-fright (*af-frīt'*), *v. t.* to frighten; terrify; alarm; confuse.
af-front (*af-frunt'*), *v. t.* to offend; to insult.
af-ghan (*af'gan*, not *af'kan*), *n.* a crocheted or knitted soft wool blanket or carriage robe.
Afghan, *adj.* pertaining to Afghanistan: *n.* a native of Afghanistan.
a-field (*ȧ-fēld'*), *adv.* to, in, or on, the field; astray.
a-flame (*ȧ-flām'*), *adj.* and *adv.* in flames; ablaze.
a-float (*ȧ-flōt'*), *adj.* and *adv.* floating; in circulation.
a-foot (*ȧ-foot'*), *adv.* on foot; astir.
a-fraid (*ȧ-frād'*), *adj.* frightened.
a-fresh (*ȧ-fresh'*), *adv.* again; anew.
Af-ri-can (*af-ri'kan*), *adj.* pertaining to **Africa.**
aft (*ȧft*), *adj.* and *adv.* toward the stern.
af-ter (*ȧf'tẽr*), *adj.* next, subsequent, later: *prep.* behind in place: *adv.* behind; subsequent in time or place.
af-ter-clap (*-klap*), *n.* an untoward event happening after an affair is supposed to be at an end.
af-ter damp (*damp*), the carbonic-acid gas found in coal mines after an explosion of fire damp.
af-ter-math (*-mȧth*), *n.* a second mowing; rowen.
af-ter-noon (*-nōōn'*), *n.* the part of the day between noon and evening.
af-ter-ward (*-wẽrd*), or **afterwards** (*-wẽrdz*), *adv.* at a later time; subsequently.
a-gain (*ȧ-gen'*), *adv.* a second time; in return; further; anew.
★**a-gainst** (*ȧ-genst'*, not *ȧ-gānst'*), *prep.* opposite to; in opposition to; contrary to one's inclinations.
★**a-gape** (*ȧ-gāp'* or *ȧ-gāp'*), *adj.* and *adv.* gaping; with the mouth wide open.
ag-ate (*ag'ȧt*), *n.* a precious stone, a variety of chalcedony; Scotch pebble.
age (*āj*), *n.* a particular period of time in life or in history; time. [TIME.]
aged (*ā'jed*), old. [ELDERLY.]
a-gen-cy (*ā'jen-si*), *n.* that which makes action.
a-gent (*ā'jent*), *n.* one who acts, especially for another; an active power or cause. [MINISTER.]
ag-glom-er-ate (*ag-glom'ẽr-āt*), *v. t.* to gather into a heap; accumulate.
ag-glom-er-a-tion (*ag-glom-ẽr-ā'shun*), *n.* a heap.
ag-glu-ti-nate (*ag-glū ti-nāt*), *v. t.* to glue together: *adj.* glued together.
ag-glu-ti-na-tion (*ag-glū-ti-nā'shun*), *n.* the act or condition of being united or joined together.
★**ag-gran-dize** (*ag'gran-dīz*), *v. t.* to make great or greater in power.
ag-gran-dize-ment (*ag-gran'dīz-ment*), *n.* exaltation; advancement.
ag-gra-vate (*ag'grȧ-vāt*), *v. t.* to add to a load; intensify.
Syn. AGGRAVATE, irritate, provoke, exasperate, tantalize. The crime of robbery is *aggravated* by any circumstances of cruelty; whatever comes across the feelings *irritates;* whatever awakens anger *provokes;* whatever heightens this anger extraordinarily *exasperates;* whatever raises hopes in order to frustrate them *tantalizes.*
ag-gra-va-tion (*ag-grȧ-vā'shun*), *n.* the act of making worse.
ag-gre-gate (*ag'grē-gāt*), *v. t.* to collect or bring together; gather into a mass or body; accumulate. *adj.* formed into a mass or total.
ag-gre-ga-tion (*ag'grē-gā'shun*), *n.* a collection of particulars.
ag-gres-sion (*ag-gresh'un*), *n.* unprovoked attack.
ag-gres-sive (*ag-gres'iv*), *adj.* unjustly attacking.
ag-gres-sor (*ag-gres'ẽr*), *n.* one who attacks.
ag-grieve (*ag-grēv'*), *v. t.* to bear heavily upon oppress. [ABUSE.]
a-ghast (*ȧ-gȧst'*), *adj.* struck with sudden astonishment, or terror.
ag-ile (*aj'il*), *adj.* easily moving about; active in body; nimble. [ACTIVE.]
ag-i-tate (*aj'i-tāt*), *v. t.* to stir violently.
ag-i-ta-tion (*aj-i-tā'shun*), *n.* the act of agitating; excitement; discussion.
ag-i-ta-tor (*aj'i-tā-tẽr*), *n.* one who starts or keeps up a political or other agitation.
a-glow (*ȧ-glō'*), *adj.* and *adv.* in a glow; glowing.
Agnes (*ag-nes* or *ag'nez*). From the Greek *agnos,* "chaste." Danish, *Agnes* or *Agnete;* Dutch, *Agnes;* Fr., *Agnes;* Ger., *Agnes;* It., *Agnese;* Lat., *Agnes.*
★**ag-nos-tic** (*ag-nos'tik*), *n.* one who denies that man possesses any knowledge of the ultimate nature of things.
a-go (*ȧ-gō'*), *adv.* in past time; since (as, "long ago," "some time ago").
a-gog (*ȧ-gog'*), *adj.* and *adv.* in agitation or expectation; eager.
a-go-ing (*ȧ-gō'ing*), *adv.* on the going; in motion.
ag-o-nis-tics (*ag-ō-nis'tiks*), *n.* the science of athletic combats.
ag-o-nize (*ag'ō-nīz*), *v. i.* to suffer anguish; make convulsive efforts.
ag-o-ny (*ag'ō-ni*), *n.* [*pl.* agonies (*-niz*)], extreme pain; anguish. [DISTRESS.]
Agra (*ā'grȧ*) or **Akberabad.** A city of India, founded by Akber. Name derived from *ȧbad,* a dwelling or town, generally connected with the name of its founder; hence, "town of Akber."
a-gra-ri-an (*ȧ-grā'ri-an*), *adj.* relating to land, or to land tenure.
a-gra-ri-an-ism (*ȧ-grā'ri-an-izm*), *n.* the principle of a uniform division of land.
a-gree (*ȧ-grē'*), *v. i.* to harmonize physically, mentally, or morally: to accord.
Syn. AGREE, accede, consent, comply, acquiesce. To *agree* is the general term, meaning to fall in with. We *accede* by becoming a party to a thing; those who *accede* are on equal terms; one objects to that to which one does not *accede;* we *consent* to a thing by authorizing it; we *comply* with a thing by allowing it; those who *consent* or *comply* are not on equal terms with those in whose favor the consent is given or compliance made; *consenting* is an act of authority, *complying* an act of good-nature or weakness; to *acquiesce* is quietly to admit.
a-gree-a-bil-i-ty (*ȧ-grē-ȧ-bil'i-ti*), *n.* agreeableness.
a-gree-a-ble (*ȧ-grē'ȧ-bl*), *adj.* pleasing to the mind or senses. [CONFORMABLE, PLEASANT.]
a-gree-ment (*ȧ-grē'ment*), *n.* harmony of opinions or feelings.
ag-ri-cul-ture (*ag'ri-kul-tūr*), *n.* the science and art of cultivating fields by the plow.
a-grin (*ȧ-grin'*), *adj.* and *adv.* in the act or state of grinning.
a-ground (*ȧ-ground'*), *adj.* and *adv.* on the ground; the situation of a ship whose bottom touches the ground.
a-gue (*ā'gū*), *n.* an intermittent fever; the cold fit of an intermittent fever.
ah (*ȧ*), *interj.* an exclamation expressive of sudden emotion.
a-head (*ȧ-hed'*), *adv.* in the front; forward.
a-heap (*ȧ-hēp'*), *adv.* in a heap.
a-hem (*ȧ-hem'*), *interj.* an exclamation to call attention.

a-hoy' (*ə-hoi'*), *interj.* a term used in hailing a vessel.
a-hull (*ə-hul'*), *adv.* with sails furled and helm lashed alee.
aid (*ād*), *v. t.* to assist; support: *n.* help; assistance. [HELP, ABET.]
★**aid-de-camp** (*ād'du-kăn*), *n.* [*pl.* aids-de-camp (*ādz*)], an officer who assists a general.
★**al-gret** (*ăl'gret*) or **algrette** (*ăl-gret'*), *n.* the small white heron; a plume arranged in imitation of the feathers of the heron.
all (*ăl*), *v. t.* [*p. t.* and *p. p.* ailed, *p. pr.* ailing], to give or cause pain: *v. i.* to feel pain; be afflicted with pain.
★**Ailean** or **Alleen** (*ā-lēn'*). An Irish female name. Some translate it "light." If so, it may be a form of *Helen*; but it is more probably from the Erse *ail*, "noble," "beautiful"; or from *aille*, "handsome," "fair"; or corrupted from *ailgean*, "noble offspring."
★**ail-ment** (*āl'ment*, not *āl'munt*), *n.* a slight disorder of the body; sickness.
aim (*ām*), *v. i.* [*p. t.* and *p. p.* aimed, *p. pr.* aiming], to endeavor after; direct at something; seek. [ENDEAVOR.]
air (*ār*), *v. t.* to expose to the air; dry, as clothes; to exhibit ostentatiously: *n.* the fluid which we breathe. [PRETENSE.]
air gas (*gas*), an illuminating gas made from air.
air gun (*gun*), a gun discharged by the elastic force of compressed air.
air-i-ness (*ār'i-nes*), *n.* the state of being airy; gayety.
air-ing (*ār'ing*), *n.* a walk, ride, or drive in the open air. [*See line.*
air line (*līn*), a straight line. Also called a
air plant (*plant*), a plant which derives its nourishment from the air.
air pump (*pump*), a machine for exhausting the air from a receiver. [steering apparatus.
air-ship (*ār'ship*), *n.* a balloon with motor and
air-y (*ār'i*), *adj.* exposed to, or composed of, air; breezy; unsubstantial; gay.
★**aisle** (*īl*), *n.* wing of a building; passage in a church.
★**Aix-la-Chapelle** (*āks-lä-shä-pel'*) or **Aachen** (*ä'ken*). A city of Rhine province, Prussia, Germany, celebrated for its mineral springs, and for the chapel erected over the tomb of Charlemagne.
a-jar (*ə-jär'*), *adj.* and *adv.* slightly turned or opened, as a door; out of harmony.
a-jog (*ə-jog'*), *adv.* on the jog; jogging.
a-kim-bo (*ə-kim'bō*), *adv.* with the hands on the hips and the elbows turned outward.
a-kin (*ə-kin'*), *adj.* and *adv.* of kin; related by blood; allied by nature.
Akron (*ak'ron*). City in Summit county, Ohio, which occupies the highest ground in the northern part of the state, and several other places named for the same reason.
Alabama (*al-ə-bā'mə*) State of the Union and a river of that state, named from an Indian tribe. There are several explanations of the meaning of the word. Gatchet gives "burnt clearing." Others say it means "Here we rest." Haines, in his *American Indian*, gives "thicket clearers."
al-a-bas-ter (*al'ə-bas-tẽr*), *n.* a white, marble-like mineral; a box made of alabaster.
a-lack (*ə-lak'*), *interj.* an exclamation expressive of blame, sorrow, or surprise.
a-lac-ri-ty (*ə-lak'ri-ti*), *n.* eager readiness; joyous activity; briskness.
★**Alameda** (*ä-lä-mā'dä*). County and city in California; town in Bernalillo county, New Mexico; and post office in Clarke county, Alabama, named from the cottonwood trees growing in the vicinity. A Spanish word, meaning "grove of poplar trees."
★**Alamo** (*ä'lä-mō*). Post office in Contra Costa county, California, and many other places named from the old fort in Texas, which was so called from a grove of cottonwood trees.
al-a-mode (*al-ə-mōd'*), *adv.* in the fashion: *adj.* fashionable: *n.* a thin, light, glossy, black silk.
Alan (*al'an*). Some derive this name from Old French *alan, allan*, "a hunting dog," originally from the country of the *Alani* or *Alauni*, a warlike people of European Sarmatia.
★**Alaric** (*al'ar-ik*, not *al-ar'ik*). From the Gothic, *alareiks*, "noble ruler." Danish, *Alarik;* Fr., *Alaric;* Ger., *Alarich;* It., *Alarico;* Lat., *Alaricus;* Sp., *Alarico.*
a-larm (*ə-lärm'*), *v. t.* to arouse to a sense of danger; strike with apprehension of danger.
a-las (*ə-lăs'*), *interj.* an exclamation expressive of unhappiness.
Alaska (*ə-las'kə*). Territory of the United States An Indian word, meaning "great country." It was encountered by Russian explorers as *Al-ay-es-ka* the name having since changed through *Aliaska, Alaksa, Alashka*, to its present form.
Albany (*awl'bə-ni*). County and city in New York, named in honor of the duke of York (from his second title, *Albany*), afterward James II. of England; *Albany*, derived from his Scotch title, originally the same as *Albyn*, the Celtic name of Scotland.
al-ba-tross (*al-bə-tros*), *n.* a sea bird allied to the petrel, inhabiting the Pacific and Southern oceans.
al-be-it (*awl-bē'it*), *conj.* although; even though; notwithstanding.
Albemarle (*al'bē-märl*) **sound, N. C.** After the duke of Abermarle.
al-bum (*al'bum*), *n.* a blank book in which to insert autographs, photographs, stamps, etc.
★**al-bu-men** (*al-bū'men*, not *al'bū-men*), *n.* the white of an egg.
al-bu-men-ize (*al-bū'men-īz*), *v. t.* in photography, to coat (paper) with an albuminous solution.
★**al-bu-min** (*al-bū'min*), *n.* a variant of *albumen*.
★**Albuquerque** (Sp. *äl-bōō-kĕr'kā*), **New Mexico.** Named by the Spaniards, from *Albuquerque*, a town in Spain, near the frontier of Portugal, which took its name from Alphonso d'Albuquerque.
★**Alcazar** (*al-kä'zär*). From the Arabic, *al qaer*, "the castle." The palace of the Moorish kings, and, later, of Spanish royalty at Seville.
al-che-mist (*al'kē-mist*), *n.* one who studies or practices alchemy.
al-che-my (*al'kē-mi*), *n.* the professed art of transmuting the baser metals into gold. [wine.
al-co-hol (*al'kō-hol*), *n.* pure or rectified spirits of
al-co-hol-ism (*al'kō-hol-izm*), *n.* a diseased condition produced by alcohol.
★**Al-co-ran** (*al'kō-ran* or *al-kō-răn'*), *n.* the Koran: the Mohammedan bible.
al-cove (*al-kōv'*), *n.* a recess in a room or a garden; a bower.
al-der (*awl'dẽr*), *n.* a genus of plants growing in moist land and related to the birch.
al-der-man (*awl'dẽr-man*), *n.* [*pl.* aldermen (*-men*)], in cities and boroughs a magistrate next in dignity to the mayor.
ale (*āl*), *n.* a liquor made from an infusion of malt by fermentation.
a-lee (*ə-lē'*), *adv.* and *adj.* on the lee or sheltered side of the ship; the opposite of *aweather*.
a-lert (*ə-lẽrt'*), *adj.* on the watch; active: *n.* an alarm; a sudden attack. [ACTIVE.]
★**Aleutian** (*ə-lū'shi-an*, not *ə-lū'shan*). Islands in the Pacific Ocean. A derivation of the Russian word *aleaut*, meaning "bald rock," later appearing in the name applied to the river *Olutora* on the coast of Kamchatka, the people near the mouth of the stream being called *Olutorsky*.
Alexander. From the Greek name *Alexandros*, "helper of men." Dutch, *Alexander;* Fr., *Alexandre;* Ger., *Alexander;* It., *Alessandro;* Lat., *Alexander;* Sp., *Alejandro* or *Alexandro.*
Alexandria. An Egyptian city named after Alexander the Great.
al-ex-an-drine (*al-eks-an'drin*), *n.* a kind of heroic verse of six iambic feet, or twelve syllables.
★**Alexis** (*a-leks'is*). From the Greek name *Alexis*, "help," "defense;" Fr., *Alexis;* Russ., *Alexei.*
Alfred. This name is usually translated "all peace." Neidinger derives the first syllable of the Anglo-Saxon name Alfred, Aelfred, from the word *alp, alf, elf*, "strong," "powerful." The name is rather from *alf-rad*, "help in counsel." Danish *Alfred;* Dutch, *Alfred;* Fr., *Alfred;* Ger., *Alfred;* It., *Alfredo;* Lat., *Alfredus;* Sp., *Alfredo.*
★**al-gæ** (*al'jē*), *n. pl.* one of the great divisions of cryptogamic plants, including seaweeds and kindred fresh-water plants.
★**al-ge-bra** (*al'jē-brə*, not *al'jē-brā*), *n.* the science of calculation by general symbols.
★**al-ge-bra-ic** (*al-jē-brā'ik*) or **al-ge-bra-i-cal** (*'i-kal*), *adj.* occurring in or dealing with algebra.
★**Algernon** (*al'jẽr-nun*). From *als* (aux) *gernons;* was originally given in the twelfth century to those who, contrary to the fashion of the time, wore their whiskers. Roquefort renders the Old French, *gernon, grenon, guernon, ghernon*, "*poil de la barbe, moustache*"; from Med. L. *granus, greno;* the latter is no doubt from L. *crinis*, "hair of the head."
Algiers (*al-jērz'*). From the Arabic, *al jezair*, "the peninsula." Seaport of northern Africa.
★**Alhambra** (*al-ham'brə*). From the Arabic, *al-hamra'u*, "red." A great citadel and palace founded in the thirteenth century above the city of Granada, Spain, by the Moorish kings.
★**a-li-as** (*ā'li-əs*, not *al'i-as*), *adv.* otherwise (named): *n.* [*pl.* aliases (*-ez*)], an assumed name.
al-i-bi (*a'li-bī*), *n.* the plea of having been elsewhere when the alleged act was committed.
Alice (*al'is*). From the Teutonic, meaning "noble" or "noble cheer." Danish, *Else;* Dutch, *Elsie;* Fr., *Alice;* Lat., *Alicia;* Sw., *Elsa.*
★**al-ien** (*āl'yen*, not *ā'li-en*), *adj.* belonging to another: *n.* a foreign-born resident of a country.
al-ien-ate (*āl'yen-āt*), *v. t.* to estrange, as the affections; transfer to another, as property.
al-ien-a-tion (*āl-yen-ā'shun*), *n.* estrangement.
a-light (*ə-līt'*), *v. i.* to dismount; to descend and settle; to come upon accidentally.
a-lign (*ə-līn'*), same as *aline*.
a-lign-ment (*ə-līn'ment*), same as *alinement*.
a-like (*ə-lik'*), *adj.* like one another. [EQUAL.]
★**al-i-ment** (*al'i-ment*, not *ā'lim-ent*), *n.* food; the necessaries of life generally.
al-i-men-tal (*al-i-men'tal*), *adj.* having the quality of nourishing.
al-i-men-ta-ry (*al-i-men'tə-ri*), *adj.* pertaining to food; nutritious.
al-i-men-ta-ry ca-nal (*kə-nal'*), the great duct which conveys food to the stomach and carries off solid excreta.
al-i-men-ta-tion (*al-i-men-tā'shun*), *n.* the act of giving nourishment.
al-i-mon-y (*al'i-mŏn-i*), *n.* means of living; an allowance made by decree of court to a wife out of her husband's estate on separation.
a-line (*ə-līn*), *v. t.* to lay out or adjust by a line; *v. i.* to form or fall into a line.
Allson (*al'i-son*). A Scottish female name, which in old parish registers is spelled *Alisone*. It is of French origin, and the same as *Alizon*. Roquefort gives *Alizon, Aleite, Aileze, Aileye, Auly*, as female diminutives of *Alexis*.
a-live (*ə-līv'*), *adj.* having life; in a state of action; sprightly; sensitive; thronged.
al-ka-hest (*al'kə-hest*), *n.* the pretended universal solvent of the alchemists.
al-ka-li (*al'kə-lī* or *-li*), *n.* [*pl.* alkalis or alkalies], one of a class of caustic bases, as soda, potash, etc.
★**al-ka-line** (*al'kə-lin* or *-līn*), *adj.* pertaining to, or having the properties of, an alkali.
al-ka-loid (*al'kə-loid*), *n.* a body or substance containing alkaline properties.
al-ka-net (*al'kə-net*), *n.* a plant the root of which yields the rich red dye of commerce.
all (*awl*), *adj.* the whole quantity of, as substance, duration, extent, amount, or degree.
Al-lah (*ăl'lä*), *n.* the Arabic name for the supreme being, in use among the Mohammedans.
al-lay (*al-lā'*), *v. t.* to quiet or calm; assuage; appease.
Syn. ALLAY, appease, assuage, mitigate, soothe. All these terms indicate a lessening of something painful. In a physical sense an irritating pain is *allayed;* a wounded part is *soothed* by affording ease and comfort. Extreme heat or thirst is *allayed;* extreme hunger is *appeased;* a punishment or sentence is *mitigated*. In a moral sense one *allays* what is fervid and vehement; one *soothes* what is distressed or irritated; one *appeases* what is tumultuous and boisterous; one *mitigates* the pain of others, or what is rigorous and severe; one *assuages* grief or affliction.
★**Allee Verte** (*ăl-lā' vẽrt*). A double avenue of limes beginning at the western end of the Boulevard d'Anvers in Brussels and extending along the bank of the Willebroeck canal.
al-le-ga-tion (*al-lē-gā'shun*), *n.* the act of alleging.
al-lege (*al-lej'*), *v. t.* to produce or adduce as argument.
Syn. ALLEGE, adduce, advance, affirm, assert, asseverate, assign, aver, cite, claim, declare, introduce, maintain, offer, plead, produce, say, state. To *allege* is to state as true or capable of proof, without proving; to *adduce* is to bring forth the evidence of what has been *alleged;* to *produce* is to bring forward, as, for instance, papers or persons; *adduce* is not used of persons; of them we say *introduce* or *produce;* when an *alleged* criminal is brought to trial, the counsel *advance* a theory, *adduce* evidence in its support, *produce* documents and witnesses, *cite* precedents, *assign* reasons, *introduce* suggestions, *offer* pleas. The accused may *assert* his innocence.
★**Alleghany** (*al'ē-gā-ni*), **Allegheny, Allegany.** County, city, and river in Pennsylvania, counties in Maryland, New York, North Carolina, West Virginia, and mountains in eastern United States. An Indian word, the origin of which is in dispute.
★**al-le-giance** (*al-lē'jans* or *al-lē'ji-ans*), *n.* the tie or obligation of a subject to his sovereign or government.
al-le-gor-ic (*al-lē-gor'ik*) or **al-le-gor-i-cal** (*''i-kal*), *adj.* pertaining to, consisting of, or in the nature of, allegory; figurative.
al-le-go-ry (*al'lē-gō-ri*), *n.* [*pl.* allegories (*-riz*)], a figurative manner of treating a subject by the use of other terms analogous in properties or circumstances. [FICTION.]
Allen. According to some, this is the same name as *Allan* and *Alan*. Lower shows that it is found written *Allayne*. It is a probable corruption of the name *Alwine*.
Allentown. City in Lehigh county, Pennsylvania, and borough in Monmouth county, New Jersey, named for William Allen of Pennsylvania, at one time chief justice of the province.
al-le-vi-ate (*al-lē'vi-āt*), *v. t.* to lighten; lessen; make easier; mitigate.
al-ley (*al'li*), *n.* [*pl.* alleys (*'liz*)], a passage; a way (generally narrow); a lane.
All-hal-lows (*awl-hal'lōz*), *n. pl.* All Saints' day, celebrated on the first of November.
al-li-ance (*al-lī'ans*), *n.* the state of being allied.
al-li-ga-tion (*al-li-gā'shun*), *n.* a rule for ascertaining the value or price of a compound.
al-li-ga-tor (*al'li-gā-tẽr*), *n.* the American crocodile.
al-lit-er-a-tion (*al-lit-ẽr-ā'shun*), *n.* the repetition of the same initial letter in closely succeeding words.
al-lit-er-a-tive (*al-lit'ẽr-ā-tiv*), *adj.* pertaining to, or characterized by, alliteration.
al-lo-cate (*al'lō-kāt*), *v. t.* to assign or allot; distribute.
al-lo-cu-tion (*al-lō-kū'shun*), *n.* an address of a formal nature.
★**al-lo-path** (*al'lō-path*) or **al-lop-a-thist** (*al-lop'ə-thist*, not *al'lō-path-ist*), *n.* one who favors or practices allopathy.
★**al-lop-a-thy** (*al-lop'ə-thi*), *n.* a method of treating disease by inducing an action opposite to the disease it is sought to cure.
al-lot (*al-lot'*), *v. t.* [*p. t.* and *p. p.* allotted, *p. pr.* allotting], to distribute or divide, as by lot.
al-lot-ro-py (*al-lot'rō-pi*), *n.* the capability shown by certain chemical elements to assume different forms.
al-low (*al-low'*), *v. t.* to grant, yield; admit; deduct. [CONSENT, ADMIT.]
al-low-ance (*al-low'ans*), *n.* the act of allowing: admission; concession.
al-loy (*al-loi'*), *v. t.* to combine; to form a compound; *n.* a compound or fusion of two or more metals.

all one (*awl wun*), *adj.* and *n.* in effect the same; quite the same.
all-round (*-round*), *adj.* versatile.
all sorts (*sôrts*), remnants of various liquors blended together.
All Souls' day (*sôlz dā*), the day, celebrated second of November by the Roman Catholic church, in honor of the departed.
all-spice (*awl'spīs*), *n.* the fruit or berry of the pimento.
all told (*awl tōld*), *adv.* all counted.
al-lude (*al-lūd'*), *v. t.* to compare: *v. i.* refer or make an allusion indirectly (with *to*).
Syn. ALLUDE, hint, refer, suggest. To *allude* is not so direct as to *refer*, but it is more clear and positive than either *hint* or *suggest*. We *allude* to a circumstance by introducing something collaterally allied to it; we *refer* to an event by expressly introducing it into our discourse; we *hint* at a person's intentions by darkly insinuating what may possibly happen; we *suggest* an idea by some poetical expression relative to it. *Ant.* ALLEGE, assert, prove.
al-lure (*al-lūr'*), *v. t.* to tempt by the offer of something good, real, or apparent; entice. [ATTRACT, PERSUADE.]
al-lu-sion (*al-lū'zhun*), *n.* a casual reference; a comparison or reference by symbol or metaphor.
al-lu-vi-um (*al-lū'vi-um*), *n.* [*pl.* alluvia (*-ȧ*)], a deposit of mingled sand and clay.
al-ly (*al-lī'*), *v. t.* [*p. t.* and *p. p.* allied, *p. pr.* allying], to unite. [ACCESSORY.]
Alma (*al'mȧ*). At the time of the war between England and Russia this name was introduced in the west of England, so christened after the battle of the *Alma*.
Almack's (*awl'maks*). This well-known place of assembly in King street, St. James', London, was built by one MacCall, a tavern-keeper, in 1759.
al-ma-nac (*awl'mȧ-nak*), *n.* a yearbook or calendar giving the order of the days of the week and month, and astronomical data.
al-might-y (*awl-mīt'i*), *adj.* possessing all power; omnipotent.
★**alm-ond** (*ä'mund*, not *al'mund*), *n.* the kernel of the fruit of the almond-tree.
al-mon-er (*al'mun-ėr*), *n.* one who dispenses or distributes alms or charity.
al-mon-ry (*al'mun-ri*), *n.* [*pl.* almonries (*-riz*)], the residence of the almoner.
al-most (*awl'mōst*), *adv.* nearly; very nearly.
alms (*ämz*), *n. sing.* [used sometimes as *n. pl.*], the act of relieving by charitable aid.
alms-house (*'hous*), *n.* a house endowed by private or public charity and appropriated to the use of the poor.
al-oes (*al'ōz*), *n.* a drug, the inspissated juice of several species of aloe.
a-loft (*ȧ-lôft'*), *adv.* on high; far above the earth.
a-lone (*ȧ-lōn'*), *adj.* and *adv.* without or apart from another.
a-long (*ȧ-lông'*), *prep.* and *adv.* by the length of; lengthwise.
a-long-shore-man (*-shōr-man*), *n.* [*pl.* -men], a laborer employed at docks.
a-long-side (*'sīd*), *adv.* by the side; side by side.
Alonzo (*ȧ-lon'zō*) or **Alonso.** See *Alphonso.*
a-loof (*ȧ-lōōf'*), *adv.* at a moderate distance but within sight.
a-loud (*ȧ-loud'*), *adv.* with raised voice; loudly.
★**al-pac-a** (*al-pak'ȧ*, not *al-ȧ-pak'ȧ*), *n.* a mammal, closely allied to the llama.
al-pen-glow (*al'pen-glō*), *n.* a peculiar purple glow on the snow on the Alps seen just before sunrise and after sunset.
al-pen-horn (*-hôrn*), *n.* a long and nearly straight horn used by the mountaineers of the Alps.
al-pen-stock (*-stok*), *n.* a stout staff, furnished with an iron spike, used by mountain climbers.
al-pha-bet (*al'fȧ-bet*), *n.* the letters of a language.
Alphonso (*al-fon'sō, al-fon'zō*), or **Alonzo.** From the Teutonic, meaning "battle eager." Danish, *Alfons;* Fr., *Alphonse;* It., *Alfonso;* Lat., *Alphonsus;* Port., *Affonso;* Sp., *Alfonso* or *Alonso.*
Alps. The word *alp*, or *alb*, is Celtic, and signifies "white." Its application to the white tops of the mountains of the Alps is a natural one.
al-read-y (*awl-red'i*), *adj.* quite ready; fully prepared.
al-so (*awl'sō*), *adv.* and *conj.* wholly so; in addition to.
★**Altai** (*äl-tī'*, not *al'ti*). A mountain, or range, in central Asia, rich in the precious metals; *Al-tai* (for *Altagh*) is the Tartaric form of the name. Hence the name *Altaic* which is applied to languages of the Mongol-Turkic class.
al-tar (*awl'tėr*), *n.* a raised place for the offering of sacrifices or burning of incense.
al-ter (*awl'tėr*), *v. t.* to effect some change in.
al-ter-a-tion (*awl-tėr-ā'shun*), *n.* the act of altering or changing.
al-ter-a-tive (*awl'tėr-ȧ-tiv*), *adj.* producing change.
al-ter-cate (*awl'tėr-kāt*), *v. i.* to contend in words.
al-ter-ca-tion (*awl-tėr-kā'shun*), *n.* the act of wrangling. [DIFFERENCE.]
★**al-ter-nate** (*al'tėr-nāt* or *al-tėr'nāt*), *v. t.* to perform by turns: *v. i.* to take place by turns (followed by *with*): *adj.* (*al-tėr'nāt*), succeeding each other by turns. [SUCCESSIVE.]
al-ter-na-tion (*al-tėr-nā'shun*), *n.* the act of alternating, or state of being alternate.
★**al-ter-na-tive** (*al-tėr'nȧ-tiv*), *adj.* giving the choice of two things.
Syn. ALTERNATIVE, choice, election, option, pick, preference, resource. A *choice* may be among many things; an *alternative* is a *choice* between two things; *option* is the right or privilege of choosing; *choice* may be either the right to choose, the act of choosing, or the thing chosen. Ability and readiness to meet difficult situations indicate *resources*. *Pick* and *election* imply objects placed before one, with freedom and power to choose, as, there were horses of several colors from which I could take my *pick*. A *choice*, *pick*, *election*, or *preference* is that which suits one best; an *alternative* is that to which one is restricted; a *resource*, that to which one is glad to betake him.
Ant. COMPULSION, necessity.
al-though (*awl-thō'*), *conj.* granting that; though; even if; notwithstanding.
al-ti-tude (*al'ti-tūd*), *n.* space extended upward; height.
al-ti-tu-di-nal (*al-ti-tū'di-nal*), *adj.* of or pertaining to height.
al-to (*al'tō*), *adj.* high: *n.* the contralto.
al-to-geth-er (*awl-tōō-geth'ėr*), *adv.* wholly.
Altoona (*al-tōō'nȧ*). City in Blair county, Pennsylvania, so named because of its high situation in the Alleghany mountains, and town in Polk county, Iowa, situated on the highest point between the Des Moines and Mississippi rivers. A derivative of the Latin word *altus*, "high."
★**al-tru-ism** (*al'trōō-izm*), *n.* the principles inculcated by Comte, and involving the sacrifice of self in the interests of others: opposed to *egoism*.
al-tru-ist (*al'trōō-ist*), *n.* one who advocates or practices altruism.
al-um (*al'um*), *n.* a double sulphate formed of aluminium and some other element.
a-lu-mi-na (*ȧ-lū'mi-nȧ*), *n.* the single oxide of aluminium, the most abundant of the earths.
★**al-u-min-i-um** (*al-ū-min'i-um*) or **a-lu-mi-num** (*ȧ-lū'mi-num*), *n.* a bluish-white, light metal.
a-lum-na (*ȧ-lum'nȧ*), *n.* [*pl.* alumnæ (*'nē*)], a female graduate or pupil of a university or college.
a-lum-nus (*ȧ-lum'nus*), *n.* [*pl.* alumni (*-nī*)], the graduate of a school, college, or university.
Alvin (*al'vin*). Means "winning all." Dutch, *Alewijn;* Fr., *Aluin;* Ger., *Alwin;* It., *Alvino;* Lat., *Alwinus;* Sp., *Aluino.*
al-ways (*awl'wāz*), *adv.* constantly.
★**Amadeus** (*am-ȧ-dē'us*). Translated a "lover of God." Fr., *Amadée;* Ger., *Amadeus;* It., *Amedeo;* Lat., *Amadeus;* Sp., *Amadeo.*
a-main (*ȧ-mān'*), *adv.* with force or violence; suddenly; at once.
a-mal-gam (*ȧ-mal'gȧm*), *n.* any metallic mixture or alloy of which mercury is the chief constituent.
a-mal-ga-mate (*ȧ-mal'gȧ-māt*), *v. t.* to alloy mercury with another metal.
a-mal-ga-ma-tion (*ȧ-mal-gȧ-mā'shun*), *n.* the act or process of compounding mercury with another metal.
Amanda (*ȧ-man'dȧ*). A feminine name from the Latin *amanda*, "to be loved"; *i. e.*, "worthy of being loved." It is also found as a masculine name in the parish registers of Nottingham, England.
a-man-u-en-sis (*ȧ-man-ū-en'sis*), *n.* [*pl.* amanuenses (*'sēz*)], one who is employed to write at the dictation or direction of another; a secretary.
am-a-ranth (*am'ȧ-ranth*), *n.* an imaginary flower said by poets to be unfading.
a-mass (*ȧ-mȧs'*), *v. t.* to collect into a heap. [HEAP.]
★**am-a-teur** (*am'ȧ-tūr*, Fr. *ȧ-mȧ-tōr'*), *n.* one who cultivates an art or pursues a study from love or attachment, without reference to gain or emolument.
am-a-tive (*am'ȧ-tiv*), *adj.* amorous; full of love.
am-a-to-ri-al (*am-ȧ-tō'ri-al*), *adj.* pertaining to love; amatory.
am-a-to-ry (*am'ȧ-tō-ri*), *adj.* relating to, or expressive of, love.
am-au-ro-sis (*am-aw-rō'sis*), *n.* loss or decay of sight
a-maze (*ȧ-māz'*), *v. t.* to confound or stun with fear.
am-bas-sa-dor (*am-bas'ȧ-dėr*), *n.* an accredited representative of a sovereign or state at the court of another.
Syn. AMBASSADOR, envoy, plenipotentiary, deputy. *Ambassadors*, *envoys*, and *plenipotentiaries* speak and act in the name of their sovereigns. An *ambassador* is invested with the highest authority, acting in all cases as the representative; the *envoy* appears simply as an authorized minister acting for another, but not always representing him; the *plenipotentiary* is a species of envoy used on the occasion of concluding peace or making treaties; *deputies* are not deputed by sovereigns, although they may be deputed to sovereigns; they have no power to act or speak but in the name of some subordinate community or particular body. The functions of the three first belong to the minister, those of the latter to the agent.
am-ber (*am'bėr*), *n.* a yellowish fossil resin found on the shores of the Baltic.
★**am-ber-gris** (*am'bėr-grēs*, not *am'bėr-gris*), *n.* a morbid secretion from the intestines of the sperm-whale, usually found floating in tropical seas.
am-bi-dex-trous (*am-bi-deks'trus*), *adj.* able to use both hands alike; unusually clever.
am-bi-ent (*am'bi-ent*), *adj.* surrounding; investing.
am-bi-gu-i-ty (*am-bi-gū'i-ti*), *n.* [*pl.* ambiguities (*-tiz*)], double or dubious signification.
am-big-u-ous (*am-big'ū-us*), *adj.* doubtful. [EQUIVOCAL, OBSCURE.]
am-bi-tion (*am-bish'un*), *n.* a seeking for preferment.
am-bi-tious (*am-bish'us*), *adj.* having ambition.
am-ble (*am'bl*), *v. i.* to move with a peculiar pace, as a horse, by lifting the two feet on one side together.
am-bly-o-pi-a (*am-bli-ō'pi-ȧ*) or **amblyopy** (*am'bli-ō-pi*), *n.* dimness of vision.
Ambrose (*am'brōz*). From the Latin name *Ambrosius*, meaning "immortal," "divine," "godlike." Danish, *Ambrosius;* Dutch, *Ambrosius;* Fr., *Ambroise;* Ger., *Ambrosius* or *Ambros;* It., *Ambrogio;* Sp., *Ambrosio.*
am-bro-sia (*am-brō'zhȧ* or *'zhi-ȧ*), *n.* anything exquisitely pleasing to taste or smell. [delicious.
am-bro-sial (*am-brō'zhal* or *'zhi-al*), *adj.* divinely
am-bu-lance (*am'bū-lans*), *n.* a field hospital; a vehicle for the sick or wounded.
am-bu-la-tion (*am-bū-lā'shun*), *n.* the act of walking about.
am-bus-cade (*am-bus-kād'*), *n.* a strategic disposition of troops in ambush. [surprise.
am-bush (*am'boosh*), *n.* a lying in wait to attack by
★**a-meer** (*ȧ-mēr'*), *n.* a prince; governor.
Amelia (*ȧ-mē'li-ȧ*). From *Aemylia*, name of a noble family in Rome; also the name of a vestal who rekindled the fire of Vesta, which had been extinguished, by putting her veil over it. The name means "gentle," "engaging," "courteous." Danish, *Amalie;* Fr., *Amélie;* Ger., *Amalie;* Sp., *Amelia.*
★**a-mel-io-rate** (*ȧ-mēl'yō-rāt*, not *ȧ-mē'li-ō-rāt*), *v. t.* to make better.
a-mel-io-ra-tion (*ȧ-mēl-yō-rā'shun*), *n.* the making or growing better.
a-men (*ā-men'* or *ȧ-men'*), *adv.* verily: *interj.* so be it.
a-me-na-bil-i-ty (*ȧ-mē-nȧ-bil'i-ti*) or **amenableness** (*ȧ-mē'nȧ-bl-nes*), *n.* tractableness; responsibility.
★**a-me-na-ble** (*ȧ-mē'nȧ-bl*, not *ȧ-men'ȧ-bl*), *adj.* easy to lead.
a-mend (*ȧ-mend'*), *v. t.* to free from fault.
Syn. AMEND, correct, emend, improve, mend, better. *Amend*, *emend*, and *correct* are all applied to works of the understanding, with this distinction, that *amend* signifies to remove faults or defects generally, either by adding, taking away, or altering, as to *amend* a law; to *emend* is to remove particular faults in any literary work by the alteration of letters or single words; to *correct* is to remove gross faults; *mend* is employed in respect to any work in the sense of putting that right which either is or has become faulty; to *improve* is said either of persons or things which are made better; as to *improve* the mind, morals, etc.; to *better* is mostly applied to the outward condition on familiar occasions.
a-mend-ment (*ȧ-mend'ment*), *n.* the removal of faults; the alteration of a bill.
a-mends (*ȧ-mendz'*), *n. pl.* compensation for loss. [COMPENSATION.]
a-men-i-ty (*ȧ-men'i-ti*), *n.* [*pl.* amenities (*-tiz*)], pleasantness, as of climate or demeanor; geniality.
a-merce (*ȧ-mėrs'*), *v. t.* to punish by arbitrary fine.
America. From Amerigo Vespucci, sometimes spelled Vespucius, who landed on the western continent south of the equator in 1497. His name was given to this country by a German geographer, Martin Waldseemüller, who published an account of the four voyages of Vespucci at Frankfort, Germany, in 1507.
A-mer-i-can (*ȧ-mer'i-kan*), *adj.* belonging to, or characteristic of, America.
A-mer-i-can-ism (*ȧ-mer'i-kan-izm*), *n.* a form of expression peculiar to the United States.
am-e-thyst (*am'ē-thist*), *n.* a violet-purple variety of quartz or rock crystal.
Amherst (*am'ėrst*). County in Virginia, and town in Hillsboro county, New Hampshire, and Hampshire county, Massachusetts.
a-mi-a-bil-i-ty (*ā-mi-ȧ-bil'i-ti*), *n.* amiableness.
a-mi-a-ble (*ā'mi-ȧ-bl*), *adj.* friendly.
am-i-ca-ble (*am'i-kȧ-bl*), *adj.* friendly; peaceable.
a-mid (*ȧ-mid'*) or **amidst** (*-midst'*), *prep.* in the middle of; among.
a-miss (*ȧ-mis'*), *adj.* wrong; faulty: *adv.* wrongly.
am-i-ty (*am'i-ti*), *n.* friendly relations; friendship.
am-mo-ni-a (*am-mō'ni-ȧ*), *n.* a transparent, pungent, volatile gas.
am-mu-ni-tion (*am-mū-nish'un*), *n.* powder, balls, etc., used in charging firearms of all kinds.
am-ne-si-a (*am-nē'si-ȧ*), *n.* loss of memory.
am-nes-ty (*am'nes-ti*), *n.* an act of oblivion for political offenses; a general pardon.
★**a-mœ-ba** (*ȧ-mē'bȧ*), *n.* [*pl.* amœbas (*'bȧz*), amœbæ (*'bē*)], a genus of microscopic organisms.
★**a-mong** (*ȧ-mung'*) or **amongst** (*-mungst'*), *prep.* and *adv.* mixed with; surrounded by; amidst.
am-o-rous (*am'ō-rus*), *adj.* fond of the opposite sex; loving.
a-mor-phous (*ȧ-môr'fus*), *adj.* formless.
a-mor-tize (*ȧ-môr'tiz*), *v. t.* to sell and convey to a corporation having perpetual succession.
Amos (*ā'mus*). From the Hebrew, signifying a "burden." Fr., *Amos.*
a-mount (*ȧ-mount'*), *v. i.* to mount up to; be equivalent or equal to.
am-phib-i-ous (*am-fib'i-us*), *adj.* having the power of living both on land and in water.
am-phi-brach (*am'fi-brak*), *n.* a foot of three syllables, the middle long, the first and last short.

am-phi-the-a-ter, -tre (*am-fi-thē'ā-tĕr*), *n.* a double theater; a theater with seats all around the arena; a circus.
am-ple (*am'pl*), *adj.* full; large; abundant.
am-pli-fi-ca-tion (*am-pli-fi-kā'shun*), *n.* the act of amplifying.
am-pli-fy (*am'pli-fī*), *v. t.* [*p. t.* and *p. p.* amplified, *p. pr.* amplifying], to make large. [ADD.]
am-pu-tate (*am'pū-tāt*), *v. t.* to lop off in pruning.
am-pu-ta-tion (*am-pū-tā'shun*), *n.* the operation of cutting off a limb.
a-muck (*ā-muk'*), *adj.* or *adv.* (used only in the phrase, to run amuck), running about armed, in a state of frenzy.
am-u-let (*am'ū-let*), *n.* a charm worn to protect against evil; a talisman.
a-muse (*ā-mūz'*), *v. t.* to occupy the attention of pleasantly.
Amy (*ā'mi*). Some derive this name from the French *aimée*, "beloved"; others from *amie*, "a friend." It is found Latinized both *Amata* and *Amicia*. Danish, *Amalie*; Fr., *Aimée*; It., *Amata*.
Anabella. A feminine name formed from *Hannibal*.
★**an-ach-ro-nism** (*an-ak'rō-nizm*), *n.* an error in the order of time.
an-a-con-da (*an-ā-kon'dā*), *n.* the specific name of a large South American boa.
★**a-næ-mi-a** or **anemia** (*ā-nē'mi-ā*), *n.* deficiency or low condition of the blood.
★**an-æs-the-si-a** or **anesthesia** (*an-es-thē'si-ā* or *'zhi-ā*), *n.* a condition of insensibility to pain.
an-æs-thet-ic. See *anesthetic*. [relief.
an-a-glyph (*an'ā-glif*), *n.* a work of art carved in
an-a-glyp-to-graph (*an-ā-glip'tō-grāf*), *n.* an instrument by which a medallion engraving of any object in relief can be made.
★**an-a-gram** (*an'ā-gram*), *n.* a word or a sentence constructed out of another by the transposition of the letters contained in the second.
a-nal (*ā'nal*), *adj.* relating to the anus.
an-a-lect (*an'ā-lekt*), *n.* [*pl.* analects (*-lekts*) or analecta (*-lek'tā*)], a passage or extract from a published work.
an-al-ge-si-a (*an-al-jē'si-ā*), *n.* insensibility to pain in any part of the body.
a-nal-o-gism (*ā-nal'ō-jizm*), *n.* a reasoning from the cause to the effect.
★**a-nal-o-gous** (*ā-nal'ō-gus*), *adj.* possessing points of analogy.
an-a-logue (*an'ā-log*), *n.* an object which bears analogy to something else.
★**a-nal-o-gy** (*ā-nal'ō-ji*), *n.* [*pl.* analogies (*-jiz*)], agreement, resemblance, or correspondence in relations between different objects.
a-nal-y-sis (*ā-nal'i-sis*), *n.* [*pl.* analyses (*-sēz*)], the resolution of a compound into its constituent parts.
an-a-lyt-ic (*an-ā-lit'ik*), or **an-a-lyt-i-cal** (*'i-kal*), *adj.* relating to, or characterized by, the method of analysis.
an-a-lyze (*an'ā-līz*), *v. t.* to separate or resolve.
an-a-pest or **anapæst** (*an'ā-pest*), *n.* a foot comprising two short syllables and one long syllable.
an-a-plas-ty (*an'ā-plas-ti*), *n.* the repairing of wounds by the transplantation of adjacent healthy tissue.
★**an-arch-ist** (*an'ärk-ist*), *n.* one who supports or promotes a scheme for anarchy.
★**an-arch-y** (*an'ärk-i*), *n.* nonexistence or incapability of governmental rule.
a-nath-e-ma (*ā-nath'ē-mā*), *n.* [*pl.* anathemas (*-māz*)], the curse accompanying excommunication.
a-nath-e-ma-tize (*ā-nath'ē-mā-tiz*), *v. t.* to pronounce a decree of excommunication against.
an-a-tom-i-cal (*an-ā-tom'i-kal*), *adj.* relating to, or according to, the laws of anatomy.
a-nat-o-mism (*ā-nat'ō-mizm*), *n.* anatomical analysis or structure.
★**a-nat-o-mist** (*ā-nat'ō-mist*), *n.* one possessing a knowledge of anatomy derived from dissection.
a-nat-o-my (*ā-nat'ō-mi*), *n.* [*pl.* anatomies (*-miz*)], separation by dissection of the various parts of a body.
an-ces-tor (*an'ses-tĕr*), *n.* a forefather or progenitor. [FOREFATHER.]
an-ces-try (*an'ses-tri*), *n.* the line of one's descent traced from a period more or less remote.
★**an-chor** (*ang'kĕr*), *n.* an iron implement of varying form, used to secure a floating vessel to the bottom.
an-chor-age (*ang'kĕr-āj*), *n.* a suitable or customary place for the anchoring of vessels.
an-chor-et (*ang'kōr-et*) or **anchorite** (*-it*), *n.* one who voluntarily secludes himself from society and lives a solitary life.
an-chor ice (*ang'kĕr īs*), ground ice.
★**an-cho-vy** (*an-chō'vi*, not *an'chō-vi*), *n.* [*pl.* anchovies (*'viz*)], a diminutive fish abounding in the Mediterranean.
★**an-cient** (*ān'shent*), *adj.* of or pertaining to the early history of the world; of past times or remote ages. [ANTIQUE, OBSOLETE.]
an-cil-la-ry (*an'sil-lā-ri*), *adj.* attended upon; accessory; subservient.
★**Andalusia** (*an-dā-lōō'shi-ā*). Now a captaincy-general in southern Spain, comprising the modern provinces Almeria, Jaen, Granada, Cordova, Malaga, Seville, Cadiz, and Huelva.
★**Andes** (*an'dēz*) Properly *Cordilleras de los Andes*, "the chain of the Andes," is a name of uncertain meaning Garcilasso de la Vega says that it was derived from the Anti tribe near Cuzco. It has also been referred to a Peruvian word *anta*, "copper." Another proposed etymology is from *anta*, a "tapir," of which the Portuguese plural would be *antas*, so that the *Cordilleras de los Antas* would mean the "mountains of the tapirs."
and-i-rons (*and'i-ürnz*), *n. pl.* metal standards used for open fires, to support the logs; firedogs.
Andrew. From the Greek *Andreas*, meaning "manly," "brave," "courageous." Danish, *Andreas;* Dutch, *Andries;* Fr., *André;* Ger., *Andreas;* It., *Andrea;* Lat., *Andreas;* Port., *Andre;* Sp., *Andres*.
an-drog-y-nous (*an-droj'i-nus*), *adj.* combining both sexes.
★**Androscoggin** (*an-dros-kog'gin*). River in Maine and New Hampshire, and county in Maine.
an-ec-dote (*an'ek-dōt*), *n.* a brief narrative of an entertaining character.
an-e-lec-tric (*an-ē-lek'trik*), *adj.* without the properties of electricity.
an-e-lec-trode (*an-ē-lek'trōd*), *n.* the positive pole of a galvanic battery.
a-ne-mi-a. See *anæmia*.
★**a-nem-o-ne** (*ā-nem'ō-nē*), *n.* [*pl.* anemones (*-nēz*)], the windflower or wood anemone.
an-e-roid (*an'ē-roid*), *n.* a barometer shaped like a watch.
an-es-the-si-a. See *anæsthesia*.
an-es-thet-ic or **anæsthetic** (*an-es-thet'ik*), *adj.* pertaining to loss of the sense of feeling.
an-es-the-tize (*an-es'thē-tiz*), *v. t.* to bring under the influence of an anæsthetic.
an-eu-rism (*an'ū-rizm*), *n.* a local swelling or dilatation of an artery.
a-new (*ā-nū'*), *adv.* afresh; over again.
an-gel (*ān'jel*), *n.* a messenger of God.
Angela (*an'jē-là*). A feminine name of Italian origin, derived from *angelo*, "an angel."
an-gel-ic (*an-jel'ik*) or **an-gel-i-cal** (*'i-kal*), *adj.* belonging to or resembling an angel.
Angelica (*an-jel'i-kà*). Translated *ngelic*. Fr., *Angelique;* Ger., *Angelica;* It., *Angelica*.
★**Angelo, Sant'** (*sän-tän'jē-lō*), **Castle of.** The remodeled mausoleum of Hadrian in Rome.
an-ger (*ang'gĕr*), *n.* excessive emotion or passion aroused by a sense of injury or wrong; wrath.
Syn. ANGER, resentment, wrath, ire, indignation, rage, fury. *Anger* is a sudden sentiment of displeasure; *resentment* is a continued anger; *wrath* is a heightened sentiment of anger which is poetically expressed by the word *ire; indignation* is a sentiment awakened by the unworthy and atrocious conduct of others; *rage* is a vehement ebullition of anger; and *fury* is an excess of rage. [See *displeasure*.]
Ant. CHARITY, forbearance, leniency, love, peace, self-control.
an-gi-ol-o-gy (*an-ji-ol'ō-ji*), *n.* that branch of anatomy which treats of the blood vessels and lymphatics.
an-gle (*ang'gl*), *n.* the inclosed space near the point where two lines meet.
an-gle (*ang'gl*), *v. i.* to fish with a hook and line.
an-gler (*ang'glĕr*), *n.* one who fishes with rod and line.
★**an-gli-can** (*ang'gli-kan*), *adj.* pertaining to England as a nation.
★**an-gli-cism** (*ang'gli-sizm*), *n.* a principle or mannerism peculiar to England. [English.
an-gli-cize (*ang'gli-siz*), *v. t.* to make or to render into
★**An-glo - A-mer-i-can** (*ang-glō-ā-mer'i-kan*), *adj.* pertaining to England and the United States conjointly.
An-glo - Sax-on (*-saks'un*), *adj.* pertaining to the Saxon settlers in England prior to the Conquest, or to their language.
an-go-ra (*an-gō'rà*), *n.* cloth made from angora wool.
an-go-ra cat (*kat*), a cat of the domestic kind with long, handsome hair.
an-go-ra wool (*wool*), the coat of the angora goat.
an-gos-tu-ra bark (*ang-gos-tōō'rà bärk*), a bitter aromatic bark.
an-gry (*ang'gri*), *adj.* inflamed with anger; provoked.
an-guish (*ang'gwish*), *n.* intense pain or grief. [DISTRESS, ANXIETY.]
an-gu-lar (*ang'gu-lĕr*), *adj.* possessing an angle or angles.
an-gus-tate (*an-gus'tāt*), *adj.* narrow at the base and expanded at the top.
an-hy-drous (*an-hī'drus*), *adj.* without water.
an-i-line (*an'i-lin*), *n.* a base used in the formation of many rich dyes obtained from coal tar.
★**an-i-mad-ver-sion** (*an-i-mad-vĕr'shun*), *n.* reproof; censure.
an-i-mad-vert (*an-i-mad-vĕrt'*), *v. i.* to criticise; to censure.
an-i-mal (*an'i-mal*), *n.* an organized living body, sentient, mobile, and locomotive.
an-i-mal-ism (*an'i-mal-izm*), *n.* the state of being animal.
an-i-mal mag-net-ism (*an'i-mal mag'net-izm*), magnetism inherent in animals.
an-i-mate (*an'i-māt*), *v. t.* to impart life to; to inspire with energy or action. [EAGER.]
an-i-ma-tion (*an-i-mā'shun*), *n.* the act of giving life or spirit.
an-i-mos-i-ty (*an-i-mos'i-ti*), *n.* hostility; hatred; active enmity. [ENMITY, FEUD.]
an-i-mus (*an'i-mus*), *n.* a hostile spirit or purpose.
an-ise (*an'is*), *n.* the common name for a plant (indigenous in Egypt) yielding the aniseed of commerce.
an-kle (*ang'kl*), *n.* the joint or articulation connecting the foot with the leg.
an-klet (*ang'klet*), *n.* an ornament or support for the ankle.
an-ky-lo-sis (*ang'ki-lō-sis*), *n.* the joining or consolidation of parts formerly or normally separate by means of bony growth.
Anna or **Anne.** Same origin as *Hannah*. Dan., *Anna;* Dutch, *Anna;* Fr., *Anne;* Ger., *Anne;* It., *Anna;* Lat., *Anna*.
an-nal-ist (*an'nal-ist*), *n.* a compiler of annals.
an-nals (*an'nalz*), *n. pl.* a description, history, or chronicle issued from time to time.
an-neal (*an-nēl'*), *v. t.* to heat or fix by heat.
an-nex (*an-neks'*), *v. t.* to add or affix at the end. *n.* (*an-neks'* or *an'neks*), that which is added; an addition. [ADD.]
an-nex-a-tion (*an-neks-ā'shun*), *n.* the act of annexing.
an-ni-hi-late (*an-ni'hi-lāt*), *v. t.* to reduce to nothing.
an-ni-hi-la-tion (*an-nī-hi-lā'shun*), *n.* the act of annihilating.
an-ni-ver-sa-ry (*an-ni-vĕr'sā-ri*), *n* [*pl.* anniversaries (*-riz*)], the recurrence in each year of the date of an event.
an-no-tate (*an'nō-tāt*), *v. t.* to mark or note.
an-no-ta-tion (*an-nō-tā'shun*), *n.* the act of noting or commenting upon.
an-nounce (*an-nouns'*), *v. t.* to proclaim or make known formally or in a public manner.
Syn. ANNOUNCE, advertise, circulate, communicate, declare, enunciate, give notice, give out, herald, make known, notify, proclaim, promulgate, propound, publish, report, reveal, say, spread abroad, state, tell. We *announce* that which has occurred or which is to occur; *advertise* our business; *communicate* our intentions; *enunciate* our views; *notify* an individual, *give notice* to the public; *declare* war; *proclaim* peace; *propound* a question or an argument, *promulgate* views; *report* an interview; *reveal* a secret; *herald* the coming of some great event; *publish* books or magazines. [See *speak*.]
Ant. BURY, conceal, suppress, withhold.
an-nounce-ment (*an-nouns'ment*), *n.* the act of announcing.
an-noy (*an-noi'*), *v. t.* [*p. t.* and *p. p.* annoyed (*-noid'*), *p. pr.* annoying], to vex or trouble by repeated acts; harass or discompose by petty injury or opposition. [INCONVENIENCE.]
an-noy-ance (*an-noi'ans*), *n.* the act of annoying or causing vexation. [ABOMINATION.]
an-nu-al (*an'ū-al*), *adj.* once in twelve months; yearly; of or belonging to a year.
an-nu-i-tant (*an-nū'i-tant*), *n.* one who is in receipt of, or is entitled to receive, an annuity.
an-nu-i-ty (*an-nū'i-ti*), *n.* [*pl.* annuities (*-tiz*)], the payment of a sum of money by periodical or yearly installments.
an-nul (*an-nul'*), *v. t.* [*p. t.* and *p. p.* annulled, *p. pr.* annulling], to make void, abolish, or obliterate. [ABOLISH.]
an-nu-lar (*an'ū-lĕr*), *adj.* ring-like.
an-nu-let (*an'ū-let*), *n.* a little ring.
an-nul-ment (*an-nul'ment*), *n.* the act of reducing to nothing.
an-nun-ci-a-tion (*an-nun-si-ā'shun*), *n.* the act of annunciating.
★**Annunciation,** *n.* the church festival (Lady-day, March 25) commemorating the intimation of the Incarnation made by the angel Gabriel to the Virgin Mary.
an-nun-ci-a-tor (*an-nun'shi-ā-tĕr*), *n.* a signaling apparatus; an indicator.
an-ode (*an'ōd*), *n.* the path of the electric current from the positive to the negative pole.
an-o-dyne (*an'ō-dīn*), *adj.* assuaging pain: *n.* a drug which relieves pain.
a-noint (*ā-noint'*), *v. t.* to pour oil upon, in a religious ceremony.
★**a-nom-a-lous** (*ā-nom'ā-lus*), *adj.* deviating from the common order; abnormal. [ABSURD.]
a-nom-a-ly (*ā-nom'ā-li*), *n.* deviation from the natural order.
a-non (*ā-non'*), *adv.* soon; straightway; again.
an-o-nym-i-ty (*an-ō-nim'i-ti*), *n.* the state of being anonymous.
a-non-y-mous (*ā-non'i-mus*), *adj.* bearing no author's name; nameless.
an-oth-er (*an-uth'ĕr*), *adj.* and *pron.* one more; not the same.
Anselm (*an'selm*). From the Teutonic, meaning "divine helmet," hence "a defender." Dutch, *Anselmus;* Fr., *Anselme;* Ger., *Anselm;* It., *Anselmo;* Lat., *Anselmus;* Sp., *Anselmo*.
an-swer (*an'sĕr*), *v. t.* to swear in opposition to; to reply to a charge.
Syn. ANSWER, reply, rejoinder, response. An *answer* is given to a question; a *reply* is made to an assertion; a *rejoinder* is made to a reply; a *response* is made in accordance with the words of another. We *answer* either for the purpose of affirmation, information or contradiction; we always *reply*, or *rejoin*, in order to explain or confute; *responses* are made by way of assent or confirmation.
Ant. CHARGE, question.
an-swer-a-ble (*an'sĕr-ā-bl*), *adj.* liable to give answer; responsible. [CORRESPOND.]
ant (*ānt*), *n.* a small social insect of the hymenoptera.

ant-ac-id (*ant-as'id*), *adj.* counteracting acidity.
ar-tag-o-nism (*an-tag'ō-nizm*), *n.* the active opposition of two opponents or opposing forces. [ANTIPATHY.]
an-tag-o-nist (*an-tag'ō-nist*), *n.* a competitor.
an-tag-o-nize (*an-tag'ō-nīz*), *v. t.* to oppose; hinder.
★**ant-arc-tic** (*ant-ārk'tik*, not *ant-är'tik*), *adj.* opposite to arctic; pertaining to the south polar regions; southern.
Antarctic Ocean. Denotes the ocean *anti*, "against" or "opposite to" the Arctic Ocean.
ant-bear (*ánt'-bâr*), *n.* the name sometimes given (from its likeness to a bear) to the great ant-eater of South America.
ant-eat-er (*ánt'-ēt-ẽr*), *n.* the name applied to a group of quadrupeds which feed upon ants.
an-te-cede (*an-tē-sēd'*), *v. t.* to precede or go before in time or space.
an-te-ced-ence (*an-tē-sēd'ens*), or **antecedency** (*'en-si*), *n.* precedence.
★**an-te-ced-ent** (*an-tē-sēd'ent*), *adj.* preceding: *n.* the substantive or noun to which a relative or other pronoun refers; *pl.* the previous events of a person's life.
an-te-cham-ber (*an'tē-chām-bẽr*), *n.* an apartment next the principal room.
an-te-date (*an'tē-dāt*), *v. t.* to carry back to an earlier period.
an-te-di-lu-vi-an (*an-tē-di-lū'vi-an*), *adj.* of or pertaining to the world before the flood.
an-te-lope (*an'tē-lōp*), *n.* the name given to numerous species of deer-like ruminants, intermediate between the deer and the goat.
an-te-me-rid-i-an (*an-tē-mē-rid'i-an*), *adj.* preceding noon.
ant-e-met-ic (*ant-ē-met'ik*), *adj.* allaying vomiting.
an-ten-na (*an-ten'nà*), *n.* [*pl.* antennæ (*'nē*)], the jointed horns or feelers upon the heads of insects and crustacea.
★**an-te-pe-nult** (*an-tē-pē'nult*) or **antepenultima** (*an-tē-pē-nult'i-mà*), *n.* the last syllable but two of a word.
an-te-pran-di-al (*an-tē-pran'di-al*), *adj.* before dinner.
an-te-ri-or (*an-tē'ri-ẽr*), *adj.* more to the front; former.
an-te-room (*an'tē-rōōm*), *n.* a room before, or forming an entrance to, another.
ant-hel-ion (*ant-hēl'yun* or *-hē'li-on*), *n.* [*pl.* anthelia (*'yà* or *'li-à*)], a halo or a colored ring or rings, opposite the sun, formed around the shadow of the head of the observer, as projected on a cloud or moist surface.
an-them (*an'them*), *n.* a composition from the Scriptures or liturgy set to sacred music.
an-ther (*an'thẽr*), *n.* the summit of the stamen of a flower, containing the pollen or fertilizing dust.
an-tho-log-ic-al (*an-thō-loj'i-kal*), *adj.* pertaining to anthology.
an-thol-o-gist (*an-thol'ō-jist*), *n.* one who compiles an anthology.
★**an-thol-o-gy** (*an-thol'ō-ji*), *n.* a collection of choice poems.
an-thra-cite (*an'thrà-sīt*), *n.* a nonbituminous coal which burns without smoke.
an-thrax (*an'thraks*), *n.* [*pl.* anthraces (*'thrà-sēz*)], a carbuncle, or malignant boil.
★**An-thro-poid-e-a** (*an-thro-poid'ē-à*), *n. pl.* a sub-order of primate mammals, including man, the apes, and monkeys.
an-thro-po-log-ic-al (*an-thrō-pō-loj'i-kal*), *adj.* pertaining to anthropology.
★**an-thro-pol-o-gist** (*an-thrō-pol'ō-jist*), *n.* a student of anthropology.
an-thro-pol-o-gy (*an-thrō-pol'ō-ji*), *n.* the science of man.
an-thro-pom-e-try (*an-thrō-pom'ē-tri*), *n.* the measurement of the human body.
★**an-thro-po-mor-phism** (*an-thrō-pō-mōr'fizm*), *n.* the ascription of a human form and attributes to the deity.
an-tic (*an'tik*), *adj.* grotesque: *n.* a clown.
An-ti-christ (*an'ti-krīst*), *n.* an opponent of Christ, especially the great personal opponent expected to appear before the end of the world.
an-tic-i-pant (*an-tis'i-pant*), *adj.* that which operates beforehand.
an-tic-i-pate (*an-tis'i-pāt*), *v. t.* to take beforehand; use in advance; look for as certain.
Syn. ANTICIPATE, apprehend, expect, forecast, foretaste, hope, look forward to. *Anticipate* is allied with *prevent* and *expect;* as, a boy *expects* to grow to manhood. We *hope* for that which we desire and *expect; apprehend* what we both *expect* and fear; *anticipate* that which we *expect* both with confidence and pleasure. [See *abide, prevent.*]
Ant. DESPAIR OF, doubt, fear, remember.
an-tic-i-pa-tion (*an-tis-i-pā'shun*), *n.* the act of taking beforehand; expectation.
an-tic-i-pa-tive (*an-tis'i-pā-tiv*), or **anticipatory** (*-pā-tō-ri*), *adj.* taking beforehand; anticipating.
an-ti-cli-max (*an-ti-klī'maks*), *n.* a ludicrous descent in thought and expression; bathos.
an-ti-cy-clone (*an-ti-sī'klōn*), *n.* a meteorological condition in which the ordinary features of a cyclone are reversed.
an-ti-do-tal (*an'ti-dō-tal*), *adj.* of the nature or quality of an antidote.
an-ti-dote (*an'ti-dōt*), *n.* a substance which acts medicinally as a counteractive to the effects of poison or disease.
an-ti-fat (*an'ti-fat*), *adj.* available for preventing or reducing fatness.
an-ti-mo-ni-al (*an-ti-mō'ni-al*), *adj.* pertaining to antimony.
an-ti-mo-nite (*an'ti-mō-nīt*), *n.* native sulphide of antimony.
an-ti-mo-ny (*an'ti-mō-ni*), *n.* a white lustrous metal.
an-ti-no-mi-an-ism (*an-ti-nō'mi-an-izm*), *n.* the tenets of the Antinomian sect.
an-tin-o-my (*an-tin'ō-mi*), *n.* [*pl.* antinomies (*-miz*)], the opposition of one law or part of a law to another.
★**an-tip-a-thy** (*an-tip'à-thi*), *n.* [*pl.* antipathies (*-thiz*)], natural aversion.
Syn. ANTIPATHY, abhorrence, antagonism, aversion, detestation, disgust, dislike, distaste, hatred, hostility, opposition, repugnance, repulsion. *Antipathy* is an instinctive recoil from connection or association with a person or thing; *antagonism* results from the necessity of circumstances; *opposition* springs from conflicting views or interests; *abhorrence* and *detestation* may result from religious and moral training; *distaste* and *disgust* may be acquired; *aversion* is a deep and permanent *dislike;* a natural *antipathy* may give rise to *opposition* which may result in *hatred* and *hostility.* [See *acrimony, anger, enmity, hate.*]
Ant. AFFINITY, agreement, congeniality, harmony, sympathy.
★**an-ti-phlo-gis-tic** (*an-ti-flō-jis'tik*), *adj.* efficacious in counteracting fever or inflammation.
an-ti-phon (*an'ti-fon*), or **antiphone** (*-fōn*), *n.* a chant or hymn rendered alternately by two choirs.
an-tiph-o-nal (*an-tif'ō-nal*), *adj.* characterized by antiphony or responsive singing.
an-tiph-o-na-ry (*an-tif'ō-nā-ri*), *n.* [*pl.* antiphonaries (*-riz*)], a book of responses used in the services.
an-tiph-o-ny (*an-tif'ō-ni*), *n.* [*pl.* antiphonies (*-niz*)], the alternate or responsive rendering of psalms or chants by a dual choir.
an-tiph-ra-sis (*an-tif'rà-sis*), *n.* the employment of a word, or words, in a sense contrary to its, or their, true meaning.
★**an-ti-pode** (*an'ti-pōd*), *n.* [*pl.* antipodes (*an'ti-pōdz*)], one who resides on the opposite side of the earth.
★**an-tip-o-des** (*an-tip'ō-dēz*), *n. pl.* two portions of the earth's surface which are exactly opposite to each other; the direct opposite of a person or thing.
★**an-ti-py-rine** (*an-ti-pī'rin*), *n.* a drug, obtained from coal tar, employed for the relief of neuralgia.
an-ti-qua-ri-an (*an-ti-kwā'ri-an*), *adj.* pertaining to antiquaries or to antiquity: *n.* an antiquary.
an-ti-qua-ri-an-ism (*an-ti-kwā'ri-an-izm*), *n.* the attachment to what is old or antiquated.
an-ti-qua-ry (*an'ti-kwā-ri*), *n.* one who is attached to ancient things and is learned in their history.
an-ti-qua-ted (*an'ti-kwā-ted*), *p. adj.* grown old. [ANTIQUE, OBSOLETE.]
★**an-tique** (*an-tēk'*), *adj.* of or belonging to a former age; ancient.
Syn. ANTIQUE, ancient, antiquated, old-fashioned, quaint, superannuated. *Antique* refers to *ancient, antiquated* to discarded style. We speak of *antique* architecture, and *antiquated* customs; an *old-fashioned* fireplace; a *quaint* gambrel-roofed house; a *superannuated* person, incapacitated by reason of age.
Ant. FASHIONABLE, modern, new, stylish.
an-tiq-ui-ty (*an-tik'wi-ti*), *n.* [*pl.* antiquities (*-tiz*)], great age; ancientness; early ages.
an-ti-scor-bu-tic (*an-ti-skôr-bū'tik*), *adj.* and *n.* counteracting or a remedy for scurvy.
an-ti-Sem-it-ism (*an-ti-sem'it-izm*), *n.* antagonism to the Jewish race.
an-ti-sep-sis (*an-ti-sep'sis*), *n.* the exclusion of bacteria from wounds, etc., by the use of antiseptics.
an-ti-sep-tic (*an-ti-sep'tik*), *adj.* destructive to the germs of disease or putrefaction. [slavery.
an-ti-sla-ver-y (*an-ti-slā'vẽr-i*), *adj.* opposed to
an-tis-tro-phe (*an-tis'trō-fē*), *n.* in the ancient Greek chorus, the alternating part immediately following the strophe.
★**an-tith-e-sis** (*an-tith'ē-sis*), *n.* [*pl.* antitheses (*-sēz*)], opposition; contrast.
an-ti-thet-ic (*an-ti-thet'ik*), or **an-ti-thet-i-cal** (*'i-kal*), *adj.* pertaining to antithesis.
★**an-ti-tox-in** (*an-ti-toks'in*), *n.* a serum used hypodermically as a preventive of, or cure for, diphtheria.
an-ti-trade (*an'ti-trād*), *n.* a tropical wind blowing steadily in an opposite direction to the trade wind. [type.
an-ti-type (*an'ti-tīp*), *n.* that prefigured by the
an-ti-zy-mot-ic (*an-ti-zi-mot'ik*), *adj.* preventing fermentation.
ant-ler (*ant'lẽr*), *n.* an individual branch of a stag's horn.
ant-li-on (*ánt'-li-un*), *n.* a neuropterous insect whose larva constructs a pitfall for ants and other insects.
Antony (*an'tō-nē*), **Anthony.** From Latin *Antonius,* meaning "inestimable." According to Littleton, the Antonian family were descended from *Antius,* son of Hercules. Danish, *Anton;* Dutch, *Anton, Antoon,* or *Antonius;* Fr., *Antoine;* Ger., *Anton;* It., *Antonio;* Port., *Antonio;* Sp., *Antonio;* Sw., *Anton.*
★**an-to-nym** (*an'tō-nim*), *n.* a word opposed to another in meaning.
an-trum (*an'trum*), *n.* a sinus or cavity in a body.
★**Antwerp** (*ant'wẽrp*). From *andoverpum,* "at the wharf"; *werf,* a dam or wharf; literally, "what is thrown up"—*werfen.* A seaport of Belgium.
a-nus (*ā'nus*), *n.* the terminal portion of the rectum.
an-vil (*an'vil*), *n.* an iron block used for the hammering and shaping of metals.
anx-i-e-ty (*ang-zī'ē-ti*), *n.* [*pl.* anxieties (*-tiz*)], a condition of mental uneasiness arising from fear or solicitude.
Syn. ANXIETY, anguish, apprehension, care, concern, disturbance, dread, fear, foreboding, fretfulness, fretting, misgiving, perplexity, solicitude, trouble, worry. *Anxiety* is a choking *disquiet,* akin to *anguish; anxiety* is mental; *anguish* may be mental or physical; *anxiety* refers to some future event, always suggesting hopeful possibility, and thus differing from *apprehension, fear, dread, foreboding, terror,* all of which may be full of despair. *Worry* is more petty, restless, and manifest *anxiety,* communicated to all around. *Solicitude* is a milder *anxiety. Fretting* or *fretfulness* is weak complaint. *Perplexity* often involves *anxiety,* but may be quite free from it. [See *distress.*]
Ant. APATHY, assurance, calmness, confidence, ease, tranquillity.
anx-ious (*angk'shus*), *adj.* deeply concerned; very solicitous; apprehensive. [EAGER.]
an-y (*en'i*), *adj.* and *pron.* one, indeterminately, unlimited; some, an indefinite number, quantity.
★**a-or-ta** (*ā-ôr'tà*), *n.* [*pl.* aortæ (*-tē*)], the chief artery or main trunk of the arterial system. [speedily.
a-pace (*à-pās'*), *adv.* quickly; at a quick pace;
a-pa-che (*à-pà'chà*), *n.* one of a band of lawless persons who frequent the streets, as of Paris, at night and prey upon the pedestrians; a nocturnal prowler.
★**Apalachee** (*ap-à-lach'ē*) **bay, Fla.** Variously spelled *Apahlahche, Apeolatei, Palazy, Palatcy;* the prefix is supposed to be Spanish, and the word in full is said to mean "the men."
★**Apalachicola** (*ap-à-lach-i-kō'là*) **river, Fla.** From an Indian town *Apalatichiokli,* "those on the other side."
a-part (*à-pärt'*), *adv.* separately; aside; asunder.
a-part-ment (*à-pärt'ment*), *n. pl.* a set or suite of two or more rooms of a house set apart as lodgings. [LODGINGS.]
ap-a-thet-ic (*ap-à-thet'ik*), or **ap-a-thet-i-cal** (*'i-kal*), *adj.* devoid of feeling or emotion.
ap-a-thy (*ap'à-thi*), *n.* [*pl.* apathies (*-thiz*)], lack of feeling; want of passion or emotion. [STUPIDITY.]
ap-a-tite (*ap'à-tīt*), *n.* a crystalline phosphate of lime.
ape (*āp*), *n.* a tailless monkey having teeth the same in number and appearance as man.
a-peak (*à-pēk'*), *adv.* nearly vertical in position.
★**Ap-en-nines** (*ap'en-ninz*). Now used as the name of the central mountain chain of Italy. The Roman term *Mons Apenninus* originally denoted the Maritime Alps near Genoa, the *Mons Peninus* signifying the Dauphiny Alps, more especially the part near the Great St. Bernard.
★**a-pe-ri-ent** (*à-pē'ri-ent*), *adj.* gently laxative.
a-pe-ri-od-ic (*à-pē-ri-od'ik*), *adj.* without periodicity
ap-er-ture (*ap'ẽr-tūr*), *n.* an opening; a perforation.
a-pex (*ā'peks*), *n.* [*pl.* apexes (*-ez*) and apice. (*ap'i-sēz*)], the point, tip, or summit of anything.
a-pha-gi-a (*à-fā'ji-à*), *n.* inability to swallow.
★**a-pha-si-a** (*à-fā'zhi-à*, not *à-fā'si-à*), *n.* loss of the power of speech.
a-phe-li-on (*à-fē'lyun* or *à-fē'li-on*), *n.* [*pl.* aphelia (*'yà* or *'li-à*)], that point in the orbit of a planet or a comet which is farthest from the sun.
A-phis (*ā'fis*), *n.* [*pl.* Aphides (*af'i-dēz*)], the genus of plant suckers to which the aphides belong; a member of the genus.
★**aph-o-rism** (*af'ō-rizm*), *n.* a concise and pithy statement of a rule or precept; a maxim.
a-pi-a-ry (*ā'pi-à-ri*), *n.* [*pl.* apiaries (*-riz*)], a place where bees are kept; a beehouse.
a-piece (*à-pēs'*), *adv.* to or for each; each; severally.
a-plomb (*à-plŏn'*), *n.* self-possession; assurance.
A-poc-a-lypse (*à-pok'à-lips*), *n.* the last book of the New Testament.
a-poc-ry-pha (*à-pok'ri-fà*), *n. pl.* used as a *sing.* with *pl.* apocryphas (*-fàz*), certain writings received by some Christians as an authentic part of the holy Scriptures, but rejected by others.
a-poc-ry-phal (*à-pok'ri-fal*), *adj.* of doubtful authority.
ap-od (*ap'od*), *n.* an animal without feet.
a-pod-o-sis (*à-pod'ō-sis*), *n.* the latter portion, or consequent clause, of a conditional sentence.
ap-o-gee (*ap'ō-jē*), *n.* that point in the orbit of a planet which is most distant from the earth.
a-pol-o-get-ic (*à-pol-ō-jet'ik*), or **a-pol-o-get-i-cal** (*'i-kal*), *adj.* in the way of defense or apology.
a-pol-o-get-ics (*à-pol-ō-jet'iks*), *n.* the defense and vindication of the principles and laws of the Christian belief.
a-pol-o-gize (*à-pol'ō-jīz*), *v. i.* to make an apology or excuse.
Syn. APOLOGIZE, defend, justify, exculpate, excuse, plead. We *apologize* for an error

by acknowledging ourselves guilty of it; we *defend* ourselves against a charge by proving its fallacy; we *justify* our conduct against any imputation by proving that it was blameless; we *exculpate* ourselves from all blame by proving that we took no part in the transaction. *Excuse* and *plea* are not grounded on any idea of innocence; a *plea* is frequently an idle or unfounded *excuse*, a frivolous attempt to lessen displeasure; we *excuse* ourselves for a neglect by alleging indisposition.

★ap-o-logue (*ap'ō-log*, not *ap'ō-lōg*), *n.* a moral fable; a fiction or allegory. [FICTION.]

a-pol-o-gy (*a-pol'ō-ji*), *n.* [*pl.* apologies (*-jiz*)], a vindication or excuse.

ap-o-phthegm. See *apothegm.*

ap-o-plec-tic (*ap-ō-plek'tik*), or **ap-o-plec-ti-cal** (*'ti-kal*), *adj.* pertaining to, or of the nature of, apoplexy; afflicted with apoplexy.

ap-o-plex-y (*ap'ō-pleks-i*), *n.* the sudden loss of consciousness and motive power.

a-port (*a-pōrt'*), *adv.* on or toward the port or left side of a ship.

a-pos-ta-sy (*a-pos'ta-si*), *n.* [*pl.* apostasies (*-siz*)], the forsaking or abandonment of what one has hitherto professed or adhered to.

a-pos-tate (*a-pos'tāt*), *n.* one who has forsaken or apostatized his faith or party.

a-pos-ta-tize (*a-pos'ta-tiz*), *v. i.* to abandon one's faith, church, or party.

★a-pos-tle (*a-pos'l*), *n.* one charged with a high mission; one of the twelve persons specially selected by Christ to propagate his gospel.

a-pos-tles' creed (*krēd*), the shortest of the three creeds, so named as containing a summary of apostolical doctrine.

ap-os-tol-ic (*ap-os-tol'ik*) or **ap-os-tol-ic-al** (*'i-kal*), *adj.* of or pertaining to an apostle or apostles, and their age, doctrine, or practice; papal.

ap-os-tol-i-cal suc-ces-sion (*suk-sesh'un*), the regular and uninterrupted transmission of ministerial authority by bishops from the apostles.

a-pos-tro-phe (*a-pos'trō-fē*), *n.* a breaking off in a speech to address directly a person or persons who may or may not be present.

a-pos-tro-phize (*a-pos'trō-fiz*), *v. t.* to address by apostrophe; omit a letter or letters; mark an omission by the sign (').

a-poth-e-ca-ry (*a-poth'ē-kā-ri*), *n.* [*pl.* apothecaries (*-riz*)], one who prepares and dispenses medicines and drugs for profit.

a-poth-e-ca-ries' weight (*wāt*), the weight used for dispensing drugs, and comprising the pound (12 oz.), the ounce (8 drams), the dram (3 scruples), the scruple (20 grains), and the grain.

ap-o-thegm (*ap'ō-them*), *n.* a pithy saying, embodying a wholesome truth or precept.

★ap-o-the-o-sis (*ap-ō-thē'ō-sis* not *ap-ō-thē-ō'sis*), *n.* [*pl.* apotheoses (*-sēz*)], deification.

★Ap-pa-la-chi-an (*ap-pa-lā'chi-an*, not *ap-pā-lā'chi-an*) **mountains.** From the Apalachicola river, or the ancient town called *Apalache*, found by De Soto in Florida.

ap-pall (*ap-pawl'*), *v. t.* [*p. t.* and *p. p.* appalled, *p. pr.* appalling], to fright. [DISMAY.]

★ap-pa-ra-tus (*ap-pa-rā'tus*, not *ap-pā-rā'tus*), *n. sing.* and *pl.* an outfit of tools, utensils, or instruments adapted to the accomplishment of any branch of work.

ap-par-el (*ap-par'el*), *n.* clothing; vesture; garb, *v. t.* [*p. t.* and *p. p.* appareled, *p. pr.* appareling], to clothe or adorn.

ap-par-ent (*ap-pâr'ent*), *adj.* open to view; capable of being readily perceived or understood.

Syn. APPARENT, visible, clear, plain, obvious, evident, manifest. That which is simply an object of sight is *visible:* that which presents itself to our view in any form, real or otherwise, is *apparent:* the stars themselves are *visible* to us, but their size is *apparent:* what is *clear* is to be seen in all its parts and in its proper colors; what is *plain* is seen by a plain understanding; what is *obvious* presents itself readily to the mind of every one; what is *evident* is seen forcibly, and leaves no hesitation in the mind. *Manifest* is a greater degree of the *evident:* it strikes on the understanding and forces conviction.

ap-pa-ri-tion (*ap-pa-rish'un*), *n.* a visible object; a ghost or specter.

ap-peal (*ap-pēl'*), *v. t.* to transfer or refer to a superior court or judge; to address another person. [ADDRESS.]

ap-pear (*ap-pēr'*), *v. i.* to be or become visible; come before: seem. [SEEM, LOOK.]

ap-pear-ance (*ap-pēr'ans*), *n.* the act of becoming visible; the object seen.

ap-pease (*ap-pēz'*), *v. t.* to allay; assuage; quiet; satisfy; pacify. [ALLAY.]

★ap-pel-lant (*ap-pel'lant*), *n.* one who appeals to a higher court.

★ap-pel-late (*ap-pel'lāt*), *adj.* pertaining to appeals.

ap-pel-la-tion (*ap-pel-lā'shun*), *n.* the name, title, or designation by which a person or thing is called or known.

ap-pel-la-tive (*ap-pel'la-tiv*), *adj.* serving to distinguish, as a name or denomination of a group or class; common, as a noun.

ap-pend (*ap-pend'*), *v. t.* to attach, hang, or suspend. [ADD.]

ap-pen-dage (*ap-pen'dāj*), *n.* something appended or attached as a part of.

★ap-pen-di-ci-tis (*ap-pen-di-si'tis*), *n.* inflammation of the vermiform appendix.

ap-pen-dix (*ap-pen'diks*), *n.* [*pl.* appendixes (*-ez*) and appendices (*'di-sēz*)], that which is added as supplemental.

ap-per-tain (*ap-pēr-tān'*), *v. i.* to belong or pertain to.

ap-pe-tite (*ap'pē-tīt*), *n.* the desire for gratification of some want, craving, or passion.

ap-pe-ti-zer (*ap'pē-ti-zēr*), *n.* something that excites or whets the appetite.

Appian way. The *Via Appia* of ancient Rome, most famous of Roman highways. It ran from Rome to Brundisium (Brindisi), and is probably the first great Roman road which was formally undertaken as a public work.

ap-plaud (*ap-plawd'*), *v. t.* to praise. [ADMIRE.]

ap-plause (*ap-plawz'*), *n.* the expression of approval by clapping.

ap-ple (*ap'pl*), *n.* the round, fleshy fruit of the apple tree.

ap-pli-ance (*ap-plī'ans*), *n.* the act of applying.

ap-pli-ca-ble (*ap'pli-kā-bl*), *adj.* capable of being applied.

ap-pli-cant (*ap'pli-kant*), *n.* one who applies.

ap-pli-ca-tion (*ap-pli-kā'shun*), *n.* the act of applying, putting to, or on.

★ap-pli-qué (*a-plē-kā'*), *n.* a method of ornamentation in dress or upholstery.

ap-ply (*ap-plī'*), *v. t.* [*p. t.* and *p. p.* applied, *p. pr.* applying], to place one to another; lay on; put into practice.

ap-point (*ap-point'*), *v. t.* to fix; settle; found; make fast. [CONSTITUTE.]

ap-point-ment (*ap-point'ment*), *n.* the act of appointing; the assigning to an office or trust.

★Appomattox (*ap-pō-mat'oks*). River and county in Virginia.

ap-por-tion (*ap-pōr'shun*), *v. t.* to assign by equal or proportionate division.

ap-por-tion-ment (*ap-pōr'shun-ment*), *n.* the act of apportioning.

★ap-po-site (*ap'pō-zit*), *adj.* proper; fit, pertinent.

ap-po-si-tion (*ap-pō-zish'un*), *n.* the act of adding to; the placing of a second noun in the same case in juxtaposition to the first, which it characterizes or explains.

ap-prais-al (*ap-prāz'al*), *n.* the act of appraising.

ap-praise (*ap-prāz'*), *v. t.* to set a price upon; value.

ap-pre-ci-a-ble (*ap-prē'shi-a-bl*), *adj.* capable of being appreciated.

ap-pre-ci-ate (*ap-prē'shi-āt*), *v. t.* to value; estimate.

ap-pre-ci-a-tion (*ap-prē-shi-ā'shun*), *n.* the just valuation of worth or merit.

ap-pre-ci-a-tive (*ap-prē'shi-a-tiv*), *adj.* exhibiting appreciation.

ap-pre-hend (*ap-prē-hend'*), *v. t.* to take or lay hold of; seize: *v. i.* to form a conception.

Syn. APPREHEND, conceive, suppose, imagine. To *apprehend* is simply to take an idea into the mind; thus we may *apprehend* any object that we hear or see; to *conceive* is to form an idea in the mind, as to *conceive* the idea of doing anything, to *conceive* a design. What one *supposes* may admit of a doubt, it is frequently only conjectural; what one *imagines* may be altogether improbable or impossible, or may be too improbable to admit of being believed. [ANTICIPATE.]

ap-pre-hen-sion (*ap-prē-hen'shun*), *n.* the act of seizure or laying hold of; arrest; anticipation of evil. [ANXIETY.]

ap-pre-hen-sive (*up-prē-hen'siv*). *adj.* suspicious; perceptive.

ap-pren-tice (*ap-pren'tis*), *n.* one bound or articled to learn some trade or craft.

ap-prize (*ap-priz'*), *v. t.* to give notice to; inform.

ap-proach (*ap-prōch'*), *v. i.* to draw or grow near: *n.* the act of drawing near. [ADDRESS.]

ap-pro-bate (*ap'prō-bāt*), *v. t.* to express approval of; license or sanction.

ap-pro-ba-tion (*ap-prō-bā'shun*), *n.* the act of approving: commendation. [ASSENT.]

ap-pro-pri-a-ble (*ap-prō'pri-a-bl*), *adj.* capable of appropriation.

ap-pro-pri-ate (*ap-prō'pri-āt*), *v. t.* to take to one's self, in exclusion of others.

ap-pro-pri-a-tion (*ap-prō-pri-ā'shun*), *n.* the act of assigning to one's self.

ap-prov-al (*ap-prōō'al*), *n.* approbation; sanction.

ap-prove (*ap-prōōv'*), *v. t.* to prove, test, or demonstrate; be pleased or satisfied with. [ADMIRE.]

★ap-prox-i-mate (*ap-proks'i-māt*), *v. t.* to bring or carry near; cause to approach.

ap-prox-i-mate-ly (*ap-proks'i-māt-li*), *adv.* very nearly, but not absolutely.

ap-prox-i-ma-tion (*ap-proks-i-mā'shun*), *n.* the act of approximating.

ap-pulse (*ap-puls'*), or **appulsion** (*-pul'shun*), *n.* a coming toward.

ap-pur-te-nance (*ap-pûr'tē-nans*), *n.* that which belongs or relates to something else.

★a-pri-cot (*ā'pri-kot*, not *ap'ri-kot*) *n.* the fruit of a tree allied to the plum.

A-pril (*ā'pril*). From *aperio*, "I open," this being the month in which the buds shoot forth.

April fool, one who is imposed upon or deceived in a jocular manner on April 1st, or All Fools' day.

a-pron (*ā'pērn*), *n.* a portion of cloth, leather, or other material, worn as a protective or ornamental covering to the front of the person.

apse (*aps*), *n.* [*pl.* apses (*'ez*)], a polygonal or semi-circular recess terminating the choir or other portion of a church.

apt (*apt*), *adj.* suitable; pertinent; appropriate. [FIT, READY.]

ap-ti-tude (*ap'ti-tūd*), *n.* capacity for anything.

★a-qua (*ā'kwa*), *n.* a term used in pharmacy in the abbreviated form of *aq.*, and denoting water.

★a-qua am-mo-ni-æ (*am-mō'ni-ē*), water containing an infusion of ammonia gas.

★a-qua for-tis (*fôr'tis*), (strong water) impure nitric acid.

★a-qua-ma-rine (*ā-kwa-ma-rēn'*), *n.* a pale bluish-green variety of beryl.

★a-qua re-gi-a (*ā'kwa rē'ji-a*), (royal water) a mixture of nitric and hydrochloric acids, capable of dissolving gold.

★a-qua-ri-um (*a-kwā'ri-um*, not *ā-kwā'ri-um*), *n.* [*pl.* aquariums (*-umz*) and aquaria (*-a*)], a tank or globe for the keeping and cultivation of aquatic plants and animals.

a-quat-ic (*a-kwat'ik*), *adj.* pertaining to water.

a-qua-tint (*ā'kwa-tint*), *n.* a species of etching resembling a water-color drawing in india ink or in sepia.

★a-qua vi-tæ (*ā'kwa vi'tē*), (water of life) unrectified alcohol; brandy and other ardent spirits.

★aq-ue-duct (*ak'wē-dukt*, not *ak'wē-duk*), *n.* a structure in the form of a conduit or artificial channel for conducting water from a source.

★a-que-ous (*ā'kwē-us*, not *ak'wē-us*), *adj.* of the nature of, or abounding in, water.

aq-ui-line (*ak'wi-lin* or *-lin*) *adj.* belonging to, or resembling, an eagle.

★Ar-ab (*ar'ab*), *n.* a native of Arabia; a desert dweller.

Arabella (*ar-a-bel'la*. Corrupted from the old name, *Orragel, Oraglee*, meaning a "fair altar." Dutch, *Arabella;* Fr., *Arabelle;* Ger., *Arabelle;* It., *Arabella;* Lat., *Arabella.*

ar-a-besque (*ar-a-besk'*), *n.* the style of Arabic decorative art which consists of the painting, inlaying, or carving in low relief of figures of plants, fruits, flowers, and foliage, variously combined or fantastically grouped.

Arabia (*a-rā'bi-a*). The country of the Arabs, "men of the desert."

★Ar-a-bic nu-mer-als (*ar'a-bik nū'mēr-alz*), the figures 0, 1, 2, 3, etc., of Indian origin, used by the Arabs, and introduced into Europe in the twelfth century.

ar-a-ble (*ar'a-bl*), *adj.* fit for the plow.

ar-bi-ter (*ār'bi-tēr*), *n.* an umpire or judge.

ar-bit-ra-ment (*ār-bit'rā-ment*), *n.* the decision of arbitrators.

ar-bi-tra-ri-ly (*ār-bi-trā'ri-li*), *adv.* in a capricious manner.

ar-bi-tra-ry (*ār'bi-trā-ri*), *adj.* depending on the will of the arbiter; imperious. [ABSOLUTE.]

ar-bi-trate (*ār'bi-trāt*), *v. i.* and *v. t.* to act as arbiter; to settle, as a dispute.

ar-bi-tra-tion (*ār-bi-trā'shun*), *n.* the settlement of a dispute by an umpire.

ar-bi-tra-tor (*ār'bi-trā-tēr*), *n.* an umpire.

ar-bor (*ar'bēr*), *n.* a bower; a shaded nook or walk.

Ar-bor day (*ar'bēr dā*). A day legally set apart in certain states for planting trees.

★ar-bo-re-tum (*ār-bō-rē'tum*), *n.* [*pl.* arboreta (*-ta*) and arboretums (*-tumz*)], a place in which rare trees are cultivated and exhibited.

ar-bor-i-cul-ture (*ār-bor-i-kul'tūr*), *n.* the cultivation of trees.

★ar-bor vi-tæ (*ār'bēr vi'tē*), an evergreen tree extensively cultivated in gardens, etc.

arc (*ārk*), *n.* a curved line or any part of a curve forming the segment of a circle.

ar-cade (*ār-kād'*), *n.* an arched gallery, or promenade, lined with shops.

ar-ca-di-an (*ār-kā'di-an*), *adj.* rurally simple.

ar-ca-num (*ār-kā'num*), *n.* [*pl.* arcana (*'na*)], a secret; a mystery.

★Arc de Triomphe de l'Etoile (*ārk du trē-ōnf' du lā-twāl'*). Meaning, "triumphal arch of the star." The largest triumphal arch in existence, at the head of the Champs Elysées, Paris.

arch (*ārch*), *n.* a structure of brick or masonry, the component wedge-shaped parts of which follow a curved line; any curvature having the form of an arch.

ar-chæ-o-log-ic (*ār-kē-ō-loj'ik*) or **ar-chæ-o-log-i-cal** (*'i-kal*), *adj.* pertaining to the study of antiquities.

★ar-chæ-ol-o-gist or **archeologist** (*ār-kē-ol'ō-jist*), *n.* one versed in the study of ancient things; an antiquary.

ar-chæ-ol-o-gy or **archeology** (*ār-kē-ol'ō-ji*, *n.* the science of antiquities.

ar-cha-ic (*ār-kā'ik*) or **ar-cha-i-cal** (*'i-kal*), *adj.* old-fashioned; antiquated. [OBSOLETE.] [use.

ar-cha-ism (*ār-kā-izm*), *n.* antiquity of style or

arch-an-gel (*ārk-ān'jel*), *n.* an angel of the highest order.

Archangel. City of Russia, named in honor of the archangel Michael.

★arch-bish-op (*ārch-bish'up*, not *arch'bish-up*), *n.* a chief bishop, one who supervises the bishops in his province.

arch-dea-con (*ārch-dē'kn*), *n.* a dignitary ranking next below a bishop.

arch-duch-ess (*ārch-duch'ss*), *n.* the wife of an archduke; a daughter of the emperor of Austria.

arch-duch-y (*ārch-duch'i*), *n.* [*pl.* archduchies (*'iz*)], the territory or rank of an archduke.

arch-duke (*ārch-dūk'*), *n.* a prince of the imperial house of Austria.

arch-en-e-my (*ärch-en'ē-mi*), *n.* a principal enemy.
arch-er (*ärch'ẽr*), *n.* a bowman.
arch-er-y (*ärch'ẽr-i*), *n.* the art or skill of one who uses the bow and arrow.
★**ar-che-type** (*är'kē-tīp*, not *är'chē-tīp*), *n.* the original type or pattern upon or after which a thing is made.
Archibald (*är'chi-bâld*). From the Old German name *Ercheneals, Erchanpald*; from *erchanbald*, "bold in work or activity." Fr., *Archambaud;* Lat., *Archibaldus.* [arched work.
arch-ing (*ärch'ing*), *adj.* curving like an arch: *n.*
★**ar-chi-pe-lag-ic** (*är-ki-pē-laj'ik*), *adj.* pertaining to a collection of islands with the sea dividing them.
★**ar-chi-pel-a-go** (*är-ki-pel'ȧ-gō*, not *är-chi-pel'ȧ-gō*), *n.* [*pl.* archipelagoes or -gos (*-gōz*)], any sea or body of salt water interspersed with numerous islands.
★**ar-chi-tect** (*är'ki-tekt*, not *är'chi-tekt*), *n.* one versed in the art of building and the various styles of architecture.
★**ar-chi-tec-tu-ral** (*är-ki-tek'tū-ral*), *adj.* pertaining to the art of building.
★**ar-chi-tec-ture** (*är'ki-tek-tūr*), *n.* the science or art of building.
★**ar-chi-trave** (*är'ki-trāv*, not *är'chi-trāv*), *n.* the lowest division of an entablature, or that part which rests immediately on the column.
ar-chive (*är'kīv*), *n.* [*pl.* archives (*'kīvz*)], a record preserved as evidence: *pl.* the place where public or state records are kept.
arch-ly (*ärch'li*), *adv.* roguishly; waggishly; coyly.
arch-ness (*'nes*), *n.* shyness; coyness.
Arch of Constantine (*kon'stan-tin*). An arch in Rome built 312 A. D., in honor of Constantine's triumph over Maxentius.
Arch of Septimius Severus. An arch in the Roman forum, dedicated 203 A. D., in commemoration of victories over the Parthians.
Arch of Titus. An arch in Rome, built in commemoration of the taking of Jerusalem.
Arch of Trajan. Arch over the Appian way at Benevento, Italy, dedicated 114 A. D., and one of the finest of ancient arches.
arc lamp (*ärk lamp*), a lamp having a luminous bridge or arc.
arc light (*līt*), a light produced by a current of electricity passing between two carbon points.
★**arc-tic** (*ärk'tik*, not *är'tik*). The word *arctic* is derived from the Greek name for the constellation of the Bear, *Arctos*, and means "near Arctos"; *i. e.*, "in the extreme north."
arc-tic cir-cle (*sẽr'kl*), an imaginary circle parallel to the equator and distant 23° 28′ from the north pole.
ar-dent (*är'dent*), *adj.* hot; burning; fiery; warm. [HOT, EAGER.]
ar-dor (*är'dẽr*), *n.* heat in a physical sense; warmth of affection or passion. [FERVOR, ZEAL.]
ar-du-ous (*är'dū-us*), *adj.* steep; hard to climb; difficult.
★**a-re-a** (*ā're-ȧ*, not *ā-rē'ȧ*), *n.* [*pl.* areas (*-ȧz*)], any plane surface having bounds, whether natural or artificial, as the floor of a hall, etc.
a-re-na (*ȧ-rē'nȧ*), *n.* [*pl.* arenas (*'nȧz*)], the central inclosed space of a Roman amphitheater.
★**Areopagus** (*ar-ē-op'ȧ-gus*). From the Greek *Areios pagos*, "Martial hill"; *i. e.*, "hill of Mars." A low, rocky hill at Athens continuing westward in line with the Acropolis, from which it is separated by a depression of ground.
ar-gand lamp (*är'gand lamp*), a lamp having a hollow circular wick to permit the passage of air inside and outside the flame.
ar-gent (*är'jent*), *n.* the silver of a coat of arms.
Argentina (*är-jen-tē'nȧ*). Now the Argentine Republic, South America.
ar-gil (*är'jil*), *n.* potter's clay or earth.
ar-gol (*är'gol*), *n.* crude tartar, from which cream of tartar is prepared.
ar-gon (*är'gun*), *n.* an element associated with nitrogen, and forming one of the constituents of the air.
★**ar-go-naut** (*är'gō-nawt*), *n.* a cephalopod commonly known as the paper nautilus.
★**ar-go-sy** (*är'gō-si*), *n.* [*pl.* argosies (*-siz*)], a large, richly freighted merchant vessel.
ar-gue (*är'gū*), *v. i.* to show or offer reasons in support of, or in opposition to, a proposition.
ar-gu-ment (*är'gū-ment*), *n.* that which is advanced in support or proof with a view to persuade.
ar-gu-men-ta-tion (*är-gū-men-tā'shun*), *n.* the act of arguing.
★**ar-gu-men-ta-tive** (*är-gū-men'tȧ-tiv*), *adj.* consisting of, or exhibiting, a process of reasoning.
ar-gus-eyed (*är'gus-īd*), *adj.* watchful; vigilant.
★**a-ri-a** (*ä'ri-ȧ* or *ā'ri-ȧ*), *n.* an air; a melody or tune for single voice with accompaniment.
★**A-ri-an** (*ā'ri-an*), *adj.* pertaining to the doctrines of the Arian sect.
ar-id (*ar'id*), *adj.* dry; parched up; barren.
a-rid-i-ty (*ȧ-rid'i-ti*), or **aridness** (*ar'id-nes*), *n.* the state of being dry.
a-right (*ȧ-rīt'*), *adv.* rightly; in a right way or form.
a-rise (*ȧ-rīz'*), *v. i.* [*p. t.* arose, *p. p.* arisen, *p. pr.* arising], to mount up or ascend; to come into view.
ar-is-toc-ra-cy (*ar-is-tok'rȧ-si*), *n.* [*pl.* aristocracies (*-siz*)], the nobility or chief persons in a state.
a-ris-to-crat (*ȧ-ris'tō-krat* or *ar'is-tō-krat*), *n.* a personage of rank and noble birth; a person who possesses traits supposed to characterize the nobility.
ar-is-to-crat-ic (*ar-is-tō-krat'ik*) or **aristocratical** (*'i-kal*), *adj.* pertaining to, or consisting in, a government of the nobles.
a-rith-me-tic (*ȧ-rith'mē-tik*), *n.* the science of numbers.
ar-ith-met-i-cal (*ar-ith-met'i-kal*), *adj.* of or pertaining to arithmetic.
Arizona (*ar-i-zō'nȧ*). Generally accepted that the name is derived from an Indian word meaning "arid zone or desert"; but Mowry claims that the name is Aztec, from *arizuma*, signifying "silver bearing." State of the Union.
ark (*ärk*), *n.* the repository of the Covenant, or tables of the Law, in the Jewish tabernacle; the vessel in which Noah and his family were preserved during the deluge.
★**Arkansas** (*är'kan-saw*, not *är-kan'zas*). River, state, county, and town in said state, and city in Cowley county, Kansas. Marquette and other French explorers wrote the word *Alkansas* and *Akamsca*, from the Indian tribe.
★**Arles** (*ärlz*, Fr., *ärl*). A city in the department of Bouches-du-Rhone, France, situated on the left bank of the eastern arm of the Rhone near its mouth.
Arlington house. A mansion on the heights opposite Washington, District of Columbia, in the midst of the national cemetery.
arm (*ärm*), *n.* the limb of the human body which extends from the shoulder to the hand; the branch of a tree, an inlet of the sea, etc.
arm (*ärm*), *n.* a weapon; a branch of the military service: *v. t.* to furnish or equip with weapons of offense or defense.
ar-ma-da (*är-mä'dȧ*), *n.* a fleet of armed vessels.
ar-ma-ment (*är'mȧ-ment*), *n.* a body of forces equipped for war, either military or naval.
ar-ma-ture (*är'mȧ-tūr*), *n.* armor; that which serves as a means of defense; a piece of soft iron connecting the poles of a magnet.
arm-chair (*ärm'chār*), *n.* a chair furnished with supports for the elbows.
ar-mis-tice (*är'mis-tis*), *n.* a temporary cessation of hostilities; a truce.
arm-let (*ärm'let*), *n.* a bracelet, or piece of armor for the arm.
ar-mor (*är'mẽr*), *n.* defensive arms; protective covering for the body in battle.
ar-mor-clad (*-klad*), *adj.* iron-clad, as a war vessel protected by steel plating.
ar-mor-er (*är'mẽr-ẽr*), *n.* formerly a maker of arms or armor.
ar-mo-ri-al (*är-mō'ri-al*), *adj.* pertaining to armor or to the arms or escutcheon of a family.
ar-mo-ry (*är'mō-ri*), *n.* [*pl* -ries, (*-riz*)], a place for arms or the assembly of soldiers.
ar-mo-zeen or **armozine** (*är-mō-zēn'*), *n.* a thick plain silk, generally black, used for clerical robes.
arm-pit (*ärm'pit*), *n.* the cavity beneath the shoulder.
arms (*ärmz*), *n. pl.* weapons of offense or defense; the military service.
ar-my (*är'mi*), *n.* [*pl.* armies (*'miz*)], a body of men trained and equipped for war.
ar-ni-ca (*är'ni-kȧ*), *n.* a genus of perennial herbs; from the roots or flowers of a species of this herb a valuable external remedy for bruises is made.
Arnold. Bailey says the name in Saxon, *Arnhold*, signifies "faithful to his honor"; Lower says the surname *Arnulfe* is the same as *Arnold*, in mediæval records sometimes Latinized *Ernulphus*, which might be translated both "help in war" and "helping lord," all doubtless from *ern-walt*, "powerful lord." Fr., *Arnaud;* Ger., *Arnold;* It., *Arnaldo;* Lat., *Arnoldus* or *Arnaldus.*
★**a-ro-ma** (*ȧ-rō'mȧ*), *n.* [*pl.* aromas (*'mȧz*)], perfume; fragrance.
★**ar-o-mat-ic** (*ar-ō-mat'ik*) or **ar-o-mat-i-cal** (*'i-kal*), *adj.* giving out aroma.
★**Aroostook** (*ȧ-rōō'stook*). River and county in Maine. An Indian word meaning "good river," or "clear of obstruction."
a-round (*ȧ-round'*), *adv.* in a circle; on every side; roundabout.
a-rou-sal (*ȧ-rou'zal*), *n.* the act of awakening.
a-rouse (*ȧ-rouz'*), *v. t.* to excite or stir to action.
ar-raign (*ar-rān'*), *v. t.* to summon as a prisoner at the bar of a court to answer to a charge. [ACCUSE.]
ar-raign-ment (*ar-rān'ment*), *n.* an accusation.
ar-range (*ar-rānj'*), *v. t.* to put in proper order or sequence; classify. [DISPOSE.]
ar-range-ment (*ar-rānj'ment*), *n.* the act of putting in proper form or order; that which is ordered or disposed.
ar-rant (*ar'rant*), *adj.* notorious; unmitigated.
ar-ras (*ar'ras*), *n.* tapestry.
ar-ray (*ar-rā'*), *n.* order; the grouping or arrangement of a body of men as drawn up for battle: *v. t.* [*p. t.* and *p. p.* -ed, *p. pr.* -ing], to place or dispose in order; marshal; deck or dress.
ar-rear (*ar-rēr'*), *n.* the state of being behind-hand.
ar-rear-age (*ar-rēr'āj*), *n.* the state or condition of being in arrears.
ar-rest (*ar-rest'*), *v. t.* to stop or stay; check or hinder the action or motion of; seize, take, or apprehend by legal authority. [OBSTRUCT.]
ar-ri-val (*ar-rī'val*), *n.* the act of coming to a place.
ar-rive (*ar-rīv'*), *v. i.* to come to or reach.
ar-ro-gance (*ar'rō-gans*), *n.* an undue degree of self-importance; an exorbitant claim to dignity. [HAUGHTINESS, PRIDE.]
ar-ro-gant (*ar'rō-gant*), *adj.* making exorbitant claims to dignity or estimation.
ar-ro-gate (*ar'rō-gāt*), *v. t.* to assume or lay claim to unduly, or with presumptuous pride.
ar-row (*ar'rō*), *n.* a slender, pointed missile weapon, usually feathered and barbed, made to be shot from a bow. [arrow.
ar-row-head (*-hed*), *n.* the head or barb of an
ar-se-nal (*är'sē-nal*), *n.* a magazine for the storage of arms and military stores.
ar-se-nic (*är'sē-nik*), *n.* an element of steel-gray color and brilliant luster, and exceedingly brittle.
ar-se-ni-ous (*är-sē'ni-us*), *adj.* pertaining to or containing arsenic.
ar-son (*är'sn*), *n.* the malicious firing of any building, agricultural produce, ship, etc.
art (*ärt*), *n.* the employment of means to the accomplishment of some end; the skillful adaptation and application to some purpose or use of knowledge acquired from nature. [BUSINESS.]
ar-te-ri-al (*är-tē'ri-al*), *adj.* pertaining to an artery or the arteries: contained in an artery.
ar-te-ri-al-ize (*är-tē'ri-al-īz*), *v. t.* to convert venous blood into arterial blood.
ar-ter-y (*är'tẽr-i*), *n.* [*pl.* arteries (*-iz*)], one of a system of tubes or vessels which convey the blood from the heart to all parts of the body.
ar-te-sian well (*är-tē'zhan wel*), a well formed by boring, often to great depth.
art-ful (*ärt'ful*), *adj.* cunning; crafty.
★**Ar-tha-bas-ka lake, Me.** Indian word, meaning "swampy."
Arthur. Armstrong derives this name from Gael. *ard*, "an eminent person"; literally, "high," "lofty," "exalted," "noble," "eminent," "excellent," "proud"; others derive it from *arth*, "a bear." Fr., *Arthur* or *Artus;* It., *Arturo;* Lat., *Arthurus.*
ar-ti-choke (*är'ti-chōk*), *n.* a plant with thistle-like foliage, and bearing large terminal flower-heads.
ar-ti-cle (*är'ti-kl*), *n.* a distinct portion or member; a single clause, item, or particular, as in a formal agreement or treaty; a concise statement; a prose composition, complete, in itself, in a newspaper.
★**ar-tic-u-late** (*är-tik'ū-lāt*), *v. t.* to joint; unite by means of a joint; to form words; utter in distinct syllables. [UTTER, SPEAK.]
ar-tic-u-la-tion (*är-tik-ū-lā'shun*), *n.* the act of jointing; the act of speaking distinctly.
★**ar-ti-fice** (*är'ti-fis*), *n.* an artful or crafty device, an ingenious expedient.
★**ar-ti-fi-cial** (*är-ti-fish'al*), *adj.* made or contrived by art; produced by human skill or labor.
★**ar-ti-fi-ci-al-i-ty** (*-fish-i-al'i-ti*) or **ar-ti-fi-cial-ness** (*-fish'al-nes*), *n.* the quality of being unreal or unnatural.
ar-ti-fi-cial-ly (*-fish'al-li*), *adv.* by human skill or contrivance.
ar-til-ler-y (*är-til'lẽr-i*), *n.* cannon; great guns; ordnance of all kinds. [trade.
ar-ti-san (*är'ti-zan*), *n.* one skilled in any art or
ar-tist (*är'tist*), *n.* one skilled in any branch of high art.
ar-tis-tic (*är-tis'tik*) or **ar-tis-tic-al** (*'ti-kal*), *adj.* pertaining to art or to artists; characterized by æsthetic feeling.
art-less (*ärt'les*), *adj.* lacking art; unskillful.
Ar-yan (*är'yan*), *n.* the race of mankind from which the white people of Europe and southern Asia have descended.
as (*as*), *n.* [*pl.* asses (*as'ez*)], a Roman weight equivalent to the libra or pound.
as-a-fet-i-da or **as-a-fœt-i-da** (*as-ȧ-fet'i-dȧ*), *n.* a fetid sap obtained from the roots of several large umbelliferous plants.
★**A-sa-ka-sa** (*ä-sä-kä'sä*) **pagoda.** A picturesque Buddhist tower in Tokio, Japan.
★**as-bes-tos** (*as-bes'tos*) or **asbestus** (*'tus*), *n.* a fibrous variety of hornblende, possessing the property of being incombustible.
as-cend (*as-send'*), *v. i.* to take an upward direction; mount; go up; rise.
as-cend-ant (*as-send'ant*) or **ascendent** (*'ent*), *adj.* rising; superior; predominant; above the horizon.
as-cend-en-cy (*as-send'en-si*) or **ascendancy** (*'an-si*), *n.* a governing or controlling power or influence; domination.
as-cen-sion (*as-sen'shun*), *n.* the act of moving upward; a rising.
As-cen-sion day (*dā*), a movable feast to commemorate Christ's ascension into heaven.
Ascension island. Was so named because discovered by the Portuguese on Ascension day, 1501. An island in the Atlantic belonging to Great Britain.
as-cent (*as-sent'*), *n.* the act of rising; an upward movement.
as-cer-tain (*as-sẽr-tān'*), *v. t.* to make certain.
★**as-cet-ic** (*as-set'ik*), *adj.* exceedingly rigid in the exercise of religious duties and mortification of worldly desires.
as-cribe (*as-krib'*), *v. t.* to attribute, impute, or refer; assign.
as-crip-tion (*as-krip'shun*), *n.* the act of attributing or imputing.
a-sep-tic (*ȧ-sep'tik*), *adv.* free from the germs of disease or putrefaction.
a-sex-u-al (*ȧ-seks'ū-al*), *adj.* not sexual; produced by other than sexual processes.
ash (*ash*), *n.* the name popularly applied to trees of the genus Fraxinus.

ash (*ash*), *n.* [*pl.* ashes (*'ez*)], the residue of plant or animal substance remaining after subjection to red heat [BODY.]

a-shamed (*ȧ-shāmd'*), *p. adj.* affected or touched by shame.

ash-en (*ash'n*), *adj.* pertaining to the ash-tree; made of ash; of the color of ashes; pale.

Ashley river, S. C. From Sir Anthony Ashley Cooper. Indian name of the stream *Kiawah.*

Asia (*ā'shi-ȧ*). From the Sanskrit *ushas,* signifying "land of the dawn."

Asia Minor. Lesser Asia.

ask (*ȧsk*), *v. t.* to request; seek to obtain by words.

Syn. ASK, inquire, interrogate, question. We perform all these actions in order to get information; but we *ask* for general purposes of convenience; we *inquire* from motives of curiosity; we *question* and *interrogate* from motives of discretion. Indifferent people *ask* of each other whatever they wish to know; learners *inquire* the reasons for things which are new to them; masters *question* their servants, or parents their children, when they wish to ascertain the real state of any case; magistrates *interrogate* criminals when the latter are brought before them.

a-skance (*ȧ-skans'*) or **a-skant** (*ȧ-skant'*), *adv.* sideways; obliquely; awry.

a-skew (*ȧ-skū'*), *adv.* obliquely; awry.

asp (*ȧsp*), *n.* a small venomous snake of Egypt.

as-par-a-gus (*as-par'ȧ-gus*), *n.* a plant having tender edible shoots.

as-pect (*as'pekt*), *n.* visual or mental appearance; look; mien; air; outlook or prospect.

as-pen (*as'pen*), *n.* a species of poplar whose leaves have the property of trembling in the slightest breeze.

as-per-i-ty (*as-per'i-ti*), *n.* [*pl.* asperities (*-tiz*)], roughness of surface; bitterness of taste or temper. [ACRIMONY.]

as-per-sion (*as-pēr'shun*), *n.* a sprinkling, as of dust or water; slander.

★**as-phalt** (*as-falt'*, not *as'falt*), *n.* a compact, brittle variety of native bitumen, employed for the purpose of paving, roofing and cementing.

as-pho-del (*as'fō-del*), *n.* the name of several plants of the lilaceous genus Asphodelus.

★**as-phyx-i-a** (*as-fiks'i-ȧ*) or **as-phyx-y** (*ȧs-fiks'i*), *n.* the condition of lifelessness occasioned by suspension or interruption of respiration.

as-phyx-i-ate (*as-fiks'i-āt*), *v. t.* to suffocate.

★**as-pir-ant** (*as-pir'ant*), *adj.* aspiring; ambitious: *n.* one who seeks to attain.

as-pi-rate (*as'pi-rāt*), *v. t.* to pronounce with a full breathing; to prefix the sound of the letter *h.*

as-pi-ra-tion (*as-pi-rā'shun*), *n.* the act of aspirating; an aspirated sound; a breath; ambition.

as-pire (*as-pir'*), *v. i.* to seek after or desire with longing.

ass (*ȧs*), *n.* a quadruped of the genus Equus, allied to the horse.

as-sa-fœt-i-da. See *asafetida.*

as-sail (*as-sāl'*), *v. t.* to fall upon or attack with vehemence.

★**as-sail-ant** (*as-sāl'ant*), *adj.* assaulting; attacking.

as-sas-sin (*as-sas'sin*), *n.* one who slays treacherously or by covert assault.

as-sas-si-nate (*as-sas'si-nāt*), *v. t.* to kill, or attempt to kill, by secret or treacherous means.

as-sault (*as-sawlt'*), *n.* an attack with violence by physical means; an onslaught.

as-say (*as-sā'*), *n.* the act or process of determining by analysis the quantity or proportion of any one or more metals in a metallic compound.

★**as-say-er** (*as-sā'ēr*), *n.* one who assays.

as-sem-blage (*as-sem'blāj*), *n.* the act of assembling.

as-sem-ble (*as-sem'bl*). *v. t.* to collect or gather together in one place or body.

as-sem-bly (*as-sem'bli*), *n.* [*pl.* assemblies (*-bliz*)], a collection or company of persons brought together in one place.

as-sem-bly-man (*-man*), *n.* a member of a legislative assembly.

as-sent (*as-sent'*), *v. i.* to admit as true; concede.

Syn. ASSENT, consent, approbation, concurrence. *Assent* respects matters of judgment; *consent* respects matters of conduct. We *assent* to what we admit to be true; we *consent* to what we allow to be done. *Approbation* is a species of *assent, concurrence* of *consent.* To approve is not merely to *assent* to a thing as right, but to determine upon it positively to be so; *concurrence* is properly the *consent* of many. *Assent* is given by equals or inferiors; *consent* by superiors; *approbation* by equals or superiors; *concurrence* by equals.

as-sert (*as-sērt'*), *v. t.* to maintain; declare positively, or with assurance.

Syn. ASSERT, maintain, vindicate. We *assert* anything to be true; we *maintain* it by adducing proofs, facts, or arguments; we *vindicate* our own conduct or that of another when it is called in question. [See *allege.*]

Ant. DENY, imply, insinuate, suppose.

as-ser-tion (*as-sēr'shun*), *n.* the act of asserting.

as-sert-ive (*as-sērt'iv*), *adj.* positive; dogmatical.

as-sess (*as-ses'*), *v. t.* to fix or determine, as damages.

as-sess-or (*as-ses'sēr*), *n.* one appointed to assess property or persons for taxation.

★**as-sets** (*as'sets*), *n. pl.* the property or effects of an insolvent debtor; the entire property of a trader or company of traders.

as-sev-er-ate (*as-sev'ēr-āt*), *v. t.* to affirm or aver positively, or with solemnity. [ALLEGE.]

as-sib-i-late (*as-sib'i-lāt*), *v. t.* to pronounce with a hissing sound; to alter to a sibilant.

as-si-du-i-ty (*as-si-dū'i-ti*), *n.* [*pl.* assiduities (*-tiz*)], close application or unremitting attention to.

as-sid-u-ous (*as-sid'ū-us*), *adj.* constant in application.

as-sign (*as-sīn'*), *v. t.* to appoint, mark out, apportion, make over; fix; designate for a specific purpose. [ALLEGE, COMMIT.]

as-sig-na-tion (*as-sig-nā'shun*), *n.* the act of assigning; an appointment to meet.

★**as-sign-ee** (*as-si-nē'*, not *as-si'nē*), *n.* one to whom an assignment of anything is made.

as-sign-ment (*as-sīn'ment*), *n.* a setting apart, allotment, or appointment.

as-sign-or (*as-si-nōr'*), *n.* one who assigns or transfers an interest.

as-sim-i-late (*as-sim'i-lāt*), *v. t.* to bring to conformity or agreement with something else.

as-sist (*as-sist'*), *v. t.* to help; aid; give support to. [HELP, ABET.]

as-sist-ance (*as-sist'ans*), *n.* help; furtherance.

as-sist-ant (*as-sist'ant*), *adj.* helping; lending aid. [ACCESSORY.]

★**as-size** (*as-sīz'*), *n.* [*pl.* assizes (*-si'zez*)], a court or session of justice for the trial by jury of civil or criminal cases.

as-so-ci-ate (*as-sō'shi-āt*), *v. t.* to unite; join with; connect; accompany, as a companion: *n.* a companion; a confederate; an ally. [ACCESSORY.]

as-so-ci-a-tion (*as-sō-si-ā'shun*), *n.* the act of associating or state of being associated; union. [ACQUAINTANCE, CLASS.]

★**as-so-nance** (*as'sō-nans*), *n.* resemblance of sound.

★**as-so-nant** (*as'sō-nant*), *adj.* having resemblance of sound.

as-sort (*as-sôrt'*), *v. t.* to divide or separate into lots according to arrangement.

as-sort-ment (*as-sôrt'ment*), *n.* the act of assorting.

★**as-suage** (*as-swāj'*), *v. t.* to soften; mitigate. [ALLAY.]

as-sume (*as-sūm'*), *v. t.* to take to; to take in or into; take upon one's self; arrogate.

as-sump-tion (*as-sump'shun*), *n.* the act of assuming. [PRETENSE, PRIDE.]

as-sur-ance (*ȧ-shūr'ans*), *n.* the act of assuring.

as-sure (*ȧ-shūr'*), *v. t.* to make sure or certain; to inspire confidence by declaration or promise.

as-sured (*ȧ-shūrd'*), *p. adj.* made certain; guaranteed; self-possessed; insured: *n.* a person insured.

as-sur-ed-ly (*-li*), *adv.* certainly; with assurance.

As-syr-i-an (*as-sir'i-an*), *adj.* pertaining to Assyria or to its inhabitants.

as-ter (*as'tēr*), *n.* a genus of flowering plants with rosette-shaped flowers; any plant of the genus aster.

as-te-ri-al (*as-tē'ri-al*), *adj.* connected with, or related to, the stars.

as-ter-isk (*as'tēr-isk*), *n.* the mark (*) used in printing as a reference to a marginal passage or footnote appended to the text, or to indicate letters or words omitted (* * *).

a-stern (*ȧ-stērn'*), *adj.* and *adv.* at or toward the hinder part of a ship.

as-ter-oid (*as'tēr-oid*), *adj.* star-like; star-shaped.

asth-ma (*as'mȧ, az'mȧ* or *ast'mȧ*), *n.* respiratory disease, chronically recurrent and attended by difficulty of breathing.

a-stig-ma-tism (*ȧ-stig'mȧ-tizm*), or **a-stig-mism** (*'mizm*), *n.* a defect in the structure of the eye.

a-stir (*ȧ-stēr'*), *adv.* or *adj.* on the move; active.

as-ton-ish (*as-ton'ish*), *v. t.* to strike with sudden wonder.

as-ton-ish-ment (*as-ton'ish-ment*), *n.* the state of being astonished.

as-tound (*as-tound'*), *v. t.* to strike with amazement.

★**as-tra-khan** (*as'trȧ-kan*), *n.* the skins of young lambs with curly wool, obtained from Astrakhan.

as-tral (*as'tral*), *adj.* pertaining to the stars; starry.

a-stray (*ȧ-strā'*), *adv.* out of the right way.

a-stride (*ȧ-strīd'*), *adv.* with the legs wide apart.

as-trin-gent (*as-trin'jent*), *adj.* binding; contracting, opposed to laxative.

as-tro-labe (*as'trō-lāb*), *n.* an instrument formerly employed for taking the altitude of the sun or stars.

as-trol-o-ger (*as-trol'ō-jēr*), *n.* one who professes to forecast events by means of the stars.

as-trol-o-gy (*as-trol'ō-ji*), *n.* predestination by the stars.

as-tron-o-mer (*as-tron'ō-mer*), *n.* one who studies, or is versed in, astronomy.

as-tro-nom-ic (*as-trō-n.om'ik*) or **as-tro-nom-i-cal** (*'i-kal*), *adj.* pertaining to astronomy, or according to astronomical laws.

as-tron-o-my (*as-tron'ō-mi*), *n.* the study of the heavenly bodies.

as-tro-pho-tog-ra-phy (*as-trō-fō-tog'rȧ-fi*), *n.* photography applied to the delineation of the heavenly bodies.

as-tro-phys-i-cal (*as-trō-fiz'i-kal*), *adj.* pertaining to the physical structure of the stars.

as-tute (*as-tūt'*), *adj.* shrewd; keenly penetrating; sagacious; cunning; crafty.

a-sun-der (*ȧ-sun'dēr*), *adv.* apart; separately.

a-sy-lum (*ȧ-sī'lum*), *n.* [*pl.* asylums (*'lumz*)], an institution for the care or relief of the aged, destitute, or afflicted.

★**as-ym-met-ri-cal** (*as-im-met'ri-kal*), *adj.* not symmetrical.

at-a-vism (*at'ȧ-vizm*), *n.* the reversion, or tendency to revert, to the ancestral type of a species.

★**a-tax-i-a** (*ȧ-taks'i-ȧ*), or **a-tax-y** (*'i*), *n.* irregularities in the functions of the body.

a-the-ism (*ā'thē-izm*), *n.* disbelief in the existence of God.

a-the-ist (*ā'thē-ist*), *n.* one who disbelieves or denies the existence of God.

ath-e-ne-um, ath-e-næ-um (*ath-e-nē'um*), *n.* [*pl.* atheneums (*'umz*) and athenæa (*'ȧ*)], an institution, club, or building devoted to study.

Athens (*ath'enz*). A name of doubtful etymology; cannot be separated from that of Athene, the tutelary goddess of the city. Athens is either the city of Athene, as the Athenians believed, or Athene may be the goddess of Athens, or both names may be independent formations from the same root. The capital of Greece.

a-thirst (*ȧ-thērst'*), *adj.* in want of drink.

ath-lete (*ath'lēt*), *n.* a competitor for a prize in public games; one possessed of great physical strength.

ath-let-ic (*ath-let'ik*), *adj.* pertaining to athletes, or their performances.

ath-let-ics (*ath-let'iks*), *n. pl.* any system of athletic training by gymnastic exercises or outdoor sports.

Athol (*ath'ol*). Town in Worcester county, Massachusetts, said to have been named for James Murray, second duke of Athol.

a-thwart (*ȧ-thwart'*), *prep.* across; from side to side.

Atlanta (*at-lan'tȧ*), **Ga.** Originally, Marthasville. Atlanta was suggested by the late Edgar Thomson of Philadelphia, owing to its geographical position, immediately on the dividing ridge, separating the gulf and Atlantic waters.

Atlantic Ocean. Was known to the Greeks by the name of *Atlantikos pelagos,* from the Isle of Atlantes.

at-las (*at'las*), *n.* [*pl.* atlases (*-ez*)], a collection of maps in a volume.

at-mol-o-gy (*at-mol'ō-ji*), *n.* the science of aqueous vapor.

at-mom-e-ter (*at-mom'ē-tēr*), *n.* an instrument for measuring the rate and amount of evaporation from a moist surface.

at-mos-phere (*at'mos-fēr*), *n.* the aëriform fluid surrounding the earth, composed of a mechanical mixture of 79 parts by volume of nitrogen with 21 parts of oxygen, and a trace of carbonic acid and argon.

at-mos-pher-ic (*at-mos-fēr'ik*), or **at-mos-pher-i-cal** (*'i-kal*), *adj.* pertaining to, or resembling, the atmosphere.

at-mos-pher-ic pres-sure (*presh'ēr*), the pressure exerted in every direction upon a body by the atmosphere; equivalent to 14⅞ lbs. on the sq. in.

a-toll (*ȧ-tol'*), *n.* a coral island having the form of an outer ring of coral surrounding a basin or lagoon.

at-om (*at'um*), *n.* an ultimate indivisible particle of matter.

a-tom-ic (*a-tom'ik*) or **a-tom-i-cal** (*'i-kal*), *adj.* pertaining to, or consisting of, atoms.

at-om-i-zer (*at'um-i-zēr*), *n.* an instrument constructed to reduce a liquid to spray.

a-tone (*ȧ-tōn'*), *v. i.* [*p. t.* and *p. p.* atoned, *p. pr.* atoning], to make reparation or amends.

a-tone-ment (*ȧ-tōn'ment*), *n.* reparation or satisfaction; the recompense for sin typified by the sufferings and death of Christ.

a-tro-cious (*ȧ-trō'shus*), *adj.* wicked in the highest degree; extremely criminal or cruel. [HEINOUS.]

a-troc-i-ty (*ȧ-tros'i-ti*), *n.* [*pl.* atrocities (*-tiz*)], enormous wickedness.

★**at-ro-phy** (*at'rō-fi*), *n.* a wasting, or diminution in bulk, of the body: *v. i.* [*p. t.* and *p. p.* atrophied, *p. pr.* atrophying], to waste away; to dwindle.

at-tach (*at-tach'*), *v. t.* to fasten, or fix, to or on. [ADD, ADJACENT, ADDICTED.]

at-tach-ment (*at-tach'ment*), *n.* the act of attaching. [LOVE.]

at-tack (*at-tak'*), *v. t.* to assault; fall upon with force; assail with intent to overcome or to damage: *n.* the act of attacking in any sense of the word. [IMPUGN.]

at-tain (*at-tān'*), *v. t.* to achieve; gain; compass.

at-tain-der (*at-tān'dēr*), *n.* the act of attainting, or the state of being attainted.

at-tain-ment (*at-tān'ment*), *n.* the act of attaining.

at-taint (*at-tānt'*), *v. t.* to taint; corrupt.

at-tempt (*at-tempt'*), *v. t.* to make an effort to accomplish; try; endeavor to perform.

at-tend (*at-tend'*), *v. t.* [*p. t.* and *p. p.* attended, *p. pr.* attending], to wait upon; accompany or be present with.

at-ten-dance (*at-ten'dans*), *n.* the act of attending; waiting on; presence.

at-ten-dant (*at-ten'dant*), *n.* one who attends in service of another. [ACCESSORY.]

at-ten-tion (*at-ten'shun*), *n.* the act of applying the mind to anything; consideration or regard for any person or thing. [HEED.]

at-ten-tive (*at-ten'tiv*), *adj.* heedful.

at-ten-u-ate (*at-ten'ū-āt*), *v. t.* to make thin or slender; weaken or reduce; thin out by dilution; rarefy.

at-test (*at-test'*), *v. t.* to bear witness to; certify as being genuine or true.

at-tic (*at'tik*), *n.* an uppermost room in a house immediately beneath the roof; a garret.
At-tic (*at'tik*), *adj.* pertaining to Attica, in Greece; classical; elegant.
★**at-tire** (*at-tīr'*), *v. t.* to dress; clothe; array; adorn: *n.* dress; clothes; habit.
at-ti-tude (*at'ti-tūd*), *n.* bodily position or posture. [ACTION.]
★**at-tor-ney** (*at-tĕr'ni*), *n.* one legally qualified to act for another in the transaction of business.
at-tract (*at-trakt'*), *v. t.* to draw to or toward.
Syn. ATTRACT, allure, invite, engage. That is *attractive* which draws the thoughts toward itself; that is *alluring* which awakens desires; that is *inviting* which offers persuasion; that is *engaging* which takes possession of the mind.
at-trac-tion (*at-trak'shun*), *n.* the power or act of attracting. [LOVE.]
at-tract-ive (*at-trakt'iv*), *adj.* having the power or tendency to attract. [PLEASANT.]
at-trib-u-ta-ble (*at-trib'ū-tā-bl*), *adj.* capable of being attributed.
at-trib-ute (*at-trib'ūt*), *v. t.* to ascribe, impute, assign.
at-tri-tion (*at-trish'un*), *n.* the act of wearing by rubbing.
at-tune (*at-tūn'*), *v. t.* to put in tune.
Aubrey (*aw'bri*). A name derived from the Old German name *Amalric*, signifying "powerful without a blot," or "rich in chastity." *Amalric* has been corrupted to *Alberic*, whence *Aubrey*.
au-burn (*aw'bĕrn*), *adj.* reddish-brown.
auc-tion (*awk'shun*), *n.* a public sale of property or effects.
auc-tion-eer (*awk-shun-ēr'*), *n.* one licensed to sell property or goods by public auction.
au-da-cious (*aw-dā'shus*), *adj.* bold; daring; spirited.
au-dac-i-ty (*aw-das'i-ti*), *n.* [*pl.* audacities (*-tiz*)], boldness; daring; spirit.
au-di-ble (*aw'di-bl*), *adj.* capable of being heard.
au-di-bly (*-bli*), *adv.* so as to be heard.
★**au-di-ence** (*aw'di-ens*), *n.* the act of hearing; admittance to a hearing or formal interview.
au-dit (*aw'dit*), *n.* official examination and verification of claims or accounts.
au-di-tor (*aw'di-tĕr*) *n.* a person appointed to examine and verify accounts and claims.
au-di-to-ri-um (*aw-di-tō'ri-um*), *n.* [*pl.* auditoriums (*-umz*) and auditoria (*-ȧ*)], the space in a theater or other public building assigned to the audience.
au-di-to-ry (*aw'di-tō-ri*), *adj.* pertaining to hearing, or to the sense or organs of hearing.
Audrey or **Audrie** (*aw'dri*). A feminine name corrupted from *Etheldreda*.
au-ger (*aw'gĕr*), *n.* a tool for boring holes.
aught (*awt*), *n.* anything; any part.
★**aug-ment** (*awg-ment'*), *v. t.* to increase; to enlarge in size or extent. [ADD.]
★**aug-men-ta-tion** (*awg-men-tā'shun*), *n.* increase; the increase in time-value of the notes of a theme; the period of increase in a fever before the crisis is reached
au-gur (*aw'gĕr*), *n.* one who officially predicted events by the observation and interpretation of natural signs or omens.
Syn. AUGUR, presage, forebode, betoken, portend. *Augur* signifies either to serve or make use of as an augury; to *forebode*, and *presage*, is to form a conclusion in one's own mind; to *betoken* or *portend* is to serve as a sign. Persons or things *augur;* persons only *forebode* or *presage;* things only *betoken* or *portend. Auguring* is a calculation of some future event, in which the imagination seems to be as much concerned as the understanding; *presaging* is rather a conclusion or deduction of what may be from what is; it lies in the understanding more than in the imagination; *foreboding* lies altogether in the imagination. Things are said to *betoken* which present natural signs; those are said to *portend* which present extraordinary or supernatural signs.
au-gust (*aw-gust'*), *adj.* grand; invested with grandeur and dignity.
August. Named by Augustus Cæsar after himself. Before this the month was known in Rome as *Sextilis*. In Gallia, however, and in other remote parts of the empire, the ancient name for this month was *Eaust*, or *Aust; i. e.*, "harvest."
Augusta (*aw-gus'tȧ*). The feminine form of Augustus, meaning "venerable." Danish, *Auguste;* Dutch, *Auguste;* Fr., *Auguste;* Ger., *Auguste* or *Augusta;* It., *Augusta;* Lat. *Augusta*.
Augusta, Me. Given in 1737, after the name of the English Princess Augusta Charlotte, eldest granddaughter of George II. The Indian name of the locality was *Cushnoc*.
Augustin. See *Augustine*.
Augustine (*ô-gus'tin, ô'gus-tin*). From the Latin *augustus*, "venerable." Dutch, *Augustinus*, or *Augustijn;* Fr., *Augustin;* It., *Augustino;* Lat., *Augustinus;* Port., *Agostinho;* Sp., *Augustin*.
auk (*awk*), *n.* the name given to the members of a family of arctic diving birds.
aunt (*ănt*), *n.* the sister of one's father or mother.
au-re-ate (*aw'rē-āt*), *adj.* golden; gilded.
Aurelia (*aw-rē'li-ȧ*). A feminine name derived from that of *Aurelia*, mother of Cæsar, formed from *Aurelius*, name of a Roman emperor.
au-re-o-la (*aw-rē'ō-lȧ*) or **au-re-ole** (*aw'rē-ōl*), *n.* a halo, radiance, or luminous cloud encircling the figures of Christ, the Virgin, and the saints.
★**au-ri-cle** (*aw'ri-kl*), *n.* the external ear.
au-ric-u-lar (*aw-rik'ū-lĕr*), *adj.* pertaining to the ear or to the sense of hearing.
au-ri-form (*aw'ri-fôrm*), *adj.* ear-shaped.
★**au-ro-ra** (*aw-rō'rȧ*), *n.* [*pl.* auroras (*'rȧz*) and auroræ (*'rē*)], the rising light of the morning; the dawn or dayspring.
Aurora. A feminine name from Latin *aurora*, "the dawn."
★**au-ro-ra bo-re-a-lis** (*bō-rē-ā'lis*), the northern lights.
au-rous (*aw'rus*), *adj.* pertaining to gold.
aus-cul-ta-tion (*aws-kul-tā'shun*), *n.* a method of detecting chest disease by observing the sounds arising in the part.
aus-pice (*aws'pis*), *n.* [*pl.* auspices (*'pi-sez*)], an omen drawn from birds.
aus-pi-cious (*aws-pish'us*), *adj.* having promise of success or happiness.
aus-tere (*aws-tēr'*), *adj.* sour; harsh; rough to the taste; severe.
aus-ter-i-ty (*aws-ter'i-ti*), *n.* severity of manner or life.
★**Austerlitz** (*aws'tĕr-lits*). The east town of the river Littawa in Austro-Hungary; *ost*, "the east."
Austin. Corrupted from *Augustin*.
Austin. County and city in Travis county, Texas, and town in Lonoke county, Arkansas, named for Stephen Fuller Austin, the first man to establish a permanent American colony in Texas (1844).
Australasia (*aws-tral-ā'shi-ȧ*). Meaning, "southern Asia," derived from the Latin *australis*, "southern."
Australia (*aws-trā'li-ȧ*). Meaning, "the south." The first indication of Australia on any map is in a small map of the world which forms the vignette to a Dutch work, *Journael vande Nassauche Vloot*, under Admiral v'Hermitte, in 1623-4-5-6. The place indicated is to the west of Cape Carpentaria of the present map, and is marked "*Land eendracht.*"
Austria (*aws'tri-ȧ*). From the German, *österreich*, "the eastern empire," in contradistinction to the western empire, founded by Charlemagne.
au-then-tic (*aw-then'tik*), or **au-then-ti-cal** (*'ti-kal*), *adj.* genuine; original; duly authorized; true.
au-then-ti-cate (*aw-then'ti-kāt*), *v. t.* to make authentic.
au-then-tic-i-ty (*aw-then-tis'i-ti*), *n.* the quality of being authentic.
au-thor (*aw'thĕr*), *n.* the beginner or prime mover of anything. [WRITER.]
au-thor-i-ta-tive (*aw-thor'i-tā-tiv*), *adj.* having due authority.
au-thor-i-ty (*aw-thor'i-ti*), *n.* [*pl.* authorities (*-tiz*)], power or right to act or command; dominion.
au-thor-ize (*aw'thĕr-īz*), *v. t.* to vest with authority. [COMMISSION.]
au-to (*aw'tō*), *n.* an abbreviation in common use for automobile.
★**au-to-bi-o-graph-ic** (*aw-tō-bī-ō-graf'ik*) or **au-to-bi-o-graph-i-cal** (*'i-kal*), *adj.* pertaining to autobiography.
★**au-to-bi-og-ra-phy** (*aw-tō-bī-og'rȧ-fi*), *n.* [*pl.* autobiographies (*-fiz*)], a biography, account, or character sketch of a person written by himself.
au-toc-ra-cy (*aw-tok'rȧ-si*), *n.* [*pl.* autocracies (*-siz*)], absolute, uncontrolled authority.
au-to-crat (*aw'tō-krat*), *n.* an absolute prince or sovereign.
au-to-crat-ic (*aw-tō-krat'ik*) or **au-to-crat-i-cal** (*'i-kal*), *adj.* pertaining to autocracy; absolute.
au-to-graph (*aw'tō-grȧf*), *n.* a person's own handwriting; an original manuscript or signature.
au-tog-ra-phy (*aw-tog'rȧ-fi*), *n.* the science or study of autographs.
au-to-hyp-no-sis (*aw-tō-hip-nō'sis*), *n.* the state or condition of self-hypnotism.
au-to-mat-ic (*aw-tō-mat'ik*) or **au-to-mat-i-cal** (*'i-kal*), *adj.* having the power of self-motion or self-action.
au-tom-a-ton (*aw-tom'ȧ-ton*), *n.* [*pl.* automatons (*-tonz*), and automata (*-tȧ*)], that which possesses the power of spontaneous movement without consciousness.
★**au-to-mo-bile** (*aw-tō-mō'bil*, Fr. *aw-tō-mō-bēl'*), *n.* a vehicle moved by a source of power within itself; a motor-carriage.
au-to-mo-bil-ist (*aw-tō-mō'bil-ist*), *n.* one who uses and controls an automobile; a chauffeur.
au-to-nom-ic (*aw-tō-nom'ik*), or **au-ton-o-mous** (*-ton'ō-mus*), *adj.* pertaining to autonomy.
au-ton-o-my (*aw-ton'ō-mi*), *n.* [*pl.* autonomies (*-miz*)], the power or right of self-government; the state of political independence.
★**au-top-sy** (*aw'top-si*), *n.* a post-mortem examination.
au-to-sug-gest-i-bil-i-ty (*aw-tō-sug-jest-i-bil'i-ti*), *n.* the state or quality of being autosuggestive; ability to hypnotize one's self.
au-to-sug-gest-ive (*aw-tō-sug-jest'iv*), *adj.* fitted or tending to stimulate thought of itself; pertaining to, or characteristic of, autosuggestion.
au-to-tox-ic (*aw-tō-toks'ik*), *adj.* self-poisoning.
au-to-truck (*aw'tō-truk*), *n.* a self-moving truck; motor-truck.
au-to-type (*aw'tō-tīp*), *n.* a facsimile.
au-to-ty-pog-ra-phy (*aw-tō-ti-pog'rȧ-fi*), *n.* a kind of nature printing.
au-tumn (*aw'tum*), *n.* the season between summer and winter.
au-tum-nal (*aw-tum'nal*), *adj.* belonging or peculiar to autumn.
★**aux-il-i-a-ry** (*awgs-il'yȧ-ri*), *adj.* helping; aiding; assisting; subsidiary.
a-vail (*ȧ-vāl'*), *v. t.* to be of use, value, or service.
a-vail-a-bil-i-ty (*ȧ-vāl'ȧ-bil-i-ti*), *n.* the state or quality of being available.
av-a-lanche (*av'ȧ-lanch*), *n.* the sudden descent of a mass of compact snow or ice from the higher parts of a mountain.
av-a-rice (*av'ȧ-ris*), *n.* an inordinate or insatiable desire of gain.
av-a-ri-cious (*av-ȧ-rish'us*), *adj.* impelled by avarice.
av-a-tar (*av-ȧ-tär'*), or **av-a-ta-ra** (*-tä'rȧ*), *n.* the descent of a deity to earth in an incarnate form.
a-vaunt (*ȧ-vawnt'* or *ȧ-vänt'*), *interj.* begone!
a-venge (*ȧ-venj'*), *v. t.* to exact punishment or satisfaction for wrong or injury done to one's self or another.
Syn. AVENGE, punish, retaliate, revenge, vindicate, visit. To *avenge* is to *visit* punishment, in order to *vindicate* the righteous; to *revenge* is to inflict harm or suffering upon another through personal anger and resentment; *avenge* is unselfish; *revenge* is selfish; to *retaliate* may be necessary for self-defense.
★**Aventine** (*av'en-tin*) **hill.** One of the seven hills of ancient Rome.
av-e-nue (*av'e-nū*), *n.* a way or means of approach to a place; a passageway; drive.
a-ver (*ȧ-vĕr'*), *v. t.* [*p. t.* and *p. p.* averred, *p. pr.* averring], to affirm positively. [ALLEGE.]
av-er-age (*av'ĕr-āj*), *v. t.* to find the mean, as of unequal sums or quantities.
a-verse (*ȧ-vĕrs'*), *adj.* unwilling; unfavorable.
a-ver-sion (*ȧ-vĕr'shun*), *n.* opposition or repugnance of mind. [ANTIPATHY, ABOMINATION.]
a-vert (*ȧ-vĕrt'*), *v. t.* to turn aside or away.
A-ves-ta (*ȧ-ves'tȧ*), *n.* the sacred writings attributed to Zoroaster.
★**a-vi-a-ry** (*ā'vi-ā-ri*), *n.* [*pl.* aviaries (*-riz*)], a house, large cage, or inclosure for the keeping of birds.
★**a-vi-a-tion** (*ā'vi-ā-shun*), *n.* the art of flying.
★**a-vi-a-tor** (*ā'vi-ā-tĕr*), *n.* one who operates an aëroplane.
a-vid-i-ty (*ȧ-vid'i-ti*), *n.* greediness; eagerness.
av-o-ca-tion (*av-ō-kā'shun*), *n.* a subordinate or occasional occupation.
a-void (*ȧ-void'*), *v. t.* to keep away; to shun.
a-void-ance (*ȧ-void'ans*), *n.* the act of annulling or making void.
★**av-oir-du-pois** (*av-ĕr-dū-poiz'*), *n.* a system of weights in which one pound contains 16 ounces.
a-vouch (*ȧ-vouch'*), *v. t.* to affirm openly; maintain.
a-vow (*ȧ-vou'*), *v. t.* to declare openly; acknowledge.
a-vow-al (*ȧ-vou'al*), *n.* an open declaration.
a-wait (*ȧ-wāt'*), *v. t.* to wait for; look for or expect.
a-wake (*ȧ-wāk'*), *v. t.* [*p. t.* and *p. p.* awoke, awaked, *p. pr.* awaking], to arouse from sleep: *adj.* not sleeping; roused from sleep or inactivity.
a-wak-en (*ȧ-wāk'en*), *v. t.* to rouse from sleep.
Syn. AWAKEN, excite, provoke, rouse, stir up. We *awaken* by a simple effort; we *excite* by repeated efforts or forcible means; we *provoke* by words, looks, or actions. The tender feelings are *awakened;* affections, or the passions in general, are *excited;* the angry passions are commonly *provoked;* we are *roused* from an extraordinary state by extraordinary means; we are *stirred up* from an ordinary to an extraordinary state.
a-ward (*ȧ-ward'*), *v. t.* to adjudge; assign by judicial sentence, or arbitration.
a-ware (*ȧ-wâr'*), *adj.* on guard; watchful; apprised.
a-way (*ȧ-wā'*), *adj.* absent; at a distance; out of.
awe (*aw*), *n.* reverential fear; the feeling or emotion inspired by the contemplation of something sublime.
aw-ful (*aw'ful*), *adj.* inspiring or impressing with profound fear.
aw-ful-ly (*-li*), *adv.* in an awful manner.
awk. See *auk*.
awk-ward (*awk'wĕrd*), *adj.* wanting dexterity; unskillful.
awl (*awl*), *n.* a pointed instrument for piercing.
awn (*awn*), *n.* the beard or bristle-like appendage of the outer glume of wheat.
awn-ing (*awn'ing*), *n.* a covering of canvas or other cloth stretched upon a frame and used as a shelter.
a-wry (*ȧ-ri'*), *adj.* or *adv.* turned or twisted toward one side.
ax or **axe** (*aks*), *n.* a tool or instrument of steel, used for the hewing of timber and chopping of wood.
ax-il (*ak'sil*), *n.* the angle formed by the upper side of an organ or branch with the stem or trunk to which it is attached.
ax-ile (*ak'sil*), *adj.* pertaining to the axis.
★**ax-i-om** (*aks'i-um*), *n.* an indisputable self-evident truth.
ax-i-o-mat-ic (*aks-i-ō-mat'ik*) or **ax-i-o-mat-i-cal** (*'i-kal*), *adj.* pertaining to, or of the nature of, an axiom.
ax-is (*aks'is*), *n.* [*pl.* axes (*'ēz*)], the straight line, real or imaginary, passing through a body, upon or around which such body revolves, or is supposed to revolve.
ax-le (*aks'l*), *n.* the spindle which is inserted in the hub of a wheel, and on which the wheel revolves.
ax-le box (*boks*), a bushing in the hub of a wheel through which the axle passes.

ax-le tree (*aks'l trē*), a bar connecting the opposite wheels of a carriage.
aye (*ā*), *adv.* always; forever; continually.
aye or **ay** (*ā* or *ī*), *adv.* or *interj.* yes; yea; even so.
Ayr-shire (*âr'shir*), *n.* a fine breed of cattle from the country of Ayr, Scotland.
a-za-le-a (*ā-zā'lē-ā*), *n.* [*pl.* azaleas (**-āz**)], a genus of plants belonging to the rhododendron tribe, and remarkable for their flowers.
★**Aztec** (*az'tek*). Village in San Juan county, New Mexico, named for one of the native tribes of Mexico. The word is said to mean "place of the heron." Other interpretations give "white" or "shallow land where vapors arise." Humboldt gives "land of flamingoes." The word *azcalt* means "ant," but Bushmann says that this word has no connection with the name of the tribe.
az-ure (*azh'ûr* or *ā'zhûr*), *adj.* like the blue of the sky; cerulean: *n.* the clear blue of the sky.

B

baa (*bâ*), *v. i.* to cry, as a sheep; bleat: *n.* the cry or bleating of a sheep.
★**Baalbec** (*bāl'bek* or *bāl-bek'*), **Baalbek, Baalbak.** An ancient city of Syria, situated on the slope of Anti-Libanus, thirty-four miles northwest of Damascus. It is the Greek Heliopolis, "city of the sun," famous for its ruins.
bab-ble (*bab'bl*), *v. i.* to utter indistinct or imperfect sounds; prattle; talk childishly.
babe (*bāb*), *n.* [*pl.* babes (*bābz*)], an infant or young child of either sex.
ba-boon (*bà-bōōn'*), *n.* the popular name of a large division of monkeys which inhabit Africa and Arabia.
ba-by (*bā'bi*), *n.* [*pl.* babies (*'biz*)], an infant of either sex; a small child.
baby farm (*bā'bi fârm*), a place where young children are put out for nursing.
ba-by-ish (*bā'bi-ish*), *adj.* childish.
Bab-y-lo-ni-an (*bab-i-lō'ni-an*), *adj.* pertaining to Babylonia; magnificent; luxurious. Also *Babylonish.*
★**bac-ca-lau-re-ate** (*bak-à-law'rē-āt*), *n.* the degree of bachelor of arts, science, etc.: *adj.* pertaining to the degree of bachelor.
★**bac-ca-rat** (*bak-kà-rà'*), *n.* a French card game played between a banker and an unlimited number of bettors with one or more packs of cards.
bac-cha-nal (*bak'kà-nal*) or **bac-cha-na-li-an** (*bak-kà-nā'li-an*), *adj.* indulging in or characterized by drunken revelry.
bach-e-lor (*bach'ē-lēr*), *n.* one who has taken the lowest university degree in any faculty; an unmarried man.
bach-e-lor's but-tons (*bach'ē-lērz but'unz*), the name popularly given to several flowering plants whose blossoms somewhat resemble buttons.
★**bac-il-la-ry** (*bas'il-là-ri*), *adj.* consisting of bacilli.
★**ba-cil-lus** (*bà-sil'lus*), *n.* [*pl.* bacilli (*'li*)], a genus of microscopic vegetable organisms with rod-like, jointed bodies or filaments in constant movement, present in many ferments, active in all stages of putrefaction, and associated with the earliest stages of malignant or zymotic disease.
back or **bac** (*bak*), *n.* a flat-bottomed ferryboat.
back (*bak*), *n.* the hinder part of the body in man, or in other animals the upper portion; the whole region of the spine, extending from the base of the neck to the buttocks; the dorsal region of a fish: *v. t.* to furnish with a back or backing; get upon the back of or mount; second or support; bet. [ABET.]
back-bite (*bak'bīt*), *v. t.* [*p. t.* backbit, *p. p.* backbit and backbitten, *p. pr.* backbiting], to slander or speak evil of in absence.
back-bone (*bak'bōn*), *n.* the bone of the back; the vertebral column of animals.
backer (*bak'ĕr*), *n.* one who sustains or abets another.
back-gam-mon (*bak'gam-un*), *n.* a game played by two persons upon a table or board made for the purpose.
back-ground (*bak'ground*), *n.* ground in the rear; the distant portion of a landscape.
back-hand (*bak'hand*), *n.* writing which slopes backward or to the left.
back-hand-ed (*bak'hand-ed*), *adj.* with the hand turned backward; unfair; indirect.
back-ing (*bak'ing*), *n.* something placed behind to support or strengthen.
★**back-slide** (*bak-slīd'*), *v. i.* [*p. t.* backslid, backslided, *p. p.* backslid, backslidden, backslided, *p. pr.* backsliding], to slide back; apostatize.
back-stair (*bak'stâr*) or **back-stairs** (*'stârz*), *n.* stairs in the back part of a house.
back-ward (*bak'wĕrd*), *adj.* directed to the back or rear; unwilling; reluctant.
back-ward or **back-wards** (*'wĕrdz*), *adv.* with the back foremost; toward the back.
back-wa-ter (*bak'waw-tĕr*), *n.* water caused to flow backward by obstruction of its course.
back-woods (*bak'woodz*), *n. pl.* forests or partially cleared land situated far from the centers of population.
ba-con (*bā'kn*), *n.* hog's flesh salted or pickled and dried, usually in smoke.
★**bac-te-ri-a** (*bak-tē'ri-à*), *n. pl.* of bacterium.
bac-te-ri-o-log-ic-al (*bak-tē-ri-ō-loj'i-kal*), *adj.* of or pertaining to bacteriology.
bac-te-ri-ol-o-gist (*bak-tē-ri-ol'ō-jist*), *n.* a student of bacteriology.
★**bac-te-ri-ol-o-gy** (*bak-tē-ri-ol'ō-ji*), *n.* the scientific investigation or study of bacteria.
★**bac-te-ri-um** (*bak-tē'ri-um*), *n.* [*pl.* bacteria (**-à**)], a microscopic vegetable organism varying in form.
bad (*bad*), *adj.* [*compar.* worse, *superl.* worst], the opposite of good; evil; ill; wicked; depraved.
badge (*baj*), *n.* a mark, sign, or token, or cognizance to denote occupation, allegiance.
badg-er (*baj'ĕr*), *n.* a plantigrade carnivorous mammal, of nocturnal habits: *v. t.* to worry or annoy.
★**bad-i-nage** (*bad'i-nāj* or *bà-dē-nàzh'*), *n.* light or playful raillery or banter.
bad-ly (*bad'li*), *adv.* wickedly; grievously; unskillfully; defectively; ill.
Baffin land. In the Arctic Ocean, named for the famous arctic navigator who discovered it.
baf-fle (*baf'l*), *v. t.* to elude or circumvent by artifice.
bag (*bag*), *n.* a sack; a pouch; a wallet; a receptacle for holding anything: *v. t.* to inclose in a bag.
★**bag-a-telle** (*bag-à-tel'*), *n.* a game played on a nine-holed board, baized and cushioned.
bag-gage (*bag'gāj*), *n.* the tents, clothing, utensils, etc., of an army; the trunks, bags, and other impedimenta or baggage of a traveler.
bag-ging (*bag'ging*), *n.* the act of putting into bags; coarse cloth or other material used for bags.
bag-gy (*bag'gi*), *adj.* having a loose or flabby appearance.
★**bagn-io** (*ban'yō*, not *bag'ni-ō*), *n.* a bath-house; a brothel.
bag-pipe (*bag'pip*), *n.* a Scottish musical instrument, of shrill tone, consisting of a leathern wind bag from which air is forced by the performer's elbow into pipes.
bail (*bāl*), *v. t.* to set free or liberate from arrest on security for reappearance.
bail (*bāl*), *v. t.* to free from water by dipping; to lade out with a bucket or other utensil.
bai-liff (*bā'lif*), *n.* a sheriff's officer who serves processes.
bait (*bāt*), *v. t.* to harass or provoke, as by the setting on of dogs.
baize (*bāz*), *n.* a coarse woolen stuff, with a nap on one side.
bake (*bāk*), *v. t.* to cook or prepare food by subjection to dry heat in a closed place.
bak-er (*bāk'ĕr*), *n.* one whose business is to make bread, biscuit, etc.
bak-er-y (*bāk'ĕr-i*), *n.* [*pl.* bakeries (**-iz**)], a place used for bread-making; a baker's shop.
bak-ing (*bāk-ing*), *n.* the quantity of anything baked at the same time; a batch.
bal-ance (*bal'ans*) *n.* an instrument for determining the weight of bodies; a pair of scales; a steel-yard: *v. t.* to weigh; compare; bring to a state of equipoise; keep in equilibrium; poise; equal or make equal; counterbalance; adjust or settle. [POISE.]
bal-an-cer (*bal'an-sĕr*), *n.* one who, or that which, keeps anything in equilibrium.
bal-co-nied (*bal'kō-nid*), *adj.* having a projecting exterior platform or interior gallery.
bal-co-ny (*bal'kō-ni*), *n.* [*pl.* balconies (**-niz**)], a platform or gallery projecting from the wall of a building, inclosed by a balustrade or parapet.
bald (*bawld*), *adj.* without the natural or usual covering on the head or summit.
bal-der-dash (*bawl'dĕr-dash*), *n.* a nonsensical jumble of words; silly talk or writing; a worthless mixture.
bald-head (*bawld'hed*), *n.* a man bald on the head.
bal-dric or **bal-drick** (*bawl'drik*), *n.* a broad belt, often richly ornamented, worn around the waist, or over one shoulder and across the breast.
Baldwin. From the Teutonic, probably meaning a "bold winner," or "powerful warrior"; by other authorities, "prince friend"; Danish, *Balduin;* Dutch, *Boudewijn;* Fr., *Baudouin;* Ger., *Balduin;* It. *Baldovino;* Lat., *Balduinus.*
bale (*bāl*), *n.* a large bundle or package of goods: *v. t.* to make up into a bale or bales.
bale (*bāl*), *n.* woe; calamity; mischief.
★**Balearic** (*bal-ē-ar'ik*) **islands.** From the Greek *ballein,* "to throw"; so called because their inhabitants were skillful in the use of the sling. A group of islands in the Mediterranean.
bale-fire (*bāl'fīr*), *n.* a beacon or signal fire; a bonfire; a funeral pyre.
bale-ful (*bāl'ful*), *adj.* replete with deadly or malign influence.
balk or **baulk** (*bawk*), *n.* a strip or ridge of land left unplowed; a thick, heavy piece of timber; *v. t.* to thwart, check, or disappoint.
★**Balkan** (*bawl-kan'*). From *bāla,* "high," "high ridge"; also called Mount Hæmus, meaning "the snowy mount"; *hima,* "snow"; *balkh,* "high town." A mountain system in southeastern Europe.
ball (*bawl*), *n.* a round body; any mass resembling a sphere; a dance. [for singing.
bal-lad (*bal'lad*), *n.* a short narrative poem, adapted
bal-last (*bal'last*), *n.* weighty material carried by a ship to insure stability.
ball-bearing (*bawl'bâr-ing*), *n.* a bearing containing loose balls of metal to reduce friction.
bal-let (*bal'là* or *bal'let*), *n.* a theatrical representation in which a story is told, and actions, characters, and passions represented by gestures, accompanied by music and dancing.
bal-loon (*bal-lōōn'*), *n.* a large bag of prepared silk or other material, which, when inflated by hydrogen gas or heated air, ascends and floats in the atmosphere.
bal-loon jib (*bal-lōōn' jib*), a triangular sail used by yachts in a slight breeze.
bal-lot (*bal'lot*), *n.* a ball, ticket, or paper by which a vote is registered.
★**Ballston Spa** (*bawl'stun spā*). Village in Saratoga county, New York. Named for Rev. Eliphalet Ball, an early settler, the "spa" being added in reference to the medicinal springs resembling the celebrated watering places in Belgium.
balm (*bām*), *n.* the oily aromatic exudation of certain trees or shrubs, used for healing or soothing.
balm of gil-e-ad (*or gil'ē-ad*), the name of various kinds of fragrant resins.
balm-y (*bām'i*), *adj.* having the qualities of balm.
★**bal-sam** (*bawl'sam*), *n.* an oily, aromatic, resinous substance obtained from certain trees or shrubs, and used medicinally or in perfumery.
★**Balthasar** (*bāl'thà-zār*). The Greek form of Belshazzar, "king protector"; Fr., *Balthazar* or *Balthasar;* It., *Baldassare;* Lat., *Balthasar;* Sp., *Baltasar.*
Baltic Sea. Denotes, in accordance with the Swedish *balt,* "a strait," "a sea full of balts, or straits." An arm of the Atlantic.
★**Baltimore** (*bawl'ti-mōr*). County and city in Maryland, and town in Windsor county, Vermont, named for the proprietor of a large tract of land in Maryland, Cecil Calvert, Lord Baltimore, who settled the province in 1635.
bal-us-ter (*bal'us-tĕr*), *n.* a small column or pilaster to support the rail of a parapet or balustrade.
bal-us-trade (*bal'us-trād*), *n.* a series of small columns or pilasters, surmounted by a top rail or coping, serving as a parapet or protective railing.
bam-boo (*bam-bōō'*), *n.* the name of certain tropical grasses having thick-jointed stems of exceeding hardness, and attaining to a height of from 20 to 120 ft.
bam-boo-zle (*bam-bōō'zl*), *v. t.* to hoax.
ban (*ban*), *n.* in feudal times a public proclamation; excommunication; curse. [BANISH.]
★**ba-na-na** (*bà-nà'nà*, not *ban-an'à*), *n.* a tropical herbaceous plant.
Banbury (*ban'bĕr-i*). A town in Oxfordshire, England, situated on the Cherwell twenty-two miles north of Oxford.
band (*band*), *n.* that which binds together; that which connects; body of soldiers; a company of musicians forming an orchestra.
band-age (*band'āj*), *n.* a roller of cotton or other material used in dressing and binding up wounds.
ban-da-la (*ban-dā'là*), *n.* manila white rope.
ban-dan-na or **ban-dan-a** (*ban-dan'à*), *n.* a large silk or cotton handkerchief.
band-box (*band'boks*), *n.* a light box of pasteboard, etc., for holding bonnets.
ban-deau (*ban-dō'*), *n.* [*pl.* bandeaux (**-dōz'**)], a ribbon worn over the forehead.
band-ed (*band'ed*), *p. adj.* allied; confederated; having bands.
ban-dit (*ban'dit*), *n.* [*pl.* bandits (*'dits*) and banditti (*-dit'ti*)], an outlaw; a brigand.
ban-do-leer (*ban-dō-lēr'*), *n.* a broad leather belt, worn over the shoulder and across the breast, for holding ammunition.
band-saw (*band'saw*), *n.* an endless steel saw running on pulleys.
ban-dy (*ban'di*), *v. t.* [*p. t.* and *p. p.* bandied, *p. pr.* bandying], to throw or beat to and fro, as a ball in play; toss from one to another.
ban-dy (*ban'di*), *n.* a kind of cart or buggy used in India, drawn by oxen. [destruction.
bane (*bān*), *n.* that which causes death, ruin, or
bane-ful (*bān'ful*), *adj.* poisonous; pernicious.
bang (*bang*), *v. t.* to beat, as with a club or cudgel; thump; handle roughly; produce a loud sound by or from (as to *bang* the door).
bang (*bang*), *n.* [*pl.* bangs], hair cut straight across the forehead so as to form a fringe.
★**Bangor** (*ban'gôr*), **Me.** Named by Rev. Seth Noble, from a well-known psalm tune of that name. Previously the section was known as Sunbury; the Indian name, *Con,* or *Kenduskeag.*
ban-ian or **ban-yan** (*ban'yan* or *ban-yan'*) *n.* a Hindu trader or merchant; a Bengali native who manages money affairs for Europeans; a loose gown for men, like that worn by the Hindus.
banian tree (*trē*), the Indian fig tree, which spreads over a large area by sending down shoots from its branches; these take root and become new trunks.
ban-ish (*ban'ish*), *v. t.* to condemn to exile.
Syn. BANISH, ban, discharge, dislodge, dismiss, drive out, eject, evict, exile, expatriate, expel, ostracize, oust. One may be *banished, exiled,* or *expatriated* from a country; but *expatriated* or *exiled* only from his own; one may *expatriate* or *exile* himself; he is *banished* by others: one may *banish* disturbing thoughts; care may *banish* sleep; to *expel* is to *drive out* with violence or rudeness.
Ant. HONOR, retain, sustain.
ban-ish-ment (*ban'ish-ment*), *n.* the act of expelling or driving away.
ban-is-ter or **bannister** (*ban'is-tĕr*), *n.* corrupt forms of *baluster.*
ban-jo (*ban'jō*), *n.* a musical instrument, of from five to nine strings, having a neck like a guitar, and a circular body covered in front with tightly stretched parchment.

bank (*bangk*), *n.* a heap, mound, or ridge of earth; a steep acclivity; an elevation; an establishment for the custody, loan, exchange, or issue of money.
bank-er (*bangk'ẽr*), *n.* one who keeps a bank; a vessel employed in the cod-fishery on the banks of Newfoundland; the stone bench on which masons cut and square their work; a ditcher.
bank-rupt (*bangk'rupt*), *n.* a person legally declared to be unable to discharge his liabilities.
bank-rupt-cy (*bangk'rupt-si*), *n.* the state of being legally insolvent. [INSOLVENCY.]
Banks land. So called in compliment to Sir Joseph Banks, the eminent naturalist and president of the Royal Society of Great Britain.
ban-ner (*ban'nẽr*), *n.* an ensign, standard, or flag of a country, state, or order.
ban-nock (*ban'nuk*), *n.* a thick cake made of oatmeal.
banns (*banz*), *n. pl.* the proclamation in church of an intended marriage.
★**ban-quet** (*bang'kwet*, not *ban'kwet*), *n.* a sumptuous entertainment or feast.
ban-tam (*ban'tam*), *n.* a diminutive breed of domestic fowl.
ban-ter (*ban'tẽr*), *v. t.* to rail at good-humoredly.
bap-tism (*bap'tizm*), *n.* the application of water by an authorized administrator, in the name of the Holy Trinity, to a person, by sprinkling, affusion, or immersion, constituting the sacrament or rite by which he is initiated into the visible church of Christ.
bap-tis-mal (*bap-tiz'mal*), *adj.* pertaining to the ceremonial application of water.
Bap-tist (*bap'tist*). From the Greek, meaning a "baptizer"; Fr., *Baptiste;* Ger., *Baptist;* It., *Battista;* Lat., *Baptista;* Port., *Baptista;* Sp., *Bautista. n.* one of a Christian denomination who baptize adult believers only, and who maintain the necessity for immersion.
bap-tis-ter-y (*bap'tis-tẽr-i*) or **bap-tis-try** (*-tri*), *n.* [*pl.* baptisteries (*-iz*), -tries (*-triz*)], a building or portion of a building in which the rite of baptism is administered.
bap-tize (*bap-tiz'*), *v. t.* to administer the rite of baptism.
bar (*bär*), *n.* a piece of wood, metal, or other solid matter; a bank of sand, gravel, etc., obstructing navigation at the entrance to a harbor or mouth of a river; the railing inclosing the space occupied by counsel in courts of justice; the place in court where prisoners are stationed for trial or sentence; the members of the legal profession collectively: *v. t.* [*p. t.* and *p. p.* barred, *p. pr.* barring], to fasten with a bar; to hinder; obstruct; exclude. [OBSTRUCT.]
barb (*bärb*), *n.* the sharp point projecting backward from the extremity of an arrow, fish-hook, etc.
★**Barbados** (*bär-bā'dōz*). From the Latin *barba*, "a beard," in allusion to the beardlike streamers of moss always hanging from the branches of the trees. An island of British West Indies.
Barbara (*bär'bà-rà*). From the Greek, meaning "foreign, strange"; Dutch, *Barbara;* Fr., *Barbe;* Ger., *Barbara;* It., *Barbara;* Lat., *Barbara.*
bar-ba-ri-an (*bär'bā'ri-an*), *n.* a foreigner; a man in a rude, savage state.
bar-bar-ic (*bär-bar'ik*), *adj.* pertaining to or characteristic of savage or uncivilized people.
bar-ba-rism (*bär'bà-rizm*), *n.* an offense against purity of style or language; an uncivilized state or condition.
bar-bar-i-ty (*bär-bar'i-ti*), *n.* [*pl.* barbarities (*-tiz*)], the state of being uncivilized; savageness; cruelty.
bar-ba-rous (*bär'bà-rus*), *adj.* uncivilized. [CRUEL.]
★**Barbary** (*bär'bà-ri*). The land of the Berbers.
bar-be-cue (*bär'bẽ-kū*), *n.* a social or political entertainment at which animals are roasted whole, with appropriate surroundings.
bar-ber (*bär'bẽr*), *n.* one whose occupation is to shave the beard and cut and dress the hair.
★**Barberini** (*bär-bā-rē'nē*) **palace.** A palace in Rome, near the Quirinal, begun by Urban VIII., whose name was Carlo Barberini, and finished in 1640.
★**Barcelona** (*bär-sē-lō'nà*). Named from Hamilcar Barca, who founded it. A seaport of Spain.
bard (*bärd*), *n.* a poet and singer.
bard or **barde** (*bärd*), *n.* one of the ornaments and housings of a horse.
bare (*bär*), *adj.* naked; with the head uncovered.
Syn. BARE, scanty, destitute. *Bare* respects what serves for ourselves; *scanty* that which is provided by others. A subsistence is *bare;* a supply is *scanty; destitute* is said generally of whatever one wants. One is *destitute* of friends, of resources, or of comforts.
Ant. CLOTHED, covered.
bare-faced (*bär'fāst*), *adj.* with the face uncovered. [GLARING.]
★**bar-gain** (*bär'gen*, not *bär'gun*), *n.* an agreement between two or more parties with reference to the sale or transfer of property. [BUY.]
barge (*bärj*), *n.* a flat-bottomed vessel.
Bar Harbor. A village in Hancock county, Mount Desert Island, Me., so named from a sandy bar.
Baring (*bā'ring, bär'ing*) **island.** Discovered by Captain Penny, received the name of Sir Francis Baring, first lord of the British admiralty.
bar-i-tone. See *barytone.*
★**ba-ri-um** (*bā'ri-um*), *n.* one of the elementary metals.
bark (*bärk*), *v. i.* to utter a sharp, short sound, as the cry of a dog; to cough: *n.* the sound or cry emitted by dogs.
bark, *n.* the exterior layer or rind of woody stems or trunks; Peruvian bark.
bark or **barque** (*bärk*), *n.* a three-masted vessel having the fore and main mast square-rigged, and the mizzenmast fore-and-aft rigged.
bar-kan-tine or **bar-ken-tine** (*bär'kàn-tēn*), *n.* a three-masted vessel having the foremast square-rigged, and the main and mizzen mast fore-and-aft or schooner rigged.
bark-ing (*bärk'ing*), *n.* a sharp sound like that of a dog; coughing: *n.* the process of stripping bark from trees; the process of tanning leather and of dyeing with bark.
bar-ley (*bär'li*), *n.* the grain grown and used chiefly or malting.
bar-ley-corn (*bär'li-kôrn*), *n.* a grain of barley.
barm (*bärm*), *n.* the foam rising upon beer or other malt liquors when fermenting.
barm-y (*bärm'i*), *adj.* containing or consisting of yeast; frothy.
barn (*bärn*), *n.* a covered building for the storage of grain or other farm produce; a stable for cattle or horses.
Barnabas (*bär'na-bas*) or **Barnaby** (*bär'na-bi*). From the Hebrew *Bar Nebah*, which some translate "son of exhortation," or "son of consolation." It rather means "son of prophecy," from *bar-nebuah.* Danish, *Barnabas;* Dutch, *Barnabas;* Fr., *Barnabe;* Ger., *Barnabas;* It., *Barnaba;* Lat., *Barnabas;* Sp., *Bernabe.*
bar-na-cle (*bär'na-kl*), *n.* a cirriped crustacean, found adhering in groups or clusters to rocks or to the bottoms of ships, etc.
★**ba-rom-e-ter** (*bà-rom'ẽ-tẽr*), *n.* an instrument for measuring the weight or pressure of the atmosphere.
bar-on (*bar'un*), *n.* the title of an English peer of the lowest rank, next below a viscount; formerly the title of the judges of the court of exchequer.
ba-ro-ni-al (*ba-rō'ni-al*), *adj.* pertaining to a baron or a barony.
bar-o-scope (*bar'ō-skōp*), *n.* an instrument for indicating variations in the pressure of the atmosphere without actual measurement of its weight.
★**ba-rouche** (*bà-rōōsh'*), *n.* a roomy four-wheeled carriage with a folding or falling top.
bar-rack (*bar'rak*), *n.* a large building, or series of buildings, for the lodgment of soldiers.
bar-ra-try (*bar'rà-tri*), *n.* the practice of vexatiously inciting and encouraging to lawsuits or litigation; the committal by a ship's master, officer, or mariner, of an act of fraud, or breach of duty, whereby the owners, freighters, or insurers of the vessel are defrauded or injured.
★**bar-rel** (*bar'rel*, not *bar'rul*), *n.* a vessel or cask.
bar-rel, *v. t.* [*p. t.* and *p. p.* barreled, *p. pr.* barreling], to put or pack in a barrel.
bar-ren (*bar'ren*), *adj.* incapable of producing its kind.
bar-ri-cade (*bar-ri-kād'*), *n.* a fortification constructed in haste of such materials as are nearest to hand. [OBSTRUCT.]
bar-ri-er (*bar'ri-ẽr*), *n.* anything which hinders or obstructs; an obstacle to progress.
bar-ris-ter (*bar'ris-tẽr*), *n.* a member of the legal profession qualified to plead at the bar.
bar-row (*bar'rō*), *n.* a frame covered with boards, and furnished with handles at both ends, or with a pair of wheels and handles or shafts at one end; a hand-barrow.
Barrow island. In Arctic Ocean, discovered by Captain Penny, in 1850, named for John Barrow, son of Sir John Barrow, the eminent British statesman.
Barrow's strait. In Arctic Ocean, so called by Captain Penny, in compliment to John Barrow.
bar-ter (*bär'tẽr*), *v. i.* to traffic or trade by exchanging one commodity for another. [CHANGE.]
★**Bartholomew** (*bär-thol'ō-mū*). From the Hebrew *Bartolomai*, which, according to some, means "son of Ptolemy," but it translates rather "son of Tolmai." Danish, *Bartholomæus;* Dutch, *Bartholomeus;* Fr., *Barthelemi;* Ger., *Bartholomaus;* It., *Bartolommeo;* Lat., *Bartholomæus;* Port., *Bartholomeu;* Russ., *Varfolomei;* Sp., *Bartolome;* Sw., *Bartholomaus.*
ba-ry-ta (*bà-ri'tà*), *n.* the oxide of barium.
★**bar-y-tone** or **bar-i-tone** (*bar'i-tōn*), *adj.* intermediate between bass and tenor, as a male voice or instrument.
ba-salt (*bà-sawlt'* or *bas'awlt*), *n.* an igneous rock of greenish black color.
base (*bās*), *adj.* worthless; spurious; of mean spirit.
base, *n.* the part of a thing on which it rests; a foundation or groundwork; that which combines with an acid to form a salt.
base-ball (*bās'bawl*), *n.* a game of ball played by nine on a side; ball used in playing baseball.
base-man (*bās'man*), *n.* [*pl.* basemen (*'men*)], a player in baseball placed at the first, second, and third bases respectively.
base-ment (*bās'ment*), *n.* the lowest part of a structure; the lowest story of a building.
bash-ful (*bash'ful*), *adj.* easily disconcerted; modest to excess; diffident; shy. [MODEST.]
★**Basil** (*bā'sil*, not *bā'zil*). From the Greek, *basileios*, meaning "kingly." Danish, *Basilius;* Dutch, *Basilius;* Fr., *Basile;* Ger., *Basilius;* It., *Basilio;* Lat., *Basilius;* Russ., *Vasilii;* Sw., *Basilius.*
★**ba-sil-i-ca** (*bà-zil'i-kà*, not *bā-sil'i-kà*), *n.* [*pl.* basilicas (*-kàz*)], in ancient Rome, a public hall of rectangular shape used for judicial assemblies; a magnificent church, chapel, or cathedral.
bas-i-lisk (*baz'i-lisk*), *n.* a fabulous creature, variously conceived as a kind of serpent; a crested lizard.
ba-sin (*bā'sn*), *n.* a circular vessel for holding water or other liquid.
ba-sis (*bā'sis*), *n.* [*pl.* bases (*'sēz*)], a foundation; the groundwork or fundamental principle of anything. [FOUNDATION.]
bask (*bàsk*), *v. i.* to lie in warmth; be exposed to genial heat.
bas-ket (*bàs'ket*), *n.* a vessel made of rushes, or other flexible material.
basque (*bàsk*), *n.* a kind of a woman's jacket with a short skirt.
Basque, *adj.* of or pertaining to the Basque race or language.
★**Basque provinces.** The provinces of Vizcaya, Guipuzcoa, and Alava, in Spain, united to Castile in the thirteenth and fourteenth centuries. From *bassoco,* "a mountaineer"; or, according to Humboldt, from *basoa,* "a forest."
bas-re-lief (*bä-rē-lēf'*), *n.* low relief.
bass (*bàs*), *n.* the American lime tree.
bass (*bās*), *adj.* low; deep; grave: *n.* the lowest part in the harmony of a musical composition.
bass or **basse** (*bàs*), *n.* the name of various edible fishes allied to the perch.
★**bas-soon** (*bas-sōōn'*), *n.* an instrument of the reed kind.
bast (*bast*), *n.* the tough inner fibrous bark of various trees, especially of the lime.
bas-tard (*bas'tẽrd*), *n.* a child begotten and born out of wedlock.
bas-tar-dy (*bas'tẽr-di*), *n.* the state of being illegitimate, or born out of lawful wedlock.
baste (*bāst*), *v. t.* to beat with a stick; to drip or pour melted fat or butter on meat while roasting.
★**Bastille** (*bàs-tēl'*), **The.** An old castle in Paris used as a state prison, demolished by the populace in 1789.
bas-ti-na-do (*bas-ti-nā'dō*), *n.* an oriental mode of punishment, consisting in beating an offender upon the soles of his feet with a stick or rod.
★**bas-tion** (*bas'chun*), *n.* an earthwork faced with brick or stone, projecting from the angles of a rampart.
bat (*bat*), *n.* a heavy stick or club; the flattened club used in cricket or similar games; a batsman.
bat (*bat*), *n.* an insectivorous mammal furnished with wings formed by a membrane stretched between the elongated fingers, legs, and tail.
batch (*bach*), *n.* a quantity of anything produced at one operation; a group or collection of similar things.
bate (*bāt*), *v. t.* to lessen or reduce; deduct.
bath (*bàth*), *n.* [*pl.* baths (*bàthz*)], the act of washing or immersing the body in water; a medium through which heat is applied to a body.
Bath, Me. Name adopted February 17, 1781, from Bath, England.
bathe (*bāth*), *v. t.* to subject to a bath.
ba-thos (*bā'thos*), *n.* a ludicrous descent from the elevated to the commonplace in writing or speech.
Baths of Caracalla (*kar-à-kal'à*). Baths in ancient Rome, begun by Severus, 206 A. D. Named for the Emperor "Caracalla," a nickname for Marcus Aurelius Antoninus.
ba-thym-e-try (*bà-thim'ẽ-tri*), *n.* the art of sounding or of measuring sea depths.
ba-tiste (*bà-tēst'*), *n.* a kind of cambric.
★**bat-on** (*bat'un*, Fr. *bà-tōN'*), *n.* a staff or truncheon used as a weapon, or as a mark or badge of office.
★**Baton Rouge** (*bat'un rōōzh*, Fr. *bà-tōN' rōōzh*). City in East Baton Rouge parish, Louisiana. It is a French name, meaning "red staff" or "stick," given because of a tall cypress tree which stood upon the spot where it was first settled. Still another theory ascribes the name to the fact that a massacre by the Indians took place upon the spot upon the arrival of the first settlers.
bat-tal-ion (*bat-tal'yun*), *n.* a body of infantry usually forming a division of a regiment.
bat-ten (*bat'tn*), *v. t.* to make fat by plenteous living; fertilize or enrich: *v. i.* to grow or become fat.
bat-ten, *n.* a strip of wood used to fasten the edges of a tarpaulin to the deck of a ship: *v. t.* to fasten or form with battens.
bat-ter (*bat'tẽr*), *v. t.* to strike with heavy, repeated blows, so as to bruise.
bat-ter, *n.* a mixture of several ingredients, as flour, eggs, etc., beaten together.
bat-ter-y (*bat'tẽr-i*), *n.* [*pl.* batteries (*-iz*)], the act of battering or beating; a body of cannon, with its complement of officers, men, and equipments.
bat-tle (*bat'tl*), *n.* a fight or encounter between opposing forces; a combat.
bat-tle-ment (*bat'tl-ment*), *n.* an indented parapet, consisting of alternate solids and openings.
bau-ble (*baw'bl*), *n.* a trifling piece of finery; anything showy or gay.
Bavaria (*bà-vā'ri-à*). The country of the Boarii, a tribe related to the Boii.
bawd-ry (*bawd'ri*), *n.* obscenity; lewdness.

bawl (*bawl*), *v. i.* to cry out with a loud, full, and sustained sound. [CALL.]
bay (*bā*), *v. i.* to bark as a dog, with a deep sound, as hounds in the chase.
bay (*bā*), *adj.* red or reddish, approaching to chestnut (applied to horses): *n.* a horse of such color.
bay (*bā*), *n.* a recess in the shore of a sea or lake; the expanse of water between two capes or headlands.
★**Bayeux** (*bä-yō'*). Named from the *Bajoccas*, a Celtic tribe, the name meaning "great conquerors."
Bayeux tapestry. A strip of linen 231 feet long and twenty inches wide, preserved in the Library at Bayeux, France, embroidered with episodes of the Norman conquest of England from the visit of Harold to the Norman court until his death at Senlac, each with its title in Latin.
bay-o-net (*bā'ō-net*), *n.* a short, dagger-like instrument constructed to fix onto the barrel of a rifle.
★**bay-ou** (*bī'o͞o* or *bī'ō*), *n.* [*pl.* bayous (*'o͞oz*)], in the southern United States, an inlet from a gulf, lake or river.
★**Bayreuth** (*bī'rŭth*. Ger. *bī'roit*), **Baireuth.** A former German burggraviate and principality, now in the northern part of Bavaria.
Bayreuth festival. A musical festival held at Bayreuth.
bay win-dow (*bā' win'dō*), the window or windows forming a bay or recess in a room, and extending outward from the wall, usually of a rectangular, semicircular, or polygonal shape.
ba-zaar or **ba-zar** (*bȧ-zär'*), *n.* in the east, a market-place or exchange.
bdel-lium (*del'yum*), *n.* an aromatic gum resin brought from Africa.
beach (*bēch*), *n.* [*pl.* beaches (*'ez*)], the portion of the shore of the sea or of a lake which is washed by the waves; the strand.
bea-con (*bē'kn*), *n.* a signal of warning or guidance, on sea or land.
Beacon hill. An eminence in Boston, Mass., which has become famous in history. The old beacon, shown in all the early plans of the town, which gave the name to Beacon hill, was erected in 1634-1635, to alarm the country in case of invasion. It stood near the present statehouse, the exact spot being the southeast corner of the reservoir formerly standing on Temple street.
Beacon street. A street in Boston, Mass.
bead (*bēd*), *n.* a little perforated ball of any suitable material, intended to be strung with others.
bea-dle (*bē'dl*), *n.* a messenger or crier of a court.
bea-gle (*bē'gl*), *n.* a small hound, formerly used for hunting hares.
beak (*bēk*), *n.* the bill of a bird; the horny jaws or mandibles of other animals.
beak-er (*bēk'ėr*), *n.* a large drinking cup or vessel with a wide mouth.
beam (*bēm*), *n.* a long piece of timber or iron used horizontally or vertically in the framework of a building.
beam-y (*bēm'i*), *adj.* emitting rays of light resembling a beam.
bean (*bēn*), *n.* the smooth, kidney-shaped seed of many leguminous plants.
bear (*bâr*), *v. t.* [*p. t.* bore, bare, *p. p.* borne, *p. pr.* bearing], to support, hold up; carry or convey; suffer or endure; be answerable for; possess, wear: *v. i.* to be fruitful; to bear.
Syn. BEAR, yield. *Bear* conveys the idea of creating within itself; *yield*, that of giving from itself. Animals *bear* their young; inanimate objects *yield* their produce.
Ant. BARREN.
bear *n.* a plantigrade carnivorous mammal, belonging to the genus Ursus, the three best known species of which are the brown or black bear of Europe, the grizzly bear of North America, and the polar bear of the arctic regions.
beard (*bērd*), *n.* the hair that grows on the chin.
bear-ing (*bâr'ing*), *n.* the act of enduring with patience; carriage; behavior; mutual relation of the parts of a whole.
bear-ish (*bâr'ish*), *adj.* resembling a bear in qualities; rude; surly.
beast (*bēst*), *n.* any four-footed animal.
beat (*bēt*), *v. t.* [*p. t.* beat, *p. p.* beaten, beat, *p. pr.* beating], to strike with repeated blows; thrash; knock; pound or break; flatten or spread by blows; *n.* a recurring stroke; a pulsation; a throb; a footfall.
Syn. BEAT, defeat, overpower, rout, overthrow. A general is *beaten* in important engagements; he is *defeated* and may be *routed* in partial attacks; he is *overpowered* by numbers, and *overthrown* in set engagements.
beat-en work (*wėrk*), metal shaped by being beaten on an anvil.
be-a-tif-ic (*bē-ȧ-tif'ik*), *adj.* having power to bless or render perfectly happy; blissful.
be-at-i-fi-ca-tion (*bē-at-i-fi-kā'shun*), *n.* the act of blessing or the state of being blessed.
be-at-i-fy (*bē-at'i-fi*), *v. t.* [*p. t.* and *p. p.* beatified, *p. pr.* beatifying], to make happy.
be-at-i-tude (*bē-at'i-tūd*), *n.* felicity of the highest kind; consummate bliss.
Beatrice (*bē'ȧ-tris*, Fr. *bā-ȧ-trēs'*), **Beatrix** (*bē'ȧ-triks*). Feminine names formed from Latin *beatus*, "blessed, happy." Danish, *Beatrix;* Dutch, *Beatrix;* Fr., *Beatrice;* Ger., *Beatrix*, or *Beatrice;* It., *Beatrice;* Lat., *Beatrix;* Sp., *Beatriz;* Sw., *Beatrix.*
beau (*bō*), *n.* [*pl.* beaus or beaux (*bōz*)], a ladies' man or suitor.
★**Beaufort** (*bū'fȯrt*), **S. C.** In honor of Henry, duke of Beaufort.
beau-te-ous (*bū'tē-us*), *adj.* possessing beauty.
beau-ti-ful (*bū'ti-ful*), *adj.* possessing qualities which charm and delight the senses; lovely.
beau-ti-fy (*bū'ti-fī*), *v. t.* [*p. t.* and *p. p.* beautified, *p. pr.* beautifying], to make or render beautiful.
beau-ty (*bū'ti*), *n.* [*pl.* beauties (*-tiz*)], assemblage of graces or properties which command the approbation of the senses.
bea-ver (*bē'vėr*), *n.* a rodent quadruped of amphibious habits, and valued for its fur.
bea-ver, *n.* that portion of armor which served to protect the lower part of the face, and could be raised or depressed.
be-calm (*bē-käm'*), *v. t.* to make calm or still.
beck (*bek*), *n.* a nod, or other significant gesture.
beck-et (*bek'et*), *n.* a contrivance in ships to confine small spars or loose ropes, etc.
beck-on (*bek'n*), *v. i.* to make a signal to another by a motion of the head or hand.
be-cloud. See *cloud.*
be-come (*bē-kum'*), *v. i.* [*p. t.* became, *p. p.* become, *p. pr.* becoming], to pass from one state to another; come or grow to be.
be-com-ing (*bē-kum'ing*), *p. adj.* fit; suitable; seemly; proper; appropriate; befitting.
★**becque-rel rays** (*bek-rel' rāz*), radio-active energy manifested by radium.
bed (*bed*), *n.* an article of domestic furniture upon or within which one rests or sleeps; a layer or stratum of rock; a mass or heap of anything esembling a bed: *v. t.* [*p. t.* and *p. p.* bedded, *p. pr.* bedding], to furnish with a bed; plant, as flowers.
bed-bug (*bed'bug*), *n.* a flat-bodied, reddish-colored insect infesting furniture, etc.
bed-ding (*bed'ding*), *n.* a bed and its furniture.
be-dev-il (*bē-dev'l*), *v. t.* [*p. t.* and *p. p.* bedeviled, *p. pr.* bedeviling], to throw into disorder or confusion.
be-dev-il-ment (*bē-dev'l-ment*), *n.* the state of being vexatiously and bewilderingly disordered.
be-dew (*bē-dū'*), *v. t.* to moisten with dew.
be-diz-en (*bē-diz'n* and *-di'zn*), *v. t.* to deck or adorn.
bed-lam (*bed'lam*), *n.* a madhouse.
bed-lam-ite (*bed'lam-īt*), *n.* a madman.
★**Bed-ou-in** (*bed'oo-ēn* or *bed'oo-in*, not *bed'win*), *n.* a nomadic Arab or tent-dweller of Arabia, Syria, and northern Africa: *adj.* nomad.
bed-pan (*bed'pan*), *n.* a warming pan.
bed-rid (*bed'rid*) or **bedridden** (*'rid-n*), *adj.* confined to bed by age or infirmity.
bee (*bē*), *n.* a hymenopterous insect of the genus Apis; the hive or honey-bee kept in hives for the sake of its honey and wax.
beech (*bēch*), *n.* [*pl.* beeches (*'ez*)], a tree of the genus Fagus.
beech-en (*bēch'en*), *adj.* pertaining to, or made of the wood or bark of the beech.
beef (*bēf*), *n.* the flesh of an ox, bull, or cow, when killed.
bee-hive (*bē'hīv*), *n.* a box or other covering for a swarm of bees.
bee line (*bē' līn*), the straight course pursued by a bee returning laden to the hive; hence the most direct way from one point to another.
beer (*bēr*), *n.* a fermented alcoholic liquor made from any farinaceous grain, but generally from malted barley.
beet (*bēt*), *n.* a biennial plant, cultivated for its edible, succulent root.
bee-tle (*bē'tl*), *n.* a heavy wooden mallet employed for driving wedges; any insect belonging to the order of Coleoptera, having four wings.
bee-tle (*bē'tl*), *v. i.* to be prominent, jut out, overhang, as a cliff.
bee-tling (*bē'tling*), *adj.* standing out; overhanging.
be-fall or **be-fal** (*be-fawl'*), *v. t.* [*p. t.* befell, *p. p.* befallen, *p. pr.* befalling], to happen or occur to.
be-fit (*bē-fit'*), *v. t.* [*p. t.* and *p. p.* befitted, *p. pr.* befitting], to suit; to be suitable; to become.
be-fore (*bē-fōr'*), *prep.* in front of; preceding in space, time, or rank; in presence or sight of.
be-fore-hand (*bē-fōr'hand*), *adv.* in advance.
be-friend (*bē-frend'*), *v. t.* to act as a friend to; aid or shield; assist.
beg (*beg*), *v. t.* and *v. i.* [*p. t.* and *p. p.* begged, *p. pr.* begging], to ask or supplicate in charity.
Syn. BEG, beseech, solicit, entreat, supplicate, implore, crave. To *beg* denotes a state of want; to *beseech*, *entreat*, and *solicit*, a state of urgent necessity; *supplicate*, and *implore*, a state of abject distress; *crave*, the lowest state of physical want. One *begs* with importunity; *beseeches* with earnestness; *entreats* by the force of reasoning and strong representation; one *solicits* by virtue of one's interest; *supplicates* by an humble address; *implores* by every mark of dejection and humiliation.
be-get (*be-get'*), *v. t.* [*p. t.* begot, begat, *p. p.* begotten, begot, *p. pr.* begetting], to procreate, as a father or sire.
beg-gar (*beg'gėr*), *n.* one who entreats or supplicates with humility; one who makes it his business to beg or ask for alms.
beg-gar-ly (*beg'gėr-li*), *adj.* like, or in the condition of, a beggar; poor; mean; contemptible.
beg-gar-y (*beg'gėr-i*), *n.* the state of a beggar; extreme poverty; beggars collectively.
be-gin (*bē-gin'*), *v. i.* [*p. t.* began, *p. p.* begun, *p. pr.* beginning], to commence existence.
be-gin-ner (*be-gin'nėr*), *n.* one who begins or originates.
be-gin-ning (*be-gin'ning*), *n.* the first cause; origin; the initial stage of anything.
be-gone (*be-gōn*), *interj.* go away; depart.
★**be-go-ni-a** (*bē-gō'ni-ȧ*), *n.* a genus of tropical plants, cultivated for their ornamental leaves.
be-grudge. See *grudge.*
be-guile (*bē-gīl'*), *v. t.* to impose upon or delude by guile; deceive.
be-guile-ment (*be-gīl'ment*), *n.* the act of beguiling; the state of being beguiled.
be-gum (*bē'gum*), *n.* in the East Indies, a princess or lady of high rank.
be-half (*bē-hâf'*), *n.* advantage; favor; support; defense; stead.
be-have (*bē-hāv'*), *v. t.* to conduct, comport, demean, or acquit.
be-hav-ior (*bē-hāv'yėr*), *n.* manner of behaving.
be-head (*bē-hed'*), *v. t.* to cut off the head of.
be-hest (*bē-hest'*), *n.* a command; precept.
be-hind (*bē-hīnd'*), *prep.* at the back of; in the rear of; remaining after; inferior to.
be-hind-hand (*bē-hīnd'hand*), *adv.* or *adj.* in a state of backwardness; late; in arrear.
be-hold (*bē-hōld'*), *v. t.* [*p. t.* and *p. p.* beheld, *p. pr.* beholding], to fix the eyes upon; have in sight.
be-hold-en (*bē-hōld'n*), *p. adj.* indebted; obliged, bound in gratitude.
be-hoof (*bē-hōōf'*), *n.* advantage; interest; profit; use; behalf.
be-hoove or **be-hove** (*bē-hōōv'*), *v. t.* to be meet, necessary, or fit for.
★**Behring** (*bē'ring*, Dan. *bā'ring*) **strait, Alaska.** Named by Captain Cook, in memory of Ivan Ivanovitch or Vitus Behring (who wrote it *Bering* or *Bereng; Behring*, a German corruption), a Russian navigator, its discoverer, in 1728.
be-ing (*bē'ing*), *n.* existence, as opposed to nonexistence.
be-la-bor (*bē-lā'bėr*), *v. t.* to beat soundly.
be-late (*bē-lāt'*), *v. t.* to make late, or retard.
be-lay (*bē-lā'*), *v. t.* to make fast, as with a rope.
belch (*belch*), *v. t.* to eject with force or violence.
be-lea-guer (*bē-lē'gėr*), *v. t.* to besiege; surround with an army so as to preclude escape.
bel-fry (*bel'fri*), *n.* a bell tower.
Belgium (*bel'ji-um*). Literally, the land of the Belgæ. A kingdom of Europe.
Bel-gra-vi-an (*bel-grā'vi-an*), *adj.* belonging to Belgravia, a fashionable quarter of London.
be-lie (*bē-li'*), *v. t.* to calumniate; slander by lies.
be-lief (*bē-lēf'*), *n.* assent to anything proposed or declared, and its acceptance as fact.
be-liev-a-ble (*bē-lēv'ȧ-bl*), *adj.* capable of being accepted as truth; credible.
be-lieve (*bē-lēv'*), *v. t.* to accept as true, upon the ground of authority. [THINK.]
be-liev-er (*bē-lēv'ėr*), *n.* one who accepts as truth something not actually demonstrated.
be-like (*bē-lik'*), *adv.* probably.
Belinda (*bē-lin'dȧ*). A feminine name. It may be from Italian *Bella Linda*, or corrupted from *bellino*, a diminutive of *bello*, "beautiful."
be-lit-tle (*bē-lit'tl*), *v. t.* to lower or depreciate.
bell (*bel*), *v. i.* to bellow, as deer in rutting time.
bell (*bel*), *n.* a hollow metallic vessel, usually cup-shaped, and giving forth a clear, ringing sound when struck.
Bella (*bel'lȧ*). An abbreviation of both *Isabella* and *Arabella.*
★**bel-la-don-na** (*bel-lȧ-don'nȧ*), *n.* the deadly nightshade, a poisonous plant used as medicine.
belle (*bel*), *n.* a young and handsome lady.
★**Belle Isle** (*bel īl'*). French for "beautiful island."
belles-let-tres (*bel-let'tėr*), *n. pl.* polite or elegant literature; light literature.
★**Bellevue** (*bel-vū'*). A noted castle near Cassel in Germany.
bel-li-cose (*bel'li-kōs*), *adj.* pugnacious.
bel-lig-er-ence (*bel-lij'ėr-ens*), or **bel-lig-er-en-cy** (*-en-si*), *n.* the act or state of warfare.
bel-lig-er-ent (*bel-lij'ėr-ent*), *n.* a power recognized as carrying on war; a person engaged in fighting.
bel-low (*bel'lō*), *v. i.* to utter a full resonant sound, as a bull; bawl or vociferate. [CALL.]
bel-lows (*bel'lōz*), *n. sing.* and *pl.* an instrument for producing a current of air.
bell-weth-er (*bel'weth-ėr*), *n.* a wether or sheep which leads the flock with a bell on his neck.
bel-ly (*bel'li*), *n.* [*pl.* bellies (*'liz*)], that part of the human body which extends from the breast to the thighs, and contains the bowels.
be-long (*bē-lông'*), *v. i.* to be the property (of); go along with; be a part (of); be appendant (to).
be-long-ing (*bē-lông'ing*), *n.* that which belongs to one (generally used in the *pl.*)
★**Beloochistan** (*bel-o͞o-chis-tän'*) or **Baluchistan.** From the Persian, meaning "the country of the Belooches, or Baluches," a people of Asia.
be-low (*bē-lō'*), *prep.* under in place; beneath; not so high; inferior to in rank or excellence.
belt (*belt*), *n.* a girdle or band used to encircle the waist; anything resembling a belt.

belt-ed cruis-er (*belt'd krōō'zĕr*), a quick-sailing ship, having a broad band of armor plating.
belt-ing (*belt'ing*), *n.* belts collectively.
★**Belvedere** (*bel-vē-dēr'* or *bel'vē-dēr*). A portion of the Vatican palace at Rome. The word is from the Italian, meaning "fair view."
be-mire (*bē-mīr'*), *v. t.* to soil by passing through mire.
be-moan (*bē-mōn'*), *v. t.* to lament; bewail.
bench (*bench*), *n.* [*pl.* benches (*'ez*)], a long seat; the seat where judges sit in court.
bend (*bend*), *v. t.* to curve or make crooked; move or deflect out of a straight line. [TURN, LEAN.]
bend-er (*bend'ĕr*), *n.* one who, or that which, bends.
be-neath (*bē-nēth'*), *prep.* lower in place, with reference to something above.
ben-e-dict (*ben'ē-dikt*), *n.* a newly married man.
Benedict or **Bennet** (*ben'net*). From the Latin *Benedictus*, "blessed"; Danish, *Benedict;* Dutch, *Benedictus;* Fr., *Benoit;* Ger., *Benedict;* It., *Benedetto;* Sp., *Benito,* or *Benedicto;* Sw., *Bengt.*
ben-e-dic-tion (*ben-ē-dik'shun*), *n.* the act of blessing; a blessing or expression of kind wishes.
ben-e-fac-tion (*ben-ē-fak'shun*), *n.* the act of conferring a benefit.
ben-e-fac-tor (*ben-ē-fak'tĕr*), *n.* one who confers a benefit.
ben-e-fice (*ben'ē-fis*), *n.* an ecclesiastical living; the revenue to maintain it. [LIVING.]
be-nef-i-cence (*bē-nef'i-sens*), *n.* active goodness.
be-nef-i-cent (*bē-nef'i-sent*), *adj.* characterized by benevolence.

Syn. BENEFICENT, bountiful or bounteous, generous, liberal, munificent. The sincere well-wisher to fellow-creatures is *beneficent* according to his means; he is *bountiful* in providing for the comfort and happiness of others; he is *munificent* in dispensing favors; he is *generous* in imparting his property; he is *liberal* in all he does. *Beneficence* and *bounty* are characteristics of the deity as well as of his creatures.

ben-e-fi-cial (*ben-ē-fish'al*), *adj.* contributing to a valuable end.
ben-e-fi-ci-a-ry (*ben-ē-fish'i-ā'ri*), *adj.* holding office under another, connected with the receipt of benefits or profits.
ben-e-fit (*ben'ē-fit*), *n.* an act of kindness; a favor conferred.
be-nev-o-lence (*bē-nev'ō-lens*), *n.* the disposition to do good; philanthropy. [MERCY.]
be-nev-o-lent (*bē-nev'ō-lent*), *adj.* kind; charitable; philanthropic. [HUMANE.]
ben-gal light (*ben-gawl' lit*), a firework, used also for signaling at sea, giving a steady bright blue light.
be-night (*bē-nīt'*), *v. t.* to enshroud in darkness.
★**be-nign** (*bē-nīn'*), *adj.* of kind or gentle disposition.
★**be-nig-nant** (*bē-nig'nant*, not *bē-ni'nant*), *adj.* kind; gracious. [HUMANE.]
be-nig-ni-ty (*bē-nig'ni-ti*), *n.* [*pl.* benignities (*-tiz*)], kindness of nature; graciousness. [MERCY.]
ben-i-son (*ben'i-zn*), *n.* a blessing.
Benjamin. From the Hebrew, *Binyamiyn,* which, according to the Samaritan Pentateuch, means "son of days"; *i. e.*, "son of old age." Fuerstius translates it "lucky son." The name means, literally, "son of the right hand"; figuratively, "son of good fortune." Danish, *Benjamin;* Fr., *Benjamin;* Ger., *Benjamin;* It., *Beniamino;* Lat., *Benjaminus.*
Bennet. See *Benedict.*
Bennett. This occurs frequently as a feminine name in the registers of Kent, England.
Bennington. Town in Hillsboro county, New Hampshire, and county, township, and town in Vermont, named for Governor Benning Wentworth of New Hampshire, who gave grants for the original town, in 1748.
bent (*bent*), *adj.* curved; crooked; strongly inclined.
ben-zene (*ben'zēn*), *n.* a volatile, highly inflammable liquid, obtained commercially by distillation from coal tar.
ben-zine (*ben-zēn'*), *n.* a liquid compounded of the volatile hydrocarbons of petroleum, and obtained by distillation.
★**ben-zoin** or **benzoine** (*ben-zoin'*), *n.* the resinous juice of gum benjamin.
be-queath (*bē-kwēth'*), *v. t.* to give or leave by will. [DEVISE.]
be-quest (*bē-kwest'*), *n.* the act of leaving by will.
be-reave (*bē-rēv'*), *v. t.* [*p. t.* and *p. p.* bereaved, bereft, *p. pr.* bereaving], to deprive; make destitute.
be-reave-ment (*be-rēv'ment*), *n.* the act of bereaving; the state of being bereaved.
★**Berenice** (*ber-ē-nī'sē*) or **Bernice** (*bĕr'nīs*). From the Latin, "bringing victory." Ger., *Berenike;* It., *Berenice.*
Beriah (*bē-ri'ä*). The Hebrew *B'riyah,* Simonis translates "in calamitate," *i. e.*, "born in calamity"; Jones, "a calamity in his house"; and Tregelles, "gift."
Berkshire (*bĕrk'shir*). This is derived from *barruc,* "a polled or pollard oak," and *scyre,* "a shire"; from the shiremotes of that county being anciently held in the shade of a large polled oak tree.
Berkshire. County in Massachusetts, named for Berkshire, England.
Berlin (*bĕr'lin,* Ger. *ber-lēn'*). The capital of Prussia. The meaning of the name has been much discussed; it is probably Wendish, from *berle,* "uncultivated ground."
Ber-mu-da grass (*bĕr-mū'dä grȧs'*), a valuable variety of pasture grass.
Bermudas (*bĕr-mū'dȧs*). Named for the discoverer, Juan Bermudez, in 1522. One of a group of islands in the North Atlantic.
★**Berne** (*bern,* Ger. *bĕrn*). A Swiss canton which takes its name from its chief town, which grew up around a castle built in 1192, by Duke Berchtold V. of Zahringen. The name *Berne* appears in 1224 on a seal of the town. Not improbably, Berchtold gave the place the name of Berne in memory of Dietrich of Berne (Verona), a favorite hero of Alemannic poetry.
ber-ret-ta (*bĕr-ret'tä*), *n.* a red ecclesiastical cap.
ber-ry (*bĕr'ri*), *n.* [*pl.* berries (*'riz*)], any small pulpy or succulent fruit, as the strawberry, etc.
berth (*bĕrth*), *n.* ample or adequate sea room; a station which a ship occupies at anchorage or port; a room in a vessel set apart for officers or seamen.
ber-tha (*bĕr'thä*), *n.* a kind of lady's cape.
Bertha. From the Old German name, *Berta,* "bright or famous"; Dutch, *Bertha;* Fr., *Berthe;* Ger., *Bertha;* It., *Berta;* Lat., *Bertha;* Sw., *Bertha.*
Bertram (*bĕr'tram*). The Old German name, from *brecht-ram,* "renowned for strength." Fr., *Bertrand;* Ger., *Bertram.*
★**Berwick** (Eng. *ber'ik,* U. S. *bĕr'wick*). This is a contraction of *Aberwick,* the meaning of which is a town (*wick*) at the mouth (*aber*) of a river.
ber-yl (*ber'il*), *n.* a mineral of varying colors, commonly green or greenish-blue.
be-seech (*bē-sēch'*), *v. t.* [*p. t.* and *p. p.* besought, *p. pr.* beseeching], to entreat; supplicate. [BEG.]
be-seem (*bē-sēm'*), *v. i.* and *v. t.* to be suitable or seemly.
be-set (*be-set'*), *v. t.* [*p. t.* and *p. p.* beset, *p. pr.* besetting], to set or stud.
be-set-ting (*bē-set'ting*), *adj.* habitually attacking or coming upon.
be-shrew (*bē-shrōō'*), *v. t.* to wish a curse to; execrate.
be-side (*bē-sīd'*), *prep.* at the side of; near. [ADJACENT.]
be-sides (*bē-sīdz'*), *adv.* more than that; in addition.
be-siege (*bē-sēj'*), *v. t.* to encompass with armed forces.
be-slob-ber (*bē-slob'bĕr*), *v. t.* to smear with anything running from the mouth.
be-smirch (*bē-smĕrch'*), *v. t.* to soil; discolor.
be-som (*bē'zum*), *n.* a brush of twigs for sweeping.
be-sot (*bē-sot'*), *v. t.* [*p. t.* and *p. p.* besotted, *p. pr.* besotting], to bestialize, as with drink.
be-span-gle (*bē-spang'gl*), *v. t.* to adorn with spangles.
be-speak (*bē-spēk'*), *v. t.* [*p. t.* bespoke, *p. pr.* bespeaking], to speak for beforehand.
bes-se-mer steel (*bes'sē-mĕr stēl*), steel made by forcing atmospheric air into cast iron while in a molten state.
Bessie. Corrupted from *Elizabeth.*
best (*best*), *adj.* having the highest degree of goodness or excellence; of the first quality or standing; most desirable, suitable, advantageous.
be-stead (*bē-sted'*), *v. t.* to profit; to accommodate.
★**bes-tial** (*bes'chal*), *adj.* belonging to a beast; animal.
bes-tial-i-ty (*bes-chal'i-ti*), *n.* the qualities or nature of a beast.
bes-tial-ly (*bes'chal-li*), *adv.* in a beast-like manner.
be-stir (*bē-stĕr'*), *v. t.* [*p. t.* and *p. p.* bestirred, *p. pr.* bestirring], to put into brisk or vigorous action.
best man (*best' man*), the groomsman or principal attendant on a bridegroom.
be-stow (*bē-stō'*), *v. t.* to give. [GIVE, CONFER.]
be-stow-ment (*bē-stō'ment*) or **be-stow-al** (*'al*), *n.* the act of giving or conferring; that which is given.
bet (*bet*), *v. t.* [*p. t.* and *p. p.* bet and betted, *p. pr.* betting], to stake or pledge on the event of a future contingency.
be-take (*bē-tāk'*), *v. t.* [*p. t.* betook, *p. p.* betaken, *p. pr.* betaking], to have recourse to; repair.
beth-el (*beth'el*), *n.* a hallowed spot.
be-think (*bē-think'*), *v. t.* and *v. i.* [*p. t.* and *p. p.* bethought, *p. pr.* bethinking], to call to mind.
be-tide (*bē-tīd'*), *v. t.* to happen to; befall.
be-times (*bē-tīmz'*), *adv.* in good season or time.
be-to-ken (*bē-tō'kn*), *v. t.* to indicate by signs. [AUGUR.]
bet-o-ny (*bet'ō-ni*), *n.* a common name for a woodland plant, with purple flowers.
be-tray (*bē-trā'*), *v. t.* to deliver into the hands of an enemy by treachery; violate by fraud or unfaithfulness.
be-tray-al (*bē-trā'al*), *n.* the act of betraying.
★**be-troth** (*bē-trōth'* or *bē-trōth'*), *v. t.* to contract to give any one in marriage.
★**be-troth-al** (*bē-trōth'al* or *bē-trō'thal*) or **be-trothment** (*'ment*), *n.* the act of engaging to marry.
bet-ter (*bet'tĕr*), *adj.* having good qualities in a greater degree than another; preferable or more suitable: *adv.* [used as *compar.* of well], in a superior or more excellent manner; more correctly or thoroughly. [AMEND.]
bet-ting (*bet'ting*), *n.* the act of making bets.
be-tween (*bē-twēn'*), *prep.* in the space or interval which separates.
be-twixt (*bē-twikst'*), *prep.* between, in the space which separates.
bev-el (*bev'el*), *v. t.* [*p. t.* and *p. p.* beveled (*'eld*), *p. pr.* beveling], to cut to a bevel angle: *v. i.* to slant or incline off to a bevel angle: *adj.* sloping.
bev-er-age (*bev'ĕr-āj*), *n.* drink of any description.
bev-y (*bev'i*), *n.* a flock of birds; a company.
be-wail (*bē-wāl'*), *v. t.* to mourn or weep aloud for.
be-ware (*bē-wâr'*), *v. i.* to be on one's guard.
be-wil-der (*bē-wil'dĕr*), *v. t.* to lead into perplexity or confusion; puzzle.
be-wil-der-ment (*bē-wil'dĕr-ment*), *n.* the state of being greatly puzzled or perplexed.
be-witch (*bē-wich'*), *v. t.* to cast a spell over; subject to witchcraft.
★**bey** (*bā*), *n.* a governor of a province or district in the Turkish dominions.
be-yond (*bē-yond'*), *prep.* on the farther side of; before; past; out of reach of; later than.
bez-el (*bez'el*), *n.* the part of a finger ring which surrounds and holds fast the stone.
bi-an-nu-al (*bī-an'ū-al*), *adj.* occurring twice a year; semiannual.
★**bi-as** (*bī'ȧs*), *n.* [*pl.* biases (*-ez*)], a cut oblique to the texture of the fabric; oblique; slanting; prejudice; a leaning of the mind. [PREJUDICE.]
bi-au-ric-u-late (*bī-aw-rik'ū-lāt*), *adj.* having two auricles, as the heart of the higher vertebrates.
bib (*bib*), *n.* a piece of cloth placed under an infant's chin to protect its clothes.
Bi-ble (*bī'bl*), *n.* the writings of the Old and New Testament.
Bib-li-cal (*bib'li-kal*), *adj.* of or pertaining to the Bible; scriptural.
bib-li-og-ra-pher (*bib-li-og'rȧ-fĕr*), *n.* one who is versed in bibliography
bib-li-og-ra-phy (*bib-li-og'rȧ-fi*), *n.* the science or description of books.
bib-li-ol-o-gy (*bib-li-ol'ō-ji*), *n.* an account of books; biblical literature; bibliography.
bib-li-o-ma-ni-a (*bib-li-ō-mā'ni-ȧ*), *n.* a mania for acquiring rare and curious books.
bib-li-o-ma-ni-ac (*bib-li-ō-mā'ni-ak*), *n.* one who has a mania for acquiring books.
★**bib-li-o-phile** (*bib'li-ō-fil*), *n.* a lover of books.
bib-li-o-the-ca (*bib-li-ō-thē'kȧ*), *n.* a library.
★**Bibliothèque Nationale** (*bē-blē-ō-tāk' nȧs-yôN-nȧl'*). That is, "national library," the great French library, the largest in the world.
bib-u-lous (*bib'ū-lus*), *adj.* readily absorbing or imbibing fluids.
bi-cam-er-al (*bi-kam'ĕr-al*), *adj.* pertaining to or consisting of two legislative chambers.
bi-cen-te-na-ry (*bi-sen'tē-nā-ri*), *n.* the two hundredth anniversary of an event.
bi-ceps (*bī'seps*), *n.* the large flexor muscle of the arm and thigh.
bi-cip-i-tal (*bi-sip'i-tal*, or **bicipitous** (*-tus*), *adj.* having two heads.
bick-er (*bik'ĕr*), *v. i.* to engage in petty altercation.
bi-con-cave (*bi-kon'kāv*), *adj.* hollow on both sides.
bi-cus-pid (*bi-kus'pid*) or **bicuspidate** (*-āt*), *adj.* having two points or prominences.
★**bi-cy-cle** (*bī'si-kl*, not *bi'si-kl*), *n.* a vehicle for human propulsion, the machine being propelled by the feet by means of treadles attached to cranks or levers.
bid (*bid*), *v. t.* [*p. t.* bade (*bad*) or bid, *p. p.* bidden, bid, *p. pr.* bidding], to make an offer of; propose as a price; offer for; invite; request; ask.
bid-ding (*bid'ding*), *n.* an order; command; proclamation; the act of offering a price at auction.
bid-dy (*bid'di*), *n.* a fowl or chicken.
bide (*bīd*), *v. i.* [*p. t.* and *p. p.* bided, *p. pr.* biding], inhabit; reside: *v. t.* to endure; suffer; wait for.
bi-en-ni-al (*bi-en'ni-al*), *adj.* happening once in two years; continuing or existing for two years.
bi-en-ni-al-ly (*-li*), *adv.* once in two years.
bier (*bēr*), *n.* a frame or carriage on which a corpse is placed, or conveyed to the grave.
bi-fur-ca-tion (*bī-fĕr-kā'shun*), *n.* a forking or division into two branches.
big (*big*), *adj.* [*compar.* bigger, *superl.* biggest], of great bulk or magnitude; grown up; pregnant. [GREAT.]
big-a-mist (*big'ȧ-mist*), *n.* one guilty of bigamy.
big-a-mous (*big'ȧ-mus*), *adj.* pertaining to and involving bigamy.
big-a-my (*big'ȧ-mi*), *n.* the offense of contracting a second marriage during the existence of a former marriage.
bight (*bīt*), *n.* a loop or bend of a rope; an open bay of the sea.
big-ot (*big'ot*), *n.* one who is unreasonably and blindly attached to a particular creed.
big-ot-ed (*big'ot-ed*), *adj.* characterized by bigotry.
big-ot-ry (*big'ot-ri*), *n.* [*pl.* bigotries (*-riz*)], the state or condition of a narrow-minded, intolerant person.
Big Sandy river, Ky. From its extensive sand bars, came the Indian names *Tatteroi, Chatteroi,* and *Chatterwha.* Known to the Miamis as *Wepepoconecepewe,* and to the Delawares as *Sikeacepe,* "Salt river."
★**bi-jou** (*bē-zhōō'*), *n.* [*pl.* bijoux (*-zhōōz*)], a jewel; any small and elegantly finished article.
bi-lat-er-al (*bi-lat'ĕr-al*), *adj.* pertaining to, or having, two sides.
bi-lat-er-al-ly (*-li*), *adv.* in a two-sided manner; on both sides.
bil-ber-ry (*bil'bĕr-ri*), *n.* [*pl.* bilberries (*-riz*)], the berry from a shrub of the whortleberry family.
bile (*bīl*), *n.* a yellowish-green bitter fluid secreted by the liver from the blood; ill-humor.
bilge (*bilj*), *n.* the bulging part of a cask; the broadest part of a ship's bottom.
bilge wa-ter (*bilj' waw-tĕr*), water which accumulates in the bilge of a ship.

bilge ways (*bilj' wāz*), the timbers supporting the cradle of a vessel, which upholds it.
bil-ia-ry (*bil'yā-ri*), *adj.* pertaining to the bile; conveying the bile.
bil-ious (*bil'yus*), *adj.* pertaining to the bile.
bil-ious-ness (*-nes*), *n.* the state of being bilious, having bile in excess.
bilk (*bilk*), *v. t.* to spoil the score of an opponent at cribbage; deceive or defraud.
bill (*bil*), *n.* the beak of a bird: *v. i.* to join bills, as doves; caress; *v. t.* to enter or publish in a bill or poster.
bill, *n.* a kind of hatchet with a blade hook-shaped toward the point.
bill, *n.* an account for goods sold, services rendered, or work done.
bill bro-ker (*bil' brō-kẽr*), one who negotiates the discount of bills of exchange.
bil-let (*bil'let*), *n.* a small paper in writing; a note or short letter.
bil-let, *n.* a small stick or log of wood, as for fuel.
bill-hook (*bil'hook*), *n.* a small kind of hatchet with a hooked point.
bil-liards (*bil'yẽrdz*), *n.* a game played on a rectangular, cloth-covered slate table, 12 ft. x 6 ft. in size, with ivory balls and a cue.
bil-lings-gate (*bil'lingz-gāt*), *n.* coarse or profane language; virulent abuse.
bil-lion (*bil'yun*), *n.* in the United States one thousand millions (1,000,000,000); in England a million millions (1,000,000,000,000).
bill of en-try (*en'tri*), a written account of goods entered at the custom-house.
bill of ex-change (*eks-chānj'*), a written order from one person or house (the drawer) to another (the acceptor) to pay to the person designated a certain sum.
bill of health (*helth*), a certificate given to the master of a vessel, specifying the state of the health of a ship's company or passengers at the time of her clearing a port.
bill of lad-ing (*lād'ing*), a document specifying the goods shipped on board a vessel, and signed by the master of such ship, acknowledging the receipt of the goods, and undertaking their safe conveyal to the consignee.
bill of mor-tal-i-ty (*môr-tal'i-ti*), the official return of the deaths (also births) occurring in a particular district within a certain period.
bill of sale (*sāl*), a formal instrument for the transfer of goods and chattels.
bil-lon (*bil'lon*, Fr. *bē-yôN'*), *n.* an alloy of gold and silver.
bil-lot (*bil'lot*), *n.* bullion in the mass or bar.
bil-low (*bil'lō*), *n.* a great wave of the sea. [WAVE.]
bil-ly goat (*bil'li gōt*), a male goat.
★**bi-me-tal-lic** (*bī-mē-tal'lik*), *adj.* pertaining to two metals.
★**bi-met-al-lism** (*bī-met'al-lizm*), *n.* the legalized adoption of two metals in the currency of a country.
bi-month-ly (*bī-munth'li*), *adj.* occurring once in two months.
bin (*bin*), *n.* a receptacle for any commodity.
bind (*bīnd*), *v. t.* [*p. t.* and *p. p.* bound, *p. pr.* binding], to confine or make fast with a cord or band; confine or restrain by physical force; unite by bonds of affection, loyalty, or duty: *v. i.* to tie up; confine by ligature or band.
bind-ing (*bīnd'ing*), *n.* the act of making fast; a bandage.
bin-na-cle (*bin'nȧ-kl*), *n.* a turret-shaped box containing a ship's compass.
★**Binnenhof** (*bin'nen-hōf*). Originally, the palace of Count William of Holland, at the Hague.
bin-o-cle (*bin'ō-kl* or *bī'no-kl*), *n.* a field or opera glass with two eye tubes.
★**bin-oc-u-lar** (*bin-ok'ū-lẽr* or *bī-nok'*), *adj.* having two eyes; pertaining to, or suited to, the use of both eyes.
★**bi-no-mi-al** (*bī-nō'mī-al*), *n.* an expression or quantity consisting of two terms connected by the sign plus (+) or minus (−).
bi-no-mi-al the-o-rem (*thē'ō-rem*), the celebrated theorem of Sir Isaac Newton, which expresses the law of formation of any power of a binomial.
★**bi-o-gen-e-sis** (*bī-ō-jen'ē-sis*) or **bi-og-e-ny** (*-oj'ē-ni*), *n.* the doctrine that living organisms can proceed only from, or be generated by, living parents or germs; the science of life development.
★**bi-o-graph** (*bī'ō-grȧf*), *n.* a device for projecting seemingly animated pictures upon a screen.
bi-og-ra-pher (*bī-og'rȧ-fẽr*), *n.* one who writes the history of a particular person's life.
★**bi-og-ra-phy** (*bī-og'rȧ-fi*), *n.* [*pl.* biographies (*-fiz*)], the history of the life of a particular person.
bi-o-log-ic (*bī-ō-loj'ik*) or **bi-o-log-i-cal** (*'i-kal*), *adj.* pertaining to the science of life.
bi-o-log-i-cal-ly (*-li*), *adv.* in accordance with the principles of biology.
bi-ol-o-gist (*bī-ol'ō-jist*), *n.* one who studies, or is skilled in, the science of living forms.
★**bi-ol-o-gy** (*bī-ol'ō-ji*, not *bī-ol'ō-jī*), *n.* the science of life in different forms.
bi-par-tite (*bī-pär'tīt*), *adj.* divided into two parts.
bi-par-ti-tion (*bī-pär-tish'un*), *n.* the act of dividing into two parts; the state of being so divided.
bi-ped (*bī'ped*), *adj.* having two feet: *n.* a two-footed animal.
bi-plane (*bī'plān*), *n.* a form of aëroplane consisting of two planes arranged one above the other; distinguished from monoplane and triplane.
birch (*bẽrch*), *n.* [*pl.* birches (*'ez*)], a tree or shrub belonging to the genus Betula.
birch-en (*bẽrch'en*), *adj.* pertaining to, or consisting of, birch.
bird (*bẽrd*), *n.* a warm-blooded feathered vertebrate, furnished with wings.
bird-lime (*bẽrd'līm*), *n.* a viscous substance prepared from holly bark, and used for entangling small birds in bird snaring.
bird's-eye (*bẽrdz'i*), *adj.* seen from above, or at a glance, as by a flying bird; hence general, not minute or detailed.
bi-ret-ta (*bi-ret'tȧ*), *n.* a head-dress for men, of different shapes and colors.
★**Birmingham** (*bẽr'ming-am*). Probably a patronymic from the Boerings; *ham*, a home or family residence; literally "a place of shelter," from *heiman*, "to cover." Hence, originally, "Boering's home."
birth (*bẽrth*), *n.* the act of coming into life; the fact of being born.
birth rate (*rāt*), the increase of population as shown by the percentage of births registered.
birth right (*'rīt*), any right or privilege to which a person is entitled by birth
Biscay (*bis'kā*). Takes its name from the Spanish province of Biscaya or Viscaya, meaning the land of the Basques or Vasks.
bis-cuit (*bis'kit*), *n.* a kind of unraised bread, shaped in flat cakes and baked hard and dry.
bi-sect (*bī-sekt'*), *v. t.* to cut or divide into two equal parts.
★**bi-sex-u-al** (*bī-seks'ū-al*), *adj.* combining the organs of both sexes in one individual; hermaphrodite.
bish-op (*bish'up*), *n.* one of the highest orders of the Episcopal church; below the rank of an archbishop, but above that of a priest.
bish-op-ric (*bish'up-rik*), *n.* the office, dignity, or jurisdiction of a bishop; a diocese.
bish-op's staff (*bish'ups stȧf*), a crosier.
★**bisk** or **bisque** (*bisk*), *n.* soup or broth composed of several kinds of meat or fish boiled together.
★**Bismarck** (*biz'märk*). City in St. Francois county, Missouri, city in Burleigh county, North Dakota (capital of state), and many other places, named for Prince Otto von Bismarck of Germany.
bis-muth (*biz'muth*), *n.* one of the elements.
★**bi-son** (*bī'son*), *n.* the aurochs, or European bison, still preserved in Lithuania; the American bison, which is now nearly extinct.
★**bisque** (*bisk*), *n.* an unglazed white porcelain, used for statuettes, etc.
bi-sul-phate (*bī-sul'fāt*), *n.* a salt of sulphuric acid.
bi-sul-phite (*bī-sul'fīt*), *n.* a salt of sulphurous acid, half the hydrogen of which is replaced by the base.
bit (*bit*), *n.* a tool for boring; the metal mouthpiece of a bridle; the part of a key which enters the lock and acts on the bolts and tumblers.
bitch (*bich*), *n.* the female of the dog, or of other canine animals.
bite (*bīt*), *v. t.* [*p. t.* bit, *p. p.* bitten, bit, *p. pr.* biting], to seize, grip, cut, or crush with the teeth; sting, as an insect; cause smarting pain to: *n.* the act of seizing with the teeth; a wound made by the teeth, or by a sting.
bit-ing-ly (*'ing-li*), *adv.* in a sarcastic manner.
bitt (*bit*), *n.* a post of wood or iron to which cables are made fast.
bit-ter (*bit'tẽr*), *adj.* having a sharp taste; acrid. [ACRIMONY, FEUD.]
bit-tern (*bit'tẽrn*), *n.* a wading bird of the heron family.
bit-ters (*bit'tẽrz*), *n. pl.* liquor in which herbs or roots are steeped.
bi tu-men (*bi-tū'men*), *n.* mineral pitch.
bi-valve (*bī'valv*), *adj.* having two valves or shells united by a ligament.
★**biv-ouac** (*biv'wak* or *biv'oo-ak*), *n.* an encampment of soldiers in the open air, without tents.
bi-week-ly (*bi-wēk'li*), *adj.* occurring or appearing every two weeks; fortnightly.
★**bi-zarre** (*bē-zär'*), *adj.* odd in manner or appearance.
blab (*blab*), *v. t.* [*p. t.* and *p. p.* blabbed, *p. pr.* blabbing], to tell thoughtlessly: *v. i.* to talk indiscreetly.
black (*blak*), *adj.* destitute of light; of the darkest hue; opposed to white; enveloped in darkness.
black art, necromancy, magic.
black-ball (*blak'bawl*), *v. t.* to reject or exclude (as a candidate) by placing black balls in the ballot box.
black-ber-ry (*blak'ber-ri*), *n.* the fruit of several species of bramble.
black-bird (*blak'bẽrd*), *n.* an English song bird, a species of thrush.
black cur-rant (*blak' kur'rent*), the well-known garden bush, and its fruit.
black-en (*blak'n*), *v. i.* to grow black or dark: *v. t.* to make black; defame; asperse.
black fri-ar (*blak' fri-ẽr*), a friar of the Dominican order.
black-guard (*blag'gärd*, not *blak'gärd*), *n.* a man of low character,
black-guard-ism (*blag'gärd-izm*), *n.* the conduct or language of a blackguard.
black hole (*blak' hōl*), a dungeon or dark cell in a prison; a place of confinement for soldiers.
black-ing (*blak'ing*), *n.* a preparation for imparting a shining black polish to boots.
black-jack (*blak'-jak*), *n.* a large leathern vessel or drinking cup of old times.
black-leg (*blak'leg*), *n.* one who endeavors to obtain money by cheating at races or cards.
black let-ter (*blak' let-tẽr*), the old English or Gothic letter employed in the early manuscripts and the first printed books.
black-list (*blak'list*), *n.* a list of persons who are deemed to be deserving of punishment.
black-mail (*blak'māl*), *n.* a tax anciently paid in money, corn, or cattle, in the north of England, and in Scotland, to the agents of robbers, to secure protection from pillage; hence extortion by means of intimidation.
Black Sea. An inland sea of southeastern Europe, probably so named because it abounds with black rocks. Another explanation is that it is so called from its frequent storms and fogs.
black-smith (*blak'smith*), *n.* a smith who works in iron and makes iron utensils, horseshoes, etc.
Blackstone river, R. I. In memory of William Blackstone, an Episcopal minister, the first white settler of Rhode Island. Indian name of stream *Kehetuck*, "great river," changed afterward to *Pawtucket*, meaning "the forks," from *Pochatuck*, "a branch."
black-thorn (*blak'thôrn*), *n.* the sloe; a stick cut from the stem of the sloe.
blad-der (*blad'dẽr*), *n.* a thin, elastic, membranous bag in animals, in which a fluid is collected.
blade (*blād*), *n.* the leaf of a grass; the young stalk or spire of a grass; the broad, expanded part of a leaf; the cutting part of an instrument.
★**Blaise** (*blāz*). In France the name of the saint is found written *Blaise*, and in Germany *Blaes*. In Latin it occurs as *Blasius* and *Blatius*. It seems to be the same as the Roman name *Blæsus*, which Statius renders "lisper." Danish, *Blasius;* Dutch, *Blasius;* Fr., *Blaise;* Ger., *Blasius;* It., *Biagio;* Lat., *Blasius;* Sp., *Blas;* Sw., *Blasius.*
blam-a-ble (*blām'ȧ-bl*), *adj.* worthy of being blamed.
blame (*blām*), *v. t.* to censure; reproach: *n.* an imputation of a fault; censure.
Syn. BLAME, censure, condemn, reprove, reproach, upbraid. To *blame* is simply to ascribe a fault to; to *censure* is to express disapprobation; the former is less personal than the latter. The thing more than the person is *blamed;* the person more than the thing is *censured.* A person may be *blamed* for his good nature, and *censured* for his negligence; *reprove* is even more personal than *censure.* A *reproof* passes from one individual to another, or to a certain number of individuals; *reproaching* and *upbraiding* are as much the acts of individuals as *reproving*, but the former denote the expression of personal feelings, and may be just or unjust; the latter is presumed to be divested of all personal feeling. [See *condemn.*]
Ant. APPROVE, commend, praise. [lustrous.
blanch (*blänch*), *v. t.* to take the color out; make
★**blanc-mange** (*blȧ-mänzh'*) *n.* a white jelly.
bland (*bland*), *adj.* mild; soft; gentle.
blan-dish-ment (*blan'dish-ment*), *n.* winning expressions or actions; artful caresses.
blank (*blangk*), *adj.* confounded; confused; dejected; empty; free from writing or printing; without result; absolute; complete.
blan-ket (*blang'ket*), *n.* a soft, loosely woven woolen cloth for a bed or as a covering.
blank verse (*vẽrs*), unrhymed verse.
blare (*blär*), *v. i.* to bellow; to give forth a loud sound like a trumpet.
blar-ney (*blär'ni*), *n.* soft, wheedling speech; flattery: *v. t.* [*p. t.* and *p. p.* blarneyed, *p. pr.* blarneying], to influence or talk over by soft words.
blar-ney stone, *n.* a stone in the wall of Blarney castle, Cork, Ireland.
bla-sé (*blä-zā'*), *adj.* exhausted by excess of pleasure.
★**blas-pheme** (*blas-fēm'* not *blas'fēm*), *v. t.* to speak irreverently of God or sacred things; mock; revile.
blas-phe-mous (*blas'fē-mus*), *adj.* uttering, containing, or exhibiting blasphemy; profane.
blas-phe-my (*blas'fē-mi*), *n.* [*pl.* blasphemies (*-miz*)], impious, profane, or mocking speech concerning God or sacred things.
blast (*blȧst*), *n.* a violent or sudden gust of wind; a forcible stream of air from an orifice; any sudden pernicious influence upon plants or animals. [BREEZE.]
blaze (*blāz*), *n.* a body of flame; brilliant sunlight; a sudden bursting out; active display; a white mark cut on a tree to serve as a guide.
bla-zon (*blā'zn*), *n.* a coat of arms; a description of armorial bearings; ostentatious display.
bleach (*blēch*), *v. t.* to make white by removing color.
bleak (*blēk*), *adj.* exposed to wind and cold; desolate; unsheltered; cheerless; piercing.
blear (*blēr*), *adj.* sore or dim from a watery discharge (said of the eyes).
bleat (*blēt*), *v. i.* to cry as, or like, a sheep: *n.* a cry, as of a sheep.
bleed (*blēd*), *v. i.* [*p. t.* and *p. p.* bled, *p. pr* bleeding], to emit or lose blood; to shed one's blood.
blem-ish (*blem'ish*), *v. t.* to injure; stain; mar; tarnish, defame: *n.* any defect or deformity.
Syn. BLEMISH, stain, spot, speck, flaw, defect, fault. Whatever takes off from the seemliness of appearance is a *blemish.* In works of art the slightest dimness of color, or want of proportion, is a *blemish.* A *stain* or *spot* sufficiently characterizes itself, as that which is superfluous and out of its place; a *speck* is a small *spot*, and a *flaw*, which is confined to hard substances,

mostly consists of a *faulty* indenture on the outer surface. A *blemish* tarnishes; a *stain* spoils; a *spot, speck,* or *flaw* disfigures; *defect* consists in the want of some specific property in an object; *fault* conveys the idea not only of something wrong, but also of its relation to the author. There is a *blemish* in fine china; a *defect* in the springs of a clock; and a *fault* in the contrivance.

blench (*blench*), *v. i.* to start back: flinch; quail.

blend (*blend*), *v. t.* to mix together, so that the things mixed cannot be separated or individually distinguished. [MIX.]

blende (*blend*), *n.* native sulphide of zinc.

★**Blenheim** (*blen'im*, not *blen'him*) **palace.** A mansion at Woodstock, Oxfordshire, England, built by Vanbrugh at national cost, 1705-16, for the first duke of Marlborough.

bless (*bles*), *v. t.* [*p. t.* and *p. p.* blessed and blest, *p. pr* blessing], to consecrate. [HOLY.]

bless-ed-ness (*bles'ed-nes*), *n.* the state of being blessed; happiness; heavenly joys.

bless-ing (*bles'ing*), *n.* an invocation of happiness on another; a benediction. [MERCY.]

blight (*blīt*), *n.* a disease in plants, which causes them to wither partly or wholly.

blind (*blīnd*), *adj.* destitute of the sense of sight; without light, morally or intellectually; not discriminating; inconsiderate; hidden.

blind-fold (*blīnd'fōld*), *adj.* having the eyes covered so as to be unable to see.

blind-ness (*'nes*), *n.* want of sight: want of discernment; ignorance; heedlessness.

blink (*blingk*), *v. i.* to wink with or as with the eye; twinkle; to get a glimpse; glimmer: *v. t.* to evade or shut one's eyes to; shirk.

blink-er (*blingk'ẽr*), *n.* one who blinks; a leather flap placed one on each side of a horse's bridle to prevent him from seeing any object except in front.

bliss (*blis*), *n.* the highest degree of happiness.

blis-ter (*blis'tẽr*), *n.* a vesicle or pustule on the skin containing watery matter or serum.

blithe (*blīth*), *adj.* gay; joyous; glad; mirthful; sprightly.

bliz-zard (*bliz'zẽrd*), *n.* a furious gale of wind, usually accompanied with fine, blinding snow.

bloat (*blōt*), *v. t.* to cure or dry in smoke.

bloat *v. t.* to cause to swell; make turgid or swollen.

block (*blok*) *n.* any unshaped solid mass of matter, as of wood, stone, etc.: *v. t.* to obstruct so as to hinder the passage of persons or things; stop up; obstruct.

block-ade (*blok-ād'*) *n.* the shutting up of a place, as a port, by hostile ships or troops.

block-age (*blok'āj*), *n.* an obstruction.

block-head (*blok'hed*), *n.* a stupid fellow.

block-house (*blok'hous*), *n.* an edifice constructed of heavy timber, and furnished with loopholes for musketry.

block sys-tem (*blok' sis-tem*), a system of working railway traffic by which the line is divided into short sections, no train being allowed to leave a section until the next section is signaled clear.

blond or **blonde** (*blond*), *adj.* of a fair color; light colored.

blood (*blud*), *n.* the fluid which circulates in the arteries and veins of an animal.

blood-ed, *adj.* of the best stock or breed.

blood-hound (*blud'hound*), *n.* a breed of large dogs remarkable for their acuteness of smell.

blood-i-ly (*blud'i-li*), *adv.* in a bloody manner; relentlessly; cruelly.

blood-i-ness (*-nes*), *n.* the state of being bloody; disposition to shed blood.

blood-stone (*blud'stōn*), *n.* a dark green variety of quartz spotted with red jasper.

blood-y (*blud'i*), *adj.* pertaining to, containing, or resembling blood; blood-stained; cruel; murderous.

bloom (*blōōm*), *n.* a blossom; the flower of a plant; the blossoming of flowers; a state or period of health and growth, promising higher perfection, or exhibiting freshness and beauty.

bloom-er (*blōōm'ẽr*), *n.* a costume for women sought to be introduced by a Mrs. Bloomer, of New York, in 1849-50, and consisting of a short skirt, loose trousers, fastened round the ankle.

blos-som (*blos'sum*), *n.* the flower of a plant; the state of flowering; bloom.

blot (*blot*), *n.* a spot or stain; an obliteration or erasure; a blemish; disgrace: *v. t.* [*p. t.* and *p. p.* blotted, *p. pr.* blotting], to spot or stain; mar.

Syn. BLOT OUT, expunge, rase or erase, efface, cancel, obliterate. Letters are *blotted out,* so that they cannot be seen again; they are *expunged,* so as to signify that they cannot stand for anything; they are *erased,* so that the space may be reoccupied with writing; *efface* does not designate either the manner or the object; inscriptions on stone may be *effaced* by rubbing them off so as not to be visible; *cancel* is principally confined to written or printed characters; they are *canceled* by striking through them with the pen; letters are *obliterated* which are in any way made illegible.

Ant. APPROVE, enforce, record, write.

blotch (*bloch*), *n.* a large, irregular spot; a clumsy daub; an eruption, or pustule.

★**blouse** (*blouz,* Fr. *blooz*), *n.* a light, loose overgarment.

blow (*blō*), *n.* a mass of blossoms; the state or condition of flowering: *v. i.* [*p. t.* blew, *p. p.* blown, *p. pr.* blowing], to blossom; flower.

blow (*blō*), *n.* a stroke with the hand or with a weapon; a knock.

blow *v. i.* [*p. t.* blew, *p. p.* blown, *p. pr.* blowing], to form or make a current of air; pant; breathe quickly: *n.* a blowing; a blast; a gale of wind, an egg deposited by a fly; the spouting of a whale.

blow-fly (*blō'flī*), *n.* any species of fly which deposits its eggs upon animal food products.

blow-pipe (*blō'pīp*), *n.* a long tube of cane or reed used by South American Indians and the Dyaks of Borneo to discharge arrows by force of the breath; a tube through which a current of air or gas is driven upon a flame.

blow-y (*blō'i*), *adj.* windy; breezy.

blub-ber (*blub'bẽr*), *v. i.* to weep violently, or so as to disfigure the face.

blu-cher (*blū'kẽr*). *n* a strong half boot.

bludg-eon (*bluj'un*), *n.* a short, heavy stick, sometimes loaded, used as a weapon.

blue (*blū*). *adj.* of the color of the clear sky: azure; low-spirited; dismal; severe.

blue-bell (*'bel*), *n.* the wild hyacinth; the harebell of Scotland.

blue-blood (*'blud*), *n.* aristocratic lineage.

blue-b ok (*'book*), *n.* a governmental official report, etc.; so called from the blue paper covers.

Blue Grotto. A celebrated cavern on the shore of Capri, an island of Italy.

blue-jacket (*blū'jak-et*), *n.* a sailor.

blue-stock-ing (*blū'stok-ing*), *n.* a woman of literary tastes or occupation.

bluff (*bluf*), *adj.* having a broad, flattened front; rising steeply or boldly; *n.* a high, steep bank; a cliff or headland with a broad, steep face: *v. t.* to deceive, or gain an advantage over.

blu-ing (*blū'ing*), *n.* the process of imparting a blue tint; the indigo, etc., used by washerwomen.

blu-ish (*blū'ish*), *adj* somewhat blue.

blun-der (*blun'dẽr*), *v. i.* to make a gross mistake. [ERROR.]

blun-der-buss (*blun'dẽr-bus*), *n.* a short gun or firearm with a large bore, now obsolete.

blun-der-ing-ly (*blun'dẽr-ing-li*), *adv.* in a blundering manner.

blunt (*blunt*), *adj.* having a thick or rounded edge or point; not sharp; dull in understanding; abrupt.

blur (*blẽr*), *v. t.* [*p. t.* and *p. p.* blurred, *p. pr.* blurring], to dim; sully; stain; blemish.

blurt (*blẽrt*), *v. t.* to speak inadvertently; divulge unadvisedly (usually with *out*).

blush (*blush*), *v. i.* to become red in the face, as from shame or confusion.

blus-ter (*blus'tẽr*), *v. i.* to be windy and boisterous, as the weather.

blus-ter-ous (*blus'tẽr-us*), **blus-trous** (*'trus*), or **blus-ter-y** (*'tẽr-i*), *adj.* noisy; tumultuous; rough.

★**bo-a** (*bō'ȧ*), *n.* [*pl.* boas (*'ȧz*)], a huge serpent of South America; a long fur tippet.

bo-a con-stric-tor (*bō'ȧ kon-strik'tẽr*), a reptile remarkable for its length, and power of destroying its prey by constriction.

boar (*bōr*), *n.* the male of swine; the wild hog, or wild boar.

board (*bōrd*), *n.* a piece of timber sawed thin, and of considerable length and breadth compared with the thickness; a table for food; provision; entertainment.

board-ing (*bōrd'ing*), *n.* light timber collectively; a covering of boards; the act of supplying, or state of being supplied with, food and lodging.

boar-ish (*bōr'ish*), *adj.* swinish; brutal; cruel.

boast (*bōst*), *v. i.* to brag; to speak of one's self or belongings in assertive and bombastic terms. [GLORY.]

boast, *v. t.* to dress (stone) with a broad chisel and mallet.

boast-ful (*bōst'fūl*), *adj.* given to boasting.

boat (*bōt*) *n.* a small open vessel usually moved by oars, but often by a sail.

★**boat-swain** (*bōt'swān* or *bō'sn*), *n.* a petty officer of a ship who has charge of the rigging, etc.

bob (*bob*), *v. t.* [*p. t.* and *p. p.* bobbed, *p. pr.* bobbing], to impart a short jerking motion to; to cut short: *v. i.* to have a short jerking motion; move or play to and fro, or up and down.

bob-bin (*bob'bin*), *n.* one of the pins or small cylinders of wood used to carry and steady the threads in pillow lace making.

★**bob-o-link** (*bob'ō-lingk*), *n.* an American song bird.

bob-stay (*bob'stā*), *n.* one of two or more ropes or chains to hold the bowsprit down.

bob-tail (*bob'tāl*), *n.* a short tail, or a tail cut short; the rabble (rag, tag and bobtail).

bode (*bōd*), *v. t.* to portend; be an omen of: *v. i.* to augur; presage.

bod-ice (*bod'is*), *n.* a close-fitting waist.

bod-i-ly (*bod'i-li*), *adj.* not mental; corporeal. [PHYSICAL.]

bod-kin (*bod'kin*), *n.* a pointed instrument for piercing holes.

★**Bodleian** (*bod'lē-an*) **library.** A library of Oxford University, England, which was originally established in 1445, and reëstablished by Sir Thomas Bodley in 1597-1602.

bod-y (*bod'i*), *n.* [*pl.* bodies (*'iz*)], the material organized substance of an animal, as distinguished from the soul, spirit, or vital principle.

Syn. BODY, ashes, carcass, clay, corpse, dust, form, frame, remains, system, trunk. *Body* denotes the structure considered as a whole; *form* looks upon it as a thing of shape and outline; *frame* regards it as supported by its framework; *system* views it as an assemblage of many related and harmonious organs. *Body, form, frame,* and *system* may be either dead or living, *clay* and *dust* are sometimes figuratively so used, *corpse* and *remains* are used only of the dead, *carcass* applies only to the *body* of an animal.

Ant. MIND, soul, spirit.

bod-y col-or (*bod'i kul'ẽr*), a pigment possessing body or consistence.

★**Bœ-o-tian** (*bē-ō'shan*), *adj.* pertaining to Bœotia, in central Greece.

★**Boer** (*bōor,* not *bōr*). Applied to Dutch inhabitants of the country districts of the Cape of Good Hope, is the German name for farmers and agriculturists.

bog (*bog*), *v. t.* [*p. t.* and *p. p.* bogged, *p. pr.* bogging], to sink or submerge in a bog or quagmire: *v. i.* to sink or stick in a bog.

bo-gus (*bō'gus*), *adj.* counterfeit, spurious.

bo-gy or **bo-gey** (*bō'gi*), *n.* [*pl.* bogies, bogeys (*'giz*)], a hobgoblin; a specter.

bo-hea (*bō-hē'*), *n.* a kind of black tea.

Bohemia (*bō-hē'mi-ȧ*). Once the country of the Boii, expelled in the time of Augustus by the Marcomanni. Now part of Austria-Hungary.

bo-he-mi-an (*bō-hē'mi-an*), *n.* a person who disregards social conventionalities.

boil (*boil*), *v. i.* to be in a state of ebullition through the action of heat.

boil, *n.* an inflamed and painful suppurating tumor.

boil-er (*boil'ẽr*), *n.* one who boils, a vessel in which anything is boiled.

★**Bois de Boulogne** (*bwȧ du bōō-lōn'yu*). A park in Paris reached by the Champs Élysées, the avenue of the Grande Armée, or the avenue of the Bois de Boulogne.

★**Bois de Vincennes** (*bwȧ du van-sen'*). A public park in Paris larger than the Bois de Boulogne.

★**Boise** (*boi'zā*), **Idaho.** From the river on which it was located, the latter having been named by the French *Rivière Boisé,* "woody river."

bois-ter-ous (*bois'tẽr-us*), *adj.* violent; rough; stormy; turbulent; noisy. [VIOLENT.]

★**Bokhara** (*bō-kȧ'rȧ*). The treasury of sciences, or "town of learning"; the chief town in a state of the same name in central Asia.

bold (*bōld*), *adj.* courageous; venturesome; planned or executed with courage and spirit.

Syn. BOLD, fearless, intrepid, undaunted. *Boldness* is a positive characteristic of the spirit; *fearlessness* is a negative state of the mind, that is, simply an absence of fear. A person may be *bold* through *fearlessness,* but he may be *fearless* without being *bold;* he may be *fearless* where there is no apprehension of danger or no cause for apprehension, but he is *bold* only when he is conscious or apprehensive of danger, and prepared to encounter it. A man is *intrepid* who has no fear where the most *fearless* might tremble; he is *undaunted* whose spirit is unabated by that which would make the stoutest heart yield.

Ant. COWARDLY; dastardly, fearful.

bole (*bōl*), *n.* the trunk or stem of a tree.

Bolivia (*bō-liv'i-ȧ,* Sp. *bō-lē'vē-ȧ*). A republic of South America. So named in memory of Gen. Simon Bolivar.

★**boll** (*bōl*), *n.* the pod or capsule of a plant, as of flax: *v. i.* to form a boll or seed vessel, go to seed.

★**Bologna** (*bō-lōn'yȧ,* not *bō-lō'nȧ*), **Italy.** Named from the Boii, anciently *Felsina,* later *Bononia.*

bol-ster (*bōl'stẽr*), *n.* a long pillow or cushion used to support the head.

bolt (*bōlt*), *n.* a short, thick arrow with a blunt head; a thunderbolt; a discharge of lightning; a stout metallic pin or rod used for holding objects together; a sliding catch for securing a door.

bolt (*bōlt*), *v. t.* to sift or separate the coarser from the finer particles.

bomb (*bom* or *bum*), *n.* a hollow iron ball or shell filled with an explosive material, fired from a mortar and usually exploded by a fuse.

bom-bard (*bom-bārd'*), *v. t.* to attack with cannon.

bom-bard-ment (*bom-bārd'ment*), *n.* a continuous attack with shot and shell.

★**bom-bast** (*bom'bȧst* or *bum'bȧst*), *n.* originally cotton or other soft material used for stuffing garments.

★**Bombay** (*bom-bā'*). Named after an Indian goddess *Bombe,* but translated by the Portuguese into *Bom bahia,* "good bay." A seaport of India.

★**bom-ba-zine** (*bum-bȧ-zēn'* or *bom-*), *n.* a twilled fabric, of which the warp is silk, the weft worsted.

bo-nan-za (*bō-nan'zȧ*), *n.* a rich vein of ore; hence, anything which is a mine of wealth.

★**bon-bon** (*bôn'bôn*), *n.* a sugar-plum; any confection of sugar; a Christmas cracker.

bond (*bond*), *n.* anything that binds, fastens, or confines; a ligament: *pl.* fetters; imprisonment; captivity; nence, a cause of union; duty; obligation; an instrument under seal by which a person binds himself, his heirs, etc.

bone (*bōn*), *n.* the ossified tissue forming the skeleton of most vertebrate animals, one of the parts or pieces of an animal skeleton.

bone-black (*bōn'blak*), *n.* animal charcoal.

bon-fire (*bon'fīr*), *n.* any large fire made in the open.

★**Boniface** (*bon'i-fās*). From the Latin *Bonifacius,* name of several popes; this, in turn, from *benefacio,* "to do good," hence, a "well-doer." Danish, *Bonifacius;* Dutch, *Bonifacius;* Fr., *Boniface;* Ger., *Bonifaz* or *Bonifacius;* It., *Bonifacio;* Lat., *Bonifacius;* Sw., *Bonifacius.*

bon-net (*bon'nĕt*), *n.* a soft woolen cap worn by men in Scotland; a woman's head covering, varying according to fashion.
★**bon-ny** (*bon'nĭ*), *adj.* handsome; beautiful; pretty; gay; blithe. [Written also *bonnie.*]
bo-nus (*bō'nus*), *n.* [*pl.* bonuses (*-ez*)], a sum given or paid, over and above what is required or actually payable.
boo (*bōō*), *interj.* an expression of aversion or contempt: *n.* hooting.
boo-by (*bōō'bi*), *n.* a dunce; a stupid fellow.
boo-dle (*bōō'dl*), *n.* money paid for votes, or undue political influence.
book (*book*), *n.* a collection of sheets of paper and other material, blank, written, or printed, bound together.
book-ing of-fice (*book'ing of'fis*), in England, an office where passenger tickets are sold. [study.
book-ish (*book'ish*), *adj.* given to reading; fond of
book-keep-ing (*book'kēp-ing*), *n.* the art of recording pecuniary or business transactions in a regular and systematic manner.
book-let (*book'let*), *n.* a little book.
book-mak-er (*book'māk-ẽr*), *n.* one who writes and publishes books; a compiler.
book-worm (*book'wẽrm*), *n.* the larva or grub of various species of insects which infest and injure books; a person closely addicted to study.
boom (*bōōm*), *n.* a long pole or spar run out to extend the foot of certain sails; a strong chain, cable, or line of spars bound together, extended across a river or harbor to exclude an enemy's ships.
★**boom-er-ang** (*bōōm'ẽr-ang*), *n.* a missile weapon used by the Australian aborigines, consisting of a piece of flat, curved wood, which, when thrown by the hand in a certain manner, describes a series of curves, and finally returns to the thrower.
boon (*bōōn*), *n.* a benefit; a gift; a privilege; a favor: *adj.* convivial.
boor (*bōōr*), *n.* a rustic; a peasant.
boor-ish (*bōōr'ish*), *adj.* like a boor; clownish.
boose. See *booze.*
boost (*bōōst*), *v. t.* to lift by pushing from behind.
boot (*bōōt*), *n.* that which is thrown in as an inducement to a bargain.
boot, *v. t.* to profit; to advantage.
boot, *n.* a leather covering for the feet and the lower part of the leg.
booth (*bōōth*), *n.* a temporary structure.
boot-less (*bōōt'les*), *adv.* without advantage.
boots (*bōōts*), *n.* the servant in a hotel who cleans the boots of the guests. [war.
boo-ty (*bōō'tĭ*), *n.* [*pl.* booties (*'tĭz*)], spoil taken in
Syn. BOOTY, spoil, prey. *Booty* and *spoil* are used as military terms in attacks on an enemy, *prey* in cases of particular violence. The soldier gets his *booty;* the combatant his *spoils;* the carnivorous animal his *prey. Booty* respects what is of personal service to the captor; *spoils* whatever serves to designate his triumph; *prey* includes whatever gratifies the appetite and is to be consumed.
booze (*bōōz*), *n.* liquor: *v. i.* to drink deeply.
bo-rac-ic (*bō-ras'ĭk*), *adj.* pertaining to, or produced from, borax.
bo-rac-ic ac-id (*as'id*), a compound of boron with oxygen and hydrogen.
bo-rax (*bō'raks*), *n.* a salt compounded of boracic acid and soda.
bor-deaux (*bôr-dō'*), *n.* red and white wines produced in the district of Bordeaux, France.
Bordeaux. Literally means "the margin of the water."
bor-der (*bôr'dẽr*), *n.* the outer part or edge of anything; a margin; brink; boundary; frontier. [ADJACENT.]
bore (*bôr*), *v. t.* to pierce or drill a hole in; form by piercing or drilling; to force (as a passage) with effort; weary by tedious repetition.
bore, *n.* a tidal wave which breaks in the estuaries of some rivers.
bore-dom (*bôr'dum*), *n.* ennui; the realm of bores; bores collectively.
★**Borghese** (*bôr-gā'zē*) **palace.** A famous Roman palace, seat of the Borghese family, and noted for its art collections.
★**Borgne** (*bôrn'y*) **lake, La.** French word, meaning "blind of one eye," or "one-eyed." Application has never been explained.
bo-ride (*bō'rid*), *n.* a compound of boron with a metallic base.
★**Borneo** (*bôr'nē-ō*). Comes from the Malay *Brunei,* once the name of the largest city on the island, and changed by the Portuguese to *Borneo.* Largest of the East Indian islands
bor-nite (*bôr'nit*), *n.* a valuable ore of copper.
★**bo-ro-glyc-er-ide** (*bō-rō-glis'ẽr-id* or *-id*), *n.* an antiseptic containing boric acid, glycerine, etc.
bo-ron (*bō'ron*), *n.* a nonmetallic element occurring abundantly in borax.
bor-ough (*bur'ō*), *n.* a corporate town.
bor-row (*bor'rō*), *v. t.* to obtain (a thing) on loan.
bort (*bôrt*), *n.* imperfect or inferior diamonds.
★**bos-cage** or **bos-kage** (*bos'kāj*), *n.* ground covered with trees and shrubs; woods; thickets; a wooded landscape.
bosh (*bosh*), *n.* absurd or empty talk.
bos-ket (*bos'ket*), *n.* a grove; a thicket.
bos-ky (*bos'kĭ*), *adj.* woody; bushy.
★**Bosnia** (*boz'nĭ-ȧ*, not *bos'nĭ-ȧ*). The country of southeastern Europe traversed by the river Bosna.
bos-om (*booz um*), *n.* the breast; clothing covering the breast; the affections or passions.
★**Bosporus** (*bos'pō-rus*). A Greek term, composed of *bous,* "a cow," and *poros,* "a ford," alluding to the legend that, after Io was transformed into a cow, she forded this strait.
boss (*bos*), *n.* [*pl.* bosses (*'ez*)], a protuberant part; a stud or knob.
boss (*bos*), *n.* a master, superintendent; foreman.
★**Boston** (*bôs'tun,* not *bos'tẽn* nor *bôs'ton*). City in Massachusetts. By some authorities the name is said to have been given in honor of John Cotton, vicar of St. Bodolph's church in Boston, Lincolnshire, England, and one of the first clergymen in the American Boston. Others say it was named before the arrival of John Cotton, in honor of three prominent colonists from Boston, England.
bo-tan-ic (*bō-tan'ĭk*), or **bo-tan-i-cal** (*'ĭ-kal*), *adj.* skilled in a knowledge of plants.
★**bot-a-nist** (*bot'ȧ-nist*), *n.* one who studies or is skilled in a knowledge of plants.
bot-a-nize (*bot'ȧ-nīz*), *v. i.* to seek after plants for the purpose of studying them.
★**bot-a-ny** (*bot'ȧ-nĭ*), *n.* the science of plants.
Botany bay. So called by Captain Cook from the great variety of plants which he found growing on its shores when exploring it in the year 1770.
botch (*boch*), *v. t.* to mend or patch in a clumsy manner.
both (*bōth*), *adj.* and *pron.* the one and the other; the two.
both-er (*both'ẽr*), *v. t.* to annoy; tease; worry.
both-er-a-tion (*both-ẽr-ā'shun*), *n.* the act of bothering, or state of being bothered.
both-er-some (*both'ẽr-sum*), *adj.* troublesome.
bot-tle (*bot'tl*), *n.* a hollow vessel, usually with a narrow neck, made of glass or earthenware, for holding liquids.
bot-tle-hold-er (*bot'l-hōld'ẽr*), *n.* one who waits upon a pugilist in a prize fight.
bot-tom (*bot'tum*), *n.* the deepest part of anything; the base; foundation; root; the ground under any body of water; the buttocks.
bot-tom lands (*bot'tum lands*), rich, flat alluvial soil on the river banks of the western states.
bot-tom-ry (*bot'tum-rĭ*), *n.* the act of borrowing money on the security of a ship.
★**bou-doir** (*bōō'dwôr,* Fr. *bōō-dwär'*), *n.* a small room, elegantly furnished, for a lady's private use.
bough (*bou*), *n.* an arm or branch of a tree.
★**bou-illon** (*bōō'yȯN* or *bōōl-yȯN'*), *n.* a clear soup produced from boiling meat.
boul-der (*bōl'dẽr*), *n.* a large stone worn or rounded by the action of water.
★**bou-le-vard** (*bōō'lē-vär* or *bōō'lē-värd*), *n.* a broad street in or around a city.
bounce (*bouns*), *v. t.* to cause to bound; to eject summarily; to bully: *v. i.* to strike against anything so as to rebound.
bound (*bound*), *n.* a limit; confine; extent; boundary: *pl.* territory within certain boundaries: *v. t.* to limit.
Syn. BOUND, limit, confine, circumscribe, restrict. *Bound* applies to the natural or political divisions of the earth; countries are *bounded* by mountains and seas; *limit* applies to any artificial boundary, as landmarks in fields serve to show the *limits* of one man's ground from another. To *confine* is to bring the *limits* close together, to part off one space absolutely from another; in this manner we *confine* a garden by means of walls. To *circumscribe* is literally to surround; in this manner a circle may *circumscribe* a square; to *restrict* is to exercise a strong degree of control; a person is *restricted* by his physician to a certain portion of food in a day.
Ant. BROADEN, enlarge, extend.
bound (*bound*), *v. i.* to jump or spring suddenly or in succession; leap; rebound.
bound (*bound*), *adj.* ready to go; destined.
bound-a-ry (*bound'ȧ-rĭ*), *n.* [*pl.* boundaries (*-rĭz*)], the extent or limit of anything.
bound-less (*bound'les*), *adj.* without bound.
Syn. BOUNDLESS, unbounded, unlimited, infinite. The ocean is a *boundless* object so long as no bounds to it have been discovered; desires are often *unbounded* which ought always to be bounded; power is sometimes *unlimited* which would be better limited; nothing is *infinite* but that Being from whom all finite beings proceed.
Ant. FINITE, limited, restricted.
boun-te-ous (*boun'tē-us*), *adj.* giving freely; liberal in gifts; munificent. [BENEFICENT.]
boun-ti-ful (*boun'tĭ-ful*), *adj.* liberal in bestowing gifts or favors; generous; ample. [BENEFICENT.]
boun-ty (*boun'tĭ*), *n.* [*pl.* bounties (*t'iz*)], liberality in bestowing gifts or favors; generosity.
★**bou-quet** (*bōō-kā'*, not *bō-kā'*), *n.* a nosegay; a perfume or aroma characteristic of some wines.
★**bour-geois** (*bōōr-zhwä'*), *n.* a French citizen of the mercantile class; a shopkeeper.
★**bour-geoi-sie** (*bōōr-zhwä-zē'*), *n.* the French middle class.
bourn (*bōrn*), *n.* a stream; a rivulet.
★**bourse** (*bōōrs*), *n.* a stock exchange for the transaction of business.
bout (*bout*), *n.* a turn or bend; a going and returning.
bo-vine (*bō'vin*), *adj.* of or pertaining to cows or oxen.
bow (*bou*), *n.* the forepart or prow of a ship.
bow (*bou*), *v. t.* to bend; make curved or crooked; bend or incline, as the head or body in token of respect.
bow (*bō*), *n.* a weapon for discharging arrows; anything curved.
bow-el (*bou'el*), *n.* one of the intestines of an animal.
bow-er (*bou'ẽr*), *n.* a shelter constructed of boughs or twining plants; an arbor.
bow-er (*bou'ẽr*), *n.* an anchor carried at the bow of a ship.
bow-er-y (*bou'ẽr-ĭ*), *adj.* like a bower; shady.
bow-er-y (*bou'ẽr-ĭ*), *n.* [*pl.* boweries (*-iz*)], a country retreat; farm or plantation with its buildings.
bowl (*bōl*), *n.* a circular, hollow vessel for holding liquids.
bowl (*bōl*), *n.* a ball of wood used in the games of bowls, and skittles.
bowse (*bouz*), *v. t.* to pull or haul hard.
★**bow-sprit** (*bō'sprit*), *n.* a large boom or spar running out from the stem of a ship.
bow-string (*bō'string*), *n.* string of a bow; string used by the Turks for strangling offenders.
box (*boks*), *n.* an evergreen shrub or small tree, yielding a hard, close-grained wood.
box (*boks*), *n.* [*pl.* boxes (*'ez*)], a case for holding anything: *v. t.* to inclose in a box; confine.
box (*boks*), *n.* a blow on the head with the fist, or on the ear with the open hand.
box-ing glove (*boks'ing gluv*), a padded glove.
box met-al (*boks' met-al*), an antifriction alloy used for journal boxes, shafting, etc.
boy (*boi*), *n.* a male child; a young lad.
★**boy-cott** (*boi'kot*), *v. t.* to combine against a person so as to ostracize.
boy-hood (*boi'hood*), *n.* the state of being a boy.
boy-ish (*boi'ish*), *adj.* pertaining to a boy or boyhood; childish; puerile.
brace (*brās*), *n.* that which holds anything tightly or supports it firmly; a prop; a bandage; a pair; a rope reeved through a block at the end of a yard, by which the yard is swung from the deck; *v. t.* to bind or tie closely; strain up; strengthen; furnish with supports.
brace-let (*brās'let*), *n.* an ornamental band or ring for the wrist.
brack-en (*brak'en*), *n.* the brake or fern.
brack-et (*brak'et*), *n.* a supporting piece projecting from a wall; one of the inclosing marks in printing: *v. t.* to furnish with or inclose within brackets.
brack-ish (*brak'ish*), *adj.* saltish.
bract (*brackt*), *n.* a modified leaf growing from the flower stem.
brad (*brad*), *n.* a slender nail, having a projection on one side: *v. t.* [*p. t.* and *p. p.* bradded, *p. pr.* bradding], to nail or secure with brads.
brag (*brag*), *v. i.* [*p. t.* and *p. p.* bragged, *p. pr.* bragging], to boast; speak vainglioriously.
brag-ga-do-cio (*brag-ȧ-dō'shō*), *n.* a boaster; a braggart; empty boasting.
brag-gart (*brag'gẽrt*), *n.* a boaster: *adj.* boastful.
brag-ger (*brag'gẽr*), *n.* one who brags.
brah-ma (*brä'mȧ*), *n.* a useful variety of large domestic fowl.
Brahman or **Brahmin** (*brä'man* or *brä'mĭn*), *n.* [*pl.* Brahmans or Brahmins (*'manz* or *'mĭnz*)], a member of the Hindu priestly caste.
★**Brahmanism** or **Brahminism** (*brä'man-izm* or *brä'mĭn-izm*), *n.* the religion or doctrines of the Brahmans.
★**Brahmapootra** or **Bramaputra** (*brä-mȧ-pōō'trȧ*). River of India, the name being of Sanskrit origin, meaning "the offspring of Brahma," or "Brahma's son."
braid (*brād*), *v. t.* to weave or intertwine; plait: *n.* a plaited band.
brain (*brān*), *n.* the soft, whitish, convoluted mass occupying the cranium of a vertebrate; the understanding.
★**brain storm** (*stôrm*), a state of cerebral excitement.
brain wave (*wāv*), a telepathic vibration by which it is supposed a thought is conveyed from one mind to another.
brain-y (*brān'ĭ*), *adj.* possessed of brains; acute.
★**braise** (*brāz*), *v. t.* to stew (as meat) in a covered vessel.
brait (*brāt*), *n.* a rough diamond.
brake (*brāk*), *n.* an instrument or machine to break flax; an extended handle, by which a number of men can unite in working a pump; a mechanical device for checking the motion of a vehicle or machine.
brake (*brāk*), *n.* a place overgrown with bracken, brushwood, etc.; the common fern.
bram-ble (*bram'bl*), *n.* the English blackberry; any prickly bush or shrub.
bram-bly (*bram'blĭ*), *adj.* full of brambles.
bran (*bran*), *n.* the husks of wheat, rye, etc., separated from the flour by bolting.
branch (*bränch*), *n.* [*pl.* branches (*'ez*)], a shoot or limb from a main bough; an offshoot; any member or part of a body or system; a department.
brand (*brand*), *n.* a burning piece of wood; any form of trade-mark; hence, quality or kind: *v. t.* to mark by burning with a hot iron.
bran-dish (*bran'dish*), *v. t.* to move, wave, or shake, as a raised weapon.
bran-dy (*bran'dĭ*), *n.* [*pl.* brandies (*'dĭz*)], an ardent alcoholic liquor distilled from wine or the husks of grapes.
Brandywine river, Pa. Called by the first settlers, the Swedes, *Fish-kiln,* "Fish creek." Its present name is ascribed by tradition to the loss of a Dutch vessel laden with brandy, or *brand-wijn.* A celebrated battle was fought there, which

accounts for the name being given to eight places in the country.

brash (*brash*), *adj.* brittle, as wood. [*Colloq., U. S.*]

brash (*brash*), *n.* broken, loose, and angular fragments of rock underlying alluvial deposits.

brass (*brăs*), *n.* [*pl.* brasses (*'ez*)], an alloy of copper and zinc.

brass-y (*brăs'i*), *adj.* pertaining to, or resembling, brass; impudent; brazen.

brat (*brat*), *n.* a child (used contemptuously).

brat-tish-ing (*brat'ish-ing*), *n.* ornamental openwork; cresting.

★**bra-va-do** (*brā-vā'dō*), *n.* [*pl.* bravadoes (*'dōz*)], arrogant menace; defiance.

brave (*brāv*), *adj.* bold; courageous; intrepid; making a fine show: *n.* an Indian warrior.

Syn. BRAVE, gallant. *Gallantry* is extraordinary bravery or bravery on extraordinary occasions; the *brave* man goes willingly where he is commanded; the *gallant* man leads on with vigor to the attack. *Bravery* is common to vast numbers and whole nations; *gallantry* is peculiar to individuals or particular bodies.

Ant. FEAR, cringe, shrink, tremble.

brav-er-y (*brāv'ĕr-i*), *n.* the quality of being brave.

Syn. BRAVERY, courage, valor. *Bravery* lies in the blood; *courage* lies in the mind; the latter depends on the reason, the former on the physical temperament; the first is a species of instinct, the second a virtue; a man is *brave* in proportion as he is without thought; he has *courage* in proportion as he reasons or reflects. *Valor* is a higher quality than either *bravery* or *courage*, and seems to partake of the characteristics of both; it combines the fire of *bravery* with the determination and firmness of *courage*. [See *courage*.]

Ant. FEAR, pusillanimity, cowardice.

bra-vo (*brä'vō*), *interj.* well done! good! *n.* a cheer.

bra-vu-ra (*brä-vōō'rä*), *n.* an air of florid, brilliant style, adapted to display the skill of the performer, or the range and flexibility of a singer's voice.

brawl (*brawl*), *v. i.* to quarrel noisily and outrageously. [FEUD.]

brawn (*brawn*), *n.* full, strong muscles; boar's flesh, especially when collared and otherwise prepared.

brawn-y (*brawn'i*), *adj.* muscular; tough.

bray (*brā*), *v. t.* [*p. t.* and *p. p.* brayed, *p. pr.* braying], to pound or beat fine or small.

braze (*brāz*), *v. t.* to solder with brass; cover or ornament with brass.

bra-zen (*brā'zn*), *adj.* made of brass; pertaining to brass.

bra-zier (*brā'zhĕr*), *n.* an open pan for burning charcoal.

★**Brazil** (*brä-zil'*, Port. *bra-zēl'*). Named, on account of the color of its dye-woods, from *braza*, "a live coal." A republic of South America.

bra-zil nut (*brä-zil' nut*), *n.* the seed of a tree of tropical America.

★**Brazos** (*brä'zōs*) **river, Tex.** As named by the Spaniards *Brazos de Dios*, "arm of God." The Spaniards established a mission on its banks, and, the guard having been called away, the Indians descended on the mission, completely destroying it. When the soldiery returned, their loss was quickly discovered, and, searching for a solution, they found in the river many of the dead bodies of the depredators, still floating in its eddies; as they could discern no marks of violence, they pronounced it a retributive miracle done by the "arm of God."

breach (*brēch*), *n.* the act of breaking; the violation of a law, contract, or any other engagement.

Syn. BREACH, break, gap, chasm. A *breach* and a *gap* are the consequence of a violent removal, which destroys the connection; a *break* and a *chasm* may arise from the absence of that which would form a connection. A *breach* in a wall is made by means of cannon; *gaps* in fences are commonly the effect of some violent effort to pass through; a *break* is made in a page of printing by leaving off in the middle of a line; a *chasm* is left in writing when any words in the sentence are omitted. [See *break*.]

bread (*bred*), *n.* food made from ground grain; food in general.

bread-fruit (*'frōōt*), *n.* the fruit of a tree growing in the Pacific islands.

bread-stuff (*'stuf*), *n.* grain, flour, or meal from which bread is made.

breadth (*bredth*), *n.* the measure of any surface from side to side.

break (*brāk*), *v. t.* [*p. t.* broke, *p. p.* broken, *p. pr.* breaking], to separate with violence; interrupt: *n.* a breach; rupture; an interruption.

Syn. BREAK, burst, crack, split. To *break* does not specify any particular manner or form of action; what is *broken* may be *broken* in two or more pieces, *broken* short or lengthwise, and the like; to *burst* is to break suddenly and with violence, frequently also with noise. To *crack* and *split* are modes of breaking lengthwise; the former in application to hard or brittle objects, as clay, or the things made of clay; the latter in application to wood. [See *breach*.]

Ant. ATTACH, bind, join, mend, unite.

break-age (*brāk'āj*), *n.* the act of breaking; allowance for accidental fracture.

break-down (*brāk'doun*), *n.* a collapse; failure.

break-er (*brāk'ĕr*), *n.* one who, or that which, breaks. [WAVE.]

break-fast (*brek'fast*), *n.* the first meal in the day.

break-wa-ter (*'waw-tĕr*), *n.* any structure to break the force of the waves.

bream (*brēm*), *n.* a broad-shaped fresh-water fish; sunfish; marine fishes of different varieties.

breast (*brest*), *n.* the fore part of the body between the neck and the abdomen.

breast-plate (*'plāt*), *n.* a portion of armor covering the front of the body.

breast-work (*'wĕrk*), *n.* a hastily constructed work, thrown up breast-high for defense.

★**breath** (*breth*), *n.* the air inhaled and exhaled in respiration; life; the power or capacity to breathe.

★**breathe** (*brēth*), *v. i.* to inhale air and expel it from the lungs; live; take breath.

breath-ing (*brēth'ing*), *n.* respiration; air in gentle motion.

breech (*brēch*), *n.* the buttocks; the hinder part of anything.

breech-es (*brich'ez*), *n. pl.* a garment worn by men, covering the legs.

breech-ing (*brich'ing*), *n.* the harness which passes round a horse's breech.

breed (*brēd*), *v. t.* [*p. t.* and *p. p.* bred, *p. pr.* breeding], to procreate; hatch; train. [EDUCATION.]

breeze (*brēz*), *n.* a gentle gale; a fresh, soft wind.

Syn. BREEZE, gale, blast, gust, storm, tempest, hurricane. A *breeze* is gentle; a *gale* is brisk, but steady; we have *breezes* in a calm summer's day; the mariner has favorable *gales*, which keep the sails on the stretch. A *blast* is impetuous; the exhalations of a trumpet, the breath of bellows, are *blasts*. A *gust* is sudden and vehement; *storm*, *tempest*, and *hurricane* include other particulars besides wind. A *storm* throws the whole atmosphere into commotion; it is a war of the elements, in which wind, rain, hail, and the like conspire to disturb the heavens. *Tempest* is a species of *storm* which has also thunder and lightning to add to the confusion. *Hurricane* is a species of *storm* which exceeds all the rest in violence and duration.

Ant. CALM, lull, quiet.

breeze (*brēz*), *n.* house sweepings.

★**Brenner** (*bren'nĕr*) **pass.** The lowest pass over the main chain of the Alps. It is situated in the Tyrol about twenty-five miles south of Innsbruck.

★**breth-ren** (*breth'ren*, not *breth'ĕrn*), *n.* plural of brother.

★**Breton** (*brit'un* or *bret'un*) **Cape.** Discovered by mariners from Brittany.

breve (*brēv*), *n.* a note of time equal to two semibreves or four minims.

★**bre-vet** (*brē-vet'*), *n.* a commission to an officer in the army conferring a higher rank, but without increase of pay.

★**bre-vi-a-ry** (*brē'vi-ā-ri*), *n.* [*pl.* breviaries (*-riz*)], a book containing the daily prayers.

brev-i-ty (*brev'i-ti*), *n.* [*pl.* brevities (*-tiz*)], shortness.

brew (*brōō*), *v. t.* to make liquors from malt; plot: *n.* the action, process, or product of brewing.

brew-er-y (*brōō'ĕr-i*), *n.* a brewhouse.

★**Brian** (*bri'an*) or **Briant.** Names derived from the Irish name *Brian*, which has been rendered "warrior of great strength."

bribe (*brīb*), *n.* a gift or consideration given or promised with the object of corrupting or unduly influencing the judgment of the recipient.

brib-er-y (*brīb'ĕr-i*), *n.* [*pl.* briberies (*-iz*)], the act or practice of bribing.

★**bric-a-brac** (*brik'-ä-brak*), *n.* antique articles of virtu; fancy ware.

brick (*brik*), *n.* a block of clay dried in the sun or burned in a kiln; a jolly, good-natured fellow.

brick-kiln (*'kil*), *n.* a kiln or furnace in which bricks are baked or burnt.

brid-al (*brīd'al*), *n.* a marriage; nuptials: *adj.* pertaining to a bride, or wedding.

bride (*brīd*), *n.* a woman newly married, or about to be married.

bride-groom (*'grōōm*), *n.* a man newly married or about to be married.

brides-maid (*brīdz'mād*), *n.* a female friend who attends on a bride at her wedding.

bride-well (*brīd'wel*), *n.* a house of correction for the confinement of disorderly persons.

bridge (*brij*), *n.* a structure of iron, stone, or wood, spanning a river, road, valley, etc.

★**Bridget** (*brij'et*). Mr. Arthur derives this feminine name from Gaelic *brighid*, "fiery dart" or "shining bright"; the Gaelic word signifies also a hostage; Armstrong renders *brighide* "a hostage." Celtic, "strength." Danish, *Birgitte;* Dutch, *Brigetta;* Fr., *Brigitte;* Ger., *Brigitta;* It., *Brigida* or *Brigita;* Lat., *Brigida;* Sp., *Brigida*.

bri-dle (*brī'dl*), *n.* the headstall, bit and reins by which a horse is controlled; a restraint.

brief (*brēf*), *adj.* short; concise; contracted; narrow: *n.* an epitome; an abridged statement. [SHORT.]

bri-er (*brī'ĕr*), *n.* a thorny plant or shrub.

bri-er root (*rōōt*), *n.* the root of two species of smilax, used in the manufacture of tobacco pipes.

brig (*brig*), *n.* a two-masted, square-rigged vessel.

bri-gade (*bri-gād'*), *n.* a subdivision of an army: *v. t.* to form into a brigade or brigades.

brig-a-dier (*brig-a-dēr'*), *n.* a general officer commanding a brigade. [Also *brigadier general.*]

★**brig-and** (*brig'and*, not *brig-and'*), *n.* a robber; a member of a gang of freebooters; a bandit.

brig-and-age (*brig'and-āj*), *n.* the life and practices of a brigand; organized robbery.

brig-an-tine (*brig'an-tīn*), *n.* a small two-masted square-rigged vessel like a brig, except that she has no square mainsail.

bright (*brit*), *adj.* brilliant; shining; illustrious; witty; clever; lively. [CLEAR.]

bright-en (*brit'n*), *v. i.* to grow bright; clear up: *v. t.* to make bright or luminous; make cheerful.

Brighton (*bri'tun*). Formerly Brighthelmstoen, from a personal name. A city and watering-place in Sussex, England, on the English channel. It is the leading seaside resort in Great Britain.

Bright's dis-ease (*brits' diz-ēz'*), *n.* a form of kidney disease characterized by the presence of albumin in the urine.

brill (*bril*), *n.* a flatfish resembling the turbot; prill.

bril-lian-cy (*bril'yan-si*), *n.* splendor. [RADIANCE.]

bril-liant (*bril'yant*), *adj.* sparkling; distinguished: *n.* a diamond, cut to exhibit its refracting qualities.

brim (*brim*), *n.* the edge of anything: *v. t.* [*p. t.* and *p. p.* brimmed, *p. pr.* brimming], to fill to the brim.

brim-ful (*brim'ful*), *adj.* overflowing.

brim-stone (*brim'stōn*), *n.* sulphur: *adj.* made of brimstone; of the color of sulphur.

brine (*brin*), *n.* salt water; pickle; the ocean; tears: *v. t.* to steep in brine.

bring (*bring*), *v. t.* [*p. t.* and *p. p.* brought, *p. pr.* bringing], to fetch or convey.

Syn. BRING, fetch, carry. To *bring* is simply to take with one's self from the place where one is; to *fetch* is to go first to a place and then bring a thing; to *fetch*, therefore, is a species of *bringing;* whatever is near at hand is *brought;* whatever is at a distance must be *fetched;* to *carry* respects always a motion directly from the place or at a distance from the place; he *carries* a parcel from home.

brink (*bringk*), *n.* the edge; verge.

brisk (*brisk*), *adj.* lively; active; swift; vivacious; effervescing vigorously; sparkling. [ACTIVE.]

bris-ket (*bris'ket*), *n.* that part of an animal's breast where the ribs join the breastbone.

★**bris-tle** (*bris'l*, not *brist'l*), *n.* a short, stiff, coarse hair, especially upon the back and sides of swine.

bris-tly (*bris'li*), *adj.* covered with bristles.

bris-tol board (*bris'tul bōrd*), *n.* a thick, smooth, white pasteboard.

bris-tol pa-per (*pā'pĕr*), *n.* a kind of stout drawing paper.

Bristol, R. I. From the town of same name in England. Derived from Anglo-Saxon words *bris*, "bright," and *stol*, "place."

bris-tol stone (*stōn*), *n.* a transparent rock crystal. Called, when polished, bristol diamond.

Britain (*brit'n*). From *brith*, meaning "to paint." The British poets called it *Inis gwyn*, "white island," which answers to the Roman name *Albion*. It was known to the Phenns as *Barat-Anac*, or "the land of tin," as far back as the year 1037 B. C. Five hundred years afterward it was alluded to by the Romans under the name of Britannia, which subsequently became Britain.

Brit-ish (*brit'ish*), *adj.* of or pertaining to Great Britain or its inhabitants.

British Columbia. The only portion of North America that retains the name of the discoverer of the new world, with the exception of the District of Columbia.

British museum. A celebrated museum at Bloomsbury, London, founded in 1753.

Brit-on (*brit'un*), *n.* a native of Great Britain.

★**Brittany** (*brit'ta-ni*). In French, *Bretagne*, an old province in the northwest of France. It was originally called *Armorica*, a Celtic name meaning the "land by the sea."

brit-tle (*brit'l*), *adj.* apt to break; not tough. [FRAGILE.]

broach (*brōch*), *n.* an awl; spike; skewer; a kind of boring bit or drill; a stonecutter's chisel.

broad (*brawd*), *adj.* [*comp.* broader, *superl.* broadest], wide; ample; vast; liberal. [LARGE.]

broad ar-row (*ar'ō*), *n.* a British government mark to distinguish its property.

broad-cloth (*'klawth*), *n.* a fine woolen cloth with a smooth finished surface.

broad-en (*brawd'n*), *v. i.* to grow broad: *v. t.* to make broad or comprehensive.

Broad river, N. C. and **S. C.** The Indian name given by the Catawbas was *Eswan Huppeday*, or "Line River," because it was the established line between the Cherokee and Catawba tribes.

broad-side (*brawd'sīd*), *n.* a simultaneous volley from one side of a warship.

broad-sword (*'sōrd*), *n.* a cutting sword with a broad blade.

Broadway. The principal business street of New York, extending from Bowling Green northward to Albany, N. Y. Longest street in the world.

bro-cade (*brō-kād'*), *n.* a silk stuff variegated with gold and silver flowers, etc.

broch (*brok*), *n.* a prehistoric roofless round tower, with massive walls of unhewn stone, found on the Orkney and Shetland islands and near the mainland.

bro-chure (*brō-shōōr'*), *n.* a pamphlet dealing with a subject of passing interest.

★**Brocken** (*brok'en*) or **Blocksberg** (*bloks'bĕrg*). The chief summit of the Harz mountains, and the highest mountain in northern Germany, situated in the province of Saxony, Prussia. It is the Roman *Mons Bructerus*.

★**brogue** (*brōg*), *n.* a coarse, rough shoe; a dialectic pronunciation.

broil (*broil*), *v. t.* to cook upon a gridiron: *v. i.* to be subjected to great heat: *n.* a noisy quarrel. [QUARREL, FEUD.]

bro-ken (*brō'kn*), *p. adj.* not entire; in pieces; rough; hilly; bankrupt; crushed; infirm; imperfect.

bro-ker (*brō'kẽr*), *n.* one who acts as agent or middleman for another.

bro-ker-age (*brō'kẽr-āj*), *n.* the business of a broker; his fee or commission.

bro-ma (*brō'mà*), *n.* aliment; a light preparation of cocoa.

bro-mic ac-id (*brō'mik as'id*), a compound of bromine and oxygen.

★**bro-mide** (*brō'mid* or *'mid*), *n.* a compound of bromine.

★**bro-mine** (*brō'min* or *'min*), *n.* a nonmetallic element related to chlorine and iodine.

bron-chi-a (*brong'ki-à*), *n. pl.* the bronchial tubes.

bron-chit-ic (*bron-kit'ik*), *adj.* of or pertaining to bronchitis.

★**bron-chi-tis** (*bron-kī'tis*), *n.* an inflammation of the mucous lining of the bronchial tubes.

★**bron-cho** (*brong'kō*), *n.* a native, a Mexican or Californian horse of small size.

bron-cho-pneu-mo-ni-a (*brong-kō-nū-mō'ni-à*), *n.* inflammation of the lungs and bronchi.

bron-chus (*brong'kus*), *n.* [*pl.* bronchi (*'kī*)], one of the two principal branches of the windpipe.

Bronxville (*brongks'vil*). Village in Westchester county, New York. Named for Jonas or Jacob Bronck, an early settler.

bronze (*bronz*), *n.* an alloy of copper and tin; a work of art cast or wrought in bronze.

brooch (*brōch*), *n.* an ornamental dress clasp.

brood (*brōōd*), *n.* offspring; the young birds hatched at one time: *v. i.* to linger over sorrowfully.

brook (*brook*), *n.* a small stream.

brook (*brook*), *v. t.* to bear; put up with.

Brooklyn (*brook'lin*). City in New York, corruption of the Dutch name *Breukelen*, from a village in the province of Utrecht, Holland. The name signifies "broken-up land," or "marshy land."

broom (*brōōm*), *n.* a shrub, bearing large yellow flowers; a besom or brush.

broth (*broth*), *n.* a kind of thin soup.

broth-el (*broth'el*), *n.* a house of ill fame.

broth-er (*bruth'ẽr*), *n.* [*pl.* brothers (*'ẽrz*) and brethren (*breth'ren*)], a male person who has the same father and mother with another person; one closely united by a common interest with another.

broth-er ger-man (*-jẽr'man*), a brother on both the father's and the mother's side.

broth-er-hood (*-hood*), *n.* the state or quality of being a brother; a fraternity.

broth-er-in-law (*-in-law*), *n.* the brother of one's husband or wife; sister's husband.

★**brough-am** (*brōō'am* or *brōōm*), *n.* a close four-wheeled carriage for one or two horses.

brow (*brou*), *n.* the arch of hair over the eye; the forehead; the edge of a steep place.

brow-beat (*brou'bēt*), *v. t.* [*p. t.* browbeat, *p. p.* browbeaten, *p. pr.* browbeating], to bully.

brown (*broun*), *adj.* of a dusky or dark color: *n.* a dark color, inclined to red or yellow.

brown-ie (*broun'i*), *n.* a beneficent spirit supposed to haunt old farmhouses. [*Scotch.*]

browse (*brouz*), *v. t.* to feed on; pasture on; graze: said of cattle, deer, etc.

★**Brüges** (*brü'jez*, Fr. *brüzh*). In Belgium, "a city with many bridges"; *brücke*, "a bridge."

bru-in (*brōō'in*), *n.* a bear, in popular tales.

bruise (*brōōz*), *n.* an injury to the flesh of an animal or to a plant or other body, caused by a blow.

bruit (*brōōt*), *n.* report; rumor; fame: *v. t.* to report; noise abroad.

bru-nette (*brōō-net'*), *n.* a woman with a dark complexion, usually with dark hair and eyes.

brunt (*brunt*), *n.* a violent shock; a furious onslaught; a strong, brief and sudden effort.

brush (*brush*), *n.* a thicket of small trees; an instrument composed of bristles, etc.

brusque (*brusk*), *adj.* abrupt in manner.

★**Brussels** (*brus'selz*), Fr. **Bruxelles.** Meaning "the seat or site on the marsh"; *broek*, "a marsh," and *sels*, "a house." The capital of Belgium.

Brus-sels car-pet (*kär'pet*), a strong kind of woolen carpet.

Brus-sels lace (*lās*), various kinds of expensive lace made originally at Brussels.

Brus-sels sprouts (*sprouts*), a variety of the common cabbage.

bru-tal (*brōō'tal*), *adj.* pertaining to or resembling a brute; savage. [CRUEL.]

bru-tal-i-ty (*brōō-tal'i-ti*), *n.* the quality of being brutal; pitiless cruelty.

brute (*brōōt*), *adj.* without reason or intelligence; uncivilized: *n.* a beast; a brutal person.

bru-tish (*brōō'tish*), *adj.* pertaining to, or resembling, a brute; savage; sensuous.

bub-ble (*bub'l*), *n.* a small bladder of water or other fluid filled with air or gas; anything unreal.

★**buc-ca-neer** (*buk-kà-nēr'*), *n.* a pirate; a sea robber: *v. i.* acting the part of a buccaneer.

buc-ci-na-tor (*buk-si-nā'tẽr*), *n.* a muscle of the cheek called the trumpeter's muscle.

★**Bucharest** or **Bukharest** (*bū-kà-rest'*). From an Albanian word *bucurie*, "pleasure, joy"; hence, "the city of enjoyment." Capital of Roumania.

buck (*buk*), *v. t.* to break or pulverize, as ore.

buck, *n.* the male of the fallow-deer, goat, rabbit, etc.; a gay fellow; a male Indian or negro.

buck-et (*buk'et*), *n.* a vessel for drawing or holding water; the scoop of a dredging machine.

buck-et shop (*shop*), an office for gambling in stocks, grain, etc., in small amounts.

buck-eye (*buk'i*), *n.* a name of the American horse chestnut.

buck-hound (*'hound*), *n.* a staghound.

★**Buckingham** (*buk'ing-am*). A tribe name, "the dwelling among beeches"; *bucke*, "the beech tree"; *ham*, "a home or family dwelling."

Buckingham palace. The London residence of the sovereign, situated at the western end of St. James' park.

buck-jumper (*'jump-ẽr*), *n.* a vicious untrained horse that endeavors to throw the rider.

buc-kle (*buk'l*), *n.* a metal clasp consisting of a frame with movable tongue or catch.

buck-le (*buk'l*), *n.* a bend, or kink, as in a blade; a curl of hair; the condition of being curled, as hair.

buc-kler (*buk'lẽr*), *n.* a kind of ancient shield.

★**buck-ram** (*buk'ram*), *n.* coarse linen cloth stiffened with dressing: *adj.* made of, or resembling, buckram.

buck-shot (*'shot*), *n.* shot of a large size.

buck-wheat (*'hwēt*), *n.* a plant cultivated for its seeds, which are ground into meal and used for food.

bu-col-ic (*bū-kol'ik*), *adj.* pastoral: *n.* a pastoral poem.

bud (*bud*), *v. t.* [*p. t.* and *p. p.* budded, *p. pr.* budding], to graft: *v. i.* begin to grow: *n.* the undeveloped stage of a branch, leaf, or flower.

★**Buda** (*bōō'dà*). In Hungary; took its name from *Buda*, the brother of Attila, as well as *Bud-var* and *Bud-falva*, meaning "Buda's fort and village"; *buda*, "a hut or dwelling."

★**Bud-dhist** (*bōōd'ist*), *n.* one who accepts the doctrines of Buddhism: *adj.* pertaining to Buddha or Buddhism.

budge (*buj*), *v. i.* to move from one's position.

budg-et (*buj'et*), *n.* a bag with its contents, hence a stock or store.

bud-let (*bud'let*), *n.* a small bud.

★**Buenos Ayres** or **Aires** (*bō'nus ā'riz* or *ârz*). Meaning "good breezes"; *buen*, "good." The capital of the Argentine Republic.

buff (*buf*), *n.* a thick leather prepared from the skin of the ox, etc.; a light yellow.

buf-fa-lo (*buf'à-lō*), *n.* [*pl.* buffaloes (*-lōz*)], a ruminant mammal of the ox family.

Buffalo. A city in New York, named from the stream Buffalo creek, on which it is located, the stream receiving its name from the frequent visits of the American bison to a salt spring which welled up near its mouth, "where the buffalo drinks." Indian name of the locality *Teosahwa* or *Teshuway*, "the place of the basswood," also *sisilichanne*, "waters sought by the buffaloes."

buf-fa-lo bird (*bẽrd*), a bird which perches on the buffalo to catch parasites.

buf-fer (*buf'ẽr*), *n.* any contrivance which serves to deaden the concussion caused by the impact of two bodies.

buf-fet (*buf'et*), *n.* a blow with the hand: *v. t.* to strike with the hand; box; beat; contend against.

buf-fet (*boo-fā'*), *n.* a cupboard or sideboard; a counter for refreshments.

buf-foon (*buf-ōōn'*), *n.* one who amuses others by low jests, antics, odd gestures, etc. [FOOL.]

buf-foon-er-y (*buf-ōōn'ẽr-i*), *n.* [*pl.* buffooneries (*-iz*)], the arts and practices of a buffoon.

bug (*bug*), *n.* name in England for the bedbug; an insect.

bug-a-boo (*bug-à-bōō'*), *n.* a bugbear.

bug-bear (*bug'bâr*), *n.* a frightful object; a vain terror.

bug-gy (*bug'i*), *n.* a light four-wheeled carriage drawn by one horse.

bu-gle (*bū'gl*), *n.* a hunting horn; a military wind-instrument.

bu-gle (*bū'gl*), *n.* an elongated glass bead.

build (*bild*), *v. t.* [*p. t.* and *p. p.* built, builded, *p. pr.* building], to construct; erect, as a house: *v. i.* to construct an edifice; depend, base, or reckon.

build-ing (*bild'ing*), *n.* the act of constructing, raising, or establishing; an edifice.

bulb (*bulb*), *n.* an onion-shaped root; a kind of leaf bud; any protuberance or expansion on a stem or tube.

★**Bulgaria** (*bōōl-gā'ri-à*, not *bul-gā'ri-à*). On the Danube, and comprising part of ancient Mœsia.

bulge (*bulj*), *n.* the bilge or widest part of a cask; a bending outward: *v. i.* to jut out.

bulk (*bulk*), *n.* magnitude or size.

bulk-head (*'hed*), *n.* a partition in a vessel which separates apartments on the same deck.

bulk-y (*bulk'i*), *adj.* of great size or bulk.

Syn. BULKY, massive. Whatever is *bulky* has a prominence of figure; what is *massive* has compactness of matter.

bull (*bool*), *n.* the male of any bovine mammal; the male of various large animals.

bull (*bool*), *n.* a papal letter, edict, or rescript, having a leaden seal (*bulla*) affixed to it.

bull (*bool*), *n.* a ludicrous inconsistency in language.

bul-let (*bool'let*), *n.* a small ball or projectile.

bul-le-tin (*bool'lē-tin*), *n.* an official report; a periodical publication.

bull-fight (*bool'fīt*), *n.* a combat between armed men and a bull.

bull-finch (*bool'finch*), *n.* a common European song bird.

bull-head (*bool'hed*), *n.* a broad-headed, scaleless fish of North America; catfish.

★**bul-lion** (*bool'yun*), *n.* uncoined gold or silver; foreign coin.

bul-lock (*bool'luk*), *n.* an ox or castrated bull; a full-grown steer.

bull's-eye (*boolz'i*), *n.* a boss of glass; the center of a target.

bull ter-ri-er (*bool' ter'i-ẽr*), a cross-breed between the bulldog and the terrier.

bull-y (*bool'i*), *n.* [*pl.* bullies (*'iz*)], one who domineers by insolence or threats.

bul-rush (*bool'rush*), *n.* a rushlike aquatic plant.

★**bul-wark** (*bool'wẽrk*), *n.* a rampart; a fortification; the sides of a ship above the upper deck.

bum-ble-bee (*bum'bl-bē*), *n.* a large bee.

bum-mer (*bum'ẽr*), *n.* a loafing fellow who sponges on others. [*Slang, U. S.*]

bump (*bump*), *n.* a shock from a blow; a swelling, protuberance.

bump-er (*bump'ẽr*), *n.* an overflowing cup.

bump-kin (*bump'kin*), *n.* an awkward, clumsy rustic; a country lout.

bump-tious (*bump'shus*), *adj.* self-assertive.

bun (*bun*), *n.* a small, light cake.

bunch (*bunch*), *n.* a cluster; a collection of things of the same kind growing or fastened together.

★**bun-combe** or **bun-kum** (*bung'kum*), *n.* idle or showy speech, especially if intended to secure votes.

bun-dle (*bun'dl*), *n.* a number of things bound together; a roll or package; two reams of printing or brown paper

bung (*bung*), *n.* a large cork for stopping the hole in a cask.

★**bun-ga-low** (*bung'gà-lō*), *n.* a single-storied house, lightly built, and generally surrounded by a veranda.

bun-gle (*bung'gl*), *v. i.* to work in a clumsy, awkward manner: *v. t.* to botch; manage awkwardly.

bun-ion (*bun'yun*), *n.* a swelling on the foot.

bunk (*bungk*), *n.* a box or recess serving for a sleeping berth in a vessel, sleeping car, etc.

bun-ker (*bung'kẽr*), *n.* a large bin or receptacle; a sandhole on golf links.

bun-ko or **bun-co** (*bung'kō*), *n.* a confidence game.

bunt (*bunt*), *n.* the middle part or belly of a sail: *v. i.* to swell out.

bunt (*bunt*), *n.* a species of fungus which affects the car of cereals, filling the grains with a fetid dust.

bunt-ing (*bunt'ing*), *n.* a bird allied to the finches and the sparrows.

★**buoy** (*bwoi* or *boi*), *n.* a floating body moored at a certain place to indicate the position of something beneath the water; a life buoy.

buoy-an-cy (*'an-si*), *n.* relative lightness; elasticity of spirits.

buoy-ant (*'ant*), *adj.* having the quality of floating in a fluid.

bur (*bẽr*), *n.* the rough, prickly seed case of certain plants.

bur-den (*bẽr'dn*), *n.* that which is borne or carried; a load; something grievous, wearisome, or oppressive. [WEIGHT.]

bur-dock (*bẽr'dok*), *n.* a large wayside weed with rough, broad leaves.

★**bu-reau** (*bū'rō* or *bū-rō'*), *n.* [*pl.* bureaus or bureaux (*'rōz*)], a desk or writing table furnished with drawers; an office; a governmental department.

bu-reau-cra-cy (*bū-rō'krà-si*), *n.* the system of centralized government by means of bureaus or departments.

bu-reau-crat (*bū'rō-krat*), *n.* an advocate or supporter of bureaucracy.

burg (*bûrg*), *n.* a borough.

bur-gess (*bûr'jes*), *n.* an inhabitant of a borough or walled town, or one who possesses a tenement therein.

bur-gher (*bûr'gẽr*), *n.* a citizen or freeman of a burg or borough.

bur-glar (*bûr'glẽr*), *n.* one who breaks into a house at night with intent to commit a felony.

bur-gla-ry (*bûr'glà-ri*), *n.* the act or crime of breaking into a house at night with intent to commit a felony.

★**bur-gun-dy** (*bûr'gun-di*, not *bûr-gun'di*), *n.* a wine, red and white, made in Burgundy in France.

bur-i-al (*ber'i-al*), *n.* the act of burying.

Syn. BURIAL, interment, sepulture. We *bury* in order to conceal; *interment* and *sepulture* are accompanied with religious ceremonies. *Bury* is confined to no object or place; *interment* may be used when a body is deposited in a vault; *sepulture* is an abstract term confined to particular cases, as in speaking of the rites and privileges of *sepulture*.

bur-lap (*bûr'lap*), *n.* a coarse fabric made of jute or hemp.

★**bur-lesque** (*bûr-lesk'*, not *bûr'lesk*), *adj.* tending to excite laughter by extravagant contrast or caricature.

Burlington house, Old. A house standing between Bond and Sackville streets, London, named for Lord Burlington, by whom it was built.

bur-ly (*bûr'li*), *adj.* bulky; large; corpulent.

★**Burmese** (*bûr'mēz* or *'mēs*), *adj.* pertaining to Burma.

burn (*bûrn*), *v. t.* [*p. t.* burnt and burned, *p. pr.* burning], to consume or injure with fire; reduce to ashes; scorch: *v. i.* to be on fire; suffer from excess of heat. [HOT, EAGER.]

burn (*bûrn*), *n.* a rivulet; a brook.

burn-er (*bûrn'ẽr*), *n.* one who burns or sets fire to anything.

bur-nish (*bûr'nish*), *v. t.* polish by friction.

bur-row (*bur'rō*), *n.* a hole in the ground: *v. i.* to excavate; work a way into or under something.

★**bur-sar** (*bûr'sẽr*), *n.* the treasurer of a college.

burst (*bûrst*), *v. i.* [*p. t.* and *p. p.* burst, *p. pr.* bursting], to rend or break open with violence; yield to internal force or pressure: *n.* a violent or sudden breaking forth. [BREAK.]
bur-y (*ber'i*), *v. t.* [*p. t.* and *p. p.* buried, *p. pr.* burying], to deposit and cover in a grave or tomb.
bus (*bus*), *n.* a shortened form of omnibus.
bush (*boosh*), *n.* a thick shrub; a forest region; wild, uncleared country.
bush-el (*boosh'el*), *n.* a dry measure containing eight gallons or four pecks.
bush-whacker (*boosh'hwak-ẽr*), *n.* one accustomed to beat about through bushes; a guerrilla.
bush-y (*boosh'i*), *adj.* thick and spreading like a bush; overgrown with shrubs.
★**busi-ness** (*biz'nes*, not *bis'i-nes*), *n.* employment; trade; profession; something to be transacted.
Syn. BUSINESS, art, profession, trade. Buying and selling of merchandise is inseparable from *trade;* but the exercise of one's knowledge and experience for purposes of gain constitutes a *business;* when learning or particular skill is required, it is a *profession;* and when there is a particular exercise of art, it is an *art.*
Ant. LEISURE, pastime, pleasure.
bus-kin (*bus'kin*), *n.* a high shoe (*cothurnus*) worn by ancient actors in tragedy.
bust (*bust*), *n.* the chest or thorax; the head, shoulders, and breast of a person.
bus-tard (*bus't ẽrd*), *n.* a bird of the genus Otis.
★**bus-tle** (*bus'l*, not *bust'l*), *v. i.* to be busy, with a certain amount of noise.
Syn. BUSTLE, tumult, uproar. *Bustle* has most of hurry in it; *tumult* most of disorder and confusion; *uproar* most of noise; the hurried movements of one, or many, cause a *bustle;* the disorderly struggles of many constitute a *tumult;* the loud elevation of many opposing voices produces an *uproar; uproar* is the consequence either of general anger or mirth. [See *active.*]
Ant. CALM, peace, quiet.
bus-y (*biz'i*), *adj.* earnestly or closely employed. [ACTIVE.]
bus-y-bod-y (*biz'i-bod-i*), *n.* [*pl.* busybodies (*-iz*)], a meddling, officious person.
butch-er (*booch' ẽr*), *n.* one who slaughters animals for food.
butch-er-y (*booch' ẽr-i*), *n.* the business of slaughtering cattle; barbarous murder. [CARNAGE.]
but-ler (*but'l ẽr*), *n.* a manservant in a household who has the care of the plate, wines, etc.
butt (*but*), *n.* a push or thrust delivered by the head of an animal; a thrust in fencing; the extremity of a thing; the thicker end of anything.
butte (*bût* or *boot*), *n.* an abrupt isolated hill or ridge.
Butte. City in Montana, named for a bare butte overlooking the place.
but-ter (*but' ẽr*), *n.* an oily, unctuous substance obtained from cream or milk by churning.
but-ter-cup (*-kup*), *n.* a plant bearing yellow, cup-shaped flowers.
but-ter-fly (*but' ẽr-fli*), *n.* [*pl.* butterflies (*-fliz*)], a general name for any species of diurnal lepidopterous insects.
★**but-ter-ine** (*but' ẽr-in*), *n.* an imitation butter.
but-ter-milk (*but' ẽr-milk*), *n.* milk separated from the cream in butter-making.
but-ter-nut (*but' ẽr-nut*), *n.* the fruit of a North American tree allied to the walnut.
but-ter-y (*but' ẽr-i*), *n.* [*pl.* butteries (*-iz*)], an apartment in which provisions, wines, etc., are kept.
but-tock (*but'ok*), *n.* the rump or protuberant hinder part of a man or animal.
but-ton (*but'n*), *n.* any small rounded object used to secure different parts of a garment, or attached for ornament; something resembling a button.
but-ton-wood (*-wood*), *n.* the plane tree.
but-tress (*but'res*), *n.* masonry or brickwork built on to an outside wall to afford support.
bux-om (*buks'um*), *adj.* cheerful; jolly; robust; plump and comely.
buy (*bi*), *v. t.* [*p. t.* and *p. p.* bought, *p. pr.* buying], to acquire by paying an agreed price; purchase; bribe.
Syn. BUY, purchase, bargain, cheapen. *Buy* may always be substituted for *purchase* without impropriety, but *purchase* would be sometimes ridiculous in the familiar application of *buy;* the necessaries of life are *bought;* luxuries are *purchased;* to *cheapen* is not only to lower the price asked, but to deal in such things as are cheap.
Ant. SELL. [bees.
buzz (*buz*), *n.* a continuous humming noise, as of
buz-zard (*buz' ẽrd*), *n.* the name of several species of hawks; a stupid, dull fellow.
Buzzard's bay, Mass. Waters discovered by Gosnold, May 21, 1602, and by him named "Bay of Hope." Indian name *Manomet.*
buzz saw (*buz' saw*), a circular saw.
by-law (*bi'-law*), *n.* a private law or statute framed by a corporate body; a secondary law.
by-word (*bi'w ẽrd*), *n.* a proverb; nickname; an object of derision.
★**Byzantine** (*bi-zan'tin* or *biz'an-tin*), *adj.* of or pertaining to Byzantium (Constantinople), the ancient capital of the eastern Roman empire.

C

Cab (*kab*), n. a public carriage with two or four wheels, drawn by one horse.
★**ca-bal** (*ka-bal'*), *n.* a secret combination for carrying out some specific design. [MYSTERIOUS.]
cab-a-ret (*ka'bā-rē'*), originally a French drinking house; now generally applied to drinking places offering some sort of theatrical entertainment.
cab-bage (*kab'āj*), *n.* a well-known vegetable; the terminal head of palm trees.
cab-in (*kab'in*), *n.* a small hut, cottage, or room; a room in a ship for officers or passengers.
cab-i-net (*kab'i-net*), *n.* a small room; a piece of furniture to hold objects of virtu.
cab-i-net pic-ture (*pik'tūr*), a valuable picture of small dimensions.
ca-ble (*kā'bl*), *n.* a large, strong rope or chain.
ca-ble-gram (*kā'bl-gram*), *n.* a message sent by a submarine cable.
ca-boose (*ka-bōōs'*), *n.* a ship's galley or kitchen; the trainmen's car attached to a freight train.
★**ca-ca-o** (*ka-kā'ō* or *kā'kō*), *n.* a small evergreen tree of South America and the West Indies.
★**cache** (*kàsh*), *n.* a place of concealment for food for future use.
cach-in-na-tion (*kak-i-nā'shun*), *n.* loud or unrestrained laughter.
cac-kle (*kak'l*), *v. i.* to cry like a hen or goose.
cac-tus (*kak'tus*), *n.* [*pl.* cactuses (*-ez*) and cacti (*'ī*)], a spiny, fleshy plant with showy flowers.
cad (*kad*), *n.* a vulgar, ill-bred fellow; an omnibus conductor.
★**ca-da-ver** (*ka-dā'vẽr*, not *ca-dav'ẽr*), *n.* a dead body; a corpse.
ca-dav-er-ous (*ka-dav'ẽr-us*), *adj.* resembling a corpse. [clubs.
cad-die (*kad'i*), *n.* a lad who carries a golf player's
cad-dy (*kad'i*), *n.* [*pl.* caddies (*'iz*)], a small box for keeping tea.
ca-dence (*kā'dens*), *n.* a fall of, or a rhythmical modulation of, the voice in reading or speaking.
ca-den-za (*ka-den'za*), *n.* a voca' or instrumental flourish.
ca-det (*ka-det'*), *n.* a younger son; student in a naval or military academy.
ca-di (*kā'di*), *n.* Mohammedan judge.
★**Cadillac** (*ka'di-lak*, Fr. *kà-dē-yàk'*). City in Wexford county, Michigan, named for La Motte (or La Mothe) Cadillac.
★**Cadiz** (*kā'diz*, not *ka-diz'*, Sp., *kā'thēth*). From *qadr,* meaning "an inclosure, a city, or fortified place," and *kir,* "a wall." A city of Spain.
★**Cæsar** (*sē'zẽr*). Some translate this name "hairy"; Schlegel says from Sanskrit *kesa,* "adorned with hair." It is more probable, however, of Persian origin, and comes from the Persian *sar,* "head, highest, greatest, chief." Danish, *Cæsar;* Fr., *César;* Ger., *Casar* or *Cæsar;* It., *Cesare;* Lat., *Cæsar;* Sp., *Cesar.* Name of first Roman emperor, and title of successors.
Cæ-sa-ri-an (*sē-zā'ri-an*), *adj.* pertaining to Cæsar.
Cæ-sa-ri-an op-er-a-tion (*op-ẽr-ā'shun*), a delivery of a fœtus by cutting through the walls of the abdomen.
cage (*kāj*), *n.* a box or inclosure furnished with metal bars for confining birds, or other animals.
★**ca-ïque** (*kā-ēk'*), *n.* a skiff or light rowing boat used on the Bosporus.
★**cairn** (*kârn*), *n.* a conical heap of stones erected as a monument.
★**Cairo** (*ki'rō*, not *kā'rō*), a corruption of the Arabic *Alkâhirah,* "the victorious"; so called because *Kâhir* (Mars), the planet of victory, was visible on the night when the city was founded. A city in Egypt.
★**Cairo** (*kā'rō*, not *kī'rō*), **Ill.** A locally fancied adoption from the Egyptian city Cairo, as it has a similar location, namely, at the mouth of a large river.
★**cais-son** (*kā'son*), *n.* an ammunition wagon or chest; a box filled with explosives for firing a mine.
cai-tiff (*kā'tif*), *n.* a despicable or cowardly wretch: *adj.* despicable; vile; cowardly.
ca-jole (*ka-jōl'*), *v. t.* to coax or deceive by flattery; wheedle; cheat.
cake (*kāk*), *n.* a small mass of dough, sweetened and baked; a compressed or solidified mass of any substance, especially if thin or flat.
cal-a-boose (*kal-a-bōōs'*), *n.* a jail; a lockup.
ca-lam-i-tous (*ka-lam'i-tus*), *adj.* producing, or resulting from, calamity.
ca-lam-i-ty (*ka-lam'i-ti*), *n.* [*pl.* calamities (*-tiz*)], any cause that produces evil.
Syn. CALAMITY, disaster, misfortune, mischance, mishap. A *calamity* is a great *disaster* or *misfortune;* a *misfortune* a great *mischance* or *mishap;* whatever is attended with destruction is a *calamity;* whatever occasions mischief to the person, defeats or interrupts plans, is a *disaster;* whatever is accompanied with a loss of property, or the deprivation of health, is a *misfortune;* whatever diminishes the beauty or utility of objects is a *mischance* or *mishap.* [See *accident.*]
Ant. GOOD FORTUNE, luck.
ca-lash (*ka-lash'*), *n.* a light carriage with low wheels and a folding adjustable top.
cal-ci-fy (*kal'si-fi*), *v. t.* [*p. t.* and *p. p.* calcified, *p. pr.* calcifying], to convert into lime.
cal-ci-mine (*kal'si-mīn*), *n.* white or tinted wash for walls or ceilings.
cal-ci-na-tion (*kal-si-nā'shun*), *n.* the act or process of reducing to powder by heat.
★**cal-cine** (*kal'sīn* or *kal-sīn'*), *v. t.* to reduce a substance to powder by heat.
cal-ci-um (*kal'si-um*), *n.* the metallic base of lime.
cal-cu-late (*kal'kū-lāt*), *v. t.* to compute.
Syn. CALCULATE, reckon, compute, count. To *calculate* denotes any numerical operation in general, but is particularly applicable to the abstract science of figures; the astronomer *calculates* the motions of the heavenly bodies; the mathematician makes algebraic *calculations;* to *reckon* is to enumerate and set down things in detail; *reckoning* is applicable to the ordinary business of life; tradesmen keep their accounts by *reckoning;* children learn to *reckon* by various simple processes. *Calculation* is therefore the science, *reckoning* the practical art, of enumerating. To *compute* is to come at the result by *calculation;* we *count* one by one; we *count* the minutes. [See *estimate.*]
cal-cu-la-tion (*kal-kū-lā'shun*), *n.* the art of reckoning by numbers.
cal-cu-la-tor (*kal'kū-lā-t ẽr*), *n.* one who, or a machine that, computes or reckons.
★**cal-cu-lus** (*kal'kū-lus*), *n.* [*pl.* calculi (*-lī*)], one of the higher branches of mathematics; the differential calculus.
Calcutta (*kal-kut'ta*). Called *Kalkatta* in early annals. The name is supposed to be a corruption of the Indian *Kali-Kata,* the "dwelling or sacred place of Kali," the wife of Siva. A city of India.
cal-dron (*kawl'drun*), *n.* a large kettle or boiler.
Caleb (*kā'leb*). From the Hebrew *kaleb,* "a dog."
cal-en-dar (*kal'en-dẽr*), *n.* a register of the days, weeks, and months of the year, etc.
calf (*kaf*), *n.* [*pl.* calves (*kāvz*)], the young of the cow, or of the bovine family, also of some other mammals.
cal-i-ber (*kal'i-bẽr*), *n.* the diameter of a cylindrical body; mental capacity.
cal-i-co (*kal'i-kō*), *n.* [*pl.* calicoes (*-kōz*)], white or unprinted cotton cloth; also with figured pattern.
California (*kal-i-fôr'ni-a*). Most authorities derive it from the two Spanish words, *caliente fornalia* (i. e., "hot furnace"), given by Cortes in the year 1535 to the peninsula now known as Old or Lower California, of which he was the discoverer, on account of its hot climate. A state of the Union.
California, Gulf of. Variously called *Mar de Cortez* and *Mar Bermejo* by the Spaniards—the former in honor of Hernando Cortes; the latter meaning "bright reddish color," literally, "red sea," for its resemblance in color to the Red Sea.
cal-i-pers (*kal'i-pẽrz*), *n. pl.* compasses for measuring the diameters of bodies or the bore of tubes.
★**ca-liph** (*kā'lif*), *n.* a title of the successors of Mohammed. [Also *calif.*]
★**cal-is-then-ics** (*kal-is-then'iks*), *n. pl.* the art of promoting health by physical exercise.
calk (*kawk*), *v. t.* to copy (a drawing) by covering the back with chalk or lead, and tracing over the lines with a style for transfer.
calk (*kawk*), *n.* that part of a horseshoe which projects downward to prevent slipping; an instrument with sharp points worn on the sole of a boot or shoe: *v. t.* to furnish with calks.
calk or **caulk** (*kawk*), *v. t.* to drive oakum into the seams of (a ship), smearing with pitch.
call (*kawl*), *v. t.* to summon from, or invite to, any place: *n.* a summons or invitation; a request or command; a short visit.
Syn. CALL, bawl, bellow, clamor, cry, ejaculate, exclaim, roar, scream, shout, shriek, vociferate, yell. To *call* is to send out the voice in order to attract another's attention; a man *calls* his dog; to *shout* is to *call* or *exclaim* with the fullest volume of sustained voice; to *scream* is to utter a shriller cry; to *shriek* or to *yell* refers to that which is louder and wilder still; in *screaming, shrieking,* or *yelling* there is often no attempt at articulation; to *bawl* is to utter senseless, noisy cries; *bellow* and *roar* are applied to the utterances of animals; *clamor* is noisy iteration; *vociferate* is commonly applied to loud and excited speech; we may *exclaim* by mere interjections; to *ejaculate* is to give out utterances of joy, regret, and especially of appeal, petition, prayer. [See *name.*]
Ant. STILL, hearken, hush, listen.
cal-lig-ra-phy (*kal-lig'ra-fi*), *n.* elegant or beautiful writing.
call-ing (*kawl'ing*), *n.* the act of summoning; a summons or invitation.
cal-lous (*kal'us*), *adj.* hardened, insensible.
cal-low (*kal'ō*), *adj.* unfledged.
cal-lus (*kal'us*), *n.* [*pl.* calli (*-i*)], the hardening of the skin from pressure; repair material exuded by broken bone.
calm (*kām*), *adj.* tranquil; still: undisturbed.
Syn. CALM, composed, cool, dispassionate, imperturbable, peaceful, placid, quiet, sedate, serene, smooth, still, tranquil. *Calm* is free from disturbance or agitation; we speak of a *calm* sea, a *placid* lake, a *serene* sky, a *still* night, a *quiet* day, a *quiet* home; one is *cool* if he scarcely feels the tendency to excitement; *composed* who has subdued excited feeling; *collected* when he has every thought or feeling at command. We speak of a *tranquil* mind, a *placid* disposition, a *serene* spirit. [See *composed, peace.*]
Ant. AGITATED, excited, passionate, wild.
★**cal-o-mel** (*kal'ō-mel*), *n.* mercurous chloride.
★**ca-lor-ic** (*ka-lor'ik*, not *ka-lō'rik*), *adj.* pertaining to heat.
★**cal-o-rie** (*kal'ō-ri*), *n.* the unit of heat (metric system) to express the amount of heat required to raise one kilogram of water from 0° to 1° centigrade.

cal-o-rim-e-ter (*kal-ō-rim'ē-tĕr*), *n.* an apparatus for measuring heat produced or given off by a body.
cal-o-rim-e-try (*kal-ō-rim'ē-tri*), *n.* the art or process of determining the amount of heat contained in, or given off by, bodies.
★**Calton** (*kawl'ton*) **hill.** A height in the north-eastern part of Edinburgh.
★**Calumet** (*kal'ū-met*). River in Illinois and Indiana, county in Wisconsin, town in Indiana, and several other places in the country. From the French *calumet*, pipe (*calumet de paix*, pipe of peace); *chalrumeau*, corn pipe, pipe, reed. The "*calumet*," or "pipe of peace," was used by the Indians to ratify treaties.
ca-lum-ni-ate (*ka-lum'ni-āt*), *v. t.* to accuse falsely and maliciously: *v. i.* to utter calumnies.
ca-lum-ni-a-tion (*ka-lum-ni-ā'shun*), *n.* the act of calumniating.
cal-um-ny (*kal'um-ni*), *n.* [*pl.* calumnies (*-niz*)], a false accusation; a slander.
Calvary (*kal'vā-ri*), *n.* the place where Christ was crucified.
calve (*kăv*), *v. i.* to bring forth a calf.
Cal-vin-ism (*kal'vin-izm*), *n.* the doctrines of John Calvin, the French theologian and reformer, especially those relating to predestination and election.
Cal-vin-ist (*kal'vin-ist*), *n.* one who holds the doctrines of Calvin.
★**ca-lyx** (*kā'liks*, not *kal'iks*), *n.* [*pl.* calyxes (*kā'liks-ez*), Lat. *pl.* calyces (*kal'i-sēz*)], the outer envelope of a flower.
cam (*kam*), *n.* a projecting part of a wheel or other moving piece of machinery for imparting an eccentric or alternating motion.
cam-ber (*kam'bĕr*), *n.* a convexity on an upper surface; a concavity on an under surface.
★**Cambria** (*kam'bri-ā*). The original name for Wales, so called on account of the Cymri, or Kimri.
★**cam-bric** (*kām'brik*), *n.* a very fine thin linen.
cam-bric mus-lin (*muz'lin*), a fine cotton imitation of cambric.
Cambridge (*kām'brij*). City in Middlesex county, Massachusetts, so named for the English university town, after the general court decided to establish a college there. The English name is usually supposed to mean "the bridge over the river Cam."
Camden (*kam'den*), **N. J.** In honor of the noted English statesman, Earl of Camden (Cambden).
cam-el (*kam'el*), *n.* a large ruminant quadruped, of which there are two species, the Arabian camel or dromedary, with a single hump, and the Bactrian camel, with two humps.
★**Camellia** (*kā-mel'i-ā* or *kā-mēl'yā*), *n.* an Asiatic genus of small shrubs.
cam-e-o (*kam'ē-ō*), *n.* a precious stone or shell on which figures are engraved in relief.
cam-e-ra (*kam'ē-rā*), *n.* [*pl.* cameras (*-rāz*)], a camera obscura.
★**Camilla** (*kā-mil'lā*). The feminine of *Camillus*. Fr., *Camille;* It., *Camilla;* Lat., *Camilla*.
★**Camillus** (*kā-mil'lus*). Some translate this name "attendant at a sacrifice." The Roman name was probably corrupted from the Arabic *Kasen-El*, signifying "oracle of God."
camp (*kamp*), *n.* the ground occupied by an army at rest; an encampment.
★**Campagna di Roma** (*kām-pān'yā dē rō'mā*). A large plain in Italy, surrounding Rome, between the Mediterranean and Sabine and Alban mountains.
cam-paign (*kam-pān'*), *n.* an open tract of land; the period during which an army carries on active operations in the field.
cam-pa-ni-le (*kām-pā-nē'lā*), *n.* [*pl.* campaniles (*'lāz*)], a bell-tower.
★**Campanile** (*kām-pā-nē'lā*) **of Giotto.** A famous tower near the Duomo, at Florence, Italy, begun by the architect Giotto, in 1334, and after his death, in 1336, continued by Andrea Pisano.
cam-phine (*kam-fēn'* or *kam'fin*), *n.* rectified oil of turpentine.
cam-phor (*kam'fĕr*), *n.* a volatile, aromatic, whitish resin.
camp meet-ing (*kamp' mēt'ing*), an outdoor religious gathering.
camp-stool (*'stool*), *n.* a folding stool or seat.
can (*kan*), *v. i.* [*p. t.* could], am able.
Syn. CAN, may. *Can* denotes possibility; *may* liberty and probability. He who has sound limbs *can* walk; but he *may* not walk in places which are prohibited.
can (*kan*), *n.* a metal vessel of small size, for holding liquids or preserving solids.
★**Canaan** (*kā'nan* or *kā'nā-an*). The "Land of Canaan" is interpreted to mean "lowland," from Semitic *kana*, "to humble," "subdue"; generally, in the Old Testament, the country west of the Jordan and the Dead Sea, extending to the Mediterranean.
Canada (*kan'a-dā*). Called *La Nouvelle France* by the French settlers, is probably the native word *kanata*, which means "a collection of huts or wigwams."
ca-nal (*kā-nal'*), *n.* an artificial navigable waterway.
★**Canandaigua** (*kan-an-dā'gwā*). Lake town in Ontario county, New York, and village in Lenawee county, Michigan. An Indian word, the derivation of which is in dispute. Morgan defines it as "a place selected for settlement," a "chosen spot"; Haines, "a town set off."
ca-nard (*kā-närd'*, Fr. *kā-nār'*), *n.* an absurd story or report.
ca-na-ry (*kā-nā'ri*), *n.* a light wine; a small singing bird with yellow plumage.
can-can (*kan'kan*), *n.* a vivacious and indelicate French dance.
can-cel (*kan'sel*), *v. t.* [*p. t.* and *p. p.* canceled, *p. pr.* canceling], to deface writing by drawing lines across it; annul. [ABOLISH, BLOT.]
can-cer (*kan'sĕr*), *n.* a genus of crustaceans, the crab; a malignant tumor or growth.
can-cer-ate (*kan'sĕr-āt*), *v. i.* to grow into a cancer.
can-cer-ous (*kan'sĕr-us*), *adj.* like a cancer; affected with cancer.
★**can-de-la-brum** (*kan-dē-lā'brum*, not *kan-dē-lā'brum*), *n.* [*pl.* candelabra (*'brā*)], a lamp-stand.
★**Candia** (*kan'di-ā*). From the Arabic *Khandae*, "the island of trenches." The island of Crete.
can-did (*kan'did*), *adj.* honest; outspoken; sincere; free from undue bias; open; fair.
Syn. CANDID, aboveboard, fair, frank, honest, impartial, ingenuous, innocent, open, simple, straightforward, transparent, truthful. *Fair* is applied to the conduct; *candid* is not; as, *fair* treatment, a *fair* field and no favor. He is *frank* who states the truth fearlessly; *honest* and *ingenuous* express contempt for deceit; *artless, simple*, imply the goodness which comes from guileless simplicity; *open* expresses unstudied truthfulness or defiant recklessness; as, *open* admiration, *open* robbery. We speak of *transparent* integrity or *transparent* fraud. *Sincere* applies to the feelings which underlie one's words. [See *fair, frank, ingenuous*.]
Ant. DECEITFUL, treacherous.
can-di-date (*kan'di-dāt*), *n.* one who offers himself, or is proposed by others, to fill some office.
can-di-da-ture (*kan'di-dā-tūr*), *n.* the state of being a candidate.
can-died (*kan'did*), *p. adj.* preserved or incrusted with sugar.
can-dle (*kan'dl*), *n.* a cylindrical body of tallow, wax, or other fatty material, inclosing a wick of cotton.
★**Can-dle-mas** (*kan'dl-mas*), *n.* the feast of the Purification of the Virgin Mary (Feb. 2).
can-dle pow-er (*pou'ĕr*), the illuminating power of a candle taken as a unit in determining the luminosity of any flame.
can-dor (*kan'dĕr*), *n.* openness; frankness.
can-dy (*kan'di*), *n.* a solid confection of sugar.
cane (*kān*), *n.* the stem of certain palms, grasses, and other plants, as the bamboo.
cane-brake (*'brāk*), *n.* a thicket of canes.
ca-nine (*kā-nīn'*), *adj.* pertaining to dogs; having the nature or qualities of a dog.
can-is-ter (*kan'is-tĕr*), *n.* a metal box or case for tea, coffee, etc.; a case containing shot which explodes when fired from a gun.
can-ker (*kang'kĕr*), *n.* a cancerous or ulcerous disease.
can-ker-ous (*kang'kĕr-us*), *adj.* corroding.
canned (*kand*), *adj.* preserved in tins.
can-nel coal (*kan'el kōl*), a hard bituminous coal.
can-ner-y (*kan'ĕr-i*), *n.* [*pl.* canneries (*-iz*)], an establishment for preserving meat, fish, etc.
can-ni-bal (*kan'i-bal*), *n.* a human being who eats human flesh.
can-ni-bal-ism (*kan'i-bal-izm*), *n.* the act or practice of eating human flesh by human beings.
can-non (*kan'un*), *n.* [*pl.* cannons (*'unz*), or cannon (collectively)], a large gun.
can-non-ade (*kan-un-ād'*), *n.* the act of discharging cannon against a town, fort, etc.
can-non-eer (*kan-un-ēr'*), *n.* an artilleryman.
can-non-eer-ing (*kan-un-ēr'ing*), *n.* the act or art of using the cannon.
can-not (*kan'ot*) [*can* and *not*], to be unable.
can-ny or **can-nie** (*kan'i*), *adj.* shrewd; knowing; cautious; wary; artful.
ca-noe (*kā-nōō'*), *n.* [*pl.* canoes (*-nōōz'*)], a light boat of bark, hide, or the hollow trunk of a tree; any light boat propelled by paddles.
ca-noe-ist (*kā-nōō'ist*), *n.* one who paddles a canoe.
★**can-on** (*kan'un*), *n.* a law or rule in general; a law or rule regarding doctrine or discipline enacted by a council and confirmed.
★**ca-ñon** (*kā-nyōn'*) or **canyon** (*kan'yun*), *n.* a deep gorge having more or less perpendicular sides.
can-on-ize (*kan'un-īz*), *v. t.* to enroll in the catalogue or canon of the saints.
can-on law (*law*), rules or laws relating to faith, morals, and discipline that regulate church government.
can-o-py (*kan'ō-pi*), *n.* [*pl.* canopies (*-piz*)], a covering fixed above a bed, or suspended over a throne or dais.
cant (*kant*), *v. i.* to speak in a whining voice, or with an affected or hypocritical tone: *n.* a whining manner of speech; the speech affected by those soliciting alms; the words and phrases characteristic of a certain party, sect, etc.
can't (*känt*), a colloquial contraction of *can-not*.
can-ta-lev-er (*kan'tā-lev-ĕr*). Same as *cantilever*.
can-ta-loupe (*kan'tā-lōōp*), *n.* a variety of musk-melon of delicate flavor.
can-tan-ker-ous (*kan-tang'kĕr-us*), *adj.* ill-tempered; cross-grained; contentious.
can-ta-ta (*kän-tä'tä*), *n.* a short choral composition in the manner of an oratorio.
can-teen (*kan-tēn'*), *n.* a kind of shop in barracks or camp where liquors and provisions are sold; a vessel used by soldiers for carrying water or liquor when on the march.
can-ter (*kan'tĕr*), *n.* an easy gallop.
Canterbury (*kan'tĕr-ber-i*). A corruption of the Anglo-Saxon *Cantwarabyrig*, "the forts or strongholds of the Cantwere, or men of Cant" (Kent).
can-ti-cle (*kan'ti-kl*), *n.* a song; one of the non-metrical hymns of the Bible arranged for chanting in church service.
★**can-ti-lev-er** (*kan'ti-lev-ĕr*), *n.* one of two arms projecting from opposite banks and joined over a stream to form a bridge.
can-to (*kan'tō*), *n.* [*pl.* cantos (*'tōz*)], one of the chief divisions of a poem of some length.
can-ton (*kan'tun*), *n.* a district or division of a territory; one of the Swiss federal states.
can-ton-ment (*kan-tun'ment*), *n.* a town or village, or part of one, allotted to a body of troops.
can-vas (*kan'vas*), *n.* a coarse, heavy cloth of hemp or flax, used for tents, sails, etc.
can-vas-back (*-bak*), *n.* a North American duck.
can-vass (*kan'vas*), *v. t.* to examine; sift; discuss; solicit votes or opinions.
can-yon (*kan'yun*). Same as *canon*.
★**caout-chouc** (*kōō'chōōk*), *n.* an elastic gummy substance obtained from the milky juice of several tropical trees.
cap (*kap*), *n.* a covering for the head, usually without a brim; anything resembling a cap.
ca-pa-bil-i-ty (*kā-pa-bil'i-ti*), *n.* the quality of being capable. [ABILITY.]
ca-pa-ble (*kā'pa-bl*), *adj.* receptive; susceptible; having power, skill.
ca-pa-cious (*kā-pā'shus*), *adj.* roomy; spacious.
ca-pa-cious-ness (*-ness*), *n.* the power of holding or receiving. [CAPACITY.]
ca-pac-i-tate (*kā-pas'i-tāt*), *v. t.* to make capable; enable; qualify.
ca-pac-i-ty (*kā-pas'i-ti*), *n.* [*pl.* capacities (*-tiz*)], the power of receiving or containing; the power of containing a certain quantity.
Syn. CAPACITY, capaciousness. *Capacity* is an indefinite term designating the property of being fit to hold or receive, as applied to bodies generally; but *capaciousness* denotes a fullness of this property as belonging to a particular object in a great degree. Measuring the *capacity* of vessels belongs to the science of mensuration; the *capaciousness* of a room is to be observed by the eye. [See *ability*.]
★**ca-par-i-son** (*kā-par'i-sun*), *n.* an ornamental covering for a horse; harness or trappings collectively, especially when decorative.
cape (*kāp*), *n.* a covering for the shoulders, worn separately or attached; a headland.
Cape Colony. A British colony in South Africa, so called after the parent settlement at Cape Town, which dates from the year 1826. The Cape region, settled by the Dutch in 1652, passed in 1806 into British possession.
Cape Fear River, N. C. Was originally named by the English *Charles river*. Afterward the name of *Cape Fair river* was adopted from the Atlantic cape of that name, the stream being located by navigators as "coming in back of *Cape Fair*." Subsequently corrupted to *Fear*.
Cape Horn. The southernmost point of South America was called *Cape Hoorn* by Schouten, who first rounded it in 1616, in honor of his birthplace, *Hoorn*, in the Netherlands.
Cape May, N. J. The most southern point of New Jersey. Here is located the Cape May lighthouse.
Cape of Good Hope. Discovered by Bartholomēw de Diaz in 1486; was so named (*Cabo de Boa Esperance*) by John II., king of Portugal.
ca-per (*kā'pĕr*), *v. i.* to skip; jump: *n.* a frolicsome leap or spring; a skip; a prank.
★**cap-il-la-ry** (*kap'il-ā-ri* or *kā-pil'ā-ri*), *adj.* resembling a hair; minute; slender; possessing a very small bore: *n.* an extremely fine tube or blood vessel.
cap-il-la-ry at-trac-tion (*at-trak'shun*), the power possessed by solid bodies of elevating or depressing fluids, especially that of capillary tubes of drawing up fluids.
cap-i-tal (*kap'i-tal*), *adj.* affecting the head or life; principal, good, excellent: *n.* the chief city or town in a kingdom or state.
cap-i-tal (*kap'i-tal*), *n.* the sum invested in any particular business; stock in trade; stock or resources of any kind, moral or physical.
cap-i-tal-ist (*kap'i-tal-ist*), *n.* one who has capital.
cap-i-tal-i-za-tion (*kap-i-tal-i-zā'shun*), *n.* the act of capitalizing.
cap-i-tal-ize (*kap'i-tal-īz*), *v. t.* to convert into capital.
cap-i-tal-ly (*-li*), *adv.* in a manner involving the forfeiture of life; in an excellent manner.
Capitol (*kap'i-tol*), *n.* the temple of Jupiter at Rome, situated on the southwest summit of the Capitoline hill; the building occupied by the United States Congress at Washington; the statehouse of a state.
★**Capitoline** (*kap'i-tō-līn*, not *kap'i-tō-lēn*) **hill, The.** One of the seven hills of ancient Rome, northwest of the Palatine, on the left bank of the Tiber, on which the Capitol was erected.
Capitoline museum (*mū-zē'um*). A famous museum of antiquities in Rome.
ca-pit-u-late (*kā-pit'ū-lāt*), *v. i.* to surrender to an enemy on conditions agreed upon.
ca-pit-u-la-tion (*kā-pit-ū-lā'shun*), *n.* the act of capitulating.
★**ca-pon** (*kā'pn* or *kā'pun*), *n.* a castrated cock.
★**Capri** (*kä'prē*). Signifies "the island of goats," being derived from the Latin *caper*, a he goat.

cap-ric (*kap'rik*), *adj.* pertaining to capric acid.
cap-ric ac-id (*as'id*), a fatty acid occurring in small quantities in butter, cocoanut oil, etc., united with glycerine.
★**ca-price** (*kă-prēs'*), *n.* a sudden impulse of the mind; a whim; a freak.
★**ca-pri-cious** (*kă-prish'us*), *adj.* characterized by caprice; unsteady; fickle. [FANCIFUL.]
cap-si-cum (*kap'si-kum*), *n.* a genus of plants, the pods of several species of which are used as a condiment.
cap-size (*kap-sīz'*), *v. i.* to be overturned; upset: *v. t.* to turn over or upset: (*kap'sīz*), *n.* an upset or overturn.
cap-stan (*kap'stan*), *n.* an upright drum or cylinder revolving upon a spindle, worked by bars or levers.
cap-su-lar (*kap'sū-lēr*), *adj.* pertaining to, or of the nature of, a capsule.
cap-sule (*kap'sūl*), *n.* a metallic seal or cover for a bottle; a small envelope of gelatine inclosing a nauseous or acrid drug.
cap-tain (*kap'tin*), *n.* one who has command of or authority over, others; a chief; a commander.
cap-tain-cy (*kap'tin-si*), *n.* the rank, post, or commission of a captain.
cap-tion (*kap'shun*), *n.* a heading; arrest by judicial process.
★**cap-tious** (*kap'shus*), *adj.* ready to catch at faults or take offense; quibbling; sophistical.
Syn. CAPTIOUS, cross, peevish, petulant. *Captious* marks a readiness to be offended, *cross* indicates a readiness to offend or come across the wishes of others; *peevish* expresses a strong degree of crossness; *fretful* a complaining impatience; *petulant* a quick or sudden impatience. *Captiousness* is the consequence of misplaced pride; *crossness* of ill-humor; *peevishness* of a painful irritability; *petulance* is either the result of a naturally hasty temper or of a sudden irritability. [See *perverse*.]
cap-ti-vate (*kap'ti-vāt*), *v. t.* to enslave or hold captive by beauty or excellence.
cap-tive (*kap'tiv*), *adj.* made prisoner; held in bondage; fascinated.
cap-tiv-i-ty (*kap-tiv'i-ti*), *n.* the state of being held in bondage or confinement.
cap-tor (*kap't'ēr*), *n.* one who captures or takes any person or thing by force or stratagem.
cap-ture (*kap'tūr*), *n.* the act of seizing or taking, as a prisoner or a prize.
Syn. CAPTURE, seizure, prize. A *capture* is made by force of arms; a *seizure* by direct and personal force; *prize* relates only to the thing taken, and its value to the captor.
★**cap-u-chin** (*kap-ū-shēn'*, not *kap'ū-chin*), *n.* a Franciscan monk of the mendicant order.
car (*kär*), *n.* a small wheeled vehicle, especially of two wheels, for one horse; a railway carriage; a chariot.
car-a-mel (*kar'a-mel*), *n.* burnt sugar, for coloring spirits, gravies, etc.; a kind of confectionery, etc.
car-at (*kar'at*), *n.* the weight of 3.2 grains Troy, used for weighing precious stones and pearls.
car-a-van (*kar'a-van* or *kar-a-van'*), *n.* a company of travelers, merchants, or pilgrims, associated together for mutual security.
★**car-a-van-sa-ry** (*kar-a-van'sa-ri*), *n.* [*pl.* caravansaries (*-riz*)], in the East, a kind of inn consisting of a large unfurnished building surrounding a spacious court, where caravans rest at night.
car-a-vel (*kar'a-vel*), *n.* a name given to several kinds of ships; the sixteenth century caravel was small; a Portuguese vessel of 100 or 150 tons burden.
car-a-way (*kar'a-wā*), *n.* a biennial plant with aromatic and pungent seeds.
★**car-bine** (*kär'bin* or *kär-bin'*, not *kär'bēn*), *n.* a short, light rifle or musket, especially one adapted to the use of cavalry.
car-bi-neer (*kär-bi-nēr'*), *n.* a soldier armed with a carbine.
car-bo-hy-drate (*kär-bō-hī'drāt*), *n.* one of a group of organic compounds of carbon, hydrogen, and oxygen.
car-bol-ic (*kär-bol'ik*), *adj.* pertaining to, or derived from, coal tar and other sources.
car-bol-ic ac-id (*as'id*), an acid obtained from coal tar by distillation.
car-bon (*kär'bon*), *n.* an elementary substance found in all organic compounds, and in nature in two distinct forms, as the diamond and graphite.
car-bon-ic (*kär-bon'ik*), *adj.* pertaining to, or obtained from, carbon.
car-bon-ic ac-id (*as'id*), *n.* contains two parts hydrogen, one carbon, three oxygen; usually signifies carbon dioxide, one part carbon, two parts oxygen.
car-bon-ize (*kär'bon-īz*), *v. t.* to convert into a residue of carbon by combustion.
car-bon light (*līt*), a brilliant light produced by passing an electric current through carbon points.
car-bon point (*point*), the rod of an arc lamp.
car-boy (*kär'boi*), *n.* a large globular bottle of glass, protected by a basket work.
car-bun-cle (*kär'bung-kl*), *n.* a beautiful gem of a deep red color.
car-bun-cu-lar (*kär-bung'kū-lēr*), *adj.* pertaining to, or resembling, a carbuncle.
car-bu-ret (*kär'bū-ret*), *n.* a carbide.
car-bu-ret-ed or **car-bu-ret-ted** (*kär'bū-ret-ed*), *p. adj.* combined with carbon in the manner of a carbide.
★**car-bu-ret-or** (*kär'bū-ret-ēr*), *n.* an apparatus used to increase illuminating power.
car-cass or **car-case** (*kär'kas*), *n.* [*pl.* carcasses (*-ez*)], the dead body of an animal; a corpse; the decaying remains of a bulky thing. [BODY.]
card (*kärd*), *n.* a printed piece of pasteboard used for various social or business purposes: *v. t.* to comb or open, as wool, cotton, etc., with a card.
car-di-ac (*kär'di-ak*), *adj.* pertaining to the heart.
car-di-gan jack-et (*kär'di-gan jak'et*), a knitted wool jacket or waistcoat.
car-di-nal (*kär'di-nal*), *adj.* chief; preëminent; fundamental.
car-di-nal (*kär'di-nal*), *n.* an ecclesiastical prince, ranking in dignity next to the pope.
car-di-nal num-bers (*num'berz*), the numbers *one, two, three,* etc., in distinction from *first, second, third,* etc., which are called *ordinal numbers*.
car-di-nal points (*pointz*), north, south, east, and west.
car-di-nal signs (*sīnz*), Aries, Libra, Cancer, and Capricorn.
car-di-nal vir-tues (*vēr'tūz*), among the ancients, prudence, justice, temperance, and fortitude.
car-di-nal winds (*windz*), winds which blow from due north, south, east, and west.
care (*kār*), *n.* concern; solicitude; anxiety.
Syn. CARE, charge, management. *Care* will include both *charge* and *management*, but, in the strict sense, it comprehends personal labor; *charge* involves responsibility; *management* includes regulation and order. A gardener has the *care* of a garden; a nurse has the *charge* of children; a steward has the *management* of a farm. [See *anxiety, heed*.]
Ant. DISREGARD, neglect, recklessness.
ca-reen (*kă-rēn'*), *v. i.* to incline on one side, as a ship under press of sail.
ca-reer (*kă-rēr'*), *n.* a run at full speed; general course of action in an occupation or calling.
care-ful (*kär'ful*), *adj.* full of care; anxious.
Syn. CAREFUL, cautious, provident. *Careful*, or full of care, is the general term; to be *cautious* is to be *careful* in guarding against danger; to be *provident* is to be *careful* in preventing straits and difficulties. The term *careful* is applied for the most part to present matters, but *provident* only to that which is future. One is *careful* of his money, but *provident* toward a time of need. [See *cautious*.]
Ant. HEEDLESS, rash, reckless.
ca-ress (*kă-res'*), *n.* an act or expression of affection.
★**ca-ret** (*kā'ret* or *kar'et*), *n.* a mark (^) used in writing, or in correcting proofs, to indicate the place where something is omitted or is to be added.
car-go (*kär'gō*), *n.* [*pl.* cargoes (*'gōz*)], the lading or freight of a ship.
★**Carib** (*kar'ib*) or **Caribbee** (*'ib-ē*), *n.* a native of the Caribbee islands.
★**Caribbean** (*kar-ib-ē'an*, not *kar-ib'ē-an*) **Sea.** Washes the territory of the Caribs, whose name means "cruel men." An arm of the Atlantic.
car-i-bou (*kar'i-bōō*), *n.* the North American reindeer.
car-i-ca-ture (*kar'i-kă-tūr*), *n.* a pictorial or descriptive representation, in which defects or peculiarities are exaggerated to a ludicrous degree.
car-i-ca-tur-ist (*kar'i-kă-tūr-ist*), *n.* one who represents others in caricature.
ca-ri-es (*kā'ri-ēz*), *n.* decay of bones, teeth, or vegetable tissue.
car-il-lon (*kar'il-lon*), *n.* a chime of bells diatonically tuned, and played by hand or machinery.
cark (*kärk*), *v. i.* to be anxious or concerned: *v. t.* to vex; load with care or grief.
car-lock (*kär'lok*), *n.* a kind of isinglass made of the sturgeon's bladder, and used in clarifying wine.
car-min-a-tive (*kär-min'a-tiv*), *n.* a medicine which expels wind and relieves colic.
car-mine (*kär'min* or *'min*), *n.* the essential coloring principle of cochineal.
car-nage (*kär'nāj*), *n.* slaughter; great destruction of life by violence; massacre.
Syn. CARNAGE, slaughter, massacre, butchery. *Carnage* respects the number of dead bodies in consequence of any impetuous attack from a powerful enemy; *slaughter* respects the act of taking away life, and the circumstances of the agent; *massacre* and *butchery* respect the circumstances of the objects who are the sufferers of the action; the latter three are said of human beings only; defenseless women and children are commonly *butchered* by the savage furies who are most active in this work of blood.
car-nal (*kär'nal*), *adj.* pertaining to the body, its passions and its appetites.
car-na-tion (*kär-nā'shun*), *n.* a light rose pink; flesh color.
car-ni-fi-ca-tion (*kär-ni-fi-kā'shun*), *n.* process of turning to flesh, or to substance resembling flesh.
car-ni-val (*kär'ni-val*), *n.* the season of rejoicing before Lent; merrymaking; riotous excess.
car-niv-o-rous (*kär-niv'ō-rus*), *adj.* eating or feeding on flesh.
car-ol (*kar'ul*), *n.* a song of joy or praise, especially one in honor of the Nativity.
Carolina (*kar-ō-lī'nă*). Name given to two states, North and South Carolina. Near the middle of the sixteenth century, Jean Ribault visited the region and named it Carolina in honor of his king, Charles IX. of France.
Caroline (*kar'ō-līn* or *-lin*). From *Carolus*, from root of *Charles*. Danish *Caroline;* Dutch, *Carolina;* Fr., *Caroline;* Ger., *Caroline* or *Karoline;* It. *Carolina;* Lat., *Carolina;* Sw., *Karolina*.
Caroline Islands. A great archipelago of the Pacific, discovered by Lopez de Villalobos in 1543, and named after Charles V., emperor of Germany.
★**ca-rot-id** (*kă-rot'id*, not *kă-rō'tid*), *n.* one of the two principal arteries on either side of the neck.
carp (*kärp*), *v. i.* to cavil or find fault. [CENSURE.]
carp (*kärp*), *n.* a fresh-water fish.
car-pal (*kär'pal*), *adj.* pertaining to the carpus or wrist.
★**Carpathian** (*kär-pā'thi-an*). The range of mountains north of Hungary. The name is derived from *Krapat* or *Karpa*, the local name of the main chain, which is explained by the Slavonic root *chrb*, signifying a "ridge" or "range of hills."
car-pen-ter (*kär'pen-tēr*), *n.* an artificer in timber.
car-pen-try (*kär'pen-tri*), *n.* the art of cutting, framing and joining timber.
car-pet (*kär'pet*), *n.* a thick woven or felted fabric, used for covering floors or stairs.
★**Carrara** (*kă-rā'ră*). A town in the province of Massa-e-Carrara, Italy. *Carrara marble*, for statuary, is taken from quarries in its environs.
car-riage (*kar'ij*), *n.* the act of carrying or transporting; cost of conveyance; manner of carrying one's self.
Syn. CARRIAGE, gait, walk. *Carriage* is here the most general term; it respects the manner of carrying the body, whether in a state of motion or rest; *gait* is the mode of carrying the limbs and body whenever we move: *walk* is the manner of carrying the body when we move forward to walk.
Carrie, Caddie. Feminine names corrupted from *Caroline*.
car-ri-er (*kar'i-ēr*), *n.* one who, or that which, carries or conveys; one whose business is to carry.
car-ri-er pig-eon (*pij'un*), a variety of pigeon trained to convey letters, etc.
car-ri-on (*kar'i-un*), *n.* dead or putrefying flesh; filth; garbage.
car-ron-ade (*kar-un-ād'*), *n.* a short cannon of large bore for close range, formerly used in the navy.
car-ron oil (*kar'un oil*), linseed-oil and lime-water; used as a liniment for burns.
car-rot (*kar'ut*), *n.* a well-known plant with an edible root; the root itself.
car-ry (*kar'i*), *v. t.* to convey from one point to another; bear; have on one's person; convey by force. [BRING.]
Carson City, Nev. Named in honor of Christopher Carson, or, as more widely known, "Kit" Carson, the noted frontiersman and hunter.
cart (*kärt*), *n.* a vehicle for conveyance of heavy goods.
car-tel (*kär-tel'* or *kär'tel*), *n.* an agreement between hostile states regarding the exchange of prisoners.
Carthage (*kär'thāj*). From *Kartha-hadtha*, "the new city," in opposition to Utica, "the old." A city of northern Africa.
car-ti-lage (*kär'ti-lāj*), *n.* an elastic animal tissue; gristle.
car-ti-lag-i-nous (*kär-ti-laj-i-nus*), *adj.* pertaining to, or in the form of, cartilage; gristly.
car-tog-ra-pher (*kär-tog'rā-fēr*), *n.* one who make charts or maps.
car-to-graph-ic (*kär-tō-graf'ik*), **car-to-graph-i-cal** (*'i-kal*), *adj.* pertaining to cartography.
car-tog-ra-phy (*kär-tog'rā-fi*), *n.* the art or business of drawing charts or maps. [Also *chartography*.]
★**car-toon** (*kär-tōōn'*), *n.* a pictorial sketch dealing with a political or social subject.
car-tridge (*kär'trij*), *n.* a case of cardboard, metal, or other material, holding the charge of a firearm.
carve (*kärv*), *v. t.* to form a design; shape by cutting; cut into slices.
★**car-y-at-id** (*kar-i-at'id*), *n.* a figure of a woman in long robes, serving to support an entablature.
Casco Bay, Me. From an Italian word, meaning "crane"; hence "crane bay."
case (*kās*), *n.* a covering or receptacle; a sheath; a box with its contents.
case (*kās*), *n.* that which happens or befalls; the matters involved in a question under discussion or investigation; a certain form or instance of disease; a suit or action at law.
Syn. CASE, cause. The *case* is matter of fact; the *cause* is matter of question; a *case* involves circumstances and consequences; a *cause* involves arguments; a *case* is something to be learned; a *cause* something to be decided. [See *cause*.]
case-ment (*kās'ment*), *n.* a window-frame hinged at the side.
ca-se-ous (*kā'sē-us*), *adj.* cheesy.
cash (*kash*), *n.* money; ready money: *v. t.* to turn into, or exchange for, money. [MONEY.]
cash-book, *n.* a book in which a register is kept of money received or paid out.
cash-ier (*kash-ēr'*), *n.* one who has charge of the money, payments and receipts of a bank or firm.
cash-mere (*kash'mēr*), *n.* a soft woolen fabric for shawls, etc., originally made in Cashmere.
ca-si-no (*kă-sē'nō*), *n.* [*pl.* Eng. casinos (*'nōz*), It. casini (*'nē*)], a small country house; a room for public amusements.
cask (*kask*), *n.* a vessel composed of wooden staves, bound by iron hoops.
cas-ket (*kas'ket*), *n.* a small chest or box for jewels, etc.; a costly coffin.
Caspian (*kas'pi-an*). The European name of the great inland sea of Asia. It was so called by the Greeks from the Caspii, a tribe who in, the time of Herodotus, dwelt on its western shore.
casque (*kask*), *n.* a helt.
★**Cassandra** (*kas-san'drā*). A daughter of Priam,

king of Troy. Mr. Arthur translates this name "inflaming one with love." Gr., *Kassandre*; Fr. *Cassandre*; It., *Cassandra*; Lat., *Cassandra*.

★**cas-sa-va** (*kas'sə-vä*), *n.* a plant of tropical America and Africa, cultivated for its tuberous roots.

★**cas-sia** (*kash'ä*), *n.* a genus of leguminous plants, the leaves of several species of which constitute the drug senna.

cas-sia oil (*oil*), oil extracted from cassia bark and cassia buds.

★**cas-si-mere** (*kas'i-mēr*, not *kaz'i-mēr*), *n.* a thin twilled woolen cloth, used for men's garments.

cas-sock (*kas'uk*), *n.* a long, close-fitting vestment worn by clergymen, choristers, etc.

cas-so-wa-ry (*kas'ō-wā-ri*), *n.* [*pl.* cassowaries (*-riz*)], a large bird resembling the ostrich.

cast (*kȧst*), *v. t.* [*p. t.* and *p. p.* cast, *p. pr.* casting], to throw; hurl; shed; direct or turn.

★**cas-ta-nets** (*kas'tȧ-nets*), *n. pl.* small spoon-shaped shells of hard wood or ivory, fastened loosely at top, and shaken with the fingers to beat time.

cast-a-way (*kȧst'ȧ-wā*), *n.* one cast away or lost.

★**caste** (*kȧst*, not *kast*), *n.* one of the artificial or hereditary divisions into which Hindus are restricted by Brahman religious law. [CLASS.]

cas-ter (*kȧs'tẽr*), *n.* one who, or that which, casts; a computer; a small swiveled wheel.

cas-ti-gate (*kas'ti-gāt*), *v. t.* to correct; chastise; punish; subject to severe criticism.

cas-ti-ga-tion (*kas-ti-gā'shun*), *n.* the act of castigating.

cas-tile soap (*kas'tēl* or *kas-tēl' sōp*), a superior kind of refined soap, originally made at Castile, Spain.

★**Cas-til-ian** (*kas-til'yan*), *adj.* of or pertaining to Castile, Spain.

cast-ing (*kȧst'ing*), *n.* the act or process of founding or molding.

cast iron or **steel** (*i'urn* or *stēl*), iron or steel melted and run into molds.

cas-tle (*kȧs'l*), *n.* a fortified residence; a fortress.

cas-trate (*kas'trāt*), *v. t.* emasculate; geld; expurgate; deprive a flower of its anthers.

cas-tra-tion (*kas-trā'shun*), *n.* the act of castrating.

cas-u-al (*kazh'ū-al*), *adj.* happening by chance; accidental. [OCCASIONAL.]

cas-u-al-ty (*kazh'ū-al-ti*), *n.* [*pl.* casualties (*-tiz*)], an accident, especially if resulting in bodily injury or death. [ACCIDENT.]

cas-u-ist-ry (*kazh'ū-is-tri*), *n.* [*pl.* casuistries (*-triz*)], the science or doctrine which deals with cases of conscience as determined by theological dogmas or ethical rules.

cat (*kat*), *n.* a carnivorous animal of the family Felidæ, especially the domesticated quadruped.

cat-boat (*'bōt*), *n.* a small boat with one sail on a mast near the bows.

cat-a-clysm (*kat'ȧ-klizm*), *n.* a deluge; an extensive, sweeping flood; a violent catastrophe, involving great changes of the earth's surface.

cat-block (*kat'blok*), *n.* a two or three fold iron strapped block used to cat the anchor; that is, to bring it up to the cathead, the projecting piece of timber or iron near the bow to which the anchor is secured.

★**cat-a-comb** (*kat'ȧ-kōm*, not *kat'ȧ-kōmb*), *n.* a subterraneous burial place with niches hollowed out for the dead.

cat-a-falque (*kat'ȧ-falk*), *n.* a temporary structure, erected usually in a church, to support a coffin.

Cat-a-lan (*kat'ȧ-lan*), *adj.* of or pertaining to Catalonia, a former province of Spain, or to its inhabitants or language.

cat-a-lep-sy (*kat'ȧ-lep-si*), *n.* a sudden suspension of sensation and volition.

cat-a-lep-tic (*kat-ȧ-lep'tik*), *adj.* of or pertaining to catalepsy.

cat-a-logue (*kat'ȧ-log*), *n.* an arranged list.

cat-a-mount (*kat'ȧ-mount*), *n.* the wildcat.

cat-a-pult (*kat'ȧ-pult*), *n.* an ancient military engine for hurling darts and stones.

cat-a-ract (*kat'ȧ-rakt*), *n.* a large waterfall; a furious rush or downpour of water; a disease of the eye in which the crystalline lens becomes opaque.

ca-tarrh (*kȧ-tär'*), *n.* an inflammatory affection of any mucous membrane, accompanied by increase of the mucus.

ca-tarrh-al (*kȧ-tär'al*), *adj.* pertaining to, or produced by, catarrh.

ca-tas-tro-phe (*kȧ-tas'trō-fē*), *n.* a great calamity or disaster.

ca-taw-ba (*kȧ-taw'bȧ*), *n.* a light red variety of American grape.

Catawba river, N. C. and **S. C.** So named from the *Catawbas*, a tribe of Indians.

Catawissa (*kat-ȧ-wis'sȧ*) **river, Pa.** From the Delaware Indian word *Cattawissa*, "getting fat."

cat-call (*kat'kawl*), *n.* a squeaking instrument used in theaters to express disapproval.

catch (*kach*), *v. t.* [*p. t.* and *p. p.* caught, *p. pr.* catching], to seize or grasp; lay hold of suddenly; intercept; *n.* the act of seizing or grasping; that which is caught or taken; gain. [LAY.]

★**catch-up** (*kach'up*, not *kech'up*), *n.* a sauce. [Also *catsup*, *ketchup*.]

cat-e-chism (*kat'ē-kizm*), *n.* an elementary manual in the principles of the Christian religion.

cat-e-chist (*kat'ē-kist*), *n.* a catechizer.

cat-e-chize (*kat'ē-kiz*), *v. t.* to instruct by means of questions and answers, and offering explanations; expecially to instruct on points of Christian dogma.

cat-e-gor-i-cal (*kat-ē-gor'i-kal*), *adj.* pertaining to a category.

cat-e-gor-i-cal-ly (*-li*), *adv.* absolutely; positively.

cat-e-go-ry (*kat'ē-gō-ri*), *n.* [*pl.* categories (*-riz*)], one of the highest classes to which the objects of knowledge or thought can be reduced; condition.

ca-ter (*kā'tẽr*), *v. i.* to supply food, amusement, etc. (with *for* and *to*).

cat-er-pil-lar (*kat'ẽr-pil'ẽr*), *n.* the hairy, worm-like larva of a butterfly or lepidopterous insect.

cat-er-waul (*kat'ẽr-wawl*), *v. i.* to cry as cats at night; to utter harsh, discordant sounds.

cat-fish (*kat'fish*), *n.* a fish remarkable for its voracity; bullhead; pout.

cat-gut (*kat'gut*), *n.* a kind of cord made from the intestines of animals, usually sheep.

Catharine (*kath'ȧ-rin*). The real name of Catharine of Alexandria, the patron saint of girls and virgins, was Dorothea. The proper derivation of the word is from the Greek *katharos*, "pure"; and, therefore, the correct spelling of the name is *Catharine* or *Katharine*. Danish, *Catharine;* Dutch, *Catharine;* Fr., *Catherine;* Ger., *Katharine;* Gr., *Katharine;* It., *Caterina;* Lat., *Catharina;* Russ., *Ekaterina* or *Yekaterina;* Sp., *Catalina;* Sw. *Katharina*.

ca-thar-tic (*kȧ-thär'tik*), *adj.* purgative: *n.* a purgative medicine.

ca-the-dral (*kȧ-thē'dral*), *n.* the chief church of a diocese, in which is the official chair of a bishop.

cath-ode (*kath'ōd*), *n.* the negative electrical pole.

cath-o-lic (*kath'ō-lik*), *adj.* universal; general; embracing all; liberal.

Catholic, *adj.* pertaining to the church of Rome.

ca-thol-i-cism (*kȧ-thol'i-sizm*), *n.* the belief of, or adherence to, the Catholic church or faith.

cath-o-lic-ity (*kath-o-lis'i-ti*), *n.* the quality of being catholic.

Ca-thol-i-cize (*kȧ-thol'i-sīz*), *v. t.* to convert to the Roman Catholic church.

cat-nip (*kat'nip*), **cat-mint** (*kat'mint*), *n.* a strong-scented perennial herb, much liked by cats.

cat o' nine tails, a whip with nine lashes of knotted cord.

ca-top-trics (*kȧ-top'triks*), *n.* that branch of optics which treats of the principles of reflected light.

Catskill mountains, N. Y. Name originally applied to the river (*Kill*) by the Dutch, and transferred to the mountains; *Katskill*, "panther creek," from the numerous panthers or lynxes (cat-like) animals formerly infesting the hills. The mountains were called *Katsbergs* by the Dutch.

★**Cattaraugus** (*kat-ȧ-raw'gus*) **river, N. Y.** From an Iroquois Indian word, which may be translated "bad smelling shore."

cat-tle (*kat'l*), *n. pl.* live stock, especially oxen, bulls and cows.

cat-tle plague (*plāg*), rinderpest.

★**Cau-ca-si-an** (*kaw-kā'shan*, not *kaw-kā'zhan*, nor *kaw-kash'an*), *adj.* of or pertaining to the Caucasus, a mountainous range between the Black and the Caspian Seas.

cau-cus (*kaw'kus*), *n.* a preliminary meeting of representatives of a political party, to decide upon a line of policy.

cau-dal (*kaw'dal*), *adj.* pertaining to a tail.

caul (*kawl*), *n.* a net or covering for the head; the omentum.

caul-dron. See *caldron*.

cau-li-flow-er (*kaw'li-flou-ẽr*), *n.* a garden variety of cabbage with an edible flowering head.

caulk. See *calk*.

caus-al (*kawz'al*), *adj.* relating to or expressing cause; causative.

cau-sal-i-ty (*kaw-zal'i-ti*), *n.* [*pl.* causalities (*-tiz*)], the agency of a cause; the action of a cause in producing its effect.

caus-al-ly (*kawz'al-li*), *adv.* according to order of series of causes; by tracing effects to causes.

cau-sa-tion (*kaw-zā'shun*), *n.* the act of causing, or the agency by which the effect is produced.

caus-a-tive (*kawz'ȧ-tiv*), *adj.* that causes; expressing a cause.

cause (*kawz*), *n.* that which produces or contributes to a result; a reason; motive; principle.

Syn. CAUSE, reason, motive. *Cause* respects the order and connection of things; *reason* the movements and operations of the mind; *motives* the movements of the mind and body. *Cause* is said of all inanimate objects; *reason* and *motive* of rational agents: whatever happens in the world happens from some *cause* mediate or immediate; whatever opinions men hold, they ought to be able to assign a substantial *reason* for them; and for whatever they do, they ought to have a sufficient *motive*. The *cause* gives birth to the effect, the *reason* gives birth to the conclusion, and the *motive* gives birth to the action. [See *case*.]

Ant. DETERRENT, effect, impulse.

cause, *v. t.* to effect, bring about, make.

Syn. CAUSE, occasion, create. What is *caused* seems to follow naturally; what is *occasioned* follows incidentally, or what *occasions* may be incidental, but necessary; what is *created* receives its existence arbitrarily. A wound *causes* pain; accidents *occasion* delay; busybodies *create* mischief. [See *occasion*.]

Ant. DESTROY, happen, prevent.

cause-way (*kawz'wā*), or **cau-sey** (*kaw'zi*), *n.* a raised pathway or road; a highway.

caus-tic (*kaws'tik*), *adj.* burning; hot; corrosive; sarcastic; cutting; pungent.

cau-ter-i-za-tion (*kaw-tẽr-i-zā'shun*), *n.* the act of cauterizing.

cau-ter-ize (*kaw'tẽr-iz*), *v. t.* to burn or sear with a hot iron, or with a caustic substance.

cau-tion (*kaw'shun*), *n.* *heedfulness*; prudence in regard to danger.

cau-tion-a-ry (*kaw'shun-ā-ri*), *adj.* containing a caution; given as a pledge or security.

cau-tious (*kaw'shus*), *adj.* exercising caution; heedful; wary; vigilant; circumspect.

Syn. CAUTIOUS, wary, circumspect. We must be *cautious* on all occasions where there is danger, but we must be *wary* where there is great danger. A tradesman must be *cautious* in his dealings with all men, but he must be *wary* when he has to deal with designing men; *circumspect* is used in reference to matters of theory or contemplation, when the mind is principally employed; a man must be *circumspect* when he transacts business of particular importance and delicacy.

Ant. CARELESS, inattentive, reckless.

cav-al-cade (*kav'al-kād*), *n.* a procession of persons chiefly on horseback.

★**cav-a-lier** (*kav-a-lēr'*), *n.* an armed horseman, especially a knight or gentleman soldier.

cav-al-ry (*kav'al-ri*), *n.* mounted troops.

★**ca-va-ti-na** (*kā-vȧ-tē'nȧ* or *kav-ȧ-tē'nȧ*), *n.* a short, simple melody.

cave (*kāv*), *n.* a large natural cavity in the earth.

★**ca-ve-at** (*kā'vē-at*, not *kav'ē-at*), *n.* a notice filed to stop procedure; bar to letters patent; warning.

cav-ern (*kav'ẽrn*), *n.* a large natural hollow under the earth.

cav-ern-ous (*kav'ẽrn-us*), *adj.* hollow like a cavern.

★**ca-viare** (*kȧ-vēr'*) or **cav-i-ar** (*kav'i-är*), *n.* the roes of the sturgeon.

cav-il (*kav'il*), *v. i.* to raise captious or frivolous objections. [CENSURE.]

cav-i-ty (*kav'i-ti*), *n.* [*pl.* cavities (*-tiz*)], a hollow place or part.

ca-vort (*kȧ-vôrt'*), *v. i.* to prance about, as a horse.

caw (*kaw*), *v. i.* to cry like a crow, rook, or raven: *n.* the cry of the crow, etc.

★**cay-enne pep-per** (*kā-en'* or *ki-en' pep'ẽr*), a kind of pepper made from the seeds and fruit of various species of the genus Capsicum.

★**Cayuga** (*kā-yōō'gȧ*). County, village, and lake in New York. Indian word, the derivation of which is in dispute.

Cazenovia (*kaz-ē-nō'vi-ȧ*). Lake and town in Madison county, New York; town named by its founder, Col. John Linkhaen, for Theophilus Cazenove, general agent of the Holland Land company.

cease (*sēs*), *v. i.* to come to an end; stop; desist (followed by *from* before a noun): *v. t.* to put a stop to; end.

Syn. CEASE, leave off, discontinue. *Cease* is used either for particular actions or general habits; *leave off* more usually and properly for particular actions; *discontinue* for general habits. A restless, spoiled child never *ceases* crying until it has obtained what it wants; a laborer *leaves off* his work at any given hour; a delicate person *discontinues* his visits when they are found not to be agreeable.

Ant. BEGIN, commence, continue, start.

★**Cecil** (*sē'sil, sis'il, or ses'il*). A masculine name derived from the Latin *Cecilius* or *Cæcilius*, a diminutive of *cæcus*, "blind," or "dim-sighted." *Cecil* is also found as a feminine name. Dutch, *Cecilius;* Lat., *Cæcilius*.

Cecilia (*sē-sil'i-ȧ*). A baptismal name derived from *Cæcilia*, feminine of *Cæcilius*. [See *Cecil*.] Dutch, *Cecilia;* Fr., *Cécile;* It., *Cecilia;* Lat., *Cæcilia*.

ce-dar (*sē'dẽr*), *n.* the name of several evergreen trees, with fragrant wood of great durability.

cede (*sēd*), *v. t.* to give up or surrender.

ceil (*sēl*), *v. t.* to overlay or cover the inner surface of a roof.

ceil-ing (*sēl'ing*), *n.* the inner surface of the roof of an apartment.

cel-an-dine (*sel'an-dīn*), *n.* the name of a perennial plant of the poppy family.

cel-e-brate (*sel'ē-brāt*), *v. t.* to praise, extol, or honor; commemorate.

Syn. CELEBRATE, commemorate. Everything is *celebrated* which is distinguished by any marks of attention, whether present or past; but nothing is *commemorated* but what has been past. [See *famous*.]

Ant. DESPISE, forget, profane, violate.

cel-e-bra-tion (*sel-ē-brā'shun*), *n.* the act of celebrating.

ce-leb-ri-ty (*sē-leb'ri-ti*), [*pl.* celebrities (*-tiz*)], fame; renown.

ce-ler-i-ty (*sē-ler'i-ti*), *n.* rapidity; swiftness.

cel-er-y (*sel'ẽr-i*), *n.* a plant cultivated for a salad.

ce-les-tial (*sē-les'chal*), *adj.* of or pertaining to the sky or heavens; heavenly; supremely excellent.

Syn. CELESTIAL, heavenly. *Celestial* is applied mostly in the natural sense of the heavens; *heavenly* is employed more commonly in a spiritual sense. Hence, we speak of the *celestial* globe as distinguished from the terrestial; and of the *celestial* bodies. But, on the other hand, of the *heavenly* habitation, of *heavenly* joys or bliss, of *heavenly* spirits, and the like.

Anth. Earthly, low, mortal, mean.

Ce-les-tial (*sē-les'chal*), *n.* an inhabitant of heaven, a native of China.

Celestial empire. Name applied to the Chinese empire, because of a belief that its early rulers were all celestial deities.
★**ce-lib-a-cy** (*sē-lib'ā-si* or *sel'i-bā-si*), *n.* the state of being unmarried.
cel-i-bate (*sel'i-bāt*), *n.* one who is unmarried.
cell (*sel*), *n.* a small room in a monastery, convent, or prison; minute elementary structure of tissues of animals and plants.
cel-lar (*sel'ēr*), *n.* a vault for storing provisions, wine, fuel, etc.
★**cel-lo** (*chel'ō*), *n.* [*pl.* cellos (*'ōz*), It. celli (*'ē*)], a contraction for violoncello.
cel-lu-loid (*sel'ū-loid*), *n.* a compound of camphor and gun cotton, resembling ivory.
celt (*selt*), *n.* an instrument or weapon of stone or metal found in the tumuli of early Celtic nations.
★**Celt-ic** (*sel'tik*) or **Keltic** (*kel'tik*), *adj.* pertaining to the Celts or Kelts.
ce-ment (*sē-ment'* or *sem'ent*), *n.* any adhesive substance which makes two bodies cohere.
cem-e-ter-y (*sem'ē-ter-i*), *n.* [*pl.* cemeteries (*-iz*)], a public burial ground.
cen-o-bite (*sen'ō-bit*), *n.* one of a religious order living in a convent or in community.
cen-o-taph (*sen'ō-tăf*), *n.* an empty tomb.
cen-ser (*sen's ēr*), *n.* a covered cup-shaped vessel pierced with holes, in which incense is burned.
cen-sor (*sen'sor*), *n.* one of two magistrates of ancient Rome who imposed taxes and regulated the morals and manners of the community; an official appointed to examine books, manuscripts, plays, etc., to ascertain whether there is anything immoral or offensive in them.
cen-so-ri-al (*sen-sō'ri-al*), *adj.* pertaining to a censor; censorious.
cen-so-ri-ous (*sen-sō'ri-us*), *adj.* addicted to, or expressing, censure; carping; critical.
cen-sur-a-ble (*sen'shōor-ā-bl*), *adj.* blamable.
cen-sure (*sen'shōor*), *n.* blame; reproof; the act of finding fault.
Syn. CENSURE, carp, cavil. To *censure* respects positive errors; to *carp* and *cavil* have regard to what is trivial or imaginary; the former is employed for errors in persons; the latter for supposed defects in things. *Carping* and *caviling* are resorted to only to indulge ill-nature or self-conceit: party politicians *carp* at the measures of administration; infidels *cavil* at the evidences of Christianity, because they are determined to disbelieve. [See *blame, condemn.*]
cen-sus (*sen'sus*), *n.* an official enumeration of population, with details of sex, age, occupation, etc.
cent (*sent*), *n.* the one-hundredth part of a dollar.
cen-taur (*sen'tawr*), *n.* a fabulous being, half man and half horse.
cen-te-na-ri-an (*sen-tē-nā'ri-an*), *adj.* of or pertaining to a centenary: *n.* a person a hundred years old.
cen-te-na-ry (*sen'tē-nā-ri*), *n.* [*pl.* centenaries, (*-riz*)], the space of a hundred years.
cen-ten-ni-al (*sen-ten'i-al*), *adj.* consisting of, or enduring, a century; once in a century.
cen-ter (*sen'tēr*), *n.* the middle point of anything; the nucleus around which things are collected; a title of the leaders of certain organizations.
cen-ter-board (*-bōrd*), *n.* a keel so constructed that it may be raised within the vessel or lowered at pleasure; it is extensively used by racing craft.
cen-ter of grav-i-ty (*uv grav'i-ti*), that point of a body through which the resultant of all the forces acting upon it in consequence of the earth's attraction will pass.
cen-ti-grade (*sen'ti-grād*), *adj.* graduated or divided into a hundred degrees.
★**cen-ti-gram** or **cen-ti-gramme** (*sen'ti-gram*), *n.* a measure of weight equal to the hundredth part of a gram.
★**cen-ti-li-ter** (*sen'ti-lē-tēr* or *sen-til'i-tēr*, Fr. *sȧN'-tē-lē-tēr*), *n.* a measure of capacity equal to the hundredth part of a liter.
★**cen-time** (*sȧN-tēm'*), *n.* a small French coin equal to the hundredth part of a franc.
★**cen-ti-me-ter** (*sen'ti-mē-tēr*, or *sen-tim'ē-tēr*), *n.* a measure of length equal to the hundredth part of a meter.
cen-ti-ped (*sen'ti-ped*) or **cen-ti-pede** (*-pēd*), *n.* the term applied to an articulated animal with numerous feet belonging to the class Myriapoda.
cen-tral (*sen'tral*), *adj.* relating to, or situated in, the center.
cen-tral-i-za-tion (*sen-tral-i-zā'shun*), *n.* the act of bringing all local administrations under one central government.
cen-tral-ize (*sen'tral-īz*), *v. t.* to draw or bring to a center.
Central park. The principal park in New York, extending from 59th street to 110th street, and from Fifth avenue to Eighth avenue.
cen-tre (*sen'tēr*), *n.* same as *center*.
cen-tric (*sen'trik*) or **cen-tri-cal** (*'tri-kal*), *adj.* placed in the center; central.
cen-trif-u-gal (*sen-trif'ū-gal*), *adj.* tending or causing to fly off from the center; radiating from a central focus.
cen-trip-e-tal (*sen-trip'ē-tal*), *adj.* tending or causing to approach the center; opposed to centrifugal.
cen-trip-e-tal rail-way (*rāl'wā*), a railway constructed with a single rail to support the carriage.
cen-tu-ri-on (*sen-tū'ri-un*), *n.* a military officer commanding a hundred men.
cen-tu-ry (*sen'tū-ri*), *n.* [*pl.* centuries (*-riz*)], a hundred years, especially of the Christian era.
cen-tu-ry plant (*plant*), a name of the American aloe, from the supposition that it flowered once only in a hundred years.
century run, a hundred-mile run on a bicycle.
★**ce-phal-ic** (*sē-fal'ik*, not *sef'al-ik*), *adj.* pertaining to the head.
★**ce-ram-ic** (*sē-ram'ik*, not *kē-ram'ik*), *adj.* of or pertaining to pottery or the fictile arts.
ce-rate (*sē'rāt*), *n.* a thick ointment of wax, etc.
cere (*sēr*), *n.* the naked skin at the base of the bill of many birds.
cere (*sēr*), *v. t.* to cover or close with wax.
ce-re-al (*sē'rē-al*), *adj.* pertaining to, or producing, wheat or edible grain.
cer-e-bel-lum (*ser-ē-bel'um*), *n.* [*pl.* cerebella (*'a*)], the hinder and lower part of the brain.
cer-e-bral (*ser'ē-bral*), *adj.* of or pertaining to the brain.
cer-e-bral hem-is-phere (*hem'is-fēr*), one of the two lateral halves of the cerebrum.
cer-e-bra-tion (*ser-ē-brā'shun*), *n.* the conscious or unconscious action of the brain.
cer-e-brum (*ser'ē-brum*), *n.* [*pl.* cerebra (*-brā*)], the superior and larger part of the brain.
cere-cloth (*sēr'kloth*), *n.* a cloth saturated with wax or some gummy substance, used for wrapping embalmed bodies in.
cere-ment (*sēr'ment*), *n.* a grave-cloth or shroud: *pl.* grave-clothes.
cer-e-mo-ny (*ser'ē-mō-ni*), *n.* [*pl.* ceremonies (*-niz*)], a sacred rite or observance; a prescribed rite or formality. [FORM.]
cer-iph (*ser'if*), *n.* one of the fine lines of a printing type.
ce-ri-um (*sē'ri-um*), *n.* a rare metallic element.
ce-rog-ra-phy (*sē-rog'rā-fi*), *n.* the art of writing or engraving on wax.
cer-tain (*sēr-tin*), *adj.* sure; beyond a doubt.
Syn. CERTAIN, sure, secure. *Certain* and *sure* have regard to a person's convictions; *secure* to his interests or condition: one is *certain* from actual knowledge or from a belief in others; one is *sure* from a reliance upon others; one is *secure* when free from danger. We can be *certain* of nothing future but death; we may be *sure* that God will fulfill his promises in his own way; we may be *secure* against any loss or mischief if we use proper precautions.
Ant. DUBIOUS, disputed, exposed.
cer-tain-ty (*sēr'tin-ti*), *n.* [*pl.* certainties (*-tiz*)], full assurance.
cer-tes (*sēr'tēz*), *adv.* certainly; assuredly.
cer-tif-i-cate (*sēr-tif'i-kāt*), *n.* a written testimony to the truth of any fact.
cer-ti-fi-ca-tion (*sēr-ti-fi-kā'shun*), *n.* the act of certifying.
cer-ti-fy (*sēr'ti-fī*), *v. t.* [*p. t.* and *p. p.* certified, *p. pr.* certifying], to testify to, or to make known, in writing.
★**cer-ti-o-ra-ri** (*sēr-shi-ō-rā'rī*), *n.* a writ issuing from a superior court calling for the records of an inferior court.
cer-ti-tude (*sēr'ti-tūd*), *n.* certainty; assurance.
★**Certosa** (*cher-tō'sȧ*). A former Carthusian monastery, at Pavia, Italy, one of the largest and most splendid existing.
ce-ru-le-an (*sē-rōō'lē-an*), *adj.* sky-colored.
ce-ru-lin (*sē'rōō-lin*), *n.* an olive-green dye.
ce-ruse (*sē'rōōs*), *n.* white lead, used as a pigment, and from which a cosmetic is prepared.
cer-vi-cal (*sēr'vi-kal*), *adj.* of or pertaining to the neck.
cer-vine (*sēr'vīn*), *adj.* of or pertaining to the deer family; of a tawny or fawn color.
cess (*ses*), *v. t.* to impose a tax; assess: *n.* a rate or tax, especially the land tax.
ces-sa-tion (*ses-sā'shun*), *n.* the act of ceasing.
Syn. CESSATION, stop, rest, intermission. To *cease* respects the course of things; whatever does not go on has *ceased; stop* respects some external action or influence; *rest* is a species of *cessation* that regards labor or exertion; whatever does not move or exert itself is at *rest; intermission* is a species of *cessation* only for a time or at certain intervals. That which *ceases* or *stops* is supposed to be at an end; *rest* or *intermission* supposes a renewal. [See *hinder.*]
Ant. BEGINNING, continuance, progress.
ces-sion (*sesh'un*), *n.* a yielding up, as of territory, property, or rights.
cess-pool (*ses'pōōl*), *n.* a deep hole in the ground, or the well of a drain for the reception of filth.
ces-tus (*ses'tus*), *n.* a kind of glove used by ancient boxers, frequently loaded with lead or iron.
★**ce-ta-cean** (*sē-tā'shan*), *adj.* pertaining to the Cetacea, formerly a group of marine mammalia which included the whales.
Ce-te (*sē'tē*), *n. pl.* an order of the mammalia, containing the true whales, dolphins, etc.
★**Ceylon** (*sē-lon'* or *sil-ōn'*). Portuguese *Selen* is but a part of the original Sanskrit *Sinhalo-dwipa*, "the island of lions." Marco Polo, seemingly deriving his knowledge from Javanese sources, calls it *Seilan*, whence the Portuguese forms *Cilan* and *Ceilaon*, from the last of which the English form *Ceylon* has been obtained.
chafe (*chāf*), *v. t.* to make warm by friction; to wear away or make sore by rubbing.
chaff (*chăf*), *n.* the husk of grain, especially when separated by threshing, etc.
chaff (*chăf*), *v. t.* to banter; make game of: *v. i.* to use bantering language: *n.* banter.
chaf-finch (*chaf'inch*), *n.* a bird, so named from its feeding on grain.
chaf-ing dish (*chāf'ing dish*), a small portable grate for coals.
★**cha-grin** (*shȧ-grin'* or *-grēn'*), *n.* vexation due to disappointment.
chain (*chān*), *n.* a connected series of links or rings fitted into one another: *v. t.* to bind with chains.
chair (*chār*), *n.* a movable seat with a back for one person; an official seat.
chair-man (*chār'man*), *n.* [*pl.* chairmen (*'men*)], the president of an assembly.
chaise (*shāz*), *n.* a light two-wheeled carriage; a carriage in general.
★**chal-ced-o-ny** (*kal-sed'ō-ni* or *kal'sē-dō-ni*), *n.* a cryptocrystalline variety of quartz, resembling diluted milk.
chal-dron (*chal'drun*), *n.* a measure for coke equal to 36 bushels (25½ cwt.).
★**chal-ice** (*chal'is*), *n.* a cup; a Eucharist cup.
chalk (*chawk*), *n.* a soft limestone rock composed of carbonate of lime; prepared chalk for drawing.
chalk-stone (*'stōn*), *n.* a chalky concretion in the joints.
chal-lenge (*chal'enj*), *n.* an invitation to a contest; a summons to fight a duel.
cham-ber (*chām'bēr*), *n.* an apartment; especially a bedroom.
cham-ber-lain (*chām'bēr-lin*), *n.* an officer who has charge of the private apartments of a sovereign or nobleman.
★**cha-me-le-on** (*kā-mē'lē-un*), *n.* an insectivorous lizard-like reptile, possessing the power of changing its color.
champ (*champ*), *v. t.* to bite with the teeth repeatedly and impatiently.
★**cham-pagne** (*sham-pān'*), *n.* a light sparkling effervescent wine.
cham-paign (*sham-pān'*), *n.* flat open country: *adj.* level; open.
★**Champ de Mars** (*shȧN du mȧrs'*). In early French institutional history, an annual political and military assembly, held in March. The time of meeting was changed to May in the eighth century, and thereafter these assemblies were called *Champs de Mai.*
cham-pi-on (*cham'pi-un*), *n.* one who defends the cause of another.
Champlain (*sham-plān'*, Fr. *shȧN-plaN'*), **Lake, N. Y.** For its discoverer Samuel de Champlain, in 1609. Indian name *Canaderi-Gouarante,* "mouth or door of the country." Allusion to the north entrance of the lake. In the Abenaqui tongue, called *Petawa-bouque,* "alternate land and water," alluding to its numerous islands. Iroquois name *Andiatora.*
★**Champs Elysées** (*shȧN-zā-lē-zā'*). An avenue and the gardens surrounding it, in Paris, extending from the Place de la Concorde one and one fourth miles to the Place de l'Etoile, celebrated as a place of public resort.
chance (*chȧns*), *n.* an unforeseen event; an accident; a possibility; opportunity; risk: *v. i.* to happen; occur without design or expectation.
Syn. CHANCE, fortune, fate. *Chance* applies to all things, personal or otherwise; *fortune* and *fate* are mostly said of that which is personal. *Chance* neither forms, orders, nor designs; *fortune* forms plans and designs, but without choice; it is said to be blind: *fate* forms plans and chains of causes; intention, knowledge, and power are attributed to it; its views are fixed, its results decisive. [See *accident, happen.*]
Ant. DESIGN, plan.
chan-cel (*chan'sel*), *n.* that part in a church where the altar stands; the sanctuary.
chan-cel-lor (*chan'sel-ēr*), *n.* a judge of a court of equity or chancery; the president or highest official of a university.
chance-med-ley (*chȧns-med'li*), *n.* justifiable homicide in self-defense.
chan-cer-y (*chan'sēr-i*), *n.* originally in England, next to Parliament, the highest court of justice.
chan-de-lier (*shan-dē-lēr'*), *n.* a hanging frame with branches for lights.
chan-dler (*chȧn'dlēr*), *n.* a maker or vendor of candles; a dealer or merchant.
change (*chānj*), *v. t.* to alter; substitute; exchange or give an equivalent for; render acid or tainted.
Syn. CHANGE, exchange, barter, substitute. To *change* in respect to persons is to take one for another, without regard to whether they are alike or different, as a king *changes* his ministers; any person may *change* his servants: to *exchange* is to take one person in return for another who is in like condition, as prisoners are *exchanged* in time of war. In respect to things, to *change* is to take anything new or fresh, whether alike or different. Clothes may be *changed;* to *exchange* is to take one thing for another, that is, either of the same kind or equivalent in value, as to *exchange* one commodity for another. To *change* may often be the result of caprice, but to *exchange* is always an act either of discretion or necessity. To *barter* is the giving of any commodity for other commodities. To *substitute* is to put one person in the place of another, as to *substitute* one for another who has been drawn for the militia. [See *interchange.*]
Ant. CONTINUE, keep, retain.

change-a-ble (*chānj'ä-bl*), *adj.* fickle.
change-ling (*chānj'ling*), *n.* a child left in place of another; an idiot; a waverer.
chan-nel (*chan'el*), *n.* the bed of a stream; a watercourse; the deepest part of a strait, bay, harbor.
chant (*chänt*), *v. t.* to sing; intone: *v. i.* make melody with the voice; go in full cry, as hounds: *n.* a song.
chan-ti-cleer (*chan'ti-klēr*), *n.* a cock.
★**cha-os** (*kā'os*), *n.* the confused matter out of which the universe was formed.
cha-ot-ic (*kā-ot'ik*), *adj.* resembling chaos.
chap (*chap*), *v. t.* [*p. t.* and *p. p.* chapped; *p. pr.* chapping], to cause to crack longitudinally.
chap (*chap*), *n.* a fellow.
★**chap** (*chop*, not *chap*), *n.* one of the jaws or its fleshy covering (usually *pl.*); the mouth of a channel.
★**cha-par-ral** (*chä-pär-räl'*), *n.* a dense thicket.
chap-book (*chap'book*), *n.* a small book, usually of fairy tales; romances.
chap-el (*chap'el*), *n.* a subordinate place of public worship.
chap-el-ry (*chap'el-ri*), *n.* [*pl.* chapelries (*-riz*)], the district legally assigned to a chapel.
★**chap-er-on** (*chap'ēr-ōn*), *n.* a married lady who accompanies young ladies in public.
chap-lain (*chap'lin*), *n.* a clergyman who performs service in the army or navy.
chap-lain-cy (*chap'lin-si*), *n.* the office or status of a chaplain.
chap-let (*chap'let*), *n.* a wreath or garland encircling the head; a rosary.
chap-man (*chap-man*), *n.* [*pl.* chapmen (*'men*)], formerly a merchant or trader; a hawker.
chap-ter (*chap'tēr*), *n.* a division of a book; the clergy of a cathedral or collegiate church.
char (*chär*), *v. t.* [*p. t.* and *p. p.* charred; *p. pr.* charring], burn or reduce to charcoal; burn partially.
char-ac-ter (*kar'ak-tēr*), *n.* a letter, sign, or figure; distinctive qualities or traits.
Syn. CHARACTER, reputation. *Character* lies in the man; it is the mark of what he is; it shows itself on all occasions; *reputation* depends upon others; it is what they think of him.
char-ac-ter-is-tic (*kar-ak-tēr-is'tik*), *adj.* pertaining to, or indicating, the character.
char-ac-ter-is-ti-cal-ly (*'ti-kal-li*), *adv.* in a characteristic manner.
char-ac-ter-i-za-tion (*kar-ak-tēr-i-zā'shun*), *n.* the act of characterizing.
char-ac-ter-ize (*kar'ak-tēr-iz*), *v. t.* to describe by peculiar qualities; mark or distinguish.
cha-rade (*shä-räd'*), *n.* an acted enigma.
char-coal (*chär'kōl*), *n.* wood partially burnt; impure carbon.
charge (*chärj*), *v. t.* to rush on or attack; load; fill up; impose; command or enjoin; instruct; accuse; place on the debit side: *n.* care, custody. [CARE, ACCUSE, COST.]
charge-a-ble (*chärj'ä-bl*), *adj.* liable to be charged; ratable; burdensome.
★**char-gé d'af-faires** (*shär-zhā' dȧ-fâr'*), [*pl.* chargés (*shär-zhā'*)], a government official who acts for an ambassador in his absence, or at a court to which no ambassador is accredited.
char-ger (*chär'jēr*), *n.* a cavalry horse; a large dish.
★**Charing Cross** (*chär'ing krôs*). A cross in memory of Queen Eleanor, erected by Edward I., one and one-fourth miles west-southwest of St. Paul's, London. It was demolished by the Long Parliament, in 1647, and restored by the South Eastern Railway company, in 1865.
char-i-ot (*char'i-ot*), *n.* an ancient two-wheeled car for war, state processions, racing, etc.
char-i-ta-ble (*char'i-tä-bl*), *adj.* benevolent in disposition; kind and liberal. [HUMANE.]
char-i-ty (*char'i-ti*), *n.* the disposition to think well of others; liberality; alms. [LOVE.]
char-la-tan (*shär'lä-tan*), *n.* a quack.
char-la-tan-ism (*-izm*), *n.* quackery.
Charles. From the Teutonic, meaning "manly" or "noble spirited." Danish, *Carl;* Dutch, *Karel;* Fr., *Charles;* Ger., *Karl;* It., *Carlo;* Lat., *Carolus;* Sp., *Carlos;* Sw., *Karl.*
Charles Cape, Va. So named in April, 1607, by Admiral Newport, in honor of "baby" Charles, son of James I., afterward King Charles I. of England.
Charleston, S. C. In honor of Charles II. of England, original settlement being called *Charles Fort.* The name *Charleston* substituted in 1783.
Charleston, W. Va. Originally known as "Clendman's Settlement" and "The town at the mouth of the Elk." December 19, 1794, the name of *Charlestown* was fixed by the Virginia legislature, but from some cause unknown, through common consent it was changed to *Charleston.* The name *Charlestown* was given by George Clendman, its founder, in honor of his father Charles.
Charlotte (*shär'lot*). From the Teutonic, meaning "noble spirited." Danish, *Charlotte;* Dutch, *Charlotta;* Fr., *Charlotte;* Ger., *Charlotte;* It., *Carlotta;* Lat., *Caroletta;* Sp., *Carlota, Charlotta.*
Charlotte, N. C. A compliment to Princess Charlotte of Mecklenburg.
Charlottenburg (*shär-lot'ten-bōōrg*). A city in the province of Brandenburg, Prussia, named from a palace built for Charlotte, wife of Frederick I.
Charlottesville. City in Virginia, named for Charlotte Augusta, princess of Wales.
charm (*chärm*), *n.* a spell; an allurement; a trinket: *v. t.* to influence by magic; subdue. [GRACE.]
★**char-nel** (*chär'nel*), *adj.* containing flesh or dead bodies.
chart (*chärt*), *n.* a map of any part of a sea, river, etc., for the use of mariners.
char-ter (*chär'tēr*), *n.* a document bestowing certain rights and privileges.
Charterhouse. The name of the *Charterhouse,* a famous school in London, is a corruption of the word *Chartreuse,* that is, *Carthusian.* The *Charterhouse* was originally a Carthusian monastery founded in 1371, but was seized by Henry VIII.
Chartists (*chärt'ists*). A body of political reformers, chiefly workingmen, that sprang up in England about the year 1838.
★**char-treuse** (*shär-trēz'*, Fr. *shär-trōz'*), *n.* a celebrated liqueur made by the monks of La Grand Chartreuse.
char-y (*chär'i*), *adj.* cautious; sparing.
chase (*chās*), *v. t.* to pursue; capture or kill; hunt; drive away: *v. i.* to ride or hunt rapidly.
chase (*chās*), *n.* a groove; an iron frame for securing types; that part of a cannon in front of the trunnions.
chasm (*kazm*), *n.* a deep gap or opening in the earth; a void space. [BREACH.]
★**chas-sis** (*chas'is* or *shȧ'sē*), *n.* the frame and springs of a motor car; by extension, also, all other mechanical parts of the car, including the wheels.
chaste (*chāst*), *adj.* morally pure; modest; pure in style; refined.
chas-ten (*chā'sn*), *v. t.* to punish for the purpose of reformation; purify; refine.
Syn. CHASTEN, chastise. *Chasten* has most regard to the end, *chastise* to the means. The former is an act of deity, the latter a human action. God *chastens* his faithful people, to cleanse them from their transgressions; parents *chastise* their children, to prevent the repetition of faults.
★**chas-tise** (*chas-tiz'*, not *chas'tiz*), *v. t.* to correct by punishment; reduce to obedience. [CHASTEN.]
★**chas-tise-ment** (*chas'tiz-ment*, not *chas-tiz'ment*), *n.* punishment.
chas-ti-ty (*chas'ti-ti*), *n.* moral and sexual purity.
chas-u-ble (*chas'ū-bl*), *n.* a rich vestment worn over the alb by a celebrating priest.
chat (*chat*), *v. i.* [*p. t.* and *p. p.* chatted; *p. pr.* chatting], to talk in an easy manner. [SPEAK.]
★**cha-teau** (*shȧ-tō'*), *n.* [*pl.* chateaux (*-tōz'*)], a castle; a manor house or country seat.
★**Chateau de Meillant** (*shȧ-tō' du mâyon'*). Noted chiefly on account of its architecture, is now the seat of the Duc de Mortemart at St. Amand Montrond, France.
★**chat-e-laine** (*shat'ē-lān*), *n.* a bunch of chains to which are attached trinkets, etc., worn at the waist by ladies.
Chatsworth (*chȧts'wērth*). A celebrated mansion of the duke of Devonshire in Derbyshire, England.
★**Chattahoochee** (*chat-tȧ-hōō'chē*) **river, Ga.** Translated "figured or painted stone," from the Indian *Chatehoche; chateo,* "stone," *hoche,* "marked" or "figured."
Chattanooga (*chat-tȧ-nōō'gȧ*). City in Hamilton county, Tennessee, and creek in Georgia. From the Cherokee Indian word, meaning "crow's nest" or "eagle's nest."
chat-tel (*chat'el*), *n.* personal property except freehold (usually in *pl.*).
chat-ter (*chat'ēr*), *v. i.* to utter sounds rapidly, as a monkey. [SPEAK.]
chat-ter-box (*chat'ēr-boks*), *n.* an incessant talker.
Chaucer's Inn, the "Tabard." This old London tavern immortalized by Chaucer as the *Tabard,* was burnt down in the great fire of 1676. Upon its restoration the name was changed to the *Talbot,* or *Dog,* which name it retained until about 1873, when it was demolished.
★**chauf-feur** (*shō-fēr'*), *n.* an operator of an automobile: *fem.* **chauffeuse** (*shō-fēz'*).
★**Chautauqua** (*shȧ-tô'kwȧ*, not *chȧ-tô'kwȧ*). A village and summer resort situated on Chautauqua lake, in western New York; noted as the seat, since 1874, of the Chautauqua assembly. An Indian word which has been the subject of much controversy. Webster says it is a corruption of a word which means "foggy place."
cheap (*chēp*), *adj.* purchasable for a low price; common; of small value.
cheap-en (*chēp'en*), *v. t.* to lessen the price of. [BUY.]
Cheapside (*chēp'sīd*). The central east-and-west thoroughfare of the city of London. Formerly *West Cheap* was distinguished from *East Cheap.*
cheat (*chēt*), *n.* a fraud or deception; one who cheats: *v. t.* to deceive or defraud; impose upon: *v. i.* to act as a cheat.
Syn. CHEAT, defraud, trick. One *cheats* by direct and gross falsehood or artifice; one *defrauds* by a settled plan or contrivance; one *tricks* by a sudden invention.
Ant. DEAL HONESTLY, fairly, justly.
★**Cheboygan** (*shē-boi'gan*). River, county, and city in Michigan. An Indian word, variously interpreted. Haines says it is composed of two words, *che,* "great," and *poygan,* "pipe."
check (*chek*), *n.* a restraint; a reproof; a pass, ticket, or token; a term in chess; cloth woven in squares of alternate patterns; an order or draft on a bank or banker for money. [OBSTRUCT.]
check-er (*chek'ēr*), *n.* checkerwork; one of the squares of a checkered pattern; piece with which to play checkers: *pl.* game played on a checkerboard; draughts.
check-er-board (*chek'ēr-bōrd*), *n.* board on which the game of checkers is played.
check-mate (*chek'māt*), *n.* the winning move at chess when the opponent's king cannot move out of check.
cheek (*chēk*), *n.* the side of the face beneath either eye; one of two corresponding sides.
cheep (*chēp*), *n.* a shrill noise, as that of a young chicken, or a mouse: *v. i.* to make such a noise.
cheer (*chēr*), *n.* temper or state of mind; a state of gladness or joy; a shout of applause: *v. t.* to make cheerful.
Syn. CHEER, encourage, comfort. To *cheer* regards the spirits; to *encourage* the resolution. The sad require to be *cheered;* the timid to be *encouraged.* To *cheer* and *comfort* have both regard to the spirits, but the latter differs in degree and manner. To *cheer* expresses more than to *comfort;* the former signifying to produce a lively sentiment, the latter to lessen or remove a painful one. We are *cheered* in the moments of despondency, we are *comforted* in the hour of distress. [See *encourage, comfort.*]
Ant. DISHEARTEN, dismay.
cheer-ful (*chēr'fool*), *adj.* full of good spirits.
cheer-i-ness (*chēr'i-nes*), *n.* the state of being cheery.
cheer-y (*chēr'i*), *adj.* cheerful; gay.
cheese (*chēs*), *n.* the curd or casein of milk coagulated, pressed and allowed to dry in a mold.
★**chef** (*shef*), *n.* a head or professional cook.
★**chef-d'œuvre** (*shȧ-dēvr'*), *n.* [*pl.* chefs-d'œuvre (*shȧ-dēvr'*)], a masterpiece.
chem-i-cal (*kem'i-kal*), *adj.* pertaining to chemistry: *n.* a chemical substance.
★**che-mise** (*shē-mēz'*), *n.* a woman's undergarment; a wall lining an earthwork.
chem-ist (*kem'ist*), *n.* one skilled in chemistry; a dealer in drugs and medicines; an analyst.
chem-is-try (*kem'is-tri*), *n.* the science which treats of the properties of elementary and compound substances and the laws which govern their molecular and atomic relations.
Chemung (*shē-mung'*) **river.** Indian word, signifying "big horn," or "horn in the water."
Chenango (*shē-nang'gō*) **river, N. Y.** From an Iroquois word, *ochenung,* "bull thistles."
che-nille (*shē-nēl'*), *n.* silk or worsted cord.
Chepstow (*chep'stō*). A town in Monmouthshire, England, situated on the Wye, thirteen miles northwest of Bristol.
★**cheque** (*chek*), *n.* an order or draft on a banker or bank, payable to the bearer; check.
cher-ish (*cher'ish*), *v. t.* to hold or esteem dear; treat with tenderness; protect and aid.
Syn. CHERISH, cheer, comfort, foster, harbor, nourish, nurse, nurture. To *cherish* is both to hold dear and to treat as dear. To *nurse* is to tend the helpless or feeble; to *nourish* is strictly to sustain and build up by food; to *nurture* combines mental and spiritual training with love and tenderness; to *foster* is to maintain and care for. [See *cheer, foster.*]
★**che-root** (*chē-rōōt'*), *n.* a kind of cigar.
cher-ry (*cher'i*), *n.* [*pl.* cherries (*'iz*)], the fruit of a tree allied to the plum.
cher-ub (*cher'ub*), *n.* [*pl.* cherubs (*'ubz*), cherubim (*'ōō-bim*)], an angel next to a seraphim.
che-ru-bic (*chē-rōō'bik*), *adj.* angelic.
★**Chesapeake** (*ches'ä-pēk*). Bay in Maryland which gives name to several places in the country. An Indian name variously explained. Heckewelder says it is corrupted from *Tschischwapeki,* which is compounded of *kitshi* "highly salted," and *peek,* "a body of standing water, a pond, a bay."
chess (*ches*), *n.* a game played by two persons with 16 pieces each on a checkered board divided into 64 squares.
chest (*chest*), *n.* a large box; the quantity such a box contains; the breast or thorax.
Chester, Caster, Cester. Places whose names terminate with any of these words were sites of castles built by the Romans in Great Britain.
chest-nut (*ches'nut*), *n.* the nut or seed of trees of the genus Castanea.
Chesuncook lake, Me. Indian, meaning "the goose place." *Chesunk,* "a goose," *auke,* "a place." *Chesunk* or *schunk* being the sound made by a wild goose when flying.
che-val-glass (*she-väl'glȧs*), *n.* a large swing looking-glass.
chev-a-lier (*shev-ȧ-lēr'*), *n.* a knight; a horseman.
★**Cheviot** (*chev'ē-ut*), *n.* a sheep bred on the Cheviot hills; a rough cloth made from its wool.
chev-ron (*shev'ron*), *n.* a term in heraldry; the badge on the coat sleeve of a noncommissioned officer.
chew (*chōō*), *v. t.* to crush and grind with the teeth; masticate; meditate upon.
★**Cheyenne** (*shī-en'*). County in Colorado, Kansas, and Nebraska, mountain in Colorado, river in Nebraska and South Dakota, city in Laramie county, Wyoming, and several small places, named for the Indian tribe.
★**Chianti** (*kē-än'tē*). A group of mountains near Siena, Italy, in Tuscany. It gives name to celebrated wines.
★**chia-ro-scu-ro** (*ki-ä-rō-skōō'rō*), *n.* treatment of light and shade in painting, drawing, or engraving.
★**chic** (*shēk*), *adj.* stylish: *n.* Parisian elegance in dress; manual dexterity.

Chicago (*shi-kô'gō*). City and river in Illinois. The origin of the word is from the Indian, being a derivation by elision and French annotation from the word *Chickaugong*. Col. Samuel A. Starrow used the name in a letter to Gen. Jacob Brown, in 1816, as follows: "The river Chicago (or in English, 'Wild Onion river')." Schoolcraft in 1820 said: "Its banks produce abundantly the wild species of cepa or leek." When the word first appeared the country was inhabited by a tribe of Miamis, in whose dialect the word for skunk was *se-kaw-kwaw*.

chi-cane (*shi-kān'*), *n.* mean or unfair artifices to obscure the truth; sophistry.

chick (*chik*), *n.* the young of a bird, especially of the domestic hen; hence, a child.

★**Chickahominy** (*chik-à-hom'i-ni*). River in Virginia, which, according to De Vere, is named from the Indian word, *Checahaminend*, "land of much grain," so called because it flows through fertile lowlands.

★**Chickamauga** (*chik-à-mô'gà*) **river, Tenn.** From a Cherokee Indian word, meaning "river of death."

chick-en (*chik'en*), *n.* the young of a fowl, especially the domestic fowl.

chick-en pox (*poks*), a mild eruptive disease of children; varicella.

chick-weed (*chik'wēd*), *n.* a common wild plant with white blossoms.

★**Chicopee** (*chik'ō-pē*), **Mass.** An Indian word, meaning "the birch-bark place."

chic-o-ry (*chik'ō-ri*), *n.* a perennial plant with bright blue flowers and a tapering root.

chide (*chīd*), *v. t.* [*p. t.* chid, chode, *p. p.* chidden, chid, *p. pr.* chiding], to find fault with.

chief (*chēf*), *n.* a commander or leader; a head or principal person; the principal or most important part: *adj.* principal.

Syn. CHIEF, principal, main. *Chief* respects order and rank; *principal* has regard to importance and respectability; *main* to degree or quantity. We speak of a *chief* clerk; a commander-in-*chief*; the *chief* person in a city, but the *principal* people in a city; the *principal* circumstances in a narrative and the *main* object.

Ant. AUXILIARY, subaltern, subordinate, subsidiary.

chief-tain (*chēf'tin*), *n.* a captain, leader, or commander; the head of a clan or tribe. [CHIEF.]

chif-fon (*shif'fon*, Fr. *shē-fôN'*), *n.* a kind of thin gauze fabric.

chif-fo-nier (*shif-ō-nēr'*), *n.* a piece of furniture fitted with drawers and shelves.

★**chi-gnon** (*shin'yon*; Fr. *shē-nyôN'*), *n.* a roll of natural or artificial hair worn by women.

chil-blain (*chil'blān*), *n.* a sore or inflammation caused by frost or cold.

child (*chīld*), *n.* [*pl.* children (*chil'dren*)], a son or daughter; a very young person.

child-birth (*'bĕrth*), *n.* the act or time of bringing forth a child.

child-hood (*chīld'hood*), *n.* the period from infancy to puberty.

child-ish (*'ish*), *adj.* like a child; puerile.

★**Chili** (*chil'i*) or **Chile** (*chē'lā*). A Peruvian name denoting "land of snow." South American state.

chill (*chil*), *n.* a sudden coldness; the absence of heat in a substance; the hardened part of a casting: *adj.* having the sensation of cold.

★**Chillicothe** (*chil-i-koth'ē*). City in Ohio and Illinois, and town in Wapello county, Iowa, and Livingston county, Missouri, named from an Indian tribe.

★**Chillon** (*shil'on*, Fr. *shē-yôN'*). A castle in Vaud, Switzerland, at the eastern end of Lake Geneva. It covers an isolated rock on the edge of the lake, and is a very picturesque combination of semicircular and square towers and machicolated curtains grouped about a higher central tower.

chi-lo-plas-ty (*ki'lō-plas-ti*), *n.* the transplantation of healthy skin to a diseased lip.

chime (*chīm*), *n.* the musical harmony produced by striking a set of bells with hammers; a set of bells tuned to the musical scale and struck with hammers.

★**chi-me-ra** (*ki-mē'rà*, not *kī-mē'rà*), *n.* an incongruous conception of the fancy.

★**chi-mer-i-cal** (*ki-mer'i-kal*), *adj.* merely imaginary; fantastic; unreal. [ABSURD.]

chim-ney (*chim'ni*), *n.* [*pl.* chimneys (*'niz*)], a flue; vent.

★**chim-pan-zee** (*chim-pan'zē*, not *chim-pan-zē'*), *n.* a large West Indian anthropoid ape allied to the gorilla.

chin (*chin*), *n.* the part of the face below the under lip.

chi-na (*chī-nà*), *n.* a fine kind of porcelain: *adj.* of or from China; of, or made of, china.

China. Is a western corruption of *Tsina*, so called in honor of Tsin, the founder of the great dynasty which commenced in the third century B. C., when a knowledge of this country was first conveyed to the western nations.

chin-chil-la (*chin-chil'à*), *n.* a small South American rodent with a soft, fine fur

★**chine** (*chīn*), *n.* the backbone or spine of an animal; a piece or the backbone of an animal with adjacent parts cut for cooking.

Chi-nese (*chī-nēz'*), *adj.* of or pertaining to China.

chink (*chingk*), *n.* a small fissure opening lengthwise; a narrow aperture: *v. t.* to crack; to form into or close up cracks.

chink (*chingk*), *n.* a sharp metallic or jingling sound; money.

chintz (*chints*), *n.* cotton cloth, usually glazed, printed in various colors.

chip (*chip*), *v. t.* [*p. t.* and *p. p.* chipped, *p. pr.* chipping], to cut into small pieces; bet at cards: *v. i.* to break or fly off into small pieces.

chip-munk (*chip'mungk*), *n.* a small squirrel of North America, having dark and light stripes on its back.

chip-per (*chip'ĕr*), *adj.* active; pert.

★**Chippewa** (*chip'ē-wā, chip'ē-wà*). River in Michigan and county in Michigan, Minnesota, and Wisconsin, named from an Indian tribe.

★**chi-rog-ra-phy** (*ki-rog'rà-fi*, not *chīr-og'rà-fi*), *n.* the art of writing or engrossing.

★**chi-rop-o-dist** (*ki-rop'ō-dist*), *n.* one who removes corns, bunions, etc.

chirp (*chĕrp*), *n.* a short shrill cheerful note: *v. i.* to utter such a note.

chis-el (*chiz'el*), *n.* an edged instrument of iron or steel for cutting wood, stone, etc.: *v. t.* [*p. t.* and *p. p.* chiseled, *p. pr.* chiseling], to cut with a chisel.

chit (*chit*), *n.* a child; a pert, forward girl.

chiv-al-rous (*shiv'al-rus*), *adj.* relating to chivalry; gallant.

chiv-al-ry (*shiv'al-ri*), *n.* the mediæval system of knighthood; knights collectively; the qualifications of a knight, as bravery, etc.

Chloe (*klō'ē*). A female name derived from the Greek, signifying a "green bud" or "germ," hence, a "young shoot," "blooming," etc. Fr., *Chloe;* Gr., *Chloe;* Lat., *Chloe.*

chlo-ral (*klō'ral*), *n.* a strong narcotic.

chlo-rate (*klō'rāt*), *n.* a salt of chloric acid.

chlo-ric (*klō'rik*), *adj.* pertaining to, or containing, chlorine.

chlo-ric ac-id (*as'id*), an acid containing hydrogen, oxygen, and chlorine.

chlo-ride (*klō'rid* or *'rid*), *n.* a compound of chlorine with another element.

chlo-ride of lime (*ov lim*), a compound of chloride with lime, used in bleaching.

chlo-rine (*klō'rin* or *'rēn*), *n.* a greenish-yellow gas possessing great bleaching powers.

chlo-ro-form (*klō'rō-fôrm*), *n.* a volatile liquid used for producing insensibility to pain: *v. t.* to administer chloroform to.

choc-o-late (*chok'ō-lāt*), *n.* a paste made from the roasted kernels of the cacao-nut, used in making the beverage so called: *adj.* having the color of, or made of, chocolate.

choice (*chois*), *n.* the act of choosing; the thing chosen: *adj.* carefully chosen. [ALTERNATIVE.]

choir (*kwīr*), *n.* a band of singers in a church; the place where they sing.

choke (*chōk*), *v. t.* to suffocate by obstructing the windpipe; block up. [OBSTRUCT.]

choke-damp (*'damp*), *n.* carbonic acid generated in mines.

chol-er (*kol'ĕr*), *n.* bile; irascibility.

chol-er-a (*kol'ĕr-à*), *n.* a disease with violent vomiting and purging.

choose (*chōōz*), *v. t.* [*p. t.* chose, *p. p.* chosen, *p. pr.* choosing], to take by preference; select: *v. i.* to make a choice.

Syn. CHOOSE, prefer. To *choose* is to take one thing from among others; to *prefer* is to take one thing before or rather than another.

Ant. DECLINE, reject.

Syn. CHOOSE, pick, select. We may *choose* whatever comes in our way without regard to the number of the objects to be chosen from, but we *pick* or *select* out of a number only, as to *pick* or *select* books from a library. We may *pick* one or many out of a number, but we mostly *select* a number. We *select* with even greater care than we *pick*.

Ant. CAST AWAY, leave, refuse.

chop (*chop*), *v. t.* [*p. t.* and *p. p.* chopped, *p. pr.* chopping], to cut with repeated blows; hew; mince: *v. i.* to do anything with a quick motion: *n.* the act of chopping; a piece chopped off.

chop-sticks (*chop'stiks*), *n. pl.* two small sticks used in China for eating.

chop-su-ey (*chop-sōō'i*), *n.* a dish consisting of stewed or fried chicken (or pork), rice, noodles, various vegetables, and sesame seeds, served in its own juice.

cho-ral (*kō'ral*), *adj.* of or pertaining to a choir: *n.* a simple sacred melody or hymn sung in unison. [Written also *chorale.*]

chord (*kôrd*), *n.* the string of a musical instrument; notes in harmony: *v. t.* to string, as a musical instrument.

chores (*chōrz*), *n. pl.* the daily light work of a farmyard or household.

★**chor-is-ter** (*kor'is-tĕr*, not *kō'ris-tĕr*), *n.* a member of a choir.

cho-rus (*kō'rus*), *n.* a number singing in concert; a band of singers and dancers in a Greek tragedy.

chow-chow (*chou'chou*), *adj.* a kind of mixed pickles.

chow-der (*chou'dĕr*), *n.* a dish of fresh fish; clams stewed together with pork and biscuit, etc.

Christabel (*kris'tà-bel*). Not an uncommon female name. It would seem to be derived from *Cristobal*, the Spanish form of *Christopher*.

chris-ten (*kris'n*), *v. t.* to baptize in the name of the Holy Trinity; give a Christian name to.

Chris-ten-dom (*kris'n-dum*), *n.* countries whose inhabitants profess the Christian faith; Christians collectively.

Chris-tian (*kris'chàn*), *n.* a professor of the religion of Christ: *adj.* professing the religion of Christ.

Christiania (*kris-tē-à'nē-à*). Named after Christian IV. of Sweden. The capital of Norway.

Chris-tian-i-ty (*kris-chan'i-ti* or *kris-chi-an'i-ti*), *n.* the precepts and doctrines taught by Christ.

Chris-tian-ize (*kris'chan-īz*), *v. t.* to convert to Christianity.

Christina (*kris-tē'nà*). A female name; probably derived from the Spanish name *Cristina*, from root of *Christian*. Dutch, *Christina;* Fr., *Christine;* Ger., *Christiana;* It., *Cristina.*

Christ-mas (*kris'mas*), *n.* the festival (Dec. 25) celebrating the birth of Christ.

Christmas island. In Pacific Ocean. So named because Captain Cook set foot upon it on Christmas day, 1777.

Christopher (*kris'tō-fĕr*). From the Greek name *Christophoros*, signifying Christ's bearer or carrier. Danish, *Christoffer;* Dutch, *Christophorus;* Fr., *Christophe;* Ger., *Christoph;* Gr., *Christophoros;* It., *Cristoforo;* Lat., *Christophorus;* Port., *Christovao;* Sp., *Christoval;* Sw., *Kristofer.*

chro-mate (*krō'māt*), *n.* a salt of chromic acid.

chro-mat-ic (*krō-mat'ik*), *adj.* relating to colors; including notes not belonging to the diatonic scale: *n.* a note affected by an accidental: *pl.* that branch of optics which treats of colors.

chro-ma-type (*krō'mà-tīp*), *n.* a process for obtaining a colored photographic picture.

chrome (*krōm*), *n.* chromium: *v. t.* to dye in a bath of bichromate of potash.

chro-mi-um (*krō'mi-um*), *n.* a steel-gray metal, one of the elements.

chro-mo (*krō'mō*), *n.* [*pl.* chromos (*'mōz*)], a chromo-lithograph or picture produced by chromo-lithography.

chro-mo-li-thog-ra-phy (*krō-mō-li-thog'rà-fi*), *n.* the art of printing in colors from stone.

chro-mo-sphere (*krō'mō-sfēr*), *n.* the rose-colored outer envelope of the sun.

chron-ic (*kron'ik*), *adj.* continuing a long time, or recurring: said of a disease.

chron-o-log-ic-al (*kron-ō-loj'i-kal*), *adj.* relating to past events in the order of time.

chro-nol-o-gy (*krō-nol'ō-ji*), *n.* [*pl.* chronologies (*-jiz*)], the science that treats of events and arranges their dates in proper sequence.

chro-nom-e-ter (*krō-nom'ē-tĕr*), *n.* an instrument for measuring time with extreme accuracy.

chrys-a-lis (*kris'à-lis*), *n.* the final stage through which a lepidopterous insect, or a butterfly, passes prior to its winged state.

chrys-an-the-mum (*kris-an'thē-mum*), *n.* a composite plant with large heads of showy flowers; a flower of this plant.

chub (*chub*), *n.* a fresh-water fish.

chub-bi-ness (*chub'i-nes*), *n.* plumpness.

chub-by (*chub'i*), *adj.* plump; fat and round.

chuck (*chuk*), *v. t.* to make a noise like a hen calling to her chickens: *n.* a hen's call.

chuck (*chuk*), *v. t.* to pat in a playful manner; throw smartly to a short distance: *n.* a light blow under the chin.

chuc-kle (*chuk'l*), *n.* a quiet, suppressed laugh: *v. i.* to laugh in such a manner.

chum (*chum*), *n.* one who lodges in the same apartment; an intimate friend: *v. i.* [*p. t.* and *p. p.* chummed; *p. pr.* chumming], to occupy the same room

chunk (*chungk*), *n.* a short, thick piece; a thick-set strong person or animal.

chunk-y (*chungk'i*), *adj.* short and thick.

church (*chĕrch*), *n.* a building set apart or consecrated for divine worship.

Church (*chĕrch*), *n.* the collective body of Christians; a particular body of Christians; the clergy.

Church-man (*'man*), *n.* an adherent of the established church; an Episcopalian.

church-war-den (*'wawr-dn*), *n.* in the Anglican church, one of two officers to attend to the secular affairs of the church; a long clay pipe.

churl (*chĕrl*), *n.* formerly one of the lowest orders of freemen; a peasant; a surly ill-bred person.

churl-ish (*'ish*), *adj.* ill-bred; niggardly.

churn (*chĕrn*), *n.* a vessel in which milk or cream is agitated to form butter: *v. t.* to make (butter) by agitating milk or cream.

chute (*shōōt*), *n.* an inclined trough for sending articles down; an aquatic switchback.

★**chyle** (*kil*), *n.* a milk-like fluid separated from digested matter in the stomach, absorbed by the lacteal vessels, and assimilated into the blood.

★**chyme** (*kim*), *n.* the pulpy mass of digested food prior to the separation of the chyle.

ci-ca-da (*si-kā'dà*), *n.* [*pl.* cicadæ (*'dē*)], a genus of insects having the power of producing a shrill sound.

ci-ca-trix (*si-kā'triks*), *n.* [*pl.* cicatrices (*sik-à-trī'sēz*)], the scar remaining after a wound has healed.

cic-a-trize (*sik'à-trīz*), *v. t.* to heal (a wound) by inducing the skin to form a cicatrix.

ci-der (*sī'dĕr*), *n.* the juice of apples expressed and fermented. [for smoking.

ci-gar (*si-gär'*), *n.* a small roll of tobacco leaf used

cig-a-rette (*sig-à-ret'*), *n.* a small cigar made of tobacco rolled in thin paper.

cil-i-a (*sil'i-à*), *n. pl.* the hair of the eyelids; long minute hair-like appendages on the margins of vegetable bodies; the very minute vibratile filaments lining or covering certain organs.

Cimarron (*sĭ-mär-ron'*) **river, Okla.** Name of Spanish derivation, meaning "wild," "unruly."
cinch (*sinch*), *n.* a saddle girth firmly fastened in place by loop and knots; a sure grip or hold.
Cincinnati (*sin-sin-nă'tĭ*). City in Ohio, laid out and named by Colonel Israel Ludlow, in honor of an organization of officers formed after the Revolutionary war and named in honor of Cincinnatus, the Roman patriot.
cinc-ture (*singk'tūr*), *n.* a belt or girdle worn round the waist; a raised or carved ring at the bottom and top of a pillar.
cin-der (*sin'dĕr*), *n.* any piece of body thoroughly burnt but not reduced to ashes; *pl.* volcanic scoriæ.
cin-e-mat-o-graph (*sin-ē-mat'ō-grăf*), *n.* a French device similar to the biograph.
cin-na-bar (*sin'ă-bär*), *n.* red sulphide of mercury.
cin-na-mon (*sin'ă-mun*), *n.* the inner aromatic bark of an East Indian tree: *adj.* light reddish brown.
Cintra (*sēn'trä*). A town in the district of Lisbon, Portugal, fifteen miles northwest of Lisbon. It contains the Cork convent, a Moorish castle, the palace of the Pena and the royal palace.
ci-pher (*sī'fĕr*), *n.* the symbol 0; hence, a person or anything without value or power; a secret manner of writing, or the key to it: *v. i.* to practice arithmetic: *v. t.* to express in cipher.
Circassia (*sĕr-kash'i-ă*). Named from the country of the *Tcherkes*, a Tartar tribe which settled in the neighborhood of the river Terck.
cir-cle (*sĕr'kl*), *n.* a round body; a plane figure bounded by a single curved line called its circumference, every part of which is equally distant from a point within it, called the center; a sphere or position in society; a number of persons united by a common bond: *v. t.* to encompass: *v. i.* to move in a circle; revolve. [CLASS.]
Circleville, Ohio. So named from its original location within one of the Indian mounds bearing the shape of a circle.
★**cir-cuit** (*sĕr'kĭt*, not *sĕr'kut*) *n.* the act of going around anything; the space inclosed in a circle; the arrangement by which an electrical current is kept up between the two poles of a battery or machine.
Syn. CIRCUIT, tour, round. A *circuit* is made for a specific end of a serious kind; a *tour* is always made for pleasure; a *round*, like a circuit, is employed in matters of business, but of an ordinary kind. [See *excursion*.]
cir-cu-i-tous (*sĕr-kū'i-tus*), *adj.* roundabout.
cir-cu-lar (*sĕr'kū-lĕr*), *adj.* round like a circle; ending in itself; intended for circulation: *n.* a printed or written letter or notice.
cir-cu-lar-ize (*sĕr'kū-lĕr-īz*), *v. t.* to make circular; send circulars to.
cir-cu-late (*sĕr'kū-lāt*), *v. t.* to cause to pass from point to point or from one person to another: *v. i.* move round and return to the same point; pass from hand to hand; be diffused or distributed; travel. [ANNOUNCE.]
cir-cu-la-tion (*sĕr-kū-lā'shun*), *n.* the act of moving round; passing or transmitting from place to place; the extent to which a thing is circulated; currency of money.
cir-cum (*sĕr'kum*), a prefix equal to *around*, forming compounds the meaning of many of which is obvious, as *circum*polar, *around* the pole, etc.
cir-cum-cise (*sĕr'kum-sīz*), *v. t.* to cut off the foreskin or prepuce; purify the heart.
cir-cum-ci-sion (*sĕr'kum-sizh-un*), *n.* the act of circumcising; spiritual purification.
cir-cum-fer-ence (*sĕr-kum'fĕr-ens*), *n.* the line that bounds a circle; a periphery.
cir-cum-flex (*sĕr'kum-fleks*), *n.* a mark (◠ ~ ◡) over a vowel or syllable to denote accent or contraction: *adj.* marked with such an accent; curved or winding: *v. t.* to pronounce or mark with the circumflex.
cir-cum-lo-cu-tion (*sĕr-kum-lō-kū'shun*), *n.* a roundabout way of speaking; an indirect mode of statement.
cir-cum-nav-i-gate (*sĕr-kum-nav'i-gāt*), *v. t.* to sail round; usually round the globe.
cir-cum-nav-i-ga-tor (*sĕr-kum-nav'i-gā-tĕr*), *n.* one who circumnavigates.
cir-cum-scribe (*sĕr-kum-skrīb'*), *v. t.* to inclose within certain lines or boundaries; restrict.
Syn. CIRCUMSCRIBE, inclose. The extent of any place is drawn out to the eye by a *circumscription;* its extent is limited to a given point by an *inclosure*. A garden is *circumscribed* by any ditch, line, or posts that serve as its boundaries; it is *inclosed* by wall or fence. [See *bounds*.]
cir-cum-spect (*sĕr'kum-spekt*), *adj.* cautious; prudent; watchful on all sides. [CAUTIOUS.]
cir-cum-spec-tion (*sĕr-kum-spek'shun*), *n.* caution; watchfulness on every side; prudence.
cir-cum-stance (*sĕr'kum-stans*), *n.* something relative or appendant to a fact; an incident: *pl.* state of affairs: *v. t.* to place in a particular situation (only in *p. p.*)
Syn. CIRCUMSTANCE, incident, fact. *Incident* is what happens; *fact* is what is done; *circumstance* is not only what happens and is done but whatever is or belongs to a thing. To everything are annexed *circumstances*, either of time, place, age, color, or other collateral appendages which change its nature. Everything that moves and operates is exposed to *incidents;* effects are produced, results follow, and changes are brought about; these are *incidents*. [See *event*.]
cir-cum-stan-tial (*sĕr-kum-stan'shal*), *n.* something incidental and subordinate to the main subject: *pl.* incidentals: *adj.* accidental; detailed; proving indirectly.
Syn. CIRCUMSTANTIAL, particular, minute. *Circumstantial* expresses less than *particular*, and that less than *minute*. A *circumstantial* account contains all leading events; a *particular* account includes every event and movement, however trivial; a *minute* account omits nothing as to person, time, place, figure, form, and every other trivial *circumstance* connected with the events.
cir-cum-vent (*sĕr-kum-vent'*), *n.* to gain an advantage over by stratagem or deception.
cir-cum-ven-tion (*-ven'shun*), *n.* the act of circumventing; a stratagem.
cir-cus (*sĕr'kus*), *n.* [*pl.* circuses (*-ez*)], a large level oblong space for feats of horsemanship, etc., with seats for the spectators arranged in tiers; a semicircular space.
Circus Maximus (*sĕr'kus maks'i-mus*). In ancient Rome the great circus occupying the hollow between the Palatine and the Aventine hills. Under Cæsar and Augustus it was first largely built of stone, and splendidly adorned. In its final form it is said to have accommodated 385,000 spectators.
Circus of Romulus or Maxentius. A Roman circus built in 311 A. D., the most perfect ancient circus surviving.
cis-al-pine (*sis-al'pīn*), *adj.* this side of the Alps with regard to Rome; south of the Alps.
cis-at-lan-tic (*sis-at-lan'tik*), *adj.* on this side of the Atlantic Ocean.
cis-tern (*sis'tĕrn*), *n.* a natural or artificial receptacle for storing water; a reservoir.
cit-a-del (*sit'ă-del*), *n.* a fortress.
ci-ta-tion (*si-tā'shun*), *n.* an official summons to appear before a court, especially an ecclesiastical court; a quotation.
cite (*sīt*), *v. t.* to summon officially to appear in court; quote.
Syn. CITE, quote. To *cite* is employed for persons or things; to *quote* for things only. Authors are *cited*, passages from their works are *quoted*. We *cite* only by authority; we *quote* for general purposes of convenience. [See *allege*.]
Ant. MISQUOTE.
cith-a-ra (*sith'ă-rä*), *n.* an ancient lyre.
cit-i-zen (*sit'i-zen*), *n.* a native or inhabitant of a town or city; a freeman; a member of a state or nation who enjoys political rights and privileges.
cit-rate (*sit'rāt*), *n.* a salt of citric acid.
cit-ric ac-id (*sit'rik as'id*), *n.* an acid found in the lemon and orange.
cit-ron (*sit'run*), *n.* a tree with a fruit like the lemon.
cit-y (*sit'i*), *n.* [*pl.* cities (*'iz*)], a large and important town; a corporate town.
civ-ic (*siv'ik*), *adj.* pertaining to a city.
★**civ-il** (*siv'il*, not *siv'l*) *adj.* relating to the affairs of a city or government; non-international; not military or criminal; complaisant; well-bred.
Syn. CIVIL, obliging, complaisant. *Civil* applies to words or manner as well as to the action; *obliging* to the action only. As *civil* is indefinite in its meaning, so it is indiscriminate in its application; *obliging*, on the other hand, is confined to what passes between particular persons or under particular circumstances. *Civil* and *obliging* both imply a desire to do a kindness; *complaisant* signifies the desire of receiving pleasure, which is a refined mode of doing a kindness.
Ant. BOORISH, rude, unmannerly.
ci-vil-ian (*si-vil'yan*), *n.* one engaged in the pursuits of civil life: *adj.* occupied in civil pursuits.
ci-vil-i-ty (*si-vil'i-ti*), *n.* [*pl.* civilities (*-tiz*)], good breeding; courtesy.
civ-i-li-za-tion (*siv-i-li-zā'shun*), *n.* the state of being civilized; culture; refinement. [CULTIVATION.]
civ-i-lize (*siv'i-līz*), *v. t.* to reclaim from a savage state; instruct in the arts and refinements of civilized life.
clack (*klak*), *v. i.* to make a sudden, sharp sound: *n.* a sudden, sharp sound; continual prattle.
claim (*klām*), *v. t.* to demand as a right, or by authority: *v. i.* to be entitled to anything; *n.* a demand; the thing claimed. [RIGHT, ALLEGE.]
clai-mant (*klā'mant*), *n.* one who demands anything as his right.
clair-voy-ance (*klâr-voi'ans*), *n.* the power attributed to persons in a mesmeric state of seeing objects not usually perceptible.
clair-voy-ant (*'ant*), *adj.* pertaining to, or characterized by, clairvoyance: *n.* one who professes to have the power of clairvoyance.
clam (*klam*), *v. t.* [*p. t.* and *p. p.* clammed, *p. pr.* clamming], to clog with any glutinous matter: *v. i.* to be moist and cold.
clam (*klam*), *n.* an edible bivalve mollusk.
clam-bake (*'bāk*), *n.* a picnic at which baked clams form the chief dish.
clam-my (*klam'i*), *adj.* soft and sticky.
clam-or (*klam'ĕr*), *n.* a loud and continued noise; popular outcry: *v. t.* shout. [CALL.]
clam-or-ous (*klam'ĕr-us*), *adj.* vociferous.
clamp (*klamp*), *n.* anything that fastens or binds: *v. t.* to fasten or bind with clamps.
clan (*klan*), *n.* a tribe or association of families united under one chieftain, having one common ancestor, and the same surname. [CLASS.]
★**clan-des-tine** (*klan-des'tin*), *adj.* secret; private.
Syn. CLANDESTINE, secret. To do a thing *clandestinely* is to elude observation; to do a thing *secretly* is to do it without the knowledge of any one. What is *clandestine* is unallowed, which is not necessarily the case with what is *secret*.
Ant. OPEN, conspicuous, advertised.
clang (*klang*), *n.* a loud, sharp, ringing metallic sound: *v. t.* to cause to resound with a clang: *v. i.* give out a clang.
clan-gor (*klang'gĕr*), *n.* a sharp clang.
clank (*klangk*), *n.* a sharp, hard, metallic sound: *v. t.* and *v. i.* to rattle and sound, as chains.
clap (*klap*), *v. t.* and *v. i.* [*p. t.* and *p. p.* clapped, *p. pr.* clapping], to indicate approval by striking the hands together: *n.* a loud noise made by a sudden collision; applause expressed by clapping.
★**clap-board** (*klab'ŏrd*, not *klap'bōrd*), *n.* a thin, narrow board, used for the covering of the sides of frame houses.
clap-per (*klap'ĕr*), *n.* one who, or that which, claps; the tongue of a bell; the clack of a mill-hopper.
Clara (*klar'ä*). A modern form of *Clare*. Danish, *Clara;* Dutch, *Clara;* Fr., *Clara;* Ger., *Klara;* It., *Clara;* Lat., *Clara;* Sw., *Klara*.
Clare. A name probably derived from *St. Clare*, a popular saint in England, a friend of St. Francis, and foundress of all the *Poor Clares*. It is probably derived from Latin *clarus*, "bright," "fair."
clar-et (*klar'et*), *n.* a light bodied wine of a dark red color; blood: *adj.* claret-colored.
clar-i-fy (*klar'i-fī*), *v. t.* [*p. t.* and *p. p.* clarified, *p. pr.* clarifying], to make clear from impurities: *v. i.* to become clear.
★**clar-i-net** (*klar'i-net*), *n.* a keyed reed instrument of the oboe class. [Also *clarionet*.]
clar-i-on (*klar'i-un*), *n.* a kind of trumpet.
Clarissa (*klä-ris'ä*). From the French name *Clarisse* (It., *Clarice*), from root of *Clare*.
Clarksville, Tenn. So named as an honor to Gen. George Rogers Clark, a distinguished Revolutionary soldier.
clash (*klash*), *v. i.* to make a loud harsh noise by mutual collision: *v. t.* to strike violently together: *n.* the noise so produced.
clasp (*klăsp*), *v. t.* to shut or fasten together with, or as with, a clasp: *n.* a hook to hold anything close; a close embrace.
Syn. CLASP, hug, embrace. To *clasp* makes the act of inclosing another in one's arms when it is performed with the warmth of true affection; *hug* is a ludicrous sort of *clasping*, which is the consequence of ignorance or extravagant feeling; *embrace* is simply a mode of ordinary salutation.
class (*klăs*), *n.* a number of things or persons of the same status: *v. t.* to classify.
Syn. CLASS, association, caste, circle, clan, clique, club, company, coterie, grade, order, rank, set. A *class* is a number of persons or objects having common pursuits, purposes, attributes, or characteristics; membership in a *caste* is supposed to be for life; in a *class* may be very transient. *Rank* obtains among the nobility or military officers, or various *orders* of the priesthood. *Grade* implies some regular scale of valuation, as *grades* of wool, a man of inferior *grade*. A *coterie* is a small company of persons of similar tastes; *clique* is always factional; the *association* breaks up into *cliques*. A *set* is more extensive than a *clique; circle* is similar in meaning to *set*, but of wider application.
class-ic (*klăs'ik*), *adj.* of or relating to the highest class or rank in literature or art; pertaining to, or having the characteristics of, the Greek or Roman authors. [Also *classical*.] *n.* an author of the first rank whose works serve as a standard; one versed in Greek and Latin literature: *pl.* ancient Greek and Latin literature.
clas-si-fi-ca-tion (*klăs-i-fi-kā'shun*), *n.* the act of forming or dividing into classes.
clas-si-fy (*klăs'i-fī*), *v. t.* [*p. t.* and *p. p.* classified; *p. pr.* classifying], to arrange in classes; systematize.
clat-ter (*klat'ĕr*), *v. t.* to strike so as to make a clatter: *v. i.* to make a clatter: *n.* a continuous or confused noise.
Claude (*klôd*). From the Roman name *Claudius*, another form of *Clodius*, Latinized from *Clodio;* from Old German, *laut*, "celebrated," "distinguished," "illustrious."
Claudia (*klô'di-ä*). Feminine of *Claudius*. Dutch, *Claudia;* Fr., *Claudie;* It., *Claudia;* Lat., *Claudia;* Sw., *Klaudia*.
clause (*klawz*), *n.* a part of a written composition, or a sentence; a special proviso in a document.
clav-i-cle (*klav'i-kl*), *n.* the collar bone.
claw (*klaw*), *n.* a sharp hooked nail in the foot of an animal, as the cat; the whole foot of a bird; *v. t.* to tear or scratch with, or as if with, claws.
clay (*klā*), *n.* anything easily molded; soft plastic earth: *adj.* made of or like clay. [BODY.]
clean (*klēn*), *adj.* free from dirt or extraneous matter; morally or ceremonially pure: *adv.* in a clean manner; entirely: *v. t.* to render clean.
Syn. CLEAN, cleanly, pure. *Clean* expresses a freedom from dirt or soil; *cleanly* the disposition or habit of being clean. A person who keeps himself *clean* is *cleanly*. *Pure* is used in a moral sense; the heart should be *pure*.
★**clean-ly** (*klen'li*), *adj.* neat; pure: *adv.* (*klēn'li*) wholly clean. [CLEAN.]
clean-ness (*klēn'nes*), *n.* moral or physical purity; neatness.

cleanse (*klenz*), *v. t.* to make clean; purify from moral impurity or guilt.
clear (*klēr*), *adj.* bright; pure; manifest to the understanding: *v. t.* to make bright; render evident; free from obstructions
Syn. CLEAR, lucid, bright, vivid. A mere freedom from stain or dullness constitutes *clearness;* the return of light, and consequent removal of darkness, constitutes *lucidity; brightness* supposes a certain strength of light; *vividness* a freshness combined with the strength, and even a degree of brilliancy. [See *apparent, fair, absolve.*]
clear-ance (*klēr'ans*), *n.* the act of clearing.
clear-cut (*'kut*), *adj.* having a sharp, clearly defined outline, as if chiseled.
clear-ing (*klēr'ing*), *n.* the act of making clear; land cleared of timber.
clear-ly (*klēr'li*), *adv.* in a clear manner.
Syn. CLEARLY, distinctly. That is seen *clearly* of which one has a *clear* view independent of anything else; that is seen *distinctly* which is seen so as to distinguish it from other objects. We see the moon *clearly* whenever it shines, but we cannot see the spots in the moon *distinctly* without the help of glasses.
Ant. CONFUSEDLY, dimly, obscurely.
clear-ness (*klēr'nes*), *n.* the quality of being clear.
Syn. CLEARNESS, perspicuity. *Clearness* respects our ideas, and springs from the distinction of the things themselves that are discussed; *perspicuity* respects the mode of expressing the ideas, and springs from the good qualities of style.
Ant. DULLNESS, obtuseness, obscurity.
cleat (*klēt*), *n.* a thin piece of iron worn on boots; a strip of wood nailed across a board: *v. t.* to secure or strengthen with a cleat.
cleav-a-ble (*klēv'a-bl*), *adj.* divisible.
cleav-age (*klēv'āj*), *n.* the act of splitting.
cleave (*klēv*), *v. i.* [*p. t.* clave, cleaved, *p. p.* cleaved, *p. pr.* cleaving], to adhere to; be attached to.
cleave (*klēv*), *v. t.* [*p. t.* cleft, clove, *p. p.* cleft, cloven, cleaved, *p. pr.* cleaving], to divide with violence.
clef (*klef*), *n.* a figure at the beginning of each staff in music to indicate the pitch of all the notes on one particular line or space.
cleft (*kleft*), *n.* a crack; crevice.
★clem-a-tis (*klem'a-tis*, not *klē-mā'tis*), *n.* a perennial plant of the crowfoot family.
clem-en-cy (*klem'en-si*), *n.* [*pl.* clemencies (*-siz*)], compassion; remission. [MERCY.]
clem-ent (*klem'ent*), *adj.* compassionate; forgiving; gentle; forbearing.
Clement. Like the classical name Clemens, derived from the Latin *clemens*, "mild," "calm," "gentle." Danish, *Clemens;* Fr., *Clement;* Ger., *Clemens;* It., *Clemente;* Lat., *Clemens;* Sp., *Clemente.*
Clementia (*klē-men'shi-ā*). A female name formed from *Clement.*
Cleopatra (*klē-ō-pā'trā*). Found as a female name in the parish registers of Nottingham, England. So called from Cleopatra, queen of Egypt. It is derived from *kleos*, "glory," "renown," "fame," and *patria*, "one's native country," "a family"; hence, "fame of her father."
Cleopatra's Needles. A pair of Egyptian obelisks of pink granite which were transported from Heliopolis to Alexandria in the eighteenth year of Augustus. One of them was taken to London and set up on the Thames embankment, in 1878, and the other was soon after brought to New York and erected in Central park.
cler-gy (*klēr'ji*), *n.* a body of men set apart by ordination for the service of the church.
cler-gy-man (*-man*), *n.* [*pl.* clergymen (*-men*)], a minister.
cler-ic-al (*kler'i-kal*), *adj.* pertaining to the clergy; pertaining to a clerk, writer, or copyist.
clerk (*klērk*), *n.* a parish clerk; one engaged in an office to transact business generally; an assistant salesman in a store or shop: *v. i.* to act as clerk.
Cleveland, Ohio. City named in honor of General Moses Cleveland of Connecticut, who had charge of the surveying of this region.
clev-er (*klev'ēr*), *adj.* possessing skill or ability; dexterous; expert; good natured.
Syn. CLEVER, skillful, expert, dexterous, adroit. *Cleverness* is mental power employed in the ordinary concerns of life. *Skill* is both a mental and corporeal power, exerted in mechanical operations and practical sciences. A physician, a lawyer, or an artist is *skillful;* one may have a *skill* in divination, or a *skill* in painting. *Expertness* and *dexterity* require more corporeal than mental power exerted in minor arts and amusement; one is *expert* at throwing the quoit; *dexterous* in the management of horses.
clew (*klōō*), *n.* a ball of thread; a corner of a sail: *v. t.* to truss up (sails) to the yard of a ship.
click (*klik*), *v. i.* to make short sharp successive noises; *v. t.* to move with a clicking sound: *n.* a slight sharp sound.
cli-ent (*klī'ent*), *n.* one who employs a lawyer; one dependent upon another's patronage.
cli-ent-age (*klī'ent-āj*), *n.* the condition of being a client; clients collectively.
cliff (*klif*), *n.* a high steep rock or bank.
cli-mac-ter-ic (*klī-mak'tēr-ik*), *n.* a critical period in human life when some great change is supposed to take place in the constitution.
cli-mate (*klī'māt*), *n.* the temperature and meteorological conditions of a country, etc.
cli-mat-ic (*klī-mat'ik*), *adj.* relating to, or connected with, climate.
cli-ma-tize (*klī'ma-tīz*), *v. t.* to accustom to a new climate.
cli-max (*klī'maks*), *n.* the summit; acme.
climb (*klīm*), *v. i.* to mount or ascend, as by the hands and feet: *v. t.* to ascend laboriously: *n.* an ascent by climbing.
clime (*klīm*), *n.* a country, region, or tract.
clinch (*klinch*), *v. t.* to rivet; double up tightly, as the fingers; to hold fast: *n.* anything that holds both ways.
cling (*kling*), *v. i.* [*p. t.* and *p. p.* clung, *p. pr.* clinging], to adhere closely; hold fast by embracing.
clin-ic (*klin'ik*), *n.* a medical lecture at the bedside or in the presence of patients.
clink (*klingk*), *v. t.* to strike so as to make a slight sharp sound: *v. i.* to make a clinking noise: *n.* a slight sharp vibrating noise.
clink-er (*'ēr*), *n.* a mass of partly vitrified brick; slag.
clip (*klip*), *v. t.* [*p. t.* and *p. p.* clipped, clipt, *p. pr.* clipping], to cut with shears or scissors: *n.* the wool of a season's shearing; a spring for holding papers.
clip-per (*'ēr*), *n.* one who, or that which, clips; a sailing vessel with very sharp lines and great spread of canvas; a first-rate person or thing.
★clique (*klēk*, not *klik*), *n.* a group of persons united for some common purpose (usually sinister); a coterie. [CLASS.]
Cloaca Maxima (*klō-ā'kà maks'i-mà*). The chief drain of Rome, built by Tarquinius Priscus about 600 B. C. and still serving its purpose.
cloak (*klōk*), *n.* a sleeveless, loose outer garment worn by both sexes; hence, a pretext; disguise: *v. t.* to cover with, or as with, a cloak; conceal. [PRETENSE.]
clock (*klok*), *n.* a machine for measuring and indicating the divisions of time by means of hands moving over a dial plate.
clock-wise (*'wiz*), *adv.* in the direction of the rotation of the hands of a clock.
clod (*klod*), *n.* a lump of earth, turf, or clay; a bait used in eel fishing; the shoulder part of the neck-piece in beef.
clog (*klog*), *v. t.* [*p. t.* and *p. p.* clogged: *p. pr.* clogging], to load with anything that may impede motion; embarrass: *n.* a load or weight; a hindrance; a kind of wooden shoe. [OBSTRUCT.]
clois-ter (*klois'tēr*), *n.* a place of religious retirement; a monastery or nunnery: *v. t.* to confine in, or as in, a cloister or convent.
Syn. CLOISTER, convent, monastery. The proper idea of *cloister* is that of seclusion; the proper idea of *convent* is that of community; the proper idea of a *monastery* is that of solitude. One is shut up in a *cloister*, put into a *convent*, and retires to a *monastery.*
clois-tral (*klois'tral*), *adj.* pertaining to, or confined in, a cloister; secluded.
close (*klōz*), *v. t.* to shut; surround closely: *v. i.* to come together; engage in hand-to-hand conflict; grapple: *n.* end; an inclosed space: *adj.* (*klōs*) without ventilation; oppressive; minute; concise; reticent; niggardly: *adv.* near.
Syn. CLOSE, shut. To *close* signifies simply to put close together; *shut*, to stop or prevent admittance; *closing* is therefore a partial *shutting*, and *shutting* a complete *closing.* [See *end, sequel.*]
Ant. OPEN.
Syn. CLOSE, near, nigh. *Close* is more definite than *near.* Houses stand *close* to each other which are almost joined; men stand *close* when they touch each other; objects are *near* which are within sight; persons are *near* each other when they can converse together. *Near* and *nigh* are but variations of each other in etymology. [ADJACENT.]
Ant. DISTANT, far, separate.
clos-et (*kloz'et*), *n.* a small room for privacy or retirement: *adj.* private; secluded: *v. t.* to receive in a private room for confidential consultation.
clo-sure (*klō'zhūr*), *n.* the act of shutting up; that which closes; the end.
clot (*klot*), *v. i.* [*p. t.* and *p. p.* clotted, *p. pr.* clotting], to coagulate: *v. t.* to make, form into, or cover with, clots: *n.* a concrete or coagulate mass of soft or fluid matter.
cloth (*klōth*), *n.* [*pl.* cloths (*klōthz*)], a woven fabric of some fibrous material, especially wool; a table covering; the distinctive dress of any profession, especially the clerical.
clothe (*klōth*), *v. t.* to put raiment on; cover with, or as with, a garment.
clothes (*klōthz*), *n. pl.* covering for the body; dress; bedclothes.
cloth-ier (*klōth'y ēr*), *n.* one who manufactures, or sells, clothes.
cloth-ing (*klōth'ing*), *n.* garments in general.
Clotilda (*klō-til'dà*). From the Old German *Clothildis*, name of a queen of France, signifying "distinguished and noble," or "illustrious noble" (*laut-hild*).
cloud (*kloud*), *n.* a mass of visible vapor floating in the atmosphere; the dark markings in marble or precious stones: *v. t.* to overspread with a cloud; render gloomy: *v. i.* to grow cloudy. [OBSCURE.]
cloud-burst (*'bērst*), *n.* a violent downpour of rain over a very limited area.
clough (*kluf*), *n.* a ravine in a rock or hillside; a gorge; a kind of sluice.
clout (*klout*), *n.* a piece of cloth or leather for patching; the center mark of an archery target.
clove (*klōv*), *n.* a pungent aromatic spice.
clo-ven (*klō'vn*), *p. adj.* divided into parts.
clo-ver (*klō'vēr*), *n.* a species of grass.
clown (*kloun*), *n.* a rustic; an ill-bred fellow; a professional jester or buffoon.
cloy (*kloi*), *v. t.* [*p. t.* and *p. p.* cloyed, *p. pr.* cloying], to fill to repletion; surfeit.
club (*klub*), *n.* a heavy stick; one of the suits of cards marked with trefoils; a number of persons associated for a common purpose: *v. t.* [*p. t.* and *p. p.* clubbed, *p. pr.* clubbing], to beat with a club: *v. i.* contribute to a common expense. [CLASS.]
club-foot (*'foot*), *n.* a deformed foot.
cluck (*kluk*), *v. i.* to cry or call like a hen to her chickens: *n.* a hen's call.
clue (*klōō*), *n.* a hint; a clew.
clump (*klump*), *n.* a cluster of trees, etc.; a thick sole: *v. t.* arrange in a clump: *v. i.* tread clumsily.
clum-sy (*klum'zi*), *adj.* awkward; heavy.
Cluny (*klū-nē'*), **Hotel de.** A former palace of the abbots of Cluny, situated on the Boulevard St. Michel, Paris.
clus-ter (*klus'tēr*), *n.* a number of things of the same kind growing or collected together; a bunch: *v. i.* to grow or gather into bunches; congregate.
clutch (*kluch*), *v. t.* to grasp, seize, or grip strongly: *v. i.* to snatch or seize (with *at*): *n.* a grasp; seizure: *pl.* hands; claws.
co (*kō*), a prefix meaning *with, together.*
coach (*kōch*), *n.* a large, covered, four-wheeled carriage; a tutor who prepares another for an examination or an athletic contest: *v. t.* to instruct or train.
co-ad-ju-tor (*cō-ad-jū'tēr*), *n.* One who aids another; a helper; an assistant. [ACCESSORY.]
co-ag-u-late (*kō-ag'ū-lāt*), *v. t.* to clot or curdle.
co-ag-u-la-tion (*-ū-lā'shun*), *n.* the act of coagulating; the state of being coagulated.
coal (*kōl*), *n.* mineralized vegetable matter, used as fuel: *v. t.* to furnish with coals: *v. i.* to take in coal.
co-a-lesce (*kō-à-les'*), *v. t.* to grow together; combine; unite.
co-a-les-cence (*'ens*), *n.* the act of coalescing.
co-a-li-tion (*kō-à-lish'un*), *n.* union in a body or mass; a combination of persons.
coal oil (*oil*), *n.* petroleum.
coal tar (*tär*), *n.* a thick opaque liquid distilled from bituminous coal, and from which many rich dye colors are obtained.
coarse (*kōrs*), *adj.* large in texture or size; not refined; rough; rude; indelicate.
Syn. COARSE, rough, rude. In the proper sense *coarse* refers to the composition and materials of bodies, as *coarse* bread, *coarse* meat, *coarse* cloth; *rough* respects the surface of bodies, as *rough* wood and *rough* skin; *rude* respects the make or fashion of things, as a *rude* bark, a *rude* utensil. *Coarse* is opposed to fine, *rough* to smooth, *rude* to polished. [See *gross.*]
Ant. CULTURED, elegant, polite, well bred.
coast (*kōst*), *n.* the margin of the land next the sea; *v. i.* to sail near or along the coast; descend an incline in a sledge, or on a bicycle without working the pedals: *v. t.* to sail close or near to.
coast-er (*'ēr*), *n.* a home-trading vessel; one who coasts on a sled.
coast-guard (*'gärd*), *n.* a member of the service for watching the sea, originally to check smuggling.
coast-wise (*'wiz*), *adv.* by, or along, the coast.
coat (*kōt*), *n.* an outer garment covering the upper part of the body; an external covering, as fur, etc.; a thin layer; an integument: *v. t.* to cover or spread over.
coat of arms (*ov ärmz*), *n.* the emblazonment of armorial bearings on an escutcheon.
coat of mail (*māl*), *n.* chain mail.
coax (*kōks*), *v. t.* to wheedle; cajole. [PERSUADE.]
cob (*kob*), *n.* the spike of Indian corn; a strong, thick-set pony: *v. t.* [*p. t.* and *p. p.* cobbed, *p. pr* cobbing], to punish with a strap; break (ore).
co-balt (*kō'bawlt*), *n.* a steel-gray metal.
cob-ble (*kob'l*), *n.* a pebble; a round medium-sized stone: *v. t.* to mend or patch up coarsely.
cob-bler (*'lēr*), *n.* one who mends boots and shoes; a clumsy workman.
cob-web (*kob'web*), *n.* a spider's web; hence, a net or snare; old musty rubbish: *adj.* made of, or like, a cobweb; flimsy.
co-ca (*kō'kà*), *n.* the dried leaf of a small South American shrub: a powerful tonic.
★co-ca-ine (*kō'kà-in*), *n.* a powerful alkaloid extracted from coca leaves.
coch-i-neal (*koch'i-nēl*, *n.* a scarlet dye obtained from the dried body of an insect.
Cochituate (*kō-chit'ū-āt*), **Mass.** Indian word, meaning "land on or near falls," or "rapid streams."
coch-le-a (*kok'lē-à*), *n.* [*pl.* cochleæ (*-ē*)], the spiral shaped cavity of the inner ear.
coch-le-ate (*kok'lē-āt*), *adj.* screwlike.
cock (*kok*), *n.* the male of birds, especially the domestic fowl; a small conical heap of hay.
cock (*kok*), *v. t.* to turn up or set (the hat or head) jauntily on one side; erect.
cock-ade (*-ād'*), *n.* a badge or ribbon worn on the hat.
cock-a-too (*'à-tōō*), *n.* a crested bird of the parrot family.
cock-a-trice (*'à-trīs*), *n.* a fabulous serpent said to have been hatched in a cock's egg, and possessing the power of killing by a glance of its eye.
cock-crow (*'krō*), *n.* early morning.
cock-er-el (*'ēr-el*), *n.* a young cock.

coc-kle (*kok'kl*), *v. t.* to contract into wrinkles.
coc-kle (*'kl*), *n.* an edible shellfish with two heart-shaped wrinkled shells: the plant corncockle or darnel; a kiln for drying hops.
cock-ney (*kok'ni*), *n.* a Londoner: traditionally one born within sound of the bells of Bow church.
cock-pit (*kok'pit*), *n.* an inclosed space for cock-fighting.
cock-roach (*'rōch*), *n.* a black beetle.
co-coa (*kō'kō*), *n.* a palm which produces the cocoanut. [Also *coco.*]
co-coa (*kō'kō*), *n.* the ground seeds of the cacao or chocolate tree; the beverage made from it.
co-coa-nut (*-nut*), *n.* the fruit of the cocoa palm.
co-coon (*ko-kōōn'*), *n.* the silky oblong case covering the larvæ of many spinning insects while in the chrysalis state.
cod (*kod*), *n.* the husk or pod of a seed; the scrotum; the narrow part of a trawl net.
cod (*kod*), *n.* a large edible fish found in the northern seas, and on the banks of Newfoundland.
Cod, Cape, Mass. From the fish its name implies, discovered and named by Bartholomew Gosnold, May 15, 1602. *Tamwock*, its Indian name, means "codfish."
cod-dle (*kod'l*), *v. t.* to make effeminate by pampering.
code (*kōd*), *n.* a body of classified laws or regulations; a system of signals.
codg-er (*koj'ĕr*), *n.* a miser; an old man.
cod-i-cil (*kod'i-sil*), *n.* an appendix to a will.
co-di-fy (*kō'di-fī* or *kod'i-fī*), *v. t.* [*p. t.* and *p. p.* codified, *p. pr.* codifying], to reduce to a code.
co-ef-fi-cient (*kō-ĕf-fish'ent*), *adj.* coöperating: *n.* in algebra, a number or known quantity prefixed as a multiplier to a variable or an unknown quantity.
co-erce (*kō-ĕrs'*), *v. t.* to restrain or constrain by force, especially legally or morally; compel.
Cœur d'Alene (*kĕr dă-lān'*). Lake and town in Kootenai county, Idaho; named from a tribe of Indians. French name, meaning "needle hearts" or "awl hearts."
co-e-val (*kō-ē'val*), *adj.* contemporaneous.
co-ex-ten-sive (*kō-eks-ten'siv*), *adj.* equally extensive.
cof-fee (*kof'ē*), *n.* the seeds of a plant which, roasted and ground, form a well-known beverage.
cof-fer (*kof'ĕr*), *n.* a chest; a kind of caisson or floating dock; a sunken panel: *pl.* a treasury: *v. t.* to inclose in a cofer.
cof-fin (*kof'in*), *n.* a case for the dead; the hollow part of a horse's hoof: *v. t.* inclosed in a coffin.
cog (*kog*), *n.* the tooth of a wheel; a trick: *v. t.* [*p. t.* and *p. p.* cogged, *p. pr.* cogging], to furnish with cogs; wheedle; to load (dice) in order to cheat.
co-gent (*kō'jent*), *adj.* forcible, convincing.
Syn. COGENT, forcible, strong. *Cogency* applies to reasons individually considered; *force* and *strength* to modes of reasoning or expression. *Cogent* reasons impel to decisive conduct; *strong* conviction is produced by *forcible* reasoning conveyed in *strong* language.
cog-i-tate (*koj'i-tāt*), *v. i.* to meditate: *v. t.* to devise or plan.
cog-nate (*kog'nāt*), *adj.* allied by blood; of the same stock, nature, or quality.
cog-ni-tion (*kog-nish'un*), *n.* knowledge.
cog-ni-zant (*kog'ni-zant* or *kon'i-zant*), *adj.* having knowledge of anything.
★cog-no-men (*kog-nō'men*, not *kog'nō-men*), *n.* a surname.
co-hab-it (*kō-hab'it*), *v. i.* to dwell together as husband and wife.
Cohasset (*kō-has'set*), **Mass.** Indian word, meaning "place of pines."
co-here (*kō-hēr'*), *v. i.* to stick together.
co-her-ence (*'ens*), *n.* the state or quality of cohering. [Also *coherency.*]
co-he-sion (*kō-hē'zhun*), *n.* the force that unites together molecules of the same material.
co-he-sive (*'siv*), *n.* causing to cohere.
Cohoes (*kō-hōz'*), **N. Y.** Corruption of the Iroquois word *gahaoose*, "shipwrecked canoe," having reference to the falls in the Mohawk at this place.
co-hort (*kō'hôrt*), *n.* a body of ancient Roman soldiers, the tenth part of a legion.
★coif-fure (*koif'ūr*, Fr. *kwă-fūr'*), *n.* a headdress; manner of arranging the hair.
coil (*koil*), *n.* a rope gathered into a ring; anything resembling it: *v. t.* to gather into a circular heap.
coin (*koin*), *n.* money stamped with a legal impression: *v. t.* to convert into money; invent.
co-in-cide (*kō-in-sīd'*), *v. i.* correspond exactly; occur at the same time.
co-in-ci-dence (*kō-in'si-dens*), *n.* the act of coinciding.
co-in-ci-dent (*kō-in'si-dent*), *adj.* coinciding.
coke (*kōk*), *n.* the residue of coal after the gas has been expelled: *v. t.* to convert into coke.
col-an-der (*kul'an-dĕr*), *n.* a vessel with a perforated bottom.
co-la nut (*kō'lă nut*), *n.* the large bitter seed of an African tree.
cold (*kōld*), *adj.* without heat or warmth; indifferent; *n.* the opposite of heat.
cole (*kōl*), *n.* cabbage plants in general.
cole-slaw (*'slaw*), *n.* cabbage salad.
col-ic (*kol'ik*), *n.* acute spasmodic pain in the abdomen or bowels: *adj.* pertaining to the bowels.
col-ick-y (*-i*), *adj.* pertaining to colic.
Colin (*kol'in*). From *Nicolin*, a diminutive of *Nicol*, from *Nicolas* or *Nicholas.*
col-lab-o-rate (*kol-ab'ō-rāt*), *v. i.* to work jointly, especially in literary or scientific work.
col-lapse (*kol-aps'*), *n.* sudden and complete failure: *v. i.* to break down.
col-lar (*kol'ĕr*), *n.* anything encircling the neck: *v. t.* to seize by the collar.
col-late (*kol'āt*), *v. t.* compare critically one thing with another of the same kind, as manuscripts.
col-lat-er-al (*kol-at'ĕr-al*), *adj.* side by side; auxiliary.
col-la-tion (*kol-ā'shun*), *n.* comparison; a light repast.
col-league (*kol'ēg*), *n.* an associate in the same office, employment, or commission.
Syn. COLLEAGUE, partner. *Colleague* is more noble than *partner.* Men in the highest offices are *colleagues;* tradesmen, mechanics, and subordinate persons are *partners.* Every Roman consul had a *colleague;* every workman has commonly a *partner. Colleague* is used for community of office; *partner* for community of interest. [ACCESSORY.]
Ant. OPPONENT.
col-lect (*kol'ekt*), *n.* a short comprehensive prayer.
col-lect (*kol-ekt'*), *v. t.* gather together; demand and obtain payment of: *v. i.* to meet together. [GATHER.]
col-lec-tion (*'shun*), *n.* the act of gathering together; an assemblage of works of art; a contribution to a special object.
col-lec-tor (*kol-ek't ĕr*), *n.* one who collects.
col-lege (*kol'ej*), *n.* a society of men possessing certain powers and rights, and engaged in some common pursuit, especially literary studies; the house founded for such a society.
col-le-gi-ate (*kol-ē'ji-āt*), *adj.* pertaining to, or of the nature of, a college; instituted like a college.
col-lide (*kol-īd'*), *v. i.* to come into collision.
col-lie (*kol'i*), *n.* a Scotch sheep dog.
col-lier (*kol'yĕr*), *n.* a digger of coal; a worker in a coal mine; a vessel in the coal trade.
col-li-sion (*kol-izh'un*), *n.* the act of striking two bodies violently together; concussion.
col-lo-ca-tion (*kol-ō-kā'shun*), *n.* the act of placing together; arrangement.
col-lo-qui-al (*kol-ō'kwi-al*), *adj.* used in ordinary conversation.
col-lo-qui-al-ism (*-izm*), *n.* a colloquial form of speech; slang.
col-lo-quy (*kol'ō-kwi*), *n.* [*pl.* colloquies (*-kwiz*)], a conversation; a dialogue. [CONVERSATION.]
col-lu-sion (*kol-ū'zhun*), *n.* a secret agreement for a fraudulent or evil purpose.
co-logne wa-ter (*ko-lōn' waw'tĕr*), *n.* perfume; eau de cologne.
co-lon (*kō'lon*), *n.* a mark of punctuation (:); the largest of the intestines.
colo-nel (*kĕr'nel*), *n.* the chief officer of a regiment.
co-lo-ni-al (*kō-lō'ni-al*), *adj.* pertaining to a colony.
col-o-nist (*kol'ō-nist*), *n.* an inhabitant of a colony.
col-o-ni-za-tion (*kol'ō-ni-zā'shun*), *n.* the act of colonizing, or state of being colonized.
col-o-nize (*kol'ō-niz*), *v. t.* to settle or establish a colony in.
col-on-nade (*kol-on-ād'*), *n.* a series of columns.
col-o-ny (*kol'ō-ni*), *n.* [*pl.* colonies (*-niz*)], a body of people from their native country who settle in another land, but are under the jurisdiction of, or connected with, the parent country.
col-or (*kul'ĕr*), *n.* the hue or appearance that a body presents to the eye; a pigment or paint; an apparent right or reason: *pl.* a military or naval flag: *v. t.* to impart a color to; make plausible. [PRETENSE.]
Colorado (*kol-ō-rā'dō*). One of the western states of the United States, so named from the river; a Spanish word, meaning "ruddy" or "red," the waters of which, when swollen by heavy rains, sweep down immense volumes of red sand, mud, and silicious pebbles. Indian name, *Pashahono.*
co-los-sal (*kō-los'al*), *adj.* like a colossus; gigantic.
★col-os-se-um (*kol-os-sē'um*), *n.* the Flavian amphitheater at ancient Rome. [Also *coliseum.*]
Colosseum or **Flavian Amphitheater.** An amphitheater in Rome, begun by Vespasian (T. Flavius Sabinus) in 72 A. D., and for 400 years the seat of gladiatorial shows.
Colossus of Rhodes. A gigantic statue in commemoration of the successful defense of Rhodes against Demetrius Poliorcetes in 304 B. C. It represented the Rhodian sun-god, Helios; was over 105 feet high, and was considered one of the seven wonders of the old world.
col-por-tage (*kol'pōr-tāj*), *n.* the system of distributing bibles, religious books, etc.
colt (*kōlt*), *n.* a young male horse.
Columbia (*kō-lum'bi-ă*). The United States. So named in honor of Christopher Columbus. [*Poetical.*] First used by Dr. Timothy Dwight in a popular song written by him.
col-um-bine (*kol'um-bīn*), *adj.* pertaining to, or like, a dove: *n.* a plant with flowers of five petals.
Columbus, Ohio. So named as a tribute to Christopher Columbus; the ground when originally selected in 1812 was for the purpose of locating homes for Canadian and Nova Scotian refugees.
★col-umn (*kol'um*, not *kol'yum*), *n.* a round pillar to support or adorn a building; a division of the page of a book, etc.; a formation of troops. [PILLAR.]
co-ma (*kō'mă*), *n.* insensibility; stupor.
co-ma-tose (*kō'mă-tōs* or *kom'*), *adj.* torpid; lethargic.
comb (*kōm*), *n.* a toothed instrument to separate and adjust the hair; the crest of a cock or of a wave or hill: *v. t.* to dress (the hair) with a comb.
com-bat (*kom'bat*), *v. i.* to fight; act in opposition: *v. t.* to fight with; oppose by force: *n.* a contest by force; a struggle.
Syn. COMBAT, oppose. A person's positions are *combated;* his interests or his measures are *opposed.*
Ant. AID, assist, befriend.
com-bi-na-tion (*kom-bi-nā'shun*), *n.* the union of bodies or qualities; an association of persons for a common object.
com-bine (*kom-bin'*), *v. t.* to unite or join: *v. i.* to unite or coalesce: *n.* (*kom'bin*) a secret combination, generally for fraudulent purposes. [CONNECT.]
com-bus-ti-ble (*kom-bus'ti-bl*), *adj.* inflammable: *n.* an inflammable substance.
com-bus-tion (*-bus'chun*), *n.* the act of burning; the state of being burnt; the union of an inflammable substance with oxygen, etc., producing light and heat.
come (*kum*), *v. i.* [*p. t.* came, *p. p.* come, *p. pr.* coming], to move toward; draw near; reach; happen; arrive at some state or condition: *v. t.* to act or play the part of.
co-me-di-an (*kō-mē'di-an*), *n.* an actor or player in comedy: *fem.* **comédienne** (*kō-mā-di-en'*).
com-e-dy (*kom'ē-di*), *n.* [*pl.* comedies (*-diz*)], dramatic representation of the humorous or ridiculous side of human life.
★come-ly (*kum'li*, not *kōm'li*) *adj.* graceful; handsome.
com-et (*kom'et*), *n.* a luminous celestial body, with an eccentric orbit, consisting, when perfect, of a nucleus, coma, and a tail.
com-fort (*kum'fĕrt*), *v. t.* to console; strengthen: *n.* a state of quiet enjoyment; consolation; a quilted bed cover.
Syn. COMFORT, pleasure. The grand feature in *comfort* is substantiality; in that of *pleasure* is warmth. *Pleasure* is quickly succeeded by pain; *comfort* is that portion of *pleasure* which seems to be the most durable sort of *pleasure. Comfort* must be sought for at home; *pleasure* is pursued abroad. [See *cheer.*]
com-fort-a-ble (*'fĕrt-ă-bl*), *adj.* imparting or enjoying comfort.
com-fort-er (*kum'fĕrt-ĕr*), *n.* one who comforts; a long woolen scarf.
com-ic (*kom'ik*) or **com-ic-al** (*'i-kal*), *adj.* exciting mirth.
com-i-ty (*kom'i-ti*), *n.* civility; politeness; acts of international courtesy.
com-ma (*kom'ă*), *n.* a punctuation point (,).
com-mand (*kom-ând'*), *v. t.* to order or charge with authority: *v. i.* to act as a commander; *n.* authority; an order; a naval or military force under the command of a particular officer.
Syn. COMMAND, order, injunction, precept. A *command* is an exercise of power or authority; it is imperative and must be obeyed. An *order* serves to direct; it is instructive and must be executed. A sovereign issues his *commands; orders* may be given by a subordinate or by a body, as *orders* of a court. *Order* is applied to the common concerns of life; *injunction* and *precept* to the moral conduct or duties of men. *Injunction* imposes a duty by virtue of the authority which enjoins; the *precept* lays down or teaches such duties as already exist. [See *class.*]
Ant. ALLOW, consent, permit.
com-mand-er (*'ĕr*), *n.* one who commands; a naval officer next below a captain.
com-mand-ment (*kom-and'ment*), *n.* a command; a precept; a law, especially one of the decalogue.
com-mem-o-rate (*kom-em'ō-rāt*), *v. t.* to call to remembrance by a solemn act; celebrate with honor. [CELEBRATE.]
com-mem-o-ra-tion (*kom-em-ō-rā'shun*), *n.* the act of commemorating.
com-mence (*kom-ens'*), *v. i.* to come into existence; begin: *v. t.* to enter upon.
com-mence-ment (*'ment*), *n.* beginning; origin; the annual festival when degrees, etc., are conferred at colleges.
com-mend (*kom-end'*), *v. t.* to recommend as worthy of notice; praise. [LAUDABLE.]
com-men-da-tion (*kom-en-dā'shun*), *n.* the act of commending; approval.
com-men-su-ra-ble (*kom-en'sū-ra-bl*), *adj.* having, or reducible to, a common measure.
com-men-su-rate (*-en'sū-rāt*), *adj.* reducible to a common measure; equal. [PROPORTIONATE.]
com-ment (*kom'ent*), *n.* a spoken or written remark; *v. i.* (*kom-ent'*), to write notes or explanations.
com-men-ta-ry (*'en-tā-ri*), *n.* explanatory notes or annotations. [DEFINITION.]
com-merce (*kom'ĕrs*), *n.* interchange of merchandise between nations or individuals.
com-mer-cial (*kom-ĕr'shal*), *adj.* pertaining to trade or commerce; mercantile. [MERCANTILE.]
com-mer-cial-ism (*-izm*), *n.* commercial habits, methods, or principles.
com-min-gle (*kom-ing'gl*), *v. t.* and *v. i.* to mix; blend.
★com-mis-er-ate (*kom-iz'ĕr-āt*, not *kom-is'ĕr-āt*) *v. t.* to feel pity for; sympathize with in distress. [SYMPATHY.]

com-mis-sa-ry (*kom'is-ā-ri*), *n.* [*pl.* commissaries (*-riz*)], an official in the commissariat department.
com-mis-sion (*kom-ish'un*), *n.* a delegation of business to any one; the act of doing or committing; a trust; brokerage or allowance; *v. t.* to empower.
Syn. COMMISSION, authorize, empower. We *commission* in matters where our own will and convenience are concerned; we *authorize* in matters where our personal authority is requisite; and we *empower* in matters where the authority of the law is required.
Ant. OBJECT, prevent, refuse.
com-mit (*kom-it'*), *v. t.* [*p. t.* and *p. p.* committed, *p. pr.* committing], to give in charge or trust; perpetrate; learn by heart; send for trial, or to prison.
Syn. COMMIT, assign, confide, consign, relegate, trust. *Commit* is to give in charge, put into care or keeping; to *confide* is to *commit* especially to one's fidelity. We *assign* a duty, *confide* a secret; we *commit* thoughts to writing; *commit* a paper to the flames; *consign* goods to an agent. [See *perpetrate.*]
com-mit-tee (*-it'ē*), *n.* persons appointed to consider or manage any matter.
★**com-mo-di-ous** (*kom-ō'di-us*, not *kom-ō'jus*), *adj.* useful; convenient; roomy.
Syn. COMMODIOUS, convenient. *Commodious* is mostly applied to that which contributes to the bodily ease and comfort; *convenient* to whatever suits the purposes of men in their various transactions.
Ant. SMALL, unfit.
com-mod-i-ty (*-od'i-ti*), *n.* [*pl.* commodities (*-tiz*)], that which is useful; an article of commerce: *pl.* goods; merchandise.
com-mo-dore (*'ō-dōr*), *n.* a captain commanding a squadron.
com-mon (*kom'un*), *adj.* belonging equally to more than one; usual; inferior; *n.* a tract of open public land. [MUTUAL.]
com-mon coun-cil (*koun'sil*), the representative body of a city or municipal corporation.
com-mon law (*law*), the unwritten law of England based on immemorial usage.
com-mon-ly (*kom'un-li*), *adv.* usually, generally, ordinarily.
Syn. COMMONLY, generally, frequently, usually. What is *commonly* done is an action common to all; what is *generally* done is the action of the greatest part; what is *frequently* done is either the action of many, or an action many times repeated by the same person; what is *usually* done is done regularly by one or many.
Ant. OCCASIONALLY, seldom, singularly.
com-mon-place (*-plās*), *n.* a memorandum for ready reference; an obvious remark: *adj.* uninteresting; trite.
com-mon-sense (*-sens*), *adj.* characterized by sound practical judgment.
com-mon-wealth (*-welth*), *n.* the whole body of people in a state; a republic. [STATE.]
com-mo-tion (*kom-ō'shun*), *n.* violent agitation.
com-mu-nal-ism (*kom'ū-nal-izm*), *n.* government by communes or corporations of towns and districts.
com-mune (*kom-ūn'*), *v. i.* to take counsel; partake of the Eucharist.
com-mu-ni-ca-ble (*-ū'ni-kā-bl*), *adj.* impartible.
com-mu-ni-cate (*-kāt*), *v. t.* to impart; reveal: *v. i.* to share; partake of the Eucharist.
Syn. COMMUNICATE, impart. A thing may be *communicated* directly or indirectly, and to any number of persons; as to *communicate* intelligence by signal or otherwise. *Impart* is a direct action that passes between individuals; as to *impart* instruction. [See *announce.*]
Ant. CONCEAL, keep secret.
com-mu-ni-ca-tion (*-kā'shun*), *n.* the act of communicating; means of passing from one place to another; news.
com-mu-ni-ca-tive (*ū'ni-kā-tiv*), *adj.* unreserved.
com-mun-ion (*-ūn'yun*), *n.* intercourse; a religious body; the partaking of the Eucharist.
Syn. COMMUNION, converse. Both these terms imply a communication between minds; but the former may take place without corporeal agency, the latter never does; spirits hold *communion* with each other; people hold *converse.*
★**com-mu-nism** (*kom'ū-nizm*), *n.* the doctrine of having property in common; socialism.
com-mu-nist (*'ū-nist*), *n.* a supporter of communism; a socialist; a member of the Commune of Paris (1871).
com-mu-ni-ty (*-ū'ni-ti*), *n.* [*pl.* communities (*-tiz*)], a body of persons having common rights, interests and privileges.
com-mu-ta-tion (*-ū-tā'shun*), *n.* the act of commuting; change or exchange.
com-mute (*kom-ūt'*), *v. t.* to reduce the severity of; regulate the direction of an electric current: *v. i.* to pay in gross amount.
com-mut-er (*'er*), *n.* one who commutes or changes; one who uses a commutation ticket in traveling.
com-pact (*kom'pakt*), *n.* an agreement or covenant: *v. t.* (*kom-pakt'*), to press or pack closely; consolidate.
com-pan-ion (*kom-pan'yun*), *n.* a comrade: *adj.* attendant. [ACCESSORY.]
com-pan-ion-ship (*-ship*), *n.* fellowship. [ACQUAINTANCE.]
com-pa-ny (*kum'pā-ni*), *n.* [*pl.* companies (*-niz*)], an assemblage of people; a body of persons associated together; a firm; a subdivision of a regiment: *v. i.* associate with. [CLASS.]
★**com-pa-ra-ble** (*kom'pā-rā-bl*, not *kom-pār'ā-bl*), *adj.* capable of being compared; of equal regard.
com-par-a-tive (*-par'ā-tiv*), *adj.* estimated by comparison; not positive: *n.* the comparative degree of grammar.
com-pare (*-pār'*), *v. t.* to make one thing the measure of another; inflect so as to form the degrees of comparison: *v. i.* to bear a comparison.
com-par-i-son (*-par'i-sun*), *n.* the act of comparing; an illustration or simile.
Syn. COMPARISON, contrast. Likeness in the quality and difference in the degree are requisite for a *comparison;* likeness in degree and unlikeness in quality are requisite for a *contrast.*
com-part-ment (*-pārt'ment*), *n.* a division by a partition, as of a carriage, etc.; a panel.
com-pass (*kum'pas*), *v. t.* to encircle; walk around: *n.* extent; grasp; an instrument indicating the magnetic meridian: *pl.* a mathematical instrument for dividing and drawing circles.
com-pas-sion (*kom-pash'un*), *n.* sorrow for the sufferings of others; sympathy; pity. [PITY, SYMPATHY, MERCY.]
com-pas-sion-ate (*-āt*), *v. t.* to have compassion for: *adj.* sympathetic; merciful. [HUMANE.]
com-pat-i-ble (*-pat'i-bl*), *adj.* congruous; suitable.
Syn. COMPATIBLE, consistent. *Compatibility* has principally a reference to plans and measures; *consistency* to character, conduct, and station. Everything is *compatible* with a plan which does not interrupt its prosecution; everything is *consistent* with a person's station by which it is neither degraded nor elevated.
Ant. INCONGRUOUS, irreconcilable.
com-pa-tri-ot (*-pā'tri-ot*), *n.* a fellow countryman.
com-peer (*kom-pēr'*), *n.* an equal.
com-pel (*kom-pel'*), *v. t.* [*p. t.* and *p. p.* compelled, *p. pr.* compelling], to urge irresistibly; force.
Syn. COMPEL, force, oblige, necessitate. To *compel* denotes moral rather than physical force; but to *force* is properly applied to the use of physical force or a violent degree of moral force. A man may be *compelled* to walk if he has no means of riding; he may be *forced* to go at the will of another. *Oblige* expresses only an indirect influence, which may be resisted or yielded to at discretion; we are *compelled* to do that which is repugnant to our will and our feelings; that which one is *obliged* to do may have the assent of the judgment if not of the will. We are *necessitated* by circumstances, or by anything which puts it out of our power to do otherwise.
com-pend (*kom'pend*), *n.* an abridgment.
com-pen-di-um (*'di-um*), *n.* an abridgment. [ABRIDGMENT.]
com-pen-sate (*kom'pen-sāt* or *kom-pen'sāt*), *v. t.* to recompense: *v. i.* to make compensation.
com-pen-sa-tion (*-sā'shun*), *n.* amends; recompensea set-off.
Syn.; COMPENSATION, amends, satisfaction, recompense, remuneration, requital, reward. A *compensation* is a return for a loss or damage sustained; *amends* is a return for anything that is faulty in ourselves or toward others; *satisfaction* is that which satisfies the individual requiring it; it is given for personal injuries. A *recompense* is a voluntary return for a voluntary service; it is made from a generous feeling. *Remuneration* is estimated according to the condition of the person and the dignity of the service rather than its positive worth. Authors often receive a *remuneration* for their works according to the reputation they have previously acquired, and not according to the real merit of the work. A *reward* conveys no idea of an obligation on the part of the person making it; whoever *rewards* acts optionally. When evil is returned for good, that is a bad *requital.*
Ant. CORRECTION, loss, punishment.
com-pete (*kom-pēt'*), *v. i.* to enter into competition with another.
com-pe-tence (*kom'pē-tens*), *n.* the state of being competent; sufficiency. [fied; moderate.
com-pe-tent (*-tent*), *adj.* fit; able; suitable; quali-
Syn. COMPETENT, fitted, qualified. *Competency* mostly respects the mental endowments and attainments; *fitness,* the disposition and character; *qualification,* the artificial acquirements or natural qualities.
Ant. FEEBLE, inadequate.
com-pe-ti-tion (*-tish'un*), *n.* rivalry.
com-pet-i-tive (*kom-pet'i-tiv*), *adj.* pertaining to competition; emulous.
com-pet-i-tor (*'i-tēr*), *n.* a rival.
com-pi-la-tion (*-pi-lā'shun*), *n.* the act of compiling; the thing compiled.
com-pile (*kom-pīl'*), *v. t.* to put existing materials together in fresh form.
com-pla-cence (*kom-plā'sens*), *n.* inward satisfaction. [Also *complacency.*]
com-pla-cent (*'sent*), *adj.* affable.
com-plain (*kom-plān'*), *v. i.* to express grief, pain, or resentment; charge formally.
Syn. COMPLAIN, lament, regret. *Complaint* marks most of dissatisfaction, *lamentation* most of grief; *regret* most of pain. *Complaint* is *expressed* verbally; *lamentation* either by words or signs; *regret* may be felt without being expressed. *Complaint* is made of personal grievance; *lamentation* and *regret* may be made on account of others as well as ourselves. We *complain* of our ill-health, of our inconveniences, or of troublesome circumstances; we *lament* our inability to serve another; we *regret* the absence of one whom we love. [See *deplore.*]
com-plaint (*kom-plānt'*), *n.* an accusation; an expression of grief or pain; ailment.
Syn. COMPLAINT, accusation. A *complaint* is mostly made in matters that personally affect the complainant; an *accusation* is made of matters in general, but especially those of a moral nature. A *complaint* is made for the sake of obtaining redress; an *accusation* is made for the sake of ascertaining a fact or bringing to punishment.
Ant. COMMENDATION, eulogy.
com-plai-sance (*-plā-sāns'*), *n.* courtesy.
Syn. COMPLAISANCE, deference, condescension. *Complaisance* signifies the act of complying with, or pleasing others; *deference* marks the inclination to defer, or acquiesce in the sentiments of another in preference to one's own; *condescension* marks the act of condescending from one's own height to yield to the satisfaction of others rather than rigorously to exact one's rights. The necessities and the allurements of society and of intimacy lead to *complaisance;* it makes sacrifices to the wishes, tastes, and personal feelings of others. *Complaisance* is the act of an equal; *deference* that of an inferior; *condescension* that of a superior.
★**com-plai-sant** (*'plā-zānt*), *adj.* courteous. [CIVIL.]
com-ple-ment (*'plē-ment*), *n.* full number; a complete set: *v. t.* to supply (a deficiency).
com-plete (*kom-plēt'*), *adj.* free from deficiency; entire; absolute; finished: *v. t.* to supply; finish.
Syn. COMPLETE, perfect, finished. That is *complete* which has no deficiency; that is *perfect* which has positive excellence; and that is *finished* which has no omission in it. [See *whole.*]
Ant. BLEMISHED, defective, faulty.
Syn. COMPLETE, finish, terminate. The characteristic idea of *completing* is that of making a thing altogether what it ought to be; that of *finishing,* the doing all that is intended to be done toward a thing; and that of *terminating,* simply putting an end to a thing.
Ant. BEGIN, commence.
★**com-plex** (*kom'pleks*, not *kom-pleks'*) *adj.* composed of various parts of things; composite; intricate. [OBSCURE.]
com-plex-ion (*-plek'shun*), *n.* the color of the skin, especially the face; aspect.
com-plex-ioned (*'shund*), *adj.* having a complexion.
com-plex-i-ty (*'i-ti*), *n.* the state of being complex. [Also *complexness.*]
com-pli-ance (*-plī'ans*), *n.* acquiescence.
com-pli-ant (*'ant*), *adj.* yielding.
Syn. COMPLIANT, yielding, submissive. A *compliant* person may want command of feeling; a *yielding* person may want fixedness of principle; a *submissive* person may want resolution. A too *compliant* disposition will be imposed upon by the selfish and unreasonable; a too *yielding* disposition is most unfit for commanding; a too *submissive* disposition exposes one to the exactions of tyranny. [See *humble.*]
com-pli-cate (*'pli-kāt*), *v. t.* to make intricate; *adj.* intricate; folded together. [OBSCURE.]
com-pli-ca-tion (*-kā'shun*), *n.* the act of complicating; the state of being complicated.
com-plic-i-ty (*-plis'i-ti*), *n.* partnership in crime.
com-pli-ment (*'pli-ment*), *n.* a formal act or expression of courtesy: *v. t.* to flatter; praise.
com-pli-men-ta-ry (*'tā-ri*), *adj.* conveying a compliment.
com-ply (*kom-plī'*), *v. i.* [*p. t.* and *p. p.* complied, *p. pr.* complying], to yield assent.
Syn. COMPLY, conform, yield, submit. *Compliance* is an act of the inclination; *conformity* an act of the judgment. *Compliance* is altogether optional; we *comply* with a thing or not, at pleasure. *Conformity* is binding on the conscience; it relates to matters in which there is a right and a wrong. To *yield* is to give way to another, either with one's will, judgment, or outward conduct; *submission* is the giving up of one's self altogether; it is the substitution of another's will for one's own. [See *agree.*]
com-po-nent (*kom-pō'nent*), *adj.* constituent: *n.* an elementary part of a compound.
com-port (*-pōrt'*), *v. i.* to agree; harmonize: *v. t.* to behave.
com-pose (*-pōz'*), *v. t.* to form by combination; write as an author; calm; adjust; arrange in order.
Syn. COMPOSE, settle. We *compose* that which has been disjointed and separated, by bringing it together again; we *settle* that which has been disturbed. [See *compound.*]
com-posed (*-pōzd'*), *adj.* tranquil; quiet.
Syn. COMPOSED, sedate. *Composed* is, opposite to ruffled or hurried, and is a temporary state; *sedate* is a permanent habit of the mind or body. [See *calm.*]
com-pos-ite (*-poz'it*), *adj.* compound.
com-po-si-tion (*-pō-zish'un*), *n.* the act of composing; the thing composed; a mass formed by mingling various ingredients.
com-pos-i-tor (*-poz'i-tēr*), *n.* one who sets type.
com-post (*'pōst*), *n.* a mixture of various substances for fertilizing the ground.
com-po-sure (*-pō'zhūr*), *n.* tranquillity.

com-pound (*kom-pound'*), *v. t.* to mix or combine together; settle by mutual agreement: *adj.* (*kom'pound*), composed of two or more elements or ingredients or words: *n.* a mixture of two or more elements or ingredients.

Syn. COMPOUND, compose. *Compound* is used in the physical sense only; *compose* in the proper or the moral sense. A medicine is *compounded* of many ingredients; society is *composed* of various classes. [See *compose.*]

Ant. OBVIOUS, simple.

com-pre-hend (*kom-prē-hend'*), *v. t.* to include; grasp with the mind; conceive. [CONCEIVE.]

com-pre-hen-si-ble (*-hen'si-bl*), *adj.* intelligible.

com-pre-hen-sion (*-hen'shun*), *n.* the act of comprehending; extent of understanding. [full.

com-pre-hen-sive (*-hen'siv*), *adj.* including much;

Syn. COMPREHENSIVE, extensive. *Comprehensive* respects quantity; *extensive* regards space. A *comprehensive* view of a subject includes all branches of it; an *extensive* view of a subject enters into minute details; the *comprehensive* is associated with the concise; the *extensive* with the diffuse.

Ant. LIMITED, narrow, slight.

com-press (*kom-pres'*), *v. t.* to press together; condense: *n.* (*kom'pres*), a soft pad used in surgery to maintain pressure.

com-pres-sion (*-presh'un*), *n.* condensation.

com-prise (*-prīz'*), *v. t.* to comprehend.

Syn. COMPRISE, comprehend, embrace, contain, include. A library *comprises* a variety of books; the whole is *comprised* within a small compass; laws *comprehend* a number of cases; a discourse *embraces* a variety of topics; a society *contains* very many individuals; it *includes* none but of a certain class, or it *includes* some of every class. [See *conceive.*]

com-pro-mise (*kom'prō-mīz*), *n.* a settlement by mutual concessions: *v. t.* to settle by compromise; expose to risk.

★**comp-trol-ler** (*kon-trōl'ėr*). See *controller.*

com-pul-sion (*kom-pul'shun*), *n.* the act of compelling; force; constraint.

com-pul-so-ry (*-pul'sō-ri*), *adj.* exercising compulsion; obligatory.

com-punc-tion (*-pungk'shun*), *n.* contrition.

com-pu-ta-tion (*-pū-tā'shun*), *n.* the act or process of computing; estimate.

com-pute (*-pūt'*), *v. t.* to number; reckon. [ESTIMATE.]

com-rade (*kom'rad*), *n.* a companion.

con (*kon*), *v. t.* [*p. t.* and *p. p.* conned, *p. pr.* conning], to peruse carefully.

co-na-tive (*kō'nā-tiv* or *kon'ā-tiv*), *adj.* pertaining to voluntary agency; expressing endeavor.

con-cat-e-na-tion (*kon-kat-ē-nā'shun*), *n.* a series of things united like links.

con-cave (*kon'kāv*), *adj.* hollow and curved. [guise.

con-ceal (*kon-sēl'*), *v. t.* to hide; keep secret; dis-

Syn. CONCEAL, dissemble, disguise. To *conceal* is simply to abstain from making known what we wish to keep secret; to *dissemble* and *disguise* signify to *conceal* by assuming some false appearance. We *conceal* facts; we *dissemble* feelings; we *disguise* sentiments.

Ant. DISPLAY, be candid, be sincere.

Syn. CONCEAL, hide, secrete. *Concealing* has simply the idea of not letting come to observation; *hiding*, that of putting under cover; *secreting*, that of setting at a distance or in unfrequented places.

Ant. REVEAL, uncover.

con-cede (*-sēd'*), *v. t.* to yield; admit.

con-ceit (*-sēt'*), *n.* an idea; an overestimate of one's own abilities; a quaint fancy.

Syn. CONCEIT, fancy. *Conceit* applies only to internal objects; it is mental in the operation and the result; it is a species of invention. *Fancy* is applied to external objects, or whatever acts on the senses. Nervous people are subject to strange *conceits;* timid people *fancy* they hear sounds or see objects in the dark. [See *pride, opinionated.*]

con-ceiv-a-ble (*-sēv'ā-bl*), *adj.* imaginable.

con-ceive (*-sēv'*), *v. i.* imagine; understand; develop in the womb: *v. i.* to think; become pregnant.

Syn. CONCEIVE, understand, comprehend. *Conception* is the simplest operation of the three. When we *conceive* we may have but one idea; when we *understand* or *comprehend* we have all the ideas which the subject is capable of presenting. The builder *conceives* plans, the scholar *understands* languages. [See *apprehend.*]

Ant. FAIL OF, misapprehend.

con-cen-trate (*kon-sen'trāt*), *v. t.* to bring to a center: *adj.* reduced to a pure or dense state.

con-cen-tric (*-sen'trik*), *adj.* having a common center.

con-cept (*kon'sept*), *n.* an abstract general notion or conception.

con-cep-tion (*-sep'shun*), *n.* the impregnation of the ovum; the act or power of conceiving in the mind; an idea or notion.

Syn. CONCEPTION, notion. *Conception* is the mind's own work, what it pictures to itself from the exercise of its own powers; *notion* is the representation of objects as they are drawn from observation. *Conceptions* are the fruit of the understanding and imagination; *notions* are the result of experience and information.

Ant. PERCEPT, realization.

Conception, Cape, Cal. Named from one of the vessels belonging to Cortes' expedition.

con-cep-tu-al-ist (*kon-sep'tū-al-ist*), *n.* one who holds the theory (conceptualism) that the mind can form for itself general conceptions.

con-cern (*kon-sėrn'*), *v. t.* to relate or belong to; interest or engage; make uneasy: *n.* business; affair; anxiety; a firm. [INTEREST, ANXIETY.]

con-cern-ing (*'ing*), *prep.* relating to.

con-cert (*kon-sėrt'*), *v. t.* to contrive or devise together: *n.* (*kon'sėrt*), a musical entertainment; coöperation; harmony, or mutual agreement.

Syn. CONCERT, contrive, manage. There is a secret understanding in *concerting;* invention in *contriving;* execution in *managing.* Measures are *concerted;* schemes are *contrived;* affairs are *managed.* [See *conduct.*]

con-cer-to (*-sėr'tō*, It. *kon-chār'to*), *n.* [*pl.* concertos (*'tōz*)], a musical composition for a solo instrument, with an orchestral accompaniment.

con-ces-sion (*kon-sesh'un*), *n.* the act of conceding; the thing conceded.

conch (*kongk*), *n.* a marine shell.

con-cha (*kong'kā*), *n.* [*pl.* conchæ (*-kē*)], the outer ear; auricle; the dome of an apse.

con-cil-i-ate (*kon-sil'i-āt*), *v. t.* to reconcile; win or gain the affections of.

Syn. CONCILIATE, reconcile. The *conciliator* gets the good will and affections for himself; the *reconciler* unites the affections of two persons to each other.

Ant. ESTRANGE.

con-cil-i-a-to-ry (*-ā-tō-ri*), *adj.* tending to conciliate or reconcile. [Also *conciliative.*]

con-cise (*kon-sīs'*), *adj.* condensed, terse. [SHORT.]

con-cise-ness (*'nes*), *n.* brevity.

con-clave (*kon'klāv*), *n.* a private meeting, as of cardinals for the election of a pope.

con-clude (*kon-klūd'*), *v. t.* to infer; determine; settle; end: *v. i.* to draw an inference.

con-clu-sion (*-klū'zhun*), *n.* a final determination; result; end.

Syn. CONCLUSION, inference, deduction. *Conclusions* are drawn from real facts; *inferences* are drawn from the appearances of things; *deductions* only from arguments or assertions. *Conclusions* are practical; *inferences* ratiocinative; *deductions* are final.

Ant. GROUNDS, premise.

con-clu-sive (*-klū'siv*), *adj.* decisive; final.

Syn. CONCLUSIVE, decisive, convincing. *Conclusive* applies either to practical or argumentative matters; *decisive* to what is practical only; *convincing* to what is argumentative only. It is necessary to be *conclusive* when we deliberate, and *decisive* when we command; an argument is *convincing,* reasoning *conclusive.* [See *final.*]

Ant. INEFFECTIVE, sophistical, specious.

con-coct (*kon-kokt'*), *v. t.* to digest; cook; assimilate mentally; plot.

con-coc-tion (*-kok'shun*), *n.* the act of concocting; a plan or plot; a compound of various ingredients.

con-com-i-tant (*kon-kom'i-tant*), *adj.* accompanying; conjoined with: *n.* an attendant.

con-cord (*kong'kôrd*, not *kon'kôrd*), *n.* harmony; union; agreement.

Syn. CONCORD, harmony. *Concord* is generally employed for the union of wills and affections; *harmony* respects the aptitude of minds to coalesce. *Harmony* may be used in the sense of adaptation to things generally.

Ant. CONFLICT, discord, dissension.

Concord (*kong'kûrd*). Town in Middlesex county, Massachusetts, so-called from the peaceful manner of its acquisition, having been purchased from the Indians.

Concord, N. H. Early English settlers named it *Rumford,* after a Benjamin Rumford; changed to *Concord* to commemorate an expression of unanimity in a land controversy.

con-cord-ance (*kon-kôrd'ans*), *n.* agreement; a dictionary of words or passages, especially of the bible, with references to the places where they occur.

con-cor-dat (*kon-kôr'dat*), *n.* a compact or agreement, especially between church and state.

con-course (*kong'kōrs*), *n.* arriving together; an assembly or crowd.

★**con-crete** (*kon'krēt*), *adj.* united in growth; not abstract: *n.* a mass formed by concretion; a compact mass of lime, sand, gravel, mortar, etc.

con-cre-tion (*kon-krē'shun*), *n.* the act of concreting; a mass formed by the union of separate particles.

con-cu-bine (*kong'kū-bīn*), *n.* a woman who lives with a man without being legally married.

con-cu-pis-cence (*kon-kū'pis-ens*), *n.* illicit sexual desire; unlawful desire.

con-cur (*kon-kėr'*), *v. i.* [*p. t.* and *p. p.* concurred, *p. pr.* concurring], to agree or unite in action or opinion; coincide. [ASSENT.]

con-cur-rent (*-kur'ent*), *adj.* acting in union or conjunction; meeting at one point.

con-cus-sion (*-kush'un*), *n.* the shock caused by two bodies coming violently together.

con-demn (*kon-dem'*), *v. t.* to pronounce guilty; censure; declare to be forfeited.

Syn. CONDEMN, blame, censure, convict, denounce, doom, reprobate, reprove, sentence. To *condemn* is to pass sentence or render judgment against. We *censure* silently; we *condemn* by open utterance. A person is *convicted* when his guilt is made clearly manifest to others; the convict is *sentenced* to imprisonment. To *denounce* is to make public or official declaration against; to *doom* is to *condemn* solemnly and consign to an evil or destructive destiny.

con-dem-na-tion (*kon-dem-nā'shun*), *n.* the act of condemning.

con-den-sa-tion (*-den-sā'shun*), *n.* compression.

con-dense (*-dens'*), *v. t.* to compress; make close or thick: *v. i.* to grow dense.

con-de-scend (*kon-dē-send'*), *v. i.* to stoop; descend; yield; deign.

con-de-scen-sion (*-dē-sen'shun*), *n.* the act of condescending; humiliation. [COMPLAISANCE.]

con-dign (*-dīn'*), *adj.* well deserved; suitable.

con-di-ment (*kon'di-ment*), *n.* a relish; seasoning.

con-di-tion (*kon-dish'un*), *n.* state; external circumstances; stipulation or terms of a contract.

Syn. CONDITION, station. *Condition* has most relation to circumstances, education, birth, and the like; *station* refers rather to the rank, occupation, or mode of life which is marked out.

con-dole (*kon-dōl'*), *v. t.* to lament: *v. i.* to express sympathy for another (with *with*).

★**con-do-lence** (*kon-dō'lens*, not *kon'dō-lens*), *n.* sympathy. [SYMPATHY.]

con-done (*kon-dōn'*), *v. t.* to pardon, especially a violation of marital duty.

con-dor (*kon'dėr*), *n.* a very large South American vulture.

con-duce (*-dūs'*), *v. i.* to tend to; contribute.

Syn. CONDUCE, contribute. To *conduce* signifies to serve the full purpose; to *contribute* signifies only to serve a secondary purpose. Exercise *conduces* to the health; it *contributes* to give vigor to the frame.

Ant. DESTROY, detract from, neglect.

con-du-cive (*-dū'siv*), *adj.* having the quality or power of conducing (with *to*).

con-duct (*kon-dukt'*), *v. t.* to guide; manage; behave: *n.* (*kon'dukt*) personal behavior or practice.

Syn. CONDUCT, manage, direct. *Conducting* requires most wisdom and knowledge; *managing* most action; *direction* most authority. A lawyer *conducts* the cause intrusted to him; a steward *manages* the mercantile concerns for his employer; a superintendent *directs* the movements of all the subordinate agents. [See *lead.*]

Ant. DEFEAT, neglect.

con-duc-tor (*-duk'tėr*), *n.* one who, or that which, conducts; a substance which conducts or transmits certain forces.

★**con-duit** (*kon'dit* or *kun'dit*), *n.* a canal or pipe for the conveyance of water, etc.

cone (*kōn*), *n.* a geometrical solid of which the base is a circle and the summit a point; the fruit of the fir, pine, etc.

Conemaugh (*kon-ē-mô'*) **river, Pa.** Indian word, meaning "otter creek."

Coney (*kō'ni*). Island at the extremity of Long Island, New York, which is said by some to have been so named because of the numbers of rabbits there. It appears, however, to have been originally called *Congu,* which may suggest another derivation.

con-fec-tion (*kon-fek'shun*), *n.* anything conserved or compounded with sugar; a sweetmeat.

con-fec-tion-er (*-ėr*), *n.* one who prepares and sells sweetmeats, etc.

con-fec-tion-er-y (*-i*), *n.* [*pl.* confectioneries (*-iz*)], sweetmeats, cakes, preserves, etc.

con-fed-er-a-cy (*-fed'ėr-a-si*), *n.* [*pl.* confederacies (*-siz*)], persons, states, or nations united in a league; unlawful combination.

con-fed-er-ate (*'ėr-āt*), *v. i.* to unite in a league: *adj.* united: *n.* (*-āt*) a member of a confederation; an ally; an accomplice. [ACCESSORY.]

con-fer (*kon-fėr'*), *v. t.* [*p. t.* and *p. p.* conferred, *p. pr.* conferring], to give or bestow: *v. i.* to consult together; converse.

Syn. CONFER, bestow. *Conferring* is an act of authority; *bestowing* that of charity or generosity. Princes and men in power *confer;* people in a private station *bestow.*

Ant. DEPRIVE.

con-fer-ence (*'fėr-ens*), *n.* the act of consulting together formally; an appointed meeting. [CONVERSATION.]

con-fess (*kon-fes'*), *v. t.* to admit or acknowledge; avow; grant; prove: *v. i.* to disclose the state of one's conscience to a priest and receive absolution.

con-fes-sion (*-fesh'un*), *n.* the act of confessing.

con-fes-sion-al (*-al*), *n.* an inclosed cabinet, in which a priest sits to hear confessions.

con-fes-sor (*kon-fes'ėr* or *kon'fes-ėr*), *n.* a priest who hears confessions and grants absolution.

con-fet-to (*-fet'tō*), *n.* [*pl.* confetti (*'ti*)], a sweetmeat; a plaster pellet used at carnivals.

★**con-fi-dant** (*'fi-dant*), *n.* a confidential or bosom friend. [Fem. *confidante.*]

con-fide (*kon-fid'*), *v. i.* to have confidence in: *v. t.* to trust fully (with *to*).

Syn. CONFIDE, trust. *Confidence* is an extraordinary trust, but *trust* is always ordinary unless the term be qualified. *Confidence* involves the reliance of one upon another, but *trust* is confined to action. [See *commit.*]

con-fi-dence (*kon'fi-dens*), *n.* trust; reliance.

con-fi-dent (*-dent*), *adj.* full of confidence; positive; bold; dogmatical.

Syn. CONFIDENT, dogmatic, positive. *Confidence* implies a general reliance on one's

abilities. *Dogmatism* implies a reliance on the truth of our opinions; *positiveness* a reliance on the truth of our assertions. A *confident* man is always ready to act, as he is sure of succeeding; a *dogmatical* man is always ready to speak, as he is sure of being heard; a *positive* man is determined to maintain what he has asserted. [See *definite*.]
Ant. DIFFIDENT, unbiased.

con-fi-den-tial (*kon-fi-den'shal*), *adj.* spoken or written in confidence; trustworthy.

con-fig-u-ra-tion (*-fig-ū-rā'shun*), *n.* external form; relative position of the planets.

con-fine (*kon'fin*), *n.* a boundary, border, or limit; a frontier (usually *pl.*): *v. t.* (*kon-fin'*) to restrict within limits; imprison. [CONTRACTED, BOUND.]

con-fine-ment (*kon-fin'ment*), *n.* the act of confining; childbirth.

con-firm (*kon-fėrm'*), *v. t.* to strengthen; ratify; administer the rite of confirmation.
Syn. CONFIRM, corroborate, establish. What *confirms* serves to *confirm* the mind; what *corroborates* gives weight to the thing. An opinion or a story is *confirmed;* an evidence or the representation of a person is *corroborated; established* is applied to that which is permanent and of importance; as, to *establish* a reputation; to *establish* a trade or a government.
Ant. CANCEL, weaken.

con-fir-ma-tion (*-fėr-mā'shun*), *n.* the act of confirming; verification. [firm.

con-firm-a-to-ry (*-fėrm'ā-tō-ri*), *adj.* serving to confirm.

con-fis-cate (*kon'fis-kāt* or *kon-fis'kāt*), *v. t.* to adjudge to be forfeited; seize as thus forfeited.

con-fis-ca-tion (*-kā'shun*), *n.* thea ct of confiscating.

con-fis-ca-to-ry (*-fis'kā-tō-ri*), *adj.* characterized by, or attended with, confiscation.

con-fla-gra-tion (*-flą-grā'shun*), *n.* a great fire.

con-flict (*kon-flikt'*), *v. i.* to strike or dash together: *n.* (*kon'flikt*), a fight or struggle for the mastery.

con-flu-ence (*kon'flōō-ens*), *n.* the junction of two or more streams; an assembly.

con-flu-ent (*-ent*), *adj.* flowing or running together: *n.* a tributary river or stream.

con-form (*kon-fôrm'*), *v. t.* to make like; bring into harmony : *v. i.* to comply with. [COMPLY.]

con-form-a-ble (*'ā-bl*), *adj.* like; corresponding; compliant; in parallel order.
Syn. CONFORMABLE, agreeable, suitable. *Conformable* is employed for matters of obligation; *agreeable* for matters of choice; *suitable* for matters of propriety and discretion What is *conformable* accords with some prescribed form or given rule of others; what is *agreeable* accords with the feelings of ourselves or others; what is *suitable* accords with outward circumstances.

con-for-ma-tion (*-fôr-mā'shun*), *n.* structure; arrangement; shape.

con-form-i-ty (*-fôrm'i-ti*), *n.* compliance with established forms: resemblance.

con-found (*kon-found'*), *v. t.* to mingle; perplex; astonish; confuse; overthrow.
Syn. CONFOUND, confuse. A person *confounds* one thing with another; objects become *confused,* or a person *confuses* himself. It is a common error among ignorant people to *confound* names, and among children to have their ideas *confused* on commencing a new study. [See *abash, mix*.]
Ant. DIFFERENTIATE, discriminate, embolden, put at ease.

con-front (*kon-frunt'*), *v. t.* to stand face to face (with *with*); oppose; compare.
Syn. CONFRONT, face. *Confront* implies to set face to face; and *face* signifies to set the face toward any object. Witnesses are *confronted;* a person *faces* danger.
Ant. AVOID, shun.

con-fuse (*kon-fūz'*), *v. t.* to mingle; jumble up; render indistinct; disconcert. [CONFOUND, ABASH.]

con-fu-sion (*-fū'zhun*), *n.* the act of confusing; perplexity; loss of self-possession; disorder.
Syn. CONFUSION, disorder. *Confusion* supposes the absence of all order; *disorder* the derangement of order where it exists, or is supposed to exist.
Ant. NEATNESS, regularity.

con-fu-ta-tion (*-fū-tā'shun*), *n.* disproof.

con-fute (*kon-fūt'*), *v. t.* to prove to be false or invalid; convict of error.
Syn. CONFUTE, refute, disprove, oppugn. To *confute* respects what is argumentative; *refute* what is practical and personal; *disprove* whatever is represented or related; *oppugn* what is held or maintained. An argument is *confuted* by proving its fallacy; a charge is *refuted* by proving the innocence of the party charged; an assertion is *disproved* by proving that it is incorrect; a doctrine is *oppugned* by a course of reasoning.

con-geal (*kon-jēl'*), *v. t.* to convert from a liquid to a solid state by cold: *v. i.* to concrete by cold.

★**con-ge-ni-al** (*kon-jēn'yal*), *adj.* kindred; pleasant and sympathetic; cognate.

con-ge-ni-al-i-ty (*-ni-al'i-ti*), *n.* the state or quality of being congenial.

con-gen-i-tal (*-jen'i-tal*), *adj.* existing, or produced, at birth; constitutional.

con-gest (*kon-jest'*), *v. ti.* to accumulate.

con-gest-ed (*'ed*), *p. adj.* unduly crowded; containing an unnatural accumulation of blood.

con-ges-tion (*-jest'yun*), *n.* an overcrowded condition, especially of the blood vessels.

con-glom-er-ate (*kon-glom'ėr-āt*), *adj.* collected or clustered together: *n.* a rock composed of rounded or water-worn fragments of preexistent rocks.

con-glu-ti-nate (*-glū'ti-nāt*), *v. t.* to glue together: *adj.* glued together; united by an adhesive substance.

con-grat-u-late (*kon-grat'ū-lāt*), *v. t.* to felicitate on account of some happy event (with *on* or *upon*). [FELICITATE.]

con-grat-u-la-tion (*-grat-ū-lā'shun*), *n.* the act of congratulating.

★**con-gre-gate** (*kong'grē-gāt*), *v. t.* to assemble; gather together: *v. i.* to come together.

con-gre-ga-tion (*-gā'shun*), *n.* an assembly, especially of persons for religious worship.

con-gre-ga-tion-al (*-al*), *adj.* pertaining to a congregation.

Con-gre-ga-tion-al-ism (*'shun-al-izm*), *n.* a democratic form of church government.

Con-gre-ga-tion-al-ist (*-al-ist*), *n.* an adherent to Congregationalism: *adj.* pertaining to Congregationalism.

con-gress (*kong'gres*), *n.* a conference; an assembly of ambassadors, etc.

Congress, *n.* the national legislature of the United States.

Con-gress-man (*-man*), *n.* a member of Congress, especially of the house of representatives.

con-gru-ence (*kong'grōō-ens*), *n.* suitability; agreement; consistency. [Also *congruency.*]

con-gru-ent (*-grōō'ent*), *adj.* suitable; agreeing.

con-gru-ous (*'grōō-us*), *adj.* accordant; fit.

con-ic (*kon'ik*), *adj.* pertaining to, or shaped like, a cone. [Also *conical.*] *n. pl.* the branch of geometry which treats of the parabola, ellipse, and hyperbola; conic sections.

con-jec-ture (*kon-jek'tūr*), *n.* a guess: *v. t.* to surmise: *v. i.* to form conjectures. [GUESS.]

con-join (*kon-join'*), *v. t.* to join together; connect or associate: *v. i.* to unite.

con-joint (*-joint'*), *adj.* united; coöperating.

con-ju-gal (*'jōō-gal*), *adj.* of or pertaining to marriage; connubial.

con-ju-gate (*kon'jōō-gāt*), *v. t.* to inflect (verbs): *adj.* combined in pairs.

con-ju-ga-tion (*-gā'shun*), *n.* the act of conjugating; the inflection of a verb; sexual union.

con-junct (*kon-jungkt'*), *adj.* conjoined.

con-junc-tion (*-jungk'shun*), *n.* union; the apparent meeting of two or more stars or planets; a word used to connect sentences or words.

con-jure (*kon-jūr'*), *v. t.* to summon in a sacred name: (*kun'jėr*), influence by, or as if by, magic: *v. i.* to practice the arts of a conjurer.

con-jur-er (*kon'jėr-ėr*), *n.* one who performs tricks by sleight of hand: (*kon-jūr'ėr*), *n.* one who solemnly enjoins.

con-nect (*kon-nekt'*), *v. t.* to bind or fasten together; *v. i.* to join.
Syn. CONNECT, combine, unite. What is *connected* and *combined* remains distinct, but what is *united* loses all individuality. Things the most dissimilar may be *connected* or *combined;* things of the same kind only can be *united.* Houses are *connected* by means of a common passage; the armies of two nations are *combined;* two armies of the same nation are *united.*
Ant. ISOLATE, separate, sever.

Connecticut (*kon-net'i-kut*). River and state. An Indian name derived from *Quonoktacut,* meaning, according to some authorities, "a river whose water is driven in waves by tides or winds." Haines says, "land on the long tidal river." Other interpretations are, "on long river," "long river," and "the long, or without end, river."

con-nec-tion or **con-nex-ion** (*kon-nek'shun*), *n.* the state of being connected; relation by marriage or blood.
Syn. CONNECTION, relation. Families are *connected* with each other by the ties of blood or marriage; persons are *connected* with each other in the way of trade or business; objects stand in a certain *relation* to each other, as persons stand in the *relation* of giver and receiver, or of debtor and creditor.
Ant. DISCONNECTION, isolation.

con-ni-vance (*-ni'vans*), *n.* the act of conniving; passive coöperation in a crime or fault; collusion.

con-nive (*kon-niv'*), *v. i.* to close the eyes upon a fault; be in secret complicity (with *at*). [ABET.]

con-note (*kon-nōt'*), *v. t.* to designate by implication; imply as an attribute.

con-nu-bi-al (*kon-nū'bi-al*), *adj.* of or pertaining to the marriage state; nuptial.

con-quer (*kong'kėr*), *v. t.* to gain by conquest; overcome; subdue: *v. i.* to get the victory.

con-quer-or (*kong'kėr-ėr*), *n.* one who conquers.
Syn. CONQUEROR, victor. A *conqueror* is always supposed to add something to his possessions; a *victor* gains nothing but the superiority. Those who take possession of other men's lands by force of arms make a *conquest;* those who excel in any trial of skill are the *victors.*

★**con-quest** (*kong'kwest,* not *kon'kwest*), *n.* the act of conquering; subjugation; victory.

Conrad (*kon'rad*). From the Old German name *Cunrad,* which Wachter translates "quick in counsel." Danish, *Conrad;* Dutch, *Könraad;* Fr., *Conrad;* Ger., *Conrad;* It., *Corrado,* or *Curado;* Lat., *Conradus;* Sw., *Konrad.*

con-science (*kon'shens*), *n.* the moral sense which determines right and wrong.

★**con-sci-en-tious** (*kon-shi-en'shus,* not *kon-si-en'shus*), *adj.* influenced or regulated by conscience; scrupulous.

con-scious (*'shus*), *adj.* aware of one's thoughts and actions; sensible. [FELL.]

con-scious-ness (*-ness*), *n.* the knowledge of that which passes in one's own mind.

con-script (*kon-skript'*), *v. t.* to enroll for compulsory military or naval service: (*kon'skript*), *adj.* registered: *n.* one thus compulsorily enrolled.

con-se-crate (*kon'sē-krāt*), *v. t.* to set apart as sacred; dedicate to God; set apart to a sacred office: *adj.* made sacred. [DEDICATE, HOLY.]

con-sec-u-tive (*-sek'ū-tiv*), *adj.* successive.

con-sen-sus (*-sen'sus*), *n.* general agreement.

con-sent (*kon-sent'*), *n.* a yielding of the mind or will: *v. i.* to comply; yield.
Syn. CONSENT, permit, allow. As the act of an equal we *consent* to that in which we have a common interest with others; we *permit* or *allow* what is for the accommodation of others; we *allow* by abstaining to oppose; we *permit* by a direct expression of our will; contracts are formed by the *consent* of the parties who are interested; the proprietor of an estate *permits* his friends to sport on his grounds; he *allows* of a passage through his premises. [See *agree, assent, admit*.]

con-se-quence (*kon'sē-kwens*), *n.* that which naturally follows an effect.
Syn. CONSEQUENCE, effect, result, issue, event. A *consequence* is that which follows of itself, without any qualification or restriction; an *effect* is that which is produced, or which follows from the connection between the thing *effecting,* as a cause, and the thing *effected;* a *result* is general following from a whole; there may be many *consequences* from the same thing, and but one *result* only; we speak of the *issue* of a negotiation or a battle, and the *event* of a war. The fate of a nation sometimes hangs on the *issue* of a battle.
Ant. CAUSE, occasion, origin, reason, source.

con-se-quent (*-kwent*), *adj.* following as a result or natural effect (with *to*): *n.* a result or effect.

con-se-quen-tial (*-kwen'shal*), *adj.* following as the effect; self-important.

con-ser-va-tion (*-s ėr-vā'shun*), *n.* the act of preserving from decay, loss, or injury.

con-serv-a-tive (*-serv'a-tiv*), *adj.* having the tendency or power to preserve: *n.* that which preserves; one opposed to hasty changes.

con-serv-a-to-ry (*sėrv'ā-tō-ri*), *adj.* tending to preserve: *n.* a greenhouse.

★**con-serve** (*kon-sėrv'*), *v. t.* to preserve from injury or destruction: *n.* (*kon'sėrv*) candied fruit.

con-sid-er (*kon-sid'ėr*), *v. t.* to fix the mind upon; contemplate: *v. i.* to deliberate; reflect.
Syn. CONSIDER, reflect. *Consideration* is employed for practical purposes; *reflection* for matters of speculation or moral improvement. Common objects call for *consideration;* the workings of the mind itself, or objects purely spiritual, occupy *reflection.*
Ant. NEGLECT, slight.
Syn. CONSIDER, regard. There is more caution or thought in *considering;* more personal interest in *regarding.* To *consider* is to bear in mind all that prudence or propriety suggests; to *regard,* all that our wishes or interests suggest.

★**con-sid-er-ate** (*-āt*), *adj.* having regard for others; prudent; thoughtful; careful.

con-sign (*kon-sīn'*), *v. t.* to deliver in a formal manner to another; yield in trust; to send, as goods. [COMMIT.]

★**con-sign-ee** (*-si-nē'*), *n.* the person to whom goods are sent; an agent or factor.

con-sist (*kon-sist'*), *v. i.* to be composed of; co-exist; subsist (with *in*).

con-sist-ent (*'ent*), *adj.* solid; not contradictory. [CONSONANT, COMPATIBLE.]

con-sole (*kon-sōl'*), *v. t.* to give comfort to; cheer in sorrow; solace.

con-sol-i-date (*-sol'i-dāt*), *v. t.* to make solid; harden; condense: *v. i.* to become solid.

con-so-nance (*kon'sō-nans*), *n.* agreement of sounds; harmony; concord.

con-so-nant (*-nant*), *adj.* harmonious; accordant: *n.* a letter other than a vowel.
Syn. CONSONANT, accordant, consistent. *Consonant* is employed in matters of representation; *accordant* in matters of opinion; *consistent* in matters of conduct. [See *compatible*.]

con-sort (*kon'sôrt*), *n.* a companion; a husband or wife; a ship accompanying another: *v. t.* and *v. i.* (*kon-sort'*) to associate; keep company (with *with*).

con-spic-u-ous (*-spik'ū-us*), *adj.* mentally or physically visible; distinguished. [DISTINGUISHED, PROMINENT.]

con-spir-a-cy (*-spir'ā-si*), *n.* [*pl.* conspiracies (*-siz*)], a plot; two or more persons engaged together for an unlawful or evil purpose.

con-spir-a-tor (*'ā-tėr*), *n.* one who conspires.

con-spire (*kon-spīr'*), *v. i.* to concert a crime; combine for an unlawful purpose.

★**con-sta-ble** (*kun'stā-bl,* not *kon'stā-bl*), *n.* a high officer of state in mediæval courts; a policeman.

Constance (*kon'stans*). From the Latin name *Constantia,* "constancy," "steadfastness." Dutch, *Constantia;* Fr., *Constance;* It., *Costanza;* Lat., *Constantia;* Sp., *Constancia.*

con-stan-cy (*kon'stan-si*), *n.* steadiness of purpose or action.
Syn. CONSTANCY, stability, steadiness.

firmness. *Constancy* respects the affections; *stability* the opinions; *steadiness* the action, or the motives of action; *firmness* the purpose or resolution.

con-stant (*kon'stant*), *adj.* steadfast; continuous: *n.* that which is not subject to change. [CONTINUED, PERMANENT.]

Constantine (*kon'stan-tin*). From the Latin *Constantinus*, "firm, resolute." Danish, *Constantin;* Dutch, *Konstantijn;* Fr., *Constantin;* Gr., *Konstantinos;* It., *Constantino.*

Constantinople (*kon-stan-ti-nō'pl*). The Anglicised form of *Constantinopolis*, "the city of Constantine," the name given by Constantine to Byzantium.

con-stel-la-tion (*-stel-ā'shun*), *n.* a group or cluster of fixed stars designated by some name.

con-ster-na-tion (*-stĕr-nā'shun*), *n.* excessive terror, or surprise.

con-sti-pate (*kon'sti-pāt*), *v. t.* to make costive.

con-sti-pa-tion (*-pā'shun*), *n.* costiveness.

con-stit-u-en-cy (*-stit'ū-en-si*), *n.* [*pl.* constituencies (*-siz*)], the body of electors voting for a member of Congress, etc.

con-stit-u-ent (*'ū-ent*), *adj.* necessary or essential: *n.* an essential or component part; an elector.

con-sti-tute (*kon'sti-tūt*), *v. t.* to compose or make up; appoint; establish.

Syn. CONSTITUTE, appoint, depute. To *constitute* is the act of a body; to *appoint* and *depute* that of either a body or an individual. A community *constitutes* any one their leader; a monarch *appoints* his ministers; whoever is *deputed* has private and not public authority.

con-sti-tu-tion (*kon-sti-tū'shun*), *n.* the act of constituting; bodily strength; the system of fundamental laws of a nation, state or society.

con-sti-tu-tion-al (*-al*), *adj.* inherent in the constitution: *n.* walk taken to benefit the health.

con-strain (*kon-strān'*), *v. t.* to hold down or keep back by force.

con-straint (*-strānt'*), *n.* compulsion.

con-strict (*-strikt'*), *v. t.* to bind; cramp.

con-stric-tor (*-strik't-ẽr*), *n.* that which contracts or compresses; a large serpent, the boa constrictor.

con-stru-gent (*-strin'jent*), *adj.* contracting or binding.

con-struct (*kon-strukt'*), *v. t.* to build; form; put together; compose.

con-struc-tion (*-struk'shun*), *n.* the act of building; that which is constructed; the syntactical arrangement of words in a sentence.

con-strue (*kon'stroō*), *v. t.* to put into proper order by syntactical rules; translate; interpret.

con-sub-stan-tial (*kon-sub-stan'shal*), *adj.* having the same substance, essence, or nature.

con-sub-stan-ti-a-tion (*-shi-ā'shun*), *n.* the doctrine that the body and blood of Christ are in a mysterious manner substantially present in the Eucharistic elements after consecration.

★**con-sul** (*kon'sul*, not *kown'sul*), *n.* the chief magistrate of the Roman republic; an officer commissioned by a government to reside in a foreign country to promote the interests of its trade, and protect its subjects.

con-su-lar (*'sū-lẽr*), *adj.* pertaining to a consul.

con-su-late (*'sū-lāt*), *n.* the office and residence of a consul.

con-sult (*kon-sult'*), *v. t.* to ask advice of; have regard to: *v. i.* to take counsel together.

Syn. CONSULT, deliberate. *Consultations* always require two persons at least; *deliberations* may be carried on either with one's self or with numbers; an individual may *consult* with one or many; assemblies commonly *deliberate.*

con-sul-ta-tion (*-sul-tā'shun*), *n.* the act of consulting.

con-sume (*kon-sūm'*), *v. t.* to destroy; waste: *v. i.* to waste away. [DESTROY, ABSORB.]

con-sum-mate (*kon'sum-āt*), *v. t.* to complete; finish: *adj.* (*kon-sum'āt*), perfect.

con-sum-mate-ly (*-sum'āt-li*), *adv.* perfectly.

con-sum-ma-tion (*-mā'shun*), *n.* completion.

Syn. CONSUMMATION, completion. Wishes are *consummated;* plans are *completed.*

con-sump-tion (*-sump'shun*), *n.* the act of consuming; pulmonary disease; phthisis. [DECAY.]

con-sump-tive (*'tiv*), *adj.* pertaining to consumption.

con-tact (*kon'takt*), *n.* touch; close union.

con-ta-gion (*kon-tā'jun*), *n.* transmission of disease by direct or indirect contact.

Syn. CONTAGION, infection. We consider *contagion* as to the manner of spreading from one body to another; we consider *infection* as to the act of its working itself into the system. Whatever acts by *contagion* acts immediately by direct personal contact; whatever acts by *infection* acts gradually and indirectly, or through the medium of a third body, as clothes, or the air when *infected.*

Ant. IMMUNITY, health.

con-ta-gious (*'jus*), *adj.* transmitted by contact.

Syn. CONTAGIOUS, epidemical, pestilential. The *contagious* applies to that which is capable of being caught, and ought not, therefore, to be touched; the *epidemical* to that which is already caught or circulated, and requires, therefore, to be stopped; the *pestilential* to that which may breed an evil, and is, therefore, to be removed; diseases are *contagious* or *epidemical;* the air or breath is *pestilential.*

con-tain (*kon-tān'*), *v. t.* to hold, as a vessel; inclose. [COMPRISE.]

con-tam-i-nate (*-tam'i-nāt*), *v. t.* to pollute.

Syn. CONTAMINATE, defile, pollute, taint, corrupt. Whatever is impure *contaminates;* what is gross and vile in the natural sense *defiles* and in the moral sense *pollutes;* what is contagious or infectious *corrupts;* and what is *corrupted* may *taint* other things.

Ant. CLEAN, clear, purify, whiten.

con-temn (*kon-tem'*), *v. t.* to despise.

Syn. CONTEMN, despise, scorn, disdain. *Contemn* signifies to pollute or render worthless, which is the cause of contempt. *Despise* signifies to look down upon, which is a strong mark of contempt; *scorn* signifies stripped of all honors and exposed to derision; *disdain* signifies to hold altogether unworthy.

Ant. ADMIRE, adore, esteem, laud.

con-tem-plate (*kon-tem'plāt*), *v. t.* to consider with continued attention.

Syn. CONTEMPLATE, meditate, muse. Different species of reflection are marked by these terms. We *contemplate* what is present or before our eyes; we *meditate* on what is past or absent. The heavens and all the works of the Creator are objects of *contemplation;* the ways of Providence are fit subjects for *meditation.* One *muses* on events or circumstances which have been just passing.

Ant. ACT, do.

★**con-tem-pla-tive** (*kon-tem'plā-tiv*, not *kon'tem-plā-tiv*), *adj.* thoughtful.

con-tem-po-ra-ne-ous (*-pō-rā'nē-us*), *adj.* contemporary.

con-tem-po-ra-ry (*'pō-rā-ri*), *adj.* existing or occurring at the same time: *n.* one living at the same time as another.

con-tempt (*kon-tempt'*), *n.* disdain; disobedience to the orders, etc., of a court.

con-tempt-i-ble (*'i-bl*), *adj.* meriting scorn.

Syn. CONTEMPTIBLE, contemptuous. *Contemptible* is applied to the thing deserving contempt; *contemptuous* to that which is expressive of contempt. A production is *contemptible;* a sneer or look is *contemptuous.*

Ant. ESTIMABLE, noble, praiseworthy.

con-temp-tu-ous (*-temp'tū-us*), *adj.* disdainful. [CONTEMPTIBLE.]

con-tend (*kon-tend'*), *v. i.* to strive in opposition; dispute or debate; assert.

Syn. CONTEND, contest, dispute. To *contend* is simply to exert a force against a force; to *contest* is to struggle together for an object; to *dispute,* according to its original meaning, applies to opinions only, and is distinguished from *contend* in that the latter signifies to maintain one's own opinion, and the former to call in question the opinion of another.

con-tent (*kon-tent'*), *adj.* satisfied: *v. t.* to satisfy; gratify: *n.* (*kon'tent*), generally plural, that which is comprised in anything.

con-ten-tion (*-ten'shun*), *n.* contest; debate. [STRIFE, DISSENSION, FEUD.]

con-ten-tious (*-ten'shus*), *adj.* causing contention.

con-tent-ment (*-tent'ment*), *n.* satisfaction, gratification.

Syn. CONTENTMENT, satisfaction. *Contentment* lies in ourselves; *satisfaction* is derived from external objects. One is *contented* when one wishes for no more; one is *satisfied* when one has obtained all one wishes; *contentment* is within the reach of the poor man, to whom it is a continual feast; but *satisfaction* has never been procured by wealth, however enormous, or ambition, however boundless. [See *compensation.*]

Ant. DISTRESS, melancholy, trouble.

con-test (*kon-test'*), *v. t.* to dispute; oppose: *v. i.* to strive: *n.* (*kon'test*) a struggle for superiority; dispute. [CONTEND, FEUD.]

con-test-ant (*-test'ant*), *n.* one who contests, especially an election or a will.

con-text (*kon'tekst*), *n.* the parts in a book or discourse immediately adjoining the sentence quoted.

con-ti-gu-i-ty (*-ti-gū'i-ti*), *n.* contact.

★**con-tig-u-ous** (*-tig'ū-us*), *adj.* adjacent. [ADJACENT.]

con-ti-nence (*kon'ti-nens*), *n.* chastity; self-restraint.

con-ti-nent (*'ti-nent*), *adj.* chaste; exercising self-restraint: *n.* a large extent of land, forming a geographical division.

con-ti-nen-tal (*-nen'tal*), *adj.* pertaining to a continent.

con-tin-gence (*kon-tin'jens*), *n.* [*pl.* contingencies (*'jen-siz*)], a chance or possible occurrence.

con-tin-gent (*'jent*), *adj.* accidental; conditional: *n.* quota of troops.

con-tin-u-al (*'ū-al*), *adj.* proceeding without interruption; incessant; constant.

Syn. CONTINUAL, perpetual, constant. What is *continual* admits of no interruption; what is *perpetual* admits of no termination. There may be an end to that which is *continued* and there may be intervals in that which is *perpetual. Constant,* like *continual,* admits of no interruption; what is *continual* may not always continue in the same state; but what is *constant* remains in the same state. [See *durable.*]

Ant. CEASING, changeable, broken, interrupted.

con-tin-u-ance (*'ū-ans*), *n.* permanence; uninterrupted succession; continuation.

Syn. CONTINUANCE, continuation, duration. The *continuance* is said of that which itself continues; the *continuation* of that which is continued by some other agency; as, the *continuance* of the rain; the *continuation* of a history, work, line, etc. Things are of long or short *duration* by comparison.

con-tin-ue (*kon-tin'ū*), *v. t.* to carry on without interruption: *v. i.* to remain; persevere.

Syn. CONTINUE, remain, stay. To *continue* is associated with a state of action; to *remain* with a state of rest; we are said to *continue* to speak, or do anything, to *remain* stationary or in a position; *stay* is a voluntary act; as, to *stay* at a friend's, or with a friend.

Ant. Go, leave, move.

Syn. CONTINUE, persevere, persist. We *continue* from habit or casualty; we *persevere* from reflection and the exercise of our judgment; we *persist* from attachment. A child *perseveres* in a new study until he has mastered it; he *persists* in making a request until he has obtained the object of his desire.

Ant. CEASE, lag, discontinue.

con-ti-nu-i-ty (*-ti-nū'i-ti*), *n.* [*pl.* continuities (*-tiz*)], uninterrupted succession or connection.

con-tin-u-ous (*-tin'ū-us*), *adj.* uninterrupted.

con-tort (*kon-tôrt'*), *v. t.* to twist.

con-tour (*kon-tōōr'*), *n.* an outline; profile.

con-tra-band (*kon'trā-band*), *adj.* prohibited from importation; illegal.

con-tract (*kon-trakt'*), *v. t.* to condense: *v. i.* to shrink up; agree upon: *n.* (*kon'trakt*) a compact; a written agreement. [ABBREVIATE.]

con-tract-ed (*kon-trak'ted*), *adj.* narrow, mean, scanty.

Syn. CONTRACTED, confined, narrow. *Contracted* signifies drawn into a smaller compass than it might otherwise be in, and *confined* signifies brought within unusually small bounds. *Narrow* denotes a quality belonging to a material body. A limb is said to be *contracted* which is drawn up by disease; a situation is *confined* which has not the necessary or usual degree of open space; a road or a room is *narrow.*

con-trac-tion (*-trak'shun*), *n.* the act of contracting; the state of being contracted; abbreviation.

con-tra-dict (*kon-tra-dikt'*), *v. t.* to assert the contrary or opposite of; gainsay; deny.

Syn. CONTRADICT, deny. One *contradicts* in direct terms by asserting something contrary; one *denies* by advancing arguments, or suggesting doubts or difficulties. These terms may, therefore, both be used in reference to disputations. We may *deny* the truth of a position by *contradicting* the assertions that are advanced in its support.

Ant. AGREE, acquiesce, admit, assent.

con-tra-dic-to-ry (*-dik'tō-ri*), *adj.* contrary.

con-tra-dis-tinc-tion (*-dis-tingk'shun*), *n.* a distinction by opposite qualities.

con-tral-to (*kon-tral'tō*), *n.* the part sung by the highest male (*counter-tenor*) or the lowest female voice (*alto*).

con-tra-ri-e-ty (*-trā-ri'ē-ti*), *n.* [*pl.* contrarieties (*-tiz*)], opposition.

con-tra-ry (*'trā-ri*), *adj.* opposite; perverse: *n.* a thing of opposite qualities. [PERVERSE.]

con-trast (*kon-trást'*), *v. t.* to place in contrast: *n.* (*kon'trast*) opposition or difference of qualities; dissimilitude. [COMPARISON.]

con-tra-vene (*kon-trā-vēn'*), *v. t.* to obstruct; violate.

con-trib-ute (*kon-trib'ūt*), *v. t.* to give to some common stock: *v. i.* to use one's influence. [CONDUCE.]

con-tri-bu-tion (*-tri-bū'shun*), *n.* the act of contributing; a subscription; a writing furnished to a periodical.

con-trite (*kon'trīt*), *adj.* penitent.

con-tri-tion (*-trish'un*), *n.* sorrow for sin.

con-triv-ance (*-triv'ans*), *n.* a device; apparatus; plan.

con-trive (*kon-trīv'*), *v. t.* to devise; invent. [CONCERT.]

con-trol (*kon-trōl'*), *n.* a check; restraint: *v. t.* [*p. t.* and *p. p.* controlled, *p. pr.* controlling], to restrain; govern.

con-tro-ver-sial (*-trō-vẽr'shal*), *adj.* polemical.

con-tro-ver-sy (*'trō-vẽr-si*), *n.* [*pl.* controversies (*-siz*)], debate; disputation. [FEUD.]

con-tro-vert (*-trō-vẽrt'*), *v. t.* to contend against; refute.

Syn. CONTROVERT, dispute. To *controvert* has regard to speculative points; to *dispute* respects matters of fact; there is more of opposition in *controversy;* more of doubt in *disputing;* a sophist *controverts;* a skeptic *disputes.*

Ant. AGREE.

con-tu-ma-cious (*-tū-mā'shus*), *adj.* perverse. [OBSTINATE.]

con-tu-ma-cy (*'tū-mā-si*), *n.* [*pl.* contumacies (*-siz*)], obstinate or perverse opposition to lawful authority.

Syn. CONTUMACY, rebellion. The *contumacious* resist only occasionally; the *rebel* resists systematically: the *contumacious* stand only on certain points, and oppose the individual; the *rebel* sets himself up against the authority itself.

con-tu-me-ly (*'tū-mē-li*), *n.* haughty and contemptuous rudeness. [REPROACH.]

con-tuse (*kon-tūz'*), *v. t.* to wound or bruise without breaking the skin.
co-nun-drum (*kō-nun'drum*), *n.* a riddle.
con-va-lesce (*kon-vā-les'*), *v. i.* to recover strength and health after illness.
con-va-les-cence (*'ens*),*n.* gradual recovery after illness. [Also *convalescency.*]
con-vene (*kon-vēn'*), *v. i.* to meet together: *v. t.* to cause to assemble.
con-ven-ience (*-vēn'yens*), *n.* fitness; freedom from discomfort.
con-ven-ient (*'yent*), *adj.* suitable; appropriate; handy.
Syn. CONVENIENT, suitable. *Convenient* regards the circumstances of the individual; *suitable* is closely connected with moral propriety; nothing is *convenient* which does not favor one's purpose; nothing is *suitable* which does not suit the person, place, and thing. [See *commodious.*]
con-vent (*kon'vent*), *n.* a community of religious recluses; a nunnery; monastery. [CLOISTER.]
con-ven-ti-cle (*-ven'ti-kl*), *n.* an assembly for worship (usually implying schism).
con-ven-tion (*-ven'shun*), *n.* a political or ecclesiastical assembly.
con-ven-tion-al (*-al*), *adj.* sanctioned by, or growing out of, custom; based on accepted models.
con-verge (*kon-vėrj'*), *v. i.* tend to one point.
con-ver-gence (*'jens*), *n.* [*pl.* convergencies (*'en-siz*)], tendency to one point.
★**con-ver-sant** (*kon'vėr-sant*, not *kon-vėr'sant*), *adj.* acquainted or familiar with; proficient.
Syn. CONVERSANT, familiar. A person is *conversant* in matters that come frequently before his notice; he is *familiar* with such as form the daily routine of his business.
Ant. IGNORANT.
con-ver-sa-tion (*-sā'shun*), *n.* informal or familiar talk.
Syn. CONVERSATION, dialogue, conference, colloquy. A *conversation* is always something actually held between two or more persons; a *dialogue* is mostly fictitious, and written as if spoken; any number of persons may take part in a *conversation*, but a *dialogue* always refers to the two persons who are expressly engaged; a *conference* is always specifically appointed and is mostly on public concerns; the *colloquy* has the same character as the *dialogue*, but is not confined to two people.
con-ver-sa-tion-ist (*-ist*), *n.* one who excels in conversation. [Also *conversationalist.*]
con-ver-sa-zi-o-ne (*kōn-vėr-sā-tsē-ō'nā*), *n.* [*pl.* conversazioni (*'nē*)], a meeting for conversation, especially on literary or scientific topics. [*Italian.*]
con-verse (*kon-vėrse'*), *v. i.* to interchange thoughts; *adj.* (*kon'vėrse*) reversed in order or relation; opposite: *n.* familiar talk. [SPEAK, COMMUNION.]
con-ver-sion (*kon-vėr'shun*), *n.* change from one state, or from one religion, to another.
con-vert (*kon-vėrt'*), *v. t.* to transmute; change from one religion to another: *n.* (*kon'vert*) one who changes from one religion to another.
Syn. CONVERT, proselyte. *Convert* is more extensive in its sense and application than *proselyte; convert* includes every change of opinion, without respect to the subject; *proselyte* denoted changes only from one religious belief to another; *proselyte* now means a new convert to a religion, a religious sect or to some particular system or party.
con-vert-i-ble (*kon-vėrt'i-bl*), *adj.* transmutable.
con-vex (*kon'veks*), *adj.* curved on the exterior surface; opposed to concave.
con-vey (*kon-vā'*), *v. t.* [*p. t.* and *p. p.* conveyed, *p. pr.* conveying], to carry or transport; communicate; transfer the title to (property).
con-vey-ance (*'ans*), *n.* the act or means of conveying; a vehicle.
con-vict (*kon-vikt'*), *v. t.* to prove guilty of a crime charged: *n.* (*kon'vikt*) a criminal sentenced to penal servitude.
Syn. CONVICT, detect. A person is *convicted* by means of evidence; he is *detected* by means of ocular demonstration. One is *convicted* of having perpetrated some evil deed; one is *detected* in the very act of committing the deed. [See *condemn, criminal.*]
con-vic-tion (*-vik'shun*), *n.* the act of convicting; strong belief.
con-vince (*kon-vins'*), *v. t.* to satisfy by evidence or argument. [PERSUADE, CONCLUSIVE.]
con-viv-i-al (*kon-viv'i-al*), *adj.* festive; jovial.
Syn. CONVIVIAL, social. The prominent idea in *convivial* is that of sensual indulgence; the prominent idea in *social* is that of enjoyment from an intercourse with society. We speak of *convivial* meetings, *convivial* enjoyments, or the *convivial* board; but *social* intercourse, *social* pleasure, *social* amusements.
con-vo-ca-tion (*kon-vō-kā'shun*), *n.* the act of convoking an assembly.
con-voke (*kon-vōk'*), *v. t.* to call or summon together; convene.
con-voy (*kon-voi'*), *v. t.* [*p. t.* and *p. p.* convoyed, *p. pr.* convoying], to accompany on the way for protection: *n.* (*kon'voi*) a protecting force accompanying ships, goods, persons, etc.; an escort.
con-vulse (*kon-vuls'*), *v. t.* to agitate violently.
con-vul-sion (*-vul'shun*), *n.* an agitation; tumult.
co-ny or **co-ney** (*ko'ni*), *n.* [*pl.* conies (*'niz*)], a rabbit.
coo (*kōō*), *v. i.* [*p. t.* and *p. p.* cooed, *p. pr.* cooing], to cry like a dove or pigeon: *n.* the sound uttered by doves and pigeons.
cook (*kook*), *v. t.* to prepare for eating by boiling, baking, or roasting: *n.* one who prepares food for the table.
cook-er-y (*'ėr-i*), *n.* [*pl.* cookeries (*-iz*)], the art or practice of cooking.
cook-y (*'i*), *n.* [*pl.* cookies (*'iz*)], a small flat sweet cake.
cool (*kōōl*), *adj.* slightly or moderately cold: *v. t.* to make cool: *v. i.* to become cool. [DISPASSIONATE, CALM.]
coon (*kōōn*), *n.* abbreviation of raccoon; slang name for a negro.
coop (*kōōp*), *n.* a cage; pen: *v. t.* to confine; inclose.
coop-er (*'ėr*), *n.* a maker of barrels, casks, etc.
co-öp-er-ate (*kō-op'ėr-āt*), *v. i.* to act or work jointly.
co-öp-er-a-tion (*-ā'shun*), *n.* the act of working jointly together.
Cooper river, S. C. Named in honor of Sir Anthony Ashley Cooper, afterward earl of Shaftesbury, one of the original charterers.
Cooperstown. Village in Otsego county, New York, named for the father of James Fenimore Cooper, the novelist.
co-ör-di-nate (*kō-ôr'di-nāt*), *v. t.* to place in the same order, class, etc.: *adj.* of the same rank or authority as another.
coot (*kōōt*), *n.* a short-tailed water fowl.
cop (*kop*), *v. t.* [*p. t.* and *p. p.* copped, *p. pr.* copping], to seize as a prisoner: *n.* a policeman.
cope (*kōp*), *n.* a large semicircular ecclesiastical vestment, worn by bishops and priests over the surplice.
cope (*kōp*), *v. i.* to strive or contend (followed by *with*).
Copenhagen (*kō-pen-hā'gen*). In Danish, *Kjobenhavn*, the capital of Denmark. Is first mentioned in 1027. Owing to its position it became a great resort for merchants, and was called *Kaupmanna hofn* or *Kjobmannshavn*, names translated by Saxo Grammaticus in the twelfth century as *Portus Mercatorum*, the "haven of the merchants."
cop-ing (*kō'ping*), *n.* the top masonry of a wall.
co-pi-ous (*'pi-us*), *adj.* abundant; diffusive.
cop-per (*kop'ėr*), *n.* a red, ductile metal: *v. t.* to cover with copper.
cop-per-head (*-hed*), *n.* a venomous American serpent.
copse (*kops*), *n.* a thicket of brushwood.
cop-u-la (*'ū-lā*), *n.* [*pl.* copulas (*laz*) or copulæ (*-lē*)], a word which joins the subject and predicate in a sentence or proposition.
cop-u-la-tive (*'lā-tiv*), *adj.* uniting: *n.* a copulative conjunction.
copy (*kop'i*), *n.* [*pl.* copies (*'iz*)], an imitation; a transcript: *v. t.* to transcribe; reproduce.
Syn. COPY, transcribe, model, pattern, specimen. To *copy* respects the matter; to *transcribe* respects simply the act of writing. What is *copied* must be taken immediately from the original, with which it must exactly correspond; what is *transcribed* may be taken from the *copy*, but not necessarily in an entire state; a *copier* should be very exact; a *transcriber* should be a good writer; a *model* is that which may be used as a guide or rule; the *pattern* regards solely the outward form or color of anything that is made or manufactured; the *specimen* is any portion of a material which serves to show the quality of that of which it forms a part. [See *example.*]
★**co-quet** (*kō-ket'*), *v. i.* [*p. t.* and *p. p.* coquetted, *p. pr.* coquetting], to flirt; trifle.
co-quet (*kō-ket'*), *n.* a vain woman who seeks to gain men's attention and admiration.
Syn. COQUET, jilt. The *coquet* makes a traffic of her own charms by seeking a multitude of admirers; the *jilt* sports with the sacred passion of love, and barters it for the gratification of any selfish propensity.
Cora. From the Greek *kore*, "a girl," "damsel."
★**cor-al** (*kor'al*, not *kō'ral*), *n.* the hard calcareous skeleton of certain marine polyps: *adj.* pertaining to coral.
cor-al-line (*'al-in*), *adj.* consisting of, or like, coral; of a color like coral: *n.* an orange-red dye stuff.
cord (*kôrd*), *n.* a twisted string; a measure of wood: *v. t.* to fasten with cord.
Cordelia (*kôr-dē'li-ą* or *kôr-dēl'yą*). According to Rev. Edward Davies, from the Celtic, *Creirdyddlydd*, "jewel of the sea." Fr., *Cordelie.*
★**cor-dial** (*kôr'jal* or *kôrd'yal*), *adj.* hearty; sincere: *n.* an aromatic and sweetened spirit. [HEARTY.]
cor-dial-i-ty (*'i-ti*), *n.*sincere, sympathetic geniality; sincerity; heartiness.
cor-don (*kôr'don*), *n.* a ribbon worn as the badge of an order; a line of military posts.
cor-du-roy (*'dū-roi*), *n.* a stout ribbed or corded cotton.
core (*kôr*), *n.* the heart or innermost part of anything, especially of fruit: *v. t.* to remove the core from.
co-re-spond-ent (*kō-re-spond'ent*), *n.* a joint respondent in a divorce suit.
Co-rin-thi-an (*kō-rin'thi-an*), *adj.* of or pertaining to Corinth, noted for its luxury and licentiousness; luxurious; denoting the Corinthian order of architecture.
cork (*kôrk*), *n.* a light elastic oak bark, variously used; a stopper for a bottle: *adj.* made of cork.
corn (*kôrn*), *n.* grain, as wheat, barley, rye, etc.; plants that yield grain; breadstuff; a horny excrescence on the toe, or foot.
cor-ne-a (*kôr'nē-ą*), *n.* the horny circular transparent membrane which forms the anterior portion of the eyeball.
Cornelia (*kôr-nē'lĭ-ą* or *kôr-nēl'yą*). A female name formed from *Cornelius.*
Cornelius (*kôr-nē'li-us* or *kôr-nēl'yus*). Latin name, translated by some, "horn." Danish, *Cornelius;* Dutch, *Kornelis* or *Cornelis;* Fr., *Corneille;* It., *Cornelio;* Lat., *Cornelius;* Sp., *Cornelio.*
cor-ner (*kôr'nėr*), *n.* an angle; a mercantile ring to monopolize some product: *v. t.* to drive or force into some position of difficulty from which there is no escape; *corner the market*, to buy up a commodity so as to monopolize it.
★**cor-net** (*kôr'net*, not *kôr-net'*), a kind of trumpet.
cor-nice (*'nis*), *n.* the highest projection or border on a wall or column.
Corniche (*kor-nēsh'*), **The.** A celebrated coast-road along the Riviera of France and Italy from Nice to Genoa.
corn-starch (*kôrn'stärch*), *n.* starch made from meal of Indian corn, used for puddings, etc.
cor-nu-co-pi-a (*kôr-nū-kō'pi-ą*), *n.* [*pl.* cornucopiæ (*-ē*), or -as (*-ąz*)], the horn of plenty, represented in sculpture as overflowing with fruit, flowers, etc.
Cornwall. A southwestern county of England. The Romans, who traded here for tin called it *Cornubia*, which name it bore until the Saxons imposed the name of *Weales* upon the British who retreated into the fastness west of the Severn and the Dee. The latter portion of the name *Cornubia* was then dropped, and the word *Wales* substituted, forming the name *Corn-Wales*, of which the present *Cornwall* is a corruption.
★**co-rol-la** (*kō-rol'ą*), *n.* the inner envelope of a flower composed of two or more petals.
cor-ol-la-ry (*kor'ol-* or *kō-rol'ā-ri*), *n.* an additional deduction or inference drawn from a demonstrated proposition.
co-ro-na (*kō-rō'nā*), *n.* [*pl.* coronæ (*'nē*)], a crown; the flat projecting part of a cornice; the upper surface of a molar tooth; a halo surrounding heavenly bodies.
cor-o-na-tion (*kor-ō-nā'shun*), *n.* the act or ceremony of crowning a sovereign.
cor-o-ner (*kor'o-nėr*), *n.* an officer who inquires into cases of sudden or accidental death.
cor-o-net (*'ō-net*), *n.* an inferior crown; an ornamental headdress.
cor-po-ral (*kôr'pō-ral*), *adj.* relating to the body; opposed to the mind: *n.* a noncommissioned officer of the lowest grade. [PHYSICAL.]
cor-po-rate (*-rāt*), *adj.* united in a body or community by legal enactment.
cor-po-ra-tion (*-rā'shun*), *n.* a body politic having a common seal, and legally authorized to act as one individual; an organization of a number of manufacturing or mercantile companies.
cor-po-re-al (*-pō'rē-al*), *adj.* having a material body; physical. [PHYSICAL.]
★**corps** (*kōr*), *n. sing. and pl.* a body, as of troops, etc.
corpse (*kôrps*), *n.* a dead body. [BODY.]
cor-pu-lence (*kôr'pū-lens*), *n.* excessive fatness of body.
cor-pu-lent (*-lent*), *adj.* bulky; fat.
Cor-pus Chris-ti (*kôr'pus kris'ti*). [Latin, the body of Christ]. A Roman Catholic festival (the first Thursday after Trinity Sunday) in honor of the Eucharist.
cor-pus-cle (*kôr'pus-l*), *n.* a minute particle.
cor-ral (*kor-ral'*), *n.* a pen for live stock.
cor-rect (*kor-rekt'*), *v. t.* to set straight; rectify: *adj.* exact; accurate.
Syn. CORRECT, accurate. What is done by the exercise of the judgment is said to be *correct;* as a *correct* style, a *correct* writer; what is done by the effort of the individual is more properly *accurate;* as, *accurate* observations, an *accurate* survey. [See *amend.*]
Ant. FAULTY, imperfect, perverted, poor.
cor-re-late (*kor-ē-lāt'*), *v. i.* to be reciprocally related.
cor-re-la-tion (*-lā'shun*), *n.* reciprocal relation; the interdependence of functions or organs.
cor-re-spond (*kor-ē-spond'*), *v. i.* to be adequate to; answer.
Syn. CORRESPOND, answerable, suitable. Things that *correspond* must be alike in size, shape, color, and every minute particular; those that *answer* must be fitted for the same purpose; those that *suit* must have nothing disproportionate or discordant. In the moral application, actions are said not to *correspond* with professions; the success of an undertaking does not *answer* the expectation; particular measures do not *suit* the purpose of individuals. [See *conformable.*]
cor-re-spond-ence (*'ens*), *n.* communication by letters.
cor-re-spond-ent (*'ent*), *adj.* agreeing with; similar.
cor-ri-dor (*kor'i-dōr*), *n.* a gallery or open passage in a building.
cor-ri-gi-ble (*kor'i-ji-bl*), *adj.* capable of being amended.
cor-rob-o-rate (*kor-rob'ō-rāt*), *v. t.* confirm; strengthen. [CONFIRM.]

cor-rob-o-ra-tive (*kor-rob'ō-rā-tiv*), *adj.* verifying; confirmative.
cor-rode (*kor-ōd'*), *v. t.* to eat away gradually.
cor-ro-sion (*kor-ō'zhun*), *n.* the act of corroding.
cor-ru-gate (*'oo-gāt*), *v. t.* to draw, or shape, into wrinkles or folds.
cor-rupt (*kor-rupt'*), *v. t.* to turn from a sound to an unsound and putrescent state. [CONTAMINATE.]
cor-rupt-i-ble (*-rupt'i-bl*), *adj.* capable of being corrupted.
cor-rup-tion (*-rup'shun*), *n.* the act of corrupting. [DEPRAVITY.]
cor-sage (*kôr'sāj*), *n.* a bodice.
cor-set (*kôr'set*), *n.* a close-fitting bodice.
Corsica (*kôr'si-kà*). A Mediterranean island. A Phenician word denoting "the wooded island."
cors-let (*kôrs'let*), *n.* light body armor.
Corso (*kôr'sō*). One of the principal streets of Rome.
★**cor-tège** (*kôr-tāzh'*), *n.* a train of attendants; procession.
cor-tes (*kôr'tes*), *n. pl.* the national and legislative assembly of Spain and Portugal.
cor-us-cate (*kor'us-kāt* or *kō-rus'*), *v. i.* to sparkle; flash.
cor-us-ca-tion (*kor-us-kā'shun*), *n.* a sudden flash or play of light.
Coshocton (*kō-shok'tun*). County and village in Ohio, named from the Indian town of *Goshocking*. The word means, according to some authorities, "habitation of owls."
★**cos-met-ic** (*koz-met'ik*, not *kos-met'ik*), *adj.* imparting or improving beauty: *n.* a wash or preparation for such a purpose.
cos-mic (*koz'mik*), *adj.* pertaining to the universe and the laws which govern it.
Cosmo (*koz'mō*). A name originating in Italy, where it became famous from being borne by the family of the Medici (Cosmo di Medici).
cos-mog-ra-phy (*-mog'rà-fi*), *n.* the science which includes geography, astronomy, and geology.
cos-mo-pol-i-tan (*-mō-pol'i-tan*), *n.* a citizen of the world.
cos-mos (*koz'mos*), *n.* the world or universe as an orderly system.
cost (*kôst*), *v. t.* to be bought for, or had at, a price: *n.* charge.
Syn. COST, expense, price, charge. The *cost* is what is to be laid out for anything; the *expense* is that which a person actually lays out; the *price* is that which a thing may fetch or which it may be worth; the *charge* is that which a person or thing is charged with; we do a thing at our own *cost*, but at another's *expense*. [See *expense*.]
Ant. INCOME, receipts.
cos-tal (*kos'tal*), *adj.* pertaining to a rib.
Costa Rica (*kos'tà rē'kà*). [Sp., literally, for "rich coast."] A republic of Central America.
cos-tive (*'tiv*), *adj.* constipated.
cos-tume (*kos'tūm*), *n.* dress in general; style of dress.
co-sy, another form of *cozy*.
cot (*kot*), *n.* a cottage; small bed.
★**cote** (*kōt*, not *kot*), *n.* a hut; a sheepfold.
co-tem-po-ra-ry, cotemporaneous, etc., same as *contemporary*, etc.
co-te-rie (*kō-te-rē'*), *n.* a clique. [CLASS.]
★**co-til-lion** (*-til'yun*), *n.* a brisk, lively dance for eight or more persons.
Cotswold (*kots'wōld*) **hills.** A range of hills in Gloucestershire, England. So named from the Anglo-Saxon *cote* and *wold*, as meaning a place where there are no growing woods.
cot-tage (*kot'āj*), *n.* a small dwelling.
cot-ton (*kot'n*), *n.* a white downy substance enveloping the seeds of the cotton plant.
cot-ton gin (*jin*), a machine for separating the seeds from cotton fiber.
couch (*kouch*), *v. t.* to place on a bed or other resting-place: *n.* a bed.
cough (*kôf*), *v. i.* to expel air from the lungs by a violent effort.
coul-ter (*kōl'tĕr*), *n.* a plowshare.
coun-cil (*koun'sil*), *n.* an assembly of persons met in consultation, or to give advice; a convocation.
Council Bluffs. City in Pottawattamie county, Iowa. [council.
coun-cil-man (*-man*), *n.* a member of a common
coun-sel (*'sel*), *n.* interchange of opinion; advice.
coun-sel-or (*-ĕr*), *n.* one who gives advice, especially legal advice.
count (*kount*), *n.* a title of nobility.
count (*kount*), *v. t.* to reckon or sum up; *v. i.* to tell off: *n.* the act of numbering. [CALCULATE.]
coun-te-nance (*koun'te-nans*), *n.* the whole form of the face.
Syn. COUNTENANCE, sanction, support. Persons are *countenanced;* things are *sanctioned;* persons or things are *supported;* persons are *countenanced* in their proceedings by the apparent approbation of others; measures are *sanctioned* by those who have due authority; measures or persons are *supported* by every means which may forward the object. [ABET.]
coun-ter (*'tĕr*), *n.* one who, or that which, counts; a shop table.
coun-ter (*'tĕr*), *adv.* contrary; adverse.
coun-ter-act (*-akt'*), *v. t.* to act in opposition to so as to defeat.
coun-ter-feit (*koun'tĕr-fit*), *v. t.* to make a copy of without authority for fraudulent purposes.
coun-ter-mand (*koun-tĕr-mand'*), *v. t.* to revoke or annul. [ABOLISH.]
coun-ter-pane (*koun'ter-pān*), *n.* a bed coverlet.
coun-ter part (*-pärt*), *n.* a duplicate.
coun-ter-sign (*koun'tĕr-sin*), *n.* an additional signature to a document to attest it.
count-ess (*kount'es*), *n.* the wife of an earl or count.
count-ing-house (*'ing-hous*), *n.* the room where accounts or mercantile transactions are carried on.
coun-try (*kun'tri*), *n.* [*pl.* countries (*'triz*)], a tract of land; region; rural parts. [LAND.]
coun-ty (*koun'ti*), *n.* [*pl.* counties (*'tiz*)], a definite district of a country separated from the rest for political or judicial administrative purposes.
cou-ple (*kup'l*), *n.* two of the same kind connected together; a pair; man and wife: *v. t.* to link or join together.
coup-let (*kup'let*), *n.* two successive lines of verse which rhyme together.
★**cou-pon** (*kōō'pon*), *n.* a certificate attached to transferable bonds; a section of a ticket.
cour-age (*kur'āj*), *n.* fortitude; valor.
Syn. COURAGE, fortitude, resolution. *Courage* respects action, *fortitude* respects passion; a man has *courage* to meet danger, and *fortitude* to endure pain; *resolution* simply marks the will not to recede; we require *resolution* not to yield to the first difficulties that offer. [See *bravery*.]
cour-a-geous (*-ā'jus*), *adj.* brave; bold.
cou-ri-er (*kōō'ri-ĕr*), *n.* a special messenger.
course (*kôrs*), *n.* a race; a path or track; career; direction or line of motion; regular sequence; conduct.
court (*kôrt*), *n.* a paved space surrounded by houses; a royal palace; the retinue of a sovereign: *v. t.* to pay court to; woo; flatter; solicit. [ADDRESS.]
★**cour-te-ous** (*kûr'tē-us*), *adj.* polite; obliging.
cour-te-san (*'tē-zan*), *n.* a prostitute.
cour-te-sy (*'tē-si*), *n.* [*pl.* courtesies (*-siz*)], politeness combined with kindness.
courte-sy (*kûrt'si*), *n.* [*pl.* courtesies (*-siz*)], a salutation made by bending the knees.
court-ier (*kôrt'yĕr*), *n.* one who frequents or attends court.
court-ly (*'li*), *adj.* refined; elegant.
court-mar-tial (*-mär'shal*), *n.* [*pl.* courts-martial], a court of justice composed of naval or military officers.
★**cous-in** (*kuz'n*, not *kuz'in*), *n.* the son or daughter of an uncle or aunt.
cove (*.ōv*), *n.* a small sheltered inlet or creek; a fellow.
cov-e-nant (*kuv'e-nant*), *n.* a written agreement; a free promise of God's blessing.
Covent Garden theater. A theater in Bow street, Covent Garden, London, built by John Rich, the famous harlequin of Lincoln's Inn theater, in 1731.
Coventry (*kuv'en-tri*). The name of this English city is not derived from "convent," as some suppose, but from *Cune*, or *Coven*, the name of the stream on which it is built.
cov-er (*kuv'ĕr*), *v. t.* to overspread, as the top of anything, with something else
Syn. COVER, shelter, screen. *Cover* includes the idea of concealing; *shelter* comprehends that of protecting from some immediate or impending evil; *screen* includes that of warding off some trouble.
Ant. REVEAL.
cov-ert (*kuv'ĕrt*), *adj.* concealed; covered; disguised.
cov-et (*kuv'et*), *v. t.* to desire earnestly; lust after. [DESIRE.]
★**cov-et-ous** (*-us*), *adj.* inordinately desirous.
cov-ey (*kuv'i*), *n.* a hatch or brood of birds.
cow (*kou*), *n.* [*pl.* cows (*kouz*)], the mature female of the genus bos, or ox: *v. t.* to depress with fear.
cow-ard (*'ĕrd*), *n.* one without courage; a dastard; poltroon.
★**cow-ard-ice** (*-is*, not *īs*), *n.* dishonorable fear.
cow-er (*kou'ĕr*), *v. i.* to crouch or sink down through fear; tremble.
cow-hide (*'hid*), *n.* the tanned and dressed skins of cows: *adj.* made of cowhide.
cowl (*koul*), *n.* a monk's hood; a revolving cover for a chimney pot.
cow-lick (*'lik*), *n.* a tuft of hair turned up or awry on the forehead.
cox-comb (*koks'kōm*), *n.* a fop.
coy (*koi*), *adj.* bashful.
coy-o-te (*ki'ō-tē* or *kī'ōt*), *n.* the prairie wolf.
coz-en (*kuz'n*), *v. t.* to cheat.
co-zy (*kō'zi*), *adj.* warm and comfortable; snug.
crab (*krab*), *n.* a short-tailed, stalk-eyed, ten-footed crustacean.
crack (*krak*), *n.* a chink or fissure; a narrow fracture: *v. t.* and *v. i.* to burst, break, or sever: *adj.* of superior excellence. [BREAK.]
crack-er (*krak'ĕr*), *n.* a hard biscuit; a firework.
crac-kle (*krak'l*), *v. i.* to make a slight, sharp explosive noise: *n.* a noise of frequent and slight cracks.
Cracow (*krā'kō*). The town of *Krak*, duke of Poland.
cra-dle (*krā'dl*), *n.* a baby's crib or little bed; infancy: *v. t.* to rock or place in a cradle.
craft (*kräft*), *n.* manual skill; a trade; cunning.
crafts-man (*krafts'man*), *n.* [*pl.* craftsmen (*'men*)], a skilled artisan.
crag (*krag*), *n.* a steep, rugged rock.
cram (*kram*), *v. t.* [*p. t.* and *p. p.* crammed, *p. pr.* cramming], to stuff; tell lies to.
cramp (*kramp*), *n.* a rectangular piece of iron with a tightening screw at one end.
cran-ber-ry (*kran'ber-ri*), *n.* [*pl.* cranberries (*-riz*)], the marsh whortleberry.
crane (*krān*), *n.* a large wading bird with very long legs and neck; a machine for raising heavy weights.
cra-ni-al (*krā'ni-al*), *adj.* pertaining to the skull.
cra-ni-um (*'ni-um*), *n.* [*pl.* crania], the skull.
crank (*krangk*), *n.* a device for causing the rotation of an axis; a crotchety or impracticable person.
crank-y (*'i*), *adj.* full of crotchets or cranks; liable to be upset.
cran-ny (*'ni*), *n.* [*pl.* crannies (*'niz*)], a chink.
crape (*krāp*), *n.* a thin black gauze made of raw silk and gummed.
crash (*krash*), *v. t.* to clash together with violence: *v. i.* to make a loud clattering noise.
crass (*kras*), *adj.* gross; dense; obtuse.
crate (*krāt*), *n.* a wicker hamper.
cra-ter (*krā'tĕr*), *n.* the cup-shaped cavity of a volcano.
cra-vat (*krà-vat'*), *n.* a neckcloth.
crave (*krāv*), *v. t.* to ask for with humility. [BEG.]
cra-ven (*krā'vn*), *adj.* cowardly; base: *n.* a coward; recreant.
craw-fish (*kraw'fish*) or **crayfish** (*krā'*), *n.* the common name of a fresh-water lobster-like crustacean.
crawl (*krawl*), *v. i.* move slowly and with difficulty.
cray-on (*krā'un*), *n.* a kind of chalk pencil.
craze (*krāz*), *v. i.* to become demented: *n.* a passing fashion or infatuation.
creak (*krēk*), *v. i.* to make a sharp, harsh, grating sound.
cream (*krēm*), *n.* the rich, oily part of milk.
cream-er-y (*'ĕr-i*), *n.* [*pl.* creameries (*-iz*)], a place where butter and cheese are made.
cream of tar-tar (*ov tär'tĕr*), *n.* purified tartar or argol.
crease (*krēs*), *n.* a mark made by folding or doubling anything.
cre-ate (*krē-āt'*), *v. t.* to cause to come into existence. [CAUSE, MAKE.]
cre-a-tion (*-ā'shun*), *n.* the act of creating.
cre-a-tor (*'ĕr*), *n.* one who creates.
Creator, *n.* the Supreme Being.
crea-ture (*krē'tūr*), *n.* anything created, especially a living being.
★**cre-dence** (*krē'dens*, not *kred'ens*), *n.* belief; trust.
cre-den-tial (*-den'shal*), *adj.* giving a claim or title to credit: *n. pl.* letters or certificates given to a person to show he has a right.
cred-i-ble (*cred'i-bl*), *adj.* worthy of credit; probable.
cred-it (*kred'it*), *v. t.* to believe; trust; enter on the credit side of an account: *n.* belief; honor.
Syn. CREDIT, favor, influence. *Credit* rises out of esteem; *favor* out of good-will or affection; *influence* out of either credit or favor or external circumstances; *influence* is employed in directing others; weak people easily give their *credit*, or bestow their *favor*, by which an *influence* is gained over them to bend them to the will of others.
cre-du-li-ty (*crē-dū'li-ti*), *n.* ready belief.
★**cred-u-lous** (*kred'ū-lus*, not *krej'ōō-lus*), *adj.* easily imposed upon.
creed (*krēd*), *n.* a brief statement of belief. [FAITH.]
★**creek** (*krēk*, not *krik*), *n.* a small bay; cove.
creep (*krēp*), *v. i.* [*p. t.* and *p. p.* crept, *p. pr.* creeping], to move slowly along the ground.
creep-er (*'ĕr*), *n.* one who, or that which, creeps.
cre-mate (*krē'māt*), *v. t.* to reduce to ashes by heat, especially dead bodies.
cre-ma-tion (*-mā'shun*), *n.* the act of cremating.
★**cre-ma-to-ry** (*'mā-tō-ri*), *n.* [*pl.* crematories (*-riz*)], a place for burning the dead.
cre-ole (*krē'ōl*), *n.* a native of Spanish America or the West Indies: *adj.* pertaining to a creole.
cre-o-sote (*'ō-sōt*), *n.* a heavy oily liquid with a smoky smell.
cres-cent (*kres'ent*), *adj.* growing: *n.* an increasing or new moon; a figure like a new moon.
cress (*kres*), *n.* a name for various cruciferous plants.
crest (*krest*), *n.* a plume of feathers on the head of a bird, helmet, etc.; the ridge of a wave; summit of a hill.
crest-fal-len (*'fawl-n*), *adj.* dejected.
cre-ta-ceous (*krē-tā'shus*), *adj.* composed of, or like, chalk.
cre-vasse (*krā-vas'*), *n.* a deep fissure in a glacier ice.
crev-ice (*krev'is*), *n.* a crack; fissure.
crew (*krōō*), *n.* a ship or boat's company.
crib (*krib*), *n.* a rack or manger; a stall for horses or cattle; a child's bed.
crib-bage (*'āj*), *n.* a card game.
crick (*krik*), *n.* a painful stiffness of the muscles of the neck.
crick-et (*'et*), *n.* the well-known game; a chirping insect.
crime (*krīm*), *n.* a violation of the law.
Syn. CRIME, vice, sin. A *crime* is a social offense; a *vice* is a personal offense; every action which does injury to others, either individually or collectively, is a *crime;* that which does injury to ourselves is a *vice*. *Crime* consists in a violation of human laws; *vice* in a violation of the moral law; *sin* in a violation of the divine law. [See *abomination*.]
Crimea (*krī-mē'à*). A peninsula in southern Russia named from a small town established in the peninsula by the Kimri, or Cymri.









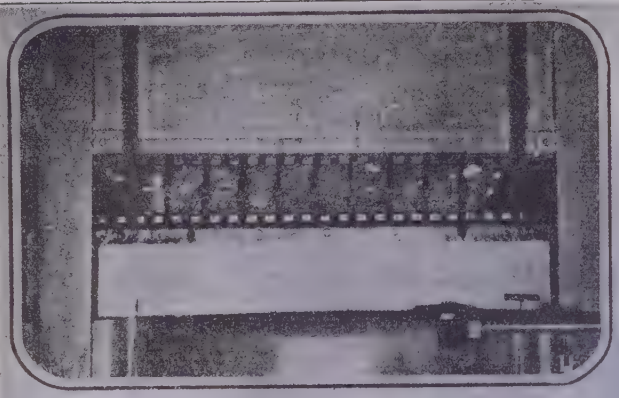








1—Picking cotton near Atlanta, Georgia. **2**—Seeds with lint attached, illustrating types of long and short staple cotton. 1, Griffin; 2, Southern Hope; 3, Truitt; 4, Hybrid of Sea Island Upland. **3**—Cotton-picking machine, showing the arms which carry the rotary picker points for plucking the cotton bolls. **4**—Rear view of one of the slats. **5**—Rear view of the cotton-picking machine, showing how the seed is plucked by the picker points and delivered to the hopper. **6**—Cotton compress. **7**—A cotton gin in Alabama. **8**—The procession of progress travels the route of good roads. Every bale of cotton which a good road permits the farmer to add to his wagonload increases his profit and decreases the cost of the ultimate consumer. Such splendid highways as this, in Mecklenburg County, North Carolina, enhance the material and social wealth of the community through which they are built.



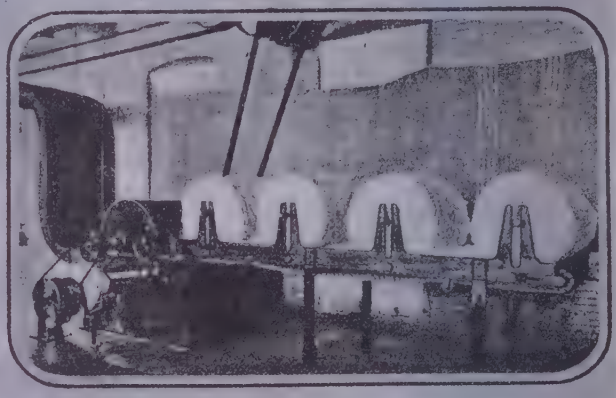
Old Way of Pressing the Bale for the Market
Final compression into one-fifth original size



New Way of Pressing the Bale for the Market
1. Automatic method of compressing round bale



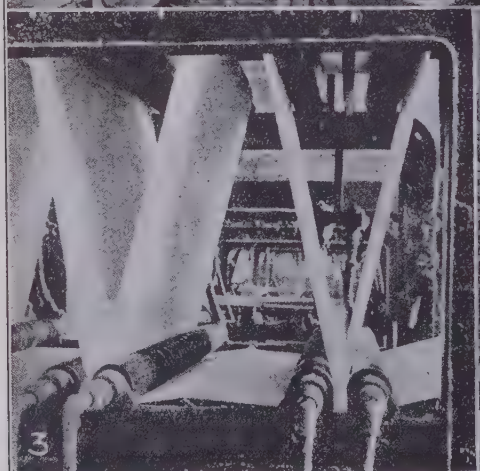
New Way of Pressing the Bale for the Market
2. The round bale completed



Method of Unrolling round Bale in the Cotton-mill











1—A primitive cotton-factory in Alabama. 2—A battery of forty-eight printing-machine at work: Lawrence, Mass. 3—Singeing cloth preparatory to printing. 4—A Warping-machine in an up-to-date textile factory. 5—Dyeing cloth in a Lawrence mill.

crim-i-nal (*krim'i-nal*), *adj.* pertaining to crime.
Syn. CRIMINAL, culprit, malefactor, felon, convict. When we wish to speak in general of those whose offenses have exposed them to punishment, we denominate them *criminals;* when we consider them as already brought before a tribunal, we call them *culprits;* when we consider them as the promoters of evil rather than of good, we entitle them *malefactors;* when we consider them as offending by the grosser violations of the law, they are termed *felons;* when we consider them as already under the sentence of the law, we denominate them *convicts.*
crim-i-nal-i-ty (*-nal'i-ti*), *n.* guilt.
crim-i-nate (*'i-nāt*), *v. t.* to accuse, or declare, guilty of crime.
crim-i-nol-o-gy (*-i-nol'ō-ji*), *n.* the scientific investigation of crimes.
crimp (*krimp*), *v. t.* to bend or twist in regular undulations: *n.* formerly one who entrapped men for the English navy or army.
crim-son (*krim'zn*), *n.* a deep red color inclining to purple.
cringe (*krinj*), *v. i.* to bend or crouch from fear.
crin-kle (*kring'kl*), *v. t.* to wrinkle; corrugate: *n.* a wrinkle.
crin-o-line (*krin'ō-lin*), *n.* a hoopskirt.
crip-ple (*krip'l*), *n.* one who is lame.
Cripplegate (*krip'l-gāt*) or **Crepelgate.** An old London gate, probably built by King Alfred in 886 A. D.
cri-sis (*krī'sis*), *n.* [*pl.* crises (*-sēz*)], a turning point; a critical turn in a disease; emergency.
Cris Kingle (*kris' king'l*). Also variously spelled *Kriss Kingle,* and *Kriss Kringle,* has been corrupted from the German word, *Christ-Kindel,* meaning the "little Christ-child."
crisp (*krisp*), *adj.* wavy; curled; brittle; terse.
criss-cross (*kris'krôs*), *n.* an intersection; a child's game.
cri-te-ri-on (*krī-tē'ri-un*), *n.* [*pl.* criteria (*-ā*)], a standard, law, or rule.
Syn. CRITERION, standard. The *criterion* is employed only in matters of judgment; the *standard* is used in the ordinary concerns of life. The former serves for determining the characters and qualities of things; the latter for defining quantity and measure.
crit-ic (*krit'ik*), *n.* one skilled in criticism.
crit-ic-al (*'i-kal*), *adj.* nicely exact.
crit-i-cise (*'i-sīz*), *v. t.* to examine or judge as a critic.
crit-i-cism (*'i-sizm*), *n.* the art of judging and defining the merits of a literary or artistic work.
cri-tique (*kri-tēk'*), *n.* a careful analysis.
croak (*krōk*), *v. i.* to make a sound like a raven: *n.* the low, hoarse sound of the raven or frog.
cro-chet (*krō-shā'*), *n.* a kind of knitting: *v. t.* to work in crochet.
crock (*krok*), *n.* soot on a kettle, etc.: *v. t.* to blacken with soot; smudge..
crock-er-y (*'ėr-i*), *n.* earthenware.
croc-o-dile (*'ō-dil*), *n.* a large lizard-like amphibian reptile.
cro-cus (*krō'kus*), *n.* a genus of iridaceous plants.
crone (*krōn*), *n.* an old woman.
cro-ny (*krō'ni*), *n.* [*pl.* cronies (*'niz*)], a familiar friend.
crook (*krook*), *n.* a bend; a shepherd's hooked staff.
croon (*krōōn*), *v. i.* to utter a hollow continued moan.
crop (*krop*), *n.* the produce of the ground; a bird's craw: *v. t.* [*p. t.* and *p. p.* cropped, cropt, *p. pr.* cropping], to cut off the tops or ends of anything; reap.
cro-quet (*krō-kā'*), *n.* a lawn game.
cro-quette (*-ket'*), *n.* ball of mincemeat, fish, or fowl.
cross (*krôs*), *n.* a gibbet of wood formed of an upright and a piece placed across it: now the emblem of the Christian faith; anything resembling a cross *adj.* not parallel; fretful; perverse; untractable. [CAPTIOUS.]
cross-bill (*'bil*), *n.* a bill brought by a defendant against a plaintiff, praying for relief.
cross-bow (*'bō*), *n.* a shooting weapon.
cross-breed (*'brēd*), *n.* an animal produced by a male and female of different varieties.
cross-ex-am-i-na-tion (*-eg-zam-i-nā'shun*), *n.* the questioning of a witness by his own, or the opposing, counsel.
cross-grained (*'grānd*), *adj.* with an irregular grain or fiber.
cross-stitch (*'stich*), *n.* a stitch formed of two stitches of the same length, intersecting in the middle.
cross-tie (*'tī*), *n.* a railroad sleeper.
cross-trees (*'trēz*), *n. pl.* short pieces of timber at the upper ends of the lower and top masts.
cross-wise (*'wīz*), *adv.* across; cross-shaped.
crotch (*kroch*), *n.* a hook or fork.
crotch-et (*'et*), *n.* a musical note; a whim or fancy.
★crouch (*krouch*, not *krōōch*), *v. i.* to stoop low; cringe.
croup (*krōōp*), *n.* the rump or buttocks of certain animals; inflammation of the trachea and larynx.
crow (*krō*), *v. i.* [*p. t.* and *p. p.* crowed, crew, *p. pr.* crowing], to make a shrill sound like a cock: *n.* a general name for birds of the genus Corvus.
crow-bar (*'bär*), *n.* an iron lever.
crowd (*kroud*), *n.* a number of persons or things collected closely together: *v. i.* to press in numbers.
crown (*kroun*), *n.* a royal headdress worn as the insignia of sovereignty: *v. t.* to invest with a crown.
Crown Point, N. Y. Alleged to be so named because scalping ("crown") parties were sent out from this place by the French and Indians.
crow's-foot (*krōz'-foot*), *n.* the ranunculus: *pl.* wrinkles under the eyes.
crow's-nest (*krōz'-nest*), *n.* a lookout, on the mainmast of a vessel.
cru-cial (*krōō'shal*), *adj.* cruciform; intersecting; severe; searching.
cru-ci-ble (*'si-bl*), *n.* a melting-pot.
cru-ci-fix (*'si-fiks*), *n.* [*pl.* crucifixes (*-ez*)], a cross with the sculptured figure of Christ.
cru-ci-fix-ion (*-si-fik'shun*), *n.* the act of crucifying.
cru-ci-fy (*'si-fī*), *v. t.* [*p. t.* and *p. p.* crucified, *p. pr.* crucifying], to put to death by nailing the hands and feet to a cross.
crude (*krōōd*), *adj.* in a natural state.
crud-i-ty (*'i-ti*), *n.* [*pl.* crudities (*-tiz*)], the state or condition of being crude.
cru-el (*krōō'el*), *adj.* disposed to give pain to others; merciless.
Syn. CRUEL, inhuman, barbarous, brutal, savage. A person is *cruel* who neglects the creature he should protect and take care of; he is *inhuman* if he withhold from him the common marks of tenderness or kindness; he is *barbarous* if he find amusement in inflicting pain; he is *brutal* or *savage* according to the circumstances of aggravation which accompany the act of torturing.
cru-el-ty (*'el-ti*), *n.* [*pl.* cruelties (*-tiz*)], inhumanity.
cru-et (*'et*), *n.* a small glass vial.
cruise (*krōōz*), *v. i.* to sail to and fro.
cruis-er (*'ėr*), *n.* a person, or ship, that cruises.
crumb (*krum*), *n.* a fragment of bread.
crum-ble (*'bl*), *v. t.* to break into crumbs.
crum-ple (*'pl*), *v. t.* to press into wrinkles; rumple.
crunch (*krunch*), *v. t.* to crush with the teeth: *v. i.* to chew audibly.
crup-per (*krup'ėr*), *n.* the buttocks of a horse; the looped leather band passing round a horse's tail.
cru-ral (*krōō'ral*), *adj.* pertaining to the leg or thigh.
cru-sade (*krōō-sād'*), *n.* a mediæval military expedition under the banner of the cross by any one of the Christian powers to recover the Holy Land.
cruse (*krōōs*), *n.* an earthen pot or dish.
crush (*krush*), *v. t.* to press between two opposite bodies; break by pressure.
crust (*krust*), *n.* a hard external coating or rind.
crus-ta-ceous (*krus-tā'shus*), *adj.* shelly.
crus-ty (*krus'ti*), *adj.* like a crust; snappish.
crutch (*kruch*), *n.* a support for cripples.
cry (*krī*), *v. i.* [*p. t.* and *p. p.* cried, *p. pr.* crying], to call aloud; proclaim: *n.* loud or passionate utterance; a party catchword or phrase.
Syn. CRY, weep. *Crying* arises from an impatience in suffering corporeal pains; *weeping* is occasioned by mental grief. [See *call.*]
cry-ing (*'ing*), *p. adj.* specially demanding notice.
crypt (*kript*), *n.* a subterranean cell or vault.
cryp-tic (*krip'tik*), *adj.* hidden; secret.
cryp-to-gram (*krip'tō-gram*), *n.* a system of writing in cipher.
cryp-tog-ra-phy (*-tog'ra-fi*), *n.* the art of writing in cipher.
crys-tal (*kris'tal*), *n.* an inorganic body having a definite geometrical form.
crys-tal-line (*'tal-lin* or *-lin*), *adj.* pertaining to, or having the form of, a crystal.
crys-tal-li-za-tion (*-li-zā'shun*), *n.* the act of crystallizing.
crys-tal-lize (*'tal-īz*), *v. t.* to cause to form crystals or a crystalline structure.
cub (*kub*), *n.* the young of certain animals, as the fox.
Cuba (*kū'bą*, Spanish *kōō'bą*). The largest island of the West Indies, discovered by Columbus in 1492, on his first voyage.
cub-by-hole (*kub'i-hōl*), *n.* a snug place.
cube (*kūb*), *n.* a regular solid body with six equal square sides or faces.
cu-beb (*kū'beb*), *n.* the small spicy berry of a species of pepper.
cu-bic (*'bik*), *adj.* having the form or properties of a cube.
cu-bit (*'bit*), *n.* an ancient measure of about 18 inches.
cuck-old (*kuk'ōld*), *n.* the husband of an adulteress.
cuck-oo (*kook'ōō*), *n.* a passerine bird with a dark plumage and curved bill.
cu-cum-ber (*kū'kum-bėr*), *n.* a creeping plant.
cud (*kud*), *n.* food brought from the first stomach of a ruminating animal back into the mouth.
cud-dle (*kud'l*), *v. t.* to embrace closely.
cudg-el (*kuj'el*), *n.* a short thick stick.
cue (*kū*), *n.* the last word of an actor's speech; the tapering rod used in billiards.
cuff (*kuf*), *n.* a blow; the ornamental fold of the sleeve of a garment at the wrist.
★cui-rass (*kwē-rās'*), *n.* a breastplate.
★cui-sine (*kwē-zēn'*), *n.* the kitchen of a hotel.
★cu-li-na-ry (*kū'li-nā-ri*, not *kul'in-ā-ri*), *adj.* pertaining to the kitchen.
cull (*kul*), *v. t.* to pick out.
cul-mi-nate (*'mi-nāt*), *v. i.* to reach the highest point.
cul-mi-na-tion (*-mi-nā'shun*), *n.* the attainment of the highest point.
cul-pa-bil-i-ty (*-pą-bil'i-ti*), *n.* liability to blame.
cul-pa-ble (*'pą-bl*), *adj.* deserving censure; criminal.
cul-prit (*'prit*), *n.* one arraigned before a judge. [CRIMINAL.]
cult (*kult*), *n.* a particular ritual or system of worship.
cul-ti-vate (*kul'ti-vāt*), *v. t.* to till; improve by care, labor, or study.
cul-ti-va-tion (*-vā'shun*), *n.* the act of cultivating.
Syn. CULTIVATION, culture, civilization, refinement. *Cultivation* is with more propriety applied to the thing that grows; *culture* to that in which it grows. The *cultivation* of flowers will not repay the labor unless the soil be prepared by proper *culture. Civilization* is the first stage of *cultivation; refinement* is the last; we *civilize* savages by divesting them of their rudeness; we *refine* them by the introduction of the liberal arts.
cul-tur-al (*'tūr-al*), *adj.* pertaining to culture.
cul-ture (*'tūr*), *n.* tillage; the training or refining of the moral or intellectual faculties. [CULTIVATION.]
cul-vert (*'vėrt*), *n.* a drain or waterway of masonry or brickwork.
cum-ber (*kum'bėr*), *v. t.* to hinder; embarrass.
Cumberland mountains and **river.** In Tennessee. Name applied by Dr. Thomas Walker, an English explorer (1748), in honor of the duke of Cumberland, at that time prime minister of England.
cum-brous (*'bru s*). *adj.* troublesome; vexatious.
cu-mu-la-tive (*kū'mū-lā-tiv*), *adj.* augmenting or giving force.
cu-ne-i-form (*kū-nē'i-fôrm*), *adj.* having the form of a wedge.
cun-ning (*kun'ing*), *adj.* crafty; sly; designing; subtle.
cup (*kup*), *n.* a small drinking vessel.
★cup-board (*kub'bėrd*), *n.* a closet fitted with shelves.
cu-pid-i-ty (*kū-pid'i-ti*), *n.* covetousness.
★cu-po-la (*'pō-lą*, not *kū'pą-lō*), *n.* [*pl.* cupolas (*-laz*)], a spherical cup-shaped roof.
cu-pre-ous (*'prē-us*), *adj.* coppery.
cur (*kėr*), *n.* a mongrel dog.
cur-a-ble (*kūr'ą-bl*), *adj.* remediable.
cu-rate (*kū'rāt*), *n.* a clergyman who assists a vicar.
cur-a-tive (*kūr'ą-tiv*), *adj.* pertaining to the cure of diseases.
★cu-ra-tor (*-rā'tėr*), *n.* the superintendent of a museum.
curb (*kėrb*), *v. t.* restrain; keep in subjection: *n.* that which checks, restrains.
curd (*kûrd*), *n.* the coagulated part of milk.
cur-dle (*kûr'dl*), *v. t.* to thicken into curd.
cure (*kūr*), *n.* restoration to health; the act, or art, of healing: *v. t.* to heal; preserve by salting.
Syn. CURE, heal, remedy. To *cure* is employed for what is out of order; to *heal* for that which is broken; diseases are *cured,* wounds are *healed.* To *remedy,* in the sense of applying remedies, has a moral application; an omission, a deficiency, or a mischief, requires to be *remedied.*
Ant. DIE, grow worse, relapse.
cur-few (*kûr'fū*), *n.* a bell rung at 8 p. m. as an intimation that fires were to be extinguished.
cu-ri-ous (*kū'ri-us*), *adj.* desirous to see or know something new or strange; inquisitive.
Syn. CURIOUS, inquisitive, prying. *Curiosity* is directed to all objects that can gratify the inclination, taste, or understanding; *inquisitiveness* to such things only as satisfy the understanding; a *prying* temper endeavors to get acquainted with the secrets of others. [See *rare.*]
Ant. HEEDLESS, uninterested.
curl (*kûrl*), *n.* a ringlet of hair: *v. t.* to twist into ringlets; curve.
curl-ing (*kûrl'ing*), *n.* a popular Scottish game played on the ice.
cur-mudg-eon (*kur-muj'un*), *n.* a grasping, churlish fellow.
cur-rant (*'ant*), *n.* a small variety of dried grape.
cur-ren-cy (*'en-si*), *n.* the circulating monetary medium of a nation used by authority.
cur-rent (*'ent*), *adj.* widely circulated: *n.* a flow or passing: said of fluids. [STREAM.]
cur-ric-u-lum (*-ik'ū-lum*), *n.* [*pl.* curriculums (*-lumz*)], a prescribed course of study.
Currituck sound, N. C. Named from a tribe of Indians, who lived on its shores.
cur-ry (*kur'i*), *v. t.* [*p. t.* and *p. p.* curried, *p. pr.* currying], to dress after tanning.
curse (*kûrs*), *n.* an imprecation of evil; a profane oath. [ABOMINATION.]
cur-so-ry (*kûr'sō-ri*), *adj.* hasty; superficial.
Syn. CURSORY, hasty, slight, desultory. An author will take a *cursory* view of those points which are not necessarily connected with his subject; one who takes a *hasty* view of a subject will mislead by his errors; he who takes a *slight* view will disappoint by the shallowness of his information. Between *cursory* and *desultory* there is the same difference as between running and leaping; we run in a line, but we leap from one part to another; so remarks that are *cursory* have more or less connection, but remarks that are *desultory* are without coherence.
Ant. CAREFUL, detailed, thorough, orderly, methodical.
curt (*kûrt*), *adj.* abrupt.
cur-tail (*kûr-tāl'*), *v. t.* to cut short.
cur-tain (*'tin*), *n.* a textile hanging screen which can be drawn up or set aside.
curt-sy (*kûrt'si*), *n.* [*pl.* curtsies (*'siz*)], a salutation made by bending the knees.
cur-va-ture (*kûr'vą-tūr*), *n.* a bending.
curve (*kûrv*), *n.* a bending without angles.

cur-vet (*kûr'* or *kûr-vet'*), *n.* a particular leap of a horse.
cur-vi-lin-e-al (*-vi-lin'ē-al*), or **curvilinear** (*-ar*), *adj.* consisting of, or bounded by, curved lines.
cush-ion (*koosh'un*); *n.* a pillow or soft pad.
cusp (*kusp*), *n.* the horn of a crescent; a sharp, rigid point.
cus-pi-dor (*kus'pi-dōr*), *n.* a spittoon.
cus-tard (*t'ĕrd*), *n.* a composition of eggs, milk, etc.
cus-to-di-an (*-tō'dĭ-an*), *n.* one who has the care of anything.
cus-to-dy (*t'tō-dĭ*), *n.* guardianship; imprisonment; security. [KEEPING.]
cus-tom (*t'tum*), *n.* frequent or habitual repetition of the same act; duties on imported or exported goods.
Syn. CUSTOM, habit. *Custom* is a frequent repetition of the same act; *habit* the effect of such repetition. *Custom* supposes an act of the will; *habit* implies an involuntary movement; a custom is followed; a *habit* is acquired.
Syn. CUSTOM, fashion, manner, practice. *Custom* is authoritative; it stands in the place of law, and regulates the conduct of men in the most important concerns of life; *fashion* is arbitrary and capricious; it decides in matters of trifling import; *manners* are rational; they are the expressions of moral feelings; *practice* signifies actual doing or the thing done. [See *usage*.]
cut (*kut*), *v. t.* [*p. t.* and *p. p.* cut, *p. pr.* cutting], to cleave or separate with a sharp instrument: *v. t.* to make an incision: *n.* an incision or wound made by a sharp instrument.
cu-ta-ne-ous (*kū-tā'ne-us*), *adj.* pertaining to the skin.
cut-a-way (*kut'a-wā*), *adj.* cut back from the waist.
cute (*kūt*), *adj.* sharp; clever.
cut-glass (*kut'glăs*), *n.* flint glass cut into facets or figures.
cu-ti-cle (*kū'ti-kl*), *n.* the scarf skin.
cut-ler-y (*kut'lĕr-ĭ*), *n.* edged or cutting instruments.
cut-let (*'let*), *n.* a slice of meat.
cut-off (*'ôf*), *n.* a short or straight road; a new shorter channel.
cut-out (*'out*), *n.* a switch-like contrivance to cut off an electric light.
cut-ter (*'ĕr*), *n.* one who cuts or hews; one who cuts out and shapes garments.
cut-throat (*'thrōt*), *n.* a murderer.
cut-ting (*'ing*), *p. adj.* dividing by an edged instrument: *n.* a piece cut off or from.
cut-tle (*kut'l*), *n.* the cuttlefish.
cut-water (*'waw-tĕr*), *n.* the fore part of a ship's prow.
Cuzco (*kōōs'kō*). A department of Peru.
cy-a-nide (*sī'a-nīd*), *n.* a compound of cyanic acid with a metal.
cy-an-o-gen (*-an'ō-jen*), *n.* a colorless poisonous gas.
★**cy-cle** (*sī'kl*, not *sik'l*), *n.* a revolution of a certain period of time; an imaginary circle in the heavens: *v. i.* [*p. t.* and *p. p.* cycled, *p. pr.* cycling], to occur, or recur, in cycles.
cyc-lic (*sik'lik* or *sī'klik*), *adj.* pertaining to, or moving in, a cycle.
cy-clone (*'klōn*), *n.* an atmospheric movement in which the wind blows spirally toward a center.
cy-clo-pæ-di-a or **cyclopedia** (*sī-klō-pē'dĭ-a*), *n.* a shorter form of *encyclopædia*.
cy-clo-ra-ma (*sī-klō-rā'ma*), *n.* a series of pictures extended circularly so as to appear in natural perspective to the spectator standing in the center.
cy-clo-style (*'klō-stīl*), *n.* an apparatus for producing manifold copies.
cyg-net (*sig'net*), *n.* a young swan.
cyl-in-der (*sil'ĭn-dĕr*), *n.* a right prism, having circles for bases; a body, solid or hollow, of such form.
cy-lin-dric (*si-lin'drik*), *adj.* having the form of a cylinder.
cym-bal (*sim'bal*), *n.* one of a pair of circular disk-shaped brass plates, which when struck produce a clashing sound.
cyn-ic (*sin'ik*), *n.* a morose, surly, or sarcastic person.
cyn-ic-al (*'i-kal*), *adj.* like a cynic.
cyn-i-cism (*'i-sizm*), *n.* the temper and practice of a cynic.
cy-no-sure (*sī'nō-* or *sin'ō-shûr*), *n.* an object of general attraction.
Cynthia (*sin'thi-a*). A name of Diana; so called from *Mount Cynthus*, where she was born.
cy-press (*sī'pres*), *n.* a coniferous tree, the emblem of mourning.
Cyprian (*sip'ri-an*). From the Latin *Cyprianus*, "of Cyprus." Dutch, *Cypriaan*; Fr., *Cyprien*; Ger., *Cyprian*; It., *Cipriano*; Port., *Cypriano*; Sp., *Cipriano*.
Cyprus (*sī'prus*). Perhaps named from the herb *kupros*, with which it abounded.
Cyril, Cyrill (*sir'il*). From the Latin name *Cyrillus*, a diminutive of *Cyrus*, meaning "little Cyrus." Danish, *Cyrillus*; Dutch, *Cyrillus*; Fr., *Cyrille*; It., *Cirillo*; Lat., *Cyrillus*.
Cyrus (*sī'rus*). From Greek *kuros*, "the supreme power." Fr., *Cyrus*; Ger., *Cyrus*; Gr., *Kuros*; It., *Ciro*; Lat., *Cyrus*; Sp., *Ciro*.
cyst (*sist*), *n.* a bladder; pouch.
cy-tode (*sī'tōd*), *n.* a cell.
czar (*zär*) or **tsar** (*tsär*), *n.* the title of the Russian emperor
★**czar-e-vitch** (*zär'ē-vich*), or **tsarevitch** (*tsär'*), *n.* the eldest son of the czar.
cza-rev-na (*zä-rev'nä*) or **tsarevna** (*tsä-rev'nä*), *n.* a Russian princess (imperial).
cza-ri-na (*zä-rē'nä*) or **tsarina** (*tsä-*), *n.* the wife of the czar.

D

dab (*dab*), *v. t.* [*p. t.* and *p. p.* dabbed, *p. pr.* dabbing], to strike or touch lightly: *n.* a gentle blow.
dab-ble (*dab'l*), *v. t.* to dip slightly and often.
dab-ster (*'stĕr*), *n.* an expert.
dace (*dās*), *n.* a small fresh-water fish.
dachs-hund (*dăks'hōōnt*), *n.* the German badger dog.
dac-tyl (*dak'til*), *n.* a poetical foot of three syllables, one long and two short.
dad-dy long-legs (*dad'i long'legz*), a name for various kinds of crane fly.
da-do (*dā'dō*), *n.* the solid block forming the body of a pedestal.
daf-fo-dil (*daf'ō-dil*), *n.* the narcissus.
daft (*daft*), *adj.* simple; silly.
dag-ger (*dag'ĕr*), *n.* a short, edged and pointed weapon.
da-go (*dā'gō*), *n.* [*pl.* dagos (*'gōz*)], a nickname for a person of Spanish, Portuguese, or Italian descent.
★**da-guerre-o-type** (*dă-ger'ō-tīp*, not *dă-ger-ē'ō-tip*), *n.* a picture produced on a silvered plate.
dah-lia (*dal'ya*), *n.* [*pl.* dahlias (*'yaz*)], a composite plant, with large bright colored flowers.
Dahlonega (*dă-lō-nē'gä*), **Ga.** Named from the Indian, *taulawneca*, "yellow wampum," from the discovery of gold at this place.
dai-ly (*dā'li*), *n.* [*pl.* dailies (*'liz*)], a daily paper: *adj.* occurring or recurring each successive day.
Syn. DAILY, diurnal. *Daily* is applicable to whatever passes in the daytime; *diurnal* applies to what passes within or belongs to the astronomical day.
dain-ty (*dān'ti*), *n.* [*pl.* dainties (*'tiz*)], something choice or delicious; sensitive.
dai-ry (*dā'ri*), *n.* [*pl.* dairies (*'riz*)], a place where milk is kept and converted into butter and cheese.
★**da-is** (*dā'is*), *n.* a raised platform.
dai-sied (*dā'zid*), *adj.* full of, or adorned with, daisies.
dai-sy (*dā'zi*), *n.* [*pl.* daisies (*'siz*)], a low composite herb.
Daisy. A female name, derived from the flower, whose name in Anglo-Saxon signifies "day's eye."
Dakota (*dă-kō'tä*). Two states—North and South Dakota—counties in Nebraska and Minnesota, and several small places, named for the Indian tribe.
Dakota river, Dak. Named originally from the territory.
dale (*dāl*), *n.* a vale; glen.
Dalilah. Another spelling of *Delilah*.
dal-li-ance (*dal'i-ans*), *n.* the act of dallying.
dal-ly (*dal'i*), *v. i.* [*p. t.* and *p. p.* dallied, *p. pr* dallying], to trifle away time; loiter.
dam (*dam*), *n.* a barrier across a watercourse; a female parent: *v. t.* to confine by a dam; restrain.
★**dam-age** (*dam'āj*, not *dam'ij*), *n.* injury or harm: *pl.* money recovered for loss suffered: *v. t.* to injure. [ABUSE.]
dam-ask (*'ask*), *n.* a rich silk fabric woven with elaborate patterns; a fine twilled table linen.
dame (*dām*), *n.* a title formerly used instead of mistress.
damn (*dam*), *v. t.* to sentence to punishment judicially.
dam-na-tion (*-nā'shun*), *n.* the state of being damned.
dam-num (*'num*), *n.* loss or damage.
damp (*damp*), *n.* moisture; fog: *adj.* moist. [MOISTURE.]
dam-sel (*dam'zel*), *n.* a maiden.
dance (*dăns*), *v. i.* to move with measured steps or to a musical accompaniment.
dan-de-li-on (*dan'dē-lī-un*), *n.* a biennial composite plant with large yellow flowers.
dan-der (*'dĕr*), *n.* dandruff; anger.
dan-dle (*'dl*), *v. t.* fondle.
dan-druff (*'druf*), *n.* scurf on the scalp.
dan-dy (*'dĭ*), *n.* [*pl.* dandies (*'diz*)], a fop; coxcomb.
dan-ger (*dān'jĕr*), *n.* hazard; peril.
Syn. DANGER, peril, hazard. *Danger* signifies the chance of a loss; *peril* signifies either to go over or to perish. In all walks of life we are in *danger*; the explorer undergoes *perils*. *Hazard* respects the possibility of either good or evil. When we run the *hazard* of a battle, we may either win or lose.
dan-gle (*dang'gl*), *v. i.* to hang or swing loosely.
Daniel (*dan'yel*). From the Hebrew, *Daniyyel*, which has been translated "God's judge," one who delivers judgment in the name of the Lord. Danish, *Daniel*; Dutch, *Daniel*; Fr., *Daniel*; Ger., *Daniel*; It., *Daniele*; Lat., *Daniel*; Sp., *Daniel*.
Dantzic (*dant'sik*, German *dän'tsig*). A Prussian seaport. Name supposed to be a corruption of *Dansk-vik*, "Dane's town."
Danube (*dan'ūb*). The English name of the great river which the Germans call the *Donau* is derived from the Roman name *Danubius* or *Danuvius*.
dap-per (*dap'ĕr*), *adj.* small and active.
dap-ple (*dap'l*), *adj.* spotted; variegated.
Dardanelles (*där-dä-nelz'*). Modern name of the Hellespont is derived from two Turkish forts guarding the passage, called by the Italians, *Dardanelli*.
dare (*dār*), *v. i.* [*p. t.* dared, durst, *p. p.* dared, *p. pr.* daring], to have courage; attempt.
dar-ing (*dār'ing*), *n.* intrepidity: *adj.* fearless; bold.
dark (*därk*), *adj.* destitute of light; of a brunette complexion: *n.* darkness.
Syn. DARK, obscure, dim, mysterious. *Dark* is opposed to light; *obscure* to bright; what is *dark* is altogether hidden; what is *obscure* is not to be seen distinctly, or without an effort. *Dim* expresses a degree of darkness; any intricate affair, which involves the characters and conduct of men, may be *mysterious*. [See *obscure*, *mysterious*.]
dark-en (*'en*), *v. t.* to make dark.
dark-y (*'i*), *n.* [*pl.* darkies (*'iz*)], a negro.
dar-ling (*där'ling*), *n.* a favorite.
darn (*därn*), *v. t.* to mend by filling in the hole with yarn or thread.
dar-nel (*där'nel*), *n.* the popular name of a grass, *Lolium tremulentum*.
dart (*därt*), *n.* a small lance or spear: *v. i.* to move swiftly; start suddenly and run quickly.
Dar-win-i-an (*där-win'i-an*), *adj.* pertaining to Charles Darwin, the naturalist: *n.* an evolutionist.
dash (*dash*), *v. t.* to throw violently or hastily: *v. i.* to rush with violence.
das-tard (*das'tĕrd*), *n.* a coward.
date (*dāt*), *n.* the fruit of the date palm; the time of an epoch or transaction: *v. t.* to mark with a date. [TIME.]
da-tive (*dā'tĭv*), *adj.* denoting the case of a noun, pronoun or adjective which expresses the remoter object.
da-tum (*'tum*), *n.* [*pl.* data (*'tä*)], something assumed, known, or conceded.
★**daub** (*dawb*, not *dob*), *v. t.* to cover or smear with adhesive matter.
daugh-ter (*daw'tĕr*), *n.* the female offspring.
daunt (*dānt*), *v. t.* to intimidate; dishearten. [DISMAY.]
Dauphin (*daw'fin*. French, *dō-fan'*). A title formerly borne by the eldest son of the kings of France.
David (*dā'vid*). From the Hebrew *Daviydh*, signifying "beloved." Danish *David*; Dutch, *David*; Fr., *David*; Ger., *David*; It., *Davide*; or *Davidde*; Lat., *David*.
dav-it (*dav'it*), *n.* one of a pair of f-shaped uprights projecting over the side of a vessel for suspending or lowering a boat.
da-vy (*dā'vi*), *n.* [*pl.* davies (*'viz*)], a miner's safety lamp.
daw (*daw*), *n.* a jackdaw.
daw-dle (*daw'dl*), *v. i.* to waste time.
dawn (*dawn*), *v. i.* to begin to grow light.
day (*dā*), *n.* the period of light between sunrise and sunset.
day-book (*'book*), *n.* a book in which the transactions of the day are entered.
day-break (*'brāk*), *n.* the dawn.
day-spring (*'spring*), *n.* the dawn.
daze (*dāz*), *v. t.* to dazzle: *n.* the state of being dazed.
daz-zle (*daz'l*), *v. t.* to overpower by a glare of light.
dea-con (*dē'kn*), *n.* the lowest order of the clergy in the Anglican church.
dead (*ded*), *adj.* destitute of life; inanimate.
dead cen-ter (*sen'tĕr*), that position of a crank in which the crank-axle, crank-pin, and the connecting rod are all in a straight line.
dead-en (*ded'n*), *v. t.* to diminish the acuteness, intensity, or vigor of.
dead-head (*'hed*), *n.* a person who has a free pass on railways or to places of amusement, etc.
dead let-ter (*let'ĕr*), *n.* an unclaimed letter.
dead-lock (*'lok*), *n.* a situation in which progress is impossible.
dead-ly (*'li*), *adj.* causing death.
Syn. DEADLY, mortal, fatal. *Deadly* is applied to what is productive of death; *mortal* to what terminates in or is liable to death; *fatal* applies not only to death, but to everything which may be of great mischief.
Ant. HEALTHFUL, invigorating, wholesome.
dead set (*set*), the fixed position of a dog in pointing game.
dead weight (*wāt*), the weight of the vehicle in addition to the load to be carried.
★**deaf** (*def*), *adj.* deprived of hearing.
★**deaf-en** (*def'n*), *v. t.* to make deaf.
deal (*dēl*), *n.* an indefinite quantity, degree, or extent; a division of cards to the players.
dean (*dēn*), *n.* the presiding ecclesiastical dignitary in cathedral and collegiate churches.
dear (*dēr*), *adj.* expensive; costly: *n.* a darling.
death (*deth*), *n.* extinction of life.
death-point (*deth'point*), *n.* the degree of heat or cold which destroys an animal organism.
death rate (*'rāt*), the percentage of deaths, usually reckoned per thousand.
death's-head (*deths'hed*), *n.* a skull,
Death valley. A desert region in Inyo county, eastern California, near the Nevada frontier, lying about 160 feet below the sea level.
death-watch (*deth'woch*), *n.* a vigil beside a dying person.
de-bar (*dē-bär'*), *v. t.* [*p. t.* and *p. p.* debarred, *p. pr.* debarring], to shut out; exclude.
de-bark (*dē-bärk'*), *v. i.* to disembark.
de-bar-ka-tion (*-bär-kā'shun*), *n.* the act of disembarking.
de-base (*dē-bās'*), *v. t.* to reduce from a higher to a lower state. [ABASE.]
de-ba-ta-ble (*dē-bā'tā-bl*), *adj.* admitting of question or debate.

de-bate (*dē-bāt'*), *v. t.* to contend for in words or arguments: *n.* controversy; discussion.
Syn. DEBATE, deliberate. These terms equally mark the acts of pausing or withholding the decision, whether applicable to one or many. To *debate* supposes always a contrariety of opinion; to *deliberate* supposes simply the weighing or estimating the value of the opinion that is offered.
de-bauch (*dē-bawch'*), *v. t.* to corrupt in morals or principles; seduce.
de-bauch-er-y (*de-bawch'ĕr-i*), *n.* [*pl.* debaucheries (*-iz*)], excessive intemperance.
de-bil-i-tate (*dē-bil'i-tāt*), *v. t.* to enfeeble; enervate.
de-bil-i-ty (*-bil'i-ti*), *n.* [*pl.* debilities (*-tiz*)], abnormal functional weakness.
Syn. DEBILITY, infirmity, imbecility. *Debility* is constitutional, or otherwise; *imbecility* is always constitutional; *infirmity* is accidental, and results from sickness or a decay of the frame. *Debility* may be either general or local; *infirmity* is always local; *imbecility* always general.
Ant. ROBUSTNESS, strength, vigor.
deb-it (*deb'it*), *n.* that which is owing, entered on the debtor side of a ledger.
deb-o-nair (*deb-ō-nâr'*), *adj.* of gentle manners or breeding.
Deborah (*deb'ō-rä*). From the Hebrew, *D'bhorah*, which Jerome translates "a bee," or "eloquence." Dutch, *Debora;* Fr., *Débora;* It., *Debora;* Lat., *Debora.*
de-bouch (*dē-bōōsh'*), *v. i.* to march out of a confined space into open ground.
★**dé-bris** (*dā-brē'*), *n.* fragments; broken rubbish.
debt (*det*), *n.* that which is due from one person to another.
Syn. DEBT, due. *Debt* is commonly applied to that which is owing from the person spoken of; *due* is always applied to that which is owing to the person; to pay one's *debts*, and receive one's *due.*
Ant. CREDIT.
debt-or (*'ĕr*), *n.* one who owes something to another.
★**dé-but** (*dā-bū'*, French *dā-bü'*), *n.* a first appearance in society.
★**dec-ade** (*dek'ād*, not *dē-kād'*), *n.* a group of ten; ten consecutive years.
de-ca-dence (*dē-kā'dens*), *n.* a state of decay.
dec-a-gon (*dek'ä-gon*), *n.* plane figure having ten sides.
dec-a-logue (*'ä-log*), *n.* the ten commandments.
de-camp (*dē-kamp'*), *v. i.* to depart speedily.
de-cant (*dē-kant'*), *v. t.* to pour off gently.
de-can-ter (*-kan'tĕr*), *n.* an ornamental glass bottle for holding wines.
de-cap-i-tate (*dē-kap'i-tāt*), *v. t.* to behead.
de-cay (*dē-kā'*), *v. i.* [*p. t.* and *p. p.* decayed, *p. pr.* decaying], to become impaired; rot.
Syn. DECAY, decline, consumption. What is *decayed* is fallen or gone; what *declines* leads toward a fall, or is going; *consumption* implies a rapid decay.
de-cease (*dē-sēs'*), *v. i.* to die: *n.* death.
de-ceit (*dē-sēt'*), *n.* deception; falsehood, deceitful.
Syn. DECEIT, deception. A person is said to be guilty of *deceit* who has sought to deceive another for his own purposes; but *deceptions* may be practiced in a diversity of ways. *Deceitful* and *deceptive* are employed with this distinction, a person is said to be *deceitful*, and a thing *deceptive.* [See *fallacious.*]
Syn. DECEIT, fraud, guile. *Deceit* is practiced only, in private transactions; *fraud* is practiced toward bodies as well as individuals, in public as well as private. A child practices *deceit* toward its parents; *frauds* are practiced upon government; *guile* marks a strong degree of moral turpitude in the individual.
de-ceiv-a-ble (*-sēv'ä-bl*), *adj.* capable of being deceived.
de-ceive (*-sēv'*), *v. t.* to mislead or cause to err; delude.
de-ceiv-er (*'ĕr*), *n.* an impostor, cheat.
Syn. DECEIVER, impostor. A *deceiver* is any one who practices any sort of deception; but an *impostor* is a *deceiver* who studiously *deceives* by putting on a false appearance.
December, the twelfth month. From the Latin *decem,* "ten," tenth month of the Romans.
de-cem-vir (*dē-sem'vĕr*), *n.* [*pl.* decemviri (*'vi-ri*)], one of ten Roman magistrates.
de-cen-cy (*dē-sen-si*), *n.* [*pl.* decencies (*-siz*)], the state of being decent.
Syn. DECENCY, decorum. *Decency* respects a man's conduct; *decorum,* his behavior.
de-cen-ni-al (*-ni'al*), *adj.* lasting for, or occurring, every ten years.
de-cent (*'sent*), *adj.* decorous; becoming.
de-cep-tion (*-sep'shun*), *n.* the act of deceiving. [DECEIT.]
de-cep-tive (*'tiv*), *adj.* tending to deceive.
de-cide (*dē-sīd'*), *v. t.* to bring to an issue or conclusion.
de-cid-ed (*'ed*), *adj.* free from ambiguity; determined.
Syn. DECIDED, determined, resolute. A man who is *decided* remains in no doubt; he who is *determined* is uninfluenced by the doubts or questions of others; he who is *resolute* is uninfluenced by the consequences. [See *obstinate.*]
de-cid-u-ous (*-sid'ū-us*), *adj.* falling off at maturity, or in season.
dec-i-mal (*des'i-mal*), *adj.* pertaining to, or based upon the number 10.
dec-i-mal place (*des'i-mal plās*), the place of a figure after the decimal point.
dec-i-mal point (*point*), *n.* a dot separating a decimal fraction from a whole number.
dec-i-mal sys-tem (*sis'tem*), *n.* a system of reckoning or measuring by 10 or powers of 10.
dec-i-mate (*des'i-māt*), *v. t.* to select by lot and put to death, or punish, every tenth man; destroy a large proportion of.
de-ci-pher (*dē-sī'fĕr*), *v. t.* to read (secret writing); discover or make out the meaning of; solve; unravel.
de-ci-sion (*-sizh'un*), *n.* the act of deciding.
Syn. DECISION, judgment, sentence. A *decision* has no respect to the agent; it may be said of one or many; it may be the *decision* of the court, of the nation, of the public, of a particular body of men, or of a private individual; but a *judgment* is given in a public court, or among private individuals; a *sentence* is passed in a court of law, or at the bar of the public.
Ant. DISAGREEMENT.
de-ci-sive (*-si'siv*), *adj.* final. [CONCLUSIVE.]
dec-i-stere (*des'i-stēr* or *-stār*), *n.* a cubic measure, one-tenth of a stere, equal to 3.532 cubic feet. [*French.*]
deck (*dek*), *v. t.* to array in finery or ornaments: *n.* the plank flooring of a ship.
de-claim (*dē-klām'*), *v. t.* to speak in a rhetorical style.
Syn. DECLAIM, inveigh. *Declaim* signifies literally to cry aloud in a set form of words. Public men and public measures are subjects for the *declaimer;* private individuals afford subjects for *inveighing* against. [See *abuse, speak.*]
dec-la-ma-tion (*dek-là-mā'shun*), *n.* the art of declaiming.
de-clam-a-to-ry (*dē-klam'ä-tō-ri*), *adj.* pertaining to declamation.
dec-la-ra-tion (*dek-là-rā'shun*), *n.* the act of declaring or proclaiming.
de-clar-a-tive (*dē-klar'ä-tiv*), *adj.* explanatory.
de-clar-a-to-ry (*'ä-tō-ri*), *adj.* affirmative.
de-clare (*dē-klâr'*), *v. t.* to make known; tell openly or publicly.
Syn. DECLARE, publish, proclaim. In *declaring,* the leading idea is that of speaking out that which passes in the mind; in *publishing,* the leading idea is that of making public or common; in *proclaiming,* the leading idea is that of crying aloud. Facts and opinions are *declared;* events and circumstances are *published;* the measures of government are *proclaimed.* [See *allege, speak, discover, announce.*]
Ant. CONCEAL, suppress, withhold.
de-clen-sion (*-klen'shun*), *n.* decline.
dec-li-na-tion (*dek-li-nā'shun*), *n.* the act or state of bending, or moving, downward.
de-cline (*dē-klīn'*), *v. i.* to incline from a right line: *v. t.* to refuse. [REFUSE, ABATE, DECAY.]
de-cliv-i-ty (*-kliv'i-ti*), *n.* [*pl.* declivities (*-tiz*)], a gradual descent.
de-coct (*dē-kokt'*), *v. t.* the act of boiling anything to extract its essence.
de-coc-tion (*-kok'shun*), *n.* an extract obtained by digesting in hot water.
de-com-pose (*dē-kom-pōz'*), *v. t.* to resolve into constituent elements.
de-com-po-si-tion (*-pō-zish'un*), *n.* the act of resolving into constituent elements.
dec-o-rate (*dek'ō-rāt*), *v. t.* to ornament.
dec-o-ra-tion (*-rā'shun*), *n.* the art of decorating.
Decoration day (*dā*). The day (May 30) on which the graves of those who fell in the Civil war (1861-65) are decorated.
dec-o-ra-tive (*dek'ō-rā-tiv*), *adj.* tending to decorate.
★**de-co-rous** (*dē-kō'rus* or *dek'ō-rus*), *adj.* marked by propriety.
de-co-rum (*dē-kō'rum*), *n.* propriety and decency. [DECENCY.]
de-coy (*dē-koi'*), *v. t.* [*p. t.* and *p. p.* decoyed, *p. pr.* decoying], to lead or allure into danger by artifice.
de-crease (*dē-krēs'*), *v. i.* to become less; diminish; abate. [ABATE.]
de-cree (*dē-krē'*), *n.* an ordinance, law, or edict.
Syn. DECREE, edict, proclamation. A *decree* is a more solemn and deliberative act than an *edict;* on the other hand, an *edict* is more authoritative than a *decree.* A *decree* is the decision of one or many; an *edict* speaks the will of an individual; councils and senates, as well as princes, makes *decrees;* despotic rulers issue *edicts.* An *edict* is peculiar to a despotic government; a *proclamation* is common to a monarchical and aristocratic form of government.
de-crep-it (*dē-krep'it*), *adj.* enfeebled by age, or infirmity.
de-crep-i-tate (*'i-tāt*), *v. t.* to calcine (as salt) in a strong heat.
de-crep-i-tude (*'i-tūd*), *n.* physical infirmity.
de-cre-tal (*-krē'tal*), *n.* a papal decree.
de-cry (*dē-kri'*), *v. t.* [*p. t.* and *p. p.* decried, *p. pr.* decrying], to blame clamorously.
de-cum-bent (*-kum'bent*), *adj.* lying down.
dec-u-ple (*dek'ū-pl*), *adj.* tenfold: *n.* a number repeated ten times.
de-cus-sate (*dē-kus'āt*), *v. i.* to intersect or cross at an acute angle.
ded-i-cate (*ded'i-kāt*), *v. t.* to set apart by a solemn act or religious ceremony.
Syn. DEDICATE, devote, consecrate, hallow. There is something more solemn in the act of *dedicating* than in that of *devoting;* but less so than in that of *consecrating.* To *dedicate* and *devote* may be employed in both temporal and spiritual matters; to *consecrate* and *hallow* only in the spiritual sense; we may *dedicate* or *devote* anything that is at our disposal to the service of some object; but the former is employed mostly in regard to superiors, and the latter to persons without distinction of rank. We *dedicate* a house to the service of God; or we *devote* our time to the benefit of our friends, or the relief of the poor; we may *dedicate* or *devote* ourselves to an object.
Ant. DEFILE, desecrate, withhold.
ded-i-ca-tion (*ded-i-kā'shun*), *n.* the act of dedicating.
ded-i-ca-to-ry (*ded'i-kā-tō-ri*), *adj.* pertaining to a dedication.
de-duce (*dē-dūs'*), *v. t.* to gather by reasoning; infer. [DERIVE.]
de-duct (*dē-dukt'*), *v. t.* to take away.
de-duc-tion (*-duk'shun*), *n.* the act or process of deducting.
Syn. DEDUCTION, abatement. Both these words imply a taking off from something. A person may make a *deduction* in an account for various reasons, but he makes an *abatement* in a demand when it is excessive. [See *conclusion.*]
deed (*dēd*), *n.* that which is done by a responsible agent.
deem (*dēm*), *v. t.* to think; determine. [THINK.]
deep (*dēp*), *adj.* extending far below the surface; low in situation. [OBSCURE.]
deep-laid (*'lād*), *adj.* well concerted.
deep-sea (*dēp'-sē*), *adj.* pertaining to the open sea.
deer (*dēr*), *n. sing.* and *pl.* a general name for solid-horned ruminants of the genus Cervus.
de-face (*dē-fās'*), *v. t.* to mar, disfigure, efface.
Syn. DEFACE, disfigure, deform. To *deface* is an act of destruction; it is the actual destruction of that which has before existed; to *disfigure* is either an act of destruction or an erroneous execution, which takes away the figure; to *deform* is altogether an imperfect execution, which renders the form what it should not be.
Ant. BEAUTIFY, perfect.
de-fal-ca-tion (*-fal-kā'shun*), *n.* embezzlement.
★**def-al-ca-tor** (*def'al-kā-tĕr*), *n.* an embezzler.
def-a-ma-tion (*def-ä-mā'shun*), *n.* the act of injuring one's good name.
de-fam-a-to-ry (*dē-fam'ä-tō-ri*), *adj.* containing that which is injurious to the character.
de-fame (*dē-fām'*), *v. t.* to injure or destroy the good reputation of. [ABUSE.]
de-fault (*-fawlt'*), *n.* failure or omission to do any act.
de-fault-er (*'ĕr*), *n.* one who fails to make a proper account of money.
de-fea-sance (*dē-fē'zans*), *n.* the annulment of a contract or deed.
de-feat (*dē-fēt*), *v. t.* to overcome or vanquish; frustrate; baffle. [BEAT.]
def-e-cate (*def'ē-kāt*), *v. t.* to clarify: *v. i.* discharge from the bowels.
de-fect (*dē-fekt'*), *n.* an imperfection, moral or physical. [BLEMISH.]
de-fec-tion (*-fek'shun*), *n.* a falling away.
de-fec-tive (*'tiv*), *adj.* having a defect or flaw of any kind.
Syn. DEFECTIVE, deficient. *Defective* expresses the quality or property of having a defect; *deficient* is employed with regard to the thing itself that is wanting. A book may be *defective,* in consequence of some leaves being *deficient.* A *deficiency* is, therefore, often what constitutes a *defect.*
Ant. ADEQUATE, competent, perfect.
de-fend (*dē-fend'*), *v. t.* to guard or protect.
Syn. DEFEND, protect, vindicate. A person may be *defended* in any particular case of actual danger or difficulty; he is *protected* from what may happen as well as what does happen. *Defense* respects the evil that threatens; *protection* involves the supply of necessities and the affording comforts; to *vindicate* is a species of *defense* only in the moral sense of the word. Acts of importance are *defended;* those of trifling import are commonly *vindicated.* [See *apologize, guard.*]
Ant. BETRAY, expose, surrender.
de-fense (*dē-fens'*), *n.* the act or state of defending. [APOLOGY.]
de-fen-si-bil-i-ty (*-fen-si-bil'i-ti*), *adj.* the quality of being defensible.
de-fen-si-ble (*'si-bl*), *adj.* capable of being defended.
de-fer (*dē-fĕr'*), *v. t.* [*p. t.* and *p. p.* deferred, *p. pr.* deferring], to put off to a future time.
def-er-ence (*def'ĕr-ens*), *n.* a yielding to the opinions or wishes of another. [COMPLAISANCE.]
def-er-en-tial (*-ĕr-en'shal*), *adj.* characterized by, or expressing, deference.
de-fi-ance (*dē-fi'ans*), *n.* a challenge.
de-fi-ant (*'ant*), *adj.* characterized by defiance.
de-fi-cien-cy (*-fish'en-si*), *n.* [*pl.* deficiencies (*-siz*)], the state of being deficient.
de-fi-cient (*'ent*), *adj.* wanting; incomplete. [DEFECTIVE.]
★**def-i-cit** (*def'i-sit*, not *dē-fis'it*), *n.* a falling off, or deficiency.
de-fi-er (*dē-fi'ĕr*), *n.* one who defies.
de-file (*dē-fil'*), *v. t.* to make foul or impure. [CONTAMINATE, ABUSE.]
de-fin-a-ble (*-fin'ä-bl*), *adj.* capable of being defined.
de-fine (*dē-fin'*), *v. t.* to determine the limits of.

def-i-nite (*def'i-nit*), *adj.* having fixed or distinct limits.
Syn. DEFINITE, positive. *Definite* signifies that which is *defined*, or has the limits drawn or marked out; *positive* that which is placed or fixed in a particular manner; *definite* is said of things as they present themselves or are presented to the mind; as, a *definite* idea, a *definite* proposal; *positive* is said of a person's temper of mind; a person is *positive* as to his opinions, or an assurance is *positive* which serves to make one *positive*.
Ant. VACILLATING, vague.
def-i-ni-tion (*-nish'un*), *n.* a brief description or explanation.
Syn. DEFINITION, commentary, description, explanation, exposition, interpretation, rendering, translation. *Definition* is exact, *explanation* general; a *definition* is formal, a *description* pictorial. A *definition* must include all that belongs to the object defined, and exclude all that does not; a *description* may include only some general features; an *explanation* throws light upon some point; an *exposition* undertakes a fuller statement; *interpretation* is a statement giving the doubtful or hidden meaning of that which is difficult.
Ant. OBFUSCATION.
de-fin-i-tive (*dē-fin'i-tiv*), *adj.* determining; conclusive.
def-la-grate (*def'lə-grāt*), *v. t.* to set fire to.
de-flect (*dē-flekt'*), *v. t.* to bend from a straight line.
de-flec-tive (*-flek'tiv*), *adj.* causing deflection.
de-flec-tor (*'tėr*), *n.* a plate or cone in a furnace or lamp to bring flames or gases into close contact.
de-flow-er (*dē-flou'ėr*), *v. t.* to deprive of flowers or bloom.
de-for-est (*dē-for'est*), *v. t.* to clear of forest.
de-form (*-fôrm'*) *v. t.* to render ugly. [DEFACE.]
de-form-i-ty (*'i-ti*), *n.* [*pl.* deformities (*-tiz*)], physical malformation.
de-fraud (*-frawd'*), *v. t.* to deprive of some right or interest. [CHEAT.]
de-fray (*dē-frā'*), *v. t.* [*p. t.* and *p. p.* defrayed, *p. pr.* defraying], to discharge (the expense of anything).
deft (*deft*), *adj.* dexterous.
de-funct (*dē-fungkt'*), *adj.* dead.
de-fy (*-fī'*), *v. t.* [*p. t.* and *p. p.* defied, *p. pr.* defying], to challenge.
de-gen-er-a-cy (*dē-jen'ėr-ə-si*), *n.* the state of being degenerate.
de-gen-er-ate (*'ėr-āt*), *v. i.* to become inferior in goodness or quality.
deg-lu-ti-tion (*deg-lōō-tish'un*), *n.* swallowing.
deg-ra-da-tion (*deg-rə-dā'shun*), *n.* the act of degrading.
de-grade (*dē-grād'*), *v. t.* to reduce in grade or rank. [ABASE.]
de-gree (*dē-grē'*), *n.* a step or grade; the 360th part of the circumference of a circle; *third degree*, in police practice, the process of severely examining, or harshly treating, a prisoner or an accomplice of a person suspected of a crime, for the purpose of securing information concerning it.
de-i-fi-ca-tion (*dē-i-fi-kā'shun*), *n.* apotheosis.
de-i-fy (*'i-fī*), *v. t.* [*p. t.* and *p. p.* deified, *p. pr.* deifying], to make, or exalt to the rank of, a deity.
★**deign** (*dān*), *v. i.* to condescend.
de-ism (*dē'izm*), *n.* the creed of a deist.
de-ist (*'ist*), *n.* one who believes in the existence of a personal God but not in revealed religion.
de-ist-ic (*'ik*), *adj.* pertaining to deism, or deists.
de-i-ty (*'i-ti*), *n.* [*pl.* deities (*-tiz*)], a god, goddess, or person worshiped.
Syn. DEITY, divinity. *Deity* signifies a divine person; *divinity* signifies the divine essence or power.
De-i-ty, *n.* God; Jehovah.
de-ject (*dē-jekt'*), *v. t.* to depress the spirits of.
de-jec-tion (*-jek'shun*), *n.* depression of spirits.
Syn. DEJECTION, depression, melancholy. *Depression* is but a degree of *dejection;* slight circumstances may occasion a *depression;* distressing events occasion a *dejection;* the death of a near and dear relative may be expected to produce *dejection* in persons of the greatest equanimity; *melancholy* is a disease which nothing but clear views of religion can possibly correct.
Ant. DELIGHT, ecstasy, joy, pleasure.
Delaware (*del'ə-wār*). Name of state, bay and river in the eastern section of the United States first given to the bay by Capt. Samuel Argall, afterward deputy governor of Virginia, who came to this country in company with Lord de la Ware.
de-lay (*de-lā'*), *v. t.* [*p. t.* and *p. p.* delayed, *p. pr.* delaying], to postpone.
de-lec-ta-ble (*dē-lek'tə-bl*), *adj.* pleasing; delightful.
de-lec-ta-tion (*-tā'shun*), *n.* delight; pleasure.
del-e-gate (*del'ē-gāt*), *v. t.* to send as a representative: *n.* a representative.
Syn. DELEGATE, deputé, deputy. To *delegate* is applied to the power or office which is given; *depute* to the person employed. Parents *delegate* their office to the instructor; persons are *deputed* to act for others. A *delegate* is the person commissioned, who is bound to act according to his commission; the *deputy* is that person *deputed*, who acts in the place of another.
Ant. ACT, in person.
del-e-ga-tion (*-gā'shun*), *n.* the act of delegating; a person or body of persons chosen to act for others.
de-lete (*dē-lēt'*), *v. t.* to blot out; erase.
del-e-te-ri-ous (*del-ē-tē'ri-us*), *adj.* harmful.
delf (*delf*), *n.* glazed earthenware.
Delft (*delft*). This name for earthenware is derived from *Delft*, a town in Holland, where extensive potteries existed from A. D. 1300.
Delhi (*del'hē*), or **Dehli** (*dā'lē*). From the Sanskrit, *dahal*, "a quagmire," or from the Hindustani word *dil*, "an eminence."
de-lib-er-ate (*dē-lib'ėr-āt*), *v. t.* to think upon or consider: *adj.* slow. [CONSULT, DEBATE.]
de-lib-er-a-tion (*-ėr-ā'shun*), *n.* calm and careful consideration.
del-i-ca-cy (*del'i-kə-si*), *n.* [*pl.* delicacies (*-siz*)], the state or quality of being delicate.
del-i-ca-tes-sen (*-kā-tes'en*), *n. pl.* table delicacies.
de-li-cious (*dē-lish'us*), *adj.* highly pleasing to the senses.
de-light (*dē-līt'*), *v. t.* to gratify or please greatly: *n.* an extreme degree of pleasure. [ADMIRE.]
de-light-ful (*'fool*), *adj.* pleasing, charming.
Delilah (*dē-lī'lə*). From the Hebrew *D'liylah*, signifying "weak," "delicate."
de-lin-e-ate (*-lin'ē-āt*), *v. t.* to mark out with lines.
de-lin-e-a-tion (*-ē-ā'shun*), *n.* the act or art of delineating.
de-lin-quen-cy (*-ling'kwen-si*), *n.* [*pl.* delinquencies (*-siz*)], neglect of, or failure in, duty.
de-lin-quent (*'kwent*), *adj.* falling short of duty. [OFFENDER.]
del-i-quesce (*del-i-kwes'*), *v. i.* to melt and become liquid.
★**de-lir-i-ous** (*dē-lir'i-us*, not *dē-lē'ri-us*), *adj.* light-headed; insane.
de-lir-i-um (*'i-um*), *n.* excitement and aberration of the mind.
de-lir-i-um tre-mens (*trē'menz*), *n.* a disease of the brain caused by the use of intoxicating liquors.
de-liv-er (*dē-liv'ėr*), *v. t.* to set free; yield possession or control of.
Syn. DELIVER, rescue, save. One may be *delivered* from any evil, whether great or small, and in any manner; to *rescue* is to deliver from a great impending danger or immediate evil; as to *rescue* from the hands of robbers, or from the jaws of a wild beast; to *save* signifies to keep from evil. [See *speak*.]
Ant. ABANDON, desert, forsake.
de-liv-er-ance (*'ėr-ans*), *n* the act of delivering.
de-liv-er-y (*'ėr-i*), *n.* [*pl.* deliveries (*-riz*)], the act of delivering.
dell (*del*), *n.* a small secluded valley.
Del-phic (*del'fik*), *adj.* pertaining to Delphi.
del-ta (*del'tə*), *n.* [*pl.* deltas (*'təz*)], an alluvial deposit, shaped like the Greek letter Δ, formed at the mouth of a river.
de-lude (*dē-lūd'*), *v. t.* deceive.
★**del-uge** (*del'ūj*), *n.* a great overflowing of the land by water, especially that of the time of Noah.
de-lu-sion (*dē-lū'zhun*), *n.* the act of deluding.
de-lu-sive (*-lū'siv*), *adj.* tending to delude or deceive.
delve (*delv*), *v. t.* to open with a spade.
de-mag-net-ize (*dē-mag'net-īz*), *v. t.* to deprive of magnetic properties.
dem-a-gogue (*dem'ə-gog*), *n.* a popular orator.
de-mand (*dē-mand'*), *v. t.* to claim as by right or authority.
Syn. DEMAND, require. We *demand* that which is owing and ought to be given; we *require* that which we wish and expect to have done. The creditor makes a *demand* on the debtor; the master *requires* a certain portion of duty from his servant.
Ant. BEG, entreat.
de-mar-ca-tion (*-mär-kā'shun*), *n.* the act of defining.
de-mean (*dē-mēn'*), *v. t.* to behave (with *self*).
de-mean-or (*'ėr*), *n.* behavior.
de-men-ti-a (*-men'shi-ə*), *n.* insanity.
★**de-mesne** (*dē-mēn'*), *n.* landed estate attached to a manor.
Demetrius (*dē-mē'tri-us*). From the Greek, *Demetrios*, "sprung from the earth;" Fr., *Demetrius;* It., *Demetrio;* Lat., *Demetrius;* Russ., *Dmitri*.
dem-i (*dem'i*), a prefix signifying *half*.
dem-i-god (*dem'i-god*), *n.* an inferior deity.
dem-i-john (*-jon*), *n.* a large glass bottle with a small neck and large body.
de-mise (*dē-miz'*), *n.* the transfer of a right to, or of a title in, an estate through death or forfeiture; death.
de-mob-i-lize (*dē-mob'i-līz*), *v. t.* to disband or dismiss.
de-moc-ra-cy (*-mok'rə-si*), *n.* [*pl.* democracies (*-siz*)], government by the people collectively.
dem-o-crat (*dem'ō-krat*), *n.* one who advocates and upholds the principles of democracy.
Democrat, *n.* a member of the Democratic party.
dem-o-crat-ic (*-krat'ik*), or **dem-o-crat-ic-al** (*'i-kal*), *adj.* pertaining to democracy.
de-mol-ish (*dē-mol'ish*), *v. t.* to throw down.
dem-o-li-tion (*dem-ō-lish'un*), *n.* the act or process of demolishing.
de-mon (*dē'mon*), *n.* an evil spirit; devil.
de-mon-e-tize (*dē-mun'* or *dē-mon'ē-tīz*), *v. t.* to deprive of standard value.
de-mo-ni-ac (*-mō'ni-ak*), *adj.* influenced by demons.
de-mon-ism (*'mon-izm*), *n.* belief in demons.
de-mon-stra-ble (*dē-mon'strə-bl*), *adj.* capable of being demonstrated.
★**dem-on-strate** (*dem-on'* or *dē-mon'strāt*), *v. t.* to prove beyond the possibility of a doubt.
dem-on-stra-tion (*dem-on-strā'shun*), *n.* the act of demonstrating.
de-mon-stra-tive (*dē-mon'strə-tiv*), *adj.* having the power of demonstration.
dem-on-stra-tor (*dem-on-strā-tėr*), *n.* one who demonstrates.
de-mor-al-ize (*dē-mor'al-īz*), *v. t.* to corrupt, or undermine the morals of.
de-mul-cent (*-mul'sent*), *adj.* softening.
de-mur (*dē-mur'*), *v. i.* [*p. t.* and *p. p.* demurred, *p. pr.* demurring], to hesitate.
Syn. DEMUR, hesitate, pause. We *demur* from doubt or difficulty; we *hesitate* from an undecided state of mind; we *pause* from circumstances. *Demurring* is a matter of prudence; it is always grounded on some reason; *hesitating* is rather a matter of feeling, and is oftener faulty than otherwise. When a request of a dubious nature is made to us, we *hesitate* in complying with it.
Ant. ACT, continue, rush.
de-mure (*-mūr'*), *adj.* grave; sober.
de-mur-rage (*-mur'āj*), *n.* the compensation paid for the detention of a vessel in port beyond the stipulated time.
de-mur-rer (*'ėr*), *n.* an issue on a point of law.
den (*den*), *n.* the hollow cave of a wild beast.
de-na-tion-al-ize (*dē-nash'un-al-īz*), *v. t.* to deprive of national rights or character.
de-nat-u-ral-ize (*-nat'ū-ral-īz*), *v. t.* to divest of acquired rights of citizenship.
de-na-tured (*dē-nā'tūrd*), *adj.* changed in nature or character.
den-drol-o-gy (*den-drol'ō-ji*), *n.* the natural history of trees.
den-drom-e-ter (*-drom'ē-tėr*), *n.* an apparatus for taking the heights and diameters of trees.
de-ni-al (*dē-nī'al*), *n.* the act of denying.
Denis (*den'is*) or **Dionysius** (*dī-ō-nish'i-us*). From the Greek, "belonging to the wine of god." Danish, *Dionysius;* Dutch, *Dionysius;* Fr., *Denis* or *Denys;* Ger., *Dionys;* Gr., *Dionysios;* It., *Dionigio;* Lat., *Dionysius;* Sp., *Dionisio*.
den-i-zen (*den'i-zen*), *n.* an inhabitant; citizen.
Denmark (*den'märk*). Called *Dan-mörk* in the Sagas. In old Norse, *mörk* means a "forest," and, as forests commonly formed the boundaries of tribes, we obtain such words as *mearc* in Anglo-Saxon and *marca* in Old High German, meaning a "marsh land" or "boundary."
de-nom-i-nate (*dē-nom'i-nāt*), *v. t.* to designate.
de-nom-i-na-tion (*-i-nā'shun*), *n.* the act of designating.
de-nom-i-na-tion-al-ism (*-al-izm*), *n.* a sectarian or class spirit, or policy.
de-nom-i-na-tor (*'i-nā-tėr*), *n.* the expression of a fraction which gives the name or value to the unit.
de-note (*dē-nōt'*), *v. t.* to signify or identify by a visible sign.
Syn. DENOTE, signify. *Denote* is employed with regard to things and their characters; *signify* with regard to the thoughts or movements. A letter or character may be made to *denote* any number, as words are made to *signify* the intentions and wishes of the person.
Ant. IMPLY.
★**dē-noue-ment** (*dā-nōō-mäN'* or *dā-nōō'mäN*), *n.* the act of unraveling a plot.
de-nounce (*dē-nouns'*), *v. t.* to threaten or accuse publicly; censure. [CONDEMN.]
dense (*dens*), *adj.* thick; compact; intense. [THICK, OBSCURE.]
den-si-ty (*den'si-ti*), *n.* compactness.
dent (*dent*), *n.* a slight depression caused by a blow or pressure.
den-tal (*den'tal*), *adj.* pertaining to the teeth.
den-tine (*den'tin*), *n.* the hard tissue which forms the body of a tooth.
den-ti-phone (*'ti-fōn*), *n.* an audiphone.
den-tist (*'tist*), *n.* a dental surgeon.
den-tis-try (*'tis-tri*), *n.* dental surgery.
den-ti-tion (*-tish'un*), *n.* the process, or period of cutting the teeth.
de-nude (*dē-nūd'*), *v. t.* to make bare or naked.
de-nun-ci-a-tion (*-nun-si-ā'shun*), *n.* the act of denouncing.
de-nun-ci-a-to-ry (*'shi-ə-tō-ri*), *adj.* pertaining to a denunciation.
Denver, Colo. Named after James W. Denver, ex-governor of Kansas. [contradict.
de-ny (*dē-ni'*), *v. t.* to refuse to believe or admit;
Syn. DENY, refuse. To *deny* respects matters of fact or knowledge; to *refuse*, matters of wish or request. We *deny* what immediately relates to ourselves; we *refuse* what relates to another. [See *contradict*.]
de-o-dor-ant (*-ō'dėr-ant*), *n.* a deodorizer.
de-o-dor-ize (*'dėr-īz*), *v. t.* to disinfect.
de-part (*dē-pärt'*), *v. i.* to go or move away; leave.
de-part-ment (*'ment*), *n.* a separate room or office for business; a branch of business.
de-par-ture (*-pär'tūr*), *n.* the act of departing; deviation.
de-pend (*dē-pend'*), *v. i.* to rely for support.
de-pend-ence (*'ens*), *n.* the state of being dependent. [Also *dependency* (*-si*), *pl.* dependencies (*-siz*), a colony.]
de-pend-ent (*'ent*), *adj.* hanging down; contingent.
de-pict (*-pikt'*), *v. t.* to paint or portray. [PAINT.]
de-ple-tion (*-plē'shun*), *n.* the act of emptying.
de-plor-a-ble (*-plōr'ə-bl*), *adj.* worthy to be deplored; sad.

de-plore (*dē-plōr'*), *v. t.* to lament; grieve for.
Syn. DEPLORE, lament. *Deplore* is a much stronger expression than *lament*. The former calls forth tears from the bitterness of the heart; the latter excites a cry from the warmth of feeling. *Deploring* indicates despair; to *lament* marks only pain or distress.
de-ploy (*-ploi'*), *v. t.* and *v. i.* [*p. t.* and *p. p.* deployed, *p. pr.* deploying], to open out; extend in line.
de-pon-ent (*-pōn'ent*), *n.* a witness who makes an affidavit.
Syn. DEPONENT, evidence, witness. All these words are properly applied to judicial proceedings, where the *deponent* deposes generally to facts either in causes or otherwise; the *evidence* consists either of persons or things, which are brought before the court for the purpose of making a doubtful matter clear; the *witness* is always a person who bears witness to any fact for or against another.
de-pop-u-late (*-pop'ū-lāt*), *v. t.* to deprive of inhabitants.
de-port (*-pōrt'*), *v. t.* to carry from one country to another.
de-port-ment (*'ment*), *n.* conduct.
de-pose (*-pōz'*), *v. t.* to deprive of office.
de-pos-it (*-poz'it*), *v. t.* to put or set down; *n.* anything deposited.
Syn. DEPOSIT, pledge, security. The term *deposit* has most regard to the confidence we place in another; *pledge* has most regard to the *security* we give for ourselves; *security* is a species of *pledge*. A *security* is whatever makes a person *secure* against a loss, and in the ordinary acceptation consists of any instrument or written document which legally binds a person.
dep-o-si-tion (*dep-ō-zish'un*), *n.* the act of depositing or deposing. [TESTIMONY.]
de-pos-i-tor (*dē-poz'i-tēr*), *n.* one who deposits.
de-pos-i-to-ry (*dē-poz'i-tō-ri*), *n.* [*pl.* depositories (*-riz*)], the place where anything is deposited.
de-pot (*dē'pō*, Fr. *dā-pō'*), *n.* a warehouse.
de-prave (*dē-prāv'*), *v. t.* to make bad. [ABANDON.]
de-prav-i-ty (*-prav'i-ti*), *n* the state of being depraved; depravation.
Syn. DEPRAVITY, depravation, corruption. All these terms are applied to objects which are contrary to the order of Providence, but the term *depravity* characterizes the thing as it is; the terms *depravation* and *corruption* designate the making or causing it to be so; *depravity*, therefore, excludes the idea of any cause; *depravation* always carries us to the cause or external agency; hence we may speak of *depravity* as natural, but we speak of *depravation* as the result of circumstances.
dep-re-cate (*dep'rē-kāt*), *v. t.* to pray against.
dep-re-ca-tion (*-kā'shun*), *n.* the act of deprecating.
dep-re-ca-to-ry (*dep'rē-kā-tō-ri*), *adj.* apologetic.
de-pre-ci-ate (*dē-prē'shi-āt*), *v. t.* to disparage.
de-pre-ci-a-tion (*-ā'shun*), *n.* the act of lessening the value.
dep-re-date (*dep'rē-dāt*), *v. t.* to pillage; rob.
dep-re-da-tion (*-dā'shun*), *n.* the act of depredating.
de-press (*dē-pres'*), *v. t.* to press or thrust down.
de-pres-sion (*-presh'un*), *n.* the act of depressing. [DEJECTION.]
dep-ri-va-tion (*dep-ri-vā'shun*), *n.* the act of taking away; destitution.
de-prive (*dē-prīv'*), *v. t.* to take from. [ABDUCT.]
depth (*depth*), *n.* the state or degree of being deep.
Syn. DEPTH, profundity. *Depth* is indefinite in its signification; and *profundity* is a positive and considerable degree of depth. Moreover, the word *depth* is applied to objects in general; *profundity* is confined in its application to moral objects.
dep-u-ta-tion (*dep-ū-tā'shun*), *n.* the act of deputing.
de-pute (*dē-pūt'*), *v. t.* to appoint as an agent or deputy. [DELEGATE, CONSTITUTE.]
dep-u-ty (*dep'ū-ti*), *n.* [*pl.* deputies (*-tiz*)], a delegate. [DELEGATE, AMBASSADOR.]
de-rail (*dē-rāl'*), *v. t.* to cause to leave the rails.
de-range (*-rānj'*), *v. t.* to throw into confusion.
der-by (*dēr'bi*), *n.* a kind of stiff felt hat.
der-e-lict (*der'ē-likt*), *adj.* abandoned; *n.* anything left, forsaken.
der-e-lic-tion (*-lik'shun*), *n.* omission, as of obligation or duty.
de-ride (*dē-rīd'*), *v. t.* to mock.
de-ri-sion (*-rizh'un*), *n.* the act of deriding.
de-ri-sive (*-ri'siv*), *adj.* expressing derision.
der-i-va-tion (*der-i-vā'shun*), *n.* the act of deriving.
de-riv-a-tive (*dē-riv'a-tiv*), *adj.* derived or taken from another.
de-rive (*-rīv'*), *v. t.* to draw from an original source.
Syn. DERIVE, trace, deduce. The act of *deriving* is immediate and direct; that of *tracing* a gradual process; that of *deducing* a ratiocinative process. We discover causes and sources by *derivation;* we discover the course, progress, and commencement of things by *tracing;* we discover the grounds and reasons of things by *deduction*.
der-ma (*dēr'mà*), *n.* the true skin.
der-ma-tol-o-gy (*-tol'ō-ji*), *n.* the science which treats of the skin.
der-o-gate (*der'ō-gāt*), *v. t.* to take away.
de-rog-a-to-ry (*dē-rog'a-tō-ri*), *adj.* tending to derogate from honor.
der-rick (*der'ik*), *n.* an apparatus for hoisting heavy weights.
Derrick or **Dirck.** A name corrupted from *Theodoric*.
der-rin-ger (*der'in-jēr*), *n.* a pocket pistol with a short barrel.
der-vish (*dēr'vish*), *n.* a Mohammedan monk.
★**des-cant** (*des'kant*), *n.* a disquisition or comment.
de-scend (*dē-send'*), *v. i.* to pass from a higher to a lower position.
de-scend-ant (*'ant*), *n.* one who is lineally descended from an ancestor.
de-scend-ent (*'ent*), *adj.* descending.
de-scen-sion (*-sen'shun*), *n.* the act of descending.
de-scent (*-sent'*), *n.* change from a higher to a lower place.
de-scribe (*-skrīb'*), *v. t.* to delineate or trace out.
de-scrip-tion (*-skrip'shun*), *n.* the act of describing. [DEFINITION.]
de-scrip-tive (*'tiv*), *adj.* tending to, or serving to; describe.
de-scry (*-skrī'*), *v. t.* to behold at a distance.
des-e-crate (*des'ē-krāt*), *v. t.* to divert from a sacred to a secular use.
de-sert (*dē-zērt'*), *v. t.* to forsake; abandon; *n.* merit.
Syn. DESERT, merit, worth. *Desert* is taken for that which is good or bad; *merit* for that which is good only. We deserve praise or blame; we *merit* a reward; *worth* is that which is absolutely valuable; it must be sought for on its own account. [See *abandon*.]
des-ert (*dez'ērt*), *n.* a barren tract incapable of supporting life or vegetation. [SOLITARY.]
de-serve (*dē-zērv'*), *v. t.* to earn by service.
des-ic-cate (*des'i-kāt*), *v. t.* to dry thoroughly.
★**de-sid-er-a-tum** (*dē-sid-ēr-ā'tum*, not *dē-sid-ēr-ā'tum*), *n.* [*pl.* desiderata (*'tà*)], anything desired.
de-sign (*-zīn'*), *v. t.* to draw, mark, or plan out: *v. t.* to formulate designs: *n.* purpose.
Syn. DESIGN, purpose, intend, mean. A *design* supposes something studied and methodical, it requires reflection; a *purpose* is the thing proposed or set before the mind; an *intention* is the thing to which the mind bends or inclines. We *purpose* seriously; we *intend* vaguely; we set about that which we *purpose;* we may delay that which we have only *intended*. *Mean* differs but little from *intend*, except that it is used for matters requiring but little thought.
Ant. EFFECT, express.
de-sign (*-zin'*), *n.* a plan; project; scheme.
des-ig-nate (*des'ig-nāt*), *v. t.* to indicate by marks, lines, or a description.
de-sign-ing (*dē-zin'ing*), *adj.* scheming; artful.
de-sir-a-bil-i-ty (*-zir-a-bil'i-ti*), *n.* the state of being desirable.
de-sir-a-ble (*'a-bl*), *adj.* pleasing; agreeable.
de-sire (*-zī r'*), *v. t.* to wish earnestly for.
Syn. DESIRE, wish, long, covet. *Desire* is imperious, it demands gratification; *wish* is less vehement, it consists of a strong inclination; *longing* is an impatient and continued species of *desire; coveting* is a *desire* for that which belongs to another, or what it is in his power to grant.
Ant. ABHOR, dislike, refuse, repulse.
de-sir-ous (*'us*), *adj.* full of desire. [EAGER.]
de-sist (*-sist'*), *v. i.* to cease from.
Syn. DESIST, leave off. To *desist* is voluntary or involuntary; to *leave off* voluntary. We are frequently obliged to *desist;* but we *leave off* at our option; he who annoys another must be made to *desist;* he who does not wish to offend will *leave off* when requested.
desk (*desk*), *n.* a table for reading or writing.
Des Moines (*dē-moin'*). River, county, and city in Iowa. This name is thought to have been derived from the Indian word *mikonang*, meaning "the road."
des-o-late (*des'ō-lāt*), *v. t.* to lay waste: *adj.* deserted. [SOLITARY.]
des-o-la-tion (*-lā'shun*), *n.* the act of desolating.
de-spair (*dē'spâr*), *v. i.* to abandon all hope, or expectation: *v. t.* to lose hope; desperation.
Syn. DESPAIR, desperation, despondency. *Despair* is a state of mind produced by the view of external circumstances; *desperation* and *despondency* may be the fruit of the imagination. *Desperation* marks a state of vehement and impatient feeling; *despondency* is a disease of the mind.
des-patch (*des-pach'*) or **dispatch** (*dis-*), *v. t.* to send off; put to death: *n.* speedy performance. [HASTEN.] [danger.
des-per-a-do (*-pēr-ā'dō*), *n.* a man reckless of
des-per-ate (*'pēr-āt*), *adj.* regardless of danger.
★**des-pic-a-ble** (*des'pik-à-bl*, not *dē-spik'à-bl*), *adj.* contemptible.
de-spise (*dē-spīz'*), *v. t.* to look down upon. [CONTEMN.]
de-spite (*-spīt'*), *n.* extreme contempt.
de-spond (*-spond'*), *v. i.* to be cast down in spirits.
de-spond-en-cy (*'en-si*), *n.* absence of hope. [DESPAIR.]
des-pot (*des'pot*), *n.* an absolute, irresponsible ruler.
des-pot-ic (*-pot'ik*), *adj.* absolute in power. [ABSOLUTE.]
des-pot-ism (*'pot-izm*), *n.* absolute power; tyranny.
des-sert (*dez-zērt'*), *n.* a course of fruits, sweets, etc., usually served last at dinner.
des-ti-na-tion (*des-ti-nā'shun*), *n.* purpose or end.
★**des-tine** (*des'tin*), *v. t.* to appoint to any use.
des-ti-ny (*des'ti-ni*), *n.* [*pl.* destinies (*-niz*)], fate.
Syn. DESTINY, fate, lot, doom. *Destiny* is used in regard to one's station and walk in life; *fate* in regard to what one suffers; *lot* in regard to what one gets or possesses; and *doom* is the final destiny which terminates unhappily, and depends mostly upon the will of another; *destiny* is marked out; *fate* is fixed; a *lot* is assigned; a *doom* is passed. [See *chance*.]
Ant. CHOICE, preference.
des-ti-tute (*'ti-tūt*), *adj.* without means of existence. [BARE, FORSAKEN.]
des-ti-tu-tion (*-tū'shun*), *n.* poverty.
de-stroy (*dē-stroi'*), *v. t.* to pull down; overturn.
Syn. DESTROY, consume, waste. To *destroy* is to reduce to nothing that which has been artificially raised or formed; as, to *destroy* a town or a house; to *consume* is to use up; as, to *consume* food, or to *consume* articles of manufacture. [See *subvert*.]
Ant. CHERISH, hoard, renew.
de-struc-ti-ble (*-struk'ti-bl*), *adj.* that may be destroyed.
de-struc-tion (*'shun*), *n.* the act of destroying.
Syn. DESTRUCTION, ruin. *Destruction* is an act of immediate violence; *ruin* is a gradual process; a thing is *destroyed* by some external action upon it; a thing falls to *ruin* of itself.
de-struc-tive (*'tiv*), *adj.* tending to destruction.
des-ul-to-ry (*des'ul-tō-ri*), *adj.* passing from one thing to another. [CURSORY.]
de-tach (*dē-tach'*), *v. t.* to disconnect.
de-tach-ment (*'ment*), *n.* the act of detaching; a body of troops detached from the main body.
de-tail (*dē-tāl'*), *v. t.* to relate minutely; tell off for a given duty.
de-tain (*dē-tān'*), *v. t.* to hold back. [HOLD.]
de-tect (*dē-tekt'*), *v. t.* to discover; bring to light.
Syn. DETECT, discover. *Detect* is always taken in a bad sense; *discover* in an indifferent sense. A person is *detected* in what he wishes to conceal; a person or a thing is *discovered* that has lain concealed. [See *convict*.]
Ant. OVERLOOK.
de-tec-ta-ble (*-tek'tà-bl*), *adj.* that may be detected.
de-tec-tion (*'shun*), *n.* the act of detecting or its result; discovery.
de-tec-tive (*'tiv*), *n.* one whose business it is to trace wrongdoers.
de-ten-tion (*-ten'shun*), *n.* the act of detaining or withholding.
de-ten-tive (*'tiv*), *adj.* employed in detaining.
de-ter (*dē-tēr'*), *v. t.* [*p. t.* and *p. p.* deterred, *p. pr.* deterring], to discourage, or hinder.
de-terge (*-tērj'*), *v. t.* to cleanse, as a wound.
de-te-ri-o-rate (*-tē'ri-ō-rāt*), *v. t.* to reduce to an inferior quality.
de-ter-mi-na-ble (*-tēr'mi-nà-bl*), *adj.* capable of being ascertained.
de-ter-mi-nate (*'mi-nāt*), *adj.* having definite or fixed limits.
★**de-ter-min-a-tive** (*'min-à-tiv*), *adj.* determining; limiting.
de-ter-mine (*dē-tēr'min*), *v. i.* to decide; end.
Syn. DETERMINE, resolve. We *determine* how or what we shall do; this requires examination and choice; we *resolve* that we will do what we have *determined* upon. [See *decided*.]
Ant. DOUBT, hesitate.
de-ter-rent (*-tēr'ent*), *adj.* serving, or tending, to deter: *n.* that which deters.
de-test (*-test'*), *v. t.* to hate intensely. [HATE, ABHOR.]
de-tes-ta-tion (*dē-tes-* or *det-es-tā'shun*), *n.* extreme dislike or abhorrence. [ANTIPATHY, ABOMINATION.]
de-throne (*-thrōn'*), *v. t.* to remove from a throne.
★**det-o-nate** (*det'ō-nāt*), *v. t.* to cause to explode.
de-tour (*dē-tōōr'*), *n.* a circuitous way.
de-tract (*-trakt'*), *v. t.* to draw or take away.
de-trac-tion (*-trak'shun*), *n.* depreciation; slander.
det-ri-ment (*det'ri-ment*), *n.* that which injures.
det-ri-men-tal (*-men'tal*), *adj.* injurious.
Detroit (*dē-troit'*), **Mich.** From the river or strait on which the city is built. Derived from two French words, *de troit*, "the narrows."
Deuteronomy (*dū-tēr-on'ō-mi*). From two Greek words meaning *second* and *law*. The fifth book of Moses is so named.
de-vap-o-ra-tion (*dē-vap-ō-rā'shun*), *n.* the change of vapor into water.
dev-as-tate (*dev'as-tāt*), *v. t.* to lay waste.
dev-as-ta-tion (*-tā'shun*), *n.* the act of devastating.
de-vel-op (*dē-vel'op*), *v. t.* to unfold gradually; make known in detail.
de-vel-op-ment (*-ment*), *n.* the act of developing.
de-vest (*dē-vest'*), *v. t.* to alienate or annul.
de-vi-ate (*dē'vi-āt*), *v. i.* to turn aside from a certain course.
Syn. DEVIATE, wander, swerve, stray. *Deviate* always supposes a direct path which is departed from; *wander* includes no such idea. The act of *deviating* is commonly faulty; that of *wandering* is indifferent. To *swerve* is to *deviate* from that which one holds right; to *stray* is to *wander* in the same bad sense. Men *swerve* from their duty to consult their interest; the young *stray* from the path of rectitude. [See *digress*.]
de-vi-a-tion (*-ā'shun*), *n.* the act of deviating.

de-vice (*dē-vīs'*), *n.* a contrivance; invention; a stratagem.

Devil. Many philologists declare that the name of God is derived from *Good Spirit*, shortened by long use to "good" or "god." By a similar process, Satan may have been known as *the Evil Spirit*, which shortened by usage would become *the Evil*, or *th'evil*, easily corrupted into *Devil*.

dev-il-ish (*dev'i-ish*), *adj.* diabolical; extremely wicked; infernal; excessive.

dev-il-ment (*-ment*), *n.* roguishness.

de-vi-ous (*dē'vi-us*), *adj.* rambling; circuitous.

de-vis-a-ble (*-vīs'a-bl*), *adj.* capable of being bequeathed.

de-vise (*-vīz'*), *v. t.* to imagine; contrive; bequeath by will.

Syn. DEVISE, bequeath. In the technical sense, to *devise* is to give lands by a will duly attested according to law; to *bequeath* is to give personality after one's death by a less formal instrument.

de-vis-er (*dē-vīz'ẽr*), *n.* one who devises or invents.

de-vis-or (*'ẽr* or *ôr*), *n.* one who bequeaths by will.

de-void (*-void'*), *adj.* destitute of.

de-volve (*dē-volv'*), *v. t.* to transfer from one to another.

de-vote (*dē-vōt'*), *v. t.* to dedicate or consecrate. [DEDICATE, HOLY, ADDICTED.]

dev-o-tee (*dev-ō-tē'*), *n.* a votary; enthusiast.

de-vo-tion (*dē-vō'shun*), *n.* the act of devoting or consecrating; strong affection. [LOVE.]

de-vour (*dē-vour'*), *v. t.* to swallow greedily or ravenously.

de-vout (*-vout'*), *adj.* devoted to religious thoughts.

dew (*dū*), *n.* aqueous vapor condensed from the atmosphere and deposited in small drops at evening.

dew-claw (*'klaw*), *n.* the little claw behind a dog's foot.

dew-lap (*'lap*), *n.* the loose skin that hangs from the neck of an ox or cow.

dew-y (*dū'i*), *adj.* moist with dew.

Dewy or **Dewey.** A Cornish form of *David*.

dex-ter-i-ty (*deks-ter'i-ti*), *n.* mental or physical adroitness.

dex-ter-ous (*'tẽr-us*), *adj.* quick, mentally or physically. [CLEVER.]

di-a-be-tes (*dī-a-bē'tēz*), *n.* a disease characterized by a morbid and excessive discharge of urine.

di-a-bol-ic (*dī-a-bol'ik*), or **di-a-bol-ic-al** (*'i-kal*), *adj.* devilish.

di-ab-o-lo (*dī-ab'ō-lō*) *n.* a game played by one or more persons, each of whom holds in either hand a stick connected by a cord, and endeavors by the aid of this cord to pick a reel-like top off the ground and cause it to spin continuously.

★**di-a-cous-tics** (*dī-a-kous'* or *-kōōs'tiks*), *n. pl.* the science of refracted sounds.

di-a-crit-ic-al (*-krit'i-kal*), *adj.* serving to separate or distinguish.

di-a-crit-ic-al mark (*märk*), *n.* a mark employed to distinguish letters or sounds which resemble each other.

di-a-dem (*'a-dem*), *n.* a crown; tiara.

di-ag-nose (*-ag-nōs'*), *v. t.* to ascertain, as a disease, by its general symptoms.

di-ag-no-sis (*-nō'sis*), *n.* [*pl.* diagnoses (*'sēz*)], scientific discrimination.

di-ag-o-nal (*-ag'ō-nal*), *adj.* extending from one angle to another.

di-a-gram (*'a-gram*), *n.* a geometrical figure; a mechanical plan.

di-al (*dī'al*), *n.* an instrument for showing the time of the sun's shadow.

di-a-lect (*'a-lekt*), *n.* the peculiar manner in which a language is spoken in a province or district of a country.

di-a-lec-tic (*lek'tik*), *adj.* pertaining to a dialect.

di-a-lec-ti-cian (*-tish'an*), *n.* a logician.

di-a-lec-tics (*'tiks*), *n. pl.* the art of reasoning.

di-a-logue (*'a-log*), *n.* a conversation between two or more persons. [CONVERSATION.]

di-a-mag-net-ism (*-mag'net-izm*), *n.* the property possessed by certain bodies when under the influence of magnetism, and freely suspended, of taking a position at right angles to the magnetic meridian.

di-am-e-ter (*dī-am'ē-tẽr*), *n.* the length of a line passing through the center of any object from one side to the other.

di-a-met-ric-al (*-a-met'ri-kal*), *adj.* pertaining to a diameter; directly adverse or opposite.

di-a-mond (*dī'a-mund*), *n.* a gem of extreme hardness and refractive power.

Diana (*dī-an'a*) or **Dian** (*dī'an*). So called after *Diana*, goddess of hunting, the same as *Luna*, "the moon." Danish, *Diana;* Fr., *Diane;* Ger., *Diana;* Gr., *Artemis;* It., *Diana;* Lat., *Diana*.

di-a-pa-son (*dī-a-pā'zon*), *n.* the entire compass of a voice or instrument.

di-a-per (*'a-pẽr*), *n.* linen cloth woven in geometric patterns.

di-aph-a-nous (*-af'a-nus*), *adj.* transparent.

di-a-phragm (*'a-fram*), *n.* any substance that intercepts or divides.

di-ar-rhœ-a (*dī-a-rē'a*), *n.* persistent looseness of the bowels.

di-a-ry (*'a-ri*), *n.* [*pl.* diaries (*-riz*)], a register of daily occurrences.

di-as-to-le (*-as'tō-lē*), *n.* the rhythmical expansion and dilatation of the heart.

di-a-ton-ic (*dī-a-ton'ik*), *adj.* designating the regular tones of a key or scale.

di-a-tribe (*'a-trīb*), *n.* a continued discourse or disputation.

dice (*dis*), *n. pl.* small cubes marked on the sides with one to six spots.

di-chro-mism (*dī'krō-mizm*), *n.* inability to see more than one of the three primary colors.

di-cing (*dī'sing*), *n.* gaming with dice.

dick-er (*dik'ẽr*), *v. i.* to barter or trade on a small scale.

dick-y (*dik'i*), *n.* [*pl.* dickies (*'iz*)], a small separate shirt front.

dic-tate (*dik'tāt*), *v. t.* to declare with authority: *n.* command.

Syn. DICTATE, prescribe. *Dictate* signifies to make a word for another; and *prescribe* literally signifies to write down for another; to *dictate* is, however, a greater exercise of authority than to *prescribe*. He who *dictates* speaks with an adventitious authority; he who *prescribes* has the sanction of reason.

Ant. SUGGEST.

dic-ta-tion (*-tā'shun*), *n.* the act of dictating.

dic-ta-tor (*'tẽr*), *n.* one who dictates.

dic-ta-to-ri-al (*-tō'ri-al*), *adj.* pertaining to a dictator.

dic-tion (*dik'shun*), *n.* manner of speaking or expression.

dic-tion-a-ry (*-a-ri*), *n.* [*pl.* dictionaries (*-riz*)], a book containing all, or the principal, words in a language, with their meanings, derivations, etc.

Syn. DICTIONARY, lexicon, vocabulary, glossary, nomenclature. *Lexicon* is a species of *dictionary* appropriately applied to the dead languages. *Dictionary* is applied to the words of a modern language. A *vocabulary* is a partial kind of *dictionary*, which may comprehend a simple list of words, with or without explanation, arranged in order or otherwise. A *glossary* is an explanatory *vocabulary*, which commonly serves to explain difficult or obsolete terms. A *nomenclature* is literally a list of names, and in particular a reference to proper names.

dic-tum (*'tum*), *n.* [*pl.* dicta (*-ta*)], aphorism.

di-dac-tic (*di-dak'tik*), *adj.* teaching; instructing.

did-dle (*did'l*), *v. t.* to overreach or cheat.

di-do (*dī'dō*), *n.* a caper.

die (*dī*), *v. i.* [*p. t.* and *p. p.* died, *p. pr.* dying], to cease to live.

Syn. DIE, expire. *Die* designates in general the extinction of being. *Expire* designates the last action of life in certain objects. Plants and trees *die*. The flame of a lamp *expires*.

Ant. BE BORN, live.

die (*dī*), *n.* [*pl.* dies (*dīz*)], a piece of engraved metal with a device used for coining money, medals etc; a small cube (*pl. dice*, see *dice*).

di-er-e-sis (*-er'ē-sis*), *n.* a sign (¨) placed over the second of two separate vowels to show that each has a separate sound in pronunciation.

di-e-sis (*dī'ē-sis*), *n.* the double dagger (‡) used in printing.

di-et (*dī'et*), *n.* manner of living with special reference to food.

di-e-ta-ry (*dī'ē-tā-ri*), *adj.* pertaining to the rules of diet.

di-e-tet-ic (*dī-ē-tet'ik*), *adj.* regulating food or diet.

dif-fer (*dif'ẽr*), *v. i.* to be dissimilar.

dif-fer-ence (*'ẽr-ens*), *n.* the act or state of being unlike.

Syn. DIFFERENCE, variety, diversity, medley. *Difference* and *variety* seem to lie in the things themselves; *diversity* and *medley* are created either by accident or design. A *difference* may lie in two objects only; a *variety* cannot exist without an assemblage; a *difference* is discovered by means of a comparison which the mind forms of objects to prevent confusion; *variety* strikes on the mind, and pleases the imagination with many agreeable images; *diversity* arises from an assemblage of objects naturally contrasted; a *medley* is produced by an assemblage of objects so ill suited as to produce a ludicrous effect.

Ant. IDENTITY, likeness, uniformity.

★**dif-fer-ent** (*dif'ẽr-ent*, not *dif'rent*), *adj.* unlike.

Syn. DIFFERENT, unlike. *Different* is positive, *unlike* is negative; we look at what is *different* and draw a comparison; but that which is *unlike* needs no comparison; a thing is said to be *different* from every other thing, or *unlike* to anything seen before.

Ant. IDENTICAL, one, same, similar.

dif-fer-en-ti-ate (*-en'shi-āt*), *v. t.* to constitute a difference between.

dif-fer-en-ti-a-tion (*-ā'shun*), *n.* the act of differentiating.

dif-fi-cult (*'i-kult*), *adj.* not easy. [OBSCURE.]

dif-fi-cul-ty (*-kul-ti*), *n.* [*pl.* difficulties (*-tiz*)], something that requires labor or skill to overcome.

Syn. DIFFICULTY, obstacle, impediment. *Difficulty* signifies not easy to be done; *obstacle* signifies the thing that stands in the way between a person and the object he has in view; *impediment* signifies something that entangles the feet. A *difficulty* interferes with the completion of any work; an *obstacle* interferes with the attainment of any end; an *impediment* interrupts the progress, and prevents the execution of one's wishes.

dif-fi-dence (*'i-dens*), *n.* lack of self-reliance. [DISTRUST.]

dif-fi-dent (*dif'i-dent*), *adj.* lacking self-reliance. [MODEST.]

dif-frac-tion (*dif-frak'shun*), *n.* the act of turning a ray of light when passing the edge of an opaque body.

dif-fuse (*dif-fūz'*), *v. t.* to pour out and spread all around: *n.* prolix.

Syn. DIFFUSE, prolix. Both mark defects of style opposed to brevity. The *diffuse* is properly opposed to the precise; the *prolix* to the concise or laconic. A *diffuse* writer is fond of amplification; the *prolix* writer is fond of minute details. [See *spread*.]

dif-fu-sion (*dif-fū'zhun*), *n.* the act of diffusing.

dif-fus-ive (*-fūs'iv*), *adj.* capable of diffusing.

dig (*dig*), *v. i.* [*p. t.* and *p. p.* dug or digged; *p. pr.* digging], to work with a spade.

di-gest (*dī'jest*), *n.* any compilation, abridgment, or summary of laws; *v. t.* (*di-gest'*) dissolve in the stomach by the action of digestive juices. [ABRIDGMENT, DISPOSE.]

di-ges-ti-bil-i-ty (*-jes-ti-bil'i-ti*), *n.* the quality of being digestible.

di-ges-ti-ble (*'ti-bl*), *adj.* capable of being digested.

di-ges-tion (*-jes'chun*), *n.* the act of digesting.

dig-ger (*dig'ẽr*), *n.* one who digs.

dig-ging (*'ing*), *n.* the act of excavating.

dig-it (*dij'it*), *n.* a finger or toe; any one of the Arabic numerals.

★**Dig-i-ta-lis** (*dij-i-tā'lis*, not *dij-i-tā'lis*), *n.* a genus of tall plants.

dig-i-tate (*'i-tāt*), *adj.* finger-shaped.

dig-i-ti-grade (*'i-ti-grād*), *adj.* walking on the toes, as cats.

dig-ni-fy (*dig'ni-fī*), *v. t.* [*p. t.* and *p. p.* dignified, *p. pr.* dignifying], to invest with dignity or rank.

dig-ni-ta-ry (*-tā-ri*), *n.* [*pl.* dignitaries (*-riz*)], one who holds a position of dignity or honor.

dig-ni-ty (*'ni-ti*), *n.* [*pl.* dignities (*-tiz*)], elevation of rank; moral worth.

di-gress (*di-* or *dī-gres'*), *v. i.* to turn aside.

Syn. DIGRESS, deviate. Both these words express going out of the ordinary course; we *digress* only in a narrative, whether written or spoken; we *deviate* in actions as well as in words, in our conduct as well as in writings.

di-gres-sion (*-gresh'un*), *n.* the act of digressing.

dike (*dīk*), *n.* an embankment of earth thrown up as a protection against the sea, floods, etc.

di-lap-i-date (*di-lap'i-dāt*), *v. t.* to bring into partial ruin.

di-lap-i-da-tion (*-i-dā'shun*), *n.* a state of partial ruin.

di-lat-a-ble (*-lā'ta-bl*), *adj.* expansive.

di-late (*-lāt'*), *v. t.* to enlarge or expand in all directions.

di-la-tor (*-lā'tẽr*), *n.* one who, or that which, dilates.

dil-a-to-ry (*dil'a-tō-ri*), *adj.* causing, or tending to cause, delay.

di-lem-ma (*di-* or *dī-lem'a*), *n.* an awkward or vexatious situation.

★**dil-et-tan-te** (*dil-et-an'tā* or *dē-lā-tän'tā*), *n.* [*pl.* dilettanti (*-tē*)], one who pursues the arts only for amusement; an amateur.

dil-et-tant-ism (*-tant'izm*), *n.* the characteristics of dilettanti.

di-li-gence (*'i-jens*), *n.* careful attention.

dil-i-gent (*'i-jent*), *adj.* active, alert, prompt.

Syn. DILIGENT, expeditious, prompt. *Diligent* marks the interest one takes in doing something; he is *diligent* who loses no time, who keeps close to the work from inclination: *expeditious* marks the desire one has to complete the thing begun. *Prompt* marks one's desire to get ready; he is *prompt* who sets about a thing without delay, so as to make it ready. [See *active*.]

dil-ly-dal-ly (*dil'i-dal'i*), *v. i.* [*p. t.* and *p. p.* -dallied, *p. pr.* -dallying], to loiter; trifle.

di-lute (*di-* or *dī-lūt'*), *v. t.* to thin or weaken by the admixture of another fluid.

di-lu-tion (*-lū'shun*), *n.* the act of diluting.

dim (*dim*), *adj.* [*comp.* dimmer, *superl.* dimmest], somewhat dark; hazy; obscure; faint; tarnished. [DARK, OBSCURE, FAINT.]

dime (*dīm*), *n.* a silver coin equal to 1-10th of a dollar, or ten cents.

di-men-sion (*dī-men'shun*), *n.* the size or measured extent of a body.

di-min-ish (*dī-min'ish*), *v. t.* to make less; reduce in bulk or amount. [ABATE.]

dim-i-nu-tion (*dim-i-nū'shun*), *n.* reduction; lessening.

di-min-u-tive (*di-min'ū-tiv*), *adj.* below the average size; little. [LITTLE.]

dim-i-ty (*dim'i-ti*), *n.* [*pl.* dimities (*-tiz*)], a cotton cloth of thick texture.

dim-ple (*dim'pl*) *n.* a small depression or hollow in the cheek or chin.

din (*din*), *n.* a continued and violent noise.

Dinah. From the Hebrew *Diynah*, signifying "judged"; *i. e.*, "acquitted", "vindicated."

dine (*din*), *v. i.* to take dinner.

ding (*ding*), *v. i.* to sound as a bell.

ding-dong (*'dông*), *n.* the sound of a metallic body produced by blows.

★**din-ghy** (*ding'gi*), *n.* the smallest boat of a man-of-war.

din-gle (*ding'gl*), *n.* a narrow hollow between hills.

din-gle - dan-gle (*-dang'gl*), *adv.* swinging backward and forward.

din-gy (*din'ji*), *adj.* dark-colored; dirty.

din-ner (*'ẽr*), *n.* the chief meal of the day.

dint (*dint*), *n.* a mark left by a blow or pressure.
di-oc-e-san (*dī-os'ē-san* or *dī'ō-sē-san*), *adj.* of or pertaining to a diocese.
di-o-cese (*'ō-sēs*), *n.* [*pl.* dioceses (*-sē-sez*)], a bishop's see.
di-op-tric (*-op'trik*), *adj.* assisting vision by means of the refraction of light.
di-ox-ide (*-oks'id* or *id*), *n.* an oxide consisting of 2 atoms of oxygen and 1 atom of a metal.
dip (*dip*), *v. t.* [*p. t.* and *p. p.* dipped, dipt, *p. pr.* dipping], to plunge for a short time into a fluid; the angle of inclination of strata to the horizon.
★**diph-the-ri-a** (*dif-* or *dip-thē'ri-ȧ*), *n.* a contagious throat-disease characterized by the formation of a false membrane in the air passages.
★**diph-thong** (*dif'* or *dip'thông*), *n.* the union of two vowel sounds pronounced in one syllable.
★**di-plo-ma** (*di-plō'mȧ*, not *di-plō'mȧ*), *n.* a writing on parchment or paper under sign and seal, conferring some honor.
di-plo-ma-cy (*'mȧ-si*, or *-plom'ȧ-si*), *n.* [*pl.* diplomacies (*-siz*)], the art of conducting negotiations between two states or nations.
dip-lo-mat (*dip'lō-mat*), *n.* a diplomatist.
di-plo-ma-tist (*di-plō'mȧ-tist*), *n.* one who is skilled in diplomacy.
dip-per (*dip'ẽr*), *n.* one who, or that which, dips.
dip-so-ma-ni-a (*-sō-mā'ni-ȧ*), *n.* a morbid craving for alcoholic drinks.
dire (*dīr*), *adj.* dreadful; mournful.
di-rect (*di-rekt'*), *adj.* straight; not circuitous. [CONDUCT.]
di-rec-tion (*-rek'shun*), *n.* relative position; a command.
Syn. DIRECTION, address, superscription. A *direction* may serve to direct to place as well as to persons; an *address* is never used but in direct application to the person; a *superscription* has more respect to the thing than the person. A *direction* is given to such as go in search of persons and places; an *address* is put either on a card and a letter, or in a book; a *superscription* is placed at the head of other writings, or over tombs and pillars.
di-rect-ly (*-rekt'li*), *adv.* in a direct or straight line.
di-rect-ness (*'nes*), *n.* the quality of being direct.
di-rect-or (*'ẽr*), *n.* one who directs or superintends.
di-rect-o-rate (*'ō-rāt*), *n.* the office of a director.
di-rect-o-ry (*'ō-ri*), *n.* [*pl.* directories (*-riz*)], a book containing the names of the residents of a place.
dirge (*dẽrj*), *n.* a funeral hymn.
dir-i-gi-ble (*dir'i-ji-ble*), *adj.* that may be guided or steered: *n.* a dirigible balloon.
dirk (*dẽrk*), *n.* a dagger.
dirt (*dẽrt*), *n.* any foul or filthy substance.
dirt-y (*'i*), *adj.* impure; soiled.
dis, *prefix*, signifies separation, privation or negation.
dis-a-bil-i-ty (*dis-ȧ-bil'i-ti*), *n.* [*pl.* disabilities (*-tiz*)], lack of fitness. [INABILITY.]
dis-a-ble (*-ā'bl*), *v. t.* to deprive of power.
dis-a-buse (*-būz'*), *v. t.* to clear from mistakes.
dis-af-fect (*-af-fekt'*), *v. t.* to fill with discontent.
dis-af-fec-tion (*-fek'shun*), *n.* alienation of affection.
Syn. DISAFFECTION, disloyalty. *Disaffection* may be said with regard to any form of government; *disloyalty* only with regard to monarchy. Many were disaffected by the usurpation of Oliver Cromwell, because they would not be *disloyal* to their king.
dis-a-gree-a-ble (*-ȧ-grē'ȧ-bl*), *adj.* exciting repugnance.
dis-ap-pear (*-ȧ-pēr'*), *v. i.* to pass away.
Syn. DISAPPEAR, vanish. A thing *disappears* either gradually or suddenly; it *vanishes* on a sudden; it *disappears* in the ordinary course of things, it *vanishes* by an unusual effort, a supernatural or a magic power.
dis-ap-pear-ance (*'ans*), *n.* removal from sight.
dis-ap-point (*-point'*), *v. t.* to thwart or frustrate the hopes of.
dis-arm (*-ärm*), *v. t.* deprive of arms.
dis-arm-a-ment (*-ärm'ȧ-ment*), *n.* the act of disarming.
dis-ar-ray (*dis-ȧ-rā'*), *v. t.* [*p. t.* and *p. p.* disarrayed, *p. pr.* disarraying], throw into disorder.
dis-as-ter (*diz-as'tẽr*) *n.* a sudden or unexpected misfortune. [CALAMITY, ACCIDENT.]
★**dis-as-trous** (*'trus*), *adj.* unfortunate.
dis-band (*dis-band'*), *v. t.* to dismiss from military service.
dis-bar (*-bär'*), *v. t.* [*p. t.* and *p. p.* disbarred, *p. pr.* disbarring], to deprive a lawyer of his right to practice.
dis-be-lief (*bē-lēf'*), *n.* positive unbelief.
Syn. DISBELIEF, unbelief. *Disbelief* properly implies the believing that a thing is not, or refusing to believe that it is. *Unbelief* expresses properly a believing the contrary of what one has believed before. *Disbelief* is most applicable to the ordinary events of life; *unbelief* to serious matters of opinion.
dis-bur-den (*-bûr'dn*), *v. t.* to remove a burden from.
dis-burse (*-bûrs'*), *v. t.* to expend.
dis-burse-ment (*'ment*), *n.* money expended.
disc. Another form of *disk*.
dis-card (*-kärd'*), *v. t.* to cast off as useless.
dis-cern (*diz-zẽrn'*), *v. t.* to distinguish.
dis-cern-i-ble (*'i-bl*), *adj.* perceptible.
dis-charge (*dis-chärj'*), *v. t.* unload; free from any burden, impediment, or obligation; dismission from office or employment. [ABSOLVE, BANISH.]
dis-ci-ple (*di-si'pl*), *n.* one who receives the teaching of another.
dis-ci-plin-a-ble (*dis'i-plin-ȧ-bl*), *adj.* capable of instruction.
dis-ci-plin-a-ri-an (*-plin-ā'ri-an*), *adj.* pertaining to discipline.
dis-ci-pline (*'i-plin*), *n.* mental or moral training; *v. t.* to train to obedience or efficiency. [TEACH.]
dis-claim (*-klām'*), *v. t.* to disown.
Syn. DISCLAIM, disown. To *disclaim* is to throw off a claim; to *disown* is not to admit as one's own.
dis-close (*-klōz'*), *v. t.* to uncover. [PUBLISH.]
dis-col-or (*-kul'ẽr*), *v. t.* to change from the natural color.
dis-com-fit (*-kum'fit*), *v. t.* to defeat; rout.
dis-com-mode (*-kom-ōd'*), *v. t.* to inconvenience.
dis-con-cert (*-kon-sẽrt'*), *v. t.* to disturb the composure of.
dis-con-so-late (*'sō-lāt*), *adj.* hopeless.
dis-con-tin-ue (*-tin'ū*), *v. t.* to interrupt; break off. [CEASE.]
dis-cord (*'kôrd*), *n.* disagreement; a confused noise.
Syn. DISCORD, strife. *Discord* consists most in the feeling; *strife* consists most in the outward action. *Discord* evinces itself in various ways; by looks, words, or actions; *strife* displays itself in words or acts of violence. [See *dissension*.]
dis-count (*dis'kount*), *n.* a sum deducted or allowed for prompt payment of an account: *v. t.* (*dis-kount'*) to allow a discount on.
dis-cour-age (*-kur'āj*), *v. t.* dishearten; deter.
★**dis-course** (*dis-kōrs'*, not *dis'kōrs*), *n.* speech or language: *v. t.* and *v. i.* to talk or converse. [SPEAK.]
dis-cov-er (*dis-kuv'ẽr*), *v. t.* to bring to light; reveal.
Syn. DISCOVER, manifest, declare. We *discover* by any means direct or indirect; we *manifest* by unquestionable marks; we *declare* by express words. Talents and dispositions *discover* themselves; particular feelings and sentiments *manifest* themselves; facts, opinions, and sentiments are *declared*. [See *find*, *detect*.]
dis-cov-er-y (*-i*), *n.* [*pl.* discoveries (*-iz*)], a bringing to light or making known.
dis-cred-it (*-kred-it*), *v. t.* disbelieve; *n.* state of being discredited.
Syn. DISCREDIT, disgrace, reproach, scandal. *Discredit* interferes with a man's credit or respectability; *disgrace* marks him out as an object of unfavorable distinction; *reproach* makes him a subject of reproachful conversation; *scandal* makes him an object of offense or even abhorrence.
dis-creet (*-krēt'*), *adj.* prudent.
dis-crep-an-cy (*-krep'an-si*), *n.* disagreement.
dis-crep-ant (*'ant*), *adj.* disagreeing; different.
dis-cre-tion (*-kresh'un*), *n.* prudence; judgment. [JUDGMENT.]
dis-crim-i-nate (*-krim'i-nāt*), *v. t.* to observe or mark the differences between. [DISTINGUISH.]
dis-crim-i-na-tion (*-i-nā'shun*), *n.* faculty of nice discernment.
dis-cur-sive (*-kûr'siv*), *adj.* desultory.
dis-cuss (*dis-kus'*), *v. t.* to debate; agitate.
Syn. DISCUSS, examine. *Discuss* signifies to shake asunder or to separate thoroughly so as to see the whole composition; *examine* is used where the judgment holds the balance in examining. *Discussion* is altogether carried on by verbal and personal communication; *examination* proceeds by reading, reflection, and observation.
dis-cus-sion (*-kush'un*), *n.* argument.
dis-dain (*-dān'*), *v. t.* to think unworthy; deem unsuitable: *n.* haughty, or indignant scorn. [CONTEMN, HAUGHTINESS.]
★**dis-ease** (*diz-ēz'*, not *dis-ēz'*), *n.* any mental, moral, or physical disorder. [DISORDER, DISEASE.]
dis-em-bow-el (*-bou'el*), *v. t.* [*p. t.* and *p. p.* disemboweled, *p. pr.* disemboweling], to deprive of bowels.
dis-fig-ure (*-fig'ūr*), *v. t.* to injure; deform. [DEFACE.]
dis-fran-chise (*-fran'chīz*), *v. t.* to deprive of electoral or municipal privileges.
dis-gorge (*-gôrj'*), *v. t.* to force out of the mouth or stomach with violence.
dis-grace (*-grās'*), *n.* the state of being out of favor; ignominy. [ABASE, DISCREDIT, DISHONOR.]
dis-guise (*-giz'*), *v. t.* to change the appearance of; conceal. [CONCEAL, PRETENSE.]
dis-gust (*-gust'*), *v. t.* to cause aversion in: *n.* strong aversion or repugnance.
Syn. DISGUST, loathing, nausea. *Disgust* is less than *loathing*, and that than *nausea*. When applied to sensible objects we are *disgusted* with dirt; we *loathe* the smell of food if we have a sickly appetite; we *nauseate* medicine. When applied metaphorically, we are *disgusted* with affectation; we *loathe* the endearments of those who are offensive. [See *antipathy*, *abomination*.]
dish (*dish*), *n.* a broad hollow vessel with a rimmed edge.
★**dis-ha-bille** (*dis-ȧ-bil'*), *n.* negligent attire.
dis-heart-en (*-härt'n*), *v. t.* to discourage.
di-shev-el (*di-shev'el*), *v. t.* [*p. t.* and *p. p.* disheveled, *p. pr.* disheveling], to disorder.
dis-hon-est (*dis-on'est*), *adj.* lacking in honesty.
Syn. DISHONEST, knavish. What is *dishonest* violates the established laws of man; what is *knavish* supposes peculiar art and design in the accomplishment.
dis-hon-or (*dis-on'ẽr*), *v. t.* to deprive of honor; violate the chastity of: *n.* disgrace.
Syn. DISHONOR, disgrace. *Dishonor* deprives a person of those outward marks of honor which men look for according to their rank and station; *disgrace* deprives a man of the favor and kindness which he has heretofore received from others. [See *abase*.]
dis-hon-or-a-ble (*dis-on'ẽr-ȧ-bl*), *adj.* discreditable.
dis-in-te-grate (*-in'tē-grāt*), *v. t.* to break up into component parts.
dis-junc-tive (*-jungk'tiv*), *adj.* serving, or tending, to disjoin.
disk (*disk*), *n.* a flat circular plate.
dis-like (*dis-līk'*), *n.* a strong feeling of repugnance. [ANTIPATHY.]
dis-lo-cate (*'lō-kāt*), *v. t.* to put out of joint.
dis-lo-ca-tion (*-kā'shun*), *n.* the act of dislocating.
dis-lodge (*-loj'*), *v. t.* to remove or drive out from. [BANISH.]
dis-loy-al-ty (*-loi'al-ti*), *n*, unfaithfulness. [DISAFFECTION.]
dis-mal (*diz'mal*), *adj.* gloomy; depressing. [DULL.]
dis-man-tle (*dis-man'tl*), *v. t.* to strip or divest of.
dis-may (*-mā'*), *v. t.* [*p. t.* and *p. p.* dismayed, *p. pr.* dismaying], to terrify; dispirit.
Syn. DISMAY, daunt, appall. We are *dismayed* by alarming circumstances; we are *daunted* by terrifying circumstances; we are *appalled* by horrid circumstances.
dis-mem-ber (*dis-mem'bẽr*), *v. t.* to tear limb from limb.
dis-miss (*-mis'*), *v. t.* to send away. [BANISH.]
dis-miss-al (*-mis'al*), *n.* the act of dismissing.
dis-or-der (*-ôr'dẽr*), *n.* want of order or arrangement.
Syn. DISORDER, disease, distemper, malady. In a general sense *disorder* is altogether indefinite; *disease* comprehends every serious and permanent *disorder* in the animal economy. The *disorder* is slight, partial, and transitory; the *disease* is deep-rooted and permanent. *Distemper* is used for such particularly as throw the animal frame most completely out of its temper or course. *Malady* has less of a technical sense than the other terms. [See *confusion*.]
dis-par-age (*-par'āj*), *v. t.* treat with contempt. [ABUSE.]
dis-par-i-ty (*-par'i-ti*), *n.* [*pl.* disparities (*-tiz*)], inequality of rank, station, or excellence.
Syn. DISPARITY, inequality. *Disparity* applies to two objects which should meet or stand in coalition with each other; *inequality* is applicable to those that are compared with each other; the *disparity* of age, situation, and circumstances is to be considered with regard to persons entering into a matrimonial connection; the *inequality* in the portion of labor which is to be performed by two persons is a ground for the *inequality* of their recompense.
dis-pas-sion-ate (*-pash'un-āt*), *adj.* free from passion.
Syn. DISPASSIONATE, cool. *Dispassionate* is taken negatively, it marks merely the absence of *passion; cool* is taken positively, it marks an entire freedom from *passion;* when we meet with an angry disputant it is necessary to be *dispassionate*, in order to avoid quarrels; in the moment of danger our safety often depends upon our *coolness*. [See *calm*.]
dis-patch. Same as *despatch*.
dis-pel (*dis-pel'*), *v. t.* [*p. t.* and *p. p.* dispelled, *p. pr.* dispelling], to drive away.
Syn. DISPEL, disperse. To *dispel* is a more forcible action than to *disperse;* we destroy the existence of a thing by *dispelling* it; we merely destroy the junction *dispersing* it.
Ant. GATHER, increase.
dis-pen-sa-ble (*-pen'sȧ-bl*), *adj.* that for which a dispensation may be granted; that may be spared.
dis-pen-sa-ry (*'sȧ-ri*), *n.* [*pl.* dispensaries (*-riz*)], a place where medicines are kept and made up.
dis-pen-sa-tion (*-sā'shun*), *n.* the act of dispensing; that which is appointed or bestowed by a higher power.
dis-pense (*dis-pens'*), *v. t.* to deal out in portions; distribute.
Syn. DISPENSE, distribute. *Dispense* is an indiscriminate action; *distribute* is a particularizing action. We *dispense* to all; we *distribute* to each individually.
Ant. COLLECT, consolidate.
dis-perse (*dis-pẽrs'*), *v. i.* to scatter in different directions or parts: *v. t.* to cause to scatter in different directions. [DISPEL.]
dis-pir-it (*-pir'it*), *v. t.* to dishearten.
dis-place (*-plās'*), *v. t.* to put out of place.
dis-place-ment (*'ment*), *n.* the act of displacing.
dis-play (*-plā'*), *v. t.* [*p. t.* and *p. p.* displayed, *p. pr.* displaying], to spread out; exhibit.
dis-please (*dis-plēs'*) *v. t.* to fail to please, offend.
dis-pleas-ure (*dis-plezh'ūr*), *n.* annoyance; vexation.
Syn. DISPLEASURE, anger. *Displeasure* is always a softened and gentle feeling; *anger* is always a harsh feeling, and sometimes rises to vehemence and madness. *Displeasure* is always produced by some adequate cause, real or supposed; but *anger* may be provoked by every or any cause, according to the temper of the individual; *displeasure* is an act of the will, it is an angry sentiment. [See *anger*.]
Ant. AMIABILITY, gentleness, sanction.

dis-port (*dis-pōrt'*), *v. t.* to amuse or divert (with *self*): *v. i.* to play.

dis-pos-al (*-pōz'al*), *n.* arrangement; order; control.
Syn. DISPOSAL, disposition. *Disposal* is a personal act; it depends upon the will of the individual; *disposition* is an act of the judgment; it depends upon the nature of the things. The removal of a thing from one's self is involved in a *disposal;* the good order of the things is comprehended in their *disposition.*

dis-pose (*-pōz'*), *v. t.* to place; arrange; order.
Syn. DISPOSE, arrange, digest. We may *dispose* ordinary matters by simply assigning a place to each; in this manner trees are *disposed* in a row, but we *arrange* and *digest* by an intellectual effort; in the first case by putting those together which ought to go together; and in the latter case by both separating that which is dissimilar, and bringing together that which is similar; books are *arranged* in a library; the materials for a literary production are *digested.* [See *persuade, addicted.*]
Ant. CONFUSE, disturb.

dis-po-si-tion (*-pō-zish'un*), *n.* the act of disposing; order; temper.
Syn. DISPOSITION, temper. *Disposition* is permanent and settled; *temper* may be transitory and fluctuating. The *disposition* comprehends the springs and motives of actions; the *temper* influences the action of the moment. It is possible and not infrequent to have a good *disposition* with a bad *temper,* and vice versa.
Syn. DISPOSITION, inclination. We may always expect a man to do that which he is *disposed* to do; but we cannot always calculate upon his executing that to which he is merely *inclined.* We indulge a *disposition;* we yield to an *inclination.* The *disposition* comprehends the whole state of the mind at the time; an *inclination* is particular, referring always to a particular object. [See *disposal.*]
Ant. DISINCLINATION, dislike.

dis-prove (*-prōōv'*), *v. t.* to prove to be false. [CONFUTE.]

dis-pu-ta-ble (*'pū-tà-bl*), *adj.* liable to be disputed.

★**dis-pu-tant** (*dis'pū-tant,* not *dis-pū'tant*) *n.* a controversialist.

dis-pu-ta-tion (*-tā'shun*), *n.* a verbal controversy.

dis-pute (*dis-pūt'*), *v. i.* to debate; argue: *n.* a controversy. [CONTROVERT, FEUD, CONTEND.]

dis-qui-si-tion (*-kwi-zish'un*), *n.* an elaborate essay.

dis-re-gard (*-rē-gärd'*), *v. t.* to pay no heed to.
Syn. DISREGARD, neglect, slight. We *disregard* the warnings, the words, or opinions of others; we *neglect* their injunctions or their precepts. To *disregard* results from the settled purpose of the mind; to *neglect* from a temporary forgetfulness or oversight; *slight* is altogether an intentional act toward an individual.
Ant. FAVOR, notice, watch.

dis-rup-tion (*-rup'shun*), *n.* forcible separation; breach.

dis-sect (*-sekt'*), *v. t.* to cut in pieces.

dis-sem-ble (*-sem'bl*), *v. t.* to hide under a false appearance. [CONCEAL.]

dis-sem-i-nate (*-sem'i-nāt*), *v. t.* to scatter abroad, like seed.

dis-sen-sion (*dis-sen'shun*), *n.* strife.
Syn. DISSENSION, contention, discord. A collision of opinions produces *dissension;* a collision of interests produces *contention;* a collision of humors produces *discord.* [See *feud.*]
Ant. ACCORD, harmony, peace.

dis-sent (*-sent'*), *v. i.* to disagree in opinion (with *from*).

dis-sent-er (*'ẽr*), *n.* a nonconformist.

dis-sent-ing (*'ing*), *p. adj.* pertaining to, or characterized by, dissent.

dis-ser-ta-tion (*-ẽr-tā'shun*), *n.* a formal argumentative discourse.

dis-sev-er (*-sev'ẽr*), *v. t.* to cut in two.

dis-sim-u-late (*-sim'ū-lāt*), *v. i.* and *v. t.* to dissemble.

dis-sim-u-la-tion (*-lā'shun*), *n.* hypocrisy. [PRETENSE, SIMULATION.]

dis-si-pate (*'i-pāt*), *v. t.* to scatter completely.

dis-si-pa-tion (*-pā'shun*), *n.* the act or state of being dissipated; luxury. [EXCESS.]

dis-so-ci-ate (*-sō'shi-āt*), *v. t.* to separate.

★**dis-sol-u-ble** (*-sol'ū-bl*), *adj.* capable of being dissolved.

dis-so-lute (*'sō-lūt*), *adj.* loose in morals or conduct. [ABANDONED.]

dis-so-lu-tion (*-lū'shun*), *n.* the act of dissolving or liquefying.

dis-solve (*-olv'*), *v. t.* to liquefy; melt; terminate; annul.

dis-so-nance (*'ō-nans*), *n.* discord.

dis-suade (*-swād'*), *v. t.* to advise or counsel against.

dis-sua-sion (*-swā'zhun*), *n.* the act of dissuading.

dis-syl-la-ble (*-sil'à-bl*), *n.* a word of two syllables.

dis-taff (*dis'taf*), *n.* [*pl.* distaffs (*'tafs*)], the staff from which flax is drawn in spinning.

dis-tance (*'tans*), *n.* the space or interval between two objects or points.

dis-tant (*'tant*), *adj.* remote.
Syn. DISTANT, far, remote. *Distant* is used to designate great space; *far* only that which is ordinary; astronomers estimate that the sun is ninety-four millions of miles *distant* from the earth; a person lives not very *far* off, or a person is *far* from the spot; *remote* expresses the relative idea of being gone out of sight.
Ant. NEAR, close, proximate.

dis-taste (*dis-tāst'*), *n.* aversion of the palate. [ANTIPATHY.]

dis-taste-ful (*'fool*), *adj.* unpleasant to the taste.

dis-tem-per (*-tem'pẽr*), *v. t.* to disorder or disease; derange the functions of. [DISORDER.]

dis-tend (*-tend'*), *v. t.* to stretch out in all directions.

dis-ten-tion (*-ten'shun*), *n.* a swelling out.

dis-til (*-til'*), *v. i.* [*p. t.* and *p. p.* distilled, *p. pr.* distilling], to practice the art of distillation.

dis-til-la-tion (*-ā'shun*), *n.* the process of distilling.

dis-tinct (*-tingkt'*), *adj.* separate; plain; unconfused; *adv.* distinctly. [CLEARLY.]

dis-tin-guish (*-ting'gwish*), *v. t.* to separate from others by some mark of honor or preference.
Syn. DISTINGUISH, discriminate. To *discriminate* is in fact to *distinguish* specifically; hence we speak of a *distinction* as true or false, but of a *discrimination* as nice; we *distinguish* by means of the senses as well as the understanding; we *discriminate* by the understanding only. [See *abstract.*]
Ant. CONFUSE, confound.

dis-tin-guished (*'gwisht*), *p. adj.* eminent.
Syn. DISTINGUISHED, conspicuous, noted, eminent, illustrious. A thing is *distinguished* in proportion as it is *distinct* or separate from others; it is *conspicuous* in proportion as it is easily seen; it is *noted* in proportion as it is widely known; *eminent* applies to those things which set a man high in the circle of his acquaintance; *illustrious* applies to that which makes him shine before the world.
Ant. OBSCURE, unimportant, unknown.

dis-tort (*-tôrt'*) *v. t.* to twist or turn from the natural shape or figure. [TURN.]

dis-tract (*-trakt'*), *v. t.* to perplex; harass.

dis-train (*-trān'*) *v. t.* to seize and hold as security for payment.

dis-traint (*-trānt'*), *n.* the act of distraining.

dis-trait (*dis-trā'*), *adj.* absent-minded.

dis-traught (*dis-trawt'*), *adj.* bewildered or harassed.

dis-tress (*-tres'*), *n.* affliction, adversity.
Syn. DISTRESS, anxiety, anguish, agony. *Distress* is the pain felt when in a strait from which we see no means of extricating ourselves; *anxiety* is that pain which one feels on the prospect of an evil. *Distress* always depends upon some outward cause; *anxiety* often lies in the imagination; *anguish* arises from the reflection on the evil that is past; *agony* springs from witnessing that which is immediate or before the eye. [See *grief.*]
Ant. APATHY, calmness, ease, nonchalance.

dis-tress, *v. t.* to inflict pain or suffering upon.
Syn. DISTRESS, harass, perplex. A person is *distressed* either in his outward circumstances or his feelings; he is *harassed* mentally or corporeally; he is *perplexed* in his understanding, more than in his feelings; a deprivation *distresses;* provocations and hostile measures *harass;* stratagems and ambiguous measures *perplex.*
Ant. AID, comfort, soothe, succor.

dis-trib-ute (*dis-trib'ūt*), *v. t.* to deal out or divide; allot. [DISPENSE.]

dis-tri-bu-tion (*-tri-bū'shun*), *n.* the act of distributing.

dis-trib-u-tive (*-trib'ū-tiv*), *adj.* pertaining to distribution.

★**dis-trict** (*dis'trikt,* not *dĭs'trikt*), *n.* a territorial division.

dis-trust (*-trust'*), *n.* want of confidence, faith, or reliance.
Syn. DISTRUST, suspicion, diffidence. *Distrust* is said either of ourselves or others; *suspicion* is said only of others; *diffidence* only of ourselves. To be *distrustful* of a person is to impute no good to him; to be *suspicious* of a person is to impute positive evil to him. As regards one's self, a person may *distrust* his own powers for the execution of a particular office, or have a *distrust* of himself in company; he has a general *diffidence* or he is naturally *diffident.*
Ant. ASSURANCE, confidence, conviction, certainty.

dis-turb (*-tûrb'*), *v. t.* to trouble; vex.
Syn. DISTURB, interrupt. We may be *disturbed* either inwardly or outwardly; we are *interrupted* only outwardly. Our minds may be *disturbed* by disquieting reflections, or we may be *disturbed* in our rest or in our business by unseemly noises. [See *anxiety, trouble.*]

ditch (*dich*), *n.* a trench cut in the earth.

dit-to (*dit'tō*), *n.* that which has been said; a duplicate.

dit-ty (*'i*), *n.* [*pl.* ditties (*'iz*)], a little song.

di-ur-nal (*dī-ûr'nal*), *adj.* daily. [DAILY.]

di-van (*di-van'*), *n.* a court of justice; couch.

dive (*dīv*), *v. i.* to plunge head foremost into water.

★**di-verge** (*dī-vẽrj'*), *v. i.* to spread out from one point.

di-ver-gence (*-vẽr'jens*), *n.* a receding from each ther.

di-verse (*'vẽrs,* or *dī-vers'*), *adj.* essentially different.

di-ver-si-fy (*dī-vẽr'si-fī*), *v. t.* [*p. t.* and *p. p.* diversified, *p. pr.* diversifying], to make different.

di-ver-si-ty (*-ti*), *n.* the state of being unlike. [DIFFERENCE.]

di-ver-sion (*'shun*), *n.* variation; alteration.

di-vert (*di-vẽrt'* not *dī-vẽrt'*), *v. t.* to turn aside from any direction or course.

di-vest (*di-vest'*), *v. t.* to strip or deprive of.

di-vide (*di-vīd'*), *v. t.* to cut into two or more parts: *v. i.* to be separated.
Syn. DIVIDE, separate, part. That is said to be *divided* which has been or is conceived to be a whole; that is *separated* which might be joined. An army may be *divided* into two or three *divisions* or portions; the *divisions* are frequently *separated* in their march; to *divide* is properly to make any whole into parts.
Ant. CONSOLIDATE, keep together.

div-i-dend (*div'i-dend*), *n.* a share of the profits of a public company or business.

div-i-na-tion (*-i-nā'shun*), *n.* the pretended art of foreseeing future events.

di-vine (*di-vīn'*), *adj.* partaking of the nature of God; *v. t.* to conjecture. [GODLIKE, HOLY, GUESS.]

div-ing (*dīv'ing*), *n.* the act of plunging into water.

di-vin-i-ty (*di-vin'i-ti*), *n.* [*pl.* divinities (*-tiz*)], the state or quality of being divine; theology. [DEITY.]

di-vis-i-ble (*di-viz'i-bl*), *adj.* capable of being divided.

di-vi-sion (*-vizh'un*), *n.* the act or state of being divided.

di-vi-sor (*di-vī'zor*), *n.* the number by which another is divided.

di-vorce (*-vōrs'*), *n.* a dissolution of the marriage contract by legal authority.

di-vulge (*di-vulj'*), *v. t.* to make known. [PUBLISH.]

diz-zy (*diz'i*), *adj.* giddy.

Dnieper (*nē'pẽr*). From *Don-ieper,* "upper river."

Dniester (*nēs'tẽr*). From *Don-iester,* "lower river Don."

do (*dōō*), *v. t.* [*p. t.* did, *p. p.* done, *p. pr.* doing], to perform; achieve.

doc-ile (*dos'il* or *dō'sil*), *adj.* easy to teach; tractable.

do-cil-i-ty (*dō-sil'i-ti*), *n.* the quality of being docile.

dock (*dok*), *n.* a place for constructing and laying up ships: *v. t.* to cut off or curtail.

dock-et (*'et*), *v. t.* to mark the contents or titles of papers on the back of them; a digest.

doc-tor (*'tẽr*), *n.* one skilled in any particular branch of knowledge; an academical degree denoting the highest proficiency in a faculty of a university.

doc-tri-naire (*-trē-nâr'*), *n.* one who theorizes on political or other matters.

doc-trine (*'trin*), *n.* the principles or dogma of any church.
Syn. DOCTRINE, dogma, tenet. A *doctrine* rests on the authority of the individual by whom it is framed; the *dogma* on the authority of the body by whom it is maintained; a *tenet* rests on its own intrinsic merits. A *tenet* is a species of principle maintained in matters of opinion by persons in general.

doc-u-ment (*'ū-ment*), *n.* a printed or written paper.

doc-u-men-ta-ry (*-men'tà-ri*), *adj.* pertaining to, or consisting of, documents.

dodge (*doj*), *v. i.* to start aside and shift about: *v. i.* to escape by starting aside.

doe (*dō*), *n.* the female of a buck or fallow deer.

doff (*dof*), *v. t.* to take, or put, off.

dog (*dog*), *n.* a domesticated carnivorous anima, belonging to the genus Canis.

dog-cart (*'kärt*), *n.* a light cart with two transverse seats.

dog-days (*'dāz*), *n. pl.* a period in July and August when the dog star or Sirius rises and sets with the sun.

Doge's (*dōjez*) **palace.** Formerly the palace of the doges of Venice, and now one of its most interesting architectual monuments. The present building was begun by Marino Falierno in 1354.

dog-ged (*dog'ed*), *adj.* stubborn; pertinacious. [OBSTINATE.]

dog-ger-el (*'ẽr-el*), *n.* verse devoid of sense or rhythm.

dog-ma (*'mà*), *n.* [*pl.* dogmas (*'màz*) or dogmata (*'mà-tà*)], an established principle, tenet, or doctrine. [DOCTRINE.]

dog-mat-ic (*-mat'ik*), *adj.* pertaining to, or of the nature of, dogma. [CONFIDENT.]

dog-ma-tize (*'mà-tīz*), *v. i.* to make dogmatic assertions.

dog-trot (*'trot*), *n.* a gentle trot.

dog-wood (*'wood*), *n.* the wild cornel.

doily (*doi'li*), *n.* [*pl.* doilies (*'liz*)], a small mat or napkin.

dole (*dōl*), *v. t.* to deal out sparingly.

dole-ful (*'fool*), *adj.* sorrowful; dismal. [PITEOUS.]

doll (*dol*), *n.* a girl's puppet or toy baby.

dol-lar (*'ẽr*), *n.* a silver coin current in the United States and Canada equal to 100 cents.

dol-ly (*'i*), *n.* [*pl.* dollies (*'iz*)], a little doll.

dol-man (*'man*), *n.* a long outer garment worn by the Turks.

Dolores (*dō-lō'res*). Derived from the Spanish name *Dolores,* signifying "sorrows."

dol-o-rous (*dol'ō-rus*), *adj.* sorrowful.

dol-phin (*dol'fin*), *n.* the name of a cetaceous mammal of the genus Delphinus.

dolt (*dōlt*), *n.* a heavy, stupid fellow.

★**do-main** (*dō-mān',* not *dō'mān*), *n.* lordship.

dome (*dōm*), *n.* a hemispherical roof.

do-mes-tic (*dō-mes'tik*), *adj* pertaining to the house or household affairs. [SERVANT.]

do-mes-ti-cate (*'ti-kāt*), *v. t.* to make domestic.

do-mes-tic-i-ty (*-tis'i-ti*), *n.* [*pl.* domesticities (*-tiz*)], the state of being domestic.

dom-i-cile (*dom'i-sil*), *n.* a permanent residence.

dom-i-nant (*'i-nant*), *adj.* exercising chief authority; predominant.

dom-i-nate (*'i-nāt*), *v. t.* to govern; rule.

dom-i-neer (*dom-i-nēr'*), *v. i.* to exercise authority arrogantly or tyrannically. [IMPERIOUS.]
Dominic (*dom'i-nik*). From the Latin, *dominicus*, "of or belonging to a lord or master." Danish, *Dominicus;* Dutch, *Dominicus;* Fr., *Dominique;* It., *Domenico;* Port., *Domingos;* Sp., *Domingo;* Sw., *Dominicus.*
Dominica (*dom-i-nē'kȧ*). "Sunday Island," indicative of its discovery by Columbus, on Sunday, November 2, 1493. A West Indian island.
do-min-ic-al (*dō-min'i-kal*), *adj.* pertaining to Christ as Lord, or to Sunday.
dom-i-nie (*dom'i-nē*), *n.* a schoolmaster.
do-min-ion (*dō-min'yun*), *n.* supreme authority. [EMPIRE.]
dom-i-no (*dom'i-nō*), *n.* [*pl.* dominos (*-nōz*)], a cape or cloak used as a masquerade garment; an ecclesiastical hood.
don (*don*), *v. t.* [*p. t.* and *p. p.* donned, *p. pr.* donning], to put on; assume.
Donald. An English form of *Donghal*, "brown stranger."
do-nate (*dō'nāt*), *v. t.* to contribute. [GIFT.]
don-jon (*don'* or *dun'jun*), *n.* the principal tower of a mediæval castle.
★don-key (*dong'ki* not *dung'ki*), *n.* [*pl.* donkeys (*'kiz*)], an ass.
don-na (*don'nȧ*), *n.* a lady. [*Italian.*]
do-nor (*dō'nẽr*), *n.* a giver.
doom (*dōōm*), *n.* a judicial sentence of condemnation. [DESTINY, CONDEMN.]
dooms-day (*dōōmz'dā*), *n.* the day of final judgment.
door (*dōr*), *n.* the gate or entrance of a house.
dor (*dôr*), *n.* a large black dung beetle.
Dora. A female name abbreviated from *Theodora.*
Dorcas. From the Greek name, *dorkas*, signifying "a wild goat," "antelope," "gazelle."
Do-ri-an (*dō'ri-an*), *adj.* pertaining to, or characteristic of, Doris: *n.* a member of the Doric or Dorian race.
Dor-ic order (*dôr'ik*), the oldest of the three orders of Greek architecture.
dor-king (*dôr'king*), *n.* one of a breed of domestic fowls.
dor-man-cy (*'man-si*), *n.* quiescence.
dor-mant (*'mant*), *adj.* sleeping; quiet.
dor-mer (*'mẽr*), *n.* a window pierced vertically in the side of a roof.
dor-mi-to-ry (*'mi-tō-ri*), *n.* [*pl.* dormitories (*-riz*)], a large apartment capable of holding several beds.
dor-mouse (*'mous*), *n.* [*pl.* dormice (*'mis*)], a small European squirrel-like rodent.
Dorothy (*dor'ō-thi*). From the Greek name *Dorothea*, signifying "the gift of God." Danish, *Dorothea;* Dutch, *Dorothea;* Fr., *Dorothée;* Ger., *Dorothea;* It., *Dorotea;* Lat., *Dorothea;* Sp., *Dorotea;* Sw., *Dorothea.*
dor-sal (*dôr'sal*), *adj.* pertaining to, or situated near, the back.
do-ry (*dō'ri*), *n.* [*pl.* dories (*'riz*)], a small flat-bottomed skiff with a sharp prow.
dose (*dōs*), *n.* the quantity of medicine to be taken at one time.
dot (*dot*), *n.* a small point or speck.
do-tage (*dō'tāj*), *n.* imbecility of mind; foolish or excessive affection.
do-tard (*'tẽrd*), *n.* one whose intellect is impaired by age.
dote (*dōt*), *v. i.* to exhibit the weakness of age.
dou-ble (*dub'l*), *adj.* twofold; two of a sort: *n.* a turning back to escape pursuit.
dou-ble bass (*-bās*), the largest violin.
dou-ble-en-ten-dre (*dōō'bl-ȧn-tȧn'dr*), *n.* a word or phrase with a double meaning.
doub-let (*dub'let*), *n.* a kind of close-fitting man's garment.
doub-loon (*'lōōn*), *n.* a Spanish gold coin.
doubt (*dout*), *v. i.* to waver in opinion; be in suspense; *v. t.* to suspect: *n.* indecision of belief; question.
Syn. DOUBT, suspense. *Doubt* respects that which we should believe; *suspense* that which we wish to know or ascertain. We are in *doubt* for the want of evidence; we are in *suspense* for the want of certainty. *Doubt* interrupts our progress in the attainment of truth; *suspense* impedes us in the attainment of our objects.
Ant. CERTAINTY, confidence, knowledge.
doubt-ful (*'fool*), *adj.* of uncertain issue. [EQUIVOCAL, OBSCURE.]
★douche (*dōōsh*), *n.* a jet or current of water
dough (*dō*), *n.* a soft mass of moistened flour yet unbaked.
dough-ty (*dou'ti*), *adj.* valiant, strong.
dough-y (*dō'i*), *adj.* soft like dough.
Douglas (*dug'lȧs*). From Gaelic *dubh-ghlas*, "dark gray."
douse (*dous*), *v. t.* to plunge suddenly into a liquid.
dove (*duv*), *n.* a pigeon of the genus Columba.
dove-cote (*'kōt*), *n.* a small house for doves.
Dover, Del. Named from the town in England of that name.
dove-tail (*duv'tāl*), *v. t.* to join by a joint resembling a dove's tail spread out.
dow-a-ger (*dou'ȧ-jẽr*). Strictly-speaking, a dowager is an endowed widow. In practice the name "dowager" is applied to any widowed lady.
dow-dy (*'di*), *n.* [*pl.* dowdies (*'diz*)], a slatternly woman who affects finery.
dow-el (*dou'el*), *n.* a pin to connect two pieces of wood
dow-er (*'ẽr*), *n.* that part of a husband's property which his widow enjoys during her life
down (*doun*), *n.* soft feathers, hair, or wool: *adv.* from a higher to a lower degree or position.
down-cast (*'kȧst*), *adj.* directed downward; sad.
down-fall (*'fawl*), *n.* a falling downward. [FALL.]
Downing street, London. So named after Sir George Downing.
down-right (*doun'rīt*), *adj.* straight to the point; blunt.
down-ward (*'wẽrd*), *adj.* tending to the ground.
down-y (*'i*), *adj.* covered with, or made of, down; soft.
dow-ry (*dou'ri*), *n.* [*pl.* dowries (*'riz*)], the property a woman brings to her husband at marriage.
dox-ol-o-gy (*doks-ol'ō-ji*), *n.* [*pl.* doxologies (*-jiz*)], a short hymn of praise to God
doze (*dōz*), *v. i.* to sleep lightly or fitfully.
drab (*drab*), *n.* a kind of thick dull brown or yellowish-gray woolen cloth.
drab-ble (*'l*), *v. t.* to make wet or dirty.
draft (*drȧft*), *n.* a sketch or outline; an order for money; the depth of water a vessel draws or to which she sinks.
drag (*drag*), *v. t.* [*p. t.* and *p. p.* dragged, *p. pr.* dragging], to pull or draw along by force; haul; tug: *v. i.* to trail along the ground. [DRAW.]
drag-gle (*drag'l*), *v. t.* to wet or soil by dragging in the mud.
drag-o-man (*drag'ō-man*), *n.* [*pl.* dragomans (*-manz*)], in the East, an interpreter.
drag-on (*'un*), *n.* a fabulous animal represented as a winged serpent or lizard.
drag-on fly (*flī*), an insect with a long slender abdomen, large eyes and wings.
drag-on's blood (*-unz blud*), *n.* the red juice and gum of several trees.
dra-goon (*drȧ-gōōn'*), *n.* originally a kind of mounted infantry.
drain (*drān*), *v. t.* to draw off gradually: *n.* a channel or pipe for superfluous water.
drain-age (*'āj*), *n.* the act or means of draining.
drake (*drāk*), *n.* a male duck.
dram (*dram*), *n.* 1-8th of an ounce troy, and 1-16th of an ounce avoirdupois.
★dra-ma (*drȧ'mȧ*, or *drȧ'mȧ*), *n.* a composition depicting a story of human life in character, on the stage.
dra-mat-ic (*drȧ-mat'ik*), *adj.* pertaining to, or appropriate to, the drama.
dram-a-tis per-so-næ (*dram'ȧ-tis pẽr-sō'nē*), the characters in a play.
dram-a-tize (*dram'ȧ-tīz*), *v. t.* to compose for stage representation.
dram-a-tur-gy (*'ȧ-tẽr-ji*), *n.* the art of dramatic composition.
drape (*drāp*), *v. t.* to cover with cloth.
dra-per (*drā'pẽr*), *n.* a dealer in woolen or cotton cloth, etc.
dra-per-y (*-i*), *n.* [*pl.* draperies (*-iz*)], textile cloths or fabrics.
dras-tic (*dras'tik*), *adj.* powerful.
draw (*draw*), *v. t.* [*p. t.* drew, *p. p.* drawn, *p. pr.* drawing], to pull along or haul: sketch; draft.
Syn. DRAW, drag, haul or hale, pull, pluck, tug. *Draw* expresses here the idea common to the first three terms, namely, of putting a body in motion from behind one's self or toward one's self; to *drag* is to *draw* a thing with violence, or to *draw* that which makes resistance; to *haul* is to *drag* it with still greater violence. To *pull* signifies only an effort to *draw* without the idea of motion; horses *pull* very long sometimes before they can *draw* a heavily laden cart uphill. To *pluck* is to *pull* with a sudden twitch in order to separate; to *tug* is to *pull* with violence.
Ant. LEAVE, push, repel, thrust away or back.
draw-back (*'bak*), *n.* loss of advantage; a discouragement.
draw-bridge (*'brij*), *n.* a bridge which may be lifted up.
★draw-er (*'ẽr*), *n.* one who draws, a sliding, box-like arrangement for holding clothes, papers, etc.; one who draws a bill of exchange.
draw-ing (*'ing*), *n.* delineation.
draw-ing room (*rōōm*), a room for the reception of company.
drawl (*drawl*), *v. t.* to utter in a slow, lazy tone.
drawn (*drawn*), *p. adj.* left undecided.
dray (*drā*), *n.* a low, stoutly-built cart.
dread (*dred*), *v. t.* to fear greatly. [ANXIETY.]
dread-ful (*'fool*), *adj.* inspiring dread. [FEARFUL, FORMIDABLE.]
dread-naught (*'nawt*), *n.* a fearless person; a very large battleship.
dream (*drēm*), *n.* a train of thoughts or images passing through the mind during sleep.
Syn. DREAM, reverie. *Dreams* and *reveries* are alike opposed to the reality, and have their origin in the imagination; but the former commonly passes in sleep, and the latter when awake.
Ant. REASON, act.
drear-y (*drēr'i*), *adj.* cheerless; gloomy.
dredge (*drej*), *n.* a drag or instrument for sweeping the bottoms of rivers.
dregs (*dregz*), *n. pl.* the sediment of liquors.
drench (*drench*), *v. t.* to wet thoroughly. [SOAK.]
dress (*dres*), *v. t.* [*p. t.* and *p. p.* dressed or drest, *p. pr.* dressing], to invest with, or as with, clothing; adorn, adjust to a straight line: *v. i.* to put on clothes.
dress-ing (*'ing*), *n.* the act of putting on clothes, the smoothing of the surface of stone.
dress-ing-gown (*-goun*), *n.* a light, easy, loose gown.
drib-ble (*drib'l*), *v. i.* to fall in small drops; drip: *n.* a drizzling shower.
drib-let (*drib'let*), *n.* a small piece, part or sum.
dri-er (*drī'ẽr*), *n.* one who, or that which, dries.
drift (*drift*), *n.* the direction in which anything is driven; an accumulation heaped up by sea or wind: *v. i.* to be carried along by a current.
drill (*dril*), *v. t.* to pierce with a drill; instruct thoroughly. [TEACH.]
drink (*dringk*), *v. t.* [*p. t.* drank, *p. p.* drunk, *p. pr.* drinking], to swallow (a liquid). [ABSORB.]
drip (*drip*), *v. i.* [*p. t.* and *p. p.* dripped, *p. pr.* dripping], to fall in drops.
drive (*drīv*), *v. t.* [*p. t.* drove, *p. p.* driven, *p. pr.* driving], to impel or urge forward by force. [BANISH.]
driv-el (*driv'el*), *v. i.* to slaver; be weak or foolish.
driz-zle (*driz'l*), *v. i.* to rain slightly
droll (*drōl'*), *adj.* ridiculous.
droll-er-y (*'ẽr-i*), *n.* [*pl.* drolleries (*-iz*)], the quality of being droll.
drom-e-da-ry (*drum'ē-dā-ri*), *n.* [*pl.* dromedaries (*-riz*)], one of a domesticated breed of camels distinguished by having one hump.
drone (*drōn*), *v. t.* to utter in a monotonous tone or sound: *n.* the male of the honeybee, which produces no honey.
droop (*drōōp*), *v. i.* to sink or hang down.
drop (*drop*), *v. i.* [*p. t.* and *p. p.* dropped, dropt, *p. pr.* dropping], to fall in drops; sink to a lower position: *v. t.* to let fall: *n.* a globule of moisture.
drop-si-cal (*'si-kal*), *adj.* affected with dropsy.
drop-sy (*'si*), *n.* an unnatural accumulation of serous fluid in any cavity of the body.
dross (*dros*), *n.* the scum or slag of melted metal.
★drought (*drout*), *n.* continued absence of rain.
drove (*drōv*), *n.* [*p. t.* of drive] a collection of cattle or sheep.
drown (*droun*), *v. i.* to perish by suffocation in water.
drow-sy (*drou'zi*), *adj.* sleepy.
drudge (*druj*), *v. i.* to labor hard: *n.* one employed in menial work; drudgery. [SERVANT, WORK.]
drug (*drug*), *n.* an ingredient used in medicine; a narcotic: *v. t.* [*p. t.* and *p. p.* drugged, *p. pr.* drugging], to mix drugs with.
drug-gist (*'ist*), *n.* a dealer in drugs.
dru-id (*drōō'id*), *n.* a priest of the ancient Celts of Britain.
drum (*drum*), *n.* an instrument of percussion, consisting of a hollow cylinder with vellum at the ends.
drum-head (*'hed*), *n.* the head or top of a drum.
drum-mer (*'ẽr*), *n.* a commercial traveler.
drum-stick (*'stik*), *n.* the stick with which a drum is beaten.
drunk (*drungk*), *n.* [*p. p.* of drink], a fit of drunkenness.
drunk-ard (*'ard*), *n.* one habitually drunk.
drunk-en-ness (*'n-nes*), *n.* the state of being drunk.
Drury Lane. A street in London, near the Strand. It is one of the great arteries of the parish of St. Clement Danes, an aristocratic part of London in the time of the Stuarts.
Drury Lane theater. This famous London theater was originally a cockpit, which was converted into a theater in the time of James I. It was rebuilt in 1662, in 1674, in 1775, in 1794, and in 1812. The last building was destroyed by fire in the early part of 1908, and replaced by the present structure.
Drusilla (*drōō-sil'lȧ*). A female name derived from the Greek name *Drousille*, which Bailey translates "dewy eyes." The word signifies "dew," "moisture," "pure water"; and figuratively, what is tender, delicate, young. Fr., *Drusille;* Ger., *Drusille;* It., *Drusilla;* Lat., *Drusilla.*
dry (*drī*), *adj.* [*comp.* drier, *superl.* driest], free from moisture or wetness.
Dryburgh (*drī'bur-o*) **abbey.** An ancient abbey, now in ruins, four miles southeast of Melrose, Scotland. In the south isle is the tomb of Sir Walter Scott.
dry-ly (*drī'li*), *adv.* without moisture; in a dry manner; coldly.
du-al (*dū'al*), *adj.* expressing, or composed of, the number 2.
du-al-ism (*-izm*), *n.* a twofold division.
du-al-i-ty (*-al'i-ti*), *n.* the state or quality of being twofold.
dub (*dub*), *v. t.* [*p. t.* and *p. p.* dubbed, *p. pr.* dubbing], to invest with knighthood by striking the shoulder with a sword.
du-bi-ous (*dū'bi-us*), *adj.* doubtful. [EQUIVOCAL.]
Dublin. The capital of Ireland. In the Irish language this is *Dubh-linn*, the meaning of which is "black pool."
Dubuque (*dōō-būk'*). County and city in Iowa, named for a French trader.
duc-at (*duk'at*), *n.* a gold or silver coin formerly in use in Europe Intrinsic value, $2.28¼.
duch-ess (*duch'es*), *n.* the consort or widow of a duke.
duch-y (*'i*), *n.* [*pl.* duchies (*'iz*)], the territory, dominions, or jurisdiction of a duke.
duck (*duk*), *n.* any bird of the family Anatidæ, especially the domestic duck.
duck-ling (*'ling*), *n.* a young duck.
duct (*dukt*), *n.* a passage by which a fluid is conveyed.
★duc-tile (*duk'til*, not *duk'tēl*), *adj.* capable of being drawn out into threads or wire; tractable.
dude (*dūd*), *n.* a kind of dandy.
dudg-eon (*duj'un*), *n.* sullen anger.
due (*dū*), *adj.* owed or owing; payable; ascribable; proper. [DEBT.]

du-el (*dū'el*), *n.* a combat between two persons with deadly weapons.
du-et (*dū-et'*), *n.* a vocal or instrumental composition for two performers.
Dugald. An English form of *Dughall.*
dug-out (*dug'out*), *n.* a canoe hollowed out from a log.
duke (*dūk*), *n.* the highest order of English nobility.
duke-dom (*'dum*), *n.* a duchy.
dul-cet (*dul'set*), *adj.* sweet or pleasant to the ear; harmonious.
dul-ci-mer (*'si-mĕr*), *n.* an instrument with wire strings.
dull (*dul*), *adj.* slow of apprehension or action.
Syn. DULL, gloomy, sad, dismal. When applied to natural objects, *dull* and *gloomy* denote the want of necessary light or life; in this sense metals are more or less *dull* according as they are stained with dirt; the weather is *dull* when the sun is obscured by clouds, and *gloomy* when the atmosphere is darkened by fogs or thick clouds; *dismal* denotes either that which is necessary, or that which is repugnant to the senses; as a glare of light or a sound may be *dismal*. *Sad* is not applied so much to sensible as moral objects; the loss of a parent is *sad*.
Ant. BRIGHT, clear, radiant, joyful.
dull-ness (*'nes*), *n.* the state or quality of being dull. [STUPIDITY.]
Duluth, Minn. Named in honor of the French explorer, Daniel Greysolon du Lhut.
du-ly (*dū'li*), *adv.* in a fit and becoming manner; fitly.
dumb (*dum*), *adj.* incapable of speech.
dumb-bell (*'bel*), *n.* one of a pair of heavy weights used for exercise.
dum-my (*dum'i*), *n.* [*pl.* dummies (*'iz*)], one who is mute or silent.
dump (*dump*), *n.* a place to discharge rubbish in: *v. t.* to throw down and empty.
dump-ling (*dump'ling*), *n.* a pudding.
dun (*dun*), *adj.* of a dull brown color: *n.* a creditor who presses persistently for payment.
Duncan. A Scottish surname. Some render it "powerful chieftain."
dunce (*duns*), *n.* a dull, ignorant person.
dune (*dūn*), *n.* a heap of drifted sand piled up on the seashore.
dung (*dung*), *n.* the excrement of animals.
dun-geon (*dun'jun*), *n.* a dark underground cell.
Dun-kers (*dung'kĕrz*), *n. pl.* a sect of German-American Baptists.
Dunstan. A masculine name, derived from a locality, signifying, "the stone hill" (*dun-stan*).
du-o-dec-i-mal (*dū-ō-des'i-mal*), *adj.* consisting of, or computing by, twelves.
du-o-dec-i-mo (*'i-mō*), *n.* a sheet folded into twelve leaves (12mo).
dupe (*dūp*), *n.* one who is, or can be, easily tricked.
du-plex (*dū'pleks*), *adj.* double; compound.
du-pli-cate (*'pli-kāt*), *v. t.* to make or render double: *adj.* corresponding exactly with another.
du-pli-ca-tion (*-kā'shun*), *n.* the act of duplicating.
du-plic-i-ty (*-plis'i-ti*), *n.* deceit; hypocrisy.
Duquesne (*dū-kān'*). Borough in Allegheny county Pennsylvania, named from old Fort Duquesne, which was named for a distinguished French officer, the Marquis Abraham Duquesne.
du-ra-ble (*'rā-bl*), *adj.* not perishing; permanent.
Syn. DURABLE, lasting, permanent. *Durable* is naturally said of material substances; and *lasting* of those which are spiritual; although in ordinary discourse sometimes they exchange offices; *permanent* applies more to the affairs of men. That which perishes quickly is not *durable;* that which ceases quickly is not *lasting;* that which is only for a time is not *permanent.*
Ant. BRIEF, fugitive, momentary, temporary.
du-ra ma-ter (*'rā mā'tĕr*), the tough covering which envelops the brain.
du-rance (*'rans*), *n.* imprisonment.
du-ra-tion (*-rā'shun*), *n.* continuance in time. [CONTINUANCE, TIME.]
du-ress (*dū-res'* or *dū'res*), *n.* restraint of personal liberty.
dur-ing (*dūr'ing*), *prep.* in the time of.
dusk (*dusk*), *adj.* tending to darkness; shadowy.
dust (*dust*), *n.* fine dry particles of matter state of dissolution. [BODY.]
du-ti-a-ble (*dū'ti-ā-bl*), *adj.* subject to duty.
du-ti-ful (*-fool*), *adj.* respectful.
du-ty (*'ti*), *n.* [*pl.* duties (*'tiz*)], obligatory service; tax levied by government.
Syn. DUTY, obligation. *Duty* has to do with the conscience; an *obligation* arises from circumstances, and is a species of *duty*. He who guarantees to pay a sum of money contracts an *obligation*. He who marries contracts new *duties*.
Ant. CHOICE, pleasure, whim.
dwarf (*dwawrf*), *n.* a human being, much below the average height: *v. t.* hinder from growing to the natural size.
dwell (*dwel*), *v. i.* [*p. t.* and *p. p.* dwelt, *p. pr.* dwelling], to reside for a length of time. [ABIDE.]
dwin-dle (*dwin'dl*), *v. i.* to become gradually less.
dye (*dī*), *v. t.* [*p. t.* and *p. p.* dyed, *p. pr.* dyeing], to stain or color.
dy-na-mic (*-nam'ik*), *adj.* pertaining to mechanical forces not in equilibrium.
★**dy-na-mite** (*'nā-mīt*), *n.* a highly explosive compound: *v. t.* to destroy by dynamite.
dy-na-mo (*'nā-mō*), *n.* an electric machine for converting mechanical into electric energy.
dy-nas-ty (*dī'nas-ti*), *n.* [*pl.* dynasties (*-tiz*)], a line or succession of sovereigns of a particular family.
dyne (*dīn*), *n.* the force which, acting upon a gram per second, generates a velocity of 1 centimeter.
dys-en-ter-y (*dis'en-ter-i*), *n.* a tropical disease akin to diarrhœa.
dys-pep-si-a (*-pep'si-ā*), *n.* indigestion.
dys-pep-tic (*'tik*), *adj.* pertaining to, causing, or afflicted with, dyspepsia.

E

each (*ēch*), *adj.* and *pron.* every one.
ea-ger (*ē'gĕr*), *adj.* impetuous; vehement.
Syn. EAGER, animated, anxious, ardent burning, desirous, earnest, enthusiastic, fervent, glowing, hot, impatient, impetuous, importunate, intense, intent, keen, longing, vehement, yearning, zealous. One is *eager* who *impatiently* desires to accomplish some end; one is *earnest* with a desire that is more deep, and constant; one is *anxious* with a desire that foresees the pain of disappointment. One is *eager* for the gratification of any appetite or passion; he is *earnest* in conviction, purpose, or character; the soldier is *earnest* in his devotion to his country, *eager* for a battle.
Ant. APATHETIC, heedless, purposeless.
ea-gle (*'gl*), *n.* a bird of prey, genus Aquila; a gold coin of the United States equal to 10 dollars.
ear (*ēr*), *n.* the organ of hearing.
earl (*ĕrl*), *n.* nobleman next in rank below a marquis.
earl-dom (*'dum*), *n.* the possessions or dignity of an earl.
ear-ly (*ĕr'li*), *adj.* [*comp.* earlier, *superl.* earliest], before the usual time.
ear-mark (*ēr'märk*), *n.* a mark for identification.
earn (*ĕrn*), *v. t.* to gain as a just recompense for one's labor.
earn-est (*'est*), *adj.* in serious reality. [EAGER.]
earn-ings (*'ingz*), *n. pl.* wages; reward.
ear-ring (*ēr'ring*), *n.* an ear ornament.
earth (*ĕrth*), *n.* the inhabited terraqueous globe.
earth-en (*'en*), *adj.* made of earth.
earth-ly (*'li*), *adj.* pertaining to the earth; sensual.
earth-quake (*'kwāk*), *n.* a shaking or trembling of the earth.
earth-work (*'wĕrk*), *n.* an offensive or defensive fortification.
earth-worm (*'wĕrm*), *n.* a common name for worms.
earth-y (*'i*), *adj.* pertaining to the earth; dull.
ear-wax (*ēr'waks*), *n.* cerumen.
ease (*ēz*), *n.* freedom from pain, disturbance, labor or affectation.
Syn. EASE, quiet, rest, repose. *Ease* and *quiet* respect action on the body; *rest* and *repose* respect the action of the body; *ease* denotes an exemption from any painful agency in general; *quiet* denotes an exemption from that in particular which noise, disturbance, or the violence of others may cause; *rest* simply denotes the cessation of motion; *repose* is that species of *rest* which is agreeable after labor.
Ant. ANXIETY, dread, solicitude.
ea-sel (*ē'zl*), *n.* a wooden frame for supporting a canvas.
east (*ēst*), *n.* that part of the heavens where the sun is seen to rise.
East (*ēst*), *n.* the Orient; eastern part of the United States.
East-er (*ēst'ĕr*), *n.* a festival of the Christian church to commemorate the resurrection of Jesus Christ.
Easter island. In the eastern Pacific; named by Jacob Roggevin in consequence of his visit on Easter Sunday, 1722.
east-er-ly (*-li*), *adv.* situated, or moving toward, the east.
east-ern (*ēst'ĕrn*), *adj.* situated toward, or lying in, the east.
east-ern-er (*-ĕr*), *n.* a person who resides in the eastern part of the United States.
East river. Name applied to the body of water at New York, more properly a strait, connecting Long Island sound with New York bay.
east-ward (*'wĕr*), *adv.* toward the east.
eas-y (*ēz'i*), *adj.* [*comp.* easier, *superl.* easiest], free from pain, disturbance, etc.
Syn. EASY, ready. *Easy* marks the freedom of being done; *ready* the disposition or willingness to do; the former refers mostly to the thing or the manner, the latter to the person.
eat (*ēt*), *v. t.* [*p. t.* ate, *p. p.* eaten, *p. pr.* eating], to chew and swallow, as food.
eaves (*ēvz*), *n. pl.* the edges of the roof which overhang a building.
eaves-drop (*'drop*), *v. i.* [*p. t.* and *p. p.* eavesdropped, *p. pr.* eavesdropping], to listen to the private conversation of others.
ebb (*eb*), *n.* the flowing back of the tide.
Ebenezer (*eb-en-ē'zĕr*). From the Hebrew *Ebhenezer*, signifying "stone of help," name of the stone which Samuel set up near Mispeh, in witness of the divine assistance obtained against the Philistines.
eb-on-ize (*eb'un-īz*), *v. t.* to make black by staining like ebony.
eb-o-ny (*'un-i*), *n.* a hard, heavy, durable, black-colored wood.
eb-ul-li-tion (*eb-ul-lish'un*), *n.* the act of boiling.
é-car-té (*ā-kär-tā'*), *n.* a game of cards played by two persons.
ec-cen-tric (*ek'sen-trik*), *adj.* not situated in, or deviating from, the center; peculiar in manner or character.
ec-cen-tric-i-ty (*-tris'i-ti*), *n.* [*pl.* eccentricities (*-tiz*)], deviation from a center; peculiarity.
ec-cle-si-as-tic (*ek-klē-zi-as'tik*), *n.* a person in holy orders.
ec-cle-si-as-tic-al (*-ti-kal*), *adj.* pertaining to the church.
e-chi-nus (*ē-kī'nus*), *n.* [*pl.* echini (*'nī*)], a sea-urchin; a rounded egg-shaped molding.
ech-o (*ek'ō*), *n.* [*pl.* echoes (*'ōz*)], the repetition of a sound caused by reflection: *v. i.* [*p. t.* and *p. p.* echoed; *p. pr.* echoing], to emit an echo; give, or reflect back, a sound: *v. t.* to repeat the sound of.
é-clair (*ā-klâr'*), *n.* a small oblong cake.
é-clat (*ā-klä'*), *n.* a bursting forth, as of applause or admiration.
ec-lec-tic (*ek-lek'tik*), *adj.* selecting or choosing from different systems, doctrines, or sources.
ec-lec-ti-cism (*'ti-sizm*), *n.* the eclectic system of philosophy.
e-clipse (*ē-klips'*), *n.* the total or partial obscuration of the light of a heavenly body: *v. t.* to overshadow.
Syn. ECLIPSE, obscure. Heavenly bodies are *eclipsed* by the intervention of other bodies between them and the beholder; things are in general *obscured* which are in any way rendered less striking or visible.
Ant. DISCOVER, reveal.
e-clip-tic (*-klip'tik*), *n.* the apparent path of the sun in the heavens during a year.
ec-logue (*ek'log*), *n.* a pastoral poem.
ec-o-nom-ic (*ek-ō-* or *ē-kō-nom'ik*), *adj.* frugal; saving; pertaining to domestic economy.
ec-o-nom-ic-al (*'i-kal*), *adj.* economic. [PENURIOUS.]
e-con-o-mist (*ē-kon'ō-mist*), *n.* one prudent in expenditure.
e-con-o-mize (*'ō-mīz*), *v. t.* to manage with care or frugality.
e-con-o-my (*'ō-mi*), *n.* [*pl.* economies (*-miz*)], the regulation of household affairs. [FRUGALITY.]
é-cru (*ā-kroo'*), *adj.* unbleached.
ec-sta-sy (*ek'stä-si*), *n.* [*pl.* ecstasies (*-siz*)], the state of being beside one's self.
ec-stat-ic (*-stat'ik*), *adj.* overpowering; rapturous.
é-cu (*ā-koo'*), *n.* a mediæval shield.
Ecuador (*ek-wā-dōr'*. Spanish *ā-kwā-dōr'*). Spanish for equator. A republic of South America, so called by virtue of its geographical position.
ec-u-men-ic (*ek-ū-men'ik*), *adj.* general; universal.
★**ec-ze-ma** (*ek'zē-mā*, not *ek-zē'mā*), *n.* an inflammatory disease of the skin.
ed-dy (*ed'i*), *n.* [*pl.* eddies (*'iz*)], a contrary current of air or water causing a circular motion.
e-del-weiss (*ā'del-vīs*), *n.* a small white Alpine plant.
E-den (*ē'dn*), *n.* paradise.
Edgar. From the Anglo-Saxon name *Eadgar.*
edge (*ej*), *n.* the thin, sharp, or cutting part of an instrument; extreme border.
edged (*ejd*), *p. adj.* furnished with an edge, border, or fringe.
edge-tool (*'tōōl*), *n.* any sharp tool.
edg-ing (*'ing*), *n.* that which forms an edge or border.
ed-i-ble (*ed'i-bl*), *adj.* fit to be eaten as food.
e-dict (*ē'dikt*), *n.* a public proclamation or decree. [DECREE.]
ed-i-fi-ca-tion (*ed-i-fi-kā'shun*), *n.* a building up in a moral sense.
ed-i-fice (*ed'i-fis*), *n.* a fine structure.
ed-i-fy (*'i-fī*), *v. t.* [*p. t.* and *p. p.* edified, *p. pr.* edifying], to build up or strengthen.
Edinburgh (*ed'in-bur-ō*). The capital of Scotland. Formerly *Edwinesburg*, means ostensibly the fortress of Eadwine, the Northumbrian king, who was converted by Paulinus.
ed-it (*ed'it*), *v. t.* to revise and prepare for publication.
Edith. Formerly *Eadith;* from Anglo-Saxon *eadig,* "happy," "rich."
e-di-tion (*ē-dish'un*), *n.* the published form of a literary work.
ed-i-tor (*ed'i-tĕr*), *n.* one who superintends a literary work for publication.
ed-i-to-ri-al (*-tō'ri-al*), *adj.* pertaining to an editor: *n.* a leading article.
Edmund (*ed'mund*). From Anglo-Saxon *ead-mund* "guardian or defender of happiness." Danish, *Edmund;* Fr., *Edmond;* Ger., *Edmund;* It., *Edmondo;* Lat., *Edmundus;* Sp., *Edmondo,* or *Edmundo.*
ed-u-cate (*'ū-kāt*), *v. t.* to impart knowledge to; train. [TEACH.]
ed-u-ca-tion (*-kā'shun*) *n.* the act of educating.
Syn. EDUCATION, instruction, breeding. *Instruction* and *breeding* are to *education* as parts to a whole; *instruction* respects the communication of knowledge and *breeding* respects the manners or outward conduct; but *education* comprehends not only both these, but the formation of the mind, and the establishment of the principles; good *instruction* makes one wiser; good *breeding* makes one more polished and agreeable.
Ant. IGNORANCE, uncouthness.
ed-u-ca-tor (*-kā-tĕr*) *n.* one who, or that which, educates.
e-duce (*ē-dūs'*), *v. t.* to draw out; evolve.
Edward (*ed'ward*). From Anglo-Saxon *ead-weard,* "guardian of happiness." Danish, *Eduard;* Dutch *Eduard;* Fr., *Edouard;* Ger., *Eduard;* It., *Edoardo* or *Edoardo;* Lat., *Edvardus* or *Edoardus;* Port., *Duarte;* Sp., *Eduardo;* Sw., *Eduard.*

Edwin (*ed'win*). From the Anglo-Saxon name Eadwin, from *ead-winn*, "happy conqueror." Danish, *Edwin*; Lat., *Edwinus*.
eel (*ēl*), *n.* an elongated fish, destitute of ventral fins.
eel-fare (*ēl'fâr*), *n.* a brood of eels.
Eel river, Ind. From the translation of the Indian name, *shoamague*, "slippery fish" (the eel).
e'en (*ēn*), contraction of even and evening.
e'er (*âr* or *âr*), contraction of ever.
ee-rie (*ē'ri*), *adj.* weird.
ef-face (*ē-fās'*), *v. t.* to obliterate. [BLOT.]
ef-face-a-ble (*'ā-bl*), *adj.* capable of being effaced.
ef-fect (*ē-fekt'*), *v. t* to produce as a cause: *n.* result; purpose.
Syn. EFFECT, produce, perform. To *produce* signifies to bring something forth or into existence; to *perform* to do something to the end; to *effect* is to *produce* an effect by performing; whatever is *effected* is the consequence of a specific design; what is *performed* is done by specific efforts. [See *accomplish, consequence.*]
Ant. CAUSE, fail, spoil.
ef-fect-ive (*'iv*), *adj.* having the power to effect.
ef-fect-u-al (*'ū-al*), *adj.* producing, or having, effect.
ef-fem-i-na-cy (*-fem'i-nā-si*), *n.* the quality of being effeminate.
ef-fem-i-nate (*'i-nāt*), *v. t.* to make womanish or delicate: *adj.* unmanly. [FEMALE.]
ef-fer-vesce (*-fēr-ves'*), *v. i.* to be in a state of natural ebullition.
ef-fer-ves-cence (*'ens*), *n.* the state or condition of effervescing.
ef-fete (*-fēt'*), *adj.* worn out. [effect.
ef-fi-ca-cious (*-i-kā'shus*), *adj.* producing a desired
ef-fi-ca-cy (*-kā-si*), *n.* power to produce results or effects.
ef-fi-cien-cy (*-fish'en-si*), *n.* effectual agency or power. [ABILITY.]
ef-fi-cient (*'ent*), *adj.* producing or causing effects or results; powerful.
Effie. A Scottish corruption of *Euphemia*.
ef-fi-gy (*ef'i-ji*), *n.* [*pl.* effigies (*-jiz*)], an image.
ef-flo-resce (*-flō-res'*), *v. i.* to blossom.
ef-flu-vi-um (*ef-flū'vi-um*), *n. pl.* effluvia (*-ā*)], disagreeable exhalations arising from decaying matter.
ef-fort (*'fȯrt*), *n.* strenuous exertion. [ENDEAVOR.]
ef-front-er-y (*-frunt'ēr-i*), *n.* impudence.
ef-ful-gence (*-ful'jens*), *n.* a great luster.
ef-fu-sion (*-fū'zhun*), *n.* the act of pouring out.
Syn. EFFUSION, ejaculation. An *effusion* commonly flows from a heated imagination uncorrected by the judgment; it is, therefore, in general not only incoherent but extravagant and senseless; an *ejaculation* is produced by the warmth of the moment, but never without reference to some particular circumstance. Enthusiasts are full of extravagant *effusions;* contrite sinners will often express their penitence in pious *ejaculations.*
ef-fu-sive (*'siv*), *adj.* pouring forth freely or widely.
Egbert (*eg'bērt*). It means, "distinguished in battle," Lat., *Egbertus*.
egg (*eg*), *n.* the oval or roundish body laid by birds from which their young are produced.
eg-lan-tine (*'lan-tin* or *-tin*), *n.* the dog-rose.
eg-o-ism (*eg'ō-izm*), *n.* the habit of regarding self as the center of everything. [OPINIONATED.]
eg-o-ist (*-ist*), *n.* an adherent of egoism.
eg-o-tism (*eg'ō-tizm*), *n.* vanity. [OPINIONATED.]
eg-o-tist (*-tist*), *n.* one characterized by egotism.
e-gre-gious (*ē-grē'jus*), *adj.* extraordinary.
e-gress (*'gres*), *n.* departure.
e-gret (*'gret*), *n.* a heron's plume.
Egypt. Is the Greek and not the native name of the country which on the monuments is called *Kem* (Ham), "the black," probably from the dark alluvial soil. It has been explained as the "land" (*aia*) of the "vulture" (*guptos*), or sacred kite of Horus, which is the most conspicuous animal in the country.
Egyptian hall. The Egyptian hall in the mansion house of the city of London was so-called because of its exact correspondence with the Egyptian hall described by Vitruvius.
ei-der (*i'dēr*), *n.* a large marine duck, the down of which is an article of commercial value.
eight (*āt*), *adj.* one more than 7: a cardinal numeral.
eight-een (*āt'ēn*), *adj.* one more than 17: a cardinal numeral; the sum of 17 and 1.
eight-een-mo (*-mō*), *n.* a size of book the sheets for which are folded into 18 leaves.
eight-eenth (*'ēnth*), *adj.* next in order after 17th: an ordinal numeral.
eighth (*āt'th*), *adj.* next after seventh.
eight-i-eth (*āt'i-eth*), *adj.* next to seventy-ninth.
eight-y (*'i*), *adj.* eight times ten.
ei-kon (*i'kȯn*), *n.* a holy image.
ei-ther (*ē'* or *ī'thēr*), *adj.* one or the other of two.
e-jac-u-late (*ē-jak'ū-lāt*), *v. t.* to utter suddenly. [CALL.]
e-jac-u-la-tion (*ū-lā'shun*), *n.* something uttered suddenly. [EFFUSION.]
e-ject (*ē-jekt'*), *v. t.* to cast forth. [BANISH.]
eke (*ēk*), *v. t.* to extend or lengthen.
e-lab-o-rate (*ē-lab'ō-rāt*), *v. t.* improve or refine with study or labor.
e-lapse (*-laps'*), *v. i.* to slip or glide away.
e-las-tic (*-las'tik*), *adj.* springing back; rebounding.
e-las-tic-i-ty (*-tis'i-ti*), *n.* the quality of being elastic.
e-las-tic tis-sue (*ē-las'tik tish'ū*), elastic tissue in the ligaments of the vertebræ.
e-late (*-lāt'*), *v. t.* to raise the spirits of.
e-la-tion (*-lā'shun*), *n.* the state of being elated.
Elba (*el'bà*). An island belonging to the province of Leghorn, Italy, situated in the Mediterranean, east of Corsica, and about five and one-half miles from Tuscany. Napoleon I. lived here in exile from May 4, 1814, to February 26, 1815.
el-bow (*el'bō*), *n.* the joint or bend of the arm: *v. t.* to thrust on one side.
el-der (*'dēr*), *adj.* older: *n.* one older in age, rank, or station; one of a body of laymen, in certain churches, authorized to superintend its spiritual interests.
el-der-ly (*'li*), *adj.* somewhat old.
Syn. ELDERLY, aged, old. The *elderly* man has passed the meridian of life; the *aged* man is fast approaching the term of our existence; the *old* man has already reached this term, or has exceeded it.
Ant. YOUNG, youthful.
el-dest (*'dest*), *adj.* oldest; first-born.
Eldred (*el'dred*). From the Teutonic, meaning "all dread," hence "terrible." Lat., *Eldredus*.
Eleanor (*el'ē-a-nȯr, el'en-ȯr*). Derived from *Helen*. Danish, *Eleonore;* Dutch, *Leonora;* Fr., *Elenore;* Ger., *Eleonore;* It., *Eleonora;* Lat., *Eleanora;* Sp., *Leanor*.
e-lect (*ē-lekt'*), *v. t.* to choose for any office or use: *adj.* taken in preference.
e-lec-tion (*-lek'shun*), *n.* the act of electing; voluntary preference. [ALTERNATIVE.]
e-lec-tion-eer (*-shun-ēr'*), *v. i.* to employ means for influencing the result of an election.
e-lect-ive (*-lekt'iv*), *adj.* regulated by choice; exerting the power of choice.
e-lect-or (*'ēr*), *n.* one legally qualified to vote.
e-lect-or-al col-lege (*kol'ej*), a body of representatives elected by the voters of the several states to choose a president of the United States.
e-lect-or-ate (*'ȯr-āt*), *n.* the whole body of persons entitled to vote.
e-lec-tric (*-lek'trik*), *adj.* pertaining to electricity; magnetic.
e-lec-tri-cian (*-trish'un*), *n.* one who is skilled in the science of electricity.
e-lec-tric-i-ty (*-tris'i-ti*), *n.* an imponderable and invisible agent producing light, heat, chemical decomposition, and other physical phenomena.
e-lec-tri-fi-a-ble (*'tri-fī-ā-bl*), *adj.* capable of being charged with electricity.
e-lec-tri-fi-ca-tion (*-fi-kā'shun*), *n.* the act of electrifying.
e-lec-tri-fy (*'tri-fī*), *v. t.* [*p. t.* and *p. p.* electrified, *p. pr.* electrifying], to charge with, or act upon, by electricity.
e-lec-tro, a *prefix* denoting electricity as the motive power, or operating agent.
e-lec-tro-cute (*'trō-kūt*), *v. t.* to put to death by an electric current.
e-lec-tro-cu-tion (*-kū'shun*), *n.* the act of electrocuting.
e-lec-trode (*ē-lek'trōd*), *n.* either of the terminals of an electric source; anode or cathode.
e-lec-tro-dy-nam-ics (*ē-lek'trō-dī-nam'iks*), *n.* that branch of physics which treats of electric currents.
e-lec-tro-dy-na-mom-e-ter (*-nā-mom'ē-tēr*), *n.* an instrument for measuring the strength of an electric current.
e-lec-tro-graph (*-gràf*), *n.* an apparatus used in preparing copper cylinders for printing fabrics.
e-lec-trog-ra-phy (*-trog'rā-fi*), *n.* a process of copying fine engravings on copper or steel.
e-lec-tro-ki-net-ics (*-trō-ki-net'iks*), *n.* that branch of electrical science which treats of electric currents in motion.
e-lec-tro-lier (*-trō-lēr'*), *n.* an ornamental bracket for supporting electric lamps.
e-lec-trol-y-sis (*-trol'i-sis*), *n.* the decomposition of a chemical compound by electricity.
e-lec-tro-lyze (*'trō-līz*), *v. t.* to decompose by the action of electricity.
e-lec-tro-mag-net (*-mag'net*), *n.* a coil of soft iron rendered magnetic by the passage of an electric current through it.
e-lec-tro-mag-net-ics (*-mag-net'iks*), *n.* the science of electromagnetism.
e-lec-tro-met-al-lur-gy (*-met'al-ēr-ji*), *n.* the art of precipitating certain metals from their solutions by a slow electric current.
e-lec-tron (*ē-lek'tron*), *n.* an electrical unit.
e-lec-trop-a-thy (*-trop'ā-thi*), *n.* the treatment of diseases by electricity.
e-lec-troph-o-rus (*-trof'ō-rus*), *n.* an instrument for generating statical electricity.
e-lec-tro-pho-tom-e-ter (*'trō-fō-tom'ē-tēr*), *n.* an instrument for comparing the brightness of various lights with that produced by an electric spark.
e-lec-tro-plate (*'trō-plāt*), *v. t.* to cover or give a coating of metal to by means of a current of electricity.
e-lec-tro-tech-nics (*-tek'niks*), *n.* the science of the processes in which electricity is applied to the industrial arts.
e-lec-tro-tint-ing (*-tint'ing*), *n.* a method of producing a design, etc., the lines of which when exposed in an electro bath are protected.
e-lec-tro-type (*'trō-tīp*), *n.* a facsimile in metal of any object made by the action of a galvanic electric current.
el-ee-mos-y-na-ry (*el-ē-mos'i-nā-ri*), *adj.* pertaining to alms.
el-e-gance (*el'ē-gans*), *n.* [*pl.* elegances (*-gan-siz*)], the state or quality of being elegant.
el-e-gant (*-gant*), *adj.* characterized by refinement and good taste.
★e-le-gi-ac (*ē-lē'ji-ak*, or *el-ē-jī'ak*), *adj.* pertaining to, or of the nature of, an elegy.
el-e-gy (*el'ē-ji*), *n.* [*pl.* elegies (*-jiz*)], a funeral song or ode.
el-e-ment (*el'ē-ment*), *n.* a first or constituent principle.
el-e-mental (*'tal*), *adj.* pertaining to, or characteristic of, an element.
el-e-phant (*'ē-fant*), *n.* a large five-toed proboscidian mammal.
Elephanta (*el-ē-fan'tà*). The Portuguese name for a small island in Bombay harbor, derived from the colossal figure of an elephant carved on the rock.
el-e-phan-ti-a-sis (*-ti'ā-sis*), *n.* a cutaneous disease resembling leprosy.
el-e-phan-tine (*'tin*), *adj.* huge; unwieldy.
Elephantine (*el-ē-fān-tē'nā*). The Greek name of the island of Philœ.
el-e-vate (*el'ē-vāt*), *v. t.* to raise.
el-e-va-tion (*-vā'shun*), *n.* the act of elevating.
el-e-va-tor (*-tēr*), *n.* a hoisting machine or lift.
★e-lev-en (*ē-lev'n*), *adj.* 10 with 1 added.
e-lev-enth (*-lev'nth*), *adj.* next in order after 10th: an ordinal numeral.
elf (*elf*), *n.* [*pl.* elves (*elvz*)], a diminutive mischievous sprite; fairy.
el-fin (*el'fin*), *n.* an inhabitant of fairyland: *adj.* pertaining to elves.
Elgin (*el-gin*) **marbles.** A collection of Greek sculptures comprising the bulk of the surviving plastic decorations of the Parthenon, and a caryatid and column from the Erechtheum, and recognized as containing the finest existing productions of sculpture.
Elias (*ē-lī'as*). From the Greek form of *Elijah*, meaning "God the Lord." Danish, *Elias;* Fr., *Elie;* Ger., *Elias;* It., *Elia;* Lat., *Elias*.
e-lic-it (*ē-lis'it*), *v. t.* to draw out.
e-lide (*-līd'*), *v. t.* slur over, or cut off.
el-i-gi-bil-i-ty (*el-i-ji-bil'i-ti*), *n.* the quality of being eligible.
el-i-gi-ble (*el'i-ji-bl*), *adj.* capable of being, or fit to be, chosen.
Syn. ELIGIBLE, preferable. What is *eligible* is desirable in itself, what is *preferable* is more desirable than another.
Elihu (*ē-lī'hū* or *el'i-hū*). A name derived from Elias.
Elijah. See *Elias*.
e-lim-i-nate (*ē-lim'i-nāt*), *v. t.* to leave out of consideration.
Elisabeth. See *Elizabeth*.
Elisha (*ē-lī'shà*). From the Hebrew, meaning "the salvation of God." Fr., *Elisée;* It., *Eliseo;* Lat., *Elisæus;* Port., *Eliseu;* Sp., *Eliseo*.
e-li-sion (*ē-lizh'un*), *n.* the cutting off of a rowel or syllable for the sake of euphony.
e-lix-ir (*ē-lik'sēr*), *n.* a tincture, essence, or cordial.
Eliza (*ē-lī'zà*). Corrupted from *Elizabeth*. Danish, *Elisa;* Dutch, *Elisa;* Fr., *Elise;* Ger., *Elisa;* Lat., *Eliza,* or *Elisa*.
Elizabeth (*ē-liz'a-beth*). From the Hebrew *Eliyshebha,* which St. Jerome translates "oath of my God"; Danish, *Elisabeth;* Dutch, *Elizabeth;* Fr., *Elisabeth;* Ger., *Elisabeth;* It., *Elisabetta;* Lat., *Elizabetha;* Sp., *Isabel*.
Elizabeth, N. J. Named for Elizabeth Carteret, wife of Sir George Carteret.
elk (*elk*), *n.* a very large deer of North America and northern Europe.
ell (*el*), *n.* a measure formerly used for cloth equal to 45 inches.
Ellen. Some consider this the same as *Helen*, and, indeed, in Spanish *Helen* and *Ellen* are both represented by *Elena*. It may, however, be the same as *Ailean*.
el-lipse (*el-lips'*), *n.* one of the sections of a cone.
el-lip-sis (*'sis*), *n.* the omission of a word or words in a sentence.
el-lip-tic (*-lip'tik*), *adj.* pertaining to, or formed like, an ellipse.
Ellis Island, N. Y. Variously called Oyster, Bucket, and Gibbett island. The port of arrival of immigrants.
elm (*elm*), *n.* a tree of various species belonging to the genus Ulmus.
Elma. A female name abbreviated from *Guilielma*, a feminine formed from *Guilielmus*, from root of *William*.
Elmira. City in Chemung county, New York.
Elmo, Castle of Saint. A castle at Naples and a fort at Malta.
el-o-cu-tion (*el-ō-kū'shun*), *n.* the art, manner, or style of speaking in public.
el-o-cu-tion-ist (*-ist*), *n.* one skilled in the art of elocution.
★e-lon-gate (*ē-lȯng'gāt*, not *ē-lon'gāt*), *v. t.* to stretch out.
e-lope (*ē-lōp'*), *v. i.* to escape privately.
e-lope-ment (*'ment*), *n.* running away.
e-lo-quence (*el'ō-kwens*), *n.* the art of speaking with fluency and elegance.
el-o-quent (*-kwent*), *adj.* having the power of oratory.
else (*els*), *adv.* besides.
Else or **Elsa.** See *Alice*.
else-where (*'hwâr*), *adv.* in another place.
Elsie. A name corrupted from *Elizabeth*.

e-lu-ci-date (*ē-lū'si-dāt*), *v. t.* to make clear; render intelligible. [EXPLAIN.]
e-lude (*ē-lūd'*), *v. t.* to avoid by artifice or dexterity.
e-lu-sive (*-lū'siv*), *adj.* deceptive.
e-lu-so-ry (*'sō-ri*), *adj.* evasive.
elves, *pl.* of elf.
Elvira (*el-vī'rā*). It has been corrupted from the name *Geloyra* or *Geluira*.
Elysée (*ā-lē-zā'*), **Palace of.** The official residence of the president of France, in Paris. It was built in 1718, and since the reign of Louis XV. has been the property of the state.
e-ly-sian (*ē-lizh'an*), *adj.* pertaining to Elysium.
E-ly-sium (*'um*), *n.* the Greek paradise or residence of the blessed after death; a condition of perfect happiness.
em (*em*), *n.* the square body of any size of type.
e-ma-ci-ate (*ē-mā'shi-āt*), *v. i.* to lose flesh; pine away.
em-a-nate (*em'ā-nāt*), *v. i.* to flow out, issue, as from a source.
e-man-ci-pate (*ē-man'si-pāt*), *v. t.* to liberate from servitude or bondage.
e-man-ci-pa-tor (*-pā-tẽr*), *n.* a liberator.
e-mas-cu-late (*-mas'kū-lāt*), *v. t.* to castrate; deprive of virility: *adj.* castrated.
em-balm (*em-bām'*), *v. t.* to preserve from decay by balsams or aromatic spices.
em-bank (*-bangk'*), *v. t.* to inclose with a bank.
em-bank-ment (*'ment*), *n.* a bank of earth.
em-bar-go (*-bär'gō*), *n.* [*pl.* embargoes (*'gōz*)], an order by authority prohibiting the departure of vessels from port.
em-bark (*-bärk'*), *v. t.* to put on board ship; venture or invest: *v. i.* to go on board a vessel.
em-bar-rass (*-bar'as*), *v. t.* to hinder, perplex.
Syn. EMBARRASS, perplex, entangle. *Embarrassments* depend altogether on ourselves; the want of prudence and presence of mind is the common cause; *perplexities* depend on extraneous circumstances as well as ourselves; extensive dealings with others are mostly attended with *perplexities; entanglements* arise mostly from the evil designs of others. [See *obstruct.*]
Ant. EMBOLDEN, rally, extricate.
em-bas-sy (*'ba-si*), *n.* [*pl.* embassies (*-siz*)], the public function of an ambassador; a legation.
em-bat-tled (*-bat'ld*), *p. adj.* furnished with battlements.
em-bed (*-bed'*), *v. t.* to lay in a bed; set in surrounding matter.
em-bel-lish (*-bel'ish*), *v. t.* to make beautiful.
em-ber (*'bẽr*), *n.* a small live coal.
em-bez-zle (*-bez'l*), *v. t.* to appropriate fraudulently.
em-bit-ter (*-bit'ẽr*), *v. t.* to make bitter.
em-bla-zon (*-blā'zn*), *v. t.* to adorn with heraldic figures.
em-bla-zon-ry (*-ri*), *n.* [*pl.* emblazonries (*-riz*)], heraldic decoration.
em-blem (*'blem*), *n.* a symbolical figure or design.
em-blem-at-ic (*blem-at'ik*), *adj.* pertaining to an emblem.
em-ble-ments (*'blē-ments*), *n. pl.* annual crops.
em-bod-i-ment (*-bod'i-ment*), *n.* the act of embodying or uniting in a whole.
em-bod-y (*-bod'i*), *v. t.* [*p. t.* and *p. p.* embodied, *p. pr.* embodying], to collect into one mass or united whole: *v. i.* to coalesce.
em-bold-en (*em-bōld'n*), *v. t.* to encourage. [ENCOURAGE.]
em-bo-lus (*'bō-lus*), *n.* [*pl.* emboli (*-lī*)], something inserted and acting in another thing.
em-bos-om (*em-booz'um*), *v. t.* to hold in the bosom.
em-boss (*-bos'*), *v. t.* to cover with bosses or studs.
em-boss-ing (*'ing*), *n.* the art of producing raised figures in relief.
em-bow-el (*-bou'el*), *v. t.* [*p. t.* and *p. p.* emboweled, *p. pr.* emboweling], to remove the intestines from.
em-bow-er (*-bou'ẽr*), *v. t.* to cover with, or as with, a bower.
em-brace (*-brās'*), *v. t.* to take in close, or press to the bosom with affection; hug: *v. i.* to join in an embrace. [CLASP, EMBRACE.]
em-bra-cer-y (*-brā'sẽr-i*), *n.* the act of attempting to corrupt a jury.
em-bra-sure (*'zhūr*), *n.* an opening in a wall from which to fire guns.
em-bro-ca-tion (*-brō-kā'shun*), *n.* a liniment for rubbing an injured part.
em-broid-er (*-broid'ẽr*), *v. t.* to decorate with needlework.
em-broid-er-y (*-i*), *n.* [*pl.* embroideries (*-iz*)], ornamental work of gold, silver, silk, etc., executed with the needle.
em-broil (*-broil'*), *v. t.* to throw into confusion.
em-bry-o (*'bri-ō*), *n.* [*pl.* embryos (*-ōz*)], the first germ or rudiment of an organism.
em-bry-ol-o-gy (*-ol'ō-ji*), *n.* that branch of biology which treats of embryos.
em-bry-on-ic (*-on'ik*), *adj.* pertaining to an embryo.
em-bry-ot-o-my (*-ot'ō-mi*), *n.* the extraction of an embryo by cutting.
e-mend (*ē-mend'*), *v. t.*, to correct. [AMEND.]
em-en-da-tion (*em-en-dā'shun*), *n.* the alteration or correction of a text.
em-er-ald (*em'ẽr-ald*), *n.* a precious stone of a rich, deep green color.
Emerald isle. Ireland. The author of this epithet was Dr. Drennan, of Belfast, who died 1820.
e-merge (*ē-mẽrj'*), *v. i.* to rise up, or come forth, from anything.
e-mer-gen-cy (*ē-mẽr'jen-si*), *n.* [*pl.* emergencies (*-siz*)], 'a sudden occasion; crisis. [EXIGENCY.]
e-mer-sion (*-mẽr'shun*), *n.* the act of emerging.
em-er-y (*em'ẽr-i*), *n.* a very hard variety of corundum.
Emery (*em'e-ri*). A name derived from the old name *Amalaric*, signifying "powerful without a blot," or "rich in chastity." Danish, *Almerik;* Dutch, *Almerik;* Fr., *Emeric* or *Emeri;* Lat., *Almericus;* Sw., *Emmerik.*
e-met-ic (*ē-met'ik*), *adj.* inducing vomiting.
em-i-grant (*em'i-grant*), *n.* one who quits his own country to settle in another.
em-i-grate (*'i-grāt*), *v. i.* to leave one's country to settle in another.
Syn. EMIGRATE, immigrate, migrate. To *migrate* is to change one's dwelling-place, usually with the idea of repeated change, or of periodical return; it applies to wandering tribes of men, and to many birds and animals. *Emigrate* and *immigrate* carry the idea of a permanent change of residence to some other country or some distant region.
Emilia (*ē-mil'i-ā*) or **Emily** (*em'i-li*). A name corrupted from *Amelia.* Fr., *Emilie;* Ger., *Emilie,* or *Emilia;* It., *Emilia.*
Emily. See *Emilia.*
em-i-nence (*em'i-nens*), *n.* that which is lofty; elevation; height.
em-i-nent (*-nent*), *adj.* high in office, or reputation. [DISTINGUISHED.]
em-is-sa-ry (*em'i-sā-ri*), *n.* [*pl.* emissaries (*-riz*)], a person sent on a mission.
Syn. EMISSARY, spy. Both these words designate a person sent out by a body on some public concern among their enemies. The *emissary* is sent so as to mix with the people to whom he goes, to be in all places, and to associate with every one individually as may serve his purpose; the *spy* takes his station wherever he can best perceive what is passing. The *emissary* is generally employed by those who have some legitimate object to pursue; *spies,* on the other hand, are employed by governments in a time of warfare only.
e-mis-sion (*ē-mish'un*), *n.* the act of sending out.
e-mit (*-mit'*), *v. t.* [*p. t.* and *p. p.* emitted, *p. pr.* emitting], to send or give forth.
Emma. Some derive this name from Greek *amme,* "a nurse." Fr., *Emma;* It., *Emma;* Lat., *Emma.*
Emmanuel (*em-man'ū-el*) or **Immanuel.** From the Hebrew, meaning "God with us;" Fr., *Emmanuel;* Ger., *Emanuel* or *Immanuel;* It., *Emanuele;* Lat., *Emanuel;* Port., *Manoel;* Sp., *Manuel.*
e-mol-lient (*ē-mol'yent*), *adj.* softening: *n.* a medicine that has a softening effect.
e-mol-u-ment (*'ū-ment*), *n.* profit; remuneration.
e-mo-tion (*-mō'shun*), *n.* mental agitation.
e-mo-tion-al (*-al*), *adj.* pertaining to emotion.
em-per-or (*em'pẽr-ẽr*), *n.* the sovereign of an empire.
em-pha-sis (*'fa-sis*), *n.* a particular stress of the voice on a word or words in reading or speaking.
em-pha-size (*'fa-siz*), *v. t.* to pronounce with emphasis.
em-phat-ic (*-fat'ik*), *adj.* uttered with emphasis; forcibly significant.
em-pire (*'pir*), *n.* supreme power or dominion; the region ruled over by an emperor or sovereign.
Syn. EMPIRE, reign, dominion. As *empire* signifies command, or the power exercised in commanding, it properly refers to the country or people commanded; and as *reign* signifies the act of *reigning* it refers to the individual who *reigns. Dominion* may be applied in the proper sense to the power which man exercises over the brutes or inanimate objects, and figuratively to the power of the passions.
em-pir-ic (*-pir'ik*), *adj.* pertaining to, or derived from, experience.
em-pir-i-cism (*'i-sizm*), *n.* observation, or practical experience apart from scientific knowledge.
em-ploy (*-ploi'*), *v. t.* [*p. t.* and *p. p.* employed, *p. pr.* employing], to give occupation to: *n.* occupation.
Syn. EMPLOY, use. We *employ* whatever we take into our service, or make subservient to our convenience for a time; we *use* whatever we entirely devote to our purpose.
Ant. NEGLECT.
★**em-ploy-é** (*em-ploi-ā'* or ᴅN-*plwā-yā*, not *em-ploi-ē'* unless spelled *employee*), *n.* one who works for another.
em-ploy-ment (*'ment*), *n.* business; occupation.
em-po-ri-um (*-pō'ri-um*), *n.* a commercial center or place of trade.
em-pow-er (*-pou'ẽr*), *v. t.* to authorize. [COMMISSION.]
em-press (*'pres*), *n.* a woman invested with sovereign sway over an empire.
emp-ty (*emp'ti*), *adj.* [*comp.* emptier, *superl.* emptiest], containing nothing; vacant: *v. t.* [*p. t.* and *p. p.* emptied, *p. pr.* emptying], to pour out; discharge. [HOLLOW.]
em-py-re-an (*em-pi'rē-an*), *adj.* ethereal.
e-mu (*ē'mū*), *n.* a large Australian ostrich-like bird.
em-u-late (*em'ū-lāt*), *v. t.* to strive to equal or excel.
e-mul-gent (*ē-mul'jent*), *adj.* draining out: *n.* a medicine that promotes a flow of the bile.
e-mul-sion (*ē-mul'shun*), *n.* any liquid preparation resembling milk.
en-a-ble (*en-ā'bl*), *v. t.* to make able.
en-act (*-akt'*), *v. t.* to decree; pass into law.
en-act-ment (*en-akt'ment*), *n.* the act of enacting; a statute.
Enaid or **Enid.** A Welsh female name signifying "soul, life."
en-am-el (*en-am'el*), *n.* an opaque, semitransparent substance, or glass, used in coating the surface of metals or porcelain: *v. t.* [*p. t.* and *p. p.* enameled, *p. pr.* enameling], to decorate with enamel.
en-am-or (*-am'ẽr*), *v. t.* to captivate.
en-camp (*-kamp'*), *v. i.* to form a camp; halt on the march.
en-camp-ment (*'ment*), *n.* a temporary resting place.
en-chain (*en-chān'*), *v. t.* to hold fast with, or as with, a chain.
★**en-chant** (*-chänt'*, not *en-chant'*), *v. t.* to charm or subdue, fill with delight.
en-cir-cle (*-sẽr'kl*), *v. t.* to enclasp; embrace. [SURROUND.]
en-co-mi-um (*-kō'mi-um*), *n.* [*pl.* encomiums (*-umz*)], formal praise.
Syn. ENCOMIUM, eulogy, panegyric. We bestow *encomiums* upon any work of art or production of genius; we bestow *eulogies* on the exploits of a hero; but we write *panegyrics* either in a direct address, or in direct reference to the person who is *panegyrized;* the *encomium* is produced by merit, real or supposed; the *eulogy* may spring from admiration of the person *eulogized.*
Ant. ABUSE, censure, denunciation.
en-com-pass (*-kum'pas*), *v. t.* to surround. [SURROUND.]
★**en-core** (*āng-kōr'*, French *ᾶN-kōr'*), *adv.* once more; again: *n.* a demand by an audience for a repetition of a part of a program.
en-coun-ter (*en-koun'tẽr*), *v. t.* to come upon suddenly; meet face to face: *n.* a conflict; battle.
en-cour-age (*-kur'āj*), *v. t.* to inspire with courage.
Syn. ENCOURAGE, embolden. To *encourage* is to give *courage,* and to *embolden* to make *bold;* the former impelling to action in general, the latter to that which is more difficult or dangerous.
Ant. BAFFLE, confuse, deter, discourage.
en-croach (*-krōch'*), *v. i.* to invade gradually or by stealth.
en-cum-ber (*-kum'bẽr*), *v. t.* to impede; retard.
en-cum-brance (*'brans*), *n.* that which encumbers.
en-cyc-li-cal (*-sik'li-kal*), *adj.* sent to all members of a class or community.
en-cy-clo-pæ-di-a or **encyclopedia** (*-si-klō-pē'di-ā*), *n.* a dictionary of the arts, sciences, and literature.
en-cy-clo-pæd-ic (*-ped'ik*), *adj.* pertaining to an encyclopædia.
en-cy-clo-pæ-dist (*-pē'dist*), *n.* a compiler of an encyclopædia.
Encyclopædists or **Encyclopedists** (*en-si-klō-pē'dists*). The collaborators in the encyclopædia of Diderot and D'Alembert (1751-65).
end (*end*), *n.* the extreme limit or terminal point of anything; purpose in view; death: *v. t.* to bring to an end; destroy: *v. i.* to come to an end; die.
Syn. END, terminate, close. To *end* is indefinite in its meaning and general in its application; *terminate* and *close* are modes of *ending;* to *terminate* is to *end* finally; to *close* to end gradually. Whatever is begun will *end,* and it may *end* in any way; but what *terminates* is that which has been designedly brought to an end; a string, a line, a verse, etc., may *end,* but a road is said properly to *terminate.* [See *abolish.*]
Ant. BEGIN, commence, continue.
en-dan-ger (*en-dān'jẽr*), *v. t.* expose to danger.
en-dear (*-dēr'*), *v. t.* to make dear or beloved.
en-deav-or (*-dev'ẽr*), *v. i.* to strive for the attainment of some object; attempt: *n.* exertion; effort; attempt.
Syn. ENDEAVOR, effort, exertion. *Endeavor* expresses little more than this common idea, being a term of general import; *effort* and *exertion* are particular modes of *endeavor;* the former being a special strong *endeavor,* the latter a continued strong *endeavor.*
Ant. NEGLECT, idleness.
end-less (*end'les*), *adj.* forever. [ETERNAL.]
en-do-gen (*'dō-jen*), *n.* a plant of one of the primary classes of the vegetable kingdom: *pl.* the class.
en-do-sperm (*'dō-spẽrm*), *n.* the albumen of a seed.
en-dow (*-dou'*), *v. t.* to bestow a fund or income upon.
en-dow-ment (*'ment*), *n.* the act of endowing; that which is bestowed, settled, or appropriated to any object.
en-due (*-dū'*), *v. t.* to clothe; invest. [INVEST.]
en-dur-a-ble (*-dūr'ā-bl*), *adj.* bearable.
en-dur-ance (*-dūr'ans*), *n.* the capacity to endure; fortitude.
en-dure (*-dūr'*), *v. t.* to support without breaking or yielding; remain in: *v. i.* to harden; remain in the same state.
en-e-ma (*en'ē-mā*), *n.* an injection into the rectum.
en-e-my (*'ē-mi*), *n.* [*pl.* enemies (*-miz*)], one hostile to another.
en-er-get-ic (*-ẽr-jet'ik*), *adj.* possessing, or displaying, energy; vigorous in action. [ACTIVE.]
en-er-gize (*'ẽr-jīz*), *v. t.* to endow with energy.
en-er-gy (*'ẽr-ji*), *n.* [*pl.* energies (*-jiz*)], internal or inherent power; vigorous operation.
Syn. ENERGY, force, vigor. With *energy* is connected the idea of activity; with *force* that of capability; with *vigor* that of health; *energy* lies only in the mind; *force* and *vigor* are the property of either body or mind.
Ant. FEEBLENESS, impatience, weakness.

e-ner-vate (*ē-nĕr'vāt* or *en'ĕr-vāt*), *v. t.* to deprive of nerve.
en-fee-ble (*en-fē'bl*), *v. t.* to weaken; relax.
en-force (*-fōrs'*), *v. t.* to put into execution with vigor.
★en-fran-chise (*en-fran'chiz*), *v. t.* to liberate or set free; admit to the right of voting.
Engadine (*en-gā-dēn'*). A valley in the canton of Grisons, Switzerland, traversed by the Inn, noted for its health resorts and high elevation.
en-gage (*en-gāj'*), *v. t.* to pledge or bind by oath or contract; secure for aid or employment; encounter in battle; occupy the time or attention of; interlock. [ATTRACT.]
en-gage-ment (*-gāj'ment*), *n.* the act of engaging; the state or condition of being engaged; betrothal. [PROMISE.]
en-gen-der (*-jen'dĕr*), *v. t.* to beget; excite.
★en-gine (*en'jin*, not *en'jin*), *n.* a machine by which power is applied for the performance of work.
en-gi-neer (*-ji-nēr'*), *n.* one who is skilled in the principles or practice of any branch of ngineering.
en-gi-neer-ing (*'ing*), *n.* the art of constructing and using machinery.
England (*ing'gland*). When Egbert, king of the West-Saxons, in 829, had subjugated the other six Saxon kingdoms, he summoned a general council at Winchester, at which it was declared that henceforth Britain should be called England, its people Englishmen, and himself king of England. Originally the name was *Englaland*, the land of the Engles, or Angles, who came over from Sleswick, a province of Juteland.
Eng-lish (*ing'glish*), *adj.* belonging to, characteristic of, or pertaining to, the language or the people of England, or those descended from them.
en-grain. Another form of *ingrain*.
en-grave (*en-grāv'*), *v. t.* to cut or carve in sunken patterns.
en-gross (*-grōs'*), *v. t.* to absorb; write in a large distinct, round hand. [ABSORB.
en-gulf. Same as *ingulf*.
en-hance (*-hans'*), *v. t.* to raise in esteem.
en-har-mon-ic (*-här-mon'ik*), *adj.* proceeding by smaller intervals than a semitone.
e-nig-ma (*ē-nig'ma*), *n.* a riddle.
e-nig-mat-ic (*-mat'ik*), *adj.* pertaining to an enigma. [EQUIVOCAL, MYSTERIOUS.]
en-join (*-join'*), *v. t.* to direct with authority or urgency; prohibit.
en-joy (*-joi'*), *v. t.* to feel or perceive with pleasure. [ADMIRE.]
en-kin-dle (*-kin'dl*), *v. t.* to set on fire; rouse.
en-large (*-lärj'*), *v. t.* to make larger; extend in limits or dimensions; amplify.
Syn. ENLARGE, increase, extend. *Enlarge* is applied to dimension and extent; *increase* is applicable to quantity, signifying to become greater in size; *extend* signifies to make greater in space. [See *add*.]
Ant. ABBREVIATE, curtail, limit, reduce.
en-light-en (*-līt'n*), *v. t.* to illuminate; make clear to the mind. [ILLUMINATE, TEACH.]
en-list (*-list'*), *v. t.* to enroll, as for military service; register.
en-liv-en (*-līv'n*), *v. t.* to make vigorous, active, or vivacious.
en-mi-ty (*'mi-ti*), *n.* [*pl.* enmities (*-tiz*)], animosity; hatred; hostility; ill will.
Syn. ENMITY, animosity, hostility. *Enmity* lies in the heart; *animosity*, lies in the passions; *hostility*, lies in the action. *Enmity* is altogether personal; *hostility* respects public or private measures; *enmity* often lies concealed in the heart and does not betray itself by any open act of *hostility*. [See *feud*.]
en-no-ble (*-nō'bl*), *v. t.* to make noble.
★en-nui (*än-we*, French ĀN-nwē'), *n.* languor of mind; listlessness.
Enoch (*ē'nok*). Derived from the Hebrew *Hhanokh*, "initiated, dedicated"; *i. e.*, to God. Fr., *Enoch* or *Henoch;* Lat., *Enochus* or *Henochus*.
e-nor-mi-ty (*ē-nôr'mi-ti*), *n.* [*pl.* enormities (*-tiz*)], something outrageous or extremely immoderate.
e-nor-mous (*'mus*), *adj.* excessive; very great; immense; huge.
Syn. ENORMOUS, prodigious, monstrous. The *enormous* contradicts our rules of estimate and calculating; the *prodigious* raises our minds beyond their ordinary standard of thinking; the *monstrous* contradicts nature and the course of things. What is enormous excites our surprise or amazement; what is *prodigious* excites our astonishment; what is *monstrous* does violence to our senses and understanding.
Ant. DIMINUTIVE, little, mean, paltry, slight.
e-nough (*ē-nuf'*), *adj.* sufficient: *n.* a sufficiency.
Syn. ENOUGH, sufficient. He has *enough* whose desires are satisfied; he has *sufficient* whose wants are supplied.
Ant. INADEQUATE, scanty, scarce.
en-rage (*en-rāj'*), *v. t.* to throw into a rage.
en-rail (*-rāl'*), *v. t.* to place a car upon rails; opposed to derail.
en-rapt (*-rapt'*), *adj.* enraptured.
en-rap-ture (*-rap'tür*), *v. t.* to transport with delight.
en-rich (*en-rich'*), *v. t.* to make rich.
en-robe (*-rōb'*), *v. t.* to clothe; invest.
en-roll (*-rōl'*), *v. t.* to insert in a register; enlist; record.
en route (ĀN-rōōt'), on the way. [*French.*]
en-sam-ple (*en-sam'pl*) *n.* example. [EXAMPLE.]
en-sconce (*-skons'*), *v. t.* to hide; fix securely.
en-sheathe (*-shēth'*), *v. t.* to sheathe.
en-shrine (*en-shrin'*), *v. t.* to place in a shrine.
en-shroud (*-shroud'*), *v. t.* to cover with, or as with, a shroud.
en-sign (*'sīn*), *n.* a flag; the lowest rank in the navy.
en-si-lage (*'si-lāj*), *n.* fodder or vegetable produce stored in a silo.
en-slave (*-slāv'*), *v. t.* to bring into, or reduce to, slavery.
en-snare (*-snâr'*), *v. t.* to take in, or as in, a snare.
en-sue (*-sū'*), *v. i.* to follow as a consequence. [FOLLOW.]
en-sure. Same as *insure*.
en-tab-la-ture (*-tab'lā-tūr*), *n.* the whole parts on the top of a pillar or column.
en-tail (*en-tāl'*), *n.* an estate in fee limited to a particular heir or heirs: *v. t.* to leave or settle, as if by entail.
en-tan-gle (*-tang'gl*), *v. t.* to involve; tangle. [EMBARRASS.]
en-ter (*'tĕr*), *v. t.* to go or come into; begin; penetrate: *v. i.* to effect an entrance.
en-ter-prise (*'tĕr-priz*), *n.* an undertaking of importance.
en-ter-pris-ing (*-ing*), *adj.* adventurous.
Syn. ENTERPRISING, adventurous. The *enterprising* character conceives great projects, and pursues objects that are difficult to be obtained; the *adventurous* character is contented with seeking that which is new, and placing himself in dangerous and unusual situations.
Ant. TIMID, conservative, meticulous.
en-ter-tain (*-tān'*), *v. t.* to receive and treat hospitably; take into consideration: *v. i.* to receive guests hospitably.
en-ter-tain-ment (*'ment*), *n.* the act of entertaining.
en-thrall (*-thrawl'*), *v. t.* to enslave.
en-throne (*-thrōn'*), *v. t.* to place on a throne.
en-thu-si-asm (*-thū'zi-azm*), *n.* elevation of fancy; zeal.
en-thu-si-ast (*'zi-ast*), *n.* one who is filled with enthusiasm.
en-thu-si-as-tic (*-as'tik*), *adj.* given to, or characterized by, enthusiasm. [EAGER.]
en-tice (*-tīs'*), *v. t.* to attract or allure. [PERSUADE.]
en-tire (*-tīr'*), *adj.* complete in all parts; whole: *adv.* entirely; wholly. [WHOLE.]
en-tire-ty (*'ti*), *n.* completeness.
en-ti-tle (*en-ti'tl*), *v. t.* to give a title, or designation to.
en-ti-ty (*'ti-ti*), *n.* [*pl.* entities (*-tiz*)], anything that exists, or is supposed to exist; being.
en-tomb (*en-tōōm'*), *v. t.* to place in a tomb.
en-to-mol-o-gist (*-jist*), *n.* a student of entomology.
en-to-mol-o-gy (*-tō-mol'ō-ji*), *n.* that branch of zoölogy which treats of insects.
en-ton-ic (*-ton'ik*), *adj.* having great tension.
en-trails (*'trālz*), *n. pl.* the intestines.
en-train (*-trān'*), *v. t.* to dispatch by train.
en-trance (*'trans*), *n.* the act of entering; a passage.
en-trap (*-trap'*), *v. t.* to take in, or as in, a trap.
en-treat (*-trēt'*), *v. t.* to solicit earnestly. [BEG.]
en-treat-y (*-trēt'i*), *n.* [*pl.* entreaties (*'iz*)], an earnest petition.
en-trée (*ăn-trā'*), *n.* entrance; admission.
en-trust. Same as *intrust*.
en-try (*en'tri*), *n.* [*pl.* entries (*'triz*)], an entrance; passage.
en-twine (*-twīn'*), *v. t.* to twine around.
e-nu-mer-ate (*ē-nū'mĕr-āt*), *v. t.* to reckon or name singly.
e-nu-mer-a-tion (*-ā'shun*), *n.* the act of numbering.
e-nun-ci-ate (*ē-nun'shi-āt*), *v. t.* to declare or proclaim. [ANNOUNCE, SPEAK.]
e-nun-ci-a-tion (*-si-ā'shun*), *n.* articulation.
en-vel-op (*-vel'up*), *v. t.* to surround with, or as with, a wrapper.
en-vel-ope (*en'vel-ōp*), *n.* a case or wrapper, usually gummed, for safe conveyance of a letter.
en-vel-op-ment (*-vel'up-ment*), *n.* the act of enveloping.
en-ven-om (*-ven'um*), *v. t.* to make poisonous.
en-vi-a-ble (*'vi-ā-bl*), *adj.* exciting envy.
en-vi-a-bly (*-bli*), *adv.* in an enviable manner.
en-vi-ous (*'vi-us*), *adj.* feeling, or characterized by, envy.
en-vi-ron (*-vī'run*), *v. t.* to surround or inclose. [SURROUND.]
en-vi-ron-ment (*-ment*), *n.* that which surrounds.
en-voy (*'voi*), *n.* a diplomatic representative. [AMBASSADOR.]
en-vy (*'vi*), *v. t.* [*p. t.* and *p. p.* envied, *p. pr.* envying], to grudge; feel displeasure at the excellence or prosperity of. [JEALOUSY.]
en-wrap (*-rap'*), *v. t.* to wrap up.
en-zo-ōt-ic (*-zō-ot'ik*), *adj.* pertaining to a disease of a particular district.
e-pact (*ē'pakt*), *n.* the excess of the solar over the lunar month.
ep-au-let (*ep'aw-let*), *n.* an ornamental badge sometimes worn on the shoulder by officers.
e-pergne (*ē-pern'*), *n.* an ornamental stand with a dish for holding flowers, etc.
e-phem-e-ra (*ē-fem'ē-rā*), *n.* [*pl.* ephemeræ (*-rē*)], that which exists but for a day.
e-phem-e-ris (*ē-fem'ē-ris*), *n.* [*pl.* ephemerides (*ef-ē-mer'i-dēz*)], an astronomical almanac showing the daily positions of the sun, moon, and planets.
Ephraim (*ē'frā-im*). From the Hebrew *Ephrayim*, "two-fold increase," "very fruitful"; from *p'riy*, "fruit of the earth," hence "fruitful." Fr., *Ephraïm;* Lat., *Ephraimus*.
ep-ic (*ep'ik*), *adj.* heroic: *n.* a narrative poem of some heroic deed or event.
ep-i-cure (*'i-kūr*), *n.* one devoted to luxury. [SENSUALIST.]
ep-i-cu-re-an (*i-kū-rē'an*), *adj.* luxurious: *n.* a voluptuary; gormand; epicure.
ep-i-dem-ic (*-i-dem'ik*), *adj.* attacking many at the same time. [CONTAGIOUS.]
ep-i-der-mis (*-dĕr'mis*), *n.* the cuticle or scarf skin.
ep-i-glot-tis (*-glot'is*), *n.* the leaf-shaped cartilage which covers the upper part of the larynx.
ep-i-gram (*'i-gram*), *n.* a verse or short poem ending in some ingenious or witty turn.
ep-i-gram-mat-ic (*-at'ik*), *adj.* pertaining to, or of the nature of, an epigram.
ep-i-gram-mat-ic-al-ly (*i-kal-li*), *adv.* in an epigrammatical manner.
ep-i-graph (*'i-grāf*), *n.* an inscription on a building, monument, etc.
ep-i-lep-sy (*'i-lep-si*), *n.* a chronic nervous disease accompanied by loss of consciousness.
ep-i-lep-tic (*'tik*), *adj.* affected with epilepsy.
ep-i-logue (*'i-log*), *n.* a poem or speech at the conclusion of a play.
E-piph-a-ny (*ē-pif'a-ni*), *n.* a church festival (Jan. 6) to commemorate the visit of the Magi to Bethlehem.
e-pis-co-pa-cy (*ē-pis'kō-pa-si*), *n.* church government by bishops.
e-pis-co-pal (*'kō-pal*), *adj.* pertaining to episcopacy.
e-pis-co-pa-lian (*-pā'li-an*), *adj.* pertaining to episcopacy.
Episcopalian, *adj.* pertaining to the Protestant Episcopal church.
ep-i-sode (*ep'i-sōd*), *n.* an incident.
ep-i-sod-ic (*-sod'ik*), *adj.* pertaining to an episode.
e-pis-tle (*ē-pis'l*), *n.* a letter. [LETTER.]
e-pis-to-la-ry (*'tō-lā-ri*), *adj.* pertaining to letters.
ep-i-taph (*ep'i-taf*), *n.* a memorial inscription.
ep-i-thet (*'i-thet*), *n.* an adjective denoting any quality.
Syn. EPITHET, adjective. *Epithet* is the technical term of the rhetorician; *adjective* that of the grammarian. The same word is an *epithet* as it qualifies the sense; it is an *adjective* as it is a part of speech; thus, in the phrase "Alexander the Great," great is an *epithet*, inasmuch as it designates Alexander in distinction from all other persons; it is an *adjective* as it expresses a quality in distinction from the noun Alexander, which denotes a thing.
Ant. SUBSTANTIVE.
e-pit-o-me (*ē-pit'ō-mē*), *n.* a brief summary. [ABRIDGMENT.]
e-pit-o-mize (*'ō-mīz*), *v. t.* to describe briefly.
ep-i-zo-ōt-ic (*ep-i-zō-ot'ik*), *adj.* parasitic on animals.
ep-och (*ep'ok* or *ē'pok*), *n.* a point of time from which succeeding years are reckoned. [TIME.]
ep-ode (*ep'ōd*), *n.* the last part of an ode.
Epsom (*ep'sum*). A market town in the county of Surrey, fifteen miles southwest of London, chiefly celebrated now as the place near which the Oaks and Derby races are run.
ep-som salts (*'sum sawlts*), *n. pl.* sulphate of magnesia.
e-qua-bil-i-ty (*ē-kwā-bil'i-ti*), *n.* evenness.
e-qua-ble (*'kwā-bl*), *adj.* uniform; consistently equal. [EQUAL.]
e-qual (*'kwal*), *adj.* of the same extent, or magnitude; uniform; adequate.
Syn. EQUAL, even, equable, like, or alike, uniform. *Equal* is said of degree, quantity, number and dimensions, as *equal* in years; *even* is said of the surface and position of bodies; a board is made *even* with another board; *like* is said of accidental qualities in things, as *alike* in color or in feature; *uniform* is said of things only as to their fitness to correspond; those which are *unlike* in color, shape, or make, are not *uniform*, and cannot be made to match as pairs; *equable* is used only in the moral acceptation, in which all the others are likewise employed.
Ant. DIFFERENT, dissimilar, heterogeneous.
e-qual-i-ty (*-kwal'i-ti*), *n.* [*pl.* equalities (*-tiz*)], the state of being equal.
e-qual-ize (*'kwal-īz*), *v. t.* to make equal; render uniform.
e-qua-nim-i-ty (*-kwā-nim'i-ti*), *n.* evenness of temper or mind.
e-quate (*-kwāt'*), *v. t.* to reduce to an average.
e-qua-tion (*-kwā'shun*), *n.* in mathematics, a proposition expressing the equality of two quantities.
e-qua-tor (*-kwā'tĕr*), *n.* the imaginary circle which passes around the middle of the earth.
e-qua-to-ri-al (*-tō'ri-al*), *adj.* pertaining to the equator.
eq-uer-ry (*ek'wer-i*), *n.* [*pl.* equerries (*-iz*)], an officer in the house of a prince or nobleman.
e-ques-tri-an (*ē-kwes'tri-an*), *adj.* pertaining to horses or horsemanship.
e-ques-tri-enne (*-kwes-tri-en'*), *n.* a skillful horsewoman.
equi, a *prefix* meaning *equal, equally, same.*

e-qui-lat-er-al (*ē-kwi-lat'ĕr-al*), *adj.* having all the sides equal.
e-qui-lib-ri-um (*-lib'ri-um*), *n.* equality of weight, power, force.
e-quine (*ē'kwin*), *adj.* pertaining to a horse.
e-qui-noc-tial (*-kwi-nok'shal*), *adj.* pertaining to the equinoxes: *n.* the equinoctial line.
e-qui-nox (*'kwi-noks*), *n.* the point of intersection of the ecliptic and the equator.
e-quip (*ē-kwip'*), *v. t.* [*p. t.* and *p. p.* equipped, *p. pr.* equipping], to furnish or fit out; accouter.
eq-ui-page (*ek'wi-pāj*), *n.* the arms and outfit of an army, vessel, traveler.
e-quip-ment (*ē-kwip'ment*), *n.* articles or supplies necessary for any particular service.
e-qui-poise (*ē'kwi-poiz*), *n.* equilibrium.
eq-ui-ta-ble (*ek'wi-ta-bl*), *adj.* impartial; just.
eq-ui-ty (*'wi-ti*), *n.* [*pl.* equities (*-tiz*)], justice; just regard to right or claim.
e-quiv-a-lent (*ē-kwiv'a-lent*), *adj.* equal in value or power; the same in significance or effect.
e-quiv-o-cal (*'ō-kal*), *adj.* of a doubtful or double significance; ambiguous.
Syn. EQUIVOCAL, ambiguous, doubtful, dubious, enigmatic, enigmatical, indefinite, indeterminate, indistinct, questionable, suspicious, uncertain. *Equivocal* denotes that which may equally well be understood in either of two or more ways. *Ambiguous* signifies lacking in distinctness or certainty. *Ambiguous* is applied only to spoken or written statements; *equivocal* has other applications; an *equivocal* expression is, as a rule, intentionally deceptive, while an *ambiguous* utterance may be simply the result of a want of adequate expression. That which is *enigmatical* must be guessed like a riddle; that is *doubtful* which is fairly open to doubt; *questionable* may be used nearly in the sense either of *dubious* or of *doubtful;* to say that one's honesty is *questionable* is a mild way of saying that in the opinion of the speaker he is likely to prove dishonest. A *suspicious* character gives manifest reason to be suspected.
e-quiv-o-cate (*'ō-kāt*), *v. i.* to use words of double meaning. [EVADE.]
e-ra (*ē'rā*), *n.* the point of time from which a series of years is reckoned; period. [TIME.]
e-rad-i-cate (*ē-rad'i-kāt*), *v. t.* to destroy thoroughly.
e-rase (*-rās'*), *v. t.* to obliterate by, or as by, scratching. [BLOT.]
e-ra-ser (*-rā'zĕr*), *n.* a knife or prepared india-rubber for rubbing out.
Erasmus (*ē-raz'mus*). The Latin name, from Greek *Erasmos*, "desirable", "pleasant." Danish, *Erasmus;* Fr., *Erasme;* Ger., *Erasmus;* It., *Erasmo;* Lat., *Erasmus;* Sp., *Erasmo.*
Erastus (*ē-ras'tus*). Means, "beloved." Fr., *Eraste;* Gr., *Erastos;* Lat., *Erastus.*
★**e-ra-sure** (*ē-rā'shūr*, not *ē-rā'shūr*), *n.* the act of erasing.
ere (*ār* or *âr*), *conj.* and *prep.* before; sooner than.
Er-e-bus (*er'ē-bus*), *n.* a place of utter darkness; Hades.
Erechtheum (*er-ek-thē'um*). An Ionic temple in Athens dating from the end of the fifth century B. C., remarkable for its complex plan and architectural variety, as well as for its technical perfection.
e-rect (*ē-rekt'*), *v. t.* to raise upright; construct; build; raise; establish.
e-rec-tion (*-rek'shun*), *n.* the act of constructing or raising.
e-rect-ive (*'iv*), *adj.* tending, or serving, to erect.
erg (*ĕrg*), *n.* a unit of work in the centimeter-gram-second system.
erg-me-ter (*'mē-tĕr*), *n.* an instrument for measuring an electric current in ergs.
er-gom-e-ter (*er-gom'ē-tĕr*), *n.* an instrument for measuring work performed.
Eric (*er'ik, ē'rik*). The same as the old *Ericus*, name of several Danish kings. Wachter says it should be written *Errich*, which he translates, "powerful in war."
Erie. The name of one of the Great Lakes, drained by the St. Lawrence, is an Indian word which signifies "cat" or "wildcat"; another authority gives the meaning as "mad."
er-mine (*ĕr'min*), *n.* a weasel-like animal, much valued for its fur.
Erminia (*ĕr-min'i-a*). A female name derived from the Roman *Herminus.* Latinized from *Hermann*, an Old German compound signifying "war-man", "warrior."
Ernest (*ĕr'nest*). From Old German *ernst*, "ardent and vehement desire for study." Danish, *Ernst;* Dutch, *Ernestus;* Fr., *Ernest;* Ger., *Ernst;* It., *Ernesto;* Lat., *Ernestus;* Sw., *Ernst.*
Ernestine (*ĕr'nes-tēn*). A female name formed from *Ernest.*
e-rode (*ē-rōd'*), *v. t.* to eat away.
e-rose (*-rōs'*), *adj.* toothed irregularly, as if gnawed away.
e-ro-sion (*-rō'zhun*), *n.* the act of eroding; an eroded part.
e-ro-sive (*-rō'siv*), *adj.* gnawing or wearing away.
e-rot-ic (*-rot'ik*), *adj.* pertaining to, or caused by, love.
err (*ĕr*), *v. i.* to commit an error or mistake; wander.
er-rand (*er'rand*), *n.* a message; commission.
er-rant (*'rant*), *adj.* roving; wandering.
er-rat-ic (*-rat'ik*), *adj.* wandering; irregular; eccentric.
er-ra-tum (*er-rā'tum*), *n.* [*pl.* errata (*'tà*)], an error in printing.
er-ro-ne-ous (*-rō'nē-us*), *adj.* characterized by error; incorrect. [ABSURD.]
er-ror (*'ĕr*), *n.* deviation from the truth; mistake.
Syn. ERROR, mistake, blunder. *Error* in its universal sense is the general term, since every deviation from what is right in rational agents is termed *error.* Into whatever we attempt to do or think *error* will be sure to creep. The other terms designate modes of *error*, which mostly refer to the common concerns of life; *mistake* is an error of choice; *blunder* an error of action.
e-ruc-ta-tion (*ē-ruk-tā'shun*), *n.* the act of throwing off wind from the stomach.
er-u-dite (*er'ū-dīt*), *adj.* learned.
er-u-di-tion (*-dish'un*), *n.* knowledge obtained by the study of books. [KNOWLEDGE.]
e-rup-tion (*ē-rup'shun*), *n.* a sudden breaking forth; outburst.
Syn. ERUPTION, explosion. *Eruption* is the coming into view, by a sudden bursting; *explosion* signifies bursting out with a noise; hence of flames there will be properly an *eruption*, but of gunpowder an *explosion.*
e-rup-tive (*ē-rup'tiv*), *adj.* bursting forth.
★**er-y-sip-e-las** (*er-i-sip'ē-las*, not *ir-i-sip'ē-las*), *n.* an inflammation of the skin, accompanied with fever.
Erzeroom (*ĕrz-rōōm'*). From *Arz-er-Room*, "the fortress of the Romans." The capital of a district of same name in Asiatic Turkey.
Esau (*ē'saw*). From the Hebrew, signifying "hairy, covered with hair." Fr., *Esaü;* Lat., *Esavus.*
es-ca-lade (*es-ka-lād'*), *n.* the act of scaling the walls of a fortified place by means of scaling ladders.
es-cal-lop. Same as *scallop.*
es-ca-pade (*-ka-pād'*), *n.* a breach of propriety; misdeed.
es-cape (*-kāp'*), *v. t.* to flee from; get out of the way of; avoid: *n.* flight; deliverance.
es-carp (*-kārp'*), *n.* the side of the ditch next the rampart forming a steep slope.
es-carp-ment (*'ment*), *n.* the precipitous face of a ridge of high land.
es-cheat (*-chēt'*), *v. t.* to forfeit through failure of heirs.
es-chew (*-chū'*), *v. t.* to shun; avoid.
Escorial (*es-kō'ri-al*, Spanish *es-kō-rē-ál'*). A celebrated building in Spain, situated twenty-seven miles northwest of Madrid, containing a monastery, palace, church, and mausoleum of the Spanish sovereign.
es-cort (*es'kôrt*), *n.* a body of armed men acting as a guard.
es-cu-lent (*'kū-lent*), *adj.* eatable.
es-cutch-eon (*-kuch'un*), *n.* a shield on which arms are emblazoned.
Es-ki-mo (*'ki-mō*), *adj.* pertaining to one of a tribe of diminutive people inhabiting Greenland.
e-soph-a-gus (*ē-sof'ā-gus*), *n.* the gullet or canal through which food and drink pass to the stomach.
★**es-o-ter-ic** (*es-ō-ter'ik*), *adj.* pertaining to doctrines taught privately.
es-pe-cial (*-pesh'al*), *adj.* particular; chief.
es-pe-cial-ly (*-li*), *adv.* particularly; chiefly.
es-per-an-to (*es-pĕr-an'tō*), *n.* a recently invented artificial language, designed for international use.
★**es-pi-o-nage** (*es'pē-ō-nāj*, or *es'pē-on-ăzh*), *n.* the act or practice of spying.
Espiritu Santo (*ās-pē'rē-tōō sān'tō*) **bay, Texas.** Spanish appellation, meaning "Bay of the Holy Spirit."
es-pla-nade (*es-plā-nād'*), *n.* a level walk or drive, especially by the seaside.
es-pouse (*-pouz'*), *v. t.* to promise, engage, or give in marriage.
es-py (*-pī'*), *v. t.* [*p. t.* and *p. p.* espied, *p. pr.* espying], to see at a distance; discover (something intended to be hid).
es-quire (*-kwīr'*), *n.* originally the armor-bearer or attendant on a knight.
es-say (*'sā*), *n.* a short written composition or treatise.
es-sence (*'ens*), *n.* the concentrated preparation of any substance.
es-sen-tial (*-sen'shal*), *adj.* necessary to the existence of a thing.
Essie (*es'-sē*). A female name derived from *Esther* or *Hester.*
es-tab-lish (*-tab'lish*), *v. t.* to fix firmly; settle. [CONFIRM.]
es-tab-lish-ment (*-ment*), *n.* the act of establishing; ratification; settlement.
es-tate (*-tāt'*), *n.* condition of life; rank, position, or quality.
es-teem (*-tēm'*), *v. t.* to set a high value upon; respect; prize; consider. [VALUE, ADMIRE.]
Estelle. A French name derived from Spanish *estella*, from Latin *stella*, a "star."
Esther (*es'tĕr*). From the Persian *sitarah*, "star;" Dutch, *Hester;* Fr., *Esther;* Ger., *Esther;* It., *Ester;* Lat., *Esthera;* Sp., *Ester.*
es-thet-ics. Same as *æsthetics.*
es-ti-ma-ble (*'ti-ma-bl*), *adj.* worthy of regard or esteem.
es-ti-mate (*'ti-māt*), *v. t.* to compute; determine the value of.
Syn. ESTIMATE, compute, rate. To *estimate* is to obtain the aggregate sum in one's mind, either by an immediate or a progressive act; to *compute* is to obtain the sum by the gradual process of putting together items; to *rate* is to fix the relative value in one's mind by deduction and comparison. [See *calculate.*]
es-ti-ma-tion (*es-ti-mā'shun*), *n.* calculation; appraisement.
es-top (*-top'*), *v. t.* [*p. t.* and *p. p.* estopped, *p. pr.* estopping], to prevent; bar.
es-trange (*-trānj'*), *v. t.* to alienate; keep at a distance.
Estremadura (*ās-trā-mā-dōō'rà*). From *Esytema-Durii*, the extreme limits of the River Douro. A province of Portugal.
es-tu-a-ri-al (*-tū-ā'ri-al*), *adj.* pertaining to, or formed in, an estuary.
es-tu-a-ry (*'tū-ā-ri*), *n.* [*pl.* estuaries (*-riz*)], the mouth of a tidal river.
etch (*ech*), *v. t.* to engrave by biting out with an acid the design previously drawn with an etching-needle.
e-ter-nal (*ē-tĕr'nal*), *adj.* without beginning or end.
Syn. ETERNAL, endless, everlasting. The *eternal* is set above time; the *endless* lies within time. That is properly *eternal* which has neither beginning nor end; that is *endless* which has a beginning, but no end; that which is *everlasting* has neither interruption nor cessation.
Ant. FINITE, mortal, temporary, transient.
e-ter-ni-ty (*'ni-ti*), *n.* [*pl.* eternities (*-tiz*)], infinite duration.
Ethel (*eth'el*). From the Anglo-Saxon, signifying "noble."
Ethelbert (*eth'el-bĕrt*). From the Teutonic, meaning 'nobly bright." Danish, *Adelbert;* Dutch, *Adelbert;* Fr., *Adalbert* or *Adelbert;* Ger., *Adelbert;* Lat., *Ethelbertus* or *Adalbertus.*
e-ther (*ē'thĕr*), *n.* an extremely fine fluid, lighter than air, supposed to pervade all space.
e-the-re-al (*-thē'rē-al*), *adj.* pertaining to, or formed of, ether.
eth-ic-al (*eth'i-kal*), *adj.* pertaining to ethics; moral.
eth-ics (*'iks*), *n. pl.* the science that treats of the principles of human morality and duty.
Ethiopia or **Æthiopia** (*ē-thi-ō'pi-a*). The "land of the blacks," according to the two Greek words, *aithein*, "to burn," and *ops*, "the face."
E-thi-o-pi-an (*-thi-ō'pi-an*), *adj.* pertaining to Ethiopia.
eth-nic (*eth'nik*), *adj.* characteristic of races or peoples.
eth-nol-o-gy (*-nol'ō-ji*), *n.* the science that treats of races of men.
e-thos (*ē'thos*), *n.* the characteristic genius of a people.
eth-yl (*eth'il*), *n.* a monatomic fatty hydrocarbon radical.
★**et-i-quette** (*et'i-ket*), *n.* the conventional rules observed in polite society.
Etna (*et'na*). The chief mountain in Sicily, and the highest volcano in Europe. The Greek name was *Aitna*, "burning mountain."
et-y-mol-o-gist (*et-i-mol'ō-jist*), *n.* one who is proficient in etymology.
et-y-mol-o-gize (*-mol'ō-jīz*), *v. i.* to investigate the origin of words.
et-y-mol-o-gy (*'ō-ji*), *n.* [*pl.* etymologies (*-jiz*)], that branch of philology which treats of the origin of words.
Eu-ca-lyp-tus (*ū-ka-lip'tus*), *n.* [*pl.* Eucalypti (*'ti*)], a genus of Australian evergreen trees.
eu-char-ist (*ū'kăr-ist*), *n.* the holy communion; the elements, bread and wine.
eu-cha-ris-tic (*-ka-ris'tik*), *adj.* pertaining to the eucharist.
eu-chre (*'kĕr*), *n.* a particular game of cards.
Eugene (*ū-jēn'*). A name derived from the Latin, *Eugenius*, "nobly descended." Dutch, *Eugenius;* Fr., *Eugene;* Ger., *Eugen;* Gr., *Eugenios;* It., *Eugenio;* Sp., *Eugenio.*
Eugenia (*ū-jē'ni-a*). Feminine of the Latin name *Eugenius.* Fr., *Eugénie;* Gr., *Eugenia.*
eu-lo-gist (*ū'lō-jist*), *n.* one who eulogizes.
eu-lo-gis-tic (*-jis'tik*), *adj.* laudatory.
eu-lo-gize (*'lō-jiz*), *v. t.* to praise highly.
eu-lo-gy (*-ji*), *n.* [*pl.* eulogies (*-jiz*)], the praise of any one spoken or written. [ENCOMIUM.]
Eunice (*ū'nis, ū-nī'sē*). A female name derived from the Greek name, *Eunike*, "happy victory." Lat., *Eunice.*
eu-nuch (*'nuk*), *n.* a castrated person.
Euphemia (*ū-fē'mi-a*). From the Greek, *Euphemia*, "words of good omen, or good report."
eu-phe-mism (*'fē-mizm*), *n.* the substitution of a delicate expression in place of that which is offensive or indelicate.
eu-phon-ic (*-fon'ik*), *adj.* sounding pleasantly to the ear.
eu-pho-ny (*'fō-ni*), *n.* [*pl.* euphonies (*-niz*)], an agreeable sound.
Euphrates (*ū-frā'tēz*). A great river of Mesopotamia. The name is merely a Greek adaptation of the Persian *Hufrat* or *Ufratu.*
eu-phu-ism (*'fū-izm*), *n.* the affected use of words.
Eurasian (*ū-rā'shan*). This word, which is often met with in Indian newspapers, is applied to persons born of European fathers and native mothers.
Europe (*ū'rup*). From the Greek *eurus*, "broad," and *op*, "to see," or *ops*, "the face," in allusion to "the broad face of the earth." The continent.
Eusebius (*ū-sē'bi-us*). From the Greek, *eusebes*, "pious," or "religious." Fr., *Eusebe;* Gr., *Eusebios;* It., *Eusebio;* Lat., *Eusebius;* Sp. *Eusebio.*

Eustace (*ūs'tās*). From the Latin name, *Eustathius*," standing fast," "firm," "constant." Dutch, *Eustatius*; Fr., *Eustache*; It., *Eustachio*; Lat., *Eustachius*; Sp., *Eustaquio*.

eu-sta-chi-an (*ū-stā'ki-an*), *adj.* pertaining to a tube which leads from the cavity of the tympanum of the ear to the pharynx.

Euxine (*ūks'in*). The Black Sea. Greek, "the hospitable"; formerly *axinos*, "the inhospitable sea."

e-vac-u-ate (*ē-vak'ū-āt*), *v. t.* to make void or empty; discharge through the excretory passages.

e-vade (*-vād'*), *v. t.* to elude; escape by artifice.

Syn. EVADE, equivocate, prevaricate. We *evade* by artfully turning the subject or calling off the attention of the inquirer; we *equivocate* by the use of *equivocal* expressions; we *prevaricate* by the use of loose and indefinite expressions; we avoid giving satisfaction by *evading;* we give a false satisfaction by *equivocating;* we give dissatisfaction by *prevaricating.*

Ant. ANSWER, meet; be frank, direct, open, candid.

e-vad-i-ble (*'i-bl*), *adj.* capable of being evaded.

Evan (*ev'an*). A Welsh name. *Evan*, or rather *Evans*, is merely another spelling of *Jones*, which has been corrupted from the Greek original of *John*.

ev-a-nes-cent (*ev-a-nes'ent*), *adj.* disappearing gradually.

e-van-gel-ic-al (*ē-van-jel'i-kal*), *adj.* pertaining to the gospel, or the four Gospels.

e-van-gel-ism (*'jel-izm*), *n.* the doctrine and preaching of evangelical principles.

e-van-gel-ist (*-ist*), *n.* an itinerant preacher.

e-van-gel-ize (*'jel-iz*), *v. t.* to instruct in the gospel; convert to Christianity.

e-vap-o-rate (*-vap'ō-rāt*), *v. i.* to disperse in vapor.

e-vap-o-ra-tion (*-rā'shun*), *n.* the slow conversion of a fluid into vapor.

e-va-sion (*-vā'zhun*), *n.* the act of evading; an excuse.

e-va-sive (*-vā'siv*), *adj.* tending or seeking to evade.

eve (*ēv*), *n.* the period immediately preceding some important event; evening. [*Poetry.*]

Evelina (*ev-ē-lī'nà*), **Eveline** (*ev'ē-lin*). Female names derived from *Evelyn*.

Evelyn (*ev'ē-lin*). From the Latin, meaning "hazel nut."

e-ven (*ē'vn*), *adj.* level; uniform; divisible by 2 without a remainder; equal; balanced. [EQUAL.]

e-ven-ing (*-ing*), *n.* the close of the day.

e-ven-ly (*-li*), *adv.* in an even manner; smoothly.

e-ven-ness (*-nes*), *n.* smoothness; uniformity.

e-vent (*ē-vent'*), *n.* an occurrence; incident.

Syn. EVENT, incident, accident, adventure, occurrence. These terms are expressive of what passes in the world, which is the sole signification of the term *event;* an *incident* is a personal *event;* an *accident* an accidental *event* which happens by the way; an *adventure* an extraordinary *event;* an *occurrence* an ordinary or domestic event. *Event* in its ordinary and limited acceptation, excludes the idea of chance; *accident* excludes that of design; *incident, adventure,* and *occurrence* are applicable in both cases. [See *circumstance, consequence.*]

e-vent-ful (*'fool*), *adj.* full of incidents or events.

e-ven-tide (*ē'vn-tīd*), *n.* evening.

e-ven-tu-al-i-ty (*-ven-tū-al'i-ti*), *n.* [*pl.* eventualities (*-tiz*)], a possible occurrence.

e-ven-tu-ate (*'tū-āt*), *v. i.* to happen; terminate.

ev-er (*ev'ėr*), *adv.* at any time.

Everard (*ev'ėr-ard*). Same as the German names *Eberhard, Eberhardt.* From *eberhart,* "strong as a wild boar." Danish, *Eberhard;* Dutch *Everard;* Ger., *Eberhard.*

ev-er-glade (*-glād*), *n.* a low, swampy tract of land.

ev-er-green (*-grēn*), *n.* a tree or plant which retains its foliage throughout the year.

ev-er-last-ing (*-last'ing*), *adj.* perpetual: *n.* eternity. [ETERNAL.]

Ev-er-last-ing, *n.* God, the Eternal.

ev-er-more (*-mōr*), *adv.* eternally.

eve-ry (*ev'ri* or *ev'ėr-i*), *adj.* the whole, taken one at a time.

e-vict (*ē-vikt'*), *v. t.* to expel or dispossess by legal process. [BANISH]

e-vic-tion (*-vik'shun*), *n.* the act of evicting.

ev-i-dence (*ev'i-dens*), *n.* indubitable certainty. [DEPONENT, TESTIMONY.]

ev-i-dent (*-dent*), *adj.* plain. [APPARENT.]

ev-i-den-tial (*-den'shal*), *adj.* proving clearly.

e-vil (*ē'vl*), *adj.* morally bad; wicked: *adv.* badly; unfortunately: *n.* anything that harms or injures. [ABOMINATION.]

e-vince (*ē-vins'*), *v. t.* to manifest or make evident.

e-vin-ci-ble (*-vin'si-bl*), *adj.* capable of proof.

e-vis-cer-ate (*-vis'ėr-āt*), *v. t.* to disembowel.

e-voke (*-vōk'*), *v. t.* to call forth.

ev-o-lu-tion (*ev-ō-lū'shun*), *n.* the gradual development or descent of forms of life from simple or low organized types.

ev-o-lu-tion-ist (*-ist*), *adj.* pertaining to evolution.

ev-o-lu-tive (*-tiv*), *adj.* causing evolution.

e-volve (*ē-volv'*), *v. t.* to develop; unfold; expand.

ewe (*ū*), *n.* a female sheep.

ew-er (*ū'ėr*), *n.* a large water jug.

ex, *prefix,* meaning *out of, beyond, from.*

ex-act (*egz-akt'*), *adj.* very correct or accurate; precise; particular: *v. t.* to demand; extort.

Syn. EXACT, extort. To *exact* is to demand with force; it is commonly an act of injustice; to *extort* is to get with violence; it is an act of tyranny.

ex-act-ing (*egz-akt'ing*), *p. adj.* making unreasonable demands.

ex-ac-tion (*-ak'shun*), *n.* the act of exacting; extortion.

ex-act-ness (*-akt'nes*), *n.* accuracy; precision.

★**ex-ag-ger-ate** (*egz-aj'ėr-āt*), *v. t.* to enlarge or heighten by overstatement.

ex-alt (*-awlt'*), *v. t.* to elevate in rank, station or dignity.

ex-am-i-na-tion (*-am-i-nā'shun*), *n.* careful search; investigation; interrogatory.

★**ex-am-ine** (*egz-am'in,* not *eks-am'in*), *v. t.* to scrutinize or investigate carefully. [DISCUSS.]

★**ex-am-ple** (*egz-am'pl*), *n.* a pattern; a model or copy.

Syn. EXAMPLE, pattern, ensample. The *example* must be followed generally; the *pattern* must be followed particularly, not only as to what, but how a thing is to be done; the former serves as a guide to the judgment; the latter to guide the actions; the *ensample* is a species of *example,* the word being employed only in the solemn style.

Ant. ANOMALY, abnormality.

ex-as-per-ate (*egz-as'pėr-āt*), *v. t.* to irritate exceedingly; enrage greatly; exasperation. [AGGRAVATE.]

ex ca-the-dra (*eks kà-thē'drà*), with an air of official authority.

ex-ca-vate (*eks'kà-vāt*), *v. t.* to dig or hollow out.

ex-ca-va-tion (*-vā'shun*), *n.* a hollow cavity formed by digging out earth.

ex-ceed (*ek-sēd'*), *v. t.* to go beyond the limit or measure of; surpass; excel; transcend.

ex-ceed-ing (*'ing*), *p. adj.* very great.

ex-cel (*-sel'*), *v. i.* to possess good qualities in a great degree.

ex-cel-lence (*'sel-ens*), *n.* the state of excelling in anything; virtue.

ex-cel-len-cy (*-en-si*), *n.* a title of honor of various high officials.

ex-cel-lent (*-ent*), *adj.* of great value, merit, or virtue.

ex-cel-si-or (*'si-ėr*), *adj.* yet higher.

ex-cept (*-sept'*), *v. t.* to omit or leave out: *prep.* omitting; without inclusion of. [UNLESS.]

ex-cep-tion (*-sep'shun*), *n.* the state of being excepted.

ex-cep-tion-a-ble (*-à-bl*), *adj.* objectionable.

ex-cep-tion-al (*-al*), *adj.* unusual.

ex-cerpt (*-serpt'*) *v. t.* to take out or select from, as a passage from a book.

ex-cess (*-ses'*), *n.* that which exceeds the ordinary limit; overplus.

Syn. EXCESS, dissipation, exorbitance, extravagance, intemperance, lavishness, prodigality, profusion, redundance, redundancy, superfluity, surplus, waste wasteful. *Excess* is more than enough of anything; the word is used frequently in an unfavorable sense. Careless expenditure is *extravagance;* we may have also *extravagance* of language; *exorbitance* is *excess* in pecuniary demands upon others; *lavishness* and *profusion,* a generous, bountiful, or amiable *excess; surplus* is neutral, having none of the unfavorable meaning that often attaches to *excess; a surplus* is that which remains over after all demands are met. *Redundance* or *redundancy* refers chiefly to literary style, denoting an *excess* of words or matter.

Ant. DEARTH, lack, need, want.

ex-cess-ive (*'iv*), *adj.* extreme; unreasonable.

ex-change (*eks-chānj'*), *v. t.* to give in return for an equivalent; barter; give; resign. [CHANGE, INTERCHANGE.]

ex-change-a-ble (*à-bl*), *adj.* that may be exchanged.

ex-cheq-uer (*-chek'ėr*), *n.* a treasury; cash or funds.

ex-cis-a-ble (*ek-siz'à-bl*), *adj.* dutiable.

ex-cise (*-sīz'*), *v. t.* to levy a duty upon: *n.* a tax.

ex-ci-sion (*-sizh'un*), *n.* the act of cutting out, or off.

ex-ci-ta-bil-i-ty (*-si-tà-bil'i-ti*), *n.* [*pl.* excitabilities (*'tiz*)], the state or quality of being excitable.

ex-ci-tant (*-si'tant*), *n.* a stimulant.

ex-ci-ta-tion (*-tā'shun*), *n.* the act of exciting.

ex-cite (*-sīt'*), *v. t.* to animate; put into motion or action.

Syn. EXCITE, incite, provoke. To *excite* is said more particularly of the inward feelings; *incite* is said of the external actions; *provoke* is said of both. A person's passions are *excited;* he is *incited* by any particular passion to a course of conduct; a particular feeling is *provoked,* or he is *provoked* by some feeling to a particular step. [See *awaken.*]

Ant. CALM, quiet, soothe.

ex-cite-ment (*'ment*), *n.* the state of being excited; commotion; stimulation.

ex-claim (*eks-klām'*), *v. i.* and *v. t.* to cry out abruptly. [CALL.]

ex-cla-ma-tion (*-klà-mā'shun*), *n.* an abrupt or clamorous outcry.

ex-clam-a-to-ry (*-klam'à-tō-ri*), *adj.* containing or using exclamation.

ex-clude (*-klūd'*), *v. t.* to shut out; hinder from entrance or admission.

ex-clu-sion (*-klū'zhun*), *n.* the act of excluding.

ex-clu-sive (*'siv*), *adj.* tending to exclude; illiberal.

ex-cog-i-tate (*-koj'i-tāt*), *v. t.* to discover by thinking.

ex-com-mu-ni-cate (*kom-mū'ni-kāt*), *v. t.* to punish by cutting off from the communication of the church.

ex-co-ri-ate (*-kō'ri-āt*), *v. t.* to strip off the skin; rub or gall.

ex-cre-ment (*eks'krē-ment*), *n.* matter discharged from the body of an animal after digestion.

ex-cres-cence (*-kres'ens*), *n.* an unnatural outgrowth.

ex-cre-tion (*eks-krē'shun*), *n.* the ejection or waste matter from the body.

ex-cre-to-ry (*'tō-ri*), *adj.* pertaining to excretion.

ex-cru-ci-ate (*-krū'shi-āt*), *v. t.* to inflict severe pains upon; torture.

ex-cul-pate (*-kul'pāt*), *v. t.* to clear from blame; exonerate. [APOLOGIZE, ABSOLVE.]

ex-cur-sion (*-kûr'shun*), *n.* a pleasure trip; a short or rapid tour.

Syn. EXCURSION, ramble, tour, trip, jaunt. *Excursion* signifies going out of one's course; a *ramble* is a going without any course or regular path; a *tour,* is a circuitous course; a *trip* means to go on the toes like a dancer, is properly a pedestrian *excursion* or *tour;* those who have no better means of spending their time make *jaunts.* [See *circuit.*]

ex-cus-a-ble (*-kūz'à-bl*), *adv.* pardonable.

ex-cuse (*-kūz'*), *v. t.* to extenuate by apology; pardon: *n.* (*-kūs'*), apology; pretext.

Syn. EXCUSE, pardon. We *excuse* a person or thing by exempting him from blame; we *pardon* by giving up the punishment of the offense one has committed. We *excuse* a small fault; we *pardon* a great fault; we *excuse* that which personally affects ourselves; we *pardon* that which offends against morals. [See *apologize, pretense.*]

Ant. CHASTEN, condemn, punish.

ex-e-crate (*'ē-krāt*), *v. t.* to imprecate evil upon.

ex-e-cra-tion (*-krā'shun*), *n.* the act of execrating. [ABOMINATION.]

ex-e-cute (*'ē-kūt*), *v. t.* to perform; carry into effect; put to death.

Syn. EXECUTE, fulfill, perform. To *execute* is to bring about an end; it involves active measures, and is peculiarly applicable to that which is extraordinary; to *fulfill* is to satisfy a moral obligation. We *fulfill* the duties of citizens; to *perform* is to carry through by simple action or labor; we *perform* a work or a task. [See *accomplish.*]

Ant. FAIL, frustrate, miscarry, neglect.

ex-e-cu-tion (*-kū'shun*), *n.* the act of executing; performance; capital punishment.

ex-ec-u-tive (*egz-ek'ū-tiv*). *adj.* pertaining to the governing body; administrative.

ex-ec-u-tor (*'ū-tėr*), *n.* a person appointed by a testator to see that the terms of his will are carried out.

ex-e-ge-sis (*eks-ē-jē'sis*), *n.* explanation or interpretation of a text of the bible.

ex-em-plar (*egz-em'plėr*), *n.* something to be copied, example.

ex-em-pla-ry (*-em'plà-ri*), *adj.* serving as a copy or model.

ex-em-pli-fy (*'pli-fī*), *v. t.* [*p. t.* and *p. p.* exemplified, *p. pr.* exemplifying], to illustrate by example.

ex-empt (*-empt'*), *v. t.* to free from some duty or obligation. [FREE, ABSOLVE.]

ex-er-cise (*eks'ėr-sīz*), *v. t.* to train by use; exert; practice; employ actively.

Syn. EXERCISE, practice. We *exercise* in that where the powers are called forth; we *practice* in that where frequency and habitude of action is requisite.

ex-ert (*egz-ėrt'*), *v. t.* to put forth; use with an effort.

ex-er-tion (*-ėr'shun*), *n.* effort. [ENDEAVOR.]

ex-ha-la-tion (*eks-hà-lā'shun*), *n.* the act of exhaling.

ex-hale (*-hāl'*), *v. t.* to breathe forth; emit or send out.

★**ex-haust** (*egz-awst'*), *v. t.* to empty by drawing off the contents; drain; weaken: *adj.* wholly or partially deprived of strength. [ABSORB, FAINT.]

ex-haust-i-ble (*'i-bl*), *adj.* capable of being exhausted.

ex-haust-ive (*'iv*), *adj.* exhausting.

ex-hib-it (*egz-ib'it* or *eks-hib'it*), *v. t.* to present to view; display. [GIVE.]

ex-hi-bi-tion (*eks-hi-bish'un*) *n.* the act of exhibiting. [SHOW.]

ex-hil-a-rate (*egz-il'à-rāt* or *eks-hil'à-rāt*), *v. t.* to make joyous, glad, enliven.

ex-hort (*egz-ôrt'* or *eks-hôrt'*). *v. t.* to incite by appeal or argument to good deeds.

ex-hume (*eks-hūm'*), *v. t.* to disinter.

ex-i-gen-cy (*eks'i-jen-si*), *n.* [*pl.* exigencies (*-siz*)], pressing necessity or demand.

Syn. EXIGENCY, emergency. The *exigency* is more common, but less pressing; the *emergency* is imperious when it comes, but comes less frequently. A prudent traveler will never carry more money with him than what will supply the *exigencies* of his journey; and in case of an *emergency* will rather borrow than risk his property.

ex-ile (*eks'il*), *v. t.* to banish from one's native country. [BANISH.]

ex-ist (*egz-ist'*), *v. i.* to have existence.

ex-ist-ence (*-ist'ens*), *n.* the state of being; life.

★**ex-it** (*eks'it,* not *egz'it*), *n.* the act of going out.

ex-o-gen (*'ō-jen*), *n.* a plant which increases year by year by the addition of layers outside the previous bark.

ex-on-er-ate (*egz-on'ėr-āt*), *v. t.* to free from the imputation of a fault; acquit.

Syn. EXONERATE, exculpate. The first is the act of another; the second is one's own act. We *exonerate* him upon whom a charge has lain, or who has the load of guilt; we *exculpate* ourselves when there is any danger of being blamed; cir-

cumstances may sometimes tend to *exonerate;* the explanation of some person is requisite to *exculpate.* [See *absolve.*]

Ant. Accuse, implicate.

ex-or-bi-tance (*egz'ôr-bi-tans*), *n.* going beyond due limits. [EXCESS.]

ex-or-bi-tant (*-tant*), *adj.* excessive.

ex-or-cise (*eks'or-siz*), *v. t.* to expel (an evil spirit).

ex-or-cism (*-sizm*), *n.* the act of expelling evil spirits.

ex-or-di-um (*egz-ôr'di-um*), *n.* the opening part of a speech.

ex-o-ter-ic (*eks-ō-ter'ik*), *adj.* pertaining to the uninitiated public.

ex-ot-ic (*egz-ot'ik*), *adj.* foreign.

ex-pand (*eks-pand'*), *v. t.* to distend; dilate. [SPREAD]

ex-panse (*-pans'*), *n.* a continuous area.

ex-pan-sion (*-pan'shun*), *n.* the state of being expanded.

ex-pan-sive (*'siv*), *adj.* capable of being expanded.

ex-pa-ti-ate (*-pā'shi-āt*), *v. i.* to enlarge in statement or language.

ex-pa-tri-ate (*-pā'tri-āt*), *v. t.* to drive from one's native country. [BANISH.]

ex-pect (*-pekt'*), *v. t.* to wait for. [ANTICIPATE.]

ex-pect-ance (*'ans*), *n.* the act or state of expecting.

ex-pect-ant (*'ant*), *adj.* waiting in expectation.

ex-pec-ta-tion (*-tā'shun*), *n.* the act of looking forward to.

ex-pec-to-rate (*-tō-rāt*), *v. t.* to eject by coughing.

ex-pe-di-en-cy (*-pē'di-en-si*), *n.* [*pl.* expediencies (*-siz*)], suitability to an end or purpose.

★**ex-pe-di-ent** (*eks-pē'di-ent*, not *eks-pē'jent*), *adj.* fit; convenient; suitable; proper: *n.* device; resource.

Syn. EXPEDIENT, resource. The *expedient* is an artificial means; the *resource* is a natural means. A cunning man is fruitful in *expedients;* a fortunate man abounds in *resources.*

Syn. EXPEDIENT, fit. The *expediency* of a thing depends altogether upon the outward circumstances; the fitness is determined by a moral rule.

Ant. Futile, unwise.

ex-pe-dite (*'pē-dīt*), *v. t.* to hasten. [HASTEN.]

ex-pe-di-tion (*-dish'un*), *n.* haste; dispatch; promptness; a march.

ex-pe-di-tious (*'us*), *adj.* quick; speedy. [DILIGENT, ACTIVE.]

ex-pel (*-pel'*), *v. t.* to drive away; force out. [BANISH.]

ex-pend (*-pend'*), *v. t.* to spend.

ex-pend-i-ture (*'i-tūr*), *n.* laying out, as money. [EXPENSE.]

ex-pense (*-pens'*), *n.* expenditure; cost.

Syn. EXPENSE, cost, expenditure, outlay. The *cost* of a thing is whatever one surrenders or gives up for it; *expense* is what is laid out by calculation or intention. There is a tendency to use *cost* of what we pay for a possession, *expense* of what we pay for service; *outlay* is used of some definite *expenditure,* as for the purchase of supplies; outgo is a steady drain of incidental *expenses.* [See *cost.*]

ex-pen-sive (*pen'siv*), *adj.* causing expense.

ex-pe-ri-ence (*-pē'ri-ens*), *n.* knowledge gained by trial and practice. [ACQUAINTANCE.]

ex-per-i-ment (*-per'i-ment*), *n.* a trial or operation to discover something. [periment.

ex-per-i-men-tal (*-men'tal*), *adj.* founded on ex-

ex-pert (*-p ērt'*), *adj.* skillful, through practice or experience; adroit; dexterous. [CLEVER.]

ex-pi-ate (*'pi-āt*), *v. t.* to atone for.

ex-pi-ra-tion (*-pi-rā'shun*), *n.* termination.

ex-pire (*-pīr'*), *v. t.* to breathe out from the lungs; cease to live. [DIE.]

ex-plain (*-plān'*), *v. t.* to make intelligible or clear.

Syn. EXPLAIN, expound, interpret. Single words or sentences are *explained;* a whole work, or considerable parts of it, are *expounded;* the sense of any writing or symbolical sign is *interpreted.*

Ant. Confuse, obscure, darken, obfuscate.

ex-pla-na-tion (*plā-nā'shun*), *n.* the act of explaining; elucidation. [DEFINITION.]

ex-plan-a-to-ry (*-plan'ā-tō-ri*), *adj.* serving to explain.

ex-ple-tive (*'plē-tiv*), *n.* a word inserted in a sentence for ornament or to fill up a verse.

ex-pli-ca-ble (*'pli-kā-bl*), *adj.* that may be explained.

ex-pli-ca-tive (*-kā-tiv*), *adj.* serving to explain.

ex-plic-it (*-plis'it*), *adj.* plain; definite.

ex-plode (*-plōd'*), *v. i.* to burst forth with sudden noise and violence.

ex-ploit (*-ploit'*), *v. t.* to make use of for one's own profit: *n.* a remarkable deed or heroic act.

ex-ploi-ta-tion (*-ploi-tā'shun*), *n.* the act of exploiting; the improvement of lands.

ex-plo-ra-tion (*-plō-rā'shun*), *n.* the act of exploring; careful investigation or search. [thoroughly.

ex-plore (*-plōr'*), *v. t.* to search into or examine

ex-plo-sion (*-plō'zhun*), *n.* the act of exploding. [ERUPTION.]

ex-plo-sive (*'siv*), *adj.* pertaining to, or causing, explosion.

ex-po-nent (*-pō'nent*), *n.* one who explains or interprets the principles of something.

ex-port (*-pōrt'*), *v. t.* to send or carry out of the country, as merchandise.

ex-pose (*-pōz'*), *v. t.* to lay open; leave to the action of any force or circumstance; disclose.

ex-po-si-tion (*-pō-zish'un*), *n.* an explanation or interpretation. [DEFINITION.] [terprets.

ex-pos-i-tor (*-poz'i-tēr*), *n.* one who expounds or in-

ex-pos-i-to-ry (*eks-poz'i-tō-ri*), *adj.* pertaining to, or conveying, exposition.

ex-pos-tu-late (*-pos'tū-lāt*), *v. i.* to reason earnestly or remonstrate.

Syn. EXPOSTULATE, remonstrate. We *expostulate* in a tone of authority; we *remonstrate* in a tone of complaint. He who *expostulates* passes a censure, and claims to be heard; he who *remonstrates* presents his case and requests to be heard.

ex-po-sure (*-pō'zhūr*), *n.* the act of exposing.

ex-pound (*-pound'*), *v. t.* to set forth, explain, or interpret. [EXPLAIN.]

ex-press (*-pres'*), *v. t.* to exhibit by language; utter; dispatch by express. [SPEAK.]

ex-press-i-ble (*'i-bl*), *adj.* capable of being expressed.

ex-pres-sion (*-presh'un*), *n.* the act or power of representing anything; mode of speech.

ex-press-ive (*'iv*), *adj.* serving to express.

ex-press-man (*'man*), *n.* the person who takes charge of express matter.

ex-pul-sion (*-pul'shun*), *n.* forcible ejection.

ex-pul-sive (*'siv*), *adj.* serving to expel.

ex-punge (*-punj'*), *v. t.* to erase; destroy. [BLOT.]

ex-pur-gate (*'pēr-gāt*), *v. t.* to remove whatever is offensive.

★**ex-qui-site** (*eks'kwiz-it*, not *eks-kwiz'it*), *adj.* refined; delicate; nice; accurate.

★**ex-tant** (*eks'tant*, not *eks-tant'*), *adj.* still existing.

ex-tem-po-ra-ne-ous (*-tem-pō-rā'nē-us*), *adj.* unpremeditated; without previous notes or study.

ex-tem-po-rize (*'pō-riz*), *v. t.* to compose on the spur of the moment.

ex-tend (*-tend'*), *v. t.* to stretch out; enlarge; amplify; continue. [ENLARGE, ADD.]

ex-ten-sion (*-ten'shun*), *n.* the act of extending; the state of being extended.

ex-ten-sive (*'siv*), *adj.* having great extent. [COMPREHENSIVE.]

ex-ten-sor (*-ten'sēr*), *n.* a muscle that extends a limb.

ex-tent (*-tent'*), *n.* the space or degree to which a thing is extended; size.

ex-ten-u-ate (*-ten'ū-āt*), *v. t.* to offer excuses for; palliate.

ex-te-ri-or (*-tē'ri-ēr*), *adj.* outward; external. [OUTWARD.]

ex-ter-mi-nate (*-tēr'mi-nāt*), *v. t.* to destroy utterly.

ex-ter-mi-na-to-ry (*-nā-tō-ri*), *adj.* pertaining to extermination.

ex-ter-nal (*-tēr'nal*), *adj.* outside; exterior; superficial; objective; foreign. [OUTWARD.]

ex-ter-ri-to-ri-al-i-ty (*-ter-ri-tō-ri-al'i-ti*), *n.* the right possessed by ambassadors to live under the laws of their own country.

ex-tinct (*-tingkt'*), *adj.* extinguished; put out.

ex-tin-guish (*-ting'gwish*), *v. t.* to put out.

ex-tin-guish-er (*-ēr*), *n.* that which extinguishes.

ex-tir-pate (*'tēr-pāt*), *v. t.* to eradicate; destroy.

ex-tol (*-tōl'*), *v. t.* [*p. t.* and *p. p.* extolled, *p. pr.* extolling], to praise highly; magnify. [ADMIRE.]

ex-tort (*-tôrt'*), *v. t.* to obtain by threats, violence, or injustice. [EXACT.]

ex-tor-tion (*-tôr'shun*), *n.* the act or practice of extorting.

ex-tor-tion-ate (*'shun-āt*), *adj.* characterized by extortion.

ex-tor-tion-er (*'shun-ēr*), *n.* one who practices extortion.

ex-tra (*'trà*), *adj.* additional.

ex-tract (*-trakt'*), *v. t.* to draw out of; pull out; select from a large literary work: *n.* an abstract or excerpt from a book.

ex-trac-tion (*-trak'shun*), *n.* lineage, birth, or descent.

ex-tra-dite (*'trà-dīt*), *v. t.* to surrender (a person) to another government.

ex-tra-di-ta-ble (*-dī-tà-bl*), *adj.* liable or subject to, extradition.

ex-tra-di-tion (*-dish'un*), *n.* the surrender by the government of one nation to another of a person guilty of a crime.

ex-tra-ne-ous (*-trā'nē-us*), *adj.* external.

Syn. EXTRANEOUS, extrinsic, foreign. The *extraneous* is that which forms no necessary or natural part of anything; the *extrinsic* is that which forms a part or has a connection, but only in an indirect form; it is not an inherent or component part; the *foreign* is that which forms no part whatever, and has no kind of connection.

Ant. Apropos, essential, relevant, intrinsic.

★**ex-traor-di-na-ry** (*-trôr'di-nā-ri*), *adj.* beyond or out of the usual course; uncommon.

Syn. EXTRAORDINARY, remarkable. The *extraordinary* is that which is out of the ordinary course, but it does not always excite remark, and is not, therefore, *remarkable,* as when we speak of an *extraordinary* loan; on the other hand, *extraordinary* expresses much more than *remarkable.* [See *rare.*]

Ant. Ordinary, usual, obscure.

ex-trav-a-gance (*-trav'ā-gans*), *n.* excess in anything. [EXCESS.]

ex-trav-a-gant (*'ā-gant*), *adj.* exceeding reasonable limits; wasteful; prodigal.

Syn. EXTRAVAGANT, prodigal, lavish, profuse. The *extravagant* man spends his money without reason; the *prodigal* man spends it in excesses. One may be *extravagant* with a small sum where it exceeds one's means; one can be *prodigal* only with large sums; *lavish* and *profuse* are properly applied to particular actions, the former to denote an expenditure more or less wasteful or superfluous, the latter to denote a full supply without any sort of scant.

Ant. Close, miserly, parsimonious, saving.

ex-trav-a-gan-za (*eks-trav-ā-gan'zā*), *n.* a stage burlesque; an irregular piece of music.

ex-treme (*-trēm'*), *adj.* of the highest degree; last; utmost; furthest; uncompromising.

ex-trem-ist (*'ist*), *n.* a supporter of extreme views or practice.

ex-trem-i-ty (*-trem'i-ti*), *n.* [*pl.* extremities (*-tiz*)], the utmost point or degree.

ex-tri-ca-ble (*'tri-kā-bl*), *adj.* capable of being extricated.

ex-tri-cate (*'tri-kāt*), *v. t.* to free from difficulties.

ex-trin-sic (*-trin'sik*), *adj.* external. [EXTRANEOUS.]

ex-trude (*-trūd'*), *v. t.* to thrust out.

ex-u-ber-ance (*-ū'bēr-ans*), *n.* superabundance.

ex-u-ber-ant (*-ant*), *adj.* copious.

Syn. EXUBERANT, luxuriant. These terms are both applied to vegetation in a flourishing state; but *exuberance* expresses the excess, and *luxuriance* the perfection.

Ant. Drained, poor, scant.

ex-ude (*-ūd'*), *v. t.* to discharge gradually through pores.

ex-ult (*egz-ult'*), *v. i.* to rejoice in triumph.

ex-ult-ant (*'ant*), *adj.* rejoicing triumphantly.

ex-u-vi-æ (*egz-ū'vi-ē*), *n. pl.* the cast off skins, shells, etc., of animals.

eye (*i*), *n.* the organ of sight; the eyeball; sight; observation; view.

eye-ball (*'bawl*), *n.* the globe of the eye.

eye-brow (*'brou*), *n.* the hairy arch above the eyes.

eye-lash (*'lash*), *n.* the ridge of hair that lines the eyelid.

eye-let (*'let*), *n.* a small hole to receive a cord.

eye-lid (*'lid*), *n.* the movable skin which covers over and closes the eye.

eye-sight (*'sīt*), *n.* the sight of the eye.

eye-sore (*'sōr*), *n.* anything that offends the sight.

eye-tooth (*'tōōth*), *n.* [*pl.* eye-teeth (*'tēth*)], one of the upper teeth in the jaw.

★**ey-rie** (*ā'ri* or *ē'ri*), *n.* the nest of a predatory bird. [Also *eyry.*]

Ezekiel (*ē-zē'ki-el*). From the Hebrew, meaning "strength of God." Dutch, *Ezechiel;* Fr., *Ezechiel.*

Ezra (*ez'rà*). From the Hebrew, *Ezra,* meaning "a helper." Fr., *Esdras;* Lat., *Ezra* or *Esdras.*

F

Fabian (*fā'bi-an*). A name derived from the Roman *Fabius,* which, in turn, is derived from *faba,* a bean. Danish, *Favian;* Dutch, *Fabiaan;* Fr., *Fabien;* It., *Fabiano;* Lat., *Fabianus.*

fa-ble (*fā'bl*), *n.* a short fictitious narrative intended to convey some moral: *v. i.* to speak falsely or untruthfully. [FICTION.]

fab-ric (*fab'rik*), *n.* an edifice or building.

fab-ri-cate (*'ri-kāt*), *v. t.* to construct; invent falsely.

fab-u-lous (*'ū-lus*), *adj.* fictitious.

★**fa-çade** (*fà-sàd'* or *fà-sād'*), *n.* front elevation.

face (*fās*), *n.* the countenance; dial of a clock, etc.; value, excluding discount or interest) said of a note, etc.: *v. t.* to meet in front. [CONFRONT.]

faced (*fāst*), *p. adj.* having a face; dressed, as stone or tea.

fac-et (*fas'et*), *n.* a small surface or face.

fa-ce-tious (*fà-sē'shus*), *adj.* humorous; jocular.

Syn. FACETIOUS, pleasant, jocular, jocose. *Facetious* may be employed either for writing or conversation; the rest only in conversation. The *facetious* man deals in that kind of discourse which may excite laughter; a *conversable* man may instruct as well as amuse; the *pleasant* man says everything in a *pleasant* manner; his *pleasantry* even on the most delicate subject is without offense; the person speaking is *jocose;* the thing said, or the manner of saying it, is *jocular.*

fa-cial (*fā'shal*), *adj.* pertaining to the face.

fa-ci-es (*'shi-ēz*), *n.* the general resemblance or aspect of any group of organisms or rocks.

fac-ile (*fas'il*), *adj.* yielding.

fa-cil-i-tate (*fà-sil'i-tāt*), *v. t.* to make easy or less difficult.

fa-cil-i-ty (*'i-ti*), *n.* [*pl.* facilities (*-tiz*)], freedom from difficulty; dexterity; ease. [EASE.]

fa-cing (*fā'sing*), *n.* a covering in front for ornamental or other purposes.

fac-sim-i-le (*fak-sim'i-lē*), *n.* an exact reproduction, counterpart, or likeness of an original.

fact (*fakt*), *n.* anything that is done; reality. [CIRCUMSTANCE.]

fac-tion (*fak'shun*), *n.* a party in disloyal opposition.

fac-tious (*'shus*), *adj.* given to faction.

Syn. FACTIOUS, seditious. *Factious* is an epithet to characterize the tempers of men; *seditious* characterizes their conduct. The *factious* man attempts to raise himself into importance, he aims at authority, and seeks to interfere in the measures of government; the *seditious* man attempts to excite others, and to provoke their resistance to established authority. [See *perverse.*]

Ant. Peaceable, quiet, well disposed, governable.

fac-ti-tious (*-tish'us*), *adj.* artificial; sham.

fac-tor (*fak'tĕr*), *n.* an agent who transacts business for another.

★fac-to-ry (*fak'tō-ri*, not *fak'tri*), *n.* [*pl.* factories (*-riz*)], a manufactory.

fac-to-tum (*-tō'tum*), *n.* a man of all work.

fac-ul-ty (*'ul-ti*), *n.* [*pl.* faculties (*-tiz*)], any mental or physical power; the masters and professors of a department in a university. [ABILITY.]

fad (*fad*), *n.* a pet idea or hobby.

fade (*fād*), *v. i.* to lose color or distinctness. [FAINT.]

fæ-ces (*fē'sēz*), *n. pl.* excrement.

fag (*fag*), *v. i.* [*p. t.* and *p. p.* fagged, *p. pr.* fagging], to work hard: *v. t.* to tire out or exhaust.

fag-ot (*'ot*), *n.* a bundle of sticks bound together.

fag-ot-ing (*-ing*), *n.* a method of ornamenting textile fabrics.

fail (*fāl*), *v. i.* to be deficient; waste away: *v. t.* to be wanting, or insufficient for; forsake.

fail-ing (*'ing*), *n.* a fault; weakness; imperfection; the act of becoming bankrupt.

fail-ure (*fāl'ūr*), *n.* the act of failing; omission; want of success. [INSOLVENCY.]

faln (*fān*), *adv.* willingly; gladly.

faint (*fānt*), *v. i.* to become feeble; lose consciousness; swoon.

Syn. FAINT, dim, exhausted, faded, faltering, fatigued, feeble, indistinct, languid, listless, timid, weak, wearied. *Faint* has the general sense of lacking strength or effectiveness. A person may be *faint* when physically *wearied;* he may be a *faint* adherent because naturally *feeble* or purposeless, or because half hearted in the cause. Written characters may be *faint* or *dim*, either because originally written with poor ink, or because they have become *faded* by time and exposure.

faint-ing (*'ing*), *n.* a sudden and temporary loss of consciousness.

fair (*fār*), *adj.* beautiful; handsome; pleasing to the eye or mind; *n.* market: *adv.* justly openly.

Syn. FAIR, clear. *Fair* is used in a positive sense; *clear* in a negative sense; there must be some brightness in what is *fair;* there must be no spots in what is *clear*. The weather is said to be *fair*, which is not only free from what is disagreeable but somewhat enlivened by the sun; it is *clear* when it is free from clouds or mists.

Ant. DECEITFUL, unjust, unprincipled.

fair-y (*fār'i*), *n.* [*pl.* fairies (*-iz*)], an imaginary being of graceful and diminutive human form.

faith (*fāth*), *n.* belief; trust in the honesty and truth of another; the assent of the mind to divine revelation; a system of doctrines or tenets.

Syn. FAITH, creed. These words are synonymous when taken for the thing trusted in or believed; but they differ in this, that *faith* has always a reference to the principle in the mind; *creed* only respects the thing which is the object of faith.

Ant. DENIAL, disbelief, infidelity.

faith-ful (*'fool*), *adj.* full of faith; trustworthy; truthful; honest; loyal.

Syn. FAITHFUL, trusty. *Faithful* respects the principle altogether; *trusty* includes not only the principle, but the mental qualifications in general. It is the part of a Christian to be *faithful* to all his engagements; it is a particular excellence in a servant to be *trusty*.

Ant. FAITHLESS, deceitful.

faith-less (*'les*), *adj.* without faith or belief; unbelieving.

Syn. FAITHLESS, perfidious, treacherous. A *faithless* man is *faithless* only for his own interest; a *perfidious* man is expressly so to the injury of another. *Perfidy* may lie in the will to do; *treachery* lies altogether in the thing done. A friend is *perfidious* whenever he evinces his *perfidy;* but he is said to be *treacherous* only in the particular instance in which he betrays the confidence and interests of another.

Ant. FAITHFUL, honest, magnanimous, trustworthy.

fake (*fāk*), *v. t.* to fabricate with the view of deception.

fak-er (*'ĕr*), *n.* a swindler; pickpocket.

Fa-kir (*fā'kēr*), *n.* a Mohammedan ascetic.

fal-chion (*fawl'chun*), *n.* a short, slightly curved sword.

★fal-con (*faw'kn*), *n.* a predatory bird.

fal-con-er (*faw'kn-ĕr*), *n.* one who trains or sports with falcons.

fal-con-ry (*faw'kn-ri*), *n.* the art of training hawks.

fall (*fawl*), *v. i.* [*p. t.* fell, *p. p.* fallen, *p. pr.* falling], to drop from a higher to a lower place: *adj.* pertaining to the autumn.

Syn. FALL, downfall, ruin. *Fall* applies to that which is erect; *downfall* to that which is elevated. Everything which is set up, although as trifling as a stick, may have a *fall;* but we speak of the *downfall* of the loftiest trees or the tallest spires. A man may recover from his *fall*, but his *downfall* is commonly followed by the entire *ruin* of his concerns, and often of himself.

Ant. RISE, flourish, prosper.

fal-la-cious (*fal-lā'shus*), *adj.* deceptive.

Syn. FALLACIOUS, deceitful, fraudulent. The *fallacious* has respect to falsehood in opinion; *deceitful* to that which is externally false. Our hopes are often *fallacious;* the appearances of things are often *deceitful*. *Fallacious*, as characteristic of the mind, excludes the idea of design; *deceitful* excludes the idea of mistake; *fraudulent* is a gross species of the *deceitful*.

Ant. HONEST, sound, truthful.

fal-la-cy (*fal'ă-si*), *n.* [*pl.* fallacies (*-siz*)], a deceptive or false appearance; mistake.

fall-en (*fawl'n*), *p. adj.* sunk to a lower state or condition.

fal-li-ble (*fal'i-bl*), *adj.* liable to be deceived.

fall-ing (*fawl'ing*), *p. adj.* moving or hanging downward: *n.* the act or process of falling.

fal-low (*fal'ō*), *adj.* plowed but not sown for the season.

false (*fawls*), *adj.* untrue; dishonest; disloyal; perfidious. [ABSURD.]

false-hood (*'hood*), *n.* an untruth; lie. [FICTION.]

fal-set-to (*fawl-set'ō*), *n.* an artificial tone higher in key than the natural compass of the voice.

fal-si-fy (*'si-fi*), *v. t.* [*p. t.* and *p. p.* falsified, *p. pr.* falsifying], to make, or prove to be, false.

fal-si-ty (*'si-ti*), *n.* [*pl.* falsities (*-tiz*)], the quality of being false.

Fal-staf-fi-an (*fawl'staf-i-an*), *adj.* resembling Falstaff; convivial.

fal-ter (*'tĕr*), *v. t.* to utter in a weak, trembling manner (with *out*). [FAINT, HESITATE.]

fame (*fām*), *n.* public report.

Syn. FAME, report, reputation, renown. *Fame* may be applied to any object, good, bad, or indifferent; a *report* serves to communicate information of events; *reputation* is applied only to real eminence in some department; *renown* is employed only for extraordinary men and brilliant exploits. [See *character*.]

famed (*fāmd*), *adj.* renowned; celebrated.

fa-mil-iar (*fă-mil'yĕr*), *adj.* well acquainted, or intimate, with; domestic; affable; easy; unconstrained; unceremonious. [CONVERSANT.]

fa-mil-iar-i-ty (*yar'i-ti*), *n.* [*pl.* familiarities (*-tiz*)], intimacy; ease of conversation; freedom from ceremony or conventionality. [ACQUAINTANCE.]

fam-i-ly (*fam'i-li*), *n.* [*pl.* families (*-liz*)], a household; a group of animals larger than a genus, but less than an order.

fam-ine (*fam'in*), *n.* extreme dearth; great scarcity.

fam-ish (*'ish*), *v. t.* and *v. i.* to starve.

fa-mous (*fā'mus*), *adj.* renowned.

Syn. FAMOUS, celebrated, renowned, illustrious. *Famous* signifies literally having *fame* or the cause of *fame;* it is applicable to that which causes a noise or sensation; *celebrated* signifies literally kept in the memory by a celebration or memorial; *renowned* signifies literally possessed of a name; *illustrious* signifies literally what has or gives a luster.

Ant. OBSCURE, unknown.

fan (*fan*), *v. t.* [*p. t.* and *p. p.* fanned, *p. pr.* fanning], to cool with a fan; agitate (the air), as with a fan: *n.* an object with a broad surface used to agitate the air; a fanatic (said of a baseball enthusiast).

fa-nat-ic (*fă-nat'ik*), *n.* one who is intemperately zealous, or wildly extravagant: *adj.* characterized by fanaticism.

fa-nat-i-cism (*i'sizm*), *n.* extravagant or frenzied zeal.

fan-cied (*fan'sid*), *adj.* imaginary.

fan-ci-ful (*'si-fool*), *adj.* influenced by the fancy.

Syn. FANCIFUL, fantastic, whimsical, capricious. *Fanciful* is said of that which is irregular in the taste or judgment; *fantastical* is said of that which violates all propriety, as well as regularity; the former may consist of a simple deviation from rule; the latter is something extravagant; *whimsical* is a species of the *fanciful* in regard to one's likes or dislikes; *capricious* respects errors of temper.

fan-cy (*'si*), *v. t.* [*p. t.* and *p. p.* fancied, *p. pr.* fancying], to imagine; be pleased with: *v. i.* to imagine: *n.* creative imagination.

Syn. FANCY, imagination. The *fancy* only employs itself about things without regarding their nature; but the *imagination* aims at tracing a resemblance, and getting a true copy. The *fancy* consequently forms combinations, either real or unreal, as chance may direct; but the *imagination* is more seldom led astray. The *fancy* is busy in dreams, or when the mind is disordered; but the *imagination* acts when the intellectual powers are in full play. [See *conceit*.]

Ant. RATIOCINATION.

fan-dan-go (*-dang'gō*), *n.* a lively Spanish dance.

fane (*fān*), *n.* a temple.

fan-fare (*fan'fār*), *n.* a flourish of trumpets.

fang (*fang*), *n.* the poison tooth of a serpent; a tusk.

Fanny. A female name corrupted from *Frances*.

fan-tail (*fan'tāl*), *n.* a variety of pigeon.

fan-tan (*'tan*), *n.* a Chinese gambling game.

fan-ta-si-a (*fan-tā'zi-ă*, It. *fän-tä'zē-ä*), *n.* a musical composition not restricted by usual laws.

fan-tas-tic (*fan-tas'tik*), *adj.* odd; whimsical; grotesque. [FANCIFUL.]

far (*fär*), *adj.* remote; distant; extending widely or at length. [DISTANT.]

far-ad (*far'ad*), *n.* a unit of electric capacity.

farce (*färs*), *n.* a short comedy in which qualities are exaggerated.

far-ci-cal (*fär'si-kal*), *adj.* of the nature of a farce.

fare (*fār*), *v. i.* to be in any state; live: *n.* the sum paid for a journey by rail, etc.

fare-well (*fār'wel*), *interj.* may you fare well or prosper; good-by.

Syn. FAREWELL. adieu, good-by, leave-taking, parting salutation, valedictory. *Good-by* is the homely and hearty, *farewell* the formal, English word at parting. *Adieu*, from the French, is still more ceremonious than *farewell*. A *valedictory* is a public farewell to a company or assembly.

far-fetched (*fär'fecht*), *adj.* unnatural; forced.

fa-ri-na (*fă-ri'* or *fă-rē'nă*), *n.* meal or flour.

far-i-na-ceous (*far-i-nā'shus*), *adj.* consisting of farina.

farm (*färm*), *n.* a portion of land with the buildings, etc., appurtenant to it: *v. t.* to cultivate (land).

farm-er (*'ĕr*), *n.* one who cultivates a farm; an agriculturist.

farm-ing (*'ing*), *adj.* pertaining to, or engaged in, agriculture.

Farnese (*fär-nēz'*, Italian *fär-nā'zā*) **palace.** A celebrated palace of the Farnese in Rome, founded in the first part of the reign of Leo X.

fa-ro (*fā'rō* or *fă'rō*), *n.* a game of chance, played with cards.

far-ri-er (*far'i-ĕr*), *n.* one who shoes horses.

far-ther (*fär'thĕr*), *adj.* [*comp.* of far], more distant or remote; additional.

far-thing (*'thing*), *n.* one-fourth of an English penny.

fas-ci-nate (*fas'i-nāt*), *v. t.* to influence the mind or will of, as if by enchantment.

fas-ci-na-tion (*-nā'shun*), *n.* the act of fascinating.

fash-ion (*fash'un*), *n.* the shape or form of anything; conventional custom or usage: *v. t.* to mold, shape, or form. [CUSTOM, FORM.]

fash-ion-a-ble (*ă-bl*), *adj.* made in accordance with the fashion of the day.

fast (*fāst*), *v. i.* to abstain from food as a religious obligation.

fast (*fāst*), *adj.* quick; speedy in motion; in advance of the standard: *adv.* rapidly; firmly.

fast day (*'dā*), a day set apart for religious fasting.

fas-ten (*fās'n*), *v. t.* to fix securely; make fast; bolt or bar.

fas-tid-i-ous (*-tid'i-us*), *adj.* squeamish.

fast-ing (*fast'ing*), *n.* abstinence from food.

fat (*fat*), *adj.* [*comp.* fatter, *superl*, fattest], corpulent; fleshy; adipose; greasy: *n* a solid, oily substance forming part of the tissue of animals.

fa-tal (*fā'tal*), *adj.* causing death; mortal. [DEADLY.]

fa-tal-ism (*-izm*), *n.* the doctrine that all things happen by irresistible necessity.

fa-tal-is-tic (*-is'tik*), *adj.* pertaining to fatalism.

fa-tal-i-ty (*fā-tal'i-ti*), *n.* [*pl.* fatalities (*-tiz*)], predetermined order or series of events.

fate (*fāt*), *n.* destiny; inevitable necessity; death or destruction. [DESTINY.]

fat-ed (*fāt'ed*), *p. adj.* decreed by fate; destined.

fa-ther (*fä'thĕr*), *n.* a male parent; the official title of a confessor of the Roman Catholic church.

Fa-ther, *n.* the Creator, God.

fath-om (*fath'um*), *n.* a measure of length equal to 6 feet.

fa-tigue (*fă-tēg'*), *n.* weariness; toil.

Syn. FATIGUE, weariness, lassitude. *Fatigue* is an exhaustion of the animal or mental powers; *weariness* is a wearing out the strength, or breaking the spirits; *lassitude* is a general relaxation of the animal frame. [See *faint*.]

fat-ten (*fat'n*), *v. t.* to make fat, plump, or stout.

fat-ty (*'i*), *adj.* consisting, or having the qualities, of fat.

fa-tu-i-ty (*fă-tū'i-ti*), *n.* weakness of intellect.

fat-u-ous (*fat'ū-us*), *adj.* weak in intellect; silly.

★fau-cet (*faw'set*, not *fas'et*), *n.* a short pipe with a valve, used for drawing out liquor.

fault (*fawlt*), *n.* a slight crime or offense; blemish; defect. [BLEMISH.]

fault-y (*'i*), *adj.* imperfect.

faun (*fawn*), *n.* a classic woodland deity.

fau-na (*faw'nă*), *n.* [*pl.* faunas (*'năz*), faunæ (*'nē*)], the animals characteristic of any particular region.

fa-vor (*fā'vĕr*), *n.* kindness; support; patronage; good will; facility: *v. t.* to regard with favor. [CREDIT, MERCY.]

fa-vor-a-ble (*-ă-bl*), *adj.* propitious; advantageous.

fa-vored (*'vĕrd*), *adj.* featured.

★fa-vor-ite (*fā'vĕr-it*, not *fā'vĕr-īt*), *n.* one who, or that which, is particularly esteemed.

fa-vor-it-ism (*-izm*), *n.* the disposition or tendency to favor one person or class in preference to others.

fawn (*fawn*), *n.* a young deer.

fawn-ing (*'ing*), *n.* gross, or servile, flattery.

fay (*fā*), *n.* an elf; fairy.

faze (*fāz*), *v. t.* to worry.

fe-al-ty (*fē'al-ti*), *n.* the duty of a vassal or tenant to his feudal superior.

fear (*fēr*), *n.* apprehension of evil or danger; dread: *v. i.* to be in fear; feel anxiety. [ANXIETY.]

Fear, Cape, N. C. Is said to have been named *Cape of Fear*, owing to its tempestuous coast at the time Raleigh's fleet was trying to find an entrance, June 20, 1585.

fear-ful (*fēr'fool*), *adj.* affected with fear; timorous; apprehensive.

Syn. FEARFUL, dreadful, frightful, tremendous, terrible, horrible, horrid. A contest is *fearful* when the issue is important, but the event doubtful; the thought of death is *dreadful* to one who feels himself unprepared; the

frightful is less than the *tremendous;* the *tremendous* than the *terrible;* the *terrible* than the *horrible;* shrieks may be *frightful;* thunder and lightning may be *tremendous;* the roaring of a lion is *terrible;* the actual spectacle of killing is *horrible* or *horrid.* We may speak of a *frightful, dreadful, terrible,* or *horrid* dream; or *frightful, dreadful,* or *terrible* tempest; *Dreadful, terrible,* or *horrid* consequences.

Ant. COMMONPLACE, contemptible, mean, paltry.

fear-less (*fēr'les*), *adj.* without fear. [BOLD.]

fea-si-ble (*fē'zi-bl*), *adj.* practicable.

feast (*fēst*), *n.* a sumptuous repast; a festival, especially of the church: *v. i.* to feed sumptuously.

feat (*fēt*), *n.* a notable achievement.

feath-er (*feth'ĕr*), *n.* part of the exterior covering of a bird: *v. t.* turn the blade of (an oar) horizontally when leaving the water.

feath-er weight (*wāt*), in a handicap, the least weight that can be put on a racehorse.

feath-er-y (**-i**), *adj.* covered with, or resembling, feathers.

fea-ture (*fē'tūr*), *n.* the cast of the face.

fea-tured (*'tūrd*), *adj.* having a particular cast of face.

fe-brile (*fē'bril* or *fēb'ril*), *adj.* pertaining to, or accompanied by, fever.

February (*feb'roo-ā-ri*). From the Latin word, *febru,* "to purify," because the purification of women took place in this month.

fec-u-lent (*fek-ū'lent*), *adj.* containing dregs.

★**fec-und** (*fek'und,* not *fē'kund*), *adj.* fruitful; prolific.

fec-un-date (*fek'un-dāt*), *v. t.* to make friutful or prolific.

fed-er-al (*fed'ĕr-al*), *adj.* pertaining to, constituting, or founded upon, a league or treaty.

Fed-er-al, *adj.* supporting the cause of the Union in the American Civil war (1861-65).

fed-er-al-ism (*izm*), *n.* the doctrine of federal union.

Federalist (*fed'ĕr-al-ist*), **The.** A collection of essays in favor and in explanation of the United States constitution, first issued in serial form, October, 1787, to April, 1788.

fee (*fē*), *n.* a compensation or payment for service rendered, especially professional service; land held from a superior.

fee-ble (*fē'bl*), *adj.* weak; wanting in physical strength or mental vigor. [WEAK, FAINT.]

feed (*fēd*), *v. t.* to give food to; nourish: *v. i.* to eat: *n.* a certain quantity of food given to animals.

feed-er (*'ĕr*), *n.* one who, or that which, feeds.

feel (*fēl*), *v. i.* to perceive by the touch; be influenced or moved by: *v. i.* to seem to the touch.

Syn. FEEL, be sensible, conscious. To *feel* is said of the whole frame, inwardly and outwardly; it is the accompaniment of existence; to be *sensible* is said only of the *senses.* It is the property of all living creatures to *feel* pleasure and pain in a greater or less degree; those creatures which have not the sense of hearing will not be *sensible* of sounds; we are *conscious* of having fallen short of our duty.

Ant. BE INSENSIBLE, unconscious.

feel-er (*'ĕr*), *n.* one who, or that which, feels.

feel-ing (*'ing*), *p. adj.* easily affected; sympathetic; *n.* susceptibility.

fee sim-ple (*fē-sim'pl*), an estate in land or tenements held by a person in his own right.

feign (*fān*), *v. t.* to pretend; invent.

Syn. FEIGN, pretend. One *feigns* in order to gain some future end; a person *feigns* sickness in order to be excused from paying a disagreeable visit; one *pretends* in order to serve a present purpose; a child *pretends* to have lost his book who wishes to excuse himself for his idleness.

Ant. BE SINCERE, unaffected.

feint (*fānt*), *n.* a pretense; mock attack.

feld-spar (*feld'spär*), *n.* a name for various crystalline minerals.

Felicia. A female name formed from *Felix.*

fe-lic-i-tate (*fē-lis'i-tāt*), *v. t.* to congratulate.

Syn. FELICITATE, congratulate. *Felicitate* signifies to make happy, and is applicable only to ourselves; *congratulate* is applicable either to ourselves or others; we *felicitate* ourselves on having escaped the danger; we *congratulate* others on their good fortune.

Ant. CONDOLE, console.

fe-lic-i-tous (*-itus*), *adj.* characterized by, or causing, happiness.

fe-lic-i-ty (*'i-ti*), *n.* [*pl.* felicities (*-tiz*)], a condition of supreme happiness.

fe-line (*fē'lin*) *adj.* pertaining to, or resembling, a cat.

Felix (*fē'liks*). A Latin name meaning "happy." Danish, *Felix;* Dutch, *Felix;* Fr., *Felix;* Ger., *Felix;* It., *Felice;* Sp., *Felix.*

fell (*fel*), *v. t.* to hew, cut, or knock, down; cause to fall: *adj.* cruel.

fel-lah (*'ä*), *n.* [*pl.* fellahs (*'äz*), fellaheen (*-hēn'*)], in Egypt and Syria, a peasant or laboring man.

fel-loe. Same as *felly.*

★**fel-low** (*fel'lō,* not *fel'lu*), *n.* a companion or associate; one of the same kind.

fel-low-ship (*-ship*), *n.* association; communion; intimacy. [ACQUAINTANCE.]

fel-ly (*'i*), *n.* [*pl.* fellies (*'iz*)], one of the curved pieces of wood which form the rim of a wheel.

fel-on (*fel'un*), *n.* one guilty of felony. [CRIMINAL.]

fe-lo-ni-ous (*fē-lō'ni-us*), *adj.* malignant.

felt (*felt*), *n.* an unwoven fabric composed of wool or wool and hair.

fe-luc-ca (*fē-luk'ä*), *n.* a small sailing vessel used in the Mediterranean.

fe-male (*fē'māl*), *n.* one of that sex which conceives and produces young: *adj.* feminine; womanly.

Syn. FEMALE, feminine, effeminate. In the *female* character we expect to find that which is *feminine.* The *female* dress, manners, and habits, have engaged the attention of all essayists, from the time of Addison to the present period. The *feminine* is natural to the *female;* the *effeminate* is unnatural to the male.

★**fem-i-nine** (*fem'i-nin,* not *fem'i-nin*), *adj.* pertaining to, or characteristic of, women. [FEMALE.]

fem-i-nin-i-ty (*-i-nin'i-ti*), *n.* the state or quality of being feminine.

fem-o-ral (*fem'ō-ral*), *adj.* pertaining to the thigh.

fe-mur (*fē'mĕr*), *n.* the thigh bone.

fen (*fen*), *n.* low, flat marsh land, covered with sedges.

fence (*fens*), *v. i.* to practice fencing: *v. t.* to defend; inclose or surround with a fence.

fen-cing (*fen'sing*), *n.* the art of skillfully using a foil or sword.

fend (*fend*), *v. t.* to ward off.

fend-er (*'ĕr*), *n.* a cushion of rope, or piece of wood, hung over the side of a vessel to prevent injury by contact with a landing stage.

fen-nel (*fen'el*), *n.* an aromatic biennial herb of the parsley family.

Ferdinand (*fĕr'di-nand*). One authority derives this name from the North High German name *Ferdinand* or *Fert-nand,* translated, figuratively, "one quick of comprehension." Ger., *Ferdinand;* It., *Ferdinando;* Lat., *Ferdinandus;* Port., *Fernando* or *Fernao;* Sp., *Fernando.*

Fergus. An English form of *Frederick.*

fer-ment (*fĕr'ment*), *n.* a microscopic fungus which produces fermentation: *v. t.* (*fĕr-ment'*) to produce fermentation in.

fer-men-ta-tion (*-men-tā'shun*), *n.* the chemical decomposition which takes place in an organic substance exposed to the air.

fern (*fĕrn*), *n.* a flowerless plant with broad and feathery fronds or leaves.

Fernandina (*fĕr-nän-dē'nä*), **Fla.** Given by the Spaniards in honor of their king, Ferdinand.

fern-er-y (*fĕrn'ĕr-i*), *n.* [*pl.* ferneries (**-iz**)], a place where ferns are cultivated.

fe-ro-cious (*fē-rō'shus*), *adj.* savage; fierce; rapacious.

Syn. FEROCIOUS, fierce, savage. *Ferocity* marks the untamed character of a cruel disposition; *fierceness* has a greater mixture of pride and anger in it; *savageness* marks a more permanent, but not so violent a sentiment of either cruelty or anger as the two former. *Ferocity* and *fierceness* are in common applied to the brutes, to designate their natural tempers; *savage* is mostly employed to designate the natural tempers of man.

Ant. DOCILE, harmless, tame.

fe-roc-i-ty (*-ros'i-ti*), *n.* [*pl.* ferocities (*-tiz*)], savageness or cruelty of disposition.

fer-ret (*fer'et*), *n.* a domesticated variety of polecat, employed to hunt rats and rabbits from their holes.

fer-ric ac-id (*fer'ik as'id*), an acid composed of 3 atoms of oxygen and 1 of iron.

fer-ro-type (*-tip*), *n.* a photograph taken upon a sensitized iron plate.

fer-rule (*'rūl*), *n.* a metal ring placed at the end of a stick.

fer-ry (*'i*), *n.* [*pl.* ferries (*'iz*)], a passage across a river, etc.; a ferryboat.

fer-tile (*fĕr'til*), *adj.* producing abundantly; fruitful.

fer-til-i-ty (*'i-ti*), *n.* the state or quality of being fertile.

fer-til-i-za-tion (*-i-zā'shun*), *n.* the act or process of making fertile.

fer-ule (*fer'ul*), *n.* a rod or flat stick used for chastisement.

fer-vent (*fĕr'vent*), *adj.* zealous; earnest. [EAGER.]

fer-vid (*'vid*), *adj.* burning; ardent; fiery.

fer-vor (*'vĕr*), *n.* intensity of feeling.

Syn. FERVOR, ardor. The affections are properly *fervent;* the passions are *ardent;* we are *fervent* in feeling, and *ardent* in acting. [See *zeal.*]

Ant. COOL, indifferent.

fes-tal (*fes'tal*), *adj.* pertaining to a feast; joyous; festive.

fes-ter (*'tĕr*), *v. t.* to cause to fester or rankle: *n.* an ulcerous sore.

fes-ti-val (*'ti-val*), *n.* a joyful celebration; an entertainment.

fes-tive (*'tiv*), *adj.* pertaining to a feast; gay.

fes-tiv-i-ty (*-tiv'i-ti*), *n.* [*pl.* festivities (*-tiz*)], social gayety at an entertainment or feast.

fes-toon (*-tōōn'*), *n.* a wreath or garland suspended at the extremities and hanging in a curve.

fetch (*fech*), *v. t.* to go after and bring; *v. i.* to move and turn; reach or get. [BRING.]

★**fête** (*fāt*), *n.* a festival or holiday.

fet-id (*fet'id,* or *fē'tid*), *adj.* giving forth an offensive smell.

fe-tish (*fēt'ish,* or *fet'ish*), *n.* any object, as a stone, weapon, feather, etc., supposed by the negroes of Western Africa to be the abede of a spirit.

fet-lock (*fetlock*), *n.* a tuft of hair behind a horse's pastern joint.

fet-ter (*fet'ĕr*), *n.* a chain or shackle for the feet (usually *pl.*).

fet-tle (*fet'l*), *n.* good condition or repair; fuss

fe-tus. Same as *fœtus.*

feud (*fūd*), *n.* an inveterate quarrel between clans or families.

Syn. FEUD, affray, animosity, bitterness, brawl, broil, contention, contest, controversy, dispute, dissension, enmity, fray, hostility, quarrel, strife. A *feud* is *enmity* between families, clans, or parties; *feud* is rarely used of nations; a *feud* is long enduring, and often hereditary. *Dissension* is used of a number of persons, of a party or other organization. *Bitterness* is in feeling only; a *quarrel* is in word or act, or both, and is commonly slight and transient; *contention* and *strife* may be in word or deed; *contest* is often used in a good sense, *contention* and *strife* very rarely so. *Affray, brawl,* and *broil,* like *quarrel,* are words of inferior dignity. [See *quarrel.*]

feu-dal (*fū'dal*), *adj.* pertaining to, or founded upon, a feud or fief.

feu-dal sys-tem (*sis'tem*), the politico-social system prevalent in Europe during the middle ages of holding lands.

fe-ver (*fē'vĕr*), *n.* a disease characterized by marked increase of heat of the skin.

fe-ver-ish (*-ish*), *adj.* affected with fever.

few (*fū*), *adj.* [*comp.* fewer, *superl.* fewest], not many.

fez (*fez*), *n.* a brimless, close fitting, felt hat, usually red, with a black tassel (worn by Turks).

★**fi-an-cé** (*fē-äN-sā'*), *n.* one who is betrothed or affianced. [Fem. *fiancée.*]

fi-as-co (*fē-äs'kō*), *n.* a complete or ludicrous failure.

fi-at (*fī'at*), *n.* peremptory order or decree.

fib (*fib*), *n.* a falsehood.

fi-ber (*fī'bĕr*), *n.* a slender thread-like substance.

★**fi-bril** (*fī'bril,* not *fib'ril*) *n.* a small fiber.

fi-brin (*fī'brin*), *n.* a white albuminoid substance which forms the clot of blood.

fi-bri-nous (*'bri-nus*), *adj.* composed of, or of the nature of, fibrin.

fi-brous (*'brus*), *adj.* composed of, or of the nature of, fibers.

fib-u-la (*fib'ū-lä*), *n.* [*pl.* fibulæ (*-lē*)], the outer and smaller of the two bones which form the lower leg.

fi-chu (*fē-shōō'*), *n.* a linen or lace three-cornered cape or collar worn, by ladies, over the shoulders.

fic-kle (*fik'kl*), *adj.* capricious; inconstant.

fic-tion (*'shun*), *n.* that which is feigned or invented; a literary production of the imagination.

Syn. FICTION. allegory, apologue, fable, falsehood, figment, invention, legend, myth, novel, romance, story. *Fiction* is now chiefly used of a prose work in narrative form in which the characters are partly or wholly imaginary; a *romance* portrays what is picturesque or striking; *novel* is a general name for any continuous fictitious narrative, especially a love story; a *fiction* is studied; a *myth* grows up without intent; a *legend* may be true, but can not be historically verified; a *myth* has been received as true at some time, but is now known to be false, a *fabrication* is designed to deceive; a *figment* is something imaginary which the one who utters it may or may not believe to be true; *apologue* is the same as *fable.*

Ant. ACTUALITY, truth, reality.

fic-ti-tious (*-tish'us*), *adj.* false; unreal.

fid (*fid*), *n.* an iron or wooden bar to support a topmast.

fid-dle (*fid'l*), *n.* a violin: *v. i.* to play the fiddle or violin.

fid-dle-fad-dle (*-fad'l*), *n.* nonsense.

fid-dler (*fid'lĕr*), *n.* a violinist.

fid-dle-stick (*fid'l-stik*), *n.* a bow for playing upon the fiddle or violin.

fid-dling (*fid'ling*), *n.* the act of playing the violin.

fi-del-i-ty (*fi-del'i-ti*), *n.* [*pl.* fidelities (*-tiz*)], integrity; faithful adherence to obligation. [FAITH.]

fidg-et (*fij'et*), *n.* one who is fidgety; nervous.

fi-du-cial (*fi-dū'shal*), *adj.* of the nature of a trust.

fi-du-ci-a-ry (*'shi-ā-ri*), *n.* [*pl.* fiduciaries (*-riz*)], a trustee: *adj.* pertaining to, or of the nature of, a trust.

fie (*fi*), *interj.* for shame!

fief (*fēf*), *n.* a fee or feud.

field (*fēld*), *n.* a piece of land inclosed for tillage or pasture; a wide expanse; in heraldry, the surface of the shield.

field ar-til-ler-y (*är-til'ĕr-i*), artillery so mounted as to be readily handled in active service.

field book (*book*), a surveyor's notebook.

field day (*dā*), a day devoted to outdoor scientific research.

field glass (*glas*), a small portable telescope.

field mar-shal (*mär'shal*), the highest rank in the armies of European countries.

field of-fi-cer (*of'i-sĕr*), a major, lieutenant-colonel, or colonel.

field sports (*spōrtz*), outdoor diversions.

fiend (*fēnd*), *n.* an infernal being; demon.

fiend-ish (*'ish*), *adj.* like a fiend.

fierce (*fērs*), *adj.* savage; violent; merciless. [FEROCIOUS].

fi-er-i-ness (*fī'ĕr-i-nes*), *n.* the quality of being fiery; heat of temper.

fi-er-y (*fī'ĕr-i*), *adj.* [*comp.* fierier, *superl.* fieriest], pertaining to, or consisting of, fire. [HOT.]

Fiesole (*fē-es'ō-lē*). An old Etruscan city in the province of Florence, Italy, four miles northeast of Florence; the ancient *Fæsulæ.* It was the headquarters of Catiline in 63-62 B. C.

fife (*fif*), *n.* a shrill-toned musical instrument of the flute class.
fif-teen (*fif'tēn*), *adj.* consisting of 5 and 10; a cardinal numeral: *n.* the number made up of 5 and 10.
fifth (*fifth*), *adj.* next in order after 4th: *n.* one of 5 equal parts
Fifth avenue. The principal residence street of New York, extending from Washington square to Harlem river, a distance of about six and one-half miles.
fif-ti-eth (*fif'ti-eth*), *adj.* next in order after 49th: *n.* one of 50 equal parts.
fif-ty (*'ti*), *adj.* consisting of five times 10.
fig (*fig*), *n.* the pear-shaped fruit of the fig tree.
fight (*fit*), *v. i.* [*p. t.* and *p. p.* fought, *p. pr.* fighting], contend in battle; make war: *n.* a combat; contest.
fight-ing (*'ing*), *adj.* pertaining to conflict: *n.* a combat.
fig-ment (*fig'ment*), *n.* an invention. [FICTION.]
fig-ur-a-tive (*'ūr-ā-tiv*), *adj.* representing by figure; metaphorical.
★**fig-ure** (*'ūr*), *n.* the outline or shape of a person or object; appearance; pattern; a space bounded on all sides by lines or planes: *v. i.* to be conspicuous; cipher.
fig-ured (*'ūrd*), *adj.* covered or adorned with figures; symbolized.
fig-ure-head (*'ūr-hed*), *n.* a carved representation placed at the prow of a ship.
fig-ur-ing (*fig'ūr-ing*), *n.* computation.
fil-a-ment (*fil'ā-ment*), *n.* a fine thread, or thread-like process or appendage.
fil-bert (*fil'bĕrt*), *n.* the edible nut of the cultivated hazel.
filch (*filch*), *v. t.* to pilfer; rob.
file (*fil*), *n.* a wire, etc., on which papers are strung; a tool of hard steel with small grooves on the surface: *v. t.* to march in a file or line.
fil-i-al (*fil'i-al*), *adj.* pertaining to, or befitting, a son or daughter.
fil-i-bus-ter (*-i-bus'tĕr*), *n.* a freebooter; a lawless military adventurer: *v. i.* to act as a filibuster.
fil-i-gree (*'i-grē*), *adj.* made of, or relating to, work in filigree: *n.* ornamental work, resembling lace.
fil-i-greed (*'i-grēd*), *adj.* ornamented with filigree.
fil-ing (*fil'ing*), *n.* the act of using a file.
Fil-i-pi-no (*fil-i-pē'nō*), *n.* a native of the Philippine islands.
fill (*fil*), *v. t.* to make full; satisfy; crowd: *v. i.* to become full or replete.
fill-er (*'er*), *n.* one who, or that which, fills.
fil-let (*'et*), *n.* a narrow band worn around the forehead for securing the hair.
fill-ing (*fil'ing*), *p. adj.* serving to fill; occupying the whole space; satiating.
fil-ly (*'i*), *n.* [*pl.* fillies (*'iz*)], a young mare.
film (*film*), *n.* a thin skin or filament.
film-y (*'i*), *adj.* composed of, or resembling, films.
fil-ter (*fil'tĕr*), *n.* any material or apparatus by which water is purified; a strainer.
filth (*filth*), *n.* foul matter; dirt.
filth-y (*'i*), *adj.* [*comp.* filthier, *superl.* filthiest], foul; dirty; unclean.
fin (*fin*), *n.* one of the organs of locomotion of a fish.
fi-nal (*fī'nal*), *adj.* pertaining to the end; ultimate, finishing; decisive.
Syn. FINAL, conclusive. *Final* designates simply the circumstance of being the last; *conclusive* the mode of finishing or coming to the last; a determination is *final* which is to be succeeded by no other; a reasoning is *conclusive* that puts a stop to further question.
Ant. OPENING, beginning.
★**fi-na-le** (*fē-nä'lā*, not *fi-nal'ē*), *n.* the last passage in a musical composition.
fi-nal-i-ty (*fi-nal'i-ti*), *n.* completeness.
★**fi-nance** (*fi-nans'*, not *fi'nans*), *n.* the science of the profitable management of monetary affairs.
fi-nan-cial (*-nan'shal*), *adj.* pertaining to finance.
Syn. FINANCIAL. fiscal, monetary, pecuniary. *Monetary* relates to actual money, coin, currency; as, the *monetary* system; *pecuniary* refers to that in which money is involved, but less directly; *financial* applies especially to governmental revenues or expenditures, or to private transactions of considerable moment; we speak of a *pecuniary* reward, a *financial* enterprise; we give a needy person *pecuniary* assistance.
★**fin-an-cier** (*fin-an-sēr'*, not *fi'nan-sēr*), *n.* one who is skilled in the principles of banking.
finch (*finch*), *n.* the common name for various small birds.
find (*find*), *v. t.* [*p. t.* and *p. p.* found, *p. pr.* finding], to discover; obtain by searching; ascertain.
Syn. FIND, find out, discover, invent. The merit of *finding* or *inventing* consists in newly applying or modifying the materials, which exist separately; the merit of *discovering* consists in removing the obstacles which prevent us from knowing the real nature of the thing; imagination and industry are requisite for *finding* or *inventing;* acuteness and penetration for *discovering*. *Find* is applicable to the operative arts; *invent* to the mechanical; *discover* to the speculative.
Ant. CONCEAL, suppress, lose, overlook.
find-er (*'ĕr*), *n.* one who, or that which, finds.
find-ing (*find'ing*), *n.* discovery; the verdict of a jury, or court.
fine (*fīn*), *n.* money paid as a penalty: *v. t.* to impose a monetary penalty upon.
fine (*fin*), *adj.* slender; thin; pure; refined; delicate.
Syn. FINE, delicate, nice. *Fine*, in the natural sense, denotes smallness in general. *Delicate* denotes a degree of *fineness* that is agreeable to the taste. Thread is said to be *fine;* silk is said to be *delicate*, when to *fineness* of texture it adds softness; *nice* is said of what is agreeable to the appetite.
Ant. BROAD, coarse, huge, repulsive.
fine-drawn (*fin'drawn*), *adj.* spun very fine.
fi-ner-y (*fi'n ĕr-i*), *n.* [*pl.* fineries (*iz*)], personal adornment, as fine or showy clothes.
fi-nesse (*fi-nes'*), *n.* artifice or stratagem; skill: *v. i.* to use artifice or skill to accomplish some end.
fin-ger (*fing'gĕr*), *n.* one of the four digits of the hand, as distinguished from the thumb.
fin-ger-ing (*-ing*), *n.* the act of touching with, or manipulating, the fingers; fine work executed with the fingers.
fin-i-cal (*fin'i-kal*), *adj.* fastidious; overparticular.
fin-ing (*fin'ing*), *n.* the act or process of purifying or refining.
fi-nis (*fī'nis*), *n.* the end.
fin-ish (*fin'ish*), *v. t.* to bring to an end; complete; conclude; make perfect; polish. [COMPLETE.]
fin-ished (*'isht*), *p. adj.* complete; of superior excellence or quality. [COMPLETE.]
fi-nite (*fī'nīt*), *adj.* having limits.
Syn. FINITE, limited. *Finite* is the natural property of things; and *limited* is the artificial property; the former is opposite only to the *infinite;* but the latter, which lies within the *finite*, is opposed to the *unlimited* or the *infinite*. This world is *finite*, and space *infinite;* the power of a prince is *limited*.
Ant. BOUNDLESS, infinite, unlimited.
Finland. Properly *Fenland*, meaning "the land of marshes."
fiord (*fyôrd*), *n.* a long narrow inlet of the sea between high rocks or banks.
fir (*fĕr*), *n.* the name of various cone-bearing trees of the genus Abies, and allied genera; a fir tree.
fire (*fīr*), *n.* heat and light evolved by ignition and combustion; ardor; spirit: *v. t.* explode; excite violently; illuminate.
fire-arms (*'ärmz*), *n. pl.* rifles, cannon, etc.
fire bal-loon (*bal-lōōn'*), a balloon inflated by hot air.
fire-box (*'boks*), *n.* in a locomotive engine, the receptacle for the fire.
fire-brand (*'brand*), *n.* a piece of burning wood; an incendiary.
fire-bug (*'bug*), *n.* an incendiary.
fire clay (*klā*), a kind of clay capable of resisting intense heat.
fire-cracker (*'krak-ĕr*), *n.* a small explosive firework.
fire damp (*damp*), carburetted hydrogen.
fire-dog (*'dog*), *n.* an andiron.
fire en-gine (*en-jin*), a hand or steam engine for ejecting water.
fire es-cape (*es-kāp*), a kind of ladder for rescuing persons.
fire-fly (*'flī*), *n.* a winged insect which emits light.
fire irons (*ī-urns*), the shovel, poker, and tongs.
fire-man (*'man*), *n.* [*pl.* firemen (*'men*)], one trained to extinguish fires.
fire ship (*ship*), a ship filled with combustibles, set fire to, and floated among the vessels of an enemy.
fire-side (*'sīd*), *n.* the hearth: hence, domestic life and comfort.
fire-works (*'wĕrkz*), *n. pl.* a pyrotechnic display.
fire wor-ship (*wĕr-ship*), the worship of fire as a deity.
fir-ing (*'ing*), *n.* the act of discharging firearms.
fir-kin (*fĕr'kin*), *n.* a small wooden vessel for holding butter, lard, etc.
firm (*fĕrm*), *adj.* hard; compact; solid; closely compressed; unyielding; not easily moved.
Syn. FIRM, fixed, solid, stable. *Fixed* denotes the state of being *fixed; solid*, in Latin *solidus*, comes from solum, the ground, which is the most *solid* thing existing. That is *firm* which is not easily shaken; that is *fixed* which is fastened to something else, and not easily torn; that is, *solid* which is able to bear, and does not easily give way; that is *stable* which is able to withstand resistance. [See *obstinate, hard.*]
Ant. UNCERTAIN, variable, wavering.
fir-ma-ment (*fĕr'mä-ment*), *n.* the sky.
first (*fĕrst*), *adj.* the ordinal of one; foremost in place, rank, dignity, time, excellence, etc.; earliest: *adv.* before all others in order.
first-class (*-klās*), *adj.* of the highest excellence, rank, or quality.
First day (*dā*), the name given to Sunday by the society of Friends.
first fruits (*frūts*), the first gatherings of the produce of the season.
first-hand (*-hand*), *adj.* obtained direct from the producer or grower.
first mate (*māt*), in the merchant service, the officer next in rank to the captain.
first-rate (*-rāt*), *adj.* of the highest excellence: *adv.* excellently.
firth. Same as *frith*, a bay.
fis-cal (*fis'kal*), *adj.* pertaining to the exchequer or public revenues; financial. [FINANCIAL.]
fish (*fish*), *n.* [*pl.* fish, fishes (*'ez*)], a vetebrate, cold-blooded, aquatic animal, furnished with permanent gills: *v. t.* to catch (fish).
fish-er-man (*'ĕr-man*), *n.* one whose occupation it is to catch fish.
fish-er-y (*'ĕr-i*), *n.* [*pl.* fisheries (*-iz*)], the business of catching fish.
fish-hawk (*fish'hawk*), *n.* the osprey.
fish-i-ness (*'i-nes*), *n.* the state of being fishy.
fish-ing (*'ing*), *n.* the art, sport, or business of taking fish.
fish-mon-ger (*'mung-gĕr*), *n.* one who sells fish.
fish-wife (*'wīf*), *n.* a woman who retails fish.
fish-y (*'i*), *adj.* incredible.
fis-sile (*fis'il*), *adj.* capable of being split.
fis-sion (*fish'un*), *n.* the act of cleaving or splitting up into parts.
fis-sure (*fish'ūr*), *n.* a cleft or crack; a narrow opening; furrow.
fist (*fist*), *n.* the hand when closed or clenched.
fis-tic (*fis'tik*), *adj.* pertaining to pugilism.
fis-ti-cuffs (*'ti-kufs*), *n.* a combat with the fists.
fis-tu-la (*'tū-lä*), *n.* a deep ulcer.
fit (*fit*), *v. t.* [*p. t.* and *p. p.* fitted, *p. pr.* fitting], to make fit or suitable; adapt; accommodate to anything; qualify: *adj.* [*comp.* fitter, *superl.* fittest], convenient; suitable.
Syn. FIT, apt, meet. A house is *fit* for the accommodation of the family according to the plan of the builder; the young mind is *apt* to receive either good or bad impressions; *meet* is a term of rare use, except in religion or poetry; it is *meet* to offer prayers. [See *competent, expedient.*]
Ant. UNBECOMING, unseemly, unsuitable.
fit (*fit*), *n.* a sudden attack of disease attended with convulsions.
Fitchburg. City in Worcester county, Mass., named for John Fitch, one of the committee that procured the act of incorporation.
fit-ful (*fit'fool*), *adj.* capricious; spasmodic.
fit-ting (*'ing*), *p. adj.* suitable; appropriate: *n. pl.* the necessary fixtures of a house.
Fitzedward. A baptismal name, son of Edward. Norman *fitz*, for *filius*.
Fitzwilliam Museum. A museum at Cambridge University, England, founded by Richard, seventh and last Viscount Fitzwilliam.
five (*fīv*), *adj.* a cardinal numeral: *n.* the sum of 4 and 1.
five-fold (*'fōld*), *adj.* five times as much or as great.
fix (*fiks*), *v. t.* to make fast, secure, or stable; direct steadily; adjust; predispose.
fix-a-tion (*-ā'shun*), *n.* the act of fixing; stability.
fixed (*fikst*), *p. adj.* firm; lasting; settled; permanent; stable. [FIRM, PERMANENT, OBSTINATE.]
fix-ed-ly (*fiks'ed-li*), *adv.* steadily; firmly.
fix-ing (*fiks'ing*), *n.* the act of making firm, or rendering permanent; the act of adjusting or amending.
fix-i-ty (*'i-ti*), *n.* stability; permanence.
fix-ture (*fiks'tūr*), *n.* that which is firmly fixed; an article of furniture regarded as part of a house.
fizz (*fiz*), *n.* a hissing noise: *v. i.* to make a fizzing noise.
flab-by (*flab'i*), *adj.* easily shaken or yielding to the touch; lacking muscle.
fla-bel-lum (*flä-bel'um*), *n.* [*pl.* flabella (*'ä*)], a large fan carried by the pope's attendants.
flac-cid (*flak'sid*), *adj.* flabby; weak.
flag (*flag*), *n.* a piece of cloth or bunting on which usually some device is wrought, used as a standard, ensign, signal, etc.: *v. t.* to signal with a flag: *v. i.* to droop; become feeble.
flag-el-late (*flaj'el-āt*), *v. t.* to whip.
flag-eo-let (*flaj'ō-let*), *n.* a musical instrument of the flute class.
flag-ging (*flag'ing*), *n.* pavement of flagstones.
fla-gi-tious (*flä-jish'us*), *adj.* atrocious; wicked. [HEINOUS.]
flag-on (*flag'un*), *n.* a large drinking vessel.
fla-grant (*flā'grant*), *adj.* openly wicked; heinous. [HEINOUS.]
flag-stone (*flag'stōn*), *n.* a large flat paving stone.
flail (*flāl*), *n.* a wooden instrument for threshing wheat.
flake (*flāk*), *n.* a small film of anything loosely held together, as snow: *v. t.* and *v. i.* to form into flakes.
flak-y (*'i*), *adj.* consisting of flakes or layers.
flam-beau (*'bō*), *n.* [*pl.* flambeaux (*'bōz*)], a lighted torch.
flam-boy-ant (*-boi'ant*), *adj.* denoting a florid or showy style.
flame (*flām*), *n.* fire; ardor of temper or passion: *v. t* to heat; excite.
flam-ing (*flām'ing*), *adj.* giving forth flames; blazing.
fla-min-go (*flä-ming'gō*), *n.* a long-legged, web-footed, red-colored bird.
Flaminian (*flä-min'i-an*) **way.** One of the oldest and most famous highways of ancient Rome. It extends in a direct line from Rome to Ariminum (Rimini), and was built by the censor Caius Flaminius in 220 B. C.
flange (*flanj*), *n.* a raised or projecting rim for preventing a wheel slipping.
flank (*flangk*), *n.* the fleshy part of an animal between the ribs and hip; that part of a fortification constructed to defend another: *v. i.* to border or touch (with *on*).
flank-er (*'ĕr*), *n.* ore of a body of troops thrown out to protect a line of march.
flan-nel (*flan'el*), *n.* a soft-textured cloth with a light nap.
flap (*flap*), *n.* anything broad and flexible hanging loosely; a slap: *v. t.* [*p. t.* and *p. p.* flapped], to strike with a flap.
flare (*flār*), *n.* a large, unsteady, glaring light: *v. i.* to burn with a broad, unsteady light.

flash (*flash*), *n.* a sudden, quick blaze: *adj* sham; *v. t.* gleam.
flash light (*līt*), a momentary, brilliant light for taking photographs.
flash-ing (*'ing*), *n.* a name for various operations in glass making.
flash-ing point (*point*), *n.* the temperature below the burning point at which the vapor of a volatile liquid will ignite and explode.
flash-y (*'i*), *adj.* brilliant, but empty; gaudy.
flask (*flăsk*), *n.* a small bottle.
flat (*flat*), *adj.* level; insipid; sounded below the true pitch: *n.* story or floor of a house.
flat-fish (*'fish*), *n.* any fish with a compressed body.
flat-ten (*'n*), *v. t.* to lay flat.
flat-ter (*'ĕr*), *v. t.* to gain over or please by complimentary speech: *n.* flatterer, one who flatters.
Syn. FLATTERER, sycophant, parasite. The *flatterer* is one who *flatters* by words; the *sycophant* and *parasite* are therefore always a *flatterer* and something more, for the *sycophant* adopts every mean artifice by which he can ingratiate himself, and the *parasite* submits to every degradation and servile compliance by which he can obtain his base purpose.
flat-ter-ing (*-ing*), *p. adj.* pleasing to pride or vanity.
flat-ter-y (*'ĕr-i*), *n.* [*pl.* flatteries (*-iz*)], insincere complimentary speech.
flat-u-lence (*'ū-lens*), *n.* distension of the stomach, caused by gases. [Also *flatulency.*]
flat-wise (*'wīz*), *adv.* with the flat side downward.
flaunt (*flânt* or *flawnt*), *v. i.* to make an ostentatious display.
fla-vor (*flā'vẽr*), *n.* a particular smell or taste: *v. t.* to impart a flavor to.
flaw (*flaw*), *n.* a blemish; inherent defect. [BLEMISH.]
flax (*flaks*), *n.* a plant, the fiber of which is spun into linen cloth.
flax-en (*'en*), *adj.* resembling, or made of, flax.
flax-seed (*'sēd*), *n.* linseed.
flay (*flā*), *v. t.* [*p. t.* and *p. p.* flayed, *p. pr.* flaying], to strip off, as skin.
flea (*flē*), *n.* a small blood-sucking insect of the genus Pulex.
fleck (*flek*), *n.* a streak or spot: *v. t.* variegate.
fledge (*flej*), *v. i.* to acquire the full plumage necessary for flight.
fledg-ling (*'ling*), *n.* a young bird just fledged.
flee (*flē*), *v. t.* [*p. t.* and *p. p.* fled, *p. pr.* fleeing], to run away from.
fleece (*flēs*), *n.* the whole wool shorn from a sheep at one time: *v. t.* to strip; plunder by injustice.
flee-cy (*flē'si*), *adj.* resembling a fleece; woolly.
fleet (*flēt*), *adj.* swift: *n.* a company of warships or merchant vessels.
Fleet street. A London street running from Ludgate circus to the Strand and the West End. It is named from the Fleet brook.
flesh (*flesh*), *n.* that part of an animal body underlying the skin: *adj.* resembling flesh.
flesh-ings (*'ingz*), *n. pl.* flesh-colored tights.
flesh-ly (*'li*), *adj.* pertaining to the body: *adv.* carnally.
flesh-y (*'i*), *adj.* [*comp.* fleshier, *superl.* fleshiest], plump; succulent; gross.
fleur-de-lis (*flẽr-de-lē'*), *n.* [*pl.* fleurs-de-lis], the royal bearing or emblem of France.
flex-i-ble (*fleks'i-bl*), *adj.* easily bent; yielding to persuasion.
Syn. FLEXIBLE, pliable, pliant, supple. *Flexible* is used in a natural or moral sense; *pliable* in the familiar sense only; *pliant* in the higher and moral application only; what can be bent in any degree, as a stick, is *flexible;* what can be bent as wax, or folded like cloth, is *pliable; supple,* whether in a proper or a figurative sense, is an excess of *pliability;* what can be bent backward and forward, like an osier twig, is *supple.*
Ant. RIGID, stiff, unyielding.
flex-ion (*flek'shun*), *n.* the act of bending; inflection.
flex-or (*fleks'ẽr*), *n.* a muscle that acts in bending the joints.
flex-ure (*'ūr*), *n.* the act of bending.
flick (*flik*), *n.* a light, quick stroke: *v. t.* to whip lightly.
flick-er (*'ẽr*), *v. i.* to move with an unsteady and quick motion: *n.* the golden-winged woodpecker.
fli-er (*flī' ẽr*), *n.* one who flies; that part of a machine that regulates motion.
flight (*flīt*), *n.* the act or power of flying; hasty departure; a series of steps.
flight-y (*'i*), *adj.* changeful; capricious; extravagant in fancy.
flim-sy (*flim'zi*), *adj.* unsubstantial; thin; weak.
flinch (*flinch*), *v. i.* to shrink or draw back.
fling (*fling*), *v. t.* [*p. t.* and *p. p.* flung, *p. pr.* flinging], to throw or hurl: *v. i.* to flounce: *n.* the act of throwing.
flint (*flint*), *n.* a variety of quartz.
Flint, Mich. Named from the river on which it is located, the name derived from translation of the Indian name *Pewonigo,* "river of flint."
flint-y (*'i*), *adj.* composed of, or resembling, flint.
flip (*flip*), *n.* a short quick stroke; a flick: *v. t.* to jerk with the fingers.
flip-flap (*'flap*), *n.* the noise caused by something flapping.
flip-pan-cy (*flip'an-si*), *n.* pertness.
flip-pant (*'ant*), *adj.* characterized by pertness.
flip-per (*flip'ẽr*), *n.* a broad fin, arm, or paddle used in swimming.
flirt (*flẽrt*), *v. t.* to move with a rapid action: *v. i.* to make love from mere amusement.
flir-ta-tion (*flẽr-tā'shun*), *n.* the act of flirting.
flirt-ing (*flẽrt'ing*), *n.* coquetry: *adj.* coquettish.
flit (*flit*), *v. i.* to pass lightly and swiftly along.
flitch (*flich*), *n.* the side of a hog salted and cured.
flit-ting (*flit'ing*), *n.* the act of flying.
float (*flōt*), *v. t.* to cause to rest on the surface of a liquid: *v. i.* to drift about.
float-ing (*'ing*), *p. adj.* swimming, or buoyed up, on the surface of a liquid.
floc-cu-lent (*flok'ū-lent*), *adj.* woolly.
flock (*flok*), *n.* a company or collection of sheep or bird; crowd.
floe (*flō*), *n.* a large flat mass of floating ice.
flog (*flog*), *v. t.* [*p. t.* and *p. p.* flogged, *p. pr.* flogging], to whip; chastise.
flood (*flud*), *n.* a great flow of water; high tide: *v. t.* to overflow.
flood gate (*gāt*), a gate in a water way.
flood tide (*tīd*), the rising tide.
floor (*flōr*), *n.* the part of a house, room, etc., on which one treads; any smooth or level area: *v. t.* to strike down.
floor-ing (*'ing*), *n.* materials for floors; pavement.
flop (*flop*), *v. t.* [*p. t.* and *p. p.* flopped, *p. pr.* flopping], to strike frequently: *v. i.* to plump down; fall loosely and flatly.
flo-ra (*flō'rà*), *n.* the wild plants of a particular region.
Flora (*flō'rà*). A female name derived from *Flora,* goddess of flowers and gardens, the same as the *Chloris* of the Greeks. Dutch, *Flora;* Fr., *Flore;* It., *Flora;* Lat., *Flora.*
flo-ral (*'ral*), *adj.* pertaining to flowers.
flo-re-a-ted (*'rē-ā-ted*), *adj.* ornamented with floral decorations.
Florence (*flor'ens*). A female name, said to have been Anglicized from *Finin* or *Fineen,* an Irish name used by men, meaning "flourishing." It might also mean "white," or "fair." Danish, *Florenz;* Dutch, *Florentia;* Fr., *Florence;* Ger., *Florenz;* It., *Fiorenza;* Lat., *Florentia;* Sp., *Florencia;* Sw., *Florenz.*
Florence, Italy. This is the French form adopted for the city whose Italian name, formerly *Fiorenza,* is now *Firenze.*
flo-res-cence (*flō-res'ens*), *n.* the flowering of a plant.
flo-ri-cul-ture (*'ri-kul-tūr*), *n.* the culture of flowers.
★**flor-id** (*flor'id,* not *flō'rid*), *adj.* bright in color; brilliant with decorations.
Florida. The southeasternmost state of the United States. So named by Ponce de Leon, a Spanish navigator, in honor of his discovery of the land on Easter Sunday, March 27, 1513, which is called by Spaniards *Pascua Florida,* "holy day of flowers."
flor-in (*'in*), *n.* a Dutch silver coin value, 0.402.
flo-rist (*flō'rist*), *n.* one who cultivates flowers.
floss (*flos*), *n.* floss silk.
floss silk (*silk*), an inferior, untwisted, soft silk.
floss-y (*'i*), *adj.* downy.
flo-ta-tion (*flō-tā'shun*), *n.* the act or state of floating.
flo-til-la (*-til'à*), *n.* a fleet of small vessels.
flot-sam (*flot'sam*), *n.* goods lost in shipwreck, and found floating upon the sea.
flounce (*flouns*), *n.* a narrow piece of cloth sewed to the skirt of a dress or petticoat, with the lower border loose and spreading; a sudden jerk or movement of the body, indicative of impatience: *v. t.* to furnish or trim with flounces: *v. i.* to throw about the limbs and body.
floun-cing (*'sing*), *n.* material for flounces.
floun-der (*floun'dẽr*), *v. i.* to struggle, or proceed with difficulty: *n.* a flat sea fish.
flour (*flour*), *n.* the fine meal of ground wheat.
flour-ish (*flur'ish*), *v. i.* to prosper or thrive; embellish: *v. t.* to swing about or brandish; *n.* ostentatious parade.
flour-ish-ing (*-ing*), *p. adj.* prosperous; thriving.
flout (*flout*), *v. t.* to insult; treat contemptuously: *v. i.* to sneer.
flow (*flō*), *v. i.* to run or spread, as water: *v. t.* to overflow.
flow-er (*flou'ẽr*), *n.* that part of a plant which contains the reproductive organs; blossom; the best part of anything: *v. i.* to put forth flowers.
flow-er-et (*-et*), *n.* a little flower.
flow-er-ing fern (*'ẽr-ing fẽrn*), the Osmunda regalis.
flow-ing (*flō'ing*), *p. adj.* moving, or pouring forth.
fluc-tu-ate (*fluk'tū-āt*), *v. i.* to roll to and fro, as a wave; be irresolute.
Syn. FLUCTUATE, waver. To *fluctuate* conveys the idea of strong agitation; *to waver* that of constant motion backward and forward; when applied in the moral sense, to *fluctuate* designates the action of the spirits or the opinions; to *waver* is said only of the will or opinions.
Ant. ABIDE, persist, be constant.
flue (*flū*), *n.* a pipe or passage to convey away smoke, etc.
flu-en-cy (*flū'en-si*), *n.* the quality of being fluent.
flu-ent (*'ent*), *adj.* possessing readiness and ease of speech.
fluff (*fluf*), *n.* light down or fur nap.
fluff-y (*'i*), *adj.* feathery.
flu-id (*flū'id*), *adj.* liquid or gaseous: *n.* a substance the particles of which are readily separable.
flu-id-i-ty (*-id'i-ti*), *n.* the state of being fluid.
fluke (*flūk*), *n.* the broad part of an anchor; one of the two lobes of a whale's tail: *v. i.* to score by a lucky stroke.
flume (*flūm*), *n.* a channel for the conveyance of water.
flum-mer-y (*flum'ẽr-i*), *n.* a jelly made of flour; blancmange.
flunk (*flungk*), *n.* a complete failure.
flunk-y (*'i*), *n.* [*pl.* flunkies (*'iz*)], a liveried servant.
flu-o-res-cence (*flū-ō-res'ens*), *n.* the quality existing in certain bodies of giving off a color differing from their own.
flu-or-ine (*'or-in*), *n.* an elementary gaseous body.
flu-or spar (*'or spär*), a transparent or semi-transparent mineral.
flur-ry (*flur'i*), *v. t.* [*p. t.* and *p. p.* flurried, *p. pr.* flurrying], to agitate, confuse, or bewilder.
flush (*flush*), *v. t.* to cause to blush; excite; clean out with a flow of water: *adj.* level with the surface.
flush-ing (*'ing*), *n.* the act of cleaning out by a copious flow of water.
flus-ter (*flus'tẽr*), *v. t.* to confuse or agitate; hurry.
flute (*flūt*), *n.* a tubular wind instrument furnished with fingerholes and keys.
flut-ing (*flūt'ing*), *n.* a channel or groove.
flut-ist (*'ist*), *n.* a performer on the flute.
flut-ter (*flut'ẽr*), *v. i.* to move the wings rapidly; be in agitation: *v. t.* to throw into confusion.
flu-vi-al (*flū'vi-al*), *adj.* pertaining to, or caused by, rivers.
flux (*fluks*), *n.* any flow or issue of matter.
fly (*flī*), *v. i.* [*p. t.* flew, *p. p.* flown, *p. pr.* flying], to move in the air with wings: *n.* [*pl.* flies (*flīz*)], a two-winged insect of many species including the housefly.
fly-blow (*'blō*), *n.* the egg or larva of a fly.
fly-ing (*'ing*), *n.* the action of the verb *to fly.*
fly-ing but-tress (*but'tres*), an arched brace for strengthening and supporting a part of a building.
fly-ing fish (*fish*), a fish which has the power of sustaining itself in the air.
fly wheel (*flī' hwēl*), a heavy wheel in a machine which regulates its motion.
foal (*fōl*), *n.* the young of a horse.
foam (*fōm*), *n.* the white substance formed on a liquid by violent agitation or fermentation.
fob (*fob*), *n.* a small pocket.
fo-cal (*fō'kal*), *adj.* pertaining to a focus.
fo-cal dis-tance (*dis'tâns*), the distance between the optical center of a lens and the point where the rays converge.
fo-cus (*fō'kus*), *n.* [*pl.* focuses (*-ez*), foci (*'si*)], the point where a system of rays of light or heat meet after being reflected or refracted.
fod-der (*fod'ẽr*), *n.* food for horses, cattle or sheep.
foe (*fō*), *n.* a personal enemy.
fœ-tus (*'tus*), *n.* the young of viviparous animals in the uterus.
fog (*fŏg*), *n.* condensed watery vapor; bewilderment.
fog bank (*bangk*), a dense mass of fog at sea.
fog-gy (*'i*), *adj.* abounding in, or filled with, fog.
fo-gy (*fō'gi*), *n.* [*pl.* fogies (*'giz*)], a person of old-fashioned or eccentric habits.
foi-ble (*foi'bl*), *n.* a failing or imperfection in character.
foil (*foil*), *v. t.* to baffle or frustrate: *n.* a contrast to set something off to advantage.
foist (*foist*), *v. t.* to place wrongfully or surreptitiously.
fold (*fōld*), *v. t.* to bend one part over another: *n.* a pen for sheep.
fold-er (*'ẽr*), *n.* one who, or that which, folds.
fold-ing (*'ing*), *n.* the act or process of doubling one part over another.
fold-ing doors (*dōrz*), a pair of doors hung on opposite side-posts and meeting in the middle.
fo-li-a-ceous (*fō-li-ā'shus*), *adj.* resembling, shaped like, or having, leaves, or laminæ.
fo-li-age (*'li-āj*), *n.* leaves collectively.
fo-li-a-tion (*-ā'shun*), *n.* the act of leafing; the act or process of beating a metal into thin plates.
fo-li-o (*fō'li-ō*), *n.* a book of the largest size; a case for music, etc.
folk (*fōk*), *n.* people in general; nation or race.
folk-lore (*'lōr*), *n.* popular traditions.
folk song (*sŏng*), a popular song or ballad.
fol-low (*fol'ō*), *v. t.* to go or come after; pursue; conform to: *v. i.* to go or come after another; result.
Syn. FOLLOW, succeed, ensue, pursue. *Follow* and *succeed* are said of persons and things; *ensue* of things only; *follow* in respect of persons, denotes the going in order; *succeed* denotes the going or being in the same place immediately after another; *ensue* is used in specific cases; quarrels too often *ensue* from the conversations of violent men who differ either in religion or politics; to *pursue* with a hostile intention.
Ant. FLEE, precede, anticipate, create.
fol-low-er (*-ẽr*), *n.* one who follows another; a disciple, attendant, or dependent.
Syn. FOLLOWER, adherent, partisan. A *follower* is one who *follows* a person generally; an *adherent* is one who *adheres* to his cause; a *partisan* is the follower of a *party.* [See *accessory.*]
Ant. ADVERSARY, betrayer, renegade.
fol-low-ing (*-ing*), *adj. n.* succeeding: vocation or calling.
fol-ly (*fol'i*), *n.* [*pl.* follies (*'iz*)], want of understanding; foolishness.
Syn. FOLLY, foolery. *Folly* is the abstract of *foolish,* and characterizes the thing; *foolery* the abstract of *fool,* and characterizes the person. Young people are perpetually committing *follies* if not under proper control; fashionable people lay aside one *foolery* only to take up another.

o-ment (*fō-ment'*), *v. t.* to bathe with warm or medicated liquids. [ABET.]
fo-men-ta-tion (*-men-tā'shun*), *n.* the act of fomenting.
fond (*fond*), *adj.* affectionate; loving. INDULGENT, LOVE.]
Fond du Lac (*fon-dū-lak'*), **Wis.** A city and county. French appellation, "bottom of the lake."
fondle (*fon'dl*), *v. t.* to caress: *v. i.* to exhibit fondness.
font (*font*), *n.* a stone receptacle to hold the water used in baptizing; a complete assortment of a particular kind of type.
Fontainebleau (*fŏn-tăn-blō'*). Originally a hunting seat called *Fons Bleaudi*, but now a town in the department of Seine-et-Marne, France.
food (*fōōd*), *n.* nutriment; material.
fool (*fōōl*), *n.* a person devoid of reason or intelligence: *v. t.* to disappoint. [FOLLY.]
Syn. FOOL, idiot, buffoon. *Fool* is doubtless connected with our word foul; *idiot* signifies either a private person or one that is rude and unskilled in the ways of the world; *buffoon* signifies a senseless fellow. The *fool* is either naturally or artificially a fool; the *idiot* is a natural fool; whoever intentionally violates common sense is a *buffoon*. [See *folly*.]
Ant. SAGE.
fool-har-dy (*'här-di*), *adj.* foolishly bold.
Syn. FOOLHARDY, adventurous, rash. The *foolhardy* man ventures in defiance of consequences; the *adventurous* man ventures from a love of the arduous and the bold; the *rash* man ventures for want of thought.
Ant. CAUTIOUS, cowardly, timid, wary.
fool-ing (*'ing*), *n.* banter; idle interference.
fool-ish (*'ish*), *adj.* acting without reason or judgment. [IRRATIONAL, ABSURD.]
fools-cap (*fōōlz'kap*), *n.* a size of paper about 17 in. by 14 in.
foot (*foot*), *n.* [*pl.* feet (*fēt*)], the part of the leg on which an animal walks or stands; a measure equal to 12 inches; a certain number of syllables constituting part of a verse.
foot-ball (*'bawl*), *n.* a large india-rubber ball incased in leather.
foot-ing (*'ing*), *n.* ground or supporting for the feet.
foot-man (*'man*), *n.* [*pl.* footmen (*'men*)], a liveried servant who attends a carriage.
foot-pad (*'pad*), *n.* a highwayman who robs on foot.
foot-pound (*'pound*), *n.* the unit of energy, equal to work required to raise 1 lb. through a space of 1 ft.
foot-step (*'step*), *n.* the act of moving the foot; a footfall. [MARK.]
fop (*fop*), *n.* a dandy; pretentious fool.
fop-pish (*'ish*), *adj.* affected in dress and manners.
for (*fôr*), *prep.* in place of; on account of; for the sake of: *conj.* because; since.
for-age (*for'āj*), *n.* food for horses and cattle: *v. i.* to search for provisions.
for-ag-ing (*-ing*), *n.* the act of searching for forage.
★**for-ay** (*for'ā, fō-rā'*), *n.* a predatory expedition in border warfare.
for-bear (*-bār'*), *v. t.* [*p. t.* forbore, *p. p.* forborne, *p. pr.* forbearing], to abstain from: *v. i.* to restrain one's self. [MERCY.]
for-bid (*-bid'*), *v. t.* [*p. t.* forbade, *p. p.* forbidden, forbid, *p. pr.* forbidding], to prohibit.
for-bid-ding (*'ing*), *p. adj.* repellent; disagreeable.
force (*fôrs*), *n.* active power; power to persuade or convince; troops: *v. t.* to compel: *v. i.* to endeavor.
Syn. FORCE, violence. The arm of justice must exercise *force* in order to bring offenders to a proper account; one nation exercises *violence* against another in the act of carrying on war; *force* is mostly conformable to reason and equity; *violence* is always resorted to for that which is unattainable by law. [See *compel, energy*.]
for-ceps (*fôr'seps*), *n.* pincers for seizing and extracting anything.
for-ci-ble (*fôr'si-bl*), *adj.* characterized by mental or physical power. [COGENT.]
ford (*fôrd*), *n.* a shallow part of a stream.
fore, a *prefix* meaning *before.*
fore-arm (*fôr'ärm*), *n.* the arm between the wrist and elbow: *v. t.* (*fôr-ärm'*) to prepare for attack.
fore-bode (*-bōd'*), *v. i.* to presage. [AUGUR, ANXIETY.]
fore-cast (*'kast*), *n.* a foresight; prediction of the weather. [ANTICIPATE.]
fore-cas-tle (*fôr'kas-l* or *fōk'sl*), *n.* the part of a vessel forward of the foremast.
fore-close (*fôr-klōz'*), *v. t.* to cut off from the right of redemption.
fore-fa-ther (*'fä-thẽr*), *n.* a male ancestor.
Syn. FOREFATHERS, progenitors, ancestors. *Forefathers* signifies our *fathers* before us, and includes our immediate parents; *progenitors* signifies those begotten before us, exclusive of our immediate parents; *ancestors* is said of those from whom we are remotely descended.
Fore father's day (*'fä-thẽrz dā*). Dec. 21, the day on which the Pilgrim Fathers landed at Plymouth, Mass.
fore-gath-er (*-gath'ẽr*), *v. i.* to assemble.
fore-go (*-gō'*), *v. t.* to renounce or refrain from. [ABANDON.]
fore-head (*for'ed*), *n.* that part of the face between the eyes and the hair.
for-eign (*for'en*), *adj.* belonging to another nation or country. [EXTRANEOUS.] [forehead.
fore-lock (*fōr'lok*), *n.* a lock of hair growing on the
fore-man (*fōr'man*), *n.* [*pl.* foremen (*'men*)], the spokesman of a jury.
fore-most (*'mōst*), *adj.* chief.
fo-ren-sic (*fō-ren'sik*), *adj.* pertaining to courts of justice or public debate.
fore-run (*-run'*), *v. t.* [*p. t.* foreran, *p. p.* forerun, *p. pr.* forerunning], to run before.
fore-run-ner (*'ẽr*), *n.* a messenger sent before; herald.
fore-sail (*'sāl*), *n.* a large square sail, the principal one on the foremast.
fore-short-en (*-shôrt'n*), *v. t.* to depict (figures as they appear to the eye when viewed obliquely) so as to convey the impression of full length.
fore-sight (*'sīt*), *n.* the act or power of foreseeing.
★**for-est** (*for'est*, not *fôr'ust*), *n.* a large extent of ground covered with trees: *v. t.* to cover with trees or forest.
fore-stall (*fōr-stawl'*), *v. t.* to be beforehand with; anticipate.
for-est-er (*for'est-ẽr*), *n.* one skilled in forestry.
for-est-ry (*'est-ri*), *n.* the art of cultivating forests or managing timber.
fore-taste (*fōr'tāst*), *n.* anticipation. [ANTICIPATE.]
fore-tell (*tel'*), *v. t.* to predict.
Syn. FORETELL, predict, prophesy, prognosticate. We may *foretell* common events, although we cannot *predict* or *prophesy* anything important; one *foretells* by a simple calculation or guess; *to predict* and *prophesy* are extraordinary gifts; to *prognosticate* is an act of the understanding; a physician *prognosticates* the crises of a disorder.
Ant. CALCULATE, demonstrate, make sure, prove.
fore-thought (*'thawt*), *n.* premeditation.
fore-top (*fōr'top*), *n.* the platform at the head of a foremast.
fore-top-mast (*-mast*), *n.* the mast immediately above the foremast.
for-feit (*fôr'it*), *n.* a fine or penalty: *v. t.* to lose by breach of conditions.
for-fei-ture (*'fi-tūr*), *n.* the act of forfeiting.
for-fend (*-fend'*), *v. t.* to ward off.
forge (*fôrj* or *fōrj*), *v. t.* to fashion (metal) by heating and hammering; impel forward: *v. i.* to be guilty of the crime of forgery.
for-ger (*fōr'jẽr*), *n.* one who commits the crime of forgery.
for-ger-y (*-i*), *n.* the act of counterfeiting the handwriting of another.
for-get (*for-get'*), *v. t.* [*p. t.* forgot, *p. p.* forgotten, *p. pr.* forgetting], to lose the remembrance of.
for-get-a-ble (*'a-bl*), *adj.* liable to be forgotten.
for-get-ful (*'fool*), *adj.* apt to forget; careless.
for-get-me-not (*-mē-not*), *n.* a perennial plant with small bright sky-blue flowers.
for-giv-a-ble (*-giv'a-bl*), *adj.* that may be forgiven.
for-give (*-giv'*), *v. t.* [*p. t.* forgave, *p. p.* forgiven, *p. pr.* forgiving], to pardon; remit, as a sin.
Syn. FORGIVE, pardon, absolve, remit. Individuals *forgive* each other personal offenses; they *pardon* offenses against law and morals: *remission* is the consequence of the crime; it has more *particular* regard to the punishment; it arrests the execution of justice. *Absolution* is pronounced either by the civil judge or the ecclesiastical minister; and it reëstablishes the accused in the rights of innocence. [See *absolve, mercy*.]
Ant. ACCUSE, condemn, convict.
fork (*fôrk*), *n.* an instrument with two or more prongs, *v. t.* to raise, throw, or dig with a fork.
forked (*fôrkt*), *adj.* shaped like a fork.
for-lorn (*for-lôrn'*), *adj.* abandoned; deserted; destitute. [FORSAKEN.]
form (*fôrm*), *n.* the appearance or shape of anything; established practice: *v. t.* to give shape to; create.
Syn. FORM, fashion, mold, shape. As everything respects a *form* when it receives existence, so *to form* conveys the idea of producing. When we wish to represent a thing as *formed* in any distinct or remarkable way, we may speak of it as *fashioned*. God *formed* man out of the dust of the ground; he *fashioned* him after his own image. When we wish to represent a thing as *formed* according to a precise rule, we should say it was *molded*. When we wish to represent a thing so as to distinguish it from others, we talk of *shaping* it. [See *body, make*.]
Ant. CONTENT, meaning, soul, spirit.
form-al (*'al*), *adj.* according to form or established rules.
for-mal-de-hyde (*fôr-mal'de-hīd*), *n.* a gas obtained by the partial oxidation of methyl alcoho'.
for-ma-lin (*fôr'mā-lin*), *n.* a 40 per cent solution of ormaldehyde.
for-mal-i-ty (*-mal'i-ti*), *n.* [*pl.* formalities (*-tiz*)], strict adherence to external or customary forms.
form-al-ly (*fôrm'al-li*), *adv.* in a formal manner.
for-ma-tion (*-mā'shun*), *n.* the act of forming; that which is formed.
form-a-tive (*fôrm'ā-tiv*), *adj.* giving or serving to form; plastic.
for-mer (*fôr'mẽr*), *adj.* preceding in time or place; first mentioned; formerly.
for-mer-ly (*-li*), *adv.* in time past; heretofore.
for-mic (*'mik*), *adj.* pertaining to, or produced by, ants.
for-mid-a-ble (*'mid-a-bl*), *adj.* exciting dread; fearful.
Syn. FORMIDABLE, dreadful, terrible, shocking. The *formidable* acts neither suddenly nor violently; the *dreadful* may act violently, but not suddenly; thus the appearance of an army may be *formidable;* but that of a field of battle is *dreadful*. The *terrible* and *shocking* act both suddenly and violently; but the former acts both on the senses and the imagination, the latter on the moral feelings; thus, the glare of a tiger's eye is *terrible;* the unexpected news of a friend's death is *shocking*.
Ant. SMALL, ridiculous, puny.
Formosa (*fôr-mō'sa*). Portuguese for "beautiful." An island near China belonging to Japan.
for-mu-la (*'mū-la*), *n.* [*pl.* formulas (*-laz*), formulæ (*-lē*)], a prescribed form, rule, or model; a prescription.
for-mu-late (*'mū-lāt*), *v. t.* to put into the form of, or reduce to, a formula.
for-myl (*'mil*), *n.* the hypothetical base of formic
for-sake (*for-sāk'*), *v. t.* [*p. t.* forsook, *p. p.* forsaken, *p. pr.* forsaking], to leave. [ABANDON.]
for-sak-en (*'n*), *p. adj.* deserted; abandoned, forlorn.
Syn. FORSAKEN, forlorn, destitute. To be *forsaken* is to be deprived of the company and assistance of those we have looked to; to be *forlorn* is to be *forsaken* in time of difficulty; to be *destitute* is to be deprived of the first necessaries of life. [See *abandoned*.]
Ant. CHERISHED, favored, protected, supported.
for-sooth (*-sōōth'*), *adv.* verily; in truth.
fort (*fôrt*), *n.* an inclosed fortified place.
forte (*fôrt*), *n.* one's special talent.
forth (*fôrth*), *adv.* onward in time, place or order.
forth-com-ing (*-kum'ing*), *adj.* ready, or about to appear.
forth-with (*-with'*), *adv.* immediately.
for-ti-eth (*fôr'ti-eth*), *adj.* next in order after 39th.
for-ti-fi-ca-tion (*-ti-fi-kā'shun*), *n.* the art or science of fortifying.
for-ti-fy (*'ti-fī*), *v. t.* [*p. t.* and *p. p.* fortified, *p. pr.* fortifying], to strengthen against attack; encourage or confirm. [STRENGTHEN.]
for-ti-tude (*'ti-tūd*), *n.* mental strength to endure suffering with courage. [COURAGE.]
fort-night (*fôrt'nīt*), *n.* 14 days.
for-tress (*fôr'tres*), *n.* a large permanently fortified place.
for-tu-i-tous (*for-tū'i-tus*), *adj.* happening by chance.
for-tu-i-ty (*'i-ti*), *n.* [*pl.* fortuities (*-tiz*)], an accidental occurrence. [ACCIDENT.]
for-tu-nate (*fôr'tū-nāt*), *adj.* happening by good fortune; auspicious. [HAPPY.]
for-tune (*'tūn*), *n.* the good or ill that happens to mankind. [CHANCE.]
Fort Wayne, Ind. Named (1749) in honor of "Mad" Anthony Wayne, a Revolutionary general.
for-ty (*'ti*), *adj.* one more than 39: *n.* sum of 10 and 30.
fo-rum (*fō'rum*), *n.* [*pl.* forums (*'rumz*), fora (*'rà*)], the public place of meeting in ancient Rome.
for-ward (*fôr'wẽrd*), *adv.* onward; in advance: *adj.* prompt.
for-ward-er (*-ẽr*), *n.* one who forwards or promotes.
fos-sil (*fos'il*), *n.* any organic body which by burial in the earth's strata has become petrified.
fos-ter (*'tẽr*), *v. t.* to nourish; nurse; rear up.
Syn. FOSTER, cherish, harbor, indulge. These terms are all employed here in the moral acceptation, to express the idea of giving nourishment to an object; to *foster* in the mind is to keep with care and positive endeavors; to *cherish* in the mind is to hold dear or set a value upon; as when one *cherishes* good sentiments; to *harbor* is to allow room in the mind; as when one *harbors* resentment by permitting it to have a resting place in the heart; to *indulge* in the mind is to give the whole mind to it, to make it the chief source of pleasure. [See *cherish*.]
Ant. ABANDON, desert, afflict, chastise.
fos-ter broth-er (*bruth'ẽr*), a brother by nursing, but not by birth.
fos-ter child (*chīld*), a child nursed or reared by one who is not its parent.
foul (*foul*), *adj.* offensive; dirty; impure: *v. t.* to make foul or dirty.
fou-lard (*fōō-lärd'*), *n.* a light silk.
found, *p. t.* and *p. p.* of find.
found (*found*), *v. t.* to lay the basis of; build; fix firmly; establish.
foun-da-tion (*foun-dā'shun*), *n.* the basis or lowest part of a structure; groundwork.
Syn. FOUNDATION, ground, basis. A report is said to be without any *foundation* which has taken its rise in mere conjecture, or in some arbitrary cause independent of all fact; a man's suspicion is said to be without *ground* which is not supported by the shadow of external evidence; both *foundation* and *basis* are the lowest parts of any structure; but the former lies under ground, the latter stands above; the *foundation* supports some large and artificially erected pile; the *basis* supports a simple pillar.
foun-der (*foun'dẽr*), *n.* one who originates; builder: *v. t.* to sink by filling with water.
found-ling (*found'ling*), *n.* a child found whose parent is unknown.
foun-dry (*foun'drì*), *n.* [*pl.* foundries (*'drìz*)], the place where metal casting is carried on.
fount (*fount*), *n.* a fountain or spring.
foun-tain (*foun'tin*), *n.* a natural or artificial spring of water.
Fountains abbey. A Cistercian monastery of the fourteenth century, near Ripon, England, now

the largest and most picturesque of English ecclesiastical ruins.

foun-tain head (*foun'tin hed*), the spring from which a stream flows.

foun-tain pen (*pen*), a pen having a reservoir of ink in the holder.

four (*fōr*), *adj.* consisting of 1 more than 3; a cardinal numeral.

four-fold (*fōr'fōld*), *n.* quantity four times as much.

four-in-hand (*fōr'-in-hand*), *n.* a coach drawn by four horses.

four-score (*'skōr*), *adj.* eighty.

four-teen (*'tēn*), *adj.* consisting of 4 more than 10: *n.* the sum of 4 and 10.

fourth (*fōrth*), *adj.* next in order after third.

fowl (*foul*), *n.* a gallinaceous bird, especially the domestic cock or hen.

fowl-ing (*'ing*), *n.* the act of shooting wild birds.

fowl-ing piece (*pēs*), a light gun used for ordinary sporting.

fox (*foks*), *n.* a canine mammal with a long bushy tail, belonging to the genus Vulpes.

fox brush (*brush*), the tail of a fox.

foxed (*fokst*), *p. adj.* stained, as timber, or spotted, as prints, books, etc., with a reddish discoloration.

fox-glove (*foks'gluv*), *n.* a plant of the genus Digitalis, the leaves of which are used medicinally.

fox grape (*grāp*), a variety of grape.

fox-hound (*'hound*), *n.* one of a breed of dogs used for fox-hunting.

Fox Islands, Lake Michigan. So named from translation of the Indian name *Annemosine*, "place of the young fox"; *annemose*, "a young fox"; *ink*, "a place."

Fox river, ill. English rendering of its Indian name *Meshdeke Wakpa*, "river of the foxes."

fox squir-rel (*skwĕr-el*), the North American tree squirrel.

fox-tail (*'tāl*), *n.* the name of various species of grass; the tail of a fox.

fox-y (*'i*), *adj.* pertaining to, or resembling, a fox; cunning; crafty.

foy-er (*fwä-yā'*), *n.* the lobby of a theater.

fra-cas (*frā'kas*), *n.* a noisy quarrel.

frac-tion (*frak'shun*), *n.* a part broken off; act of breaking; the state of being broken; a part of a unit, as one-fourth.

frac-tious (*'shus*), *adj.* unruly; cross. [PERVERSE.]

frac-ture (*'tūr*), *n.* a part broken; a break caused by violence; separation: *v. t.* to break or crack.

★**frag-ile** (*fraj'il*, not *fraj'īl*), *adj.* easily broken weak; delicate.

Syn. FRAGILE, frail, brittle. Man, corporeally considered, is a *fragile* creature, his frame is composed of *fragile* materials; mentally considered, he is a *frail* creature, for he is liable to every sort of *frailty; fragile* applies to whatever will break from the effects of time; *brittle* to that which will not bear a temporary violence.

frag-ment (*frag'ment*), *n.* a part broken off from a whole; an imperfect part.

fra-grance (*frā'grans*), *n.* the state or quality of being fragrant.

fra-grant (*'grant*), *adj.* sweet-smelling.

frail (*frāl*), *adj.* fragile; brittle; weak, physically or morally; infirm: *n.* a basket made of rushes. [FRAGILE.]

fram-a-ble (*frām'ä-bl*), *adj.* capable of being framed.

frame (*frām*), *n.* something constructed or composed of parts fitted and joined together; that on which anything is held or stretched; shape; temper; state: *v. t.* to fit (one thing) into another; shape or form; adjust or regulate; invent; adapt. [BODY.]

frame-work (*'wĕrk*), *n.* that which incloses or supports something else.

franc (*frangk*), *n.* a French coin, the unit of monetary value, equal to 19.3 cents.

France (*frans*, French *frāns*). Country of the Franks, or, as the Germans call it, Frankreich; *i. e.*, "kingdom of the Franks." All western nations were styled Franks by the Turks and Orientals, and anything brought to them from the west invariably merited a prenomen descriptive of its origin, as, for example, *frankincense*, by which was meant incense brought from the country of the Franks.

Frances. Female name formed from *Francis*, "free." Danish, *Francisca;* Dutch, *Francisca;* Fr., *Francoise;* Ger., *Francisca;* It., *Francesca;* Lat. *Francesca* or *Francisca;* Sw., *Franciska.*

fran-chise (*fran'chiz*), *n.* the constitutional right of suffrage; a particular privilege or right granted by a sovereign or by a legislative body to an individual, or to a corporation.

Francis (*fran'sis*). From the Latin *Franciscus*, which has been rendered, "one who had visited the Franks"; also, "free." Danish, *Frants*, or *Franciscus;* Dutch, *Franciscus;* Fr., *Francois;* Ger., *Franz;* It., *Francesco;* Port., *Francisco;* Sp., *Francisco;* Sw., *Frans.*

Franconia (*frang-kō'ni-ä*). German province inhabited by the Franks, so called from the *franca*, a kind of javelin which they carried.

fran-gi-bil-i-ty (*fran-ji-bil'i-ti*), *n.* the state or quality of being frangible.

fran-gi-ble (*'ji-bl*), *adj.* easily broken.

frank (*frangk*), *adj.* open or ingenuous; candid; outspoken; unreserved: *n.* a signature that exempts mail-matter from payment of postage: *v. t.* to send or have conveyed free of charge.

Syn. FRANK, candid, ingenuous, free, open, plain. The *frank* man is under no constraint; his thoughts and feelings are both set at ease, and his lips are ever ready to give utterance to the dictates of his heart; the *candid* man has nothing to conceal; he speaks nothing but the truth; the *ingenuous* man throws off all disguise; the *frank, free* and open men all speak without constraint; but the *frank* man is not impertinent like the *free* man, nor indiscreet like the *open* man; the *open* man says all he knows and thinks, from the inconsiderate levity of his temper; the *plain* man speaks *plainly* but truly. [See *candid.*]

Ant. ADROIT, cunning, diplomatic, sharp, shrewd, wily.

Frank. A baptismal name corrupted from *Francis.*

Frankfort, Ky. The county, Franklin, was named in honor of Benjamin Franklin, and when its capital was created, a composite word further commemorating the honor was adopted, *Frank*, diminutive of Franklin; *fort*, meaning "town"; "town of Franklin."

frank-in-cense (*frangk'in-sens*), *n.* a fragrant inflammable resin burnt as incense.

frank-ness (*'nes*), *n.* candor; openness.

fran-tic (*fran'tik*), *adj.* violently mad or distracted; outrageous; transported by passion.

frap-pé (*frä-pā'*), *adj.* chilled with ice.

Frascati (*frās-kä'ti*). A town in the province of Rome, Italy, twelve miles southeast of Rome, celebrated for its villas. There are remains of a Roman amphitheater, and of a small but very perfect Roman theater, in which much of the stage structure survives.

fra-ter-nal (*frä-tĕr'nal*), *adj.* pertaining to, becoming, or like, brothers.

fra-ter-ni-ty (*frä-tĕr'ni-ti*), *n.* [*pl.* fraternities (*-tiz*)], brotherly relationship; a body of men associated together by a common bond of interest; men of the same profession or class.

frat-ri-cide (*frat'ri-sīd*), *n.* the crime of killing a brother; one who kills a brother.

fraud (*frawd*), *n.* deceit; artifice; trick; cheat; humbug. [DECEIT.]

fraud-u-lent (*'ū-lent*), *adj.* characterized by, ounded on, or obtained by, fraud. [FALLACIOUS.]

fraught (*frawt*), *adj.* laden; charged.

fray (*frā*), *n.* a riot; quarrel; a chafe or rub: *v. t.* to chafe or wear away. [FEUD.]

fray-ing (*'ing*), *n.* the act of wearing away by friction; the peeling off of the velvet of a deer's horn.

freak (*frēk*), *n.* sudden or capricious change of mind, or whim; a prank; an abnormal animal or plant: *v. t.* to variegate; spot or streak.

frec-kle (*frek'l*), *n.* a brownish spot in the skin: *v. t.* to mark with freckles: *v. i.* to become freckled.

Frederick (*fred'ĕr-ik*). The same as the Old German name *Friderich, Fridorich, Fridurih.* Junius translates the two latter "rich or powerful in peace." The more probable etymology is from *frid-reich*, "powerful protector." Danish, *Frederik;* Dutch, *Frederik;* Fr., *Frederic;* Ger., *Friedrich;* It., *Frederico* or *Federigo;* Lat., *Fredericus;* Port., *Frederico;* Sp., *Frederico;* Sw., *Frederik.*

Fredericksburg, Va. Name adopted 1727, in honor of Prince Frederick, father of George III.

free (*frē*), *adj.* [*comp.* freer, *superl.* freest], without restraint; at liberty; permitted; generous; open; independent; familiar; not attached or fixed; invested with the franchise, etc. (with *of*): *v. t.* to set at liberty; exempt; clear: *adv.* gratuitously.

Syn. FREE, liberal. To be *free* signifies to act or think at will; to be *liberal* is to act according to the dictates of an enlarged heart and an enlightened mind. [See *frank.*]

Ant. AVARICIOUS, close, parsimonious.

Syn. FREE, exempt. *Free* is applied to everything from which any one may wish to be disengaged; but *exempt* to those burdens which we should share with others. [See *absolve.*]

Ant. LIABLE, subject.

free-boot-er (*'bōōt-ĕr*), *n.* one who roves about for plunder or pillage; buccaneer.

freed-man (*frēd'man*), *n.* [*pl.* freedmen (*'men*)], a slave who has been legally emancipated.

free-dom (*frē'dum*), *n.* the state of being free; liberty; independence; ease in performance; particular privilege.

Syn. FREEDOM, liberty. *Freedom* is personal, and private; *liberty* is public. The *freedom* of the city is the privilege granted by the city to individuals; the *liberties* of the city are the immunities enjoyed by the city.

Ant. CAPTIVITY, bondage, oppression.

free-hold (*'hōld*), *n.* an estate or tenement held by fee simple, fee tail, or for life.

free lance (*lans*), one of a class of mediæval soldiers who sold their services to fight; one who acts, speaks, or writes irrespective of any party.

free-man (*'man*), *n.* [*pl.* freemen (*'men*)], one in the enjoyment of liberty; one possessed of certain franchises or municipal privileges.

Free-ma-son (*'mā-sn*), *n.* a member of a secret society, consisting formerly of skilled craftsmen, now a social association professing principles of brotherly love, charity, and mutual aid.

free port (*pōrt*), a port where no duties are levied on merchandise.

Free-soil (*'soil*), *adj.* opposed to the extension of slavery: said of the party formed at Boston, United States, 1848, to restrict slavery.

free-think-er (*'thingk-ĕr*), *n.* one who forms his opinions independently of others; one who rejects revelation in religion.

free trade (*frē trād*), trade with other countries unrestricted by tariffs or customs duties.

free-will (*'wil*), *adj.* voluntary; holding the theological doctrine that man is free to exercise his will for good or evil.

freeze (*frēz*), *v. t.* [*p. t.* froze, *p. p.* frozen, *p. pr.* freezing], to congeal or harden into ice; kill by cold: *v. i.* to be congealed with cold: be at or below the temperatur ɛo ɪ32 degrees.

freez-ing point (*ing point*), 32° above 0° in the Fahrenheit scale (0° centigrade), at which water freezes.

freight (*frāt*), *n.* cargo of a ship; goods carried by rail; the sum paid or charges for the conveyance of goods: *adj.* used for conveying goods: *v. t.* to load with goods for conveyance.

freight car (*kär*), a railway car for transporting freight.

French (*french*), *adj.* pertaining to France, its inhabitants, or language.

French Broad. River in North Carolina, so named because the country west of the Blue Ridge was held by the French, according to some authorities. Others hold that the river was named by a party of hunters for their captain, whose name was French. The latter part of the name is used descriptively.

French leave (*-lēv*), departure without ceremony or notice.

fren-zy (*fren'zi*) *n.*, [*pl.* frenzies (*'ziz*)], violent agitation; temporary madness; fury: *v. t.* [*p. t.* and *p. p.* frenzied, *p. pr.* frenzying], to throw into a frenzy; render mad. [MADNESS.]

fre-quen-cy (*frē'kwen-si*), *n.* the repeated occurrence of a thing at short intervals.

fre-quent (*'kwent*), *adj.* recurring often: *v. t.* (*frē-kwent'*), to resort to, or visit often.

Syn. FREQUENT, resort to, haunt. *Frequent* is more commonly used of an individual who goes often to a place; *resort* and *haunt* of a number of individuals; a man may *frequent* a theater, a club, or any other social meeting, innocent or otherwise; people from different quarters may *resort* to a fair, a church, or any other place where they wish to meet for a common purpose; but those who *haunt* any place go to it in privacy for some bad purpose. [See *commonly.*]

Ant. AVOID, desert, forsake.

fres-co (*fres'kō*), *n.* [*pl.* frescos, frescoes (*'kōz*)], a method of wall painting in water colors on fresh plaster: *v. t.* to decorate or paint in fresco.

fresh (*fresh*), *adj.* new; recent; unfaded; in good condition; not forgotten; strong and active; lively; pure and cool; not salt; inexperienced: *n.* a spring freshet. [NEW.]

fresh-en (*'n*), *v. t.* to make fresh; render less salt; revive: *v. i.* to become vigorous; grow fresh; lose saltness.

fresh-et (*'et*), *n.* a flood caused by melting snow or heavy rain.

fresh-man (*'man*), *n.* [*pl.* freshmen (*'men*)], a college student in his first year.

fret (*fret*), *v. t.* [*p. t.* and *p. p.* fretted, *p. pr.* fretting], to wear away by friction; corrode; vex; make rough on the surface; ornament with raised or interlaced work. [ANXIETY.]

fret-work (*'wĕrk*), *n.* carved, raised, or open ornamental work.

fri-a-bil-i-ty (*fri-ä-bil'i-ti*), *n.* the state or quality of being friable. [Also *friableness.*]

fri-a-ble (*'ä-bl*), *adj.* readily crumbled, or reduced to powder.

fri-ar (*'ĕr*), *n.* one of a mendicant order of monks in the Roman Catholic church.

★**fric-as-see** (*frik-ä-sē'*, not *frig-ä-zē'*), *n.* a dish of chicken, rabbit, or other meat cut into small pieces, stewed and fried with gravy or sauce: *v. t.* to make into, or dress like, a fricassee.

fric-tion (*'shun*), *n.* the act of rubbing; resistance to the motion of a body, caused by contact with the surface upon which it moves; irritation or disagreement.

Fri-day (*fri'dā*), *n.* the sixth day of the week: named from the Scandinavian deity Frigga, the goddess of love.

friend (*frend*), *n.* one attached to another by affection, regard, or esteem; an intimate acquaintance; an ally; a term of salutation.

Friend, *n.* a member of the society of Friends.

friend-li-ness (*'li-nes*), *n.* the state or quality of being friendly.

friend-ly (*'li*), *adj.* pertaining to a friend; having the characteristics of a friend; amicable; affable; convenient: *adv.* amicably.

Friendly Islands. In the South Pacific. So named because of the friendly disposition of the natives.

friend-ship (*'ship*), *n.* intimacy; united with affection or esteem; mutual attachment; good will. [ACQUAINTANCE, LOVE.]

frieze (*frēz*), *n.* the middle part of the entablature of a column between the architrave and cornice, usually ornamented with sculpture, etc.; a coarse woolen cloth.

frig-ate (*frig'āt*), *n.* formerly a warship with an upper flush deck, carrying from 24 to 50 guns.

fright (*frīt*), *n.* a sudden and violent fear; alarm; a person whose dress or appearance is ridiculous.

fright-en (*'n*), *v. t.* to terrify.

Syn. FRIGHTEN, intimidate. The danger

that is near or before the eyes *frightens;* that which is seen at a distance *intimidates.*
Ant. EMBOLDEN, encourage.

fright-ful (*frīt'fool*), *adj.* terrible; dreadful; alarming; shocking; grotesque. [FEARFUL.]

frig-id (*frij'id*), *adj.* without warmth; wintery; cold in temperament; stiff; formal; dull.

frill (*fril*), *n.* a plaited or crimped edging to a garment; ruffle: *pl.* affectation of manner; ornamentation of dress, etc.: *v. i.* to become ruffled: *v. t.* to make into a frill.

frill-ing (*'ing*), *n.* gathered trimming or edging for garments.

fringe (*frinj*), *n.* an ornamental border of hanging cords, etc.; any border or edging resembling a fringe: *v. t.* to border with a fringe.

frip-per-y (*frip'ĕr-i*), *n.* old clothes or furniture; the place where old clothes are sold: *adj.* trumpery; contemptible.

frisk (*frisk*), *v. i.* to gambol or dance in frolic: *n.* a gambol, dance, or frolic.

frisk-i-ness (*'i-nes*), *n.* the state or quality of being frisky.

frisk-y (*'i*), *adj.* lively in action; sprightly; gay.

frith, *n.* a bay; a firth.

frit-ter (*frit'ĕr*), *v. t.* to waste by degrees: *n.* a small piece of meat cut for frying; a small fried cake with meat or fruit in it.

fri-vol-i-ty (*fri-vol'i-ti*), *n.* [*pl.* frivolities (*-tiz*)], levity; a trifling act, thought, or action.

friv-o-lous (*friv'ō-lus*), *adj.* trifling; trivial; petty; silly; incline to levity.

frizz (*friz*), *v. t.* to curl or crisp; form into little hard burrs: said of the nap of cloth: *n.* that which is frizzed, as hair.

friz-zle (*friz'l*), *v. t.* to curl on hot coals; curl or frizz: *n.* a crisped lock of hair.

fro (*frō*), *adv.* away from; backward.

frock (*frok*), *n.* a loose upper garment worn by children and women and laborers; dress; a monk's habit; an undress regimental coat.

frock coat (*kōt*), a close-fitting straight-bodied coat with wide skirts.

frog (*frog*), *n.* a small tailless amphibious animal of the genus Rana; a tender horny substance growing in the middle of the sole of a horse's foot; a spindle-shaped button or toggle used for fastening cloaks, mantles, etc.; a section of a railway line where the rails diverge.

frol-ic (*frol'ik*), *n.* a scene of merry-making or gayety; wild prank: *adj.* sportive; merry or gay: *v. i.* to indulge in tricks of mirth; play wild pranks.

frol-ic-some (*-sum*), *adj.* full of frolic.

from (*from*), *prep.* out of; away since; noting source or beginning, distance, logical or physical sequences.

frond (*frond*), *n.* the union of a leaf and a branch; the leaf of a fern, palm, or seaweed.

front (*frunt*), *n.* the forehead; the forepart or foremost of anything; van; impudence or boldness: *adj.* situated at the front: *v. t.* to stand, or be situated, opposite to: *v. i.* to have the front turned in a particular direction. [area.

front-age (*'āj*), *n.* the front part of a building or its

fron-tal (*fron'tal*), *adj.* pertaining to the front or forehead: *n.* something worn on the forehead; an ecclesiastical hanging in front of an altar.

★**fron-tier** (*fron'tēr*, not *frun'tēr*), *n.* the boundary or limits of a country: *adj.* pertaining to, or situated near, the boundary of a country; contiguous.

fron-tis-piece (*fron'tis-pēs*), *n.* an illustration facing the front page of a book.

frost (*frôst*), *n.* minute frozen particles of moisture; hoarfrost; an enterprise ending in failure: *v. t.* to cover with, or as with, hoarfrost; injure by frost.

frost-ed (*'ed*), *p. adj.* covered with, resembling, or injured by, frost.

frost-ing (*'ing*), *n.* a preparation of fine sugar and white of egg for covering cakes; rough powdered glass used in decorative work.

frost-y (*'i*), *adj.* [*comp.* frostier, *superl.* frostiest], producing, or accompanied with, frost; frozen; hoary; cold or distant in manner.

froth (*frôth*), *n.* the mass of bubbles formed on the surface of a liquid by agitation, or fermentation; foam; superficial knowledge.

froth-y (*'i*), *adj.* [*comp.* frothier, *superl.* frothiest], full of, or composed of, froth; empty; frivolous; unsubstantial.

frow (*frou*), *n.* a German or Dutch woman; slattern; (*frō*), potato-flour; a tool used for cleaving shingles, staves, etc.

fro-ward (*frō'wĕrd*), *adj.* perverse; wayward. [PERVERSE.]

frown (*froun*), *n.* a contraction of the brows: *v. i.* to contract the brows; scowl; lower.

frow-zy (*frou'zi*), *adj.* musty; untidy.

fro-zen (*frō'zn*), *p. adj.* congealed; icy; wanting sympathy.

fruc-ti-fy (*fruk'ti-fī*), *v. t.* [*p. t.* and *p. p.* fructified, *p. pr.* fructifying], to make productive; fertilize: *v. i.* to bear fruit.

fru-gal (*froo'gal*), *adj.* thrifty; economical.

fru-gal-i-ty (*-gal'i-ti*), *n.* thrift; economy.

Syn. FRUGALITY, economy, miserliness, parsimoniousness, parsimony, providence, prudence, saving, scrimping, sparing, thrift. *Frugality* is a withholding of expenditure, or *sparing* of supplies or provision; *economy* is a wise and careful management of the means at one's disposal; *parsimony* is excessive *saving* for the sake of *saving; miserliness* is the denial of ordinary comforts for the sake of hoarding money; *prudence* and *providence* look far ahead, and sacrifice the present to the future; *thrift* seeks not merely to save, but to earn.

fruit (*frōōt*), *n.* the product of a tree or plant; product; result or profit; offspring: *v. i.* to produce fruit.

fruit-er-er (*'ĕr-ĕr*), *n.* one who deals in fruit.

fruit-ful (*'fool*), *adj.* yielding fruit; prolific.

fru-i-tion (*froo-ish'un*), *n.* the bearing of fruit; realization.

fruit-y (*frōōt'i*), *adj.* full-flavored; rich.

frus-trate (*frus'trāt*), *v. t.* to defeat; thwart; nullify: *adj.* vain; useless.

frus-tum (*'tum*), *n.* [*pl.* frusta (*'tà*)], that part of a solid next the base, as of a cone, pyramid, etc., which is left after cutting off the top.

fry (*frī*), *v. t.* [*p. t.* and *p. p.* fried, *p. pr.* frying], to cook with fat in a pan: *v. i.* to be cooked with fat in a pan; be subjected to intense heat: *n.* a dish of things fried; young fish.

fuch-si-a (*fū'shi-ȧ*), *n.* a garden plant with handsome pendulous elongated flowers.

fud-dle (*fud'l*), *v. t.* to stupefy with drink; intoxicate: *v. i.* to become intoxicated.

fu-el (*fū'el*), *n.* combustible material for supplying a fire; anything that serves to inflame or sustain passion or excitement.

fu-gi-tive (*fū'ji-tiv*), *adj.* unstable; fleeting; not permanent; fleeing from danger, pursuit, or duty: *n.* one who flees; a runaway.

fugue (*fūg*), *n.* a musical composition in which the parts follow each other with repetitions at certain intervals.

Fujiyama (*fōō'jē-yȧ'mȧ*). An extinct volcano and the highest mountain of Japan, situated seventy miles west-southwest of Tokio, and meaning "great mountain." There has been no eruption since 1707. It is a resort of pilgrims, and figures largely in Japanese art and legend.

ful-crum (*ful'krum*), *n.* [*pl.* fulcrums (*'krumz*), fulcra (*'krȧ*)], that part of a lever on which it rests.

ful-fill (*fool-fil'*), *v. t.* to complete or accomplish; execute; perform or carry out, as that which is promised, foretold, or anticipated. [EXECUTE.]

ful-fill-ment (*'ment*), *n.* accomplishment; completion; execution.

full (*fool*), *adj.* filled; having no empty space; well supplied; stored; saturated; satiated; copious; rounded out; clear; distinct; sonorous: *n.* the highest state, extent, or measure: *v. i.* and *v. t.* to pucker; gather: *v. t.* to scour and thicken: *adv.* without diminution or qualification; directly; quiet. [*Full* is used in composition to express *full extent* or *degree,* its meaning being generally self-evident, as *full-armed, full-fledged,* etc.]

full back (*bak*), in football, the player farthest from the goal of the opposing side.

full dress (*dres*), dress required for formal or ceremonial occasions.

full-er (*'ĕr*), *n.* one who fulls cloth.

ful-mi-nate (*ful'mi-nāt*), *v. t.* to cause to explode; send out or utter: *v. i.* to thunder; make a loud sudden noise; detonate: *n.* a detonating compound of fulminic acid.

ful-some (*ful'sum*), *adj.* offensive; gross.

fum-ble (*fum'bl*), *v. i.* to grope or feel about, handle or attempt something in an awkward manner: *v. t.* to manage awkwardly.

fume (*fūm*), *n.* vapor or exhalation: *v. i.* to emit smoke; to be in a passion: *v. t.* fill with gas or vapor; exhale.

fu-mi-gate (*fū'mi-gāt*), *v. t.* to smoke; perfume; disinfect by the action of smoke or vapor.

fu-mi-to-ry (*'mi-tō-ri*), *n.* a plant, the leaves of which were formerly used as a specific for skin diseases.

fun (*fun*), *n.* mirth; drollery; sport: *v. i.* [*p. t.* and *p. p.* funned, *p. pr.* funning], to indulge in fun.

func-tion (*fungk'shun*), *n.* the performance of any duty, office or business; power; the office of any organ; public or official ceremony: *v. i.* to perform a function; act.

func-tion-a-ry (*-ā-ri*), *n.* [*pl.* functionaries (*-riz*)], one who holds an office, or discharges some trust; an official.

fund (*fund*), *n.* established stock or capital; money set apart for carrying out some object; a permanent debt on which interest is paid; a stock in reserve: *pl.* money: *v. t.* to place in, or convert into, a fund.

fun-da-men-tal (*fun-dȧ-men'tal*), *adj.* pertaining to a foundation or basis; essential; primary: *n.* a principle; basis.

fund-ing (*fund'ing*), *n.* the act or process of converting money lent into a permanent fund bearing a fixed rate of interest; investment in stocks or funds.

fu-ner-al (*fū'nĕr-al*), *n.* the ceremony of burying a dead body and the procession of mourners accompanying it: *adj.* pertaining to, befitting, or used at, a funeral.

Syn. FUNERAL, obsequies. We speak of the *funeral* as the last sad office which we perform for a friend; it is accompanied by nothing but mourning and sorrow; we speak of *obsequies* as the greatest tribute of respect which can be paid to the person of one who was high in station or public esteem.

fu-ne-re-al (*-nē'rē-al*), *adj.* pertaining to, or suitable for, a funeral; mournful; sad.

★**fun-gus** (*fung'gus*), *n.* [*pl.* funguses (*-ez*), fungi (*fun'jī*)], a cryptogamous plant not containing chlorophyll, as a mushroom, toadstool, etc.; a spongy excrescence.

fu-nic-u-lus (*fū-nik'ū-lus*), *n.* [*pl.* funiculi (*-lī*)], a small cord, ligature, or fiber; a little stalk or cord like appendage uniting a seed with the placenta.

funk (*fungk*), *n.* cowardice; ill temper [*Scotch*]; fright: *v. i.* to be in a state of cowardly fear.

fun-nel (*fun'el*), *n.* a wide-mouthed conical vessel terminating in a spout for pouring liquids; the chimney of a steamship or steam engine.

fun-ny (*'i*), *adj.* [*comp.* funnier, *superl.* funniest], comical; droll; provoking laughter; ludicrous: *n.* a long narrow clinker-built pleasure boat rowed with sculls.

fun-ny bone (*bōn*), the lower part of the elbow over which the nerve of the ulna passes.

fur (*fûr*), *n.* the soft hair of certain animals, growing thickly upon the skin: *pl.* the dressed skins of fur-bearing animals, used for apparel or ornament: *adj.* consisting, lined, or trimmed with fur: *v. t.* [*p. t.* and *p. p* furred, *p. pr.* furring], to cover, line, or trim with fur.

fur-be-low (*'bē-lō*), *n.* an ornament of feminine attire.

fur-bish (*'bish*), *v. t.* to make bright by rubbing, polishing, or burnishing; renovate.

fu-ri-ous (*fū'ri-us*), *adj.* full of fury; frenzied; mad; tempestuous. [VIOLENT.]

furl (*fûrl*), *v. t.* to roll up and secure to something, as a sail, flag, etc.

fur-long (*fûr'lông*), *n.* 1-8th of a mile.

fur-lough (*'lō*), *n.* leave of absence: *v. t.* to grant leave of absence to.

fur-nace (*'nās*), *n.* a chamber or apparatus for producing a violent heat.

Furness (*fûr'nes*) **abbey.** The extensive ruins of Furness abbey are among the most picturesque of English mediæval remains. A large part of the fine church survives almost complete except the vaulting, and there is a beautiful early English chapter-house. The entrance to the ivy-draped cloisters is by three superb, deeply recessed Norman arches.

fur-nish (*'nish*), *v. t.* to supply with what is requisite; fit out; equip. [PROVIDE.]

fur-ni-ture (*'ni-tūr*), *n.* the necessary equipment of a house, ship, or a trade; outfit.

fu-ro-re (*fōō-rō'rā*), *n.* a great outburst of excitement.

fur-ri-er (*fûr'i-ĕr*), *n.* one who prepares or sells furs; fur dresser.

fur-row (*fûr'ō*), *n.* a trench made in the ground by a plow; a groove: *v. t.* to plow; make grooves in.

fur-ry (*fûr'i*), *adj.* covered with, or consisting of, fur.

fur-ther (*fûr'thĕr*), *adj.* more distant; additional: *adv.* to a greater distance or degree; moreover; also: *v. t.* to promote; help forward.

fur-ther-ance (*-ans*), *n.* advancement.

fur-ther-more (*-mōr*), *adv.* moreover; besides.

fur-ther-most (*-mōst*), *adj.* most remote.

fur-thest (*'thest*), *adj.* most distant in time or degree: *adv.* at or to the greatest distance.

fur-tive (*fûr'tiv*), *adj.* sly; secret; stealthy.

fu-ry (*fū'ri*), *n.* [*pl.* furies (*'riz*)], violent rage; madness. [MADNESS, ANGER.]

furze (*fûrz*), *n.* a hardy spiny shrub, belonging to the bean family.

fuse (*fūz*), *v. t.* to liquefy by heat; melt: *v. i.* to become melted by heat; blend: *n.* a small tube filled with an inflammable material, or a cord, used for exploding gunpowder, etc.

fu-see (*fū-zē'*), *n.* a kind of match, used for igniting tobacco.

fu-sel oil (*'zel oil*), an oily poisonous product produced in rectifying spirits.

fus-i-ble (*fūz'i-bl*), *adj.* capable of being fused.

fu-sil-eer (*fū-zil-ēr'*), *n.* the name of several British line regiments. [Also *fusilier.*]

fu-sil-lade (*-zil-ād'*), *n.* a simultaneous discharge of firearms.

fu-sion (*'zhun*), *n.* the act or process of melting by heat; the state of being fused; union by melting.

fuss (*fus*), *n.* unnecessary activity; disorderly confusion: *v. i.* to worry.

fuss-y (*'i*), *adj.* making a fuss.

fus-tian (*'chan*), *n.* a kind of coarse twilled cotton cloth: *adj.* made of fustian.

fus-ti-ness (*'ti-nes*), *n.* the state or quality of being fusty.

fu-tile (*fū'til*), *adj.* vain; useless.

fu-til-i-ty (*-til'i-ti*), *n.* the quality of being futile.

fu-ture (*'tūr*), *adj.* that will be hereafter: *n.* time yet to come; a tense in grammar.

fu-tu-ri-ty (*-tū'ri-ti*), *n.* [*pl.* futurities (*-tiz*)], time to come; future events.

fuzz (*fuz*), *n.* fine minute particles of down.

fuzz-y (*'i*), *adj.* covered with, or like, fuzz.

G

gab (*gab*), *n.* idle chatter: *v. i.* [*p. t.* and *p. p.* gabbed, *p. pr.* gabbing], to chatter.

gab-ble (*gab'l*), *v. t.* to utter rapidly without sense: *v. i.* to chatter: *n.* incoherent talk.

ga-ble (*gā'bl*), *n.* the triangular end of a building.

Gabriel (*gā'bri-el*). From the Hebrew, *Gabriyel,* "man of God," "strength of God," or, according to some, the "hero of God." Arabic, *Jabreel* or *Jabril;* Fr., *Gabriel;* Ger., *Gabriel;* It., *Gabriel;* Lat., *Gabriel;* Sw., *Gabriel.*

gad (*gad*), *v. i.* [*p. t.* and *p. p.* gadded, *p. pr.* gadding], to roam about: *n.* the act of roaming about without an object; an iron tool: a gadfly.

gad-fly (*gad'flī*), *n.* [*pl.* gadflies (*'flīz*)], a fly that stings cattle.

Gael-ic (*gāl'ĭk*), *adj.* pertaining to the Celtic inhabitants of the Scottish highlands, or to their language: *n.* the language of the Gaels. Also *Gadhelic, Galic.*

gaff (*gaf*), *n.* a large hook for landing salmon, etc.; a boom of a fore-and-aft sail: *v. t.* to seize or land with a gaff.

gag (*gag*), *n.* something placed in the mouth to hinder speech: *v. t.* [*p. t.* and *p. p.* gagged, *p. pr.* gagging], to stop the mouth with, or as with, a gag.

gage, gauge (*gāj*), *n.* a standard of measure; a measuring rod; the distance between the rails of a railway line: *v. t.* to ascertain the capacity or contents of; estimat .

gai-e-ty (*gā'ē-tĭ*), *n.* [*pl.* gaieties (*-tĭz*)], the state or quality of being gay; pleasure.

gai-ly (*gā'lĭ*), *adv.* merrily; finely.

gain (*gān*), *n.* advantage; profit; *v. t.* to obtain, as profit or advantage; earn; arrive at: *v. i.* to improve or make progress; increase.

gain-say (*'sā*), *v. t.* [*p. t.* and *p. p.* gainsaid, *p. pr.* gainsaying], to contradict; oppose.

gait (*gāt*), *n.* manner of walking. [CARRIAGE.]

gai-ter (*gā'tĕr*), *n.* a covering of cloth for the ankle; a shoe with a cloth top.

ga-la (*gā'lă*), *n.* a festive show; pomp.

Gal-ax-y (*gal'ăks-ĭ*), *n.* the Milky Way.

gal-ax-y, *n.* an assemblage of splendid persons or things.

gale (*gāl*), *n.* a strong wind. [BREEZE.]

ga-le-ate (*gā'lē-āt*), *adj.* wearing, covered with, or shaped like, a helmet.

ga-le-na (*gă-lē'nă*), *n.* sulphide of lead.

Galena, Ill. Name derived from its mines of lead. Latin, *galena*, "lead ore."

Galilee (*gal'ĭ-lē*). In the Roman period, the northernmost division of Palestine. It now belongs to Turkey. The name means the "circuit" or "district of the Gentiles," so called by the Hebrews because largely inhabited by Sidonians.

gal-i-pot (*'ĭ-pot*), *n.* a white resinous juice which exudes from pine trees.

gall (*gawl*), *n.* the bile; anything very bitter; rancor; the gall bladder; gall-nut; a wound caused by friction: *v. t.* to break the skin off by friction; vex; harass: *v. i.* to fret; be vexed, etc.

gal-lant (*gal'ant*), *adj.* brave; chivalrous: *n.* a person of sprightly and gay manners; a beau. [BRAVE.]

gal-lant (*gal-ant'*), *adj.* showing courtesy to women. *n.* a man who is attentive to women (used either in a good or bad sense).

gal-lant-ry (*'ant-rĭ*), *n.* [*pl.* gallantries (*-rĭz*)], bravery; heroic courage; polite and deferential attention to women.

gal-la-tin (*'ă-tĭn*), *n.* coal-tar oil used for preserving timber.

gal-le-on (*'ē-on*), *n.* a large Spanish three-decked vessel.

★**gal-ler-y** (*gal'ĕr-ĭ*, not *gal'rĭ*), *n.* [*pl.* galleries (*-ĭz*)], corridor, the upper seats of a theater, church, etc.; a building, or room, used for the exhibition of works of art, etc.

gal-ley (*'lĭ*), *n.* [*pl.* galleys (*'lĭz*)], a one-decked vessel propelled by oars, and sometimes with sails, formerly rowed by slaves or convicts; the cookhouse of a ship; a frame for holding composed type.

Gal-lic (*'ĭk*), *adj.* pertaining to ancient Gaul, or modern France.

Gal-li-can (*'ĭ-kan*), *adj.* pertaining to Gaul, or France, or the Roman Catholic church in France.

Gal-li-cism (*'ĭ-sĭzm*), *n.* a French idiom.

gall-ing (*gawl'ĭng*), *p. adj.* chafing; irritating.

gal-li-vant (*gal'ĭ-vant*), *v. i.* to flirt; idle or gad about with women.

gall-nut (*gawl'nut*), *n.* a round excrescence produced on the oak by the puncturing of the leaf-buds by the gall beetle. Contains tannin, and is used in the manufacture of ink, dyeing, etc.

gal-lon (*gal'un*), *n.* a liquid measure equal to 4 quarts; a dry measure equal to 1-8th of a bushel.

gal-lop (*'up*), *n.* the rapid forward springing movement of a horse; the act of riding at a gallop: *v. i.* ride a horse at a gallop; hasten.

gal-lows (*'ōz*), *n.* a wooden structure used for hanging criminals..

gall-stone (*gawl'stōn*), *n.* a concretion formed in the gall bladder or biliary duct.

ga-lore (*gă-lōr'*), *adv.* in great plenty.

ga-losh (*gă-losh'*), *n.* an overshoe of india rubber. [Also *goloshe.*]

gal-van-ic (*gal-van'ĭk*), *adj.* pertaining to galvanism; voltaic; spasmodic.

gal-va-nism (*'vă-nĭzm*), *n.* that branch of electric science which treats of currents arising from the chemical action of certain bodies placed in contact, or of an acid on a metal.

gal-va-nize (*-nīz*), *v. t.* to affect with galvanism; to imbue with fictitious animation; to electrotype.

gal-va-nom-e-ter (*-vă-nom'ē-tĕr*), *n.* an instrument for measuring the presence, extent, and direction of an electric current.

Galveston (*gal'ves-tun*). County and city in Texas, named for Don Jose Galvez, Spanish viceroy of Texas, who, in 1779, established a colony on this island, and, in 1797, was proclaimed king by the people of Mexico.

Gamaliel (*gă-mā'lĭ-el*). From the Hebrew, *Gamliyel*, "the gift, or benefit of God."

gam-bier (*gam'bēr*), *n.* a vegetable extract used medicinally and for tanning and dyeing.

Gambier (*gam'bēr*). Village in Knox county, Ohio, named for Lord James Gambier, a British admiral, who was a benefactor of Kenyon College, located at this place.

gam-bit (*'bĭt*), *n.* an opening play in chess.

gam-ble (*'bl*), *v. i.* play for money; risk money: *v. t.* to squander in gaming (with *away*).

gam-bler (*'blĕr*), *n.* one who gambles.

gam-bol (*'bol*), *n.* a dancing or skipping about for joy or sport; frolic: *v. i.* [*p. t.* and *p. p.* gamboled, *p. pr.* gamboling], to skip about sportively; frolic.

gam-brel (*'brel*), *n.* the hock of a horse.

gam-brel roof (*rōōf*), a curved roof.

game (*gām*), *n.* a sport or diversion; fun; frolic; a single match at play; any object of pursuit: *pl.* athletic contests: *adj.* pertaining to game; ready; plucky: *v. i.* to play; play for a stake or prize.

game-some (*'sum*), *adj.* sportive. [PLAYFUL.]

gam-in (*gam'ĭn*), *n.* street child; street Arab.

gam-ing (*gām'ĭng*), *n.* the act of playing games for stakes; gambling.

★**gam-ut** (*gam'ut*, not *gā'mut*), *n.* entire range or extent.

gan-der (*gan'dĕr*), *n.* a male goose.

gang (*gang*), *n.* a number of persons associated together for a particular purpose; an association of political leaders. [*Colloquial.*]

gang-board (*'bōrd*), *n.* a plank with pieces of wood fastened on it for going on board a vessel.

Ganges (*gan'jēz*). The Greek transformation of the name of the great Indian river. Handed on to the Romans and then to the Portuguese, it has been generally adopted throughout Europe as the equivalent of the Indian name *Ganga*, which signifies a "stream" or "flowing water."

gan-gli-on (*gang'glĭ-on*), *n.* [*pl.* ganglia (*-ă*), ganglions (*-onz*)], an enlargement in the course of a nerve; an encysted tumor on a tendon.

gan-gli-on-ic (*-glĭ-on'ĭk*), *adj.* pertaining to a ganglion.

gan-grene (*'grēn*), *n.* the first state of mortification: *v. t.* to mortify: *v. i.* to become mortified.

gang-way (*gang'wā*), *n.* a narrow platform of horizontal planks used as a temporary passageway, or to enter a ship; a passage; a passageway; the waist of a vessel; the main level in a mine.

gaol. Same as *jail.*

gap (*gap*), *n.* an opening; cleft; breach: *v. t.* to make a gap in. [BREACH.]

gape (*gāp*), *v. i.* to open the mouth wide, as from drowsiness, wonder, etc.; yawn; open as a fissure or chasm: *n.* the act of gaping; yawn.

Syn. GAPE, stare, gaze. *Gape* and *stare* are taken in a bad sense; the former indicating the astonishment of gross ignorance; the latter not only ignorance but impertinence; *gaze* is taken always in a good sense, as indicating a laudable feeling, of astonishment, pleasure, or curiosity.

★**gar-age** (*gar-ăj'*), *n.* a place in which automobiles are kept.

garb (*gārb*), *n.* a dress; external form: *v. t.* to clothe.

gar-bage (*'bāj*) *n.* offal; refuse.

gar-ble (*gār'bl*), *v. t.* to cleanse by sifting; select such parts of as are wanted or may serve some particular purpose.

gar-den (*'dn*), *n.* a piece of ground set apart for the cultivation of flowers, fruit, vegetables, etc.: *v. t.* to cultivate as a garden: *v. i.* to lay out and cultivate a garden.

gar-den-ing (*'dn-ĭng*), *n.* horticulture.

Garden of the Gods. Locality near Pike's Peak, Colorado. Lewis N. Tappan and three others went from Denver to select a site for a town. They stood upon a rocky prominence and exclaimed, "A fit garden for the gods," hence the name.

gar-fish (*gār'fish*), *n.* a marine fish with a long body and spearlike snout.

gar-gle (*'gl*), *n.* a liquid for washing the throat and mouth: *v. i.* to wash the throat and mouth.

gar-goyle (*'goil*), *n.* in Gothic architecture, a projecting stone waterspout, often grotesquely shaped.

gar-ish (*gār'ĭsh*), *adj.* gaudy; dazzling.

gar-land (*gār'lănd*), *n.* a chaplet or wreath made of flowers, etc.: *v. t.* to deck or adorn with a garland.

gar-lic (*'lĭk*), *n.* a bulbous rooted plant of the lily family, with a strong pungent taste and unpleasant smell.

gar-ment (*'ment*), *n.* any article of clothing: *pl.* clothing collectively.

gar-ner (*'nĕr*), *n.* a granary: *v. t.* to store for preservation in, or as in, a granary; gather up.

gar-net (*'net*), *n.* a precious stone.

gar-nish (*'nish*), *v. t.* to adorn; embellish (a dish): *n.* an ornament or decoration; something laid around a dish as an embellishment.

gar-nish-ee (*-ē'*), *n.* the person in whose hands the property of another is attached pending the satisfaction of the claims of a third party.

gar-nish-ment (*'nish-ment*), *n.* a warning or summons not to pay money, etc., to a defendant, but to appear in court.

gar-ni-ture (*'nĭ-tūr*), *n.* embellishment.

gar-ret (*gar'et*), *n.* the uppermost room of a house.

gar-ri-son (*'ĭ-sn*), *n.* a body of troops stationed in a fort; a fortified place: *v. t.* to furnish with troops.

gar-rote (*-rōt'*), *n.* an instrument for strangling a criminal (used in Spain): *v. t.* to execute with a garrote or by strangling.

★**gar-ru-li-ty** (*-rōō'lĭ-tĭ*), *n.* incessant and inconsequent loquacity.

gar-ru-lous (*gar'roo-lus*), *adj.* characterized by garrulity; verbose.

gar-ter (*gār'tĕr*), *n.* an elastic band, etc., by which a stocking is held up on the leg: *v. t.* to bind or fasten with a garter.

gar-ter fish (*fish*), a long thin-bodied fish.

gar-ter snake (*snāk*), an innocuous yellow striped snake, common in America.

gas (*gas*), *n.* [*pl.* gases (*'ez*)], matter in its most rarefied state: opposed to fluid, and solid; empty talk: *v. t.* [*p. t.* and *p. p.* gassed, *p. pr.* gassing], to impose upon by empty talk: *v. i.* to boast or indulge in empty talk.

gas-con-ade (*-kon-ād'*), *n.* boastful or blustering talk: *v. t.* to bluster; boast.

Gasconade (*gas-kō-nād'*) **river, Mo.** Name adopted by settlers as a memento of their Gasconade of France. The word translated means "a boaster."

gas-e-lier (*'ē-lēr*), *n.* a gas-burning chandelier.

gas-e-ous (*'ē-us*), *adj.* having the nature or form of gas.

gash (*gash*), *n.* a deep or gaping wound: *v. t.* to cut deep.

gas-i-fy (*gas'ĭ-fī*), *v. t.* [*p. t.* and *p. p.* gasified, *p. pr.* gasifying], to convert into gas.

gas-o-gene (*'ō-jēn*), *n.* an apparatus for making aërated beverages.

gas-o-line (*'ō-lēn*), *n.* a volatile inflammable colorless product of petroleum, used for heating purposes, etc.

gas-om-e-ter (*-om'ē-tĕr*), *n.* a circular hollow reservoir for storing or measuring gases.

gasp (*gasp*), *n.* a convulsed painful effort to catch the breath: *v. i.* to catch the breath: *v. t.* to breathe out in gasps (with *away*).

gasp-ing (*'ĭng*), *n.* convulsive or difficult breathing.

gas-sing (*gas'ĭng*), *n.* pretentious talk.

gastero, a *prefix*, meaning *the stomach*: found in various compound scientific words, as *gasteropod*, one of the gasteropoda. [Also *gastro.*]

gas-ter-op-o-da (*gas-tĕr-op'ō-dă*), *n. pl.* a division of univalve mollusks, including the snails. [Also *gastropoda.*]

Gaston. A name of French origin, probably from the French *gaston*, "baton."

gas-tral-gi-a (*-tral'jĭ-ă*), *n.* neuralgia of the stomach; stomach ache.

gas-tric (*'trĭk*), *adj.* pertaining to the stomach.

gas-tric juice (*jūs*), a fluid secreted in the stomach: the chief agent in digestion.

gas-tri-tis (*-trī'tĭs*), *n.* inflammation of the stomach.

gas-tro-nom-ic (*-trō-nom'ĭk*), *adj.* pertaining to gastronomy. [Also *gastronomical.*]

gas-tron-o-my (*-tron'ō-mĭ*), *n.* the art of good eating, or the preparation of food.

gate (*gāt*), *n.* a frame of wood, iron, etc., closing an entrance or passage, usually moving on hinges; entrance.

gath-er (*gath'ĕr*), *v. t.* to assemble; collect; pick up; pucker or plait; infer: *v. i.* to congregate; increase; ripen: *n.* a plait or pucker in cloth.

Syn. GATHER, collect. To *gather* signifies to bring things of a sort together; to *collect* annexes also the idea of binding or forming into a whole; we *gather* that which is scattered in different parts; stones are *gathered* into a heap; vessels are *collected* so as to form a fleet.

Ant. DISPERSE, scatter.

gath-er-ing (*-ĭng*), *n.* the act of assembling together; an assemblage; a charitable contribution.

gat-ling gun (*gat'ling gun*), a cannon with numerous small barrels, discharged in succession by turning a handle.

gaud-y (*gawd'ĭ*), *adj.* [*comp.* gaudier, *superl.* gaudiest], showy; vulgarly gay or fine.

gau-ger (*gā'jĕr*), *n.* one who gauges; an officer of excise.

gau-ging (*'jĭng*), *n.* the art or science of measuring the contents of vessels of capacity.

Gaul. The name by which France was known to the Greeks. It was known to the Romans as *Gallia* because it was the territory of the Celtiæ, or Celts.

gaunt (*gānt*), *adj.* pinched and lean.

gaunt-let (*gānt'let*), *n.* a mailed glove, or one with a long wrist-extension. [Also *gantlet, gantlop.*]

gauze (*gawz*), *n.* a very thin, light, transparent fabric; light, open-work material.

gav-el (*gav'el*), *n.* a small mallet.

ga-votte (*gă-vot'*), *n.* a lively, but dignified, dance of the minuet class.

gawk (*gawk*), *n.* a simpleton; cuckoo.

gawk-y (*'ĭ*), *adj.* awkward; ungainly: *n.* a tall, awkward, stupid person.

gay (*gā*), *adj.* lively; merry; full of spirits; cheerful; sportive.

gaze (*gāz*), *v. i.* to look fixedly: *n.* a steady look. [GAPE.]

ga-zelle (*gă-zel'*), *n.* a small antelope, with large eyes.

ga-zette (*-zet'*), *n.* English government biweekly newspaper: *v. t.* to publish in a gazette.

gaz-et-teer (*gaz-et-tēr'*), *n.* a dictionary of geographical names and places.

gear (*gēr*), *n.* apparatus; tackle; the moving parts of machinery: *v. t.* to put gear on.

gee (*jē*), *v. i.* to turn to the off side.

ge-lat-i-nate (*jē-lat'ĭ-nāt*), *v. t.* to convert into gelatine or a jelly-like substance: *v. i.* to be converted into gelatine. [Also *gelatinize.*]

gel-a-tine (*jel'ă-tĭn*), *n.* a transparent nitrogenou,

substance found in connective tissue; animal jelly. [Also *gelatin.*]

gel-a-tine proc-ess (*jel'a-tin pros'es*), a method of photo-engraving.

geld-ing (*geld'ing*), *n.* castration; a young horse which has been castrated.

ge-lose (*jē'lōs*), *n.* a vegetable gummy isinglass prepared from seaweed and Chinese moss.

gem (*jem*), *n.* a precious stone; any perfect or rare object; jewel.

Gem-i-ni (*'i-ni*), *n. pl.* one of the signs in the zodiac (Castor and Pollux); the Twins.

gen-darme (*zhăn-dărm'*), *n.* [*pl.* gendarmes], in France and Belgium, an armed policeman. [*French.*]

gen-der (*jen'dĕr*), *n.* the grammatical distinction of sex: *v. t.* to produce.

ge-ne-a-log-ic-al (*jē-nē-* or *jen-ē-a-loj'i-kal*), *adj.* pertaining to genealogy; exhibiting descent.

ge-ne-al-o-gy (*-al'ō-ji*), *n.* [*pl.* genealogies (*-jiz*)], family pedigree; lineage; the science of tracing pedigrees.

gen-er-al (*jen'ĕr-al*), *adj.* not special or particular; not restricted; usual; ordinary; common; indefinite; taken as a whole: *n.* the whole; the chief part; the commander of an army division or brigade.

Syn. GENERAL, universal. What is *general* includes the greater part or number; what is *universal* includes every individual or part.

Ant. EXCEPTIONAL, rare.

gen-er-al-ly (*-li.*), *adv.* the state of being general; opposed to specific. [COMMONLY.]

gen-er-al-i-za-tion (*-al-i-zā'shun*), *n.* the act or result of generalizing; an induction.

★gen-er-al-ize (*'ĕr-al-īz*), *v. t.* to reduce to, or arrange in, a genus or genera; infer inductively, as a general principle from particular instances.

gen-er-al-ship (*-ship*), *n.* the office, rank, or skill of a general or leader.

gen-er-ate (*'ĕr-āt*), *v. t.* to produce; procreate; originate.

gen-er-a-tion (*-ā'shun*), *n.* the act or process of generating; a single succession in natural descent; progeny.

gen-er-a-tor (*'ĕr-ā-tĕr*), *n.* one who, or that which, generates.

★ge-ner-ic (*jē-ner'ik*, not *jen'ĕr-ik*), *adj.* pertaining to a genus, kind, or class.

gen-er-os-i-ty (*jen-ĕr-os'i-ti*), *n.* [*pl.* generosities (*-tiz*)], the quality of being generous; liberality; munificence.

gen-er-ous (*'ĕr-us*), *adj.* munificent; bountiful; high-minded; honorable. [BENEFICENT.]

gen-e-sis (*'ē-sis*), *n.* the act or process of producing or originating; beginning.

gen-et (*-et'*), *n.* an animal allied to the civet, valued for its fur. [Also *genette.*]

gen-et (*'et*), *n.* a small Spanish horse. [Also *jennet.*]

ge-ni-al (*jē'ni-al*), *adj.* kindly and sympathetic; cordial; contributing to cheerfulness.

ge-ni-al-i-ty (*-al'i-ti*), *n.* the quality of being genial; cheerfulness.

gen-i-tal (*jen'i-tal*), *adj.* pertaining to generation.

gen-ius (*jēn'yus*), *n.* remarkable aptitude or natural endowment; character or essential principle; a person possessed of high mental powers (*pl.* geniuses); a good or evil spirit (*pl.* genii). [INTELLECT.]

Genoa (*jen'ō-a*). The English form of the Italian *Genova*, probably from the same roots as *Geneva*, from the Celtic *genava*, "mouth" or "jaw." A seaport of Italy.

Gen-o-ese (*-ō-ēz'*), *adj.* pertaining to Genoa, or to its inhabitants. [Also *Genovese.*]

gens (*jenz*), *n.* [*pl.* gentes (*jen'tēz*)], among the ancient Romans, a clan, or subdivision of a curia.

gen-teel (*jen-tēl'*), *adj.* graceful or elegant in manners or dress; polite; well bred.

Syn. GENTEEL, polite. *Gentility* respects rank in life; *politeness*, the refinement of the mind and outward behavior. A *genteel* education is suited to the station of a gentleman; a *polite* education fits for polished society and conversation, and raises the individual among his equals.

Ant. BOORISH, ill bred.

gen-tian (*'shan*), *n.* a bitter herb with tonic roots.

Gen-tile (*'til*), *adj.* belonging to a non-Jewish people: *n.* one who is not a Jew.

gen-til-i-ty (*-til'i-ti*), *n.* [*pl.* gentilities (*-tiz*)], high birth; good breeding; social status.

gen-tle (*'tl*), *adj.* mild and refined; kindly; moderate; docile; well born.

Syn. GENTLE, tame. Any unbroken horse may be *gentle*, but not *tame*; a horse that is broken in will be *tame*, but not always *gentle*. *Gentle* signifies literally well born, and is opposed either to the fierce or the rude; *tame* is opposed either to the wild or the spirited. [See *mercy.*]

Ant. FIERCE, rough, wild.

gen-tle-man (*-man*), *n.* [*pl.* gentlemen (*-men*)], a well-bred and honorable man.

gen-tle-wom-an (*-woom'an*), *n.* [*pl.* gentlewomen (*-wim'en*)], a woman of good birth and breeding: lady.

gen-try (*'tri*), *n.* the upper class of society.

gen-u-flec-tion (*-ū-flek'shun*), *n.* bending of the knee, especially in worship. [Also *genuflexion.*]

★gen-u-ine (*jen'ū-in*, not *jen'ū-īn*), *adj.* real, unadulterated; not hypocritical; open.

ge-nus (*jē'nus*), *n.* [*pl.* genera (*jen'ĕr-a*)], that which has under it several species or subgenera.

ge-o-cen-tric (*jē-ō-sen'trik*), *adj.* pertaining to the center of the earth; having the earth as the center.

ge-od-e-sy (*-od'ē-si*), *n.* the science of measuring large portions of the earth's surface.

ge-o-det-ic (*jē-ō-det'ik*), *adj.* pertaining to, determined by, or carried out by, geodesy. [Also *geodetical.*]

Geoffrey (*jef'ri*) or **Geffrey.** Sometimes translated "God's peace or joyful peace." The name has been corrupted from *Galfrid* for *Walfrid*; from Old German *walt-frid*, "powerful protector." Danish, *Galfred*; Fr., *Geoffroy*; Dutch, *Godfried*; It., *Gioffreddo*; Lat., *Galfridus.*

ge-og-ra-pher (*jē-og'rā-fĕr*), *n.* one who is versed in, or a writer on, geography.

ge-o-graph-i-cal (*-ō-graf'i-kal*), *adj.* pertaining to geography.

ge-og-ra-phy (*og'ri-fi*), *n.* [*pl.* geographies (*-fiz*)], the science that describes the surface of the earth, and its divisions.

ge-o-log-ic-al (*-ō-loj'i-kal*), *adj.* pertaining to geology.

ge-ol-o-gist (*jē-ol'ō-jist*), *n.* one versed in geology.

ge-ol-o-gy (*'ō-ji*), *n.* the science that investigates the structure and physical history of the earth.

ge-o-met-ric (*jē-ō-met'rik*), *adj.* pertaining to, or done by, geometry. [Also *geometrical.*]

ge-om-e-tri-cian (*jē-om-ē-trish'an*), *n.* one who is skilled in geometry.

ge-om-e-try (*-om'e-tri*), *n.* [*pl.* geometries (*-triz*)], that branch of mathematics that treats of the measurement of lines, angles, surfaces, and solids.

George. From the Latin name, *Georgius*, "a tiller of the ground," "husbandman," "a vinedresser." Danish, *Georg*; Dutch, *Georg*; Fr., *George* or *Georges*; Ger., *Georg*; Gr., *Georgios*; It., *Giorgio*; Lat., *Georgius*; Port., *Jorge*; Sp., *Jorge*; Sw., *Georg.*

George, Lake, N. Y. So named in honor of England's king.

Georgeanna, Georgiana, Georgina. Female names derived from *George.*

Georgetown. Formerly a city, now a part of the District of Columbia, named for George Boone, an Englishman, who purchased several tracts of land in the neighborhood.

Georgia. A South Atlantic state of the Union. Named in honor of George II. of England, who here established a colony in 1732.

geor-gic (*jôr'jik*), *adj.* pertaining to husbandry or rural life: *n.* a poem on agriculture.

ge-ra-ni-um (*jē-rā'ni-um*), *n.* a plant cultivated for its handsome scarlet or white flowers.

Gerard (*jer'ărd*, French *zhā-rār'*). From the Old German name *Gerhard*, *Gerart*; from *gerhart*, "very strong." Sometimes corrupted to *Gar'ret* and *Ger'rit*; *i. e.*, "firm spear." Danish, *Gerhard*; Dutch, *Gerard*; Fr., *Gérard*; Ger., *Gerhard*; It., *Gerardo*; Lat., *Gerardus*; Sw., *Gerhard.*

germ (*jĕrm*), *n.* the rudimentary form of an organism; origin; first principle.

Ger-man (*jĕr'man*), *adj.* pertaining to Germany, its inhabitants, or language; of the same stock or parentage; germane.

ger-mane (*jĕr-mān'*), *adj.* related; relevant; appropriate.

Ger-man-ic (*-man'ik*), *adj.* pertaining to Germany; Teutonic.

Ger-man-ism (*-izm*), *n.* a German idiom, custom, or characteristic; love of German institutions.

Ger-man-ize (*-iz*), *v. t.* to make German, in language, customs, etc.

German Ocean. The North Sea. Name indicative of its geographical position.

Ger-man sil-ver (*sil-vĕr*), a white alloy of zinc, nickel, and copper.

Germany. A country of central Europe. Known in ancient times as *Tronges*, the country of the *Tungri*, "speakers"; but the Romans afterward gave it the name of *Germanus*, meaning "neighbors," originally bestowed by the Gauls.

ger-mi-cide (*jĕr'mi-sīd*), *n.* a substance used to destroy disease germs.

ger-mi-nal (*'mi-nal*), *adj.* pertaining to a germ or seed bud.

ger-mi-nate (*'mi-nāt*), *v. i.* to sprout or bud; begin to develop into a higher form.

ger-mi-na-tion (*-nā'shun*), *n.* the first act of growth in a seed, bud, or germ.

Gertrude (*gĕr'trūd*). From the Old German name *Gertrude*; from *gerdraut*, which translates either "very faithful," or "very dear or beloved." Another meaning is given as "true spear." Dutch, *Geertruida*; Fr., *Gertrude*; Ger., *Gertraud* or *Gertrud*; It., *Gertruda*; Lat., *Gertruda*; Sw., *Gertrud.*

★ger-und (*jer'und*, not *jē'rund*), *n.* a kind of verbal noun.

ges-ta-tion (*jes-tā'shun*), *n.* pregnancy.

ges-tic-u-late (*-tik'ū-lāt*), *v. i.* to make gestures or motions.

ges-ture (*'tūr*), *n.* a movement of the face, body, or limbs. [Also *gesticulation.*] [ACTION.]

get (*get*), *v. t.* [*p. t.* got, *p. p.* got, gotten, *p. pr.* getting], to obtain; procure; gain; procreate: *v. i.* to arrive at; find time, opportunity, etc.

gew-gaw (*gū'gaw*), *n.* showy trifle.

gey-ser (*gī'sĕr*), *n.* an intermittent spring from which water or mud is ejected. [Also *geysir.*]

ghast-ly (*gāst'li*), *adj.* death-like; pale; haggard; cadaverous; horrible.

gher-kin (*gĕr'kin*), *n.* a small cucumber used for pickling.

Ghet-to (*get'ō*), *n.* [*pl.* ghettos (*'ōz*), ghetti (*'i*)], the Jews' quarter.

ghost (*gōst*), *n.* the spirit of a deceased person; apparition; remotest likelihood.

ghost-ly (*'li*), *adj.* pertaining to the soul; spiritual; supernatural.

ghoul (*gōōl*), *n.* a supposed demon who robs graves and feeds on the flesh of the dead.

gi-ant (*ji'ant*), *n.* a man of extraordinary bulk or stature: *adj.* like a giant; huge.

gib-ber (*gib'ĕr*), *v. i.* to speak incoherently.

gib-ber-ish (*-ish*), *n.* rapid incoherent talk: *adj.* incoherent.

gib-bet (*jib'et*), *n.* a gallows: *v. t.* to hang on a gibbet; expose to public scorn or ridicule.

gibe (*jīb*), *n.* a scoff; taunt: *v. t.* to sneer at; taunt: *v. i.* to use gibes; cast reproaches; sneer.

gib-let (*jib'let*), *n.* one of the edible internal parts of a fowl, goose, etc.

Gibraltar (*ji-brawl'tĕr*). A fortified city and promontory on southern coast of Spain. Derived from *Gibel el Tarik*, "the mountain of Tarik." Tarik was the leader of the Saracens when they entered Spain in 711, and he first fortified the hill as a base of operations and a ready point of access from the Barbary coast.

gid-dy (*gid'i*), *adj.* [*comp.* giddier, *superl.* giddiest], having a whirling sensation in the head; frivolous; fickle.

Gideon (*gid'ē-on*). From the Hebrew *Gidhon*, which Tregelles renders "cutter down"; *i. e.*, "brave soldier." Fr., *Gedeon*; It., *Gedeone*; Lat., *Gideon.*

gift (*gift*), *n.* something given or bestowed; present.

Syn. GIFT, present, donation. The *gift* is an act of generosity or condescension; it contributes to the benefit of the receiver; the *present* is an act of kindness, courtesy or respect; it contributes to the pleasure of the receiver. The *gift* is private, and benefits the individual; the *donation* is public, and serves some general purpose: what is given to relieve the necessities of any poor person is a *gift*; what is given to support an institution is a *donation.*

gig (*gig*), *n.* a two-wheeled open chaise drawn by one horse; a long ship's boat.

gi-gan-tic (*ji-gan'tik*), *adj.* huge; colossal.

gig-gle (*gig'l*), *v. i.* to laugh in a nervous, foolish, tittering manner: *n.* a nervous, silly laugh.

Gila (*hē'la*). **river, Ariz.** Name corruption of the Spanish word *Guija*, meaning "pebbly" or "pebble-stone," applied by them owing to this local characteristic in its waters.

Gilbert (*gil'bĕrt*). From the Teutonic, *Giselbert*, "bright," or "bright as gold." Danish, *Gilbert*; Dutch, *Gilbert*; Fr., *Gilbert*; Ger., *Gilbert*; Lat., *Gilbertus*; Sw., *Gilbertus.*

gild (*gild*), *v. t.* [*p. t.* and *p. p.* gilded, gilt, *p. pr.* gilding], to overlay or wash with gold: *n.* another form of guild.

gild-ing (*'ing*), *n.* the art or process of overlaying or covering with gold; gold leaf, powder, etc., applied to a surface.

Giles (*jīlz*). Probably derived from *Ægidus*, from Greek *aigidios*, "a goatskin." Fr., *Gilles*; Ger., *Ægidius*; It., *Egidio*; Lat., *Ægidius*; Sp., *Gil.*

gill (*gil*), *n.* the respiratory organ of aquatic animals, especially fishes: *pl.* the thin spore-bearing lamellæ under a cap of certain fungi.

gill (*jil*), *n.* 1-4th of a pint.

gil-ly-flow-er (*jil'i-flou-ĕr*), *n.* one of various plants of the mustard family.

gilt (*gilt*), *adj.* covered with, or yellow like, gold: *n.* gilding.

gim-crack (*jim'krak*), *adj.* showy, but of no value; trumpery: *n.* a pretty, useless thing; toy.

gim-let (*gim'let*), *n.* a small boring tool.

gimp (*gimp*), *n.* a kind of twist or trimming interwoven with wire or cord: *v. t.* to border with gimp.

gin (*jin*), *n.* an aromatic alcoholic liquid flavored with juniper berries; a trap or snare; a machine for clearing cotton fibers from the seeds: *v. t.* [*p. t.* and *p. p.* ginned, *p. pr.* ginning], to catch in a trap; clear cotton.

gin-ger (*'jĕr*), *n.* the scraped and dried root of a pungent aromatic East and West Indian plant.

gin-ger-bread (*-bred*), *n.* a dark colored cake made of flour, ginger, molasses, sugar, etc.

gin-ger-ly (*-li*), *adv.* cautiously; daintily.

ging-ham (*ging'am*), *n.* a cotton dress cloth.

gin-seng (*jin'seng*), *n.* an herb with an aromatic root.

Giorgio. See *George.*

Giovanni. See *John.*

Gip-sy (*jip'si*), *n.* [*pl.* Gipsies (*'siz*)], one of a wandering, dark-skinned, and dark-eyed race, of Eastern, probably Hindu, origin; a person of dark complexion; a hoydenish girl. [Also *Gypsy.*]

gi-raffe (*ji-raf'*), *n.* the camelopard.

gird (*gĕrd*), *v. t.* [*p. t.* and *p. p.* girded, girt, *p. pr.* girding], to surround; bind; encircle.

gird-er (*'ĕr*), *n.* the main beam in a floor.

gir-dle (*gĕr'dl*), *n.* a belt; anything that encompasses like a girdle: *v. t.* to bind with, or as with, a girdle; inclose; to cut the bark of a tree and so kill it.

girl (*gĕrl*), *n.* a female child; young unmarried woman.

girth (*gĕrth*), *n.* the band by which the saddle is kept secured on a horse; the circumference of anything.

★gist (*jist*, not *gist*). *n.* the substance of a matter; main point; object.

Giulia. See *Julia.*

Giuseppe. See *Joseph.*

give (*giv*), *v. t.* [*p. t.* gave, *p. p.* given, *p. pr.* giving],

to bestow; grant; yield; deliver: *v. i.* to give gifts; yield to pressure; grow moist. [ADDICTED.]

Syn. GIVE, grant, bestow. The idea of communicating to another what is our own, or in our power, is common to these terms; this is the whole signification of *give*. To *grant* is to give at one's pleasure; to *bestow* is to give from a certain degree of necessity. We *give* money, clothes, food, or whatever is transferable; *granting* is confined to such objects as afford pleasure or convenience; *bestowing* is applied to such objects only as are necessary to supply wants, which always consist of that which is transferable.

Ant. KEEP, retain.

Syn. GIVE, present, offer, exhibit. We *give* to our domestics; we *present* to princes; we *offer* to God; we *give* to a person what we wish to be received; we *present* to a person what we think agreeable; a poem is said to *exhibit* marks of genius.

Ant. CLING TO, hold, refuse.

giz-zard (*giz'ẽrd*), *n.* the muscular part of the intestinal canal in certain birds.

gla-cial (*glā'shal*), *adj.* pertaining to, consisting of, or caused by, ice.

gla-cier (*glā'shẽr* or *glas'i-ẽr*), *n.* a vast accumulation of ice and snow found in the valleys and ravines of mountains.

glad (*glad*), *adj.* [*comp.* gladder, *superl.* gladdest], in a state of hilarity; joyous; gay; pleased; cheerful; satisfied. [JOY.]

glad-den (*'n*), *v. t.* to make glad: *v. i.* to rejoice.

glade (*glād*), *n.* an open space or passage in a wood or forest.

glad-i-a-tor (*glad'i-ā-tẽr*), *n.* in ancient Rome a professional swordsman who fought in the arena.

glad-i-a-to-ri-al (*ā-tō'ri-al*), *adj.* pertaining to gladiators or their combats.

★**gla-di-o-lus** (*glā-di'ō-lus*), *n.* the sword lily.

Gladys. Most probably a Welsh form of *Claudia*. It is derived from the Welsh *gwlad*, which now means "of country," but formerly signified "a prince," "a sovereign," a meaning which still survives in several of its derivations.

glair (*glâr*), *n.* the white of egg, used as size or varnish; any sticky or glairy matter.

glam-our (*glam'ẽr*), *n.* fascination; witchery: *v. t.* to fascinate.

glance (*glans*), *n.* quick passing look of the eye: *v. i.* to shoot a sudden ray; view with a quick movement of the eye: *v. t.* to shoot or dart suddenly or obliquely. [GLIMPSE, LOOK.]

gland (*gland*), *n.* organ by which secretion is carried on; an acorn; a name for various mechanical contrivances.

glan-ders (*glan'dẽrz*), *n. pl.* a contagious disease in horses.

glare (*glâr*), *n.* a bright dazzling light, or luster; a fierce look: *v. i.* to shine with a dazzling light; look with fierce piercing eyes; be excessively gaudy: *adj.* having a smooth slippery surface, as ice.

glar-ing (*'ing*), *adj.* Staring; clear; barefaced.

Syn. GLARING, barefaced. *Glaring* designates the thing; *barefaced* characterizes the person; a *glaring* falsehood is that which strikes the observer in an instant to be falsehood; a *barefaced* lie or falsehood betrays the effrontery of him who utters it.

Ant. COVERT, imperceptible, unseen.

Glasgow (*glas'gō*). The second city in the British isles was called *Glas-gu* in 1301. Numerous etymologies have been proposed, such as *clais-dhu*, the "black ravine," *glaise-dhu*, "the black brook," or *glas-coed*, the "gray wood," but the most probable is that given by Professor Rhys, who holds that the name is from one of the Gaelic pet names of St. Kentigern, or St. Mungo, around whose cell the place grew up.

glass (*glas*), *n.* a hard, brittle, transparent substance formed of silica; an instrument or vessel made of glass; a drinking glass, or the quantity contained in it: *adj.* pertaining to, or made of, glass; vitreous; *v. t.* to mirror, or reflect in a mirror; glaze.

Glastonbury (*glas'tun-bẽr-i*). A town in Somerset, England, twenty-one miles south of Bristol. Its abbey, founded in Roman times, was refounded under Ine in the eighth century. Glastonbury is associated in legend with Joseph of Arimathea, who is said to have visited it, and, in sign of possession, planted his staff, which took root and became the famous Glastonbury thorn that bursts into leaf on Christmas eve. The Isle of Avalon, where King Arthur was buried, is also here.

glau-ber's salt (*glaw'bẽrz sawlt*), sulphate of soda, used medicinally as a strong purgative.

glaze (*glāz*), *v. t.* to furnish with glass; overlay with a transparent substance resembling glass: *v. i.* to become glassy or glazed: *n.* the vitreous or glassy coating on potter's ware.

gla-zier (*glā'zhẽr*), *n.* one whose business is to set glass in windows, etc.

glaz-ing (*glāz'ing*), *n.* a glaze; the operation of setting glass, or applying a glaze; glass.

gleam (*glēm*), *n.* a stream or shoot of light; brightness: *v. i.* to emit brightness; shoot, or dart, as rays of light.

glean (*glēn*), *v. t.* to gather; collect little by little; infer: *v. i.* to gather gleanings.

glebe (*glēb*), *n.* land belonging to a parish church, or ecclesiastical benefice.

glede (*glēd*), *n.* the kite.

glee (*glē*), *n.* gayety; mirth; exhilaration; a musical composition for voices in harmony.

glen (*glen*), *n.* a narrow valley; a secluded hollow between hills.

glib (*glib*), *adj.* voluble; flippant: *n.* the tongue; smooth talk.

glide (*glīd*), *v. i.* [*p. t.* and *p. p.* glided, *p. pr.* gliding], to flow or move along smoothly and noiselessly: *n.* the act of gliding; a gliding movement. [SLIP.]

glim (*glim*), *n.* a light or candle.

glim-mer (*'ẽr*), *v. i.* to shine faintly and intermittently: *n.* a faint intermittent light; sheen.

glimpse (*glimps*), *n.* a weak, faint light; transient view; slight trace: *v. t.* to catch a glimpse of: *v. i.* to glance; appear for the moment.

Syn. GLIMPSE, glance. A *glimpse* is the action of the object appearing to the eye; a *glance* is the action of the eye seeking the object; one catches a *glimpse* of an object; one casts a *glance* at an object.

glint (*glint*), *n.* a gleam of light: *v. i.* to gleam or flash out.

glis-sade (*glis-ād'*), *n.* the act of sliding down a glacier; a glide in dancing: *v. i.* to slide.

glis-ten (*glis'n*), *v. i.* to sparkle; shine: *n.* a glitter.

glit-ter (*glit'ẽr*), *v. i.* to sparkle; gleam; be showy: *n.* brilliancy; luster.

gloam (*glōm*), *v. i.* to begin to grow dark; exhibit gloom.

gloam-ing (*'ing*), *n.* twilight: *adj.* pertaining to twilight.

gloat (*glōt*), *v. i.* to stare or gaze, often with feelings of lust and cruelty.

globe (*glōb*), *n.* a spherical body; ball; the earth.

globe trot-ter (*trot-ẽr*), an extensive traveler.

glob-ule (*glob'ūl*), *n.* a small spherical particle.

glob-u-lin (*'ū-lin*), *n.* an albuminous proteid substance.

glom-er-ate (*glom'ẽr-āt*), *adj.* gathered into a roundish head or mass.

gloom (*glōōm*), *n.* partial darkness; melancholy; sullenness: *v. i.* to be, or become, partially dark: *v. t.* to make gloomy.

gloom-y (*'i*), *adj.* [*comp.* gloomier, *superl.* gloomiest], overspread with, or enveloped in, darkness; dismal; melancholy. [DULL.]

glo-ri-a (*glō'ri-ā*), *n.* an ascription of praise

glo-ri-fi-ca-tion (*-ri-fi-kā'shun*) *n.* exaltation to honor: a jollification.

glo-ri-fy (*'ri-fī*), *v. t.* [*p. t.* and *p. p.* glorified, *p. pr.* glorifying], to raise in honor; magnify and honor in worship.

glo-ri-ous (*'ri-us*), *adj.* full of glory; illustrious; celebrated.

glo-ry (*'ri*), *n.* [*pl.* glories (*'riz*)], magnificence; praise ascribed in adoration; distinction: *v. i.* [*p. t.* and *p. p.* gloried, *p. pr.* glorying], to rejoice or exult (with *in*).

Syn. GLORY, honor. *Glory* is something dazzling and widely diffused; *honor* is something less splendid, but more solid; *glory* impels to extraordinary efforts and to great undertakings; *honor* induces to a discharge of one's duty.

Ant. IGNOMINY, infamy.

Syn. GLORY, boast, vaunt. *To glory* is to hold as one's *glory; to boast* is to set forth to one's advantage; *to vaunt*, is to set one's self up before others; *to glory* is more particularly the act of the mind, the indulgence of the internal sentiment; *to boast* denotes rather the expression of the sentiment; *to vaunt* is properly to proclaim praises aloud.

Ant. BE HUMBLE, meek, modest.

gloss (*glos*), *n.* luster from a polished surface; a plausible, specious representation: *v. t.* to explain by comments; palliate by plausible representation; make glossy: *v. i.* to annotate.

glos-sa-ry (*'a-ri*), *n.* [*pl.* glossaries (*-riz*)], a dictionary of obsolete, obscure, or technical words. [DICTIONARY.]

glos-sy (*'i*), *adj.* [*comp.* glossier, *superl.* glossiest], having a lustrous, smooth surface; plausible.

glot-tal (*glot'al*), *adj.* pertaining to, or produced by, the glottis.

★**glot-tis** (*glot'is*, not *glō'tis*), *n.* the small elastic oblong opening at the top of the windpipe.

glove (*gluv*), *n.* a hand covering with a separate sheath for each finger: *pl.* boxing gloves: *v. t.* to cover with, or as with, a glove.

glow (*glō*), *v. i.* to radiate heat and light; be red or flushed; be animated with passion, love, etc.: *n.* intense or shining heat; passion. [EAGER.]

glow-er (*glou'ẽr*), *v. i.* to stare with a threatening countenance; frown.

glow-worm (*glō'wẽrm*), *n.* a beetle, the wingless female of which emits a shining green light at night.

glox-in-i-a (*gloks-in'i-ā*), *n.* a genus of tropical plants with bell-shaped flowers.

glu-cose (*glōō'kōs*), *n.* the particular form of sugar existing in many organisms.

glue (*glōō*), *n.* a tenacious viscid cement made by boiling some animal substance to a jelly: *v. t.* to unite or cement with glue.

glum (*glum*), *adj.* gloomy; moody; sullen.

glut (*glut*), *n.* a superabundance: *v. t.* [*p. t.* and *p. p.* glutted, *p. pr* glutting], to fill to repletion; oversupply.

glu-ten (*glōō'ten*), *n.* a tough, gray, albuminous substance obtained from grain.

glu-ti-nous (*'tī-nus*), *adj.* viscid, like glue.

glut-ton (*glut'n*), *n.* one who eats to excess.

glut-ton-ous (*-us*), *adj* pertaining to, or characterized by, gluttony.

glut-ton-y (*glut'n-i*), *n.* [*pl.* gluttonies (*-iz*)], the act or habit of eating to excess.

★**glyc-er-ine** (*glis'ẽr-in*, not *glis'ẽr-ēn*), *n.* a sweet, colorless viscid liquid obtained from oils, fat, etc. [Also *glycerin.*]

glyp-tic (*glip'tik*), *adj.* pertaining to engraving on gems; figured: *n. pl.* the art of engraving designs on stones.

gnarl (*nārl*), *n.* a knot on a tree.

gnarled (*nārld*), *adj.* full of knots; distorted.

gnash (*nash*), *v. t.* to strike together, as the teeth: *v. i.* to grind the teeth.

gnat (*nat*), *n.* a small stinging winged insect of several species, allied to the mosquito.

gnaw (*naw*), *v. t.* to bite off, or eat away, by degrees; fret: *v. i.* to exercise the teeth in biting repeatedly.

gnome (*nōm*), *n.* a fabulous deformed, diminutive goblin, supposed to dwell in the earth or to be the guardian spirit of miners; a pithy or sententious saying.

gnom-ic (*nom'ik*), *adj.* dealing in, or containing, pithy or sententious sayings; didactic.

gno-mon (*nō'mon*), *n.* the figures made up of the two complements of a parallelogram.

gno-sis (*'sis*), *n.* higher knowledge or insight.

Gnos-ti-cism (*nos'ti-sizm*), *n.* a system of religion and Greek and Oriental philosophy (first to sixth century A. D.).

gnu (*nōō*), *n.* a ruminant horned animal of the antelope kind, inhabiting South Africa.

go (*gō*), *v. i.* [*p. t.* went, *p. p.* gone, *p. pr.* going], to depart; proceed; succeed; move by mechanism, as a clock: *n.* the fashion; enterprise or push.

goad (*gōd*), *n.* a pointed stick to urge on cattle: *v. t.* to urge on with, or as with, a goad: *v. i.* to act as a goad.

goal (*gōl*), *n.* the winning post at a race or at football; hence, the end aimed at.

goat (*gōt*), *n.* a ruminating horned quadruped with long hair.

goat-ee (*gō-tē'*), *n.* a tuft of hair on chin after the rest of the face is shaved.

gob-ble (*gob'l*), *v. t.* to swallow hastily or greedily: *v. i.* to utter a cry like a turkey: *n.* the noise of a turkey.

go-be-tween (*gō'-bē-twēn*), *n.* an intermediary.

gob-let (*gob'let*), *n.* a drinking vessel with a stem and without a handle.

gob-lin (*'lin*), *n.* an evil, mischievous spirit; gnome; fairy.

go-by (*gō'bi*), *n.* [*pl.* gobies (*'biz*)], a fish of peculiar shape.

go-by (*gō'-bī*), *n.* avoidance; evasion.

go-cart (*'kārt*), *n.* a child's cart; a light village cart.

god (*god*), *n.* a supernatural being conceived of as possessing divine powers or attributes: idol; a person or thing deified or honored to excess.

God, *n.* the Supreme Deity, and self-existent Creator or Upholder of the universe.

god-child (*'child*), *n.* one for whom another is sponsor at baptism.

god-dess (*'des*), *n.* a female deity; a woman of superior charms or excellence.

god-fa-ther (*'fā-th'ẽr*), *n.* one who acts as sponsor to another at baptism: *v. t.* to act as godfather to.

Godfrey (*god'fri*). From the Teutonic, meaning "God's peace." Danish, *Gottfried;* Dutch, *Godfried;* Fr., *Godefroi;* Ger., *Gottfried;* It., *Goffredo;* Lat., *Godfridus.*

god-like (*'lik*), *adj.* like God or a god in any respect; divine.

Syn. GODLIKE, divine, heavenly. *Godlike* is a more expressive but less common term than *divine; divine* is generally employed for that which appertains to a superior being, in distinction from that which is human; as *divine* is opposed to human, so is *heavenly* to earthly.

Ant. BASE, mean, mortal, devilish.

god-ly (*'li*), *adj.* devout; pious.

god-moth-er (*'muth-ẽr*), *n.* a female sponsor at baptism.

god-send (*god'send*), *n.* unexpected assistance or acquisition.

god-speed (*'spēd*), *n.* success.

Godwin (*god'win*). From the Teutonic, meaning "divine friend," or "victorious in God." Dutch, *Godewijn;* Lat. *Godwinus.*

gog-gle (*gog'l*), *v. i.* to strain or roll the eyes; *adj.* staring: *n.* affected rolling of the eyes: *pl.* spectacles for protecting the eyes from dust, excessive light, etc.

go-ing (*gō'ing*), *n.* the act of departing or moving; state of roads.

goi-ter (*goi'tẽr*), *n.* a swelling of the glands in the front part and side of the neck.

gol-con-da (*gol-kon'dā*), *n.* a mine of wealth.

Golconda. A place in India, seven miles northwest of Hyderabad. It is noted for its fort, for the mausoleums of the ancient kings, and for the diamonds which were cut and polished here. It was the capital of a kingdom from 1512 until its overthrow by Aurungzebe in 1687.

gold (*gōld*), *n* a metallic element, soft, ductile, and of a bright yellow color when pure; money wealth.

Gold coast. That portion of Guinea on the west coast of Africa where gold is found.

gold-en (*gōld'n*), *adj.* formed of, consisting of, or resembling, gold; shining; lustrous like gold: bright; most valuable; excellent.

Golden Gate, California. Bay in California, named by Colonel Frémont, before the discovery

of gold in the country, because of the brilliant effect of the setting sun on the cliffs and hills.

Golden gate, Constantinople. A gate in the wall of Theodosius, now walled up because of a Turkish tradition that the conquerer of Constantinople is destined to enter through it. It consists of three arches between two huge towers of white marble. The great central arch was reserved for the passage of the emperor.

Golden house. Palace of the Emperor Nero in ancient Rome, which occupied the valley between the Palatine and the Esquiline, and connected the palaces of the Cæsars with the gardens of Mæcenas. It was built after the great fire of 64 A. D., and was so large that it contained porticos 2,800 feet long and inclosed a lake where the Colosseum now stands. The forecourt contained a colossus of Nero 120 feet high

golden pheas-ant (*gold'n fez'ant*), a handsome Chinese pheasant.

gold-en-rod (*-rod*), *n.* a tall plant of the aster family with yellow flowers.

gold-en rule (*rōōl*), the rule to treat others as we ourselves wish to be treated.

gold fields (*fēldz*), auriferous deposits and diggings.

gold-finch (*finch*), *n.* a beautiful singing bird with yellow-streaked wings and a red throat.

gold-fish (*fish*), *n.* an orange-colored fresh-water fish of the carp family.

gold-smith (*smith*), *n.* a worker in gold, or dealer in gold plate.

golf (*golf*), *n.* a game played with a small gutta-percha ball and club-headed sticks: *v. i.* to play golf.

Gol-go-tha (*gol'gō-thȧ*), *n.* [Hebrew, "the place of the skull"], the place where Jesus Christ was crucified.

★gon-do-la (*gon'dō-lȧ*, not *gon-dō'lȧ*), *n* a long narrow Venetian pleasure boat propelled by one oar.

gon-do-lier (*-dō-lēr'*), *n.* the rower of a gondola.

gong (*gong*), *n.* a musical instrument of bronze, which is struck by a padded stick.

good (*good*), *adj.* [*comp.* better, *superl.* best], having excellent qualities; proper, fit for, adapted, or conducive to; convenient; useful; unblemished: *n.* that which contributes to happiness; moral qualities; prosperity: *pl.* household furniture; merchandise: *interj.* an expression of assent or pleasure.

Good Fri-day (*frī'dā*), a fast held in commemoration of the crucifixion of Jesus Christ on the Friday before Easter day.

good-li-ness (*'lī-nes*), *n.* grace; physical beauty.

good-ly (*'lī*), *adj.* [*comp.* goodlier, *superl.* goodliest], good looking; noble; considerable; pleasant.

good na-ture (*nā'chūr*), good humor; good disposition.

good will (*wil'*), benevolence; kindly feeling; the value a business has over and above stock-in-trade, etc.

good-y (*'i*), *adj.* affectedly or weakly pious; namby-pamby: *n.* (*pl.* goodies), a person affectedly or weakly pious.

goose (*gōōs*), *n.* [*pl.* geese (*gēs*)], a web-footed domesticated bird of the genus Anser; a tailor's smoothing iron; a silly person.

goose-ber-ry (*gōōz'ber-i*), *n.* [*pl.* gooseberries (*-iz*)], the fruit of a shrub of the genus Ribes; the shrub itself.

go-pher (*gō'fēr*), *n.* a North American burrowing, rat-like rodent.

gor-di-an (*gôr'di-an*), *n.* anything intricate or difficult.

Gor-di-an, *adj.* pertaining to the Phrygian king, Gordius, or to the intricate knot tied by him in his harness, which Alexander the Great cut with his sword.

gore (*gōr*), *n.* congealed or clotted blood; a triangular piece sewn into a dress, sail, etc: *v. t.* to pierce as with a horn; furnish with gores (said of a garment, etc.)

gorge (*gôrj*), *n.* the throat; gullet; that which is gorged or swallowed; a narrow passage between mountains or hills: *v. t.* to swallow with greediness; satiate: *v. i.* to feed greedily.

gor-geous (*gôr'jus*), *adj.* glittering in various colors; splendid; showy.

Gor-gon (*'gon*), *n.* one of three sisters in Greek mythology whose aspect was so terrible that any one who beheld them was turned to stone.

go-ril-la (*gō-ril'ȧ*), *n.* the largest ape known.

gor-mand (*gôr'mand*), *n.* a greedy or ravenous eater; glutton.

gor-mand-ize (*-iz*), *v. i.* to eat greedily or voraciously

gor-y (*gōr'i*), *adj.* covered or stained with gore.

gos-hawk (*gos'hawk*), *n.* a raptorial bird of the hawk family.

gos-ling (*goz'ling*), *n.* a young goose; a catkin.

gos-pel (*gos'pel*), *n.* the history of the life and doctrines of Jesus Christ, contained in the four canonical books of SS. Matthew, Mark, Luke and John; something received as infallibly true: *adj.* pertaining to the gospel.

gos-sa-mer (*'ȧ-mēr*), *n* a very thin, soft, filmy, strong gauze: *adj.* very thin, like gossamer; flimsy.

gos-sip (*'sip*), *n.* familiar or idle talk; scandal; a babbler; formerly a sponsor, neighbor, or friend: *v. i.* to tell idle tales about others; tattle; chat.

Goth (*goth*), *n.* one of an ancient Teutonic tribe that overran the Roman empire (third and fourth centuries A. D.).

Gotham (*gō'tham*). At one time the term was applied to a parish of Nottingham, England. The people there were famed for their stupidity and simplicity, which obtained for them the satirical appellation of the "wise men of Gotham." Many nations have designated some particular locality as the paradise of fools; for example, Phrygia was the fools' home in Asia, Abdera of the Thracians, Bœotia of the Greeks, Swabia of the modern Germans, etc. To Americans it is chiefly significant as a colloquial term for the city of New York. Thus applied, it first appeared in *Salmagundi*, by Washington Irving and James K. Paulding, and is supposed to hint sarcastically at the worldly wisdom of its inhabitants.

Goth-ic (*goth'ik*), *adj.* pertaining to the Goths or their language; denoting the style of architecture characterized by high and pointed arches, clustered columns, etc.: *n.* the language of the Goths; the Gothic or pointed style of architecture.

Gothland (*goth'land*). Southern division of Sweden. Name indicated a settlement of the Goths.

Gottlieb. See *Theophilus.*

gouge (*gouj*), *n.* a rounded hollow chisel for cutting grooves or holes: *v. t.* to scoop out with a gouge.

gourd (*gōrd*), *n.* a plant and fruit of various species of the genus *Cucurbita.*

gour-met (*gōōr-mā'*), *n.* an epicure.

gout (*gout*), *n.* a painful inflammatory disease of the joints or extremities, especially of the great toe.

gout-y (*'i*), *adj.* pertaining to, or affected with, gout.

gov-ern (*guv'ērn*), *v. t.* regulate; direct; manage; *v. i.* to exercise authority; administer the law.

Syn. GOVERN, rule, regulate. The exercise of authority enters more or less into the signification of these terms; but *to govern* implies the exercise likewise of judgment and knowledge. *To rule* implies rather the unqualified exercise of power, the making the will the rule; a king *governs* his people by means of wise laws and an upright administration; a despot *rules* over a nation according to his arbitrary decision; *regulate* is a species of governing simply by judgment; one *governs* the affairs of a nation, or a large body where great interests are involved; we *regulate* the concerns of an individual.

Ant. Be subject, obey, yield.

gov-ern-ess (*-es*), *n.* a lady who trains and instructs children.

gov-ern-ing (*-ing*), *p. adj.* exercising control; prevalent; ruling.

★gov-ern-ment (*guv'ērn-ment*, not *guv'ēr-ment*), *n.* the act of governing; administration of public affairs; relation between two words by which one determines the case or mood of another.

Syn. GOVERNMENT, administration. Both these terms may be employed either to designate the act of *governing* and *administering* or the persons governing and administering. In both cases *government* has a more extensive meaning than *administration;* the former includes every exercise of authority; while *administration* implies only that exercise of authority which consists in putting the laws or will of another in force.

★gov-ern-or (*'ērn-ēr*), *n.* chief ruler; tutor; a mechanical device for regulating speed.

Governor's island. A small fortified island in New York harbor. So named from its former Dutch owner, Governor Van Twiller; previously called *Nutten island,* Indian name *Paggauck.*

gown (*goun*), *n.* a woman's dress; a long loose outer covering or wrapper, as a dressing gown, etc.

gowned (*gound*), *adj.* attired in a gown.

grab (*grab*), *v. t.* [*p. t.* and *p. p.* grabbed, *p. pr.* grabbing], to seize suddenly and forcibly; snatch: *n.* a sudden and forcible seizure.

grace (*grās*), *n.* any excellence, characteristic attraction, or endowment; elegance; beauty; divine influence; spiritual excellence; a brief prayer before or after meals; a respectful title of address: *v. t.* to adorn or embellish; honor; dignify; favor.

Syn. GRACE, charm. *Grace* is altogether corporeal; *charm* is either corporeal or mental; the *grace* qualifies the action of the body; the *charm* is an inherent quality in the body itself. A lady moves, dances, and walks with *grace;* her *charms* of person equal those of her mind. [See *mercy.*]

Ant. Awkwardness, hatefulness, hardness, justice, rigor.

grace-ful (*'fool*), *adj.* full of grace or beauty; easy and elegant in manner or demeanor.

gra-cious (*grā'shus*), *adj.* showing or bestowing grace, kindness, or mercy; affable; polite.

gra-da-tion (*grȧ-dā'shun*), *n.* a regular advance or progress, step by step; regular arrangement; series; order.

grade (*grād*), *n.* a step or degree in rank, dignity, quality, order, etc.; the rise or descent of a railroad, etc.: *v. t.* to level and prepare; arrange in a regular series; *v. i.* to take rank. [CLASS.]

grad-u-al (*grad'ū-al*), *adj.* proceeding by degrees; regular and slow.

grad-u-ate (*'ū-āt*), *n.* one on whom a degree has been conferred: *v. t.* to mark with degrees or a scale: *v. i.* to take or receive an academical degree; change by degrees: *adj* having been graduated.

grad-u-a-tion (*-ā'shun*), *n.* the conferring or reception of an academical degree; regular progression; a marking into degrees or parts.

graft (*grȧft*), *n.* a small shoot of a tree inserted into another tree; a bribe: *v. t.* to insert, as a shoot in another tree; in surgery, to transplant (tissue): *v. i.* to practice grafting; to accept bribe money.

Graham (*grā'am, grām*). From the Gaelic *gruama* "surly, stern, morose, dark, gloomy."

grail (*grāl*), *n.* a dish or chalice, especially the Holy Grail (Sangreal), the cup used by Jesus Christ at the Last Supper. [Also *graal.*]

grain (*grān*), *n.* any minute, hard mass; a single seed of corn; a unit of weight equal to 1-20th of a scruple, 1-24th of a pennyweight; the arrangement of particles in a body; texture; *v. t.* form into grains; to paint in imitation of the grain of wood.

grain-ing (*'ing*), *n.* painting in imitation of the grain of wood; the pebbling of paper or leather.

gram. See *gramme.*

gra-mer-cy (*grȧ-mēr'si*), *interj.* great thanks.

gram-i-niv-o-rous (*gram-i-niv'ō-rus*), *adj.* feeding on grasses.

gram-mar (*'ēr*), *n.* the science that treats of the principles that govern the correct use of language.

gram-ma-ri-an (*-mā'ri-an*), *n.* one who is versed in grammar; a philologist.

gram-mat-ic-al (*-mat'i-kal*), *adj.* pertaining to grammar, or its rules.

gramme (*gram*), *n* the unit of weight in the metric system, 15.43 grains troy. [Also *gram.*]

gram-o-phone (*'ō-fōn*), *n.* an instrument for recording and reproducing speech.

gram-pus (*'pus*), *n.* a large cetacean, akin to the porpoise.

Granada (*grȧ-nā'dȧ*). The capital of the province of Granada, Spain, situated on the Jenil, on spurs of the Sierra Nevada. It is famous for the Alhambra. The name is from the Arabic. *Garnatha,* "pomegranate," because the city is built on four hills divided somewhat like the divisions of a pomegranate.

gran-a-ry (*gran'a-ri*), *n.* [*pl.* granaries (*riz*)], a storehouse for grain.

grand (*grand*), *adj.* high in dignity or power; illustrious; great; magnificent; noble; conceived or expressed in dignified language; complete; the second degree of parentage or descent: *n.* a grand piano. [GREAT.]

Grand canal. The principal canal of Venice. It runs in the form of the letter S through the center of the city, from the railway station to Santa Maria del Salute.

grand-child (*grand'child*), *n.* the child of one's son or daughter.

grand-daugh-ter (*'daw-tēr*), *n.* the daughter of one's son or daughter.

gran-dee (*gran-dē'*), *n.* a Spanish nobleman of the highest rank.

gran-deur (*'dūr*), *n.* greatness; vastness; sublimity; splendor of appearance.

grand-fa-ther (*grand'fȧ-thēr*), *n.* the father of one's father or mother.

gran-dil-o-quent (*gran-dil'ō-kwent*), *adj.* speaking in, or characterized by, a lofty or bombastic style.

gran-di-ose (*'di-ōs*), *adj.* really or affectedly grand or impressive.

Grand Manan island. An island east of Maine, at entrance to bay of Fundy, belonging to New Brunswick. A compound word meaning "great island." English, *grand;* Indian, *munnohan,* "the island." [Also spelled *Menan.*]

grand-mother (*'muth-ēr*), *n.* the mother of one's parent.

grand-par-ent (*'pâr-ent*), *n.* the parent of one's parent.

Grand Prix (*grän prē'*), **The.** The great horse-race at Longchamps, Paris, established by Napoleon III. (prize 20,000 francs), run by three-year-olds. Longchamps is a very good course, situated in the Bois de Boulogne, first used for racing in the reign of Louis XVI. Races have been run here since 1859. The Grand Prix is run on the Sunday of Ascot week.

Grand Prix de Rome (*grän prē' du rōm*). A prize given by the Academy of Fine Arts in Paris to the most successful competitor in painting, sculpture, engraving, architecture, or music. The examinations are held annually, and the successful candidates become pensioners of the government for four years. They are sent to reside at Rome, where Louis XVI. founded the Academie de France in 1666.

grand-son (*'sun*), *n.* the son of one's son or daughter.

grange (*grānj*), *n.* a farm with its dwelling house, appurtenances, etc.

gran-ite (*gran'it*), *n.* a massive crystalline rock composed of quartz, feldspar, and mica.

gra-niv-o-rous (*grȧ-niv'ō-rus*), *adj.* eating grain; living on seeds.

grant (*grȧnt*), *v. t.* to give or confer; concede; transfer the title of: *n.* the act of granting; a gift; a bestowing; the thing conveyed. [GIVE.]

gran-u-lar (*gran'ū-lēr*), *adj.* composed of, or resembling, grains or granules.

gran-u-late (*'ū-lāt*), *v. t.* to form into grains or small masses; roughen the surface of: *v. i.* to become granular

gran-ule (*'ūl*), *n.* a small grain or particle.

grape (*grāp*), *n.* the fruit of the grapevine; a vine of the genus *Vitis;* grapeshot.

grape-shot (*'shot*), *n.* a cluster of small shot arranged in tiers of three shots each between plates, so as to disperse when fired.

graph-ic (*grȧf'ik*), *adj.* pertaining to the art of writing; vividly described.

graph-ite (*'it*), *n.* a metallic variety of carbon.

graph-o-phone (*grȧf'ō-fōn, n.* an instrument re-

sembling the phonograph, but having a rubber cylinder instead of one of wax.

grap-nel (*grap'nel*), *n.* a kind of small anchor usually with flukes; heavy tongs.

grap-ple (*grap'l*), *v. t.* to lay fast hold of: *v. i.* struggle or contend: *n.* a close fight; a seizing; close hold; a mechanical device for taking hold of anything.

Grasmere. One of the group of English lakes, meaning "the lake of swine."

★grasp (*grăsp*), *v. t.* to seize or catch at: *v. i.* to endeavor to seize; struggle or grapple: *n.* a seizure of the hand; reach of the hand; hold; intellectual capacity. [LAY.]

grass (*grăs*), *n.* herbage having hollow-jointed stalks; that which is subject to decay: *v. t.* to cover with grass or turf; pasture or graze.

grass-wid-ow (*-wid'ō*), *n.* a woman legally or otherwise separated from her husband.

grate (*grāt*), *n.* a framework of iron bars: *v. t.* to rub or wear away by friction; produce a sound by friction: *v. i.* make a harsh noise; produce mental irritation.

grate-ful (*'fool*), *adj.* thankful; pleasurable. [ACCEPTABLE.]

grat-i-fi-ca-tion (*grat-i-fi-kā'shun*), *n.* the act of gratifying; satisfaction; pleasure; reward.

grat-i-fy (*'i-fī*), *v. t.* [*p. t.* and *p. p.* gratified, *p. pr.* gratifying], to afford pleasure to; indulge; delight; humor.

Syn. GRATIFY, indulge, humor. *To gratify* is a positive act of the choice; *to indulge* is a negative act of the will, a yielding of the mind to circumstances. One *gratifies* his desires or appetite; and *indulges* his humors, or *indulges* in pleasures. We *gratify* and *indulge* others as well as ourselves, and mostly in the good sense; *to gratify* is for the most part in return for services; it is an act of generosity; *to indulge* is to yield to the wishes or be lenient to the infirmities of others. *To humor* is mostly taken in a bad sense. [See *satisfy*.]

Ant. ABSTAIN, discipline.

grat-ing (*grāt'ing*), *n.* an open framework or lattice of bars: *p. adj.* harsh, irritating.

★gra-tis (*grā'tis*, not *grat'is*), *adv.* gratuitously.

grat-i-tude (*grat'i-tūd*), *n.* the state of being grateful; appreciation. [THANKFULNESS.]

gra-tu-i-tous (*grą-tū'i-tus*), *adj.* freely bestowed; voluntary.

Syn. GRATUITOUS, voluntary. *Gratuitous* is opposed that which is obligatory; *voluntary* is opposed to that which is compulsory or *involuntary*.

gra-tu-i-ty (*'i-ti*), *n.* [*pl.* gratuities (*-tiz*)], a donation or present; free gift.

★gra-va-men (*grą-vā'men*), *n.* [*pl.* gravimina (*-vim'i-nā*)], cause of complaint or action.

grave (*grāv*); *adj.* serious; solemn; thoughtful; sedate; important; a long-sounding accent: *n.* an excavation for a dead body: *v. t.* to shape or carve by cutting with a chisel; engrave.

Syn. GRAVE, serious, solemn. *Grave* expresses more than *serious;* it does not merely bespeak the absence of mirth, but heaviness of mind; *seriousness*, on the other hand, bespeaks no depression, but simply steadiness of action; a judge pronounces the *solemn* sentence of condemnation in a *solemn* manner; a preacher delivers many *solemn* warnings to his hearers.

Ant. FRIVOLOUS, light, gay.

grav-el (*grav'l*), *v. t.* to embarrass; lame a horse by gravel under the shoe: *n.* fragments of rock coarser than sand; a disease in the bladder and kidneys.

grav-el-ly (*-li*), *adj.* composed of, or abounding in, gravel.

grav-i-tate (*grav'i-tāt*), *v. i.* to be acted upon, or attracted by, the force of gravity; be naturally attracted.

grav-i-ta-tion (*-i-tā'shun*), *n.* the force which attracts material bodies to each other.

grav-i-ty (*'i-ti*), *n.* that force which tends to draw all bodies toward the center of the earth; weight; importance; seriousness; solemnity.

gra-vy (*grā'vi*), *n.* [*pl.* gravies (*'viz*)], the fatty juice from roasting flesh.

gray (*grā*), *adj.* of a white color with a mixture of black; hoary; mature: *n.* the color of white mixed with black.

graze (*grāz*), *v. t.* to furnish pasture for; touch or rub lightly: *v. i.* to eat grass; move along while grazing: *n.* a slight rub or touch.

★gra-zier (*grā'zhēr*), *n.* one who pastures cattle or breeds them for the market.

grease (*grēs*), *n.* soft animal fat; oily matter: *v. t.* (*grēz*) to smear or rub with grease; cause to move easily.

greas-y (*grēz'i* or *grēs'i*), *adj.* [*comp.* greasier, *superl.* greasiest], resembling, smeared or spotted with, grease; oily; unctuous; foggy; muddy.

great (*grāt*), *adj.* large; chief; principal; marvelous; eminent; high in rank or position: *adv.* very much: *n.* the whole, or gross; noble, or influential, people.

Syn. GREAT, large, big. *Great* is applied to all kinds of dimensions in which things can grow or increase; *large* signifies to give freely, it is properly applied to space, extent, and quantity; *big* denotes *great* as to expansion or capacity. A house, a room, is *great* or *large;* an animal or a mountain is *great* or *big*.

Ant. DIMINUTIVE, little, tiny, small.

Syn. GREAT, grand, sublime. These terms are synonymous only in their moral application; *great* simply designates extent; *grand* includes likewise the idea of excellence and superiority. A *great* undertaking characterizes only the extent of the undertaking; a *grand* undertaking bespeaks its superior excellence; *sublime* designates the dimensions of height. A scene may be either *grand* or *sublime*.

Ant. INSIGNIFICANT, petty, trivial.

Great Barrington. Town in Berkshire county, Massachusetts, named for William, Lord Barrington.

Great Bear lake. In British North America. So called owing to its northern situation, referring to the northern constellations of the Great and Little Bear.

Great Mogul. An extinct title borne by the chief of the Moguls of the empire founded in Hindustan by Baber, fifteenth century.

Great Salt lake, Utah. Received its name on account of the saline character of its waters.

Great Tom. A bell, weighing about 17,000 pounds, in the tower of the Tom gate of Christ church, Oxford. Every night at ten minutes past nine (closing time) it is tolled.

Great Wall of China. A wall begun by the Emperor Tsin Chi-hwangti 214 B. C. and finished 204 B. C. as a defense against northern tribes. It extends from Shanhaikwan along the northern frontiers of Chihli, Shansi, Shensi, and Kansu. Length about 1,500 miles.

greaves (*grēvz*), *n. pl.* armor to protect the legs from the ankle to the knee.

Gre-cian (*grē'shan*), *adj.* pertaining to Greece; a native or inhabitant of Greece; a Greek scholar.

Greece. The modern form of the Lat. *Græcia*, Gr. *Graikoi*, a name originally bestowed on the inhabitants of Hellas. A country of southern Europe.

greed (*grēd*), *n.* avarice; greediness.

greed-y (*'i*), *adj.* [*comp.* greedier, *superl.* greediest], voracious; gluttonous; desirous; covetous.

Greek (*grēk*), *adj.* pertaining to, or resembling, Greece or the Greeks; Hellenic: *n.* a Grecian; the language of ancient and modern Greece; something unintelligible.

Greek church (*chērch*), the eastern or oriental church.

Greek cross (*kros*), a cross with four equal arms.

Greek fire (*fir*), an inflammable material used by the ancient Greeks in warfare.

Greeley. City in Colorado, county and city in Kansas, and county in Nebraska, named for Horace Greeley.

green (*grēn*), *adj.* having the color of growing grass or plants; of a color composed of blue and yellow; fresh; flourishing; unripe; immature; inexperienced: *n.* the color of growing grass or plants; a color composed of blue and yellow; a grass plot or common: *v. t.* to make green: *v. i.* to become green.

green-back (*'bak*), *n.* a paper money (U. S. legal-tender note) with a green back, first issued in 1862.

Green bay, Wis. Located on its shores were a tribe of Indians, whose mode of life was so filthy, when first met by the French, they designated them as the Puans (*puans*, "stinkards"). To the bay they gave the name of *Baye de Puans*, and transposition through pronunciation carried it to *Grand bay* and *Grun bay* to *Green bay*.

green-horn (*'hôrn*), *n.* a simpleton; novice.

green-house (*'hous*), *n.* a conservatory.

Greenland. The name given by Eric the Red in 983 to the sheltered nook where he founded his colony from Iceland, thinking that "much people will go thither if the land has a pleasant name." The name is not altogether unsuitable, as the place chosen by Eric for the settlement which he named *Greenland* is the pleasantest spot in the country, a smooth grassy plain at the head of Igaliko fiord, near the modern Julianshaab. The name was afterward inappropriately extended to the whole ice-clad arctic island.

Green mountains, Vt. Name a translation of the French name *"vert-monts."*

Green river, Ky. Named in honor of General Nathaniel Greene of the Revolution. The letter *e* was originally added to the name of the river.

green-room (*'room*), *n.* the actors' retiring room in a theater.

Greensboro, N. C. Named in compliment to General Nathaniel Greene, he having had a victorious skirmish at this locality during his famous retreat in 1781.

Green Sea. Otherwise the Persian gulf, owing to a peculiar strip of green always discernible along the Arabian shore.

greet (*grēt*), *v. t.* to salute in kindness or respect; congratulate: *v. i.* to exchange greetings. [ADDRESS.]

greet-ing (*'ing*), *n.* salutation; welcome. [SALUTE.]

gre-ga-ri-an (*grē-gā'ri-an*), *adj.* living in herds; common.

gre-ga-ri-ous (*grē-gā'ri-us*), *adj.* associating or going together in herds.

Gre-go-ri-an cal-en-dar (*gre-gō'ri-an kal'en-dēr*), the reformed calendar introduced, 1582, by Pope Gregory XIII.

Gre-go-ri-an chant (*chânt*), the mediæval system of choral music, introduced by Pope Gregory the Great; plain song.

Gregory (*greg'ō-ri*). From the Latin *Gregorius*, from the Greek *Gregorios*, "to watch." The name means "watchful." Danish., *Gregor;* Dutch, *Gregorius;* Fr., *Grégoire;* Ger., *Gregor;* It., *Gregorio;* Lat., *Gregorius;* Sp. *Gregorio;* Sw., *Gregorius*.

gre-nade (*grē-nād'*), *n.* an explosive shell fired by a fuse and thrown by hand.

gren-a-dier (*gren-ą-dēr'*), *n.* originally a foot soldier who threw grenades, now a soldier of the Grenadier Guards.

gren-a dine (*gren-ą-dēn'*), *n.* a dress fabric of thin gauzy silk or wool; a dyestuff.

grey. Another form of *gray*.

grey-beard (*'bērd*), *n.* an old man.

grey-hound (*'hound*), *n.* a slender, swift hound.

grid-dle (*grid'l*), *n.* a broad shallow pan, used for cooking cakes.

grid-dle-cake (*-kāk*), *n.* a thin butter cake.

grid-i-ron (*grid'i-urn*), *n.* a grated iron utensil for broiling meat or fish.

grief (*grēf*), *n.* mental pain on account of present or past trouble; physical pain.

Syn. GRIEF, affliction, distress, melancholy, mourning, regret, sadness, sorrow, tribulation, trouble, woe. *Grief* is acute mental pain resulting from loss, misfortune, or deep disappointment; *sorrow* and *grief* are for definite cause; *sadness* and *melancholy* may arise from a vague sense of want or loss, from a low state of health; *affliction* expresses a deep heart-sorrow. [See *affliction*.]

griev-ance (*grēv'ans*), *n.* a sense of wrong or oppression; an injustice; cause of annoyance.

grieve (*grēv*), *v. t.* to cause to experience grief: *v. i.* to be in sorrow; lament.

griev-ous (*'us*), *adj.* causing grief or sorrow; hard to be borne.

grif-fin (*grif'in*), *n.* a fabulous animal with the body and legs of a lion, the wings and beak of an eagle.

Griffith. The English form of the Welsh name *Gryffydd*. Danish, *Griffith;* Dutch, *Rufinus;* Lat., *Griffithius;* Sw., *Rufin*.

grill (*gril*), *v. t.* to broil; torment, as if by grilling: *v. i.* to be broiled: *n.* a gridiron; grilled meat.

grille (*gril*), *n.* an open grating or screen of wrought metal.

grim (*grim*), *adj.* [*comp.* grimmer, *superl.* grimmest], of a forbidding aspect; stern and surly; unyielding.

★gri-mace (*gri-mās'*, not *grim'ās*), *n.* a distortion of the countenance; smirk: *v. i.* to make grimaces.

grime (*grim*), *n.* foul matter; dirt deeply ingrained: *v. t.* to make dirty or grimy.

grim-y (*'i*), *adj.* full of grime.

grin (*grin*), *n.* the act of closing the teeth and showing them; a broad smile: *v. i.* [*p. t.* and *p. p.* grinned, *p. pr.* grinning], to show the teeth in laughter, scorn, or pain: *v. t.* to express by grinning.

grind (*grind*), *v. t.* [*p. t.* and *p. p.* ground, *p. pr.* grinding], to pulverize or reduce to powder by friction; sharpen or smooth; study hard: *v. i.* to pe form the act of grinding; be rubbed together: *n.* the act of grinding; laborious and tedious work.

grind-stone (*'stōn*), *n.* a flat, circular stone for sharpening tools, etc.

grip (*grip*), *n.* a grasp with the hand; that by which anything is held firmly; a particular mode of grasping the hand: *v. t.* to grasp, or seize: *v. i.* to take fast hold.

gripe (*grip*), *n.* a clasping with the hand or arms; a squeeze: *pl.* colic: *v. t.* grasp; hold tightly; seize; clutch; oppress; pinch: *v. i.* to take firm hold. [PRESS, LAY.]

grippe (*grip*, or *grēp*), *n.* influenza. [Also *grip*.]

grip-p ng (*grip'ing*), *adj.* avaricious.

gris-ly (*griz'li*), *adj.* terrible; savage looking.

Grisons (*grē-zōn'*). The largest canton of Switzerland. So called from the German *Graubünden*, "the gray league," so called from the dress worn by the Unionists in 1424.

grist (*grist*), *n.* grain for grinding; ground corn; provision or supply.

gris-tle (*gris'l*), *n.* cartilage.

gris-tly (*'li*), *adj.* cartilaginous.

grit (*grit*), *n.* rough, hard particles, as sand, etc.; courage: *pl.* oats hulled and coarsely ground.

grit-ty (*'i*), *adj.* composed of, containing, or resembling, grit; courageous.

griz-zly (*griz'li*), *adj.* somewhat gray: *n.* a large, fierce bear of North America.

groan (*grōn*), *n.* low, deep sound uttered in pain, sorrow, disapprobation or ridicule: *v. i.* to utter a groan; lament; be burdened: *v. t.* to express disapproval of by groans.

Syn. GROAN, moan. *Groan* is a deep sound produced by hard breathing; *moan* is a plaintive, long-drawn sound produced by the organs of utterance. The *groan* proceeds involuntarily as an expression of severe pain, either of body or mind; the *moan* proceeds often from the desire of exciting compassion.

groat (*grōt*), *n.* formerly a silver coin current in England, value 4d.; a trifling sum.

gro-cer (*grō'sēr*, *n.* one who sells groceries.

gro-cer-y (*-i*), *n.* [*pl.* groceries (*-iz*)], tea, coffee, sugar, spices, etc. (usually *pl.*); a grocer's shop; a grogshop.

grog (*grog*), *n.* a mixture of spirits and water; spirituous liquor.

grog-gy (*'i*), *adj.* tipsy; staggering as if dazed.

groin (*groin*), *n.* the depressed part of the human body between the thigh and the belly; the curve made by the intersection of two arches: *v. t.* to build or form into groins.

groom (*grōōm*), *n.* one who has charge of horses; a bridegroom: *v. t.* to feed and take care of, as a groom does a horse; curry and brush.

grooms-man (*grōōmz'man*), *n.* one who attends a bridegroom; best man.

groove (*grōōv*), *n.* channel or furrow, especially as cut by a tool; settled habit or routine: *v. t.* to form or cut a groove in.

grope (*grōp*), *v. i.* to feel one's way with the hands; seek blindly: *v. i.* to search out, as in the dark.

gros-beak (*grōs'bēk*), *n.* the name of various warblers with a large, stout beak, allied to the finches.

gros-grain (*grō'grān*), *n.* a stout double-corded silk.

gross (*grōs*), *adj.* bulky; thick; coarse; indelicate; corpulent; dense; whole: *n.* 12 dozen; entire amount.

Syn. GROSS, coarse. These terms are synonymous in the moral application. *Grossness* of habit is opposed to delicacy; *coarseness* to softness and refinement. A person becomes *gross* by an unrestrained indulgence of his sensual appetites; he is *coarse* from the want of polish.

Ant. EXQUISITE, fine.

Grosvenor (*grōv'nēr*) **gallery.** A gallery for the exhibition of paintings of the modern æsthetic school, established by Lord Grosvenor in New Bond street, London, in 1876. Pictures were received only by invitation. The exhibitions have been for some time discontinued.

Grosvenor square. A fashionable square in London, east of Hyde Park. It was laid out before 1716 and has been the residence of many famous men. There is great variety of styles in its architecture, and it is noted for the old ironwork and flambeau extinguishers before many of the doors.

gro-tesque (*grō-tesk'*), *adj.* fantastically or oddly formed; extravagant; whimsical; ridiculous.

grot-to (*grot'ō*), *n.* a natural or artificial cavern in the earth.

ground (*ground*), *n.* the earth or soil; surface of a floor or pavement; land; territory; cause or reason; origin: *pl.* dregs or sediment: *v. t.* to place or set on, or in, the ground; settle in first principles; base; run aground: *v. i.* to take the ground; run aground: *adj.* fundamental: *p. t.* and *p. p.* of grind. [FOUNDATION.]

ground-hog (*'hog*), *n.* the woodchuck; the aardvark.

group (*grōōp*), *n.* a small crowd or assemblage; a cluster; an assemblage of figures or objects: *v. t.* to form into a group.

grouse (*grous*), *n.* red and black heath game; partridge; pheasant; prairie hen.

grout (*grout*), *n.* mortar or cement mixed with gravel; a fine plaster for ceilings: *v. t.* to surround or fill in with grout.

grove (*grōv*), *n.* a small wood.

grov-el (*grov'l*), *v. i.* to lie prone; be mean or debased.

grow (*grō*), *v. t.* [*p. t.* grew, *p. p.* grown, *p. pr.* growing], to cultivate: *v. i.* to increase in stature or size by development; be produced by vegetation; thrive; become. [INCREASE.]

growl (*groul*), *n.* a deep angry snarl or murmur: *v. i.* to snarl or murmur like a dog; grumble.

growl-er (*'ēr*), *n.* one who, and that which, growls.

growth (*grōth*), *n.* the progressive increase of animal or vegetable bodies; advancement; increase; progress; result; effect.

grub (*grub*), *v. t.* [*p. t.* and *p. p.* grubbed, *p. pr.* grubbing], to dig up: *v. i.* to drudge or toil; perform dirty work: *n.* the larva of a beetle, moth or other insect.

grudge (*gruj*), *v. t.* to regard with envy or discontent; give or take with reluctance: *n.* secret malice or ill will.

gru-el (*grōō'el*), *n.* a light, semiliquid food for invalids.

grue-some (*grōō'sum*), *adj.* horrible of aspect; inspiring gloom or horror.

gruff (*gruf*), *adj.* rough or surly in voice or manner; harsh; hoarse.

grum-ble (*grum'bl*), *v. i.* to murmur discontentedly; find fault.

grump-y (*grump'i*), *adj.* surly; cross; low-spirited.

grunt (*grunt*), *n.* the guttural noise of a hog: *v. i.* to make a noise like a hog.

gua-no (*gwä'nō*), *n.* the dung of sea birds, yielding a valuable manure.

guar-an-tee (*gar-an-tē'*), *n.* an engagement made to secure the fulfillment of an agreement: *v. t.* to undertake to secure (that another shall perform a certain stipulation); warrant; be responsible for.

guar-an-tor (*-tôr'*), *n.* one who becomes surety for the performance of another's acts.

guar-an-ty. The legal form of *guarantee.*

guard (*gärd*), *v. t.* to watch over or protect; preserve by caution: *v. i.* be cautious (with *against*): *n.* security or defense against injury or attack; any contrivance or device for security; a man or body of men employed for defense or control.

Syn. GUARD, defend, watch. *To guard,* in its largest sense, comprehends both *watching* and *defending.* In the restricted sense, *to guard* is properly to keep off an enemy; *to defend* is to drive him away when he makes the attack. *Watch,* like *guard,* consists in looking to the danger; he who *watches* may only give an alarm.

Ant. BETRAY, expose, surrender.

Syn. GUARD, guardian. The *guard* only *guards* against external evils; the *guardian* takes upon himself the office of parent, counselor, and director.

Ant. BETRAYER, enemy.

guard-i-an (*'i-an*), *n.* one who has the care of the person or property of another; a warden: *adj.* protecting; tutelary. [GUARD.]

Guatemala (*gaw-tē-mä'lä*, Spanish *gwä-tä-mä'lä*). A republic of Central America. Name is European rendering of the Mexican *quahtemali,* "a decayed log of wood"; so called by the Mexican Indians who accompanied Alvarado into this region because they found an old worm-eaten tree near the ancient palace of the kings or *Kachiquel,* which was thought to be the center of the country.

gua-va (*gwä'vä*), *n.* a tree of tropical America yielding a pear-shaped fruit.

gu-ber-na-to-ri-al (*gū-bēr-nā-tō'ri-al*), *adj.* pertaining to a governor or to his office.

gudg-eon (*guj'un*), *n.* a small edible fresh-water fish; a person who is easily imposed upon.

guer-il-la (*gēr-il'ä*), *n.* one of an irregular force engaged in harassing an enemy in small bands: *adj.* belonging to, or consisting of, guerillas; pertaining to irregular warfare.

guern-sey (*gērn'zi*), *n.* a close-fitting knitted woolen shirt.

Guern-sey, *n.* a breed of dairy cattle from the island of Guernsey in the English channel.

guess (*ges*), *n.* a conjecture; the act of guessing: *v. t.* to hit upon at random; believe or think: *v. i.* to conjecture.

Syn. GUESS, conjecture, divine. We *guess* that a thing actually is; we *conjecture* that which may be; *guess* that it is a certain hour; we *conjecture* as to the meaning of a person's actions. *To guess* and *to conjecture* are natural acts of the mind; *to divine* in its proper sense is a supernatural act.

Ant. ASCERTAIN, discover, prove.

guest (*gest*), *n.* one who is entertained at the house or table of another.

Syn. GUEST, visitor, or visitant. *Guest* signifies one who is entertained; *visitor* or *visitant* is the one who pays the *visit;* the *visitor* simply comes to see the person, and enjoy social intercourse; but the *guest* patakes also of hospitality.

guf-faw (*guf-faw'*), *n.* a rude, boisterous laugh.

Guglielmo (*gōōl-yel'mō*). See *William.*

guid-ance (*gid'ans*), *n.* direction; leading.

guide (*gid*), *n.* one who leads or directs; conductor; that by which one directs his course: *v. t.* to lead or direct; influence; regulate. [LEAD.]

guide-book (*'book*), *n.* a handbook for the direction of travelers.

Guido (*gwē'dō*). See *Guy.*

guild (*gild*), *n.* a fraternity; corporation; association. [Also *gild.*]

guil-der (*gil'dēr*), *n.* the Dutch florin, value about 40.2 cents.

Guildhall (*gild'hawl*). The council hall of the city of London, founded in 1411, and restored after the fire of 1666. The great hall measures 153 by 48 feet, and is 55 feet high; it has a handsome open-framed roof, modern colored glass windows, and the two legendary colossal wooden figures of Gog and Magog. Along the walls are placed statues of famous men. The crypt, with its cloistered columns, is of the original construction.

guile (*gīl*), *n.* deceit; cunning; duplicity. [DECEIT.]

Guillaume (*gē-yōm'*). See *William.*

guil-lo-tine (*gil'o-tēn*), *n.* an apparatus for beheading a criminal by means of a heavy knife sliding in two upright grooves: *v. t.* (*gil-ō-tēn'*) to behead with the guillotine.

guilt (*gilt*), *n.* the state of one who is liable to a penalty; sin; criminality.

guilt-less (*'les*), *adj.* free from guilt; innocent.

guilt-y (*'i*), *adj.* [*comp.* guiltier, *superl.* guiltiest], justly chargeable with a crime; wicked.

guin-ea (*gin'ē*), *n.* a gold coin, formerly current in England, value 21s. or about $5.00. The English *guinea* was first coined in 1673. It derived its name from the fact that the gold of which it was first composed came from *Guinea.*

Guinea. A native West African term, meaning "abounding in gold."

guin-ea fowl (*foul*), a grayish-blue gallinaceous bird with white spots.

guin-ea pig (*pig*), a small domesticated South American rodent.

guise (*gīz*), *n.* external appearance; dress; mien.

Syn. GUISE, habit. The *guise* is that which is unusual, and often only occasional; the *habit* is that which is usual among particular classes; a person sometimes assumes the *guise* of a peasant, in order the better to conceal himself; he who devotes himself to the clerical profession puts on the *habit* of a clergyman.

gui-tar (*gi-tär'*), *n.* a six-stringed instrument, on the principle of the violin, played with the fingers.

gulch (*gulch*), *n.* a rocky, or rough, narrow valley.

gulf (*gulf*), *n.* an arm of the sea extending into the land, intermediate in size between a bay and sea; an abyss; something insatiable.

Gulf of Carpentaria. In north coast of Australia; preserves the memory of a Dutch captain named Carpenter, who discovered it in 1616.

Gulf of St. Lawrence. An arm of the Atlantic; first explored, and the navigation of the long river of same name flowing into it commenced, on the Feast of St. Lawrence, 1500.

gulf stream (*strēm*), a vast and important warm ocean current flowing out from the Gulf of Mexico.

gull (*gul*), *n.* a web-footed sea fowl with long wings; one easily cheated: *v. t.* to cheat; deceive.

gul-let (*'et*), *n.* the throat; œsophagus.

gul-li-ble (*gul'i-bl*), *adj.* capable of being easily deceived.

gul-ly (*gul'i*), *n.* [*pl.* gullies (*'iz*)], a channel or hollow worn by water; narrow ravine.

gulp (*gulp*), *v. t.* to swallow down eagerly: *n.* the act of gulping.

gum (*gum*), *n.* the soft fleshy part of the jaws by which the teeth are surrounded; a semitransparent viscid substance that exudes from certain trees and hardens: *v. t.* [*p. t.* and *p. p.* gummed, *p. pr.* gumming], to smear or unite with gum.

gum-my (*'i*), *adj.* like gum.

gump-tion (*gump'shun*), *n.* quickness of perception; common sense.

gump-tious (*'shus*), *adj.* shrewd; smart.

gun (*gun*), *n.* an instrument for discharging shot.

gun-boat (*gun'bōt*), *n.* a warship of light draft, next in size to a cruiser.

gun cot-ton (*kot-n*), a highly explosive substance formed by the action of nitric and sulphuric acid upon cotton.

gun fire (*fir*), the hour at which the morning and evening gun is fired.

gun met-al (*met-al*), an alloy of copper and tin.

gun-ner (*'ēr*), *n.* one who works a gun.

gun-ny (*'i*), *n.* [*pl.* gunnies (*'iz*)], a coarse heavy sackcloth of jute or hemp.

gun-pow-der (*'pou-dēr*), *n.* an explosive substance composed of sulphur, niter and charcoal.

Gun-ter's chain (*gun'tērz chān*), surveyor's chain used in measuring land, 66 ft. long, and divided into 100 links of 7.92 inches each.

Gun-ter's scale (*skāl*), a large plane scale, with various lines of numbers engraved upon it.

gun-wale (*gun'wāl*), *n.* the upper edge of the side of a ship next to the bulwarks.

gur-gi-ta-tion (*gûr-ji-tā'shun*), *n.* a state of boiling, or whirling round.

gur-gle (*gûr'gl*), *v. i.* to flow or run with a purling, bubbling sound: *n.* a purling, bubbling noise.

gush (*gush*), *n.* a sudden and violent flow of a liquid from an inclosed space; outburst; an extravagant display of sentiment: *v. i.* to issue with violence and rapidity; be extravagantly sentimental.

gush-er (*'ēr*), *n.* one who, or that which, gushes.

gus-set (*gus'et*), *n.* a small triangular piece of cloth inserted in a garment to strengthen or enlarge a part.

gust (*gust*), *n.* a sudden squall; a sudden and violent outburst of passion. [BREEZE.]

gus-ta-to-ry (*gus'tä-tō-ri*), *adj.* pertaining to the taste.

Gustavus (*gus-tā'vus*). From the Swedish name *Gustaf,* which some translate "Goth's staff"; others derive it from the Su-Goth *God,* "God" or "good," and *staf,* "staff." Gustaf is more probably corrupted from *Augustus.* Dutch, *Gustavus;* Fr., *Gustave;* Ger., *Gustav;* Lat., *Gustavus;* Sw., *Gustaf.*

gus-to (*'tō*), *n.* zest; relish.

gus-ty (*'i*), *adj.* characterized by gusts.

gut (*gut*), *n.* an intestine; catgut: *v. t.* [*p. t.* and *p. p.* gutted, *p. pr.* gutting], to extract the entrails of; to plunder, or empty entirely.

gut-ta-per-cha (*gut-ä-pēr'chä*), *n.* a reddish-brown horn-like substance; the inspissated juice of the gutta-percha tree.

gut-ter (*'ēr*), *n.* a channel for carrying away water: *v. t.* to cut into channels; furnish with gutters.

gut-tur-al (*'ur-al*), *adj.* pertaining to, or produced in, the throat: *n.* a letter produced in the throat.

guy (*gi*), *n.* a rope, chain, etc., to swing and keep steady a heavy body; a person oddly or dowdily dressed: *v. t.* to steady or guide with a guy; ridicule; delude.

Guy. Probably derived from French *gui,* "mistletoe," or from *Guillaume* (William), whence the diminutives, *Guyot* and *Gusion.* Danih, *Guido;* Dutch, *Guido;* Fr., *Guy;* Ger., *Veit;* It., *Guido;* Lat., *Guido;* Sw., *Guido.*

guz-zle (*guz'l*), *v. i.* to drink greedily and immoderately.

Gwendolen (*gwen'dō-len*). A Welsh female name. Sometimes translated "the lady of the bow"; another translation is "white-browed."

gym-na-si-um (*jim-nā'zi-um*), *n.* [*pl.* gymnasia (*a*)], a building where gymnastic exercises are practiced.

gym-nast (*'nast*), *n.* one who practices, or is expert in, gymnastics.

gym-nas-tic (*-nas'tik*), *adj.* pertaining to, or of the nature of, gymnastics.

gym-nas-tics (*'tiks*), *n. pl.* athletic exercises; the art of developing the physical powers by athletic exercises.

gyn-e-col-o-gy (*jin-ē-kol'ō-ji*), *n.* that branch of medical science which treats of the functions and diseases of women.

gyp-sum (*jip'sum*), *n.* sulphate of lime; plaster of paris.

Gypsy. Same as *Gipsy.*

gy-ral (*ji'ral*), *adj.* rotatory; whirling.

gy-rate (*'rāt*), *v. i.* to revolve round a central point; rotate; wheel.

gy-ra-to-ry (*'rä-tō-ri*), *adj.* revolving in a circle.

gy-ro-scope (*ji'rō-skōp*), *n.* an instrument for demonstrating the laws of dynamics governing rotating bodies.

gy-ro-scope rail-way (*-rāl'wā*), a recent invention of a single-rail railway, each car being kept erect by the rotary force of two gyroscopes in rapid opposite motion. The car used is called a *gyro-car.*

gy-ro-stat (*-stat*), *n.* an instrument for demonstrating the dynamics of rotating rigid bodies.

H

hab-er-dash-er (*hab′ĕr-dash-ĕr*), *n.* a dealer in small wares, as ribbons, laces, tapes, needles, etc.

ha-bil-i-tate (*hă-bil′i-tāt*), *v. i.* to become qualified.

hab-it (*hab′it*), *n.* ordinary course of conduct; established custom; dress; a woman's riding dress; *v. t.* to dress; furnish with a habit. [GUISE, CUSTOM.]

hab-it-a-ble (*hab′it-a-bl*), *adj.* fit to be dwelt in.

hab-i-tat (*′i-tat*), *n.* the natural locality of animals, plants, etc., in their wild state; geographical range.

hab-i-ta-tion (*-i-tā′shun*), *n.* residence or place of abode; natural locality.

Syn. HABITATION, home, house, residence. *Habitation* implies merely a dwelling place; *house* refers to a building constructed purposely for dwelling therein. *Home* is usually restricted to mean an endeared dwelling as the scene of domestic ties and family life.

ha-bit-u-al (*hă-bit′ū-al, adj.* formed or acquired by use; customary; inveterate.

ha-bit-u-ate (*′ū-āt*), *v. t.* to make familiar by use or custom; familiarize. [ADDICTED.]

★**ha-bit-u-é** (*a-bē-too-ā′*, not *hab-it′yū-ē′*), *n.* one who habitually frequents a place of amusement, etc.

ha-ci-en-da (*ä-thē-än′dä*, or *hä-si-en′dä*), *n.* in Spanish America, a large plantation on which the owner is resident.

hack (*hak*), *v. t.* to cut irregularly and into small pieces; notch; kick (the shins of another), let out for hire: *n.* a notch; hollow irregular cut; a horse let out for hire; a kick on the shins; a carriage let out for hire; a literary drudge.

Hackensack, N. J. A town, so called from the river of same name, which is a corruption of its Indian name *haucquansauk*, "hook mouth," from its shape near the mouth, its many windings before it empties into Newark bay.

hack-ing (*′ing*), *adj.* notching; irritating and wearing: said of a cough.

hac-kle (*hak′l*), *v. t.* to dress or comb, as flax or hemp; tear into pieces: *n.* an implement with sharp spikes for cleansing flax or hemp; unspun fiber; a long narrow feather in the neck of a cock; feather fly for angling.

hack-ney (*′ni*), *v. t.* [*p. t.* and *p. p.* hackneyed, *p. pr.* hackneying], to wear out by constant use: *adj.* let out for hire; common or trite: *n.* a hackney coach; a horse kept for hire.

hack-neyed (*′nid*), *p. adj.* worn out; commonplace.

had-dock (*had′ok*), *n.* a sea fish of the cod family.

Ha-des (*hā′dēz*), *n* the abode and state of the dead.

Hadrian's villa. Now simply an assemblage of ruins, perhaps the most impressive in Italy, about fifteen miles from Rome, near Tivoli. It included the Greek and Latin theaters, so called, an odeum, thermæ, a stadium, a palace, several temples, spacious structures for guards and attendants, and many subsidiary buildings and devices. Of most of these there are extensive remains; and here were found many of the fine statues now in Roman museums.

Hadrian's wall. One of the most noted Roman antiquities of Great Britain, constructed by Hadrian between the Solway firth and the mouth of the Tyne, for purposes of defense. The work has been ascribed to Severus and others, but the opinion now prevails that the whole system of defense bears the impress of a single mind, and that the wall and its parallel earthworks, its camps, roads, and stations, were designed and constructed by Hadrian alone.

hæm-a-lo-pi-a (*hem-ä-lō′pi-ä*), *n.* disease of the eye in which objects appear red.

hæ-mat-ic (*hē-mat′ik*), *adj.* pertaining to the blood: *n. pl.* that branch of physiology that treats of the blood.

haft (*haft*), *n* a handle of a tool or knife.

hag (*hag*), *n.* a witch; an ugly old woman.

Hagar (*hā′gär*). From the Hebrew *Haghar*, which some translate "flight"; others render the name "stranger," from *gur*, "to tarry," "to be a sojourner." Arab *Hajar*, or *Hagar;* Fr., *Agar;* Lat., *Hagar.*

hag-gard (*′ärd*), *adj* worn and anxious in appearance; lean and hollow-eyed.

Haidee (*hi-dē′*) A female name which Stephanus renders "sempiternus"; *i. e.*, "perpetual," "eternal."

hail (*hāl*), *n.* frozen raindrops; a call or salutation: *v. i.* to pour down hail: *v. t* to pour down or out like hail; call to or salute. [ADDRESS.]

hair (*hār*), *n.* one of the small horny fibrous tubes with a bulbous root growing out of the skin of a mammal; the mass of such horny fibrous tubes.

hair-split-ting (*′split-ing*), *adj.* making oversubtle or very minute distinctions.

hair-spring (*′spring*), *n.* a very fine spring to regulate the balance wheel of a watch. [of a gun.

hair-trig-ger (*hār′trig-ĕr*), *n.* a secondary trigger

hair-y (*′i*), *adj.* covered with, abounding in, or resembling, hair.

hal-cy-on (*hal′si-un*), *adj* peaceful; happy; calm.

hale (*hāl*). *adj.* sound bodily; healthy; hearty: *v. t.* to drag or draw by violence. [DRAW.]

half (*hăf*), *n.* [*pl.* halves (*hăvz*)], one of two equal parts; a school term: *adv.* equally; partly: *adj* consisting of a half; approximating.

half-blood (*′blud*), *n* one whose parents are of different races; relationship between persons who have one parent in common.

half-breed (*hăf′-brēd*), *n.* a person of mixed blood; as, an Indian *half-breed.*

hal-i-but (*hal′i-but*), *n* a large edible flatfish.

Halifax, Nova Scotia. Named for the Earl of Halifax.

hall (*hawl*), *n.* a large room; the first large room of a house; a college room.

hal-le-lu-jah (*hal-ē-lōō′yä*), *n.* [Hebrew, Praise ye Jehovah] an ascription of praise to God: *adj* singing, or containing, hallelujah. [Also *alleluiah.*]

hall-mark (*hawl′-märk*), *n.* the official mark attesting the quality of gold and silver articles; a mark or proof of genuineness.

hal-loo (*hal-lōō′*), *interj.* an exclamation to call attention or to cheer on: *v. t* to shout out; incite or cheer on: *v. i.* to cry out loudly. [Also *halloa.*]

hal-low (*hal′ō*), *v. t.* to consecrate; devote to sacred purposes; revere. [DEDICATE, HOLY.]

Hal-low-een (*-ēn′*), *n.* the eve of All Saints' or All-hallows day, Oct. 31.

hal-lu-ci-na-tion (*hal-lōō-si-nā′shun*), *n.* belief in something imaginary; delusion; error.

ha-lo (*hā′lō*), *n.* a ring or circle of light round the sun or moon; a ring of light or nimbus.

halt (*hawlt*), *n.* a stop in marching: *adj.* crippled or lame: *v. i.* to limp; be dubious; to stop in marching.

halt-er (*′ĕr*), *n.* one who halts.

hal-ter (*hawl′tĕr*), *n.* a rope for hanging; a rope for leading or holding a horse.

halve (*hăv*), *v. t.* to divide into two equal parts; fasten together, as timbers.

hal-yard (*hal′yĕrd*), *n.* a rope or tackle for hoisting a sail, flag, etc. [Also *halliard.*]

ham (*ham*), *n.* the hinder parts of the thigh; a thigh of a hog, salted and smoked.

Ham-a-me-lis (*-ä-mē′lis*), *n.* an order of shrubs, to which the witch-hazel belongs.

Ham-burg (*′bĕrg*), *n.* a rich kind of black grape; a breed of black domestic fowl.

hame (*hām*), *n.* one of the curved bars on the collar to which the traces of a draft horse are fastened.

ham-let (*′let*), *n.* a small village.

Hamlet. From the Old German *amal-laut*, "distinguished for spotlessness." According to some the name in Hamlet's country was pronounced *amlet*, and signified "madman," but no etymology has been suggested for such rendering.

ham-mer (*′ĕr*), *n.* an instrument with a handle and iron head for driving nails, beating metals, etc.: *v. t.* to beat with, or as with, a hammer: *v. i.* to work hard.

ham-mock (*′ok*), *n.* a swinging bed usually of network or canvas.

Hampden. County and town in Massachusetts and a town in Penobscot county, Maine, named for the English patriot, John Hampden.

ham-per (*′pĕr*), *n.* a large wicker-work basket for carrying food, etc.: *v. t.* to embarrass; impede.

Hampton court. A royal palace on the Thames twelve miles from Charing Cross, built by Cardinal Wolsey. Hampton court is most intimately associated with James I. and William III., and was a place of imprisonment of Charles I.

Hampton roads. A channel connecting the estuary of James river with Chesapeake bay, situated south of Fort Monroe, Virginia. Here, March 8, 1862, the Confederate ironclad *Virginia* (*Merrimac*) destroyed the Federal frigates *Cumberland* and *Congress;* and the following day there was a contest between the *Virginia* and the ironclad *Monitor*, the former retiring. This was the first engagement between ironclads in our history.

ham-string (*′string*), *v. t.* [*p. t.* and *p. p.* hamstrung, *p. pr.* hamstringing], to lame by cutting the tendons of the ham. *n. pl.* the strong sinews at the back of the knee.

hand (*hand*), *n.* the divided and terminal extremity of the arm connected with the wrist; something resembling a hand in appearance or use; a measure of 4 inches; right or left side; style of writing; an employé; cards held: nearness; agency of; index of any kind: *v. t.* to give or transmit with, or as with, the hand; assist or lead with the hand: *adj.* pertaining to, or used by, the hand.

hand-i-craft (*′i-kräft*), *n.* the work or skill of an artificer; manual skill or labor: *adj.* pertaining to manual labor.

hand-i-work (*-wĕrk*), *n.* work done, or produced by, the hands.

hand-ker-chief (*hang′kĕr-chif*), *n.* a square of linen, cotton or silk carried in the hand, to wipe the nose or face; a cloth square for the neck

han-dle (*hand′l*), *n.* that part of a tool, vessel, etc., grasped by the hand: *v. t.* to touch or feel with the hand: manage; manipulate; treat; buy, sell, or invest in.

hand-maid (*′mād*), *n.* a female servant or attendant. [Also *handmaiden.*]

hand screw (*skrōō*), a lifting jack.

hand-some (*′sum*), *adj.* pleasing to look upon; well formed; elegantly dressed; graceful.

hand-spike (*′spīk*), *n.* a wooden lever for moving heavy weights.

hand-y (*′i*), *adj.* [*comp* handier, *superl.* handiest], dexterous; skillful; convenient; close at hand.

hang (*hang*), *v. t.* [*p. t.* and *p. p.* hung, hanged, *p. pr* hanging], to suspend· suspend by the neck; display; furnish with ornaments or drapery; catch fast: *v. i.* to be suspended; dangle; cling: *n.* method of hanging; manner of doing or using.

★**han-gar** (*han′gär*), *n.* a carriage shed; a shed for housing aeroplanes.

hang-ing (*′ing*), *p. adj.* suspended or dangling; suggesting or involving death by hanging: *n.* the act of putting to death by hanging: *pl.* drapery for a room.

hang-man (*′man*), *n.* [*pl.* hangmen (*′men*)], a public executioner.

hang-nail (*′nāl*), *n,* a small piece of skin hanging from the root of a finger nail; an agnail.

hank (*hangk*), *n.* two or more skeins of thread, silk, wool, etc., fastened together: *v. t.* to form into hanks.

han-ker (*hang′kĕr*), *v. i.* to desire eagerly (with *after*).

Hannah (*han′nä*). From the Hebrew *Hannah*, which Simonis translates "gratuitous gift"; *i. e.*, "grace," "mercy." Danish, *Hanne* or *Hanna;* Dutch, *Hanna;* Fr. *Anna;* Lat., *Hanna;* Sw., *Hanna.*

Hannibal (*han′ni-bal*). From the Punic, meaning "grace of Baal," or, more freely, a "gracious lord." Fr., *Hannibal;* It., *Annibale;* Lat., *Hannibal.*

Hanover island. Off coast of Chili; named in honor of the house of Hanover.

Hanover square. A square in the West End of London, south of Oxford street and west of Regent street. It received its name in the days of the early popularity of George I. St. George's, Hanover square, is noted as a fashionable church for marriages in London. The square was built about 1731, when the place for executions was removed from Tyburn, lest the inhabitants of the "new square" should be annoyed by them. It contains a bronze statue of William Pitt by Chantrey.

Hans. See *John.*

han-som (*han′sum*), *n.* a two-wheeled cab.

hap (*hap*), *n.* something unexpected. [ACCIDENT.]

hap-haz-ard (*haz-ērd*), *n.* chance; accident: *adv.* by chance.

hap-less (*hap′les*), *adj.* unfortunate; unlucky; unhappy.

hap-ly (*′li*), *adv.* by chance; perhaps.

hap-pen (*′n*), *v. i.* to chance; occur.

Syn. HAPPEN, chance. *Happen* respects all events, without including any collateral idea; *chance* comprehends likewise the idea of the cause and order of events; whatever comes to pass *happens*, whether regularly in the course of things, or particularly and out of the order; whatever *chances, happens* altogether without concert.

hap-pi-ly (*′i-li*), *adv.* successfully; by good fortune; felicitously.

hap-pi-ness (*′i-nes*), *n.* the state of being happy; good fortune; felicitousness.

hap-py (*′i*), *adj.* [*comp.* happier, *superl.* happiest], enjoying pleasure or good; successful; prosperous; lucky; living in concord.

Syn. HAPPY, fortunate. Both words are applied to the external circumstances of a man; but the former conveys the idea of that which is abstractly good, the latter implies rather what is agreeable to one's wishes. A man is *happy* in his marriage; he is *fortunate* in his trading concerns. *Happy* excludes the idea of chance; *fortunate* excludes the idea of personal effort

Ant. ILL-STARRED, unlucky.

Hapsburg (*haps′-burg*), or **Habsburg.** In *Canton Aargau*, the stamm-schloss of the Austrian dynasty appears in an eleventh century document as *Habechisburc*, "hawk's castle." According to the well-known legend, Radbot, an ancestor of Rudolf of Hapsburg, while hunting in the Aargau lost his favorite hawk, and found it sitting on the ridge of the Wulpelsberg. He was so delighted with the view from the spot that he chose the site for the erection of a castle, which he built about 1020 and called *Habichtsburg.*

ha-rangue (*hä-rang′*), *n.* a public address or oration, especially extempore: *v. i.* to deliver a harangue: *v. t.* to address by a harangue.

★**har-ass** (*har′as*), *v. t.* to annoy or vex; fatigue or weary; to tire out and annoy an enemy by incessant petty attacks. [DISTRESS.]

★**har-bin-ger** (*här′bin-jĕr*), *n.* a precursor; forerunner: *v. t.* announce; foretell; usher in.

har-bor (*′bĕr*), *n.* a port or haven for ships; any place of refuge or safety: *v. t.* to shelter or protect; cherish.

Syn. HARBOR, haven, port. The idea of a resting place for vessels is common to these terms. *Harbor* carries with it the idea of affording a resting or anchoring place; *haven* conveys the idea of security; *port* conveys the idea of an inclosure. A *haven* is a natural harbor, a *port* is an artificial harbor. [See *foster, cherish.*]

Ant. CAST OUT, expel, expose.

hard (*härd*), *adj.* compact and solid; firm; laborious; fatiguing; cruel; oppressive; unfeeling; exacting: *adv.* forcibly; laboriously; diligently; near; with vexation, trouble, or sorrow.

Syn. HARD, firm, solid. That is *hard* which will not yield to a closer compression; that is *firm* which will not yield so as to produce a separation. Ice is hard as far as it respects itself, when it resists every pressure; it is *firm*, with regard to the water which it covers, when it is so closely bound as to resist every weight without breaking. *Hard* and *solid* respect the internal constitution of bodies, and the adherence of the

component parts; but *hard* denotes a much closer degree of adherence than solid; the *hard* is opposed to the soft; the *solid* to the fluid.
Ant. Soft, shaking, wavering.

hard-en (*härd'n*), *v. t.* to make hard or harder; confirm in impudence or wickedness: *v. i.* to become hard or harder. [ABANDONED.]

hard-heart-ed (*-härt'ed*), *adj.* cruel; unmerciful; merciless.

hard-i-hood (*'i-hood*), *n.* effrontery; boldness; physical endurance.

hard-i-ly (*'i-li*), *adv.* with hardihood.

hard la-bor (*lā'bẽr*), work imposed as an additional punishment to a term of imprisonment.

hard-ly (*'li*), *adv.* with difficulty; scarcely.
Syn. HARDLY, scarcely. Where the idea of practicability predominates, *hardly* seems most proper; and where the idea of frequency predominates, *scarcely* seems preferable. One can *hardly* judge of a person's features by a single and partial glance; we *scarcely* ever see men lay aside their vices from a thorough conviction of their enormity.
Ant. Easily, abundantly.

hard-pan (*'pan*), *n.* in mining, a stratum of gravel or sand; a solid foundation.

hard-ship (*'ship*), *n.* oppression; severe labor or want; injustice.

hard-tack (*'tak*), *n.* large hard cracker or biscuit.

hard-ware (*'wâr*), *n.* manufactured articles of metal.

hare (*hâr*), *n.* a rodent, with long ears and a short tail, larger than a rabbit.

hare-brained (*'brānd*), *adj.* volatile; wild.

hare-lip (*'lip*), *n.* a malformation of the upper lip, which is divided in the middle.

ha-rem (*hā'* or *hä-rem*), *n.* the apartments of the women and children in a Mohammedan house; the wives and concubines of a Mohammedan. [Also *hareem, haram.*]

hare's-foot (*hârz'-foot*), *n.* a species of fern; a kind of clover.

hare's-tail (*-tāl*), *n.* a species of cotton grass allied to the bulrushes.

har-i-cot (*har'ē-kō*), *n.* a kind of stew of meat and vegetables; the kidney bean.

hark (*härk*), *v. i.* to listen. [Also *harken.*]

Harlem or **Haarlem.** In Holland, called *Haralem* in a ninth century document, is a name of doubtful meaning. In Old Saxon we have *lemo*, "clay" or "mud," and *hara*, "an estuary," and the dialect-word *har* or *haar* denotes a rising ground or small eminence. Harlem, now a suburb of New York, stands on the Harlem river, a tidal channel. With Brooklyn and Hoboken it is one of the few names surviving from the time of the Dutch occupancy.

har-le-quin (*här'lē-kin* or *kwin*), *n.* the performer in a pantomime who wears parti-colored garments: *adj.* fantastic or full of trickery; parti-colored.

har-lot (*'lot*), *n.* a prostitute.

har-lot-ry (*-ri*), *n.* the trade or practice of prostitution.

harm (*härm*), *n.* injury; hurt; damage: *v. t.* to inflict hurt, damage, or injury upon. [ABUSE.]

har-mon-ic (*här-mon'ik*), *adj.* pertaining to, or producing, harmony; musical. [Also *harmonical.*]
n. pl. the science of musical sounds.

har-mon-i-ca (*-mon'i-kä*), *n.* a mouth organ; an oblong musical instrument consisting of glass slips which are struck by a mallet. [Also *harmonicon.*]

har-mo-ni-ous (*-mō'ni-us*), *adj.* concordant; musical; symmetrical.

har-mo-nize (*'mō-nīz*), *v. t.* to render harmonious; cause to agree; reconcile: *v. i.* to agree; be in peace and friendship; correspond.

har-mo-ny (*'mō-ni*), *n. pl.* harmonies (*-niz*), the quality of being pleasing to the ear; unison; accord in feeling, sentiment, etc.; a literary work showing the agreement between histories or passages; the science of music. [CONCORD.]

har-ness (*'nes*), *n.* the working gear of a horse; accouterment: *v. t.* to put harness upon.

Harold (*har'uld*). The same with the Middle High German names *Ariold, Harhold*, etc., which Wachter translates "powerful in battle," "a champion." Danish, *Harald;* Dutch, *Herold;* Fr., *Harold;* It., *Araldo;* Lat., *Haroldus.*

harp (*härp*), *n.* a musical stringed instrument of triangular shape, played with the fingers: *v. i.* to play on the harp; dwell tediously or persistently on a subject (with *on* or *upon*).

Harper's Ferry, Va. Robert Harper of Oxford, England, an architect, en route to Winchester, saw this pass, bought land here and formed a settlement in 1734. Later he established a ferry at this point, known as "Harper's ferry."

har-poon (*här-pōōn'*), *n.* a long barb-headed spear having a line attached to the staff: *v. t.* to strike with a harpoon.

harp-si-chord (*härp'si-kôrd*), *n.* a stringed instrument with a keyboard, the precursor of the pianoforte.

har-py (*här'pi*), *n.* [*pl.* harpies (*'iz*)], in classical mythology, one of three winged monsters, the daughters of Neptune and Terra, with a woman's face and the body and sharp claws of a vulture; a large crested American eagle.

har-ri-er (*har'i-ẽr*), *n.* a variety of dog used for hunting hares; a species of hawk.

Harriet (*har'ri-et*). From the German *Henriette*, "head of the house." Danish, *Henriette;* Dutch, *Henrietta;* Fr., *Henriette;* It., *Enrichetta;* Sp., *Enriqueta;* Sw., *Henrietta.*

Harrisburg, Pa. A city; named from its first settler, John Harris of Yorkshire, England. Founded in 1785, name subsequently changed to *Louisbourg;* in 1791, changed back to *Harrisburg.*

har-row (*har'ō*), *n.* an agricultural instrument for breaking up clods upon sown land: *v. t.* to use a harrow; lacerate or torment.

har-ry (*'i*), *v. t.* [*p. t.* and *p. p.* harried, *p. pr.* harrying], to plunder, lay waste; annoy or vex: *v. i.* to make raids.

harsh (*härsh*), *adj.* discordant; jarring; rough to the ear, taste, or touch; austere.

hart (*härt*), *n.* the male of the red deer.

Hartford. Name transferred from Hertford, England, to many places in the United States, the capital of Connecticut being one of these.

harts-horn (*härtz'hôrn*), *n.* a volatile preparation of ammonia.

har-um-scar-um (*hâr-um-skâr'um*), *adj.* giddy; wild; untidy.

har-vest (*här'vest*), *n.* the season of reaping and gathering: *v. t.* to gather in, as corn; reap.

har-vest-home (*-hōm*), *n.* a harvest festival.

Harvey. A masculine name from Old German *her-wig*, "noble," "noble soldier or warrior."

Harz (*härts*) or **Hartz mountains.** In German *Harzgebirge*, were called in the eighth century *Hart* (Old Saxon *hard*, Old High German *hart*, "wood" or "forest"). The present spelling, *Harz*, is supposed to be due to a folk etymology which has made the name into *Harzwald*, the "forest of resin" (*harz*). The *Hardt*, a wooded range of hills near Carlsruhe, is the "wood."

hash (*hash*), *n.* a dish of meat cut and cooked with vegetables; a mixture: *v. t.* to chop small and mix.

hasp (*hâsp*), *n.* a clasp folded over a staple and secured with a padlock.

has-sock (*has'ok*), *n.* a padded mat or cushion for kneeling upon.

haste (*hāst*), *n.* celerity; speed; urgency; precipitancy: *v. t.* to hasten.

has-ten (*hās'n*), *v. t.* to cause to make haste; hurry: *v. i.* to move with speed; be quick.
Syn. HASTEN, accelerate, speed, expedite, dispatch. *To hasten* expresses little more than the general idea of quickness in moving toward a point; *accelerate* expresses, moreover, the idea of bringing something to a point. The word *speed* includes not only quick but forward movement. He who goes with *speed* goes effectually forward. This idea is excluded from the term *haste*, which may often be a planless, unsuitable quickness. Hence the proverb, "The more *haste*, the less *speed*." *Expedite* and *dispatch* are terms of higher import, in application to the most serious concerns in life; but to *expedite* expresses a process, a bringing forward toward an end; *dispatch* implies a putting an end to, a making a clearance. We do everything in our power to *expedite* a business; we *dispatch* a great deal of business within a given time.
Ant. Check, delay, impede, retard.

has-ty (*'ti*), *adj.* [*comp.* hastier, *superl.* hastiest], precipitate; quick; speedy; eager; vehement; rash. [CURSORY.]

ha-sty pud-ding (*pud'ing*), a pudding of flour or meal and water or milk.

hat (*hat*), *n.* a covering for the head, with a crown and brim.

hat-band (*'band*), *n.* a band worn round the hat.

hatch (*hach*), *v. t.* to produce (young) from eggs; plot or contrive: *n.* the number of young produced from eggs at a sitting; brood; plot; a door with an opening over it: *pl.* doors or openings in the deck of a ship.

hatch-er-y (*'ẽr-i*), *n.* a place where eggs are artificially hatched.

hatch-et (*'et*), *n.* a small ax.

hatch-way (*'wā*), *n.* a rectangular opening in the deck of a vessel for passage below.

hate (*hāt*), *v. t.* to dislike intensely; abhor; detest: *n.* hatred.
Syn. HATE, detest. *To hate* is a personal feeling directed toward the object independently of its qualities; *to detest* is a feeling independent of the person, and altogether dependent upon the nature of the thing. One *hates*, but not *detests*, the person who has done an injury to one's self; and that one *detests*, rather than *hates* the person who has done injuries to others.
Ant. Affect, dote, love.

hate-ful (*'fool*), *adj.* causing hate.
Syn. HATEFUL, odious. *Hateful* is properly applied to whatever violates general principles of morality; lying and swearing are *hateful* vices; *odious* is more commonly applied to such things as affect the interests of others, and bring *odium* upon the individual.
Ant. Congenial, pleasant.

ha-tred (*hā'tred*), *n.* bitter aversion; continued hostility of feeling; detestation. [ABOMINATION, ANTIPATHY.]

Hatteras, Cape, N. C. Name applied to the headland by early English navigators, from a tribe of Indians inhabiting its shores, the *Hatterask* or *ash.*

haugh-ty (*haw'ti*) *adj.* proud and disdainful; supercilious; haughtiness.

haugh-ti-ness (*'ti-nes*), *n.* the character or quality of being haughty; pride; disdain.
Syn. HAUGHTINESS, disdain, arrogance. *Haughtiness* is founded on the high opinion we entertain of ourselves; *disdain*, on the low opinion we have of others; *arrogance* is the result of both, but if anything, more of the former than the latter. *Haughtiness* and *disdain* are properly sentiments of the mind, and *arrogance* a mode of acting resulting from a state of mind. [See *pride.*]
Ant. Humility, meekness, modesty.

haul (*hawl*), *v. t.* to pull or draw with force; transport by drawing: *n.* a strong pull; draft of a net; quantity caught at one time; distance over which anything is drawn. [DRAW.]

haunch (*hänch*), *n.* the fleshy part of the hip and buttock.

haunt (*hänt*), *n.* a place of accustomed resort: *v. t.* to visit frequently or habitually. [FREQUENT.]

hau-teur (*hō-tẽr'*), *n.* haughty bearing or spirit.

Ha-van-a (*hä-van'ä*), *n.* a cigar made of Cuban tobacco.

Havana. Capital city of Cuba, city in Mason county, Illinois, named for former. The word is Spanish, meaning "harbor."

have (*hav*), *v. t.* [*p. t.* and *p. p.* had, *p. pr.* having], to possess; take; hold or bear; enjoy; desire; be obliged; bring forth; cheat; obtain the advantage of.
Syn. HAVE, possess. *To have* is sometimes *to have* in one's hand or within one's reach; but *to possess* is *to have* as one's own; a clerk *has* the money which he has fetched for his employer; the latter *possesses* the money which he *has* the power of turning to his use.

ha-ven (*hā'vn*), *n.* a sheltered anchorage for ships; harbor; place of shelter and safety. [HARBOR.]

hav-er-sack (*hav'ẽr-sak*), *n.* a strong coarse linen bag which soldiers carry.

hav-oc (*'ok*), *n.* wide and general destruction; devastation.

Havre (*hä'vẽr*). The "haven" at the mouth of the Seine was, before 1515, merely a fishing village with a chapel dedicated to Notre Dame de Grace, hence the official name *Le Havre de Grace.* The French *havre*, "a harbor," is descended from the Old French *havle*, originally *hable*, which is derived from the Low-Latin *habulum*, a word of Teutonic origin related to the English *haven.*

haw (*haw*), *n.* the fruit of various species of hawthorn; a hesitation in speech.

Ha-wai-ian (*hä-wi'yan*), *adj.* pertaining to Hawaii, its inhabitants, or language.

Hawarden (*här'den*). A town in Flintshire, North Wales, sixteen miles south of Liverpool. Near it is Hawarden castle, once the residence of Gladstone, the British statesman.

hawk (*hawk*), *n.* a name for various species of raptorial birds allied to the eagles and falcons; a forcible effort to clear the throat: *v. t.* to cry, or carry about, for sale: *v. i.* to make a forcible effort to cough.

hawk-er (*'ẽr*), *n.* peddler; falconer.

hawk-eyed (*'id*), *adj.* keen sighted like a hawk.

hawse-hole (*hawz'hōl*), *n.* one of the two holes under a ship's bow through which the cable passes.

haws-er (*'ẽr*), *n.* a thick rope or cable.

haw-thorn (*haw'thôrn*), *n.* a prickly shrub or tree of the rose family.

Hawthornden (*haw'thôrn-den*). A picturesque glen or valley in Edinburghshire, Scotland, eight miles south of Edinburgh. The estate of Hawthornden was the property of the poet, William Drummond.

hay (*hā*), *n.* grass, clover, etc., cut and dried for fodder.

hay-cock (*'kok*), *n.* a conical pile of hay.

hay fe-ver (*fē-vẽr*), a catarrh, accompanied by itching, sneezing, slight fever, and pains in the head.

Haymarket, The. A London market, established in 1644 on the site now partly covered by the Criterion restaurant and theater and Lower Regent street. It was abolished in 1830. The place is called *Haymarket square*, or the *Haymarket.*

hay-mow (*'mow*), *n.* a mass of hay laid up in a barn.

Hayti (*hä'ti*, French *ä-ē-tē'*). A native name, meaning "mountainous country." One of the West Indian islands. [Also *Haiti.*]

Hay-ti-an (*hā'ti-an*), *adj.* pertaining to Hayti or its inhabitants. [Also *Haitian.*]

haz-ard (*haz'ẽrd*), *n.* chance; accident; risk; danger: *v. t.* to run the risk of; chance; put in peril.
Syn. HAZARD, risk, venture. He who *hazards* an opinion or an assertion does it from presumptuous feelings and upon slight grounds; he who *risks* a battle does it often from necessity; he chooses the least of two evils; he who *ventures* on a mercantile speculation does it from a love of gain. [See *accident, danger.*]

haz-ard-ous (*-us*), *adj.* risky; perilous.

haze (*hāz*), *n.* a slight fog or mist; dimness of sight or knowledge: *v. i.* to be foggy or misty: *v. t.* play practical jokes upon.

haz-el (*'l*), *n.* a shrub or tree of the genus Corylus, bearing an edible nut.

haz-y (*'i*), *adj.* misty; obscure.

he (*hē*), *pr.* [*pl.* they (*thā*)], the masculine pronoun of the third person: *n.* a male.

head (*hed*), *n.* the uppermost part of the body of an animal that contains the face, brain, etc.; chief or principal part of anything; leader or commander; place of honor or authority; top; the understanding or intellect; origin or source: *adj.* principal or chief: *v. t.* to lead or direct; take the first place in; get in front of; direct the course of; *v. i.* come to, or form, a head.

head-ed (*'ed*), *adj.* having a head; noting under-

standing or intellect (much used in composition, as clear-*headed*, wrong-*headed*, etc.).
head-ing (*hed'ing*), *n.* a title.
head-land (*'land*), *n.* a promontory.
head-line (*'līn*), *n.* a line of type displayed conspicuously at the top of a page, chapter, column: *pl.* the ropes at the head of a sail.
head-long (*'lông*), *adv.* head foremost; rashly; precipitously: *adj.* rash; precipitate; thoughtless.
heads-man (*hedz'man*), *n.* an executioner.
head-strong (*hed'strông*), *adj.* ungovernable; self-willed. [OBSTINATE.]
head-y (*hed'ĭ*), *adj.* precipitate; intoxicating. [OBSTINATE.]
heal (*hēl*), *v. t.* to restore to health; cure; make sound; *v. i.* to become well or sound. [CURE.]
health (*helth*), *n.* freedom from bodily pain or disease; vigor of mind; a toast or pledge.
health-ful (*'fool*), *adj.* promoting health; salubrious.
health-y (*'ĭ*), *adj.* [*comp.* healthier, *superl.* healthiest], noting a sound condition of body.
Syn. HEALTHY, wholesome, salubrious, salutary. *Healthful* is applied to exercise, to air, situation, climate, and food, for which latter *wholesome* is commonly substituted; the life of a farmer is reckoned the most *healthy;* and the simplest diet is the most *wholesome. Healthy* and *wholesome* are rather negative in their sense; *salubrious* and *salutary* are positive; that is *healthy* and *wholesome* which does no injury to the health; that is *healthful* and *salubrious* which serves to improve the health; and that is *salutary* which serves to remove a disorder. [See *sound.*]
Ant. DELICATE, diseased, frail, ill, sick.
heap (*hēp*), *n.* a quantity; accumulation; crowd: *v. t.* to form into a heap; pile up; amass.
Syn. HEAP, pile, accumulate, amass. *To heap* is an indefinite action; it may be performed with or without order; *to pile* is a definite action done with design and order; thus we *heap* stones, or *pile* wood. *To accumulate* is properly to bring or add *heap to heap,* which is a gradual and unfinished act; *to amass* is to form into a *mass,* which is a single complete act; a man may *accumulate* guineas or anything else in small quantities, but he properly *amasses* wealth.
Ant. DISSIPATE, spend, squander, waste.
hear (*hēr*), *v. t.* [*p. t.* and *p. p.* heard, *p. pr.* hearing], to perceive by the ear; attend or listen to; attend judicially: *v. i.* to have the sense of hearing; be told of.
hear-ing (*'ing*), *n.* the sense by which sound is perceived; audience; judicial investigation.
hearк-en (*härk'n*). Same as *hark.*
hear-say (*hēr'sā*), *n.* rumor or report: *adj.* second hand. [FAME.]
hearse (*hėrs*), *n.* a vehicle for the conveyance of dead bodies.
heart (*härt*), *n.* the organ in animals by the muscular contraction and dilation of which the blood is circulated through the arteries, etc.; the vital, inner, or chief part of anything; the seat of affection; affection; courage; will; spirit; conscience; a suit of cards marked with one or more red hearts.
heart-bro-ken (*'brō-kn*), *adj.* overwhelmingly grieved.
heart-burn (*'bėrn*), *n.* a burning affection of the œsophagus, caused by acidity of the stomach.
heart-en (*'n*), *v. t.* to give courage to; inspirit.
★**hearth** (*härth*, not *hėrth*), *n.* that part of a room where the fire is made; hence, the family circle.
heart-y (*härt'ĭ*), *adj.* [*comp.* heartier, *superl.* heartiest], cordial; sincere; open; warm; kind; healthy.
Syn. HEARTY, warm, sincere, cordial. There are cases in which it may be peculiarly proper to be *hearty,* as when we are supporting the cause of religion and virtue; there are other cases in which it is peculiarly proper to be *warm,* as when our affections ought to be roused in favor of our friends; in all cases we ought to be *sincere* when we express either a sentiment or a feeling; it is peculiarly happy to be on terms of *cordial* regard with those who stand in any close relation to us. The man himself should be *hearty;* his heart should be *warm;* professions should be *sincere;* a reception *cordial.*
Ant. COLD, distant, inimical, unfriendly.
heat (*hēt*), *n.* the sensation produced by a hot body; the state of being hot; ardor; vehemence; a course at a race: *v. t.* to make hot; warm; excite with passion or desire: *v. i.* to become hot or warm.
heath (*hēth*), *n.* a small evergreen flowering shrub with rose-colored flowers, etc.; heather; moorland.
hea-then (*hē'then*), *n.* one who is ignorant of the true God; a pagan; idolator.
hea-then-ish (*-ish*), *adj.* pertaining to heathens; rude; ignorant, or uncultured.
hea-then-ism (*-izm*), *n.* ignorance of the true God; paganism; idolatry.
heave (*hēv*), *v. t.* to hoist or lift up; force from the breast, as a sigh; throw: *v. i.* to be lifted up; rise and fall alternately; pant: *n.* an effort or exertion upward; lift; the act of throwing; haul. [LIFT.]
heav-en (*hev'n*), *n.* the abode of God and the blessed; the firmament or sky; a state or condition of bliss.
heav-en-ly (*-lĭ*) *adj.* belonging to, or suggestive of, heaven. [CELESTIAL, GODLIKE.]
heav-er (*hēv'ėr*), *n.* one who, or that which, lifts or heaves, especially one who loads or unloads goods, coal, etc.
heav-y (*hev'ĭ*), *adj.* [*comp.* heavier, *superl.* heaviest], ponderous; weighty; oppressive; grievous; laborious; dull; indigestible: *adv.* heavily. [*Poetry.*]
Hebe (*hē'bē*). A female name, derived from *Hebe,* daughter of Jupiter and Juno, or of Juno only; and who, being fair and always in the bloom of youth, was called "the goddess of youth."
He-bra-ic (*hē-brā'ĭk*), *adj.* pertaining to the Hebrews, the Jewish language or literature.
He-bra-ist (*-ist*), *n.* one who is learned in the Hebrew language and literature.
He-brew (*'brōō*), *adj.* pertaining to the Hebrews, a Semitic race; Jewish: *n.* the Hebrew language; a Jew.
Hebrides (*heb'ri-dēz*). A group of islands west of Scotland. Anciently referred to by Ptolemy as the *Ebudæ,* and by Pliny as the *Hebudes,* denoting the "western isles."
hec-a-te (*hek'ā-tē*), *n.* a witch; a hag.
Hec-a-te, *n.* an ancient threefold Grecian deity possessing power over heaven, earth, and the underworld.
hec-tic (*'tĭk*), *adj.* constitutional; slow, but of long continuance; feverish: *n.* a remittent fever accompanying consumption.
hec-to-graph (*'tō-gráf*), *n.* an apparatus for multiplying copies of a letter or drawing, etc. [*French.*]
hec-tor (*'tėr*), *v. t.* to bully or bluster, from *Hector,* the Trojan hero.
Hector. From the Greek name *Hektor.* The name signifies "anchor," literally, "what holds"; also translated a "defender." Fr., *Hector;* It., *Ettore;* Lat., *Hector.*
hedge (*hej*), *n.* a fence of bushes or shrubs: *v. t.* to inclose with a hedge; encircle; invest: *v. i.* to bet on both sides.
hedge-hog (*'hog*), *n.* an insectivorous mammal covered on the back with spines or prickles.
hed-on-ism (*hed'on-izm*), *n.* the doctrine that pleasure is the chief end of life.
heed (*hēd*), *v. t.* to regard with care; take notice of; mind: *n.* careful attention; caution.
Syn. HEED, care, attention. *Heed* applies to matters of importance to one's moral conduct; *care* to matters of minor import; a man is required to take *heed;* a child is required to take *care;* the former exercises his understanding in taking *heed;* the latter exercises his thoughts and his senses in taking *care.* We speak of giving *heed* and paying *attention.*
Ant. CARELESSNESS, neglect.
heed-ful (*'fool*), *adj.* cautious; attentive.
hee-haw (*hē'haw*), *v. i.* to bray like an ass: *n.* the bray of an ass.
heel (*hēl*), *n.* the hinder part of the foot, shoe, or stocking: *v. t.* to furnish with a heel: *v. i.* lean on one side, as a ship.
heft (*heft*), *n.* weight; the greater part or bulk: *v. t.* to try the weight of, by lifting or holding in the hand.
He-gi-ra (*hē-jī'rā*), *n.* the flight of Mohammed from Mecca to Medina (662 A. D.). [Also *Hejira.*]
heif-er (*hef'ėr*), *n.* a young cow.
heigh-ho (*hī'-hō*), *interj.* an expression of languor or uneasiness.
★**height** (*hīt*, not *hith*), *n.* altitude; elevation; highest state or degree; stature.
height-en (*'n*), *v. t.* to make high or higher; elevate; intensify; set off; increase.
★**hei-nous** (*hā'nus*, not *hē'nus*), *adj.* atrocious; extremely wicked; flagrant.
Syn. HEINOUS, flagrant, flagitious, atrocious. A crime is *heinous* which seriously offends against the laws of men; a sin is *heinous* which seriously offends against the will of God; an offense is *flagrant* which is in direct defiance of established opinions and practice; it is *flagitious* if a gross violation of the moral law, or coupled with any grossness; a crime is *atrocious* which is attended with any aggravating circumstances.
Ant. MERITORIOUS, moral, right, virtuous.
Heinrich (*hīn'rēk*). See *Henry.*
heir (*ār*), *n.* one who succeeds another in possession.
heir-ess (*'es*), *n.* a female heir.
heir-loom (*'lōōm*), *n.* any movable or personal chattel which descends to the heir.
Helen (*hel'en*) or **Helena** (*hel'ē-nā*). From the Greek *Helene,* signifying "a lamp," "a torch," hence "brightness." Danish, *Helena;* Dutch, *Helena;* Fr., *Hélène;* Ger., *Helene;* It., *Elena;* Lat., *Helena;* Sp., *Elena.*
Helena, Mont. From the Greek Latinized word, *Helen.* John Somerville suggested it at a meeting of several hundred miners, in 1864, as a name for the settlement. Opinions differ, however, as to the origin of the name, for by some it is supposed to be named for Helen of Troy. The Helena Historical Directory of 1879 says it was named by John Somerville, of Minnesota, *St. Helena,* from the resemblance in its location to that of the original St. Helena. It was then voted to drop the prefix *Saint,* and that was done.
He-li-an-thus (*hē-lĭ-an'thus*), *n.* a genus of plants to which the sunflower belongs.
hel-ic-al (*hel'ĭ-kal*), *adj.* spiral-shaped.
he-li-cop-ter (*hē-lĭ-kop'tėr*), *n.* in aëronautics, a flying machine in which propellers are used to give the necessary power to rise.
Heligoland (*hel'ĭ-gō-länd*). Now a German island, expresses the Danish for "holy land settlement."
hello, a *prefix* meaning *sun, caused by,* or *like,* the *sun* or *sunlight,* as *heliograph,* an instrument for taking a photograph of the sun, or for signaling by reflecting sunlight.
he-li-om-e-ter (*hē-lĭ-om'ē-tėr*), *n.* a micrometer for measuring small angles in the heavens.
he-li-o-scope (*'lĭ-ō-skōp*), *n.* a form of refracting telescope for observing the sun.
he-li-o-stat (*'lĭ-ō-stat*), *n.* an instrument by which signaling is carried on by means of a mirror.
he-li-o-trope (*'lĭ-ō-trōp*), *n.* a plant whose flowers follow the course of the sun; the color of the flowers of heliotrope, bluish-pink.
he-li-o-type (*'lĭ-ō-tīp*), *n.* an impression from a photograph taken on a gelatine plate hardened with alum.
hell (*hel*), *n.* the place of the dead or of departed souls (more correctly *Hades*); the place of punishment for the wicked after death.
Hel-len-ic (*hel-en'ĭk*), *adj.* pertaining to, or characteristic of, the ancient Hellenes or Greeks, or to Grecian art and literature.
Hel-len-ism (*hel'en-izm*), *n.* a Greek idiom; Grecian culture.
Hel-len-ist (*'en-ist*), *n.* a Jew who spoke Greek; one learned in Greek.
helm (*helm*), *n.* the apparatus for steering a ship; tiller; the place of its direction and government; a helmet. [*Poetry.*] *v. t.* to guide or conduct.
hel-met (*hel'met*), *n.* metal or leather armor for the head; the hooded upper lip of a flower.
help (*help*), *v. t.* to give assistance to; aid; support; sustain; remedy; cure: *v. i.* to lend aid; be available or useful: *n.* assistance; aid; support; succor; relief; a portion of food; a hired servant.
Syn. HELP, assist, aid, succor, relieve. *Help* signifies to do good to; *assist* signifies to place one's self by another so as to give him our strength; *aid* signifies to profit toward a specific end; *succor* signifies to run to the help of any one; *relieve* signifies to alleviate. We *help* a person to prosecute his work, or *help* him out of a difficulty; we *assist* in order to forward a scheme, or we *assist* a person in the time of his embarrassment; we *aid* a good cause, or we *aid* a person to make his escape; we *succor* a person who is in danger; we *relieve* him in time of distress.
Ant. OPPOSE, thwart, withstand.
Helsingfors (*hel-sing-fors'*), **Finland.** From the tribal name of the *Helsings,* and *fors,* "a waterfall." We have cognate names *Helsingland* and *Helsingborg* in Sweden, and *Helsingor* in Denmark.
hel-ter-skel-ter (*hel'tėr-skel'tėr*), *adv.* in hurry and confusion.
Helvetia (*hel-vē'shi-ä*). The old Latin name of Switzerland; often used as a poetical appellation in modern literature. The country is often mentioned as the *Helvetian Republic,* and that is still the official name.
Hel-ve-tian (*hel-vē'shan*), *adj.* pertaining to Switzerland: *n.* a Swiss. [Also *Helvetic.*]
hem (*hem*), *n.* the edge of a garment doubled and sewn; an ejaculatory sound: *v. t.* [*p. t.* and *p. p.* hemmed, *p. pr.* hemming], to form a hem on; to shut in; environ: *v. i.* utter the ejaculation "hem!"
hem-a-tin (*hem'ā-tin*), *n.* the red coloring matter in the blood. [Also *hæmatin.*]
hemi, a *prefix* meaning *half,* as *hemi*sphere, half a sphere or globe.
hem-i-sphere. See under *hemi.*
hem-i-stich (*hem'ĭ-stik*), *n.* in poetry, an incomplete line, or the half of a line.
hem-lock (*hem'lok*), *n.* a wild poisonous plant of the parsley family; *hemlock* spruce, an evergreen tree of the pine family.
hem-mer (*'ėr*), *n.* one who, or that which, hems.
hem-ming (*'ing*), *n.* the action of the verb *to hem;* hems collectively.
hem-op-ty-sis (*-op'tĭ-sis*), *n.* spitting of blood.
hem-or-rhage (*hem'ō-rāj*), *n.* bleeding from the lungs, arteries, veins, etc.
hem-or-rhoids (*'ō-roidz*), *n. pl.* bleeding piles.
hemp (*hemp*), *n.* a plant of the nettle family, the tough fiber of which is used for cordage and various kinds of coarse linen.
hemp-en (*'en*), *adj.* pertaining to, or made of, hemp.
hem-stitch (*'stich*), *n.* a particular kind of ornamental stitching.
hen (*hen*), *n.* the female of a bird, especially the domestic fowl.
hence (*hens*), *adv.* from this, in consequence of this: *interj.* away! begone!
hench-man (*hench'man*), *n. pl.* henchmen (*'men*)], formerly, a male attendant or servant. [ACCESSORY.]
Henderson, Ky. A town named after the county, so called in honor of Col. Richard Henderson.
Henlopen (*hen-lō'pen*), **Cape, Del.** From a Dutch expression, *en lopen,* meaning "to run in" as indicating the place of entrance to a bay. Previously named *Cornelius* by the Dutch commander, Mey, after his Christian name.
hen-pecked (*'pekt*), *adj.* governed by one's wife.
Henri (*än-rē'*). The French form of *Henry.*
Henrietta (*hen-ri-et'tä*). A name formed from *Henry.*
Henry. Usually rendered "home-ruler," or "chief of the house." The Gothic name is *Heinric,* the Anglo-Saxon *Henric* and *Cynric,* and the North High German, *Heinrich;* but all these names are the same as the old *Hunoricus,* from *Kunreich,* "illustrious for strength." The English name *Henry,* formerly also *Henrie, Henri, Herry,* now *Harry,* is derived from the Old French and French *Henri.* Danish, *Hendrik;* Dutch, *Hendrik;*

Ger., *Heinrich;* It., *Enrico,* or *Errico;* Lat., *Henricus;* Port., *Henrique;* Sp., *Enrique;* Sw., *Henrik.*

Henry, Cape, Va. Named by Admiral Newport in April, 1607, in honor of Henry, prince of Wales, son of James I. of England.

he-pat-ic (*hē-pat'ik*), *adj.* pertaining to the liver.

hep-tarch-y (*hep'tärk-i*), *n.* [*pl.* heptarchies (*-iz*)], a government by seven rulers, especially the seven Anglo-Saxon kingdoms established in England.

her (*hėr*), *pron.* the objective and possessive case of the personal pronoun *she.*

her-ald (*her'ald*), *n.* formerly an official who proclaimed messages from a sovereign; a precursor: *v. t.* proclaim; usher in. [ANNOUNCE.]

he-ral-dic (*hē-ral'dik*), *adj.* pertaining to heralds or heraldry.

her-al-dry (*her'al-dri*), *n.* the science that treats of armorial bearings.

Herat (*her-ät'*). Anciently *Aria-Civitas,* the town on the Arius, now the river Heri.

herb (*ėrb* or *hėrb*), *n.* a plant with a soft and succulent stem.

her-ba-ceous (*hėr-bā'shus*) *adj.* pertaining to, of the nature of, or feeding upon, herbs.

herb-age (*ėrb'āj* or *hėrb'āj*), *n.* herbs collectively; grass; pasturage; the right of pasture on the lands of another.

her-ba-ri-um (*hėr-bā'ri-um*), *n.* [*pl.* herbaria (*-ä*)], a systematic collection of dried plants for purposes of study; a building where such a collection is kept.

Herbert (*hėr'bėrt*). A name derived from the Alemannic *Heribert, Heribret, Heripreht,* Old German *Aribert,* which Wachter derives from *aer bert,* "illustrious lord." Lat., *Herbertus;* Sw., *Herbert.*

her-bif-er-ous (*-bif'ėr-us*), *adj.* producing herbs.

Herculaneum (*hėr-kū-lā'nē-um*). An ancient city of Campania, Italy, near the coast, six miles southeast of Naples, directly at the foot of Mount Vesuvius. The ancient Greek name was *Herakleion,* "city of Hercules."

Her-cu-le-an (*-kū'lē-an*), *adj.* pertaining to Hercules, the hero of Grecian mythology, possessed of superhuman strength; hence, of exceeding strength and power; very difficult.

Hercules (*hėr'kū-lēz*). From the Greek *Hera* and *Kleos,* "glory or fame"; hence, the "glory of Hera." Fr., *Hercule;* Ger., *Hercules;* Gr., *Herakles;* It., *Ercole;* Lat., *Hercules.*

herd (*hėrd*), *n.* a collection of beasts or cattle; crowd; a keeper of cattle: *v. i.* to unite or associate, as beasts; crowd together.

here (*hēr*), *adv.* in, or to, this place or time; at this point.

here-by (*-bī'*), *adv.* by virtue of this; near.

he-red-i-ta-ry (*hē-red'i-tā-ri*), *adj.* passing from an ancestor to a descendant.

he-red-i-ty (*'i-ti*), *n.* the transmission of physical or mental characteristics or qualities from parent to offspring.

here-in (*hēr-in'*), *adv.* in this.

here-in-aft-er (*-äft'er*), *adv.* in this (deed, book, etc.) after or subsequently.

her-e-sy (*her'ē-si*), *n.* [*pl.* heresies (*-siz*)], an opinion or doctrine at variance with fundamental truths commonly received. [HETERODOXY.]

her-e-tic (*'ē-tik*), *n.* one who holds, or maintains, heretical opinions.

he-ret-i-cal (*hē-ret'i-kal*), *adj.* pertaining to, or having the character of, heresy.

here-to-fore (*hēr-tōō-fōr'*), *adv.* previously; hitherto.

her-i-tage (*her'i-tāj*), *n.* an estate or birthright that passes from an ancestor to a descendant.

Herman (*hėr'man*). From the Teutonic, meaning the "leader of an army." Danish, *Hermann;* Dutch, *Herman;* Fr., *Armand* or *Armant;* Ger., *Hermann;* Lat., *Hermannus* or *Harmannus;* Sw., *Herman.*

her-maph-ro-dite (*hėr-maf'rō-dīt*), *adj.* having the sexual characteristics of both male and female: *n.* an animal with both the male and female sexual organs.

her-met-ic (*hėr-met'ik*), *adj.* perfectly closed and air-tight. [Also *hermetical.*]

Hermione (*hėr-mī'ō-nē*). A name derived from *Hermione,* a daughter of Mars and Venus, who married Cadmus.

her-mit (*'mit*), *n.* one who retires from society and lives in solitude; an anchorite.

her-mit-age (*-āj*), *n.* the abode of a hermit; a wine.

Her-mit-age, The. A palace at St. Petersburg, Russia, founded by Catherine II., originally in the form of a pavilion of moderate size, but rebuilt in the nineteenth century in a neo-Greek style of excellent effect, and forming one of the best-designed museums existing. Also the name of the home of President Jackson, near Nashville, Tenn.

her-nia (*'ni-ä*), *n.* a protrusion of some part of the intestine, or of some other internal organ.

he-ro (*hē'rō*), *n.* [*pl.* heroes (*'rōz*)], a man of distinguished courage, moral or physical; the chief character in a play, novel, poem, etc.

Hero. Female name, so called after the celebrated Greek name *Hero,* "one raised or elevated."

he-ro-ic (*hē-rō'ik*), *adj.* having the qualities of a hero; larger than life; venturesome; drastic. [Also *heroical.*] *n. pl.* extravagant or boastful language.

he-ro-ic verse (*vėrs*), epic poetry; the hexameter verse in Greek and Latin poetry; in English, iambic pentameter.

her-o-ine (*her'ō-in*), *n.* a female hero.

her-o-ism (*her'ō-izm*), *n.* the qualities of a hero.

Herold. See *Harold.*

her-on (*'un*), *n.* a wading bird with a long neck and long legs.

he-ro wor-ship (*hē'rō wėr'ship*), excessive admiration of distinguished men.

her-pe-tol-o-gy (*hėr-pē-tol'ō-ji*), *n.* that branch of zoölogy that treats of reptiles and amphibians.

★her-ring (*her'ing,* not *her'in*), *n.* an edible sea fish moving in shoals.

her-ring-bone (*-bōn*), *n.* a kind of cross-stitch: *v. t.* and *v. i.* to work in such a stitch.

hes-i-tan-cy (*hez'i-tan-si*), *n.* hesitation; suspense.

hes-i-tate (*'i-tāt*), *v. i.* to be in suspense or uncertainty; pause; vacillate; stammer.

Syn. HESITATE, falter, stammer, stutter. A person who is not in the habit of public speaking, or of collecting his thoughts into a set form, will be apt *to hesitate* even in familiar conversation; he who first addresses a public assembly will be apt *to falter;* children who first begin to read will *stammer* at hard words; and one who has an impediment in his speech will *stutter* when he attempts to speak in a hurry. [See *demur.*]

Hes-sian (*hesh'an*), *adj.* pertaining to Hesse in Germany or its inhabitants.

Hester. See *Esther.*

het-er-o-dox (*het'ėr-ō-doks*), *adj.* deviating from an accepted doctrine or standard; opposed to orthodox.

het-er-o-dox-y (*-doks-i*), *n.* [*pl.* heterodoxies (*-iz*)], an unorthodox doctrine or opinion; heresy.

Syn. HETERODOXY, heresy. To be of a different persuasion is *heterodoxy;* to have a faith of one's own is *heresy.*

Ant. ORTHODOXY.

het-er-o-ge-ne-ous (*-ō-jē'nē-us*), *adj.* opposite or dissimilar in character, etc.; not homogeneous.

Hetty, Hettey. Female names derived from *Henrietta;* perhaps also from *Harriet.*

hew (*hū*), *v. t.* [*p. t.* hewed, *p. p.* hewn, hewed, *p. pr.* hewing], to cut or shape, as with an ax; hack; form laboriously.

hex-a-gon (*heks'ä-gon*), *n.* a plane figure having six sides.

hex-am-e-ter (*-am'ē-tėr*), *n.* in Greek and Latin verse, a line consisting of six feet, the last being usually a spondee.

hex-i-ol-o-gy (*-i-ol'ō-ji*), *n.* the science of habits and environment.

Hezekiah (*hez-ē-kī'ä*). From the Hebrew *Hhizkeyyah,* from *hhezek-Yah,* "the strength of Jehovah," or "cleaving to the Lord." Dutch, *Hiskia;* Lat., *Hezekias.*

hi-a-tus (*hī-ā'tus*), *n.* a break; vacancy; gap; the concurrence of two vowels in two successive syllables.

hi-ber-nal (*-bėr'nal*), *adj.* wintry.

hi-ber-nate (*'bėr-nāt*), *v. i.* to pass the winter in a state of torpor; to winter.

Hi-ber-ni-an (*'nī-an*), *adj.* pertaining to, or characteristic of, Hibernia or Ireland.

hic-cough (*hik'up*), *n.* a short convulsive cough: *v. i.* to utter a short convulsive cough. [Also *hiccup.*]

hick-o-ry (*hik'ō-ri*), *n.* [*pl.* hickories (*-riz*)], an American nut-bearing tree of the genus Carya.

hi-dal-go (*hi-dal'gō*), *n.* in Spain, a nobleman of the lowest rank. [Fem. *hidalga.*]

hide (*hid*), *v. t.* [*p. t.* hid, *p. p.* hidden, *p. pr.* hiding], to conceal; secrete; whip: *v. i.* to lie concealed: *n.* an animal's skin. [COVER, SECRETE, CONCEAL, MYSTERIOUS.]

hide-bound (*'bound*), *adj.* having the skin close or contracted; prejudiced; bigoted.

hid-e-ous (*hid'ē-us*), *adj.* offensive; shocking; horrible.

hie (*hī*), *v. t.* [*p. t.* and *p. p.* hied, *p. pr.* hieing], to excite; speed: *v. i.* to hasten.

hi-er-arch (*'ėr-ärk*), *n.* the chief ruler of an ecclesiastical body.

hi-er-arch-y (*-i*), *n.* [*pl.* hierarchies (*-iz*)], the higher and lower clergy of a church; priesthood; rank of holy beings, as angels.

hi-er-o-glyph-ic (*hī-ėr-ō-glif'ik*), *n.* a sacred character or symbol: *pl.* the picture writings of the ancient Egyptians, etc.: *adj.* pertaining to hieroglyphics.

Hieronymus (*hī-ē-ron'i-mus*). See *Jerome.*

hig-gle (*hig'l*), *v. i.* to carry provisions about for sale; dispute about trifles.

hig-gle-dy-pig-gle-dy (*-di-pig'l-di*), *adv.* in confusion; topsy-turvy.

high (*hī*), *adj.* elevated in place; lofty; chief; noble; strong; powerful; intense; tempestuous; full or complete; tainted; shrill; acute: *n.* an elevated place: *adv.* aloft; profoundly; eminently.

Syn. HIGH, tall, lofty. *High* expresses the idea of extension upward, which is common to them all; what is *tall* is *high,* but what is *high* is not always *tall;* that which attains considerable *height* by growing is *tall;* a thing may be *high* because on a pedestal; *lofty* is said of that which is extended in breadth as well as in height; we say that a house is *high,* a chimney *tall,* a room *lofty.*

Ant. BASE, deep, low.

high-church (*'chėrch*), *adj.* attaching great importance to the prerogative and authority of the church, its sacraments and priesthood.

high-col-ored (*-kul'ėrd*), *adj.* having a strong, deep, or glaring color; flushed; vivid; exaggerated.

high-est (*'est*), *adj.* most high.

high-fa-lu-tin (*-fä-lū'tin*), *adj.* bombastic: *n.* bombastic speech.

high-flown (*hī'flōn*), *adj.* elevated; proud; extravagant; inflated.

high-hand-ed (*-hand'ed*), *adj.* violent; arbitrary.

high jinks (*jinks*), sportive jollification.

high-land (*'land*), *n.* a mountainous region: *pl.* mountainous district.

Highlands, The. A district in northern and western Scotland, of vague limits. It includes the Hebrides, the counties of Argyll, Inverness, Ross and Cromarty, Sutherland and Caithness, and parts of Nairn, Elgin, Banff, Aberdeen, Kincardine, Forfar, Perth, Stirling, Dumbarton, and Bute. The inhabitants are mainly of Celtic stock. The Highlands are celebrated for romantic scenery; they contain the highest mountains in Great Britain.

Highlands of the Hudson. A range of hills and low mountains in eastern New York, in Orange Putnam, Dutchess, and Rockland counties. Prominent points are Fishkill mountain, Storm King, Crow's Nest, Donderberg, Anthony's Nose, and West Point.

high life (*lif*), fashionable society; its manner of living.

high mass (*mas*), a mass accompanied with singing, and incense.

high-ness (*'nes*), *n.* the state or quality of being high.

high priest (*prēst*), a chief priest.

high-road (*'rōd*), *n.* a chief road; an easy course or method.

high-strung (*'strung*), *adj.* strung to a high pitch; extremely sensitive.

high-toned (*'tōnd*), *adj.* high pitched; fashionable.

high wa-ter (*waw-tėr*), pertaining to high tide, or its height or time.

high-way (*'wā*), *n.* a public road; a course or path.

★high-way-man (*hī'wā-man,* not *hī-wā'man*), *n.* [*pl.* highwaymen (*-men*)], one who robs on the public road.

hi-la-ri-ous (*hi-lā'ri-us*), *adj.* merry; exhilarated.

hi-lar-i-ty (*-lar'i-ti*), *n.* [*pl.* hilarities (*-tiz*)], noisy merriment; exhilaration.

Hilary (*hil'ä-ri*). Derived from the Latin name *Hilarius,* signifying "pleasant," "cheerful," "merry." Danish, *Hilarius;* Dutch, *Hilarius;* Fr., *Hilaire;* It., *Ilario;* Lat., *Hilarius;* Sw. *Hilarius.*

Hilda. A female name abbreviated from *Everhilda;* or derived from the Lombardian word *hild,* "noble."

Hildebrand (*hil'dē-brand*). The same as Teutonic names *Hildebrand* and *Hiltiprant.* Translated "very fervent," "hero," "leader," etc. Wachter claims the name to be the same as *Childebrand,* from *child-brand,* which might be translated either "distinguished youth," or "distinguished warrior."

hill (*hil*), *n.* an elevation less than a mountain; a small mound or heap: *v. t.* to draw earth about (plants in mounds), as potatoes.

hill-ock (*'ok*), *n.* a small hill.

hill-y (*'i*), *adj.* abounding with, or characterised by, hills.

hilt (*hilt*), *n.* a handle, especially of a sword.

Himalaya (*hi-ma'lä-yä*). A mountain system of Asia. From the Sanskrit, *hima,* "snow," and *alaya,* "abode," "dwelling." Hence, "the abode of snow."

hind (*hind*), *n.* the female of the stag or red deer; a farm servant; peasant: *adj.* backward; hinder.

hind-er (*hind'ėr*), *adj.* belonging to, or constituting, the back or rear of anything.

hin-der (*hin'dėr*), *v. t.* to obstruct or impede: *v. i.* to impose obstructions or impediments.

Syn. HINDER, stop. We are *hindered* from proceeding by something that draws us back; to *stop* refers simply to the cessation of motions. [See *obstruct, retard, cessation.*]

Ant. AID, assist, expedite, further.

hind-most (*hind'mōst*), *adj.* farthest from the front; in the extreme rear.

hin-drance (*hin'drans*), *n.* obstruction.

Hin-du (*'dōō*), *n.* a native of Hindustan belonging to the Aryan race; Brahman: *adj.* pertaining to the Hindus or to Hinduism. [Also *Hindoo.*]

Hindustan (*hin-doo-stän', hin-dō-stan'*). A Persian term signifying the country or place of the Hindus or Indians. *Hindu* is the Persian form of the Sanskrit *Sindhu,* "a dweller on the Indus," which means the river.

hinge (*hinj*), *n.* the joint or hook on which a door, etc., turns or swings; that on which anything depends or turns: *v. t.* to furnish with a hinge: *v. i.* to stand, turn, or depend, as on a hinge.

hint (*hint*), *v. t.* to suggest; mention casually: *n.* a suggestion; distant allusion. [ALLUDE.]

hip (*hip*), *n.* the upper fleshy part of the thigh; haunch: *interj.* a huzzah.

hip-po-drome (*hip'ō-drōm*), *n.* an ancient Greek racecourse for equestrian games and chariots; a circus.

hip-po-pot-a-mus (*-ō-pot'ä-mus*), *n.* [*pl.* hippopotami (*mī*), -muses (*-ez*)], a large pachydermatous aquatic animal of Africa.

hire (*hīr*), *v. t.* to engage for temporary service at a certain price; bribe; let or lease: *n.* recompense or consideration paid for the use of anything; wages; bribe.

hire-ling (*hīr'ling*), *n.* one who serves for hire: *adj.* mercenary.

hir-sute (*hėr'sūt*), *adj.* hairy; shaggy.

hiss (*his*), *n.* a noise, made by forcing the breath

between the tongue and upper teeth: *v. i.* to utter such a sound.

hist (*hist*), *interj.* silence! hark!

his-tol-o-gy (*his-tol'ō-ji*), *n.* the science of animal tissues.

his-to-ri-an (*-tō'ri-an*), *n.* a writer or student of history.

his-tor-ic (*-tor'ik*), *adj.* pertaining to, contained in, or celebrated in, history [Also *historical.*]

★**his-to-ry** (*his'tō-ri*, not *his'tri*), *n.* [*pl.* histories (*-riz*)], a narration of facts and events arranged chronologically; knowledge of facts.

his-tri-on-ic (*-tri-on'ik*), *adj.* pertaining to actors or the stage; theatrical. [Also *histrionical.*]

hit (*hit*), *v. t.* [*p. t.* and *p. p.* hit, *p. pr.* hitting], to strike; give a blow to; touch (the mark); attain to; suit: *v. i.* to clash or collide; succeed: *n.* a stroke or blow; felicitous remark.

hitch (*hich*), *n.* a catch; impediment, a pulling upward: *v. i.* to move by jerks; strike the feet together: *v. t.* to fasten or tie.

hith-er (*hith'ĕr*), *adv.* to this place: *adj* on the side nearest to the speaker.

hive (*hīv*), *n.* an artificial house for bees; bees inhabiting a hive; a busy assemblage: *v t.* to gather or put into a hive.

hives (*hīvz*), *n. pl.* nettle rash; croup.

ho (*hō*), *interj.* stop! hold!

Hoang-Ho (*hō-ăng-hō'*). In China, this is the "yellow river," which borders Ho-Nan, the province "south of the river," and flows into the Hoang-Hai, or "yellow sea," so called because discolored by the yellow mud brought down by the Hoang-Ho.

hoar (*hōr*), *adj.* white; gray with age; ancient.

hoard (*hōrd*), *n.* a store or treasure laid up secretly; an accumulation of things: *v. t.* to collect and lay up: *v. i.* to lay up a store.

hoar-frost (*hōr'frost*), *n.* white particles of frozen dew or moisture.

hoar-hound (*'hound*), *n.* a white, woolly, aromatic herb.

hoarse (*hōrs*), *adj.* rough and harsh in sound, as the voice when affected by a cold.

hoax (*hōks*), *n.* a sportive, deceptive trick; *v. t.* to delude by a hoax.

hob (*hob*), *n.* the flat part of a grate on which things are placed to be kept warm.

hob-ble (*'l*), *v. i.* to walk with a limp or awkward step: *v. t.* embarrass or perplex; shackle: *n.* limping or awkward step.

hob-bly (*'li*), *adj.* rough or uneven.

hob-by (*hob'i*), *n.* [*pl.* hobbies (*'iz*)], a favorite pursuit or object; an ambling nag.

hob-by-horse (*-hōrs*), *n.* a stick with a horse's head, across which children sit; a wooden or rocking-horse.

hob-gob-lin (*-gob'lin*), *n.* a goblin, sprite, or elf, especially one of frightful appearance.

hob-nail (*'nāl*), *n.* a short thick nail with a large head.

hob-nob (*'nob*), *v. i.* to drink familiarly with; associate intimately together.

ho-bo (*hō'bō*), *n.* an idle itinerant workman; a tramp.

Hoboken (*hō'bō-ken*). In New Jersey, opposite New York, often said to be a native name meaning "the smoked pipe," marking the spot where the first colonists smoked the pipe of peace with the Indian chiefs. It is more likely, however, a reminiscence of the Dutch village of *Hoboken*, three miles from Antwerp.

hock-ey (*hok'i*), *n.* an outdoor game played with a ball and clubs curved at one end.

ho-cus-po-cus (*hō'kus-pō'kus*), *n.* a juggler's trick; a juggler.

hod (*hod*), *n.* a wooden trough, affixed to a long handle, for carrying mortar, bricks, etc.

hod-car-ri-er (*'kar-i-ĕr*), *n.* a man who carries a hod.

hodge-podge (*hoj'poj*), *n.* a medley of ingredients.

hod-man (*hod'man*), *n.* a hodcarrier.

hoe (*hō*), *n.* an agricultural tool for cutting weeds, etc.: *v. t.* to cut, or till, with a hoe.

hog (*hog*), *n.* a swine; a grasping, gluttonous person.

hogs-head (*hogz'hed*), *n.* a measure of capacity equal to 52½ imperial gals. or 63 wine gals.; a large barrel or cask.

Hohenzollern (*hō'en-tsol-ĕrn*) **castle.** A castle situated in the Swabian Alps, near Hechingen, southern Germany, belonging to the present Prussian royal family. It is the ancestral home of Emperor Wilhelm II. of Germany.

hoi-den (*hoi'dn*), *n.* a rude rustic girl; *adj.* rustic; ill-mannered: *v. i.* to romp roughly. [Also *hoyden.*]

hoist (*hoist*), *v. t.* to lift or raise: *n.* an apparatus for lifting goods. [LIFT.]

hoi-ty-toi-ty (*hoi'ti-toi'ti*), *interj.* an exclamation of surprise, rebuke, etc.

hold (*hōld*), *v. t.* [*p. t.* held, *p. p.* held, holden, *p. pr.* holding], to grasp and keep in the hand; clutch; retain; possess; judge or consider: *v. i.* to cling; adhere; maintain an opinion: *n.* the act of holding; a grasp or clutch; that part of a vessel where the cargo is stored.

Syn. HOLD, keep, detain, retain. To *hold* is a physical act; it requires a degree of bodily strength, or at least the use of the limbs; to *keep* is simply to have by one at one's pleasure; *detain* and *retain* are modes of *keeping;* the former signifies *keeping* back what belongs to another; the latter signifies *keeping* a long time for one's own purpose.

Ant. FREE, let loose, release.

hold-ing (*hold'ing*), *n.* anything held; tenure or right of possession.

hole (*hōl*), *n.* a cavity; hollow place; pit; perforation; a difficulty or dilemma.

hol-i-day (*hol'i-dā*), *n.* a day of gayety and joy in celebration of some event, etc.: *adj.* pertaining to a festival; joyous; gay

ho-li-ness (*hō'li-nes*), *n.* the state or quality of being holy; freedom from sin, sacredness: a title of the pope.

Syn. HOLINESS, sanctity. *Holiness* is to the mind of a man what *sanctity* is to his exterior; with this difference, that *holiness* to a certain degree ought to belong to every man professing Christianity; but *sanctity*, as it lies in the manners, the outward garb, and deportment, is becoming only to certain persons, and at certain times.

hol-land (*hol'and*), *n.* fine unbleached linen.

Holland. A kingdom of western Europe. Name supposed to be derived from *ollant*, or *holtland*, "marshy ground." Taylor gives the translation of *holtland* as "woodland," that is, the forest around Dordrecht.

hol-loa (*hol-ō'*), *v. i.* to shout to one at a distance: *n.* a shout.

hol-low (*'ō*), *adj.* having a void space within: opposed to solid; insincere; superficial: *n.* a cavity; space between hills or elevations: *v. t.* to make hollow: *adv.* completely; thoroughly.

Syn. HOLLOW, empty. *Hollow*, a cavity formed by taking material out; as, a *hollow* tree. That which has nothing in it is empty; as, an *empty* chair.

hol-ly (*'li*), *n.* a shrub or tree of the genus Ilex.

hol-ly-hock (*hol'i-hok*), *n.* a tall plant of the mallow family.

hol-o-caust (*'ō-kawst*), *n.* a sacrifice wholly consumed by fire.

hol-ster (*hōl'stĕr*), *n.* a leather pistol case usually carried at the saddle bow.

ho-ly (*hō'li*), *adj.* [*comp.* holier, *superl.* holiest], pure; morally and spiritually perfect; sinless; pious; sacred; consecrated.

Syn. HOLY, blessed, consecrated, devoted, divine, hallowed, sacred, saintly, set apart. *Sacred* is applied to that which is to be regarded as inviolable on any account; that which is *holy* is so by its own nature, possessing intrinsic moral purity, and, in the highest sense, absolute moral perfection. God is *holy;* his commands are *sacred. Divine* has been used with great looseness, as applying to anything eminent or admirable.

Ant. CURSED, secular, unsanctified, wicked.

Holyoke (*hōl'yōk*). City in Hampden county, Mass., and mountain in same county, named for Rev. Edward Holyoke, an early president of Harvard College.

Holyrood (*hō'li-rōōd*) **palace.** An ancient royal palace of Scotland, situated in Edinburgh. It was originally an abbey, founded in 1128; was several times burned and was the scene of the murder of Rizzio, 1566. It was once the place of residence of Mary, Queen of Scots.

hom-age (*hom'āj*), *n.* respect paid by external action; deference; reverence.

home (*hōm*), *n.* one's abode or residence: dwelling place of a man and his family; a benevolent institution: *adj.* pertaining to one's abode or country; near; effective: *adv.* to or at home. [HABITATION.]

home-li-ness (*'li-nes*), *n.* the state of being homely; plainness.

home-ly (*'li*), *adj.* plain-featured; uncultured; rude.

ho-me-o-path-ic (*hō-mē-ō-path'ik*), *adj.* of or pertaining to homeopathy.

ho-me-op-a-thist (*-op'a-thist*, *n.* one who practices or believes in homeopathy.

ho-me-op-a-thy (*-op'a-thi*), *n.* the medical system introduced by Hahnemann, which seeks to cure diseases by the administration of medicines in minute quantities.

Homer. An English baptismal name at the present time. From the classical name, in Greek, *Homeros*, signifying a "pledge," "security," "hostage."

home-sick (*hōm'sik*), *adj.* ill because of absence from home; nostalgic.

home-sick-ness (*-nes*), *n.* state of being homesick; nostalgia.

★**home-stead** (*hōm'sted*, not *hōm'stid*), *n.* a dwelling house with the adjacent land; original abode.

hom-i-cide (*hom'i-sīd*), *n.* the killing of a human being; one who kills another.

hom-i-let-ics (*-i-let'iks*), *n. pl.* that branch of theology which treats of sermons and their composition.

hom-i-ly (*'i-li*), *n.* [*pl.* homilies (*-liz*)], a plain religious discourse or sermon.

hom-ing (*hōm'ing*), *adj.* returning home: said of carrier pigeons.

hom-i-ny (*hom'i-ni*), *n.* Indian corn soaked so as to remove the hull, and then coarsely ground.

ho-mo-ge-ne-ous (*hō-mō-jē'nē-us*), *adj.* uniform; composed of similar parts or elements.

Honduras (*hon-dōō'rās*). Spanish for "deep water." A republic of Central America.

hone (*hōn*), *n.* a kind of fine whetstone: *v. t.* to sharpen on a hone.

★**hon-est** (*on'est*, not *on'ust*), *adj.* upright; just; sincere; honorable; frank or open. [CANDID.]

hon-est-y (*-i*), *n.* the quality of being honest.

hon-ey (*hun'i*), *n.* a sweet sirupy substance collected by bees; sweetness: *adj.* resembling honey: *v. t.* to talk to in an endearing or flattering manner.

hon-ey-bee (*-bē*), *n.* the common hive-bee.

hon-ey-comb (*-kōm*), *n.* the waxen hexagonal cells made by bees to contain their honey, eggs, etc.; any structure resembling a honeycomb: *v. t.* to fill with holes.

hon-ey-dew (*-dū*), *n.* a saccharine secretion from the leaves of certain plants.

hon-ey-moon (*-mōōn*), *n.* the first month after marriage.

hon-ey-suck-le (*-suk'l*). *n.* a climbing plant with fragrant flowers.

Hongkong (*hong'kong*). The place of fragrant streams. Island off coast of China.

hon-or (*on'ĕr*), *n.* respectful regard; esteem; worship; reputation; fame; chastity; an outward mark of high esteem; a title; one of the four highest trump cards in whist: *v. t.* to treat with respect, deference, or civility; bestow marks of honor upon (with *with*); accept and pay when due.

Syn. HONOR, reverence, respect. *To honor* is only an outward act; *to reverence* is either an act of the mind or the outward expression of a sentiment; *to respect* is mostly an act of the mind, though it may admit of being expressed by some outward act. We *honor* God by adoration and worship; we *honor* our parents by obeying them and giving them our personal service; we *reverence* our Maker by cherishing in our minds a dread of offending him: we *respect* a person or thing that is lofty, worthy, or honorable. [See *admire, glory.*]

Honora. An Irish female name derived from the Latin name *Honor.*

★**hon-or-a-ble** (*on'ĕr-a-bl*, not *on'ra-bl*), *adj.* worthy of, or conferring, honor; distinguished in rank; a title of distinction.

★**hon-o-ra-ri-um** (*on-ō-rā'ri-um*), *n.* a fee paid to a professional man.

hon-or-a-ry (*'ĕr-a-ri*), *adj.* done, or conferred, as an honor.

Honoria. A female name derived from the Roman name *Honoria*, the feminine of *Honorius;* from root of *Honor.*

hood (*hood*), *n.* a soft wrapper or covering for the head; an ornamental fold hanging down the back denoting a university degree: *v. t.* to cover or furnish with, or as with, a hood: *suffix* meaning state, condition, or quality, as man*hood* hardi*hood.*

hood-lum (*hōōd'lum*), *n.* originally a California rough or bully; a rowdy.

hoo-doo (*hōō'dōō*), *n.* a person or thing that causes ill luck: *v. t.* to bring ill luck upon.

hood-wink (*hood'wingk*), *v. t.* to deceive.

★**hoof** (*hōōf*, not *hoof*), *n.* [*pl.* hoofs], the horny substance covering the feet of certain mammals, etc.; an animal with hoofs.

hook (*hook*), *n.* a curved piece of metal, bone, etc., to hold or catch something; a cape or headland: *v. t.* to catch with, or as with, a hook: *v. i.* to bend in the shape of a hook; become fastened to anything with a hook (with *on*).

hoop (*hōōp*, or *hoop*), *n.* a band to hold together the staves of a cask, etc.; a finger ring; a kind of crinoline; a whoop; *v. t.* to bind or secure with a hoop; encircle.

Hoosac. River in Massachuetts, New York, and Vermont. Derived from the Mohican Indian *wudjoo*, meaning "a mountain," and *abic*, "a rock." [Also *Hoosic* and *Hoosick.*]

hoot (*hōōt*), *n.* a contemptuous shout: *v. t.* to jeer at or drive with contemptuous shouts: *v. i.* to utter a hoot.

hop (*hop*), *v. t.* [*p. t.* and *p. p.* hopped, *p. pr.* hopping], to leap over: *v. i.* to proceed by short leaps on one leg: *n.* a jump on one leg; a dance; a twining plant used in brewing malt liquors: *adj.* pertaining to hops.

Hopatcong (*hō-pat'kong*). Lake in New Jersey. An Indian name, meaning "stone over water," because of an artificial causeway of stone which connected an island of the lake with the shore.

hope (*hōp*), *n.* the desire of good accompanied by expectation; anticipation; confidence: the object of hope: *v. t.* to expect with confidence or desire: *v. i.* to cherish a desire for good; trust confidently. [ANTICIPATE.]

Hope. Found frequently as a female name. From the Anglo-Saxon, meaning "expectation."

hope-ful (*'fool*), *adj.* full of hope; promising success.

hop-scotch (*hop'skoch*), *n.* a children's game.

Horace. From the classical name, *Horatius*, which Littleton translates, "worthy to be looked upon, or becoming in appearance." Danish, *Horats;* Dutch, *Horatius;* Fr., *Horace;* Ger., *Horaz;* It., *Orazio;* Lat., *Horatius;* Port., *Horacio;* Sp., *Horacio.*

Horatio (*hō-rā'shi-ō*). From the root of *Horace.*

Horatius (*hō-rā'shi-us*). See *Horace.*

horde (*hōrd*), *n.* a vast multitude: *v. i.* to live, or act together, in hordes.

hore-hound. Same as *hoarhound.*

★**ho-ri-zon** (*hō-rī'zun*), *n.* the circular line where the sky and earth, or sea, appear to meet; hence the limit of one's mental vision.

hor-i-zon-tal (*hor-i-zon'tal*), *adj.* parallel to, or situated near, the horizon; level; opposed to vertical.

horn (*hôrn*), *n.* a hard protuberance on the head of certain mammals; anything made of horn, or like horn; a wind instrument.

horn-bill (*hôrn'bil*), *n.* a bird with a large horn-crested bill, allied to the kingfishers.
horn-blende (*'blend*), *n.* a dark green or black colored mineral.
hor-net (*hôr'net*), *n.* a wasp which inflicts a severe sting; hence, a disagreeable person.
horn-pipe (*hôrn'pip*), *n.* a lively dance, especially by sailors.
hor-o-loge (*hor'ō-lōj*), *n.* a mechanism, as a clock, etc., for marking the hours.
hor-o-scope (*hor'ō-skōp*), *n.* a representation of the heavens at any time.
hor-ri-ble (*'i-bl*), *adj.* terrible; dreadful. [FEARFUL.]
hor-rid (*'id*), *adj.* dreadful; terrible; hideous; most obnoxious; gloomy. [FEARFUL.]
hor-ri-fy (*'i-fī*), *v. t.* to fill or strike with horror.
hor-ror (*'ėr*), *n.* excessive fear; extreme dread; great disgust: *pl.* extreme depression. [ABOMINATION.]
horse (*hôrs*), *n.* a solid-hoofed animal, used for riding or drawing burdens; cavalry; a framework for the support of anything: *v. t.* to mount on, or furnish with, a horse; place astride: *v. i.* to get on horseback.
horse-fly (*hôrs'flī*), *n.* a large fly that stings horses.
Horse latitudes. So called because situated between the trade winds and the westerly winds of higher latitudes, and distinguished for tedious calms. It received this name because it was in this portion of the Atlantic the old navigators often threw overboard the horses which they had undertaken to transport to the West Indies.
horse-laugh (*'laf*), *n.* a coarse, noisy laugh.
horse pow-er (*pou-ėr*), the theoretical unit of work of a steam engine equal to 33,000 lbs. raised 1 ft. in 1 minute.
horse-rad-ish (*'rad-ish*), *n.* a plant with a long root having an acrid, pungent taste.
horse-shoe (*'shōō*), *n.* a U-shaped metal shoe to protect the hoof of a horse; anything U-shaped; the king crab.
hor-ta-tive (*hôr'tā-tiv*), *adj.* inciting; giving exhortation. [Also *hortatory.*]
hor-ti-cul-ture (*-ti-kul'tūr*), *n.* the art of cultivating gardens.
hor-ti-cul-tur-ist (*-ist*), *n.* one who is skilled in horticulture.
ho-san-na (*hō-zan'ä*), *n.* an exclamation of praise and glory to God.
hose (*hōz*), *n.* [*pl.* hose], coverings for the legs; stockings; flexible tubing for conveying water, etc.
ho-sier-y (*hō'zhėr-i*), *n.* stockings, underclothing, etc.; a manufactory for such goods.
hos-pit-a-ble (*hos'pit-ä-bl*), *adj.* receiving and entertaining friends or strangers.
hos-pit-al (*-al*), *n.* an institution for the medical treatment and care of the sick.
hos-pi-tal-i-ty (*hos-pi-tal'i-ti*), *n.* [*pl.* hospitalities (*-tiz*)], the practice of entertaining friends and strangers with kindness and liberality.
host (*hōst*), *n.* a crowd; one who entertains another; the consecrated bread or wafer of the Eucharist.
hos-tage (*hos'tāj*), *n.* a person who remains in the hands of another as a pledge for the fulfillment of certain conditions; a pledge.
hos-tel (*'tel*), *n.* a hostelry.
hos-tel-ry (*-ri*), *n.* an inn or lodging house.
host-ess (*hōst'es*), *n.* a female host.
hos-tile (*hos'til*), *adj.* showing animosity; inimical; adverse.
hos-til-i-ty (*-til'i-ti*), *n.* [*pl.* hostilities (*-tiz*)], antagonism; enmity; animosity: *pl.* acts of warfare. [ENMITY, FEUD, ANTIPATHY.]
hos-tler (*'lėr*), *n.* one who takes charge of horses. [Also *ostler.*]
hot (*hot*), *adj.* [*comp.* hotter, *superl.* hottest], having much heat; burning; fiery; passionate; furious; pungent; unendurable.
Syn. HOT, fiery, burning, ardent. In the figurative application, a temper is said to be *hot* or *fiery;* rage is *burning;* the mind is *ardent* in pursuit of an object. Zeal may be *hot, fiery, burning* and *ardent;* but in the first three cases it denotes the intemperance of the mind when heated by religion or politics. [See *eager.*]
hot-bed (*'bed*), *n.* a bed of earth covered with glass for rearing plants.
hotch-potch (*hoch'poch*), *n.* a mixture of various ingredients; a thick broth of meat and vegetables. [*Scotch.*]
ho-tel (*hō-tel'*), *n.* a superior inn or lodging house.
Hôtel des Invalides (*ō-tāl'dā zan-vā-lēd'*). Freely translated, "soldiers' home." A great establishment founded in 1670 at Paris for disabled and infirm soldiers. The interior possesses halls adorned with interesting military paintings, and contains the Musée d'Artillerie, which includes a remarkable collection of mediæval and Renaissance armor. It contains also the tomb of Napoleon I.
Hôtel-de-Ville (*ō-tāl' du vāl*), **Paris.** A celebrated building of great size, burned by the French Commune in 1871, but carefully restored and much enlarged. The exterior is richly adorned with sculpture. The rooms of state display splendid sculptures and wall paintings by the most distinguished contemporary artists.
hot-house (*hot'hous*), *n.* a glazed building artificially heated for rearing tender plants.
Hottentot. The early Dutch settlers at the Cape of Good Hope were much struck with the *click* which forms such a distinct feature of the Caffre languages, and which sounded to them like a perpetual repetition of the syllables *hot* and *tot.* From these sounds they gave the natives the name of *Hott-en-tot, en* in the Dutch language meaning "and."
hound (*hound*), *n.* a particular breed of hunting dog; a mean fellow: *v. t.* to chase with, or as with, hounds; set upon.
hour (*our*), *n.* the 1-24th part of a day; 60 minutes; particular time: *pl.* life.
hour-glass (*our'glas*), *n.* a device for measuring time by running sand through a narrow neck of a glass vessel.
★**bou-ri** (*hou'* or *hōō'ri*), *n.* [*pl.* houris (*'riz*)], one of the dark-eyed nymphs of the Mohammedan paradise.
Housatonic (*hōō-sä-ton'ik*). River of Massachusetts and Connecticut. From the Indian words *wussi,* "beyond," and *adene,* "mountain," meaning "beyond the mountain." According to other authorities from the Indian words *wassa,* "proud," *aton,* "stream," and *ick,* from *azhubic,* meaning "rocks," the whole meaning "proud river flowing through the rocks."
house (*hous*), *n.* a building for residence; place of abode; family or race; one of the divisions of a legislative or ecclesiastical body; a mercantile firm: *v. t.* to place in a house; shelter or lodge: *v. i.* to take shelter. [HABITATION.]
house-hold (*'hōld*), *n.* a family living together: *adj.* domestic; pertaining to a family or home.
Houston (*hūs'ton*), **Texas.** So called in honor of General Samuel Houston, the first president of the Texan republic. This name is borne by many places in the United States, generally given in honor of Gen. Houston, among them being counties in Minnesota, Tennessee, and Texas; city in Chickasaw county, Mississippi, and the city in Texas county, Missouri.
hov-el (*hov'el*), *n.* a mean habitation.
hov-er (*huv'ėr*), *v. i.* to flutter over or about; stand in suspense or expectation.
how (*hou*), *adv.* in what manner; to what degree or extent; for what reason.
how-be-it (*-bē'it*), *adv.* nevertheless.
how-ev-er (*-ev'ėr*), *adv.* in whatever manner or degree; at all events: *conj.* notwithstanding; yet.
how-itz-er (*'itz-ėr*), *n.* a short cannon, formerly used for throwing shells.
howl (*houl*), *n.* a prolonged cry: *v. i.* to cry like a dog or wolf; utter a prolonged cry; roar, like the wind: *v. t.* to utter in a loud wailing tone.
howl-er (*'ėr*), *n.* one who howls.
hoy-den. Same as *hoiden.*
hub (*hub*), *n.* the nave of a wheel.
hub-bub (*hub'bub*), *n.* uproar.
Hubert (*hū'bėrt*). From the German name *Hugobert,* which Wachter derives from *hug-bert,* "distinguished for memory or prudence." Danish, *Hubertus;* Dutch, *Hubertus;* Fr., *Hubert;* Lat., *Hubertus;* Sw., *Hubertus.*
huck-a-back (*'ä-bak*), *n.* a rough kind of linen or cotton cloth.
huck-le-ber-ry (*'l-ber-i*), *n.* [*pl.* huckleberries (*-iz*)], the edible berry of any species of Gaylussacia; the whortleberry.
huck-ster (*'stėr*), *n.* one who retails small articles.
hud-dle (*hud'l*), *v. t.* to crowd together in a disorderly manner; collect closely: *v. i.* to come in a crowd or haste (with *on, up, over*): *n.* confusion; crowd.
Hudson river, N. Y. Named in honor of Henry Hudson, an English navigator in the Dutch service who ascended the river in 1607. He called it "the Great River," or "Great River of the Mountains," from the extraordinary circumstance of such a body of water flowing through the mountains without a cataract. The Dutch gave the name of *Mauritius river,* in honor of Prince Maurice, to the section above New York island.
Hudson's bay and Hudson's strait. In northern North America. So named after their rediscovery by Captain Henry Hudson, while searching for the northwest passage in 1610. Prior to this date the bay and the strait had not been navigated since their original discovery by Cabot in 1512.
★**hue** (*hū*), *n.* color tint; a shouting; clamor.
hue and cry (*krī*), the process of pursuing.
huff (*huf*), *v. t.* to puff, or blow, up; treat with insolence: *n.* fit of petulance or sudden offense.
hug (*hug*), *n.* a close embrace: *v. t.* [*p. t.* and *p. p.* hugged, *p. pr.* hugging], to embrace closely; fondle; hold fast; keep close to. [CLASP.]
huge (*hūj*), *adj.* vast; very large.
Hugh (*hū*). Derived from the Teutonic *hoog,* or *hugr,* "high, tall, elevated;" also translated as "mind," "thought." Danish, *Hugo;* Dutch, *Hugo;* Fr., *Hugues;* It., *Ugo;* Lat., *Hugo;* Sw., *Hugo.*
Hu-gue-not (*hū'gē-not* or *-nō*), *n.* a name applied to French Protestants of the 16th and 17th centuries.
Hulda. A female name, from the Hebrew *Hhuldah,* signifying "a mole or weasel."
hulk (*hulk*), *n.* the body of a ship, especially if old or dismantled.
hulk-ing (*'ing*), *n.* unwieldy; bulky.
hull (*hul*), *n.* outer covering, especially of grain or nuts; the body or frame of a vessel: *v. t.* to peel off the hull or husk of.
hul-la-ba-loo (*-ä-bä-lōō'*), *n.* uproar; noisy contention.
hum (*hum*), *n.* the noise of bees and other insects in flight: *v. i.* [*p. t.* and *p. p.* hummed, *p. pr.* humming], to make such a noise: *v. t.* to sing in a low undertone; set or keep going energetically: *interj.* a sound implying hesitation.
hu-man (*hū'man*), *adj.* pertaining to, or characteristic of, man or mankind. [HUMANE.]
hu-mane (*-mān'*), *adj.* having the feelings proper to man; benevolent; kind; compassionate.
Syn. HUMANE, benevolent, benignant, charitable, compassionate, human, kind, merciful. *Human* denotes what pertains to mankind; as, the *human* race; *humane* denotes what may rightly be expected of mankind at its best. The *compassionate* man sympathizes with and desires to relieve actual suffering.
hu-man-ize (*'man-īz*), *v. t.* to render human.
hu-man-ism (*-izm*), *n.* culture derived from classical training.
hu-man-ist (*-ist*), *n.* a student of the humanities; one versed in the knowledge of human nature.
hu-man-i-ta-ri-an (*hu-man-i-tā'ri-an*), *n.* a philanthropist; an anti-Trinitarian; a perfectionist: *adj.* philanthropic.
hu-man-i-ty (*'i-ti*), *n.* [*pl.* humanities (*-tiz*)], mankind; philanthropy; kindness: *pl.* the ancient classics.
hum-ble (*hum'bl*), *adj.* having a low estimate of one's self; modest; meek; mean; obscure: *v. t.* to make submissive; humiliate.
Syn. HUMBLE, modest, submissive. A man is *humble* from a sense of his comparative inferiority to others in point of station and outward circumstances, or he is *humble* from a sense of his imperfections, and a consciousness of not being what he ought to be; he is *modest* inasmuch as he sets but little value on his qualifications, acquirements, and endowments. Between *humble* and *submissive* there is this prominent feature of distinction, that the former marks a temper of mind, the latter a mode of action; we may be *submissive* because we are *humble;* but we may likewise be *submissive* from fear, from interested motives, and the like. [See *abase, compliant.*]
Ant. ADVANCE, exalt, honor.
hum-ble-bee (*-bē*), *n.* a bumble-bee.
Humboldt (*hum'bōlt*, Ger. *hoom'bōlt*) **river, Nev.** Named by General John C. Frémont in honor of Baron von Humboldt, prior to which it was known as *Mary's river,* also *Ogden river.*
hum-bug (*'bug*), *n.* a fraud or imposition under fair pretenses: *v. t.* [*p. t.* and *p. p.* humbugged, *p. pr.* humbugging], to cheat or impose upon.
hum-drum (*'drum*), *adj.* dull; monotonous; commonplace.
hu-mer-al (*hū'mėr-al*), *adj.* pertaining to the shoulder.
hu-mer-us (*'mėr-us*), *n.* [*pl.* humeri (*-i*)], the arm from the shoulder to the forearm.
hu-mid (*hū'mid*), *adj.* damp; moist.
hu-mid-i-ty (*'i-ti*), *n.* dampness. [MOISTURE.]
hu-mil-i-a-tion (*-mil-i-ā'shun*), *n.* the act of humiliating; the state of being humiliated; mortification.
hu-mil-i-ty (*-mil'i-ti*), *n.* [*pl.* humilities (*-tiz*)], the state or quality of being humble; modesty.
hum-ming bird (*hum'ing bėrd*), a very small bird of the family Trochilidæ.
hum-mock (*'ok*), *n.* a large mass of floating ice; a hillock or mound.
hu-mor (*hū'* or *ū'mėr*), *n.* wit; merriment; the tendency to look at things mirthfully; caprice; temper; disease: *v. t.* to indulge; yield to a desire of.
Syn. HUMOR, temper, mood. The *humor* is so fluctuating that it varies in the same mind perpetually; but the *temper* is so far confined that it always shows itself to be the same whenever it shows itself at all. The *humor* makes a man different from himself; the *temper* makes him different from others; hence we speak of the *humor* of the moment; of the *temper* of youth or of old age. *Humor* and *mood* agree in denoting a particular and temporary state of feeling; but they differ in the cause; the former being attributable rather to the physical state of the body, and the latter to the moral frame of the mind; *mood* is a temporary or capricious state or condition of the mind in regard to passion or feeling. The *humor* of a man depends upon his *mood* whether he performs ill or well. [See *gratify.*]
hu-mor-ist (*-ist*), *n.* a droll person; one who is characterized by humor.
hu-mor-ous (*-us*), *adj.* full of, or characterized by, humor; comical; diverting.
hu-mor-some (*-sum*), *adj.* characterized by humor; laughable; capricious.
hump (*hump*), *n.* a protuberance on the back.
Humphrey (*hum'fri*). The same as *Cundfrid,* which Wachter translates "illustrious protector," or "support of peace." Dutch, *Humfried;* Fr., *Onfroi;* It., *Onofredo;* Lat., *Humphredus* or *Onuphrius;* Sw., *Humfrid.*
hu-mus (*hū'mus*), *n.* vegetable mold.
Hun (*hun*), *n.* one of an ancient Tartar race, which, in the 5th century A. D., overran and devastated Europe.
hunch (*hunch*), *n.* a hump; lump; a thrust with the fist or elbow: *v. t.* to push with the fist or elbow; push with a sudden jerk.
★**hun-dred** (*hun'dred*), *adj.* 10 times 10: *n.* the number of 10 times 10; the symbol (C or 100) denoting it.

hun-dredth (*hun'dredth*), *adj.* the ordinal of 100: *n.* one of 100 equal parts.
hun-dred-weight (*'dred-wāt*), *n.* the 1-20th part of a ton.
Hungary (*hung'gā-ri*). A country of central Europe. So named because originally inhabited by the Huns, who were first heard of in China in the third century B. C., as *Hiong-nu*, "giants."
hun-ger (*hung'gĕr*), *n.* keenness of appetite; want of food; strong desire: *v. i.* to feel the pain of hunger; to have a longing.
hun-gry (*'gri*), *adj.* [*comp.* hungrier, *superl.* hungriest], having a keen appetite; feeling want of food; emaciated; eagerly desirous.
hunk (*hungk*), *n.* a lump or large piece.
hunt (*hunt*), *v. t.* to pursue, or chase: *v. i.* to follow the chase: *n.* pursuit of game; a search.
hunts-man (*huntz'man*), *n.* [*pl.* huntsmen (*'men*)], one who hunts game.
hur-dle (*hûr'dl*), *n.* a movable fence; a fence to be leaped over: *v. t.* to cover or inclose with hurdles or jump hurdles.
hur-dy-gur-dy (*'di-gûr'di*), *n.* a barrel organ.
hurl (*hûrl*), *v. t.* to throw with violence; drive forcibly: *n.* the act of throwing.
hur-ly-bur-ly (*hûr'li-bûr-li*), *n.* tumult; great commotion.
Huron (*hū'ron*). One of the Great Lakes of North America. Opinions differ as to the classification of the name, whether French or Indian, and as to its meaning. According to some authorities it is a corruption of the name *Hure*, given a tribe of Indians by the French, the word meaning "head of a wild boar," applicable on account of their unkempt appearance; another authority says it is derived from the Indian words *Ohkwe honwe*, "true man"; by others to have been corrupted by the French from the Indian *Irri roron*, "cat tribe."
hur-rah (*hoō-rä'*), *interj.* a shout of joy, triumph, applause, etc.: *v. i.* to utter such a shout in applause, etc. [Also *hurra.*]
hur-ri-cane (*hur'i-kān*), *n.* a gale of extreme violence characterized by fitful changes of the wind. [BREEZE.]
hur-ri-cane deck (*dek*), the bridge-deck of a steamship; the upper deck of a river steamer.
hur-ry (*'i*), *v. t.* [*p. t.* and *p. p.* hurried, *p. pr.* hurrying], to impel to greater speed; hasten on; accelerate: *v. i.* to act or move with haste: *n.* haste; urgency; precipitation; confusion. [HASTEN.]
hurt (*hûrt*), *v. t.* [*p. t.* and *p. p.* hurt, *p. pr.* hurting], to cause or inflict pain in; wound; injure: *n.* a wound; injury; damage.
hurt-ful (*'fool*), *adj.* injurious; harmful.
Syn. HURTFUL, pernicious, noxious, noisome. Between *hurtful* and *pernicious* there is the same distinction as between hurting and destroying; that which is *hurtful* may hurt in various ways; but that which is *pernicious* necessarily tends to destruction; confinement is *hurtful* to the health; bad company is *pernicious* to the morals; *noxious* and *noisome* are species of the *hurtful;* that which is *noxious* inflicts a direct injury; that which is *noisome* inflicts it indirectly; *noxious* insects are such as wound; *noisome* vapors are such as tend to create disorders.
hur-tle (*hûrt'l*), *v. t.* to move violently; impel forcibly: *v. i.* to clash; dash in collision.
hus-band (*huz'band*), *n.* a married man: *v. t.* to manage or use with economy.
hus-band-man (*-man*), *n.* [*pl.* husbandmen (*-men*)], a tiller of the soil; farmer.
hus-band-ry (*-ri*), *n.* agriculture; frugality.
hush (*husH*), *interj.* be still! silence! *adj.* quiet; silent: *n.* quietness; silence: *v. t.* to make silent; soothe.
husk (*husk*), *n.* the dry outer covering of certain fruits or seeds: *v. t.* to remove husks from.
husk-ing bee (*'ing bē*), a social gathering to assist in husking corn.
husk-y (*'i*), *adj.* [*comp.* huskier, *superl.* huskiest], consisting of, or like, husks; worthless; rough or hoarse: said of the voice: *n.* sledge dog.
★**hus-sar** (*hooz-är'*), *n.* a light-armed cavalry soldier.
★**hus-sy** (*huz'i*, not *hus'i*), *n.* [*pl.* hussies (*'iz*)], a worthless woman.
hus-tle (*hus'l*), *v. t.* to push roughly; jostle; mob; *v. i.* exhibit energy and alacrity.
hut (*hut*), *n.* a small house or cabin.
huz-zah. Same as *hurrah.*
hy-a-cinth (*hī'a-sinth*), *n.* a handsome bulbous flowering plant of the genus Hyacinthus.
hy-a-line (*hī'a-lin*), *adj.* glassy; transparent.
hy-brid (*hī'brid*), *n.* a mongrel; an animal or plant produced by interbreeding different species; a compound word, the elements of which are derived from different languages.
Hyde Park. A park in Westminster, London, situated two and one-fourth miles south by west of St. Paul's. This was originally the manor of Hyde, belonging to the abbey of Westminster. It became crown property at the dissolution of the monasteries in 1539. It contains about 400 acres.
Hy-dra (*hī'drä*), *n.* in classical mythology, the water serpent with nine heads slain by Hercules; hence any evil grappled with.
Hy-dran-ge-a (*hī-dran'jē-ä*), *n.* a genus of shrubs of the saxifrage family.
hy-drant (*hī'drant*), *n.* a plug with a valve connected with a water main.
hy-drate (*'drāt*), *n.* a chemical compound containing a definite quantity of water: *v. t.* to combine with water to form a hydrate.
★**hy-drau-lic** (*hī-draw'lik*, not *hī-drol'ik*), *adj.* pertaining to fluids in motion: *n. pl.* the science of liquids in motion.
hy-dride (*'drīd*), *n.* a chemical combination of hydrogen with another element.
hy-dro-car-bons (*-drō-kär'bonz*), *n. pl.* a general name for bitumens, mineral resins and fats which are composed of hydrogen and carbon.
hy-dro-gen (*'drō-jen*), *n.* a colorless, gaseous, inflammable substance, which is the lightest element known.
hy-drog-ra-phy (*-drog'rä-fi*), *n.* the art of measuring and mapping the water surface of the earth.
hy-dro-pa-tic (*hī-drō-path'ik*), *adj.* pertaining to hydropathy.
hy-drop-a-thy (*hī-drop'ä-thi*), *n.* the cure of disease by water treatment.
hy-dro-pho-bi-a (*-fō'bi-ä*), *n.* a disease caused by the virus from the saliva of a mad dog.
hy-dro-stat-ic (*hī-drō-stat'ik*), *adj.* pertaining to hydrostatics: *n. pl.* that branch of physics that treats of fluids.
hy-dro-ther-a-py (*-ther'ä-pi*), *n.* treatment of disease by water.
hy-e-na (*hī-ē'nä*), *n.* a bristly-maned wolf-like quadruped.
hy-giene (*'jēn*), *n.* the science of health; sanitation.
hy-gi-en-ic (*-ji-en'ik*), *adj.* pertaining to hygiene.
hy-men (*'men*), *n.* marriage, from *Hymen*, the Grecian god of marriage.
hymn (*him*), *n.* a sacred ode expressive of praise or adoration: *v. t.* to sing hymns to; adore or praise by hymns.
hym-nal (*'nal*), *n.* a collection of hymns for public worship.
hym-nol-o-gy (*-nol'ō-ji*), *n.* the study of hymns.
hyper, a *prefix* meaning *over, beyond, excess, highest.*
hy-per-bo-la (*-pēr'bō-lä*), *n.* a curve formed by the section of a cone when the cutting plane makes a greater angle with the base than the side of the cone makes.
hy-per-bo-le (*'bō-lē*), *n.* a figure of speech in which there is obvious exaggeration.
hy-per-bol-ic (*-bol'ik*), *adj.* exaggerated; pertaining to, or of the nature of, a hyperbola.
hy-phen (*hī'fen*), *n.* a mark (-) joining two words or syllables: *v. t.* to join by such a mark.
hyp-no-sis (*hip-nō'sis*), *n.* a hypnotic state or trance.
hyp-no-tism (*'nō-tizm*), *n.* a method of inducing a trance-like sleep.
hyp-no-tize (*'nō-tīz*), *v. t.* to produce, or subject to, hypnotism.
hyp-o-chon-dri-a (*hip-ō-kon'dri-ä*), *n.* a disease attended with extreme melancholy and anxiety. [Also *hypochondriasis.*]
hyp-o-chon-dri-ac (*'dri-ak*), *n.* one who is affected with hypochondria: *adj.* pertaining to, or affected with, hypochondria.
hy-poc-ri-sy (*hi-pok'ri-si*), *n.* dissimulation; false profession.
★**hyp-o-crite** (*hip'ō-krit*), *n.* one who practices hypocrisy.
hy-po-der-mic (*hī-pō-dĕr'mik*), *adj.* inserted under the skin: *n.* a medicine thus injected.
hy-pot-e-nuse (*-pot'ē-nūs*), *n.* the side of a right-angled triangle opposite the right angle. [Also *hypothenuse.*]
hy-poth-e-sis (*-poth'ē-sis*), *n.* [*pl.* hypotheses (*-sēz*)], something assumed for the purpose of argument; supposition; conjecture.
hy-po-thet-ic (*-pō-thet'ik*), *adj.* based on hypothesis; conjectural. [Also *hypothetical.*]
hys-sop (*his'up*), *n.* an aromatic plant with blue flowers.
hys-te-ri-a (*his-tē'ri-ä*), *n.* a nervous affection of women characterized by choking sensations or paroxysms.
hys-ter-ic-al (*-ter'i-kal*), *adj.* pertaining to, or affected by, hysterics; violently emotional.
hys-ter-ics (*his-ter'iks*), *n. pl.* hysteria.

I

I (*ī*), *pron.* [*pl.* we (*wē*)], *nom. case, sing.* of the pronoun of the first person; the word by which the speaker or writer denotes himself.
i-am-bus (*ī-am'bus*), *n.* a metrical foot consisting of two syllables, of which the first is snort and the second is long (⏑ —).
i-bex (*'beks*), *n.* one of a genus of wild goats, having very large recurved horns.
i-bis (*'bis*), *n.* one of a genus of large wading birds, having a long, curved beak.
ice (*īs*), *n.* frozen water or other fluid: *v. t.* freeze; preserve in ice; cover with concreted sugar.
ice-berg (*'bĕrg*), *n.* a large mass of ice floating in the sea.
ice floe (*flō*), a smaller sheet of floating ice.
Iceland. Island of north Atlantic Ocean. Was called *Snæland*, the "land of snow," by the viking, Naddodd, who discovered it in 868. On account of the ice floes which then beset the northern coast, Floki, who followed him, called it *Island*, of which *Iceland* is the English translation.
ice pack (*is pak*), a field of broken and drifting ice.
Ichabod (*ik'a-bod*). From the Hebrew *Iykhabhodh*, which Simonis renders "inglorious."
ich-thy-ol-o-gy (*ik-thi-ol'ō-ji*), *n.* that branch of zoölogy which treats of fishes.
i-ci-cle (*ī'si-kl*), *n.* a pendent cone of ice formed by the freezing of dripping water.
i-ci-ly (*'si-li*), *adv.* in an icy manner; coldly.
i-cing (*'sing*), *n.* a coating of concreted sugar.
i-con (*ī'kon*), *n.* [*pl.* icons (*'konz*), icones (*'kon-ēz*)], in the Greek church, a sacred image or picture. [Also *eikon, ikon.*]
i-con-o-clast (*ī-kon'ō-klast*), *n.* an image breaker; one who attacks superstitions or shams.
i-cy (*ī'si*), *adj.* [*comp.* icier, *superl.* iciest], pertaining to, or resembling, or abounding in, ice; cold; chilling; indifferent.
Idaho. A western state of the union. From the Indian words *Edah hoe*, descriptive of the sheen on the mountains, occasioned by the light on the snowy summits, expressed in English "gem of the mountains," or, literally, "the first appearance of the sun after sunrise on the mountain tops."
Iddo. Male name from the Hebrew *Iddo*, signifying "love of Him"; *i. e.*, of the Lord.
i-de-a (*ī-dē'ä*), *n.* a mental image or picture; opinion; belief; plan.
Syn. IDEA, thought, imagination. The *idea* is the simple representation of an object; the *thought* is the reflection; and the *imagination* is the combination of ideas; we have *ideas* of the sun, the moon, and all material objects; we have *thoughts* on moral subjects; we have *imaginations* drawn from the *ideas* already existing in the mind.
Ant. ACTUALITY, fact, reality, substance.
i-de-al (*-dē'al*), *adj.* existing in imagination only; visionary; conforming to a standard of perfection; perfect: *n.* a mental conception, or an individual regarded as the standard of perfection.
Syn. IDEAL, imaginary. The *ideal* is not directly opposed to, but abstracted from, the real; the *imaginary*, on the other hand, is directly opposed to the real; it is the unreal thing formed by the imagination. *Ideal* happiness is the happiness which is formed in the mind without having any direct and actual prototype in nature; the *imaginary* is that which is opposite to some positive existing reality.
i-de-al-ism (*-izm*), *n.* in art, the effort to realize the highest type of any natural object; the doctrine that all our knowledge is a knowledge of ideas.
i-de-al-ize (*-iz*), *v. t.* to make ideal; embody in an ideal form: *v. i.* to form ideals.
i-den-tic-al (*ī-den'ti-kal*), *adj.* expressing sameness.
i-den-ti-fy (*-den'ti-fī*), *v. t.* [*p. t.* and *p. p.* identified, *p. pr.* identifying], to make, prove to be, or consider as, the same.
i-den-ti-ty (*'ti-ti*), *n.* essential or practical sameness.
i-de-ol-o-gy (*ī-dē-ōl'ō-ji*), *n.* the science of ideas; the system of philosophy which derives ideas exclusively from sensation.
id-i-o-cy (*id'i-ō-si*), *n.* the state of being an idiot. [Also *idiotcy.*]
id-i-om (*'i-um*), *n.* a turn of expression peculiar to a language.
id-i-o-mat-ic (*-ō-mat'ik*), *adj.* peculiar to a language; given to, or marked by, the use of idioms. [Also *idiomatical.*]
★**id-i-o-syn-cra-sy** (*-i-ō-sin'krä-si*), *n.* [*pl.* idiosyncrasies (*-siz*)], peculiarity of constitution or temperament.
id-i-ot (*'i-ot*), *n.* one of weak intellect; a foolish person. [FOOL.]
i-dle (*ī'dl*), *adj.* unemployed; unused; useless; irrelevant; lazy: *v. i.* to be inactive or without employment: *v. t.* to spend in idleness.
Syn. IDLE, lazy, indolent. One is termed *idle* who will do nothing useful; one is *lazy* who will do nothing at all without great reluctance; one is *indolent* who does not care to do anything or set about anything.
Ant. BUSY, industrious.
i-dler (*ī'dlẽr*), *n.* one who idles; a lazy person.
i-dol (*ī'dol*), *n.* an object of worship.
i-dol-a-ter (*ī-dol'ä-tẽr*), *n.* an idol-worshipper.
i-dol-a-try (*ī-dol'ä-tri*), *n.* [*pl.* idolatries (*-triz*)], the paying of divine honors to idols.
i-dol-ize (*ī'dol-iz*), *v. t.* to make an idol of; love or admire to excess.
i-dyl (*ī'dil*), *n.* a short, highly-wrought pastoral poem. [Also *idyll.*]
i-dyl-lic (*'lik*), *adj.* pertaining to, or of the nature of, an idyl.
if (*if*), *conj.* on the condition; whether; although.
Ignatius (*ig-nā'shi-us*). From the Greek *Ignatios*, "ardent," "fiery." Dutch, *Ignatius;* Fr., *Ignace;* Ger., *Ignaz* or *Ignatius;* Gr., *Ignatios;* It., *Ignacio;* Lat., *Ignatius;* Sp., *Ignacio* or *Inigo.*
ig-nite (*-nīt'*), *v. t.* to set on fire; to make incandescent with heat: *v. i.* to take fire.
ig-ni-tion (*-nish'un*), *n.* the act of igniting; the state of being ignited.
ig-no-ble (*-nō'bl*), *adj.* of low birth or station; of mean character or quality.
ig-no-min-i-ous (*-nō-min'i-us*), *adj.* marked with ignomy or public disgrace.

ig-no-min-y (*ig'nō-min-i*), *n.* [*pl.* ignominies (*-iz*)], public disgrace or dishonor; cause or source of disgrace.

★**ig-no-ra-mus** (*ig-nō-rā'mus*, not *ig-nō-rā'mus*), *n.* an ignorant person.

ig-no-rance (*ig'nō-rans*), *n.* the state of being ignorant; want of knowledge.

ig-no-rant (*-rant*), *adj.* destitute of knolwedge; uninstructed; illiterate.

Syn. IGNORANT, illiterate, not educated, unlettered. *Ignorant* signifies destitute or lacking in education or knowledge; the most learned man is still *ignorant* of many things; *illiterate* is without letters and the knowledge that comes through reading; the *unlettered* man may have acquired some elementary knowledge; the *uneducated* man has never taken any systematic course of mental training.

Ant. EDUCATED, learned, trained, wise.

ig-nore (*-nōr'*), *v. t.* to be ignorant of; treat as unknown; disregard.

Ile de France (*ēl-du-fräns'*), "Isle of France." An ancient government of France. It was the portion of the country about Paris that was most completely under the control of the kings; *i. e.*, the royal domain.

Ilium (*il'i-um*). In ancient geography, a place in Mysia, Asia Minor, identified by the Greeks with the legendary Troy. It was frequently destroyed in prehistoric times; was rebuilt by Greek colonists in the sixth century B. C., and continued (as *New Ilium*) to late Roman times. Its site has been identified by Schliemann at Hissarlik, about 100 miles north by west of Smyrna.

ill (*il*), *adj.* [*comp.* worse, *superl.* worst], bad or evil; diseased; unfriendly; vicious: *n.* evil; misfortune; disease: *adv.* not well; not easily.

il-lic-it (*-lis'it*), *adj.* not authorized or allowed; unlicensed.

il-lim-it-a-ble (*-lim'it-a-bl*), *adj.* immeasurable; vast; infinite.

Illinois (*il-lin-oi'*, *il-lin-oiz'*). State of the United States. One authority gives it as a combination of the Indian word *Illini*, meaning "men," and the French suffix *ois*, meaning "tribe," "band of men."

il-lit-er-a-cy (*-lit'ĕr-a-si*), *n.* ignorance of letters

il-lit-er-ate (*il-lit'ĕr-āt*), *adj.* uneducated. [IGNORANT.]

ill-ness (*'nes*), *n.* the condition of being ill; disease; sickness.

il-lude (*-lūd'*), *v. t.* to mock; deceive; delude.

il-lu-mi-nate (*-lū'mi-nāt*), *v. t.* to give light to; decorate with lights; enlighten; make plain; adorn, as a manuscript: *v. i.* to display lights.

Syn. ILLUMINATE, illumine, enlighten. We *illuminate* by means of artificial lights; the sun *illuminates* the world by its own light; preaching and instruction *enlighten* the minds of men. *Illumine* is but a poetic variation of *illuminate*.

il-lu-mi-na-tion (*-nā'shun*), *n.* supply of light; the act of illuminating, or state of being illuminated; the art of illumining books; a design in an illuminated work; intellectual light.

il-lu-sion (*'zhun*), *n.* deceptive appearance; false show; hallucination.

il-lu-sive (*'siv*), *adj.* deceiving by illusion; deceptive; illusory

il-lu-so-ry (*'sō-ri*), *adj.* causing illusion; fallacious; deceptive.

★**il-lus-trate** (*il-lus'trāt*, not *il'lus-trāt*), *v. t.* to make clear or intelligible; explain by examples. [EXPLAIN.]

il-lus-tra-tion (*-trā'shun*), *n.* the act of illustrating; the state of being illustrated; that which illustrates; a picture.

il-lus-tra-tive (*'trā-tiv*), *adj.* tending to illustrate, elucidate, or exemplify.

il-lus-tri-ous (*'tri-us*), *adj.* distinguished by luster or greatness; eminent; renowned; glorious. [DISTINGUISHED, FAMOUS.]

im-age (*im'āj*), *n.* an imitation of any person or thing; likeness; a conception, or idea: *v. t.* to form, or reflect, an image of; represent to the mental vision; imagine.

im-age-ry (*'āj-ri*), *n.* [*pl.* imageries (*-riz*)], representation by images; images collectively; forms of the fancy.

im-ag-i-na-ble (*-aj'i-nà-bl*), *adj.* that may be imagined or conceived.

im-ag-i-na-ry (*'i-nà-ri*), *adj.* existing only in imagination; unreal; utopian. [IDEAL.]

im-ag-i-na-tion (*-nā'shun*), *n.* the image-forming power of the mind; a conception or idea; fancy; invention. [IDEA, FANCY.]

im-ag-i-na-tive (*'i-nà-tiv*), *adj.* proceeding from, exhibiting, or endowed with, imagination.

im-ag-ine (*-aj'in*), *v. t.* to form a mental picture of; produce by the imagination; think; suppose: *v. i.* to form a mental image; fancy; surmise. [APPREHEND, THINK.]

im-be-cile (*im'bē-sil*), *adj.* without strength of mind: *n.* one of feeble mind.

im-be-cil-i-ty (*-sil'i-ti*), *n.* [*pl.* imbecilities (*-tiz*)], mental weakness. [DEBILITY.]

im-bibe (*-bīb'*), *v. t.* to drink in; absorb, as if by drinking; *v. i.* to drink. [ABSORB.]

★**im-brogl-io** (*-brōl'yō*), *n.* intricate and perplexing state of affairs; strife; complicated plot.

im-brue (*-brōō'*), *v. t.* to wet or moisten; soak; drench.

im-bue (*-bū'*), *v. t.* to cause to absorb; tinge deeply; dye.

im-i-tate (*im'i-tāt*), *v. t.* to produce a semblance of; use as a model or pattern; copy.

im-i-ta-tion (*-tā'shun*), *n.* the act of imitating; that which is produced by imitating: *adj.* not genuine.

im-mac-u-late (*-mak'ū-lāt*), *adj.* without blemish; unspotted; undefiled; pure. [inherent.

im-ma-nent (*im'mà-nent*), *adj.* remaining within.

im-ma-te-ri-al (*-mà-tē'ri-al*), *adj.* not consisting of matter; spiritual; unimportant.

im-ma-ture (*-mà-tūr'*), *adj.* not ripe; not fully grown or developed; not finished or perfected; crude.

im-ma-tur-i-ty (*-tūr'i-ti*), *n.* unripeness; incompleteness.

im-meas-ur-a-ble (*im-mezh'ūr-à-bl*), *adj.* not to be measured; immense; limitless; vast.

im-me-di-ate (*-mē'di-āt*), *adj.* next; direct; instant.

im-me-mo-ri-al (*-mē-mō'ri-al*), *adj.* extending beyond the reach of memory, record, or tradition.

im-mense (*-mens'*), *adj.* immeasurable; boundless; vast; very great or large.

im-men-si-ty (*-men'si-ti*), *n.* [*pl.* immensities (*-tiz*)], the character of being immense; vastness in extent or bulk.

im-merge (*-mērj'*), *v. t.* to plunge into or under anything, especially a fluid; immerse.

im-merse (*-mērs'*), *v. t.* to plunge into or under anything, especially a fluid; sink; dip.

im-mi-grant (*'i-grant*), *adj.* passing or coming into, as a new habitat: *n.* one who, or that which, immigrates.

im-mi-grate (*'i-grāt*), *v. i.* to come into a new habitat or place of residence. [EMIGRATE.]

im-mi-nence (*'i-nens*), *n.* the condition of being imminent; nearness.

im-mi-nent (*'i-nent*), *adj.* threatening or about to fall or occur immediately.

Syn. IMMINENT, impending, threatening. All these terms are used in regard to some evil that is exceedingly near; *imminent* conveys no idea of duration; *impending* excludes the idea of what is momentary. A person may be in *imminent* danger of losing his life in one instant, and the danger may be over the next instant; but an *impending* danger is that which has been long in existence and gradually approaching; a *threatening* evil gives intimations of its own approach; we perceive the *threatening* tempest in the blackness of the sky.

Ant. CONTINGENT, remote, unlikely.

im-mo-bil-i-ty (*-mō-bil'i-ti*), *n.* fixedness in place or state.

im-mod-er-ate (*-mod'ĕr-āt*), *adj.* not moderate; extravagant; intemperate.

im-mod-est (*-mod'est*), *adj.* forward; arrogant; indelicate; unchaste.

im-mo-late (*'ō-lāt*), *v. t.* to kill as a sacrificial victim; offer in sacrifice; make a sacrifice of.

im-mor-al (*-mor'al*), *adj.* vicious; dissolute; dishonest; unprincipled.

im-mor-tal (*-mōr'tal*), *adj.* not mortal or subject to death; imperishable; ever-living: *n.* one who is immortal.

im-mor-tal-i-ty (*-tal'i-ti*), *n.* exemption from death or oblivion.

im-mor-telle (*-mor-tel'*), *n.* [*pl.* immortelles (*-telz'*)], a plant whose flowers may be dried without losing their form or color.

im-mov-a-ble (*-mōōv'à-bl*), *adj.* incapable of being moved; fixed; unfeeling. [OBSTINATE.]

im-mune (*-mūn'*), *adj.* exempt, as from a disease: *n.* one who is exempt from disease.

im-mu-ni-ty (*-mū'ni-ti*), *n.* [*pl.* immunities (*-tiz*)], exemption from any duty, office, tax or liability.

im-mure (*-mūr'*), *v. t.* to inclose within walls.

im-mu-ta-ble (*-mū'tà-bl*), *adj.* unchangeable; invariable; unalterable; permanent. [PERMANENT.]

imp (*imp*), *n.* a young, little or inferior devil; a mischievous child.

im-pact (*im'pakt*), *n.* collision.

im-pair (*-pâr'*), *v. t.* to make worse; lessen in quality: *v. i.* to deteriorate.

Syn. IMPAIR, injure. *To impair* is a progressive mode of *injuring*; an *injury* may take place either by degrees or by an instantaneous act; straining of the eyes *impairs* the sight, but a blow *injures* rather than *impairs* the eye.

im-pale (*-pāl'*), *v. t.* to fix on a stake.

im-pal-pa-ble (*-pal'pà-bl*), *adj.* not to be perceived by touch; not material; incorporeal.

im-pan-el (*-pan'el*), *v. t.* summon to serve on a jury; draw from the panel and swear in.

im-par-i-ty (*-par'i-ti*), *n.* inequality; disproportion; want of correspondence.

im-part (*-pärt'*), *v. t.* to bestow a share or portion of; give; make known: *v. i.* to give a share. [COMMUNICATE.]

im-par-tial (*-pär'shal*), *adj.* free from partiality; just; unprejudiced. [CANDID.]

im-pass-a-ble (*-pas'à-bl*), *adj.* not to be passed.

im-pas-sioned (*-pash'und*), *p. adj.* moved to strong feeling; animated; excited.

im-pas-sive (*-pas'iv*), *adj.* apathetic.

im-pa-tient (*-pā'shent*), *adj.* intolerant of pain, delay, opposition, control, or circumstances. [EAGER.]

im-peach (*-pēch'*), *v. t.* to call in question; accuse before a tribunal of official misconduct. [ACCUSE.]

im-peach-ment (*'ment*), *n.* the arraignment of a public officer for malfeasance in office; a discrediting or calling in question.

im-pec-ca-ble (*im-pek'à-bl*), *adj.* not liable to sin; faultless.

im-pe-cu-ni-ous (*-pē-kū'ni-us*), *adj.* without money; poor.

im-pede (*-pēd'*), *v. t.* to obstruct; hinder. [OBSTRUCT.]

im-ped-i-ment (*-ped'i-ment*), *n.* that which impedes progress or activity; obstruction; obstacle; hindrance. [DIFFICULTY.]

im-pel (*-pel'*), *v. t.* [*p. t.* and *p. p.* impelled, *p. pr.* impelling], to drive or urge forward or on; constrain to any kind of motion or action. [PERSUADE.]

im-pend (*-pend'*), *v. i.* to hang over; be ready to fall; be at hand.

im-pend-ing (*'ing*), *p. adj.* overhanging; suspended so as to menace; close at hand. [IMMINENT.]

im-pen-e-tra-ble (*-pen'ē-trà-bl*), *adj.* not penetrable; not admitting entrance.

im-pen-i-tence (*-pen'i-tens*), *n.* hardness of heart; stubborn wickedness. [Also *impenitency*.]

im-pen-i-tent (*'i-tent*), *adj.* not contrite; obdurate: *n.* a hardened sinner.

im-per-a-tive (*-per'à-tiv*), *adj.* expressing command; obligatory: *n.* that mood of a verb that expresses command.

im-per-cep-ti-ble (*-pĕr-sep'ti-bl*), *adj.* that cannot be immediately perceived.

im-per-fect (*'fekt*), *adj.* wanting in completeness, correctness, or excellence; defective; faulty.

im-per-fec-tion (*-fek'shun*), *n.* incompleteness; faultiness; a defect or blemish.

im-pe-ri-al (*-pē'ri-al*), *adj.* pertaining to an empire or emperor of superior size or excellence; royal; sovereign.

im-pe-ri-al-ism (*-izm*), *n.* the system of imperial government; the policy of imperial federation; policy of territorial expansion.

im-per-il (*-per'il*), *v. t.* to put in peril; endanger; jeopardize.

im-pe-ri-ous (*-pē'ri-us*), *adj.* domineering, dictatorial, overbearing; urgent; imperative.

Syn. IMPERIOUS, lordly, domineering A person's temper or his tone is denominated *imperious;* his air or deportment is *lordly;* his tone is *domineering; overbearing* is employed for men in the general relations of society, whether superiors or equals. A man of an *imperious* temper and some talent will frequently be so *overbearing* in the assemblies of his equals as to awe the rest into silence.

im-per-ish-a-ble (*-per'ish-à-bl*), *adj.* indestructible; not subject to decay; permanently enduring.

im-per-me-a-ble (*-pĕr'mē-à-bl*), *adj.* not permitting passage, as of a fluid, through its substance; impervious; impenetrable.

im-per-son-al (*'sun-al*), *adj.* wanting personality or conscious individuality; not referring to a particular person: *n.* an impersonal verb.

im-per-son-ate (*'sun-āt*), *v. t.* to invest with personality; to represent the person or character of, especially on the stage.

im-per-ti-nence (*'ti-nens*), *n.* that which is impertinent or irrelevant, as in speech or manners; rudeness.

im-per-ti-nent (*'ti-nent*), *adj.* nonpertinent; of no relation to the matter in hand; uncivil, or offensive.

im-per-turb-a-ble (*-tûrb'à-bl*), *adj.* not easily disturbed, agitated, or disconcerted. [CALM.]

im-per-vi-ous (*'vi-us*), *adj.* not to be passed through or penetrated; impenetrable.

im-pet-u-ous (*-pet'ū-us*), *adj.* rushing with force and violence; precipitate. [VIOLENT, EAGER.]

im-pe-tus (*'pē-tus*), *n.* impulse; impulsion; momentum.

im-pi-e-ty (*-pī'e-ti*), *n.* [*pl.* impieties (*-tiz*)], want of piety; ungodliness; an act of irreverence.

im-pinge (*-pinj'*), *v. i.* to strike or dash; clash; come in collision (with *on*, *upon*, or *against*).

★**im-pi-ous** (*im'pi-us*, not *im-pī'us*), *adj.* irreligious; wicked; profane. [IRRELIGIOUS.]

imp-ish (*imp'ish*), *adj.* having the character of an imp.

★**im-pla-ca-ble** (*im-plā'kà-bl*, not *im-plak'à-bl*), *adj.* not to be pacified or appeased; relentless.

im-plant (*-plant'*), *v. t.* to infix for growth; cause to take root.

im-ple-ment (*'plē-ment*), *n.* that which supplies a want, or is a requisite to an end: *pl.* tools and weapons.

im-pli-cate (*'pli-kāt*), *v. t.* to infold; involve; entangle.

Syn. IMPLICATE, involve. *Implicate* denotes to fold into a thing; and *involve* signifies to roll into a thing; *to implicate* marks something less entangled than *to involve*. In application to human affairs, people are said to be *implicated* who have taken ever so small a share in a transaction; but they are *involved* only when they are deeply concerned.

Ant. EXTRICATE, remove.

im-pli-ca-tion (*-kā'shun*), *n.* entanglement; that which is implied; deduction.

im-plic-it (*-plis'it*), *adj.* implied; resting on implication; trusting in another; tacit; unreserved.

im-plore (*-plōr'*), *v. t.* to entreat (a person, or for a thing) earnestly, humbly, and importunately: *v. i.* to beg; pray; supplicate. [BEG.]

im-ply (*-plī'*), *v. t.* [*p. t.* and *p. p.* implied, *p. pr.* implying], to contain by implication; mean or signify by fair inference.

im-po-lite (*im-pō-līt'*) *adj.* wanting in good manners; boorish.

im-pol-i-tic (*-pol'i-tik*), *adj.* contrary to good policy; unwise.

im-port (*-pōrt'*), *v. t.* to bring into a country from abroad; bring in from without, as irrelevant matter into a discussion; imply; signify; concern: *v. i.* to be of moment. *n.* (*im'pōrt*) merchandise brought into a country from abroad (usually in *pl.*); meaning; purport; significance; importance.

im-por-tance (*-pôr'tans*), *n.* the quality of being important; high place in public estimation; high self-esteem.

im-por-tant (*'tant*), *adj.* of much import or significance; momentous; of high standing; pompous.

im-por-tu-nate (*-pôr'tū-nāt*), *adj.* persistent; unreasonable or troublesome in solicitation; urgent. [EAGER.]

★**im-por-tune** (*-pôr-tūn'*), *v. t.* to harass with perpetual petitions or demands: *v. i.* to beg persistently or urgently. [SOLICITATION.]

im-pose (*-pōz'*), *v. t.* to lay upon, as a burden, punishment, or charge; palm off: *v. i.* to place a burden or tax; practice deception (with *upon*). [ABUSE.]

im-pos-ing (*'ing*), *p. adj.* adapted to impress forcibly; commanding; stately; grand; impressive.

im-po-si-tion (*-pō-zish'un*), *n.* a laying upon, especially of hands in ordination or confirmation; that which is imposed, levied, or enjoined; a trick, fraud, or deception.

im-pos-si-ble (*-pos'i-bl*), *adj.* that cannot be done; inconceivable.

im-post (*'pōst*), *n.* that which is imposed or levied; a tax, or duty.

im-pos-tor (*-pos'tēr*), *n.* one who imposes upon others. [DECEIVER.]

im-pos-ture (*-pos'tūr*), *n.* deception.

im-po-tence (*'pō-tens*), *n.* the state of being impotent in body or mind; feebleness.

★**im-po-tent** (*'pō-tent*, not *im-pō'tent*), *adj.* wanting in physical, intellectual, or moral power; weak.

im-pound (*-pound'*), *v. t.* to shut up in a pound or pen; confine.

im-pov-er-ish (*-pov'ēr-ish*), *v. t.* to make poor; reduce to poverty; cause to deteriorate.

im-prac-ti-ca-ble (*-prak'ti-kā-bl*), *adj.* not to be effected by the means employed, or at command.

im-pre-cate (*'prē-kāt*), *v. t.* to invoke, especially an evil or curse, upon; curse; wish evil to.

im-preg-na-bil-i-ty (*-preg-nā-bil'i-ti*), *n.* the quality of being unconquerable.

im-preg-na-ble (*'nā-bl*), *adj.* not to be captured, as a fortress; not to be overcome, as virtue.

im-preg-nate (*-preg'nāt*), *v. t.* to make pregnant; fecundate; imbue; saturate.

im-pre-sa-ri-o (*ēm-prā-sā'rē-ō*), *n.* the manager of an opera or concert company.

im-press (*-pres'*), *v. t.* to mark, stamp, or print by pressure; to affect forcibly, or stamp deeply on, the mind; compel to enter the public service as soldiers or sailors: *n.* (*im'pres*) a mark made by pressure; an image or figure; an impression or image fixed in the mind.

im-press-i-ble (*'i-bl*), *adj.* capable of being impressed; susceptible of impressions.

im-pres-sion (*-presh'un*), *n.* the mark made by a stamp or mold; style or character formed by external force or influence; an image in the mind; the effect produced by a sensation, passion, or emotion; remembrance, or belief; edition.

im-pres-sion-a-bil-i-ty (*-a-bil'i-ti*), *n.* the quality of being impressionable.

im-pres-sion-a-ble (*-a-bl*), *adj.* capable of receiving impressions; susceptible.

im-pres-sion-ism (*'un-izm*), *n.* the doctrine that natural objects should be painted (in literature described) so as to reproduce only their general effect or impression.

im-pres-sion-ist (*'un-ist*), *n.* one who, in art or in literature, holds the theory of impressionism.

im-press-ive (*-pres'iv*), *adj.* capable of making impression.

im-press-ment (*-pres'ment*), *n.* the act of seizing for public use, or of compelling to enter the pubile service.

im-print (*-print'*), *v. t.* to mark by pressure; print; impress feebly, as on the mind or memory: *n.* (*im'print*) an impression, impress, or mark left by something.

im-pris-on (*-priz'n*), *v. t.* to put into a prison; restrain or confine in any way.

im-prob-a-ble (*-prob'a-bl*), *adj.* unlikely; not to be expected.

im-prob-i-ty (*-prob'i-ti*), *n.* want of probity or rectitude; dishonesty.

im-promp-tu (*-promp'tū*), *adv.* without preparation; *adj.* extemporaneous: *n.* extemporaneous speech or effort.

im-prop-er (*-prop'ēr*), *adj.* not well adapted or suited to the purpose; erroneous; unseemly.

im-pro-pri-e-ty (*-prō-prī'ē-ti*), *n.* [*pl.* improprieties (*-tiz*)], the quality of being improper; unsuitableness.

im-prove (*-prōōv'*), *v. t.* to make better; turn to account: *v. i.* to grow better. [AMEND.]

im-prove-ment (*'ment*), *n.* advancement of anything from good to better; profitable use or application of anything; that by which the value of anything is advanced: *pl.* betterments.

im-prov-i-dence (*-prov'i-dens*), *n.* want of foresight or thrift.

im-prov-i-dent (*im-prov'i-dent*), *adj.* lacking foresight or thrift; careless.

im-prov-i-sa-tion (*-sā'shun*), *n.* the act of improvising; an impromptu.

im-pro-vise (*-prō-vīz'*), *v. t.* to compose extemporaneously; bring about on a sudden: *v. i.* to compose extemporaneously; do a thing in an offhand way.

im-pru-dent (*-prōō'dent*), *adj.* wanting prudence; indiscreet; injudicious.

im-pu-dent (*'pū-dent*), *adj.* shameless; immodest; offensively forward.

im-pugn (*-pūn'*), *v. t.* to attack by arguments; contradict.

Syn. IMPUGN, attack. He who *impugns* may sometimes proceed insidiously and circuitously to undermine the faith of others; he who *attacks* always proceeds with more or less violence. When there are no arguments wherewith to *impugn* a doctrine, it is easy *to attack* it with ridicule and scurrility.

Ant. DEFEND, resist.

im-pulse (*'puls*), *n.* force communicated suddenly; the result of an impelling force; a mental force directly urging to action.

im-pul-sive (*'siv*), *adj.* having the power of impelling; actuated by, or resulting from, impulse; passionate.

im-pu-ni-ty (*-pū'ni-ti*), *n.* freedom from punishment, injury, or loss.

im-pure (*-pūr'*), *adj.* mixed with extraneous matter; unchaste; unclean; dirty; not accurate.

im-pu-ri-ty (*'ri-ti*), *n.* [*pl.* impurities (*-tiz*)], uncleanness; a physical or moral blemish.

im-pu-ta-tion (*-tā'shun*), *n.* the act of imputing or charging; anything imputed or charged; censure; reproach; insinuation.

im-pute (*-pūt'*), *v. t.* to charge, attribute or ascribe; attribute as derived from another.

in-ac-tive (*in-ak'tiv*) *adj.* not active.

in-ad-e-quate (*-ad'ē-kwāt*), *adj.* not adequate.

in-ad-vert-ent (*-vērt'ent*), *adj.* inattentive; heedless; unconscious.

in-al-ien-a-ble (*-āl-yen-a-bl*), *adj.* that cannot, or should not, be alienated, surrendered or transferred to another.

in-ane (*-ān'*), *adj.* empty; senseless; pointless: *n.* infinite void; space.

in-an-i-mate (*-an'i-māt*), *adj.* not animate or animated.

in-an-i-ty (*-an'i-ti*), *n.* [*pl.* inanities (*-tiz*)], emptiness; mental vacuity; frivolity: *pl.* vanities.

in-ap-pre-ci-a-ble (*-ap-prē'shi-a-bl*), *adj.* not to be appreciated or estimated; of no consequence.

in-ar-tic-u-late (*-ār-tik'ū-lāt*), *adj.* not uttered with intelligible distinctness; incapable of speech; not articulated.

in-as-much (*-az-much'*), *adv.* in a like degree; seeing that (with *as*); because.

in-at-ten-tive (*-at-ten'tiv*) *adj.* not attentive. [ABSTRACTED.]

in-au-gu-ral (*-aw'gū-ral*), *adj.* pertaining to an inauguration.

★**in-au-gu-rate** (*in-aw'gu-rāt*, not *in-aw'gur-āt*), *v. t.* to invest with office in a formal manner; consecrate; make a formal beginning of; dedicate.

in-aus-pi-cious (*-aws-pish'us*), *adj.* ill-omened; unlucky; unfavorable.

in-breed (*-brēd'*), *v. t.* to breed or develop within; breed from animals closely related.

In-ca (*ing'kà*), *n.* the Peruvian emperor, or a member of the royal race in Peru (which claimed descent from the sun) previous to the Spanish conquest under Pizarro, 1531; the aboriginal Peruvian race.

in-cal-cu-la-ble (*in-kal'kū-là-bl*), *adj.* beyond calculation.

in-can-des-cent (*-kan-des'ent*), *adj.* glowing; white with heat.

in-can-des-cent lamp (*lamp*), *n.* a lamp in which the light is produced by a thin strip of nonconducting material contained in a vacuum, and heated to incandescence by an electric current.

in-can-ta-tion (*-kan-tā'shun*), *n.* a magical charm said or sung.

in-ca-pa-ble (*kā'pà-bl*) *adj.* not capable.

in-ca-pac-i-tate (*-kà-pas'i-tāt*), *v. t* to deprive of capacity or natural power; disqualify; disable.

in-ca-pac-i-ty (*-ti*), *n.* lack of power, physical or mental; legal disqualification.

in-car-cer-ate (*-kār'sēr-āt*), *v. t.* to imprison; confine.

in-car-na-tion (*-nā'shun*), *n.* the act of clothing with, or assuming, flesh; embodiment in human form.

in-cau-tious (*-kaw'shus*), *adj.* wanting in caution; unwary.

in-cen-di-a-rism (*-sen'di-à-rizm*), *n.* the act of an incendiary; burning; arson.

in-cen-di-a-ry (*'di-à-ri*), *adj.* pertaining to arson or the malicious burning of property; tending to excite passion or violence: *n.* one guilty of arson; one who excites passion or violence.

in-cense (*in-sens'*), *v. t.* to fire; inflame with anger; provoke; irritate; (*in'sens*), perfume with incense: *n.* any aromatic material which exhales perfume when burned; any gratifying odor; homage.

in-cen-tive (*-sen'tiv*), *adj.* inciting; encouraging: *n.* incitement; encouragement; motive; spur.

in-cep-tion (*-sep'shun*), *n.* reception; beginning.

in-cep-tive (*-sep'tiv*), *adj.* beginning; noting beginning: *n.* an inceptive word or phrase.

in-ces-sant (*in-ses'ant*), *adj.* unceasing; ceaseless continuous.

inch (*inch*), *n.* 1-12th of a foot.

in-cho-ate (*'kō-āt*), *adj.* just begun; incipient; elementary.

in-ci-dence (*'si-dens*), *n.* the direction in which a ray of light or heat falls upon a surface.

in-ci-dent (*'si-dent*), *adj.* apt to occur; appertaining; occurring accidentally; subordinate: *n.* occurrence; that which happens beside the main design: episode. [EVENT, ACCIDENT, CIRCUMSTANCE.]

in-ci-dent-al (*'al*), *adj.* casual; subordinate: *n.* something casual or subordinate: *pl.* minor expenses.

in-cin-er-ate (*-sin'ēr-āt*), *v. t.* to burn to ashes.

in-cip-i-ent (*-sip'i-ent*), *adj.* beginning to be or to appear; initial.

in-cise (*-sīz'*), *v. t.* to cut in; to engrave.

in-ci-sion (*-sizh'un*), *n.* a cut made with a sharp instrument.

in-ci-sive (*-si'siv*), *adj.* having the quality of cutting into; sharp; trenchant.

in-cite (*-sīt'*), *v. t.* to move to action; stir up; spur on. [EXCITE, PERSUADE.]

in-cite-ment (*'ment*), *n.* an inciting cause; incentive; impulse.

in-ci-vil-i-ty (*-si-vil'i-ti*), *n.* [*pl.* incivilities (*-tiz*)], lack of civility or courtesy; impoliteness.

in-clem-ent (*-klem'ent*), *adj.* not clement; unmerciful; tempestuous.

in-cli-na-tion (*-kli-nā'shun*), *n.* a leaning; tendency of the mind; disposition; slant; propensity.

Syn. INCLINATION, tendency, propensity, proneness. All these terms are employed to designate the state of the will toward an object; *inclination* denotes its first movement toward an object; *tendency* is a continued *inclination; propensity* denotes a still stronger leaning of the will; and *prone* characterizes an habitual and fixed state of the will toward an object. *Propensity* and *proneness* both designate a downward direction, and consequently refer only to that which is bad and low; a person has a *propensity* to drinking, and a *proneness* to lying. [See *disposition.*]

Ant. DISINCLINATION, repulsion.

in-cline (*-klīn'*), *v. i.* to deviate from the normal; lean; bow; have a tendency: *v. t.* to cause to lean, direct; bow; turn; dispose: *n.* a slope; an inclined plane. [LEAN, ADDICTED, PERSUADE.]

in-close (*-klōz'*), *v. t.* to shut in; encompass; surround; put into an envelope.

Syn. INCLOSE, include. A yard is *inclosed* by a wall; particular goods are *included* in a reckoning. [See *circumscribe.*]

in-clude (*-klōōd'*), *v. t.* to inclose; hold as in an inclosure. [COMPRISE.]

in-clu-sive (*-klōō'siv*), *adj.* inclosing; including.

in-co-her-ence (*-kō-hēr'ens*), *n.* want of cohesion; incongruity; inconsequence. [Also *incoherency.*]

in-co-her-ent (*'ent*), *adj.* without cohesion; incongruous.

in-com-bus-ti-ble (*-kom-bus'ti-bl*), *adj.* that cannot be consumed by fire: *n.* an incombustible.

in-come (*'kum*), *n.* the gain which proceeds from labor, business, property, or capital.

in-com-men-su-ra-ble (*kom-men'shoo-rà-bl*), *adj.* having no common measure; having no common divisor except unity: *n.* one of two (or more) quantities that have no common measure.

in-com-men-su-rate (*-rāt*), *adj.* incommensurable; not sufficient in measure; inadequate.

in-com-mode (*-kom-ōd'*), *v. t.* to give inconvenience to.

in-com-mo-di-ous (*'i-us*), *adj.* troublesome; inconvenient.

in-com-mu-ni-ca-ble (*-mū'ni-kà-bl*), *adj.* that cannot be communicated or told.

★**in-com-pa-ra-ble** (*in-kom'pa-rà-bl*, not *in-kom-pâr'á-bl*), *adj.* not admitting of comparison; unequaled. [RARE.]

in-com-pat-i-ble (*kom-pat'i-bl*), *adj.* incapable of harmonious subsistence or combination; inconsistent; incongruous: *n. pl.* persons or things irreconcilably disagreeing with each other.

in-com-pe-tence (*-kom'pē-tens*), *n.* inability; insufficiency; inadequacy. [Also *incompetency.*]

in-com-pe-tent (*'pē-tent*), *adj.* wanting ability; inadequate; incapacitated; inadmissible.

in-com-plete (*-plēt'*), *adj.* not fully finished or developed; imperfect; defective.

in-com-pre-hen-si-ble (*-prē-hen'si-bl*), *adj.* illimitable; inconceivable. [MYSTERIOUS.]

in-con-ceiv-a-ble (*in-kon-sēv'à-bl*), *adj.* incapable of being conceived or imagined; incredible.

in-con-clu-sive (*-klōō'siv*), *adj.* leading to no conclusion; unconvincing; ineffective. [ABSURD.]

in-con-gru-i-ty (*-grōō'i-ti*), *n.* [*pl.* incongruities (*-tiz*)], want of mutual fitness; unsuitableness of one thing to another.

in-con-gru-ous (*-kong'grōō-us*), *adj.* reciprocally disagreeing; unsuited to one another; inharmonious; inappropriate.

in-con-se-quent (*kon'sē-kwent*), *adj.* not following from the premises; irrelevant.

in-con-sid-er-a-ble (*-sid'ēr-à-bl*), *adj.* not deserving consideration; unimportant.

in-con-sid-er-ate (*-sid'ēr-āt*), *adj.* without consideration; thoughtless.

in-con-sis-tent (*-sis'tent*), *adj.* lacking coherence or agreement; discrepant; self-contradicting.

in-con-sol-a-ble (*in kon-sōl'ȧ-bl*), *adj.* not to be consoled or comforted.
in-con-spic-u-ous (*-spik'ū-us*), *adj.* not easily perceived; hardly discernible.
in-con-stant (*'stant*), *adj.* subject to change; unstable; variable; fickle; capricious.
in-con-test-a-ble (*-test'ȧ-bl*), *adj.* not admitting of question or dispute; incontrovertible
in-con-ti-nence (*'ti-nens*), *n.* lack of restraint; licentiousness. [Also *incontinency.*]
in-con-ti-nent (*'ti-nent*), *adj.* unrestrained· unchaste: *n.* an unchaste person.
in-con-tro-ver-ti-ble (*tro-vĕr'ti-bl*), *adj.* not admitting of controversy: indisputable. [INDUBITABLE.]
in-con-ven-ience (*-vēn'yens*), *n.* want of convenience; unfitness; disadvantage. [Also *inconvenes·ency.*] *v. t.* to put to inconvenience; incommode; annoy; molest.

Syn. INCONVENIENCE, annoy, molest. We *inconvenience* in small matters, or by omitting such things as might be *convenient;* we *annoy* or *molest* by doing that which is positively painful; we are *inconvenienced* by a person's absence; we are *annoyed* by his presence if he renders himself offensive; we are *molested* by that which is weighty and oppressive; the rude insults of ill-disposed persons may *molest.*

in-con-ven-ient (*'yent*), *adj.* disadvantageous; inopportune.
in-con-vert-i-ble (*vĕrt'i-bl*), *adj.* incapable of being converted into, or exchanged for, something else.
in-cor-po-rate (*-kôr'pō-rāt*), *v. t.* to embody; unite; associate; form into a corporation: *v. i.* to unite with another body so as to form a part of it: *p. adj.* incorporated; united in one body.
in-cor-po-ra-tion (*-pō-rā'shun*), *n.* combination; assimilation; mixture; a corporation.
in-cor-po-re-al (*kor-pō'rē-al*), *adj.* not corporeal; immaterial; intangible.
in-cor-rect (*-kor-ekt'*), *adj.* faulty; not according to fact; inaccurate; improper. [ABSURD.]
in-cor-ri-gi-ble (*'ri-ji-bl*), *adj.* bad beyond correction or amendment; irreclaimable.
in-cor-rupt (*-kor-upt'*), *adj.* free from physical or moral taint: unimpaired; upright; honest.
in-cor-rupt-i-ble (*'i-bl*), *adj.* incapable of physical corruption, decay, or dissolution; not liable to moral perversion.
in-crease (*-krēs'*), *v. i.* to become greater in any respect· *v. t.* to make greater in any respect: *n.* (*in'krēs*), a growing larger; that which is added; offspring.

Syn. INCREASE, grow. To *increase* is either a gradual or an instantaneous act; to *grow* is a gradual process; a stream *increases* by the addition of other waters; but if we say that the river or stream *grows,* it is supposed to *grow* by some regular and continual process of receiving fresh water, as from the running in of different rivulets or smaller streams. [See *add, enlarge.*]

Ant. DECREASE, fade, decline.

in-cred-i-ble (*-kred'i-bl*), *adj.* surpassing belief; hard to believe.
in-cre-du-li-ty (*-krē-dū'li-ti*), *n.* the quality of being incredulous. [UNBELIEF.]
in-cred-u-lous (*-kred'ū-lus*), *adj.* hard of belief; skeptical.
in-cre-ment (*'krē-ment*), *n.* increase; augmentation; produce.
in-crim-i-nate (*-krim'i-nāt*), *v. t.* to charge with a crime; accuse.
in-crust (*in-krust'*), *v. t* to cover with, or as with, a crust. [Also *encrust.*]
in-cu-bate (*'kū-bāt*), *v t.* to sit upon (eggs) to hatch them; hatch out: *v. i.* to brood.
in-cu-ba-tor (*'kū-bā-tĕr*), *n.* one who, or that which, incubates.
in-cu-bus (*'kū-bus*), *n.* [*pl.* incubuses (*-ez*), incubi (*-bi*)], the nightmare; a heavy weight or burden.
in-cul-cate (*-kul'kāt*), *v. t.* to impress upon the mind by frequent admonitions. [TEACH.]
in-cum-bent (*kum'bent*) *adj.* lying upon; imposed as a duty: *n.* the holder of an office.
in-cur (*-kûr'*), *v. t.* [*p. t.* and *p. p.* incurred, *p. pr.* incurring], to become liable to; contract, as a debt.
in-cur-a-ble (*-kūr'ȧ-bl*), *adj.* incapable of being cured: *n.* a person diseased beyond cure.
in-cur-sion (*-kûr'shun*), *n.* an inroad; raid; invasion.
in-debt-ed (*-det'ed*), *p. adj.* lying under an obligation.

Syn. INDEBTED, obliged. *Indebted* is more binding and positive than *obliged;* we are *indebted* to whoever confers an essential service; we are *obliged* to him who does us any service. A man is *indebted* to another for the preservation of his life; he is *obliged* to him for an ordinary act of civility.

in-de-cen-cy (*-dē'sen-si*), *n.* [*pl.* indecencies, (*-siz*)] want of decency, modesty, or good manners; that which is indecent, grossly vulgar, or obscene.
in-de-cent (*'sent*), *adj.* immodest; indelicate; obscene.
in-de-ci-sion (*-dē-sizh'un*), *n.* want of decision; irresolution.
in-de-ci-sive (*-sī'siv*), *adj.* not bringing to a decision; inconclusive.
in-de-co-rous (*-dē-kō'rus*), *adj.* violating decorum.
in-de-co-rum (*-kō'rum*), *n.* violation of decorum or propriety.
in-deed (*-dēd'*), *adv.* in fact; in truth.
in-de-fat-i-ga-ble (*in-dē-fat'i-gȧ-bl*), *adj.* not to be wearied out; not yielding to fatigue.
in-de-fea-si-ble (*-fē'zi-bl*), *adj.* not to be defeated or made void.
in-de-fen-si-ble (*-fen'si-bl*), *adj.* that cannot be defended.
in-de-fin-a-ble (*-fin'ȧ-bl*), *adj.* that cannot be defined.
in-def-i-nite (*-def'i-nit*), *adj.* not defined; not precise; vague; having no particular limit. [EQUIVOCAL.]
in-del-i-ble (*-del'i-bl*), *adj.* not to be blotted out, effaced, or obliterated.
in-del-i-ca-cy (*-del'i-kȧ-si*), *n.* [*pl.* indelicacies (*-siz*)], want of delicacy; that which is offensive.
in-del-i-cate (*'i-kāt*), *adj.* offensive to modesty or propriety; coarse; indecent.
in-dem-ni-fy (*-dem'ni-fī*), *v. t.* [*p. t.* and *p. p.* indemnified, *p. pr.* indemnifying], to secure or insure against loss or damage; reimburse.
in-dem-ni-ty (*'ni-ti*), *n.* [*pl.* indemnities (*-tiz*)], security against loss, damage, or punishment; compensation for loss.
in-dent (*-dent'*), *v. t.* to make a dent or depression in; dent; notch.
in-den-ture (*'tūr*), *n.* a covenant or deed: *v. t.* to bind by indenture, as an apprentice.
in-de-pend-ence (*-dē-pend'ens*), *n.* freedom from support or governance by others; a competency; self-reliance.
Independence day (*dā*), July 4, the anniversary of the Declaration of Independence.
in-de-pend-ent (*'ent*), *adj.* not dependent, supported by, or governed by, another; having a competency; not subject to bias or influence; irrespective.
in-de-struc-ti-ble (*-struk'ti-bl*), *adj.* not to be destroyed.
in-de-ter-mi-nate (*-tĕr'mi-nāt*), *adj.* indefinite; not precise; having an idefinite number of values or solutions. [EQUIVOCAL.]
in-dex (*'deks*), *n.* [*pl.* indexes (*-ez*), indices (*'di-sēz*)], that which points out or indicates; a table of contents; the exponent: *v. t.* provide with an index.
India. Means the country traversed by the Indus, or rather the Hindu, which name is a Persianized form of the Sanskrit *Sindhu,* "a great river," rendered *Hindos* in the Greek.
In-di-an (*'di-an*), *adj.* pertaining to the Indies, to the West Indies or to the American Indians: *n.* an East Indian, West Indian or Anglo-Indian; one of the aborigines of America, or a Red Indian.
Indiana. From the word Indian, first applied in 1768 to a grant of land north of and near the Ohio river, which was obtained that year by a company of traders from the Indians.
Indianapolis, Ind. Literally, the city of Indiana, from *Indiana* and *polis,* "city." This name was proposed by Judge Jeremiah Sullivan of Jefferson county, Ind., being preferred to *Tecumseh* and *Suwarrow,* which were suggested.
Indian Ocean. Indicative of its geographical position.
in-di-a rub-ber (*'di-ȧ rub'ĕr*), caoutchouc.
in-di-cate (*'di-kāt*), *v. t.* to point out; show; suggest; hint.
in-dic-a-tive (*-dik'ȧ-tiv*), *adj.* pointing out; bringing to notice; noting that mood of the verb which indicates, predicates, or affirms: *n.* the indicative mood.
in-di-ca-tor (*'di-kā-tĕr*), *n.* one who, or that which, indicates.
in-dict (*-dit'*), *v. t.* to charge with a crime, by the presentment of a grand jury.
in-dict-ment (*'ment*), *n.* a written accusation against a prisoner.
in-dif-fer-ence (*-dif'ĕr-ens*), *n.* the state of being indifferent; absence of preference or interest; unconcernedness; condition of being indifferent in character or quality.
in-dif-fer-ent (*'ĕr-ent*), *adj.* unconcerned; regardless.

Syn. INDIFFERENT, unconcerned, regardless. *Indifferent* respects only the will, *unconcerned* either the will or the understanding, *regardless* the understanding only; we are *indifferent* about matters of minor consideration; we are *unconcerned* or *regardless* about serious matters that have remote consequences; an author will seldom be *indifferent* about the success of his work; nor be *unconcerned* about the influence which his writings may have, nor *regardless* of the estimation put upon his character. [See *abstracted.*]

in-di-gence (*'di-jens*), *n.* the state of being indigent. [Also *indigency.*]
in-dig-e-nous (*-dij'ē-nus*), *a* born or produced in a country; innate; inherent. [NATIVE.]
in-di-gent (*'di-jent*), *adj.* destitute; needy.
in-di-gest-i-ble (*-jest'i-bl*), *adj.* not digestible.
in-di-ges-tion (*-jes'chun*), *n.* difficulty in digesting food; dyspepsia.
in-dig-nant (*-dig'nant*), *adj.* affected with indignation.
in-dig-na-tion (*-nā'shun*), *n.* anger at what is unworthy, unjust, dishonorable, or base. [ANGER.]
in-dig-ni-ty (*-dig'ni-ti*), *n.* [*pl.* indignities (*-tiz*)], an action intended to lower the dignity of another; insult.
in-di-go (*'di-gō*), *n.* a blue dyestuff obtained from the indigo plant.
in-di-rect (*in-di-rekt'*), *adj.* not straight; not directly resulting from a cause; not straightforward or fair.
in-dis-creet (*in-dis-krēt'*), *adj.* wanting in discretion; imprudent.
in-dis-cre-tion (*-dis-kresh'un*), *n.* want of discretion; imprudence; an imprudent act.
in-dis-crim-i-nate (*-krim'i-nāt*), *adj.* undistinguishing; promiscuous.
in-dis-pens-a-bil-i-ty (*-pen-sȧ-bil'i-ti*), *n.* incapability of being dispensed with.
in-dis-pen-sa-ble (*'sȧ-bl*), *adj.* that cannot be dispensed with; absolutely necessary.
in-dis-po-si-tion (*-pō-zish'un*), *n.* slight illness; disinclination.
★in-dis-pu-ta-ble (*in-dis'pū-tȧ-bl*, not *in-dis-pū'tȧ-bl*), *adj.* too evident to admit of dispute; unquestionable. [INDUBITABLE.]
in-dis-so-lu-ble (*'ō-lū-bl*), *adj.* not dissoluble or dissolvable.
in-dis-tinct (*-dis-tingkt'*), *adj.* not distinct to the senses or the mind. [EQUIVOCAL, FAINT.]
in-dis-tin-guish-a-ble (*-ting'gwish-ȧ-bl*), *adj.* incapable of being distinguished.
in-dite (*-dīt'*), *v. t.* to compose; write.
in-di-vid-u-al (*-di-vid'ū-al*), *adj.* pertaining to, or characteristic of, a single person or thing: *n.* a single person, animal, or thing. [PARTICULAR.]
in-di-vid-u-al-ism (*-izm*), *n.* the quality of being individual; a social system in which each individual works for himself alone.
in-di-vid-u-al-i-ty (*-al'i-ti*), *n.* the condition of being individual; distinctive character.
in-di-vid-u-al-ize (*'ū-al-īz*), *v. t.* to invest with individuality; distinguish.
in-di-vis-i-ble (*-viz'i-bl*), *adj.* not separable into parts: *n.* that which is indivisible.
in-doc-tri-nate (*-dok'tri-nāt*), *v. t.* to imbue with doctrines. [TEACH.]
In-do-Eu-ro-pe-an (*-dō-ū-rō-pē'an*), *adj.* pertaining to the family of Aryan languages extending from India over Europe.
in-do-lence (*'dō-lens*), *n.* love of ease; laziness.
in-do-lent (*-lent*), *adj.* indulging in ease; avoiding labor; lazy. [IDLE.]
in-dom-i-ta-ble (*-dom'i-tȧ-bl*), *adj.* untamable; invincible. [OBSTINATE.]
in-dorse (*-dôrs'*), *v. t.* to write on the back of, as a check, etc.; sanction; approve. [Also *endorse.*]
in-du-bi-ta-ble (*-dū'bi-tȧ-bl*), *adj.* too evident to be doubted.

Syn. INDUBITABLE, unquestionable, indisputable, incontrovertible. When a fact is supported by such evidence as admits of no kind of *doubt* it is termed *indubitable;* when the truth of an assertion rests on the authority of a man whose character for integrity stands unimpeached, it is termed *unquestionable* authority; when a thing is believed to exist on the evidence of every man's senses, it is termed undeniable; when a sentiment has always been held as either true or false, without *dispute,* it is termed *indisputable;* when arguments have never been *controverted* they are termed *incontrovertible.*

in-duce (*dūs'*), *v. t.* to lead on; influence; prevail upon; bring on; effect; cause; to infer by induction. [PERSUADE.]
in-duce-ment (*-dūs'ment*), *n.* that which induces; motive. [office.
in-duct (*-dukt'*), *v. t.* to introduce; install into an
in-duc-tion (*-duk'shun*), *n.* the act of inducting; the introduction of a person into an office; conclusion drawn from a process of induction; electrical or magnetic influence without direct contact.
in-duc-tive (*'tiv*), *adj.* proceeding by induction; producing induction; operating by induction.
in-due (*-dū'*), *v. t.* to clothe or invest; furnish; supply; endow.
in-dulge (*-dulj'*), *v. t.* to be kind or complaisant to; humor: *v. i.* to gratify one's self. [FOSTER, GRATIFY.]
in-dul-gence (*dul'jens*), *n.* permission; license; gratification; excess; toleration.
in-dul-gent (*'jent*), *adj.* disposed to indulge; compliant.

Syn. INDULGENT, fond. *Indulgence* lies more in forbearing from the exercise of authority; *fondness* in the outward behavior and endearments; an *indulgent* parent is seldom a prudent parent; but a *fond* parent does not rise above a fool; all who have the care of young people should occasionally relax from the strictness of the disciplinarian and show an *indulgence* where a suitable opportunity offers; a *fond* mother takes away from the value of *indulgences* by an invariable compliance with the humors of her children.

in-du-rate (*'dū-rāt*), *v. i.* to grow hard: *v. t.* to make hard; render unfeeling or obdurate.
in-dus-tri-al (*-dus'tri-al*), *adj.* pertaining to productive industry.
in-dus-tri-ous (*'tri-us*), *adj.* characterized by diligence or industry; hard-working. [ACTIVE.]
in-dus-try (*'dus-tri*), *n.* [*pl.* industries (*-triz*)], steady application to business or labor; productive labor.
in-e-bri-ate (*-ē'bri-āt*), *v. t.* to make drunk; intoxicate: *n.* an habitual drunkard.
in-ef-fa-ble (*-ef'ȧ-bl*), *adj.* unspeakable; inexpressible; too sacred for utterance. [UNSPEAKABLE.]
in-ef-fect-ive (*-ef-ekt'iv*), *adj.* not producing the desired effect; ineffectual.
in-ef-fec-tu-al (*-ek'tū-al*), *adj.* not producing the desired effect; unavailing.

in-ef-fi-cient (*in-ef-fish'ent*), *adj.* not producing, or not capable of producing, the desired effect; incapable.
in-el-e-gant (*-el'ē-gant*), *adj.* offensive to good taste.
in-el-i-gi-ble (*'i-ji-bl*), *adj.* unworthy of choice: unsuitable.
in-ept-ly (*-ept'li*), *adv.* unsuitably; foolishly.
in-e-qual-i-ty (*-ē-kwol'i-ti*), *n.* [*pl.* inequalities (*-tiz*)], difference; unevenness; changeableness; inadequacy. [DISPARITY.]
in-eq-ui-ta-ble (*-ek'wi-tā-bl*), *adj.* not according to equity; unjust.
in-ert (*-ėrt'*), *adj.* having no power of motion or action.
in-er-ti-a (*-ėr'shi-ā*), *n.* lack of activity; inertness; sluggishness.
in-es-ti-ma-ble (*-es'ti-mā-bl*), *adj.* not to be estimated; beyond measure or price.
in-ev-i-ta-ble (*-ev'i-tā-bl*), *adj.* not to be evaded; unavoidable.
in-ex-act (*egz-akt'*), *adj.* not precise, correct, or accurate.
in-ex-cus-a-ble (*-eks-kūz'ā-bl*), *adj.* incapable of being excused.
in-ex-haus-ti-ble (*-egs-aws'ti-bl*), *adj.* not to be exhausted or spent.
in-ex-o-ra-ble (*-eks'ō-rā-bl*), *adj.* unyielding; unrelenting.
in-ex-pe-di-ent (*-pē'di-ent*), *adj.* unsuitable to circumstances; inadvisable.
in-ex-pen-sive (*-pen'siv*), *adj.* cheap.
in-ex-pe-ri-ence (*-pē'ri-ens*), *n.* want of experience.
in-ex-pert (*-pėrt'*), *adj.* unskilled.
in-ex-pi-a-ble (*'pi-ā-bl*), *adj.* that cannot be expiated.
★**in-ex-pli-ca-ble** (*'pli-kā-bl*), *adj.* not to be explained. [MYSTERIOUS.]
in-ex-plo-sive (*-plō'siv*), *adj.* not liable to explode.
in-ex-press-i-ble (*-pres'i-bl*), *adj.* incapable of being expressed. [UNSPEAKABLE.]
in-ex-tin-guish-a-ble (*-ting'gwish-ā-bl*), *adj.* unquenchable.
in-ex-tri-ca-ble (*'tri-kā-bl*), *adj.* not extricable.
in-fal-li-ble (*-fal'i-bl*), *adj.* incapable of erring.
★**in-fa-mous** (*'fa-mus*), *adj.* having a notoriously bad reputation.
Syn. INFAMOUS, scandalous. *Infamous* and *scandalous* are both said of that which is calculated to excite great displeasure in the minds of all who hear it, and to degrade the offenders in the general estimation; but the *infamous* seems to be that which produces greater publicity, and more general reprehension, than the *scandalous*.
in-fa-my (*'fa-mi*), *n.* infamous character; public disgrace; ignominy.
in-fan-cy (*'fan-si*), *n.* the state of being an infant.
in-fant (*'fant*), *n.* a young child; popularly a child under two years; in law, a person who has not attained the age of twenty-one: *adj.* pertaining to infancy.
in-fan-ti-cide (*-fan'ti-sid*), *n.* the murder of an infant.
in-fan-tile (*'fan-tīl*), *adj.* pertaining to infants or infancy.
in-fan-try (*'fan-tri*), *n.* foot soldiers.
in-fat-u-ate (*-fat'ū-āt*), *v. t.* to make extravagantly foolish; to inspire with fatuous passion.
in-fect (*-fekt'*), *v. t.* to communicate some (especially bad) quality to; taint.
in-fec-tion (*-fek'shun*), *n.* the act of infecting; that which infects. [CONTAGION.]
in-fec-tious (*'shus*), *adj.* communicable by infection.
in-fe-lic-i-tous (*-fē-lis'i-tus*), *adj.* unfortunate; unhappy.
in-fe-lic-i-ty (*-lis'i-ti*), *n.* [*pl.* infelicities (*-tiz*)], misfortune: unhappiness; inappropriateness.
in-fer (*-fėr'*), *v. t.* [*p. t.* and *p. p.* inferred, *p. pr.* inferring], to derive by induction or deduction; imply: *v. i.* to conclude.
in-fer-ence (*'fėr-ens*), *n.* the act of inferring; the conclusion deduction; induction. [CONCLUSION.]
in-fer-en-tial (*-en'shal*), *adj.* having the nature of an inference; deduced by inference.
in-fe-ri-or (*-fē'ri-ėr*), *adj.* lower in place, rank, or quality; secondary: subordinate: *n.* one who ranks below another; a subordinate.
in-fe-ri-or-i-ty (*-ri-or'i-ti*), *n.* lower state or quality.
in-fer-nal (*-fėr'nal*), *adj.* pertaining to, or resembling, hell; hellish; diabolical; fiendish; outrageous.
in-fest (*-fest'*), *v. t.* to attack; haunt; overrun.
in-fi-del (*'fi-del*), *adj.* rejecting all religion; manifesting unbelief: *n.* one who rejects Christianity as a divine revelation.
in-fi-del-i-ty (*-del'i-ti*), *n.* [*pl.* infidelities (*-tiz*)], disbelief in all religion; breach of trust; adultery. [UNBELIEF.]
in-field (*'fēld*), *n.* in baseball, the space within the base line, 30 yds. by 30 yds.
in-fil-tra-tion (*-fil-trā'shun*), *n.* the act of infiltrating; that which infiltrates.
in-fi-nite (*'fi-nit*), *adj.* indefinitely extensive; immeasurable: *n.* the Infinite Being; an indeterminate. [BOUNDLESS.]
in-fin-i-tes-i-mal (*-fin-i-tes'i-mal*), *adj.* infinitely small: *n.* a quantity less than any assignable quantity.
in-fin-i-tive (*-fin'i-tiv*), *adj.* the term applied to that verb-form which simply expresses the general sense of the verb without limitation to person or number: *n.* the infinitive mood; a verb in the infinitive mood.
in-fin-i-tude (*in-fin'i-tūd*), *n.* the state of being infinite; unlimited extent; infinity.
in-fin-i-ty (*'i-ti*), *n.* [*pl.* infinities (*-tiz*)], the state of being infinite; an infinite quantity.
in-firm (*-fėrm'*), *adj.* feeble in body or health; weak-minded. [WEAK.]
in-fir-ma-ry (*'mā-ri*), *n.* [*pl.* infirmaries (*-riz*)], a hospital for the sick and injured.
in-fir-mi-ty (*'mi-ti*), *n.* [*pl.* infirmities (*-tiz*)], the state of being infirm. [DEBILITY.]
in-flame (*-flām'*), *v. t.* to set on fire; fire with passion; excite; provoke; irritate: *v. i.* to become inflamed.
in-flamed (*-flāmd'*), *p. adj.* heated; exasperated.
in-flam-ma-ble (*'flam'ā-bl*), *adj.* easily set on flame; excitable.
in-flam-ma-tion (*-ā'shun*), *n.* a morbid process, characterized, when external, by heat.
in-flam-ma-to-ry (*'ā-tō-ri*), *adj.* tending to excite passion, tumult, sedition or inflammation.
in-flate (*-flāt'*), *v. t.* to swell, or distend.
in-flec-tion (*-flek'shun*), *n.* a bend or bending; modulation of the voice; variation of nouns, verbs, etc. [Also *inflexion.*]
in-flex-i-ble (*fleks'i-bl*), *adj.* not to be bent; rigid; stiff; inexorable; stubborn. [OBSTINATE.]
in-flict (*-flikt'*), *v. t.* to cause by, or as if by, striking; cause to be suffered.
in-flu-ence (*'flū-ens*), *n.* energy or potency tending to produce effects insensibly and invisibly; power arising from character or station: *v. t.* to exercise influence on. [INFLUENCE, CREDIT.]
in-flu-en-tial (*-en'shal*), *adj.* having or exerting influence.
in-flu-en-za (*-en'zā*), *n.* an epidemic catarrh.
in-flux (*'fluks*), *n.* an inflow; infusion; continuous importation.
in-form (*-fôrm'*), *v. t.* to animate; mold; instruct; appraise; *v. i.* to give information. [TEACH.]
in-form-al (*'al*), *adj.* not according to form, custom or rule; unceremonious.
in-for-mal-i-ty (*-fôr-mal'i-ti*), *n.* [*pl.* informalities (*-tiz*)], want of regular, customary, or legal form.
in-for-ma-tion (*-mā'shun*), *n.* communicated knowledge or intelligence.
Syn. INFORMATION, intelligence, notice, advice. *Information* signifies the thing of which one is *informed*; *intelligence* to understand signifies that by which one is made to understand; *notice* is that which brings a circumstance to our knowledge; *advice* signifies that which is made known.
Ant. IGNORANCE, unfamiliarity.
in-frac-tion (*in-frak'shun*), *n.* a violation, or breach; infringement.
in-fran-gi-ble (*-fran'ji-bl*), *adj.* that cannot be broken, separated, or violated; inviolable.
in-fre-quent (*-frē'kwent*), *adj.* seldom occurring. [RARE.]
in-fringe (*-frinj'*), *v. t.* to violate or break, as a law: *v. i.* to encroach (followed by *on* or *upon*).
in-fu-ri-ate (*-fū'ri-āt*), *v. t.* to enrage; madden.
in-fu-sion (*-fū'zhun*), *n.* a pouring in, or something poured in or mingled; a liquid extract obtained by steeping.
in-gen-ious (*-jēn'yus*), *adj.* having ingenuity or inventive skill; clever. [INGENUOUS.]
in-ge-nu-i-ty (*in-jē-nū'i-ti*), *n.* cleverness in contriving or inventing; skill.
Syn. INGENUITY, wit. *Ingenuity* comprehends invention; *wit* is the fruit of the imagination, which forms new and sudden conceptions of things. One is *ingenious* in matters either of art or science; one is *witty* only in matters of sentiment.
in-gen-u-ous (*in-jen'ū-us*), *adj.* frank; open; sincere; artless; candid.
Syn. INGENUOUS, ingenious. We love the *ingenuous* character on account of the qualities of his heart; we admire the *ingenious* man on account of the endowments of his mind. One is *ingenuous* as a man, or *ingenious* as an author. The *ingenuous* man is frank, candid; the *ingenious* man is clever, skillful. [See *frank.*]
in-glo-ri-ous (*-glō'ri-us*), *adj.* without glory; disgraceful; shameful.
in-got (*'got*), *n.* a cast mass of metal.
in-graft (*-grāft'*), *v. t.* to insert (a scion) in a stock.
in-grain (*-grān'*), *v. t.* to dye with any deep, lasting color; impregnate deeply: *adj.* (*in'grān*) dyed prior to being manufactured: *n.* a carpet made of cotton warps and wool filling.
in-gra-ti-ate (*-grā'shi-āt*), *v. t.* to insinuate (one's self) into the favor of another. [INSINUATE.]
in-grat-i-tude (*-grat'i-tūd*), *n.* absence of gratitude; insensibility to kindness.
in-gre-di-ent (*-grē'di-ent*), *n.* a component part; part.
in-gress (*'gres*), *n.* entrance.
in-hab-it (*-hab'it*), *v. t.* to dwell in; occupy as a place of residence: *v. i.* to reside: remain. [ABIDE.]
in-hab-it-ant (*'it-ant*), *n.* one who, or that which, inhabits.
in-hale (*-hāl'*), *v. t.* to draw into the lungs.
in-har-mo-ni-ous (*-här-mō'ni-us*), *adj.* unmusical; discordant.
in-her-ent (*-hēr'ent*), *adj.* existing inseparably in something else; innate.
in-her-it (*-her'it*), *v. t.* to possess from an ancestor by right of succession, or by nature: *v. i.* to come into possession of property as the heir.
in-her-it-ance (*-ans*), *n.* the act of inheriting; that which is inherited.
in-hib-it (*in-hib'it*), *v. t.* to restrain; prohibit; interdict.
in-hos-pi-ta-ble (*-hos'pi-tā-bl*), *adj.* not hospitable; affording no shelter; barren; cheerless.
in-hu-man (*-hū'man*), *adj.* cruel; unfeeling. [CRUEL.]
Inigo (*in'i-gō*). Another spelling of Innigo or Enneco, and derived probably from *Ignatius*, or corrupted from *Heinrich.*
in-im-i-cal (*-im'i-kal*), *adj.* hostile; adverse.
in-im-i-ta-ble (*'i-tā-bl*), *adj.* matchless.
in-iq-ui-tous (*-ik'wi-tus*), *adj.* wicked; unjust. [WICKED.]
in-iq-ui-ty (*'wi-ti*), *n.* wickedness; injustice; unrighteousness. [ABOMINATION.]
in-i-ti-ate (*ish'i-āt*), *v. t.* to instruct in the first principles of anything; set on foot; bring in; acquaint with. [TEACH.]
in-i-ti-a-tion (*-i-ā'shun*), *n.* the act of initiating.
in-i-ti-a-tive (*'i-ā-tiv*), *adj.* introductory: *n.* an introductory or first step; power of commencing.
in-ject (*-jekt'*), *v. t.* to throw or cast in: introduce, as a liquid.
in-ju-di-cious (*-jū-dish'us*), *adj.* not judicious, indiscreet.
in-junc-tion (*-junk'shun*), *n.* the act of enjoining; that which is enjoined; command, order, or precept. [COMMAND.]
in-jure (*'jūr*), *v. t.* to hurt; harm; damage. [IMPAIR, ABUSE.]
in-ju-ri-ous (*-jū'ri-us*), *adj.* hurtful; unjust; detrimental.
in-ju-ry (*'jū-ri*), *n.* [*pl.* injuries (*-riz*)], that which occasions harm; detriment; loss; damage. [INJUSTICE.]
in-jus-tice (*-jus'tis*), *n.* the quality of being unjust; violation of another's rights; injury; wrong.
Syn. INJUSTICE, injury, wrong. The violation of *justice* or a breach of the rule of right, constitutes the *injustice;* but the quantum of ill which falls on the person constitutes the *injury;* a *wrong* partakes both of injustice and injury; it is, in fact, an *injury* done by one person to another in express violation of *justice.*
Ant. EQUITY, fairness, right.
ink (*ingk*), *n.* a fluid or viscous material used for writing, printing, etc.: *v. t.* to spread ink upon.
in-kling (*'kling*), *n.* an intimation; hint.
in-land (*in'land*), *adj.* pertaining to, or situated in, the interior of a country: *adj.* toward the interior.
in-lay (*-lā'*), *v. t.* [*p. t.* and *p. p.* inlaid, *p. pr.* inlaying], to ornament (a surface) by laying in pieces of ivory, wood, metal, etc.: *n.* materials for inlaying.
in-let (*-let'*), *v. t.* [*p. t.* and *p. p.* inlet, *p. pr.* inletting], to inlay; insert: *n.* (*in'let*), an entrance; a small bay or creek.
inn (*in*), *n.* a house for the reception and entertainment of travelers; tavern.
in-nate (*'nāt*), *adj.* inborn; native. [NATIVE.]
in-ner (*'ėr*), *adj.* internal; interior; esoteric.
in-nings (*'ings*), *n. pl.* the turn of a side or player to bat.
★**in-no-cent** (*in'nō-sent*, not *in'no-sunt*), *adj.* free from guilt or wrongdoing; pure; weak in intellect. [CANDID.]
Innocent. From the Latin meaning "harmless." Dutch, *Innocentius;* Fr., *Innocent;* Ger., *Innocenz,* or *Innocentius;* It., *Innocente;* Lat., *Innocentius;* Sp. *Inocencio.*
in-noc-u-ous (*-nok'ū-us*), *adj.* harmless.
in-no-vate (*'ō-vāt*), *v. i.* to make alterations or changes in something already established; introduce new things.
in-nox-ious (*-nok'shus*), *n.* harmless.
Innsbruck (*ins'prook*). Means "at the bridge," on the river Inn.
Inns of Court. Legal societies in London which have the exclusive privilege of calling candidates to the bar, and maintain instruction and examination for that purpose; also the precincts or premises occupied by these societies respectively.
in-nu-en-do (*-ū-en'dō*), *n.* [*pl.* innuendos, -does (*-dōz*)], an oblique hint or insinuation.
in-nu-mer-a-ble (*'mėr-ā-bl*), *adj.* that cannot be counted.
in-nu-tri-tious (*-trish'us*), *adj.* not affording nourishment.
in-oc-u-late (*-ok'ū-lāt*), *v. t.* to communicate a disease to: *v. i.* to practice inoculation. [sive.
in-or-di-nate (*-ôr'di-nāt*), *adj.* immoderate; exces-
in-or-gan-ic (*-gan'ik*), *adj.* destitute of organs; not produced by living organisms. [Also *inorganical.*]
in-quest (*'kwest*), *n.* a coroner's inquiry with a jury into the cause of a death; a judicial inquiry.
in-quire (*-kwīr'*), *v. i.* to seek for or after by questions; make inquiry (with *for, into, after, about*). [ASK.]
★**in-quir-y** (*in-kwīr'i*, not *in'kwir-i*), *n.* [*pl.* inquiries (*'iz*)], the act of inquiring; investigation; research.
in-qui-si-tion (*-kwi-zish'un*), *n.* inquiry; examination; a judicial inquiry in criminal matters.
in-quis-i-tive (*-kwis'i-tiv*), *adj.* given to asking questions. [CURIOUS.]
in-road (*'rōd*), *n.* a hostile incursion.
in-sane (*-sān'*), *adj.* mentally deranged; irrational foolish.
in-san-i-ty (*-san'i-ti*), *n.* derangement of mind or intellect; lunacy.
★**in-sa-tia-ble** (*in-sā'shā-bl*, not *in-sā'shi-ā-bl*), *adj.* that cannot be satisfied or appeased.

in-scribe (*in-skrīb'*), *v. t.* to write or engrave upon; address in dedication; draw within.
in-scrip-tion (*-skrip'shun*), *n.* the act of inscribing; that which is inscribed.
in-scru-ta-ble (*skrōō'tȧ-bl*), *adj.* not to be penetrated by inquiry or reason. [MYSTERIOUS.]
in-sect (*'sekt*), *n.* one of a numerous class of articulate animals, the Insecta.
in-sen-sate (*-sen'sāt*), *adj.* destitute of sense or perception; soulless; brutish.
in-sen-si-bil-i-ty (*-si-bil'i-ti*), *n.* the quality of being insensible. [STUPIDITY.]
in-sen-si-ble (*'si-bl*), *adj.* that cannot be felt or perceived; heedless; callous; senseless.
in-sert (*-sĕrt'*), *v. t.* to place in or among; introduce into.
in-ser-tion (*-sĕr'shun*), *n.* the act of inserting; that which is inserted.
in-side (*'sīd*), *adj.* interior; being within: *adv.* and *prep.* within; in less time or space: *n.* that which is within; inner part.
Syn. INSIDE, interior. The term *inside* may be applied to bodies of any magnitude, small or large; *interior* is peculiarly appropriate to bodies of great magnitude. We may speak of the *inside* of a nutshell, but not of its *interior*. The *interior* of the church was beautifully decorated.
Ant. OUTSIDE, exterior.
in-sid-i-ous (*-sid'i-us*), *adj.* treacherous; deceitful; operating secretly.
in-sight (*'sīt*), *n.* penetration; intuition.
in-sig-ni-a (*-sig'ni-ȧ*), *n. pl.* badges of honor or office.
in-sig-nif-i-cant (*-nif'i-kant*), *adj.* without importance, force, influence, or meaning; trivial.
in-sin-u-ate (*-sin'ū-āt*), *v. t.* to ingratiate; suggest or hint indirectly; worm in: *v. i.* work one's self into the confidence of another.
Syn. INSINUATE, ingratiate. A person who *insinuates* adopts every art to steal into the good will of another; but he who *ingratiates* adopts unartificial means to conciliate good will.
in-sip-id (*-sip'id*), *adj.* without flavor; tasteless
in-sist (*-sist'*), *v. i.* to urge or press, as a wish or command.
Syn. INSIST, persist. Both these terms express the idea of resting or keeping to a thing; but *insist* signifies to rest on a point, and *persist* signifies to keep on with a thing, to carry it through. We *insist* on a matter by maintaining it; we *persist* in a thing by continuing to do it.
Ant. DESIST, leave, abandon.
in-sist-ent (*'ent*), *adj.* urgent; conspicuous.
in-so-bri-e-ty (*-sō-brī'ē-ti*), *n.* intemperance.
in-so-lent (*'so-lent*), *adj.* overbearing or offensive to others; insulting; grossly rude. [PRIDE.]
in-sol-u-ble (*-sol'ū-bl*), *adj.* that cannot be dissolved; inexplicable.
in-sol-ven-cy (*-sol'ven-si*), *n.* bankruptcy.
Syn. INSOLVENCY, failure, bankruptcy. *Insolvency* is a state; *failure* an act flowing out of that state; and *bankruptcy* an effect of that act. *Insolvency* is a condition of not being able to pay one's debts; *failure* is a cessation of business, from the want of means to carry it on; and *bankruptcy* is a legal surrender of all one's remaining goods into the hands of one's creditors, in consequence of a real or supposed *insolvency*.
in-sol-vent (*'vent*), *adj.* unable to pay all debts; bankrupt: *n.* one who cannot pay all his debts; a bankrupt.
in-som-ni-a (*-som'ni-ȧ*), *n.* sleeplessness.
in-spect (*-spekt'*), *v. t.* to examine critically; test officially.
in-spi-ra-tion (*-spi-rā'shun*), *n.* the act of drawing air into the lungs; creative influence of genius; elevating influence.
in-spire (*-spīr'*), *v. t.* to draw (air) into the lungs; breathe into; imbue with ideas; exhilarate or enliven: *v. i.* to inhale air or any other influence.
in-spir-it (*-spir'it*), *v. t.* to infuse spirit into; animate; cheer.
in-sta-bil-i-ty (*-stȧ-bil'i-ti*), *n.* want of stability or firmness.
in-stal-la-tion (*-stol-ā'shun*), *n.* the act of installing; introduction of machinery for use.
in-stance (*'stans*), *v. t.* to refer to, or offer, as an example: *n.* something offered as an illustration or example; earnest solicitation. [EXAMPLE.]
in-stant (*'stant*), *adj.* urgent; immediate; passing; current: *n.* a particular moment of time; point of duration.
Syn. INSTANT, moment. A dutiful child comes the *instant* he is called; a prudent person embraces the favorable *moment*. When they are both taken for the present time, *instant* expresses a much shorter space than *moment*.
in-stan-ta-ne-ous (*-stan-tā'nē-us*), *adj.* acting or occurring in a moment.
in-state (*-stāt'*), *v. t.* to put in office or rank.
★**in-stead** (*in-sted'*, not *in-stid'*), *adv.* in room or place (followed by *of*).
in-step (*'step*), *n.* the arched forepart of the upper side of the human foot.
in-sti-gate (*'sti-gāt*), *v. t.* to provoke or urge on (in a bad sense); incite.
in-still (*-stil'*), *v. t.* [*p. t.* and *p. p.* instilled, *p. pr.* instilling], to insinuate gradually, as if by drops; pour in by drops. [TEACH.]
in-stinct (*'stingkt*), *adj.* animated; stimulated from within: *n.* natural impulse in animals.
in-sti-tute (*'sti-tūt*), *v. t.* to establish; fix; originate; set in operation; ordain: *n.* a maxim or principle; scientific or literary society: *pl.* a book of laws or principles.
in-sti-tu-tion (*in-sti-tū'shun*), *n.* the act of instituting; that which is instituted or established.
in-struct (*-strukt'*), *v. t.* to teach; educate; furnish with orders or directions.
Syn. INSTRUCT, teach. To inform is the act of persons in all conditions; *to instruct* and *teach* are the acts of superiors, either on one ground or another; one informs by virtue of an accidental superiority or priority of knowledge; one *instructs* by virtue of superior knowledge or superior station; one *teaches* by virtue of superior knowledge, rather than of station. [See *teach*.]
in-struc-tion (*-struk'shun*), *n.* the act of instructing; an order, etc. [EDUCATION.]
in-struct-ive (*-strukt'iv*), *adj.* tending to instruct.
in-stru-ment (*'strōō-ment*), *n.* that by which anything is effected.
in-stru-men-tal (*-men'tal*), *adj.* pertaining to, or done by, an instrument; conducive to some end; helpful.
in-stru-men-tal-i-ty (*-tal'i-ti*), *n.* [*pl.* instrumentalities (*-tiz*)], an agency; means.
in-sub-or-di-nate (*-sub-ôr'di-nāt*), *adj.* not submitting to authority; mutinous.
★**in-suf-fer-a-ble** (*-suf'ĕr-ȧ-bl*), *adj.* intolerable.
in-suf-fic-ient (*-fish'ent*), *adj.* not enough.
in-su-lar (*'sū-lĕr*), *adj.* pertaining to an island; isolated; narrow.
in-su-late (*'sū-lāt*), *v. t.* to place alone, or in a detached situation; separate.
in-sult (*'sult*), *n.* an affront or indignity; gross abuse: *v. t.* (*in-sult'*) to treat with gross indignity, contempt, or abuse.
in-su-per-a-ble (*-sū'pĕr-ȧ-bl*), *adj.* not to be overcome; invincible.
in-sur-ance (*-shūr'ans*), *n.* the act or system of insuring against loss or damage.
in-sure (*-shūr'*), *v. t.* to contract on certain conditions to secure against loss or damage; make sure.
in-sur-gent (*-sûr'jen.*), *adj.* rising against constituted authority: *n.* a rebel.
in-sur-rec-tion (*-rek'shun*), *n.* active or open hostility to constituted authority; rebellion.
Syn. INSURRECTION, sedition, rebellion, revolt. There may be an *insurrection* against usurped power, which is always justifiable; but *sedition* and *rebellion* are leveled against power universally acknowledged to be legitimate. *Insurrection* is always open; it is a rising up of many in a mass; but it does not imply any concerted, or any specifically active, measure; *rebellion* is the consummation of *sedition;* the scheme of opposition which has been digested in secrecy breaks out into open hostilities, and becomes *rebellion; revolt* is mostly taken either in an indifferent or a good sense for resisting a foreign dominion which has been imposed by force of arms.
in-tact (*-takt'*), *adj.* entire; uninjured.
★**in-tagl-io** (*in-tāl'yō, in-tal'yō*, Italian, *ēn-tāl'yō*), *n.* [*pl.* intaglios (*yōz*), intagli (*yē*)], a gem stone having a design cut in the surface; incised carving.
in-te-ger (*in'tē-jĕr*), *n.* the whole; a whole number; opposed to fraction.
in-te-gral (*'tē-gral*), *adj.* constituting a whole; complete; pertaining to an integer: *n.* the whole made up of parts. [WHOLE.]
in-te-grate (*'tē-grāt*), *v. t.* to bring together the parts of; give the sum total of: *v. i.* to pass from a complex state to a simple one.
in-teg-ri-ty (*-teg'ri-ti*), *n.* uprightness; virtue; honesty; soundness. [or skin.
in-teg-u-ment (*'ū-ment*), *n.* an external covering
in-tel-lect (*'tel-ekt*), *n.* the mind or understanding.
Syn. INTELLECT, genius, talent. *Intellect* is the *intellectual* power improved and exalted by cultivation and exercise; in this sense we speak of a man of *intellect*, or a work that displays great *intellect; genius* is the particular bent of the *intellect* which is born with a man, as a *genius* for poetry, painting, music, etc.; *talent* is a particular mode of *intellect* which qualifies its possessor to do some things better than others, etc. [See *understanding*.]
in-tel-lec-tu-al (*-lek'tū-al*), *adj.* pertaining to, or apprehended by, the intellect; mental; ideal.
in-tel-li-gence (*-tel'i-jens*), *n.* intellectual capacity; mind; notification; news. [INFORMATION, UNDERSTANDING.]
in-tel-li-gent (*'i-jent*), *adj.* endowed with intelligence or understanding; clever; discerning.
in-tel-li-gi-ble (*'i-ji-bl*), *adj.* capable of being understood; clear.
in-tem-per-ance (*-tem'pĕr-ans*), *n.* want of moderation or self-restraint. [EXCESS.]
in-tem-per-ate (*'pĕr-āt*), *adj.* characterized by want of moderation or self-restraint; excessive.
in-tend (*-tend'*), *v. t.* to purpose; mean. [DESIGN.]
in-tense (*-tens'*), *adj.* increased to excess; strained; forced; ardent; vehement. [EAGER.]
in-ten-si-fy (*-ten'si-fī*), *v. t.* to render more intense; heighten.
in-ten-si-ty (*'si-ti*), *n.* [*pl.* intensities (*-tiz*)], the state or quality of being intense; the force or energy of any physical agent.
in-ten-sive (*'siv*), *adj.* serving to intensify; giving force or emphasis to.
in-tent (*-tent'*), *adj.* having the mind strained or closely fixed on a subject: *n.* purpose; aim. [EAGER.]
in-ten-tion (*in-ten'shun*), *n.* purpose; fixed design; end or aim; project.
in-ter (*-tĕr'*), *v. t.* [*p. t.* and *p. p.* interred, *p. pr.* interring], to bury.
in-ter-cede (*-sēd'*), *v. i.* to mediate; plead for another; interpose.
in-ter-cept (*-sept'*), *v. t.* to stop and seize on the way; cut off; obstruct.
in-ter-ces-sion (*-sesh'un*), *n.* the act of interceding; mediation.
in-ter-change (*in-tĕr-chānj'*), *v. t.* and *v. i.* to put each of two things in the place of the other; receive and return reciprocally; alternate.
Syn. INTERCHANGE, exchange, reciprocity. *Interchange* is an act; *reciprocity* is an abstract property; by an *interchange* of sentiment, friendships are engendered; the *reciprocity* of good services is what renders them doubly acceptable to those who do them, and to those who receive them.
in-ter-course (*'ter-kōrs*), *n.* connection, correspondence, or communication between individuals, nations, etc.
in-ter-dict (*-dikt'*), *v. t.* to restrain or forbid.
★**in-ter-est** (*'tĕr-est*), *v. t.* to engage the attention: cause to take a share in: *n.* advantage; concern; profit; premium paid for the use of money.
Syn. INTEREST, concern. We have an *interest* in whatever touches or comes near to our feelings or our external circumstances; we have a *concern* in that which demands our attention; *interest* is that which is agreeable; *concern*, on the other hand, is something involuntary or painful.
Ant. APATHY, indifference.
in-ter-fere (*-fēr'*), *v. i.* to interpose or meddle in the affairs of others; act reciprocally so as to modify the result.
in-ter-im (*'tĕr-im*), *n.* intervening time or period: *adv.* in the meanwhile.
in-te-ri-or (*-tē'ri-ĕr*), *adj.* not exterior; inner; internal: *n.* the inside; the inland. [INSIDE.]
in-ter-jec-tion (*-tĕr-jek'shun*), *n.* an exclamation.
in-ter-lin-e-ar (*-lin'ē-ĕr*), *adj.* written or printed between other lines.
in-ter-loc-u-to-ry (*-lok'ū-tō-ri*), *adj.* conversational; intermediate; not final.
in-ter-lo-per (*'tĕr-lō-pĕr*), *n.* an intruder.
in-ter-lude (*'tĕr-lūd*), *n.* a short entertainment given between acts of a play, etc.; a short instrumental passage played between the acts, etc.
in-ter-me-di-ate (*-mē'di-āt*), *adj.* existing or lying in the middle; intervening.
in-ter-ment (*-ment*), *n.* the act of burial. [BURIAL.]
in-ter-mis-sion (*-mish'un*), *n.* interruption; pause. [CESSATION.]
in-ter-mit (*-mit'*), *v. t.* to cause to cease for a time; interrupt; suspend.
in-ter-nal (*-tĕr'nal*), *adj.* pertaining to the center; interior.
★**in-ter-na-tion-al** (*in-tĕr-nash'un-al*), *adj.* pertaining to two or more nations in common.
in-ter-po-late (*'pō-lāt*), *v. t.* to insert in a book or writing new or spurious matter.
in-ter-pose (*-pōz'*), *v. t.* to place between; *v. i.* to intercede; come between. [INTERVENTION.]
in-ter-pret (*'pret*), *v. t.* to explain; expound; construe. [EXPLAIN, DEFINITION.]
in-ter-reg-num (*-reg'num*), *n.* the period between two reigns, etc.; time of abeyance.
in-ter-ro-gate (*-ter'ō-gāt*), *v. t.* to question: *v. i.* to ask questions. [ASK.]
in-ter-ro-ga-tion (*-gā'shun*), *n.* the act of interrogating; a question; a mark (?) denoting a question.
in-ter-rog-a-tive (*-tĕr-rog'ȧ-tiv*), *adj.* denoting or containing a question: *n.* a word used in asking a question.
in-ter-rog-a-to-ry (*-rog'ȧ-tō-ri*), *adj.* pertaining to, or expressing, a question.
in-ter-rupt (*-rupt'*), *v. t.* to stop or hinder by breaking in upon. [DISTURB, OBSTRUCT.]
in-ter-rup-tion (*-rup'shun*), *n.* the act of interrupting; hindrance.
in-ter-sec-tion (*-sek'shun*), *n.* the act or state of intersecting; place of crossing.
★**in-ter-stice** (*in-tĕr'stis* or *in'tĕr-stis*), *n.* a narrow space between things closely set; crevice.
in-ter-val (*'tĕr-val*), *n.* time or space between.
Syn. INTERVAL, respite. The term *interval* respects time only; *respite* includes the idea of ceasing from action for a time; *intervals* of ease are a *respite* to one who is oppressed with labor.
in-ter-vene (*-vēn'*), *v. i.* to come, or be situated, between; interpose; interfere.
in-ter-ven-tion (*-ven'shun*), *n.* the act of intervening; mediation.
Syn. INTERVENTION, interposition. The light of the moon is obstructed by the *intervention* of the clouds; the life of an individual is preserved by the *interposition* of a superior.
in-ter-view (*'tĕr-vū*), *v. t.* to visit, to obtain opinions: *n.* a personal conference or meeting. [MEETING.]
in-tes-tate (*-tes'tāt*), *adj.* dying without a will: *n.* one who dies without a will.
in-tes-tine (*'tin*), *adj.* internal; not foreign: *n. pl.* the bowels.
in-ti-ma-cy (*'ti-mȧ-si*), *n.* [*pl.* intimacies (*-siz*)], close or confidential friendship. [ACQUAINTANCE.]
in-ti-mate (*'ti-mat*), *adj.* close in friendship; well acquainted: *v. t.* (*in'ti-māt*) to indicate; make known.

fȧrm, ȧsk, fat, fāte, cāre, final; met, mē, hĕr; pin, line: not, nōte, fȯr, ōnly, fȯg; cup, ūse, fûr; for ȯ, û, and N, see Key.

in-ti-ma-tion (*in-ti-mā'shun*), *n.* an indirect suggestion or hint.
in-tim-i-date (*-tim'i-dāt*), *v. t.* to make afraid. [FRIGHTEN.]
in-to (*'tōō*), *prep.* noting passage inward; inclusion or comprehention.
in-tol-er-a-ble (*-tol'ĕr-a-bl*), *adj.* unbearable.
in-tol-er-ance (*'ĕr-ans*), *n.* want of toleration; inability to bear.
in-tol-er-ant (*'ĕr-ant*), *adj.* bigoted; unable to bear or endure (with *of*).
in-to-na-tion (*-tō-nā'shun*), *n.* the act or manner of sounding musical notes.
in-tone (*-tōn'*), *v. t.* to recite in monotone.
in-tox-i-cant (*-toks'i-kant*), *n.* that which intoxicates.
in-toxi--cate (*'i-kāt*), *v. t.* to make drunk by spirituous liquors; excite unduly.
intra, a *prefix* meaning *within*, as *intramural*, within the walls of a city.
in-tract-a-ble (*-trakt'a-bl*), *adj.* unmanageable. [PERVERSE, OBSTINATE.]
in-tract-ile (*'il*), *adj.* incapable of being drawn out; not extensible.
in-tran-si-tive (*-tran'si-tiv*), *adj.* not passing over to or requiring, an object: said of certain verbs.
in-trench (*-trench'*), *v. t.* to fortify with a trench.
in-trep-id (*-trep'id*), *adj.* bold; fearless. [BOLD.]
in-tri-ca-cy (*'tri-ka-si*), *n.* [*pl.* intricacies (*-siz*)], the quality of being intricate; perplexity.
in-trigue (*in-trēg'*), *v. i.* to carry on a secret plot; engage in clandestine love affairs: *n.* a secret plot; clandestine love affair.
in-trin-sic (*-trin'sik*), *adj.* pertaining to that which is inherent.
intro, a *prefix* meaning *within*, *into*, as *introcession*, a depression or sinking of parts inward.
in-tro-duce (*-trō-dūs'*), *v. t.* to conduct or bring in; bring into acquaintance. [ALLEGE.]
in-tro-duc-tion (*-duk'shun*), *n.* the act of introducing; presentation; a preface. [PREVIOUS.]
in-trude (*-trūd'*), *v. i.* to thrust one's self in: *v. t.* force in.
Syn. INTRUDE, obtrude. It is *intrusion* to go into any society unasked and undesired; it is *obtruding* to put one's self in the way of another by joining the company without invitation.
in-tru-sion (*-trū'zhun*), *n.* the act of intruding; encroachment.
in-tu-i-tion (*-tū-ish'un*), *n.* instinctive knowledge or feeling.
in-tu-i-tive (*'i-tiv*), *adj.* perceived immediately by the mind.
★**in-un-date** (*in-un'dāt*, not *in'un-dāt*), *v. t.* to fill with an overflowing abundance.
in-ure (*-ūr'*), *v. t.* to habituate, or accustom; toughen.
in-vade (*-vād'*), *v. t.* to enter (a country) with a hostile army; infringe upon; violate.
in-val-id (*-val'id*), *adj.* null and void: *n.* (*in'va-lid*) one who is weak or infirm in health: *v. t.* to affect with disease.
Syn. INVALID, patient. An *invalid* is so denominated from lack of health and strength, but the *patient* is one who suffers from bodily pain.
in-val-i-date (*-val'i-dāt*), *v. t.* to weaken or destroy the force of.
in-val-u-a-ble (*-val'ū-a-bl*), *adj.* priceless.
in-va-ri-a-ble (*-vā'ri-a-bl*), *adj.* constant. [PERMANENT.]
in-va-sion (*-vā'zhun*), *n.* the act of invading; hostile incursion.
in-vec-tive (*-vek'tiv*), *n.* a violent utterance of censure, sarcasm, or abuse: *adj.* abusive.
in-veigh (*-vā'*), *v. i.* to rail against persons or things; declaim. [DECLAIM.]
★**in-vei-gle** (*in-vē'gl*, not *in-vā'gl*), *v. t.* to entice; seduce.
in-vent (*-vent'*), *v. t.* to devise or contrive; originate. [FIND.]
in-ven-tion (*-ven'shun*), *n.* the act of inventing; the thing invented. [FICTION.]
in-vent-ive (*-vent'iv*), *adj.* able to invent; quick at contriving.
in-ven-to-ry (*'ven-tō-ri*), *n.* [*pl.* inventories (*-riz*)], a catalogue of goods, etc.: *v. t.* to draw up (an inventory).
in-verse (*-vĕrs'*), *adj.* contrary in tendency, direction, or effect.
in-ver-sion (*-vĕr'shun*), *n.* the act of inverting; the state of being inverted.
in-vert (*-vĕrt'*), *v. t.* to turn upside down.
in-ver-te-brate (*'tē-brāt*), *n.* one of the Invertebrata: *adj.* having no backbone.
in-vest (*-vest'*), *v. t.* to place or lay out, as money; clothe, as with office, authority, or dignity; surround: *v. i.* to make an investment.
Syn. INVEST, endue, or endow. One is *invested* with that which is external; one is *endued* with that which is internal. We *invest* a person with an office or a dignity; a person is *endued* with good qualities; *endow* is but a variation of *endue* and yet it seems to have acquired a distinct office; we may say that a person is *endued* or *endowed* with a good understanding; but as an act of the imagination *endow* is not to be substituted for *endue*; for we do not say that it *endows* but *endues* things with properties.
in-ves-ti-gate (*-ves'ti-gāt*), *v. t.* to ascertain by careful inquiry.
in-ves-ti-ga-tion (*-gā'shun*), *n.* the act of investigating; inquiry; search.
in-ves-ti-ture (*in-ves'ti-tūr*), *n.* the act or right of giving legal possession.
in-vest-ment (*-vest'ment*), *n.* the act of laying out money productively; money so invested.
in-vet-er-ate (*'ĕr-at*), *adj.* deep-rooted; habitual.
in-vid-i-ous (*-vid'i-us*), *adj.* likely to provoke ill will or envy; unpleasant.
in-vig-or-ate (*-vig'ĕr-āt*), *v. t.* to give vigor to; strengthen; animate. [STRENGTHEN.]
in-vin-ci-ble (*-vin'si-bl*), *adj.* unconquerable.
in-vi-o-la-ble (*-vī'ō-la-bl*), *adj.* that cannot be profaned or injured; unbroken. [Also *inviolate.*]
in-vis-i-ble (*-viz'i-bl*), *adj.* that cannot be seen.
in-vi-ta-tion (*-vi-tā'shun*), *n.* the act of inviting; the words or document by which one is invited.
in-vite (*-vīt'*), *v. t.* to ask, solicit, or summon; persuade; allure. [ATTRACT.]
in-vo-ca-tion (*-vō-kā'shun*), *n.* the act or form of invoking.
in-voice (*'vois*), *n.* a document announcing the dispatch of goods: *v. t.* to state or insert in an invoice.
in-voke (*-vōk'*), *v. t.* to address in prayer or supplication; solicit.
in-vol-un-ta-ry (*-vol'un-tā-ri*), *adj.* without will or choice; not spontaneous.
in-vo-lute (*'vō-lūt*), *adj.* folded or rolled inward; coiled spirally.
in-vo-lu-tion (*-lū'shun*), *n.* the act of involving or infolding; complication.
in-volve (*-volv'*), *v. t.* to complicate; entangle; surround; embroil; result. [IMPLICATE.]
in-vul-ner-a-ble (*-vul'nĕr-a-bl*), *adj.* that cannot be wounded or injured; without any weak point.
in-ward (*'wĕrd*), *adj.* situated within: *adv.* interior; toward the center. [Also *inwards.*]
in-wrought (*-rawt'*), *p. adj.* worked in; adorned.
i-o-dine (*ī'ō-din*), *n.* a nonmetallic element, which, when heated, gives off a rich violet vapor.
i-o-do-form (*-ō'dō-fôrm*), *n.* a crystalline compound of iodine.
I-on-ic or-der (*i-on'ik ôr'dĕr*), an order of classic architecture, characterized by the volute of its capital.
i-o-ta (*-ō'tà*), *n.* the Greek letter, which from its being used under the vowels d, n, w (*iota subscriptum*), denotes anything small or insignificant.
Iowa. A French form of the Indian word *Ayuhba*, signifying "the drowsy or the sleepy ones." Written at first *Aioues*, and applied to a tribe of Indians, would seem to be simply *Ajawa*, "across, beyond," as if to say, "the tribe beyond the river."
ip-e-cac (*ip'ĕ-kak*), *n.* ipecacuanha.
ip-e-cac-u-an-ha (*ip-ĕ-kak-ū-an'à*), *n.* the root of a South American plant: used in medicine.
Ira (*ī'rà*). A male name, from the Hebrew, *Ira*, "watchful."
i-ras-ci-ble (*-ras'i-bl*), *adj.* easily excited to anger.
i-rate (*-rāt'*), *adj.* angry; enraged.
ire (*īr*), *n.* anger; wrath. [ANGER.]
Ireland. An island west of Great Britain. Was the Roman *Hibernia*, the Greek *Ierne*, and the Celtic *Erin*. The usual explanation of the name is from the Celtic *ıar*, "behind," and hence "to the west," or "western isle."
Irene (*ī-rē'nē*, or *ī-rēn'*). A female name. From the Greek *Eirene*, "goddess of peace," literally "peace." Fr., *Irène*; Ger., *Irene*; It., *Irene.*
ir-i-des-cence (*ir-i-des'ens*), *n.* the exhibition of colors like those of the rainbow.
ir-i-des-cent (*'ent*), *adj.* exhibiting iridescence.
i-ris (*ī'ris*), *n.* [*pl.* irises, irides (*-ez, 'ri-dēz*)], the pupil of the eye; the rainbow.
I-rish (*'rish*), *adj.* pertaining to Ireland, its inhabitants, or language.
Irish Sea. So named from its geographical position.
irk (*ĕrk*), *v. t.* to weary: *v. i.* to become tired.
irk-some (*'sum*), *adj.* tedious; wearisome.
Irmgard or **Ermgard** (*irm'gârd*). Anglicized form of the Teutonic *Ermengarde* or *Irmgarde*, meaning a "public benefactor."
★**i-ron** (*ī'urn*), *n.* the most common and useful of the metals; an instrument made of iron: *pl.* fetters: *adj.* pertaining to, resembling, or made of iron: *v. t.* to smooth with an iron implement; furnish with iron; fetter.
i-ron-clad (*-klad*), *n.* a warship protected with iron or steel plates: *adj.* covered or protected with iron armor.
i-ron-i-cal (*ī-ron'i-kal*), *adj.* expressing one thing and meaning another.
i-ron-wood (*'urn-wood*), *n.* a name for the timber of trees of exceptional hardness.
i-ro-ny (*'rō-ni*), *n.* subtle sarcasm.
ir-ra-di-ate (*ir-rā'di-āt*), *v. t.* to shed light upon; illuminate; brighten: *v. i.* emit rays of light.
ir-ra-tion-al (*-rash'un-al*), *adj.* not rational.
Syn. IRRATIONAL, foolish, absurd, preposterous. *Irrational* is applicable more frequently to the thing than to the person, to the principle than to the practice; *foolish*, on the contrary, is commonly applicable to the person as well as the thing; to the practice rather than the principle; *foolish* is applied to anything, however trivial, which in the smallest degree offends our understanding; the conduct of children is therefore often *foolish*, but not *absurd* and *preposterous*; it is *absurd* for a man to persuade another to do that which he in like circumstances would object to do himself; it is *preposterous* for a man to expose himself to ridicule, and then be angry.
ir-re-claim-a-ble (*ir-rē-klām'a-bl*), *adj.* incapable of being reclaimed.
ir-re-spec-tive (*-rē-spek'tiv*), *adj.* regardless (with *of*).
ir-re-spon-si-ble (*-spon'si-bl*), *adj.* not responsible.
ir-ri-gate (*'i-gāt*), *v. t.* to moisten (land) by causing water to flow over by artificial means.
ir-ri-ta-ble (*'i-ta-bl*), *adj.* easily provoked to anger; easily stimulated.
ir-ri-tate (*'i-tāt*), *v. t.* to provoke or make angry: excite heat and redness in. [AGGRAVATE.]
ir-ri-ta-tion (*-tā'shun*), *n.* the act of irritating; exasperation; excitement of muscular action by external agency.
ir-rup-tion (*-rup'shun*), *n.* a bursting or rushing in; sudden invasion.
Isaac (*ī'zàk*). From the Hebrew *Yitschhak*, which some translate "laughing"; others "sporting." Arabic, *Ishak*; Danish, *Isak*; Dutch, *Izaak*; Fr., *Isaac*; Ger., *Isaak*; Hungarian, *Izsak*; It., *Isacco*; Lat., *Isaacus*; Polish, *Izaak*; Sw., *Isak.*
Isabel (*iz'à-bel*), **Isabella** (*iz-à-bel'là*). According to some this name is the same as *Jezebel*, which Tregelles thinks may mean "without cohabitation"; *i. e.*, "chaste," "modest." Another derivation is that it is the same as *Elizabeth*; but *Isabella* is rather from *Isabel*, the Spanish rendering of *Elizabeth*. Dutch, *Isabelle*; Fr., *Isabelle*; Ger., *Isabelle*; It., *Isabelle*; Lat., *Isabella*; Sp., *Isabel*; Sw., *Isabella.*
Isaiah (*ī-zā'yà*). From the Hebrew *Y'sha-yahu*; from *yesha-Yahu*, "the salvation of Jehovah." Danish, *Isaias*; Dutch, *Jezajas*; Fr., *Isaïe*; Ger., *Esaias*; It., *Isaia*; Lat., *Esaias*; Port., *Isaias*; Sp., *Isaias.*
Ischl (*ish'l*). A famous watering-place in upper Austria, situated at the junction of the rivers Ischl and Traun, twenty-seven miles east by south of Salzburg. It is the favorite resort of the Austrian royal family and nobility, and contains salt and other baths. It is the central point in the Salzkammergut.
Ishmael (*ish'mā-el*). Hebrew for "God hath heard." Arabic, *Ishmaeel*, or *Ismail*; Fr., *Ismael*; It., *Ismaele*; Lat., *Ishmael.*
Isidore (*iz'i-dōr*). From the Latin, *Isidorus*, which some translate "strong gift." The name signifies "gift of Isis." Dutch, *Isidorus*; Fr., *Isidore*; Gr., *Isadorios*; It., *Isidoro*; Lat., *Isidorus.*
★**i-sin-glass** (*ī'zing-glàs*, not *ī'zin-glàs*), *n.* a white semitransparent substance prepared from the sounds or air bladders of the sturgeon, cod, etc.
Is-lam (*is'lam*), *n.* the Mohammedan religion; the whole body of Mohammedans.
is-land (*ī'land*), *n.* a tract of land surrounded by water.
Island of Desolation. Island in Tierra del Fuego archipelago; so named by Captain Cook owing to the absence of all signs of life.
Isle (*īl*), *n.* an island. [*Poetry.*]
Isle of Bourbon (*bōōr'bun*, Fr. *bōōr-bôn'*). An island in the Indian ocean. When settled by the French, it was so named for the Bourbon family.
Isle of Man. The modern designation of Mona island, in the Irish Sea, by which was meant, agreeably to the Celtic *maen*, "a stone," rocky island.
Isle of St. Helena (*hel'ĕ-nà*). Island off coast of South Carolina; so named from having been discovered on the Feast of St. Helena, 1502.
Isle of Wight (*wīt*). Island in English channel; originally, the island of the Wyts, or Jutes.
iso, a *prefix* in words of Greek origin, signifying *equal*; as *isosceles*, having two sides equal.
i-so-late (*ī'sō-lāt*), *v. t.* to place alone.
i-so-la-tion (*-lā'shun*), *n.* the state of being isolated.
i-sos-ce-les (*ī-sos'ĕ-lēz*), *adj.* having equal sides.
Israel (*iz'rā-el*). From the Hebrew, meaning "prevailing with God." The kingdom of the northern tribes of ancient Palestine. Fr., *Israel*; Ger., *Israel*; Lat., *Israel.*
Is-ra-el-ite (*iz'rā-el-īt*), *n.* a descendant of Israel or Jacob; a Jew.
is-sue (*ish'ū*), *n.* the act of passing or flowing out; egress; that which flows or passes out; publication; offspring; essential points in pleading or debate; result: *v. t.* to send out; publish: *v. i.* to come or pass out; flow; proceed; be descended. [OFFSPRING, CONSEQUENCE.]
isth-mi-an (*is'mi-an* or *ist'mi-an*), *adj.* pertaining to an isthmus.
isth-mus (*'mus*), *n.* a neck of land connecting two larger portions.
★**I-tal-ian** (*i-tal'yan*, not *i-tal'yan*), *adj.* pertaining to Italy, its inhabitants or language.
I-tal-ic (*'ik*), *adj.* pertaining to Italy; noting a slender, sloping kind of type (*italic*).
i-tal-i-cize (*'i-sīz*), *v. t.* to write or print in italics.
Italy. A country of southern Europe, so called after Italus, one of the early kings of the country.
Itasca. County and lake in Minnesota, into which flow the head waters of the Mississippi. Name derived from the two Latin words *veritas caput*, "the true head." Schoolcraft notes derivation from *ıa*, "to be," and *totosh*, "the female breast," signifying source of the river.
Itch (*ich*), *n.* a parasitic cutaneous disease causing irritation; a constant desire: *v. i.* to feel uneasiness in the skin, causing a desire to scratch; have a constant desire for.
i-tem (*ī'tem*), *n.* a separate article or particular; a newspaper paragraph: *adv.* also.
it-er-ate (*it'ĕr-āt*), *v. t.* to repeat.

It-er-a-tion (*it-er-ā'shun*), *n.* repetition.
Ithaca (*ith'a-kā*). City in Tompkins county, New York, and village in Gratiot county, Michigan, named for one of the Ionian islands, supposed to be the one celebrated in the Homeric poems as the kingdom of Ulysses.
i-tin-er-ant (*ī-tin'ẽr-ant*), *adj.* passing from place to place: *n.* one who goes from place to place.
i-tin-er-a-ry (*ī'ẽr-ā-ri*), *adj.* pertaining to, or done on, a journey: *n.* a traveler's guide or route-book.
Ivan (*ē-vän'*). See *John.*
★**i-vo-ry** (*ī'vō-ri*, not *i'vri*), *n.* the hard, bony, white dentine which forms the tusks of the elephant, walrus, etc.: *adj.* made of, or like, ivory.
i-vy (*ī'vi*), *n.* a clinging evergreen plant of the genus *Hedera.*

J

Jab-ber (*jab'ẽr*), *v. i.* to talk rapidly and indistinctly; chatter.
Jabez. From the Hebrew *Yabets*, which Simonis renders, "he will cause pain," *i. e.*, to his mother.
Jack (*jak*), *n.* the male of some animals; the knave of cards; a name applied to various kinds of levers or mechanical labor-saving appliances, etc.: *v. t.* to lift with a jack.
Jack-al (*'awl*), *n.* a dog-like carnivorous animal.
Jack-a-napes (*'a-nāps*), *n.* a conceited fellow.
Jack-ass (*'as*), *n.* the male ass; donkey.
Jack-daw (*'daw*), *n.* a glossy species of crow.
Jack-et (*'et*), *n.* a short tailless coat: *v. t.* to clothe with a jacket.
Jackson, Miss. The state capital. So named in honor of General Andrew Jackson.
Jacksonville, Fla. Named in 1822 in honor of President Andrew Jackson.
Jacob (*jā'kob*). From the Hebrew, *Yaakob*, which Tregelles translates, "taking hold of the heel," "supplanter," "layer of snares." Arab. *Yakoob*, or *Jakub*; Danish, *Jakob*; Dutch, *Jacob*, or *Jakob*; Fr., *Jacob*; Ger., *Jakob*; Hungarian, *Jakob*; It., *Jacob*, or *Jacopo*; Lat., *Jacobus* or *Jacob*; Polish, *Jakob*; Sw., *Jakob.*
Jade (*jād*), *n.* a tired or worn-out horse; a vicious woman; silicate of magnesium and lime, of green color: *v. t.* to tire by long-continued labor; harass.
Jaffa (*jaf'fa, yäf'fä*) or **Joppa** (*jop'pä*). From the Semetic, *Yapho*, "beauty." A seaport of Palestine.
Jag (*jag*), *n.* a notch; projecting point: *v. t.* [*p. t.* and *p. p.* jagged, *p. pr.* jagging], to cut into notches or teeth.
Jail (*jāl*), *n.* a prison.
Jal-ap (*jal'ap*), *n.* the root of *Ipomœa purga.*
Jam (*jam*), *n.* a conserve of fruit boiled with sugar; block; crush: *v. t.* to squeeze or crush; press in tightly.
Jamaica (*ja-mā'kä*). An island of the West Indies; so called from *Xaymaco*, a native West Indian name signifying "the country abounding in springs."
Jamb (*jam*), *n.* one of the upright sides of a doorway, window-opening, or fireplace.
James. A name corrupted from *Jacobus.* Danish, *Jakob*; Dutch, *Jacobus*; Fr., *Jacques*; Ger., *Jakob*; Hungarian, *Jakab*; It., *Giacomo*; Lat., *Jacobus*; Polish, *Jakub*; Port., *Diogo* or *Jacobo*; Russ., *Yakof*; Sp., *Jaime*; Sw., *Jakob.* [See *Jacob.*]
James bay. An arm of Hudson bay. Named in memory of James I., in whose reign it was explored.
James river, Va. Named in honor of James I. of England. It was first named the *river of the Holy Ghost.* The Indian name was *pawathanne*, "river of pregnancy." To this stream Captain John Smith gave the spelling of *Powhattan*, stating the chief took his name from the stream.
Jamestown. Town in James City county, Virginia, and the first English settlement in America; named for King James I.
Jan (Dutch, *yän*). An Anglo-Norman form of *John.*
Jane. From the French name *Jeanne*, from root of *John.* Dutch, *Hanna*; Fr., *Jeanne*; Ger., *Johanna*; It., *Giovanni*; Lat., *Jana* or *Johanna*; Sp., *Juana*; Sw., *Johanna.*
Janesville. Town in Lassen county, California, and city in Rock county, Wisconsin, named for Henry F. Janes.
Janet (*jan'et*, or *jä-net'*). A diminutive of *Jean.*
Jan-gle (*jang'gl*), *v. i.* to quarrel or wrangle; sound discordantly: *n.* a discordant sound; wrangle.
Janiculum (*jan-ik'yū-lum*), or **Mons Janiculus** (*monz ja-nik'u-lus*). Highest of the hills of Rome; situated on the right bank of the Tiber, extends south from the Vatican, and is opposite the Capitoline and the Aventine.
jan-i-tor (*jan'i-tẽr*), *n.* a doorkeeper.
Jan-u-a-ry (*jan'ū-ā-ri*), *n.* the first month of the year in the modern calendar; so named from Janus, a god who presided over the beginning of things.
ja-pan (*jä-pan'*), *n.* work varnished and lacquered after the Japanese style; a kind of varnish: *v. t.* [*p. t.* and *p. p.* japanned, *p. pr.* japanning], to cover, varnish or lacquer.
Japan. An empire of Asia; name, a European modification, brought about through the Portuguese *Gepuen*, or *Japao*, of the native *Nippon*, or *Niphon*, compounded of *ni*, "sun," "fire," and *pon*, "land," literally "sun-land," or "land of the rising sun," and signifying "the fountain of light."
Ja-pon-i-ca (*jä-pon'i-kä*), *n.* the name of various species of Japanese plants.
Jaqueline (*jak'wē-lin*). The feminine of *James.* Fr., *Jacqueline* (*zhäk-lēn'*); Ger., *Jakobine*; It., *Giacomina* or *Giacobba.*
Jar (*jär*), *n.* a vessel; a shake; jolt; harsh sound; conflict: *v. t.* to cause to shake; jolt: *v. i.* to interfere or clash.
Jar-di-nière (*zhär-dē-nyär'*), *n.* an ornamental flower stand.
Jar-gon (*jär'gon*), *n.* confused, unintelligible talk.
Jas-mine (*jas'min*), *n.* a plant of the genus *Jasminum.*
Jas-per (*'pẽr*), *n.* an opaque, many-shaded variety of quartz.
Jasper (*jas'pẽr*). A male name derived from the Arab *yashb*, or Persian *yashp*, the precious stone jasper; hence, "treasure master." Danish, *Jesper*; Dutch, *Jasper* or *Kasper*; Fr., *Gaspard*; Ger., *Caspar* or *Kaspar*; It., *Gasparo*; Lat., *Gaspar*; Port., *Gaspar*; Sp., *Gaspar*; Sw., *Kasper.*
Jaun-dice (*jän'dis*), *n.* a disease characterized by yellowness of the eyeballs, skin, etc.
Jaunt (*jänt*), *n.* a short excursion or ramble: *v. i.* to roam or ramble; take a short excursion. [EXCURSION.]
Jaun-ty (*'ti*), *adj.* airy; gay; showy.
Java. An island of the Dutch East Indies; name native Malay word signifying "the land of nutmegs."
Jave-lin (*jav'lin*), *n.* a light spear.
Jaw (*jaw*), *n.* the bones of the mouth; mouth; a mechanical contrivance.
Jay (*jā*), *n.* a crow-like bird.
Jeal-ous (*jel'us*), *adj.* full of, or characterized by, jealousy.
Jeal-ous-y (*-i*), *n.* suspicious vigilance; earnest care.
Syn. JEALOUSY, envy, suspicion. We are *jealous* of what is our own; we are *envious* of what is another's. *Jealousy* fears to lose what it has; *envy* is pained at seeing others have that which it wants for itself; *suspicion* denotes an apprehension of injury, has more of distrust in it than *jealousy*; the *suspicious* man is altogether fearful of the intentions of another.
Jean (*jēn*), *n.* twilled undressed cotton cloth.
Jean. A female name derived from the Fr. *Jeanne*, the feminine form of *Jean*, from root of *John.*
Jeanne. See *Jane.*
Jeannette (*jē-net'*). See *Janet.*
Jedediah (*jed-ē-dī'ä*). The Hebrew *Y'dhiydhyah*, from *yadhaydh*, "beloved of Jehovah."
Jeer (*jēr*), *v. t.* to scoff at: *v. i.* to speak in a derisive manner: *n.* a scoff; derision.
Jefferson City, Mo. Capital of the state; named in honor of President Thomas Jefferson.
Je-ho-vah (*jē-hō'vä*), *n.* Lord; God of the Hebrews.
Jel-ly (*jel'i*), *n.* [*pl.* jellies (*-iz*)], any semitransparent, soft gluey substance: *v. i.* to turn to, or become jelly.
Jenet (*jē-net'*). The diminutive of *Jean.* Fr., *Jeannette*; It., *Giovannetta*; Lat., *Joanetta.*
Jen-net (*jen'et*), *n.* a small Spanish horse. [Also *genet.*]
Jen-ny (*'i*), *n.* a machine for spinning.
Jeop-ard (*jep'ẽrd*), *v. t.* to expose to loss or injury; hazard. [Also *jeopardize.*]
Jeop-ard-y (*-i*), *n.* hazard; peril.
Jephthah (*jef'thä*). From the Hebrew, meaning, a "discoverer." Fr., *Jephté*; Lat., *Jephtha.*
Jeremiah (*jer-ē-mī'ä*), or **Jeremy** (*jer'ē-mi*). From the Hebrew *Yirm-Yah*, which Simonis renders "elevated of the Lord." Danish, *Jeremias*; Dutch, *Jeremias*; Fr., *Jeremie*; Ger., *Jeremias*; It., *Geremia*; Lat., *Jeremias*; Sw., *Jeremias.*
Jerk (*jẽrk*), *v. t.* to give a sudden pull, twist, or push to: *n.* a sudden quick pull, twist, or push.
Jer-kin (*jẽr'kin*), *n.* a short coat or jacket; close waistcoat.
Jerome (*jer'om* or *jē-rōm'*). A name corrupted from *Hieronymus*, "holy law," or "sacred name." Danish, *Jeronymus*; Dutch, *Hieronymus*; Fr., *Jerome*; Ger., *Hieronimus*; It., *Geronimo* or *Girolamo*; Lat., *Hieronymus*; Port., *Hieronimo*; Sp., *Geronimo*; Sw., *Hieronymus.*
Jerry. A male name, corrupted from *Jeremiah.*
Jer-sey (*jẽr'zi*), *adj.* pertaining to the Isle of Jersey, or to its breed of cattle; of or pertaining to New Jersey: *n.* a close-fitting thick woolen shirt; fine yarn wool.
Jersey. Island in English channel. Was originally *Czar-ey*, meaning "Cæsar's island," so called by the Romans in honor of Julius Cæsar.
Jersey City, N. J. Originally incorporated, 1829, and named after the state as the *City of Jersey.* In 1851, under a new charter, the name was transposed.
Jerusalem (*jē-rū'sa-lem*). The sacred city of Palestine. Name means "foundation of peace"; derived from the Hebrew, *yarah*, "a foundation," and *shalaim*, or *shalem*, "peace, perfect, whole."
Jesse (*jes'sē*). From the Hebrew *Yishay*, from *yesh*, "wealth." Others render the name "graft." If so, it comes from *yash*, "being," "existence."
Jessica. A female name, probably a diminutive of *Jessie.*
Jessie. A female name. Like the French masculine name *Joan*, formed from root of *John.*
Jest (*jest*), *n.* a joke; humorous pleasantry; laughing-stock: *v. i.* to joke; make merriment.
Jes-u-it (*jez'ū-it*), *n.* a member of the Roman Catholic Society of Jesus, founded by Ignatius Loyola, 1534.
Jet (*jet*), *n.* a stream suddenly emitted; a deep black variety of lignite, black amber: *v. t.* to spout out: *v. i.* to shoot or jut out.
Jet-sam (*'sam*), *n.* that part of a ship's cargo which is thrown into the sea. [Also *jetsom, jetson.*]
Jet-ty (*'i*), *n.* [*pl.* jetties (*'iz*)], a structure extending into the water to restrain currents.
Jew (*jū*), *n.* an Israelite; Hebrew. [Fem. *Jewess.*]
Jew-el (*'el*), *n.* a valuable ornament; gem; precious stone: *v. t.* to adorn with, or as with, jewels.
Jew-el-ry (*'ri*), *n.* jewels collectively; the art or trade of a jeweler.
Jew-ry (*'ri*), *n.* The land of the Jews; ghetto.
Jib (*jib*), *n.* a large triangular sail projecting beyond the bowsprit.
Jibe. Another form of *gibe.*
Jif-fy (*jif'i*), *n.* an instant.
Jig (*jig*), *n.* a quick lively dance, or music: *v. i.* to dance a jig: *v. t.* jerk up and down.
Jilt (*jilt*), *n.* a coquet or flirt: *v. t.* to encourage (a lover) and then discard him: *v. i.* to play the jilt. [COQUET.]
Jim-my (*jim'i*), *n.* a burglar's tool.
Jin-gle (*jing'gl*), *n.* a sharp tinkling metallic sound; meaningless rhyme: *v. i.* to sound with a jingle.
Jin-go (*'gō*), *n.* a mild oath (with *by*).
Jin-rik-i-sha (*-rik'i-shä*), *n.* a small Japanese two-wheeled carriage, drawn by one or more men. [Also *jinriksha.*]
Job (*job*), *n.* a piece of work: *v. t.* to let out for hire; buy up (goods) and retail them: *v. i.* buy and sell, as a stockholder; perform job work.
Job (*jōb*). From the Hebrew *Iyyobh*, "the persecuted" (man), hence, "sorrowing." Arabic, *Aiyoob* or *Ayyub*; Fr., *Job*; Ger., *Hiob*; Gr., *Iob*; It., *Giobbe*; Lat., *Job* or *Jobus*; Sw., *Job.*
Job-ber (*job'ẽr*), *n.* a middleman, especially one who acts as agent.
Job-ber-y (*'ẽr-i*), *n.* [*pl.* jobberies (*-iz*)], low intriguing for private advantage or political ends.
Jock-ey (*jok'i*), *n.* [*pl.* jockeys (*'iz*)], one who rides a horse in a race; cheat: *v. t.* to cheat or deceive.
Jo-cose (*jō-kōs'*), *adj.* sportive; humorous. [FACETIOUS.]
Joc-u-lar (*jok'ū-lẽr*), *adj.* making jokes. [FACETIOUS.]
Joc-u-lar-i-ty (*-lar'i-ti*), *n.* merriment.
Joc-und (*'und*), *adv.* jovial; sportive; gay.
Joel (*jō'el*). Means "acquiescing." Fr., *Joel*; Lat., *Joel.*
Jog (*jog*), *v. t.* [*p. t.* and *p. p.* jogged, *p. pr.* jogging], to push or shake slightly; stimulate: *v. i.* to travel along with a slow trotting motion: *n.* a slight push or shake; slow trot; stimulant.
Johanna. A female name derived from *John.*
John. From the Hebrew, *Y'hohhanan*, variously translated, "the lord gave graciously," "whom Jehovah gave," "whom Jehovah bestowed." Danish, *Johann* or *Hans*; Dutch, *Jan*; Fr., *Jean*; Ger., *Johann* (familiarly *Hans*, a contraction of *Johannes*); Gr., *Ioannes*; Hungarian, *Janos*; It., *Giovanni*; Lat., *Joannes* or *Johannes*; Pol., *Jan*; Port., *Joao*; Russ., *Ivan*; Sp., *Juan*; Sw., *Johan* or *Hans.*
John-ny-cake (*jon-i-kāk*), *n.* a flat maize cake.
Johnstown, N. Y. City in Fulton county, New York, named for its founder, Sir William Johnson.
Johnstown, Pa. City and borough in Cambria county, Pennsylvania, named for an early settler, Joseph Jahns or Yahns.
Join (*join*), *v. t.* to unite; connect; associate; add or annex: *v. i.* to adhere; be in contact; be associated with. [ADD.]
Join-er (*'ẽr*), *n.* one who, or that which, joins.
Joint (*joint*), *n.* the place where two or more things join; one of the larger pieces into which a carcass is cut up; a place of low resort: *adj.* produced by the action of two or more; united in or sharing: *v. t.* to form with, or unite by, joints; cut or divide into joints, as meat.
Join-ture (*join'tūr*), *n.* landed estate or tenements settled on a woman in consideration of her marriage: *v. t.* to settle a jointure upon.
★**Joist** (*joist*, not *jois*), *n.* a horizontal timber of a floor.
Joke (*jōk*), *n.* something said or done to excite mirth; jest; sport: *v. t.* to make jokes: *v. i.* to cast jokes at; rally.
Joliet (*jō'li-et*), **Ill.** Named after the French explorer, Louis Joliet.
jol-li-fi-ca-tion (*jol-i-fi-kā'shun*), *n.* merry-making.
jol-li-ty (*'i-ti*), *n.* the state of being jolly.
jol-ly (*'i*), *adj.* full of life and mirth: *adv.* exceedingly: *v. t.* to joke or rally.
jolt (*jōlt*), *v. t.* to shake by sudden jerks: *v. i.* to have a jerky motion: *n.* a sudden jerk.
Jonah (*jō'nä*), or **Jonas** (*jō'nas*). From the Hebrew *Yonah*, "a dove"; perhaps given as a term of endearment. Fr., *Jonas*; Ger., *Jonas*; Lat., *Jonas.*
Jonathan (*jon'a-than*). From the Hebrew *Y'honathan*, "the Lord gave," or "given by Jehovah." Fr., *Jonathan*; Lat., *Jonathan.*
★**jon-quil** (*'kwil*), *n.* a bulbous plant with fragrant flowers. [Also *jonquille.*]
Jordan. The chief river of Palestine. The Hebrew name is *yarden*, which Robinson translates "the flowing," "the river," like the German, *Rhein*, from *rinnen.*
Joseph (*jō'sef*). From the Hebrew *Yosheph*

signifying "he shall add." Fr., *Joseph;* Ger., *Joseph;* Hungarian, *Jozsef;* It., *Giuseppe;* Lat., *Josephus* or *Joseph;* Polish, *Jozef;* Port., *José;* Sp., *José.*

Josephine (*jō'zef-in*). The feminine of *Joseph.* Fr., *Josèphe* or *Josephine;* Ger., *Josephe* or *Josephine;* It., *Giuseppa* or *Giuseppina;* Lat., *Josepha.*

Joshua (*josh'ū-a*). From the Hebrew *Y'hoshua,* "whose help or salvation is Jehovah," hence, "savior." Dutch, *Josua;* Fr., *Josuè;* Ger., *Josua;* It., *Josue;* Lat., *Josua;* Sw., *Josua.*

Josiah (*jō-sī'a*), or **Josias** (*jō-sī-as*). From the Hebrew *Y'shiyyahu,* "whom the Lord gives." Danish, *Josias;* Dutch, *Jozias;* Fr., *Josias;* It., *Giosiade;* Lat., *Josias.*

Joss (*jos*), *n.* a Chinese god or idol.

★**Jos-tle** (*jos'l,* not *jost'l*), *v. t.* to push against; elbow.

Jot (*jot*), *v. t.* [*p. t.* and *p. p.* jotted, *p. pr.* jotting], to make a memorandum of (with *down*): *n.* a tittle.

Jour-nal (*jûr'nal*), *n.* record of news or events; the bearing of a machine.

Jour-nal-ism (*-izm*), *n.* newspaper or periodical literature; the profession of a journalist.

Jour-nal-ist (*-ist*), *n.* an editor, or contributor to a journal or newspaper.

Jour-ney (*jûr'ni*), *n.* passage from one place to another: *v. i.* to travel from one place to another.

Syn. JOURNEY, travel, voyage. *Journey* signifies the course that is taken in the space of a day, or in general any comparatively short passage from one place to another; *travel* signifies such a course or passage as requires labor, and causes fatigue; in general any long course; *voyage* is now confined to passage by sea.

Joust (*just*), *n.* a mediæval mock combat between two mounted knights: *v. i.* to engage in such a combat.

Jov-i-al (*jōv'i-al*), *adj.* convivial; merry.

Joy (*joi*), *n.* exhilaration of spirits; gayety; gladness: *v. i.* to rejoice or be glad.

Syn. JOY, gladness, mirth. What creates *joy* and *gladness* is of a permanent nature; that which creates *mirth* is temporary; *joy* is the most vivid sensation in the soul; *gladness* is the same in quality, but inferior in degree; *joy* is awakened in the mind by the most important events in life.

Joy-ful (*'fool*), *adj.* full of joy.

Joy ride (*rīd*), a recent term used to designate hilarious and reckless driving of a motor car. [*Colloquial.*]

Juan (*jū-an'*, Spanish *hōō-ān'*). See *John.*

Juan de Fuca (*jū'an de fū'ka*), **Strait of, Wash.** So named by Apostulus Valerianos, after Juan de Fuca, an old Greek sailor who navigated its waters in 1592.

Juan Fernandez (*jū'an fẽr-nan'dez,* Spanish *hōō-ān' fer-nān'deth*). An island in the South Pacific; perpetuates the name of its discoverer. Also known as Selkirk's Island, after Alexander Selkirk, its sole inhabitant from September, 1704, to February, 1707.

Ju-bi-la-tion (*jū-bi-lā'shun*), *n.* a shouting for joy; declaration of triumph.

Ju-bi-lee (*'bi-lē*), *n.* the 50th anniversary of any event.

Judah (*jū'da*), **Judas** (*jū'das*), **Jude** (*jūd*). Hebrew meaning "confession." Fr., *Zuda* or *Jude;* Ger., *Judas;* Hungarian, *Juda;* It., *Guida;* Lat., *Judas;* Polish, *Judas;* Sw., *Judas.*

Ju-da-ism (*'da-izm*), *n.* the religious rites and doctrines of the Jews; conformity to Jewish rites and doctrines.

Judge (*juj*), *n.* the presiding official in a court of law; arbitrator; connoisseur: *v. t.* to examine and pass sentence upon; distinguish; consider: *v. i.* to come to a conclusion; hear and determine a case.

★**Judg-ment** (*juj'ment,* not *juj'munt*), *n.* the act of judging; a judicial decision; mental faculty of deciding; criticism; opinion; judgment day.

Syn. JUDGMENT, discretion, prudence. *Judgment* is conclusive; it decides by positive inference; it enables a person to discover the truth; *discretion* is intuitive; it discerns or perceives what is in all probability right; a person is *prudent* who does not inconsiderately expose himself to danger; a measure is *prudent* that guards against the chance of evil; the impetuosity of youth naturally impels them to be *imprudent.* [See *decision.*]

Ant. JOLLITY, heedlessness, recklessness.

Ju-di-cial (*jū-di'shal*), *adj.* pertaining to courts of justice or to the administration of justice; impartial.

Ju-di-cia-ry (*-dish'a-ri*), *adj.* pertaining to courts of justice: *n.* judges collectively.

Ju-di-cious (*'us*), *adj.* prudent; discreet.

Judith (*jū'dith*). From the Hebrew *Y'hudhiyth,* "in the Jewish tongue," also, "praising." It., *Giuditta;* Lat., *Juditha.*

Jug (*jug*), *v. t.* to put into a jug: *n.* an earthenware vessel with a handle, used to carry liquids.

Jug-gle (*jug'l*), *v. t.* to cheat by artifice: *v. i.* to conjure: *n.* a trick by sleight of hand.

★**Ju-gu-lar** (*jū'gū-lẽr,* not *jug'yū-lẽr*), *adj.* pertaining to the neck or throat or jugular vein: *n.* a jugular vein.

Juice (*jōōs*), *n.* sap; the fluid parts of animal bodies.

Jui-cy (*jōō'si*), *adj.* full of juice.

Julia (*jū'li-a* or *jūl'ya*). The feminine of *Julius.* Dutch, *Julia;* Fr., *Julie;* Ger., *Julie;* It., *Giulia;* Lat., *Julia;* Sp., *Julia;* Sw., *Julia.*

Jul-ian (*jūl'yan*), *adj.* pertaining to Julius Cæsar, or to the Julian calendar as adjusted by Julius Cæsar 46 B. C.

Julian. A name derived from the Latin *Julianus,* formed from *Julius.* Julian is a feminine as well as a masculine name. Dutch, *Julianus;* Fr., *Julien;* Ger., *Julian;* It., *Giuliano;* Lat., *Julianus;* Port., *Juliao;* Sp., *Julian* or *Juliano;* Sw., *Julian.*

Juliana (*jū-li-an'a*). A female name derived from *Julian.* Dutch, *Juliana;* Fr., *Julienne;* Ger., *Juliane;* It., *Giuliana;* Lat., *Juliana;* Port., *Juliana;* Sp., *Juliana;* Sw., *Juliana.*

Julien. See *Julian.*

Julienne. See *Julia.*

Juliet (*jū'li-et*). A diminutive formed from *Julia.*

Julius (*jū'li-us*). The Roman name, said to be derived from *Julus* or *Iulus,* "sprung from *Iulus.*" Dutch, *Julius;* Fr., *Jules;* Ger., *Julius;* It., *Giulio;* Lat., *Julius;* Port., *Julio;* Sp., *Julio.*

Ju-ly (*-li*), *n.* the seventh month of the modern calendar; so named by Marc Antony in honor of Julius Cæsar, who was born in it.

Jum-ble (*jum'bl*), *n.* a confused mass: *v. t.* to mix without order: *v. i.* to mix.

Jump (*jump*), *n.* a spring or bound; the space jumped: *v. t.* to cause to spring or bound: leap over: *v. i.* to spring.

Junc-tion (*jungk'shun*), *n.* the act of being joined; union; a point or place of union.

Junc-ture (*'tūr*), *n.* the point or line at which two bodies are joined; occasion.

June (*jōōn*), *n.* the sixth month of the modern calendar; named from Juno, the queen goddess.

Jungfrau (*yoong'frow*) **mountain.** A noted Alpine peak, "the maiden," or "the fair one," so called from its spotless white.

Jun-gle (*jung'gl*), *n.* a dense tropical thicket.

Juniata (*jū-ni-at'a*) **river, Pa.** Named from a tribe of Indians inhabiting its banks, extinguished by the Iroquois. The root of the word means "a stone." *Onajutta-haga,* "the Juniata people," is the name found on early maps.

Jun-ior (*jōōn'yẽr*), *adj.* younger; of lower standing; pertaining to youth: *n.* the younger of two; one of lower standing.

Ju-ni-per (*jōō'ni-pẽr*), *n.* a shrub, the berries of which are used in flavoring gin.

Junk (*jungk*), *n.* short pieces of old cable, rope; hard salt ship beef; a Chinese flat-bottomed vessel.

Jun-ket (*jung'ket*), *n.* a variety of sweetmeat; excursion; picnic: *v. i.* to participate in an excursion or picnic.

Jun-ta (*jun'ta*), *n.* a legislative assembly or council.

Jun-to (*'tō*), *n.* [*pl.* juntos (*'tōz*)], a secret council of state; faction; cabal.

Ju-ris-dic-tion (*jū-ris-dik'shun*), *n.* legal authority; extent of power; district over which any authority extends.

Ju-ris-pru-dence (*-prōō'dens*), *n.* legal science; system of laws of a country.

Ju-rist (*'rist*), *n.* one skilled in legal science.

Ju-ror (*'rẽr*), *n.* a juryman.

Ju-ry (*'ri*), *n.* a body of men, usually twelve, selected according to law and sworn to inquire into or decide on, the evidence before them.

★**Just** (*just,* never *jest*), *adj.* conformable to divine or human laws; upright; impartial; fair: *adv.* exactly; barely; almost; perfectly.

Jus-tice (*jus'tis*), *n.* rectitude in dealing with others; impartiality; a judge or magistrate.

Jus-ti-fi-a-ble (*'ti-fī-a-bl*), *adj.* defensible.

Jus-ti-fi-ca-tion (*-fi-kā'shun*), *n.* the act of justifying; vindication or defense; the act of acceptance of a man by God as justified by the merits of Jesus Christ.

Jus-ti-fy (*'ti-fī*), *v. t.* to show or prove to be just or right; vindicate· pardon: *v. i.* to conform to each other by proper spacing, as lines of type. [APOLOGIZE.]

Justin (*jus'tin*). A masculine name derived from the Roman *Justinus,* formed from *Justus.*

Justina (*jus-tī'na*). A feminine name formed from *Justin.*

Jut (*jut*), *v. i.* [*p. t.* and *p. p.* jutted, *p. pr.* jutting], to project beyond the main body.

Jute (*jōōt*), *n.* the fiber of an East Indian plant used for ropes.

Jutland. The continental part of Denmark. Name means the land of the Jutes.

Ju-ve-nes-cent (*jōō-vē-nes'ent*), *adj.* becoming young.

Ju-ve-nile (*'vē-nil*), *adj.* youthful; like, or suitable to, youth: *n.* a young person. [YOUTHFUL.]

Ju-ve-nil-i-ty (*-nil'i-ti*), *n.* youthfulness.

Juxta, a *prefix* meaning *near,* as *juxtaposition.*

K

Kaaba (*ka-ā'ba*), or **Caaba** (*kā'āba*). A cube-shaped, flat-roofed building in the center of the Great Mosque at Mecca, the most sacred shrine of the Mohammedans.

Kaf-fir (*kaf'ẽr*), *n.* any member of one of the Bantu tribes of South Africa; the Kaffir language.

Kaffraria (*kaf-frā'ri-a*). Country of the Kaffirs, or "unbelievers."

kai-ser (*kī'zẽr*), *n.* the title of the emperors of Germany and Austria.

Kalamazoo (*kal-a-ma-zōō'*). City, river, and county in Michigan. According to one authority, name is derived from the Indian word *Negikanamazo,* meaning "otter-tail"; "beautiful water" and "boiling water" are other versions.

kale (*kāl*), *n.* a cabbage with open curled leaves; sea kale.

★**ka-lei-do-scope** (*ka-lī'dō-skōp*), *n.* an optical instrument which by an arrangement of mirrors causes objects viewed through it to appear in a variety of symmetrical and beautiful patterns.

Ka-na-ka (*ka-nā'ka*), *n.* a Sandwich Islander.

Kanawha (*ka-naw'wa*) **river, W. Va.** So named from a tribe of Indians (branch of the Nanticokes), evoluting in its spelling through *Conoys, Conoise, Canawese, Cohnawas, Canaways,* to *Kanawha.*

kan-ga-roo (*kang-ga-rōō'*), *n.* a herbivorous marsupial mammal peculiar to Australia, having short fore legs and long powerful hind legs, with which it leaps.

Kansas. A north central state of the United States. Named in 1854 from its principal river, so called from a tribe of Indians, formerly in that locality, known as the *Konsos* or *Kows.* The word means "smoky water."

Kansas City, Mo. The name given in the spring of 1839, at a meeting of the "Town Company," an organization for starting towns and locating steamboat landings on the Missouri river.

ka-o-lin (*kā'ō-lin*), *n.* china or porcelain clay.

kar-at. Same as *carat.*

Karnak (*kär'nak*). A village in Egypt, on the eastern bank of the Nile, on the site of Thebes, famous for its remains of antiquity.

Katahdin (*ka-tä'din*). Mountain in Maine. An Indian word, *Ktaadn* or *Katahdu,* meaning, according to different authorities, "highest land," "big mountain," "greatest or chief mountain."

Kathleen (*kath-lēn'*). An Irish diminutive of *Catherine.*

ka-yak (*kā'yak*), *n.* an Eskimo sealskin canoe. [Also *kaiak, kajak.*]

Kearsarge (*kēr'särj*), **Mt., N. H.** Name corruption of the Indian *keas,* "high," *auke,* "a place," "a high place"; another derivation traces it from the Indian *Koowassadchu,* "pine or peaked mountain."

keel (*kēl*), *n.* the chief and lowest timber of a vessel extending from stem to stern and supporting the whole frame; hence, a ship; a low, flat-bottomed coal barge: *v. t.* to furnish with a keel: *v. i.* turn up the keel; give up.

keel-boat (*'bōt*), *n.* a large covered freight boat.

keel-haul (*'hawl*), *v. t.* to drag under water beneath the bottom of a ship from one side to the other: formerly a naval punishment; reprimand sternly.

keen (*kēn*), *adj.* sharp; eager; piercing; bitter; acute: *n.* a shrill, bitter wail. [ACUTE, SHARP, EAGER.]

keep (*kēp*), *v. t.* [*p. t.* and *p. p.* kept, *p. pr.* keeping], to have the care of; guard; do; observe; supply with the necessaries of life; confine: *v. i.* to remain in any state or condition: *n.* subsistence.

Syn. KEEP, preserve, save. The idea of having in one's possession is common to all these terms; which is, however, the simple meaning of *keep; to preserve* signifies *to keep* with care, and free from all injury; *save* is *to keep* laid up in a safe place, free from destruction. [See *hotd.*]

Ant. DEMOLISH, destroy, wreck.

keep-sake (*'sāk*), *n.* something kept as a souvenir of the giver.

keeve (*kēv*), *n.* a large vat or tub.

keg (*keg*), *n.* a small barrel.

kelp (*kelp*), *n.* the calcined ashes of seaweeds, from which iodine is obtained; a large coarse seaweed or wrack.

kemp (*kemp*), *n.* coarse rough hair or wool; refuse of fur.

ken (*ken*), *n.* view; knowledge: *v. t.* [*p. t.* and *p. p.* kenned, *p. pr.* kenning], to know; descry. [*Scotch.*]

Kenilworth (*ken'il-wẽrth*). A town in Warwickshire, England, five miles north of Warwick. It has been immortalized by Sir Walter Scott.

Kennebec (*ken-ē-bek'*) **river, Me.** So named from the Indian *quinnipippiohke,* "long place of water." This was the Indian name of Moosehead lake.

Kennebunk (*ken-ē-bunk'*), **Me.** Similar to Kennebec, an adaptation of another pronunciation.

ken-nel (*'el*), *n.* a house for a dog or pack of hounds: *v. t.* to confine in a kennel: *v. i.* to live in a kennel.

Kenneth (*ken'neth*). The English form of the Gaelic name *Coinneach;* perhaps from *caoin-neach,* a "kind, gentle, or mild man."

Kenosha (*kē-nō'sha*), **Wis.** Algonquin derivation from *kenose,* "long," meaning "a long fish."

Kensington (*ken'sing-tun*). A borough of London; originally the town of the Kensings, the old form of which was *Cynesige.*

Kent. A county of England; so named from the ancient British word *chent* or *cant* ("a corner"), "because" says Camden, "England at this point stretched itself out in a corner to the northeast." The Roman name was *Cantium.*

Kentucky. One of the Southern states of the United States; so named, in 1782, from its principal river. Indian word, *Kain-tuk-ee,* "at the head of the river."

Keokuk (*kē'ō-kuk*). City and county in Iowa, named for an Indian chief, the word meaning "running or watchful fox."

ker-nel (*kẽr'nel*), *n.* a grain or seed; the edible substance of a nut or fruit stone; essence.

ker-o-sene (*ker'ō-sēn*), *n.* refined petroleum.

ker-sey (*kẽr'zi*), *n.* a coarse smooth-faced cloth.

ketch-up (*kech'up*), *n.* a sauce prepared from tomatoes, mushrooms, etc.

★ket-tle (*ket'l*, not *kit'l*), *n.* a metallic vessel for boiling liquids.
ket-tle-drum (*'drum*), *n.* a hemispherical copper drum.
Kew (*kū*). The name of this place has undergone many transitions. The name is probably derived from the word *quay*, a landing place.
Keweenaw (*kē'wē-naw*) **point, Mich.** So named from a portage called by the Indians *Kewauenau*, the "place where we cross by land carrying the canoe."
Kew observatory. Since 1871 the central meteorological observatory of Great Britain. It is at Old Richmond park, between Kew and Richmond.
key (*kē*), *n.* a portable metal instrument for operating a lock; an instrument by which something is turned, secured, or operated upon; clef; solution; literal translation: *v. t.* to fasten or connect with a key.
key-note (*'nōt*), *n.* the fundamental note; ruling principle.
key-stone (*'stōn*), *n.* central stone of an arch.
Key West. City in Monroe county, Florida. A corruption of *cayo hueso*, a Spanish term meaning "a bone reef or island."
Keziah (*kē-zī'a*). A feminine name derived from *Kezia*, daughter of Job, from the Hebrew, *kt'siya*, signifying "cassia," a bark similar to cinnamon.
kha-ki (*kä'ki*), *adj.* of the color of dust or ashes: *n.* a light drab or brownish cotton cloth used for military uniforms.
khan (*kän*), *n.* an Asiatic prince, chief, or governor; a caravanserai.
khe-dive (*kā-dēv'*), *n.* the official title of the viceroy of Egypt. This word, from the Persian *khidiw*, according to the best authorities, means "prince."
kick (*kik*), *n.* a blow with the foot; a recoil: *v. t.* to strike with the foot: *v. i.* to recoil; resist.
kid (*kid*), *n.* the young of the goat, or its soft skin, used for gloves, etc.; a child: *adj.* made of kid: *v. i.* to bring forth a kid: *v. t.* to furnish or cover with kid; humbug.
kid-nap (*'nap*), *v. t.* to get forcible and illegal possession of. [ABDUCT.]
kid-ney (*'ni*), *n.* [*pl.* kidneys (*'niz*)], one of two oblong, flattened organs which separate the urine from the blood; anything resembling a kidney; sort or kind.
kill (*kil*), *v. t.* to deprive of life; destroy; slay.
★kiln (*kil*, not *kiln*), *n.* a furnace, oven, or pile for burning, drying, or hardening.
kilt (*kilt*), *n.* a short petticoat or philibeg of the Scottish highlanders: *v. t.* to form into broad, flat plaits; tuck up. [*Scotch*].
ki-mo-no (*ki-mō'no*), *n.* the loose outer robe of the Japanese.
kin (*kin*), *n.* consanguinity; relationship; kindred; a Chinese lute.
kind (*kīnd*), *adj.* benevolent; indulgent; affectionate; sympathetic: *n.* genus or species; quality; variety; sort. [HUMANE, PLEASANT.]
kin-der-gar-ten (*kin'dĕr-gär-ten*), *n.* a school for young children in which they are taught by diverting object lessons, etc.
kin-dle (*kin'dl*), *v. t.* to set fire to; inflame.
kind-ly (*kīnd'li*), *adj.* benevolent; sympathetic; beneficial: *adv.* in a kindly manner. [PLEASANT.]
kind-ness (*'nes*), *n.* the state or quality of being kind; a kind act. [MERCY.]
kin-dred (*kin'drĕd*), *adj.* of like nature or character; cognate: *n.* relationship by birth or marriage; consanguinity.
kin-e-mat-ics (*kin-ē-mat'iks*), *n.* the science of pure motion.
ki-net-ic (*ki-net'ik*), *adj.* pertaining to, or imparting, motion; active: *n. pl.* that branch of dynamics which treats of the action of forces in causing or influencing motion.
★ki-ne-to-graph (*ki-nē'to-graf*), *n.* an apparatus for taking photographs of moving objects and afterward reproducing them on a screen, as if in actual motion.
ki-ne-to-scope (*ki-nē'to-skōp*) *n.* a device for presentng pictures of moving objects in such rapid succession as to give the impression of the actual movements of the original.
king (*king*), *n.* a male sovereign or ruler.
king-dom (*'dum*), *n.* the territory ruled by a king or queen; royal authority; sphere of influence; primary division.
king-fish-er (*'fish-ĕr*), *n.* a fish-eating bird with bright blue and green or slate-blue and white plumage.
king-ly (*'li*), *adj.* worthy of a king. [ROYAL.]
kink (*kingk*), *n.* a twist in a rope or thread when doubled; whim: *v. t.* and *v. i.* to form kinks.
kins-folk (*kinz'fōk*), *n.* relatives.
kip-per (*kip'ĕr*), *n.* a salmon after spawning; a salmon, herring, etc., cut open, salted, and smoke dried: *v. t.* to cure, as a salmon.
kir-tle (*kĕr'tl*), *n.* an upper garment; petticoat: *v. t.* to array in a kirtle.
Kiskiminetas (*kis-kē-min'ē-tas*) **river, Pa.** So named from an Indian word, *Kithanne*, translated, "place of the largest stream."
kiss (*kis*), *n.* a salute or caress with the lips; a slight touch: *v. t.* to salute with the lips; touch slightly: *v. i.* to caress mutually with the lips.
kit (*kit*), *n.* a small wooden tub; a small violin; traveling necessaries, outfit, etc.; set.
kitch-en (*kich'en*), *n.* a room set apart for cooking; ship's galley: *adj.* pertaining to the kitchen.
kitch-en-ette (*'en-et*), *n.* a small kitchen.
kite (*kit*), *n.* a rapacious bird of prey; a light frame of wood covered with paper or linen for flying in the air; a light lofty sail.
kith (*kith*), *n.* acquaintance.
Kittatinny (*kit'tă-tin-ni*) **mountains, Pa.** The Indian word *Kitadini*, that is, "largest mountain."
kit-ten (*kit'n*), *n.* a young cat.
Kittery (*kit'tĕr-i*) **Point, Me.** Named after the small hamlet of Kittery, England. Kittery Point was settled in 1623, and it is claimed was the first settled and the oldest town in the state.
klep-to-ma-ni-a (*klep-tō-mā'ni-ā*), *n.* a form of insanity manifesting itself in an irresistible propensity to steal.
klep-to-ma-ni-ac (*'ni-ak*), *n.* one who is under the influence of kleptomania.
knack (*nak*), *n.* adroitness; dexterity.
knap-sack (*nap'sak*), *n.* a leather or cloth traveling case carried on the back.
knave (*nāv*), *n.* a dishonest or deceitful person.
knav-er-y (*'ĕr-i*), *n.* [*pl.* knaveries (*-iz*)], dishonesty; fraud; deceit. [DISHONEST.]
knead (*nēd*), *v. t.* to work into a mass, as dough; operate upon in massage; mold.
knee (*nē*), *n.* the articulation of the leg and thigh bones; anything resembling a knee: *v. t.* to connect or strengthen with knees.
knee-cap (*'kap*), *n.* a flattened oval bone on the forepart of the knee joint; patella.
kneel (*nēl*), *v. i.* [*p. t.* and *p. p.* knelt. *p. pr.* kneeling], to bend, or fall upon, the knees.
knell (*nel*), *n.* the sound of a bell when struck, especially a funeral bell; an ill omen: *v. t.* and *v. i.* to sound or toll, as a funeral bell.
knick-er-bock-ers (*nik'ĕr-bok-ĕrz*), *n. pl.* wide breeches gathered in below the knee.
knick-knack (*'nak*), *n.* a little ornamental trifle; kickshaw.
knife (*nif*), *n.* [*pl.* knives (*nīvz*)], a cutting instrument with a sharp-edged blade set in a handle: *v. t.* to stab with a knife.
knight (*nīt*), *n.* one who holds nonhereditary rank next below a baronet, entitling him to the prefix *Sir;* a champion; lover; one of the pieces in chess: *v. t.* to confer the honor of knighthood upon.
knight-er-rant (*-er'ant*), *n.* [*pl.* knights-errant], in the middle ages, a knight who went in quest of adventure, to show his prowess, chivalry, etc.
knight-hood (*'hood*), *n.* the character, rank, or dignity, of a knight.
knit (*nit*), *v. t.* [*p. t.* and *p. p.* knitted, *p. pr.* knitting], to tie, unite, or draw together; weave together by needles: *v. i.* contract.
knob (*nob*), *n.* the rounded handle of a door, etc.; round protuberance; knoll.
knock (*nok*), *n.* a blow or stroke with something hard or heavy; rap: *v. t.* to give a blow to; drive or strike against: *v. i.* to strike a blow with something hard or heavy.
knock-out (*'out*), *n.* a mechanical device for throwing out finished work; a blow that knocks down.
knoll (*nōl*), *n.* a rounded hillock; hilltop.
knot (*not*), *n.* an interweaving or tying of thread or cord, etc.; entanglement; difficulty; a hard part in a piece of wood; a nautical mile equal to 2,025 yds.; bond of union; group: *v. t.* to tie in a knot; unite firmly or closely: *v. i.* to form knots or joints; make knots for fringe.
knot-ty (*'i*), *adj.* [*comp.* knottier, *superl.* knottiest], full of knots; rugged; difficult.
know (*nō*), *v. t.* [*p. t.* knew, *p. p.* known, *p. pr.* knowing], to perceive with the mind; understand clearly; have knowledge of; distinguish: *v. i.* to be informed.
Syn. KNOW, be acquainted with. We may *know* things or persons in various ways; we may *know* them by name only; or we may *know* their internal properties or characters, etc.; one is *acquainted with* either a person or a thing, only in a direct manner, and by an immediate intercourse in one's own person.
knowl-edge (*nol'ej*), *n.* clear perception of a truth or fact; acquaintance; information.
Syn. KNOWLEDGE, science, learning, erudition. *Knowledge* is a general term which simply implies the thing known; *science* is a systematic species of *knowledge* which consists of rule and order; *learning* is that species of *knowledge* which one derives from schools, or through the medium of personal instruction; *erudition* is scholastic *knowledge* obtained by profound research. [See *acquaintance*.]
Ant. IGNORANCE, illiteracy.
Knoxville, Tenn. Named after Gen. Henry Knox of Massachusetts, secretary of war during Washington's administration.
knuc-kle (*nuk'l*), *n.* the projecting joint of the fingers; the knee joint of a calf or pig: *v. i.* to bend the fingers; yield or submit.
ko-dak (*kō'dak*), *n.* a portable camera for taking instantaneous photographs: *v. t.* to take an instantaneous picture of.
Kokomo (*kō'kō-mō*), **Ind.** Name is an Indian word meaning "a young grandmother."
Ko-ran. See *Alcoran*.
kow-tow (*kou-tou'*), *n.* a Chinese form of salutation: *v. i.* salute by the kowtow. [Also *kotow*.]
Kremlin (*krem'lin*). A citadel of Moscow, Russia.
kreut-zer (*kroit'sĕr*), *n.* an Austrian copper coin equal to ½ of a cent; formerly a German coin equal to ⅔ of a cent.
Kurdistan or **Koordistan** (*kōōr-dis-tän'*). Means the country of the Koords.
Kyrle (*kĕrl*). A masculine name derived from *Karl* or *Carl*, from root of *Charles*.

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Laban (*lā'ban*). A masculine name, from the Hebrew *Labhan*, signifying "white."
la-bel (*lā'bel*), *n.* a small slip of paper, etc., attached to anything to indicate its destination, ownership, etc.: *v. t.* to mark with a label; classify.
la-bi-al (*lā'bi-al*), *adj.* formed by the lips: *n.* a letter representing a sound so formed.
la-bor (*'bĕr*), *n.* toil or exertion, physical or mental; effort; parturition: *v. t.* to cause to toil; fabricate: *v. i.* to exert muscular strength; use mental efforts; suffer the pains of childbirth. [WORK.]
★lab-o-ra-to-ry (*lab'ō-rā-tō-ri*, not *lab'rā-tō-ri*), *n.* [*pl.* laboratories (*-riz*)], a place where scientific experiments and operations are carried on.
la-bo-ri-ous (*lā-bō'ri-us*), *adj.* difficult; toilsome.
Labrador (*lab-rā-dōr'*). A northeastern peninsula of North America. Its name is believed to testify to the early maritime enterprise of the Portuguese, who called it *Terra de Lavradores*, the "land of the laborers."
labyrinth (*lab'i-rinth*), *n.* an intricate arrangement; perplexity. From the Greek *labyrinthos*, "a maze of intricate passages"; especially, a subterranean structure having many intricate passages.
lace (*lās*), *n.* an ornamental fabric of fine linen, cotton thread, gold or silver, etc., curiously woven: *v. t.* to fasten with a lace; adorn with lace; beat.
lac-er-ate (*las'ĕr-āt*), *v. t.* to rend; wound.
lach-ry-mal (*lak'ri-mal*), *adj.* pertaining to tears.
lach-ry-mose (*'ri-mōs*), *adj.* tearful; sad.
lack (*lak*), *v. t.* to be destitute of: *v. i.* to be in need; to be deficient; come short: *n.* want; failure. [WANT.]
lack-a-dai-si-cal (*-ă-dā'zi-kal*), *adj.* affectedly pensive or sentimental.
Lackawanna (*lak-ă-won'nă*) **creek, Pa.** Named from the Delaware Indian words *lechau-hanne*, "the stream that forks."
lack-ey (*'i*), *n.* a menial attendant; footman: *v. t.* to wait upon, as a lackey: *v. i.* to act servilely.
la-con-ic (*lă-kon'ik*), *adj.* expressing much in few words.
lac-quer (*lak'ĕr*), *n.* a varnish consisting of shellac dissolved in alcohol and variously colored: *v. t.* to varnish with lacquer.
La Crosse (*lă krōs'*). City and county in Wisconsin A French name given to the town because before its settlement the ground was a favorite place for ball playing with the Indians, the game being called by the French *la crosse*.
lac-ta-tion (*lak-tā'shun*), *n.* secretion of milk; the act or period of suckling.
lac-te-al (*'tē-al*), *adj.* pertaining to, or like, milk; conveying chyle: *n. pl.* the lymphatic vessels which convey chyle from the intestines to the thoracic duct.
lad (*lad*), *n.* a boy or youth; comrade.
lad-der (*'ĕr*), *n.* a framework consisting of two parallel side pieces connected by bars, etc., forming steps at suitable distances.
lad-die (*'i*), *n.* a lad. [*Scotch*.]
lade (*lād*), *v. t.* [*p. t.* laded, *p. p.* laded, laden, *p. pr.* lading], to load; burden; heave or throw out.
la-die (*lā'dl*), *n.* a deep spoon for serving out liquids: *v. t.* to dip up with a ladle.
Ladrone (*lă-drōn'*) **islands.** In the North Pacific. So designated from the circumstance that when Magellan touched upon one of the lesser isles of the group, in 1520, the natives stole some of his goods; whereupon he called the islands the *Ladrones*, which is Spanish for "thieves."
la-dy (*lā'di*), *n.* [*pl.* ladies (*'diz*)], a well-bred woman; the daughter of a duke, marquis, or earl; mistress of a house.
la-dy-bird (*-bĕrd*), *n.* a red coleopterous insect marked with black spots.
lag (*lag*), *v. i.* [*p. t.* and *p. p.* lagged, *p. pr.* lagging], to move slowly; loiter; stay behind: *v. t.* cause to be arrested or punished: *adj.* long delayed; last: *n.* retardation of mechanical movement. [LINGER.]
la-ger beer (*lä'gĕr bĕr*), a German beer that is stored before using.
lag-gard (*lag'ĕrd*), *n.* a slow person; loiterer: *adj.* backward; slow.
la-goon (*lă-gōōn'*), *n.* a shallow lake formed at the mouth of a river or near the sea; marsh or fen.
lair (*lār*), *n.* the covert of a wild beast.
la-i-ty (*lā'i-ti*), *n.* the people, as distinguished from the clergy.
lake (*lāk*), *n.* a large body of water surrounded by land; a pigment.
Lake district, England. A region in Westmoreland and Cumberland, England, which abounds in lakes inclosed by mountains. The district is a celebrated tourist center, and is associated with the poetry of Wordsworth.
Lake Huron. See *Huron*.
Lake Michigan. See *Michigan*.
Lake of the Woods. Lake in Minnesota. Originally named *Lac des Bois* by the French, "lake of the woods," because of the heavily wooded islands in the lake.

Lake Ontario. See *Ontario.*
Lake Superior. The uppermost and chief of the Great Lakes.
Lake Winnipeg. See *Winnipeg.*
lamb (*lam*), *n.* the young of a sheep; one who is gentle or innocent; an inexperienced speculator: *v. i.* to bring forth lambs.
lam-bent (*'bent*), *adj.* playing about; flickering; touching lightly.
Lambert (*lam'bẽrt*). Corrupted from the Old German name *Lamdbert, Lantprecht;* from *landbrecht,* "one distinguished among the people." Dutch, *Lambert* or *Lambertus;* Fr., *Lambert;* Ger., *Lambert;* Lat., *Lambertus.*
Lambeth (*lam'beth*) **palace.** The London residence of the archbishop of Canterbury, situated in Lambeth, near the Thames, one and one-half miles southwest of St. Paul's. It contains a valuable library.
lamb-kin (*'kin*), *n.* a little lamb.
lam-bre-quin (*lam'bre-kin*), *n.* a festooned drapery, hanging from the upper part of a window, doorway, etc.
lamb-skin (*'skin*), *n.* the skin of a lamb dressed with the fleece on and frequently colored.
lambs-wool (*lamz'wool*), *n.* the wool of lambs; a beverage composed of ale, with nutmeg, sugar, and the pulp of roasted apples.
lame (*lām*), *adj.* crippled or disabled in the limbs; not sound or efficient: *v. t.* to cripple or disable.
la-ment (*là-ment'*), *v. i.* to mourn for: *v. t.* to express sorrow. [COMPLAIN, DEPLORE.]
★**lam-en-ta-ble** (*lam'en-tà-bl,* not *lā-ment'à-bl*), *adj.* to be lamented; mournful; pitiable.
La Moille (*là moil'*) **river, Vt.** Discovered and named by Champlain as *la mouette,* "the mew or gull," which were seen in great numbers on its waters.
lamp (*lamp*), *n.* a vessel for burning oil; any device for producing artificial light.
lamp-black (*'blak*), *n.* finely divided charcoal or soot: *v. t.* to apply lampblack to.
lam-poon (*lam-pōōn'*), *n.* personal written satire designed to bring its subject into contempt: *v. t.* to satirize by a lampoon.
lance (*lans*), *n.* a long shaft of wood with a spear head; a thrust with a lancet: *v. t.* to pierce with a lance; cut open with a lancet.
Lancelot (*lan'sē-lot*). Sometimes rendered "servant," or "little lance"; if so, the bearer was so called from carrying a lance or pike. The name seems to be a diminutive formed from Latin *lancea,* "a lance," "javelin," a word which Varro thinks of Spanish origin. Fr., *Lancelot;* Lat., *Lancelottus.*
lan-cet (*'set*), *n.* a surgeon's knife; a lancet-shaped or pointed window.
land (*land*), *n.* the solid portion of the surface of the globe; the earth; a country or district; real estate: *v. t.* to set on shore; capture and bring on shore; win: *v. i.* to come or go on shore; disembark.
Syn. LAND, country. The term *land* in its proper sense excludes the idea of habitation; the term *country* excludes that of the earth, or the parts of which it is composed; hence we speak of the *land* as rich or poor according to what it yields; of a *country* as rich or poor according to what its inhabitants possess.
lan-dau (*lan'dô*), *n.* a kind of carriage.
land-grab-ber (*land'grab-ẽr*), *n.* one who gets possession of public land by means of fraud.
land-lord (*'lôrd*), *n.* one who has tenants holding under him; the keeper of a hotel or inn.
land-lub-ber (*'lub-ẽr*), *n.* one not a sailor.
land-scape (*'skāp*), *n.* the general aspect of a country, or a picture representing it.
lane (*lān*), *n.* a narrow path, as between hedges, walls, etc.
★**lan-guage** (*lang'gwāj,* not *lang'gwij*), *n.* human speech; the speech of one nation or race as distinguished from that of another; style or expression peculiar to an individual.
Languedoc (*lan'gwē-dok,* French *lāN'gu-dŏk*). An ancient government of southern France. It was named from the language of the South of France; the *langue d'oc,* or Provencal.
lan-guid (*lang'gwid*), *adj.* wanting energy. [FAINT.]
lan-guish (*'gwish*), *v. i.* to become weak or spiritless; pine away.
lank (*langk*), *adj.* lean; slender.
lank-y (*'ĭ*), *adj.* tall and thin.
Lansing (*lan'sing*), **Mich.** Named in honor of Abram Jacob Lansing of Rensselaer county, New York, a large landholder of this section.
lan-tern (*lan'tẽrn*), *n.* a transparent case for holding or carrying a light; the light room of a lighthouse.
lan-tern-jawed (*-jawd*), *adj.* having a long thin face.
lap (*lap*), *n.* part of the body or clothes from the waist to the knees of a person seated; a name for various pieces of mechanism; one length of a course which has to be passed over more than once in a race; the act of lapping: *v. t.* to bend and spread over; lick up: *v. i.* to lie partially on something else.
lap-dog (*'dog*), *n.* a small pet dog.
la-pel (*là-pel'*), *n.* part of a coat which laps over.
lap-i-da-ry (*lap'i-dā-ri*), *n.* [*pl.* lapidaries (*-riz*)], an artificer who cuts and sets precious stones; a connoisseur or dealer in gems.
La Porte (*là-pōrt'*). City and county in Indiana. A French word meaning "door" or "opening" between two stretches of forest connecting two prairies.
lapse (*laps*), *v. i.* to glide or slip slowly away; fall by degrees; commit a slight fault or fail in duty; *n.* a gliding or passing away slowly; slight fault or mistake.
lap-wing (*lap'wing*), *n.* a plover-like bird.
lar-board (*lär'bōrd*), *n.* the term used formerly for the *port* or left-hand side of a ship.
lar-ce-ny (*'se-ni*), *n.* theft.
larch (*lärch*), *n.* a coniferous tree.
lard (*lärd*), *n.* the fat of swine melted down: *v. t.* to cover with lard; insert strips of bacon in before roasting: hence, to mix.
lar-der (*lär'dẽr*), *n.* a pantry; household provisions.
large (*lärj*), *adj.* great in size; bulky; wide; extensive; comprehensive.
Syn. LARGE, wide, broad. A field is said to be *wide* both from its figure and the extent of its space in the cross directions; in like manner, a house is *large* from its extent in all directions; it is said to be *wide* from the extent which it runs in front; what is *broad* is in sense, and mostly in application, *wide; large* is opposed to small; *wide* to close; *broad* to narrow. [See *great.*]
Ant. LITTLE, mean, narrow, small.
lar-gess (*lar'jes*), *n.* a gift or bounty.
lar-i-at (*lar'ĭ-at*), *n.* a rope or lasso, especially of horsehair.
lark (*lärk*), *n.* a noted song bird of the genus Alauda; a frolic.
lark-spur (*'spẽr*), *n.* a plant with showy blue spurred flowers.
lar-va (*lär'và*), *n.* [*pl.* larvæ (*'vē*)], an insect in the first stage of its metamorphosis after leaving the egg.
lar-yn-ge-al (*lar-in'jē-al*), *adj.* pertaining to, or situated near, the larynx.
lar-ynx (*'ingks*), *n.* the upper part of the trachea or windpipe.
las-civ-i-ous (*las-siv'i-us*), *adj.* lustful; wanton; exciting lust.
lash (*lash*), *v. t.* to strike with a sounding blow; whip; scourge with satire; fasten or bind with cord or rope: *v. i.* to apply the whip; flog: *n.* the thong of a whip; a scourge; sarcasm or satire.
lass (*las*), *n.* a young woman; girl.
las-si-tude (*las'ĭ-tūd*), *n.* weariness; languor. [FATIGUE.]
las-so (*'ō*), *n.* a rope, usually of hide, with a noose, used for catching wild horses and cattle: *v. t.* to catch with a lasso.
last (*làst*), *adj.* coming after all others in time, place, or order; lowest; utmost; least likely: *adv.* on the last time or occasion; finally: *v. i.* to remain in existence or operation; endure: *n.* a wooden implement for shaping boots and shoes.
last-ing (*'ing*), *adj.* durable; permanent: *n.* a twilled fabric used for making women's shoes. [DURABLE, PERMANENT.]
Las Vegas (*las vā'gas*). City in San Miguel county, New Mexico. A Spanish name meaning "the plains," or the "meadows," and given this city on account of its situation in the midst of a fertile meadow.
latch (*lach*), *n.* a door catch: *v. t.* to secure or fasten with a latch.
latch-et (*'et*), *n.* a shoestring.
late (*lāt*), *adj.* [*comp.* later, *superl.* latest], coming after the usual time; tardy; long delayed; recently deceased: *adv.* after delay; recently.
la-tent (*lā'tent,*) *adj.* concealed; invisible. [SECRET.]
lat-er-al (*lat'ẽr-al*), *adj.* pertaining to, proceeding from, or acting upon, the side.
Lateran (*lat'ẽr-an*), **The.** Now an ecclesiastical palace in the eastern part of Rome. The present edifice dates from the sixteenth to eighteenth centuries. The palace was originally named from the Roman family, *Lateranus,* to which, until the time of Nero, it belonged.
lath (*lath*), *n.* a strip of wood.
lathe (*lāth*), *n.* a machine for turning and polishing articles of wood, metal, etc.
lath-er (*lath'ẽr*), *n.* froth made by moistened soap; profuse sweating: *v. t.* to cover with lather.
Lat-in (*lat'in*), *adj.* pertaining to, written, or expressed in, Latin; pertaining to Latium, ancient Rome, its inhabitants or language, or the races and languages derived from Rome: *n.* an ancient Roman; the language of ancient Rome and its literature.
La-tin-i-ty (*là-tin'ĭ-tĭ*), *n.* purity of Latin style or idiom.
Lat-in-ize (*lat'in-īz*), *v. t.* to give Latin terminations, or characteristics, to; translate into Latin.
lat-i-tude (*'ĭ-tūd*), *n.* distance on the earth's surface as measured by degrees north or south from the equator; breadth; extent; freedom from rules; laxity.
lat-i-tu-di-na-ri-an (*-tū-di-nā'ri-an*), *adj.* wide in range or scope; tolerant in speculative religious opinions: *n.* one who holds latitudinarian views.
Latitudinarians. The name applied by contemporaries to a school of theologians within the English church in the latter half of the seventeenth century. It grew out of the earlier movement in favor of a more liberal constitution for the church.
lat-ter (*lat'ẽr*), *adj.* the second of two things previously mentioned; recent; modern.
lat-tice (*'is*), *n.* crossed openwork of metal or wood; *v. t.* to furnish or cross with a lattice.
laud (*lawd*), *v. t.* to praise highly; extol: *n.* praise; worship or hymn of praise.
laud-a-ble (*lawd'à-bl*), *adj.* commendable.
Syn. LAUDABLE, praiseworthy, commendable. Things are *laudable* in themselves; they are *praiseworthy* or *commendable* in this or that person; that which is *laudable* is entitled to encouragement and general approbation; an honest endeavor to be useful to one's family or one's self is at all times *laudable;* what is *praiseworthy* obtains the respect of all men.
laud-a-num (*'à-num*), *n.* a preparation of opium.
laud-a-to-ry (*'à-tō-ri*), *adj.* expressing praise.
★**laugh** (*läf*), *n.* a convulsive sound caused by merriment: *v. i.* to express merriment, etc., by a laugh; appear gay, pleasant, etc.; jeer (with *at*): *v. t.* to express or utter with laughter.
laugh-a-ble (*'à-bl*), *adj.* exciting a laugh; ridiculous; ludicrous; comical.
laugh-ing-stock (*-ing-stok*), *n.* object of laughter.
laugh-ter (*'tẽr*), *n.* convulsive merriment.
Launcelot. Another spelling of *Lancelot.*
★**launch** (*länch*), *v. t.* to move or cause to slide into the water, as a vessel; hurl; dart; send forth: *v. i.* to put to sea; expatiate in language; plunge; enter on a new career: *n.* a large open pleasure boat usually propelled by steam, gas, or electricity.
★**laun-dress** (*län'dres*), *n.* a washerwoman.
laun-dry (*'drĭ*), *n.* [*pl.* laundries (*'drĭz*)], a place where clothes are washed and ironed.
Laura (*law-rà*). A feminine name derived from Latin *laurus,* "a laurel or baytree," dedicated to Apollo, used in triumphs, and worn by emperors and poets in garlands. *Laura* corresponds to the Greek name *Daphne.*
lau-re-ate (*law'rē-āt*), *adj.* decked or invested with laurel: *n.* one crowned with laurel; poet-laureate.
lau-rel (*'rel*), *n.* an evergreen shrub; crown or wreath of laurel: hence honor; distinction.
Laurence, Lawrence. From the Latin name *Laurentius,* formed from *laureo* "to crown with laurel." Danish, *Lorenz;* Dutch, *Laurens;* Fr., *Laurent;* Ger., *Laurenz, Lorenz* and *Laurentius;* It., *Lorenzo.*
Lauterbrunnen (*lou'ter-broon-nen*). A valley and parish in the Bernese Oberland, Switzerland, thirty-three miles southeast of Bern. It is noted for the Staubbach, Trummelbach, and other falls.
★**la-va** (*lä'và* or *là'và,* not *lav'à*), *n.* molten volcanic matter.
lav-a-to-ry (*lav'à-tō-ri*), *n.* [*pl.* lavatories (*-riz*)], a place for washing; retiring room.
lave (*lāv*), *v. t.* and *v. i.* to bathe or wash.
lav-en-der (*lav'en-dẽr*), *n.* an aromatic plant.
Lavinia (*là-vin'i-à*). Formed as a feminine name from *Latinus,* mythical Roman king.
lav-ish (*lav'ish*), *adj.* profuse; extravagant: *v. t.* to expend or bestow with profusion; squander; waste. [EXTRAVAGANT, EXCESS.]
law (*law*), *n.* a rule of action established by authority; edict, statute, or custom; act or enactment of a legislative body; jurisprudence; judicial process; rule or axiom of science or art; established principle.
law-ful (*'fool*), *adj.* agreeable or conformable to law; just; legal.
law-less (*'les*), *adj.* not obedient to or controlled by law; not according to law.
lawn (*lawn*), *n.* a plot of grass kept closely mown; fine cambric used for the sleeves of a bishop's gown: hence the office of a bishop.
lawn-ten-nis (*'ten'is*), *n.* an outdoor game played with rackets, balls, and a net.
Lawrence. See *Laurence.*
law-suit (*'sūt*), *n.* an action at law.
law-yer (*'yẽr*), *n.* one skilled in legal knowledge; one, especially a solicitor, who practices in the law-courts.
lax (*laks*), *adj.* loose; vague; weak.
lax-a-tive (*'à-tiv*), *adj.* loosening; purgative.
lay (*lā*), *v. t.* [*p. t.* and *p. p.* laid, *p. pr.* laying], to put or place; spread over; settle; calm; bring forward; impose; impute: *v. i.* to produce eggs: *n.* share of profits; a simple song: *adj.* pertaining to the people, as distinguished from the clergy; non-professional.
Syn. LAY OR TAKE HOLD OF, catch, seize, snatch, grasp, gripe. *To lay* or *take hold of* is here the generic expression; it denotes simply getting into one's possession, which is the common idea in the signification of all these terms, which differ in regard to the motion in which the action is performed; *to catch* is *to lay hold of* with an effort; *to seize* is *to lay hold of* with violence; *to snatch* is *to lay hold of* by a sudden effort. [See *put, lie.*]
lay-man (*'man*), *n.* [*pl.* laymen (*'men*)], one of the people, as distinguished from a clergyman; a non-professional man.
laz-a-ret-to (*laz-à-ret'ō*), *n.* a hospital for persons suffering with infectious diseases; a ship's storeroom. [Also *lazaret.*]
Lazarus (*laz'à-rus*). From the Hebrew *Elazar,* "God aids," *i. e.,* whom God aids. Fr., *Lazare;* Gr., *Lazaros;* It., *Lazzaro;* Lat., *Lazarus.*
la-zy (*lā'zi*), *adj.* [*comp.* lazier, *superl.* laziest], idle; indolent; slothful. [IDLE.]
lea (*lē*), *n.* a meadow.
leach (*lēch*), *v. t.* to pass water through (ashes) to form lye.
lead (*led*), *n.* a soft, heavy, ductile, bluish-gray metal; a plummet for sounding depths at sea; a thin strip of type metal for separating lines: *adj.* consisting, wholly or partially, of lead: *v. t.* to furnish with lead.

lead (*lēd*), *v. t.* [*p. t.* and *p. p.* led, *p. pr.* leading], to conduct with the hand; guide or conduct; precede; allure: *v. i.* to take precedence; act as a leader; play the first card or domino: *n.* guidance; precedence; the right to play first.
Syn. LEAD, conduct, guide. One *leads* by helping a person onward in any manner, as *to lead* a child by the hand; *to conduct* and *guide* are different modes of *leading*, the former by virtue of one's office or authority, the latter by one's knowledge or power; as *to conduct* an army; *to guide* a traveler in an unknown country. [See *persuade*.]
Ant. REBUFF, repel.

lead-en (*led'n*), *adj.* made of, or colored like, lead; heavy; sluggish.

lead-er (*lēd'ėr*), *n.* one who leads; the chief editorial article of a newspaper; tendon.

leaf (*lēf*), *n.* [*pl.* leaves (*lēvz*)], one of the thin flat parts of a plant; anything thinly beaten; part of a book containing two pages.

league (*lēg*), *n.* an alliance for mutual interests; confederacy; 3 geographical miles: *v. t.* to combine for mutual interests: *v. i.* to confederate.

leak (*lēk*), *n.* a hole which lets in water: *v. i.* to let water in or out through a hole, etc.

leak-age (*'āj*), *n.* the state of a vessel that leaks; allowance for loss by leakage.

lean (*lēn*), *v. i.* [*p. t.* and *p. p.* leaned, leant, *p. pr.* leaning], to incline or deviate from an upright position: *v. t.* to cause to lean; rest: *adj.* thin; sterile.
Syn. LEAN, incline, bend. In the proper sense, *lean* and *incline* are both said of the position of bodies; *bend* is said of the shape of bodies; that which *leans* rests on one side, or in a sideward direction; that which *inclines*, *leans* or turns only in a slight degree; that which *bends* forms a curvature.
Ant. STAND STRAIGHT.

Leander (*lē-an'dėr*). From the Greek *Leiandros*, translated "man of renown."

leap (*lēp*), *v. t.* [*p. t.* and *p. p.* leaped, leapt, *p. pr.* leaping], to pass over by leaping; jump or spring over: *v. i.* to jump; vault: *n.* the act of leaping; the space passed in leaping.

leap year (*yēr*), a year of 366 days, when February has 29 days; every year divisible by 4, except those divisible by 100 but not by 400.

learn (*lėrn*), *v. t.* [*p. t.* and *p. p.* learned, learnt, *p. pr.* learning], to acquire knowledge of; fix in the mind: *v. i.* to gain or receive knowledge or skill.

learn-ing (*'ing*), *n.* skill in literature, languages, or science; knowledge acquired. [KNOWLEDGE.]

lease (*lēs*), *n.* a written contract for the letting of land or tenements for a specified number of years; period: *v. t.* to let by a written contract; take a lease of.

leash (*lēsh*), *n.* a brace and a half; three; a band by which anything is held: *v. t.* to tie or bind by a leash.

least (*lēst*), *adj.* smallest in degree, size, value, importance, etc.: *adv.* in the lowest or smallest degree.

leath-er (*leth'ėr*), *n.* the tanned and curried skin of an animal; anything made of, or resembling, leather.

leath-ern (*'ėrn*), *adj.* made of, or resembling, leather.

leave (*lēv*), *n.* permission granted; departure; farewell: *v. t.* [*p. t.* and *p. p.* left, *p. pr.* leaving], to depart from; forsake, abandon; bequeath: *v. i.* to depart; go away.
Syn. LEAVE, quit, relinquish. We *leave* that to which we may intend to return; we *quit* that to which we return no more; we *relinquish* it unwillingly; we *leave* persons or things; we *quit* and *relinquish* things only. [See *abandon*, *desist*.]
Ant. KEEP, cherish, retain, stay.

leav-en (*lev'n*), *v. t.* to produce fermentation in; taint; imbue: *n.* any influence working silently and strong that causes changes in things or opinions.

Leavenworth, Kan. In 1820, a fort was established at this place by the United States government under the charge of Col. Henry H. Leavenworth of the 3d U. S. regiment, and named Fort Leavenworth. About this fort a town formed to which the fort's name was applied.

lech-er-y (*lech'ėr-i*), *n.* lustfulness; lewdness.

lec-tern (*lek'tėrn*), *n.* the reading desk of a church.

lec-ture (*'tūr*), *n.* a formal discourse on any subject; reprimand: *v. i.* to deliver a lecture: *v. t.* to reprimand.

ledge (*lej*), *n.* a shelf; ridge; layer; edge.

ledg-er (*'ėr*), *n.* the principal account book of a mercantile house.

leech (*lēch*), *n.* an aquatic worm furnished with a sucker, used in medicine for bleeding; formerly the name for a physician: *v. t.* to bleed with leeches.

Leech lake, Minn. Applied from the meaning of its Indian name *gahsuhgusgwah, chemakang*, "the place of leeches."

leek (*lēk*), *n.* a biennial plant of the onion family with a bulbous root.

leer (*lēr*), *n.* a sly, sidelong look indicative of malice, triumph, or lasciviousness: *v. i.* to look with a leer.

lee-ward (*lē'wėrd*), *n.* in the direction toward which the wind blows: *n.* lee side.

left (*left*), *adj.* opposite to *right*: *n.* the side opposite to *right*: *p. t.* and *p. p.* of *leave*.

left-hand-ed (*'hand-ed*), *adj.* using the left hand with greater strength or dexterity than the right; awkward; malicious.

leg (*leg*,, *n.* one of the limbs by which men and animals walk, especially in man the portion of the limb between the knee and the ankle.

leg-a-cy (*leg'ā-si*), *n.* [*pl.* legacies (*-siz*)], a gift by will of money or property; bequest.

le-gal (*lē'gal*), *adj.* pertaining to law; permitted or authorized by law; legitimate.

le-gal-i-ty (*lē-gal'i-ti*), *n.* conformity to law.

★leg-ate (*leg'āt*, not *lē'gāt*), *n.* a papal ambassador; envoy.

le-ga-tion (*lē-gā'shun*), *n.* an embassy; ambassador; the official residence of an ambassador.

leg-end (*lej'end*), *n.* a romantic story; myth; fable; inscription, as on a coin. [FICTION.]

leg-er-de-main (*-ėr-de-mān'*), *n.* sleight of hand.

leg-gings (*leg'ingz*), *n. pl.* long gaiters.

leg-i-ble (*lej'i-bl*), *adj.* capable of being read; clear; distinct.

le-gion (*lē'jun*), *n.* a division of the ancient Roman army; a great number; host; suborder.

leg-is-late (*lej'is-lāt*), *v. i.* to make or enact a law: *v. t.* to effect by legislation.

leg-is-la-tion (*-lā'shun*), *n.* the act of making a law or laws.

le-git-i-ma-cy (*lē-jit'i-mā-si*), *n.* the state of being legitimate; lawfulness of birth.

le-git-i-mate (*'i-māt*), *adj.* lawful; born in wedlock; real; logically correct: *v. t.* to make, or sanction as, lawful; render legitimate.

leg-ume (*leg'yūm*), *n.* a two-valved seed vessel having its seeds attached to one side only, as a pea pod.

Lehigh river, Pa. Corruption of the Delaware word *lechau*, "a fork," a reference to this stream being one of the forks of the Delaware; also traceable as applied to the forked piece of land over which the Indians made a portage when coming down the river.

★lei-sure (*lē'zhur*), *n.* spare time: *adj.* free from business; unoccupied.

lem-on (*lem'un*), *n.* the acid fruit of *Citrus Limonum*; the color of a lemon: *adj.* pertaining to, or of the color of, a lemon.

lem-on-ade (*-ād*), *n.* a beverage of sweetened or aërated water flavored with lemon.

Lemuel (*lem'u-el*). From the Hebrew *L'muel*, from *l'mu-El*, "by God," *i. e.*, created by God.

lend (*lend*), *v. t.* [*p. t.* and *p. p.* lent, *p. pr.* lending], to grant to another for temporary use; accommodate: *v. i.* to make a loan.

length (*length*, not *lenth*), *n.* the measure of anything from end to end; extent; duration; reach.

length-y (*'i*), *adj.* long and tiresome.

le-ni-ent (*lē'ni-ent*), *adj.* mild; merciful.

len-i-ty (*len'i-ti*), *n.* mildness; humanity. [MERCY.]

lens (*lenz*), *n.* a convex, or concave, glass, adapted for changing the direction of rays of light; the crystalline humor of the eye.

Lent (*lent*), *n.* a fast of 40 days (excluding Sundays), from Ash Wednesday to Easter eve.

Leo (*lē'ō*) or **Leon** (*lē'on*). Latin, "a lion." Fr., *Léon;* It., *Leone;* Lat., *Leo*.

Leonard (*len'ėrd*). From the Old German name *Leonhard*, "as strong as a lion." Dutch, *Leonard;* Fr., *Léonard;* Ger., *Leonhard;* It., *Leonardo* or *Lionardo;* Lat., *Leonardus*.

le-o-nine (*lē'ō-nīn*), *adj.* like a lion; powerful; kingly.

Leonora. See *Eleanor*.

leop-ard (*lep'ėrd*), *n.* a large catlike beast of prey, with a beautiful spotted skin.

Leopold (*lē'ō-pōld*). Wachter renders this name "bold as a lion." It is doubtless the same name as the Old German *Leopold, Leupold, Leodpold, Luitpold;* Fr., *Léopold;* Ger., *Leopold;* It., *Leopoldo;* Lat., *Leopoldus*.

lep-er (*lep'ėr*), *n.* one affected with leprosy.

lep-ro-sy (*'rō-si*), *n.* [*pl.* leprosies (*-siz*)], a chronic skin disease characterized by ulcers and white scaly scabs.

le-sion (*lē'zhun*), *n.* injury; morbid change in a function or organism.

less (*les*), *adj.* (used as *comparative* of *little*), not so much; smaller: *adv.* in a smaller or lower degree: *n.* a smaller quantity: *suffix* meaning *absence of a quality, without*, as *soul*less, *worth*less, etc.

less-en (*'en*), *v. t.* to make less; reduce. [ABATE.]

less-er (*'ėr*), *adj.* a double comparative of *less*.

les-son (*les'n*), *n.* that which a pupil learns, or repeats, or does, for a tutor; exercise; precept.

lest (*lest*), *conj.* that not; for fear that.

let (*let*), *v. t.* [*p. t.* and *p. p.* let, *p. pr.* letting], to permit; grant to a tenant; lease; give out on contract: *v. i.* to be hired or leased; suffer something to be done: *n.* an obstacle.

le-thal (*lē'thal*), *adj.* deadly; fatal.

le-thar-gic (*lē-thär'jik*), *adj.* affected by lethargy; sluggish; drowsy; dull.

leth-ar-gy (*leth'ar-ji*), *n.* morbid drowsiness; unnatural prolonged slumber; apathy.

Le-the (*lē'thē*). In classic mythology, the stream of forgetfulness of the underworld, whose waters, when drunk, produced loss of memory; hence oblivion forgetfulness.

Letitia (*lē-tish'i-a* or *lē-tish'a*) or **Lettice** (*let'tis*). A feminine name derived from Latin, *lætitia*, "joy," "gladness," "mirth," Danish, *Lætitia;* Dutch, *Lætitia;* Old Fr., *Letice;* Lat., *Lætitia*.

let-ter (*let'ėr*), *n.* a mark or character used to represent a sound; written or printed communication; a printing type: *pl.* knowledge; erudition: *v. t.* to impress or inscribe letters upon.
Syn. LETTER, epistle. *Letter* is a term altogether familiar; it may be used for whatever is written by one friend to another; even those which were written by the ancients, as the *letters* of Cicero, Pliny, and Seneca; but in strict propriety those are entitled *epistles*, as a term most adapted to whatever has received the sanction of ages, and by the same rule, likewise, whatever is peculiarly solemn in its contents has acquired the same epithet, as the *epistles* of St. Paul.

Levant (*lē-vant'*). Levant means simply "the east," though it is generally confined in its use to the eastern parts of the Mediterranean, as the coasts of Egypt, Syria, and Asia Minor.

lev-ee (*lev'ē*), *n.* a morning reception held by a sovereign or personage of high rank; properly, one attended by gentlemen only; a river embankment: *v. t.* to embank.

lev-el (*'el*), *n.* a horizontal plane or line; surface without inequalities; an instrument for indicating a horizontal line or plane: *adj.* even; horizontal; smooth: *v. t.* to make even; point in taking aim.

lev-er (*lev'ėr* or *lē'vėr*), *n.* a bar of metal, etc., turning on a support (fulcrum) for raising a weight.

lev-er-age (*-āj*), *n.* the mechanical power gained by using a lever; lever action.

le-vi-a-than (*lē-vī'a-than*), *n.* a large unidentified aquatic animal; anything huge, as a whale, etc.

lev-i-ta-tion (*lev-i-tā'shun*), *n.* lightness; buoyancy.

lev-i-ty (*lev'i-ti*), *n.* lightness of disposition, conduct, etc.; inconsistency; trifling gayety; lightness of weight.

lev-y (*'i*), *v. t.* [*p. t.* and *p. p.* levied, *p. pr* levying], to raise or collect, as an army or tax; seize in execution: *v. i.* to make a levy: *n.* the act of raising money or men; amount or number raised.

lewd (*lūd*), *adj.* licentious; libidinous.

Lewellin (*le-wel'lin*). Means "like a lion." Lat., *Leolinus*.

Lewis or **Louis** (*lōō'is*). Like the French name, *Louis*, corrupted from *Ludovicus*, from the Old German name *Ludwig*, "illustrious warrior," or the "fortress or defense of the people." Dutch, *Lodewijk;* Fr., *Louis;* Ger., *Ludwig;* It., *Luigi* or *Lodovico*, or *Ludovico;* Lat., *Ludovicus;* Sp., *Luis;* Sw., *Ludwig*.

lex-i-cog-ra-pher (*leks-i-kog'rā-fėr*), *n.* the editor or compiler of a dictionary or lexicon.

lex-i-con (*i-kon*) *n.* A dictionary, as of Latin, Greek or Hebrew. [DICTIONARY.]

li-a-bil-i-ty (*lī-ā-bil'i-ti*), *n.* [*pl.* liabilities (*-tiz*)], the state of being liable: *pl.* debts.

li-a-ble (*'ā-bl*), *adj.* exposed to damage, danger, expense, etc.; contingently subject.

li-ar (*lī'ėr*), *n.* one addicted to lying.

li-ba-tion (*-bā'shun*), *n.* the act of pouring wine or oil on the ground, as a sacrifice to some deity, the liquid so poured out.

li-bel (*'bel*), *n.* defamation of character or reputation: *v. t.* to publish a libel against; defame the character of; exhibit a charge against in a court of law.

lib-er-al (*lib'ėr-al*), *adj.* generous; munificent; free from narrowness in ideas: *n.* an opponent of conservatism. [BENEFICENT, FREE.]

lib-er-al-i-ty (*-al'i-ti*), *n.* [*pl.* liberalities (*-tiz*)], the quality of being liberal; generosity; magnanimity; mental breadth.

lib-er-ate (*'ėr-āt*), *v. t.* to set free. [ABSOLVE.]

Liberia (*lī-bē'ri-a*). A republic on western coast of Africa. Name means "the country of the free." It was colonized by emancipated slaves.

lib-er-tine (*lib'ėr-tin*), *n.* a debauchee: *adj.* unrestrained, morally or socially; licentious.

lib-er-ty (*'ėr-ti*), *n.* [*pl.* liberties (*-tiz*)], freedom; special privilege or exemption; immunity. [FREEDOM.]

li-bid-i-nous (*li-bid'i-nus*), *adj.* lustful.

li-bra-ri-an (*-brā'ri-an*), *n.* the custodian of a library.

★li-bra-ry (*lī'brā-ri*, not *lī'brı*), *n.* [*pl.* libraries (*-riz*)], an arranged collection of books; the building where such a collection is kept.

li-bret-to (*-bret'tō*), *n.* a book containing the words of an opera, oratorio, etc.; the text itself.

li-cense (*lī'sens*), *n.* permission; leave; unrestrained liberty: *v. t.* to authorize by a legal permit.

li-cen-ti-ate (*-sen'shi-āt*), *n.* one licensed to preach or practice a profession.

li-cen-tious (*'shus*), *adj.* unrestrained, morally or legally; lascivious; dissolute.

★li-chen (*lī'ken* or *lich'en*), *n.* one of an order of cellular flowerless (cryptogamic) plants of fungoid nature growing parasitic on stones, algæ, etc.; a kind of skin eruption.

lick (*lik*), *v. t.* to pass the tongue over; lap up; vanquish; chastise: *v. i.* to make a licking movement: *n.* the act of licking; quick or careless stroke; superficial saline deposit.

Licking, Ky. So called from the translation of its Indian name *mahoninк*, "the place of the lick," referring to buffalo licks on its banks, now the noted Blue Lick springs.

★lic-o-rice (*lik'o-ris*, not *lik'ō-rish*), *n.* the root or inspissated juice of the licorice plant (*Glycyrrhiza glabra*).

lid (*lid*) *n.* a movable cover closing an aperture; top; eyelid.

lie (*lī*), *v. i.* [*p. t.* lay, *p. p.* lain, *p. pr.* lying], to rest in a recumbent position; lean or press; rest or remain.
Syn. LIE, lay. *To lie* is neuter, and desig-

nates a state; *to lay* is active, and denotes an action on an object; it is properly to cause *to lie;* a thing *lies* on the table; some one *lays* it on the table.

lie (*lī*), *v. i.* [*p. t.* and *p. p.* lied, *p. pr.* lying], to utter a falsehood; represent falsely: *n.* a falsehood; willful misstatement.

lief (*lēf*), *adv.* willingly; rather.

liege (*lēj*), *adj.* bound by feudal service or tenure: *n.* a vassal; liege lord, or sovereign.

lien (*lēn* or *lē'en*), *n.* a legal claim upon property; security for payment.

lieu (*lū*), *n.* place; stead.

lieu-ten-ant (*-ten'ant*), *n.* an officer ranking next below a captain in the army and a commander in the navy; a deputy.

life (*līf*), *n.* animate existence; vitality; union of soul and body; period between birth and death.

lift (*lift*), *v. t.* to raise from the ground; elevate: *v. i.* to exert strength in raising: *n.* the act of lifting; promotion; a machine for raising or lifting.

Syn. LIFT, heave, hoist. We *lift* with or without an effort; we *heave* and *hoist* always with an effort; we *lift* a child up to let him see anything more distinctly; workmen *heave* the stones or beams which are used in a building; sailors *hoist* the longboat into the water.

Ant. ABASE, degrade, lower.

lig-a-ment (*lig'a-ment*), *n.* a strong elastic tissue connecting the extremities of movable bones; bond or tie.

lig-a-ture (*lig'a-tūr*), *n.* a narrow bandage or tie; two or more letters cast on one shank (*fi*, *æ*); a slur, or notes joined by a slur.

light (*lit*), *n.* the imponderable agent by which objects are rendered visible by its action on the retina; day; that which emits light: *adj.* clear; bright; not heavy; unincumbered; gay; trifling; short in weight; well leavened and raised: *v. t.* to set fire to; inflame; illuminate: *v. i.* to receive or reflect; rest or settle; fall upon by chance; happen.

Light Brigade, Charge of the. A celebrated charge made by the Light Brigade of 670 men, under Lord Cardigan, the British commander, on a Russian battery at Balaklava, October 25, 1854.

light-en (*'en*), *v. t.* to make light; illuminate; flash out; render less heavy: *v. i.* to brighten; shine out.

light-house (*'hous*), *n.* a structure furnished with a brilliant light to indicate points of danger to mariners at night.

light-ning (*'ning*), *n.* a sudden flash of electricity, usually accompanied by thunder.

lig-ne-ous (*lig'nē-us*), *adj.* woody.

lig-num-vi-tæ (*-num-vī'tē*), *n.* the very heavy hard wood of a South American tree (*Guaicum officinale*) or of similar West Indian and Australasian trees.

like (*līk*), *adj.* similar; resembling; equal or nearly equal; disposed: *adv.* in the same manner as; probably: *v. t.* have a taste for; enjoy: *n.* a counterpart. [EQUAL, LOVE.]

lik-en (*lik'n*), *v. t.* to compare.

like-ness (*'nes*), *n.* similarity; portrait.

Syn. LIKENESS, resemblance, similarity or similitude. *Likeness* respects either external or internal properties; *resemblance* respects only the external properties; *similarity* respects the circumstances or properties; we speak of a *likeness* between two persons; of a *resemblance* in the cast of the eye; of a *similarity* in age and disposition. *Similitude* is a higher term than *similarity* when used in a moral sense.

Ant. DIFFERENCE, dissimilarity, unlikeness.

li-lac (*lī'lak*), *n.* a shrub of the genus Syringa, with pale pinkish purple flowers; a color.

Lillian. A feminine name, from the Latin *lilium*, "a lily."

Lil-li-pu-tian (*lil-i-pū'shan*), *adj.* very diminutive, from Swift's *Gulliver's Travels.* [Also *Lilliputian.*]

lil-y (*lil'i*), *n.* a plant of the genus Lilium, with bulbous roots and handsome flowers: *adj.* unsullied; lily-white.

Lima (*lī'ma*, Spanish *lē'ma*), **Peru.** Probably so named from *lomnech*, "a barren spot." Taylor says it is corruption of *Rimac*, the Indian name of the plain on which the city stands.

limb (*lim*), *n.* a jointed or articulated part of an animal body; branch of a tree; leg: *v. t.* to dismember.

lim-ber (*'bēr*), *n.* the detachable forepart of a gun carriage: *adj.* pliant: *v. t.* to attach a limber to (a gun carriage); make pliant.

lime (*līm*), *n.* a calcareous earth obtained by the action of heat upon limestone; bird lime; a tree of the orange kind yielding an edible juicy fruit; the linden tree: *v. t.* to supply lime to.

lime-light (*'līt*), *n.* a brilliant light produced by the action of lighted hydrogen and oxygen upon lime.

lim-er-ick (*lim'ēr-ik*), *n.* a jocose, usually punning, verse of five lines, the first, second and fifth lines of which rhyme.

lime-stone (*līm'stōn*), *n.* a rock having carbonate of lime as its basis.

lim-it (*lim'it*), *n.* a border or boundary; utmost extent: *v. t.* restrict. [BOUND, FINITE.]

lim-i-ta-tion (*-i-tā'shun*), *n.* restriction.

limn (*lim*), *v. t.* to paint or draw; illuminate, as books and manuscripts.

Limoges (*lē-mōzh'*). A city of east central France; so called from Lat., *Lemovicum*, "the dwelling of the Lemovici," or "dwellers among the elms."

li-mou-sine (*lē-mōō-zēn'*) *adj.* designating a type of motor car having a landau-like carriage body, but with the top projecting over the driver's seat: *n.* a motor car with a limousine body.

limp (*limp*), *adj.* flexible; flaccid: *n.* a halt in walking: *v. i.* to walk with a halt.

Lina. A feminine name derived from some name ending in *lina*, as *Carolina*, *Catalina*, *Paulina*; and perhaps sometimes from the Italian name *Madalena*, or the Spanish *Madelena*.

linch-pin (*linch'pin*), *n.* the pin which goes through the end of the axle of a wheel, and keeps it in its place.

Lincoln, Neb. At the time it was made the capital city it received the name Lincoln as a compliment to President Abraham Lincoln, having been previously named *Lancaster*.

Lincoln's Inn Fields. The largest square in London. It is near the junction of High Holborn and Chancery lane, and is surrounded by lawyers' offices, Lincoln's Inn, the Royal College of Surgeons and the Soane museum.

Linda. A feminine name, abbreviated from *Belinda*.

lin-den (*lin'den*), *n.* a tree with heart-shaped leaves, and small clusters of cream-colored flowers.

line (*lin*), *n.* length without breadth; a slender string or cord; fishing line; extended row; 1-12th of an inch; short letter; mark in the hand or face; descent: *v. t.* to draw lines upon; place along side by side; cover on the inside.

lin-e-age (*lin'ē-āj*), *n.* ancestral line of descent from a common progenitor; family.

lin-e-al (*'ē-al*), *adj.* composed of lines; in direct line from an ancestor.

lin-e-a-ment (*'ē-a-ment*), *n.* feature; outline.

lin-e-ar (*'ē-ēr*), *adj.* pertaining to, or composed of, lines; having a straight direction.

lin-en (*'en*), *n.* a cloth made of flax; articles made of linen: *adj.* made of, or resembling, linen.

lin-ger (*ling'gēr*), *v. i.* to loiter.

Syn. LINGER, tarry, loiter, lag, saunter. *To linger* is to stop altogether, or to move but slowly forward; *to tarry* is properly to suspend one's movements; the former proceeds from reluctance to leave the spot on which we stand; the latter from motives of discretion; *to loiter* is to move slowly and reluctantly; *to lag* is to move slower than others; *to saunter* is altogether the act of an idler; those who have no object in moving either backward or forward will *saunter* if they move at all.

Ant. HASTEN, hurry, quicken, speed.

lin-go (*ling'gō*), *n.* language; dialect.

lin-gual (*'gwal*), *adj.* pertaining to, or formed by, the tongue: *n.* a letter, or sound, so articulated, as *s*, *th*, etc.

lin-i-ment (*lin'i-ment*), *n.* a medicated liquid for rubbing into the skin.

lin-ing (*lin'ing*), *n.* an inside covering; contents.

link (*lingk*), *n.* a single ring or division of a chain; a land measure 7.92 inches; connection; *pl.* flat sandy soil; golfing grounds; *v. t.* to connect by, or as by, a link: *v. i.* to be connected.

li-no-leum (*li-nō'lē-um*), *n.* a floor cloth composed of ground cork, linseed oil, and chloride of sulphur.

lin-o-type (*lin'ō-tip*), *n.* a machine for composing and casting stereotyped words or lines for printing.

lin-seed (*lin'sēd*), *n.* the seed of flax, from which *linseed oil* is expressed.

lint (*lint*), *n.* scraped linen used for dressing wounds.

lin-tel (*lin'tel*), *n.* the horizontal top piece of a door or window.

li-on (*lī'un*), *n.* a large, powerful carnivorous mammal of the genus Felis, found in Africa and southern Asia: *pl.* noted persons or places: *adj.* (in composition) noble; majestic; courageous.

Lionardo. Same as *Leonardo*. [See *Leonard*.]

Lionel (*lī'ō-nel*). A name formed from a word, *leonellus*, a diminutive of the Latin *leo*, "a lion."

Lion of Lucerne (*lī'un ov lōō-sērn'*). A famous piece of sculpture, by Thorwaldsen, commemorating the heroism and devotion of nearly 800 Swiss guards who died to save Louis XVI., in the attack on the Tuileries, August 10, 1792. The colossal figure of the crouching lion, transfixed and dying but still faithfully defending the lilied shield of France, is carved in the round in a recess in the face of an upright, vine-draped rock, in a little park in Lucerne, Switzerland.

lip (*lip*), *n.* one of the two borders of the mouth; edge of anything; mouth; lip-like organ; speech: *v. t.* to touch with the lips; kiss; utter.

liq-ue-fac-tion (*lik-wē-fak'shun*), *n.* the process of liquefying; state of being melted.

liq-ue-fy (*'wē-fī*), *v. t.* to melt or make liquid: *v. i.* to become liquid.

liq-uid (*lik'wid*), *adj.* clear; tearful; not solid; readily flowing: *n.* liquid substance; one of the consonants *l*, *m*, *n*, *r*.

liq-ui-date (*'wi-dāt*), *v. t.* to pay off as a debt; arrange, as the affairs of a bankrupt.

liq-uor (*lik'ēr*), *n.* an alcoholic beverage; a liquid: *v. t.* to treat with a solution: *v. i.* to take intoxicating drinks. [*Slang.*]

Lisbon (*liz-bun*). The capital of Portugal. In Portuguese, *Lisboa*, is derived from the old name *Olisipo*, supposed to contain the Phenician word *hippo*, a "fortress," or "walled town."

lisle (*lil*), *n.* a fine thread or lace.

lisp (*lisp*), *v. i.* to pronounce *s* and *z* nearly like *th;* speak: *v. t.* to utter imperfectly or affectedly: *n.* the imperfect utterance of *s* and *z*.

lis-som (*lis'um*), *n.* supple; lithesome.

list (*list*), *n.* a catalogue, roll, or register; inclination to one side; small square molding: *pl.* an inclosure for a tournament: *v. t.* to catalogue, register, or enroll; cover with strips of cloth; sew together; cause to tilt over to one side; listen to: *v. i.* to enlist; choose; careen; hearken.

lis-ten (*lis'n*), *v. i.* to attend to closely, so as to hear; hearken.

list-less (*list'les*), *adj.* indifferent; languid. [ABSTRACTED, FAINT.]

lit-a-ny (*lit'a-ni*), *n.* a solemn responsive form of supplication.

li-ter (*lē'tēr*), *n.* [Fr.] in the metric system, a measure of capacity equal to 61.026 cubic inches, or a little more than one quart.

lit-er-al (*lit'ēr-al*), *adj.* consisting of, or expressed by, letters; following the exact words; exact; plain.

lit-er-a-ry (*'ēr-a-ri*), *adj.* pertaining to, or appropriate to, literature or men of letters; versed in, or engaged in, literature.

lit-e-ra-ti (*lit-e-rā'tī*), *n. pl.* the learned.

★**lit-er-a-ture** (*'ēr-a-tūr*), *n.* the written or printed literary productions of a country or period; literary work; learning.

lithe (*lith*), *adj.* supple; pliant.

lithe-some (*'sum*), *adj.* nimble; lissom.

lith-o-graph (*lith'ō-graf*), *n.* a print reproduced from a drawing on stone: *v. t.* to draw, or engrave on stone, and transfer to paper.

lith-og-ra-phy (*-og'ra-fi*), *n.* the art of making a design on stone so that ink impressions can be taken from it.

lit-i-gate (*lit'i-gāt*), *v. t.* to contest in a court of law: *v. i.* to engage in a lawsuit.

li-ti-gious (*li-tij'us*), *adj.* given to carrying on lawsuits; quarrelsome.

lit-mus (*lit'mus*), *n.* a purple dye, obtained from certain lichens.

lit-ter (*lit'ēr*), *n.* straw, hay, etc., used for horses' bedding; a framework with a bed, for carrying a person in a recumbent position; state of confusion or untidiness; number of young produced at one birth, as pigs, etc.: *v. t.* to supply with litter; cover with straw; scatter about carelessly: *v. i.* to bring forth a litter of young.

lit-te-ra-teur (*lē-tā-ra-tēr'*), *n.* a literary man.

lit-tle (*lit'l*), *adj.* [*comp.* less, *superl.* least], small in size, quantity, duration, or importance; insignificant; young; mean: *adv.* in a small degree; not much: *n.* a small size, quantity, etc.

Syn. LITTLE, small, diminutive. What is *little* is so in the ordinary sense in respect to size; it is properly opposed to great; the *small* is that which is less than others in point of bulk; it is opposed to the large; the *diminutive* is that which is less than it ought to be; as a person is said to be *diminutive* in stature who is below the ordinary stature.

Ant. GREAT, large, broad, noble.

Little Rock, Ark. Name a local application from the town's occupying the top of a rocky cliff, which is much more conspicuous than the other cliffs of the river bank; also traceable from an igneous slate rock in the river bed at this point, visible only at low stages of the water.

li-tur-gic (*li-tēr'jik*), *adj.* pertaining to a liturgy. [Also *liturgical.*]

lit-ur-gy (*lit'ēr-ji*), *n.* [*pl.* liturgies (*-jiz*)], the prescribed forms or ritual for public worship.

live (*liv*), *v. t.* to exist or have life; pass or enjoy life; reside; endure; subsist: *adj.* (*līv*) having life; quick; effective; ignited; kept for use; energetic. [ABIDE.]

live-li-hood (*līv'li-hood*), *n.* means of living.

live-ly (*'li*), *adj.* active; brisk; animated; sprightly; vivid; forcible. [ACTIVE.]

live-oak (*'ōk*), *n.* an American oak valuable for shipbuilding.

liv-er (*liv'ēr*) *n.* one who lives; a glandular organ secreting bile.

liv-er-y (*'ēr-i*), *n.* [*pl.* liveries (*-iz*)], a particular costume worn by servants; the state of being kept and fed at a stipulated rate, as horses.

Livia (*liv'i-a*). From the Roman *Livia*. Fr., *Livie;* It., *Livia;* Lat., *Livia*.

liv-id (*'id*), *adj.* black and blue; discolored as by a blow; ashy pale.

liz-ard (*liz'ērd*), *n.* a reptile having a slender scaly body, and four well-developed limbs, each with five toes.

Llano Estacado (*lä'nō äs-tä-kä'dō*). An elevated plateau in northwest Texas and New Mexico. Spanish words, meaning "staked plain," applied to this plateau on account of the stake-like boles of the yucca plant which grows there.

lla-nos (*'nōz*), *n. pl.* the extensive level grassy plains or steppes of South America.

Llewellyn (*lū-el'lin*). From the Celtic, meaning "lightning."

Lloyd's (*loidz*). A London underwriters' association for the furtherance of commerce, especially for marine insurance and the publication of shipping news. It originated in meetings at Lloyd's coffee house about 1688.

lo (*lō*), *interj.* behold! see!

load (*lōd*), *v. t.* to put on as much as can be carried; charge, as a gun: *n.* a burden; weight; freight; incumbrance. [WEIGHT.]

load-stone (*'stōn*), *n.* magnetic oxide of iron; magnet. [Also *lodestone.*]

loaf (*lōf*), *v. i.* to idle away time: *n.* [*pl.* loaves (*lōvz*)], a large cake of bread.

loam (*lōm*), *n.* rich vegetable mold, mixed with clay and sand: *v. t.* to cover with loam.
loan (*lōn*), *n.* a sum of money lent for a period, repayable with interest; something granted for temporary use: *v. t.* to lend money.
loath (*lōth*), *adj.* unwilling; reluctant.
loathe (*lōth*), *v. t.* to regard with abhorrence or disgust; detest: *v. i.* to feel nausea. [ABHOR, DISGUST.]
lob-by (*lob'i*), *n.* [*pl.* lobbies (*'iz*)], a small hall or waiting room; passage opening before an apartment; that part of the hall of a legislative chamber to which the public have access: *v. i.* [*p. t.* and *p. p.* lobbied, *p. pr.* lobbying], to solicit the votes of members of a legislature to carry a particular measure.
lob-by-ist (*-ist*), *n.* a person not a member who tries to influence the votes of members of a legislative body.
lobe (*lōb*), *n.* any rounded and projecting part; a subdivision of an organ.
lob-ster (*lob'stĕr*), *n.* an edible marine decapod crustacean.
lo-cal (*lō'kal*), *adj.* pertaining to place; restricted to a particular place: *n.* a newspaper paragraph of local interest; a suburban train.
lo-cal-i-ty (*-kal'i-ti*), *n.* [*pl.* localities (*-tiz*)], existence in, or limitation to, a place; position.
lo-cal op-tion (*op'shun*), the restriction of the sale of intoxicating liquors by the majority of the voters of a district.
lo-cate (*lō'kāt*), *v. t.* to place; establish; mark out and determine the position of: *v. i.* to settle.
lo-ca-tion (*-kā'shun*), *n.* place; plot of ground marked out by boundaries.
lock (*lok*), *n.* a mechanical device furnished with a spring and bolt for fastening a door; tress: *v. t.* to fasten or secure with a lock; shut up: *v. i.* to become fast by a lock.
lock-et (*'et*), *n.* a small gold or silver case attached to a necklace or chain.
lock-jaw (*'jaw*), *n.* a spasmodic disease by which the lower jaw is drawn up and becomes fixed; tetanus.
lock-out (*'out*), *n.* the exclusion of workmen from a factory by an employer to compel them to accept his terms: *v. t.* to close a factory against.
lock-up (*'up*), *n.* a temporary prison; calaboose; jail.
lo-co-mo-tion (*lō-kō-mō'shun*), *n.* the act or power of moving from place to place.
lo-co-mo-tive (*'tiv*), *adj.* pertaining to locomotion; not stationary: *n.* a steam engine for drawing railway cars.
lo-cust (*'kust*), *n.* a migratory and destructive winged insect resembling the grasshopper; a tree of the bean family.
lo-cu-tion (*-kū'shun*), *n.* speech; phrase.
lode (*lōd*), *n.* a vein containing metallic ore.
lodge (*loj*), *v. t.* to furnish with a temporary dwelling: *v. i.* to reside for a time; be deposited or fixed: *n.* a small house in a park; hut of an American Indian.
Lodovico or **Lodovic.** See *Lewis.*
loft (*loft*), *n.* a room directly beneath a roof.
loft-y (*'i*), *adj.* [*comp.* loftier, *superl.* loftiest], very high; proud; stately; sublime. [HIGH.]
log (*log*), *n.* an undressed piece of timber; a log-book: *v. t.* to enter in a log-book.
log-a-rithm (*'a-rithm*), *n.* the exponent of the power to which a fixed number (the base) must be raised in order to produce a given number.
log-book (*'book*), *n.* a ship's diary, or journal, recording the progress of a vessel.
log-ger-head (*'ĕr-hed*), *n.* a blockhead; dolt.
★**log-gia** (*lod'jā*), *n.* a covered gallery or portico.
log-ic (*loj'ik*), *n.* the science of correct reasoning, especially of inference.
log-ic-al (*loj'i-kal*), *adj.* pertaining to, or used in, logic; according to the rules of logic.
lo-gi-cian (*lō-jish'un*), *n.* one skilled in logic.
lo-gis-tics (*-jis'tiks*), *n. pl.* sexagesimal arithmetic; the science of moving and supplying armies.
log-rol-ling (*log'rōl-ing*), *n.* the act of rolling logs; united action in carrying legislative schemes for mutual benefit.
loin (*loin*), *n.* the lower part of the back of a quadruped or man: *pl.* the reins.
loi-ter (*loi'tĕr*), *v. i.* to hide (with *away*): *v. i.* to spend time idly; delay; linger. [LINGER.]
loll (*lol*), *v. i.* to lounge at ease; hang out the tongue.
Lombard (*lom'bärd*) **street.** The name of a street in the city of London, often used figuratively to mean the banking or financial world.
Lombardy (*lom'bär-di*). The country of the *Longobardi*, so called from their long beards. A territorial division of northern Italy.
London. The origin of this name cannot be ascertained with any certainty. Its most probable derivation is from *Llyn-Din*, the "town on the lake." The capital of England.
lone (*lōn*), *adj.* solitary; retired; by one's self; unmarried or in widowhood.
lone-ly (*'li*), *adj.* [*comp.* lonelier, *superl.* loneliest], deserted; solitary; unfrequented.
lone-some (*'sum*), *adj.* secluded from society; depressed; unfrequented; drearily solitary.
long (*long*), *adj.* not short; extended in time, or length: *adv.* to a great length or period: *v. i.* to desire eagerly. [DESIRE, EAGER.]
★**lon-gev-i-ty** (*lon-jev'i-ti*), *n.* extended age.
long-hand (*lông'hand*), *n.* ordinary handwriting, as distinguished from *shorthand.*
Long Island, N. Y. Name applied by the Dutch in reference to its long and narrow conformation, *Lange Eylandt.*
Long Island sound. The arm of the Atlantic separating Long Island from the mainland.
lon-gi-tude (*lon'ji-tūd*), *n.* distance east and west on the earth's surface measured from a meridian or place, estimated in degrees; on the ecliptic, distance in degrees from the vernal equinox.
look (*look*), *v. i.* to direct the eye to anything, in order to view it; direct the mind or attention to; appear: *v. t.* to turn the eyes upon: *n.* the act of looking; mien; aspect.
Syn. LOOK, glance, appear. We speak of taking a *look*, or catching a *glance; appearance* implies the simple act of coming into sight.
Lookout, Cape, N. C. Name traceable to coast captains, who, when this land was seen, were to be on the "lookout" for the stormy Cape Hatteras and its long shoals.
loom (*lōōm*), *n.* a frame or machine for weaving cloth.
loon (*lōōn*), *n.* the great northern diver.
loon-y (*'i*), *adj.* crazed.
loop (*lōōp*), *n.* a folding or doubling of string, rope, etc.
loop-hole (*'hōl*), *n.* a narrow aperture for observation or defense; means of evasion.
loose (*lōōs*), *adj.* not fast; unbound; not fixed; not tight: *v. t.* to set free; unbind; disengage; relax. [SLACK.]
loos-en (*lōōs'n*), *v. t.* to free from tightness, restraint, or tension.
loot (*lōōt*), *v. t.* to pillage or plunder, especially a captured city: *n.* booty thus taken.
lop (*lop*), *v. t.* to cut off (a part of anything), especially branches of a tree: *v. i.* to hang down.
lop-sid-ed (*'sīd-ed*), *adj.* heavier on one side.
lo-qua-cious (*lō-kwā'shus*), *adj.* talkative.
lo-quac-i-ty (*-kwas'i-ti*), *n.* talkativeness.
Lora. A form of *Laura*, which occurs as early as 1208.
lord (*lôrd*), *n.* a ruler or governor; master; a baron in the British peerage: *v. t.* to invest with authority: *v. i.* to domineer. [IMPERIOUS.]
lore (*lôr*), *n.* learning; instruction; space between the eye and bill of a bird.
Lorenz or **Lorenzo.** See *Laurence.*
Loretta. A diminutive of *Lora.*
★**lor-gnette** (*lôr-nyet'*), *n.* a long-handled opera glass; a pair of eyeglasses fixed to a long handle, into which they shut.
lorn (*lôrn*), *adj.* forsaken; forlorn.
Los Angeles (*lōs an'jel-ez*, Spanish *lōs ăng'hel-es*). A city and county of southern California. Originally called by the Spaniards *Pueblo de la Reina de los Angeles* (the town of the queen of the angels), hence *Los Angeles*, "the angels."
lose (*lōōz*), *v. t.* to be deprived of; cease to have in possession: *v. i.* to fail of success; yield.
Syn. LOSE, miss. What is *lost* is supposed to be entirely and irrecoverably gone; but what is *missed* may be only out of sight or not at hand at the time when it is wanted.
Ant. ADVANTAGE, gain, profit.
loss (*lôs*), *n.* detriment; injury; privation; failure; defeat; that which is lost.
lot (*lot*), *n.* fortune; destiny; portion or parcel: *v. t.* to separate into lots; assign; catalogue. [DESTINY.]
lo-tion (*lō'shun*), *n.* a medicated fluid for outward application.
lot-ter-y (*lot'ĕr-i*), *n.* [*pl.* lotteries (*-iz*], a distribution of prizes by chance; drawing of lots.
Lotty. A feminine name corrupted from *Charlotte.*
lo-tus (*lō'tus*), *n.* a flower of a genus of the waterlily family, especially the sacred lotus of the ancient Nile.
loud (*loud*), *adj.* high or full sounding; noisy; ostentatious in dress or manner.
Louis. See *Lewis.*
Louisa (*lōō-ē'za*). A comparatively modern name formed from *Lewis.* Fr., *Louise;* Ger., *Luise;* It. *Luigia;* Lat., *Luisa;* Sp., *Luisa;* Sw., *Ludovika.*
Louise (*lōō-ēz'*). See *Louisa.*
Louisiana (*lōō-ē-zē-a'nā*, not *lōō-ē-zē-an'a*). Named by La Salle in honor of Louis XIV., king of France. One of the gulf states of the United States.
Louisville (*lōō'i-vil, lōō'is-vil*), **Ky.** Name given by act of the Virginian legislature in 1780, in honor of Louis XVI. of France, then assisting the American colonies in their revolutionary struggle.
lounge (*lounj*), *v. i.* to saunter about in a lazy manner; loll.
louse (*lous*), *n.* [*pl.* lice (*lis*)], a parasitic insect of various species, especially those of the genus Pediculus, parasitic on man.
lout (*lout*), *n.* an awkward fellow.
Louvre (*lōō'vr*). A castle, in Paris, of the kings of France from or before the thirteenth century, and the chief royal palace until Louis XIV. built Versailles. A great part of the interior has been occupied since 1793 by the famous museum, and successive governments have employed the best artists at their command for its decoration.
lov-a-ble (*luv'a-bl*), *adj.* worthy of love.
love (*luv*), *n.* a strong feeling of affection, especially to one of the opposite sex: *v. t.* to regard with strong affection: *v. i.* to be in love; have strong affection.
Syn. LOVE, affection, attachment, attraction, charity, devotion, fondness, friendship, liking, regard, tenderness. *Affection* is kindly feeling, deep, tender, and constant, going out to some person or object. *Love* is an intense and absorbing emotion, drawing one toward a person or object; it is the yearning or outgoing of soul toward something that is regarded as excellent, beautiful, or desirable; *love* may be briefly defined as strong and absorbing *affection* for, and *attraction* toward, a person or object. *Charity* has so far swung aside from this original meaning that probably it never can be recalled; *love* is more intense, absorbing, and tender than *friendship; love* normally leads to marriage, and subsists throughout all happy wedded life. *Love* can never properly denote mere animal passion; *love* of articles of food is better expressed by *liking*, as *love*, in its full sense, expresses something spiritual and reciprocal, such as can have no place in connection with objects that minister merely to the senses. [See *admire.*]
love-feast (*luv'fēst*), *n.* a religious feast of the nature of the Agape.
love-ly (*'li*), *adj.* exciting love or admiration; amiable; beautiful: *adv.* so as to inspire love or admiration.
low (*lō*), *adj.* not high; depressed; shallow; not noisy; subdued: *adv.* not on high; deeply; softly: *v. i.* o bellow like cattle.
low church (*church*), pertaining to the evangelical section of the English church, or to its doctrines.
Lowell (*lō'el*), **Mass.** Named from Francis Cabot Lowell of Boston, who was distinguished by his successful effort in introducing the cotton manufacture into the states. Indian name of locality, *Wamasit.*
low-er (*'ĕr*), *v. t.* to lessen or bring down: *v. i.* to become lower; sink; (*lou'er*) to appear dark, gloomy, or threatening. [ABASE].
low-er-most (*lō'ĕr-mōst*), *adj.* lowest.
low-ing (*'ing*), *n.* the bellow of cattle.
low-land (*'land*), *adj.* pertaining to a low or level country: *n. pl.* a level country.
low-li-ness (*'li-nes*), *n.* the state of being lowly.
low-ly (*'li*), *adj.* [*comp.* lowlier, *superl.* lowliest], low in rank or size; humble; modest.
loy-al (*loi'al*), *adj.* faithful in allegiance to one's sovereign or country; true to plighted faith or duty.
loy-al-ist (*-ist*), *n.* one who adheres to and supports the authority of his sovereign or country.
loz-enge (*loz'enj*), *n.* an oblique-angled parallelogram; a rhomb; a sweetmeat.
lub-ber (*lub'ĕr*), *n.* an awkward, clumsy fellow; a raw sailor.
lu-bri-cate (*lū'bri-kāt*), *v. t.* to make smooth or slippery.
Lucerne (*lōō-sĕrn'*). A canton of Switzerland. Named from a lighthouse or beacon, *lucerna*, formerly placed on a tower in the middle of the river Rheus.
Lucian (*lū'shi-an* or *lū'shan*). From the Latin, meaning "light." Fr., *Lucien;* It., *Luciano;* Lat., *Lucianus.*
lu-cid (*'sid*), *adj.* clear; readily understood; shining; transparent. [CLEAR.]
lu-ci-fer, (*'si-fĕr*), *n.* a match ignited by friction.
Lucifer. Venus, as the morning star; Satan.
Lucile (*lū-sēl'*). A feminine name formed from *Lucilius*, name of the celebrated Roman satirist; derived, no doubt, from *Lucius.*
Lucius (*lū'shi-us*). The Roman name is said to be derived from *lux, lucis*, "light." Fr., *Luce* or *Lucius;* Ger., *Lucius;* It., *Lucio;* Lat., *Lucius.*
luck (*luk*), *n.* casual event or accident; fortune, either good or bad; success.
Lucknow (*lŭk'nou*, commonly *luk'nō*). A division and city of British East India. From the native name *laksneanau'i*, "the fortunate."
luck-y (*'i*), *adj.* [*comp.* luckier, *superl,* luckiest], having good luck or fortune; successful; auspicious.
lu-cra-tive (*lū'krā-tiv*), *adj.* profitable.
Lucretia (*lū-krē'shi-ā*), or **Lucrece** (*lū'krēs*). A name derived from *Lucretia*, a celebrated Roman lady, daughter of Lucretius, and wife of Tarquinius Collatinus.
Lucy or **Lucie** (*lū'si*). The feminine of *Lucius.* Dutch, *Lucie;* Fr., *Lucie;* Ger., *Lucie;* It., *Lucia;* Lat., *Lucia;* Sp., *Lucia.*
lu-di-crous (*'di-krus*). *adj.* exciting mirth; comical; droll. [ABSURD.]
Ludovico or **Ludivicus.** See *Lewis.*
Ludwig. See *Lewis.*
luff (*luf*), *n.* the act of sailing close to the wind; luff-tackle: *v. i.* to steer nearer to the wind.
lug (*lug*), *v. t.* to pull or draw along: *v. i.* to drag move heavily; pull laboriously.
lug-gage (*'āj*), *n.* effects of a traveler; baggage.
lu-gu-bri-ous (*lū-gū'bri-us*), *adj.* mournful.
Luigi. See *Lewis.*
Luise. See *Louisa.*
Luke. From the Latin name *Lucas*, meaning a "light." Some maintain that the original name was *Lucius.* Danish, *Lucas;* Dutch, *Lucas;* Fr., *Luc;* Ger., *Lucas;* Hung., *Lucats;* It., *Luca;* Lat., *Lucas;* Sw., *Lucas.*
luke-warm (*lūk' ărm*), *adj.* moderately warm.
lull (*lul*), *v. t.* to soothe to sleep; quiet: *v. i.* to become calm: *n.* abatement; temporary calm.
lull-a-by (*'a-bī*), *n.* [*pl.* lullabies (*-biz*)], a cradle-song.
lum-ba-go (*lum-bā'gō*), *n.* rheumatism of the muscles of the loins.
lum-ber (*'bĕr*), *n.* rubbish; forest timber sawed for market: *v. i.* to cut down timber and prepare it for market.
lu-mi-na-ry (*lū'mi-nā-ri*), *n.* [*pl.* luminaries (*-riz*)], a body emitting light, especially a heavenly body

lu-mi-nous (*lū'mi-nus*), *adj.* emitting or radiating light; bright; clear; perspicuous.
lump (*lump*), *n.* a small shapeless mass; aggregate; gross; a swelling: *v. t.* to throw or unite in the gross.
lu-na-cy (*lū'nā-si*), *n.* [*pl.* lunacies (*-siz*)], mental unsoundness: *adj.* pertaining to lunacy, or to lunatics.
lu-nar (*'nēr*), *adj.* pertaining to, measured by, or influenced by, the moon: *n.* lunar distance.
lu-na-tic (*'nā-tik*), *adj.* affected with, or characteristic of, lunacy: *n.* one who is insane.
lunch (*lunch*), *n.* a light meal between breakfast and dinner. [Also *luncheon*.] *v. i.* to take lunch.
lung (*lung*), *n.* one of two organs of respiration in air-breathing vertebrates.
lunge (*lunj*), *n.* a sudden thrust or pass with the sword; sudden lurch: *v. i.* to make a lunge.
lurch (*lėrch*), *n.* a sudden roll to one side, as of a ship; tendency: *v. i.* to roll suddenly to the one side.
lure (*lūr*), *v. t.* to allure: *n.* anything used as an enticement; bait.
lur-id (*'id*), *adj.* grayish-orange; wan; ghastly; pale; gloomy.
lurk (*lėrk*), *v. i.* to lie in wait; be concealed.
lus-cious (*lush'us*), *adj.* sweet to excess; delightful to the taste or sense; fulsome.
lush (*lush*), *adj.* rich and juicy: *n.* intoxicating drink.
lust (*lust*), *n.* strong desire to possess or enjoy; concupiscence: *v. i.* to desire strongly; have inordinate desires (with *after*).
lus-ter (*lus'tėr*), *n.* brightness; splendor; brilliancy of reflected light; renown.
lus-tral (*lus'tral*), *adj.* pertaining to, or used in, purification.
lust-y (*'i*), *adj.* [*comp.* lustier, *superl.* lustiest], robust; vigorous; healthy.
lute (*lūt*), *n.* a stringed musical instrument of the guitar family.
Lu-ther-an (*lōō'thėr-an*), *adj.* pertaining to Luther, the German reformer, or to the Lutheran church and its doctrines: *n.* a member of the Lutheran church.
Luxembourg (*luks'em-bûrg*, Dutch *lūks'em-burg*), **Palace of the.** A palace in Paris, built by Debrosse (1615-20) for Maria de' Medici.
Luxor (*luks'ôr, lōōks'ôr*). From *El-Kasur*, "the palaces." A village in upper Egypt, situated on the Nile, on part of the site of the ancient Thebes. It is celebrated for its antiquities.
lux-u-ri-ant (*lugz-ū'ri-ant*), *adj.* characterized by luxuriance; superabundant; superfluous. [EXUBERANT.]
lux-u-ri-ate (*'ri-āt*), *v. i.* to grow exuberantly; live luxuriously; indulge unrestrainedly.
lux-u-ri-ous (*'ri-us*), *adj.* pertaining to luxury; indulging in, or administering to, luxury.
lux-u-ry (*luk'shū-ri*), *n.* extravagant indulgence in the pleasures of the senses, dress, etc.
ly-ce-um (*lī-sē'um*), *n.* a literary seminary; an academy; a literary association.
Lycoming (*lī-kom'ing*) **river, Pa.** Adaptation of the Indian name *legaui-hanne*, *i. e.*, "sandy stream."
Lydia (*lid'i-ā*). A Latin name mentioned in *Horace;* so called as coming from *Lydia*, in Asia Minor. Danish, *Lydia;* Dutch, *Lydia;* Fr., *Lydie;* Gr., *Ludia;* It., *Lidia;* Lat., *Lydia.*
lye (*lī*), *n.* an alkaline solution.
ly-ing-in (*lī-ing-in'*), *adj.* pertaining to childbirth: *n.* parturition.
lymph (*limf*), *n.* a colorless alkaline nutritive fluid in animal bodies.
lynch (*linch*), *v. t.* to judge and punish by lynch law.
Lynchburg, Va. From the origina patentee, John Lynch, brother of Charles Lynch, the reputed originator of what is known as "lynch law."
lynch law. The practice of punishing men for crimes or offenses by private, unauthorized persons, without a legal trial.
Lynn, Mass. So called from an English town of the same name. The Anglo-Saxon meant, originally, "deep pool."
lynx (*links*), *n.* a fierce catlike animal, proverbial for its keenness of sight.
lyre (*līr*), *n.* a musical instrument of the harp kind.
lyr-ic (*lir'ik*), *adj.* pertaining to, or adapted to singing to, a lyre: *n.* a lyric composition.

M

Mabel, Mabell (*mā'bel*). A feminine name derived from *Mabilia*, Latinized from *Amabel*, a corruption of the French *animable*, "lovely." Lat., *Mabilia*, or *Amabilis.*
mac-ad-am-ize (*mak-ad'am-īz*), *v. t.* to cover (a road) with small broken stone, so as to form a smooth hard, rounded, surface.
Macao (*mā-kā'ō, mā-kon'*). A Portuguese city in China. Anciently there was a temple here sacred to an idol named Ama.
mac-a-ro-ni (*mak-a-rō'ni*), *n.* a paste composed chiefly of fine flour and made into long thin tubes.
mac-a-roon (*-rōōn'*), *n.* a small cake made of flour, eggs, almonds, and sugar.
mace (*mās*), *n.* a massive staff usually surmounted with a crown; a heavy billiard cue.
mac-er-ate (*mas'ėr-āt*), *v. t.* to soften or separate the parts of by steeping in a fluid; mortify or harass.
Mach-i-a-vel-ian (*mak-i-ā-vel'yan*), *adj.* crafty; double-dealing: *n.* a cunning, unprincipled politician.
mach-i-na-tion (*mak-i-nā'shun*), *n.* a plot; artifice.
ma-chine (*mā-shēn'*), *n.* any contrivance to increase and regulate motive power; an engine.
ma-chin-ist (*'ist*), *n.* a constructor of machines; one skilled in the principles of machinery.
★**mack-er-el** (*mak'ėr-el*, not *mak'rel*), *n.* an edible marine fish, mottled with green and blue.
Mackinac. County in Michigan and town in same county. Name derived from the Indian word *michilimackinac*, meaning "island of the great turtle," or in other dialects, "island of the giant fairies."
Mackinaw straits. Strait connecting Lakes Michigan and Huron. Name has same origin as *Mackinac.*
mack-in-tosh (*mak'in-tosh*), *n.* an india-rubber waterproof overcoat.
Macon (*mā'kun*), **Ga.** Named in honor of Hon. Nathaniel Macon of North Carolina.
mad (*mad*), *adj.* [*comp.* madder, *superl.* maddest], mentally disordered or distracted; insane.
Madagascar. Properly *Malagasy*, the "island of the Malagese," because the natives belong to the Malay race. An island east of southern Africa.
mad-am (*mad'am*), *n.* [*pl.* mesdames (*mā-dām'*)], a complimentary title, or form of courteous address to a lady.
mad-den (*'n*), *v. t.* to make mad or furious: *v. i.* to become mad or furious.
ma-dei-ra (*mā-dē'rā*), *n.* a rich wine made in the island of Madeira.
Madeira (Port. *mā-dā'ē-rā*). A Portuguese term signifying "timber"; indicating that the island was formerly covered by an immense forest. One of a group of islands of the same name in Atlantic west of Africa.
Madeline. A feminine name softened down from *Magdalen.*
ma-de-moi-selle (*mā-dm-wā-zel'*), *n.* [Fr.] a title of courtesy given in France to a young lady.
Madge. A feminine baptismal name derived from *Margaret.*
mad-ness (*mad'nes*), *n.* insanity.
Syn. MADNESS, frenzy, rage, fury. *Madness* is a confirmed derangement in the organ of thought; *frenzy* is only a temporary derangement from the violence of any disease or other cause. *Rage* refers more immediately to the agitation that exists within the mind; *fury* refers to that which shows itself outwardly; a person contains or stifles his *rage;* but his *fury* breaks out into some external mark of violence.
ma-don-na (*mā-don'nā*), *n.* [*pl.* madonnas (*'nāz*)], a picture of the Virgin Mary, usually with the infant Christ.
Madrid (*mā-drid'*, Spanish *mā-drēth'*). Capital of Spain since 1560. The name is usually explained from the Arabic *madarat*, a "town."
Mælstrom (*māl'strum*). A celebrated whirlpool or violent current in the Arctic Ocean, near the western coast of Norway, between the islands Moskenaso and Varo. Etymologically it is the "grinding stream," from the Norwegian *male*, "to grind."
mag-a-zine (*mag-a-zēn'*), *n.* a warehouse; chamber in a gun; a periodical literary or scientific publication.
Magdalen (*mag'dā-len*) or **Magdalene.** A name derived from *Mary Magdalen*, meaning "of Magdala," a place in Palestine. Dutch, *Magdalena;* Fr., *Madeleine* or *Madelene;* Ger., *Magdalena;* It., *Maddalena* or *Madalena;* Lat., *Magdalena;* Sp., *Magdalena.*
ma-gen-ta (*mā-jen'tā*), *n.* a red aniline dye.
mag-got (*mag'ot*), *n.* the footless larva of a fly; grub; whim.
mag-ic (*maj'ik*), *n.* the pretended art of working by the power or assistance of supernatural beings; *adj.* pertaining to, produced by, or exercising, magic.
ma-gi-cian (*mā-jish'an*), *n.* one skilled in magic.
mag-ic lan-tern (*maj'ik lan'tėrn*), an optical instrument for producing magnified objects on a screen.
mag-is-te-ri-al (*maj-is-tē'ri-al*), *adj.* pertaining to, or suitable to, a master or magistrate; authoritative.
mag-is-tra-cy (*'is-trā-si*), *n.* [*pl.* magistracies (*-siz*)], the office or dignity of a magistrate; magistrates collectively.
mag-is-trate (*'is-trāt*), *n.* a civil officer invested with certain judicial and executive powers.
★**Mag-na Char-ta** (*mag'nā kär'tā*). The Great Charter, forming the basis of civil liberty, granted by King John of England to the barons, 1215. Also the Great Charter granted by Henry III. and confirmed by Edward I.
mag-nan-i-mous (*-nan'i-mus*), *adj.* great of mind; elevated in soul or sentiment; generous.
mag-nate (*'nāt*), *n.* a person of rank or distinction; nobleman.
mag-ne-si-a (*-nē'shi-ā*), *n.* a white tasteless earthy powder, the oxide of magnesium.
mag-net (*'net*), *n.* the loadstone; a magnetized steel bar.
mag-net-ic (*'ik*), *adj.* pertaining to, exhibiting, or produced by, the magnet or magnetism.
mag-net-ism (*'net-izm*), *n.* that property possessed by various bodies, as iron or steel, of attracting or repelling each other according to certain physical laws.
mag-nif-i-cence (*mag-nif'i-sens*), *n.* grandeur of appearance; splendor; pomp.
Syn. MAGNIFICENCE, splendor, pomp. *Magnificence* lies not only in the number and extent of the objects presented, but in the degree of richness as to their coloring and quality; *splendor* is but a characteristic of *magnificence*, attached to such objects as dazzle the eye by the quantity of light, or the beauty and strength of coloring; *pomp* signifies in general formality and ceremony.
mag-nif-i-cent (*'i-sent*), *adj.* grand in appearance; splendid; pompous; sublime.
mag-ni-fy (*'ni-fī*), *v. t.* to make great or greater; increase the apparent dimensions of.
mag-nil-o-quent (*-nil'ō-kwent*), *adj.* pompous in style or speech; bombastic.
mag-ni-tude (*'ni-tūd*), *n.* comparative size or bulk; extent of dimensions; importance.
★**mag-no-li-a** (*-nō'li-ā*), *n.* a handsome sweet-scented flowering shrub.
mag-pie (*'pi*), *n.* a chattering bird of the crow genus.
Mag-yar (*'yär*), *adj.* pertaining to the Hungarian race or language.
ma-hog-a-ny (*mā-hog'ā-ni*), *n.* a tree of tropical America yielding a dark reddish-brown wood, used for furniture; a dining table.
Mahony (*mā-hō'ni*) or **Mahoning river, Pa.** Name derived from the Delaware Indian word, *mahonink*, "at the lick."
maid (*mād*), *n.* a young unmarried woman.
maid-en (*'en*), *n.* an unmarried woman; virgin; girl: *adj.* pertaining to, or like, a maiden; pure; innocent; unsullied; unused.
maid-en-hair (*-hâr*), *n.* a handsome and delicate-leafed fern.
Maiden lane. A street in London, between Covent Garden and the Strand. The name is said to have been given from an image of the Virgin which once stood there.
maid-en-ly (*-li*), *adj.* like, or suitable to, a maiden; modest: *adv.* in a maidenlike manner.
mail (*māl*), *n.* defensive body armor of steel, net, or plate-work; government system for conveying letters, etc.: *v. t.* to post, or send by post.
maim (*mām*), *v. t.* to cripple or mutilate: *n.* an injury to the body by crippling or mutilation.
main (*mān*), *adj.* chief; principal; leading; direct: *n.* the ocean. [CHIEF.]
Maine. A state in the Union; said to be named for the private estate of Henrietta Maria, in Maine, a province of France.
main-tain (*-tān'*), *v. t.* to support; sustain; defend; vindicate. [ASSERT, ALLEGE.]
main-te-nance (*'tē-nans*), *n.* sustenance; support; vindication; champerty.
maize (*māz*), *n.* Indian corn.
ma-jes-tic (*mā-jes'tik*), *adj.* having dignity of person or mien; stately; noble; sublime.
maj-es-ty (*maj'es-ti*), *n.* [*pl.* majesties (*-tiz*)], sovereignty; grandeur; nobility; sublimity.
ma-jol-i-ca (*mā-jol'i-kā*), *n.* a fine, soft, enameled kind of pottery.
ma-jor (*mā'jėr*), *adj.* greater in number, extent, or quality: *n.* a military officer next in rank above a captain.
ma-jor do-mo (*-dō'mō*), the steward of a household.
ma-jor gen-er-al (*-jen'ėr-al*), *n.* an officer next in rank below a lieutenant general.
ma-jor-i-ty (*mā-jor'i-ti*), *n.* more than half; full legal age (21); rank, etc., of a major.
make (*māk*), *v. t.* to create; fashion; fabricate; compose; produce or effect: *v. i.* to tend or move; have effect; contribute; be active.
Syn. MAKE, form, produce, create. *To make* is the most general and unqualified term; *to form* signifies to give a *form* to a thing, that is, to make it after a given *form; to produce* is to bring forth into the light, to call into existence; *to create* is to bring into existence by an absolute exercise of power.
Ant. DESTROY, demolish, obliterate.
make-shift (*māk'shift*), *n.* a temporary expedient.
mal-a-dy (*mal'ā-di*), *n.* [*pl.* maladies (*-diz*)], a disease, especially a deep-seated or lingering disorder. [DISORDER.]
mal-a-ga (*'ā-gā*), *n.* a variety of wine.
Malakoff (*mā-lā-kōf'*). The Malakoff, near Sebastopol, which was so hotly contested in the Crimean war, was so called from the name of an innkeeper who built a liquor shop on the hill in 1831.
mal-ap-ro-pos (*mal-ap-rō-pō'*), *adv.* unseasonably.
ma-la-ri-a (*mā-lā'ri-ā*), *n.* disease produced by the bite of malaria-infested mosquitoes; chills and fever.
Ma-lay (*mā-lā'*), *adj.* pertaining to the inhabitants of Malay, or to their language.
Malcolm (*mal'kum*). Derived from the Gaelic *maol-Cholum*, "the servant of Columba." *Maol* signifies literally, "the brow of a rock," "a bald head;" then "a shorn head," "a monk."
mal-con-tent (*mal'kon-tent*), *adj.* discontented, especially with established authority.
male (*māl*), *adj.* pertaining to the sex that begets young; not female: *n.* one of the male sex.
mal-e-dic-tion (*mal-ē-dik'shun*), *n.* denunciation of evil; execration; curse.
mal-e-fac-tor (*'ē-fak-tėr*), *n.* an evil doer; criminal. [CRIMINAL.]
ma-lev-o-lence (*mal-ev'ō-lens*), *n.* spitefulness; ill will.

mal-ev-o-lent (*mal-ev'ō-lent*), *adj.* malicious; malignant; hostile.
Syn. MALEVOLENT, malicious, malignant. *Malevolence* has a deep root in the heart, and is a settled part of the character; we denominate the person *malevolent* to designate the ruling temper of his mind; *maliciousness* may be applied as an epithet to particular parts of a man's character or conduct; one may have a *malicious* joy or pleasure in seeing the distress of another; *malignity* is not so often employed to characterize the person as the thing; the *malignity* of a design is estimated by the degree of mischief which was intended to be done.
Ant. AMIABLE, friendly, kind, well-disposed.
mal-fea-sance (*mal-fē'zans*),. *n* an illegal act or deed.
mal-ice (*mal'is*), *n.* evil intention to injure others; deliberate mischief; spite.
ma-li-cious (*mā-lish'us*), *adj.* bearing ill-will or spite; prompted by hatred. [MALEVOLENT.]
ma-lign (*-līn'*), *v. t.* to speak evil of; slander: *adj* hurtful; pestilential. [ABUSE]
ma-lig-nant (*-lig'nant*), *adj.* malicious; pernicious; intending or effecting evil; virulent. [MALEVOLENT.]
ma-lig-ni-ty (*-lig'ni-ti*), *n.* the state of being malignant; malice; virulence. [ACRIMONY.]
mall (*mawl*), *n.* a large, heavy, wooden mallet or beetle; a public walk shaded by trees.
mal-le-a-ble (*mal'ē-ā-bl*), *adj.* capable of being extended by hammering or rolling.
mal-let (*'et*), *n.* a wooden hammer.
★**mal-prac-tice** (*mal-prak'tis*, not *mal'prak-tis*), *n.* evil practice; illegal or immoral conduct.
malt (*mawlt*), *n.* barley or other grain steeped in water, fermented, and kiln dried for brewing.
Malta (*mawl'tà*, It. *mäl'tä*). Anciently *Melita*, "the place of refuge." One of a group of islands in the Mediterrancan south of Sicily.
mal-treat (*mal-trēt'*), *v. t.* to treat ill or roughly. [ABUSE.]
mal-ver-sa-tion (*-vēr-sā'shun*), *n.* fraudulent practices, especially those committed in an office of trust
Malvina (*mal-vī'nà*). A feminine name derived from *Malmhin*, name of the daughter of Toscar; from *maol-mhin*, "smooth brow."
ma-ma (*mà-mà'* or *mà'mà*). See *mamma*.
Mamaroneck (*mà-mar'ō-nek*), **N. Y.** So called from the name of an Indian chief, *Mamaronock*.
mam-ma (*mà-mà'*, or *mà'mà*), *n.* a family name for mother. [Also *mama*.]
Mam-ma-li-a (*mam-ā'li-à*), *n. pl.* the highest class of the Vertebrata, containing those animals which suckle their young.
mam-mon (*-un*), *n.* wealth; worldly gain: from Mammon, the Syrian god of riches.
mam-moth (*'moth*), *n.* an extinct species of huge fossil elephants: *adj.* gigantic.
man (*man*), *n.* [*pl.* men (*men*)], a human being; an adult male of the human species; mankind; to furnish with men; guard.
man-a-cle (*'à-kl*), *n.* a handcuff: *v. t.* to place handcuffs upon; shackle.
man-age (*'āj*), *v. t.* to conduct or carry on; govern; render docile or tractable; use cautiously; wield: *v. i.* to conduct affairs. [CONDUCT, CONCERT.]
man-age-a-ble (*'āj-à-bl*), *adj.* easy to be managed; docile.
man-age-ment (*'āj-ment*), *n.* the act or art of managing; control; skill in direction; administration. [CARE.]
Manayunk (*man-à-yungk'*), **Pa.** From the Delaware Indian *meneiunk*, "place of drinking liquor," which was also the Indian name of the Schuylkill river.
Manchester, N. H. Named after a manufacturing town in England. This name is derived from the Celtic *maen*, "a stone or rock," and the Anglo-Saxon *ceastre* or *chester*, "a castle or fortification."
Manchuria (*man-chōō'ri-à*). The European name of the region inhabited by the Manchua, a Tungusic tribe, who established the dynasty which has ruled China for the last three centuries.
Mandalay (*man'dà-lā*) or **Mandale.** The capital of Burma, founded in 1860. The usual etymology is from the Pali *mandala*, a "flat plain," but, according to Colonel Yule, the name was that of an isolated conical hill, rising high above the alluvial plain of the Irawadi, and crowned by a gilt pagoda.
man-da-mus (*-dā'mus*) *n.* [Latin, "we command"], a writ issued by a superior court directing the person or inferior court to whom it is issued to perform some specified act.
man-date (*'dāt*), *n.* an order; command; papal rescript.
man-da-to-ry (*'dà-tō-ri*), *adj.* containing a mandate; directory.
man-do-lin (*'dō-lin*), *n.* a musical instrument of the guitar kind.
mane (*mān*), *n.* the long hair on the neck of certain quadrupeds, as the horse.
★**ma-neu-ver, ma-nœu-vre** (*mà-nōō'vēr*), *n.* adroit management or operation in military or naval affairs; stratagem: *v. i.* to manage with adroitness or address.
man-ful (*man'fool*), *adj.* sturdy, brave. [MANLY.]
man-ga-nese (*man'gà-nēz*), *n.* a gray-colored, hard and brittle metallic element.
★**mange** (*mānj*, not *manj*), *n.* a cutaneous disease of dogs, cattle, etc.
man-ger (*mān'jēr*), *n.* a feeding trough for horses or cattle.
man-gle (*mang'gl*), *v. t.* to lacerate; mutilate; hack; to smooth with a mangle: *n.* a machine for smoothing linen.
man-gler (*mang'glēr*), *n.* a meat-chopping machine; one who mangles.
Manhattan. The island on which New York city is built. An Indian word, said by some authorities to mean "little island"; by others, "the people of the whirlpool," referring to Hell Gate.
man-hood (*man'hood*), *n.* human nature; manliness.
★**ma-ni-a** (*mā'ni-à*, not *mān'yà*), *n.* violent insanity; intense excitement; excessive or unreasonable desire.
ma-ni-ac (*'ni-ak*), *adj.* affected with mania: *n.* a madman.
man-i-cure (*man'i-kūr*), *n.* the care of the hands, nails, etc.
man-i-fest (*'i-fest*), *adj.* clear; plain; apparent: *v. t.* to make manifest; place beyond doubt. [APPARENT, DISCOVER.]
man-i-fes-to (*-fes'tō*), *n.* [*pl.* manifestos (*'tōz*)], a public declaration concerning political measures or intentions.
man-i-fold (*'i-fōld*), *adj.* various in kind or quality; numerous; multiplied: *v. t.* to reduplicate by means of a manifold writer.
man-i-fold wri-ter (*-ri'tēr*), an apparatus for reduplicating a writing by means of thin tracing paper.
man-i-kin (*'i-kin*), *n.* a dwarf; a model of the human body for anatomical study.
ma-nil-a, ma-nil-la (*mà-nil'à*), *n.* a kind of cheroot; a hemp used for ropes, matting, etc.
Manila (*mà-nil'à*, Spanish *mà-nē'lä*). The capital of the Philippines, was founded in 1571, by Legaspi, on the site of a native village of the same name, which is derived from a shrub called *nila*, *Manila* thus meaning, "nila is," or "here is nila."
ma-nip-u-late (*mà-nip'ū-lāt*), *v. t.* to operate or work by means of the hands; treat: *v. i.* to use the hands, especially in scientific operations, or mechanical processes.
Manitoba (*man-i-tō'bà, man-i-tō-bà',*). The central province of the Canadian Dominion, formerly called the Red River Settlement; takes its name fr m Lake Manitoba, whose islands were believed by the natives to be the habitation of the Manito or Great Spirit.
Manitou (*man'i-tōō*). County in Michigan, river in Wisconsin, and town in El Paso county, Colorado.
Mankato (*man-kā'tō*) **river, Minn.** A Sioux Indian word signifying "green earth."
man-ly (*'li*), *adj.* having the characteristics of a man; courageous; noble; dignified; resolute: *adv.* like a man.
Syn. MANLY, manful. *Manly*, or like a *man*, is opposed to juvenile, and of course applied properly to youths; but *manful* or full of *manhood*, is opposed to effeminate, and is applicable more properly to grown persons.
man-na (*'à*), *n.* a name given by the Israelites to the food miraculously supplied in the wilderness.
man-ner (*'ēr*), *n.* method; mode of action; habit; custom; sort: *pl.* deportment; morals; behavior. [See *custom*.]
Syn. MANNERS, morals, *Manners* respect the minor forms of acting with others and toward others; *morals* include the important duties of life. By an attention to good *manners* we render ourselves good companions; by an observance of good *morals* we become good members of society.
man-ner-ism (*'izm*), *n.* a peculiarity of style, action, or bearing, especially if constrained or affected.
man-of-war (*man-ov-wawr*), *n.* [*pl.* men-of-war], a large ship of war.
★**man-or** (*man'ēr*), *n.* the district over which a feudal lord held authority, and subject to the jurisdiction of his court-baron.
man-sard roof (*man'särd rōōf*), a roof which has on all sides two slopes, the lower being steeper than the upper.
manse (*mans*), *n.* the residence of a Presbyterian parochial minister. [*Scotch.*]
Mansfield. City in Richland county, Ohio, named for Col. Jared Mansfield, at one time surveyor general of the United States.
man-sion (*man'shun*), *n.* a large dwelling house.
man-slaugh-ter (*-slaw'tēr*), *n.* the unlawful killing of a human being, but without malice or premeditation.
man-tel (*'tel*), *n.* a narrow ornamental slab above a fireplace. [Also *mantelpiece*.]
man-tle (*man'tl*), *n.* a loose cloak or cape; a conical network that becomes incandescent when heated: *v. t.* to cover with, or as with, a mantle; conceal.
man-u-al (*'ū-al*), *adj.* pertaining to, or performed by, the hands: *n.* a handy compendium.
man-u-fac-to-ry (*-fak'tō-ri*), *n.* [*pl.* manufactories (*-riz*)], the place where goods are manufactured.
man-u-fac-ture (*'tūr*), *v. t.* to make or fabricate from raw materials: *n.* the conversion of raw materials into articles for use; the thing manufactured.
ma-nure (*mà-nūr'*), *n.* any fertilizing substance used for enriching the soil.
man-u-script (*man'ū-skript*), *adj.* written: *n.* a book or paper written by hand.
man-y (*men'i*), *adj.* [*comp.* more, *superl.* most], numerous; consisting of a great number: *n.* a great number; multitude; people.
map (*map*), *n.* a representation of the earth or of the heavens: *v. t.* to delineate or lay down in a map; describe clearly.
ma-ple (*mā'pl*), *n.* a tree of several species of the genus *Acer*, from one of which the rock-maple sugar is extracted.
mar (*mär*), *v. t.* to disfigure; injure; damage: *n.* a blemish or disfigurement; injury.
ma-ras-mus (*mà-raz'mus*), *n.* atrophy.
mar-a-thon (*mar'à-thon*), *n.* a foot-race of 26 miles, 385 yards, so called because an Athenian youth ran that distance from Marathon to Athens, bearing the news of the defeat of the Persians; place abounding in fennel, *marathos*.
ma-raud (*mà-rawd'*), *v. i.* to rove in search of plunder.
mar-ble (*mär'bl*), *n.* a hard limestone of various colors capable of taking a fine polish: *adj.* made of, or like, marble; cold; hard.
Marc. See *Mark*.
Marcellus (*mär-sel'lus*). From the Latin, meaning "of Mars." Fr., *Marcellus*; It., *Marcello*; Lat., *Marcellus*.
mar-cel wave (*mär-sel' wāv*), in hairdressing, a style of waving the hair in tiers, made with a grooved curling iron, introduced by Marcel.
march (*märch*), *n.* a regular, measured walk, especially of soldiers; steady onward movement: *v. t.* to cause to move in a regular measured walk, as troops: *v. i.* to move with regular steps, or in military form.
March. The third month of the modern calendar. Named after *Mars*, the god of war.
mar-chion-ess (*mär'shun-es*), *n.* the wife or widow of a marquis.
mar-co-ni-gram (*mär-cō'ni-gram*), *n.* a wireless message transmitted by the Marconi system.
Marcus. See *Mark*.
Marcy, Mount, N. Y. Named in compliment to Gov. W. L. Marcy of N. Y. The Indian name is *Tahawas*, "he splits the sky," an allusion to its great height, compared with its neighbors.
mare (*mär*), *n.* the female of the horse.
Margaret (*mär'gà-ret*). From the Greek, meaning "a pearl." Dutch, *Margaretha*; Fr., *Marguerite*; Ger., *Margarethe*; Gr., *Margarites*; It., *Margarita*; Lat., *Margarita*.
Margaretta. Formed from *Margaret*.
Margery. A baptismal name from *Margaret*.
mar-gin (*'jin*), *n.* border; the part of a page at the edge not printed upon; reserved amount: *v. t.* to furnish with a margin.
mar-gin-al (*-al*), *adj.* pertaining to, or placed on, a margin.
Maria. A name derived from one of the Greek forms of *Miriam*. *Maria* is found as a masculine name as well as a feminine name.
Marian (*mā'ri-an*). A diminutive of *Mary*.
Marianne (*mā-ri-an'*), Sometimes corrupted from *Marian*; at other times from *Mary Anne*.
Marie (*mā-rē'*). The French form of *Mary*.
Marietta (*mā-ri-et'tà*), **Ohio.** A composite word, from *Marie Antoinette*, queen of Louis XVI. of France, in whose honor it was named.
mar-i-gold (*mar'i-gōld*), *n.* a plant of various genera with showy yellow flowers.
ma-rine (*mà-rēn'*), *adj.* pertaining to, living in, or formed by, the sea; naval: *n.* a soldier who serves on a warship; the navy of a nation.
mar-i-ner (*mar'i-nēr*), *n.* a sailor. [SEAMAN.]
Marion (*mar'i-on*). A masculine form of *Mary*.
mar-i-tal (*'i-tal*), *adj.* pertaining to marriage.
★**mar-i-time** (*'i-tim*), *adj.* pertaining to, connected with, or bordering upon, the sea; naval.
mar-jo-ram (*mär'jō-ram*), *n.* a genus of aromatic plants, containing the sweet marjoram.
mark (*märk*), *n.* a visible sign by which anything is known; impression; evidence; target: *v. t.* to make a mark upon; take notice of; single out: *v. i.* to keep a score; take note.
Syn. MARK, trace, vestige, footstep, track. The *mark* is said of a fresh and uninterrupted line; the *trace* is said of that which is broken by time; a carriage in driving along the sand leaves *marks* of the wheels, but in a short time all *traces* of its having been there will be lost. The *vestige* is a species of *mark* or *trace* caused by the feet of men, or, which is the same thing, by the works of active industry; as the *vestiges* of buildings. *Footstep* is employed only for the steps of an individual. The *track* is made by the steps of many.
Mark. Derived from *Mars*, meaning "of Mars." Danish, *Marcus*; Dutch, *Marcus*; Fr., *Marc*; Ger., *Marcus*; Gr., *Markos*; Hung., *Mark*; It., *Marco*; Lat., *Marcus*; Sp., *Marcos*; Sw., *Markus*.
Mark, St., Basilica of. A famous basilica of Venice, founded in 830 to receive the relics of the evangelist brought from Alexandria, rebuilt in 976, and given its definite form in 1052.
mar-ket (*mär'ket*), *n.* a public place for the sale or purchase of commodities; market place.
marks-man (*märks'man*), *n.* [*pl.* marksmen (*men*)], one skillful in shooting.
mar-line (*mär'lin*), *n.* a two-stranded cord used for winding around ropes, splicing, etc.
Marmaduke. From Anglo-Saxon *mara-mihtig*, "very mighty or powerful."
mar-ma-lade (*'ma-lād*), *n.* a confection made of oranges or other fruit.
Marmora (*mär'mō-rà*), **Sea of.** A sea between European and Asiatic Turkey. Named from an adjacent island celebrated for its marble, *marmor*.
ma-roon (*mà-rōōn'*), *n.* formerly a fugitive slave

in the West Indies: *v. t.* to place and abandon on a desert island: *adj.* of a brownish-crimson color.

★**mar-quis** (*mär'kwis*), *n.* a nobleman ranking next below a duke. [Also *marques*; fem. *marchioness.*]

mar-riage (*mar'āj*), *n.* the act of legally uniting a man and woman in wedlock; marriage ceremony.

mar-row (*'ō*), *n.* the medulla or oily tissue which fills the cavities of bones; the essence of anything.

mar-ry (*'i*), *v. t.* to unite as husband and wife; wed: *v. i.* to enter into the state of wedlock.

marsh (*märsh*), *n.* a swampy tract of land.

mar-shal (*mär'shal*), *n.* an official of high rank who superintends and regulates state ceremonials.

mart (*märt*), *n.* a market; purchase and sale.

Martha (*mär'thä*). Littleton derives this name from a Syriac word signifying "lady" (*domina*). Dutch, *Martha;* Fr., *Marthe;* Ger., *Martha;* It., *Marta;* Lat., *Martha;* Sp., *Martha;* Sw., *Martha.*

Martha's Vineyard, Mass. Named by Bartholomew Gosnold, on one of his voyages, but in whose honor it is not known. The Indian name was *Capawac.* An island southeast of Massachussetts.

mar-tial (*'shal*), *adj.* pertaining to, or adapted for, war; military.

Syn. MARTIAL, warlike, military, soldier-like. We speak of *martial* array, *martial* preparations, *martial* law, a court-*martial;* but of a *warlike* nation, meaning a nation which is fond of war; a *warlike* spirit or temper, also a *warlike* appearance, inasmuch as the temper is visible in the air and carriage of a man; we speak of *military* in distinction from naval, as *military* expeditions, *military* movements, and the like; the conduct of an individual is *soldier-like* or otherwise.

mar-tin (*'tin*), *n.* one of several species of birds allied to the swallow.

Martin (*mär'tin*). From the Latin name, *Martinus;* from *Martius;* from *Mars,* "warlike." Dutch, *Martinus;* Fr., *Martin;* Ger., *Martin;* It., *Martino;* Lat., *Martinus;* Sp., *Martin;* Sw., *Martin.*

Martinez (*mär-tē'neth*). Spanish, meaning "the son of Martin."

mar-tin-gale (*'tin-gāl*), *n.* a broad strap passing from the nose-band to the girth of a horse, between its fore legs, to keep its head down; a lower stay for the jib-boom or flying jib-boom.

Martinsburg. Town in Berkeley county, West Virginia, named for Col. Tom Martin, a nephew of Lord Fairfax, a wealthy landowner.

mar-tyr (*'tėr*), *n.* one who testifies by his death to his faith or principles: *v. t.* to put to death for adherence to some belief.

mar-tyr-dom (*-dum*), *n.* the death or sufferings of a martyr.

mar-vel (*'vel*), *n.* something extraordinary and astonishing; a prodigy: *v. i.* to be struck with astonishment; wonder. [WONDER.]

mar-vel-ous (*-us*), *adj.* exciting wonder; incredible.

Mary. From the Hebrew, meaning "bitter." Danish, *Marie;* Dutch, *Maria;* Fr., *Marie;* Ger., *Maria* or *Marie;* Gr., *Maria;* Hungarian, *Maria;* It., *Maria;* Lat., *Maria;* Polish, *Marya;* Port., *Maria;* Sp., *Maria;* Sw., *Maria.*

Maryland. One of the South-Atlantic states of the United States. It was intended that the country granted by the charter of Charles I. in his patent to Lord Baltimore, June 30, 1632, should be called *Crescentia,* but when presented to the king for signature, in conformity to his wishes, the name of the province was changed to that of *Terra Mariæ,* "Mary's land," in honor of his queen, Henrietta Maria, daughter of Henry IV. of France.

mas-cot (*mas'kot*), *n.* a person or thing that brings good fortune.

★**mas-cu-line** (*mas'kū-lin,* not *mas'kū-līn*), *adj.* pertaining to, having the qualities of, or suitable for, a man; manly.

mash (*mash*), *n.* a soft or pulpy mass; a mixture of bran and water for horses: *v. t.* to mix with hot water (as malt) in brewing.

mash-er (*'ėr*), *n.* one who impertinently endeavors to make himself attractive to, or engage the attention of, women.

mask (*mask*), *n.* a cover or partial cover to conceal the face; pretext or subterfuge; a masquerade: *v. t.* to conceal with, or as with, a mask. [PRETENSE.]

ma-son (*mā'sn*), *n.* a builder in stone; a Freemason.

Ma-son-ic (*mā-son'ik*), *adj.* pertaining to Freemasons or to their craft.

mas-quer-ade (*mas'kėr-ād*), *n.* a ball or festive gathering where masks are worn; a disguise: *v. t.* to cover with a mask or disguise: *v. i.* to take part in a masquerade.

mass (*mās*), *n.* a large quantity; lump; the celebration of the Eucharist in the Roman Catholic church: *pl.* common people.

Massachusetts. Natick Indian word *Masasuset,* contraction of *massa,* "great," *adchu,* "mountain," *et,* "near," "the place of the great hills" (reference to the Blue Hills). One of the New England states.

★**mas-sa-cre** (*'ä-kėr*), *n.* indiscriminate slaughter with unnecessary cruelty: *v. t.* to slaughter indiscriminately. [CARNAGE.]

mas-sage (*'äj* or *mä-säzh'*), *n.* a method of medical treatment by rubbing or kneading the body.

mas-seur (*mä-sėr'*), *n.* one who performs the operation of massage. (Fem. *masseuse.*) [*French.*]

mas-sive (*mas'iv*), *adj.* weighty; heavy; bulky; imperfectly and irregularly crystallized.

mast (*mast*), *n.* a long round piece of timber or iron tube, raised vertically on the keel of a vessel to support the sails.

mas-ter (*mas'tėr*), *n.* one who rules or commands others; director: *adj.* pertaining to a master; chief: *v. t.* to subdue or overcome: *v. i.* excel.

mas-ter-y (*-i*), *n.* dominion; preëminence; eminent skill.

mas-ti-cate (*mas'ti-kāt*), *v. t.* to grind with the teeth; chew.

mas-tiff (*mas'tif*), *n.* a large variety of dog.

mas-to-don (*mas'tō-don*), *n.* an extinct genus of mammals, allied to the elephant.

mas-tur-ba-tion (*-tūr-bā'shun*), *n.* self-pollution.

mat (*mat*), *n.* a texture of various fibrous materials, used for cleansing the feet: *v. t.* to cover with mats; entangle or interweave.

Matanzas (*mä-tan'zas,* Spanish *mä-tän'thäs*) **inlet, Fla.** From the Spanish, meaning, "massacre," applied by Menendez to commemorate his destruction of Ribaut and his followers.

match (*mach*), *n.* anything that readily ignites; a lucifer; anything which agrees with or suits another thing: *v. t.* to be equal to.

match-mak-er (*'mäk-ėr*), *n.* one who seeks to arrange marriages.

mate (*māt*), *n.* a companion or associate; an equal; the male and female of animals associated for propagation; checkmate: *v. t.* to match; be equal to; marry.

ma-te-ri-al (*mā-tē'ri-al*), *adj.* consisting of matter; not spiritual; essential: *n.* the substance of which anything is made. [PHYSICAL.]

ma-te-ri-al-ism (*-izm*), *n.* the doctrine that all spiritual phenomena are the result of organized matter.

ma-te-ri-al-ize (*-iz*), *v. t.* to invest with material characteristics.

ma-ter-nal (*-tėr'nal*), *adj.* motherly.

ma-ter-ni-ty (*'ni-ti*), *n.* the character or relationship of a mother.

math-e-mat-ic-al (*math-ē-mat'i-kal*), *adj.* pertaining to, or performed by, mathematics; theoretically precise. [Also *mathematic.*]

math-e-mat-ics (*-mat'iks*), *n.* the science of number and space.

Mathilde (*mä-tēld'*). A French form of *Matilda.*

Matilda (*mä-til'dä*) or **Maud.** From the Old German *magd-hild,* "noble virgin or maid." Danish, *Mathilde;* Dutch, *Mathilda;* Fr., *Mathilde;* It., *Matilda;* Lat., *Mathilda;* Sp., *Matilde;* Sw., *Matilda.*

mat-in (*mat'in*), *adj.* pertaining to the morning or to matins.

mat-i-née (*-i-nā'* or *mä-tē-nā'*), *n.* a reception or musical or dramatic performance held in the daytime.

mat-ri-cide (*'ri-sīd*), *n.* the murder of a mother by a son or daughter; one who murders one's mother.

ma-tric-u-late (*mä-trik'ū-lāt*), *v. t.* to admit to the membership of a college or university by entering one's name in a register.

mat-ri-mo-ni-al (*mat-ri-mō'ni-al*), *adj.* pertaining to marriage; nuptial; connubial.

mat-ri-mo-ny (*'ri-mō-ni*), *n.* marriage.

ma-trix (*mā'triks*), *n.* [*pl.* matrices (*mat'ri-sēz*)], the womb; the cavity in which anything is formed or cast; a mold.

ma-tron (*mā'trun*), *n.* a married woman, especially one who has borne children; the lady superintendent of a hospital or institution.

ma-tron-ly (*-li*), *adj.* matronlike; elderly; sedately.

mat-ter (*mat'ėr*), *n.* that which occupies space, and is perceptible by the senses; body; substance: *v. i.* to signify; be of importance.

Matterhorn. The most precipitous peak in the Alps, derives its lowly name from the meadow (*matt*) at its base, on which the village of Zermatt, "at the meadow," is situated.

Matthew (*math'ū*). From the Hebrew *mattah-Yah,* "the gift of Jehovah." Danish, *Matthæus;* Dutch, *Mattheus;* Fr., *Mathieu;* Gr., *Matthaios;* Hungarian, *Mate;* It., *Matteo;* Lat., *Matthæus;* Polish, *Mateusz;* Sp., *Mateo;* Sw., *Mathaus.*

Matthias (*math-ī'as*). Originally the same as *Matthew.* Dutch, *Matthijs;* Fr., *Matthias* Ger., *Mathias;* It., *Mattia;* Lat., *Matthias;* Sp., *Matias.*

mat-ting (*mat'ing*), *n.* mats collectively; material for mats; ornamental mat-work.

mat-tock (*'ok*), *n.* a pickax having one of its ends flat.

★**mat-tress** (*'res*), *n.* a quilted hair or straw stuffed bed; a spring mattress.

ma-ture (*mä-tūr'*), *adj.* ripe; full-grown; ready for application or use: *v. t.* to bring or hasten to maturity: *v. i.* to become ripe.

ma-tu-ri-ty (*-tū'ri-ti*), *n.* the state or quality of being mature; ripeness; full development.

mat-u-ti-nal (*mat-ū-tī'nal*), *adj.* pertaining to the morning; early.

Mauch Chunk (*môk chungk'*). Borough and river in Carbon county, Pennsylvania. An Indian name, meaning, according to different authorities, "on the mountain," or "bear's cave."

Maud, Maude. Corrupted from *Matilda.*

maud-lin (*mawd'lin*), *adj.* easily moved to tears; weakly and foolishly sentimental.

maul (*mawl*), *n.* a large wooden hammer: *v. t.* to wound or bruise in a rough manner.

Maurice (*maw'ris,* French, *mō-rēs'*). Some derive this name from *Amalric,* others from *Mauritius,* but it is rather the reverse, for the island had its name from Prince Maurice. The name is probably from Fr., *du marais,* "from the marsh." Danish, *Moritz;* Dutch, *Maurits* or *Mauritius;* Fr., *Maurice;* Ger., *Moritz;* It., *Maurizio* or *Mauritio;* Lat., *Mauritius* or *Mauricius;* Sp., *Mauricio;* Sw., *Moritz.*

Mauritius (*maw-rish'i-us*). Named for Maurice, prince of Orange. An island in the Indian Ocean.

★**mau-so-le-um** (*maw-sō-lē'um*), *n.* a stately tomb or monument, especially that of Mausolus, king of Caria, erected by his widow Artemisia.

★**mauve** (*mōv*), *n.* a soft lilac or purple color.

maw (*maw*), *n.* the stomach of animals; the craw of a bird.

mawk-ish (*mawk'ish*), *adj.* loathsome; affectedly sentimental.

max-im (*maks'im*), *n.* an established principle or truth; proverb; aphorism.

Maximilian (*maks-i-mil'yan, maks-i-mil'i-an*). A name said to be compounded of *maximus,* "greatest," and the name *Æmilianus.* Dutch, *Maximilianus;* Fr., *Maximilien;* Ger., *Maximilian;* It., *Massimiliano;* Lat., *Maximilianus;* Sp., *Maximiliano;* Sw., *Maximilian.*

max-i-mum (*'i-mum*), *n.* the greatest number, quantity, or degree, attainable.

Maximus (*maks'i-mus*). Latin, meaning "greatest." Fr., *Maxime;* It., *Massimo;* Lat., *Maximus;* Sp., *Maximo.*

may (*mā*), *v. aux.* [*p. t.* might (*-mīt*)], to be able; be allowed.

May. The fifth month in the modern calendar. Named after *Maia,* the mother of Mercury, to whom sacrifices were offered on the first day of this month.

Mayfair (*mā'fār*). A fashionable locality in London, east of Hyde Park. All streets north of Piccadilly now lead into the district of Mayfair, which takes its name from a fair which used to be held in Shepherd's market and its surrounding streets.

may-or (*mā'ėr*), *n.* the chief magistrate of a city or borough. [Fem. *mayoress.*]

may-or-al-ty (*-al'ti*), *n.* the office, or term of office, of a mayor.

maze (*māz*), *n.* bewilderment; a labyrinth: *v. t.* to bewilder.

ma-zy (*mā'zi*), *adj.* intricate; bewildering; winding.

mead (*mēd*), *n.* a fermented liquor of honey, water, and spices; a meadow. [*Poetry.*]

mead-ow (*med'ō*), *n.* a tract of rich pasture land; land yielding hay.

mea-ger (*mē'gėr*), *adj.* thin; scanty; poor; barren; lean; weak.

meal (*mēl*), *n.* edible ground grain; a repast.

meal-y (*'i*), *adj.* consisting of, sprinkled with, or having the qualities of, meal.

mean (*mēn*), *adj.* wanting in dignity or honor; vulgar; inferior; insignificant; humble; sordid; stingy; middle; excessive: *n.* the middle point: *v. t.* to have in the mind or intention; signify: *v. i.* to have an intention. [DESIGN.]

me-an-der (*mē-an'dėr*), *v. t.* to wind or flow around: *v. i.* to have a winding course; be intricate.

mean-time (*mēn'tīm*), *adv.* in the intervening time. [Also *meanwhile.*]

mea-sles (*mē'zlz*), *n.* an infectious disease characterized by fever and small red spots on the skin.

meas-ure (*mezh'ūr*), *n.* the standard by which the volume or extent of anything is compared; extent or dimensions of a thing; *pl.* strata or beds: *v. t.* to ascertain the extent, size, or volume of: *v. i.* to take measurements.

meat (*mēt*), *n.* animal food.

me-chan-ic (*mē-kan'ik*), *n.* a skilled workman: *pl.* the science of the laws of matter and motion, especially the science of machinery.

mech-a-ni-cian (*mek-ä-nish'an*), *n.* one skilled in mechanics or machinery.

mech-an-ism (*'an-izm*), *n.* parts of a machine; mechanical construction.

med-al (*med'al*), *n.* a coinshaped piece of metal impressed with a device or inscription to commemorate some event, distinguished person, etc.

me-dal-lion (*mē-dal'yun*), *n.* a large antique medal; a round or oval tablet with figures in bas-relief.

med-dle (*med'l*), *v. i.* to interpose or interfere officiously.

me-di-an (*mē'di-an*), *adj.* pertaining to, or connected with, the middle of anything.

me-di-ate (*-āt*), *v. i.* to interpose as a mutual friend between parties to effect a reconciliation.

me-di-a-to-ri-al (*-ä-tō'ri-al*), *adj.* pertaining to a mediator or mediation; intercessory.

★**me-di-æ-val** (*mē-di-ē'val*), *adj.* pertaining to, or characteristic of, the middle ages (8th to 15th centuries A. D.). [Also *medieval.*]

med-i-cal (*med'i-kal*), *adj.* pertaining to, or connected with, medicine.

me-dic-i-nal (*mē-dis'i-nal*), *adj.* having the properties of, or used in, medicine.

med-i-cine (*med'i-sin*), *n.* the science which relates to the treatment and alleviation of disease; a specific for the cure of disease.

Medina (*mā-dē'nä*). A city in Hedjaz, Arabia, the second holy city of the Mohammedans. It is celebrated as the place where Mohammed took refuge at the flight, 622 A. D., and where he died and was buried. The Great Mosque contains Mohammed's tomb.

me-di-o-cre (*mē'di-ō-kėr*), *adj.* of medium excellence; ordinary.

med-i-tate (*med'i-tāt*), *v. i.* to muse or ponder; think abstractedly: *v. t.* to think upon; design; purpose. [CONTEMPLATE.]

med-i-ta-tive (*mĕd'i-tā-tiv*), *adj.* disposed to meditations.

Mediterranean Sea. Modern name expresses the meaning of Latin *medius*, "middle," and *terra*, "earth." The sea between the two continents, Europe and Africa.

me-di-um (*mē'di-um*), *n.* a mean; anything intervening; agency; space or substance in which bodies exist or move.

med-ley (*med'li*), *n.* mixture or confused mass of different ingredients. [DIFFERENCE.]

meed (*mēd*), *n.* recompense; reward.

meek (*mēk*), *adj.* [*comp.* meeker, *superl.* meekest], gentle; submissive; yielding; mild of temper; humble; patient.

meer-schaum (*mēr'shawm*), *n.* a clay like silicate of magnesia from which pipe bowls are made; a pipe of this material.

meet (*mēt*), *v. t.* confront; encounter; fall in with; receive; satisfy; come upon; answer: *v. i.* to assemble; be united: *adj.* fit; suitable. [FIT.]

mel-an-cho-li-a (*mel-an-kō'li-ā*), *n.* a form of insanity characterized by great depression of spirits.

mel-an-chol-y (*'an-kol-i*), *n.* great depression of spirits; melancholia: *adj.* depressed in spirits; hypochondriac. [DEJECTION, GRIEF.]

Melbourne (*'bûrn*). The largest city of Australia. Named after Lord Melbourne in 1837.

mel-io-rate (*mēl'yō-rāt*), *v. t.* to improve or make better.

mel-lif-lu-ent (*mel-if'lū-ent*), smooth; sweetly flowing. [Also *mellifluous.*]

mel-low (*'ō*), *adj.* fully ripe; not hard, harsh, or rigid; half tipsy.

me-lo-di-ous (*mē-lō'di-us*), *adj.* full of, or produced by, melody; musical.

mel-o-dra-ma (*mel-ō-drä'mä*), *n.* a play characterized by highly sensational or romantic incidents.

mel-o-dy (*'ō-di*), *n.* [*pl.* melodies (*-diz*)], the arrangement of different musical sounds for a single voice or instrument; tune.

mel-on (*'un*), *n.* a plant of the cucumber family with its edible fruit.

melt (*melt*), *v. t.* and *v. i.* to change from a solid to a liquid state.

mem-ber (*mem'bĕr*), *n.* a limb or organ; essential part of anything.

mem-brane (*'brān*), *n.* a thin fold or layer of tissue forming the covering of some part or organ.

me-men-to (*mē-men'tō*), *n.* [*pl.* mementos (*'tōz*)], a souvenir; memorial.

mem-oir (*mem'wär*), *n.* a history written from personal experience and knowledge; a biography.

mem-o-ra-ble (*'o-rä-bl*), *adj.* worthy of remembrance; remarkable; notable.

mem-o-ran-dum (*-ō-ran'dum*), *n.* a note to assist the memory; brief record.

me-mo-ri-al (*mē-mō'ri-al*), *adj.* commemorative; preservative of, or contained in, the memory.

mem-o-ry (*mem'ō-ri*), *n.* [*pl.* memories (*-riz*)], that faculty of the mind by which it retains the knowledge of previous occurrences, facts, thoughts, etc., and recalls them.

Syn. MEMORY, remembrance, recollection, reminiscence. *Memory* is the power of recalling images once made on the mind; *remembrance* is the exercise of *memory* in a conscious agent; it may be the effect of repetition or habit; *recollection* carries us back to distant periods; *reminiscence* is altogether an abstract exercise of the *memory* which is employed on purely intellectual ideas in distinction from those which are awakened by sensible objects; the mathematician makes use of *reminiscence* in deducing unknown truths from those which he already knows.

Ant. FORGETFULNESS, oblivion, unconsciousness.

Memphis (*mem'fis*). In ancient geography, the early capital of Egypt. It was on the western bank of the Nile, south of Cairo. It is said to have been built by Menes. From *Ma-m-Phthah*, "the place of the Egyptian god Phthah."

Memphis, Tenn. Name adopted from the ancient city of *Memphis*; not from any local similarity.

Memphremagog (*mem-frē-mā'gog*), **Lake, Vt.** An application of the Algonquin name *mem-plow-bouque*, "a large expanse of water."

men-ace (*men'ās*), *n.* a threat: *v. t.* to threaten. [THREAT.]

men-ag-er-ie (*-ăzh'ĕr-i* or *-aj'e-ri*), *n.* a place where wild animals are kept; a collection of wild animals for exhibition.

mend (*mend*), *v. t.* to repair; make good or better; reform; increase: *v. i.* to grow better; improve. [AMEND.]

men-da-cious (*men-dā'shus*), *adj.* given to falsehood; lying; false.

men-di-cant (*'di-kant*), *adj.* practicing begging; reduced to beggary: *n.* a beggar; a begging friar.

Mendocino (*men-dō-sē'nō*), **Cape, Cal.** So named by Cabrillo in 1542 (*Cabo Mendocino*), in honor of the viceroy of Spain, who had employed him.

Mendota (*men-dō'tä*), **Minn.** So called from a tribe of Indians, *Mendota*, meaning "the mouth," alluding to their dwelling at the mouth of the Minnesota river.

me-ni-al (*mē'ni-al*), *adj.* pertaining to a retinue of servants: *n.* one who performs servile work. [SERVANT.]

★**men-in-gi-tis** (*men-in-jī'tis*), *n.* inflammation of the meninges.

Menominee (*mē-nom'i-nē*) **river, Wis.** From an Indian tribe, the *Malominees* or *Menominees*, their derivative name being *Monomonick*, "wild rice," or *Monomoniking*, "in the place of wild rice."

men-su-ra-tion (*men-sū-rā'shun*), *n.* the act or process of taking the measure or dimensions of anything; measurement.

men-tal (*'tal*), *adj.* pertaining to the mind.

men-thol (*'thol*), *n.* a crystalline substance resembling camphor; used as a counter-irritant.

men-tion (*'shun*), *n.* a brief notice; casual remark; hint: *v. t.* to speak briefly of; name.

men-tor (*'tĕr*), *n.* a wise and faithful counselor: from *Mentor*, the friend and tutor of Ulysses.

★**me-nu** (*me-nū'*), *n.* a bill of fare.

mer-can-tile (*mĕr'kan-til*), *adj.* commercial.

Syn. MERCANTILE, commercial. *Mercantile*, from *merchandise*, respects the actual transaction of business, or a transfer of *merchandise* by sale or purchase; *commercial* comprehends the theory and practice of *commerce;* hence we speak in a peculiar manner of a *mercantile* house, a *mercantile* situation, and the like; but of a *commercial* education, a *commercial* people, and the like.

mer-ce-na-ry (*'sē-nā-ri*), *n.* [*pl.* mercenaries (*-riz*)], a soldier hired into foreign service; one who serves for pay: *adj.* serving for pay or reward; venal; sordid.

mer-chan-dise (*'chan-diz*), *n.* goods, wares, or commodities, bought and sold.

mer-chant (*'chant*), *n.* one who traffics or carries on trade on a large scale: *adj.* pertaining to, or employed in, trade.

mer-ci-ful (*mĕr'si-fool*), *adj.* full of mercy; tenderhearted; compassionate. [HUMANE.]

mer-ci-less (*-les*), *adj.* destitute of mercy; unfeeling; cruel.

mer-cu-ri-al (*-kū'ri-al*), *adj.* active; volatile; fickle; pertaining to, made of, or caused by, mercury.

mer-cu-ry (*kū-ri*), *n.* quicksilver.

mer-cy (*'si*), *n.* [*pl.* mercies (*'siz*)], the disposition to forgive, spare, or pity; clemency.

Syn. MERCY, benevolence, benignity, blessing, clemency, compassion, favor, forbearance, forgiveness, gentleness, grace, kindness, lenience, leniency, lenity, mildness, pardon, pity, tenderness. *Mercy* is the exercise of less severity than one deserves, or in a more extended sense. *Grace* is *favor*, *kindness*, or *blessing* shown to the undeserving; *forgiveness*, *mercy*, and *pardon* are exercised toward the ill-deserving. There may be *mercy* without *pardon*, as in the mitigation of sentence. *Clemency* is a colder word than *mercy*, and without its religious associations, signifying *mildness; leniency* or *lenity* denotes an easy-going avoidance of severity; these words are more general and less magisterial than *clemency;* we should speak of the *leniency* of a parent, the *clemency* of a conqueror.

mere (*mĕr*), *adj.* [*superl.* merest], such and no more; simple; entire; absolute.

Meredith (*mer'ĕ-dith*). The English form of the Welsh name *Meredydd.*

mer-e-tri-cious (*mer-ē-trish'us*), *adj* pertaining to prostitutes; lustful; alluring by false show.

merge (*mĕrj*), *v. t.* to absorb or swallow up: *v. i.* to be swallowed up or lost.

mer-ger (*mĕr'jĕr*), *n.* the legal consolidation of two estates, forming them into one estate.

me-rid-i-an (*mē-rid'i-an*), *adj.* pertaining to midday: *n.* midday; an imaginary great circle of the sphere passing through the poles of the heavens and the zenith and nadir of any given place, and cutting the equator at right angles.

★**me-ringue** (*mē-rang'*), *n.* a light confection of eggs, sugar, cream, or jam.

me-ri-no (*mē-rē'nō*), *n.* [*pl.* merinos (*'nōz*)], a breed of sheep with a fine wool.

mer-it (*mer'it*), *n.* excellence; deserved reward: *pl.* essential character: *v. t.* to earn; be entitled to. [DESERT].

mer-i-to-ri-ous (*mer-i-tō'ri-us*), *adj.* having merit; deserving of reward or praise.

mer-lin (*mĕr'lin*), *n.* a small falcon.

Merlin. The English form of the British name *Merddhin.* Probably derived through the French.

mer-maid (*mĕr'mād*), *n.* a fabled marine creature having the upper part like a woman and the lower part like a fish.

Merrimack (*mer'ri-mak*). River, county, and town in Hillsboro county, New Hampshire. From the Indian, meaning "sturgeon," or "swift water."

mer-ri-ment (*'i-ment*), *n.* mirth; fun; frolic; gayety

mer-ry (*'i*), *adj.* [*comp.* merrier, *superl.* merriest], full of mirth and good humor; gay.

mer-ry-go-round (*mer'i-gō-round*), *n.* a circular frame fitted with wooden horses or seats, on which persons ride at fairs, etc.

Merthyr-Tydvil (*mĕr'thĕr tid'vil*). A town in South Wales. Named after the daughter of an ancient British king.

mesh (*mesh*), *n.* an opening or interstice of a net; brewer's grains.

mes-mer-ism (*mez'mĕr-izm*), *n.* the art of inducing an abnormal state of the nervous system in which the thoughts and actions of the patient are controlled by the will of the operator; animal magnetism.

mes-mer-ize (*-iz*), *v. t.* to induce the mesmeric state.

★**mesne** (*mēn*), *adj.* middle; intervening.

mess (*mes*), *n.* a number of persons who sit down to table together, especially soldiers or sailors; a state of dirt or confusion: *v. i.* to eat together.

mes-sage (*'āj*), *n.* a communication, written or verbal, sent from one person to another.

mes-sen-ger (*'en-jĕr*), *n.* one who conveys a message.

Mes-si-ah (*-i'ä*), *n.* Christ, the Anointed One. [Also *Messias.*]

me-tab-o-lism (*mē-tab'ō-lizm*), *n.* the continuous process by which living cells or tissues undergo chemical change.

met-a-car-pus (*met-ä-kär'pus*), *n.* that part of the hand which is between the wrist and the fingers.

met-al (*'al*), *n.* an elementary substance having certain physical characteristics, as luster, ductility, malleability, insolubility, is fusible by heat, and a conductor of electricity.

me-tal-lic (*mē-tal'ik*), *adj.* pertaining to, consisting of, or like, metal.

met-al-lur-gy (*met'al-ĕr-ji*), *n.* the art or process of working metals and of separating them from their ores.

met-a-mor-phism (*met-ä-môr'fizm*), *n.* the process by which stratified rocks under pressure, heat, chemical action, etc., have changed from their original structure, as limestone to marble.

met-a-mor-pho-sis (*'fō-sis*), *n.* change of form, shape, or structure; transformation, as of a chrysalis into a butterfly. [TRANSFIGURE.]

met-a-phor (*'ä-fĕr*), *n.* a figure of speech by which one word is employed for another of which it is the image; a compressed simile.

met-a-phys-ics (*-fiz'iks*), *n.* mental philosophy.

me-temp-sy-cho-sis (*mē-temp-si-kō'sis*), *n.* transmigration of the soul after death into the body of another man or lower animal.

me-te-or (*mē'tē-ĕr*), *n.* a transient luminous body in the sky; falling or shooting star.

me-te-or-ic (*-or'ik*), *adj.* pertaining to, formed of, or like, a meteor.

me-te-or-ite (*'tē-ĕr-īt*), *n.* a stone or metallic body which has fallen upon the earth from space.

me-te-or-ol-o-gist (*-ol'ō-jist*), *n.* one who is skilled in meteorology.

me-te-or-ol-o-gy (*-jy*), *n.* the science of the atmosphere and its various phenomena.

me-ter (*mē'tĕr*), *n.* an instrument for registering the measurement of the substance passing through it.

me-ter, me-tre, *n.* a rhythmic arrangement of syllables in verse; unit of length in the decimal system equal to 39.37 inches.

me-thinks (*mē-thingks'*), *v. i.* [*p. t.* methought], it appears, or seems, to me.

meth-od (*meth'od*), *n.* regular arrangement of things; system; order; classification.

me-thod-ic-al (*mē-thod'i-kal*), *adj.* characterized by, or arranged with regard to, method; systematic.

Methuselah (*mē-thū'sē-lä*). Hebrew, "driving away death." Fr., *Mathusalem;* Lat., *Methusela.*

meth-yl (*meth'il*), *n.* the hydrocarbon radical of methyl alcohol, or wood spirit.

me-tre. See *meter.*

★**met-ric** (*met'rik*, not *mē'trik*), *adj.* pertaining to the decimal system of weights and measures.

met-ric-al (*'ri-kal*), *adj.* pertaining to meter, measurement, or rhythm.

met-ro-graph (*'rō-grăf*), *n.* an apparatus for indicating the mileage run by a locomotive, and the number and time of stoppages at stations, etc.

met-ro-nome (*'rō-nōm*), *n.* an instrument which beats musical time by means of a short pendulum.

me-trop-o-lis (*mē-trop'ō-lis*), *n.* the capital or chief city of a kingdom or country.

met-ro-pol-i-tan (*met-rō-pol'i-tan*), *adj.* pertaining to the capital city of a kingdom or country, or to an archbishopric.

met-tle (*met'l*), *n.* constitutional ardor or spirit; fortitude.

met-tle-some (*-sum*), *n.* high spirited.

Metz. A city of Germany. Named from the *Meomatrici*, a tribe.

mew (*mū*), *n.* the cry of a cat; a sea gull: *pl.* stables for carriage horses: *v. t.* to shed or molt (the feathers): *v. i.* to cry like a cat.

Mexico. The modern Spanish spelling is *Méjico.* It took its name from a temple of *Mexitl*, the Aztec war god. A republic of North America.

Mexico, Gulf of. A large gulf of the Atlantic lying south of the United States and east of Mexico.

mez-zo-tint (*mez'ō-tint*), *n.* a variety of copper engraving. [Also *mezzotinto.*]

Miami (*mī-a'mi, mī-am'i*). County in Indiana, Kansas, and Ohio, city in Dade county, Florida, and Saline county, Missouri, town in Ottawa reservation, Indian territory, and river in Florida and Ohio.

mi-ca (*mī'kä*), *n.* a mineral divisible into thin transparent plates.

Michael (*mī'kel, mī'kā-el*). From the Hebrew, *Miykhael*, from *mîy-k'-Ēl*, "who is like God." Fr., *Michel;* Ger., *Michael;* Hungarian, *Mihaly;* It., *Michele;* Lat., *Michael;* Polish, *Michal;* Port., *Miguel;* Russ., *Mikhail;* Sp., *Miguel.*

Michigan (*mish'i-gan*). One of the middle western states of the Union, named from the lake on its western border, the Indian word, signifying "a weir of fish," given the lake from its fancied resemblance to a fish-trap.

micro, a *prefix* meaning *small*, as *microcosm*, a small universe or community.

mi-crobe (*mī'krōb*), *n.* a minute microscopical organism found in the blood of animals, especially those suffering from disease.
mi-cro-cosm. See under *micro.*
mi-cro-cous-tic (*-kous'* or *-kōōs'tik*), *adj.* pertaining to, or serving to increase, indistinct sounds: *n.* an instrument for the deaf, to augment faint sounds.
mi-crom-e-ter (*-krom'ē-tēr*), *n.* an instrument for measuring minute distances, or apparent diameters.
mi-cro-scope (*'krō-skōp*), *n.* an optical instrument for magnifying minute objects so as to render them visible for purposes of investigation.
★**mi-cros-co-py** (*mī-kros'kō-pi*), *n.* the use of the microscope; microscopic investigation.
mid (*mid*), *adj.* middle: *prefix*, as *midday*: *n.* a midshipman.
mid-dle (*'l*), *adj.* equally distant from the extremes.
mid-dling (*'ling*), *adj.* of middle rank, size, or quality, moderate: *n. pl.* the coarser part of flour.
mid-dy (*'di*), *n.* [*pl.* middies (*'diz*)], a midshipman.
mid-riff (*'rif*), *n.* the diaphragm separating the cavity of the chest from the stomach.
midst (*midst*), *n.* the middle.
mid-wife (*mid'wīf*), *n.* a woman who assists at childbirth: *v. t.* to assist in childbirth.
mien (*mēn*), *n.* external appearance; air; look; carriage.
might (*mīt*), *n.* power; strength; force: *p. t.* of *may.* [POWERFUL.]
mi-gnon-ette (*min-yun-et'*), *n.* a fragrant annual with greenish flower and orange-colored stamens.
mi-grate (*mī'grāt*), *v. i.* to remove or pass from one place of abode or resort to another; roving; nomadic. [EMIGRATE.]
Milan (*mil'an, mil-an'*). A city of northern Italy. The French and English form of the Italian *Milano*, called *Mailand* in German, is a corruption of the Celto-Roman name *Mediolanum*, the capital of the Insubrian Gauls, which signified the town in the "middle of the plain," *lanum* being the equivalent of the Latin *planum.*
milch (*milch*), *adj.* yielding milk.
mild (*mīld*), *adj.* gentle in temper and disposition; gentle; soft. [MERCY.]
mil-dew (*mil'dū*), *n.* a disease of plants produced by small fungi; spots of mold on cloth, etc., caused by damp: *v. t.* to taint with mildew.
Mildred (*mil'dred*). A female name, from Anglo-Saxon *mild-red*, "mild in counsel." Lat., *Mildreda.*
mile (*mīl*), *n.* a measure of length varying in different countries: the English statute mile, in use in this country, contains 1,760 yds., the geographical or nautical mile 1-60th of a degree of latitude or 2,025 yds. (nearly).
mile-age (*'āj*), *n.* an allowance for expenses per mile; length in miles.
Miles. From *Milesius*, Latinized from the Irish *mile, milead*, "a soldier," "a champion." Gaelic, *milidh*, "a hero," a "renowned person."
Milicent. A feminine name, which in Latin is found written *Milicentia, Melissa*, and *Melitta.* It comes from the Greek, which signifies both a "bee" and "honey."
mil-i-tant (*mil'i-tant*), *adj.* warlike; fighting; serving as a soldier.
mil-i-ta-ry (*'i-tā-ri*), *adj.* pertaining to soldiers or to arms; warlike; martial. [MARTIAL.]
mil-i-tate (*'i-tāt*), *v. i.* to be, or stand, opposed; operate against (with *against*).
milk (*milk*), *n.* a white fluid secreted by the mammary glands of female mammals for the nourishment of their young: *v. t.* to draw milk from.
milk-sop (*'sop*), *n.* an effeminate, weak person.
mill (*mil*), *n.* a machine for grinding and reducing a substance to small particles; a manufactory.
Milledgeville, Georgia. Named after Governor Milledge, a soldier of the Revolution.
mil-len-ni-al (*mil-len'i-al*), *adj.* of, or pertaining to, the millennium.
mil-len-ni-um (*'i-um*), *n.* the space of 1,000 years, especially that period during which Satan will be bound and Christ will reign on earth.
mil-ler (*'ēr*), *n.* one who keeps or works a flour mill.
milli, a *prefix* meaning *1,000th part of*, as *milli*ampere, the 1,000th part of an ampere.
mil-li-ner (*mil'i-nēr*), *n.* one who makes women's bonnets, hats, headdresses etc.
mil-li-ner-y (*'i-ner-i*), *n.* the articles made and sold by a milliner.
mil-lion (*'yun*), *n.* the number of ten hundred thousand; an indefinitely large number.
mil-lion-aire (*-ār'*), *n.* a person who is worth a million; one very rich.
mill-race (*'rās*), *n.* a current of water that drives a mill.
mill-stone (*'stōn*), *n.* one of two flat cylindrical stones for grinding grain.
Milwaukee (*mil-waw'kē*), **Wis.** Named from the river, which was called by the Algonquins *Minnwaukee*, or *Me-ne-wau-kee*, "good earth," "good country," "rich or beautiful country."
mim-ic (*mim'ik*), *adj.* inclined to imitate; imitative: *n.* one who mimics or imitates: *v. t.* to imitate, or ridicule by imitation.
mim-ic-ry (*-ri*), *n.* ludicrous imitation for sport or ridicule; close external likeness.
Mina. Abbreviated from *Wilhelmina*, or from the English form, *Williamina.*
min-a-ret (*min'a-ret*), *n.* a tall, slender turret from which a crier calls the people to prayers.
mince (*mins*), *v. t.* to cut or chop into minute pieces; extenuate or suppress.
mince-meat (*'mēt*), *n.* meat chopped very fine, especially with suet, raisins, lemon peel, etc.
Mincing lane. A street in London connecting Fenchurch street with Great Tower street, the center of colonial (wholesale) trade.
mind (*mīnd*), *n.* the intellectual or rational faculty in man; the understanding or intellect; soul.
mind-ful (*'fool*), *adj.* bearing in mind; observant; attentive.
mine (*mīn*), *poss. pron.* belonging to me: *n.* an excavation in the earth from which minerals, precious stones, etc., are extracted: *v. i.* to carry on mining operations: *v. t.* to dig out; excavate.
min-er-al (*min'ēr-al*), *n.* any inorganic body found on the surface of, or in, the earth: *adj.* pertaining to, consisting of, or impregnated with, a mineral.
min-er-al-o-gy (*-al'ō-ji*), *n.* the science of minerals.
Minerva (*mi-nēr'vā*). So named from *Minerva*, goddess of wisdom, war, and all the liberal arts.
min-gle (*ming'gl*), *v. t.* to intermix; join or combine; *v. i.* to be mixed or united with. [MIX.]
min-i-a-ture (*min'i-ā-tūr*), *n.* a very small painting, especially a portrait on ivory, etc.: *adj.* diminutive: minute.
min-im (*'im*), *n.* the smallest liquid measure; a single drop.
min-i-mize (*min'i-mīz*), *v. t.* to reduce to a minimum.
min-i-mum (*'mum*), *n.* [*pl.* minima (*-mà*)], the least quantity; trifle.
min-ing (*mīn'ing*), *p. adj.* pertaining to mines; burrowing in the earth: *n.* the act of making mines or working them.
min-ion (*min'yun*), *n.* a size of type intermediate between nonpareil and brevier (see type); a servile flatterer or dependent.
min-is-ter (*'is-tēr*), *n.* a servant; ambassador; a clergyman or pastor of a church authorized to preach and administer the sacraments: *v. t.* to supply; administer: *v. i.* to serve in some office, clerical or lay.
Syn. MINISTER, agent. The *minister* gives his counsel, and exerts his intellectual powers in the service of another; but the *agent* executes the orders or commissions given him; a *minister* is employed by government in political affairs; an *agent* is employed by individuals in commercial and pecuniary affairs.
min-is-te-ri-al (*-ē'ri-al*), *adj.* pertaining to ministry or service, official or clerical.
min-is-tra-tion (*-trā'shun*), *n.* the act of ministering; administration; service.
min-is-try (*'is-tri*), *n.* [*pl.* ministries (*-triz*)], the agency or service of a minister of religion; the office, duties, or functions of a minister of state.
mink (*mingk*), *n.* a carnivorous mammal allied to the weasel, yielding a valuable fur.
Minneapolis, Minn. So called from Dakota Indian words, *minni*, "water," *ha*, "curling," and the Greek word *polis*, "a city," namely "city of the curling water," alluding to the falls of St. Anthony.
Minnehaha (*min-nē-hà'hà*) **river, Minn.** A Dakota Indian compound word *minne*, "water," *rara*, "to laugh," *Minnerara.* Hennepin, in 1680, from a false pronunciation, gave the present ending, "haha."
Minnesota (*min-nē-sō'tà*). One of the north central states of the Union, named from the St. Peter's river, the Indian name of which was *Minnisotah, minni*, "water," *sotah*, "muddy or slightly turbid."
min-now (*'ō*), *n.* a fresh-water fish of small size.
mi-nor (*mī'nēr*), *adj.* smaller; less; inconsiderable; *n.* one of either sex who is under the age of 21.
Minorca (*mi-nōr'kà*) **island.** In accordance with the Latin *minor*, "the lesser island." The second largest of the Balearic islands.
mi-nor-i-ty (*mi-nor'i-ti*), *n.* [*pl.* minorities (*-tiz*)], the smallest number: opposed to majority; the state of being a minor.
min-o-taur (*min'ō-tawr*), *n.* in classic mythology, a monster with the head of a bull and the body of a man.
min-strel (*'strel*), *n.* a poet or musician.
mint (*mint*), *n.* the place where money is coined by government authority; an odoriferous plant yielding a pungent essential oil: *v. t.* to coin or stamp (money).
★**min-u-et** (*min'ū-et*, not *min-ū-et'*), *n.* a slow graceful dance; music for such a dance.
mi-nus (*mī'nus*), *n.* the sign (—) of subtraction.
mi-nute (*-nūt'*), *adj.* very small; precise: *n.* (*min'it*) 1-60th part of an hour or of a degree; an official note; memorandum. [CIRCUMSTANTIAL.]
mi-nu-ti-æ (*mi-nū'shi-ē*), *n. pl.* smaller or minor details or particulars.
minx (*mingks*), *n.* a pert, wanton girl.
Mira. See *Myra.*
mir-a-cle (*mir'à-kl*), *n.* a supernatural occurrence or act; wonder or marvel. [WONDER.]
mi-rac-u-lous (*mi-rak'ū-lus*), *adj.* performed supernaturally; wonderful.
★**mi-rage** (*mē-rāzh'*), *n.* an optical atmospheric illusion by which the image of a distant object is seen as if inverted.
mire (*mīr*), *n.* deep mud; wet clayey earth: *v. t.* to soil with mire; plunge and fix in mud: *v. i.* to sink in mud.
Miriam (*mir'i-am*). From the Hebrew *Miryam*, the etymology of which is doubtful.
mir-ror (*mir'ēr*), *n.* a looking-glass; speculum; pattern: *v. t.* to reflect as in a mirror.
mirth (*mērth*), *n.* noisy gayety; social merriment; hilarity; jollity. [JOY.]
mis, *prefix* meaning *wrong, wrongly, ill, error, divergence.*
mis-ad-ven-ture (*mis-ad-ven'tūr*), *n.* an unlucky accident; misfortune. [ACCIDENT.]
mis-al-li-ance (*-à-li'ans*), *n.* an improper alliance by marriage.
mis-an-thrope (*'an-thrōp*), *n.* a hater of mankind.
mis-ap-pre-hend (*-ap-rē-hend'*), *v. t.* to misunderstand; misconceive.
mis-carry (*-kar'i*), *v. i.* to go wrong; be unsuccessful; bring forth young prematurely.
mis-cel-la-ny (*'ē-là-ni*), *n.* [*pl.* miscellanies (*-niz*)], a mixture of various kinds.
mis-chance (*-chans'*), *n.* misfortune; mishap. [CALAMITY.]
mis-chief (*'chif*), *n.* harm; injury; hurt; damage; misfortune.
★**mis-chie-vous** (*'chē-vus*), *adj.* producing injury or damage; hurtful: inclined to mischief.
mis-con-ceive (*-kon-sēv'*), *v. t.* to conceive wrongly; misjudge; misapprehend.
mis-con-cep-tion (*-sep'shun*), *n.* false opinion; misapprehension.
mis-cre-ant (*'krē-ant*), *n.* an unscrupulous villain; vile wretch: *adj.* unscrupulous.
mis-de-mean-or (*-dē-mēn'ēr*), *n.* evil conduct; a crime less than a felony.
mi-ser (*mī'zēr*), *n.* a man who denies himself the comforts of life to hoard up money. [FRUGALITY.]
mis-er-a-ble (*miz'ēr-à-bl*), *adj.* wretched; very unhappy; worthless; despicable; very poor.
mis-er-y (*'ēr-i*), *n.* extreme pain, distress, or misfortune; great unhappiness.
mis-fit (*mis'fit*), *n.* nonfitting clothing; a person in a position for which he is unfitted.
mis-for-tune (*-fôr'tūn*), *n.* bad fortune, calamity. [CALAMITY, ACCIDENT.]
mis-giv-ing (*-giv'ing*), *n.* evil premonition. [ANXIETY.]
mis-hap (*-hap'*), *n.* evil accident. [CALAMITY, ACCIDENT.]
mis-lay (*mis-lā'*), *v. t.* to lose.
mis-place (*mis-plās'*), *v. t.* to put in a wrong place; place on an improper or undeserving object.
mis-rep-re-sent (*-rep-rē-zent'*), *v. t.* to represent falsely or incorrectly, willfully, or through carelessness.
miss, *n.* a young unmarried girl or woman; failure to hit, reach, perceive, or obtain: *v. t.* to fail to hit. [LOSE.]
mis-sal (*'al*), *n.* the book containing the order of service for the Roman Catholic mass.
mis-sile (*mis'il*), *n.* a weapon or thing thrown, or designed to be thrown, to injure another.
mis-sion (*mish'un*), *n.* the act of sending, or state of being sent with certain powers, especially to propagate religion; embassy.
mis-sion-a-ry (*-à-ri*), *n.* a person who is sent to propagate religion, especially in foreign parts: *adj* pertaining to missions or missionaries.
Mississippi. State of the Union, county in Arkansas and Missouri, and the largest river in the United States. An Indian word, meaning "great water," or "gathering in of all the waters," and "an almost endless river spread out."
mis-sive (*'iv*), *n.* a letter or message: *adj.* sent specially.
Missoula (*mi-zōō'là*). County, river, and city in Montana. The name is said to mean the same as *Missouri*, "muddy water."
Missouri (*mis-sōō'ri, miz-zōō'ri*, commonly *miz-ōō'rà*). A state of the Union, named from river of the same name. *Mis-souri*, compound word, from two very different languages—*mis* (Algonquin), "great," *souri* (Dakota, commonly called Sioux), meaning "muddy;" in Eng., "big muddy."
mist (*mist*), *n.* visible watery vapor in the atmosphere, at or near the earth's surface; fog: *v. i.* to rain in minute drops.
mis-take (*mis-tāk'*), *v. t.* [*p. t.* mistook, *p. p.* mistaken, *p. pr.* mistaking], to misunderstand; misconceive; misjudge: *v. i.* to err in judgment or opinion: *n.* an error. [ERROR.]
Mis-ter (*'tēr*), *n.* a title of address prefixed to a man's name (abbreviated in writing *Mr.*).
★**mis-tle-toe** (*mis'l-tō*, not *mis'l-tō*), *n.* an evergreen plant parasitic on apple trees, and on the oak.
mis-tress (*mis'tres*), *n.* a woman who exercises authority or governs; sweetheart.
mist-y (*mist'i*), *adj.* characterized by, or obscured with, mist; dim; obscure; clouded.
mis-un-der-stand (*mis-un-dēr-stand'*), *v. t.* to take in a wrong sense; misconceive.
mis-use (*mis-ūz'*), *n.* wrong use. [ABUSE.]
mite (*mīt*), *n.* a minute insect of the division Arcadia; a very small object or quantity.
mi-ter, mi-tre (*mī'tēr*), *n.* the headdress of the high priest of the Jews; the junction of moldings at an angle of 45 degrees: *v. t.* to adorn with a miter; join at 45 degrees.
mit-i-gate (*mit'i-gāt*), *v. t.* to render less severe, rigorous or painful; soften; alleviate. [ALLAY.]
mit-ten (*'n*), *n.* a fingerless winter glove; a fingerless cover for the hand or wrist.
mix (*miks*), *v. t.* to unite or blend into one mass or compound; join: *v. i.* to associate; mingle.
Syn. MIX, mingle, blend, confound. *Mix* is here a general and indefinite term, signifying simply to put together; but we may *mix* two or

several things; we *mingle* several objects; things are *mixed* so as to lose all distinction; but they may be *mingled* and yet retain a distinction; to *blend* is only partially *to mix*, as colors *blend* which fall into each other; *to confound* is *to mix* in a wrong way, as objects of sight are *confounded* when they are erroneously taken to be joined.

mix-ture (*miks'tūr*), *n.* the state of being mixed; a compound or mass formed by mixing.

miz-zen (*miz'n*), *n.* the hindmost of the fore-and-aft sails of a vessel.

mne-mon-ics (*nē-mon'iks*), *n. pl.* the art or science of assisting the memory.

moan (*mōn*), *v. i.* to utter a low sound from, or as from, pain or sorrow: *n.* a low, prolonged expression of sorrow or pain. [GROAN.]

moat (*mōt*), *n.* a ditch around a fortress, etc.: *v. t.* to surround with a moat.

mob (*mob*), *n.* the populace; a rude disorderly crowd: *v. t.* to attack in a disorderly crowd; crowd about and annoy.

mo-bile (*mō'bil*), *adj.* easily moved. [ACTIVE.]

Mobile (*mō-bēl'*). A town in Alabama from which Mobile bay takes its name.

mob-i-lize (*mōb'i-līz*), *v. t.* to call (troops) into active service.

moc-ca-sin (*mok'a-sin*), *n.* a deerskin sandal or shoe worn by the North American Indians; a poisonous American snake.

mo-cha (*mō'kä*), *n.* a kind of coffee from Mocha, a seaport of Arabia.

mock (*mok*), *v. t.* to ridicule; mimic in sport, contempt, or derision: *adj.* false; counterfeit.

mo-dal (*mō'dal*), *adj.* pertaining to mode or form; indicating some mode of expression.

mo-dal-i-ty (*-dal'i-ti*), *n.* the fact of being a mode; in law, the quality of being suspended by a condition.

mode (*mōd*), *n.* form; custom; fashion; manner; variety of a syllogism.

mod-el (*mod'el*), *n.* a pattern of something to be made, or reproduced; exam le for imitation: *adj.* serving as a pattern or model: *v. t.* to form after a model. [COPY.]

mod-er-ate (*mod'ĕr-āt*), *v. t.* to keep within bounds; lessen: *v. i.* to become less violent or intense; preside as a moderator: *adj.* calm; reasonable; mild.

mod-ern (*'ĕrn*), *adj.* pertaining to the present time; recent: *n. pl.* people of modern times. [NEW.]

mod-est (*'est*), *adj.* restrained by a due sense of propriety; diffident; decent; chaste.

Syn. MODEST, bashful, diffident. *Modesty* is a proper distrust of ourselves; *bashfulness* is a state of feeling which betrays itself in a downcast look or a timid air; *diffidence* is a culpable distrust; *diffidence* altogether unmans a person, and disqualifies him for his duty. [Se *humble*.]

mod-i-fi-ca-tion (*-i-fi-kā'shun*), *n.* the act of modifying; slight change in form.

mod-i-fy (*'i-fī*), *v. t.* to change slightly in form; vary; qualify; reduce.

★**mo-diste** (*mō-dēst'*), *n.* a fashionable dressmaker.

mod-u-late (*mod'ū-lāt*), *v. t.* to vary the sound of; change the key or mode of: *v. i.* to pass from one musical key to another.

Mo-ham-me-dan (*mō-ham'ed-an*), *adj.* pertaining to Mohammed, or to Mohammedanism: *n.* an adherent of Mohammedanism.

Mohawk. River, township, and village in Herkimer county, New York, said by one authority to have been named for a tribe of Indians, the word meaning "eats what lives," indicating that they were cannibals.

Mohegan (*mō-hē'gan*) **lake, N. Y.** Named from a tribe of Indians whose name was from *maingan*, "a wolf."

moi-e-ty (*moi'e-ti*), *n.* one of two equal parts or shares; half.

moire (*mwär*), *n.* watered silk.

moist (*moist*), *adj.* containing water or other liquid; humid; damp.

mois-ture (*mois'tūr*), *n.* a moderate degree of dampness; slight wetness.

Syn. MOISTURE, humidity, dampness. *Moisture* is used in general to express any small degree of infusion of a liquid into a body; *humidity* is employed scientifically to describe the state of having any portion of such liquid; hence we speak of the *moisture* of a table, the *moisture* of paper, but the *humidity* of the air, or of a wall that has contracted moisture of itself. *Dampness* is that species of *moisture* that arises from the gradual contraction of a liquid in bodies capable of retaining it; in this manner a cellar is *damp*.

mo-lar (*mō'lėr*), *n.* a double tooth or grinder: *adj.* used for, and capable of, grinding.

mo-las-ses (*-las'ez*), *n.* treacle.

mold, mould (*mōld*), *n.* a minute fungoid growth of decaying animal or vegetable matter; the matrix in which anything is cast or shaped: *v. t.* fashion in, or as in, a mold. [FORM.]

Moldavia (*mol-dā'vi-ä*). The country traversed by the Moldau, a section of the Roumania.

mold-er, mould-er (*mōld' ėr*), *v. t.* to turn into dust by natural decay: *v. i.* to crumble to mold; waste away by degrees: *n.* one who molds.

mold-ing, mould-ing (*'ing*), *n.* the act of molding; anything made in or by a mold.

mole (*mōl*), *n.* a dark-colored mark or small protuberance on the skin; a small soft-furred burrowing animal.

mol-e-cule (*mol'ē-kūl*), *n.* the smallest quantity of an element or compound which can exist separately.

mo-lest (*mō-lest'*), *v. t.* to annoy or interfere with; trouble; vex. [INCONVENIENCE, ABUSE, TROUBLE.]

mol-li-fy (*mol'i-fī*), *v. t.* to calm; soften; assuage.

Molly. A baptismal name derived from *Mary*.

molt, moult (*mōlt*), *v. i.* to cast the feathers, hair, skin, etc.

mol-ten (*mōl'tn*), *adj.* melted; made of melted metal.

mo-ment (*mō'ment*), *n.* the smallest possible portion of time; an instant. [INSTANT.]

mo-men-ta-ry (*'men-tā-ri*), *adj.* lasting only for, or done in, a moment.

mo-men-tous (*-men'tus*), *adj.* very important.

mo-men-tum (*-men'tum*), *n.* impetus; the product of the mass by the velocity of a moving body.

mon-ad (*mon'ad*), *n.* an ultimate atom; a simple primary constituent of matter.

Monadnock (*mō-nad'nok*). A mountain in New Hampshire. An Indian word, meaning "spirit place," or, possibly, "bad," as signifying the difficulty of the ascent.

mon-arch (*'ärk*), *n.* a supreme ruler; sovereign; the chief of its class or kind: *adj.* supreme.

mon-arch-y (*'ärk-i*), *n.* [*pl.* monarchies (*-iz*)], government in which the supreme power, either absolute or limited, is vested in a monarch, kingdom, or empire.

mon-as-ter-y (*'as-ter-i*), *n.* a home for religious retirement for men. [CLOISTER.]

mon-as-tic (*mon-as'tik*), *adj.* pertaining to monasteries, monks, their rules, etc. [Also *monastical*.]

Monday. The second day of the week. The "day of the moon," so called from Lat. name, *dies lunæ*.

mon-e-ta-ry (*mun'ē-tā-ri*), *adj.* pertaining to money. [FINANCIAL.]

mon-e-tize (*'ē-tīz*), *v. t.* to convert into money; give a standard or current value to.

mon-ey (*mun'i*), *n.* coin; specie; gold, silver, or other metal stamped by legal authority and used as currency. The first silver money was coined at Rome, A. U. C. 482. The mint was in the temple of Juno Moneta, and this circumstance occasioned the origin of our word *money*.

Syn. MONEY, cash. *Money* is applied to everything which serves as a circulating medium; *cash* is, in a strict sense, put for coin only.

mon-eyed (*'id*), *adj.* possessed of money; wealthy.

mon-grel (*mung'grel*), *adj.* of a mixed breed or kind: *n.* anything of mixed breed or kind.

Monica (*mon'ē-ka*). A feminine name. It may be from Italian *monaca*, "a nun," or a feminine formed from its root, Latin, *monachus*, "a monk."

mon-ism (*mon'izm*), *n.* the doctrine of the unity of substance; the identity of matter and mind.

mon-ist (*'ist*), *n.* a supporter or advocate of monism.

mo-ni-tion (*mō-nish'un*), *n.* admonition; warning; notice.

mon-i-tor (*mon'i-tėr*), *n.* one who warns or admonishes; a genus of large lizards.

monk (*mungk*), *n.* a man who devotes himself exclusively to a religious life and lives in community with others similarly bound by vows to chastity, obedience, and poverty.

mon-key (*mung'ki*), *n.* [*pl.* monkeys (*'kiz*)], a quadrumanous mammal, of the species Simiidæ; a name for various mechanical contrivances.

monk-ish (*mungk'ish*), *adj.* pertaining to, or resembling, a monk; monastic.

mono, a *prefix* meaning *one, single, alone:* as *mono*basic: *adj.* having only a single atom or equivalent of base, *mono*cle, an eyeglass for one eye. [Also *mon*.]

Monocacy (*mō-nōk'-ä-si*) **river, Md.** From the Indian name *menagassi*, "creek of many bends."

mo-noc-u-lar (*mō-nok'ū-lėr*), *adj.* adapted for use for one eye; with one eye only.

mo-nog-a-my (*mō-nog'ä-mi*), *n.* marriage of one wife only; marrying only once.

mon-o-gram (*mon'ō-gram*), *n.* a cipher or character formed by the interweaving of two or more letters.

mon-o-graph (*'ō-grāf*), *n.* a paper or treatise written on one particular subject or some branch of it.

mon-o-lith (*'ō-lith*), *n.* a pillar or column formed of a single stone.

mon-o-logue (*'ō-log*), *n.* a dramatic scene in which one person only speaks; soliloquy.

mon-o-ma-ni-a (*-mā'ni-ä*), *n.* mental derangement in regard to one subject only.

Monongahela (*mō-non-gä-hē'lä*) **river, Pa.** So called from the Indian name *menawngihella*, "falling-in bank," "a river without islands."

mon-o-plane (*mon'ō-plān*), *n.* a flying machine having one or more supporting surfaces on the same plane.

mo-nop-o-list (*mō-nop'ō-list*), *n.* one who has a monopoly, or monopolizes.

mo-nop-o-lize (*'ō-līz*), *v. t.* to acquire the possession of so as to be the only seller; to engross the whole of.

mon-o-rail (*mon'ō-rāl*), *n.* a system of railway in which only one rail is used, the cars being kept erect by the sustaining force of swiftly revolving gyroscopes.

mon-o-the-ism (*mon'ō-thē-izm*), *n.* the doctrine of, or belief in, the existence of one God.

mon-o-tone (*mon'ō-tōn*), *n.* recitation on a single note or key: *v. t.* to recite (as prayers) on a single note.

mo-not-o-ny (*mō-not'ō-ni*), *n.* dull uniformity of tone; unvarying or irksome sameness.

mon-sieur (*mo-sĕr'*, French *mo-sy ĕ'*) *n.* [*pl.* messieurs (*mesh'y ĕrz*, French *me-sy ĕ'*)], a French title of courtesy, equivalent to *Sir* or *Mr*.

mon-soon (*mon-sōōn'*), *n.* a periodical wind in the Indian Ocean.

mon-ster (*'stėr*), *n.* anything out of the usual course of nature; prodigy; something greatly deformed. [WONDER.]

mon-stros-i-ty (*-stros'i-ti*), *n.* [*pl.* monstrosities (*-tiz*)], the state or quality of being monstrous; an unnatural production.

mon-strous (*'strus*), *adj.* out of the common course of nature; wonderful; huge; horrible. [ENORMOUS, ABSURD.]

Montana (*mon-tä'nä*). Spanish *montana*, "a mountain," literally, a hilly country. A western state of the Union. Name proposed in 1864 by Hon. James M. Ashley, who was chairman of the committee on territories, suggested by territory's embracing such a large portion of the Rocky mountains and its spurs.

Montauk (*mon-tawk'*) **Point, N. Y.** So called from the Indian *manati-auke, manati*, "country," *auke*, "island," the "island country."

Mont Blanc (*mōn blăN'*). Means, "white mountain." The highest mountain of the Alps, situated on the frontiers of France and Italy, eternally covered with snow.

Monterey (*mon-te-rā'*), **Cal.** Named in 1603 by Vizcaino in honor of Monte Rey, viceroy of Spain, who had dispatched the expedition under Vizcaino.

Monte Rosa (*mon'te rō'sä*). Meaning "rosy mountain." The highest mountain of the Alps next to Mont Blanc.

Montgomery (*mont-gum'ĕr-i*), **Ala.** After General Richard Montgomery, who was killed at Quebec, Canada, 1775.

month (*munth*), *n.* one of the twelve divisions of the year, either calendar or lunar.

Montpelier (*mont-pē'li-ĕr*), **Vt.** From the French, translated a "little or lesser mountain," probably suggested from Montpellier, a town in France.

Montreal (*mont-rē-awl'*). A city in Quebec province, Canada. In 1535, Jacques Cartier, on his second voyage, ascended the St. Lawrence as far as Quebec, where he left his ship, and reached an Iroquois village called Hochelaga, perched on an eminence, which from its splendid position he called *Mont Royal*, the "royal mount," now *Montreal*.

mon-u-ment (*mon'ū-ment*), *n.* anything that perpetuates the memory of a person or event.

mon-u-men-tal (*-men'tal*), *adj.* pertaining to, or serving as, a monument; lasting.

moo (*mōō*), *v. i.* to make the noise of a cow; low: *n.* the lowing of a cow.

mood (*mōōd*), *n.* style; manner; temper of mind; variation in the form of a verb to express the manner of action or being. [HUMOR.]

mood-y (*'i*), *adj.* [*comp.* moodier, *superl.* moodiest], abstracted and pensive; out of temper; sad.

moon (*mōōn*), *n.* the satellite that revolves around the earth; satellite of a planet: *v. i.* to wander and look about in an abstracted and listless manner.

moon-sail (*'sāl*), *n.* a sail carried above a skysail. [Also *moonraker*.]

moon-shine (*'shin*), *n.* moonlight; show without reality; smuggled spirits.

moon-stone (*'stōn*), *n.* a translucent stone of yellowish or yellow-white color exhibiting beautiful pearly reflections.

moon-struck (*'struk*), *adj.* lunatic.

moor (*mōōr*), *n.* an extensive tract of waste land covered with heather: *v. t.* to secure (a ship) by a cable and anchor.

moor-ing (*'ing*), *n.* the act of securing a vessel to a particular place; the cables, anchors, etc., laid at the bottom of a harbor.

moose (*mōōs*), *n.* a large North American deer resembling the European elk.

Moosehead lake, Me. Indian name *Kennebec*, meaning "long lake," also *Seboomook*, meaning "shape of the moose's head."

moot (*mōōt*), *v. t.* to propose for discussion: *v. i.* to argue or plead on a supposed case: *n.* a discussion on a supposed case: *adj.* subject to, or open for, discussion or debate.

mop (*mop*), *n.* an instrument for washing floors, decks: *v. t.* to rub or dry with a mop.

mope (*mōp*), *v. i.* to be silent, dull, or dispirited.

mo-raine (*mō-rān'*), *n.* a line of rocks and gravel at the edges and base of glaciers.

mor-al (*mor'al*), *adj.* pertaining to morality or morals; conformed to right; virtuous: *n. pl.* conduct of life; behavior. [MANNERS.]

mo-rale (*mō-rāl'*), *n.* moral condition; that mental state which renders a man capable of endurance and of exhibiting courage in the presence of danger.

mo-ral-i-ty (*mō-ral'i-ti*), *n.* [*pl.* moralities (*-tiz*)], the doctrine or practice of the duties of life; ethics; virtue.

mor-al-ize (*mor'al-īz*), *v. t.* to apply or explain in a moral sense; render moral: *v. i.* to make reflections on good or evil.

mo-rass (*mō-ras'*), *n.* a swamp; fen.

Moravia (*mō-rā'vi-ä*). The country traversed by the Morava, a section of Austria-Hungary.

mor-bid (*mōr'bid*), *adj.* pertaining to disease; sickly; unhealthy. [SICK.]

mor-dant (*môr'dant*), *adj.* biting into or fixing colors; sarcastic; caustic: *n.* a substance that serves to fix certain colors in dyeing.

Mordecai (*môr'dē-ki*). From the Hebrew, *Mord'khay*, which Tregelles derived from the Persian, meaning "little man," or from *Merodach*, "worshiper of Mars."

more (*môr*), *adj.* [*comp.* of many and much, *superl.* most], greater in number, quality, extent: *adv.* to a greater degree, etc.; again; *n.* a greater quantity, number.

mo-reen (*mō-rēn'*), *n.* a stout woolen embossed or figured fabric.

more-o-ver (*môr-ō'vēr*), *adv.* besides; further.

Morgan. Some translate this name "by the sea," or "sea-dweller," or "seaman"; doubtless from Welsh *mor*, "the sea," *gan*, "bringing forth."

mor-ga-nat-ic (*môr-gą-nat'ik*), *adj.* noting the marriage of a man of royal rank with a woman of inferior degree, whose children are legitimate but cannot inherit their father's rank or possessions.

morgue (*môrg*), *n.* a place where the bodies of persons unknown found dead are exposed for identification.

mor-i-bund (*mor'i-bund*), *adj.* dying.

Moritz. See *Maurice.*

morn-ing (*môrn'ing*), *n.* the early part of the day: morn [*Poetry.*] *adj.* pertaining to, occurring, or performed, in, the morning.

mo-roc-co (*mō-rok'ō*), *n.* a fine kind of grained leather of goatskin or sheepskin.

Morocco. More correctly *Marocco.* The European name of the north African sultanate called by the natives *Maghrib el Aksa*, "the furthest west," or *El Gharb*, "the west."

mo-rose (*-rōs'*), *adj.* sullen; austere; gloomy.

mor-phi-a (*môr'fi-ą*), *n.* the narcotic principle of opium.

mor-phin-ism (*'fin-izm*), *n.* a morbid state occasioned by the excessive use of morphia.

mor-phol-o-gy (*-fol'ō-ji*), *n.* the science of the forms in the organisms of animals and plants.

mor-ris (*mor'is*), *n.* a Moorish dance with tambourines, bells, castanets.

mor-row (*'ō*), *n.* the next day.

mor-sel (*môr'sel*), *n.* a small piece.

mor-tal (*môr'tal*), *adj.* subject to death; causing death; fatal; punishable with death: *n.* a human being; man, as subject to death. [DEADLY.]

mor-tal-i-ty (*-tal'i-ti*), *n.* the condition of being mortal; mankind; frequency or number of deaths in ratio to population.

mor-tar (*'tĕr*), *n.* a vessel in which substances are pounded with a pestle; a building cement of lime, sand, and water.

mort-gage (*môr'gāj*), *n.* a deed conveying property to a creditor as security for the payment of a debt: *v. t.* to convey or make over to a creditor as security.

mor-ti-fi-ca-tion (*-ti-fi-kā'shun*), *n.* gangrene; subjugation of the passions and appetites by abstinence; humiliation.

mor-ti-fy (*'ti-fī*), *v. t.* produce gangrene in; subdue by penance or austerities; humble; depress; chagrin: *v. i.* to be subdued; practice austerities. [ABASE.]

mor-tise (*'tis*), *n.* a hole made in wood to receive a tenon: *v. t.* to cut or make a mortise in.

mort-main (*môrt'mān*), *n.* alienation of lands or tenements to any corporate body.

mor-tu-a-ry (*mor'tū-ą-ri*), *n* [*pl.* mortuaries (*-riz*)], a building for the dead pending burial: *adj.* pertaining to the burial of the dead.

mo-sa-ic (*mō-zā'ik*), *adj.* pertaining to, or consisting of, mosaic work: *n.* a design, or form, of artistic work.

Moscow (*mos'kō*). Capital of Russia. Name derived from *Muscovea* or *Muscovy*, an old name for Russia, now called in Russian *Moskva*, from the small River Moskva on which it stands.

Moses (*mō'zez*). From the Greek *Mosheh*, "outdrawer, deliverer." Saimasius derives the name from the Coptic *moousi*, *moou*, "water," *si*, "from," or "to take or draw."

mosque (*mosk*), *n.* a Mohammedan temple.

mos-qui-to (*mos-kē'tō*), *n.* an insect of the genus *Culex*, the females of which puncture the skin, causing great cutaneous irritation and pain.

Mosquito Coast, Nicaragua. Owes its name to the troublesome insects (Spanish *mosca*, from the Latin *musca*, "a fly") which infest this neighborhood.

moss (*mos*), *n.* soft, peaty moorland; a lichen.

most (*mōst*), *adj.* [*superl.* of more], greatest in number, quantity, or degree: *n.* the greatest number, part, quantity, or value.

mote (*mōt*), *n.* a very small particle.

moth (*mōth*), *n.* a lepidopterous insect or its larvæ, which feed upon cloth fur, etc.

moth-er (*muth'ĕr*), *n.* female parent, especially one of the human race; one who has given birth to a child; origin or source: *adj.* native; producing others.

moth-er-in-law (*-in-law*), *n.* the mother of one's husband or wife.

moth-er-of-pearl (*-ov-pĕrl'*), *n.* the hard, silvery internal layer of various kinds of shells.

mo-tion (*mō'shun*), *n.* the act, process, or state of moving; passage of a body from one place to another; animal life and action: *v. i.* to make a significant movement or gesture.

Syn. MOTION, movement. We speak of a state of *motion* as opposed to a state of rest, of perpetual *motion*, the laws of *motion*, and the like; on the other hand, we say, to make a *movement* when speaking of an army, a general *movement* when speaking of an assembly.

mo-tive (*mō'tiv*), *adj.* causing motion: *n.* that which moves or excites to action; inducement; reason. [CAUSE, PRINCIPLE.]

mo-tive pow-er (*pou'ĕr*), any natural agent, as wind, water, steam, electricity, etc., employed to produce motion in a machine.

mo-tiv-i-ty (*-tiv'i-ti*), *n.* the power of producing motion.

mot-ley (*mot'li*), *adj.* covered with parts of various colors; heterogeneous.

mo-tor (*mō'ter*), *n.* that which produces motion, or power, especially a machine which performs mechanical work: *adj.* imparting motion.

mot-tle (*mot'l*), *v. t.* to mark with spots of various colors; variegate.

mot-to (*'ō*), *n.* [*pl.* mottoes (*'ōz*)], a concise sentence added to a device, or prefixed to anything, suggesting some guiding principle, etc.

mound (*mound*), *n.* an artificial bank of earth or stone, originally for defensive purposes; hillock.

mount (*mount*), *n.* a hill or mountain; a rocky mass or elevation rising above the level of the surrounding land: *v. t.* to raise on high; climb; ascend; bestride: *v. i.* to rise up; get on horseback.

Mount Vernon. Residence of Gen. George Washington, and city in Lawrence county, Missouri, named for the foregoing, which was originally built by Lawrence Washington for Admiral Vernon, for whom it was named.

Mount Zion (*zi'on*), or **Sion** (*si'on*). A hill on which was situated the old city of Jerusalem; the "city of David." The name has been applied to Jerusalem as a whole, and symbolically to the Christian church and heaven.

moun-tain (*moun'tin*), *n.* a large mass of rock or earth rising above the level of the adjacent country.

moun-tain-eer (*-ēr'*), *n.* one who dwells among, or climbs, mountains: *v. i.* to climb mountains.

Mount Desert (*dez-ērt'*) **island, Me.** Named by Champlain *Isle de Monts Deserts*, owing to barrenness of its craggy heights.

mount-e-bank (*mount'ē-bangk*), *n.* a quack-doctor; boastful pretender.

mourn (*môrn*), *v. i.* to grieve; lament; be sorrowful; wear mourning: *v. t.* to grieve for; bewail.

mourn-ful (*'fool*), *adj.* causing, or expressing, sorrow; doleful; sad.

mourn-ing (*'ing*), *n.* expression of grief; lamenting; the dress of a mourner. [GRIEF.]

mouse (*mous*), *n.* [*pl.* mice (*mīs*)], a small rodent of the genus *Mus*, that infests houses, granaries, etc.

mouth (*mouth*), *n.* the opening in the head of an animal by which it receives food and utters sounds: *v. t.* to utter with an affected swelling or pompous voice.

mouth-ful (*'fool*), *n.* [*pl.* mouthfuls (*-foolz*)], as much as can be put into the mouth at one time; small quantity.

mouth-piece (*'pēs*), *n.* that part of an instrument which is held in or applied to the mouth; a spokesman.

mov-a-ble (*mōōv'ą-bl*), *adj.* capable of being moved or conveyed.

move (*mōōv*), *v. t.* to cause to change place or position; impel; set in motion; rouse to action: *v. i.* to change place or position: *n.* the act of moving; artifice or scheme. [STIR.]

Syn. MOVING, affecting, pathetic. The good or bad feelings may be *moved*; the tender feelings only are *affected*. A field of battle is a *moving* spectacle; the death of a friend is an *affecting* spectacle; the *pathetic* applies only to what is addressed to the heart; hence an address is *pathetic*. [See *motion, persuade.*]

mow (*mō*), *v. t.* to cut down with, or as with, a scythe: *v. i.* to cut grass with a scythe.

mow (*mou*), *n.* a heap of hay, etc., stowed in a barn; the compartment in a barn where hay, etc., are stored: *v. t.* to stow in a mow.

much (*much*), *adj.* [*comp.* more, *superl.* most], great in quantity or amount; long in duration; many in number: *adv.* to a great degree or extent.

mu-ci-lage (*mū'si-lāj*), *n.* a gummy or gelatinous substance; gum of plants.

mu-ci-lag-i-nous (*-laj'i-nus*), *adj.* pertaining to, resembling, or secreting, mucilage or gum.

muck (*muk*), *n.* moist dung; anything filthy or vile: *v. t.* to manure with dung.

mu-cous (*mu'kus*), *adj.* pertaining to, resembling, or secreting, mucus; viscous or slimy.

mu-cous mem-brane (*mem'brān*), the moist, glandular lining of the cavities and canals of the human body.

mu-cus (*'kus*), *n.* the viscid fluid secreted by the mucous membrane.

mud (*mud*), *n.* soft wet earth; mire.

mud-dle (*'l*), *v. t.* to make a mess of, or confuse; cloud or stupefy: *n.* a confused state.

muff (*muf*), *n.* a warm, soft, cylindrical cover of fur, etc., to keep the hands warm in cold weather.

muf-fin (*'in*), *n.* a soft, light, spongy round cake.

muf-fle (*'l*), *v. t.* to wrap up closely and warmly; cover or conceal the face of; cover up so as to deaden sound. *v. i.* to speak indistinctly.

mug (*mug*), *n.* an earthenware or metallic drinking vessel; the face.

mug-gy (*'i*), *adj.* warm, damp, and close; moldy.

mug-wump (*mug'wump*), *n.* an independent member of the Republican party.

mu-lat-to (*mū-lat'ō*), *n.* [*pl.* mulattoes (*'ōz*)], the offspring of parents, one of whom is negro and the other white. [Feminine, *mulattress.*]

mul-ber-ry (*mul'ber-i*), *n.* [*pl.* mulberries (*-iz*)], the tree or fruit of the genus Morus; dark purple.

mulch (*mulch*), *n.* half rotten straw, litter: *v. t.* to cover, or protect, with mulch.

mulct (*mulkt*), *v. t.* to punish with a fine: *n.* a fine, especially for some misdemeanor.

mule (*mūl*), *n.* the offspring of a male ass and a mare; a stubborn, obstinate person.

mull (*mul*), *n.* a headland or cape; a snuff-box made of the end of a horn; a very thin, soft kind of muslin: *v. t.* to warm, spice, and sweeten.

mult, multi, *prefixes* meaning many: as, *multi*angular, having many angles, *multi*florous, having many flowers.

mul-ti-ple (*mul'ti-pl*), *adj.* consisting of many parts: *n.* a number or quantity which contains another an exact number of times without a remainder.

mul-ti-plex (*mul'ti-pleks*) *adj.*, multiple, manifold; combining many in one.

mul-ti-pli-ca-tion (*mul-ti-pli-kā'shun*), *n.* the act or process of multiplying.

mul-ti-plic-i-ty (*-plis'i-ti*), *n.* the state of being manifold; a great number.

mul-ti-ply (*'ti-plī*), *v. t.* to cause to increase in number: *v. i.* make more by natural generation, production, or addition.

mul-ti-tude (*'ti-tūd*), *n.* a great number; crowd; assembly; populace (with *the*).

mul-ti-tu-di-nous (*-tū'di-nus*), *adj.* pertaining to, or consisting of, a multitude; numerous.

mum (*mum*), *adj.* silent: *n.* silence; a kind of strong ale: *interj.* be silent!

mum-ble (*'bl*), *v. t.* and *v. i.* to mutter or speak indistinctly; chew gently with closed lips.

mum-mer-y (*'ĕr-i*), *n.* masquerading; buffoonery; hypocritical parade or disguise.

mum-my (*''*), *n.* [*pl.* mummies (*'iz*)], a dead body embalmed after the manner of the ancient Egyptians.

mumps (*mumps*), *n.* a contagious febrile disease characterized by the swelling of the glands of the neck: *pl.* the sulks.

munch (*munch*), *v. t.* and *v. i.* to chew with an audible crunching noise.

Muncy, Pa. Named from the creek on which it is located, the water taking the name from the *Minsi* Indians. *Minsink*, "dwelling place of the Minsi."

mun-dane (*mun'dān*), *adj.* pertaining to the world.

Munich (*mū'nik*). The English name of the capital of Bavaria, which is called *München* in German. Both forms have been independently obtained from the old name *Munichen*, found in 1058, which is from Old High German *munich*, "a monk," the town having been built on lands belonging to the monks of the convent of Schaftlarn.

mu-nic-i-pal (*mū-nis'i-pal*), *adj.* pertaining to a city, corporation, state, or local self-government.

mu-nic-i-pal-i-ty (*-pal'i-ti*), *n.* [*pl.* municipalities (*-iz*)], a corporate town or city; a division of the country. [*French.*]

mu-nif-i-cence (*-nif'i-sens*), *n.* the quality or state of being munificent; liberality.

mu-nif-i-cent (*'i-sent*), *adj.* characterized by great liberality in giving; bountiful. [BENEFICENT.]

mu-ni-tions (*-nish'unz*), *n. pl.* military stores or materials.

mu-ral (*'ral*), *adj.* pertaining to, growing on, or resembling, a wall.

mur-der (*mûr'dĕr*), *n.* homicide with malice aforethought: *v. t.* to kill with premeditated malice.

Murfreesboro (*mûr'frēz-bur-ō*). City in Rutherford county, Tennessee, and town in Hertford county, North Carolina, named for Col. Hardy Murfree, an officer of the Revolution.

mu-ri-at-ic (*mū-ri-at'ik*), *adj.* derived from sea salt.

Muriel, Meriel. From the Greek *Myron*, "myrrh."

murk-y (*murk'i*), *adj.* dark; gloomy; obscure.

mur-mur (*mûr'mûr*), *n.* a low indistinct sound, as of a running stream: *v. i.* to make a low continued noise like the hum of bees.

mur-rain (*mur'ān*), *n.* an infectious and fatal disease among cattle.

mus-car-dine (*mus'kär-din*), *n.* a fungus which causes fatal disease in silkworms.

mus-ca-tel (*'ka-tel*), *n.* a variety of rich wine; the grapes which produce it; a sweet, fragrant pear. [Also *Muscadel, Muscadine.*]

mus-cle (*'l*), *n.* a highly contractile organ of fibrous tissue by which movement in an animal body is effected.

mus-cu-lar (*'kū-lĕr*), *adj.* pertaining to, consisting of, or performed by, muscles; strong; vigorous; brawny.

mus-cu-lar-i-ty (*-lar'i-ti*), *n.* the quality or state of being muscular.

muse (*mūz*), *v. i.* to study in silence; meditate; be absent-minded: *v. t.* to meditate on. [CONTEMPLATE.]

mu-se-um (*mū-zē'um*), *n.* a collection of natural, scientific, or literary curiosities, or of works of art; the building containing such a collection.

mush (*mush*), *n.* boiled Indian maize meal.

mush-room (*'rōōm*), *n.* an edible fungus, *Agaricus campestris*, or similar edible fungi; an upstart: *adj.* upstart; ephemeral.

mu-sic (*mū'zik*), *n.* the art or science of harmonic sounds; harmony or melody.
mu-si-cian (*-zish'an*), *n.* one skilled in the science of music; one who sings, or plays on a musical instrument.
musk (*musk*), *n.* a strong-scented substance obtained from the male musk-deer.
Muskegon (*mus-kē'gun*) **river, Mich.** So called from the Indian name, meaning "plenty of fish."
mus-ket (*mus'ket*), *n.* the firearm formerly used by infantry.
Muskingum (*mus-king'gum*). River and county in Ohio. An Indian word meaning "moose-eye river," so called because of the number of moose and elk which inhabited the country.
musk-rat (*musk'rat*), *n.* an aquatic rodent of North America which emits a musky secretion.
mus-lin (*muz'lin*), *n.* a fine, thin cotton cloth or fabric: *adj.* made of muslin.
muss (*mus*), *n.* a confused struggle; disorder: *v. t.* to disorder, as clothing.
mus-sel (*'el*), *n.* a marine edible bivalve.
Mus-sul-man (*'ul-man*), *n.* [*pl.* Mussulmans (*-manz*)], a Mohammedan, or Moslem.
must (*must*), *n.* unfermented expressed grape juice: *v. t.* to make moldy and sour: *v. i.* to be obliged morally or physically.
mus-tache (*mus-tash'*), *n.* hair worn on a man's upper lip. [Also *moustache.*]
mus-tang (*'tang*), *n.* the small, hardy, semiwild horse of the prairies.
mus-tard (*'tērd*), *n.* a plant and its seed of the genus Sinapis; a condiment made from the seed.
mus-ter (*'tēr*), *n.* an assembly of troops, for review or active service; register of troops mustered; assemblage: *v. t.* to assemble, as troops, for review or active service.
must-y (*'i*), *adj.* [*comp.* mustier, *superl.* mustiest], spoiled with damp, mold, or age; spiritless.
mu-ta-bil-i-ty (*mū-tā-bil'i-ti*), *n.* the quality of being subject to change; instability.
mu-ta-ble (*'tā-bl*), *adj.* susceptible of change.
mute (*mūt*), *adj.* silent; dumb: *n.* one who is dumb or remains silent; a consonant which is not pronounced, or intercepts the sound.
mu-ti-late (*mū'ti-lāt*), *v. t.* to cut off a limb or essential part of; render imperfect; maim.
mu-ti-la-tion (*-lā'shun*), *n.* the act of mutilating.
mu-ti-neer (*-ti-nēr'*), *n.* one who is guilty of mutiny: *v. i.* to mutiny.
mu-ti-nous (*'ti-nus*), *adj.* disposed to, or guilty of, mutiny; seditious.
mu-ti-ny (*'ti-ni*), *n.* insurrection against, or forcible resistance to, constituted authority: *v. i.* to rise against constituted authority.
mut-ter (*mut'ēr*), *v. i.* to utter words in a low voice with compressed lips; murmur: *v. t.* to utter indistinctly: *n.* indistinct utterance; murmur.
mut-ton (*'n*), *n.* the flesh of sheep.
mu-tu-al (*mū'tū-al*), *adj.* reciprocal.
Syn. MUTUAL, common. This word is often confounded with *common*. *Mutual* is used in referring to a thing that belongs to only two people; as, John and I have a *mutual* dislike; he dislikes me and I dislike him. We cannot say John and I have a *mutual* dislike for Mary. *Common* is used with reference to a third object or person; as, Mary is our *common* friend; she is your and my friend. Dickens' use of this word in "Our *Mutual* Friend" is condemned by many good authorities.
mu-tu-al-ism (*-izm*), *n.* the ethical doctrine of mutual dependence in social development.
muz-zle (*muz'l*), *n.* snout; the mouth of a gun, etc.; a fastening or cover for the mouth of a dog: *v. t.* to secure the mouth of with a muzzle.
my (*mī*), *poss. pron.* belonging to me.
Myles. Another spelling of *Miles.*
my-o-pi-a (*mī-ō'pi-ā*), *n.* shortsightedness.
Myra (*mī'rā*). A feminine name. The termination of some other Christian name; or from the Greek, *myron*, "myrrh."
myr-i-ad (*mir'i-ad*), *n.* the number of 10,000; a very large number: *adj.* innumerable.
myrrh (*mēr*), *n.* the aromatic gummy resin of *Balsamodendron myrrha*, growing in Arabia and Abyssinia.
myr-tle (*mēr'tl*), *n.* a fragrant evergreen shrub of the genus Myrtus.
my-self (*mī-self'*), *pron.* [*pl.* ourselves (*our-selvz'*)], I or me in person: used emphatically or reflexively.
mys-te-ri-ous (*mis-tē'ri-us*), *adj.* not clear to the understanding; obscure; incomprehensible.
Syn. MYSTERIOUS, abstruse, cabalistic, dark, enigmatical, hidden, incomprehensible, inexplicable, inscrutable, mystic, mystical, obscure, occult, recondite, secret, transcendental. That is *mysterious* in the true sense which is beyond human comprehension. That is *mystic* or *mystical* which has associated with it some *hidden* or *recondite* meaning, especially of a religious kind; that is *dark* which we can not personally see through; that is *secret* which is *hidden*. [See *secret, dark.*]
mys-ter-y (*'tēr-i*), *n.* [*pl.* mysteries (*-iz*)], something secret; obscure, or unexplained; that which is beyond human comprehension.
mys-tic (*'tik*), *adj.* pertaining to, or containing, mystery or mysticism; emblematical; occult. [Also *mystical.*] [OBSCURE, MYSTERIOUS.]
mys-ti-cism (*mis'ti-sizm*), *n.* the doctrines of the Mystics; obscurity of thought or teaching.
mys-ti-fi-ca-tion (*-fi-kā'shun*), *n.* the act of mystifying; the state of being mystified.
mys-ti-fy (*'ti-fī*), *v. t.* [*p. t.* and *p. p.* mystified, *p. pr.* mystifying], to involve in mystery; obscure; bewilder; puzzle.
myth (*mith*), *n.* a legend; poetic fiction; a fabulous narrative. [FICTION.]
myth-o-log-ic-al (*-ō-loj'i-kal*), *adj.* pertaining to mythology; mythical.
myth-ol-o-gist (*-ol'ō-jist*), *n.* a student of, or one skilled in, mythology.
myth-ol-o-gy (*'ō-ji*), *n.* [*pl.* mythologies (*-jiz*)], the collected body or system of the traditions or legends of a people; a treatise on myths.

N

nab (*nab*), *v. t.* [*p. t.* and *p. p.* nabbed, *p. pr.* nabbing], to catch or seize unexpectedly.
na-bob (*nā'bob*), *n.* in India, a deputy or administrator under the Mogul empire; a very wealthy man.
na-dir (*nā'dēr*), *n.* that part of the heavens directly under our feet, or directly opposite to the zenith.
nag (*nag*), *n.* a small saddle horse: *v. t.* to scold or find fault with continually: *v. i.* to find fault constantly.
Nanant (*nā-hänt', nā-hant'*). Town and watering-place in Essex county, Massachusetts. According to different authorities an Indian word meaning "at the point," or "two things united," the latter meaning given because the town is formed of two islands connected by a beach.
★**na-iad** (*nā'yad*), *n.* a water nymph.
nail (*nāl*), *n.* the horny substance at the ends of the human fingers and toes; a pointed piece of metal usually furnished with a head for fastening woodwork, etc.; *v. t.* to fasten with nails; to expose, as to *nail* a lie.
na-ive (*nā-ēv'*), *adj.* artless; ingenuous; unaffectedly simple.
na-ive-té (*nā-ēv-tā'*), *n.* natural, unaffected simplicity or ingenuousness.
na-ked (*nā'ked*), *adj.* unclothed; bare; unarmed; defenseless; exposed to view; plain.
na-n-by-pam-by (*nam'bi-pam'bi*), *adj.* weakly sentimental or affectedly pretty or fine.
name (*nām*), *n.* that by which a person or thing is called; designation; character; reputation: *v. t.* to give an appellation or designation to; specify; mention by name.
Syn. NAME, call. *Name* is employed for distinguishing or addressing one by *name*. To *call* signifies properly to address one loudly, consequently we may *name* without *calling*, when we only mention a *name* in conversation; and we may *call* without *naming*. [See *nominate.*]
name-sake (*'sāk*), *n.* one having the same name.
Nancy (*nan'si*, French *nän-sē'*). Name formed from *Nan* for *Ann.*
nan-keen (*nan-kēn'*), *n.* a buff-colored cotton cloth, originally from China.
Nantucket. Island and county in Massachusetts. This name appeared upon the maps in 1630 as *Natucko*, and some authorities state that it is derived from an Indian word meaning "far away."
Naomi (*nā-ō'mī, nā'ō-mī*). From the Hebrew *naomi*, signifying "my pleasantness."
nap (*nap*), *n.* a short slumber; doze; a game at cards; the woolly substance on the surface of cloth: *v. i.* to doze.
nape (*nāp*), *n.* the back of the neck.
na-per-y (*nā'pēr-i*), *n.* table linen; linen underclothing.
naph-tha (*naf'thā*), *n.* a clear, volatile, inflammable, bituminous, liquid hydrocarbon exuding from the earth, or distilled from coal tar, etc.; rock oil.
nap-kin (*nap'kin*), *n.* a small cloth, especially one used at table for wiping the hands, etc.
Naples (*nā'plz*). A French corruption of the Italian *Napoli*, which preserves, with little change, the old Greek name *Neapolis*, "the new city," which in spite of its name is one of the oldest cities in Italy, having been founded by colonists from the still older settlement at Cumæ.
Napoleon (*na-pō'lē-on*, French *nä-pō-lä-ôn'*). From the French name *Napoleone*, which has been translated "of the new city."
nap-py (*nap'i*), *adj.* covered with nap or pile; drowsy.
Nar-cis-sus (*när-sis'us*), *n.* a genus of ornamental bulbous plants with handsome fragrant flowers, including the daffodils.
Narcissus. From the Greek, meaning a "daffodil." Fr., *Narcisse;* It., *Narcisso;* Lat., *Narcissus.*
nar-co-sis (*-kō'sis*), *n.* stupefaction from the effects of a narcotic.
nar-cot-ic (*-kot'ik*), *adj.* producing coma or torpor: *n.* a medicine to alleviate pain and produce sleep.
Narragansett (*nar-rā-gan'set*). Summer resort in Washington county, Rhode Island. An Anglicization of the Indian name of a tribe, *Naiaganseit*, which in their language means "people of the point."
nar-rate (*nar-rāt'*), *v. t.* to tell; recite; give an account of; write as a story.
nar-ra-tion (*-rā'shun*), *n.* the act of narrating; statement, written or verbal.
nar-ra-tive (*nar'rā-tiv*), *adj.* pertaining to narration: *n.* recital of a story or event; tale.
nar-row (*nar'ō*), *adj.* of little breadth or extent limited; straitened; contracted in mind: *v. t.* to lessen the breadth or extent of: *v. i.* to become narrow. [CONTRACTED.]
na-sal (*nā'zal*), *adj.* pertaining to, affected by, or pronounced through, the nose: *n.* a letter pronounced through the nose.
nas-cent (*nas'ent*), *adj.* beginning to grow or exist.
Nashua (*nash'ū-ā*), **N. H.** So called from the river, its Indian name meaning "between."
Nashville, Tenn. First named, as a settlement, *Nashborough*, in honor of Francis Nash of North Carolina, a brigadier general in the Continental army. In June, 1784, changed to *Nashville.*
Nas-tur-tium (*-tûr'shum*), *n.* a genus of plants, including the watercresses.
nas-ty (*'ti*), *adj.* [*comp.* nastier, *superl.* nastiest], dirty; nauseous; filthy; obscene; foul; serious.
na-tal (*nā'tal*), *adj.* pertaining to one's birth or birthday; indigenous. [NATIVE.]
Natal (*nā-tal'*). Received its name from Vasco da Gama, because he discovered it on the Feast of the Nativity. A British colony in South Africa.
na-ta-tion (*nā-tā'shun*), *n.* the act or art of swimming.
na-ta-to-ri-al (*nā-tā-tō'ri-al*), *adj.* swimming, or adapted for swimming. [Also *natatory.*]
Natchez (*nach'ez*). City in Adams county, Mississippi, named for the Indian tribe, the word meaning "hurrying men," or "one running to war."
Nathan (*nā'than*). From the Hebrew *nathan*, signifying "given." Fr., *Nathan;* Ger., *Nathan;* Lat., *Nathan;* Sp. *Natan.*
Nathanael or **Nathaniel** (*nā-than'ā-el* or *nā-than'i-el*). From the Hebrew, meaning the "gift of God." Dutch, *Nathaniel;* Fr., *Nathaniel;* Ger., *Nathaniel;* Lat., *Nathanael;* Sp., *Natanael.*
na-tion (*nā'shun*), *n.* the inhabitants of one country, or united under the same government.
na-tion-al (*na'shun-al*), *adj.* pertaining to a nation; public; general; attached to one's country.
na-tion-al-ism (*-al-izm*), *n.* the state of being national; national idiom, characteristic, or independence.
na-tion-al-i-ty (*-al'i-ti*), *n.* national character; patriotism; nation.
na-tive (*nā'tiv*), *adj.* pertaining to the time and place of birth; not acquired: *n.* one who is born in a certain country or place.
Syn. NATIVE, indigenous, innate, natal, natural, original. *Native* denotes that which belongs to one by birth; *natal* that which pertains to the event of birth; *natural* denotes that which rests upon inherent qualities of character or being. We speak of one's *native* country, or of his *natal* day; of *natural* ability, *native* genius.
na-tiv-i-ty (*-tiv'i-ti*), *n.* time, place and manner of birth.
nat-ty (*nat'i*), *adj.* tidy; neat; smart.
nat-u-ral (*nat'ū-ral*), *adj.* pertaining to nature; inborn; not artificial. [NATIVE, PHYSICAL.]
nat-u-ral his-to-ry (*his'tō-ri*), the scientific description of the earth and its various productions, especially the animal kingdom.
nat-u-ral-ism (*-izm*), *n.* mere state of nature; natural religion.
nat-u-ral-ist (*-ist*), *n.* one skilled in natural history one who believes in naturalism.
nat-u-ral-ize (*-iz*), *v. t.* to make natural; acclimatize; invest (a foreigner) with the privileges of a natural-born citizen or subject.
★**na-ture** (*nā'tūr*), *n.* the universe; essential qualities; species; natural order of things.
Naugatuck (*naw'gā-tuk*), **Conn.** Indian word expressive of "form of the rivers," "point between two rivers." Another source gives the word as *neguttugk*, meaning "one tree."
naught (*nawt*), *n.* nothing: *adj.* worthless: *adv.* in no degree.
naugh-ty (*naw'ti*), *adj.* bad; perverse or mischievous.
★**nau-se-a** (*naw'shē-ā* or *naw'shā*, not *naw'sē-ā*), *n.* a strong sensation of sickness; seasickness; loathing or disgust. [DISGUST.]
★**nau-se-ate** (*naw'shē-āt* or *naw'sē-āt*), *v. t.* to affect with nausea; loathe: *v. i.* to feel disgust; be inclined to vomit.
nau-seous (*'shus*), *adj.* loathsome; abhorrent.
nau-ti-cal (*naw'ti-kal*), *adj.* pertaining to ships, sailors, or navigation; maritime. [Also *nautic.*]
nau-ti-lus (*'ti-lus*), *n.* [*pl.* nautili (*-li*)], any member of a genus of cephalopods, including those furnished with a chambered spinal univalve shell; a kind of diving bell.
Nauvoo (*naw-vōō'*). City in Hancock county, Illinois, named in obedience to a "revelation" made to Joseph Smith, one of its Mormon founders.
na-val (*nā'val*), *adj.* pertaining to ships or a navy; consisting of ships; maritime.
nave (*nāv*), *n.* the middle or body of a church; the center of a wheel.
nav-el (*'el*), *n.* the depression in the center of the lower part of the abdomen, indicating where the umbilical cord was joined to the fœtus.
nav-i-ga-ble (*nav'i-gā-bl*), *adj.* capable of being navigated.
nav-i-gate (*-gāt*), *v. i.* to pass on the water by a ship or vessel: *v. t.* to pass over in a ship or boat.
nav-i-ga-tion (*-gā'shun*), *n.* the act of navigating; the science of navigating ships.

na-vy (*nā'vi*), *n.* the ships of war belonging to a nation, or their officers and men.
nay (*nā*), *adv.* no; not only so, but: *n.* a refusal or denial.
Naz-a-rene (*naz-ā-rēn'*), *n.* a native of Nazareth; applied to Jesus Christ, his followers, and the early Christians as a term of contempt.
Naz-a-rite (*'a-rīt*), *n.* a Jew devoted by vow to God to a life of purity.
neap (*nēp*), *adj.* low; applied to the tides which occur in the beginning of the second and fourth quarters of the moon.
near (*nēr*), *adj.* not far distant in time, place, or degree; close; intimate; dear; familiar; literal: *v. t.* to approach; come near to. [ADJACENT, CLOSE.]
neat (*nēt*), *n.* cattle of the bovine genus: *adj.* pertaining to bovine animals; tidy; trim and clean; simple and elegant; chaste.
Nebraska. State and river in the United States. An Indian word meaning "shallow, or broad water."
neb-u-la (*neb'ū-la*), *n.* [*pl.* nebulæ (*-lē*)], a faint misty patch of light in the heavens produced by groups of stars or by masses of diffused gaseous matter.
neb-u-lar (*'ū-lẽr*), *adj.* pertaining to nebulæ.
nec-es-sa-ry (*nes'es-sā-ri*), *adj.* that cannot be otherwise; essential; indispensable: *n.* [*pl.* necessaries], things requisite. [NECESSITIES.]
ne-ces-si-tate (*nē ses'i-tāt*), *v. t.* to make necessary; compel; constrain. [COMPEL.]
ne-ces-si-ty (*'i-ti*), *n.* the state of being necessary; that which is unavoidable; compulsion: *pl.* things necessary.
Syn. NECESSITIES, necessaries. *Necessity* is the mode or state of circumstances, or the thing which circumstances render *necessary;* the *necessary* is that which is absolutely and unconditionally *necessary.* Habit and desire create *necessities;* nature only requires *necessaries.*
Ant. USELESS THINGS.
neck (*nek*), *n.* that part of the body between the head and trunk; a long narrow part, as of land or a vessel.
neck-lace (*'lās*), *n.* a string of beads or ornaments, as pearls, etc., worn round the neck.
nec-rol-o-gy (*-rol'ō-ji*), *n.* a register, or account, of the dead.
nec-ro-man-cy (*'rō-man-si*), *n.* the pretended art of predicting future events by communication with the dead.
nec-tar (*nek'tẽr*), *n.* in classic mythology, the wine of the gods.
nec-ta-re-ous (*-tā'rē-us*), *adj.* producing, or sweet like, nectar.
nec-tar-ine (*'tẽr-in*), *n.* a variety of peach.
need (*nēd*), *n.* necessity; urgent want; poverty: *v. t.* to want: *v. i.* to be necessary. [WANT.]
nee-dle (*nē'dl*), *n.* a small sharp-pointed steel instrument furnished with an eye to hold thread.
needs (*nēdz*), *adv.* necessarily; indispensably.
ne'er (*nãr*), *adv.* contraction of never.
ne-fa-ri-ous (*nē-fā'ri-us*), *adj.* extremely wicked; vile; infamous. [WICKED.]
ne-ga-tion (*nē-gā'shun*), *n.* denial; absence of certain qualities.
neg-a-tive (*neg'ā-tiv*), *adj.* implying negation; denying; refusing; having the power of veto: *n.* a word expressing denial: *v. t.* to prove the contrary of; dismiss or reject by vote.
neg-lect (*-lekt'*), *n.* omission; habitual negligence; disregard: *v. t.* to omit by carelessness or design; slight.
Syn. NEGLECT, omit. What we *neglect* ought not to be *neglected;* but what we *omit* may be *omitted* or otherwise, as convenience requires. We *neglect* an opportunity, we *neglect* the means, the time, the use, and the like; we *omit* a word, a sentence, a figure, and the line may be *omitted* as convenience requires. [See *disregard.*]
Ant. CARE, direct, worry.
★**neg-li-gée** (*-li-zhā'*), *n.* a loosely fitting dress or gown: *adj.* carelessly arranged or attired.
neg-li-gence (*'li-jens*), *n.* carelessness.
neg-li-gent (*-jent*), *adj.* careless; remiss; heedless.
neg-li-gi-ble (*'li-ji-bl*), *adj.* that may be neglected; of little account or value.
ne-go-ti-a-ble (*nē-gō'shi-ā-bl*), *adj.* capable of being negotiated, transferred, or exchanged.
ne-go-ti-ate (*nē-gō'shi-āt*), *v. i.* to treat with others in business or private affairs: *v. t.* to conclude by treaty, bargain, or agreement.
ne-gro (*'grō*), *n.* [*pl.* negroes (*'grōz*)], an African black. [Fem. *negress.*] *adj.* pertaining to, or characteristic of, negroes.
Nehemiah (*nē-hē-mī'a*). From the Hebrew *N'hhemyah,* from *n'hhem-yah,* "whom Jehovah comforts"; that is, "aids." Danish, *Nehemias;* It., *Neemia;* Lat., *Nehemias;* Sp., *Nehemias.*
neigh (*nā*), *v. i.* to utter the cry, or whinny, of a horse: *n.* the cry of a horse.
neigh-bor (*nā'bẽr*), *n.* one who dwells near to another; an intimate: *adj.* near to another. [NEIGHBORING.]
neigh-bor-hood (*-hood*), *n.* adjacent district; vicinity; the state of being neighbors.
Syn. NEIGHBORHOOD, vicinity. *Neighborhood* is employed in reference to the inhabitants, or in regard to inhabited places, to denote nearness of persons to each other or to objects in general; but *vicinity* is employed to denote nearness of one object to another, whether person or thing.
neigh-bor-ly (*nā'bẽr-li*), *adj.* like, or becoming, a neighbor; social; civil; friendly: *adv.* in the manner of a neighbor.
nei-ther (*nē'* or *nī'thẽr*), *pron.* and *conj.* not either.
Nellie, Nelly. Names derived from *Ellen,* and sometimes from *Helen.*
ne-o, a *prefix* meaning *new, young, recent:* as *neoplastic,* recently formed.
ne-ol-o-gism (*nē-ol'ō-jizm*), *n.* a new word or phrase introduced into a language; new religious doctrines.
ne-o-phyte (*'o-fīt*), *n.* a novice; one recently baptized; a convert: *adj.* recently entered.
neph-ew (*nef'ū*), *n.* the son of a brother or sister.
nep-o-tism (*nep'ō-tizm*), *n.* a preference shown in bestowing patronage to one's relatives in the church or public service.
nerve (*nẽrv*), *n.* one of the gray fibers which convey sensation from all parts of the body to the brain and originate motion; *v. t.* to invigorate or strengthen.
★**ner-vine** (*nẽr'vin,* not *nẽr'vēn*), *n.* a tonic for the nerves.
ner-vous (*'vus*), *adj.* pertaining to, or composed of, nerves; having weak nerves; easily agitated.
nest (*nest*), *n.* the bed or dwelling chosen by a bird for incubation, and the rearing of its young.
nes-tle (*nes'l*), *v. i.* to lie close and snug; take shelter: *v. t.* to cherish.
nes-tling (*'ling*), *n.* a young bird in the nest or just taken from it: *adj.* recently hatched.
net (*net*), *n.* an instrument of twine knotted into meshes for catching birds, fish, etc.; anything resembling or made like a net; *v. t.* take with a net; snare.
neth-er (*neth'ẽr*), *adj.* lying beneath; lower; belonging to the regions below.
Netherlands. Which means "low lands," is the English name of the Dutch kingdom at the mouth of the Rhine which the French call *Les Pays Bas. Koningrijk der Nederlanden* is the official Dutch name of the kingdom as constituted after the war of 1830, when the Belgians acquired their independence.
net-tle (*net'l*), *n.* a stinging plant of the genus Urtica: *v. t.* to provoke or irritate.
★**neu-ral-gi-a** (*nū-ral'ji-a,* not *nū-ral'ja*), *n.* acute pain in a nerve.
neu-ras-the-ni-a (*-ras-thē'ni-a*), *n.* brain and nerve exhaustion, as from influenza, etc.
neu-ro, a *prefix* meaning *nerve:* as *neurography,* a treatise on the nerves.
neu-rot-ic (*nū-rot'ik*), *adj.* pertaining to, seated in, or affecting, the nerves; characterized by a morbid hysterical style.
neu-ter (*'tẽr*), *adj.* of neither sex; intransitive: *n.* a flower having neither pistil nor stamens.
neu-tral (*'tral*), *adj.* unbiased; indifferent; taking no part on either side in a contest.
neu-tral-i-ty (*-tral'i-ti*), *n.* the state of being neutral.
Nevada (*nē-vā'da*). State of the Union, county in Arkansas and California. Named from the mountain range, the *Sierra Nevada,* running through the state. Spanish words *serrado,* "serrated or saw-toothed," *nevada,* "snowy," *i. e.,* "snowy mountains," the application taker from the *Sierra Nevada* mountains of Granada, Spain.
nev-er (*nev'er*), *adv.* not at any time; in no degree.
Neversink highlands, N. J. So called by the sailors of outgoing craft, from the circumstance of their being the highest seashore elevations.
Neversink river, N. Y. From the Indian *newasink,* "mad river," also stated to be a local application, because the stream is less affected by drought than others.
never-the-less (*-the-les'*), *adv.* notwithstanding; in spite of that.
Nevskii Prospekt (*nef'ski-i pros-pekt'*). The finest and most important street in St. Petersburg, noted for its fine buildings. Length, about three and one-half miles.
new (*nū*), *adj.* recent in origin; modern; novel; lately made, produced, invented, or discovered.
Syn. NEW, novel, modern, fresh, recent. All these epithets are applied to what has not long existed; *new* expresses this idea simply, without any qualifications; *novel* is something strange or unexpected; the *modern* is the thing of to-day, as distinguished from that which existed in fore times; the *fresh* is that which is so *new* as not to be the worse for use, or that which has not been before used or employed; the *recent* is that which is so *new* as to appear as if it were just made or done.
Ant. AGED, ancient, antique, old, venerable.
Newark (*nū'ẽrk*), **N. J.** Suggested by the settlement's first minister, Rev. Abraham Pierson, from Newark-on-Trent, England, where he was "Episcopally ordained."
New Bedford. City in Bristol county, Massachusetts, the name of the owner of the town site being Russell, the family name of the duke of Bedford.
New Berne, or **Newbern, N. C.** From Berne, Switzerland, the native place of Christopher, Baron de Graafewidt, who in 1720 emigrated to and settled near this place.
New Brunswick (*brunz'wik*). A maritime province of the Dominion of Canada. Received its name in compliment to the house of Brunswick.
new-el (*nū'el*), *n.* in a winding staircase, the central upright pillar around which the steps turn.
New England. Name applied to the northeastern section of the United States, embracing Maine, New Hampshire, Vermont, Massachusetts, Connecticut and Rhode Island.
new-fan-gled (*nū-fang'gld*), *adj.* new-fashioned.
Newfoundland (*nū'fund-land*). An island in Atlantic, east of British North America. The earliest of the colonial possessions of Great Britain. The name originally applied to the regions discovered by the two Cabots, and included a great portion of the North American coast.
New Hampshire. One of the New England states. Name given, in 1629, by John Mason, in compliment to his native county in England.
New Harmony. Town in Posey county, Indiana, settled by the "Harmonists," and named for their sect.
New Haven. County and town in same county, in Connecticut, settled by people from Boston, who called it a "new haven." Originally *Quinnippaq,* from the Indian name of the river *Quinnepyooghq,* "long water place." The present name substituted "by the court," September 5, 1640.
New Holland. The name given to Australia previous to its settlement by the British.
New Jersey. One of the North Atlantic states of the Union. Named in compliment to Carteret, who had defended the Isle of Jersey (Cæsarea, one of the Channel islands) against the Long Parliament. Originally called *New Sweden* (when a Dutch possession).
New London. City and county in Connecticut, and town in Stanley county, North Carolina, named for the city in England.
New Mexico. A southwestern state of the Union. A distinguishing name from "*old*" Mexico, it having been a former possession of Mexico. The territory was called *Nova Mexicana* by Antonio de Espejo at the time of the settlement of Santa Fé.
New Orleans (*nū ôr'lē-anz*), **La.** Translation of the French name *Nouvelle Orleans,* given in honor of the Duc d'Orleans, regent of France.
Newport, R. I. In honor of the English admiral Christopher Newport (under James I.).
news (*nūz*), *n.* recent intelligence. This word is made up of the first letter of each point of the compass: North, east, west, south. This, therefore, is usually given as the origin of the term *news,* which comes from all points of the compass.
Syn. NEWS, tidings. *News* is unexpected, it serves to gratify idle curiosity; *tidings* are expected; they serve to allay anxiety. In time of war the public are eager after *news;* and they who have relatives in the army are anxious to have *tidings* of them.
news-pa-per (*'pā-pẽr*), *n.* a paper published periodically, usually daily or weekly, containing the most recent intelligence.
newt (*nūt*), *n.* an eft; salamander.
New York. A middle eastern state of the Union. So named in honor of James, duke of York, afterward James II.
New York City, N. Y. Named from the state. The island on which the main part of the city is located is known as Manhattan island.
New Zealand (*zē'land*). A group of islands southeast of Australia. Name given by Dutch navigators, the word *zeeland* denoting "sea-land," being significant of the low countries.
next (*nekst*), *adj.* [*superl.* of nigh], nearest in time, place, degree, or rank: *adv.* immediately succeeding. [ADJACENT.]
Niagara (*nī-ag'a-rá*). The largest cataract in North America, situated north-northwest of Buffalo, N. Y. From the Indian word *neagara,* meaning "across the neck," an allusion to a strip of land between lakes Erie and Ontario.
nib (*nib*), *n.* a bird's beak; the point of anything, especially a pen.
nib-ble (*'l*), *v. t.* and *v. i.* to bite by little at a time; continue to bite at gently and quickly, as a fish.
nib-lick (*nib'lik*), *n.* a heavy, iron, round-headed golf club.
nice (*nīs*), *adj.* fastidious; precise; squeamish; minutely discriminative. [EXACT.]
Nice (*nēs*). A town on the Riviera, French form of the Italian *Nizza.*
ni-ce-ty (*nī'sē-ti*), *n.* delicate management; fastidious delicacy; precision; minute accuracy.
niche (*nich*), *n.* a recess in a wall for a statue.
Nicholas (*nik'ō-las*). From the Latin name, *Nicolaus,* signifying "conqueror of the people." Dutch, *Nicolaas* (more frequently *Klaas*); Fr., *Nicolas;* Ger., *Nicolaus;* Gr., *Nikolaos;* Hun., *Miklos;* It., *Niccolo* or *Nicolo;* Lat., *Nicolaus;* Port., *Nicolao;* Russ., *Nikolai* or *Nikolas;* Sp., *Nicolas;* Sw., *Nils.*
nick (*nik*), *n.* exact or critical point of time; winning throw at dice: *v. t.* to cut in nicks or notches.
nick-el (*'el*), *n.* a grayish-white ductile metal; a five-cent coin, made of nickel and copper alloy.
nick-el-o-de-on (*nik-el-ō'dē-on*) *n.* a place of amusement, generally charging no admission fee, containing various automatic machines, such as cinematographs, graphophones, etc., which may be used by patrons for a small charge.
nick-name (*'nām*), *n.* a name given in derision or familiarity: *v. t.* to give a nickname to; call by an opprobrious name.
Nicodemus (*nik-ō-dē'mus*). From the Greek meaning, "victory of the people," or the "con-

queror of the people." Fr., *Nicodème;* Gr., *Nikodemos;* Lat., *Nicodemus.*

nic-o-tine (*nik'o-tin*), *n.* an acrid, poisonous alkaloid extracted from tobacco. [Also *nicotin.*]

niece (*nēs*), *n.* the daughter of a brother or sister.

Niel (*nēl*). An Anglo-Saxon form of *Nigel.*

Nigel (*nī'gel*). A name derived from the Latin *nigellus,* "somewhat black;" a diminutive of *niger,* "black."

nig-gard (*nig'ērd*), *adj.* meanly covetous; parsimonious; miserly.

nig-gard-ly (*-li*), *adv.* in a miserly manner. PENURIOUS.]

nigh (*nī*), *adj.* near in time or place; adjacent; closely allied by blood or friendship: *adv.* near; almost: *prep.* near to. [ADJACENT, CLOSE.]

night (*nīt*), *n.* the time from sunset to sunrise; period of darkness; death.

night-in-gale (*'in-gāl*), *n.* a small bird which sings with a sweet note at night; philomel.

night-mare (*'mār*), *n.* a dreadful dream accompanied with oppression on the chest and a feeling of helplessness; an incubus.

night-rid-er (*-rid'ėr*), *n.* one of a band of masked mounted men who travel at night to intimidate and do violence as by burning barns, etc.

ni-hil-ism (*nī'hil-izm*), *n.* skepticism which denies that anything, even existence, can be known.

ni-hil-ist (*-ist*), *n.* a supporter of nihilism.

Nile. A river of Egypt, Africa. Called in Old Egyptian either *Hapi* or *P-iero,* "the river," of which *Nehar Miesraim,* "the river of Egypt," or simply *Nahal,* "the valley" or "stream," were Semitic translations. The Greek name *Nilus* was probably a corruption of the Phenician name *Nahal.*

nim-ble (*nim'bl*), *adj.* quick and active; alert; lively; brisk. [ACTIVE.]

nim-bus (*nim'bus*), *n.* in art, the halo or cloud of light surrounding the heads of divinities.

nine (*nīn*), *adj.* containing one more than eight: *n.* the sum of 1 and 8.

nine-teen (*'tēn*), *adj.* consisting of 9 and 10: *n.* the sum of 9 and 10.

nine-ty (*'ti*), *adj.* containing 9 ten times: *n.* the number containing 9 times 10; the symbol (XC, 90) expressing such a number.

nin-ny (*nin'i*), *n.* a simpleton.

ninth (*nīnth*), *adj.* the ordinal of 9: *n.* one of 9 equal parts.

Niobrara (*nī-ō-brā'rā*) **river, Neb.** From the Indian *ni,* "water," *abrara,* "wide," "the broad water."

nip (*nip*), *n.* a pinch, as with the nails or teeth; a blast as by cold: *v. t.* to pinch; blast or destroy.

nip-per (*'ėr*), *n.* one who, or that which, nips; one of the four foreteeth of a horse; a small boy: *pl.* small pincers.

nip-ple (*nip'l*), *n.* that part of the breast of a woman from which milk is drawn by a child; a teat.

nit (*nit*), *n.* the egg of any small insect.

Nita (*nē'tā*). A feminine name derived from *Annita,* a diminutive of *Ann.*

ni-tric ac-id (*ni'trik as'id*), a powerful acid used in chemistry, obtained by the action of sulphuric acid upon nitrate of potash; aqua fortis.

nitro, a *prefix* meaning *containing nitrogen:* as *nitro*-hydrochloric acid or aqua regia.

ni-tro-gen (*ni'trō-jen*), *n.* a gas which, with argon, constitutes 4-5ths by volume of the atmosphere, and constitutes the basis of nitric acid.

ni-trog-e-nous (*-troj'ē-nus*), *adj.* pertaining to, or containing, nitrogen.

ni-tro-glyc-er-ine (*-glis'ėr-in*), *n.* a highly explosive, oily liquid, prepared by the action of nitric and sulphuric acids upon glycerine. [Also *nitroglycerin.*]

ni-trous (*'trus*), *adj.* resembling, obtained from, or impregnated with, niter.

no (*nō*), *adv.* a word of denial or refusal: opposed to yes: *adj.* none.

Noah (*nō'ā*). From the Hebrew, *noah,* signifying "rest." Arabic, *Nooh* or *Nuh;* Dutch, *Noach* or *Noak;* Fr., *Noé;* Ger., *Noah;* Gr., *Noe;* Sw., *Noa.*

nob (*nob*), *n.* a knob; the head; a fop.

no-bil-i-ty (*nō-bil'i-ti*), *n.* the state or quality of being noble; noble birth; grandeur; dignity.

no-ble (*nō'bl*), *adj.* high in excellence or worth; illustrious; magnanimous; generous.

no-bod-y (*'bod-i*), *n.* no one; a person of no importance or influence.

noc-tur-nal (*nok-tûr'nal*), *adj.* pertaining to, done, or happening at, night.

nod (*nod*), *n.* a quick inclination of the head; a command: *v. t.* incline or bend: *v. i.* to give a quick forward motion of the head.

nod-dle (*'l*), *n.* the head.

node (*nōd*), *n.* a knot; knob; one of the two points at which the orbit of a planet intersects the ecliptic.

nod-ule (*'ūl*), *n.* a little knot or irregular rounded lump.

Noel (*nō'el*). From Fr. *Noel,* so named from being born on Christmas (*Noel*). Lat., *Natalis, Noelius.*

noise (*noiz*), *n.* sound; clamor; outcry; frequent or public conversation.

noi-some (*noi'sum*), *adj.* injurious to health; noxious; disgusting. [HURTFUL.]

nom-ad (*nom'ad*), *n.* one of a tribe that wanders about in search of game, pasture, etc.: *ad.* wandering.

no-men-cla-ture (*nō'men-klā-tūr*), *n.* the names or technical terms used in any art or science. [DICTIONARY.]

nom-i-nal (*nom'i-nal*), *adj.* pertaining to, or containing, names; existing only in name.

nom-i-nate (*-nāt*), *v. t.* to propose for an office; appoint.

Syn. NOMINATE, name. *To nominate* and *to name* are both to mention by *name;* but the former is to mention for a specific purpose; the latter is to mention for general purposes; persons only are *nominated;* things as well as persons are *named;* one *nominates* a person in order to propose him, or appoint him, to an office; but one *names* a person casually, in the course of conversation, or one *names* him in order to make some inquiry respecting him.

non, *prefix* meaning *not.*

non-age (*non'āj*), *n.* minority.

★**non-cha-lance** (*nōn-shā-lons'*, French *nôN-shā-lâNs'*), *n.* coolness; indifference.

non-de-script (*non'dē-skript*), *n.* a person or thing that cannot be easily described or classed: *adj.* abnormal; novel; odd.

none (*nun*), *adj.* not any; not one: *n.* and *pron.* no one; nothing.

non-en-ti-ty (*non-en'ti-ti*), *n.* [*pl.* nonentities (*-tiz*)], a thing not existing; a person of no importance or influence.

★**non-pa-reil** (*non-pā-rel'*, not *non-pā-rēl'*), *adj.* without an equal: *n.* unequaled excellence; a kind of printing-type.

non-plus (*'plus*), *v. t.* to throw into complete perplexity; puzzle.

non-sense (*'sens*), *n.* language without meaning; anything absurd. [ABSURD.]

non-suit (*'sūt*), *n.* the withdrawal of a suit during trial either voluntarily or by judgment of the court on the discovery of error or defect in the pleadings: *v. t.* to subject to a nonsuit.

noo-dle (*nōō'dl*), *n.* a simpleton; a strip of dried dough, served in soup or as a baked dish.

nook (*nook*), *n.* a small recess or secluded retreat; a corner.

noon (*nōon*), *n.* the middle of the day, 12 o'clock; height: *adj.* pertaining to noon.

noon-day (*'dā*), *adj.* pertaining to noon, or midday: *n.* noon. [Also *noontide.*]

noose (*nōōs*), *n.* a running knot which binds the closer the more tightly it is drawn: *v. t.* to catch or tie in a noose; ensnare.

nor (*nôr*), *conj.* a negative particle correlative to *neither* or *not.*

Nora, Norah (*nō'rā*). Irish feminine names corrupted from *Onora,* from the English name *Honora.* As an English name *Nora* may sometimes be an abbreviation of *Leonora.*

Norfolk, Va. Named from the county in England of that name. (A.-S. *Northfolc,* northern people.)

nor-mal (*nôr'mal*), *adj.* according to rule; regular; perpendicular.

Norman (*nôr'man*). Means "born in Normandy," or "of Norman extraction." Lat., *Normannus.*

Normandy (*nôr'man-di*). French *Normandie.* A former government of northern France; it was occupied early in the tenth century by the Northmen, whose name on French soil gradually changed to *Norman.*

north (*nôrth*), *n.* one of the four cardinal points; the point opposite to the south: *adj.* pertaining to, situated in, or coming from, the north: *adv.* to the north.

North Carolina (*kar-ō-lī'nā*). A South Atlantic state of the Union. North and South Carolina were originally *Carolina.* The name was given in 1564, at the time of the first colonization by the Huguenots in the reign of Charles IX. of France.

nor-thern (*nôr'thėrn*), *adj.* in, from, or toward, the north. [Also *northerly.*]

North Sea. Name indicative of its position geographically. An arm of the Atlantic east of England and west of Norway and Denmark.

Norwalk, Conn. Named from the Indian *nayaug,* "the middle land," "a tract between two rivers."

nose (*nōz*), *n.* the organ of smell; scent; a snout; nozzle: *v. t.* to smell or scent.

nose-gay (*'gā*), *n.* a bouquet.

no-sol-o-gy (*nō-sol'ō-ji*), *n.* the systematic classification of diseases.

nos-tal-gi-a (*nos-tal'ji-ā*), *n.* homesickness.

nos-tril (*'tril*), *n.* one of the two openings in the nose.

nos-trum (*'trum*), *n.* a quack medicine.

no-ta-ble (*nō'ta-bl*), *adj.* worthy of notice; memorable; notorious.

no-ta-ry (*'ta-ri*), *n.* [*pl.* notaries (*-riz*)], an official authorized to attest deeds, contracts, etc.

no-ta-tion (*-tā'shun*), *n.* the act or practice of recording by marks or symbols.

notch (*noch*), *n.* a small hollow cut; indentation: *v. t.* to cut into small hollows.

note (*nōt*), *n.* a memorandum; short letter; a paper acknowledging a debt and promising payment: *v. t.* to make a note of; mark.

not-ed (*'ed*), *p. adj.* well-known; celebrated; remarkable. [DISTINGUISHED.]

noth-ing (*nuth'ing*), *n.* not anything; a thing of no value, use, or importance; a cipher: *adv.* in no degree.

no-tice (*nō'tis*), *n.* mental or visual observation; attention; remark; advice; information: *v. t.* to see or observe.

Syn. NOTICE, remark, observe. *To notice* is a more cursory action than *to remark;* we may *notice* a thing by a single glance, or on merely turning one's head; but *to remark* supposes a reaction of the mind on an object. We *observe* things in order to judge of, or draw conclusions from, them. We *remark* things as matters of fact; we *observe* them in order to judge of, or draw conclusions from them. [See *intelligence.*]

no-tice-a-ble (*nō'tis-a-bl*), *adj.* worthy of observation; remarkable.

no-ti-fi-ca-tion (*-ti-fi-kā'shun*), *n.* the act of giving notice; notice given; document by which information is communicated.

no-ti-fy (*'ti-fī*), *v. t.* [*p. t.* and *p. p.* notified, *p. pr.* notifying], to give notice to; make known. [ANNOUNCE.]

no-tion (*'shun*), *n.* an idea or conception; opinion; belief; inclination; a clever contrivance. [CONCEPTION.]

no-to-ri-e-ty (*-tō-rī'ē-ti*), *n.* the state of being notorious. [Also *notoriousness.*]

no-to-ri-ous (*-tō'ri-us*), *adj.* publicly known; usually in a bad sense.

not-with-stand-ing (*not-with-stand'ing*), *prep.* in spite of: *conj.* although: *adv.* however; yet.

nou-me-non (*nou'mē-non*), *n.* [*pl.* noumena (*-nā*)], essence; the substance or reality existing under the phenomenal.

noun (*noun*), *n.* the name of anything; a substantive.

nour-ish (*nur'ish*), *v. t.* to feed or bring up; support; maintain: *v. i.* to promote growth. [CHERISH.]

Nova Scotia (*nō'vā skō'shi-ā*), or *New Scotland,* name given by James I. to the French colony of Acadia, when he granted it by patent to Sir William Alexander, a Scotchman, on the pretext of its having been discovered by Cabot in the reign of Henry VII. A maritime province of Canada.

Nova Zembla (*zem'blā*). "New land." An uninhabited island in the Arctic Ocean north of Russia.

nov-el (*nov'el*), *adj.* of recent origin or introduction; new; strange or unusual: *n.* a fictitious tale or romance. [NEW, FICTION.]

nov-el-ist (*'el-ist*), *n.* a writer of novels.

nov-el-ty (*'el-ti*), *n.* newness; something new.

November. The ninth month in the Roman calendar. Lat. *novem,* "nine."

nov-ice (*nov'is*), *n.* a beginner.

now (*nou*), *adv.* at the present time; quite recently.

no-wise (*nō'wīz*), *adv.* not in any manner or degree.

★**nox-ious** (*nok'shus*, not *nok'shi-us*), *adj.* harmful; pernicious; deadly. [HURTFUL.]

noz-zle (*noz'l*), *n.* a projecting mouthpiece.

nu-cle-us (*nū'klē-us*), *n.* the central mass around which matter accretes or grows; the head of a comet.

nude (*nūd*), *adj.* bare; naked; in law, made without consideration.

nudge (*nuj*), *v. t.* to touch gently, as with the elbow.

nu-ga-to-ry (*nū'gā-tō-ri*), *adj.* trifling; useless.

nug-get (*nug'et*), *n.* a lump or mass of metal, especially of gold in auriferous soil.

nul-sance (*nū'sans*), *n.* anything offensive, injurious, or annoying. [ABOMINATION.]

null (*nul*), *adj.* of no legal force; void.

nul-li-fi-ca-tion (*-i-fi-kā'shun*), *n.* the act of nullifying.

nul-li-fy (*'i-fī*), *v. t.* [*p. t.* and *p. p.* nullified, *p. pr.* nullifying], to annul or render void. [ABOLISH.]

nul-li-ty (*'i-ti*), *n.* want of existence, force, or validity.

numb (*num*), *adj.* deprived of sensation or motion; torpid: *v. t.* to benumb.

num-ber (*'bėr*), *n.* a unit; one, or more than one; multitude; one of a series; a collection of things; *v. t.* to count; mark with a number.

nu-mer-al (*nū'mėr-al*), *adj.* pertaining to, consisting of, or denoting, number: *n.* a symbol or word expressing a number. [Also *numerical.*]

Syn. NUMERAL, numerical. *Numeral,* or belonging to *number,* is applied to a class of words in grammar, as a *numeral* adjective or a *numeral* noun; *numerical,* or containing *number,* is applied to whatever other objects respect *number;* a *numerical* difference, is that which subsists between any two *numbers,* or is expressed by *numbers.*

nu-mer-ate (*-āt*), *v. t.* to reckon or enumerate; point or read, as figures.

nu-mer-ous (*'mėr-us*), *adj.* consisting of a great number.

nu-mis-mat-ic (*-mis-mat'ik*), *adj.* pertaining to coins or medals: *n. pl.* the science and study of coins and medals.

num-skull (*num'skul*), *n.* a blockhead.

nun (*nun*), *n.* a female devoted to a religious life and seclusion under a vow of chastity.

nun-ci-o (*'shi-ō*), *n.* a papal ambassador.

nun-ner-y (*nun'ėr-i*), *n.* [*pl.* nunneries (*-iz*)], a religious house for nuns.

★**nup-tial** (*nup'shal*, not *nūp'chal*), *adj.* pertaining to, or constituting, marriage.

nurse (*nûrs*), *n.* a woman who cares for infants; one who tends the sick or infirm: *v. t.* to tend or suckle, as an infant; bring up. [CHERISH.]

nur-ture (*nûr'tūr*), *n.* that which nourishes; diet; food; *v. t.* to bring up; nourish. [CHERISH, TEACH.]

nut (*nut*), *n.* the fruit of certain trees; a piece of metal grooved for screwing onto the end of a bolt.

nut-meg (*nut'meg*), *n.* the aromatic kernel of the fruit of an East Indian tree.

nu-tri-ent (*nū'tri-ent*), *adj.* promoting growth.

nu-tri-ment (*'tri-ment*), *n.* nourishment.

nu-tri-tion (*-trish'un*), *n.* that which nourishes; food.

nu-tri-tious (*'us*), *adj.* affording nutrition.

nu-tri-tive (*nū'tri-tiv*), *adj.* pertaining to, or having the quality of, nutrition.
nymph (*nimf*), *n.* a goddess of nature inhabiting the mountains, woods, streams.

O

oak (*ōk*), *n.* a tree of many species.
oak-um (*'um*), *n.* old ropes untwisted and pulled into loose hemp.
oar (*ōr*), *n.* a light pole with a broad blade, for rowing a boat: *v. t.* and *v. i.* to row.
o-a-sis (*ō-ā'sis*), *n.* [*pl.* oases (*'sēz*)], a fertile spot in a barren sandy desert.
oat (*ōt*), *n.* a grassy plant of the geaus Avena, the grain of which is used as food [usually in *pl.*].
oat-en (*'en*), *adj.* made of oats.
oath (*ōth*), *n.* a solemn declaration of truth-telling with an appeal to God as witness.
Obadiah (*ō-bā-dī'ā*). From the Hebrew *Obhadhyah*, "servant or worshiper of Jehovah."
ob-du-ra-cy (*ob'dū-rā-si*), *n.* obdurate conduct or quality.
ob-du-rate (*'dū-rāt*), *adj.* hardened against moral influence. [OBSTINATE.]
o-be-di-ence (*ō-bē'di-ens*), *n.* submission to authority; dutifulness. [dutiful.
o-be-di-ent (*'di-ent*), *adj.* submissive to authority;
Syn. OBEDIENT, submissive, obsequious. One is *obedient* to command, *submissive* to power or the will, *obsequious* to persons. *Obedience* is always taken in a good sense.
★**o-bei-sance** (*-bē'sans*), *n.* a bow or curtsey; act of reverence.
ob-e-lisk (*ob'ē-lisk*), *n.* a lofty, four-sided stone pillar gradually tapering as it rises, and terminating in a pyramidal top; a reference mark (†).
Oberlin (*ō'bēr-lin*). Village in Lorain county, Ohio, named for Jean Frederick Oberlin, a philanthropist.
o-bese (*ō-bēs'*), *adj.* corpulent.
★**o-bes-i-ty** (*-bes'i-ti*), *n.* excessive corpulence, especially of an unhealthy kind. [Also *obeseness.*]
o-bey (*-bā'*), *v. t.* [*p. t.* and *p. p.* obeyed, *p. pr.* obeying], to submit to the rule or authority of: *v. i.* to yield; do as bidden.
o-bit-u-a-ry (*ō-bit'ū-ā-ri*), *n.* [*pl.* obituaries (*-riz*)], a register of deaths; an account of a deceased person.
ob-ject (*ob-jekt'*), *v. t.* to urge against; oppose: *v. i.* to make objections: *n.* (*ob'jekt*) anything placed before the mind or senses.
Syn. OBJECT, oppose. *To object* to a thing is to propose or start something against it; but *to oppose* it is to set one's self up steadily against it.
Ant. FAVOR, further.
ob-jec-tion (*-jek'shun*), *n.* the act of objecting; adverse reason; difficulty raised. [DEMUR.]
ob-jec-tion-a-ble (*-ā-bl*), *adj.* liable or open to objection; reprehensible.
ob-jec-tive (*'tiv*), *adj.* pertaining to an object; external to the mind: *n.* the accusative case.
ob-jec-tiv-ism (*'tiv-izm*), *n.* in art and literature, the representation of persons and incidents as they really appear.
ob-jur-gate (*-jûr'gāt*), *v. t.* to chide or reprove.
ob-la-tion (*-lā'shun*), *n.* an offering or sacrifice.
ob-li-ga-tion (*-li-gā'shun*), *n.* the binding power of a vow, promise, or contract; the state of being indebted for a favor. [DUTY, INDEBTED.]
★**ob-li-ga-to-ry** (*ob'li-gā-tō-ri*), *adj.* morally or legally binding.
o-blige (*ō-blīj'*), *v. t.* to constrain by force, morally, legally, or physically. [COMPEL.]
o-bli-ging (*-blī'jing*) *adj.* disposed to do favors. [CIVIL.]
ob-lique (*ob-lēk'*), *adj.* deviating from a right line; not parallel.
ob-lit-er-ate (*-lit'ēr-āt*), *v. t.* to efface or wear out; destroy by the effects of time. [BLOT.]
ob-liv-i-on (*-liv'i-un*), *n.* the state of being blotted out from memory; forgetfulness. [FORGETFULNESS.]
ob-liv-i-ous (*'i-us*), *adj.* forgetful. [ABSTRACTED.]
ob-long (*'lông*), *adj.* longer than broad: *n.* a geometrical figure of such shape.
ob-lo-quy (*'lō-kwi*), *n.* reproachful language; calumny; slander; reproach. [REPROACH.]
ob-nox-ious (*-nok'shus*), *adj.* deserving of censure or disapproval; hateful; offensive; unpopular.
Syn. OBNOXIOUS, offensive. In the sense of giving offense *obnoxious* implies as much as hateful, *offensive* little more than displeasing; a man is *obnoxious* to a party whose interest or principles he is opposed to; he may be *offensive* to an individual merely on account of his manners or any particular actions.
✦**o-boe** (*ō'boi*), *n.* a musical wind instrument of the reed class; hautboy; an organ stop.
ob-scene (*ob-sēn'*), *adj.* offensive to chastity; impure in language or action; indecent; filthy.
ob-scure (*-skūr'*), *adj.* without light or distinctness; dark; not easily understood: *v. t.* to darken or dim; disguise.
Syn. OBSCURE, abstruse, ambiguous, cloudy, complex, complicated, dark, deep, dense, difficult, dim, doubtful, mysterious, profound. That is *obscure* which the eye or mind can not clearly discern or see through. That which is *complicated* is likely to be *obscure*, but that may be *obscure* which is not at all *complicated* and scarcely *complex*. In that which is *obscure* there may be nothing to hide; it is hard to see to the bottom of the *profound*. [See *mysterious*, *eclipse*, *dark*.]
ob-se-cr te (*ob'sē-krāt*), *v. t.* to implore.
★**ob-se-quies** (*'sē-kwiz*), *n. pl.* funeral rites. [FUNERAL.]
ob-se-qui-ous (*-sē'kwi-us*), *adj.* servile; compliant to excess. [OBEDIENT.]
ob-ser-va-tion (*ob-zēr-vā'shun*), *n.* the act of observing; attention; that which is observed; remark; note.
ob-serv-a-to-ry (*-zērv'ā-tō-ri*), *n.* [*pl.* observatories (*-riz*)], a building fitted up for astronomical research.
ob-serve (*-zērv'*), *v. t.* to keep in view; take notice of; celebrate: *v. i.* to make observations.
Syn. OBSERVE, watch. We *observe* a thing in order to draw an inference from it; we *watch* anything in order to discover what may happen; we *observe* with coolness. [See *notice*, *see*.]
ob-so-les-cent (*-sō-les'ent*), *adj.* becoming obsolete. [OBSOLETE.]
ob-so-lete (*'sō-lēt'*), *adj.* gone out of date; disused; imperfectly developed.
Syn. OBSOLETE, ancient, antiquated, archaic, obsolescent, old, out of date, rare. Some of the *oldest* or most *ancient* words are not *obsolete*, as father, mother, etc. A word is *obsolete* which has quite gone out of reputable use; a word is *archaic* which is falling out of reputable use.
ob-sta-cle (*ob'stā-kl*), *n.* an obstruction; an impediment. [DIFFICULTY.]
ob-stet-ric (*-stet'rik*), *adj.* pertaining to midwifery: *n. pl.* the science of midwifery.
ob-sti-na-cy (*'sti-nā-si*), *n.* the state or quality of being obstinate; stubbornness.
ob-sti-nate (*'sti-nāt*), *adj.* pertinaciously adhering to one's opinion or purpose; stubborn.
Syn. OBSTINATE, contumacious, decided, dogged, firm, fixed, headstrong, heady, immovable, indomitable, inflexible, intractable, obdurate, opinionated, pertinacious, refractory, resolute, stubborn. The *headstrong* person is not to be stopped in his own course of action, while the *obstinate* and *stubborn* is not to be driven to another's way. The most amiable person may be *obstinate* on some one point; the *stubborn* person is for the most part habitually so; *refractory* implies more activity of resistance; the *stubborn* horse balks; the *refractory* animal plunges, rears, and kicks; *contumacious* refers to a proud and insolent defiance of authority, as of the summons of a court. *Pertinacious* demand is contrasted with *obstinate* refusal. [See *perverse*.]
Ant. COMPLIANT, docile, obedient, wavering.
ob-strep-er-ous (*-strep'ēr-us*), *adj.* clamorously noisy; turbulent.
ob-struct (*-strukt'*), *v. t.* to block up or impede; hinder from passing; interrupt.
Syn. OBSTRUCT, arrest, bar, barricade, check, choke, clog, embarrass, hinder, impede, interrupt, oppose, retard, stay, stop. To *obstruct* is literally to build up against; the road is *obstructed* by fallen trees; we may *hinder* one's advance by following and clinging to him; anything that makes one's progress slower, whether from within or from without, *impedes*; to *arrest* is to cause to *stop* suddenly.
ob-tain (*-tān'*), *v. t.* to get possession of; gain; acquire; win; procure: *v. i.* to be established in practice or use.
ob-trude (*-trōōd'*), *v. t.* to thrust in or upon; urge or offer with unreasonable importunity. [INTRUDE.]
ob-tru-sive (*-trōō'siv*), *adj.* inclined or apt to intrude.
ob-tuse (*-tūs'*), *adj.* not pointed or acute; greater than a right angle; dull. [STUPIDITY.]
ob-verse (*-vērs'*), *adj.* bearing the head, said of a coin or medal: *n.* opposed to reverse.
ob-vi-ate (*'vi-āt*), *v. t.* to remove, as difficulties or objections.
ob-vi-ous (*'vi-us*), *adj.* evident. [APPARENT.]
oc-ca-sion (*ok-kā'zhun*), *n.* occurrence; state or position of affairs; opportunity.
Syn. OCCASION, opportunity. The *occasion* is that which determines our conduct, and leaves us no choice; it amounts to a degree of necessity; the *opportunity* is that which invites to action; it tempts us to embrace the moment for taking the step. [See *cause*.]
oc-ca-sion-al (*'zhun-al*), *adj.* occurring at regular intervals.
Syn. OCCASIONAL, casual. *Occasional* carries with it more the idea of unfrequency, and *casual* that of unfixedness, or the absence of all design. Our acts of charity may be *occasional*; but they ought not to be *casual*.
Oc-ci-dent (*ok'si-dent*), *n.* the West; the countries west of Asia and the Turkish dominions.
oc-cult (*-kult'*), *adj.* hidden; secret; invisible. [SECRET, MYSTERIOUS.]
oc-cu-pan-cy (*'ū-pan-si*), *n.* the act of taking and holding in possession.
oc-cu-pant (*'ū-pant*), *n.* one who has possession.
oc-cu-pa-tion (*-pā'shun*), *n.* the act or state of occupying; business, employment, or calling.
oc-cu-py (*'ū-pi*), *v. t.* to take possession of; hold or keep in possession. [HOLD.]
oc-cur (*ok-kûr'*), *v. i.* to happen or take place; come to the mind; be found or met with.
oc-cur-rence (*-kur'ens*), *n.* an accident, event, or incident. [EVENT.]
o-cean (*ō'shun*), *n.* the vast expanse of salt water covering more than 3-5ths of the globe.
o-cher (*'kēr*), *n.* a fine yellow or brown colored clay: used as a pigment.
Ocklawaha (*ok-lā-wā'hā*) **river, Fla.** The Seminole Indian name, meaning "muddy place."
Ocklockonee (*ok-lok'ō-nē*) **river, Fla.** From the Indian (Seminole), meaning "yellow water."
Ocmulgee (*ok-mul'gē*) **river, Ga.** So called from the Creek Indian name, *oko-mulgi*, "the turbulent stream."
Oconee (*ō-kō'nē*) **river, Ga.** From the Seminole Indian word *eknoni*, "a water course," a "small river."
octa, a *prefix* meaning *eight*, as *octa*chord, an instrument of 8 strings; a system of 8 sounds. [Also *octo.*]
oc-ta-gon (*ok'tà-gon*), *n.* a plane figure of 8 sides and 8 angles.
oc-tave (*'tāv*), *n.* an eighth or an interval of 12 semitones.
Octave. See *Octavius.*
Octavia (*ok-tā'vi-à*). Feminine of *Octavius.* Fr., *Octavie;* It., *Octavia;* Lat., *Octavia.*
Octavius (*ok-tā'vi-us*). Latin name, signifying "the eighth," *i. e.*, the eighth son in order of birth. Fr., *Octave;* It., *Octavio;* Lat., *Octavius;* Sp., *Octavio.*
October. The tenth month of the modern calendar. Name means "the eighth month" (of the ancient calendar), from the Latin *octo*, "eight."
oc-to-pus (*'tō-pus*), *n.* [*pl.* octopuses (*-es*)], a genus of *Cephalopods* having 8 arms, containing the cuttlefish.
oc-u-lar (*'ū-lēr*), *adj.* pertaining to, depending on, or formed by, the eye; known from actual sight.
oc-u-list (*'ū-list*), *n.* one who is skilled in the treatment of eye diseases.
odd (*od*), *adj.* not paired or matched with another; not even; unusual; peculiar. [RARE.]
Odd Fellows. A fanciful name assumed by the original founders of the society.
od-di-ty (*'i-ti*), *n.* a person or thing that is peculiar.
odds (*odz*), *n. pl.* inequality; advantage; superiority.
ode (*ōd*), *n.* a short song; lyric poem.
o-di-ous (*ō'di-us*), *adj.* offensive; unpopular. [HATEFUL.]
o-di-um (*'di-um*), *n.* hatred; dislike.
o-dor (*'dēr*), *n.* a scent; estimation.
o-dor-if-er-ous (*-dēr-if'ēr-us*), *adj.* diffusing fragrance.
o-dor-ous (*'dēr-us*), *adj.* emitting an odor or scent; fragrant.
of (*ov*), *prep.* from; out of; belonging to; according to; proceeding from.
off (*ôf*), *adj.* most distant: *adv.* away from: *prep.* not on; distant from: *interj.* begone!
of-fal (*of'al*), *n.* refuse; waste meat.
of-fend (*-fend'*), *v. t.* to displease or make angry: *v. i.* do anything displeasing.
of-fend-er (*'ēr*) *n.* one who offends or transgresses; a delinquent.
Syn. OFFENDER, delinquent. Those who go into a wrong place are *offenders;* those who stay away when they ought to go are *delinquents.*
of-fense (*-fens'*), *n.* any cause of anger or displeasure; insult; injury; assault. [ABOMINATION.]
of-fen-sive (*-fen'siv*), *adj.* causing displeasure; disagreeable: *n.* act of attacking. [OBNOXIOUS.]
of-fer (*'ēr*), *v. t.* to present for acceptance or refusal; proffer: *v. i.* express a willingness: *n.* a proposal made; price offered. [GIVE, ALLEGE.]
of-fice (*of'is*), *n.* public or private business; employment; function; apartment for the transaction of business.
of-fi-cer (*'sēr*), *n.* a person commissioned to perform a certain public duty.
of-fi-cial (*-fish'al*), *adj.* pertaining to an office or public duty: *n.* one who holds a civil office.
of-fi-ci-ate (*'i-āt*), *v. i* to perform the duties of an office.
of-fi-cious (*-fish'us*), *adj.* too forward in offering services; meddling. [ACTIVE.]
off-ing (*ôf'ing*), *n.* that part of the sea with deep water off the shore.
off-spring (*'spring*), *n.* a child, children, or descendants.
Syn. OFFSPRING, progeny, issue. *Offspring* is a familiar term applicable to one or many children; *progeny* is employed only as a collective noun for a number; *issue* is used in an indefinite manner without particular regard to number. When we speak of the children themselves we denominate them the *offspring;* when we speak of the parents, we denominate the children their *progeny.* The *issue* is said only in regard to a man that is deceased; his property descends to his male *issue* in a direct line.
★**of-ten** (*of'n*, not *ôf-ten*), *adv.* many times; frequently.
Ogdensburg, N. Y. Named from Samuel Ogden, the first proprietor.
o-gle (*ō'gl*), *v. t.* to look fondly at with a side glance: *n.* a side glance.
o-gre (*ō'gēr*), *n.* an imaginary man-eating monster or giant. [Fem. *ogress.*]
Ohio. State in the Union, river and county in

Indiana, Kentucky, and West Virginia. An Indian word meaning "the beautiful river."

ohm (*ōm*), *n.* the unit of electrical resistance.

oil (*oil*), *n.* a highly inflammable fatty liquid obtained from various animal and vegetable substances: *v. t.* to lubricate with oil.

oint-ment (*oint'ment*), *n.* an unctuous substance applied to a wound or injured part.

Okechobee (*ō-kē-chō'bē*) **lake, Fla.** Seminole Indian word meaning "grassy lake." [Also spelled *Okitchobi.*]

Okefinokee (*ō-kē-fin-ō'kē*) **swamp, Ga.** A Choctaw word, *okefinocau*, "quivering water."

Oklahoma (*ōk-la-hō'ma*). A southwestern state of the Union. A Choctaw word signifying "red people," *okla*, "people," *homa*, "red." Another word is given meaning "home for all Indians."

ok-ra (*ok'ra*), *n.* a West Indian plant, the pods of which are used in soups, etc. [Also *okro*, *ochra.*]

old (*ōld*), *adj.* [*comp.* older, *superl.* oldest], aged; decayed by time; ancient; out of date; long practiced. [ELDERLY, OBSOLETE.]

Old Bailey, The. The principal criminal court of England, situated on the street named Old Bailey, which runs from Newgate to Ludgate hill, not far from St. Paul's, London.

Old Dominion (*dō-min'yun*). A name popularly given to the state of Virginia. Its origin is variously explained. Perhaps the best account is that Captain John Smith called Virginia "Old Virginia" to distinguish it from "New Virginia," as the New England colony was called.

★old-en (*ōld-n*, not *ōld-en*), *adj.* ancient; bygone.

Old Jewry. One of the localities allotted in olden times as a residence for the Jews. The terminal *ry* is the Old English *ru* or *ra*, having a collective signification, as in rookery, eyry (eggery), poultry, etc.

Old Point Comfort. Town in Elizabeth county, Virginia, so named by Capt. Christopher Newport, because he found it a safe haven after a severe storm; the "Old" added to distinguish it from New Point Comfort, a few miles away.

o-le-ag-i-nous (*ō-lē-aj'i-nus*), *adj.* oily; unctuous.

o-le-an-der (*-an'dēr*), *n.* an evergreen shrub with handsome fragrant flowers.

o-le-fi-ant (*ō-le'fi-ant*), *adj.* noting a gas formed by heating 2 volumes of sulphuric acid with 1 volume of alcohol.

oleo, a *prefix* meaning *oily, pertaining to oil*, or *oily.*

o-le-o-mar-ga-rine (*ō-lē-ō-mär'ga-rin*), *n.* imitation butter made from milk and animal fat, etc.

ol-fac-to-ry (*ol-fak'tō-ri*), *adj.* pertaining to, or used in, smelling: *n.* organ of smell (usually *pl.*)

ol-i-gar-chy (*'i-gär-ki*), *n.* [*pl.* oligarchies (*-kiz*)], government in which the supreme power is in the hands of a few.

ol-ive (*'iv*), *n.* a plant of the genus Olea, or its oily fruit.

Olive. Derived, perhaps, through the French, from the Latin *olivia*, the "olive tree," an emblem of peace.

ol-ive branch (*branch*), the branch of the olive; the emblem of peace.

Oliver (*ol'i-vēr*). From French *olivier*, an olive tree, from the Latin *olivia*. Dutch, *Olivier;* Fr., *Olivier;* It., *Oliviero* or *Uliviero;* Lat., *Olivarus* or *Olivarius;* Sp., *Oliverio;* Sw., *Olivier.*

Olivia (*ō-liv'i-a*). The feminine of *Oliver*. Danish, *Olivia;* Dutch, *Olivia;* Fr., *Olivie;* Ger., *Olivia;* Sw., *Olivia.*

Olympia (*ō-lim'pi-a*). In ancient geography, a valley in Elis, Peloponnesus, Greece, situated on the Alpheus.

Olympia, Olympias (*ō-lim'pi-as*). From the Greek, meaning "belonging to Olympus," "divine." Fr., *Olympe;* Gr., *Olympias;* Lat., *Olympias* or *Olympa.*

Omaha (*ō'ma-haw*). City in Douglas county, Nebraska. An Indian word, meaning "up-stream"; also the name of a tribe designated as "up stream people."

★o-me-ga (*ō-mē'ga*), *n.* the last letter of the Greek alphabet; hence the last; end.

om-e-let (*om'ē-let*), *n.* a kind of pancake of eggs, etc.

o-men (*ō'men*), *n.* a sign of some future event: *v. t.* to portend or prognosticate.

Syn. OMEN, prognostic, presage. The *omen* and *prognostic* are both drawn from external objects; the *presage* is drawn from one's own feelings; the *omen* is drawn from objects that have no necessary connection with the thing they are made to represent; it is the fruit of the imagination, and rests on superstition; the *prognostic*, on the contrary, is a sign which partakes in some degree of the quality of the thing denoted.

om-i-nous (*om'i-nus*), *adj.* foreboding evil; inauspicious.

o-mis-sion (*ō-mish'un*), *n.* neglect or failure to do something required; something omitted.

o-mit (*-mit'*), *v. t.* to leave out; neglect; fail to mention. [NEGLECT.]

om-ni-bus (*om'ni-bus*), *n.* a public four-wheeled carriage for passenger traffic.

om-nip-o-tence (*-nip'ō-tens*), *n.* unlimited power.

om-nip-o-tent (*-nip'ō-tent*), *adj.* having unlimited power.

om-ni-pres-ence (*-ni-prez'ens*), *n.* universal presence.

om-nis-cient (*-nish'ent*), *adj.* knowing all things; infinitely wise.

om-niv-o-rous (*om-niv'ō-rus*), *adj.* feeding upon animal and vegetable food; all-devouring.

on (*on*), *prep.* upon; in contact with the upper part; at; near: *adv.* forward; onward.

once (*wuns*), *adv.* at one time; formerly; one time.

one (*wun*), *adj.* single in number; some way; individual: *n.* the number one or its symbol; an individual.

Oneida (*ō-nī'dā*) **lake, N. Y.** The name of an Indian tribe, the word signifying "the people of the beacon stone," so named from a tradition concerning a certain stone which followed them in their wanderings.

on-er-ous (*on'ēr-us*), *adj.* burdensome; weighty; oppressive.

on-ion (*un'yun*), *n.* a bulbous-rooted plant of the genus Ailinn: used in cookery.

on-ly (*ōn'li*), *adj.* single; one and no more: *adv.* singly; merely.

on-o-mat-o-pœ-ia (*on-ō-mat-ō-pē'ya*), *n.* the formation of words to resemble the sounds made by the thing signified.

Onondaga (*on-on-daw'ga*) **lake, N. Y.** So called from a tribe of Indians, the *On-ti-ah-an-taque*, the word meaning "the place of the hills," also translated as "the marsh at the foot of the hill."

on-set (*on'set*), *n.* an assault; attack.

on-slaught (*'slawt*), *n.* a furious attack.

Ontario (*on-tā'ri-ō*). One of the Great lakes, county in New York, and a village in Vernon county, Wisconsin. An Indian word, said by one authority to mean "beautiful lake."

on-to-log-ic-al (*-tō-loj'i-kal*), *adj.* pertaining to that branch of metaphysics that investigates the essence of things.

o-nus (*ō-nus*), *n.* a burden; duty; obligation.

on-ward (*on'wērd*), *adj.* advancing; progressing: *adv.* in advance.

on-yx (*on'iks*), *n.* a variety of agate.

oo-long (*ōō'lŏng*), *n.* a Chinese black tea, the flavor of which resembles green tea. [Also *oulong.*]

ooze (*ōōz*), *n.* soft mud or slime; gentle flow; liquor of a tan vat.

o-pal (*ō'pal*), *n.* a precious stone of milky hue, exhibiting a play of various colors.

o-pal-es-cent (*-es'ent*), *adj.* resembling opal in its reflection of light.

o-paque (*-pāk'*), *adj.* not transparent.

Opelika (*op-ē-lī-ka*), **Ala.** A county seat; so called from the swamp's name, the Seminole name of which was *opilualaikata*, "a large swamp."

o-pen (*ō'pen*), *adj.* not shut; unfastened; clear of trees; expanded; uncovered; unsealed: *v. t.* to unclose itself; commence; begin to appear. [FRANK.]

o-pen-ing (*-ing*), *n.* an aperture; cavity.

op-er-a (*op'ĕr-a*), *n.* a musical drama.

op-er-ate (*'ĕr-āt*), *v. i.* to work; produce a certain effect: *v. t.* to cause to perform certain work.

op-er-at-ic (*-at'ik*), *adj.* pertaining to the opera.

op-er-a-tive (*'er-ā-tiv*), *adj.* having the power of acting; efficacious; vigorous.

Ophelia (*ō-fē'li-a, ō-fēl'ya*). From the Greek, meaning "help," "usefulness." Fr., *Ophelié;* Gr., *Ophelia;* Lat., *Ophelia.*

oph-thal-mi-a (*of-thal'mi-a*), *n.* inflammation of the eye or eyeball. [Also *ophthalmitis.*]

oph-thal-mic (*'mik*), *adj.* pertaining to the eye.

o-pi-ate (*ō'pi-āt*), *n.* a medicine compounded with opium to induce sleep or rest: *adj.* narcotic.

o-pin-ion (*-pin'yun*), *n.* belief or judgment; estimation; persuasion.

o-pin-ion-a-ted (*-ā-ted*), *adj.* firm or obstinate in one's opinions.

Syn. OPINIONATED, egotistic, conceited, egoistical. An *opinionated* man is not only fond of his own *opinion*, but full of his own *opinion;* he has an *opinion* on everything, which is the best possible *opinion;* a *conceited* man has a *conceit* or an idle fond *opinion* of his own talent; it is not only high in competition with others, but it is so high as to be set above others; the *egoistical* man makes himself the darling theme of his own contemplation. [See *obstinate.*]

o-pi-um (*ō'pi-um*), *n.* the dried juice of the capsules of the white poppy.

o-pos-sum (*ō-pos'um*), *n.* an American and Australian marsupial carnivorous mammal.

op-po-nent (*op-pō'nent*), *adj.* opposite; adverse; antagonistic: *n.* one who opposes.

op-por-tune (*-por-tūn'*), *adj.* well-timed; seasonable.

op-por-tu-ni-ty (*-tū'ni-ti*), *n.* convenient time or occasion. [OCCASION.]

op-pose (*-pōz'*), *v. t.* to act against; contend with; resist; place as an obstacle against; check. [OBJECT, OBSTRUCT, COMBAT.]

op-po-site (*'pō-zit*), *adj.* placed or standing in front; contrary; adverse; antagonistic.

op-po-si-tion (*-zish'un*), *n.* the act or state of opposing; hostile resistance; contrariety; obstacle. [ANTIPATHY.]

op-press (*-pres'*), *v. t.* to burden; crush by hardship or severity; lie heavily upon. [ABUSE.]

op-pro-bri-um (*-prō'bri-um*), *n.* reproach with disdain or contempt; ignominy.

op-pugn (*-pūn'*), *v. t.* to oppose. [CONFUTE.]

op-tic (*'tik*), *adj.* pertaining to vision. [Also *optical.*] *n. pl.* the science of the properties of light and vision.

op-ti-cian (*-tish'un*), *n.* one skilled in optics; one who makes or sells optical instruments.

op-ti-mism (*op'ti-mizm*), *n.* the doctrine that everything in the present state of existence is for the best.

op-ti-mist (*'ti-mist*), *n.* one who holds the doctrine of optimism.

op-tion (*'shun*), *n.* power or right of choice; wish; selection. [ALTERNATIVE.]

op-u-lence (*'ū-lens*), *n.* wealth.

op-u-lent (*'ū-lent*), *adj.* wealthy; rich.

or (*ôr*), *conj.* the correlative of *either*.

or-a-cle (*or'a-kl*), *n.* among the ancients, the response of a deity or inspired priest to some inquiry; temple.

o-rac-u-lar (*ō-rak'ū-lēr*), *adj.* of the nature of an oracle; uttering oracles; dogmatically magisterial.

o-ral (*'ral*), *adj.* verbal.

or-ange (*ôr'enj*), *n.* a tree (*Citrus aurantium*) with a deep golden-colored and juicy fruit.

Orange Free State. Formerly a republic of South Africa, so called because the original settlers were emigrants from the principality of Orange, in Holland. Now called Orange River Colony.

Orangemen (*ôr'enj-men*). Irish Protestants. The name was given about the end of the seventeenth century by Roman Catholics to the Protestants of Ireland, on account of their support of the cause of William III. of England, prince of Orange.

o-ra-tion (*ō-ra'shun*), *n.* a formal public speech delivered on an occasion of special importance.

or-a-tor (*or'a-tēr*), *n.* one who makes an oration; an eloquent speaker.

or-a-to-ri-o (*-tō'ri-ō*), *n.* a musical composition having a sacred theme as its subject.

or-a-to-ry (*'a-tō-ri*), *n.* the art of an orator.

orb (*ôrb*), *n.* a circular body; sphere; the eye; circuit.

or-bic-u-lar (*ôr-bik'u-lēr*), *adj.* orb-shaped.

or-bit (*'bit*), *n.* the bony cavity of the eye; the path described by a heavenly body during its periodical revolution.

or-chard (*'chērd*), *n.* an inclosure of fruit trees.

or-ches-tra (*'kes-tra*), *n.* in a modern theater, etc., the place occupied by the musicians; the body of musicians.

or-ches-tra-tion (*-trā'shun*), *n.* musical arrangement or instrumentation for an orchestra.

or-chid (*'kid*), *n.* a handsome flower, often of fantastic shape, of the genus Orchis.

or-dain (*-dān'*), *v. t.* to appoint; institute; invest with ministerial or priestly functions.

★or-de-al (*'dē-al*, not *ôr-dē'al*), *n.* an ancient method of trial by fire, water, combat, etc., to determine the guilt or innocence of an accused person; hence a severe trial or test.

or-der (*'dēr*), *n.* method or regular arrangement; settled mode of procedure; rule; regulation; command; class; rank; degree: *v. t.* to regulate or manage; command; conduct; direct: *v. i.* to give a command or order. [COLA S, COMMAND.]

or-der-ly (*'dēr-li*), *adj.* well regulated; methodical; *n.* soldier who attends upon an officer to carry his orders: *adv.* methodically.

or-di-nal (*'di-nal*), *adj.* noting order: *n.* a number noting order.

or-di-nance (*'di-nans*), *n.* an established rule, rite, or law.

or-di-na-ry (*'di-nā-ri*), *adj.* according to established order; usual; customary; commonplace.

or-di-nate (*'di-nāt*), *n.* a straight line in a curve terminated on both sides by the curve and bisected by the diameter.

or-di-na-tion (*-nā'shun*), *n.* the act of conferring holy orders; the state of being ordained or appointed.

ord-nance (*ôrd'nans*), *n.* artillery.

ore (*ôr*), *n.* metal as extracted from the earth in its natural state or combined with some other substance.

Oregon (*or'ē-gon*). State of the Union, and a county in Missouri. The name said to have been derived from *Origanum*, a species of wild sage found along the coast in the state, but another authority states that it is derived from the Spanish *Oregones*, which name was given the Indian tribes inhabiting that region, by a Jesuit priest, the word meaning "big-eared men."

or-gan (*ôr'gan*), *n.* an instrument; that part of a living structure by means of which some function is discharged; a wind musical instrument.

or-gan-ic (*-gan'ik*), *adj.* pertaining to, composed of, containing, or produced by, organs; instrumental. [Also *organical.*]

or-gan-ism (*'gan-izm*), *n.* organical structure.

or-gan-ist (*'ist*), *n.* a performer on the organ.

or-gan-ize (*'gan-īz*), *v. t.* to arrange or distribute into parts with the proper officials.

or-gy (*'ji*), *n.* a drunken revel.

o-ri-el (*ō'ri-el*), *n.* a large bay window.

o-ri-ent (*'ri-ent*), *v. t.* to define the position of with reference to the East.

O-ri-ent (*'ri-ent*), *adj.* Oriental: *n.* the East.

O-ri-en-tal-ist (*-en-tal-ist*), *n.* one who is skilled in Oriental languages, subjects, etc.

o-ri-en-ta-tion (*-tā'shun*), *n.* the determination of the position of the east; eastward position.

or-i-fice (*or'i-fis*), *n.* a mouth or aperture.

Syn. ORIFICE, perforation. These terms are both scientifically employed to designate certain cavities in the human body; but the former respects that which is natural, the latter that which is artificial; all the vessels of the human body have their *orifices*, which are so constructed as to open or close of themselves. Surgeons are frequently obliged to make *perforations* into the bones

Origen (*or'i-jen*). Meaning, "descended from Horus," an Egyptian deity. Fr., *Origène;* Gr., *Origenes;* Lat., *Origenes.*
or-i-gin (*'i-jin*), *n.* beginning; first existence; source; cause; derivation.
o-rig-i-nal (*ō-rij'i-nal*), *adj.* first in order; not copied: *n.* that from which anything is copied. [NATIVE.]
o-rig-i-nal-i-ty (*-nal'i-ti*), *n.* original state or quality.
o-rig-i-nate (*-rij'i-nāt*), *v. t.* to bring into existence: *v. i.* to rise; commence.
o-ri-ole (*ō'ri-ōl*), *n.* the golden-thrush.
Orkney (*ôrk'nē*) **isles.** A group of islands north of Scotland. Name expresses the Gaelic for the "isles of whales, or porpoises."
Orlando (*ôr-lan'dō*). A form of *Roland.* It., *Orlando;* Lat., *Orlandus.*
Orleans (*ôr'lē-anz.* French, *ôr-lā-ăn'*). Means "Aurelian's city," from *Aurelianum,* named after the Emperor Aurelian.
or-na-ment (*'nà-ment*), *n.* anything that adorns or beautifies: *v. t.* to adorn.
or-nate (*-nāt'*), *adj.* ornamented.
or-ni-thol-o-gy (*-ni-thol'ō-ji*), *n.* the scientific study of the structure, habits, etc., of birds.
o-ro-tund (*ō'rō-tund*), *adj.* characterized by fullness, clearness, strength, and smoothness: *n.* a quality of voice thus characterized.
or-phan (*ôr'fan*), *n.* a child bereft of one or both parents.
or-phan-age (*-āj*), *n.* the state of an orphan; an institution for orphans.
Orson. A masculine name, derived, like the Italian *Orso,* from the Latin *ursus,* "a bear."
or-tho-dox (*'thō-doks*), *adj.* holding, or in accordance with, the received or established belief or doctrine.
or-tho-dox-y (*-doks-i*), *n.* conformity to orthodox belief or opinion.
or-tho-ë-py (*-thō'ē-pi*), *n.* correct pronunciation.
or-thog-ra-phy (*-thog'rà-fi*), *n.* the art of spelling and writing words correctly
Osage (*ō-sāj*) **river, Mo.** Indian word, "the strong."
Osawattomie (*os-à-wot'ō-mē*), **Kan.** A composite word, *Osa* and *Wottomie,* formed from the names of the rivers Osage and Pottawottomie.
Oscar. From the Old German name *Oskar,* "very renowned."
os-cil-late (*'sil-lāt*), *v. i.* and *v. t.* to swing backward and forward; vibrate.
os-cu-late (*'kū-lāt*), *v. t.* and *v. i.* to kiss; touch.
o-sier (*ō'shêr*), *n.* a willow, the twigs of which are used in basket making.
Oskaloosa (*os-kà-lōō'sà*) **Iowa.** A compound word, *Oska,* name of an Indian chief, *Loosa,* his wife.
Osmund. Some translate this name "house peace." Wachter renders it "excellent, gallant, brave man."
os-si-fi-ca-tion (*os-i-fi-kā'shun*), *n.* conversion of soft animal tissue into bone.
os-si-fy (*'i-fī*), *v. t.* to convert into bone or into a bone-like substance: *v. i.* to become bone.
os-ten-si-ble (*-ten'si-bl*), *adj.* apparent; held forth to view; plausible.
os-ten-ta-tion (*-tā'shun*), *n.* outward show or appearance; ambitious or vain display. [PRIDE.]
os-ten-ta-tious (*'shus*), *adj.* fond of show; intended for vain display; gaudy.
os-te-ol-o-gy (*-tē-ol'ō-ji*), *n.* that part of anatomy treating of bones, their structure, etc.
os-te-op-a-thist (*-op'à-thist*), *n.* one who practices osteopathy.
os-te-op-a-thy (*-op'à-thi*), *n.* a system of therapeutics in which the treatment is by manipulation of the bones, muscles, and nerve centers; the treatment of bone disease.
os-tra-cize (*'trà-sīz*), *v. t.* to banish by popular vote; exclude from public or private favor. [BANISH.]
os-trich (*'trich*), *n.* a swift running African bird, valued for its feathers.
Oswald (*oz'wald*). From Old German *os-walt,* "illustrious magistrate, prefect or administrator."
Oswego (*os-wē'gō*), **N. Y.** Named from the river, the Iroquois name being *oswageh,* "flowing out."
oth-er (*uth'êr*), *adj.* noting something besides; different; contrary.
oth-er-wise (*-wīz*), *adv.* in another manner; in other respects: *conj.* else.
Otho (*ō'thō*), or **Otto** (*ot-tō*). Some translate *Otho* "happy," and *Otto* "rich," but they would seem to be the same name. It comes from Old German *od,* "excelling," "happy," "fortunate." Dutch, *Otto;* Fr., *Othon;* Ger., *Otto;* It., *Ottone;* Lat., *Otho;* Sp., *Otonio;* Sw., *Otto.*
Ottawa (*ot'à-wà*). The capital of the Dominion of Canada, stands on the river Ottawa, which preserves the name of the *Ottawa* or *Otaua* tribe, an Algonquin term meaning "traders."
Ottoman (*ot'tō-man*) **empire.** The official title of the realm subject to the sultan, takes its name from *Othman,* the emir under whom the Turks first advanced into Europe.
ought (*awt*), *v. i.* to be under obligation; be fit, necessary, or proper: *n.* anything.
ounce (*ouns*), *n.* a weight 1-16th of a pound avoirdupois; 1-12th of a pound troy.
our (*our*), *pron.* pertaining to, or belonging to, us.
★oust (*oust*, not *ōōst*), *v. t.* to eject. [BANISH.]
out (*out*), *adv.* without; not within or at home; abroad; gone forth.
out-break (*out'brāk*), *n.* a breaking out; an eruption.
out-cast (*out'kast*), *adj.* cast out; rejected: *n.* one who is cast or driven out; an exile.
out-crop (*'krop*), *n.* the exposure of strata at the earth's surface.
out-cry (*'krī*), *n.* clamor; tumult.
out-do (*-dōō'*), *v. t.* to excel.
out-law (*'law*), *n.* one who is deprived of legal benefits and protection: *v. t.* to deprive of legal benefits and protection.
out-lay (*'lā*), *n.* expense. [EXPENSE.]
out-line (*'līn*), *n.* a line bounding or defining a figure; first sketch: *v. t.* to sketch out.
out-live (*-liv'*), *v. t.* to live longer than.
out-rage (*'rāj*), *n.* open and excessive violence; wanton abuse or mischief: *v. t.* to act in an outrageous manner.
out-ra-geous (*-rā'jus*), *adj.* violent; excessive; exceeding all bounds.
out-right (*'rīt*), *adv.* completely; at once.
out-side (*'sīd*), *n.* the external part of anything; superficies; utmost: *adj.* exterior.
out-stand-ing (*-stand'ing*), *adj.* projecting; unpaid.
out-ward (*'wêrd*), *adj.* external; to or from the exterior; visible; extrinsic.

Syn. OUTWARD, external, exterior. *Outward,* or inclined to the *out,* after the manner of the *out,* indefinitely describes the situation; *external* is employed only in regard to such objects as are conceived to be independent of man as a thinking being; hence, we may speak of the *outward* part of a building, of a board, and the like; but of *external* objects acting on the mind, or of an *external* agency; when we speak of anything which has two coats, it is usual to designate the *outermost* by the name of the *exterior.*

out-wit (*-wit'*), *v. t.* to overreach, or defeat, by superior skill or cunning.
out-work (*'wêrk*), *n.* a defense constructed beyond the main body of a fort, etc.
o-val (*ō'val*), *adj.* shaped like an egg; elliptical: *n.* anything egg-shaped.
o-va-ry (*'và-ri*), *n.* [*pl.* ovaries (*-riz*)], the organ in a female animal in which the ova or first germs of future life are formed; the hollow seed-case of a plant.
o-va-tion (*-vā'shun*), *n.* an enthusiastic demonstration of public esteem.
ov-en (*uv'n*), *n.* a place or apparatus for baking or heating.
o-ver (*ō'vêr*), *prep.* superior in position, authority, dignity, excellence, or value; above; upon: *adv.* in excess: *adj.* beyond; superior.
★o-ver-alls (*-awlz*), *n. pl.* loose trousers worn to protect others.
o-ver-awe (*-aw'*), *v. t.* to awe exceedingly.
o-ver-flow (*-flō'*), *v. t.* to flow over.
over-hear (*-hêr'*), *v. t.* to hear by accident or by artifice.
o-ver-pow-er (*-pou'êr*), *v. t.* to bear down or crush by superior force; vanquish. [BEAT.]
o-ver-pro-duc-tion (*-prō-duk'shun*), *n.* supply in excess of the demand.
o-ver-seer (*-sêr'*), *n.* the superintendent of some department of a business.
o-vert (*'vêrt*), *adj.* open; public.
o-ver-take (*ō-vêr-tāk'*), *v. t.* to catch by pursuit; come upon as a punishment.
o-ver-throw (*-thrō'*), *v. t.* to turn upside down; demolish; vanquish; destroy: *n.* (*ō'vêr-thrō*), ruin; defeat. [BEAT, SUBVERT.]
o-ver-turn (*-tûrn'*), *v. t.* to turn or throw over from a base or foundation. [SUBVERT.]
o-ver-whelm (*-hwelm'*), *v. t.* to crush or destroy utterly.
o-ver-wise (*ō'vêr-wīz*), *adj.* affectedly wise.
Ovid (*ov'id*). From the Latin, meaning "goat," or "sheep," or both. Dutch, *Ovidius;* Fr., *Ovide;* Ger., *Ovidius;* It., *Ovidio;* Lat., *Ovidius.*
o-vip-a-rous (*ō-vip'à-rus*), *adj.* producing young by eggs.
o-void (*'void*), *adj.* egg-shaped. [Also *ovoidal.*]
o-vum (*'vum*), *n.* [*pl.* ova (*'và*)], the germ or body in the ovary which, when impregnated, develops into the fœtus.
owe (*ō*), *v. t* to be indebted, or under obligation to; be obliged to pay: *v. i.* to be in debt.
Owego (*ō-wē'gō*), **N. Y.** Delaware Indian word, *ahwaga,* "where the valley widens."
Owen. Probably from the Irish name *Eogan,* signifying "youth."
owl (*oul*), *n.* a raptorial nocturnal bird characterized by its hoot: *v. i.* to smuggle.
own (*ōn*), *adj.* belonging to; peculiar or proper to: *v. t.* to possess or hold by right.
ox (*oks*), *n.* [*pl.* oxen (*'n*)], an animal of the bovine genus, especially a castrated bull.
Oxford. Anglo-Saxon *Oxnaford,* the "ford of the oxen," is a name of the same class as *Shefford,* the "sheep ford," *Hertford* and *Swinford* in England, or *Ochsenfurt* and *Schweinfurt* in Germany.
ox-ide (*'id*), *n.* a compound of oxygen and a base.
ox-i-dize (*'i-dīz*), *v. t.* to convert into an oxide: *v. i.* to be converted into an oxide. [Also *oxidate.*]
ox-y-gen (*'i-jen*), *n.* a colorless inodorous gas.
o-yer (*ō'yêr*), *n.* a hearing or trial of legal causes.
o-yes (*'yes*), *interj.* the introductory cry of an official or public crier demanding silence. [Also *oyez.*]
oys-ter (*ois'têr*), *n.* a bivalve mollusk of the genus Ostrea, much esteemed as a delicacy.
Ozark (*ō-zärk'*). County and city in Christian county, Missouri, and village in Dale county, Alabama. A corruption of the French *aux arcs,* meaning "with bows," a term descriptive of the Indians who inhabited the country.
o-zone (*ō'zōn*), *n.* an allotropic form of oxygen present in the atmosphere.

P

pa (*pä*), *n.* abbreviation of *papa.*
pace (*pās*), *n.* a step; manner of walking; a linear measure, varying from 30 in. to 60 in.: *v. t.* to measure by steps or paces: *v. i.* to amble.
pa-cif-ic (*pà-sif'ik*), *adj.* peace-making; conciliatory; mild; peaceful; tranquil.
pa-cif-i-ca-tion (*-i-kā'shun*), *n.* the act of peacemaking; conciliation.
Pacific Ocean. Is the English translaton of *Mar Pacifico,* or *Oceano Pacifico,* the somewhat inappropriate name bestowed by Magellan, in 1521, on the great ocean which he was the first to traverse.
pac-i-fy (*pas'i-fī*), *v. t.* [*p. t.* and *p. p.* pacified, *p. pr.* pacifying], to calm or appease; reconcile.
pack (*pak*), *n.* a large bundle tied up for carriage; load; burden; set of playing cards; number of dogs kept for hunting: *v. t.* to bind and press together.
pack-age (*'āj*), *n.* a bundle or bale of goods.
pack-et (*'et*), *n.* a small pack, or parcel; a vessel sailing between two or more ports at regular intervals for the conveyance of passengers, mails, and merchandise.
pact (*pakt*), *n.* an agreement.
pad (*pad*), *n.* a soft cushion; a thick mass of sheets of paper for writing upon: *v. t.* stuff with padding.
pad-ding (*'ing*), *n.* material used for stuffing.
pad-dle (*'l*), *v. i.* to row slowly; play in the water: *v. t.* to propel by paddle or oar; to spank: *n.* a short broad oar; an oar blade; one of the floats for propelling a steamship.
pad-dock (*'uk*), *n.* a small field or inclosure for horses, etc.; a large toad or frog.
pad-lock (*pad'lok*), *n.* a lock with a link to pass through a staple or eye: *v. t.* to fasten with a padlock.
Paducah (*pà-dū'kà*), **Ky.** So called from the name of an Indian chief, *Paducah.*
pæ-an (*pē'an*), *n.* a triumphal song.
pæ-do-bap-tism (*-dō-bap'tizm*), *n.* infant baptism. [Also *pedobaptism.*]
pa-gan (*pā'gan*), *n.* a heathen; idolator: *adj.* heathen; idolatrous.
page (*pāj*), *n.* a boy attending on a person of distinction; a boy in livery; one side of the leaf of a book.
pag-eant (*paj'ent*), *n.* a theatrical show or spectacle.
pa-go-da (*pà-gō'dà*), *n.* a Buddhist temple.
pai-dol-o-gy (*pā-dol'ō-ji*), *n.* scientific child study.
pail (*pāl*), *n.* an open vessel of wood or metal, furnished with a handle, for carrying water, etc.
pain (*pān*), *n.* physical or mental suffering; penalty: *pl.* diligent effort; throes of parturition: *v. t.* to cause physical or mental suffering; render uneasy.
paint (*pānt*), *v. t.* to represent by delineation and colors; depict: *v. i.* to practice painting; rouge: *n.* a coloring substance.

Syn. PAINT, depict. *To paint* is employed either literally to represent figures on paper, or to represent circumstances and events by means of words; *to depict* is used only in this latter sense, but the former word expresses a greater exercise of the imagination than the latter; it is the art of the poet *to paint* nature in lively colors; it is the art of the historian or narrator *to depict.*

paint-er (*'êr*), *n.* one whose occupation is to paint; an artist who is skilled in depicting subjects in colors.
pair (*pâr*), *n.* two things of a kind, similar in form, suited to each other, and used together.
★pa-ja-mas (*pà-jä'màz*), *n. pl.* loose trousers; a kind of sleeping costume.
pal-ace (*pal'às*), *n.* the residence of a sovereign or bishop; a magnificent house or building.
pal-a-ta-ble (*-à-tà'bl*), *adj.* agreeable to the taste; savory.
pal-a-tal (*'à-tal*), *adj.* pertaining to, or uttered by means of, the palate: *n.* a letter pronounced by means of the palate.
pal-ate (*'āt*), *n.* the roof of the mouth; taste or relish.
pa-la-tial (*pà-lā'shal*), *adj.* pertaining to, or suitable to, a palace; royal.
pal-a-tine (*'à-tin*), *adj.* invested with royal privileges and rights: *n.* one who is thus invested.
pa-la-ver (*pà-lā'vêr*), *n.* superfluous or idle talk; chatter: *v. i.* to confer; chatter.
pale (*pāl*), *adj.* not of a fresh or ruddy complexion; wan; wanting in colors: *n.* a stake: *v. t.* to turn pale: *v. t.* to inclose with pales.
pa-le-on-tol-o-gy (*pā-lē-on-tol'ō-ji*), *n.* that branch of geology which treats of fossil remains.
Palestine (*pal'es-tin*). The country of the Hebrews. From Gr. *Palæstina,* a name indicating that the Greek mariners first knew Canaan as the land of the Philistines inhabiting the coast. The latter arrived, probably from Cyprus, after the Hebrew conquest and before the time of Rameses III., on whose monuments they appear as *Pulista.*

pal-ette (*pal'ĕt*), *n.* a thin oval wood or porcelain plate for mixing and holding colors.
pal-frey (*pawl'fri*), *n.* a small saddle horse for a lady's use.
pal-imp-sest (*pal'imp-sest*), *n.* a parchment manuscript which, after the writing upon it has been partially erased, is used again.
pal-i-sade (*pal-i-sād'*) *n.* a fence or fortification formed of stakes driven into the ground and pointed at the top: *v. t.* to inclose or fortify with stakes.
Palisades (*pal-i-sādz'*), **The.** A basaltic bluff extending along the western shore of the Hudson in the states of New Jersey and New York. It commences opposite the northern part of New York City, and continues northward about eighteen miles. Height, 200 to 500 feet.
pall (*pawl*), *n.* a cloak or mantle; a coffin covering: *v. i.* to become insipid; lose strength: *v. t.* to make insipid.
pal-la-di-um (*pal-ā'di-um*), *n.* any safeguard of a liberty, or privilege; a rare grayish metal found with platinum.
pal-let (*'et*), *n.* a name for various tools used in gilding, pottery, etc.; a small rough bed.
pal-li-ate (*'i-āt*), *v. t.* to excuse or cover over; extenuate; lessen or abate.
pal-li-a-tive (*'i-ā-tiv*), *adj.* tending to lessen or mitigate.
pal-lid (*'id*), *adj.* pale; wan.
Pall Mall (*pel-mel'*). A fine street in London, leading from Trafalgar square to the Green park. Its name is a modern spelling of *paille maille*, the title of a French game of ball somewhat similar to croquet, first played in this London thoroughfare about 1621.
pal-lor (*pal'ẽr*), *n.* lack of color.
palm (*pām*), *n.* the inner part of the hand; a tree of various species of the order Palmæ.
pal-met-to (*pal-met'ō*), *n.* a species of palm tree, the cabbage-tree palm.
★**pal-mis-try** (*pal'mis-tri*, not *pā'mis tri*), *n.* the pretended art of foretelling the future by examination of the lines and marks of a person's hand.
Palo Alto (*pā'lō ăl'tō*). Town in Santa Clara county, California. A Spanish phrase meaning "high stick."
pal-pa-ble (*pal'pă-bl*), *adj.* easily perceived; obvious.
pal-pi-tate (*'pi-tāt*), *v. i.* to beat or throb.
pal-sy (*pawl'zi*), *n.* paralysis: *v. t.* [*p. t.* and *p. p.* palsied, *p. pr.* palsying], to paralyze.
pal-try (*'tri*), *adj.* worthless; contemptible.
Pamlico sound, N. C. Named from a tribe of Indians called the *Pamlicoes*.
pam-per (*'pĕr*), *v. t.* to feed luxuriously; satiate.
pam-phlet (*'flet*), *n.* a small unbound book, usually on some current topic, of one or more sheets stitched together. This word is derived from the name of a Greek authoress, Pamphylia, who compiled a history of the world in thirty-five little books.
pan, a *prefix* meaning *all, universal:* as *pan*-Anglican.
pan (*pan*), *n.* a broad shallow vessel; that part of an old flintlock which held the priming.
pan-a-ce-a (*pan-ā-sē'ā*), *n* a universal remedy or medicine.
Panama (*pan-ā-mā'*, Spanish *pä-nä-mä'*). Was the native name of a village on the Pacific coast of the Gulf and Isthmus of Panama. Here, in 1518, Davila founded the oldest existing city in America.
Panama bay. The bay of "mudfish."
pan-cake (*pan'kāk*), *n.* a thin cake of batter fried.
pan-cre-as (*pang'krē-as*), *n.* a large fleshy gland (the sweetbread) situated under and behind the stomach, secreting a fluid that assists in the process of digestion.
pan-cre-a-tin (*'krē-ā-tin*), *n.* an albuminoid principle in the fluid of the pancreas.
pan-de-mo-ni-um (*-dē-mō'ni-um*), *n.* a place or abode of general disorder.
pan-der (*'dĕr*), *v. i.* to act as an agent for the gratification of the passions.
pane (*pān*), *n.* a square of glass; a piece in variegated work.
★**pan-e-gyr-ic** (*pan-ē-jir'ik*), *n.* an ovation or eulogy in praise of some person or event; encomium. [ENCOMIUM.]
pan-el (*'el*), *n.* a thin board on which a picture is painted; a schedule containing the names of persons summoned to serve as jurors; the jury.
pang (*pang*), *n.* a violent sudden pain; agony, mental or physical.
pan-ic (*pan'ik*), *n.* a sudden fright; a kind of millet.
pan-ni-er (*'ni-ĕr*), *n.* one of two baskets suspended across the back of a horse, for carrying market produce.
pan-o plied (*'ō-plid*), *adj.* furnished with a complete suit of armor.
pan-o-ram-a (*-ō-ră'mă*), *n.* a picture, viewed from a central standpoint, of several scenes unrolled and made to pass before the spectator.
pan-sy (*'zi*), *n.* the heart's-ease.
pant (*pănt*), *v. i.* to breathe rapidly; *n.* rapid breathing.
pan-ta-loon (*pan'tă-lōōn*), *n.* a buffoon in a pantomime; *pl.* a pair of tight trousers.
pan-the-ism (*'thē-izm*), *n.* the doctrine that the universe in its totality is God.
Pan-the-on (*'thē-on*), *n.* a temple dedicated to all the gods, especially that of ancient Rome dedicated to Mars and Jupiter.
pan-ther (*pan'thẽr*), *n.* a fierce feline carnivorous animal. [Fem. *pantheress.*]
★**pan-to-mime** (*pan'tō-mīm*, not *pan'tō-mīn*), *n.* a representation in dumb show.
pan-try (*'tri*), *n.* a provision closet.
Paolo. See *Paul.*
pap (*pap*), *n.* soft food for infants; a nipple, teat, or breast; pulp of fruit.
★**pa-pa** (*pä-pä'*, or *pä'pä*), *n.* a word of endearment for father.
pa-pa-cy (*pā'pă-si*), *n.* the office, dignity, or authority, of the pope; popes collectively.
pa-pal (*'pal*), *adj.* pertaining to the pope, or the church of Rome.
pa-per (*pā'pẽr*), *n.* a thin flexible substance made of various materials, as linen, straw, etc., used for writing or printing upon; essay or literary contribution.
★**pa-pier ma-ché** (*pā-pyā'-mā-shā'*) *n.* paper pulp molded and made into trays, etc., and japanned.
pa-poose (*pā-pōōs'*), *n.* a young child [North American Indian].
Papua (*pā'pōō-ā*). An island north of Australia. A Portuguese term for "frizzled," alluding to the enormous frizzled heads of hair worn by the natives.
★**pa-py-rus** (*pā-pī'rus*, not *pap'ir-us*), *n.* [*pl.* papyri (*'rī*)], a species of Egyptian reed, from which the ancients made paper; a manuscript on papyrus.
par (*pär*), *n.* state of equality; nominal and market value.
par-a-ble (*par'ă-bl*), *n.* a comparison or similitude.
pa-rab-o-la (*pă-rab'ō-lă*), *n.* one of the conic sections formed by the intersection of the cone by a plane parallel to one of its sides.
par-a-chute (*par'ă-shōōt*), *n.* an umbrella-shaped apparatus for descending from a balloon.
pa-rade (*pā-rād'*), *n.* ostentatious display; show; military display: *v. t.* to marshal in military order; *v. i.* to exhibit.
par-a-dise (*par'ă-dīs*), *n.* the garden of Eden; any place of happiness; heaven.
par-a-dox (*'ă-doks*), *n.* something apparently absurd or incredible, yet true.
par-a-dox-ic-al (*'ă-kal*), *adj.* of the nature of a paradox. [ABSURD.]
★**par-af-fin** (*'ă-fin*), *n.* a white crystalline substance obtained by distillation from wood, shale, etc.
par-a-gon (*'ă-gon*), *n.* something of extraordinary excellence; model or pattern of perfection: *v. t.* to equal or compare.
par-a-graph (*'ă-grăf*), *n.* a small subdivision of a connected discourse.
Paraguay (*par'ă-gwā*). River and republic of South America, meaning "the river of waters," referring to its numerous tributaries.
par-al-lel (*'ă-lel*), *adj.* lying side by side; extended in the same direction and equidistant at all points: *v. t.* to place so as to be parallel; correspond to; equal.
par-al-lel-o-gram (*'ō-gram*), *n.* a 4-sided figure whose opposite sides are parallel and equal.
pa-ral-y-sis (*pă-ral'i-sis*), *n.* loss of the power of sensation in one or more parts of the body; palsy.
par-a-lyze (*'ă-līz*), *v. t.* to affect with paralysis; unnerve; render useless or ineffective.
par-a-mount (*par'ă-mount*), *adj.* superior to all others; eminent or chief: *n.* the highest in rank or authority.
par-a-noi-a (*par-ă-noi'ă*), *n.* a form of monomania.
par-a-pet (*'ă-pet*), *n.* a wall breast-high; a rampart to protect troops from the fire of an enemy.
par-a-pher-na-li-a (*-fẽr-nā'li-ă*), *n.* ornaments of dress generally; equipment; trappings.
par-a-phrase (*'ă-frāz*), *n.* a free translation or explanation: *v. t.* make a free translation of.
par-a-site (*'ă-sit*), *n.* an animal or plant nourished by another to which it attaches itself. [FLATTERER.]
par-a-sit-ic (*-sit'ik*), *adj.* of the nature of a parasite; meanly servile or fawning.
par-a-sol (*'ă-sol*), *n.* a lady's sunshade.
par-boil (*pär'boil*), *v. t.* to boil partially.
par-cel (*'sel*), *n.* a small bundle or package; little part: *v. t.* to divide into parts.
parch (*pärch*), *v. t.* to scorch; burn slightly; dry to excess.
parch-ment (*'ment*), *n.* the skin of a sheep, goat, etc., dressed and prepared for writing upon; a deed: *adj.* made of, or like, parchment.
par-don (*pär'dn*), *v. t.* to forgive; absolve: *n.* forgiveness; absolution. [FORGIVE, MERCY, ABSOLVE, EXCUSE.]
par-don-a-ble (*-ă-bl*), *adj.* that may be pardoned. [VENIAL.]
pare (*pâr*), *v. t.* to cut away little by little; reduce or diminish.
par-e-gor-ic (*par-ĕ-gor'ik*), *n.* a tincture of opium to assuage pain: *adj.* mitigating pain.
par-ent (*pâr'ent*), *n.* a father or mother; origin.
par-ent-age (*-āj*), *n.* extraction; birth.
pa-ren-tal (*pă-ren'tal*), *adj.* pertaining to, or becoming, parents; fond.
pa-ren-the-sis (*pă-ren'the-sis*), *n.* [*pl.* parentheses (*sēz*)], an explanatory word or clause inserted in a sentence, which is grammatically complete without it: indicated by the marks ( ).
par-en-thet-ic-al (*par-en-thet'i-kal*), *adj.* expressed in a parenthesis; using parentheses.
par-e-sis (*par'ĕ-sis*), *n.* insanity with general motor paralysis; softening of the brain.
pa-ri-e-tal (*pă-ri'ĕ-tal*), *adj.* pertaining to a wall or side; forming the wall or side (said of the large lateral bones of the head).
Paris (*par'is*, Fr. *pa-rē'*). The capital of France, so called from the name of the Celtic tribe *Parisii*. It was called by the Romans *Lutetia Parisiorum*, the "bright city of the Parisii," from the white stone used in building.
par-ish (*par'ish*), *n.* an ecclesiastical district under the particular charge of priest, clergyman, or minister.
pa-rish-ion-er (*pă-rish'un-ẽr*), *n.* one who belongs to a parish.
par-i-ty (*'i-ti*), *n.* equality; likeness.
park (*pärk*), *n.* a large piece of ground used as a public place for recreation.
Parkersburg. City in Wood county, West Virginia, named for Alexander Parker of Pennsylvania.
par-lance (*pär'lans*), *n.* conversation; idiom of conversation.
par-ley (*'li*), *n.* a conference, especially with an enemy: *v. i.* to hold a conference, especially with an enemy with a view to peace.
★**Par-lia-ment** (*'li-ment*), *n.* the supreme legislative assembly of Great Britain and Ireland.
par-lia-men-ta-ri-an (*-men-tā'ri-an*), *n.* one who is versed in parliamentary law and usages.
par-lia-men-ta-ry (*'tă-ri*), *adj.* pertaining to, enacted by, or in accordance with the usages of, Parliament.
par-lor (*'lẽr*), *n.* reception room; drawing room.
Parnell (*pär'nel*). A feminine name corrupted from *Petronilla*.
pa-ro-chi-al (*pă-rō'ki-al*), *adj.* pertaining to a parish; narrow-minded.
par-o-dy (*par'ō-di*), *n.* a burlesque imitation of a serious poem.
pa-role (*pă-rōl'*), *n.* a word of honor, especially one given by a prisoner of war that in return for conditional freedom he will return to custody on a specified day.
par-ox-ysm (*par'oks-izm*), *n.* a sudden spasm, or fit of acute pain; sudden action or convulsion.
par-quet, parquette (*pär-ket'*), *n.* the floor space of a theater between the orchestra-rail and dress-circle.
par-ri-cide (*par'i-sīd*), *n.* the murderer of a father or mother.
par-rot (*'ot*), *n.* a tropical bird with a hooked bill, characterized by its brilliant plumage and its power of imitating the human voice.
par-ry (*'i*), *v. t.* [*p. t.* and *p. p.* parried, *p. pr.* parrying], to ward off, as a blow.
Parry islands. A group of islands in the Arctic Ocean, named for the famous arctic navigator, Sir W. E. Parry.
parse (*pärs*), *v. t.* to resolve by grammatical rules (a sentence) into its component parts, and show the relation of the various parts of speech.
par-si-mo-ni-ous (*pär-si-mō'ni-us*), *adj.* frugal to excess; miserly; penurious.
par-si-mo-ny (*'si-mō-ni*), *n.* closeness in expenditure; niggardliness. [FRUGALITY.]
pars-ley (*pärs'li*), *n.* a culinary herb.
pars-nip (*'nip*), *n.* a plant with an edible carrot-like root.
par-son (*pär'sn*), *n.* the incumbent of a parish; a clergyman.
par-son-age (*-āj*), *n.* an ecclesiastical benefice; the residence of an incumbent of a parish.
part (*pärt*), *n.* something less than the whole; piece; portion; proportional quantity; regions; quarters: *v. t.* to distribute; separate: *v. i.* to be separated or divided; take leave.
Syn. PART, piece, patch. Things may be divided into *parts* without any express separation; but when divided into *pieces* they are actually cut asunder; hence we may speak of a loaf as divided into twelve *parts* when it is conceived only to be so; and divided into twelve *pieces* when it is really so; the *patch* is that which is always broken and disjointed, a something imperfect; many things may be formed out of a *piece*. [See *divide.*]
Ant. WHOLE.
par-take (*pär-tāk'*), *v. i.* [*p. t.* partook, *p. p.* partaken *p. pr.* partaking], to take a part or share in common with others.
par-tial (*'shal*), *adj.* inclined to favor one side or party; biased.
par-ti-al-i-ty (*-shi-al'i-ti*), *n.* the state or quality of being partial. [PREJUDICE.]
par-tic-i-pant (*-tis'i-pant*), *adj.* sharing: *n.* one who shares or partakes.
par-tic-i-pate (*'i-pāt*), *v. i.* to partake: *v. t.* to have part of; share.
★**par-ti-ci-ple** (*pär'ti-sip-l*, not *pärt'sip-l*), *n.* a word which partakes of the nature of a verb and of an adjective.
par-ti-cle (*'ti-kl*), *n.* an atom; the smallest part into which a body can be divided; a word noninflected or not used alone. [colors.
par-ti-col-ored (*pär'ti-kul-ẽrd*), *adj.* having various
par-tic-u-lar (*-tik'ū-lẽr*), *adj.* distinct from others; individual; peculiar or special; exclusive.
Syn. PARTICULAR, individual. *Particular* is much more specific than *individual;* the *particular* confines us to one object only of many; but *individual* may be said of any one object among many. [See *circumstantial.*]
Ant. COMMON, normal, ordinary.

par-tic-u-lar-i-ty (*pär-tik-ū-lar'i-ti*), *n.* circumstantiality.
par-tic-u-lar-ize (*'ū-lēr-īz*), *v. t.* to give the particulars of: *v. i.* be attentive to single things or details.
par-ti-san (*pär'ti-zan*), *n.* an adherent of a party or faction: *adj.* pertaining to, or biased in favor of, a party, etc. [FOLLOWER.]
par-ti-tion (*-tish'un*), *n.* the act or state of being divided; a dividing wall: *v. t.* divide by walls.
part-ner (*'nēr*), *n.* one who is associated with another. [COLLEAGUE, ACCESSORY.]
★**par-tridge** (*pär'trij*, not *pat'rij*), *n.* a well-known gallinaceous bird of the genus Perdix, preserved as game.
par-tu-ri-tion (*-tū-rish'un*), *n.* the act of bringing forth young.
par-ty (*'ti*), *n.* a number of persons united together for a particular purpose; faction.
par-ty wall (*-wawl*), a common wall separating two tenements.
Pasadena (*pas-a-dē'nà*). City in Los Angeles county, California. An Indian word meaning "crown of the valley."
Paschal (*pas'kal*, French *pȧs-kȧl'*). Means "belonging to Easter," or "born at Easter." Gr., *Pascal;* It., *Pasquale;* Lat., *Paschalis;* Sw., *Pascual.*
pash-a (*pash'ȧ*), *n.* a Turkish title given to high officials. [Also *pacha.*]
pass (*pȧs*), *v. i.* to move from one place or state to another; be progressive; disappear: *v. t.* to go beyond, or through, or by: *n.* a narrow passage.
pas-sage (*pas'āj*), *n.* the act of passing; course or journey.
Passaic (*pas-sā'ik*). County, city, and river in New Jersey, name derived either from the Indian word *Passaic* or *Passajeek*, "a valley," or from the Indian equivalent of "peace."
Passamaquoddy (*pas-sa-ma-kwod'di*). Bay on coast of Maine. An Indian word meaning "pollock ground," or "pollock-plenty space."
pas-sen-ger (*'en-jēr*), *n.* one who travels in or on a conveyance; one who passes.
pass-ing (*pȧs'ing*), *p. adj.* departing: *adv.* exceedingly: *n.* the act of going by; transit.
pas-sion (*pash'un*), *n.* violent agitation of mind in anger; love; ardor; intense desire.
pas-sion-ate (*-āt*), *adj.* moved by passion; angry; excitable.
pas-sive (*'iv*), *adj.* suffering without resisting; not acting; submissive; quiescent.
Pass-o-ver (*pȧs'ō-vēr*), *n.* a Jewish feast commemorative of the passing of the destroying angel over the houses of the Israelites when he slew the first-born of the Egyptians.
pass-port (*'pōrt*), *n.* a license to travel in a foreign country.
Passumpsic (*pas-sump'sik*) **river, Vt.** Indian word meaning "much clear river."
pass-word (*'wērd*), *n.* a word by means of which friends are distinguished from strangers or enemies.
past (*pȧst*), *p. adj.* having formerly been; gone by; completed: *n.* the time gone by: *adv.* along: *prep.* beyond.
paste (*pāst*), *n.* a mixture of flour, etc., with water, used as a cement; a composition for making artificial gems: *v. t.* to fasten with paste.
paste-board (*'bōrd*), *n.* thick stiff paper.
pas-tel (*pas'tel*), *n.* a colored crayon.
pas-teur-ize (*pas'tūr-īz*), *v. t.* to inoculate with the bacillus which produces a specific disease.
pas-til (*'til*), *n.* a small cone of aromatic paste used for fumigating a room; a medicated lozenge.
pas-time (*pȧs'tim*), *n.* diversion; sport.
pas-tor (*'tēr*), *n.* a clergyman or minister having spiritual charge of a church and congregation.
pas-tor-al (*-al*), *adj.* pertaining to shepherds: *n.* a kind of dramatic poem.
pas-try (*pās'tri*), *n.* articles of food, as pies, etc., made of light puffy dough.
pas-ture (*pas'tūr*), *n.* land under grass for grazing cattle: *v. t.* to supply with grass or pasture: *v. i.* to graze.
past-y (*pāst'i*), *adj.* like paste; a small pie, usually of meat covered with a pie crust.
pat (*pat*), *n.* a light quick blow with the hand; *adj.* apt; exact.
Patagonia (*pat-a-gō'ni-à*). The southernmost portion of South America. So styled by Magellan in accordance with the Spanish word *patagon*, meaning a "large, clumsy foot." It was from the fact of seeing the impressions of the large shoes of the aborigines that he at once concluded the country must be inhabited by giants.
Patapsco (*pà-taps'kō*) **river, Md.** So called from the Indian name *patapsgui*, "black water."
patch (*pach*), *n.* a piece applied to cover a hole or rent; a plot of ground: *v. t.* to put a patch on; mend clumsily. [PART.]
pate (*pāt*), *n.* the head; crown of the head.
pat-en (*pat'en*), *n.* the plate used for the bread at the Eucharist.
pat-ent (*pat'ent*, or *pā'tent*), *adj.* apparent; secured by letters patent: *n.* a privilege granted by letters patent, as a title of nobility, or the sole right in an invention: *v. t.* to grant or secure by letters patent.
pa-ter-nal (*pà-tēr'nal*), *adj.* pertaining to, or exhibiting the characteristics of, a father; hereditary.
pa-ter-ni-ty (*-tēr'ni-ti*), *n.* paternal relation; authorship.
Paternoster Row (*pā'tēr nos'tēr rō*). A street in London, north of St. Paul's, long famous as a center of book publishing. It is said to be so named from the prayer books or rosaries sold in it.
Paterson. City in Passaic county, New Jersey, named for William Paterson, an early governor.
path (*pȧth*), *n.* a road; footway, track; course of conduct or action.
pa-thet-ic (*pà-thet'ik*), *adj.* affecting the emotions or passions; touching. (Also *pathetical.*) [MOVING.]
pa-thol-o-gy (*'ō-jì*), *n.* the science of diseases.
pa-thos (*pā'thos*), *n.* expression of deep feeling; that which excites the mental emotions.
pa-tience (*'shens*), *n.* the quality of being patient or calmly enduring.
Patience. Found as a masculine as well as a feminine name. The name explains itself.
pa-tient (*'shent*), *adj.* suffering pain, hardship, affliction, insult, etc., with calmness and equanimity. [INVALID.]
pa-tois (*pà-twȧ'*), *n.* provincial dialect.
pa-tri-arch (*pā'tri-ȧrk*), *n.* the founder or head of a family; an aged man.
pa-tri-cian (*pà-trish'an*), *n.* one of the senators of ancient Rome; a nobleman: *adj.* senatorial; noble.
Patrick (*pat'rik*). From the Latin *Patricius*, meaning "patrician," "noble." Dutch, *Patricius;* Fr., *Patrice;* It., *Patrizio;* Sp., *Patricio.*
pat-ri-mo-ny (*'ri-mō-ni*), *n.* an estate or right inherited from a father or one's ancestors.
★**pa-tri-ot** (*pā'tri-ot*), *n.* one who loves, and is devoted to, his native country and its welfare.
pa-tri-ot-ism (*'tri-ot-izm*), *n.* love of one's country.
pa-tris-tic (*pà-tris'tik*), *adj.* pertaining to the theology and writings of the fathers of the Christian church. [Also *patristical.*]
pa-trol (*pà-trōl'*), *n.* a corporal's guard that marches round at night to preserve order; a mounted policeman: *v. t.* to go round as a patrol.
★**pa-tron** (*pā'trun*, not *pat'run*), *n.* a guardian or protector: *adj.* giving aid or exercising guardianship; tutelary.
pat-ron-ize (*pat'run-īz*), *v. t.* to act as a patron toward; support or protect; frequent as a customer.
pat-ro-nym-ic (*pat-rō-nim'ik*), *adj.* derived from the name of an ancestor: *n.* a name derived from an ancestor.
pat-ter (*'ēr*), *v. i.* to strike with a quick succession of light sounds, as hail.
pat-tern (*'ērn*), *n.* a model, sample, or specimen. [COPY, EXAMPLE.]
pat-ty (*'i*), *n.* a small pie.
pau-ci-ty (*paw'si-ti*), *n.* smallness of number or quantity.
Paul (*pawl*, French *pōl*, German *powl*) A name derived from the Hebrew, signifying "small in stature." Danish, *Paul* or *Paulus;* Dutch, *Paulus;* Fr., *Paul;* Ger., *Paul;* Gr., *Paulos;* Hungarian, *Pal;* It., *Paola;* Lat., *Paulus;* Polish, *Pawel;* Port., *Paulo,* Russ., *Pavel;* Sp., *Pablo;* Sw., *Paul.*
Paulina (*paw-lē'nà, paw-lī'nà*). The feminine of *Paul.* Fr., *Pauline;* Ger., *Pauline;* It., *Paolina;* Lat., *Paulina.*
Pauline (*paw-lēn'*, French *pō-lēn'*). A French name derived from the Roman name *Paulina.*
paunch (*pȧnch*, or *pawnch*), *n.* the belly.
pau-per (*paw'pēr*), *n.* a dependent poor person.
pau-per-ize (*-iz*), *v. t.* to make a pauper of.
pause (*pawz*), *n.* cessation; temporary stop: *v. i.* to make a short stop; wait. [DEMUR.]
pave (*pāv*), *v. t.* to cover or lay with stones, bricks, etc.
pave-ment (*pāv'ment*), *n.* a paved roadway or floor.
pa-vil-ion (*pà-vil'yun*), *n.* an ornamental dome-shaped building; a large tent; summer house.
paw (*paw*), *n.* the foot of an animal with claws; the hand: *v. t.* to scrape with the forefoot.
pawn (*pawn*), *n.* something given as security for the redemption of a pledge; a common piece at chess: *v. t.* to give in pledge.
pawn-bro-ker (*'brō-kēr*), *n.* one who lends money on the security of goods pawned with him.
pay (*pā*), *v. t.* to discharge a debt to; give an equivalent for; compensate: *n.* money given for service rendered.
Payette (*pā-et'*) **river, Idaho.** Named by a French trapper, José Payette.
pay-mas-ter (*'mȧs-tēr*), *n.* one who pays or from whom wages are received.
pea (*pē*), *n.* [*pl.* peas, or pease (*pēz*)], a leguminous plant of the genus Pisum and its edible seed.
Peabody institute. An institute at Baltimore, founded by George Peabody, and containing a library, conservatory of music, art gallery, etc.
peace (*pēs*), *n.* a state of rest or tranquillity; calm; freedom from war or disturbance.
Syn. PEACE, quiet, calm, tranquillity. *Peace* implies an exemption from public or private broils; *quiet* implies a freedom from noise or interruption; *calm* is a species of *quiet* which respects objects in the natural or the moral world; it indicates the absence of violent motion as well as violent noise; *tranquillity* expresses the situation as it exists in the present moment; it is sometimes applicable to society, sometimes to natural objects. [See *calm.*]
Ant. AGITATION, excitement, restlessness, tumult.
peace-a-ble (*'à-bl*), *adj.* disposed to peace, calm, quiet.
peace-ful (*'fool*), *adj.* pacific; quiet. [CALM.]
peach (*pēch*), *n.* a tree with its downy edible fruit: *v. i.* to betray one's accomplices.
pea-cock (*pē'kok*), *n.* a gallinaceous bird with handsome plumage.
peak (*pēk*), *n.* the sharp-pointed summit or jutting part of a mountain or hill; pointed end.
peal (*pēl*), *n.* a loud sound, as of thunder, bells, etc.: *v. i.* to give forth loud or solemn sounds.
pea-nut (*pē'nut*), *n.* the groundnut.
pear (*pȧr*), *n.* the juicy edible fruit of the pear tree (*Pyrus communis*).
pearl (*pērl*), *n.* a hard, smooth, grayish-white iridescent gem found in the mother-of-pearl oyster: *adj.* pertaining to, or formed of, pearls.
Pearl river, Miss. The Indian name was *Tallahatchie*, signifying 'river of pearls," of river stones, obtained from a peculiar shell taken from the bottom of the canoes; supposed to be a kind of oyster.
pearl-y (*'i*), *adj.* resembling, or containing, pearls; clear.
peas-ant (*pez'ant*), *n.* a countryman; rustic laborer: *adj.* rural.
peat (*pēt*), *n.* decayed vegetable matter, resembling turf, cut out of bogs, and used as fuel.
peb-ble (*peb'l*), *n.* a roundish stone.
pe-can (*pē-kan'*), *n.* a species of North American hickory and its fruit.
pec-ca-bil-i-ty (*pek-à-bil'i-ti*), *n.* the state of being subject to sin.
pec-ca-dil-lo (*-dil'ō*), *n.* a trifling fault.
peck (*pek*), *n.* 1-4th of a bushel; quick, sharp stroke with the beak: *v. t.* to strike with the beak.
Pecos (*pā'kōs*) **river, Tex.** Named by the Spaniards, from *pecoso*, "freckled," a local suggestion in the appearance of its waters.
pec-tic ac-id (*pek'tik as'id*), an acid found in various fruits.
pec-to-ral (*'tō-ral*), *adj.* pertaining to, or worn on, the chest.
pec-u-late (*'ū-lāt*), *v. i.* to appropriate public money to one's own use; embezzle.
pe-cul-iar (*pe-kūl'yēr*), *adj.* one's own; appropriate; individual; strange. [RARE.]
pe-cul-iar-i-ty (*-yar'i-ti*), *n.* [*pl.* peculiarities (*-tiz*)], something peculiar or characteristic.
pe-cun-ia-ry (*pe-kūn'yà-ri*), *adj.* pertaining to, or consisting of, money; monetary [FINANCIAL.]
ped-a-gog-ic (*ped-à-goj'ik*), *adj.* pertaining to a pedagogue or to the science of teaching. [Also *pedagogical.*]
ped-a-gogue (*'à-gog*), *n.* a schoolmaster; pedant.
ped-a-go-gy (*'à-gō-ji*), *n.* the science of teaching.
ped-al (*ped'al*), *n.* a key or lever attached to a musical instrument and moved by the foot, to modify or swell the tone.
ped-ant (*'ant*), *n.* one who makes an ostentatious display of his learning.
ped-ant-ry (*'ant-ri*), *n.* ostentatious display of learning.
ped-dle (*'l*), *v. i.* to travel about selling small wares: *v. t.* to retail in small quantities.
ped-dler, ped-ler, ped-lar (*'lēr*), *n.* one who peddles.
ped-es-tal (*'es-tal*), *n.* the base of a column, statue, etc.
pe-des-tri-an (*pē-des'tri-an*), *adj* going on foot; walking: *n.* one who journeys on foot.
ped-i-gree (*ped'i-grē*), *n.* lineage; genealogy.
pe-do-bap-tism. Same as *pædobaptism.*
ped-om-e-ter (*ped-om'ē-tēr*), *n.* a watch-shaped instrument for recording distances in walking.
Pedro. See *Peter.*
ped-un-cle (*-ung'kl*), *n.* a flower-stalk.
Peekskill. Village in Westchester county, New York, named for Jan Peek, a Dutch mariner of the seventeenth century.
peel (*pēl*), *v. t.* to strip the skin, bark, or rind from: *n.* skin or rind.
peep (*pēp*), *v. i.* to chirp or cry, as young birds; to look through a crevice or hiding place.
peer (*pēr*), *n.* one of the same rank; an equal; associate.
peer-age (*'āj*), *n.* the rank or dignity of a peer; peers collectively.
peer-less (*'les*), *adj.* without an equal.
peev-ish (*pēv'ish*), *adj.* fretful; difficult to please. [CAPTIOUS.]
peg (*peg*), *n.* a small pointed wooden pin; a piece of wood serving as a nail.
Pekin (*pē-kin'*) or **Peking** (*pē-king'*). Chinese. *Pehking.* The "north court" or "northern capital," of China, so called since 1421, when the third Ming emperor transferred hither the court from Nanking, the "southern court."
pelf (*pelf*), *n.* money; wealth (used in a bad sense).
pel-i-can (*pel'i-kan*), *n.* a large aquatic bird with a huge ax-shaped bill.
pel-let (*'et*), *n.* a little ball.
pell-mell (*'mel*), *adv.* with confused violence.
pel-lu-cid (*-ū'sid*), *adj.* perfectly clear; transparent.
Syn. PELLUCID, transparent. *Pellucid* is said of that which is pervious to the light, or of that into which the eye can penetrate; *transparent* is said of that which is throughout bright; a stream is *pellucid;* it admits light but it is not *transparent* for the eye. [See *candid.*]
pelt (*pelt*), *n.* a raw hide; a blow from something thrown: *v. t.* to strike by throwing something.
pel-vis (*'vis*), *n.* the bony cavity in the lower part of the abdomen.
Pembina (*pem'bē-nà*), **N. D.** Name a contraction

of Ojibway Indian word *anepeminan*, a red berry growing in that vicinity, which Michaux regards as a variety of the cranberry of the east.

pem-mi-can (*pem'i-kan*), *n.* lean meat, dried, pounded, and pressed into cakes.

pen (*pen*), *n.* a small inclosure; coop; an instrument for writing: *v. t.* to shut up in a small inclosure; write.

pe-nal (*pē'nal*), *adj.* enacting, inflicting, or incurring punishment for crime; punitive.

pen-al-ty (*pen'al-ti*), *n.* fine or forfeit.

pen-ance (*pen'ans*), *n.* self-imposed suffering, as an expression of contrition for sin.

pence (*pens*), *pl.* of penny.

pen-cil (*pen'sil*), *n.* a pointed instrument of black lead, colored chalk, etc.: *v. t.* to write, sketch, paint, or mark with a pencil.

pend-ant (*pend'ant*), *n.* anything hanging for ornamentation; an earring or locket; a pennant.

pend-ent (*'ent*), *adj.* hanging; projecting; swinging.

pend-ing (*ing*), *adj.* undecided; hanging in suspense.

Pend Oreille (*pend ō-rēl'*) **lake, Idaho.** So called from the French, meaning "earring," suggested by its shape.

pen-du-lum (*'dū-lum*), *n.* a heavy body suspended so that it may vibrate backward and forward about a fixed point by the force of gravity, as in a clock.

Penelope (*pē-nel'ō-pē*). The Greek name which some render "female weaver"; others define it "a web," and "a garment," because the wife of Ulysses was the best weaveress. Fr., *Pénélope;* Gr., *Penelope;* Lat., *Penelope.*

pen-e-tra-ble (*'ē-tra-bl*), *adj.* that may be penetrated; susceptive of impression.

pen-e-trate (*'ē-trāt*), *v. t.* to pierce into; enter; bore or perforate.

pen-e-tra-tion (*-trā'shun*), *n.* the act of penetrating; mental acuteness.

pen-guin (*'gwin*), *n.* a large sea fowl with rudimentary wings.

pen-in-su-la (*pen-in'sū-la*), *n.* a portion of jutting land nearly surrounded by water, and connected with the mainland by an isthmus.

pen-in-su-lar (*'su-lēr*), *adj.* pertaining to, or shaped like, a peninsula.

pen-i-tence (*pen'i-tens*), *n.* sorrow for sin; state of being penitent.

pen-i-tent (*'i-tent*), *adj.* repentant: *n.* one who is penitent.

pen-i-ten-tia-ry (*-ten'shā-ri*), *adj.* pertaining to penance: *n.* a house of correction; a state prison.

pen-knife (*'nīf*), *n.* a small pocket-knife.

pen-man-ship (*'man-ship*), *n.* the art, or style, of writing.

pen-nant (*'ant*), *n.* a long narrow strip of bunting at the mastheads of men-of-war.

Pennsylvania. One of the eastern states of the Union. William Penn originally designed calling the territory *New Wales*, but afterward suggested the word *Sylvania*, as suitable for a land covered with forests. The king of England, in 1681, prefixed the word *Penn* in honor of William Penn; literal translation, "Penn's woods."

Pennsylvania ave. The principal avenue of Washington, D. C. Its most important section lies between the capitol and the treasury.

pen-ny (*-i*), *n.* [*pl.* pennies (*'iz*), denoting number, pence (*pens*), denoting amount or value], a bronze coin equal to 1-12 of a shilling, or 2 cents. [*English.*]

pen-ny-weight (*-wāt*), *n.* a weight equal to 24 grains troy.

Penobscot (*pē-nob'skot*), **Me.** Name derived from the Indian word *penobskeag*, meaning "rocky place," or "river of rocks." Also said to be the name of an Indian tribe.

pe-nol-o-gy (*pē-nol'ō-ji*), *n.* the scientific study of punishments, prison management, etc.

Pensacola (*pen-sa-kō'la*). Bay and city in Escambia county, Florida. Name said to be derived from the Indian word *Pan-sha-okla*, meaning "hair people." The French gave to the bay the name of *Port-de-Aucloss*, also *Bai de St. Mariette.*

pen-sion (*'shun*), *n.* a stated allowance paid for past services, as to the state, etc.: *v. t.* to grant a pension to.

pen-sive (*'siv*), *adj.* thoughtful; sad.

pent [*p. t.* and *p. p.* of pen], to shut up.

penta, a *prefix* meaning *five:* as *pentachord.*

pen-ta-gon (*pen'ta-gon*), *n.* a figure of 5 sides and 5 angles.

pen-tam-e-ter (*-tam'ē-tēr*), *n.* a verse consisting of 5 feet.

Pen-ta-teuch (*'ta-tūk*), *n.* the first 5 books of the Old Testament.

Pen-te-cost (*'tē-kost*), *n.* a Jewish festival kept the 50th day after the second day of the Passover.

pent-house (*'hous*), *n.* a shed with a slanting roof projecting from a main wall or building.

pe-nult (*pē-nult'*), *n.* the last syllable of a word but one. [Also *penultima.*]

pe-nult-i-mate (*'i-māt*), *adj.* last but one.

pe-num-bra (*-num'bra*), *n.* a partial shadow on the exterior of the perfect shadow of an eclipse.

pe-nu-ri-ous (*-nū'ri-us*), *adj.* miserly; sordid.

Syn. PENURIOUS, economical, saving, sparing, thrifty, niggardly. To be *economical* is a virtue in those who have but narrow means; he who is *saving* when young will be *avaricious* when old; *sparing* is keeping out of that which ought to be spent; *thrifty* is accumulating by means of *saving; penurious* is suffering as from *penury* by means of *saving; niggardly* is not spending or letting go but in the smallest possible quantities.

pen-u-ry (*pen'ū-ri*), *n.* want of the necessities of life; poverty.

pe-o-ny (*pē'ō-ni*), *n.* a perennial plant with handsome flowers, of the genus Pæonia. [Also *pæony.*]

peo-ple (*'pl*), *n.* [*pl.* people, peoples (*'plz*), persons generally; community; inhabitants: *v. t.* to stock with people.

Peoria (*pē-ō'ri-á*). County and city in Illinois and nation in Indian territory. An Indian word meaning "place where there are fat beasts."

pep-per (*pep'ēr*), *n.* a hot pungent spice made of the ground seeds of *Piper nigrum.*

pep-per-mint (*-mint*), *n.* an aromatic herb; the cordial prepared from it.

pep-sin (*'sin*), *n.* a nitrogenous ferment contained in gastric juice.

per-ad-ven-ture (*pēr-ad-ven'tūr*), *adv.* by chance.

per-am-bu-la-tion (*-am-bū-lā'shun*), *n.* the act of passing through; a survey made by traveling.

per-ceive (*-sēv'*), *v. t.* to obtain knowledge of by the senses; understand; discern. [SEE.]

per cent (*-sent'*), by the hundred.

per-cent-age (*-sent'āj*), *n.* proportional allowance; per cent.

per-cep-ti-ble (*-sep'ti-bl*), *adj.* that may be perceived.

per-cep-tion (*-sep'shun*), *n.* idea, notion, or conception.

per-cep-tive (*'tiv*), *adj.* having the faculty of perceiving.

perch (*pērch*), *n.* a fresh-water fish; anything on which birds sit or roost.

per-chance (*pēr-chāns'*), *adv.* perhaps.

Percival (*pēr'si-val*). An old masculine baptismal name, derived from a local name in Normandy. It probably means "companion of the chalice."

per-co-late (*'kō-lāt*), *v. i.* to pass through small spaces.

per-cus-sion (*-kush'un*), *n.* violent collision; shock produced by the collision of bodies.

Percy. A name derived from *Perci*, a parish and canton near St. Lo, in Normandy.

per-di-tion (*-dish'un*), *n.* total destruction; ruin, utter loss of the soul or of happiness in a future state.

per-e-grin-a-tion (*per-ē-grin-ā'shun*), *n.* the act of traveling about.

Peregrine (*per'ē-grin*). From the Latin, meaning "foreign," "pilgrim," "traveler." Danish, *Peregrinus;* Dutch, *Peregrinus;* It., *Peregrino;* Lat., *Peregrinus;* Sw., *Peregrinus.*

Père-la-Chaise or **Pere Lachaise** (*pâr lā-shāz'*). The Parisian cemetery so named is the site of a great monastery founded by Louis XIV., of which Père la Chaise, a favorite confessor of that luxurious monarch, was the first superior. He died in 1709. After the Revolution the grounds were laid out for a cemetery.

per-emp-to-ry (*per'emp-tō-ri*), *adj.* positive; final; decisive; precluding discussion or hesitation.

per-en-ni-al (*-en'i-al*), *adj.* lasting through the year; perpetual.

per-fect (*pēr'fekt*), *adj.* complete; without defect or blemish; blameless; pure: *v. t.* to complete or finish. [COMPLETE.]

per-fect-i-ble (*-fek'ti-bl*), *adj.* capable of being made perfect.

per-fec-tion (*-fek'shun*), *n.* the state of being perfect; supreme excellence.

per-fid-i-ous (*-fid'i-us*), *adj.* false to trust; treacherous; faithless. [FAITHLESS.]

per-fi-dy (*'fi-di*), *n.* violation of a trust reposed; breach of faith.

per-fo-rate (*'fō-rāt*), *v. t.* to pierce or bore through; make a hole through. [ORIFICE.]

per-force (*-fōrs'*), *adv.* by force; violently.

per-form (*-fōrm'*), *v. t.* to do or carry out; execute; achieve; fulfill: *v. i.* to act a part. [EFFECT, EXECUTE.]

per-form-ance (*'ans*), *n.* the act of performing; execution; completion. [PRODUCTION.]

per-fume (*-fūm'*), *v. t.* to impregnate with a pleasant odor; scent: *n.* (*pēr'fūm*) a sweet-smelling scent.

per-fum-er-y (*'ēr-i*), *n.* perfumes in general.

per-func-to-ry (*-fungk'tō-ri*), *adj.* done carelessly or negligently with the purpose of getting rid of the duty; negligent.

per-haps (*-haps'*), *adv.* possibly.

per-i-car-di-um (*per-i-kär'di-um*), *n.* the membrane that surrounds the heart.

per-i-hel-ion (*-hēl'yun*), *n.* [*pl.* perihelia (*-yá*)], that point in the orbit of a planet, or a comet, nearest the sun.

per-il (*'il*), *n.* exposure to injury; danger; jeopardy; risk: *v. t.* to expose to danger or risk. [DANGER.]

per-il-ous (*-us*), *ad.* full of peril; hazardous.

per-im-e-ter (*per-im'ē-tēr*), *n.* the outer boundary of a plane surface.

pe-ri-od (*pē'ri-ud*), *n.* a cycle; interval of time; a dot (.) to mark the end of a sentence. [TIME.]

pe-ri-od-ic-al (*-od'i-kal*), *adj.* occurring at regular intervals. [Also *periodic.*] *n.* a publication issued at stated intervals.

per-i-o-dic-i-ty (*-ō-dis'i-ti*), *n.* the state or quality of being periodical.

per-i-os-te-um (*per-i-os'tē-um*), *n.* the vascular nervous membrane which covers the bones.

per-i-pa-tet-ic (*-pa-tet'ik*), *adj.* walking about: *n.* one who is accustomed or compelled to walk.

pe-riph-er-y (*pē-rif'ēr-i*), *n.* [*pl.* peripheries (*-iz*)], the circumference of a circle, ellipse, or similar figure.

per-i-scope (*per'i-skōp*), *n.* an instrument for seeing over intervening objects.

per-ish (*'ish*), *v. i.* to lose life or vitality; decay or die: be destroyed or come to nothing.

per-ish-a-ble (*per'ish-a-bl*), *adj.* liable to perish; mortal.

per-i-stal-tic (*per-i-stal'tik*), *adj.* pertaining to the peculiar worm-like movement of the intestines.

per-i-sys-to-le (*-sis'tō-lē*), *n.* the interval that ensues on the contraction of the heart before the dilation (diastole) which follows.

per-i-to-ne-um (*-tō-nē'um*), *n.* a thin serous membrane which covers the abdominal viscera.

per-i-wig (*per'i-wig*), *n.* a small wig.

per-i-win-kle (*-wing'kl*), *n.* a perennial creeping plant; a small univalve mollusk.

per-jure (*pēr'jūr*), *v. t.* to swear falsely. [FORSWEAR.]

perk (*pērk*), *v. t.* to make trim or smart: *v. i.* to hold up the head in a smart or saucy manner; peer.

per-ma-nence (*pēr'mā-nens*), *n.* the state or quality of being permanent; duration. [Also *permanency.*]

per-ma-nent (*-nent*), *adj.* lasting; durable; continuing in the same state.

Syn. PERMANENT, abiding, constant, durable, fixed, immutable, invariable, lasting, perpetual, stable, steadfast. *Durable* is said almost wholly of material substances that resist wear; *lasting* is said of either material or immaterial things. *Permanent* is a word of wider meaning; a thing is *permanent* which is not liable to change; as, a *permanent* color; *immutable* is a higher word, applied to that which resists both time and change. [See *durable.*]

per-me-a-ble (*'mē-a-bl*), *adj.* that may be passed through.

per-me-ate (*'mē-āt*), *v. t.* to penetrate and pass through the pores or interstices of.

per-mis-si-ble (*-mis'i-bl*), *adj.* that may be permitted.

per-mis-sion (*-mish'un*), *n.* the act of permitting; leave; license.

per-mit (*-mit'*), *v. t.* to allow without command; consent to; tolerate. [CONSENT, ADMIT.]

per-mu-ta-tion (*-mū-tā'shun*), *n.* the exchange of one thing for another.

Pernambuco (*per-nam-bōō'kō*). An important city of Brazil. Means "the mouth of hell," in allusion to the violent surf always distinguished at the mouth of its chief river, the Amazon.

per-ni-cious (*pēr-nish'us*), *adj.* highly injurious or hurtful; destructive. [HURTFUL.]

per-o-ra-tion (*per-ō-rā'shun*), *n.* the concluding part of an oration.

per-ox-ide (*pēr-oks'id*), *n.* the oxide of a base which contains the largest proportion of oxygen.

per-pen-dic-u-lar (*-pen-dik'ū-lēr*), *adj.* standing at right angles to a given line or surface; perfectly upright.

per-pe-trate (*'pē-trāt*), *v. t.* to commit; perform (in a bad sense).

Syn. PERPETRATE, commit. One may *commit* offenses of various degrees and magnitude but one *perpetrates* crimes only, and those of the more heinous kind.

Ant. BE INNOCENT.

per-pet-u-al (*-pet'ū-al*), *adj.* never ceasing; not temporary. [PERMANENT.]

per-pet-u-ate (*'ū-āt*), *v. t.* to make perpetual; preserve from extinction or oblivion.

per-pe-tu-i-ty (*-pē-tū'i-ti*), *n.* the state of being perpetual; endless duration.

per-plex (*-pleks'*), *v. t.* to make difficult to be understood; puzzle. [EMBARRASS, DISTRESS.]

per-plex-i-ty (*'i-ti*), *n.* embarrassment; doubt; intricacy. [ANXIETY.]

per-qui-site (*'kwi-zit*), *n.* a gift or allowance in addition to regular wages or salary.

per-se-cute (*'sē-kūt*), *v. t.* to harass or ill treat, especially for religious opinions. [ABUSE.]

per-se-cu-tion (*-kū'shun*), *n.* the act of persecuting; the state of being persecuted.

Persepolis (*pēr-sep'ō-lis*). In ancient geography, one of the capitals of the Persian empire, situated not far from the Kur, about thirty-five miles northeast of the modern Shiraz.

per-se-ver-ance (*-sē-vēr'ans*), *n.* the act or state of persevering; continuance in grace.

per-se-vere (*-sē-vēr'*), *v. i.* to persist in any enterprise or business undertaken; continue steadfastly. [CONTINUE, INSIST.]

Persia (*pēr'shá* or *pēr'zhá*). Name given by the Greeks to a region of western Asia, the capital of which was Persepolis, originally overrun by a wild branch of the Aryan race, the *Parsa*, meaning in the native tongue "the tigers." The Persian name for the country is *Iran.*

per-sim-mon (*-sim'un*), *n.* an American plum-like fruit; the tree yielding it.

★**per-sist** (*pēr-sist'*, not *pēr-zist'*), *v. i.* to continue steadily in any course commenced; persevere. [CONTINUE, INSIST.]

per-sist-ence (*-sist'ens*), *n.* the state or quality of being persistent; obstinacy. [Also *persistency.*]

per-son (*'sn*), *n.* a human being or individual.

per-son-al-i-ty (*-al'i-ti*), *n.* that which constitutes distinction of persons.

per-son-ate (*-āt*), *v. t.* to represent by an assumed character; counterfeit.

per-son-i-fi-ca-tion (*pĕr-son-i-fi-kā'shun*), *n.* the act of personifying.
per-son-i-fy (*'i-fī*), *v. t.* to represent as endowed with personal qualities.
per-son-nel (*pĕr-son-el'*), *n.* the persons employed in any public service.
per-spec-tive (*pĕr-spek'tiv*), *adj.* pertaining to, or in accordance with, the art of perspective: *n.* a vista or view; the art of depicting objects on a plane so that they appear as if viewed in reality.
per-spi-cac-i-ty (*-spi-kas'i-ti*), *n.* acuteness of sight or discernment.
per-spi-cu-i-ty (*-kū'i-ti*), *n.* freedom from obscurity; mental clearness; lucidity. [CLEARNESS.]
per-spi-ra-tion (*-spi-rā'shun*), *n.* excretion by the pores of the skin; sweat.
per-spire (*-spīr'*), *v. i.* to excrete by the pores of the skin; sweat.
per-suade (*-swād'*), *v. t.* to influence by argument, advice, entreaty, etc.; exhort; induce.
Syn. PERSUADE, allure, bring over, coax, convince, dispose, entice, impel, incite, incline, induce, influence, lead, move, prevail on or upon, urge, win over. Of these words *convince* alone has no direct reference to moving the will; one may be *convinced* of his duty without doing it; to *persuade* is to bring the will of another to a desired decision; one may be *convinced* that the earth is round; *coax* is a slighter word than *persuade*, as, a child *coaxes* a parent to buy him a toy; he is *won over* chiefly by personal influence.
Ant. DISCOURAGE, deter, repel.
per-sua-sion (*-swā'zhun*), *n.* the act or art of persuading; the state of being persuaded.
per-sua-sive (*'siv*), *adj.* having the power to persuade: influencing the will or passions.
pert (*pĕrt*), *adj.* saucy; forward.
per-tain (*pĕr-tān'*), *v. i.* to belong, or have relation.
Pertn Amboy, N. J. One of its landed proprietors was James Drummond, the earl of Perth, who named the original settlement *Towne of Perth;* the point of land at the mouth of the Raritan was known as *Ambo Point*, and early attachment or combination gave its present name.
per-ti-na-cious (*-ti-nā'shus*), *adj.* unyielding; obstinate; resolute. [TENACIOUS, OBSTINATE.]
per-ti-nent (*'ti-nent*), *adj.* fitting or appropriate; relevant.
per-turb (*-tûrb'*), *v. t.* to agitate; disturb; disquiet.
Peru (*pĕ-rōō'*). A republic of South America. Received its name from its principal river, the Rio Paro, upon which stands the ancient city of Paruru. The Brazilian term *para*, however modified, is at all times suggestive of a river.
pe-ruse (*-rōōz'*), *v. t.* to read with care and attention; examine.
per-vade (*pĕr-vād'*), *v. t.* to penetrate; extend or be diffused all over; permeate.
per-va-sion (*-vā'zhun*), *n.* the act of pervading.
per-verse (*-vĕrs'*), *adj.* obstinate; untractable; petulant.
Syn. PERVERSE, contrary, factious, fractious, froward, intractable, obstinate, petulant, stubborn, wayward. *Perverse* signifies willfully wrong or erring. The *stubborn* or *obstinate* person will not do what another desires or requires; the *petulant* person frets; the *perverse* individual is willfully *intractable*. *Wayward* refers to a *perverse* disregard for morality and duty. [See *petulant.*]
per-ver-sion (*-vĕr'shun*), *n.* a turning from truth or propriety; misapplication.
per-ver-si-ty. Same as *perverseness.*
per-vert (*-vĕrt'*), *v. t.* to turn from the true end or proper purpose; misapply: *n.* (*per'vert*) one who has been perverted. [ABUSE.]
per-vi-ous (*'vi-us*), *adj.* admitting passage; permeable.
pes-ky (*pes'ki*), *adj.* troublesome; annoying.
pes-si-mism (*pes'i-mizm*), *n.* the tendency to exaggerate in thought the evils of life (opposed to *optimism*).
pes-si-mist (*-mist*), *n.* one who looks on the worst side of everything.
pest (*pest*), *n.* a fatal epidemic disease; plague; anything very michievous, or injurious.
pes-ter (*pes't ĕr*), *v. t.* to annoy.
pes-tif-er-ous (*-tif'ĕr-us*), *adj.* conveying pestilence; physically or morally noxious.
pes-ti-lence (*'ti-lens*), *n.* an infectious or contagious disease.
pes-ti-lent (*'ti-lent*), *adj.* noxious to health, morals, or society.
pes-ti-len-tial (*-len'shal*), *adj.* pertaining to, or producing, a pestilence; pernicious; destructive. [CONTAGIOUS.]
pes-tle (*pes'l*), *n.* an instrument for pounding substances in a mortar.
pet (*pet*), *n.* any person or animal that is fondled: *adj.* favorite: *v. t.* to fondle.
pet-al (*'al*), *n.* one of the separate parts of the corolla of a flower; a flower leaf.
pe-tard (*pē-tärd'*), *n.* a bell-shaped explosive machine used for bursting open gates, etc.
Peter (*pē'tĕr*). From the Greek, signifying a "rock," properly, a "stone." Danish, *Peder;* Dutch, *Pieter;* Fr., *Pierre;* Ger., *Peter;* Gr., *Petros;* Hung., *Peter;* It., *Pietro;* Lat., *Petrus;* Polish, *Piotr;* Port., *Pedro;* Russ., *Piotr;* Sp., *Pedro;* Sw., *Peter.*
Petersburg or St. Petersburg. Properly *Peterburg* or *St. Peterburg*, the capital of Russia, was founded by Peter the Great, who, having in 1702 taken the Swedish forts on the Neva, in the following year laid the foundations of a fort which he called *Peterburg* (Fort Peter), on an island in the Neva, the nucleus and now the most densely populated portion of the city.
Petersburg, Va. Originally named *Peter's Point*, after the trader Peter Jones, who opened a depot here.
pe-ti-tion (*pē-tish'un*), *n.* an earnest supplication or prayer; a paper or document containing a written request: *v. t.* to solicit earnestly.
pet-it ju-ry (*pet'i jōō-ri*), a trial jury as distinguished from a grand jury. [Also *petty jury.*]
pet-rel (*'rel*), *n.* a web-footed, strong-winged, oceanic bird.
pet-ri-fac-tion (*-ri-fak'shun*), *n.* the process of changing animal or vegetable substance into stone; a fossil.
pet-ri-fy (*'ri-fī*), *v. t.* to change into stone; fix in silent amazement or fear: *v. i.* to become stone or of a stony hardness.
pe-tro-le-um (*pē-trō'lē-um*), *n.* an inflammable dark yellowish-brown bituminous liquid issuing from certain rocks; mineral oil.
pet-ti-coat (*pet'i-kōt*), *n.* a woman's loose underskirt.
pet-ti-fog-ger (*'i-fog-ĕr*), *n.* a lawyer who practices in petty cases.
pet-tish (*'ish*), *adj.* fretful; petulant.
pet-ty (*'i*), *adj.* trifling; small; inconsiderable; unimportant; contemptible.
pet-u-lant (*'ū-lant*), *adj.* peevish; capricious. [PERVERSE.]
Pe-tu-ni-a (*pē-tū'ni-ā*), *n.* a South American genus of ornamental plants with handsome flowers.
pew (*pū*), *n.* an inclosed seat in a church: *v. t.* to furnish with pews.
pew-ter (*pū'tĕr*), *n.* an alloy of tin, lead, antimony, etc.: *adj.* made of pewter.
pha-lanx (*fā'langks*), *n.* [*pl.* phalanges (*-lan'jēz*)], any close compact body: *pl.* the small bones of the fingers and toes.
phan-tasm (*fan'tazm*), *n.* a vision or specter.
phan-tom (*'tum*), *n.* an apparition; spirit; fancied vision.
Pharaoh (*fā'rō, fā'rā-ō*). A title given to the Egyptian kings. From the Hebrew *Paroh*, which has been variously translated "son of the sun," "mouth of the sun," "voice of God," and "sun" only. The proper meaning of the word is "the king" or "great house."
phar-i-sa-ic (*far-i-sā'ik*), *adj.* pertaining to, or characteristic of, the Pharisees; hypocritical.
Phar-i-see (*'i-sē*), *n.* one who observes the letter rather than the spirit of the law; a mere formalist.
phar-ma-ceu-tic (*fär-mā-sū'tik*), *adj.* pertaining to pharmaceutics. [Also *pharmaceutical.*] *n. pl.* pharmacy.
phar-ma-cy (*'mā-si*), *n.* the art of preparing and compounding medicines; a drug store.
phar-ynx (*far'ingks*), *n.* the muscular or membranous sac at the upper part of the œsophagus.
phase (*fāz*), *n.* [*pl.* phases (*'ez*)], aspect; appearance; transparent green quartz. [Also *phasis.*]
pheas-ant (*fez'ant*), *n.* a gallinaceous bird with brilliant plumage, and preserved for sport.
Phebe. See *Phœbe.*
phe-nix (*fē'niks*), *n.* a fabulous bird, said to live 500 years in the Arabian desert, and to rise rejuvenescent from its ashes after immolating itself on a funeral pyre: hence the emblem of immortality. [Also *Phœnix.*]
phe-nom-e-nal (*fē-nom'ē-nal*), *adj.* pertaining to, or consisting of, phenomena.
phe-nom-e-nal-ism (*-izm*), *n.* the metaphysical doctrine that visible things are really phenomena.
phe-nom-e-non (*'ē-non*), *n.* [*pl.* phenomena (*'ē-nà*)], an appearance, especially one of unusual occurrence.
★phi-al (*fī'al*), *n.* a small glass bottle or vessel: *v. t.* to put or keep in a phial. [Also *vial.*]
Philadelphia (*fil-a-del'fi-a*), **Pa.** From two Greek words meaning "loved or friendly," and "brother," applied as "brotherly love." The Indian name of the locality was *coaquannock*, "grove of tall pine trees."
phil-an-throp-ic (*fil-an-throp'ik*), *adj.* loving mankind; benevolent. [Also *philanthropical.*]
phil-an-thro-pist (*-an'thrō-pist*), *n.* one who loves and seeks to benefit mankind.
phil-an-thro-py (*-pi*), *n.* love of mankind; benevolence.
phi-lat-e-list (*fi-lat'ē-list*), *n.* a collector of postage stamps: *adj.* pertaining to philately.
Philemon (*fi-lē'mon*). Means "saluting." Fr., *Philémon;* Gr., *Philemon;* It., *Filemone;* Lat., *Philemon.*
Philetus (*fi-lē'tus*). From the Greek, meaning "beloved." Gr., *Philetos;* It., *Fileto;* Lat., *Philetus.*
Philibert (*fil'ē-bĕrt*) or **Philebert.** From the Teutonic, signifying "famously bright." Danish, *Philibert;* Fr., *Philibert;* It., *Filiberto;* Lat., *Philebertus.*
Philip (*fil'ip*). From the Greek name signifying "fond of horses." Dutch, *Philippus;* Fr., *Philippe;* Ger., *Philipp;* Gr., *Philippos;* Hungarian, *Filep;* It., *Filippo;* Lat., *Philippus;* Polish, *Filip;* Port., *Felippe;* Russ., *Philipp* or *Filip;* Sp., *Felipe;* Sw., *Filip.*
Philippa (*fi-lip'pà*). A feminine name formed from *Philip.* Dutch, *Philippa;* Ger., *Philippine;* Gr., *Philippa;* It., *Filippa;* Lat., *Philippa;* Sp., *Felipa;* Sw., *Filippina.*
Philippi (*fil-ip'i*). In a recent geography a city of Macedonia. Named after Philip of Macedon.
phi-lip-pic (*fi-lip'ik*), *n.* a speech of vehement invective.
Philippines (*fil'ip-inz*). Were discovered by Magellan on the feast of St. Lazarus, 1521, and hence called by him *Archipelago de San Lazaro*, a name changed in 1542 to *Islas Filipinas* in honor of Philip II., in whose reign the Spanish colonization of the islands was begun.
Phil-is-tine (*fil'is-tin* or *-is'tin*), *n.* an uncultured person or one of narrow views: *adj.* uncultured; narrow-minded; prosaic.
Phillis. Derived from the Greek *Phyllis*, name of a countrywoman introduced in Vergil's *Eclogeus*, and a nurse of Lycurgus, king of Thrace, and of a nurse of the emperor Domitian. It means "a green branch covered with leaves", "a leaf", "foliage", "a heap of leaves."
phil-ol-o-gy (*-ol'ō-ji*), *n.* the scientific study of languages, their structure and mutual relations.
phil-o-pro-gen-i-tive-ness (*-ō-prō-jen'i-tiv-nes*), *n.* the instinctive love of offspring.
phil-os-o-pher (*-os'ō-fĕr*), *n.* a student of philosophy; one noted for calm judgment and practical wisdom.
phil-o-soph-ic (*-ō-sof'ik*), *adj.* pertaining to, or in accordance with, philosophy; rational; wise; calm. [Also *philosophical.*]
phil-os-o-phize (*-os'ō-fīz*), *v. i.* to reason like a philosopher.
phil-os-o-phy (*'ō-fi*), *n.* the knowledge of the causes of all phenomena, both of mind and matter.
phil-ter, phil-tre (*'tĕr*), *n.* a love charm or potion.
Phineas (*fin'ē-as*). From the Hebrew *Pĕynkhas*, "mouth of brass." Fr., *Phinéas;* It., *Fineo;* Lat., *Phineas;* Sp., *Phineas.*
phlegm (*flem*), *n.* mucus secreted in the air passages of the throat; coldness; sluggishness.
★phleg-mat-ic (*fleg-mat'ik*), *adj.* abounding in phlegm; sluggish; dull. [Also *phlegmatical.*]
Phlox (*floks*), *n.* a genus of North American bright-colored flowering plants.
Phœbe (*fē'bē*). From the Greek name, meaning "clear, pure, bright." Fr., *Phèbe;* Gr., *Phoibe;* It., *Febe;* Lat., *Phœbe.*
pho-net-ic (*fō-net'ik*), *adj.* pertaining to the voice or sounds: *n. pl.* the science of sounds, especially of the human voice.
phon-ics (*fon'iks*), *n. pl.* the science of sounds; acoustics.
pho-no-gram (*fō'nō-gram*), *n.* articulate sound as recorded by the phonograph; a written character representing a particular sound.
pho-no-graph (*'no-graf*), *n.* an instrument to record or reproduce articulate speech or sounds.
pho-nog-ra-phy (*-nog'rà-fi*), *n.* a description of sounds uttered by the human voice; a system of shorthand.
phos-phate (*fos'fāt*), *n.* a salt of phosphoric acid.
phos-phor-es-cence (*-fōr-es'ens*), *n.* emission of light under certain conditions by substances at common temperatures; faint light.
phos-phor-es-cent (*'ent*), *adj.* luminous.
phos-phor-ic (*-for'ik*), *adj.* pertaining to, like, or obtained from, phosphorus. [Also *phosphorous.*]
phos-phor-us (*'fōr-us*), *n.* a yellowish, wax-like, inflammable, nonmetallic element, luminous in the dark.
photo, a *prefix* meaning *light.*
pho-toch-ro-my (*fō'tok-rō-mi*), *n.* the art or process of photographing in colors.
pho-to-graph (*'tō-graf*), *n.* a photographic picture: *v. t.* to take a picture of by means of photography.
★pho-tog-ra-phy (*-tog'rà-fi*), *n.* the art or process of producing pictures by the action of light on certain substances sensitized by various chemical processes.
★pho-to-grav-ure (*-tō-grāv-ūr'*), *n.* the process of producing by photography on a sensitized surface an incised engraved metal plate from which impressions may be printed.
phrase (*frāz*), *n.* a part of a sentence; brief, pithy expression; idiom; style or manner: *v. t.* to style; express in peculiar words.
phra-se-ol-o-gy (*frā-zē-ol'ō-ji*), *n.* style, manner, or peculiarity, of expression; a collection of phrases.
phren-o-log-ic-al (*fren-ō-loj'i-kal*), *adj.* pertaining to phrenology.
phre-nol-o-gist (*frē-nol'ō-jist*), *n.* one who believes in, or is skilled in, phrenology.
phre-nol-o-gy (*'ō-ji*), *n.* the science of the human mind or brain, as connected with the moral, intellectual, and sensual dispositions of the individual.
★phthis-ic (*tiz'ik*), *n.* asthma; phthisis.
phthis-ic-al (*'i-kal*), *adj.* pertaining to, or caused by, phthisic or phthisis.
★phthi-sis (*thi'sis*), *n.* pulmonary consumption.
phy-lac-ter-y (*fi-lak'tĕr-i*), *n.* [*pl.* phylacteries (*-iz*)], a small square box containing the law; worn by pious Jews upon the forehead and left wrist.
Phyllis. See *Phillis.*
phys-ic (*fiz'ik*), *n.* the science of medicine; a cathartic: *v. t.* to administer medicine.
phys-ic-al (*'i-kal*), *adj.* pertaining to nature, or to material things.
Syn. PHYSICAL, bodily, corporal, corporeal.

material, natural, sensible, tangible, visible. Whatever is composed of, or pertains to, matter may be termed *material; physical* applies to *material* things considered as parts of a system or organic whole; hence, we speak of *material* substances, *physical* forces, *physical* laws. *Bodily, corporal,* and *corporeal* apply primarily to the human body; we speak of *bodily* sufferings, *bodily* presence, *corporal* punishment, the *corporeal* frame.

phy-si-cian (*fi-zish'an*), *n.* one legally qualified to prescribe remedies for diseases.

★**phys-i-cist** (*fiz'i-sist*), *n.* a student of natural science.

phys-ics (*'iks*), *n. pl.* physical science or natural philosophy.

phys-i-og-no-my (*-i-og'nō-mi*), *n.* the face; outward appearance.

phys-i-o-log-ic-al (*-i-ō-loj'i-kal*), *adj.* pertaining to physiology.

phys-i-ol-o-gist (*-i-ol'ō-jist*), *n.* one who is skilled in physiology.

phys-i-ol-o-gy (*-ol'ō-ji*), *n.* the science that treats of the vital functions performed by the organs of animals and plants.

phy-sique (*fi-zēk'*), *n.* physical organization.

pi, pie (*pī*), *n.* disarranged or jumbled type: *v. t.* to jumble or throw into disorder.

★**pi-an-ist** (*pi-an'ist*), *n.* a performer on the piano.

★**pi-an-o** (*pi-an'ō*), *n.* a pianoforte.

pi-an-o-for-te (*-fôr-tā*), *n.* a stringed musical instrument, the notes of which are produced by hammers acted upon by keys.

pi-az-za (*-az'ä*), *n.* an open square surrounded by buildings or colonnades.

pi-ca (*pī'kä*), *n.* a size of type, used as a standard of measurement in printing.

pic-a-yune (*pik'ä-yōon*), *n.* a small silver coin equal to 6¼ cents.

Piccadilly (*pik'kä-dil-li*). The great thoroughfare in London between Hyde Park corner and the Haymarket. The name originally comes from the picardils or small stiff collars once worn by English gallants.

pic-ca-lil-li (*'a-lil-i*), *n.* a kind of pickle.

pic-ca-nin-ny (*'a-nin-i*), *n.* [*pl.* piccaninnies (*-iz*)], a negro baby or child.

pic-co-lo (*'ō-lō*), *n.* a small flute having its notes an octave higher than the ordinary flute.

pick (*pik*), *n.* a sharp pointed iron tool; choice or selection: *v. t.* to pierce; choose or select: *v. i.* to eat, or do anything, leisurely. [ALTERNATIVE, CHOOSE.]

pick-ax, pick-axe (*'aks*), *n.* an excavating tool, pointed at one end and broad at the other.

pick-er-el (*'ėr-el*), *n.* a small pike.

pick-et (*'et*), *n.* pale of a fence; a stake to which a horse is fastened; a military guard to give notice of the approach of an enemy.

pick-le (*'l*), *n.* a mixture of brine and water, etc., for preserving food: *v. t.* to preserve in, or as in, pickle.

pic-nic (*'nik*), *n.* a short excursion into the country.

pic-to-ri-al (*pik-tō'ri-al*), *adj.* pertaining to, or illustrated by, pictures.

pic-ture (*'tūr*), *n.* a painting or drawing representing a person or thing.

pic-tur-esque (*-esk'*), *adj.* giving vivid impression of nature or reality; graphic; romantic.

pie (*pī*), *n.* printer's type confusedly mixed; meat or fruit covered with crust and baked.

pie-bald (*'bawld*), *adj.* having patches of different colors.

piece (*pēs*), *n.* a part of anything; certain quantity; literary or artistic composition: *v. t.* to patch: *v. i.* to join. [PART.]

piece-meal (*'mēl*), *adj.* made of pieces or parts; single: *adv.* in pieces or parts.

pied (*pīd*), *adj.* variegated or spotted.

pier (*pēr*), *n.* a mass of masonry supporting an arch, bridge, etc.

pierce (*pērs*), *v. t.* to penetrate, especially with a pointed instrument; affect deeply; explore; dive into: *v. i.* to enter.

Pierre. See *Peter.*

Pietermaritzburg (*pē-tėr-mär'its-burg*). Capital of Natal, South Africa. Named after two Boer leaders.

Pietro. See *Peter.*

pi-e-ty (*pī'e-ti*), *n.* the quality of being pious; reverence for, and duty toward, God.

pig (*pig*), *n.* the young of swine; a swine; pork.

pi-geon (*pi'jun*), *n.* a bird of the genus Columba.

pi-geon-hole (*hōl*), *n.* a compartment for papers, etc.

pi-geon-toed (*-tōd*), *adj.* having the toes turned inward.

pig-head-ed (*pig'-hed-ed*), *adj.* stupidly obstinate.

pig-ment (*'ment*), *n.* paint; coloring matter.

pig-my. Same as *pygmy.*

pig-tail (*'tāl*), *n.* hair twisted into the form of a long queue.

pike (*pīk*), *n.* a weapon with a shaft and spear-head; a voracious fresh-water fish.

Pike's Peak. One of the highest summits of the Rocky mountains, situated in Colorado, seventy miles south by west of Denver.

pi-las-ter (*pi-las'tėr*), *n.* a square column or pillar, inserted partly in a wall.

pile (*pīl*), *n.* a large beam driven into the ground to make a firm foundation; mass or heap: *v. t.* to heap up. [HEAP.]

pil-fer (*pil'fėr*), *v. t.* to steal in small quantities.

pil-grim (*pil'grim*), *n.* a traveler.

pil-grim-age (*-āj*), *n.* a journey, especially to some sacred place.

pill (*pil*), *n.* a small ball of some medicinal substance; something disagreeable that must be accepted.

pil-lage (*'āj*), *n.* the act of plundering; spoil: *v. t.* to plunder or spoil; lay waste.

pil-lar (*'ėr*), *n.* a column to support a structure; monument.

Syn. PILLAR, column. The word *pillar* is the most general in its application to any structure, whether rude or otherwise; the term *column,* on the other hand, is applied to whatever is ornamental, as, the Grecian order of *columns.*

Pillars of Hercules. In ancient geography, the two opposite promontories, *Calpe* (Gibraltar) in Europe and *Abyla* in Africa, situated at the eastern extremity of the Strait of Gibraltar, sentinels, as it were, at the outlet from the Mediterranean into the unknown Atlantic.

pil-lo-ry (*pil'ō-ri*), *n.* [*pl.* pillories (*-iz*)], a wooden frame supported by an upright post, having holes through which the head and hands of a person exposed to disgrace were passed and secured: *v. t.* to place in a pillory.

pil-low (*'ō*), *n.* a case filled with feathers, etc.

pi-lot (*pī'lot*), *n.* one who conducts a vessel in or out of a harbor or where navigation is difficult or dangerous; a guide: *v. t.* to guide or direct as a pilot.

pi-men-to (*pi-men'tō*), *n.* allspice.

pim-ple (*pim'pl*), *n.* a small pustule.

pim-pled (*'pld*), *adj.* having, or full of, pimples. [Also *pimply.*]

pin (*pin*), *n.* a short piece of wire, used for fastening articles together; anything driven to hold parts together: *v. t.* to fasten with, or as with, a pin.

pin-a-fore (*pin'ä-fōr*), *n.* a loose apron or covering to protect children's dresses.

pin-cers. Same as *pinchers.*

pinch (*pinch*), *v. t.* to squeeze or nip; oppress or distress: *v. i.* to bear hard; be straitened: *n.* a squeeze or nip. [PRESS.]

pinch-ers (*pinch'ėrz*), *n.* an instrument for drawing out nails, etc.; nippers. [Also *pincers.*]

Pincian hill. A hill in the northern part of Rome, extending in a long ridge east from the Tiber. One of the famous "seven hills."

pine (*pin*), *n.* a cone-bearing tree of the genus Pinus; timber of the pine: *v. i.* to waste away from distress, anxiety, etc.

pine-ap-ple (*pin'ap-l*), *n.* a tropical plant and its cone-shaped fruit.

pin-ion (*pin'yun*), *n.* the last joint of a bird's wing; a wing; the smaller of two geared wheels: *v. t.* to bind or secure, as by binding the arms; confine or fetter.

pink (*pingk*), *n.* a shade of light-red color: a flower.

pin-money. Catherine Howard, wife of Henry VIII., introduced pins into England from France. As they were expensive at first, a separate sum for this luxury was granted to the ladies by their husbands. Hence the expression *pin-money.*

pin-na-cle (*'a-kl*), *n.* a small polygonal turret or elevation above the rest of the building.

pint (*pint*), *n.* 1-8th of a gallon.

pi-o-neer (*pī-o-nēr'*), *n.* one who goes before to prepare the way for another: *v. i.* act as a pioneer.

pi-ous (*'us*), *adj.* dutiful to God, or to parents; religious; devout.

pip (*pip*), *n.* the seed of certain fruit; a disease in fowls.

pipe (*pīp*), *n.* any long hollow tube; a tube of clay, wood, etc., with a bowl at one end for smoking tobacco: *v. t.* to play on, or call by, a pipe.

pip-pin (*pip'in*), *n.* a variety of apple.

★**pi-quan-cy** (*pē'kan-si* or *pik'an-si*), *n.* the state or quality of being piquant.

pi-quant (*'kant*), *adj.* pungent; severe.

pique (*pēk*), *n.* slight anger or resentment; wounded pride: *v. t.* to wound the pride of.

pi-ra-cy (*pī'rä-si*), *n.* the act or crime of a pirate; infringement of copyright.

pi-rate (*'rat*), *n.* a robber on the high seas; one who infringes the law of literary or artistic copyright: *v. t.* to take without permission or compensation: *v. i.* to practice piracy.

pir-ou-ette (*pir-ōō-et'*), *n.* a whirling or turning about on one toe.

Piscataqua (*pis-kat'ä-kwä*) **river, N. H.** Named from the Indian *piscataquanke,* "a great deer place."

pis-ca-to-ri-al (*-kä-tō'ri-al*), *adj.* pertaining to fishing. [Also *piscatory.*]

pis-mire (*pis'mīr*), *n.* an ant.

pis-til (*'til*), *n.* the seed-bearing organ in the center of a flower.

pis-til-late (*-āt*), *adj.* having a pistil.

pis-tol (*'tul*), *n.* a small handgun: *v. t.* to shoot with a pistol.

pis-ton (*'tun*), *n.* a small solid cylinder of metal or wood, fitting exactly and moving up and down in the barrel of a pump, or the cylinder of a steam engine.

pis-ton rod (*rod*), the rod moving the piston and connecting it with the external machinery.

pit (*pit*), *n.* a deep hole in the earth: *v. t.* to mark with small hollows or depressions; set in competition.

pit-a-pat (*-ä-pat'*), *adv.* with quick beating: *n.* a palpitation; a quick light step.

pitch (*pich*), *n.* the solid black resinous substance obtained from boiled tar; a casting forward or down: *v. i.* to fall headlong: *v. t.* to encamp; throw.

pitch-blende (*pich'blend*), *n.* a black oxide of uranium: used in coloring glass a pale sea-green; it is the chief source of radium.

pitch-er (*'ėr*), *n.* one who pitches; an earthen vessel for holding water; an instrument for piercing the ground.

pitch-fork (*'fôrk*), *n.* a pronged fork for pitching hay, straw, etc.: *v. t.* to lift or throw with.

pitch wheel (*hwēl*), a toothed wheel that works in another.

pitch-y (*'i*), *adj.* like, or smeared with, pitch.

pit-e-ous (*pit'ē-us*), *adj.* exciting pity; sorrowful; sad.

Syn. PITEOUS, doleful, woeful, rueful. *Piteous* is applicable to one's external expression of bodily or mental pain; a child makes *piteous* lamentations when it suffers from hunger, or has lost its way; *doleful* applies to those sounds which convey the idea of pain; there is something *doleful* in the tolling of a funeral bell or in the sound of a muffled drum; *woeful* applies to the circumstances and situations of men; a scene is *woeful* in which we witness a large family of young children suffering under the complicated horrors of sickness and want; *rueful* applies to the outward indications of inward sorrow depicted in the looks or countenance.

Ant. COMMANDING, exalted, glorious, happy, superb.

pit-fall (*'fawl*), *n.* a pit lightly covered so that wild beasts may fall into it; a trap.

pith (*pith*), *n.* the soft spongy substance in the center of plants; marrow; quintessence.

pith-y (*'i*), *adj.* of the nature of, or full of, pith; forcible.

pit-i-a-ble (*pit'i-ä-bl*), *adj.* deserving pity.

pit-i-ful (*'i-fool*), *adj.* moving compassion; insignificant.

pit-i-less (*'i-les*), *adj.* without pity or compassion; merciless.

pit-tance (*'ans*), *n.* a small allowance, especially of money.

Pittsburg. City in Pennsylvania, was originally called *Fort du Quesne,* after a French governor of Canada. Afterward, in 1758, when the French had been driven out by Washington, it was renamed *Fort Pitt,* after William Pitt, earl of Chatham, the name *Pittsburg* being adopted in 1769.

pit-y (*pit'i*), *n.* sympathy with distress; compassion: *v. t.* to sympathize with: *v. i.* to be compassionate.

Syn. PITY, compassion. *Pity* is excited principally by the weakness or degraded condition of the subject; *compassion* by his uncontrollable and inevitable misfortunes. [See *mercy.*]

Ant. HARSHNESS, cruelty, hardness, scorn.

Pius. From the Latin, meaning "pious." Fr., *Pie.,* Ger., *Pius;* It., *Pio;* Lat., *Pius.*

piv-ot (*piv'ut*), *n.* the short shaft on which anything turns.

pla-ca-bil-i-ty (*plā-kä-bil'i-ti*), *n.* the quality of being placable.

pla-ca-ble (*'kä-bl*), *adj.* that may be appeased or pacified; forgiving.

pla-card (*plä'kärd*), *n.* a bill placed on a wall, etc., as an advertisement: *v. t.* to advertise by a placard.

place (*plās*), *n.* a special spot or locality; broadway or square; situation; site; residence; office: *v. t.* to put in any place, office, etc. [PUT.]

pla-cen-ta (*plä-sen'tä*), *n.* the vascular organ that connects the fœtus in the womb with the mother.

plac-er (*plas'ėr*), *n.* a mineral deposit which is not a vein.

plac-id (*plas'id*), *adj.* calm; peaceful. [CALM.]

plack-et (*plak'et*), *n.* a petticoat; a slit in a skirt or petticoat; a woman's pocket.

pla-gi-a-rism (*plā'ji-ä-rism*), *n.* the act of taking another's ideas, etc., and passing them off as one's own.

pla-gi-a-rist (*-rist*), *n.* one who steals the writings, ideas, etc., of another and passes them off as his own; literary theft. [Also *plagiary.*]

plague (*plāg*), *n.* a malignant epidemic; anything very troublesome or annoying: *v. t.* to infest with disease; trouble or annoy. [ABOMINATION.]

pla-guy (*plā'gi*), *adj.* vexatious.

plaid (*plad*), *n.* a checkered woolen cloth, originally worn as a garment by the highlanders of Scotland.

plain (*plān*), *adj.* level; flat; even; smooth; clear, evident: *n.* level ground. [APPARENT, FRANK.]

plaint (*plānt*), *n.* lamentation.

plain-tiff (*plān'tif*), *n.* one who commences a suit in a court of law.

plain-tive (*'tiv*), *adj.* expressing grief or sorrow; sad.

★**plait** (*plāt*), *n.* a flat fold; braid: *v. t.* to fold; braid; interweave. [Also *pleat.*]

plan (*plan*), *n.* a drawing on a flat surface; scheme or project: *v. t.* form in design; outline.

plane (*plān*), *adj.* flat; level; even; without elevations or depressions: *n.* a flat or even surface; a carpenter's tool for smoothing wood: *v. t.* to make level.

plan-et (*plan'et*), *n.* a heavenly body revolving around the sun.

plan-e-ta-ry (*'ē-tä-ri*), *adj.* pertaining to, consisting of, or produced by, planets; erratic.

plank (*plangk*), *n.* a long board; an item in a political program or policy.

plant (*plant*), *n.* any vegetable organism; the machinery, or fixtures of any trade or business; a

swindle: *v. t.* to put into the ground for growth, as seed; establish.

Plantagenet (*plan-taj'ĕ-net*), **House of.** A line of English kings (1154-1399) founded by Henry II., son of Geoffrey, count of Anjou, and Matilda, daughter of Henry I. of England. The name is said to have been assumed by the first count of the line from his having caused himself to be scourged with branches of broom (*planta genesta*)as penance for some crime he had committed.

plan-tain (*'tān*), *n.* a tropical broad-leaved tree yielding an edible fruit similar to the banana.

plan-ta-tion (*-tā'shun*), *n.* a place planted with trees.

plant-er (*plant'ĕr*), *n.* one who plants; the owner of a plantation.

plaque (*plak*), *n.* a metal or terra-cotta plate upon which flowers, figures, etc., are enameled or painted.

plash (*plash*), *n.* a puddle; pond: *v. t.* to splash or dash with water; interweave the branches or twigs of, as, to *plash* a hedge.

plas-ma (*plaz'mȧ*), *n.* the colorless fluid of the blood in which the red corpuscles float.

plas-ter (*plȧs'tĕr*), *n.* a composition of lime, sand, and water, for coating walls: *v. t.* to overlay or cover with, or as with, plaster.

plas-tic (*'tik*), *adj.* capable of being formed or molded; giving form.

plat. Same as *plait*.

Plata, Rio de la (*rē'ō dā lȧ plȧ'tȧ*). River of northern South America. Literally, "river of the silver," so named by Sebastian Cabot, in 1526, by reason of a few gold and silver ornaments, the earnest of the wealth of Peru, which he obtained by barter from the natives, and which he hoped were an indication of an eldorado in the interior.

plate (*plāt*), *n.* a thin piece of metal; a small, shallow vessel used at table for eating from: *v. t.* to coat with a more valuable metal.

pla-teau (*plȧ-tō'*), *n.* [*pl.* plateaux (*-tōz'*)], elevated broad flat land; table-land.

plate glass (*plāt'glȧs*), a fine kind of glass cast in thick plates: used for mirrors, etc.

plat-en (*plat'en*), *n.* the flat part of a printing press, by which the impression is made.

plat-form (*'fôrm*), *n.* a flat floor of wood, stone, etc., raised above the level of the ground; political program or policy.

plat-i-nize (*plat'i-nīz*), *v. t.* to coat with platinum.

plat-i-nous (*-nus*), *adj.* containing platinum.

plat-i-num (*'i-num*), *n.* a grayish-white metal very hard and ductile.

plat-i-tude (*'i-tūd*), *n.* insipidity; dullness; a weak, empty, trite remark.

pla-toon (*plȧ-tōōn'*), *n.* two files of soldiers forming a subdivision.

Platte (*plat*). River in Nebraska, Colorado and Wyoming. A French word meaning "dull, flat, shallow," singularly applicable to this stream.

plat-ter (*plat'ĕr*), *n.* a large flat dish.

plau-dit (*plaw'dit*), *n.* applause.

plau-si-ble (*'zi-bl*), *adj.* specious; superficially pleasing.

play (*plā*), *n.* any exercise or occupation for amusement; exertion of powers: *v. i.* to engage in some exercise for amusement.

play-ful (*plā'fool*), *adj.* sportive; lively.

Syn. PLAYFUL, gamesome, sportive. *Playful* is applicable to youth or childhood, when there is the greatest disposition to play. *Gamesome* and *sportive* are applied to persons of maturer years, the former in the bad sense, and the latter in the good sense. A person may be said to be *gamesome* who gives in to idle jests, or *sportive* who indulges in harmless sport.

pla-za (*plȧ'zȧ*), *n.* an open square or market place.

plea (*plē*), *n.* an excuse or apology; urgent entreaty.

plead (*plēd*), *v. i.* argue before a court of law; supplicate earnestly: *v. t.* discuss or defend by arguments; offer as an excuse. [APOLOGIZE, ALLEGE.]

pleas-ant (*plez'ant*), *n.* grateful to the mind or senses; delightful; agreeable; cheerful; facetious.

Syn. PLEASANT, agreeable, attractive, good-natured, kind, kindly, pleasurable. Whatever has active qualities adapted to give pleasure is *pleasant;* in this sense *pleasant* is nearly akin to *kind*, but *kind* refers to act or intent, while *pleasant* stops with the disposition; there are *good-natured* people who by reason of rudeness and ill-breeding are not *pleasant* companions. We can say of one usually *good-natured*, "on that occasion he did not meet me with a *pleasant* face." [See *facetious.*]

pleas-ant-ry (*-ri*), *n.* merriment; lively talk; gayety; a laughable trick or joke.

please (*plēz*), *v. t.* to gratify; give pleasure to; gain approbation from: *v. i.* to afford pleasure or gratification; like or choose. [SATISFY.]

pleas-ur-a-ble (*plezh'ūr-ȧ-bl*), *adj.* gratifying; delightful. [PLEASANT.]

pleas-ure (*'ūr*), *n.* gratification; agreeable emotions, mental or physical. [COMFORT.]

pleat. Another form of *plait*.

ple-be-ian (*plē-bē'an*), *adj.* pertaining to the common people: *n.* one of the common people.

pledge (*plej*), *n.* anything placed as a security or guaranty; pawn: *v. t.* to give as security, deposit in pawn; drink to the health of. [DEPOSIT.]

ple-na-ry (*plē'nȧ-ri*), *adj.* full; complete.

plen-i-po-ten-ti-a-ry (*plen-i-pō-ten'shi-ȧ-ri*), *adj.* having full power: *n.* an ambassador to a foreign court invested with full powers. [AMBASSADOR.]

plen-i-tude (*plen'i-tūd*), *n.* fullness.

plen-te-ous (*'tē-us*), *adj.* abundant; amply sufficient.

plen-ti-ful (*'ti-fool*), *adj.* yielding abundance; copious.

plen-ty (*'ti*), *n.* abundance.

ple-o-nasm (*plē'ō-nazm*), *n.* use of more words than necessary in speaking or writing.

pleth-o-ra (*pleth'ō-rȧ*), *n.* excessive fullness of blood; overabundance.

pleu-ra (*plōō'rȧ*), *n.* [*pl.* pleuræ (*'rē*)], a delicate serous membrane covering the interior of the thorax and each lung.

pleu-ri-sy (*'ri-si*), *n.* inflammation of the pleura.

plex-us (*pleks'us*), *n.* a network of veins, nerves, etc.

pli-a-bil-i-ty (*pli-ȧ-bil'i-ti*), *n.* the state or quality of being pliable. [Also *pliableness.*]

pli-a-ble (*'ȧ-bl*), *adj.* easily bent; flexible; easy to be persuaded. [FLEXIBLE.]

pli-ant (*'ant*), *adj.* flexible; easily bent; yielding to moral suasion. [FLEXIBLE.]

pli-ers (*'ērz*), *n.* a kind of small pinchers for seizing and bending, especially small articles.

plight (*plīt*), *n.* a dangerous or distressed condition; predicament: *v. t.* to pledge, as one's faith.

plinth (*plinth*), *n.* the lowest square-shaped part of the base of a column, pedestal, etc.

Pliny (*plin'i*). From the Roman naturalist Caius Plinius. Fr., *Pline;* Ger., *Plinius;* It., *Plinio;* Lat., *Plinius.*

plod (*plod*), *v. i.* [*p. t.* and *p. p.* plodded, *p. pr.* plodding], to travel laboriously; drudge or toil; study closely.

plot (*plot*), *n.* a complicated scheme; chain of incidents in a play, novel: *v. t.* to devise: *v. i.* to conspire.

plow, plough (*plou*), *n.* an agricultural implement for turning up the soil; a grooving-plane: *v. t.* to turn up with a plow; furrow.

plow-share, plough-share (*'shâr*), *n.* the iron part of a plow that cuts the soil.

pluck (*pluk*), *v. t.* to pull off, out, or up; snatch; pick or gather: *n.* a short pull; courage. [DRAW.]

pluck-y (*'i*), *adj.* [*comp.* pluckier, *superl.* pluckiest], having courage or pluck.

plug (*plug*), *n.* a piece of wood, etc., used for stopping a hole: *v. t.* to stop with a plug.

plum (*plum*), *n.* a tree, *Prunus domestica*, or its well-known fruit; a raisin; $500,000, hence a large fortune.

plum-age (*plūm'āj*), *n.* a bird's feathers.

plumb (*plum*), *n.* a heavy body, usually of lead, suspended at the extremity of a line to indicate the perpendicularity of work done, as a wall, etc.: *v. t.* to adjust by a plumb line; make perpendicular.

plumb-er (*'er*), *n.* one who is engaged in the business of plumbing.

plumb-ing (*'ing*), *n.* the art or occupation of putting into buildings, pipes, traps, etc.

plumb line (*'līn*), a line attached to a mass of lead to indicate the perpendicular; perpendicular line.

plume (*plōōm*), *n.* a feather; crest: *v. t.* adorn with plumes.

plum-met (*plum'et*), *n.* a leaden weight attached to a string used for sounding depths, etc.

plump (*plump*), *adj.* round and sleek with fullness of flesh; in good condition: *v. i.* to grow plump: *v. t.* to make plump; fatten.

plum-y (*plūm'i*), *adj.* feathered.

plun-der (*plun'dĕr*), *n.* booty; pillage: *v. t.* to take by open force; spoil; rob.

plunge (*plunj*), *v. t.* to put suddenly into water or any other liquid; immerse: *v. i.* dive; throw the body forward and the legs up, as a horse.

plu-per-fect (*plū'pĕr-fekt*), *adj.* noting an event or action occurring prior to some other event or action.

plu-ral (*'ral*), *adj.* consisting of more than one: *n.* that form of a word that expresses more than one.

plu-ral-i-ty (*plū-ral'i-ti*), *n.* the majority; the greatest of three or more numbers.

plus (*plus*), *n.* the sign (+) used to denote addition; *adj.* more (by a certain amount); increased (by a specified addition); above zero.

plush (*plush*), *n.* a kind of shaggy cloth with a pile; woolen velvet.

plu-toc-ra-cy (*plū-tok'rȧ-si*), *n.* rule or government by the rich.

plu-to-crat (*plū'tō-krat*), *n.* one who exercises political power or influence by virtue of his wealth.

ply (*plī*), *v. t.* to worl on closely; practice diligently or earnestly: *v. i.* to run regularly between two ports.

Plymouth (*plim'uth*). Town in Plymouth county, Massachusetts, the landing place of the Pilgrims, which was named for the town in England where they were most hospitably entertained before sailing for America. The English town was so called because built at the mouth of the river Plym.

★pneu-mat-ic (*nū-mat'ik*), *adj.* pertaining to, consisting of, containing, like, or moved by, air. [Also *pneumatical.*]

pneu-mat-ics (*'iks*), *n. pl.* the science that treats of the mechanical properties of air and similar elastic fluids.

pneu-mo-nia (*nū-mō'ni-ȧ*), *n.* acute inflammation of the lung

poach (*pōch*), *v. i.* to trespass upon preserves; cook (eggs) by breaking them into boiling water.

pock (*pok*), *n.* a pustule on the skin containing eruptive matter.

pock-et (*'et*), *n.* a small bag inserted in a garment for carrying small articles.

Pocomoke (*pō'kō-mōk*) **river, Md.** So called from its Indian name *pockhammokik*, "broken by knobs", "small hill."

pod (*pod*), *n.* the pericarp or the covering of the seed of certain plants, as the pea, etc.: *v. i.* to produce pods.

pod-o-phyl-lin (*pod-ō-fil'in*), *n.* a purgative resin obtained from the root of the May apple.

★po-em (*pō'em*, not *pō'um*), *n.* a metrical or poetical composition; a poetic conception

po-e-sy (*'ē-si*), *n.* the art of composing poems.

po-et (*'et*), *n.* the author of a poem; one gifted in writing poetry; one who is strongly imaginative. [Fem. *poetess.*]

po-et-ic (*-et'ik*), *adj.* pertaining to, suitable to, or expressed in, poetry; sublime. [Also *poetical.*]

po-et-ry (*'et-ri*), *n.* a metrical composition produced or embellished by creative imagination.

Poet's Corner. A space in the east side of the south transept of Westminster Abbey, containing the tablets, statues, busts, or monuments of Shakespeare, Ben Jonson, Chaucer, Milton, Spenser, and other British poets, actors, divines, and great men. Some of them are buried near or under their monuments.

poign-an-cy (*poin'an-si*), *n.* the state or quality of being poignant.

poign-ant (*'ant*), *adj.* stimulating to the palate; irritating; very painful.

poin-set-ti-a (*-set'i-ȧ*), *n.* a Mexican plant with handsome flowers.

point (*point*), *n.* the sharp end of any instrument; mark or dot; indivisible part; mark in punctuation: *v. t.* to sharpen: *v. i.* to indicate; show clearly.

point-blank (*'blangk*), *adj.* horizontal; straightforward to the mark; direct.

Point Comfort, Va. Name given to the locality in 1607 by the first colonists on their voyage of exploration up the James river; called *Poynt Comfort* on account of the good channel and safe anchorage it offered.

point-ing (*'ing*), *n.* punctuation; the act or operation of filling in the crevices of masonry with mortar

Point Judith, R. I. So called from Judith Quincy, wife of John Hull, the coiner of the rare old pine-tree shillings of 1652.

Point Pinos (*pē'nōs*), **Cal.** Named *Punta de Pinos* by Vizcaino, in 1603, from the prevalence of the pine-tree.

Point Reyes (*point rā'ēs*), **Cal.** So called from *Tres Reyes*, name of the vessel commanded by Aguilar of Vizcaino's Spanish expedition, 1603.

poise (*poiz*), *n* weight; balance; equilibrium: *v. t.* to balance; weigh; ascertain or examine: *v. i.* to be in a state of equilibrium.

Syn. POISE, balance. *To poise* is properly to keep the weight from pressing on either side; *to balance* is to keep the *balance* even. The idea of bringing into an equilibrium is common to both terms, but a thing is *poised* as respects itself; it is *balanced* as respects other things.

Ant. FALL.

poi-son (*poi'zn*), *n.* anything noxious or destructive to life, health, or morality; venom: *v. t.* to infect with, or kill by, poison.

Syn. POISON, venom. A *poison* must be administered inwardly to have its effect; a *venom* will act by an external application; the juice of the hellebore is a *poison;* the tongue of the adder and the tooth of the viper contain *venom.*

poi-son-ous (*-us*), *adj.* having the qualities of poison; deadly; injurious to health.

Poitiers or **Poictiers** (*poi-tērz'*, French *pwȧ-ti-ȧ'*). Town in France, so named from the *Pictones*, or *Pictavi*, a Celtic people.

poke (*pōk*), *n.* a thrust or push: *v. t.* to thrust or push against.

pok-er (*'ĕr*), *n.* a metal bar for stirring fires; a card game.

po-ky (*pō'ki*), *adj.* lacking spirit or interest; slow; stupid.

Poland. An inversion of *Land-Pole*, the Slavonic for "men of the plains," who first overran this territory. It is called *Polen* or *Pohlen* in German, *Pologne* in French, and *Polska* in Polish.

po-lar (*'lĕr*), *adj.* pertaining to, or situated near, either of the poles, especially the north pole, pertaining to the magnetic poles.

po-lar-i-ty (*-lar'i-ti*), *n.* the property possessed by certain bodies, as in electrified or magnetized bodies, by which they arrange themselves in certain directions or tend to given poles.

pole (*pōl*), *n.* a long staff; a measure; one of the extremities of the imaginary axis of the earth.

pole-cat (*'kat*), *n.* a small carnivorous animal which emits a strong offensive odor.

po-lem-ic (*pō-lem'ik*), *n.* a controversialist: *pl.* the art of controversy.

po-lem-ic-al (*'i-kal*), *adj.* controversial.

pole-star (*pōl'stär*), *n.* the north star (*Polaris*), situated in Ursa Minor, within 1½ degrees of the true pole; a guide.

po-lice (*pō-lēs'*), *n.* in a city, town, or district, an organised force of civil officers for preserving order. [force.
po-lice-man (*pō-lēs'man*), *n.* a member of a police
pol-i-cy (*pol'i-si*), *n.* [*pl.* policies (*-siz*)], the art or method of government; management of public affairs; a warrant for money in the public funds.
pol-ish (*'ish*), *v. t.* to make smooth or glossy by friction: *v. i.* to become polished: *n.* a smooth, glossy surface; refinement or elegance of manners. [POLITE.]
po-lite (*po-līt'*), *adj.* well-bred; refined in manner; courteous or obliging.
Syn. POLITE, polished, refined. *Politeness* and *polish* do not extend to anything but externals; *refinement* applies as much to the mind as the body; rules of conduct, and good society, will make a man *polite;* lessons in dancing will serve to give a *polish; refined* manners or principles will naturally arise out of *refinement* of men. [See *genteel.*]
Ant. CRUDE, rough, rude.
pol-i-tic (*'i-tik*), *adj.* shrewd; specious; sagacious: especially in policy.
po-lit-i-cal (*pō-lit'i-kal*), *adj.* pertaining to politics, or to a nation or state; derived from government.
po-lit-i-cal e-con-o-my (*ē-kon'ō-mi*), the science that treats of wealth, its nature, production, distribution, and consumption, and the laws which regulate and govern these.
pol-i-ti-cian (*pol'i-tish-un*), *n.* one who is skilled in politics; a statesman.
pol-i-ty (*'i-ti*), *n.* the form or constitution of the civil government of a state, constitution.
poll (*pōl*), *n.* the head, especially the back part of it; a register of persons, especially those entitled to vote at elections; an election; place where votes are cast: *v. t.* to cast or deposit in a ballot box; *to poll a jury* is to examine each member individually as to his concurrence in the verdict.
pol-lard (*pol'ẽrd*), *n.* a tree lopped or polled; a stag that has cast its antlers.
pol-len (*'en*), *n.* the fertilizing powder in the cell of the anthers of flowers.
poll tax (*pōl taks*), a capitation tax.
pol-lute (*pol-lūt'*), *v. t.* to defile; render unclean; taint with guilt; corrupt; violate. [CONTAMINATE.]
pol-lu-tion (*-lū'shun*), *n.* the act of polluting; the state of being polluted; defilement; legal or ceremonial uncleanness.
po-lo (*pō'lō*), *n.* a game similar to hockey, played on horseback.
po-lo-naise (*pō-lō-nāz'*), *n.* a dress, body and skirt made in one; a Polish air or dance.
pol-troon (*pol-trōōn'*), *n.* a coward.
pol-y, a *prefix* meaning *many, much.*
pol-y-an-dry (*pol-i-an'dri*), *n.* the practice of a woman having more than one husband at the same time (opposed to *polygamy.*)
po-lyg-a-mist (*pō-lig'a-mist*), *n.* one who practices or upholds polygamy.
po-lyg-a-mous (*'a-mus*), *adj.* pertaining to, or practicing, polygamy.
★**po-lyg-a-my** (*pō-lig'a-mi*, not *pol'ig-ā-mi*), *n.* the practice of having more than one wife at the same time. [guages.
pol-y-glot (*pol'i-glot*), *adj.* containing many lan-
pol-y-gon (*'i-gon*), *n.* a figure having many angles.
pol-y-pus (*'i-pus*), *n* [*pl.* polypi (*-pī*)], a fleshy tumor in the nose or uterus; a polyp.
pol-y-syl-la-ble (*-sil'a-bl*), *n.* a word consisting of three or more syllables.
pol-y-tech-nic (*-tek'nik*), *adj.* noting, including, or giving instruction in, the arts and sciences: *n.* a school for imparting instruction in the arts and sciences.
pol-y-the-ism (*'i-thē-izm*), *n.* the doctrine of a plurality of gods, each taking a part in the government of the world.
po-made (*pō-mād'*), *n.* a perfumed ointment for dressing the hair. [Also *pomatum.*]
pome-gran-ate (*pum'gran-āt*), *n.* a tree (*Punica granatum*) yielding an orange-like, edible fruit with a thick rind and numerous seeds.
pom-mel (*pum'el*), *n.* the knob on a sword-hilt; the high part of a saddle-bow: *v. t.* to beat with anything thick or bulky; bruise.
po-mol-o-gy (*pō-mol'ō-ji*), *n.* the science of cultivating fruit and fruit trees, especially apples; a treatise on fruits.
pomp (*pomp*), *n.* ostentatious display; grandeur; parade. [MAGNIFICENCE.]
Pompey (*pom'pi*). From the Latin, meaning "of Pompeii," *i. e.,* the city of Pompeii. Danish, *Pompejus;* Dutch, *Pompejus;* Fr., *Pompée;* It., *Pompeo;* Lat., *Pompeius.*
Pompey's Pillar. A Corinthian column of beautifully polished red granite at Alexandria, standing on a pedestal or foundation of masonry.
pom-pous (*pom'pus*), *adj.* stately; grand; self-important; ostentatious.
pond (*pond*), *n.* a pool of standing water.
pon-der (*pon'dẽr*), *v. t.* to weigh mentally: *v. i.* to deliberate.
pon-der-a-ble (*'dẽr-a-bl*), *adj.* capable of being weighed.
pon-der-ous (*'dẽr-us*), *adj.* very heavy; weighty; important; dull.
pon-gee (*pon-jē'*), *n.* an inferior kind of silk.
pon-iard (*pon'yẽrd*), *n.* a small dagger: *v. t.* to stab with a poniard.
Pontchartrain (*pont-chär-trān'*). Lake in Louisiana, named for a French count who was an early explorer of the Mississippi valley.
Ponte Vecchio (*pon'tē vek'kē-ō*). A bridge in Florence, over the Arno; a picturesque structure with three wide arches, rebuilt in 1345. The roadway is bordered on both sides by quaint little shops, except over the middle arch, where there is an opening. Over the south row of shops is carried a gallery, built by Vascari, connecting the Pitti palace with the Uffizi and the Palazzo Vecchio.
pon-tiff (*pon'tif*), *n.* a high priest; the pope.
pon-tif-ic-al (*'i-kal*), *adj.* pertaining to a pontiff, high priest, or pope; papal.
pon-toon (*pon-tōōn'*), *n.* a buoyant, flat-bottomed structure supporting a floating military bridge; a bridge of boats; a lighter.
po-ny (*pō'ni*), *n.* [*pl.* ponies (*'niz*)], a small horse; student's key to translation of Latin or Greek lessons.
pool (*pōōl*), *n.* a small body of water; the stakes in certain games or the receptacle for them: *v. t.* to unite or aggregate together.
poop (*pōōp*), *n.* the stern of a ship: *v. t.* to break heavily over the stern of, said of waves.
poor (*pōōr*), *adj.* necessitous; having little or no means; destitute of riches; without strength.
pop (*pop*), *n.* a short, smart, quick sound: *v. t.* to thrust suddenly; pawn: *v. i.* to make a short, smart, quick sound.
pop-corn (*'kôrn*), *n.* any variety of Indian corn or maize having small ears and small, hard grains. The grains "*pop*" and expand when exposed to the heat of a fire.
pope (*pōp*), *n.* the bishop of Rome and head of the Roman Catholic church; a title of priests of the Greek church; a variety of perch.
pop-in-jay (*pop'in-jā*), *n.* a parrot; fop.
pop-lar (*pop'lẽr*), *n.* a tree of rapid growth, with a white soft wood.
pop-lin (*'lin*), *n* a fabric of silk and worsted.
Popocatepetl (*pō-pō-kā-tā-pet'l*). The loftiest volcano in Mexico, means the "smoking mountain." From the Aztec *popoca,* "he smokes," and *tepetl,* a "mountain."
pop-py (*pop'i*), *n.* any plant of the genus Papaver, with bright showy flowers.
pop-u-lace (*'ū-lās*), *n.* the common people.
pop-u-lar (*'ū-lẽr*), *adj.* pertaining to, suitable for, or pleasing to, the common people; easily understood; plebeian.
pop-u-lar-ize (*-ī-*), *v. t.* to render popular.
pop-u-late (*'ū-lāt*), *v. t.* to furnish with inhabitants.
pop-u-la-tion (*-lā'shun*), *n.* the inhabitants of a country, place, town, etc., collectively.
Pop-u-list (*-list*), *n.* a member of a political party in the United States known as the Populist or People's party.
pop-u-lous (*'ū-lus*), *adj.* thickly peopled.
por-ce-lain (*pôr'sẽ-lin*), *n.* a fine white, thin, semi-transparent kind of earthenware.
porch (*pôrch*), *n.* a vestibule supported by pillars; portico.
por-cu-pine (*pôr'kū-pīn*), *n.* a rodent covered with spines, of the genus Hystrix.
pore (*pôr*), *n.* a minute hole in the skin through which perspiration passes to the surface: *v. i.* to look with close and steady attention, as on a book.
pork (*pôrk*), *n.* the flesh of swine, either fresh or salted.
pork-er (*'ẽr*), *n.* a pig.
por-ous (*pôr'us*), *adj.* having pores.
por-phy-ry (*pôr'fi-ri*), *n.* originally a reddish igneous rock found in Egypt.
por-poise (*pôr-pus*), *n.* a cetaceous mammal of the genus Phocæna; the sea hog.
por-ridge (*por'ij*), *n.* oatmeal boiled slowly in water until it thickens.
port (*pôrt*), *n.* a harbor; harem; deportment or carriage; the left side of a ship: *v. t.* to turn to the port or left side of a ship, as, to *port* the helm. [HARBOR.]
port-a-ble (*pôrt'a-bl*), *adj.* that may be easily carried by hand or about the person.
port-age (*'āj*), *n.* carriage; cost of carriage.
port-al (*'al*), *n.* a gate or entrance; an arch over a gateway or door.
Porta Maggiore (*pôr'tä mäd-jō're*). The finest and most imposing ancient gate in the walls of Rome.
por-tend (*por-tend'*), *v. t.* to indicate in advance; presage. [AUGUR.]
por-tent (*'tent*), *n.* an omen, especially of ill.
por-tent-ous (*'us*), *adj.* ominous; foreshadowing evil; wondrous.
por-ter (*pôr'tẽr*), *n.* a door or gate keeper; a dark-colored malt beer; one who carries parcels, etc., for hire. [Fem. *porteress.*
por-ter-age (*-āj*), *n.* money charged for carriage by a porter.
port-fol-io (*pôrt-fōl'yō*), *n.* a portable case for loose papers, drawings, etc.
port-hole (*'hōl*), *n.* a window-shaped hole in the side of a ship, especially of a man-of-war.
por-ti-co (*pôr'ti-kō*), *n.* [*pl.* porticos (*-kōz*)], a walk covered by a roof supported on columns; a columned porch.
por-tion (*'shun*), *n.* a piece or part; allotment; dividend: *v. t.* to divide; allot.
Portland, Me. In 1786, "an act for erecting that part of the town of Falmouth in the county of Cumberland commonly known as the Neck into a town by the name of *Portland.*" The name was recommended from its being the oldest English name in that section, given to a large island in the harbor, the name of the main channel (Portland sound) and the mainland opposite (Portland head).
Portland, Ore. Named in compliment to Portland, Me. F. W. Pettygrove and Gen. A. L. Lovejoy, in 1843, were the purchasers of what was afterward Portland, and of which ground they were the first occupants. As a native of Maine, Pettygrove desired to compliment Maine in naming the locality, and similar motives prompted his partner to call it Boston (his native place). The controversy was settled by tossing an old American red cent; the one who threw the most heads in three flips should name the town. The score is recorded; Lovejoy, tails, two, heads, one; Pettygrove, heads, two; and so we have *Portland* instead of *Boston, Ore.*
Portland Vase. A famous urn of blue transparent cameo-cut glass, ten inches high. It was discovered about 1630 in a sarcophagus in a tomb in the Monte del Grano, near Rome. It is so called from its possessors, the Portland family.
port-ly (*pôrt'li*), *adj.* stately of mien; corpulent.
port-man-teau (*-man'tō*), *n.* a bag or trunk for carrying clothes or traveling necessities.
Porto Rico (*pôr'tō rē'kō*). Spanish for "rich port." West Indian island belonging to the Union.
por-trait (*pôr'trāt*), *n.* a picture or representation of an individual or face drawn from life.
por-trai-ture (*'trā-tūr*), *n.* the art or practice of drawing or painting portraits; vivid delineation in words.
por-tray (*-trā'*), *v. t.* to paint or draw the likeness of; describe in words.
Portsmouth, N. H. Named from Portsmouth, England; the governor of which, Captain John Mason, was the original proprietor of its namesake.
Port Royal, S. C. Named from the bay, called *Royale* by Ribaut, "because of the fairness and largeness thereof" of its waters.
Portugal (*pôr'tū-gal*, Port. *pôr-too-gäl'*). The *Portus Gallicæ* of the Romans; literally, "the gates of Gaul," as approached from the Mediterranean and Atlantic seas. A country of southwestern Europe.
Por-tu-guese (*pôr-tū-gēz'*), *adj.* pertaining to Portugal, its inhabitants, or language.
pose (*pōz*), *n.* attitude or position: *v. i.* to assume an attitude: *v. t.* to puzzle or perplex.
pos-er (*pōz'ẽr*), *n.* a puzzling question; one who, or that which, poses or puzzles.
po-si-tion (*pō-zish'un*), *n.* the state of being set or placed; situation; attitude.
Syn. POSITION, posture. The *position* is that in which a body is placed in respect to other bodies; as the standing with one's face or back to an object is a *position;* but a *posture* is that *position* which a body assumes in respect to itself, as a sitting or reclining *posture.* [See *tenet.*]
pos-i-tive (*poz'i-tiv*), *adj.* clearly expressed; actual; direct; explicit; overconfident; dogmatical: *n.* that which may be affirmed; reality; a photograph with the natural lights and shades restored. [CONFIDENT, DEFINITE.]
pos-i-tiv-ism (*'i-tiv-izm*), *n.* a French philosophical and religious system originated by Auguste Comte (1798-1857), called also Comtism, and the religion of humanity.
pos-se (*pos'ē*), *n.* an improvised force of men.
pos-sess (*poz-es'*), *v. t.* to have as an owner; be master of; occupy; seize. [HAVE, HOLD.]
pos-ses-sion (*-esh'un*), *n.* the having, holding, or detention of property; the thing possessed.
pos-sess-ive (*-es'iv*), *adj.* noting possession.
pos-sess-or (*'ẽr*), *n.* owner; one who possesses.
pos-set (*pos'et*), *n.* milk curdled with wine, etc.
pos-si-bil-i-ty (*-i-bil'i-ti*), *n.* the state of being possible; contingency. [ACCIDENT.]
pos-si-ble (*'i-bl*), *adj.* that may happen or exist.
post (*pōst*), *n.* a piece of timber, etc., set erect, usually to support something else; a messenger or postman; the mail; a postoffice: *v. t.* to inform fully: *v. i.* to travel with speed or a relay of horses.
post-age (*'āj*), *n.* the fee for the conveyance of letters by post.
post-al (*'al*), *adj.* pertaining to the postoffice or mail service.
post-er (*'ẽr*), *n.* a large advertising bill.
pos-te-ri-or (*pos-tē'ri-ẽr*), *adj.* subsequent in time or place; hinder: *n. pl.* the hinder parts of an animal.
pos-ter-i-ty (*-ter'i-ti*), *n.* [*pl.* posterities (*-tiz*)], succeeding generations; descendants.
pos-tern (*pôs'tẽrn*), *n.* a small gate or door; private entrance.
post-hu-mous (*post'hū-mus*), *adj.* born after the death of the father; published after the death of an author.
pos-til-ion (*pōs-til'yun*), *n.* the rider on the near leader in a carriage.
post-mas-ter (*pōst'mäs-tẽr*), *n.* the superintendent of a post office; one who supplies post horses.
post-me-rid-i-an (*-mē-rid'i-an*), *adj.* after noon.
post-pone (*-pōn'*), *v. t.* to delay; defer.
post-pone-ment (*'ment*), *n.* the act of deferring to a future time; temporary delay.
post-script (*'skript*), *n.* a paragraph added to a letter after the writer's signature.
pos-tu-late (*pos'tū-lāt*), *v. t.* to assume without proof; solicit: *n.* a self-evident problem.
pos-ture (*'tūr*), *n.* attitude; placing or position of

parts of the body; state: *v. i.* to place the body in particular postures. [ACTION, POSITION.]

po-sy (*pō'zi*), *n.* a bunch of flowers: originally a motto or verse sent with a bouquet.

pot (*pot*), *n.* a metal vessel for holding or boiling liquids, etc.

pot-ash (*pot'ash*), *n.* a powerful alkali obtained from the ashes of certain plants.

po-ta-tion (*pō-tā'shun*), *n.* drinking bout; a draft or drink.

★**po-ta-to** (*pō-tā'tō*, not *pō-tä'tu*), *n.* [*pl.* potatoes (*-tōz*)], the edible tuber of a South American plant, widely cultivated; the plant itself.

po-tent (*'tent*), *adj.* powerful; having great authority or influence. [POWERFUL.]

po-ten-tate (*'ten-tāt*), *n.* one who possesses great power; sovereign or monarch.

po-ten-tial (*-ten'shal*), *adj.* existing in possibility, not in reality; latent.

poth-er (*poth'ĕr*), *n.* confusion; bustle: *v. i.* to make a stir: *v. t.* to confuse; tease.

po-tion (*pō'shun*), *n.* a draft; dose.

Potomac (*pō-tō'mak*). River forming the boundary line between Maryland, Virginia, and West Virginia. Indian *patowmek* or *potowmak*, "they are coming by water"; another translation, "place of the burning pine," allusion to a council fire.

pot-pour-ri (*pō-pōō-rē'*), *n.* a medley, especially of musical airs; a dish composed of various kinds of meats and vegetables.

Potsdam (*pots'dam*, German *pōts'dām*). Prussian city situated at the junction of the Nuthe with the Havel, sixteen miles southwest of Berlin. It is an imperial residence, and contains many palaces. The name is a corruption of the Slavonic *poddubami*, "under the oaks."

pot-tage (*pot'āj*), *n.* a kind of soup.

pot-ter (*'ĕr*), *n.* a maker of pottery.

pot-ter-y (*'ĕr-i*), *n.* [*pl.* potteries (*-iz*)], earthenware of all kinds; the place where it is manufactured.

pot-to-roo (*-ō-rōō'*), *n.* the kangaroo rat of Australia. [Also *potoroo.*]

pouch (*pouch*), *n.* a small bag; pocket; bag or sack of an animal.

Poughkeepsie (*pō-kip'si*). City in Dutchess county, New York. Derived from the Delaware Indian word, *apokeepsingk*, meaning "safe and pleasant harbor," or "shallow inlet," "safe harbor for small boats."

poul-tice (*pōl'tis*), *n.* a soft preparation of bread, meal, etc., applied to a sore or inflamed part of the body; a cataplasm.

poul-try (*'tri*), *n.* domestic fowls.

pounce (*pouns*), *n.* a fine powder formerly used for drying ink on paper: *v. t.* to sprinkle with pounce: *v. i.* to fall upon and seize with the claws.

pound (*pound*), *n.* a standard weight equal to 16 ounces avoirdupois, or 12 ounces troy; a monetary unit equal to 20 shillings, or about $4.86; an inclosure for confining stray cattle: *v. t.* to shut in or confine in a pound; beat; pulverize as in a mortar: *v. i.* to plod.

pour (*pōr*), *v. t.* to empty, as a liquid, out of a vessel; discharge in a continuous stream: *v. i.* to stream; rush tumultuously.

Syn. POUR, spill, shed. We *pour* with design; we *spill* by accident; we *pour* water over a plant or a bed; we *spill* it on the ground; *to shed* is done in great quantities.

pout (*pout*), *n.* a thrusting out of the lips; fit of sullenness

pov-er-ty (*pov'ĕr-ti*), *n.* the state of being poor; indigence; necessity.

pow-der (*pou'dĕr*), *n.* any dry substance in fine particles: *v. t.* to reduce to, or sprinkle with, powder; salt.

pow-er (*pou'ĕr*), *n.* the faculty of doing or performing something; ability; energy; force; strength; rule or authority.

pow-er-ful (*-fool*), *adj.* having great power; mighty; forcible; strong; efficacious.

Syn. POWERFUL, potent, mighty. *Powerful* is applicable to strength as well as power; a *powerful* man is one who by size and make can easily *overpower* another; and a *powerful* person is one who has much in his *power; potent* is used only in this latter sense, in which it expresses a larger extent of *power;* a *potent* monarch is much more than a *powerful* prince; *mighty* expresses a still higher degree of *power; might* is *power* unlimited by any consideration or circumstance; a giant is called *mighty* in the physical sense, and genius is said to be *mighty* which takes everything within its grasp.

pow-wow (*pou'wou*), *n.* a North American Indian priest or conjurer; an incantation.

pox (*poks*), *n.* an eruptive disease characterized by pustules; syphilis.

prac-ti-ca-bil-i-ty (*prak-ti-kä-bil'i-ti*), *n.* the state of being practicable.

prac-ti-ca-ble (*'ti-kä-bl*), *adj.* that may be done, used, or passed over; feasible; possible.

prac-ti-cal (*'ti-kal*), *adj.* pertaining to action or use; useful.

prac-tice (*prak'tis*), *n.* frequent or customary action; use: *v. t.* to form a habit; exercise a profession. [CUSTOM. EXERCISE.]

prac-ti-tion-er (*-tish'un-ĕr*), *n.* one who is engaged in the exercise of any profession.

Prado (*prä'dō*). The chief fashionable promenade of Madrid.

præ-ci-pe (*pres'i-pē*), *n.* a writ requiring something to be done, or the reason why it is not performed.

præ-tor (*prē'tor*), *n.* a Roman magistrate ranking next to a consul.

prag-mat-ic (*prag-mat'ik*), *adj.* meddling; officious; assuming business airs. [Also *pragmatical.*]

Prague (*prāg*). The capital of Bohemia; is the English form of the German *prag*, or *praha*, which in Czech means the "threshold," referring, it is supposed, to a reef of rocks in the bed of the Moldau. The suburb of Warsaw on the right bank of the Vistula similarly goes by the name of *Praga*, the "threshold."

prai-rie (*prā'ri*), *n.* an extensive treeless tract of level or slightly undulating land covered with tall coarse grass.

Prairie du Chien (*prā'rē du shēn.* French, *prā-rē' dū shē-an'*), **Ia.** French words, translated "dog prairie," from the local habitations of the prairie dogs.

praise (*prāz*), *n.* approbation; commendation; *v. t.* to bestow commendation upon; honor; worship; glorify. [LAUDABLE.]

prance (*prans*), *n.* a spring or bound: *v. i.* to spring or bound; strut about in a lively or bellicose manner.

prank (*prangk*), *n.* a freak or frolic; mischievous trick.

prate (*prāt*), *v. i.* to prattle; talk idly; be loquacious: *v. t.* to utter without sense or meaning.

Prater (*prä'ter*). A noted public park in Vienna.

prat-tle (*prat'l*), *n.* childish or empty talk: *v. i.* to talk much and lightly; chatter.

prax-is (*praks'is*), *n.* an example or series of examples for exercise.

pray (*prā*), *v. t.* and *v. i.* to ask earnestly; address or petition.

prayer (*prār*), *n.* a solemn address to the Supreme Being.

preach (*prēch*), *v. i.* to pronounce a public discourse on a sacred subject: *v. t.* to teach publicly.

pre-am-ble (*prē'am-bl*), *n.* an introduction or preface.

preb-end (*preb'end*), *n.* the stipend granted to a canon out of the estate of a cathedral or collegiate church.

pre-ca-ri-ous (*prē-kā'ri-us*), *adj.* depending upon the will or pleasure of another; uncertain.

pre-cau-tion (*prē-kaw'shun*), *n.* caution taken beforehand; preventive measure.

pre-cede (*prē-sēd'*), *v. t.* to go before in time, place, rank, or importance.

★**pre-ced-ence** (*prē-sēd'ens*, not *pres'ē-dens*), *n.* the act of going before in time, rank, etc.; priority; relative rank in social etiquette. [Also *precedency.*]

★**pre-ced-ent** (*'ent*), *adj.* going before; anterior: *n.* (*pres'ē-dent*) a parallel case in the past.

pre-cen-tor (*-sen'tĕr*), *n.* the leader of a cathedral choir, etc.; the leader of the psalmody in a Presbyterian church.

pre-cept (*prē'sept*), *n.* an authoritative command; rule of action or moral conduct; maxim. [DOCTRINE, COMMAND.]

pre-ces-sion (*-sesh'un*), *n.* a going forward, especially the slow but continual shifting of the equinoctial points along the ecliptic from east to west (*precession of the equinoxes*).

pre-cinct (*prē'singkt*), *n.* an outward limit or boundary.

pre-cious (*presh'us*), *adj.* of great price or value; costly; highly esteemed; worthless (*in irony*). [RARE.]

prec-i-pice (*pres'i-pis*), *n.* a steep descent, especially one nearly or quite perpendicular.

pre-cip-i-tant (*pre-sip'i-tant*), *adj.* falling headlong; hasty: *n.* any chemical substance that causes something held in solution by a liquid to fall down in a solid state.

pre-cip-i-tate (*-sip'i-tāt*), *v. t.* to throw headlong; urge on violently; hurry on rashly: *adj* (*-tat*) headlong; overhasty; rash.

pre-cip-i-tous (*'i-tus*), *adj.* very steep; headlong; rash; hasty.

pre-cise (*prē-sīs'*), *adj.* exact; strict; accurate; definite.

pre-clude (*-klōōd'*), *v. t.* to shut out; hinder from access; obviate.

pre-clu-sion (*-klōō'zhun*), *n.* the act of precluding; the state of being precluded.

pre-co-cious (*-kō'shus*), *adj.* prematurely ripe or developed.

pre-coc-i-ty (*-kos'i-ti*), *n.* the state or quality of being precocious; premature development.

pre-cog-ni-tion (*prē-kog-nish'un*), *n.* previous knowledge or thought.

pre-cur-sor (*prē-kûr'sĕr*), *n.* one who or that which precedes; forerunner; omen.

pred-a-to-ry (*pred'ä-tō-ri*), *adj.* rapacious; plundering; pillaging.

pred-e-ces-sor (*pred-ē-ses'ĕr*), *n.* one who has preceded another in the same office, business, position, etc.; an ancestor.

pre-des-ti-nate (*prē-des'ti-nāt*), *v. t.* to ordain beforehand by an unchangeable purpose.

pre-des-ti-na-tion (*-nā'shun*), *n.* the act of foreordaining; the doctrine that God has from all eternity decreed whatever comes to pass, especially by an unchangeable purpose, the eternal life or death of man.

pred-i-ca-ble (*pred'i-kä-bl*), *adj.* capable of being predicated: *n.* in logic a term that can be predicated of others.

pre-dic-a-ment (*prē-dik'ä-ment*), *n.* in logic a category; a peculiar situation; critical condition.

pred-i-cate (*pred'i-kāt*), *v. t.* to affirm one thing of another; found: *n.* in logic, that which is affirmed or denied of the subject.

pre-dict (*prē-dikt'*), *v. t.* to declare a future event; to prophesy. [FORETELL.]

pre-di-lec-tion (*prē-di-lek'shun*), *n.* preference beforehand; prepossession; partiality.

pre-dis-pose (*-dis-pōz'*), *v. t.* to incline beforehand; adapt previously.

pre-dom-i-nant (*prē-dom'i-nant*), *adj.* having superior influence, etc.; superior; controlling.

pre-dom-i-nate (*'i-nāt*), *v. i.* to be superior in strength, power, authority, etc.; prevail.

pre-ĕmpt (*prē-empt'*), *v. t.* to secure or occupy by preëmption; establish a right or claim to before others.

pref-ace (*pref'ās*), *n.* the introduction to a book, etc.; preamble: *v. t.* to introduce by preliminary remarks: *v. i.* to say or do something introductory.

pref-a-to-ry (*'ä-tō-ri*), *adj.* pertaining to, or of the nature of, a preface; introductory.

pre-fect (*prē'fekt*), *n.* a civil magistrate or governor.

pre-fec-ture (*-tūr*), *n.* the office, jurisdiction, or official residence of a prefect.

pre-fer (*prē-fĕr'*), *v. t.* to regard or esteem more than something else, *adj.* preferable. [CHOOSE, ELIGIBLE.]

★**pref-er-ence** (*pref'ĕr-ens*), *n.* the act of preferring; the thing preferred; choice of one thing more than another; predilection. [ALTERNATIVE.]

pref-er-en-tial (*-en'shal*), *adj.* having a preference.

★**pre-fer-ment** (*prē-fĕr'ment*), *n.* promotion, especially in the church.

pre-fix (*prē'fiks*), *n.* a letter, word or syllable placed at the beginning of a word: *v. t.* (*prē-fiks'*) to place before, or at, the beginning of.

preg-nant (*preg'nant*), *adj.* being with young; fruitful; teeming; fertile.

pre-hen-sile (*prē-hen'sil*), *adj.* adapted for holding or seizing.

prej-u-dice (*prej'ū-dis*), *n.* previous and unfavorable bias; prejudgment without due examination: *v. t.* to bias the mind of; create a prejudice against

Syn. PREJUDICE, bias, partiality, prepossession, presumption. A *prejudice* or *prepossession* is grounded often on feeling, fancy, associations. A *prejudice* against foreigners is very common in retired communities. A *prepossession* is always favorable, a *prejudice* always unfavorable, unless the contrary is expressly stated. [injurious.

prej-u-di-cial (*-dish'al*), *adj.* disadvantageous;

prel-a-cy (*prel'ä-si*), *n.* the office or status of a prelate; episcopacy.

★**prel-ate** (*prel'āt*, not *prē'lāt*), *n.* an ecclesiastical dignitary having episcopal authority.

pre-lec-tion (*prē-lek'shun*), *n.* a lecture, etc., read before students or others.

pre-lim-i-na-ry (*-lim'i-nä-ri*), *adj.* preceding the main discourse or business; introductory: *n.* an introduction; something preceding. [PREVIOUS.]

pre-lude (*prē'lūd* or *prel'ūd*), *n.* a short piece of music played as an introduction to a larger piece.

pre-ma-ture (*prē-mä-tūr'*), *adj.* arriving, occurring, or done, before the proper time.

pre-med-i-tate (*prē-med'i-tāt*), *v. t.* to design, conceive, or deliberate, beforehand.

pre-mi-er (*prē'mi-ĕr*), *adj.* first; chief: *n.* the prime minister.

pre-mise (*prē-mīz'*), *v. t.* to explain previously: *n.* (*prem'is*) a proposition antecedently assumed and laid down.

pre-mi-um (*prē'mi-um*), *n.* a recompense or reward; prize or bounty; bonus.

pre-mon-i-to-ry (*prē-mon'i-tō-ri*), *adj.* giving warning beforehand.

pre-oc-cu-pied (*prē-ok'ū-pīd*), *p. adj.* engrossed; already occupied. [ABSTRACTED.]

prep-a-ra-tion (*prep-ä-rā'shun*), *n.* the act of preparing or fitting for a particular purpose; state of being prepared; readiness.

pre-par-a-to-ry (*prē-par'ä-tō-ri*), *adj.* previously necessary; introductory. [PREVIOUS.]

pre-pense (*prē-pens'*), *adj.* premeditated.

pre-pon-der-ant (*-pon'dĕr-ant*), *adj.* outweighing.

pre-pon-der-ate (*'dĕr-āt*), *v. i.* to outweigh; exceed in power or influence: *v. t.* to incline to one side.

prep-o-si-tion (*prep-ō-zish'un*), *n.* a word placed before a noun or pronoun to indicate its relation to some other word in the sentence.

pre-pos-i-tive (*prē-poz'i-tiv*), *adj.* placed before: *n.* a word or particle placed before another word.

pre-pos-sess (*prē-poz-es'*), *v. t.* to occupy beforehand; bias.

pre-pos-sess-ing (*'ing*), *p. adj.* tending to win or secure favor; attractive.

pre-pos-ses-sion (*-zesh'un*), *n.* prior possession; preconceived opinion or judgment. [PREJUDICE.]

pre-pos-ter-ous (*prē-pos'tĕr-us*), *adj.* contrary to nature or reason; ridiculous; absurd. [IRRATIONAL, ABSURD.]

pre-rog-a-tive (*-rog'ä-tiv*), *n.* an exclusive or peculiar privilege, especially of a sovereign.

pre-sage (*prē'sāj*), *n.* a foreboding or presentiment: *v. t.* (*pre-sāj'*) to forebode; predict. [AUGUR, OMEN.]

pres-by-o-pi-a (*pres-bi-ō'pi-ä*), *n.* long-sightedness, while near objects are indistinctly seen.

pres-by-ter (*pres'bi-tĕr*), *n.* an elder, minister, or priest.

pres-by-ter-y (*pres'bi-ter-i*), *n.* in the Presbyterian church, a court composed of the pastors and ruling elders of the churches in a given district.
pre-sci-ent (*prē'shi-ent*), *adj.* foreknowing.
Prescott, Ariz. A city named in compliment to the American historian, William H. Prescott.
pre-scribe (*prē-skrīb'*), *v. t.* to set down authoritatively; *v. i.* to write medical directions; give law. [DICTATE.]
pre-scrip-tion (*-skrip'shun*), *n.* the act of prescribing; a written direction for the preparation of a medicine. [USAGE.]
pres-ence (*prez'ens*), *n.* the state or quality of being present; quickness at expedients.
pres-ent (*'ent*), *adj.* at hand or in sight; at this time: *n.* the present time; a gift or donation: *v. t.* (*prē-zent'*) to exhibit to view; offer. [GIFT.]
pres-en-ta-tion (*prez-en-tā'shun*), *n.* the act of presenting; representation.
pre-sen-tient (*prē-sen'shent*), *adj.* having previous perception.
pre-sen-ti-ment (*'ti-ment*), *n.* previous apprehension of something about to come or happen.
pre-sent-ment (*prē-zent'ment*), *n.* the act of presenting; the thing presented; representation.
pres-er-va-tion (*prēz-ēr-vā'shun*), *n.* the act of preserving; the state of being preserved from injury or decay.
pre-ser-va-tive (*prē-zĕr'vā-tiv*), *adj.* having the power of preserving: *n.* that which preserves. [Also *preservatory.*]
pre-serve (*-zĕrv'*), *v. t.* to keep from injury; defend; uphold: *n.* fruit, etc., seasoned and kept in sugar. [KEEP.]
pre-side (*prē-zīd'*), *v. i.* to direct or control, especially at a public meeting; superintend.
pres-i-den-cy (*prez'i-den-si*), *n.* the office, dignity, term, jurisdiction, or residence of a president.
pres-i-dent (*'i-dent*), *n.* one who presides over a corporation or assembly; the highest officer of a republic. [president.
pres-i-den-tial (*-den'shal*), *adj.* pertaining to a
press (*pres*), *v. t.* to urge; squeeze or crush strongly; hurry: *v. i.* to exert pressure: *n.* a printing machine.
Syn. PRESS, squeeze, pinch, gripe. The forcible action of one body on another is included in all these terms. In the word *press* this is the only idea; the rest differ in the circumstances; we may *press* with the foot, the hand, or any particular limb; one *squeezes* commonly with the hand; one *pinches* either with the fingers or an instrument constructed in a similar form; one *gripes* with teeth, claws, or any instrument that can gain hold of the object.
press-gang (*'gang*), *n.* a detachment from a ship's crew to force men into the navy.
press-ing (*'ing*), *p. adj.* exerting pressure, urgent; importunate.
press-man (*'man*), *n.* a printer who works at the press and impresses the sheets; a journalist.
pres-ti-dig-i-ta-tion (*-ti-dij'i-tā'shun*), *n.* sleight of hand; legerdemain. [Also *prestigiation.*]
pres-tige (*'tij*, or *-tēzh'*), *n.* moral influence due to past reputation, achievements, etc.
pre-sume (*prē-zūm'*), *v. t.* to take for granted on probable grounds; suppose: *v. i.* to venture without actual leave.
pre-sump-tion (*-zump'shun*), *n.* strong probability; arrogance or overconfidence. [PREJUDICE, PRIDE.]
pre-sump-tive (*'tiv*), *adj.* taken by previous supposition; proving circumstantially; arrogant.
Syn. PRESUMPTIVE, presumptuous, presuming. A *presumptive* heir is one *presumed* or expected to be heir; *presumptive* evidence is evidence founded on some *presumption* or supposition; so likewise *presumptive* reasoning; but a *presumptuous man*, a *presumptuous* thought, a *presumptuous* behavior, all indicate an unauthorized *presumption* in one's own favor; a man is *presuming* inasmuch as he shows himself disposed to *presume.*
Ant. IMPROBABLE, diffident, meek.
pre-sump-tu-ous (*'tū-us*), *adj.* bold to excess; arrogant; willful; rash. [PRESUMPTIVE.]
pre-sup-pose (*prē-sup-ōz'*), *v. t.* to take for granted; imply as antecedent.
pre-tend (*prē-tend'*), *v. t.* to allege or put forward falsely; make a show of; simulate; counterfeit; assert: *v. i.* to put forward a claim. [FEIGN.]
pre-tend-er (*'ĕr*), *n.* one who lays claim to anything under the guise of a right; one who makes a show of anything not real.
★**pre-tense** (*prē-tens'*, not *prē'tens*), *n.* false or hypocritical profession; unfounded claim; pretext.
Syn. PRETENSE, affectation, air, assumption, cloak, color, disguise, dissimulation, excuse, mask, pretension, pretext, ruse, semblance, show, simulation, subterfuge, trick, wile. A *pretense* is something advanced or displayed for the purpose of concealing the reality. A person makes a *pretense* of something for the credit or advantage to be gained by it; a tricky schoolboy makes a *pretense* of doing an errand which he does not do, or he makes the actual doing of an errand a *pretext* for playing truant. [See *cheat.*]
pre-ten-sion (*-ten'shun*), *n.* a claim, true or false; assumed right. [PRETENSE.]
pre-ten-tious (*'shus*), *adj.* assuming an air of superiority.
pre-text (*prē'tekst*), *n.* a pretense or excuse; ostensible motive put forward to conceal the real one. [PRETENSE.]
Pretoria (*prē-tō'ri-à*). The capital of the Transvaal, was named in honor of Andries Pretorius, a Boer leader, whose son became the first president of the republic.
pret-ti-ness (*prit'ti-nes*), *n.* attractiveness without dignity; neatness with taste; agreeable manner.
pret-ty (*'i*), *adj.* [*comp.* prettier, *superl.* prettiest], pleasing without being absolutely beautiful; pleasing: *adv.* fairly; moderately; tolerably.
pret-zel (*pret'zel*), *n.* a hard wheaten biscuit.
pre-vail (*prē-vāl'*), *v. i.* to succeed; gain the advantage. [PERSUADE.]
prev-a-lence (*prev'à-lens*), *adj.* superior strength, influence, or efficacy; preponderance.
prev-a-lent (*-lent*), *adj.* powerful; predominant; victorious.
pre-var-i-cate (*prē-var'i-kāt*), *v. i.* to evade the truth; quibble. [EVADE.]
pre-vent (*-vent'*), *v. t.* to hinder, obstruct, or impede; obviate.
Syn. PREVENT, anticipate. *To prevent* is literally to come beforehand, and *anticipate* to take beforehand; *to prevent* is the act of a person toward other persons or things; *to anticipate* is the act of a being either toward himself or another.
Ant. ALLOW, encourage, further.
pre-ven-tion (*-ven'shun*), *n.* the act of preventing; hindrance or obstruction.
pre-ven-tive (*'tiv*), *adj.* tending to prevent: *n.* that which prevents.
pre-vi-ous (*prē'vi-us*), *adj.* going before; anterior.
Syn. PREVIOUS, preliminary, preparatory, introductory. *Previous* applies to actions and proceedings in general; as a *previous* question, a *previous* inquiry, a *previous* determination; *preliminary* is employed only for matters of contract; a *preliminary* article, a *preliminary* condition, are what precede the final settlement of any question; *preparatory* is employed for matters of arrangement; the disposing of men in battle is *preparatory* to an engagement; *introductory* is employed for matters of science or discussion; as remarks are *introductory* to the main subject in question.
Ant. CONCLUDE, subsequent, later, succeeding.
pre-vi-sion (*-vizh'un*), *n.* foreknowledge.
prey (*prā*), *n.* plunder; booty: *v. i.* to take booty or plunder. [BOOTY.]
price (*prīs*), *n.* the current value of a commodity; cost; value; recompense. [COST.]
prick (*prik*), *n.* a puncture; dot or point: *v. t.* puncture; spur or incite.
pric-kle (*'l*), *n.* a sharp point growing from the bark of a plant.
prick-ly (*'li*), *adj.* full of prickles.
pride (*prīd*), *n.* inordinate self-esteem.
Syn. PRIDE, arrogance, assumption, conceit, haughtiness, insolence, ostentation, presumption, self-conceit, self-esteem, self-respect, vainglory, vanity. *Pride* is an absorbing sense of one's own greatness; *haughtiness* thinks highly of itself and poorly of others; *arrogance* claims much for itself and concedes little to others; *haughtiness* feels one's own superiority to others; *disdain* sees contemptuously the inferiority of others to one's self; *presumption* claims place or privilege above one's right; *pride* deems nothing too high; *insolence* is open and rude expression of contempt and hostility; *vanity* is eager for admiration and praise, is elated if they are rendered, and pained if they are withheld, and seeks them; *pride* could never solicit admiration or praise; *conceit* is somewhat stronger than *self-conceit; self-conceit* is ridiculous; *conceit* is offensive; *vainglory* is more pompous and boastful than *vanity.*
Ant. HUMILITY, meekness, diffidence.
priest (*prēst*), *n.* one who officiates in sacred offices, especially by offering sacrifice. [Fem. *priestess.*]
priest-craft (*'krăft*), *n.* the policy pursued by priests for the aggrandizement of their order and material interests.
priest-hood (*'hood*), *n.* the priestly order; office or character of a priest.
prig (*prig*), *n.* a conceited fellow who gives himself airs of wisdom.
prim (*prim*), *adj.* precise; affectedly nice; formally neat.
pri-ma-cy (*prī'mà-si*), *n.* the office or dignity of a primate.
★**pri-ma don-na** (*prē'mà don'à*), the principal female singer in an opera.
pri-mage (*prī'māj*), *n.* a small allowance paid to the captain and crew of a vessel for loading or unloading a cargo, etc.
pri-mal (*prī'mal*), *adj.* first.
pri-ma-ry (*'ma-ri*), *adj.* chief, original, principal: *n.* that which is first in rank, place or importance.
pri-ma-ry col-ors (*kul'ĕrz*), yellow, red, blue.
pri-mate (*'māt*), *n.* the highest dignitary in a national church.
prime (*prim*), *adj.* first in order of rank, time or importance: *n.* the spring of life.
prime num-ber (*num'bĕr*), a number not divisible without remainder by any number except itself and unity.
prim-er (*prim'ĕr*), *n.* a manual of elementary instruction; one of two sizes of type.
pri-me-val (*pri-mē'val*), *adj.* of the earliest age or time; original.
prim-ing (*prim'ing*), *n.* the first coat of paint; powder in the nipple of a firearm.
prim-i-tive (*prim'i-tiv*), *adj.* pertaining to the beginning; old-fashioned.
pri-mo-gen-i-ture (*pri-mō-jen'i-tūr*), *n.* seniority of birth; right of the eldest son to succeed to real estate.
pri-mor-di-al (*-môr'di-al*), *adj.* existing from the beginning; first in order; original: *n.* first principle or element.
primp (*primp*), *v. t.* to deck (one's self) in a prim or affected manner; prink.
prim-rose (*prim'rōz*), *n.* an early spring flower.
prince (*prins*), *n.* a ruler or sovereign; the son of a king or sovereign; the chief of a body of men.
Prince Edward Island. In the Gulf of St. Lawrence, was formerly called *St. John's island.* In 1798 the local legislature passed an act, confirmed in 1799 by the king in council, changing the name to *Prince Edward island*, in compliment to Prince Edward, afterward duke of Kent, and father of Queen Victoria, who was then commander of the forces in British North America.
Prince of Wales Island. Island belonging to Alaska. Named after the prince regent, afterward George IV. of England.
prin-cess (*prin'ses*), *n.* the daughter of a sovereign; the wife of a prince.
prin-ci-pal (*prin'si-pal*), *adj.* chief; essential: *n.* a principal person or thing; a capital sum lent at interest. [CHIEF.]
prin-ci-pal-i-ty (*-si-pal'i-ti*), *n.* the territory of a prince; royal state; supreme power.
prin-ci-pal-ly (*'si-pal-li*), *adv.* chiefly.
prin-ci-ple (*'si-pl*), *n.* source or origin; element; foundation of morality or religion; uprightness.
Syn. PRINCIPLE, motive. The *principle* lies in conscious and unconscious agents; the *motive* only in conscious agents; all nature is guided by certain *principles;* man is put into action by certain *motives.*
prink (*pringk*), *v. t.* to dress up, or deck out, in a showy or ostentatious fashion.
print (*print*), *n.* a mark or character made by impression; anything produced by printing: *v. t.* to impress; fix or stamp deeply: *v. i.* to practice the art of printing.
printer's devil, the youngest apprentice in a printing office, whose duty it is to do all the dirty jobs. The early printers were by many believed to practice the black art.
print-ing (*'ing*), *n.* the art or act of impressing figures or characters on paper, etc.; typography.
pri-or (*prī'ĕr*), *adj.* coming before, in time; former; *adv.* previously: *n.* a superior officer.
pri-or-ate (*-āt*), *n.* the office, dignity, or government of a prior.
pri-or-i-ty (*-or'i-ti*), *n.* the state of being first in rank, time, or place; first claim.
pri-or-y (*'ĕr-i*), *n.* [*pl.* priories (*-iz*)], a religious house, in dignity below an abbey.
Priscilla (*pris-sil'là*). A diminutive of the Latin *priscus*, "old," "ancient." Dutch, *Priscilla;* Fr., *Priscille;* It., *Prisçilla;* Lat., *Priscilla.*
prism (*prizm*), *n.* a solid whose bases are similar, equal, and parallel, and whose sides are parallelograms.
pris-mat-ic (*priz-mat'ik*), *adj.* pertaining to, like, formed by, or separated by, a prism.
pris-on (*priz'n*), *n.* a public building for the confinement of criminals.
pris-tine (*pris'tin*), *adj.* pertaining to an early period; first; original; primitive.
prith-ee (*prith'ē*), corruption of "I pray thee."
pri-va-cy (*prī'và-si*), *n.* a state of retirement; place of seclusion; secrecy.
Syn. PRIVACY, retirement, seclusion. *Privacy* is opposed to publicity; he who lives in *privacy* is one who follows no public line, who lives so as to be little known; *retirement* is opposed to openness or freedom of access; he who lives in *retirement* withdraws from the society of others, he lives by himself; *seclusion* is the excess of *retirement;* he who lives in *seclusion* bars all access to himself; he shuts himself from the world.
Ant. COMPANY, society, publicity.
pri-vate (*prī'vāt*), *adj.* peculiar to one's self: personal; alone: *n.* a common soldier.
pri-va-teer (*-và-tēr'*), *n.* a private vessel licensed by the government to seize and plunder the ships of an enemy: *v. i.* to cruise in a privateer.
pri-va-tion (*-vā'shun*), *n.* the state of being deprived of something.
priv-a-tive (*priv'à-tiv*), *adj.* causing privation; taking away: *n.* that which depends on the absence of something else.
priv-et (*priv'et*), *n.* an evergreen shrub.
priv-i-lege (*'i-lej*), *n.* peculiar advantage, right, or immunity; prerogative: *v. t.* to exempt. [RIGHT.]
priv-y (*'i*), *adj.* private; secret; clandestine: *n.* a necessary house.
prize (*prīz*), *n.* a reward gained in a competition, lottery, etc.; a lever used for forcing or raising heavy bodies, etc.: *v. t.* to value; esteem; to force with a lever. [VALUE.]
prize fight (*fīt*), a boxing match for stakes.
prob-a-bil-i-ty (*prob-à-bil'i-ti*), *n.* appearance of truth; likelihood.
pro-bate (*prō-bāt'*), *n.* the official proof of wills.
pro-ba-tion (*-bā'shun*), *n.* evidence; proof; moral trial; novitiate.
probe (*prōb*), *n.* a surgical instrument for examining a wound: *v. t.* to examine with a probe.

prob-i-ty (*prob'i-ti*), *n.* integrity; sincerity.
prob-lem (*'lem*), *n.* a question for solution: a proposition requiring something to be demonstrated.
prob-lem-at-ic-al (*-at'i-kal*), *adj.* questionable; doubtful.
pro-bos-cis (*prō-bos'is*), *n.* the elongated snout of certain animals and insects.
pro-ce-dure (*-sē'dūr*), *n.* manner of proceeding; conduct; process.
pro-ceed (*-sēd'*), *v. i.* to pass from one step or place to another; advance; issue; make progress: *n. pl.* (*'sēdz*) money resulting from a commercial transaction.
proc-ess (*pros'es*), *n.* progressive course; series of measures or changes; operation.
pro-ces-sion (*prō-sesh'un*), *n.* a train of persons in a formal march.
pro-ces-sion-al (*-al*), *adj.* pertaining to, or consisting in, a procession.
pro-claim (*-klām'*), *v. t.* to announce officially; publish. [ANNOUNCE.]
proc-la-ma-tion (*prok-la-mā'shun*), *n.* an official announcement to the public; edict. [DECREE.]
pro-cliv-i-ty (*prō-kliv'i-ti*), *n.* an inclination; tendency.
pro-cras-ti-nate (*-kras'ti-nāt*), *v. t.* to put off to a future time; defer: *v. i.* to be dilatory.
pro-cre-ate (*'krē-āt*), *v. t.* to generate and produce; beget.
pro-cre-a-tion (*-ā'shun*), *n.* the begetting and production of young.
Pro-crus-te-an (*-krus'tē-an*), *adj.* pertaining to Procrustes, a fabled robber of ancient Greece.
proc-tor (*prok'tēr*), *n.* one employed to manage the affairs of another.
pro-cur-a-ble (*prō-kūr'ā-bl*), *adj.* obtainable.
proc-u-ra-tion (*prok-ū-rā'shun*), *n.* the act of obtaining young women for immoral purposes.
proc-u-ra-tor (*'ū-rā-tēr*), *n.* one who manages another's affairs, especially legal interests.
pro-cure (*prō-kūr'*), *v. t.* to get or obtain; cause. [PROVIDE.]
prod (*prod*), *n.* a goad; prick: *v. t.* [*p. t.* and *p. p.* prodded, *p. pr.* prodding], to goad.
prod-i-gal (*'i-gal*), *adj.* extravagant in expenditure; lavish; wasteful: *n.* a spendthrift; one who is lavish or wasteful. [EXTRAVAGANT.]
prod-i-gal-i-ty (*-gal'i-ti*), *n.* the state of being prodigal; extravagance; lavishness. [EXCESS.]
pro-di-gious (*prō-dij'us*), *adj.* enormous; adapted to excite wonder. [ENORMOUS.]
prod-i-gy (*prod'i-ji*), *n.* anything wonderful or extraordinary; a miracle; portent. [WONDER.]
pro-duce (*prō-dūs'*), *v. t.* to exhibit or bring to view; yield or bring forth; manufacture; extend: *n.* (*prod'ūs*) that which is yielded or brought forth; result. [EFFECT, ALLEGE, MAKE.]
prod-uct (*prod'ukt*), *n.* work; result; the result of multiplying two or more numbers together.
pro-duc-tion (*prō-duk'shun*), *n.* that which is produced: act of producing fruit; result.

Syn. PRODUCTION, performance, work. The term *production* cannot be employed without specifying or referring to the source from which it is *produced*, or the means by which it is *produced;* as the *production* of art, the *production* of the inventive faculty; a *performance* cannot be spoken of without referring to the individual by whom it has been *performed;* hence we speak of this or that person's *performance*. When we wish to specify anything that results from *work* or labor, it is termed a *work;* in this manner we speak either of the *work* of one's hands, or a *work* of the imagination.

pro-duc-tive (*'tiv*), *adj.* having the power of producing; generative; fertile.
prof-a-na-tion (*prof-a-nā'shun*), *n.* the act of treating sacred things with disrespect or irreverence.
pro-fane (*prō-fān'*), *adj.* secular; irreverent; irreligious; blasphemous: *v. t.* to treat with irreverence; desecrate. [IRRELIGIOUS.]
pro-fess (*-fes'*), *v. t.* to make open declaration of; acknowledge or avow; declare publicly.
pro-fes-sion (*-fesh'un*), *n.* the act of professing; calling or vocation. [BUSINESS.]
pro-fes-sion-al (*-al*), *adj.* pertaining to a profession: *n.* one who makes his living by his art.
pro-fes-sion-al-ism (*-izm*), *n.* the cultivation of athletic sports for pecuniary considerations.
pro-fess-or (*prō-fes'ēr*), *n.* one who publicly teaches any branch of knowledge.
pro-fess-or-ship (*-ship*), *n.* the office or position of a professor.
prof-fer (*prof'ēr*), *v. t.* to offer for acceptance; tender: *n.* an offer made.
pro-fi-cien-cy (*prō-fish'en-si*), *n.* degree of advancement in any branch of knowledge, science, or art.
pro-fi-cient (*'ent*), *adj.* thoroughly qualified, or skilled: *n.* an expert.
pro-file (*'fil*), *n.* a head or portrait in a side view, outline or contour.
prof-it (*prof'it*), *n.* pecuniary gain; benefit or advantage; emolument: *v. t.* to benefit; improve.
prof-it-a-ble (*-a-bl*), *adj.* yielding or bringing profit; lucrative; advantageous.
prof-li-ga-cy (*'li-gā-si*), *n.* a profligate course of life. [Also *profligateness.*]
prof-li-gate (*'li-gāt*), *adj.* abandoned to vice; dissolute; openly vicious.

Syn. PROFLIGATE, abandoned, reprobate. A *profligate* man has lost all by his vices, and consequently to his vices alone he looks for the regaining those goods of fortune which he has squandered; an *abandoned* man is altogether *abandoned* to his passions, which, having the entire sway over him, naturally impel him to every excess; the *reprobate* man is one who has been *reproved* until he becomes insensible to *reproof* and is given up to the malignity of his own passions.

pro-found (*prō-found'*), *adj.* deep in skill or knowledge; abstruse; deep; intense. [OBSCURE.]
pro-fun-di-ty (*-fun'di-ti*), *n.* depth of place, knowledge, skill, etc. [DEPTH.]
pro-fuse (*-fūs'*), *adj.* liberal to excess; exuberant. [EXTRAVAGANT.]
pro-fu-sion (*-fū'zhun*), *n.* lavishness; excess; abundance. [EXCESS.]
pro-gen-i-tor (*-gen'i-tēr*), *n.* an ancestor; forefather. [FOREFATHER.]
prog-e-ny (*proj'en-i*), *n.* offspring; descendants; lineage. [OFFSPRING.]
prog-nos-ti-cate (*prog-nos'ti-kāt*), *v. t.* to foretell: *v. i.* indicate the future by present signs. [FORETELL, OMEN.]
★**pro-gram, pro-gramme** (*prō'gram*, not *prō'grum*), *n.* a course of action prepared or announced beforehand.
prog-ress (*prog'res*), *n.* a moving or going forward; advancement: *v. i.* (*prō-gres'*), to move forward.
pro-gres-sion (*prō-gresh'un*), *n.* motion onward; intellectual advance; progress.
pro-gress-ive (*-gres'iv*), *adj.* moving forward; improving.
pro-hib-it (*-hib'it*), *v. t.* to forbid; interdict by authority; hinder.
pro-hi-bi-tion-ist (*-hi-bish'un-ist*), *n.* one who desires to prohibit the sale of intoxicating liquors.
pro-hib-i-tive (*-hib'i-tiv*), *adj.* tending to prohibit.
proj-ect (*proj'ekt*), *n.* a design or scheme: *v. t.* (*prō-jekt'*) to throw or cast forward: *v. i.* to put out.
pro-ject-ile (*prō-jekt'il*), *n.* a body thrown forward, especially through the air; a bullet, shot.
pro-jec-tion (*-jek'shun*), *n.* that which juts out; a plan or delineation represented on a plane.
pro-lapse (*-laps'*), *n.* a falling down or out of some part of the body: *v. i.* to fall down or out; project too much. [Also *prolapsus.*]
pro-le-ta-ri-an (*prō-lē-tā'ri-an*), *adj.* pertaining to the common people; low; vulgar: *n.* one of the lowest class of society.
pro-le-ta-ri-at (*'ri-at*), *n.* proletarians collectively.
pro-lif-er-ous (*prō-lif'ēr-us*), *adj.* producing another by budding.
pro-lif-ic (*-lif'ik*), *adj.* productive; fertile.
pro-lix (*prō-liks'* or *prō'liks*), *adj.* tedious and verbose; not concise. [DIFFUSE.]
pro-logue (*'log*), *n.* an introduction or preface: *v. t.* to introduce by a preface.
pro-long (*-long'*), *v. t.* to lengthen; extend.
pro-lon-ga-tion (*-long-gā'shun*), *n.* extension in time or space; delay or postponement.
prom-en-ade (*prom-ē-nād'*), *n.* a walk for pleasure; a public place for walking: *v. i.* walk for pleasure.
prom-i-nence (*prom'i-nens*), *n.* the state or quality of being prominent; a projection.
prom-i-nent (*'i-nent*), *adj.* projecting; conspicuous; chief; protuberant.

Syn. PROMINENT, conspicuous. What is *prominent* is, in general, on that very account *conspicuous;* but many things may be *conspicuous* which are not expressly *prominent;* nothing is *prominent* but what projects beyond a certain line; everything is *conspicuous* which may be seen by many.

pro-mis-cu-ous (*prō-mis'kū-us*), *adj.* confused; mingled; indiscriminate.
prom-ise (*prom'is*), *n.* an engagement to do or not to do something: *v. i.* to assure one by a promise: *v. t.* afford reason to expect.

Syn. PROMISE, engagement, word. In *promises* the faith of an individual is admitted upon his *word*, and built upon as if it were a deed; in *engagements* the intentions of an individual for the future are all that are either implied or understood; as a *promise* and *engagement* can be made only by *words* the *word* is often put for either, or for both, as the case requires.

prom-is-so-ry (*'is-ō-ri*), *adj.* containing a promise or covenant to do, or not to do, something.
prom-is-so-ry note (*nōt*), a written promise to pay a certain sum at a specified date in consideration of value received.
prom-on-to-ry (*'on-tō-ri*), *n.* a high cape; a point of land jutting into the sea.
pro-mote (*prō-mōt'*), *v. t.* to advance, forward, or elevate; excite.
pro-mot-er (*'ēr*), *n.* one who promotes, especially one who makes it his business to float new companies.
pro-mo-tion (*-mō'shun*), *n.* the act of promoting; state of being promoted; advancement.
prompt (*prompt*), *adj.* ready and quick to act as occasion demands; immediate; done without delay. [DILIGENT, ACTIVE, READY.]
prompt-i-tude (*prompt'i-tūd*), *n.* quickness of decision and action; readiness; alacrity.
pro-mul-gate (*prō-mul'gāt*), *v. t.* to publish. [PUBLISH, ANNOUNCE.]
prone (*prōn*), *adj.* lying with the face downward; not erect; inclined; disposed. [ADDICTED.]
prone-ness (*'nes*), *n.* the state of being prone; propensity. [INCLINATION.]
prong (*prông*), *n.* a sharp-pointed instrument; the spike of a fork.
pro-nom-i-nal (*prō-nom'i-nal*), *adj.* pertaining to, or of the nature of, a pronoun.
pro-noun (*'noun*), *n.* a word which refers to, or is used in the place of, a noun.
pro-nounce (*-nouns'*), *v. t.* to articulate; utter formally, or rhetorically. [UTTER, SPEAK.]
pro-nounced (*-nounst'*), *p. adj.* strongly marked or decided.
pro-nun-ci-a-tion (*-nun-si-ā'shun*), *n.* the act or manner of articulating words or syllables.
proof (*prōōf*), *n.* testimony or convincing evidence; test; experiment; reason. [TESTIMONY.]
prop (*prop*), *n.* a support or stay: *v. t.* to sustain. [STAFF.]
prop-a-gan-da (*-a-gan'dā*), *n. pl.* any methods for the propagation of doctrines, principles, etc., religious or secular.
prop-a-gate (*'a-gāt*), *v. t.* to continue or spread by generation or successive production; extend: *v. i.* to be produced by generation, or by new shoots or plants.
prop-a-ga-tion (*-gā'shun*), *n.* the act of propagating; spreading or extension.
pro-pel (*prō-pel'*), *v. t.* [*p. t.* and *p. p.* propelled, *p. pr.* propelling], to drive forward; urge onward by force.
pro-pel-ler (*'ēr*), *n.* one who, or that which, propels; a screw-propeller; vessel so propelled.
pro-pen-si-ty (*-pen'si-ti*), *n.* natural tendency. [INCLINATION.]
prop-er (*prop'ēr*), *adj.* noting a particular person or thing; peculiar; fit or suitable; correct; appropriate.
prop-er-ty (*'ēr-ti*), *n.* [*pl.* properties (*-tiz*)], exclusive right of possession; the thing owned; estate.
proph-e-cy (*prof'ē-si*), *n.* a prediction of something to take place in the future.
proph-e-sy (*'ē-si*), *v. t.* [*p. t.* and *p. p.* prophesied, *p. pr.* prophesying], to foretell future events, especially by divine inspiration: *v. i.* to utter prophecies; preach. [FORETELL.]
proph-et (*'et*), *n.* one who foretells future events.
pro-phet-ic (*prō-fet'ik*), *adj.* pertaining to prophecy; predictive. [Also *prophetical.*]
proph-y-lac-tic (*prof-i-lak'tik*), *adj.* guarding, or preserving, against disease: *n.* a preventive of disease.
★**pro-pin-qui-ty** (*prō-ping'kwi-ti*), *n.* nearness of place, time, or relationship.
pro-pi-ti-ate (*-pish'i-āt*), *v. t.* to conciliate; make propitious: *v. i.* to atone.
pro-pi-tious (*-pish'us*), *adj.* favorable; disposed to be merciful.
pro-por-tion (*prō-pōr'shun*), *n.* comparative relation of one thing to another; ratio; rate: *v. t.* to form symmetrically; apportion.
pro-por-tion-al (*-al*), *adj.* having the same ratio: *n.* a quantity or number in proportion.
pro-por-tion-ate (*'shun-āt*), *adj.* adjusted to something else according to a certain rate: *v. t.* to adjust according to a settled rate.

Syn. PROPORTIONATE, commensurate, adequate. *Proportionate* is here a term of general use; the others are particular terms, employed in a similar sense, in regard to particular objects; that is *proportionate* which rises as a thing rises, and falls as a thing falls; that is *commensurate* which is made to rise to the same measure or degree; that is *adequate* which is made to come up to the height of another thing.

pro-pos-al (*-pōz'al*), *n.* that which is offered for consideration or acceptance; offer of marriage.
pro-pose (*-pōz'*), *v. t.* to bring forward or offer for consideration: *v. i.* to make an offer of marriage.
prop-o-si-tion (*prop-ō-zish'un*), *n.* an offer of terms; a theorem or problem for solution.
pro-pound (*prō-pound'*), *v. t.* to offer for consideration. [ANNOUNCE.]
pro-pri-e-ta-ry (*-prī'ē-tā-ri*), *adj.* belonging to a proprietor or proprietary: *n.* a possessor in his own right; proprietors collectively.
pro-pri-e-tor (*'ē-tēr*), *n.* one who has a legal right to anything; owner. [Fem. *proprietress.*]
pro-pri-e-ty (*'ē-ti*), *n.* conformity to established rules or custom; decorum; fitness.
pro-pul-sive (*-pul'siv*), *adj.* having power to propel. [Also *propulsory.*]
pro-rogue (*-rōg'*), *v. t.* to terminate a session of; to postpone.
pro-sa-ic (*-zā'ik*), *adj.* like prose; commonplace; uninteresting. [Also *prosaical.*]
pro-sce-ni-um (*-sē'ni-um*), *n.* that part of the stage from the curtain to the orchestra.
pro-scribe (*-skrīb'*), *v. t.* to punish with civil death; outlaw; interdict.
prose (*prōz*), *n.* ordinary spoken or written language; unmetrical composition.
pros-e-cute (*pros'ē-kūt*), *v. t.* accuse of a crime before a legal tribunal: *v. i.* to carry on a legal prosecution.
pros-e-cu-tion (*-kū'shun*), *n.* pursuit; the institution and carrying on of a legal suit; prosecutor or prosecutors collectively.
pros-e-cu-tor (*'ē-kū-tēr*), *n.* one who carries on a legal suit with another.
pros-e-lyte (*'ē-līt*), *n.* a convert to some religion or belief: *v. t.* to make proselytes of. [CONVERT.]
pros-e-ly-tism (*'ē-li-tizm*), *n.* the act of proselyting; conversion to a creed or system.
pros-o-dy (*pros'ō-di*), *n.* that part of grammar that

treats of quantity, accent, and the laws of versification.

pros-pect (*pros'pekt*), *n.* a view of something distant; scene; object of view; expectation: *v. t.* to search or explore. [VIEW.]

pro-spec-tive (*prō-spek'tiv*), *adj.* looking forward; acting with, or characterized by, foresight.

pros-pec-tor (*pros'pek-tẽr*), *n.* one who searches for valuable minerals.

pro-spec-tus (*prō-spek'tus*), *n.* an outline of a proposed undertaking; sketch, or plan.

pros-per (*pros'pẽr*), *v. t.* to render successful; favor: *v. i.* to thrive; succeed.

pros-per-i-ty (*pros-per'i-ti*), *n.* successful progress in any business or enterprise; good fortune.

pros-per-ous (*pẽr'us*), *adj.* successful; thriving.

pros-ti-tute (*'ti-tūt*), *v. t.* to devote to infamous or improper purposes: *adj.* prostituted: *n.* a woman who indulges in lewdness. A base mercenary or hireling. [ABUSE.]

pros-trate (*'trāt*), *adj.* lying at full length; extended on the ground: *v. t.* to lay flat.

pros-y (*prōz'i*), *adv.* tedious; dull.

pro-te-an (*prō'tẽ-an*), *adj.* readily assuming different shapes.

pro-tect (*-tekt'*), *v. t.* to cover over, defend, shield; shelter; support. [DEFEND.]

pro-tec-tion (*-tek'shun*), *n.* defense; shelter, security; passport.

pro-tec-tion-ism (*-izm*), *n.* the doctrine that certain home industries and produce should be encouraged by the imposition of duties on foreign imports.

pro-tec-tion-ist (*-ist*), *n.* one who advocates or supports protectionism; one who opposes free trade unless it be reciprocal.

pro-tect-or (*-tekt'ẽr*), *n.* one who or that which protects.

pro-tect-or-ate (*-tekt'ẽr-āt*), *n.* government or defense by a protector.

★**pro-tē-gé** (*-tā-zhā'*), *n.* one who is under the protection, guardianship, or care of another.

pro-te-ids (*'tē-idz*), *n. pl.* a class of nitrogenous compounds, as albumen, fibrin, casein, etc., which form animal tissue.

pro-te-in (*'tē-in*), *n.* the gelatinous, semitransparent substance obtained from albumen, fibrin, or casein, the essential principle of food.

pro-test (*-test'*), *v. i.* to affirm with solemnity; remonstrate: *v. t.* to make a solemn declaration or affirmation of: *n.* (*prō'test*) a solemn declaration of opinion against something.

Prot-es-tant (*prot'es-tant*), *n.* a member of any of those bodies of Christians that protest against the spiritual supremacy of the church of Rome. The second diet of Spires, in 1529, declared that the religious differences could only be decided by an ecclesiastical council, thus disallowing the right of private judgment. A solemn protest was made against this decision by many princes of Germany, April 19, 1529, in consequence of which the members of the Reformed churches have since been known as Protestants. The protest was drawn up by Luther and Melanchthon.

prot-es-ta-tion (*-tā'shun*), *n.* a formal declaration of dissent; solemn affirmation.

pro-to-plasm (*prō'tō-plazm*), *n.* a semifluid albuminous substance, regarded as the ultimate basis of physical life, from which all living organisms are formed and developed.

pro-to-plas-mic (*-plaz'mik*), *adj.* pertaining to, or formed of, protoplasm.

pro-to-type (*'tō-tīp*), *n.* the original from which others are copied.

Pro-to-zo-a (*-zō'ā*), *n. pl.* the first or lowest division of the animal kingdom, containing animals of the simplest type of organization.

pro-tract (*-trakt'*), *v. t.* to draw out or lengthen in time; prolong; defer.

pro-trac-tion (*-trak'shun*), *n.* the act of protracting; delay.

pro-tract-or (*-trakt'ẽr*), *n.* a mathmetical instrument for laying down angles on paper; a muscle that draws forward any part.

pro-trude (*-trūd'*), *v. t.* to thrust out or push forward: *v. i.* to shoot forward; project.

pro-tru-sion (*-trū'zhun*), *n.* the act of protruding; the state of being protruded.

pro-tru-sive (*'siv*), *adj.* thrusting or impelling forward.

pro-tu-ber-ant (*-tū'bẽr-ant*), *adj.* swelling; prominent.

proud (*proud*), *adj.* having excessive self-esteem; arrogant; ostentatious; haughty.

prove (*prōōv'*), *v. t.* to ascertain or try by an experiment or test; ascertain the genuineness of; experience.

prov-en (*'en*), *adj.* proved.

Provence (*prō-vȧNs'*). An ancient government of southeastern France. The *Provencia* of Caesar, a name reminding us that it was the first province acquired by Rome beyond the Alps.

prov-en-der (*prov'en-dẽr*), *n.* dry food for beasts, as hay, etc.

prov-erb (*prov'ẽrb*), *n.* a short, familiar, pithy saying; adage.

pro-ver-bi-al (*prō-vẽr'bi-al*), *adj.* pertaining to proverbs; widely spoken of or well known.

pro-vide (*prō-vīd'*), *v. t.* to make ready beforehand; furnish: *v. i.* to procure supplies.

Syn. PROVIDE, procure, furnish, supply. *Provide* and *procure* are both actions that have a special reference to the future; *furnish* and *supply* are employed for that which is of immediate concern; one *provides* a dinner in the contemplation that some persons are coming to partake of it; one *procures* help in the contemplation that it may be wanted; we *furnish* a room, as we find it necessary for the present purpose; one *supplies* a family with any article of domestic use.

Ant. NEGLECT.

pro-vid-ed (*prō-vīd'ed*), *conj.* on condition.

prov-i-dence (*prov'i-dens*), *n.* economy; prudence; foresight. [FRUGALITY.]

Providence, R. I. Name given by Roger Williams in recognition of "God's merciful providence to me in my distress." The Indian name of the locality was *Mooshansick.*

prov-i-dent (*'i-dent*), *adj.* careful for the future; prudent; economical. [CAREFUL.]

prov-i-den-tial (*-den'shal*), *adj.* effected by, or proceeding from, divine providence.

prov-ince (*'ins*), *n.* a division of an empire or state; a dependent country; region.

pro-vin-cial (*prō-vin'shal*), *adj.* pertaining to, or characteristic of, a province; rustic: *n.* one who belongs to a province; countryman.

pro-vi-sion (*-vizh'un*), *n.* measures taken beforehand; accumulation of stores: *pl.* food: *v. t.* to supply with food.

pro-vi-sion-al (*-al*), *adj.* provided for present use; temporary.

pro-vi-so (*-vī'zō*), *n.* a conditional clause or stipulation in a deed.

prov-o-ca-tion (*prov-ō-kā'shun*), *n.* that which excites to anger or resentment; act of provoking.

pro-vo-ca-tive (*prō-vō'kā-tiv*), *adj.* tending to provoke; inciting: *n.* anything that tends to provoke.

pro-voke (*-vōk'*), *v. t.* to excite; enrage or irritate; exasperate. [AGGRAVATE, AWAKEN, EXCITE.]

prov-ost (*prov'ust*), *n.* the head of a college; superintendent or president.

prow (*prou*), *n.* the bow of a ship.

prow-ess (*'es*), *n.* bravery; valor.

prowl (*proul*), *v. i.* to wander stealthily, as for prey or plunder: *n.* a roving for prey or plunder.

prox-i-mate (*proks'i-māt*), *adj.* immediate.

prox-im-i-ty (*-im'i-ti*), *n.* immediate nearness in place, blood, or alliance.

prox-y (*'i*), *n.* [*pl.* proxies (*'iz*)], the agency of a substitute.

prude (*prōōd*) *n.* a woman who affects great reserve, coyness, and excessive virtue.

pru-dence (*prōō'dens*), *n.* the quality of being prudent; wisdom applied to practice. [JUDGMENT, WISDOM, FRUGALITY.]

Prudence. A feminine name given by Puritans. From the Latin *prudentia*, "wisdom," "prudence," "discretion," "knowledge."

pru-dent (*'dent*), *adj.* practically wise; cautious; circumspect.

pru-den-tial (*-den'shal*), *adj.* proceeding from, or influenced by, prudence.

prud-er-y (*prōōd'ẽr-i*), *n.* affected niceness or scrupulousness in conduct; manners of a prude.

prud-ish (*prōōd'ish*), *adj.* like a prude; affectedly precise, nice, or scrupulous.

prune (*prōōn*), *n.* a dried plum: *v. t.* to cut superfluous twigs or branches from; trim.

pru-nel-la (*proo-nel'a*), *n.* a smooth woolen stuff used for shoes and gaiters.

pru-ri-ent (*'ri-ent*), *adj.* having an eager desire for, or characterized by, lewdness; itching.

Prussia. Is the Latinized form of the German name *Preussen*, itself a corruption of an older Lithuanian name. Old Prussia was the duchy formed in the eastern corner of the modern kingdom out of the possessions of the Teutonic knights, whose inhabitants in the tenth century were called *Hruthenі* or *Pruzzі*, which, according to Zeuss, is a Lettish name meaning "neighbors."

prus-sic ac-id (*prus'ik as'id*), hydrocyanic acid, a deadly poison.

pry (*pri*), *v. i.* to inspect closely or with keen scrutiny. [CURIOUS.]

psalm (*sām*), *n.* a sacred song.

psalm-o-dy (*'ō-di*), *n.* the art or practice of singing psalms.

Psal-ter (*sawl'tẽr*), *n.* the Book of Psalms; the prayer book version of the Psalms.

pseu-do, a *prefix* meaning *false*, spurious, as *pseudo*blepsis, false or deceptive vision.

★**pseu-do-nym** (*sū'dō-nim*), *n.* a fictitious name.

pshaw (*shaw*), *interj.* an expression of contempt, etc.

★**psy-chi-cal** (*sī'ki-kal*), *adj.* pertaining to, or connected with, the human soul, spirit, or mind.

psy-cho-log-ic-al (*-kō-loj'i-kal*), *adj.* pertaining to psychology.

psy-chol-o-gist (*-kol'ō-jist*), *n.* one skilled in psychology.

psy-chol-o-gy (*-kol'ō-ji*), *n.* the science that treats of mental phenomena, and their classification and analysis; mental philosophy.

psy-cho-phys-ics (*-kō-fiz'iks*), *n.* the science which treats of the correlation of mind and matter.

Ptol-e-ma-ic (*tol-ẽ-mā'ik*), *adj.* pertaining to Ptolemy, the Greek geographer and astronomer.

Ptolemy (*tol'ẽ-mi*). From the Greek, meaning "warlike," or "mighty in war." Dutch, *Ptolemeus;* Fr., *Ptolémée;* Ger., *Ptolemaus;* Gr., *Ptolemaios;* It., *Tolomeo;* Lat., *Ptolemæus.*

pto-ma-ines (*tō'ma-inz*), *n. pl.* a class of alkaloids of a highly poisonous nature, originating in decaying or dead matter.

pu-ber-ty (*pū'bẽr-ti*), *n.* the age at which the generative powers begin to be developed.

pub-lic (*pub'lik*), *adj.* pertaining to a nation, state or community; belonging to the people: *n.* the people in general.

pub-li-can (*'li-kan*), *n.* one who keeps a public house.

pub-li-ca-tion (*-li-kā'shun*), *n.* the act of publishing or making public.

★**pub-li-cist** (*'li-sist*), *n.* a writer on international law, or on current events of political or social interest.

pub-lic-i-ty (*-lis'i-ti*), *n.* the state of being public; notoriety.

pub-lish (*'lish*), *v. t.* to make known; announce or proclaim; divulge; print and offer for sale; put into circulation.

Syn. PUBLISH, promulgate, divulge, reveal, disclose. *To publish* is the most general of these terms, conveying in its extended sense the idea of making known; but it is in many respects indefinite; we may *publish* to many or few; but *to promulgate* is always to make known to many. We may *publish* that which is a domestic or a national concern; we *promulgate* properly only that which is of general interest; we *divulge* things mostly not to be known; we commonly *divulge* the secrets or the crimes of another; we *reveal* the secret or the mystery of a transaction; we *disclose* the whole affair from beginning to end, which has never been properly known or accounted for. [See *announce, declare.*]

Ant. CONCEAL, hide, hush, suppress.

puck-er (*puk'ẽr*), *v. t.* and *v. i.* to gather into small folds; wrinkle: *n.* a small fold or wrinkle.

pud-ding (*pood'ing*), *n.* a soft kind of food made of flour and various ingredients.

pud-dle (*pud'l*), *n.* a small pool of dirty water.

pueb-lo (*pweb'lō*), *n.* [*pl.* pueblos (*'lōz*)], a building constructed of adobe or sun-dried brick.

Pueblo. County and important manufacturing city, in same county, in Colorado. A Spanish word meaning "a collection of people, a town or village."

pu-er-ile (*pū'ẽr-īl*), *adj.* pertaining to children; juvenile; boyish; trifling. [YOUTHFUL.]

pu-er-il-i-ty (*-il'i-ti*), *n.* the quality of being puerile; childishness.

puff (*puf*), *n.* a short quick blast; sudden forcible breath; a fungous ball filled with dust: *v. i.* to swell with air: *v. t.* to praise in exaggerated terms.

puff-ing (*'ing*), *n.* exaggerated praise; quick and hard breathing.

puff-y (*'i*), *adj.* distended with air or other light matter; windy; bombastic; tumid.

pug (*pug*), *n.* a monkey; a small dog with face and nose like a bulldog.

pug-ging (*'ing*), *n.* the act or operation of working up clay for bricks.

pu-gil-ism (*pū'jil-izm*), *n.* the art or practice of boxing or fighting with the fists; prize fighting.

pug-na-cious (*pug-nā'shus*), *adj.* disposed to fight; quarrelsome.

pug-nac-i-ty (*-nas'i-ti*), *n.* inclination to fight; quarrelsomeness.

★**pu-is-sant** (*pū'is-ant* or *pū-is'ant*, not *pwē'sant*), *adj.* powerful; strong.

puke (*pūk*), *v. i.* and *v. t.* to vomit.

pule (*pūl*), *v. i.* to whine.

pul-ing (*pūl'ing*), *adj.* whining; infantile.

pull (*pool*), *v. t.* to draw toward one; pluck; rend or tear: *v. i.* to tug. [DRAW.]

pull, *n.* a term much used to indicate a person who possesses political or other influence.

pul-let (*'et*), *n.* a young hen.

pul-ley (*'i*), *n.* a small wheel turning about an axis, and having a groove in which a rope works.

pul-mo-na-ry (*pul'mō-nā-ri*), *adj.* pertaining to, or affecting, the lungs.

pulp (*pulp*), *n.* the soft fleshy part of bodies, as of fruit; any soft uniform mass.

pul-pit (*pool'pit*), *n.* an elevated or inclosed desk in a church from which the sermon is delivered; preachers or preaching.

pulp-y (*pulp'i*), *adj.* consisting of, or like, pulp; soft; succulent.

pul-sate (*pul'sāt*), *v. i.* to throb or beat.

pul-sa-tive (*'sa-tiv*), *adj.* beating or throbbing. [Also *pulsatory.*]

pulse (*puls*), *n.* the rhythmic beating of the heart or arteries; vibration: *v. i.* to beat or throb, as the pulse.

pul-ver-ize (*'vẽr-īz*), *v. t.* to reduce to powder.

pum-ice (*pum'is*), *n.* a hard, light, spongy, volcanic lava or rock.

pump (*pump*), *n.* a machine for raising water or other liquid; a slipper: *v. t.* to raise (water or a liquid) by means of a pump.

★**pump-kin** (*pump'kin*, not *pung'kin*), *n.* a plant of the gourd family and its fruit.

pun (*pun*), *n.* a play upon words: *v. i.* to play upon words similar in sound but having a different meaning.

punch (*punch*), *n.* a tool for stamping or perforating; a beverage: *v. t.* to strike with the fist.

Punch and Judy. A contraction for *Pontius* and *Judas.* It is a relic of an old miracle play in which the actors were Pontius Pilate and Judas Iscariot.

punc-til-io (*pungk-til'yō*), *n.* a nice point in conduct or ceremony; formal exactness.

punc-til-ious (*'yus*), *adj.* very nice or precise in conduct or ceremony; exact to excess.

punc-tu-al (*pungk'tū-al*), *adj.* observing, or done at, the exact time. [EXACT.]
punc-tu-al-i-ty (*-al'i-ti*), *n.* the characteristic of keeping the exact time of an appointment or engagement.
punc-tu-ate (*'tū-āt*), *v. t.* to mark with points; divide into sentences by points.
punc-tu-a-tion (*-ā'shun*), *n.* the act or art of dividing sentences by points or stops.
punc-ture (*'tūr*), *n.* a small hole or wound made by a pointed instrument: *v. t.* to make a hole in.
pun-gent (*pun'jent*), *adj.* stinging or pricking; piercing; keen; biting; sarcastic; caustic.
pun-ish (*pun'ish*), *v. t.* to cause loss or pain to, as a penalty for a crime or fault; chastise; correct. [AVENGE.]
pun-ish-ment (*-ment*), *n.* pain, loss, or penalty, inflicted for a crime or fault. [CORRECTION.]
pu-ni-tive (*pū'ni-tiv*), *adj.* pertaining to, or inflicting, punishment.
Punjab or **Punjaub** (*pun-jāb'*). This great northwest Indian territory derives its name from two Persian words, signifying "five rivers." The five affluents of the Indus which give rise to the name are the *Jhelum*, the *Chenab*, the *Ravi*, the *Beas*, and the *Sutlej*.
pun-ster (*pun'stĕr*), *n.* one addicted to, or skilled in, punning.
punt (*punt*), *n.* a flat-bottomed boat for fishing.
pu-ny (*pū'ni*), *adj.* [*comp.* punier, *superl.* puniest], inferior in strength or size; weak; feeble.
pu-pil (*'pil*), *n.* a young person who is under the care of a tutor; scholar; ward.
pup-pet (*pup'et*), *n.* a small doll or image.
pup-py (*'i*), *n.* a whelp; young dog; a conceited young man.
pur-blind (*pûr'blīnd*), *adj.* seeing obscurely.
pur-chase (*pûr'chās*), *v. t.* to obtain by paying an equivalent; acquire; buy; move or raise by the application of some mechanical power: *n.* the act of purchasing; mechanical advantage. [BUY.]
pure (*pūr*), *adj.* free from moral or physical defilement; chaste; unpolluted. [CLEAN.]
pur-ga-tion (*pûr-gā'shun*), *n.* the act of purging; the act of clearing from imputed guilt.
pur-ga-tive (*'gā-tiv*), *adj.* serving to purge.
pur-ga-to-ry (*pûr'ga-tō-ri*), *n.* in the Roman Catholic church, the state after death.
purge (*pûrj*), *v. t.* to cleanse or free from impurities or guilt.
purg-ing (*'ing*), *n.* diarrhœa or dysentery; looseness of the bowels.
pu-ri-fi-ca-tion (*pū-ri-fi-kā'shun*), *n.* the act of purifying; state of being purified.
pu-ri-fi-ca-tive (*pū'ri-fi-kā-tiv*), *adj.* able or tending to purify. [Also *purificatory.*]
pu-ri-form (*'ri-fôrm*), *adj.* like pus.
pu-ri-fy (*'ri-fī*), *v. t.* to render pure; free from impurities, corruptions, or barbarisms.
pur-ist (*pūr'ist*), *n.* one who is scrupulously precise in matters of literary style or the choice of correct words.
pu-ri-tan (*pū'ri-tan*), *n.* one who professes great purity in religious doctrine and practice.
pu-ri-tan-ic-al-ly (*-tan'i-kal-i*), *adv.* after the manner of the Puritans.
pu-ri-tan-ism (*'ri-tan-izm*), *n.* the doctrines and practices of the Puritans.
pu-ri-ty (*'ri-ti*), *n.* the state or quality of being pure; chastity; cleanness.
purl (*pûrl*), *n.* a warm spiced ale, or gin; the continued murmuring sound of a shallow stream: *v. t.* to invert (stitches) in knitting: *v. i.* to ripple or flow with a gentle murmur.
pur-lieus (*pûr'lūz*), *n. pl.* adjacent districts.
pur-loin (*-loin'*), *v. t.* to steal.
pur-ple (*'pl*), *adj.* of the color of blended blue and red; regal; livid; dyed with blood: *n.* purple color; purple robe.
pur-port (*'pôrt*), *n.* meaning; design; signification: *v. t.* to mean or signify.
pur-pose (*'pus*), *n.* design; end or aim desired: *v. t.* to intend or resolve; design: *v. i.* to have an intention. [DESIGN.]
purr (*pûr*), *n.* the low murmuring of a cat when pleased: *v. t.* to signify by purring: *v. i.* to utter a low murmuring sound.
purse (*pûrs*), *n.* a small bag or receptacle for money; sum of money; treasury: *v. t.* to pucker or wrinkle.
pur-su-ant (*pûr-sū'ant*), *adj.* done in consequence or in prosecution of anything; agreeable: *adv.* in consequence of.
pur-sue (*-sū'*), *v. t.* to follow for some end; take and proceed in; prosecute; chase; seek: *v. i.* to go on or continue. [FOLLOW.]
pur-suit (*-sūt'*), *n.* the act of pursuing; prosecution; chase; occupation; attainment.
★**pur-sui-vant** (*'swē-vant*), *n.* an attendant or follower; state messenger.
pu-ru-lent (*pū'rū-lent*), *adj.* consisting of, or containing, pus.
pur-vey (*pûr-vā'*), *v. t.* to provide; procure: *v. i.* to purchase provisions.
pur-vey-ance (*'ans*), *n.* the procuring of provisions; provisions provided.
pur-view (*'vū*), *n.* extent; proviso; body of a statute.
pus (*pus*), *n.* the white, or yellowish-white, matter secreted in sores, etc.
push (*poosh*), *v. t.* to press against with force, urge forward; drive by pressure: *v. i.* to press hard: *n.* thrust; force applied; effort.
pu-sil-la-nim-i-ty (*pū-sil-a-nim'i-ti*), *n.* cowardice.
pu-sil-lan-i-mous (*pū-sil-an'i-mus*), *adj.* cowardly; mean-spirited; faint-hearted.
puss (*poos*), *n.* a cat; hare. [Diminutive, *pussy.*]
pus-tule (*pus'tūl*), *n.* a small elevation of the skin, or pimple, containing pus.
put (*poot*), *v. t.* to place in, or bring into, any state or condition; cause; drive into action; incite.
Syn. PUT, place, lay, set. One *puts* things generally, but the way of *putting* is not defined; we may *put* a thing into one's room, one's desk, one's pocket, and the like; but *to place* is *to put* in a specific manner, and for a specific purpose; one *places* a book on a shelf; *to lay* and *set* are still more specific than *place;* the former being applied only to such things as can be made *to lie;* and *set* only to such as can be made *to stand;* a book may be said *to be laid* on the table when *placed* in a downward position, and *set* on a shelf when *placed* on one end.
pu-ta-tive (*pū'tā-tiv*), *adj.* reputed.
pu-tre-fac-tion (*pū-trē-fak'shun*), *n.* the act or process of putrefying; decomposition; rottenness.
pu-tre-fy (*'trē-fī*), *v. t.* to cause to rot or decay by the decomposition of organic bodies; rot: *v. i.* to become putrid.
pu-tres-cent (*-tres'ent*), *adj.* pertaining to putrefaction; becoming rotten.
pu-trid-i-ty (*-trid'i-ti*), *n.* putrid state. [Also *putridness.*]
put-ter (*put'ĕr*), *n.* in golf, a club used for playing a short, careful stroke.
put-ty (*'i*), *n.* a compound of whiting and linseed oil used in glazing.
puz-zle (*puz'l*), *n.* something that tries the ingenuity, perplexes, or causes embarrassment: *v. t.* to be puzzled: *v. t.* to perplex.
py-e-mi-a, pyæmia (*pī-ē'mi-a*), *n.* blood poisoning.
pyg-my (*pig'mi*), *n.* one of a small race mentioned by Herodotus, and found in central Africa by numerous modern travelers. [Also *pigmy.*]
py-lor-ic (*pi-lor'ik*), *adj.* pertaining to the pylorus.
py-lo-rus (*-lō'rus*), *n.* the lower and right opening of the stomach, leading to the small intestines.
pyr, a *prefix*, meaning *fire*, as *pyracanth*, a plant with flame colored flowers. [Also *pyro*, as *pyroscope.*]
pyr-a-mid (*pir'a-mid*), *n.* a solid body standing on a triangular, square, or polygonal base, having its triangular sides terminating in a point at the apex.
py-ram-i-dal (*pi-ram'i-dal*), *adj.* shaped like a pyramid. [Also *pyramidic, pyramidical.*]
pyre (*pir*), *n.* a funeral pile.
Pyrenees (*pir'ĕ-nēz*). The mountain chain separating France from Spain is the *Mons Pyrenæus* of the Greek and Roman geographers. The name first appears in Herodotus, who supposed *Pyrene* was the name of the place where the Danube flowed. The etymology is unknown, being probably pre-Aryan. Many guesses have been made from Basque, Celtic, and Greek sources, explaining the name as the "high," "steep," "pine clad," or "burnt," mountains. The most probable derivation is from *biren* or *pyren*, a local word, doubtless ultimately Basque or Iberian, which signifies "a summit" or "ridge."
★**py-ri-tes** (*pi-rī'tēz*), *n.* a native compound of sulphur with iron, copper, etc.
py-ro-col-lo-di-on (*pī-rō-kol-lō'di-un*), *n.* a smokeless powder, used by Russia.
pyr-o-ma-ni-a (*pir-ō-mā'ni-a*), *n.* an insane impulse to destroy by fire.
py-rom-e-ter (*pi-rom'ĕ-tĕr*), *n.* an instrument for measuring the temperature or expansion of bodies under the influence of heat.
py-ro-tech-nic (*pī-rō-tek'nik*), *adj.* pertaining to fireworks or the art of making them.
py-ro-tech-nics (*'niks*), *n.* fireworks or the art of making them. [Also *pyrotechny.*]
pyr-rhic (*pir'ik*), *n.* a metrical foot of two syllables; an ancient Greek military dance: *adj.* pertaining to such a dance.
py-thon (*pi'thon*), *n.* a large nonvenomous serpent nearly allied to the boa.
pyth-o-nism (*pith'ō-nizm*), *n.* the art of predicting future events by divination, after the manner of the ancient oracle at Delphi.
pyx (*piks*), *n.* the box in which selected coins are placed at the mint to be tested prior to their issue as currency.

Q

quack (*kwak*), *n.* the cry of the duck; a pretender to medical skill: *v. i.* to cry like a duck.
quack-er-y (*'ĕr-i*), *n.* boastful pretension to skill in medicine; false pretensions to any art; imposture; empiricism.
quad (*kwod*), *n.* the court of a college, prison, etc.; a quadrat.
quad-ra (*'ra*), *n.* a square border or fillet of an Ionian column. *Prefix* meaning *four.* [Also *quadr, quadri, quadru.*]
quad-ra-ges-i-ma (*-ra-jes'i-ma*), *n.* Lent.
quad-ran-gle (*'rang-gl*), *n.* an open square surrounded by buildings; a plane figure with 4 angles and 4 sides.
quad-ran-gu-lar (*'gū-lĕr*), *adj.* having the form of a quadrangle.
quad-rant (*'rant*), *n.* the 4th part of a circle, an arc of 90 degrees; an instrument for taking elevations.
quad-rate (*kwod'rāt*), *adj.* having 4 equal sides and 4 right angles.
quad-rat-ic (*-rat'ik*), *adj.* pertaining to, or involving, a square.
quad-ra-ture (*'ra-tūr*), *n.* the act of squaring; the reduction of a figure to a square, exactly or approximately.
quad-ren-ni-al (*-ren'ni-al*), *adj.* comprising, or occurring, every 4 years.
quad-ri-lat-er-al (*-ri-lat'ĕr-al*), *n.* a plane figure with 4 sides and 4 angles.
qua-drille (*kwa-dril'* or *ka-dril'*), *n.* a dance by four sets of couples; a game at cards played by four persons.
quad-ril-lion (*kwod-ril'yun*), *n.* the French system of numeration, followed in the United States, a thousand trillions.
quad-roon (*-rōōn'*), *n.* the offspring of a mulatto and a white.
quad-ru-ped (*'roo-ped*), *n.* a four-footed animal: *adj.* four-footed.
quad-ru-ple (*'roo-pl*), *adj.* fourfold: *v. t.* to multiply by four; *v. i.* to increase fourfold.
quaff (*kwaf*), *v. t.* to drink or swallow in large quantities: *v. i.* to drink luxuriously.
quag-mire (*kwag'mir*), *n.* wet, boggy ground, yielding under the feet.
quail (*kwāl*), *v. i.* to sink in spirit or by dejection; lose heart; cower: *n.* a gallinaceous bird.
quaint (*kwānt*), *adj.* singular and antique; not expressed or shown in the usual way; odd; neat. [ANTIQUE.]
quake (*kwāk*), *v. i.* to tremble or shake; be agitated: *n.* a tremble or shudder.
Quaker. (*'ĕr*). This name was originally applied by a Derby, England, magistrate to the members of the Society of Friends, because George Fox, the founder, admonished him and those present to tremble at the name of the Lord.
qual-i-fi-a-ble (*kwol'i-fī-a-bl*), *adj.* that may be qualified.
qual-i-fi-ca-tion (*-fi-kā'shun*), *n.* any quality, endowment, or acquirement which fits a person for any office or occupation.
Syn. QUALIFICATION, accomplishment. The *qualification* serves the purpose of utility; the *accomplishment* serves to adorn; by the first we are enabled to make ourselves useful; by the second we are enabled to make ourselves agreeable.
qual-i-fy (*'i-fī*), *v. t.* to render fit or capable for any office, occupation, etc.: *v. i.* to become qualified. [COMPETENT.]
qual-i-ta-tive (*'i-tā-tiv*), *adj.* pertaining to quality; determining the nature of component parts.
qual-i-ty (*'i-ti*), *n.* [*pl.* qualities (*-tiz*)], peculiar power or property; attribute; disposition; rank; superior birth.
qualm (*kwām*), *n.* a sudden fit of sickness; nausea; scruple.
quan-da-ry (*kwon'dā-ri*), *n.* a state of difficulty or perplexity; fix.
quan-ti-ta-tive (*'ti-tā-tiv*), *adj.* pertaining to quantity. [Also *quantitive.*]
quan-ti-ty (*'ti-ti*), *n.* any indeterminate bulk, weight, or number; large portion, sum, or mass.
quar-an-tine (*kwor'an-tēn*), *n.* the time (usually 40 days) during which a vessel from foreign parts suspected to be infected with contagious disease is prohibited from intercourse with the shore: *v. t.* to place under quarantine.
quar-rel (*'el*), *n.* an angry dispute, petty fight; altercation: *v. i.* to dispute violently.
Syn. QUARREL, broil, feud. *Quarrel* is the general and ordinary term; *broil* and *feud*, including active hostility, are particular terms. but the former respects the complaints and charges which are reciprocally made; *broil* respects the confusion and entanglement which arises from a contention and collision of interest; *feud* respects the hostilities which arise out of the variance. [See *feud.*]
quar-rel-some (*-sum*), *adj.* inclined to quarrel; contentious; easily provoked; irascible.
quar-ry (*'i*), *n.* a place where stone is dug out for building purposes, etc.: *v. t.* to dig or take from a quarry.
quart (*kwawrt*), *n.* 2 pints, or 1-4th of a gallon; a sequence of 4 cards in the game of piquet.
quar-ter (*kwawr'tĕr*), *n.* the 4th part; mercy: *pl.* lodgings, especially for soldiers: *v. t.* to divide into four equal parts; furnish with lodgings, as soldiers.
quar-ter-deck (*-dek*), *n.* that part of a ship which is abaft the mainmast.
quar-ter-ly (*'li*), *adj.* consisting of, or containing, a quarter: *adv.* once each quarter of the year: *n.* a publication issued every quarter.
quar-ter-mas-ter (*'tĕr-mās-tĕr*), *n.* in the navy, a petty officer who attends to the steerage, signals, stowage, etc., of ships.
quar-tet (*-tet'*), *n.* anything in fours; musical composition in 4 parts for 4 voices or instruments.
quar-to (*'tō*), *n.* [*pl.* quartos (*'tōz*)], a book having the sheet folded into 4 leaves (abbreviated *4 to.*): *adj.* having 4 leaves in a sheet.
quartz (*kwawrts*), *n.* a mineral compound of pure silica.
★**quash** (*kwosh*, not *qwash*), *v. t.* to crush; subdue suddenly, or completely; annul. [ABOLISH.]
qua-si, a *prefix* meaning *as if were, apparently, nearly.*
quas-si-a (*kwosh'i-a*), *n.* a South American tree yielding bark and wood of excessive bitterness.

qua-ter-ni-on (*kwâ-tĕr'ni-un*), *n.* the number 4; set of 4, a file of 4 soldiers.
qua-tre-foil (*kă't ĕr-foil*), *n.* in heraldry, four-leaved grass; an ornamental figure in architectural tracery divided by cusps into 4 leaves.
qua-ver (*kwā'vĕr*), *v. i.* to shake or tremble; vibrate.
quay (*kē*), *n.* a wharf for loading or unloading vessels.
Quebec (*kwē-bek'*). The former capital of Canada, arose around a blockhouse built by Champlain in 1608. The name is believed to refer to the "narrowing" of the river at this point to which Champlain alludes. Another account says it was named after Quebesq in Brittany, "the village on the point"; while a third derives it from an Algonquin term signifying "take care of the rock."
queen (*kwēn*), *n.* a female ruler; consort of a king.
Queen Charlotte Island. Named in compliment to the queen of George III.
queen-ly (*'li*), *adj.* like, or befitting, a queen.
queen-post (*-pōst*), *n.* one of two vertical timbers in a roof rising from the tie beam.
queen reg-nant (*reg'nant*), a queen in her own right.
Queensland. A state of Australia; named for Queen Victoria.
Queenstown. An Irish seaport; named for Queen Victoria.
queer (*kwēr*), *adj.* odd; singular; droll; strange; out of health.
quell (*kwel*), *v. t.* to crush or subdue; put an end to; calm; allay.
quench (*kwench*), *v. t.* to put out or extinguish; check; allay.
Quentin. See *Quintin.*
quer-i-mo-ni-ous (*kwer-i-mō'ni-us*), *adj.* complaining; querulous; discontented.
que-rist (*kwē'rist*), *n.* one who asks questions.
querl (*kwĕrl*), *v. t.* to coil.
quer-u-lous (*kwer'ū-lus*), *adj.* complaining; discontented.
que-ry (*kwē'ri*), *n.* a question: *v. t.* to examine by questions; mark with a query: *v. i.* to ask questions. [QUESTION.]
quest (*kwest*), *n.* search; inquiry; jury of inquest: *v. t.* to search or seek for.
ques-tion (*kwes'chun*), *n.* an inquiry; act of asking; interrogation: *v. t.* to ask or interrogate: *v. i.* to ask a question.

Syn. QUESTION, query. *Questions* and *queries* are both put for the sake of obtaining an answer; but the former may be for a reasonable or unreasonable cause; a *query* is mostly a rational question; idlers may put *questions* from mere curiosity; learned men put *queries* for the sake of information. [See *ask.*]

Ant. ANSWER, reply, response.
ques-tion-a-ble (*-a-bl*), *adj.* that may be questioned; doubtful; suspicious. [EQUIVOCAL.]
★queue (*kū*), *n.* the tail of a wig.
quib-ble (*kwib'l*), *n.* a petty evasion or cavil: *v. i.* to evade the truth by artifice or evasion; play on words.
quick (*kwik*), *adj.* rapid; hasty; active; nimble; ready: *adv.* quickly. [ACTIVE.]
quick-en (*'en*), *v. i.* to impart life; vivify; show signs of life in the womb: *v. t.* to increase the speed of; to resuscitate; stimulate; cheer.
quick-en-ing (*'en-ing*), *adj.* vivifying.
quick-lime (*'līm*), *n.* lime burnt and unslacked.
quick-sand (*'sand*), *n.* sand easily moved or readily yielding to pressure.
quick-sil-ver (*'sil-vĕr*), *n.* fluid mercury: *v. t.* to overlay with an amalgam of mercury and tinfoil.
quid (*kwid*), *n.* a plug of tobacco for chewing; a sovereign.
quid-di-ty (*'i-ti*), *n.* [*pl.* quiddities (*-tiz*)], the essence of anything; a trifling nicety.
quid-nunc (*'nungk*), *n.* one who pretends to a knowledge of current events.
qui-esce (*kwī-es'*), *v. i.* to be silent.
qui-es-cence (*'ens*), *n.* repose or rest; mental quietude. [Also *quiescency.*]
qui-et (*kwī'et*), *adj.* free from motion, disturbance, or alarm; still; calm; peaceable; gentle; not showy: *v. t.* to calm or pacify. [EASE, PEACE, CALM.]
qui-e-tus (*-ē'tus*), *n.* rest; death; final settlement or discharge.
quill (*kwil*), *n.* the large strong feather of a bird's wing.
quilt (*kwilt*), *n.* a kind of coverlet or counterpane: *v. t.* to stitch together, as two pieces of cloth.
quilt-ing (*'ing*), *n.* the act or process of making a quilt; material for quilting; quilted work.
qui-nine (*kwī'nīn, kwī'nin,* or *kwi'nēn*), *n.* an alkaline substance obtained from the bark of the cinchona tree.
quin-quen-ni-al (*kwin-kwen'i-al*), *adj.* recurring once in, or lasting, five years.
Quinsigamond (*kwin-sig'ă-mond*) **lake, Mass.** Indian word meaning "fishing place for pickerel."
quin-sy (*'zi*), *n.* inflammation of the tonsils or the throat.
quint (*kwint*), *n.* a set or sequence of five.
quin-tes-sence (*kwin-tes'ens*), *n.* the pure, concentrated essence of anything; vital or essential part.
quin-tet (*-tet'*), *n.* a musical composition in five obligato parts. [Also *quintette, quintetto.*]
quin-til-lion (*-til'yun*), *n.* in the United States, a thousand quadrillions; in the English system, a million raised to the fifth power.
Quintin, Quintyne (*kwin'tin*). From the Latin name *Quintinus,* formed from the name *Quintus.*
Quintus (*kwin'tus*). The Roman name signifying "the fifth," *i. e.,* the fifth son in order of birth.
quip (*kwip*), *n.* a short sarcastic turn or retort; jeer: *v. i.* to scoff; jeer.
quire (*kwīr*), *n.* 24 sheets; an obsolete form of choir.
Quirinal (*kwi'ri-nal* or *kwir-i'nal*). The farthest north and the highest of the seven hills of ancient Rome, lying northeast of the Capitoline and northwest of the Viminal. It has its name from an old Sabine sanctuary of *Quirinus* (Mars). On the hill stands the palace of the *Quirinal,* the former summer palace of the pope.
quirk (*kwĕrk*), *n.* an artful evasion; subterfuge; quibble.
quit (*kwit*), *v. t.* to depart from; discharge. [LEAVE, ABANDON.]
quite (*kwīt*), *adj.* wholly; completely.
quiv-er (*kwiv'ĕr*), *n.* a case for arrows; a trembling or shivering: *v. i.* to tremble, shake, or shiver.
quix-ot-ic (*kwiks-ot'ik*), *adj.* chivalrous or romantic to extravagance.
quix-ot-ic-al-ly (*i-kal-li*), *adv.* in a quixotic manner.
quiz (*kwiz*), *n.* an enigma or obscure question designed to puzzle any one: *v. t.* to puzzle; make fun of. It is said that Daly, the manager of a Dublin playhouse, laid a wager that a new word of no meaning should be the common talk and puzzle of the city in twenty-four hours. In consequence of this the letters *q u i z* were chalked by him on all the walls of Dublin, with an effect that won the wager.
quiz-zic-al (*'i-kal*), *adj.* given to, or of the nature of, quizzing; comical.
quoin (*koin*), *n.* external angle of a building; wedge-shaped wooden block to tighten the pages of type within the chase.
★quoit (*kwoit* or *koit*), *n.* a circular ring of iron to be pitched at a fixed object: *pl.* the game thus played.
★quo-rum (*kwō'rum,* not *kwŏ'rum*), *n.* the number of members of a body or corporation competent to transact business by law or constitution.
quo-ta (*kwō'tă*), *n.* the part or share assigned to each.
quo-ta-tion (*-tā'shun*), *n.* the act of quoting; that which is quoted; current price.
quote (*kwōt*), *v. t.* to adduce (a passage) from some author or speaker, for authority or illustration; give the current price of. [CITE.]
quoth (*kwōth*), *v. i.* said.
quo-tient (*kwō'shent*), *n.* the number resulting from the division of one number by another.

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rab-bet (*rab'et*), *n.* a groove cut longitudinally in the edge of a plank: *v. t.* to groove and unite by a rabbet.
rab-bi (*'i* or *ī'*), *n.* [*pl.* rabbis (*'īz*)], a Jewish doctor or interpreter of the law. [*Pl.* also *rabbin.*]
rab-bin-ic (*-bin'ik*), *adj.* pertaining to the rabbis, their doctrines, learning, and language.
rab-bin-ism (*'in-izm*), *n.* rabbinic phraseology.
rab-bit (*'it*), *n.* a burrowing rodent animal, esteemed for food and its fur.
rab-ble (*'l*), *n.* a noisy crowd or mob, especially of the lower orders.
rab-id (*'id*), *adj.* mad; enthusiastic to excess.
ra-bi-es (*rā'bi-ēz*), *n.* canine madness; madness caused by the bite of a dog; hydrophobia.
rac-coon (*rak-kōōn'*), *n.* a badgerlike animal of North America with a valuable fur. [Also *racoon.*]
race (*rās*), *n.* a rapid course, as of an animal or river; contest of speed; career; descent or lineage: *v. i.* to run swiftly; contend in running.
Rachel (*rā'chel*). From the Hebrew *Rahhel,* usually translated "a ewe." Fuerstius translates the name "mutterschaft," *i. e.,* motherhood, maternity. Fr., *Rachel;* Ger., *Rahel* or *Rachel;* It., *Rachele;* Lat., *Rachel;* Sp., *Raquel;* Sw., *Rachel.*
ra-cial (*rā'shal*), *adj.* pertaining to race or lineage.
rack (*rak*), *n.* an instrument for stretching or straining; a grating above a manger for holding hay: *v. t.* torture; wrest; perplex; exhaust.
rack-et (*'et*), *n.* a clattering noise; a network bat used in tennis.
ra-coon. Same as *raccoon.*
rac-quet. Another form of *racket.*
ra-cy (*rā'si*), *adj.* having a strong flavor; mentally exciting; piquant.
rad-dle (*rad'l*), *n.* a hedge of branches interwoven: *v. t.* to interweave.
ra-di-al (*rā'di-al*), *adj.* pertaining to, like, or used as, a ray; pertaining to the radius of the forearm.
ra-di-ance (*'di-ans*), *n.* brightness shooting in rays; brilliant brightness; splendor.

Syn. RADIANCE, brilliancy. *Radiance* denotes the emission of rays, and is, therefore, peculiarly applicable to bodies naturally luminous, like the heavenly bodies; and *brilliancy* denotes the whole body of light emitted, and may, therefore, be applied equally to natural and artificial light.

ra-di-ant (*'di-ant*), *adj.* emitting rays of light or heat; shining; brilliant.
ra-di-ate (*'di-āt*), *v. t.* to send out, as rays: *v. i.* to emit, or issue forth in rays: *adj.* having rays.
ra-di-a-tion (*-ā'shun*), *n.* the emission or diffusion of rays of light or heat from one luminous or heated body to another.
ra-di-a-tor (*rā'di-ā-tĕr*), *n.* a chamber, coil, drum, etc., in an apartment for radiating warmth into the apartment.
rad-i-cal (*rad'i-kal*), *adj.* pertaining to the root or origin: *n.* a simple underived word.
rad-i-cate (*'i-kat*), *v. t.* to plant deeply and firmly: *v. i.* to take root: *adj.* deeply planted or rooted.
ra-di-o-ac-tive (*rā'di-ō-ak'tiv*), *adj.* emitting Becquerel rays; exhibiting the properties possessed by radium.
ra-di-o-fy (*-fī*), *v. t.* [*p. t.* and *p. p.* radiofied, *p. pr.* radiofying], to cause to become radio-active by exposing to the influence of radium.
ra-di-o-graph (*-graf*), *n.* a picture obtained by means of radiography: *v. t.* to produce (a likeness) of by means of radiography.
ra-di-og-ra-phy (*rā-di-og'rā-fi*), *n.* the art or process of producing pictures by the action of Roentgen rays upon certain sensitive salts.
ra-di-o-te-leg-ra-phy (*-tē-leg'rā-fi*), *n.* telegraphing through the air without aid of wires; wireless telegraphy.
★rad-ish (*rad'ish*, not *red'ish*), *n.* a plant with an edible root, used as a salad.
ra-di-um (*rā'di-um*), *n.* a recently discovered element possessing the property of giving off luminous and actinic rays, accompanied by heat, without apparent loss of energy or weight.
ra-di-us (*rā'di-us*), *n.* [*pl.* radii (*-ī*)], a straight line from the center to the circumference of a circle.
ra-dix (*'diks*), *n.* a root; a primitive word; base of a system of logarithms.
Rafael. See *Raphael.*
Rafaele or **Raffaelle.** See *Raphael.*
raff (*raf*), *n.* a jumble; refuse; the rabble.
raf-fle (*raf'l*), *n.* a kind of lottery: *v. t.* to dispose of by raffle: *v. i.* to take part in a raffle.
raft (*răft*), *n.* pieces of timber fastened together for transport by floating; a floating wooden framework: *v. t.* to carry on a raft.
raft-er (*'ĕr*), *n.* an inclined beam supporting the roof of a house.
rafts-man (*răfts'man*), *n.* a man who manages a raft upon a river.
rag (*rag*), *n.* a fragment of cloth. [fellow.
rag-a-muf-fin (*'a-muf-in*), *n.* a low, disreputable
rage (*rāj*), *n* excessive and uncontrolled anger; vehemence; extreme violence. [ANGER, MADNESS.]
rag-ged (*rag'ed*), *adj.* rent or worn into rags; clothed in tattered garments; destitute; rough.
ra-gout (*rā-gōō'*), *n.* a dish of stewed and highly seasoned meat.
rag-time (*'tīm*), *n.* syncopated time, characteristic of negro melodies.
Rahway (*raw'wā*), **N. J.** From the river; its name traditionally traced to a Raritan chief named *Rahwack,* who had his habitation near the river's mouth.
raid (*rād*), *n.* a hostile or predatory incursion: *v. t.* to make a raid upon.
rail (*rāl*), *n.* wooden or iron fence; a wading bird with a harsh cry: *v. i.* to brawl: *v. t.* to inclose with rails. [ABUSE.]
rail-ing (*'ing*), *n.* material for rails; fence made of posts and rails: *adj.* insulting or reproaching.
rail-ler-y (*'ĕr-i*), *n.* good-humored irony or satire; banter.
rail-way (*'wā*), *n.* a way or road laid with two parallel iron or steel rails along which cars are drawn by steam power, electricity, etc.
rai-ment (*rā'ment*), *n.* clothing.
rain (*rān*), *n.* water in drops discharged from the clouds: *v. i.* to fall in drops from the clouds: *v. t.* to pour down like rain.
rain-bow (*'bō*), *n.* the bright-colored arc formed in the heavens.
rain-fall (*'fawl*), *n.* the amount of rain that falls on any given area.
Rainier (*rā'nēr*). Town in Columbia county, Oregon, and mountain in Washington, named for Rear-Admiral Rainier.
rain-y (*rān'i*), *adj.* abounding with rain.
raise (*rāz*), *v. t.* to cause to rise; lift up; elevate; levy; collect.
rai-sin (*rā'zn*), *n.* a dried grape.
rake (*rāk*), *n.* a toothed implement for smoothing the soil; a rascal: *v. t.* to gather or smooth with a rake.
rak-ish (*rāk'ish*), *adj.* dissolute; debauched.
Raleigh (*raw'li*), **N. C.** A city, named in honor of Sir Walter Raleigh, who located a colony on Roanoke island, July 23, 1587.
ral-ly (*ral'i*), *v. t.* [*p. t.* and *p. p.* rallied, *p. pr.* rallying], to collect and arrange, as troops in confusion; reunite: *v. i.* to return to order; recover strength.
Ralph. From the Teutonic, meaning "warrior-wolf." Dutch, *Rudolf;* Fr., *Raoul;* It., *Raolfo;* Lat., *Radulphus;* Sp., *Rodolfo;* Sw., *Rudolf.*
ram (*ram*), *n.* the male of the sheep; a military engine for battering: *v. t.* to push or press with force.
ram-ble (*'bl*), *v. i.* to wander or rove about; visit many places. [EXCURSION.]
ram-i-fi-ca-tion (*ram-i-fi-kā'shun*), *n.* a division or separation into branches; subdivision.
ram-i-fy (*'i-fī*), *v. t.* to divide into branches, or divisions: *v. i.* to shoot into branches.
ramp-age (*ramp'āj*), *v. i.* to prance about with unrestrained spirits; be furious: *n.* a state of excitement.

ramp-ant (*ramp'ant*), *adj.* overleaping rest raint or natural bounds.
ram-part (*ram'pärt*), *n.* a mound or wall surrounding a fortified place.
ram-rod (*'rod*), *n.* a rod used for ramming down the charge of a gun.
ram-shac-kle (*'shak-l*), *adj.* loose; out of repair.
ranch (*ranch*), *n.* a cattle farm. [Also *ranche, rancho* (Mexican).]
ran-cid (*ran'sid*), *adj.* having a rank, unpleasant smell; sour or musty.
★**ran-cor** (*rang'kẽr*, not *ran'kẽr*), *n.* implacable enmity; deep spite or malice.
ran-cor-ous (*-us*), *adj.* malignant; spiteful.
Randolph. Properly *Radolph*, the same as the German names *Radulph, Radolf, Radolph;* from Old German *rad-ulph*, "help or counsel."
ran-dom (*ran'dum*), *n.* want of direction or method; chance: *adj.* done haphazard; left to chance.
range (*rānj*), *v. t.* to set or arrange in a row; place in proper order; rove over: *n.* a rank or row; order or class.
Rangeley. Town and plantation in Franklin county, Maine, and one of the Androscoggin lakes in the same state, named for an Englishman, an early settler and large landowner.
ran-ger (*rān'jẽr*), *n.* a rover; the chief official or keeper of a park or forest; a variety of dog.
Rangoon (*răn-gōōn'*). The chief town and port of Burma, is called in Burmese *Ran-kun*, the "end of the war," literally, enmity exhausted. A name given in 1763, by Alompra, the founder of the Burmese dynasty, who, after the destruction of the city of Pegu, established the capital of the kingdom near the famous golden pagoda called Da-gun, with which *Ran-kun* may probably be connected by assonance.
rank (*rangk*), *n.* station or position; grade; dignity; eminence: *v. t.* to draw up in line: *v. i.* to hold a certain position: *adj.* excessive. [CLASS.]
ran-kle (*'l*), *v. i.* to grow more rank or strong; fester; become mentally disquieted or irritated.
★**ran-sack** (*ran'sak*, not *ram'săck*), *v. t.* to search minutely; rummage; plunder.
ran-som (*'sum*), *v. t.* to free from captivity, slavery, or punishment, by a payment; atone for: *n.* price paid for release from captivity.
rant (*rant*), *v. i.* to bluster or be noisily wordy; rave in extravagant or violent language: *n.* noisy, empty declamation.
Raoul. See *Ralph.*
rap (*rap*), *v. i.* to strike a quick, sharp blow; knock: *v. t.* to strike sharply: *n.* a quick, sharp blow.
ra-pa-cious (*rā-pā'shus*), *adj.* given to plunder; seizing forcibly; subsisting on prey; greedy.
Syn. RAPACIOUS, ravenous, voracious. *Rapacious* is the quality peculiar to beasts of prey, or what is like beasts of prey. A lion is *rapacious* when it seizes on its prey; it is *ravenous* in the act of consuming it. The word *ravenous* respects the haste with which one eats; the word *voracious* respects the quantity which one consumes: a *ravenous* person is loath to wait for the dressing of his food; he consumes it without any preparation; a *voracious* person not only eats in haste, but he consumes great quantities, and continues to do so for a long time.
ra-pac-i-ty (*-pas'i-ti*), *n.* the quality of being rapacious. [Also *rapaciousness.*]
rape (*rāp*), *n.* a seizing and carrying away by force; the seizure and carnal knowledge of a woman against her will.
Raphael (*raf'ā-el, rā'fā-el, rā'fà-el*). From the Hebrew *R'phael*, "healed of God," or "whom God healed." Fr., *Raphael;* Ger., *Raphael;* It., *Rafaele* or *Raffaelle;* Lat., *Raphael;* Sp., *Rafael.*
rap-id (*rap'id*), *adj.* very quick or swift; expeditious: *n. pl.* a swift current in a river where the channel is descending.
Rapidan (*rap-i-dan'*) **river, N. C.** Corruption of *Rapid Anne*, the suffix being given in honor of Queen Anne of England.
ra-pi-er (*rā'pi-ẽr*), *n.* a long thin sword, used for thrusting.
rap-ine (*rap'in*, or *'in*), *n.* the act of plundering or seizing forcibly; pillage; violence.
Rappahannock (*rap-pà-han'nuk*) **river, Va.** Indian *lappihanne*, "river of quick, rising water," also noted as *toppehannock.*
rap-port (*-pōrt'*), *n.* harmonious relation; affinity.
rap-proche-ment (*rà-prōsh'măN*), *n.* the act of coming together; an understanding.
rap-scal-lion (*rap-scal'yun*), *n.* a rascal.
rapt (*rapt*), *p. adj.* transported; ravished.
rap-ture (*rap'tūr*), *n.* extreme pleasure or delight; ecstasy; enthusiasm.
rare (*rār*), *adj.* [*comp.* rarer, *superl.* rarest], scarce; uncommon; unusual; thinly scattered.
Syn. RARE, curious, extraordinary, incomparable, infrequent, odd, peculiar, precious, remarkable, scarce, singular, strange, unique. *Rare* is *infrequent* of its kind; *unique* is alone of its kind; great poems are *rare; Paradise Lost* is *unique; rare* has the added sense of *precious*, which is sometimes, but not necessarily, blended with that above given; as, a *rare* gem; *extraordinary*, signifying greatly beyond the ordinary, is a neutral word; as, *extraordinary* genius, *extraordinary* wickedness. [See *obsolete.*]
Ant. COMMON, ordinary, plentiful.
rare-bit (*'bit*), *n.* a dainty morsel.
rar-e-fac-tion (*rar-ē-fak'shun*), *n.* the act of rarefying or rendering less dense.
rar-e-fy (*rar'e-fi*), *v. t.* to make rare, thin, or less dense; expand: *v. i.* to become less dense.
rare-ly (*rār'li*), *adv.* seldom.
rare-ness (*'nes*), *n.* the state or quality of being rare.
Raritan (*rar'i-tan*) **river, N. J.** From a local tribe of Indians, the *Raritans.*
rar-i-ty (*'i-ti*), *n.* a rare article; exceptional excellence; rareness.
ras-cal (*ras'kal*), *n.* a mean fellow; a scoundrel; one who is guilty of mean offenses.
ras-cal-i-ty (*-kal'i-ti*), *n.* the state of being a rascal; petty villainy or dishonesty.
rash (*rash*), *adj.* hasty; incautious; precipitate: *n.* a slight cutaneous eruption. [FOOLHARDY.]
rash-er (*'ẽr*), *n.* a slice of bacon.
rasp (*rasp*), *v. t.* to rub with, or as with, a rough instrument; file with a rasp: *n.* a kind of rough file.
rasp-ber-ry (*raz'bẽr-i*), *n.* [*pl.* raspberries (*-iz*)], a shrub and its well-known fruit.
rat (*rat*), *n.* an animal of the mouse family but larger and more voracious.
rat-a-ble (*rāt'à-bl*), *adj.* assessed at a certain value; liable to be assessed.
ra-tan. Same as *rattan.*
ratch (*rach*), *n.* a toothed bar into which a click drops.
ratch-et (*'et*), *n.* the detent which stops a ratchet wheel.
ratch-et wheel (*hwēl*), a circular ratch.
rate (*rāt*), *n.* ratio or proportion; price fixed or stated; comparative value; degree: *v. i.* to make an estimate: *v. t.* to make a rate upon. [ESTIMATE.]
rath-er (*rath'ẽr*), *adv.* sooner; more willingly; on the contrary; preferably to the other.
rat-i-fi-ca-tion (*rat-i-fi-kā'shun*), *n.* the act of ratifying; confirmation.
rat-i-fy (*'i-fī*), *v. t.* to approve and sanction; settle or confirm; establish.
ra-ti-o (*rā'shi-ō*), *n.* [*pl.* ratios (*-ōz*)], the relation or proportion of one thing or quantity to another.
ra-ti-oc-i-nate (*rash-i-os'i-nāt*), *v. i.* to reason deductively; argue.
ra-ti-oc-i-na-tion (*-i-nā'shun*), *n.* the act or process of reasoning; act of deducing conclusions from premises.
ra-tion (*rā'shun*), *n.* an allowance: *v. t.* to furnish with rations.
ra-tion-al (*rash'un-al*), *adj.* agreeable to, or consistent with, reason.
ra-tion-a-le (*rash-un-ā'lē*), *n.* a series of reasons assigned for any opinion, action, etc.
ra-tion-al-ism (*'un-al-izm*), *n.* a system or doctrine which, rejecting revelation, makes reason the sole guide in the interpretation of Scripture and dogma.
ra-tion-al-ist (*-ist*), *n.* one who upholds or supports rationalism.
ra-tion-al-i-ty (*-al'i-ti*), *n.* the quality of being rational; power of reasoning; reasonableness.
ra-tion-al-ize (*'al-īz*), *v. t.* to interpret as a rationalist; convert to rationalism: *v. i.* to rely solely on reason or act as a rationalist.
rat-lins (*rat'linz*), *n. pl.* small horizontal ropes, extending over the shrouds, forming ladder-like steps. [Also *ratline.*]
rat-tan (*rat-tan'*), *n.* one of the long, smooth, reed-like stems of several species of palms.
rat-tle (*rat'l*), *v. i.* to produce rapidly sharp noises: *v. t.* to cause to make a rapid, sharp noise: *n.* a succession of rapid, sharp noises.
rat-tler (*rat'lẽr*), *n.* one who, or that which, rattles; a rattlesnake.
rat-tle-snake (*-snāk*), *n.* a venomous snake with hard bony rings on the tail producing a rattling sound when in motion.
rau-cous (*raw'kus*), *adj.* hoarse.
rav-age (*rav'āj*), *v. t.* to lay waste; pillage; plunder or sack: *n.* destruction by violence or decay; devastation; ruin.
rave (*rāv*), *v. i.* to wander in the mind or be delirious.
rav-el (*rav'l*), *v. t.* to unweave or untwist; involve or entangle: *v. i.* to be unwoven or untwisted.
ra-ven (*rā'vn*), *n.* a large bird of the crow family noted for its deep black color: *adj.* raven-colored.
rav-en (*rav'n*), *v. t.* to obtain, or seize, by violence; devour with greediness or voracity: *n.* violence; plunder; prey.
rav-en-ous (*'n-us*), *adj.* devouring with rapacity; eagerly voracious; eager for gratification. [RAPACIOUS.]
ra-vine (*rà-vēn'*), *n.* a long, deep hollow, worn by the action of a stream or torrents.
rav-ish (*rav'ish*), *v. t.* to seize and to carry away by force; have sexual intercourse with by force and without her consent. [ABUSE.]
rav-ish-ment (*'ish-ment*), *n.* forcible violation of chastity; rape; abduction; transport; rapture.
raw (*raw*), *adj.* uncooked; crude; sore; in the natural state.
raw-boned (*'bōnd*), *adj.* with little flesh on the bones.
raw-hide (*'hīd*), *n.* a cowhide whip.
ray (*rā*), *n.* a line or pencil of light proceeding from a radiant point; light.
Raymond. A name derived from the Teutonic, *ram-mund*, "a strong man." Fr., *Raymond;* It., *Raimondo;* Lat., *Raymundus;* Sp., *Raymundo* or *Ramon.*
raze (*rāz*), *v. t.* to level to the ground; blot out; efface; graze or shave.
ra-zor (*rā'zẽr*), *n.* a sharp-edged cutting instrument used for shaving.
reach (*rēch*), *v. t.* to touch with the extended hand; stretch forth; arrive at; gain: *v. i.* endeavor to obtain something.
read (*rēd*), *v. t.* [*p. t.* and *p. p.* read (*red*), *p. pr* reading], to observe and apprehend the meaning of (something written, printed, or inscribed); peruse: *v. i.* to perform the act of reading.
read (*red*), *adj.* well-informed or acquainted with books.
read-a-ble (*rēd'à-bl*), *adj.* fit to be read; worth reading; legible.
read-er (*'ẽr*), *n.* one who reads; one who reads prayers in church; a corrector of the press; a university lecturer; a reading book.
read-i-ness (*red'i-nes*), *n.* the state of being ready; promptness; cheerfulness.
read-ing (*rēd'ing*), *n.* perusal of books; lecture; public recital; variation.
read-y (*red'i*), *adj.* [*comp.* readier, *superl.* readiest], prepared at the moment; quick; prompt; fit for a purpose.
Syn. READY, apt, prompt. *Ready* is in general applied to that which has been intentionally prepared for a given purpose; *prompt* is applied to that which is at hand so as to answer the immediate purpose; *apt* is applied to that which is fit, or from its nature has a tendency to produce effects. [See *active, easy.*]
re-al (*rē'al*), *adj.* actually existing; not fictitious; genuine; true.
re-al es-tate (*es-tāt'*), lands and all appertaining to them.
re-al-ism (*'al-izm*), *n.* the representation of nature or social life as it actually appears.
re-al-ist (*-ist*), *n.* one who holds the doctrine of, or practices, realism.
re-al-i-ty (*-al'i-ti*), *n.* [*pl.* realities (*-tiz*)], actual existence; fact; truth.
re-al-i-za-tion (*-al-i-zā'shun*), *n.* the act of realizing, or of making and believing something real.
re-al-ize (*'al-īz*), *v. t.* to bring into act or being; make real; convert into real property or money.
re-al-ly (*'al-i*), *adv.* with actual existence; in truth.
realm (*relm*), *n.* royal jurisdiction or territory; kingdom; empire; state. [STATE.]
re-al-ty (*'al-ti*), *n.* real estate.
ream (*rēm*), *n.* 20 quires, or 480 sheets of paper; 516 sheets (printer's *ream*).
reap (*rēp*), *v. i.* to perform the operation of reaping: *v. t.* to gather in.
rear (*rēr*), *n.* the part behind the rest; last in order; background: *v. t.* to raise or lift up: *v. i.* to assume an erect posture.
rear ad-mi-ral (*-ad'mi-ral*), in the United States navy, an officer ranking next below the admiral.
rea-son (*rē'zn*), *n.* that mental faculty in man which enables him to deduce inferences from facts, and to distinguish between right and wrong; right judgment: *v. i.* to exercise the faculty of reason. [CAUSE.]
rea-son-a-ble (*-à-bl*), *adj.* endowed with reason; rational; equitable; moderate; fair.
rea-son-ing (*-ing*), *n.* the exercise of the faculty of reason; argumentation.
re-bate (*-bāt'*), *v. t.* to make blunt; make obtuse: *n.* a return to shippers by transportation companies of part of freight charges.
Rebecca, Rebekah (*rē-bek'kà*). From the Hebrew *Ribhk-ah*, signifying a "rope with a noose"; from Arabic *rabkat*, which Tregelles says means "one who ensnares men by her beauty." Fr., *Rebecca;* It., *Rebecca;* Lat., *Rebecca;* Sp., *Rebeca.*
reb-el (*reb'el*), *n.* one who revolts from his allegiance to or defies constituted authority: *adj.* rebellious: *v. i.* (*rē-bel'*), to revolt; rise against authority.
re-bel-lion (*rē-bel'yun*), *n.* insurrection against, or open resistance to, lawful or constituted authority; revolt. [INSURRECTION, CONTUMACY.]
re-bel-lious (*'yus*), *adj.* opposing lawful or constituted authority.
re-bound (*rē-bound'*), *v. i.* to start or leap back; recoil; to reverberate: *n.* the act of rebounding.
re-buff (*-buf'*), *n.* a beating back; sudden check or resistance; defeat; refusal: *v. t.* to beat back. [REFUSE.]
re-buke (*-būk'*), *n.* reprimand or reproof; chiding; chastisement: *v. t.* to reprimand or chide.
re-bus (*rē'bus*), *n.* [*pl.* rebuses (*-ez*)], an enigmatical representation of a word or phrase by pictures or figures instead of words.
re-but (*rē-but'*), *v. t.* to beat back; oppose by argument or proof; repel: *v. i.* in law, to put in or return an answer.
re-but-tal (*'al*), *n.* the act of rebutting.
re-cal-ci-trant (*rē-kal'si-trant*), *adj.* refractory.
re-call (*-kawl'*), *v. t.* to call back; remember; revoke; withdraw: *n.* a revocation.
re-cant (*-kant'*), *v. t.* to withdraw or retract; abjure.
re-can-ta-tion (*-kan-tā'shun*), *n.* the act of recanting; a declaration recalling and contradicting a former one
re-ca-pit-u-late (*-kà-pit'ū-lāt*), *v. t.* to go over, or summarize, as the chief points of a discourse. [REPEAT.]
re-ca-pit-u-la-tion (*-lā'shun*), *n.* the act of recapitulating.
re-ca-pit-u-la-to-ry (*'ū-là-tō-ri*), *adj.* repeating again in brief.

re-cede (*rē-sēd'*), *v. i.* to fall back or retrograde; retreat: *v. t.* to cede back. [ABATE.]
re-ceipt (*-sēt'*), *n.* the act of receiving; reception; a recipe: *v. t.* to sign in acknowledgment of.
re-ceive (*-sēv'*), *v. t.* to take or obtain from another in any manner; accept; obtain; entertain.
re-ceiv-er (*'ėr*), *n.* one who, or that which, receives; a person appointed by a court to manage property in controversy.
re-cen-cy (*rē'sen-si*), *n.* lateness of time; newness. [Also *recentness.*]
re-cen-sion (*rē-sen'shun*), *n.* review or revision, especially critical revision of the text of an author.
re-cent (*'sent*), *adj.* of late origin or occurrence; new; modern. [NEW.]
re-cep-ta-cle (*-sep'tȧ-kl*), *n.* a vessel or place into which anything is received.
re-cep-tion (*'shun*), *n.* welcome; entertainment; admission; formal or official receiving of a person.
re-cep-tive (*'tiv*), *adj.* having the quality of receiving or containing; capable of receiving mental impressions.
re-cess (*-ses'*), *n.* state of being in retirement; cavity in a room or alcove; niche.
re-ces-sion (*-sesh'un*), *n.* the act of receding or withdrawal; cession back.
★**rec-i-pe** (*res'i-pē*), *n.* a medical prescription; formula for compounding anything.
re-cip-i-ent (*rē-sip'i-ent*), *n.* one who receives: *adj.* receiving.
re-cip-ro-cal (*'rō-kal*), *adj.* mutual; alternating; mutually interchangeable.
re-cip-ro-cate (*'rō-kāt*), *v. t.* to give and receive mutually: *v. i.* to alternate; interchange.
re-cip-ro-ca-tion (*-kā'shun*), *n.* interchange of acts; reciprocal motion.
rec-i-proc-i-ty (*res-i-pros'i-ti*), *n.* reciprocal obligation or right. [INTERCHANGE.]
re-ci-sion (*rē-sizh'un*), *n.* the act of cutting off.
re-cit-al (*-sīt'al*), *n.* the act of reciting; rehearsal; narrative; a musical entertainment by one performer.
rec-i-ta-tion (*res-i-tā'shun*), *n.* a public reading; delivery of a composition committed to memory; the composition so delivered.
rec-i-ta-tive (*-tȧ-tēv'*), *adj.* pertaining to recitation; words spoken in the sounds of the musical scale; chant.
re-cite (*rē-sīt'*), *v. t.* to repeat aloud from memory; enumerate. [REPEAT.]
reck (*rek*), *v. t.* and *v. i.* to care for; heed.
reck-less (*'les*), *adj.* heedless of consequences; careless; thoughtless.
reck-on (*'n*), *v. t.* to count or compute; estimate by rank: *v. i.* to calculate. [CALCULATE.]
reck-on-ing (*-iṅg*), *n.* computation; calculation.
re-claim (*rē-klām'*), *v. t.* to call back; demand the return of.
Syn. RECLAIM, reform. *Reclaim* signifies to call back to its right place that which has gone astray; *reform* signifies to *form* anew that which has changed its *form;* they are allied only in their application to the moral character. A man is *reclaimed* from his vicious courses by the force of advice or exhortation; he may be *reformed* by various means, external or internal.
re-cline (*-klīn'*), *v. t.* to cause to lean or lie back; lean to one side: *v. i.* to rest or repose.
Syn. RECLINE, repose. When we *recline* we put ourselves into a particular position; but when we *repose* we put ourselves into that position which will be most easy.
re-cluse (*rē-klūs'*), *n.* one who lives in retirement; hermit.
rec-og-ni-tion (*rek-og-nish'un*), *n.* remembrance; recollection; formal avowal.
rec-og-ni-za-ble (*rek'og-nī-zȧ-bl*), *adj.* capable of being recognized.
re-cog-ni-zance (*rē-kog'ni-zans* or *rē-kon'i-zans*), *n.* avowal; acknowledgment; badge or token.
rec-og-nize (*rek'og-nīz*), *v. t.* to know again; acknowledge; avow.
rec-ol-lect (*-ol-ekt'*), *v. t.* to call to memory; (*rē-kol-ekt'*), to gather together again.
rec-ol-lec-tion (*rek-ol-ek'shun*), *n.* memory; that which is remembered. [MEMORY.]
rec-om-mend (*-om-end'*), *v. t.* to commend to another; introduce favorably; advise.
rec-om-men-da-tion (*-en-dā'shun*), *n.* the act of recommending; favorable introduction.
re-com-mit (*rē-kom-it'*), *v. t.* to commit anew; refer back to a committee.
rec-om-pense (*rek'om-pens*), *n.* an equivalent given in return; reward; compensation: *v. t.* to give back as an equivalent. [COMPENSATION.]
rec-on-ci-la-ble (*-on-sī'lȧ-bl*), *adj.* capable of being reconciled.
rec-on-cile (*'on-sīl*), *v. t.* to restore to friendship or favor after estrangement; adjust; harmonize. [CONCILIATE.]
rec-on-cil-i-a-tion (*-sil-i-ā'shun*), *n.* renewal of friendship; expiation or atonement.
rec-on-dite (*'on-dīt*), *adj.* deep; abstruse; hidden from view; secret. [MYSTERIOUS.]
re-con-nais-sance (*rē-kon'is-ans*), *n.* the act of reconnoitering.
★**rec-on-noi-ter, rec-on-noi-tre** (*rek-on-noi'tėr*, not *rē-kon-oi'tėr*), *v. t.* to make a survey of, especially for military purposes.
re-cord (*rē-kôrd'*), *v. t.* to remember, or cause to be remembered; register or enroll; celebrate: *n.* (*rek'ėrd*), register; formal writing or copy of an official document.
re-count (*rē-kount'*), *v. t.* to go over or narrate in detail.
re-coup (*rē-kōōp'*), *v. t.* to indemnify or make good; diminish by keeping back a part.
re-course (*rē-kōrs'*), *n.* a going to for aid or protection; application of effort for a particular purpose or end.
re-cov-er (*-kuv'ėr*), *v. t.* to regain; retrieve; cure; obtain as compensation: *v. i.* to regain health, strength, or any former state.
Syn. RECOVER, retrieve, repair, recruit. We *repair* that which has been injured; we *recruit* that which has been diminished; we *recover* property from those who wish to deprive us of it; we *retrieve* our misfortunes, or our lost reputation.
re-cov-er-y (*'ėr-i*), *n.* the act of recovering; restoration to health.
Syn. RECOVERY, restoration. *Recovery* is the regaining of any object which has been lost or missing; *restoration* is the getting back what has been taken away, or that of which one has been deprived. What is *recovered* may be *recovered* with or without the use of means; the *restoration* is effected by foreign agency.
rec-re-ant (*rek'rē-ant*), *adj.* cowardly; mean-spirited; apostate; false: *n.* a mean-spirited creature; a coward; an apostate.
rec-re-ate (*'rē-āt*), *v. t.* to reanimate, especially after toil; gratify: *v. i.* to take recreation: *v. t.* (*rē-krē-āt'*) to create anew.
rec-re-a-tion (*rek-rē-ā'shun*), *n.* refreshment after toil, etc.; amusement: *n.* (*rē-krē-ā'shun*) the act of creating anew; a new creation.
re-crim-i-nate (*rē-krim'i-nāt*), *v. i.* to return one accusation with another: *v. t.* to accuse in return.
re-crim-i-na-to-ry (*'i-nā-tō-ri*), *adj.* retorting an accusation or charge.
re-cru-des-cence (*-kroo-des'ens*), *n.* the state of becoming sore again; a sharp relapse.
re-cruit (*-krōōt'*), *v. t.* to supply with new soldiers: *v. i.* to obtain fresh supplies; recover health: *n.* a soldier newly enlisted; supply of any want. [RECOVER.]
rec-tan-gle (*rek'tang-gl*), *n.* a 4-sided figure with 4 right angles, or angles of 90 degrees.
rec-ti-fi-ca-tion (*-ti-fi-kā'shun*), *n.* the act of setting right.
rec-ti-fy (*'ti-fī*), *v. t.* to set right; adjust; refine by distillation.
rec-ti-lin-e-al (*-ti-lin'ē-al*), *adj.* bounded by straight lines; right or straight lined; straight.
rec-ti-tude (*'ti-tūd*), *n.* rightness of principles and practice; honesty; moral integrity.
rec-tor (*'tėr*), *n.* a clergyman.
rec-tor-y (*'tėr-i*), *n.* the house of a rector.
rec-tum (*'tum*), *n.* the lowest part of the great intestine.
re-cum-bent (*rē-kum'bent*), *adj.* reclining; idle.
re-cu-per-ate (*-kū'pėr-āt*), *v. t.* and *v. i.* to recover.
re-cur (*-kėr'*), *v. i.* return to the mind; return; happen at a stated interval; have recourse.
re-cu-sant (*'kū-zant*), *adj.* refusing to acknowledge the royal supremacy in religion; nonconforming: *n.* a nonconformist.
red (*red*), *n.* one of the primary colors, varying from scarlet to pink: *adj.* red-colored.
red-breast (*red'brest*), *n.* the robin.
red-den (*'n*), *v. t.* to make red: *v. i.* to become red; blush.
red-dish (*'ish*), *adj.* somewhat red.
re-deem (*rē-dēm'*), *v. t.* to ransom from bondage; rescue; make atonement for; perform; recover.
re-deem-er (*'ėr*), *n.* one who redeems.
re-demp-tion (*-demp'shun*), *n.* repurchase; release; ransom.
re-demp-tion-er (*-ėr*), *n.* an emigrant to the United States who sells his services for a certain term, as payment for his passage out from Europe.
red-i-vi-vus (*red-i-vī'vus*), *adj.* come to life again.
red-let-ter day (*-let'ėr dā*). A day that is fortunate or auspicious; so called in allusion to the custom of marking holy days, or saints' days, in the old calendars with red letters.
red-o-lent (*'ō-lent*), *adj.* emitting a sweet smell; fragrant.
re-doubt (*rē-dout'*), *n.* a field-work for strengthening or fortifying a military position without flanks.
re-doubt-a-ble (*'ȧ-bl*), *adj.* formidable; valiant; terrible to enemies.
re-dound (*-dound'*), *v. i.* to tend or contribute; be in excess.
re-l-ow-a (*red'ō-ȧ*), *n.* a Bohemian dance; music for such a dance.
re-dress (*rē-dres'*), *v. t.* to amend or set right; compensate; relieve from; to dress again: *n.* the reparation of wrong; relief.
re-dress-i-ble (*'i-bl*), *adj.* capable of being redressed.
Red river. From the color of its waters it was called by the French *Riviere Rouge,* "Red river"; called by the Spaniards *Rio Roxo de Natchitoches.*
Red Sea. Translates the unexplained classical names *Erythrasan sea* and *Mare Rubrum.* To the early Portuguese mariners the name *Mar Vermelho* seemed to be appropriate, because of the red streaks of water, due probably to floating infusoria.
red-sear (*red'sėr*), *v. t.* to break or crack under the hammer, as iron when hot.
red-tape (*'tāp*), *n.* excessive official formality.
re-duce (*rē-dūs'*), *v. t.* to bring into a lower state; degrade; diminish; conquer; shorten. [ABASE, ABBREVIATE.]
re-du-ci-ble (*-dū'si-bl*), *adj.* capable of being reduced.
re-duc-tion (*-duk'shun*), *n.* diminution; conquest or subjugation; the changing of quantities from one denomination to another.
re-dun-dance (*-dun'dans*), *n.* superfluity; excess. [Also *redundancy.*] [EXCESS.]
re-du-pli-cate (*-dū'pli-kāt*), *v. t.* to double again; repeat; multiply.
re-du-pli-ca-tion (*-kā'shun*), *n.* the act of redupli cating.
reed (*rēd*), *n.* a large, coarse grass of the genus Arundo.
reef (*rēf*), *n.* that part of a sail which can be reduced by being drawn in by small ropes running in eyelet holes; a chain of rock lying at or near the surface of the water: *v. t.* to reduce the size of a sail.
reef-er (*'ėr*), *n.* a midshipman; a rough kind of jacket.
reek (*rēk*), *n.* smoke; steam: *v. i.* to emit smoke or steam.
reek-y (*'i*), *adj.* smoky; made foul by smoke or steam.
reel (*rēl*), *n.* a turning frame for winding yarn, etc.: *v. t.* to wind on a reel: *v. i.* to stagger; perform a reel.
reeve (*rēv*), *n.* a bailiff or steward; the female of the ruff.
re-fec-tion (*rē-fek'shun*), *n.* a light repast.
re-fec-to-ry (*'tō-ri*), *n.* an eating room or hall.
re-fer (*-fėr'*), *v. t.* [*p. t.* and *p. p.* referred, *p. pr.* referring], to submit to another person or authority for information, corroboration, or decision: *v. i.* to allude; have relation; appeal; hint. [ALLUDE.]
★**ref-er-able** (*ref'ėr-ȧ-bl*, not *rē-fėr'ȧ-bl*), *adj.* that may be referred; ascribable.
ref-er-ee (*ref-ėr-ē'*), *n.* one to whom anything is referred for decision; an umpire.
ref-er-ence (*'ėr-ens*), *n.* the act of referring; allusion; one who, or that which, is referred to.
ref-er-en-dum (*ref'ėr-en-dum*), *n.* the referring of a legislative act to the decision of a vote of the people.
re-fine (*rē-fin'*), *v. t.* to separate from impurities; clear from dross: *v. i.* to become fine or pure; improve in accuracy or delicacy. (*refined,*) [POLITE.]
re-fine-ment (*'ment*), *n.* elegance; polish; purity of taste, mind, morals, etc.; affectation of elegant or subtle improvements. [CULTIVATION.]
re-fin-er-y (*'ėr-i*), *n.* [*pl.* refineries (*-iz*)], a place where anything is refined or purified.
re-fit (*-fit'*), *v. t.* to make fit for use again: *v. i.* to repair damages, especially damages of ships.
re-flect (*-flekt'*), *v. t.* to throw back, especially rays of light or heat after striking on any substance; consider in mind. [CONSIDER.]
re-flec-tion (*-flek'shun*), *n.* that which is reflected; the turning of thought back upon past experiences or ideas; attentive consideration. [INSINUATION.]
re-flect-ive (*-flekt'iv*), *adj.* throwing back images or rays; considering the operations of the mind or things of the past; reflexive.
re-flex (*'fleks*), *adj.* bent or turned back; directed backward: *n.* reflected light, etc.
re-flex-i-ble (*'i-bl*), *adj.* capable of being reflected.
re-flex-ive (*'iv*), *adj.* reflective; having respect to something past; referring back to the grammatical subject.
re-flux (*'fluks*), *n.* a flowing back.
re-form (*-fôrm'*), *v. t.* to make better; change or return to a former good state: *v. i.* to abandon evil for that which is good: *n.* change for the better; correction.
Syn. REFORM, reformation. Whatever undergoes such a change as to give a new *form* to an object occasions a *reform;* when such a change is produced in the moral character, it is termed a *reformation;* the concerns of a state require occasional *reform;* those of an individual require *reformation.* [See *reclaim.*]
ref-or-ma-tion (*ref-ôr-mā'shun*), *n.* amendment; political redress. [REFORM.]
Reformation, *n.* the great religious movement (16th century) under Martin Luther. [REFORM.]
re-form-a-to-ry (*rē-fôrm'ȧ-tō-ri*), *adj.* tending to reform: *n.* an institution for the detention and reformation of juvenile offenders.
re-fract (*-frakt'*), *v. t.* to break the natural course of, or bend from, a straight line.
re-fract-ed (*'ed*), *p. adj.* bent back at an acute angle; bent from a direct course.
re-frac-tion (*-frak'shun*), *n.* the change from a straight line.
re-frac-to-ry (*'tō-ri*), *adj* sullenly or perversely obstinate; difficult of fusion, etc. [OBSTINATE.]
re-frain ★(*-frān'*), *v. t.* to restrain: *v. i.* to forbear; abstain from action: *n.* burden of a song repeated at the end of each stanza.
re-frau-gi-ble (*-fran'ji-bl*), *adj.* capable of being refracted.
re-fresh (*-fresh'*), *v. t.* to revive after fatigue or exhaustion; reinvigorate; restore.
re-fresh-ment (*'ment*), *n.* the act of refreshing, state of being refreshed; that which refreshes, as food or rest.

re-frig-er-ate (*rē-frij'ēr-āt*), *v. t.* to cool, or keep cool, as by a refrigerator.
re-frig-er-a-tor (*'ēr-ā-tēr*), *n.* an apparatus or vessel for preserving or cooling things.
ref-uge (*ref'ūj*), *n.* protection from danger or distress; shelter or asylum; stronghold.
ref-u-gee (*ū-jē'*), *n.* one who flees for protection, especially from political or religious persecution.
re-ful-gent (*rē-ful'jent*), *adj.* casting a bright light; brilliant; splendid.
re-fund (*-fund'*), *v. t.* to pay back again.
re-fus-al (*-fūz'al*), *n.* the act of refusing; rejecting; right to take the preference; option.
re-fuse (*-fūz'*), *v. t.* to deny or reject, as a demand or request: *v. i.* to decline to accept; not to comply: *n.* (*ref'ūs*), waste or worthless matter.
Syn. REFUSE, decline, reject, repel, rebuff. We *refuse* what is asked of us, for want of inclination to comply; we *decline* what is proposed from motives of discretion; we *reject* what is offered to us, because it does not fall in with our views; *to repel* is *to reject* with violence; *to rebuff* is *to refuse* with contempt. [See *deny*.]
ref-u-ta-tion (*ref-ū-tā'shun*), *n.* the act of refuting; that which is refuted.
re-fute (*rē-fūt'*), *v. t.* to prove to be false or erroneous; repel; disprove. [CONFUTE.]
re-gain (*-gān'*), *v. t.* to recover possession of; get back; reach again.
re-gal (*rē'gal*), *adj.* pertaining to, or characteristic of, a king; kingly; royal. [ROYAL.]
re-gale (*-gāl'*), *v. t.* to entertain with something to delight the senses; feast sumptuously: *v. i.* to feast.
★**re-ga-li-a** (*-gā'li-ȧ*), *n. pl.* the ensigns of sovereignty; decorations of an order or office.
re-gard (*rē-gärd'*), *v. t.* to observe particularly; heed; esteem. *pl.* good wishes. [CONSIDER, LOVE.]
re-gard-ful (*'fool*), *adj.* taking notice.
re-gard-less (*'les*), *adj.* heedless. [INDIFFERENT.]
re-gat-ta (*-gat'ȧ*), *n.* a sailing or rowing match for prizes.
re-gen-cy (*rē'jen-si*), *n.* the office or jurisdiction of a regent; a body intrusted with the duties of a regent.
re-gen-er-ate (*-jen'ēr-āt*), *v. t.* to renew the heart of and cause to turn to the love of God; produce anew: *adj.* renewed; reformed.
re-gen-er-a-tion (*-ā'shun*), *n.* formation of new tissue to supply that which has been lost.
re-gent (*rē'jent*), *adj.* exercising vicarious authority: *n.* one who governs in the interim during the minority, absence, or disability of the sovereign.
Regent's (*rē'jents*) **park.** One of the largest parks of London, situated in the northwestern part of the city. It is 472 acres in extent, and contains the zoölogical gardens.
Regent street. One of the principal streets of the West End of London, extending from Portland place to Waterloo place.
reg-i-ci-dal (*rej'i-sī-dal*), *adj.* pertaining to a regicide or to regicide.
reg-i-cide (*'i-sīd*), *n.* the murder, or murderer, of a king.
★**ré-gime** (*rā-zhēm'*), *n.* mode, system or rule of government, social or political.
reg-i-men (*rej'i-men*), *n.* systematic regulation of diet or habit; rule.
reg-i-ment (*rej'i-ment*), *n.* a number of companies of soldiers united into one body under the command of a colonel.
Regina (*rē-jī'nȧ*). A feminine name, probably signifying "queen," from the Latin. Arthur translates it "queenlike."
Reginald (*rej'i-nald*). From the Old German name *Reginald*, "noble hero."
re-gion (*rē'jun*), *n.* a tract of land; country.
reg-is-ter (*rej'is-tēr*), *v. t.* to record in any way: *v. i.* to enter one's name in a register: *n.* an official written record; that which registers, records, or regulates.
reg-is-trar (*-trär*), *n.* an official who keeps a register or record.
reg-is-tra-tion (*-trā'shun*), *n.* the act of inserting in a register.
reg-is-try (*'is-tri*), *n.* the place where a register is kept.
reg-nant (*'nant*), *adj.* reigning; exercising royal authority; prevalent.
re-gret (*rē-gret'*), *n.* mental sorrow or concern for anything, as for past conduct; remorse: *v. t.* to remember with sorrow. [COMPLAIN, GRIEF.]
reg-u-lar (*reg'ū-lēr*), *adj.* according to rule, order, or established usage; consistent: *n.* a soldier belonging to a standing army.
reg-u-lar-i-ty (*-lar'i-ti*), *n.* conformity to rule; uniformity; method or certain order.
reg-u-late (*'ū-lāt*), *v. t.* to make regular; put in good order; adjust by rule. [GOVERN.]
reg-u-la-tion (*-lā'shun*), *n.* the act of regulating; order; method; rule.
re-gur-gi-tate (*rē-gûr'ji-tāt*), *v. i.* to be thrown or poured back.
re-hears-al (*-hērs'al*), *n.* a recital in private prior to a public performance.
re-hearse (*-hērs'*), *v. t.* to repeat, as what has already been said or written; tell or narrate. [REPEAT.]
reign (*rān*), *v. i.* to exercise sovereign authority; rule; be predominant: *n.* supreme power or influence. [EMPIRE.]
re-im-burse (*rē-im-bûrs'*), *v. t.* to refund.
rein (*rān*), *n.* the strap of a bridle; an instrument for curbing, restraining, or governing; power.
rein-deer (*'dēr*), *n.* a large arctic deer.
re-in-force (*rē-in-fôrs'*), *v. t.* to supply with new strength, support, or assistance. [Also *reënforce*.]
re-in-forced con-crete (*-fôrst kon'krēt*), concrete strengthened by rods of iron for building purposes.
Reinhold. See *Reynold*.
re-in-state (*-in-stāt'*), *v. t.* to restore to a former state.
re-it-er-a-tion (*-it-ēr-ā'shun*), *n.* repetition.
re-ject (*rē-jekt'*), *v. t.* to throw away as useless or vile; refuse; renounce; discard. [REFUSE.]
re-jec-tion (*-jek'shun*), *n.* the act of rejecting.
re-joice (*-jois'*), *v. i.* to feel or express joy or gladness; exult: *v. t.* to make joyful.
re-join (*-join'*), *v. t.* to unite again after separation: *v. i.* to answer a reply.
re-join-der (*'dēr*), *n.* an answer to a reply; in law the defendant's answer to the plaintiff's replication. [ANSWER.]
re-lapse (*-laps'*), *v. i.* to fall back from a state of convalescence; return to a former bad state or habit: *n.* a falling into a former bad state.
re-late (*-lāt'*), *v. t.* to tell; describe; recite; narrate: *v. i.* to refer.
re-la-tion (*-lā'shun*), *n.* mutual connection between two or more things; proportion or ratio; kinsman or kinswoman. [CONNECTION.]
re-la-tion-ship (*-ship*), *n.* the state of being related by kindred, affinity, or other alliance.
rel-a-tive (*rel'ȧ-tiv*), *adj.* having, or expressing, relation; pertinent: *n.* that which has relation to something else; a person connected by kinship.
re-lax (*rē-laks'*), *v. t.* to slacken; make less close; render less tense: *v. i.* become less severe or close.
Syn. RELAX, remit. In regard to our attempts to act, we may speak of *relaxing* our endeavors, and *remitting* our labors or exertions; in regard to our dealings with others, we may speak of *relaxing* in discipline, *relaxing* in the severity or strictness of our conduct, of *remitting* a punishment or a sentence.
re-lax-a-tion (*-ā'shun*), *n.* diminution of tension; diversion or recreation.
re-lay (*-lā'*), *v. t.* [*p. t.* and *p. p.* relaid, *p. pr.* relaying], to lay a second time: *n.* new supply; a subsidiary electric circuit.
re-lease (*-lēs'*), *v. t.* to set free; discharge; free from obligation or penalty: *n.* liberation from restraint, penalty, pain, etc. [ABSOLVE.]
rel-e-gate (*rel'ē-gāt*), *v. t.* to banish; consign. [COMMIT.]
re-lent (*rē-lent'*), *v. i.* to grow less hard or severe; become more tender; yield.
rel-e-van-cy (*rel'ē-van-si*), *n.* applicability; pertinence. [Also *relevance*.]
rel-e-vant (*'ē-vant*), *adj.* applicable; related; pertinent.
re-li-a-ble (*rē-lī'ȧ-bl*), *adj.* trustworthy.
re-li-ance (*'ans*), *n.* confidence; trust.
re-li-ant (*'ant*), *adj.* having reliance.
rel-ic (*rel'ik*), *n.* that which is left after the loss or decay of the rest; memorial or souvenir.
rel-ict (*'ikt*), *n.* a widow.
re-lief (*rē-lēf'*), *n.* aid; redress; the projection of a sculptured design from the plane surface.
re-lier-a-ble (*-lēv'ȧ-bl*), *adj.* capable of being relieved.
re-lieve (*-lēv'*), *v. t.* to free from pain, suffering, grief, etc.; mitigate; alleviate; help; release from a post of duty. [HELP.]
re-li-gion (*rē-lij'un*), *n.* any system of faith or worship; love and obedience toward God; piety.
re-li-gious (*'us*), *adj.* godly; pious; devotional; conscientiously exact or strict.
re-lin-quish (*-ling'kwish*), *v. t.* to forsake or abandon; quit; renounce. [ABANDON, LEAVE.]
rel-i-qua-ry (*rel'i-kwā-ri*), *n.* [*pl.* reliquaries (*-riz*)], a depository for relics; a casket or small chest for holding relics.
rel-ish (*rel'ish*), *v. t.* to like the taste of; use with pleasure; enjoy: *v. i.* to have a pleasing taste: *n.* savor; zest; pleasure.
re-luc-tant (*rē-luk'tant*), *adj.* unwilling; disinclined.
re-ly (*-lī'*), *v. i.* [*p. t.* and *p. p.* relied, *p. pr.* relying], to lean upon a person with confidence; trust or have confidence in a person or thing.
re-main (*-mān'*), *v. i.* to continue; stay; last; endure: *n. pl.* a dead body. [CONTINUE, BODY.]
re-mand (*-mand'*), *v. t.* to recommit or send back; remit in custody to a future time.
re-mark (*-märk'*), *v. t.* to note or observe; express; say: *n.* observation; comment. [NOTICE.]
re-mark-a-ble (*'ȧ-bl*), *adj.* worthy of notice or remark; extraordinary; strange; famous; uncommon. [EXTRAORDINARY.]
re-me-di-al (*-mē'di-al*), *adj.* affording, or intended for, a remedy.
rem-e-dy (*rem'ē-di*), *n.* [*pl.* remedies (*diz*)], a restorative; an efficacious medicine: *v. t.* to repair or remove something evil from. [CURE.]
re-mem-ber (*rē-mem'bēr*), *v. t.* to recall to mind; attend to.
re-mem-brance (*'brans*), *n.* power of remembering; memory; recollection. [MEMORY.]
re-mind (*-mind'*), *v. t.* to bring to the remembrance of; put in mind.
rem-i-nis-cence (*rem-i-nis'ens*), *n.* recovery of ideas; memory; that which is remembered. [MEMORY.]
re-miss (*rē-mis'*), *adj.* careless in the performance of duty or business; heedless; dilatory.
re-mis-sion (*-mish'un*), *n.* the act of remitting; pardon; abatement.
re-mit (*-mit'*), *v. t.* to pardon; send back: *v. i.* to abate in violence or force. [RELAX, FORGIVE.]
re-mit-tal (*'al*), *n.* surrender; transmission.
re-mit-tance (*'ans*), *n.* that which is remitted; the sending of money, bills, etc., in payment; the sum so transmitted.
re-mit-tent (*'ent*), *adj.* increasing and abating alternately.
rem-nant (*rem'nant*), *n.* that which is left after a part has been removed; remainder.
re-mon-e-tize (*rē-mun'ē-tīz*), *v. t.* to restore to circulation in the shape of money.
re-mon-strance (*-mon'strans*), *n.* strong representation against something complained of; expostulation.
re-mon-strate (*'strāt*), *v. i.* to urge against some act or course complained of; expostulate. [EXPOSTULATE.]
re-morse (*re-môrs'*), *n.* anguish of mind caused by the sense of guilt; sympathetic sorrow; compunction.
re-mote (*-mōt'*), *adj.* distant in time or space; far; primary; alien; foreign; inconsiderable. [DISTANT.]
re-mov-a-ble (*-mōōv'ȧ-bl*), *adj.* capable of being removed.
re-mov-al (*'al*), *n.* the act of removing or displacing; change of place; dismissal.
re-move (*-mōōv'*), *v. t.* to put from its place; withdraw; cut off, or kill: *v. i.* to change place.
re-mu-ner-ate (*-mū'nēr-āt*), *v. t.* to reward as an equivalent for service; recompense.
re-mu-ner-a-tion (*-ā'shun*), *n.* payment for service; recompense; reward. [COMPENSATION.]
re-mu-ner-a-tive (*'nēr-ā-tiv*), *adj.* yielding an equivalent return for outlay; lucrative; profitable.
★**Re-nais-sance** (*rē-nās-ans'*), *n.* revival of letters and arts in the 15th century.
re-nal (*rē'nal*), *adj.* pertaining to the kidneys.
re-nas-cent (*rē-nas'ent*), *adj.* coming again into being.
rend (*rend*), *v. t.* [*p. t.* and *p. p.* rent, *p. pr.* rending], to tear apart with violence; split; lacerate.
ren-der (*ren'dēr*), *v. t.* to return; pay back; make up; deliver.
★**ren-dez-vous** (*ren'de-vōō* or *rän'dā-vōō*), *n.* appointed place of meeting, especially for warships or troops: *v. i.* to assemble.
ren-di-tion (*ren-dish'un*), *n.* surrender; translation. [DEFINITION.]
Rene (*rē-nā'*). From the French. Like the Italian name *Renato*, derived from the Latin, *renatus*, "renewed," "born, risen or begun again." Fr., *Réné*; It., *Renato*; Lat., *Renatus*.
Renee. Feminine of *Réné*. Sometimes Anglicized in pronunciation as *ren'ne*. Fr., *Rénée*; It., *Renata*; Lat., *Renata*.
ren-e-gade (*ren'ē-gād*), *n.* one who renounces his faith; apostate; traitor; deserter.
re-new (*rē-nū'*), *v. t.* to make new again; restore; renovate; reinvigorate: *v. i.* to be made new; begin afresh; grow again.
re-nounce (*rē-nouns'*), *v. t.* to disown; reject publicly and finally; repudiate; reject. [ABANDON.]
ren-o-vate (*ren'ō-vāt*), *v. t.* to make new again; restore to a previous condition.
re-nown (*rē-noun'*), *n.* celebrity; fame; distinction: *v. t.* to make famous. [FAME.]
re-nowned (*-nound'*), *p. adj.* celebrated; famous; illustrious; distinguished. [FAMOUS.]
rent (*rent*), *n.* a tear; fissure; schism; periodical payment for the use of property. [*p. t.* and *p. p.* of rend.]
rent-al (*'al*), *n.* amount of rent; schedule of rents of an estate; rent roll.
rent roll (*rent' rōl*), a schedule of income derived from rents.
re-nun-ci-a-tion (*rē-nun-si-ā'shun*), *n.* disavowal; rejection.
re-pair (*rē-pâr'*), *v. i.* betake one's self: *v. t.* to restore; mend; renovate; make amends. [RECOVER.]
★**rep-a-ra-ble** (*rep'ȧ-rȧ-bl*, not *rē-pâr'ȧ-bl*), *adj.* capable of being repaired.
rep-a-ra-tion (*-ā-rā'shun*), *n.* restoration to a good condition; amends or compensation.
rep-ar-tee (*rep-ar-tē'*), *n.* a ready, witty reply.
re-past (*rē-past'*), *n.* a meal; victuals.
re-pay (*-pā*), *v. t.* to pay back. [RESTORE.]
re-peal (*-pēl'*), *v. t.* to revoke or abrogate; annul: *n.* revocation. [ABOLISH.]
re-peat (*-pēt'*), *v. t.* to do or speak a second time; reiterate; recite: *n.* repetition.
Syn. REPEAT, recite, rehearse, recapitulate. *To recite* is *to repeat* in a formal manner; *to rehearse* is *to repeat* or *recite* by way of preparation; *to recapitulate* is *to repeat* the chapters or principal heads of any discourse.
re-peat-er (*'ēr*), *n.* one who, or that which, repeats; revolver.
re-pel (*-pel'*), *v. t.* to drive back; resist: *v. i.* to act in opposition to force impressed. [REFUSE.]
re-pel-lent (*'ent*), *adj.* driving back; tending or able to repel; repulsive.
re-pent (*-pent'*), *v. i.* to feel pain or sorrow on account of something done or left undone.
re-pent-ance (*-pent'ans*), *n.* contrition.
re-pent-ant (*'ant*), *adj.* penitent.

★rep-er-toire (*rep-ĕr-twär'*), French **ré-per-toire** (*rā-pâr-twär'*), *n.* a repository; stock of dramas, songs, etc., ready for use.
rep-er-to-ry (*-tō-rĭ*), *n.* a storehouse; treasury.
rep-e-ti-tion (*-ĕ-tish'un*), *n.* the act of repeating; recital from memory. [complain.
re-pine (*rē-pīn'*), *v. i.* to fret one's self; murmur;
re-plen-ish (*-plen'ish*), *v. t.* to fill up again; fill or stock in abundance.
re-plete (*-plēt'*), *adj.* completely filled; full.
re-plev-y (*-plev'ĭ*), *v. t.* to recover by writ goods wrongfully seized.
★rep-li-ca (*rep'li-kȧ*), *n.* a copy of an original picture or statue executed by the same artist or sculptor.
rep-li-ca-tion (*-kā'shun*), *n.* a reply; echo; repetition; the plaintiff's answer to the plea of the defendant.
re-ply (*rē-plī'*), *v. i.* to answer; respond: *n.* an answer; response. [ANSWER.]
re-port (*-pōrt'*), *v. t.* to give an account of; relate: *v. i.* to make a statement: *n.* rumor; hearsay; noise. [FAME, ANNOUNCE.]
re-por-to-ri-al (*-pōr-tō'ri-al*), *adj.* pertaining to, or constituted by, reporters.
re-pose (*-pōz'*), *v. t.* refresh by rest; compose: *v. i.* to sleep; recline: *n.* sleep; quiet. [RECLINE, EASE.]
re-pos-i-to-ry (*-poz'i-tō-rĭ*), *n.* [*pl.* repositories (*riz*)], a warehouse for the storing and safe keeping of goods.
rep-re-hend (*rep-rē-hend'*), *v. t.* to censure.
rep-re-hen-si-ble (*-hen'si-bl*), *adj.* deserving censure; culpable.
rep-re-hen-sive (*'siv*), *adj.* given to, or containing, reproof. [Also *reprehensory.*]
rep-re-sent (*rep-rē-zent'*), *v. t.* show; describe; give an account of; personate or act the part of.
rep-re-sen-ta-tion (*-zen-tā'shun*), *n.* portrayal; description; likeness; body of representatives. [SHOW.]
rep-re-sen-ta-tive (*'tā-tiv*), *adj.* typical: *n.* member of the popular branch of Congress or of a state legislature.
re-press (*rē-pres'*), *v. t.* to check or restrain; crush.
Syn. REPRESS, restrain, suppress. *To repress* is to *press* back or down; *to restrain* is to *strain* back or down; the former is the general, the latter the specific term. We always *repress* when we *restrain*, but not vice versa. *Repress* is used mostly for *pressing* down, so as to keep that inward which wants to make its appearance; *restraint* is an habitual *repression* by which a thing is kept in a state of lowness; to *suppress*, which is to keep under, or keep from appearing or being perceptible, is also said in respect of ourselves or others; as to *repress* one's feelings; to *suppress* laughter, sighs, etc.
re-pres-sion (*-presh'un*), *n.* the act of repressing.
re-prieve (*-prēv'*), *v. t.* to grant a respite to; delay the execution of: *n.* temporary suspension of a criminal sentence.
rep-ri-mand (*rep'ri-mȧnd*), *v. t.* to reprove severely; reprove publicly and officially: *n.* severe reproof.
re-pris-al (*rē-prīz'al*), *n.* something done or seized by way of retaliation for an injury or wrong suffered.
re-proach (*-prōch'*), *v. t.* to censure severely; upbraid: *n.* severe blame mingled with contempt.
Syn. REPROACH, contumely, obloquy. The idea of contemptuous or angry treatment of others is common to all these terms; but *reproach* is the general, *contumely* and *obloquy* are the particular terms. *Reproach* is either deserved or undeserved; the name of Puritan is applied as a term of *reproach* to such as affect greater purity than others; *contumely* is always undeserved; *obloquy* is always supposed to be deserved or otherwise; it is applicable to those whose conduct calls for general censure, and whose name, therefore, has almost become a *reproach.* [See *abuse, blame, discredit.*]
rep-ro-bate (*rep'rō-bāt*), *v. t.* to condemn strongly; disown: *adj.* wholly given up to sin: *n.* a profligate person. [CONDEMN, PROFLIGATE, ABANDONED.]
rep-ro-ba-tion (*-bā'shun*), *n.* abandonment to eternal destruction; condemnation.
re-proof (*rē-prōōf'*), *n.* censure; rebuke.
re-prove (*-prōōv'*), *v. t.* to censure or blame; reprimand; rebuke. [BLAME, CONDEMN.]
rep-tile (*rep'til*), *n.* an animal, of the class Reptilia, that creeps or crawls on the ground.
re-pub-lic (*rē-pub'lik*), *n.* a state or country in which the supreme power is vested in representatives elected by popular vote.
re-pub-lic-an (*'lik-an*), *adj.* pertaining to, characteristic of, or consisting of, a republic.
Re-pub-lic-an (*'lik-an*), *n.* a member of the Republican political party.
re-pub-lic-an-ism (*-izm*), *n.* the principles of a republican government.
re-pub-li-ca-tion (*-li-kā'shun*), *n.* the act of republishing; reimpression of a printed book.
re-pub-lish (*'lish*), *v. t.* to publish anew; print a new edition of.
re-pu-di-ate (*-pū'di-āt*), *v. t.* to disown or disclaim; refuse to pay or acknowledge; disavow.
re-pug-nance (*-pug'nans*), *n.* aversion; reluctance; dislike. [Also *repugnancy.*] [ANTIPATHY.]
re-pug-nant (*'nant*), *adj.* highly distasteful or offensive; contrary; hostile.
re-pulse (*puls'*), *v. i.* to drive back; beat off; repel: *n.* refusal; denial.
re-pul-sion (*rē-pul'shun*), *n.* the act of driving back; state of being repelled. [ANTIPATHY.]
re-pul-sive (*'siv*), *adj.* tending to repel; forbidding; disgusting.
★rep-u-ta-ble (*rep'ū-tȧ-bl*), *adj.* esteemed; honorable; respectable.
rep-u-ta-tion (*-tā'shun*), *n.* good name or character; honor; credit. [FAME, CHARACTER.]
re-pute (*rē-pūt'*), *v. t.* to estimate; deem: *n.* estimation; character.
re-quest (*-kwest'*), *n.* desire expressed; petition; prayer; demand; entreaty: *v. t.* to ask for.
★re-qui-em (*rē'kwi-em*), *n.* a mass or musical setting of a mass, for the repose of the soul of a person deceased.
re-quire (*rē-kwīr'*), *v. t.* to ask for or claim as by right or authority; demand; exact; need. [DEMAND.]
req-ui-site (*rek'wi-zit*), *adj.* needful; indispensable: *n.* anything requisite.
req-ui-si-tion (*-wi-zish'un*), *n.* demand, especially a written one: *v. t.* to demand.
re-quit-al (*rē-kwit'al*), *n.* retaliation. [COMPENSATION.]
re-quite (*-kwīt'*), *v. t.* ro make return for treatment, good or evil; recompense; retaliate; revenge.
re-scind (*rē-sind'*), *v. t.* to annul; revoke.
res-cue (*res'kū*), *v. t.* to set free from danger, restraint, or violence; liberate; deliver: *n.* deliverance from danger. [DELIVER.]
★re-search (*rē-sêrch'*, not *rē'sêrch*), *n.* laborious, careful inquiry or investigation: *v. t.* to investigate carefully and diligently.
re-sem-blance (*-zem'bl*), *n.* likeness. [LIKENESS.]
re-sem-ble (*-zem'bl*), *v. t.* to have a likeness to; have similarity to.
re-sent (*-zent'*), *v. t.* to consider as an injury or affront; take ill; be angry in consequence of.
re-sent-ment (*'ment*), *n.* strong anger or displeasure; deep sense of injury. [ANGER.]
res-er-va-tion (*rez-ĕr-vā'shun*), *n.* anything kept back or reserved; public land reserved for some particular use.
re-serve (*rē-zĕrv'*), *v. t.* to keep in store; hold back for future use: *n.* that which is retained for future use; taciturnity; modesty: *pl.* troops kept for the support of an army.
★res-er-voir (*rez'ĕr-wôr*), *n.* a place where anything (usually fluids and liquids) is collected and stored up for use.
re-side (*rē-zīd'*), *v. i.* to dwell or inhabit; live. [ABIDE.]
res-i-dence (*rez'i-dens*), *n.* place of abode; domicile; act of residing. [HABITATION.]
re-sid-u-a-ry (*rē-zid'ū-ā-rĭ*), *adj.* pertaining to, or constituting, the residue.
res-i-due (*rez'i-dū*), *n.* remainder.
re-sid-u-um (*rē-zid'ū-um*), *n.* that which is left after a chemical process.
re-sign (*-zīn'*), *v. t.* to yield to another; surrender formally. [ABANDON.]
res-ig-na-tion (*rez-ig-nā'shun*), *n.* the act of resigning; calm submission or acquiescence.
re-sil-i-ent (*rē-zil'i-ent*), *adj.* springing back.
res-in (*rez'in*), *n.* a solid inflammable substance obtained from various trees which exude it in the form of gum.
re-sist (*rē-zist'*), *v. t.* to oppose; withstand; thwart; strive against: *v. i.* to make opposition.
re-sist-ance (*-zist'ans*), *n.* opposition; power of a body that acts in opposition to another.
re-sist-ant (*'ant*), *adj.* offering resistance: *n.* one who, or that which, resists.
re-sist-i-ble (*'i-bl*), *adj.* capable of resisting.
re-sist-less (*'les*), *n.* irresistible.
res-o-lu-ble (*rez'ō-lū-bl*), *adj.* capable of being melted or resolved.
res-o-lute (*'ō-lūt*), *adj.* determined; decided; firm; steady. [DECIDED, OBSTINATE.]
res-o-lute-ness (*-nes*), *n.* the state or quality of being resolute.
res-o-lu-tion (*-lū'shun*), *n.* analysis; fixed determination; constancy of purpose. [COURAGE.]
re-solv-a-ble (*rē-zolv'ȧ-bl*), *adj.* capable of being resolved.
re-solve (*-zolv'*), *v. t.* to reduce to constituent parts; analyze; free from doubt or difficulty: *v. i.* to determine; pass a formal resolution. [DETERMINE.]
re-solv-ent (*-zolv'ent*), *adj.* having the power of resolving; causing solution.
res-o-nant (*rez'ō-nant*), *adj.* returning sound.
re-sort (*rē-zôrt'*), *v. i.* to betake one's self; go often: *n.* a place much frequented. [FREQUENT.]
re-sound (*-zound'*), *v. i.* and *v. t.* to reverberate; be reëchoed; spread the fame or renown of.
re-source (*-sōrs'*), *n.* source of help or supply; an expedient to which one resorts. [EXPEDIENT, ALTERNATIVE.]
re-spect (*rē-spekt'*), *n.* regard; expression of esteem; deference; manner of treating others: *v. t.* to honor or esteem. [HONOR, ADMIRE.]
re-spect-a-ble (*'ȧ-bl*), *adj.* capable, or worthy, of respect; held in good repute.
re-spect-ful (*'fool*), *adj.* characterized by respect.
re-spect-ing (*'ing*), *prep.* concerning.
re-spect-ive (*'iv*), *adj.* relating to a particular person or thing; not absolute; relative.
res-pi-ra-tion (*res-pi-rā'shun*), *n.* the act or process of breathing; relief from toil.
re-spir-a-to-ry (*rē-spīr'ȧ-tō-rĭ*), *adj.* pertaining to or serving for, respiration.
re-spire (*-spīr'*), *v. i.* to draw air into the lungs and expel it again: *v. t.* breathe; inhale.
res-pite (*res'pit*), *n.* pause or temporary cessation of anything: *v. t.* suspend the execution of. [INTERVAL.]
re-splen-dent (*rē-splen'dent*), *adj.* shining with brilliant luster; intensely bright.
re-spond (*-spond'*), *v. i.* to answer or reply.
re-spond-ent (*'ent*), *adj.* giving response: *n.* one who answers or replies.
re-sponse (*rē-spons'*), *n.* the act of answering; reply. [ANSWER.]
re-spon-si-ble (*-spon'si-bl*), *adj.* involving responsibility; answerable; liable.
re-spon-sive (*'siv*), *adj.* answering; correspondent.
re-spon-so-ry (*'sō-rĭ*), *adj.* containing answer.
rest (*rest*), *n.* cessation from motion or disturbance; quiet; peace; repose; sleep; death: *v. i.* repose; be quiet; sleep. [EASE, CESSATION.]
★res-tau-rant (*res'tō-rant* or *-tō-rän*), *n.* a house for refreshment; an eating house.
rest-ful (*'fool*), *adj.* full of rest; quiet.
res-ti-tu-tion (*res-ti-tū'shun*), *n.* the act of making good any loss, injury, or damag ; compensation.
rest-ive (*rest'iv*), *adj.* unwilling to go forward; stubborn; obstinate; uneasy.
re-stor-a-ble (*rē-stōr'ȧ-bl*), *adj.* capable of being restored.
res-to-ra-tion (*res-tō-rā'shun*), *n.* the act of restoring; renewal; repair. [RECOVERY.]
re-stor-a-tive (*rē-stōr'ȧ-tiv*), *adj.* capable of restoring: *n.* a reinvigorating medicine.
re-store (*-stōr'*), *v. t.* to bring back to its former strength; repair; rebuild; heal or cure.
Syn. RESTORE, return, repay. We *restore* upon a principle of equity; we *return* upon a principle of justice and honor; we *repay* upon a principle of undeniable right. We cannot always claim that which ought to be *restored;* but we can not only claim but enforce the claim in regard to what is to be *returned* or *repaid.*
Ant. KEEP, retain.
re-strain (*-strān'*), *v. t.* to check; repress. [REPRESS.]
re-straint (*-strānt'*), *n.* the act of restraining; state of being restrained; limitation.
re-strict (*-strikt'*), *v. t.* to confine or limit. [BOUND.]
re-strict-ive (*'iv*), *adj.* imposing restraint.
re-sult (*-zult'*), *v. i.* to follow as a consequence; to come to a decision; ensue; decree: *n.* conclusion. [CONSEQUENCE.]
re-sume (*rē-zūm'*), *v. t.* to take up again after interruption; begin again; take back.
re-sump-tion (*rē-zump'shun*), *n.* the act of resuming.
res-ur-rec-tion (*rez-ûr-ek'shun*), *n.* a rising again from the dead; moral revival.
★re-sus-ci-tate (*rē-sus'i-tāt*), *v. t.* to revive from apparent death; revivify.
re-tail (*rē-tāl'*), *v. t.* to sell in small quantities; sell second-hand.
re-tain (*-tān'*), *v. t.* to hold or keep in possession; detain. [HOLD.]
re-tain-er (*'ĕr*), *n.* one who, or that which, retains; a dependent; attendant; preliminary retaining fee paid to counsel. [ACCESSORY.]
re-tal-i-ate (*-tal'i-āt*), *v. t.* to return by giving like for like (usually in an ill sense). [AVENGE.]
re-tal-i-a-tive (*'ā-tiv*), *adj.* returning like for like; vindictive. [Also *retaliatory.*]
re-tard (*-tärd'*), *v. t.* to hinder or obstruct; delay; keep back.
Syn. RETARD, hinder. We *retard* or make slow the progress of any scheme toward completion; we *hinder* or keep back the person who is completing the scheme; we *retard* a thing, therefore, often by *hindering* the person; but we frequently *hinder* without *retarding.* [See *obstruct.*]
Ant. QUICKEN, expedite, aid, further.
retch (*rech*), *v. i.* to try to vomit; strain in vomiting.
re-ten-tion (*rē-ten'shun*), *n.* the act of holding back; power of retaining, especially ideas.
re-ten-tive (*'tiv*), *adj.* having the power to retain.
ret-i-cent (*ret'i-sent*), *adj.* silent; reserved.
re-tic-u-lar (*rē-tik'ū-lĕr*), *adj.* formed with interstices.
ret-i-cule (*ret'i-kūl*), *n.* a lady's handbag or workbag; a telescopic eyepiece.
ret-i-na (*ret'i-nȧ*), *n.* one of the coats of the eye, containing the ends of the sensory nerves which receive the impressions which give rise to vision.
ret-i-nue (*'i-nū*), *n.* the suite or attendants of a prince or person of distinction; train.
re-tire (*rē-tīr'*), *v. i.* to go to a place of privacy; withdraw; retreat; recede; withdraw from business, official, or active life; to go to bed.
re-tire-ment (*-tīr'ment*), *n.* the act of retiring; state of being retired; privacy; solitude. [PRIVACY.]
re-tort (*-tôrt'*), *v. t.* to return, as an argument, incivility: *v. i.* to make a retort: *n.* censure.
re-touch (*-tuch'*), *v. t.* to touch again; improve by going over, as a work of art, to restore faded parts, etc.
re-tract (*-trakt'*), *v. t.* to draw, or take back; recall; rescind; recant: *v. i.* to withdraw something previously said or written.
re-treat (*-trēt'*), *n.* the act of withdrawing or retiring; retirement or seclusion; place of privacy: *v. i.* to withdraw to seclusion or place of safety.

re-trench (*rē-trench'*), *v. t.* to furnish with a retrenchment: *v. i.* to cut down expenses.
re-trench-ment (*'ment*), *n.* curtailment; military work constructed inside another.
ret-ri-bu-tion (*ret-ri-bū'shun*), *n.* reward or punishment suitable to the action.
re-trib-u-tive (*rē-trib'ū-tiv*), *adj.* rewarding for good deeds and punishing for offenses. [Also *retributory.*]
re-trieve (*-trēv'*), *v. t.* to recover; restore; regain: *v. i.* to act as a retriever. [RECOVER.]
re-triev-er (*'ėr*), *n.* a variety of dog trained to fetch game.
retro, a *prefix* meaning *back, backward,* as *retrospect,* a review of the past.
re-tro-cede (*rē'trō-sēd'*), *v. t.* to cede or grant back.
re-tro-grade (*rē'trō-grād*), *adj.* going or moving backward; going from a better to a worse moral condition.
re-tro-gres-sion (*rē-trō-gresh'un*), *n.* the act of going backward.
re-tro-spect (*rē'trō-spekt*), *n.* act of looking backward.
re-tro-spec-tion (*rē-trō-spek'shun*), *n.* the act or faculty of looking back on the past.
re-tro-spec-tive (*'tiv*), *adj.* looking back on things past; referring to past things.
re-tro-ver-sion (*-vėr'shun*), *n.* a turning or falling backward.
Retta. A feminine name derived from *Margaretta.*
re-turn (*rē-tûrn'*), *v. i.* to come back again to the same place: *v. t.* to repay; restore: *n.* the act of going back or returning; repayment. [RESTORE.]
Reuben (*rū'ben*). From the Hebrew, *R'ubhen,* which St. Jerome translates "son of vision"; Tregelles, "see"; *i. e.,* "behold a son."
re-un-ion (*rē-ūn'yun*), *n.* a festive gathering of familiar friends or associates; act of reuniting.
re-u-nite (*-ū-nīt'*), *v. t.* to unite again; reconcile after variance: *v. i.* to become united again.
re-veal (*rē-vēl'*), *v. t.* to make known; disclose: *n.* the vertical side of a doorway, window, etc. [PUBLISH, ANNOUNCE.]
★**re-veil-le** (*rē-vāl'yā* or *rev-á-lē'*), *n.* the beat of a drum, or bugle call, at daybreak to awaken soldiers.
rev-el (*rev'el*), *n.* a noisy or riotous feast: *v. i.* to feast with joyous or clamorous merriment.
rev-e-la-tion (*-ē-lā'shun*), *n.* the act of revealing or making known, especially divine truth.
rev-el-ry (*'el-ri*), *n.* boisterous festivity.
re-venge (*rē-venj'*), *v. t.* to inflict pain or punishment because of; avenge: *n.* retaliation; malice. [AVENGE.]
re-venge-ful (*'fool*), *adj.* vindictive.
rev-e-nue (*rev-ē'nū*), *n.* the general income of a state, derived from the annual taxes, excise, customs, etc.
re-ver-ber-ate (*rē-vėr'bėr-āt*), *v. t.* to send back, as sound; reëcho: *v. i.* to be driven back, or reflected, as sound or light.
re-ver-ber-a-to-ry (*'bėr-á-tō-ri*), *adj.* pertaining to, characterized by, or produced by, reverberation.
re-vere (*-vēr'*), *v. t.* to regard with fear mingled with respect and affection; reverence. [ADMIRE.]
rev-er-ence (*rev'ėr-ens*), *n.* veneration; honor; respect; a title given to the clergy: *v. t.* to regard with reverence. [HONOR.]
★**rev-er-end** (*rev'ėr-end,* not *rev'ėr-ent*), *adj.* worthy of reverence.
rev-er-ent (*-ent*), *adj.* showing, or expressive of, reverence; humble; submissive.
rev-er-en-tial (*-en'shal*), *adj.* proceeding from reverence; respectful.
rev-er-ie (*'ėr-i*), *n.* deep musing; wakeful dreaminess; irregular train of thoughts or fancies in meditation. [DREAM.]
re-verse (*rē-vėrs'*), *adj.* turned backward; having an opposite direction: *v. t.* change entirely: *n.* the contrary or opposite.
re-vers-i-ble (*'i-bl*), *adj.* capable of being reversed.
re-ver-sion (*-vėr'shun*), *n.* tendency of an animal or plant to revert to its original form.
re-vert (*-vėrt'*), *v. t.* to turn back; change; reverse: *v. i.* to return or fall back.
re-vest (*-vest'*), *v. i.* to return to a former owner.
re-view (*-vū'*), *v. t.* to consider over again; reëxamine; look back; revise; examine critically: *n.* the act of reviewing.
re-vile (*-vīl'*), *v. t.* to address with opprobrious or contumelious language; reproach. [ABUSE.]
re-vise (*-vīz'*), *v. t.* to review and amend; examine for correction: *n.* a revision; second proof sheet.
re-vi-sion (*-vizh'un*), *n.* the act of examining for correction; that which is revised.
re-viv-al (*-vīv'al*), *n.* the act of reviving; recovery; renewal of life.
re-viv-al-ist (*-ist*), *n.* one who promotes revivals.
re-vive (*-vīv'*), *v. i.* to recover life; return to vigor or activity, especially from a state of languor, neglect, etc.: *v. t.* to restore to life again; renovate; reproduce.
re-viv-i-fy (*-viv'i-fī*), *v. t.* [*p. t.* and *p. p.* revivified, *p. pr.* revivifying], to reanimate; quicken.
★**rev-o-ca-ble** (*rev'ō-kā-bl,* not *rē-vō'kā-bl*), *adj.* that may be revoked.
rev-o-ca-tion (*-kā'shun*), *n.* the act of revoking; recall; repeal; reversal.
re-voke (*rē-vōk'*), *v. t.* to recall; repeal; annul: *v. i.* to fail to follow suit at cards. [ABOLISH.]
re-volt (*-volt'*), *n.* insurrection; change of sides; desertion: *v. i.* to turn away in disgust; to rebel. [INSURRECTION.]
rev-o-lu-tion (*rev-ō-lū'shun*), *n.* the act of revolving; rotation; change or alteration of system.
rev-o-lu-tion-ist (*'shun-ist*), *n.* one who organizes or takes part in a revolution.
rev-o-lu-tion-ize (*'shun-īz*), *v. t.* to cause revolution or entire change of government or any system.
re-volve (*rē-volv'*), *v. i.* to turn round, as on an axis; roll in a circle; rotate: *v. t.* to cause to turn or roll round.
re-volv-er (*-volv'ėr*), *n.* a pistol with revolving barrels, fired successively without reloading.
re-vul-sion (*-vul'shun*), *n.* sudden and violent change, especially of feeling.
re-ward (*-wārd'*), *n.* something given for good or ill received; recompense: *v. t.* to give in return for good or ill received. [COMPENSATION.]
Reynold (*ren'old*). From the Teutonic, meaning "power of judgment." Danish, *Reinhold;* Dutch, *Reinold;* Fr., *Renaud;* Ger., *Reinhold;* Lat., *Reynaldus* or *Reginaldus;* Sp., *Reynaldo;* Sw., *Reinhold.*
rhap-so-dy (*rap'sō-dī*), *n.* [*pl.* rhapsodies (*-diz*)], any unconnected or rambling composition, composed under the influence of excitement.
Rheims or **Reims** (*rēmz,* French *rans*). A famous French city; was named for the *Remi,* a tribe.
rhe-om-e-try (*rē-om'ē-tri*), *n.* the art of measuring the intensity and velocity of electric and other currents.
rhe-o-mo-tor (*'ō-mō-tėr*), *n.* an apparatus by which an electrical current is generated.
rhe-o-phore (*'ō-fōr*), *n.* the connecting wire of an electric or galvanic apparatus.
rhe-o-stat (*'ō-stat*), *n.* an apparatus for regulating an electric current.
rhe-o-tome (*'ō-tōm*), *n.* an apparatus for interrupting an electric current at stated intervals.
rhet-o-ric (*ret'ō-rik*), *n.* the art of speaking with elegance and force; declamation.
rhe-tor-ic-al (*rē-tor'i-kal, adj.* pertaining to rhetoric; figurative; declamatory.
rhet-o-ri-cian (*ret-ō-rish'an*), *n.* a teacher of rhetoric, or one skilled in the art; orator.
rheum (*rōōm*), *n.* the increased action of the vessels of any organ.
★**rheu-mat-ic** (*roo-mat'ik*), *adj.* pertaining to, or affected by, rheumatism. [Also *rheumatical.*]
★**rheu-ma-tism** (*rōō'mā-tizm*), *n.* a painful disease of the muscles and joints accompanied by swelling and stiffness.
Rhine (*rīn*). Is the English spelling of the German name *Rhein,* which was the Latin *rhenus* and the Celtic *renos.* It means, "to flow."
rhi-noc-er-os (*rī-nos'ėr-os*), *n.* a large pachydermatous animal allied to the elephant, with one or two horns on the snout.
Rhoda (*rō'dā*). A feminine name derived from the Latin *rhoda,* "a rose." Gr., *Rhode;* Lat., *Rhoda.*
Rhode (*rōd*) **Island.** One of the original thirteen states, said to have received its name from a small island in Narraganset bay named *Roode Eylandt,* "red island"; according to another authority, named for the island of Rhodes.
Rhodes (*rōdz*). Means an "island of roses," in conformity with the Greek *rhodon,* a "rose."
Rho-do-den-dron (*rō-dō-den'dron*), *n.* a genus of ornamental evergreen shrubs with large, handsome, roselike flowers.
rhom-boid (*rom'boid*), *n.* a 4-sided figure having its opposite sides equal and its angles not right angles.
rhom-bus (*'bus*), *n.* a 4-sided figure whose sides are equal and the opposite sides parallel, but which has two of its angles obtuse and two acute.
rhu-barb (*rōō'bārb*), *n.* a plant whose leaf stalks are used for culinary purposes.
rhyme (*rīm*), *n.* harmonical succession of sounds; poetry: *v. t.* to accord in sound: *v. t.* put into rhyme.
rhythm (*rith'm*) *n.* movement marked by regular recurrence; verse.
rhyth-mic (*rith'mik*), *adj.* pertaining to rhythm; harmonical; periodical. [Also *rhythmical.*]
rib (*rib*), *n.* one of the curved bones attached to the vertebral column and supporting the lateral walls of the thorax: *v. t.* to furnish, or inclose, with ribs.
rib-ald (*'ald*), *adj.* low; obscure; filthy: *n.* a vulgar, foul-mouthed licentious fellow.
rib-ald-ry (*-ri*), *n.* obscenity.
rib-bon (*'un*), *n.* a fillet or strip of silk, etc.; narrow strip.
rice (*rīs*), *n.* a valuable food grain produced extensively in hot countries.
rice pa-per (*'pā-pėr*), a kind of paper prepared from pith; used in China, etc., for painting upon.
rich (*rich*), *adj.* abounding in money or possessions; wealthy; opulent; sumptuous.
Richard. From the Teutonic *reich-hart,* "very powerful, strong, or rich." Dutch, *Richard;* Fr., *Richard;* Ger., *Richard* or *Reichard;* It., *Ricardo;* Lat., *Richardus;* Port., *Ricardo;* Sp., *Ricardo.*
rich-es (*rich'ez*) *n. pl.* valuable property; wealth.
Richmond, Va. From Richmond on the Thames, a suburb of London; the name suggested owing to analogy in situation.
rick (*rik*), *n.* a pile or heap, as of hay or corn, and usually thatched or sheltered.
rick-ets (*'ets*), *n.* a disease affecting children.
rick-et-y (*'et-i*), *adj.* affected with rickets; feeble in the joints; unsteady.
ric-o-chet (*rik-ō-shā'* or *-ō-shet'*), *n.* the rebounding of a shot or shell; *v. i.* to bound by touching the earth or the surface of water and glancing off, as a cannon ball: *v. t.* to cause to ricochet.
rid (*rid*), *v. t.* to set free; deliver; clear or destroy by violence: *adj.* clear; free.
rid-dance (*'ans*), *n.* the act of ridding or clearing away; deliverance.
rid-dle (*'l*), *n.* an enigma; puzzling question: *v. i.* to speak ambiguously or as in riddles.
ride (*rid*), *v. i.* and *v. t.* [*p. t.* rode, *p. p.* ridden, *p. pr.* riding], to be borne along, as on horseback or in a vehicle: *n.* excursion on horseback or in a vehicle; drive.
rid-er (*rīd'ėr*), *n.* one who rides on, breaks, or manages, a horse.
ridge (*rij*), *n.* anything formed like an animal's back, as a continuous range of hills: *v. t.* to form or furnish with a ridge.
★**rid-i-cule** (*rid'i-kūl*), *n.* banter; mockery; satire: *v. t.* to expose to contemptuous merriment.
ri-dic-u-lous (*ri-dik'ū-lus*), *adj.* deserving or exciting ridicule; preposterous; absurd; ludicrous. [ABSURD].
rife (*rīf*), *adj.* prevalent, common.
riff-raff (*rif'raf*), *n.* refuse; the rabble.
ri-fle (*ri'fl*), *n.* a musket with the barrel spirally grooved: *v. t.* to groove spirally; pillage.
ri-fle corps (*kōr*), a body armed with rifles.
rift (*rift*), *n.* an opening or split in anything; fissure: *v. t.* to cleave or split.
rig (*rig*), *n.* dress; manner of fitting the masts and rigging to the hull of a vessel: *v. t.* to furnish or fit with rigging; dress (with *out*).
rig-ging (*'ing*), *n.* the cordage or ropes by which the masts of a vessel are supported, and the sails extended or furled.
right (*rīt*), *adj.* according to truth, justice, or law; correct; fit; true; exact; most direct: *adv.* justly: *n.* uprightness; truth; justice; rectitude: *v. t.* to make right or straight; correct: *v. i.* to recover the vertical position.
Syn. RIGHT, claim, privilege. *Right,* in its full sense, is altogether an abstract thing which is independent of human laws and regulations; *claims* and *privileges* are altogether connected with the establishments of civil society. We have often a *claim* to a thing which is not in our power to substantiate; and, on the other hand, *claims* are set up in cases which are totally unfounded on any *right; privileges* are *rights* granted to individuals, depending either upon the will of the grantor, or the circumstances of the receiver, or both; *privileges* are, therefore, partial *rights* transferable at the discretion of persons individually or collectively.
Ant. WRONG, unjust, improper.
right an-gle (*'ang-gl*), an angle of 90°, formed by one straight line standing perpendicular to another.
right-eous (*rī'chus*), *adj.* just; equitable; honest; holy; deserved.
right-ful (*rīt'fool*). *adj.* having a just claim; accordant with justice.
rig-id (*rij'id*), *adj.* not pliant; stiff; inflexible; strict; stern; severely just.
ri-gid-i-ty (*ri-jid'i-ti*), *n.* want of pliability; stiffness; resistance to change of form.
rig-ma-role (*rig'mā-rōl*), *n.* foolish, disconnected talk; long story.
rig-or (*'ėr*), *n.* stiffness or severity; exactitude; strictness; severity of climate.
rig-or-ous (*rig'ėr-us*), *adj.* characterized by, or exercising, rigor; stern; inflexible; scrupulously accurate.
rill (*ril*), *n.* a small stream or rivulet: *v. i.* to run in a small stream.
rim (*rim*), *n.* a border or margin; raised border; brim: *v. t.* to furnish with a rim.
rime (*rīm*), *n.* hoarfrost; another form of rhyme *v. i.* to congeal into hoarfrost.
ri-my (*ri'mi*), *adv.* frosty.
rind (*rind*), *n.* the outer covering of fruit, etc.; bark: *v. t.* to strip the rind from.
rin-der-pest (*rin'dėr-pest*), *n.* a malignant and contagious disease in cattle; cattle plague.
ring (*ring*), *n.* a circle; anything circular in form; small hoop worn on the finger: *v. i.* to sound as a bell when struck: *v. t.* to cause to sound, as metal when struck.
ring-dove (*'duv*), *n.* the wood pigeon.
ring-ing (*'ing*), *p. adj.* sounding like a bell; resonant: *n.* the act of sounding as a bell.
ring-let (*'let*), *n.* a little ring; curl.
ring-worm (*'wėrm*), *n.* a contagious cutaneous disease, usually on the scalp.
rink (*ringk*), *n.* a ground for skating upon: *v. i.* to skate on a rink.
★**rinse** (*rins,* not *rens*), *v. t.* to cleanse lightly with clean water; cleanse repeatedly.
Rio Grande (*rī'ō grand,* Spanish *rē'ō grän'dā*). River rising in the Rocky mountains and emptying into the gulf, which gives name to a county in Colorado. A Spanish phrase meaning "great river."
ri-ot (*rī'ot*), *n.* uproar; tumult; noisy revelry; luxurious excess: *v. i.* to raise an uproar.
ri-ot-ous (*-us*), *adj.* indulging in riot or excess; licentious; noisy; turbulent; seditious.
rip (*rip*), *v. t.* to divide by tearing or cutting; cut asunder; disclose.
ri-pa-ri-an (*ri-pā'ri-an*), *adj.* pertaining to the banks of a river.

ripe (*rīp*), *adj.* brought to maturity or perfection; ready for harvest; fit for use; complete.
ri-pen (*rī'pen*), *v. t.* to make ripe; bring to perfection: *v. i.* to grow ripe.
ripe-ness (*rīp'nes*), *n.* the state or quality of being ripe; maturity.
rip-ple (*rip'l*), *n.* a small curling wave on the surface of water.
rip-pling (*'ling*), *n.* the breaking of, or sound made by, ripples.
rip-rap (*'rap*), *n.* a loose foundation of stones in deep water on a soft bottom.
rise (*rīz*), *v. i.* [*p. t.* rose, *p. p.* risen, *p. pr.* rising], to ascend; get up from the ground or recumbent position; begin to stir: *n.* ascent; elevated place; appearance above; origin.
ris-i-ble (*rīz'i-bl*), *adj.* having the faculty or power of laughing; inclined to laugh; causing laughter.
ris-ing (*rīz'ing*), *n.* the act of getting up or ascending; insurrection; an ascent.
risk (*risk*), *n.* possibility of loss or injury; peril; danger: *v. t.* to hazard; venture upon. [HAZARD.]
Rita (*rē'tà*). A feminine name of Italian origin; abbreviated from *Margarita*.
rite (*rīt*), *n.* a solemn religious act; external religious observance. [FORM.]
rit-u-al (*rit'ū-al*), *adj.* pertaining to, consisting of, or prescribing, rites: *n.* manner of performing divine service.
rit-u-al-ism (*-izm*), *n.* a system of ritual or prescribed forms of religion.
rit-u-al-ist (*-ist*), *n.* one who advocates, or is skilled in, ritual; an Anglo-Catholic.
ri-val (*rī'val*), *n.* competitor; antagonist: *adj.* having the same claims; emulous: *v. t.* to strive to equal or excel; emulate.
ri-val-ry (*-ri*), *n.* competition; emulation.
rive (*rīv*), *v. i.* to be split or torn asunder: *n.* a rent, tear, or split.
riv-er (*riv'ĕr*), *n.* a large running stream of water flowing into the sea or another river.
riv-et (*'et*), *n.* a short metal bolt clinched by hammering: *v. t.* to secure with, or as with, a rivet.
riv-u-let (*riv'ū-let*), *n.* a little stream.
roach (*rōch*), *n.* a fresh-water fish; a cockroach.
road (*rōd*), *n.* a public way for traveling upon; path; way.
road-ster (*'stĕr*), *n.* a horse suited for traveling; a bicycle for road work.
roam (*rōm*), *v. i.* to wander about without any definite object; ramble: *v. t.* to wander over.
roan (*rōn*), *adj.* of a bay or dark color with a shade of red: *n.* a roan color; grained sheepskin leather.
Roanoke (*rō-à-nōk'*). County and city in same county in Virginia, river in Virginia and North Carolina, town in Hunting county, Indiana, and village in Woodford county, Ill. From the island of same name, *Roenoke* or *Rawnoke*, equivalent to *peag*, "sea-shell," or "wampum."
roar (*rōr*), *n.* the deep, full cry of an animal; a cry as in distress; any loud noise: *v. i.* to utter a roar.
roast (*rōst*), *v. t.* to cook before a fire; parch by exposure to heat; criticise severely: *v. i.* to be roasted.
rob (*rob*), *v. t.* [*p. t.* and *p. p.* robbed, *p. pr.* robbing], to steal; plunder; strip of something by secret theft or violence; deprive.
rob-ber (*'ĕr*), *n.* a thief.
rob-ber-y (*-i*), *n.* theft; the felonious and forcible taking away the money and goods of another.
robe (*rōb*), *n.* a loose outer garment; dressed skin of a buffalo: *v. t.* to invest with a robe; dress; array.
Robert. Is "red-beard," from *ru* or *ro*, "red," and *bert* or *bart*, a "beard." Dr. R. S. Maitland gives no fewer than two hundred different methods of spelling this name. *Rupert* and *Robert* are identical, and were used occasionally for the same person. Danish, *Robert;* Dutch, *Robert;* Ger., *Robert;* It., *Roberto;* Lat., *Robertus;* Sp., *Roberto;* Sw., *Robert.*
Robertina. A feminine name derived from *Robert.*
rob-in (*rob'in*), *n.* the redbreast.
Robin. A diminutive of *Rob*, the nickname of *Robert.*
★ro-bust (*rō-bust'*, not *rō'bust*), *adj.* hardy; strong; vigorous; muscular.
roc (*rok*), *n.* a fabulous bird of great size and strength.
Rochester. A city in the state of New York; derives its name from Colonel Nathaniel Rochester, who projected the settlement in 1818.
roch-et (*roch'et*), *n.* a linen vestment worn by a bishop resembling a surplice open at the sides.
rock (*rok*), *n.* a large mass of stone or stony matter; any mineral deposit; movement backward and forward: *v. i.* to move backward and forward.
Rockaway, N. Y. A summer resort, named from the Indian *ackewek*, "bushy."
rock-et (*rok'et*), *n.* a firework.
rock-wood (*'wood*), *n.* ligniform asbestos.
rock-y (*'i*), *adj.* full of, or resembling, rocks; stony; hard; inflexible.
Rocky mountains. Were first called *Montagnes de Pierres Brilliantes*, "mountains of brilliant stones," from the sparkling of the summits in the sunshine. Then came the more prosaic *Montagnes Rocheuses*, or "Rocky mountains;" and our present still more prosaic "The Rockies."
rod (*rod*), *n.* a long twig or shoot of any woody plant; a wand; measure of length equal to 5½ yards.
ro-dent (*rō'dent*), *adj.* gnawing: *n.* any animal of the Rodentia, an order of Mammalia.
Roderick (*rod'ĕr-ik*). From the Old German name *Roderic* or *Roderich*, from *rad-reich*, "rich or powerful in counsel." Fr., *Rodrigue;* Ger., *Roderich;* It., *Rodrigo;* Lat., *Rodericus;* Russ., *Rurik;* Sp., *Rodrigo, Roderigo*, or *Ruy.*
Rodrigo. See *Roderick.*
Rodriguez (Spanish, *rō-drē'geth*). The "son of Roderick."
roe (*rō*), *n.* a species of deer, the roebuck; the female of the hart; the spawn or sperm of fishes.
Roent-gen rays (*rĕnt'gen rāz*), a form of radiant energy emanating from the surface of an electrically excited vacuum tube opposite the cathode electrode having power of penetrating objects impervious to light or heat rays, affecting sensitive photographic films, and exciting fluoresence in certain salts. [Also called *X rays.*]
ro-ga-tion (*rō-gā'shun*), *n.* a litany; supplication.
Roger (*roj'ĕr*). Some translate this name "spear of fame," others "spear-red." It comes from *ratgar*, "a war councilor," or "prompt in counsel." Dutch, *Rutger;* Fr., *Roger;* It., *Ruggiero;* Lat., *Rogerus;* Sp., *Rogerio.*
rogue (*rōg*), *n.* a dishonest person; knave; a sly, mischievous person; wag; term of endearment.
ro-guer-y (*rō'gĕr-i*), *n.* knavish or dishonest practices; cheating; mischievous or waggish conduct.
ro-guish (*rō'gish*), *adj.* fraudulent; dishonest; somewhat mischievous or sly.
★roil (*roil*, not *ril*), *v. t.* to render turbid; vex or irritate.
Roland or **Rowland** (*rō'land*, French *rō-lăn'*). Derived from the old Frankish name signifying "illustrious countryman." Danish, *Roland;* Dutch, *Rœland;* Fr., *Roland;* Ger., *Roland;* It., *Orlando* or *Rolando;* Lat., *Rolandus;* Port., *Rolando;* Sp., *Rolando.*
rôle (*rōl*), *n.* a part or character in a play, etc.; function or part.
roll (*rōl*), *v. i.* to turn like a wheel or on an axis; be moved with violence; rock: *v. t.* to revolve; inwrap; move on wheels: *n.* the act of rolling.
rol-lick (*rol'ik*), *v. i.* to move or act with a careless, swaggering air.
roll-ing (*rōl'ing*), *adj.* moving on, or as on, wheels; undulating; used for rolling: *n.* a circular motion; undulation.
ro-ly-po-ly (*rō-li-pō'li*), *n.* a game in which by rolling a ball into a certain hole it wins.
Ro-man (*'man*), *adj.* pertaining to Rome, the Romans, or to the church of Rome; noting the ordinary type used in printing.
Ro-man can-dle (*kan'dl*), a kind of firework.
Ro-man Cath-o-lic (*kath'ō-lik*), *adj.* pertaining to the church of Rome, of which the pope is the head: *n.* a member of the church of Rome.
ro-mance (*-mans'*), *n.* a work of fiction or adventure; novel; fable: *v. i.* to invent and tell fictitious stories; exaggerate; lie. [FICTION.]
Ro-mance (*-mans'*), *adj.* pertaining to the dialects of Latin and the languages which grew out of classic Latin, spoken in the old Roman provinces.
Ro-man-esque (*-man-esk'*), *n.* that style of architecture and ornamentation in vogue during the period of the later Roman empire: *n.* the dialect of Languedoc.
Romanoff (*rō-mà'nof*) **cape, Alaska.** Compliment to the prominent Russian statesman, Romanoff.
ro-man-tic (*-man'tik*), *adj.* extravagant; fanciful; ideal; full of wild and fantastic scenery.
ro-man-ti-cism (*'ti-sizm*), *n.* the reactionary movement in opposition to cold classical literary forms, begun in Germany in the 18th century.
Rom-a-ny (*rom'à-ni*), *n.* a gipsy; gipsy language.
Rome. The French name of the city called *Roma* in Latin and Italian. Among the various guesses as to the meaning of the name, the most probable refers it to the word *gruma* or *groma*, "crossroads," spreading themselves at their junction into a sort of forum.
romp (*romp*), *n.* an unrestrained, boisterous girl; rough play or frolic: *v. i.* to play in a boisterous, unrestrained manner.
ron-deau (*ron'dō*), *n. pl.* rondeaux (*'dōz*), a little poem of thirteen verses or lines.
ron-del (*'del*), *n.* a poem of 14 lines; small, round tower.
rood (*rōod*), *n.* 40 square poles or perches; a cross or crucifix.
rood loft (*'lôft*), the gallery in a church over the entrance to the choir where the rood was fixed.
★roof (*rōof, roof*), *n.* the top covering of a house or other building: *v. t.* to cover with, or as with, a roof.
roof-tree (*'trē*), *n.* a roof beam; roof; home.
rook (*rook*), *n.* a bird of the crow family; a swindler or sharper.
rook-er-y (*'ĕr-i*), *n.* colony of rooks; place of low resort; low slum.
★room (*rōōm*, not *room*), *n.* unoccupied place or space; apartment of a house: *v. i.* to lodge.
room-y (*'i*), *adj.* spacious.
roor-back (*rōōr'bak*), *n.* a lie; fictitious report made for the purpose of influencing an election.
roost (*rōōst*), *n.* the pole, perch, etc., upon which a bird rests at night: *v. i.* to sit or sleep upon a perch.
roost-er (*'ĕr*), *n.* the domestic cock.
★root (*rōōt*, not *root*), *n.* that part of a plant that descends and fixes itself in the earth by which the plant is nourished: *v. t.* to fix by the root; implant deeply; to dig or burrow with the snout; eradicate (with *out*): *v. i.* to take root.
rope (*rōp*), *n.* a thick cord; small cable; halter; series of things connected: *v. t.* to fasten or draw with a rope.
rop-y (*rōp'i*), *adj.* like a rope; viscous.
Roque-fort (*rōk'fōr*), *n.* a French mold-streaked cheese made from ewe's milk.
Rosa. See *Rose.*
ro-sa-ceous (*rō-zā'shus*), *adj.* composed of several petals arranged in a circular form; consisting of roses.
Rosalia. A feminine name formed from the name *Rose.*
Rosalin (*roz'à-lin*), **Rosalind** (*roz'à-lind*). A feminine diminutive formed from the name *Rose.*
Rosamond (*roz'à-mund*). Probably from *rosa mundi*, "rose of the world," corrupted to "rose of peace." Dutch, *Rozamond;* Fr., *Rosemonde;* It., *Rosmonda;* Lat., *Rosamunda.*
ro-sa-ry (*rō'zà-ri*), *n.* [*pl.* rosaries(*-riz*)], a garland or chaplet; a string of threaded beads by which prayers are counted.
rose (*rōz*), *n.* a plant of the genus *Rose* or its well-known flower; rose-color.
Rose. A feminine name derived from the Latin *rosa*, a "rose." The Romans sometimes called their sweethearts "rosa mea." Danish, *Rosa;* Dutch, *Rosa;* Fr., *Rose;* Ger., *Rose;* It., *Rosa;* Lat., *Rosa;* Sp., *Rosa;* Sw., *Rosa* or *Rosina.*
ro-se-ate (*rō'ze-āt*), *adj.* rose-colored; rose-like; blooming.
rose-ma-ry (*rōz'mà-ri*), *n.* a sweet-smelling evergreen shrub from which an aromatic water is distilled.
Rosemary. A feminine name formed from the Latin *rosmarinus*, "dew of the sea."
Rosetta (*rō-set'tà*). A diminutive derived from the name *Rose*, or from the Italian form *Rosa.*
ro-sette (*rō-zĕt'*), *n.* a cluster of ribbons arranged like a rose.
rose-win-dow (*'win-dō*), *n.* a circular window with compartments branching from the center.
rose-wood (*'wood*), *n.* a Brazilian wood used as a veneer.
ros-in (*roz'in*), *n.* another form of *resin*; specifically, inspissated turpentine: *v. t.* to rub with rosin.
ross (*ros*), *n.* the outer rough bark of trees; tanbark: *v. t.* to remove the outer bark or rough surface of.
Ross. Either as a name of a place by itself, or as a portion of a name, always means "a headland." It is a Celtic word, and is frequent in Scotland, as in *Rosslyn, Culross, Rossberg, Ardrossan*, etc.
ros-ter (*'tĕr*), *n.* list or muster roll showing how the duties of military officers, regiments, etc., are regulated.
ros-tral (*'tral*), *adj.* pertaining to, or like, a beak.
ros-trate (*'trāt*), *adj.* furnished with a beak or beak-like process.
★ros-trum (*ros'trum*, not *rō-strum*), *n.* [*pl.* rostrums (*'trumz*), rostra (*'trà*)], the beak of a bird; a pulpit or platform; prow of an ancient war vessel.
ros-y (*rōz'i*), *adj.* like a rose; red; blooming; charming; very favorable.
rot (*rot*), *v. i.* to putrefy or become decomposed; decay: *v. t.* to make putrid or corrupt: *n.* putrefaction; decomposition; nonsense.
ro-ta-ry (*rō'tà-ri*), *adj.* turning on an axis; pertaining to rotation.
ro-tate (*'tāt*), *v. t.* to revolve on, or as on, an axis; cause to turn: *v. i.* to turn round like a wheel.
ro-ta-tion (*-tā'shun*), *n.* the act of turning round on an axis, like a wheel; regular succession.
rote (*rōt*), *n.* mechanical repetition, or learning without understanding.
ro-ti-fer (*rō'ti-fĕr*), *n.* an individual of the Rotifera, the wheel animalcules.
rot-ten (*rot'n*), *adj.* putrefied; decomposed; unsound; untrustworthy.
Rotten Row. The popular name corrupted from *Route en Roi*, "the way of the king," for a famous driveway and promenade in Hyde Park, London, much frequented by fashionables during the season.
ro-tund (*rō-tund'*), *adj.* spherical.
ro-tun-da (*-tun'dà*), *n.* a circular domed building. [Also *rotundo.*]
rou-ble (*rōō'bl*), *adj.* a Russian silver coin of varying value, used as a monetary unit (about 77 cents).
★rou-é (*rōō-ā'*), *n.* a fashionable sensualist; confirmed rake; debauchee.
rouge (*rōōzh*), *n.* a cosmetic of red color; *v. t.* to color or paint with rouge: *v. i.* to use rouge.
rough (*ruf*), *adj.* inequality of the surface; rugged; not smooth or plane; uneven: *adv.* roughly. [COARSE]
rou-lette (*rōō-let'*), *n.* a game of chance played with revolving disk and ball.
Roumania (*rōō-mā'ni-à*). A modern kingdom on the lower Danube, comprising the former Turkish principalities of Wallachia and Moldavia. The kingdom was so named because the people, who speak a neo-Latin dialect derived from the colonists settled by Trajan in Dacia, designate themselves as *Rumeni* or *Romani* (Romans).
rounce (*rouns*), *n.* the handle of a printing press.
round (*round*), *adj.* circular; spherical; globular; cylindrical; plump; corpulent; whole: *adv.* on all sides; circularly: *n.* a circle, sphere, or globe; circuit or tour; routine: *prep.* about; on every side of; around: *v. t.* to make round; travel or pass round; *v. i.* to go the rounds. [CIRCUIT.]
round-a-bout (*'à-bout*), *adj.* indirect; encompassing: *n.* a merry-go-round; a short coat or jacket.
roun-del (*roun'del*), *n.* a circle; roundelay.

round-e-lay (*round'ē-lā*), *n.* an ancient song or dance in which the passages are repeated.
round-hand (*round'hand*), *n.* penmanship in well-rounded letters.
Round-head (*'hed*), *n.* a contemptuous epithet applied to the Puritans by the Cavaliers, from the close-cut hair of the former.
round-house (*'hous*), *n.* a building having stalls for the housing of locomotives.
round-ly (*'li*), *adv.* in a round form; straightforwardly.
round rob-in (*'rob-in*), a petition having the signatures written in a circle so as not to show who signed it first.
rounds-man (*rounds'man*), *n.* a police inspector who visits the officers on their beats.
rouse (*rouz*), *v. t.* to awaken; stir to thought or action; drive (game) from a covert. [AWAKEN.]
Rouse's Point, N. Y. A village named from Jacques Rouse, a Canadian who settled here in 1783.
roust-a-bout (*roust'ā-bout*), *n.* an idler or loafer; a laborer on a steam vessel.
rout (*rout*), *n.* total defeat and flight of an army; tumultuous crowd; uproar: *v. t.* to defeat and put to disorderly flight. [BEAT.]
★route (*rōōt*), *n.* way or road traveled; course; journey; march.
rou-tine (*rōō-tēn'*), *n.* course of business or official duties regularly pursued; regular habit or practice.
rove (*rōv*), *v. i.* to wander or ramble: *v. t.* to draw through an eye.
row (*rō*), *n.* line, file, or rank; excursion in a rowboat; (*rou*) noisy disturbance: *v. t.* (*rō*) to impel by means of oars: as to *row* a boat.
row-dy (*rou'di*), *n.* a rough, riotous fellow: *adj.* rough and riotous.
row-el (*'el*), *n.* the small sharp-pointed wheel of a spur; flat ring on a horse's bit.
Rowena (*rō-ē'nà*). A feminine name, which some consider to be of Saxon origin. Mr. Arthur derives it from *D. rouw*, "peace"; Anglo-Saxon *rinnan*, "to acquire"; others derive it from the Welsh *rhonwen*, "white shirt."
row-lock (*rō'lok*), *n.* the crutch or hollow in the wale of a boat in which the oar rests in rowing.
roy-al (*roi'al*), *adj.* pertaining to a king or to the crown; befitting or like a king; majestic; kingly.
Syn. ROYAL, regal, kingly. *Royal* signifies belonging to a king, in its most general sense; *regal* signifies appertaining to a king, in its particular application; *kingly* signifies properly like a king. A *royal* carriage, a *royal* residence, *royal* authority, all designate the general and ordinary appurtenances of a king; *regal* government, *regal* state, *regal* power, denotet he peculiar properties of a king; *kingly* always implies what is becoming a *king* or after the manner of a *king*; a *kingly* crown is such as a *king* ought to wear.
roy-al-ist (*-ist*), *n.* an adherent of a king or government by a king.
roy-al-ty (*'al-ti*), *n.* [*pl.* royalties (*-tiz*)], the character, or status, of a king; a percentage for the use of a patent or copyright.
rub (*rub*), *v. t.* to apply pressure with motion to the surface of; clean or scour; wipe; polish: *v. i.* to make a friction: *n.* the act of rubbing.
rub-ber (*'ėr*), *n.* one who, or that which, rubs; india rubber.
rub-bish (*'ish*), *n.* mixed or waste fragments; anything of no value.
rub-ble (*'l*), *n.* rough undressed stone; builder's rubbish.
Ruben. See *Reuben.*
ru-bes-cent (*rōō-bes'ent*), *adj.* becoming red.
ru-bi-cund (*'bi-kund*), *adj.* inclined to red.
ru-bric (*'brik*), *n.* the directions for liturgical use in prayer books, formerly printed in red: *adj.* pertaining to, or marked in, rubrics; red.
ru-bri-cate (*'bri-kāt*), *v. t.* to mark, or distinguish, with red.
ru-by (*'bi*), *n.* [*pl.* rubies (*'biz*)], a precious stone, varying in color from carmine red to crimson; a size of type used in England.
ruche (*rōōsh*), *n.* frilled or plaited lace, silk, etc., for edging dresses, etc.: *v. t.* to make, or ornament, with a ruche.
ruck (*ruk*), *v. t.* to wrinkle or crease: *n.* a wrinkle or crease; the crowd of horses that come in at the end of a race.
ruc-tion (*'shun*), *n.* a row; disturbance.
rud-der (*rud'ėr*), *n.* the frame of wood or metal by which a vessel is steered; anything that directs or governs.
rud-die (*'l*), *n.* red ocher.
rud-dock (*'ok*), *n.* the robin redbreast.
rud-dy (*'i*), *adj.* approaching to redness; florid; flesh-colored: *v. t.* to make ruddy.
rude (*rōōd*), *adj.* rough; barbarous; uncultivated; harsh. [COARSE.]
rude-ness (*'nes*), *n.* the state of being rude; rude conduct; incivility; unskillfulness.
ru-di-ment (*rōō'di-ment*), *n.* first principle; anything in its first or undeveloped state: *v. t.* to instruct in first principles.
ru-di-men-ta-ry (*-men'tà-ri*), *adj.* pertaining to, or containing, first principles; in an undeveloped state. [Also *rudimental.*]
Rudolph (*rū'dolf*). From root of *Randolph* and *Rodolph.* Dutch, *Rudolf;* Fr., *Rodolphe;* Ger., *Rudolf;* It., *Rodolfo* or *Ridolfo;* Lat., *Rudolphus.*
rue (*rōō*), *v. t.* to lament or be sorry for; repent of: *n.* an herb of bitter taste and strong odor.
rue-ful (*rōō'fool*), *adj.* mournful; sad. [PITEOUS.]
ruff (*ruf*), *n.* a large frilled collar; anything plaited; a small fresh-water fish: *v. t.* to disorder or ruffle.
ruf-fian (*ruf'yan*), *n.* a brutal, boisterous fellow; any base, low character, as a robber.
ruf-fle (*'l*), *v. t.* to wrinkle, pucker, or disarrange; furnish or adorn with ruffles; annoy or vex: *v. i.* to grow rough or turbulent: *n.* agitation; discomposure.
Rufus (*rū'fus*). From the Latin, meaning "reddish," "having red hair." Lat., *Rufus.*
rug (*rug*), *n.* an adjustable floor covering, usually of a textile heavier than carpeting.
rug-ged (*rug'ed*), *adj.* having an uneven surface; rough; shaggy; brutal; uncouth; crabbed.
ru-in (*rōō'in*), *n.* overthrow; destruction; downfall; loss of happiness, etc.: *v. t.* to pull down, destroy. [DESTRUCTION, SUBVERT, ABUSE, FALL.]
ru-in-ous (*-us*), *adj.* fallen into ruin; decayed; consisting of ruins; destructive; hurtful.
rule (*rōōl*), *n.* standard or guide; maxim or precept; government; an instrument for drawing lines: *v. t.* to govern or control: *v. i.* to decide. [GOVERN.]
rul-er (*'ėr*), *n.* one who rules or governs; an instrument for ruling lines.
rul-ing (*'ing*), *p. adj.* governing or having control; marking with lines; predominant: *n.* a rule laid down by a judge or court.
rum (*rum*), *n.* spirit distilled from the fermented juice of the sugar cane: *adj.* strange; odd.
rum-ble (*'bl*), *v. i.* to make a low, heavy, continued sound: *n.* a rumbling sound.
ru-mi-nant (*rōō'mi-nant*), *adj.* chewing the cud: *n.* an animal that chews the cud.
ru-mi-nate (*'mi-nāt*), *v. i.* to chew the cud; meditate or muse; ponder: *v. t.* to chew again.
ru-mi-na-tion (*-nā'shun*), *n.* the act of chewing the cud; meditation.
rum-mage (*rum'āj*), *v. t.* to search carefully for; ransack: *v. i.* to make a careful search: *n.* a careful searching.
ru-mor (*rōō'mėr*), *n.* popular report; current story; *v. t.* to circulate by report. [FAME.]
rump (*rump*), *n.* the end of the backbone of an animal, with its adjacent parts: buttocks; fagend.
rum-ple (*rum'pl*), *n.* a fold or plait: *v. t.* to fold or plait; make uneven.
rum-pus (*'pus*), *n.* great disturbance.
run (*run*), *v. i.* to pass quickly with the legs over the ground; extend; flee for escape; contend in a race: *n.* the act of running; course run.
run-a-bout (*'a-bout*), *n.* a light, handy, open automobile adapted for ready service.
runes (*rōōnz*), *n. pl.* runic letters or poetry.
rung (*rung*), *n.* [*p. t.* of ring] step of a ladder; a floor-timber in a ship; spar.
ru-nic (*rōō'nik*), *adj.* pertaining to, or consisting of, runes: *n.* the alphabet of the earliest Teutonic nations.
run-ner (*'ėr*), *n.* one who runs; racer; messenger; keel to support a sleigh.
run-ning (*'ing*), *adj.* moving swiftly; kept for a race; being in motion: *n.* the act of moving swiftly; discharge of pus.
runt (*runt*), *n.* a dwarf animal; stump.
ru-pee (*rōō-pē'*), *n.* an East Indian coin, worth about 48 cents.
Rupert (*rū'pėrt*). Etymologically the same name as *Robert.* Ger., *Ruprecht;* Lat., *Rupertus.*
rup-ture (*rup'tūr*), *n.* breach or interruption of friendly relations; hernia: *v. t.* to burst or break violently asunder: *v. i.* to suffer a breach or disruption.
ru-ral (*rōō'ral*), *adj.* pertaining to, or characteristic of, the country or agriculture; rustic.
Syn. RURAL, rustic. *Rural* applies to all country objects except man; it is, therefore, always connected with the charms of nature; *rustic* applies only to persons, or what is personal, in the country, and is, therefore, always associated with the want of culture.
ru-ral free de-liv-ery (*frē dē-liv'er-i*). A service of house-to-house free mail delivery maintained in the country by the government.
ru-ral-ist (*rōō'ral-ist*), *n.* one who leads a rural life.
Rurik. See *Roderick.*
ruse (*rōōz*), *n.* a trick; stratagem. [PRETENSE.]
rush (*rush*), *v. i.* to move or press forward with impetuosity: *n.* a driving forward with eagerness and haste; a plant of many species growing on wet ground.
rusk (*rusk*), *n.* a kind of light biscuit.
Russ. Same as *Russian.*
rus-set (*rus'et*), *adj.* reddish-brown; homespun; coarse: *n.* russet color; homespun cloth; a variety of apple.
Russia (*rush'à, rōō'shà*). Named from the *Roosi*, or *Russ*, a tribe of Norsemen in the ninth century.
Rus-sia leath-er (*rush'à leth'ėr*), a strong, soft leather prepared from the hides of sheep and cattle steeped in birch-oil.
rust (*rust*), *n.* the reddish matter formed on iron and steel; red oxide of iron: *v. i.* to contract rust.
rus-tic (*rus'tik*), *adj.* pertaining to, or characteristic of, the country; rural; unpolished; unadorned: *n.* a countryman; peasant. [RURAL.]
rus-ti-cate (*'ti-kāt*), *v. i.* to reside in the country: *v. t.* to banish for a time from college.
rus-ti-ca-tion (*-kā'shun*), *n.* residence in the country; temporary banishment from a college.
rus-tic-i-ty (*-tis'i-ti*), *n.* rural manners or simplicity; rudeness.
rus-tle (*rus'l*), *v. i.* to make a soft whispering sound, as the rubbing together of silk or dry leaves; to bestir one's self: *n.* a rustling.
rus-tler (*'ler*), *n.* one who rustles; an enterprising, successful man.
rus-tling (*'ling*), *n.* the soft whispering sound made by rubbing silk or dry leaves together; rustle.
rust-y (*rust'i*), *adj.* covered with rust; impaired by inactivity; rust-colored.
rut (*rut*), *n.* the copulation and sexual desire of deer and certain other animals; the track of a wheel; groove or hollow: *v. i.* to be moved with sexual desire, as deer, etc.
Ruth (*rōōth*). From the Hebrew *Ruth*, from *r'uth*, "appearance", "vision," "beauty."
ruth-less (*'les*), *adj.* cruel; pitiless.
ru-ti-lant (*rōō'ti-lant*), *adj.* shining.
ru-tile (*'til*), *n.* red oxide of titanium.
rye (*ri*), *n.* a hardy esculent plant closely allied to wheat; also its grain or seed.

S

sab-a-oth (*sab-ā'oth*), *n. pl.* armies; hosts.
Sab-bath (*'ath*), *n.* the seventh day of the week, observed by the Jews as a day of rest, commencing from sunset on Friday and ending at sunset on Saturday.
Sab-bat-ic-al year (*sab-bat'i-kal yēr*), *n.* among the ancient Jews, every seventh year, in which the lands and vineyards of the Israelites were allowed to remain fallow.
sa-ber, sa-bre (*sā'bėr*), *n.* a cavalry sword: *v. t.* to cut, wound, or kill with, or as with, a saber.
Sabina (*sā-bī'nà*). A feminine name derived from Sabina, wife of Adrian, celebrated for her private as well as her public virtues; one as chaste as a Sabine. Dutch, *Sabina;* Fr., *Sabine;* It., *Sabina;* Lat., *Sabina;* Sp., *Sabina;* Sw., *Sabina.*
Sabine (*sā-bēn'*) **river, La.** Some allege that it was so named by French voyagers, who applied the name *Sabine* because of a lively skirmish with the Indians on its banks for wives. More likely it means "cypress," from the French word.
sa-ble (*sā'bl*), *n.* a kind of weasel valued for its handsome, dark, glossy fur.
sa-bot (*sà-bō'*), *n.* a wooden shoe worn by the peasantry of France, etc.
sac (*sak*), *n.* a bag or membranous receptacle; cyst.
sac-cade (*sak-kād'*), *n.* a sudden check with the bridle; strong pressure of the bow of a violin against the strings.
sac-cha-rine (*'à-rin*), *adj.* pertaining to, or having the qualities of, sugar: *n.* the uncrystallized sugar of maltwort.
sac-cha-rize (*'à-riz*), *v. t.* to convert into sugar.
sac-cho-lac-tic (*-ō-lak'tik*), *adj.* obtained from the sugar of milk; mucic acid.
sac-cule (*'ūl*), *n.* a little sac or cyst.
sac-er-do-tal (*sas-ėr-dō'tal*), *adj.* pertaining to priests or to the priesthood; priestly.
sac-er-do-tal-ism (*-izm*), *n.* sacerdotal spirit or system; tendency to emphasize the priestly office or its sacred character.
sac-er-do-tal-ly (*-li*), *adv.* in a sacerdotal manner.
★sa-chem (*sā'chem*, not *sach'em*), *n.* a North American Indian chief.
sa-chet (*sà-shā'*), *n.* a small bag or cushion filled with a perfume.
sack (*sak*), *n.* a bag or pouch: *v. t.* to plunder or pillage; ravage.
sack-cloth (*'klôth*), *n.* coarse material of which sacks are made; coarse, rough cloth worn as a token of mourning.
sack-ful (*'fool*), *n.* the quantity a sack will hold.
sack-ing (*'ing*), *n.* coarse material used for making sacks.
Saco (*sav'kō*). River, and city in York county, Maine. Derived from an Indian word *sohk* or *sauk*, "pointing out"; hence the outlet or discharge of a river or lake.
★sac-ra-ment (*sak'rà-ment*, not *sā'krà-ment*), *n.* a sign or pledge of grace, an outward and visible sign of an inward and spiritual grace, instituted by Jesus Christ; holy baptism, the eucharist, Lord's supper.
sac-ra-men-tal (*-men'tal*), *adj.* pertaining to, or constituting, a sacrament; solemnly pledged.
Sacramento (*sak-rà-men'tō*). River, city, and county in California, named by the Spaniards, the word meaning "the sacrament."
sa-cred (*sā'kred*), *adj.* pertaining to religion or to religious uses; consecrated; inviolable. [HOLY.]
sac-ri-fice (*sak'ri-fīs*), *n.* the act of sacrificing or offering to a deity: *v. i.* to offer sacrifice.
sac-ri-fi-cial (*-ri-fish'al*), *adj.* pertaining to, consisting in, or offering, sacrifice. [Also *sacrificatory.*]
sac-ri-lege (*'ri-lej*), *n.* the crime of appropriating to one's self or to secular use what is consecrated to God or religion.
★sac-ri-le-gious (*sak-ri-lē'jus*, not *sak-ri-lij'us*), *adj* violating sacred things; guilty of sacrilege; profane.
sa-cring bell (*sā'kring bel*), *n.* the sanctus bell, rung when the Host is elevated at high mass.
sa-crist (*sā'krist*), *n.* a cathedral official who copies the music for the choir; minor canon; sacristan.
sac-ris-tan (*sak'ris-tan*), *n.* one who has the care of church vessels and movables.
sac-ris-ty (*'ris-ti*), *n.* an apartment in a church

where the sacred vessels, vestments, etc., are kept; vestry.

sac-ro-sanct (*sak'rō-sangkt*), *adj.* preëminently sacred or inviolable.

sa-crum (*sā'krum*), *n.* a triangular-shaped bone at the base of the vertebral column.

sad (*sad*), *adj.* [*comp.* sadder, *superl.* saddest], full of grief; mournful; sorrowful; sober or sedate; dark-colored. [DULL, GRIEF.]

sad-den (*'n*), *v. t.* to make sad or sorrowful; tone down: *v. i.* to become sad.

sad-dle (*'l*), *n.* a seat, usually of leather, for riding on horseback.

sad-dle-bow (*-bō*), *n.* the pieces which form the pommel or arched part of a saddle.

sad-dler-y (*'lėr-i*), *n.* the business of a saddler; articles made by a saddler.

Sad-du-cee (*'yū-sē*), *n.* on of the ancient Jewish sect or school that adhered to the written law and denied the resurrection of the dead.

safe (*sāf*), *adj.* free from danger, injury, or damage; secure: *n.* a fire or burglar proof iron chest.

Syn. SAFE, secure. We may be *safe* without using any particular measure; but none can reckon on any degree of *security* without great precaution; a person may be very *safe* on the top of a coach, in the daytime; but if he wish to *secure* himself, at night, from falling off, he must be fastened.

Ant. EXPOSED, lost.

safe-con-duct (*-kon'dukt*), *n.* a guard or passport which insures a safe passage.

safe-guard (*'gärd*), *n.* one who, or that which, guards or protects; defense; protective warrants granted to a foreigner: *v. t.* to protect or guard safely.

safe-ty (*'ti*), *n.* freedom from danger, injury, or damage; safe-keeping; a bicycle with medium-sized wheels of equal height.

safe-ty lamp (*lamp*), a wire-gauze covered lamp used in mines.

safe-ty valve (*valv*), an automatic valve in a boiler which opens when the steam exceeds a certain pressure.

saf-fron (*saf'run*), *n.* a bulbous plant of the genus Crocus, the dried stigmas of which yield a deep yellow dye; deep yellow: *adj.* saffron-colored.

sag (*sag*), *v. i.* to sink down or yield; incline from an upright or horizontal position.

★sa-ga-cious (*sā-gā'shus*, not *sā'gash-us*), *adj.* mentally quick and discerning; judicious; wise; acute.

sa-gac-i-ty (*-gas'i-ti*), *n.* a readiness of apprehension; discriminative intelligence.

sag-a-more (*sag'ā-mōr*), *n.* a North American Indian chief.

sa-gas (*sā'gaz*), *n. pl.* a class of prose epics embodying the myths and heroic tales of the ancient Scandinavians.

sage (*sāj*), *adj.* wise; discerning; well-judged; discriminating: *n.* a man of experienced wisdom; an aromatic herb.

Sag Harbor. Village in Suffolk county, New York. Derived from the Indian word *saggaponack*, "place where the ground nuts grow."

Saginaw (*sag'i-naw*). River, county, bay, and city in Michigan. Said to derive its meaning from an Indian word, *sauk-sahcoon*, "pouring out at the mouth," or "an outlet."

sa-go (*sā'gō*), *n.* a kind of granulated food starch from the pith of certain palms.

Sahara (*sā-hä'rā*). The great African desert; the word is simply an Arabic term for "desert."

sail (*sāl*), *n.* a sheet of canvas spread to catch the wind, by means of which a vessel is driven forward in the water; an excursion in some vessel: *v. t.* and *v. i.* to pass over in a ship; navigate.

sail-er (*'ėr*), *n.* a vessel that sails, with special reference to its speed, or manner of sailing.

sail-ing (*'ing*), *n.* the art of navigation; the art of moving through water, or of setting sail.

sail-or (*'ėr*), *n.* a mariner; seaman. [SEAMAN.]

saint (*sānt*), *n.* a holy or sanctified person; one eminent for piety and virtue.

St. Anthony, Minn. Named *St. Anthony* by Hennepin in July, 1680; a reference to his being a recollet of the province of St. Anthony in Artois, France. Indian name *Owahmenah*, "falling water."

St. Augustine (*sānt aw'gus-tēn*). A town in Florida, the oldest European settlement in the United States. Don Pedro Menendez de Aviles, sent by Philip II. of Spain in 1565 to drive out the French Protestant refugees, who, three years before, had reached Albemarle sound, arrived off the coast of Florida on St. Augustine's day, August 28th, and gave the name of the saint to the city which he founded shortly afterward.

St. Bernard (*sānt bėr-närd'*), **Great.** An Alpine pass leading from Martigny, Valais, Switzerland, to Aosta, Italy, and connecting the valleys of the Rhone and the Dora Baltea. It was traversed by armies in Roman and mediæval times. The passage by the French army under Napoleon in May, 1800, is especially noteworthy.

St. Clair (*sānt klâr'*) **river, Mich.** Also the lake, was named in honor of the founder of the Franciscan nuns, from the fact that La Salle reached it on the day consecrated to her (August 12th). He therefore named it *Sainte Claire* (St. Clara.)

St. Croix (*sānt kroi'*) **river, Me.** Means "holy cross," and was named by De Monts, from a circumstance in the two rivers of its mouth forming a cross.

St. Croix river, Wis. Le Seur says it was originally named *Madelaine* after Madelaine Radisson; then changed to *St. Croix*, after Monsieur St. Croix, who was drowned at its mouth, while exploring, about 1700. Indian name *hoganwauke-kim*, "the place where the fish lies."

Saint Elias. Mountain in Alaska, named for the saint upon whose day it was discovered.

St. George's channel. Named after the patron saint of England.

St. Helena (*sānt he-lē'nä*). An island in the South Atlantic belonging to Great Britain. Napoleon was exiled there, and resided at Longwood from 1815 until his death in 1821

St. James' palace. A palace in London, adopted as a royal residence by Henry VIII., enlarged by Charles I., damaged by fire in 1809, and since restored. Though no longer occupied by the sovereign, it gives its name officially to the British court.

St. John river, Me. The name given by Pierre de Monts; Indian name *looshtook*, "long river."

Saint Johnsbury. Town in Caledonia county, Vermont, named for St. John de Crèvecœur, French consul at New York, and a benefactor of Vermont.

St. John's river, Fla. Indian name, *Yeacas* or *Walaka*, "river of many lakes." French named the stream *Riviere Mai*, Ribault having entered its waters in that month. The Spaniard, Francisco Gordillo, called it *Rio San Juan*, having reached it on June 24, 1521, "the day was set apart to honor the precursor of Christ." The word was afterward Anglicized by the English to *St. John's river*.

St. Lawrence river, N. Y. Named from the gulf, which received its name, *St. Lawrent* or *St. Lawrence*, from the French navigator Jacques Cartier, who entered its water August 10, 1535 (St. Lawrence's day).

St. Louis (*sānt lōō'is* or *lōō'i*), **Mo.** Named in honor of Louis XV. of France; the name originally applied to a depot established at this point February 15, 1764, by Pierre Laclede Siguest.

Ste. Marie, Sault (*sōō sānt mā'ri*, French *sō* SANT *mä-rē'*), **Mich.** Schoolcraft says the French call a cascade, a *leap* or *sault*, but *sault* alone would not be distinctive; therefore, in conformity with their general usage, they added the name of a patron saint to the term by calling it *Sault de Sainte Marie*, that is, "leap of St. Marie," to distinguish it from other *leaps* or *saults*.

St. Paul. A city of Minnesota, named from the Chapel of St. Paul, a log chapel erected there by Roman Catholics. Prior to the adoption of *St. Paul*, it was known as *Pig's Eye*, from the nickname applied to a corpulent "one-eyed" Frenchman who located a "saloon-shanty" at that point. Indian name, *imnijaska*, "white rock," a reference to the sandstone bluff on which the city stands.

St. Petersburg. See *Petersburg*.

saint-ed (*sānt'ed*), *p. p.* canonized: *adj.* pious; holy; departed to heaven.

saint-ly (*'li*), *adj.* like, or befitting, a saint. [HOLY.]

sake (*sāk*), *n.* end; purpose; cause; account; regard; reason.

sa-laam (*sä-läm'*), *n.* an Oriental form of salutation or respect, meaning "peace."

sal-a-ble (*sāl'ā-bl*), *adj.* marketable.

sa-la-cious (*sā-lā'shus*), *adj.* lustful; impure.

sa-lac-i-ty (*-las'i-ti*), *n.* lustfulness. [Also *salaciousness.*]

sal-ad (*sal'ad*), *n.* raw herbs cut up and dressed with vinegar, oil, etc.

sal-ad days (*dāz*), years of youthful inexperience.

sal-a-man-der (*sal'ā-man-dėr*), *n.* an amphibious animal resembling a newt, and fabled by the ancients to live in fire.

sal-a-man-drine (*'drin*), *adj.* resembling a salamander; fire-resisting or fire-enduring.

sal-a-ried (*sal'ā-rid*), *p. adj.* having a salary.

sal-a-ry (*'ā-ri*), *n.* recompense, usually periodical, for services rendered; stipend.

sale (*sāl*), *n.* the act of selling; exchange of a commodity for an agreed price; market; auction; demand.

Salem (*sā'lem*). City in Essex county, Massachusetts, so named by its early settlers because they hoped to enjoy peaceful security there. An Indian word meaning "peace."

Sal-ic law (*sal'ik law*). The law of the Salian Franks excluding females from the succession to the French throne.

sa-li-ence (*sā'li-ens*), *n.* the state of being salient.

sa-li-ent (*'li-ent*), *adj.* leaping; prominent; noting any angle less than two right angles; in heraldry, in a leaping position.

sa-line (*sā'lin*), *adj.* consisting of, containing, or like, salt: *n.* a salt spring.

sa-li-va (*sä-lī'vä*), *n.* the watery fluid or spittle secreted in the mouth.

sal-i-vate (*sal'i-vāt*), *v. t.* to produce an abnormal secretion in the mouth of.

sal-let (*sal'et*), *n.* a light helmet.

sal-low (*'ō*), *adj.* of a pale, sickly, yellow color: *n.* a small tree of the willow kind.

sal-ly (*'i*), *n.* [*pl.* sallies (*'iz*)], a sudden rushing forth of troops to attack the besiegers; sudden outburst of wit or fancy: *v. i.* to issue or rush forth suddenly.

sal-ma-gun-di (*-mä-gun'di*), *n.* a compound of chopped meats with other ingredients, seasoned, etc.; medley.

★salm-on (*sam'un*, not *sä'mun*), *n.* a marine fish of the genus Salmo, which ascends fresh-water rivers to spawn.

salm-on trout (*trout*), a sea trout, resembling the salmon, but of smaller size.

Salome (*sä-lōm'*, *sā-lō'mē*). A feminine name, from the Hebrew *Solomon*, "peaceful."

sa-lon (*sä-lôN'*), *n.* a saloon; fine art gallery: *pl.* fashionable circles or assemblages. [*French.*]

sa-loon (*sä-lōōn'*), *n.* a hall or state apartment; large reception room; fine art exhibition; barroom or grogshop.

sal-pinx (*sal'pingks*), *n.* the Eustachian tube.

sal-si-fy (*sal'si-fi*), *n.* a plant of the aster family, which from the flavor of its edible root is called *oyster-plant* and *vegetable oyster*.

salt (*sawlt*), *n.* chloride of sodium, used for seasoning and the preservation of meat: *v. t.* to sprinkle or season with salt: *adj.* flavored, seasoned, or impregnated, with salt.

sal-tant (*sal'tant*), *adj.* leaping; dancing; in heraldry, same as salient.

sal-ta-tion (*-tā'shun*), *n.* a leaping or dancing.

sal-ta-to-ry (*'tä-tō-ri*), *adj.* dancing.

Salt Lake. County, and city in same county, in Utah, named for the famous lake of that state.

salt-less (*sawlt'les*), *adj.* without salt; insipid.

sa-lu-bri-ous (*sä-lū'bri-us*), *adj.* healthy. [HEALTHY.]

sal-u-ta-ry (*sal'ū-tā-ri*), *adj.* healthful; wholesome; beneficent. [HEALTHY.]

sal-u-ta-tion (*-ū-tā'shun*), *n.* act or manner of saluting; greeting, or act of paying respect. [SALUTE.]

sa-lute (*sä-lūt'*), *n.* a mark of military respect shown by raising the hand to the helmet, etc.; a kiss; greeting; salvo of artillery: *v. t.* to address with kind wishes; to make a salute.

Syn. SALUTE, salutation, greeting. A *salute* may consist either of a word or an action; *salutations* pass from one friend to another; the *salute* may be either direct or indirect; the *salutation* is always direct and personal; guns are fired by way of a *salute;* bows are given in the way of a *salutation; greeting* is frequently a particular mode of *salutation* adopted on extraordinary occasions, indicative of great joy or satisfaction in those who *greet*. [See *address*.]

sal-va-ble (*sal'vä-bl*), *adj.* capable of being saved.

sal-vage (*'väj*), *n.* compensation given to those who assist at saving a vessel or cargo at sea; the goods or vessel saved.

sal-va-tion (*-vā'shun*), *n.* the act of saving; preservation from destruction; rescue.

Sal-va-tion Ar-my (*är'mi*). A religious organization formed on a quasi-military model.

★salve (*säv*), *n.* a healing ointment; a remedy or soothing application.

sal-ver (*sal'vėr*), *n.* a tray on which anything is presented.

sal-vo (*'vō*), *n.* a discharge of a number of pieces of artillery, intended as a salute; general, simultaneous cheering.

Sa-mar-i-tan (*sä-mar'i-tan*), *adj.* pertaining to, or characteristic of, Samaria, or the Samaritans.

same (*sām*), *adj.* identical in kind or degree; exactly alike; before-mentioned.

same-ness (*'nes*), *n.* identity; similarity.

sam-o-var (*sam'ō-vär*) *n.* a Russian tea urn.

sam-phire (*'fir* or *'fėr*), *n.* a marine plant growing usually on cliffs, and used as a pickle.

sam-ple (*'pl*), *n.* a specimen; model; pattern: *v. t.* to take a sample of.

sam-pler (*'plėr*), *n.* a pattern; a piece of ornamental needlework for practice, etc.

Samson or **Sampson** (*sam'sn* or *samp'sn*). From the Hebrew *shimshon*, "illustrious sun"; "solar, like the sun;" "one who resembles the sun." Danish, *Samson;* Dutch, *Samson;* Fr., *Samson;* Lat., *Samson;* Port., *Sansao;* Sp., *Sanson;* Sw., *Simson*.

Samuel (*sam'ū-el*). From the Hebrew *sh'mu-El*, "heard of God." Danish, *Samuel;* Dutch, *Samuel;* Fr., *Samuel;* Hungarian, *Samuel;* It., *Samuele;* Lat., *Samuel;* Sp., *Samuel*.

San Antonio (*san an-tō'ni-ō*). City in Bexar county, Texas, named for the Roman Catholic mission, *San Antonio de Velero*, otherwise the *Alamo*.

san-a-to-ri-um (*san-ä-tō'ri-um*), *n.* a health retreat; an institution for the treatment of particular diseases.

san-a-to-ry (*'ä-tō-ri*), *adj.* conducive to health.

sanc-ti-fi-ca-tion (*sangk-ti-fi-kā'shun*), *n.* the act of sanctifying; state of being sanctified; consecration.

sanc-ti-fi-er (*'ti-fī-ėr*), *n.* one who sanctifies.

sanc-ti-mo-ni-ous (*-ti-mō'ni-us*), *adj.* having the appearance of, or affecting, sanctity; hypocritical.

sanc-tion (*'shun*), *n.* the act of ratifying, or giving authority to, an act or opinion; authority; custom: *v. t.* to give sanction to; countenance. [COUNTENANCE].

sanc-ti-ty (*'ti-ti*), *n.* purity; inviolability; sacredness; solemnity; a saint. [HOLINESS.]

sanc-tu-a-ry (*'tū-ā-ri*), *n.* [*pl.* sanctuaries (*-riz*)], the most retired and sacred part of a temple, inviolable asylum; shelter; refuge.

sanc-tum (*'tum*), *n.* a sacred or private place.

sanc-tum sanc-to-rum (*sangk-tō'rum*), a most holy place; in the Jewish temple, the Holy of Holies; a place of the utmost privacy.

sanc-tus bell (*sangk'tus bel*), a bell rung at the more solemn parts of the mass.
sand (*sand*), *n.* fine particles of crushed or worn rock; *pl.* tracts of sand: *v. t.* to sprinkle with sand.
san-dal (*san'dal*), *n.* a kind of shoe fastened by straps to the foot; a loose slipper.
san-dal-wood (*-wood*), *n.* a white-colored, odoriferous wood, used in cabinetmaking.
San Diego (*săn dē-ā'gō*), **Cal.** From the bay, which was named by Sebastian Vizcaino, Spanish navigator, who entered it November 12, 1603, in honor of the day saint, *San Diego d'Alcala.* A coincidence being that Vizcaino's vessel also was named *San Diego.*
sand-pi-per (*sand'pī-pĕr*), *n.* a name for various birds of the snipe and woodcock family.
Sandusky (*san-dus'ki*). Town in Illinois, county, river, and city in Ohio, whose name by some authorities is said to be derived from the Indian word *outsandouke,* "there is pure water here"; or *saanduste,* "large bodies or pools of water." Another authority states that it was named for Jonathan Sandousky, a Polish trader of the vicinity.
sand-wich (*sand'wich*), *n.* two thin slices of bread with ham, etc., between.
Sandwich Islands. Islands in the South Pacific, named by Captain Cook in compliment to Lord Sandwich, first lord of the admiralty.
sand-y (*'i*), *adj.* composed of abounding in, of the color of, or covered with, sand; shifting; unstable.
Sandy. A Scottish name corrupted from *Alexander.*
Sandy Hook, N. Y. Namely, "sandy point," *Hook* being applied from the Dutch *haak,* "point."
sane (*sān*), *adj.* mentally sound or healthy. [SOUND]
sane-ness (*'nes*), *n.* the state or quality of being sane.
San Francisco. Bay, county, and city in same county, in California, said by some to have been named for the old Spanish mission of *San Francisco de Assisi,* by others to have been named for the founder of the order to which Father Junipero, the discoverer of the bay, belonged.
san-guif-er-ous (*sang-gwif'ĕr-us*), *adj.* conveying blood.
san-gui-fy (*'gwi-fī*), *v. i.* to form or produce blood: *v. t.* to convert into blood.
san-gui-na-ry (*'gwi-nā-ri*), *adj.* attended with much bloodshed; bloodthirsty; murderous; cruel.
san-guine (*'gwin*), *adj.* warm and ardent in temper; hopeful; confident: *n.* blood color: *v. t.* to stain with blood.
san-guin-e-ous (*-gwin'ē-us*), *adj.* pertaining to, abounding with, or constituting, blood; of a blood color.
San-he-drim (*san-hē'drim*), *n.* the great judicial council of the ancient Jews, composed of 71 priests, scribes, and elders, presided over by the high priest.
san-i-ta-ri-an (*san-i-tā'ri-an*), *adj.* having regard to the public health: *n.* an advocate or promoter of sanitary measures.
san-i-ta-ri-um (*-tā'ri-um*), *n.* a sanatorium, especially one where the treatment is prophylactic instead of therapeutic.
san-i-ta-ry (*san'i-tā-ri*), *adj.* pertaining to, connected with, or tending to promote, health, especially by legislative enactment.
san-i-ta-tion (*-tā'shun*), *n.* hygiene.
san-i-ty (*'i-ti*), *n.* saneness.
San Joaquin (*săn hō-a-kēn'*). County and river in California. A Spanish phrase meaning "whom Jehovah has appointed."
San José (*săn hō-sā'*). City in Santa Clara county, California, named for the patron saint of Mexico, St. Joseph.
San Salvador (*săn săl-va-dōr'*). Means "Holy Savior." This was the first land sighted by Columbus (October 11, 1492); he therefore gave it this name as a token of thanksgiving.
Sanskrit, (*san'skrit*). From the Hindu *sanscritu,* "polished," the learned language of the Hindustani and of the Brahmins, which was current at the time of Solomon. It is the parent of most modern languages. It contains the roots of Greek, Latin, Celtic, Slavonic, and German, and as it contains no exotic terms must be one of the primitive tongues.
Santa Barbara. County, and city in same county, in California, named for an old Spanish mission, which, in turn, probably received its name from the Santa Barbara channel, designated by Vizcaino as *Canal de Santa Barbara,* he having sailed through its waters, December 4, 1603, the day being St. Barbara's.
Santa Claus (*san'ta klawz*) or **Santa Klaus.** A modern adaptation of the Dutch *Sant Nikolaas* (St. Nicholas). As is now very well known, St. Nicholas was the patron saint of children and dispensed gifts to them on Christmas eve.
Santa Cruz (*săn'ta krōōs'*). Counties in Arizona and California, city and island in the latter state. A Spanish word meaning "holy cross."
Santa Fé (*săn'ta fā'*). County and city in same county, in New Mexico; city in Haskell county, Kansas, and town in Monroe county, Missouri. A Spanish phrase meaning "holy faith." The name originally given by Antonio de Espejo, in 1582, was *La Ciudad de la Santa Fé de San Francisco,* "the city of the holy faith of St. Francis."
Santiago (*săn-tē-ā'gō*). The capital of Chile, was founded in 1541 by Pedro de Valdivia, and placed under the protection of the patron saint of Spain. Iago is a form of Jacobus, and Santiago of Spain was St. James the Great, the elder brother of St. John.
sap (*sap*), *n.* the watery circulating juice of a plant; vital fluid: *v. t.* to deprive of vitality; undermine.
sap-id (*'id*), *adj.* savory.
sa-pi-ence (*sā'pi-ens*), *n.* knowledge; wisdom.
sa-pi-ent (*'pi-ent*), *adj.* wise; sagacious.
sap-ling (*sap'ling*), *n.* a young tree.
sap-o-na-ceous (*-ō-nā'shus*), *adj.* resembling, or having the qualities of, soap; unctuous.
sa-pon-i-fy (*sa-pon'i-fī*), *v. t.* [*p. t.* and *p. p.* saponified, *p. pr.* saponifying], to convert into soap by combination with an alkali.
sap-o-ros-i-ty (*sap-ō-ros'i-ti*), *n.* that quality in a substance which excites the sensation of taste.
sap-o-rous (*'ō-rus*), *adj.* having, or stimulating, flavor.
sap-per (*'ĕr*), *n.* one who saps; a soldier employed in sapping or digging trenches.
sap-phire (*saf'īr*), *n.* a precious stone of a blue color, a variety of corundum.
sap-py (*'i*), *adj.* full of sap; juicy.
Sara. A feminine name derived from the Italian form of *Sarah.*
sar-a-band (*sar'a-band*), *n.* a Spanish dance; music for such a dance.
Saracen (*sar'a-sen*). Is a term loosely used by mediæval writers to denote the Moslem races, and especially the foes of the Crusaders. It is a Greek corruption of the Arabic *sharqin,* "eastern" people, as opposed to the *maghrabi* or "western" people.
Saragossa (*sa-ra-gos'sa*). An ancient city of Spain; name corrupted from Cæsarea Augusta; its Basque name was *Saluba,* "the sheep's ford."
Sarah or **Sara** (*sā'ra*). From the Hebrew *Sarah,* variously rendered "female ruler, "governor," "princess," "noble lady," "leader," "commander." Dutch, *Sara;* Fr., *Sara;* Ger., *Sara;* It., *Sara;* Lat., *Sara;* Port., *Sara;* Sp., *Sara;* Sw., *Sarah.*
Saranac (*sar'a-nak*) **Lake.** Village in Franklin county, New York. An Indian word meaning "river that flows under a rock."
Saratoga (*sar-a-tō'ga*), **N. Y.** Uncertain. Termination *oga* or *aga* said to signify "place," the first part of the word thought by some to imply "hillside"; by others, a reference to the springs, *soragh* in some Indian dialects being the name for "salt"; *seitake* is given, meaning "on the heel," but no reason further than a probable corruption in pronunciation of the word. *Assarat,* "sparkling," *oga,* "place," is mentioned by Schoolcraft.
Sarawak (*sa-rä'wak*). Malay *Sarakaw,* "the cove," or bay. British protectorate of western Borneo.
sar-casm (*sär'kazm*), *n.* a bitter, cutting, satirical expression.
sar-cas-tic (*-kas'tik*), *adj.* bitterly satirical. [Also *sarcastical.*]
sar-co-derm (*'kō-dĕrm*), *n.* the fleshy layer between the interior and exterior covering of a seed.
sar-coph-a-gus (*-kof'ā-gus*), *n.* a limestone used by the Greeks for coffins; a stone coffin.
sard (*särd*), *n.* a precious stone, a deep blood-red variety of carnelian.
sar-dine (*-dēn'*), *n.* a species of pilchard, abundant in the Mediterranean, and preserved in oil for exportation.
Sardinia (*sär-din'i-a*). Italian, *Sardegna.* Bears the name of the *Sardi,* its early inhabitants, who may possibly be identified with the *Shardina,* or *Shardana,* one of the northern races who attacked Egypt in the reign of Meneptah. Another view is that it expresses the "land of the sardonion," a Greek term for a plant indigenous to this island.
sar-don-ic (*-don'ik*), *adj.* forced, bitter, or heartless: said of a laugh or smile.
sar-do-nyx (*'dō-niks*), *n.* a variety of agate.
sar-sa-pa-ril-la (*-sa-pa-ril'a*), *n.* a twining shrub found in Mexico, etc., the root of which is used as a medicine.
sar-to-ri-al (*-tō'ri-al*), *adj.* pertaining to a tailor.
sash (*sash*), *n.* a band, ribbon, or scarf; a frame for holding panes of glass: *v. t.* to furnish with sashes.
Saskatchewan (*sas-kach'ē-won*). A river in British North America. The name is derived from the Indian, meaning "swift river."
sas-sa-fras (*'a-fras*), *n.* a tree allied to the laurel, with a fragrant root, wood, and flowers.
Sa-tan (*sā'tan*), *n.* the Devil.
sa-tan-ic (*sa-tan'ik*), *adj.* pertaining to, or resembling, Satan; diabolical; infernal; very malicious.
satch-el (*sach'el*), *n.* a small bag for carrying books, papers, etc.; any handbag.
sate (*sāt*), *v. t.* to satisfy the appetites or desires of.
sat-een (*sat-ēn'*), *n.* a woolen or cotton fabric made in imitation of satin.
sat-el-lite (*sat'el-īt*), *n.* a small planet revolving round a larger one, an obsequious attendant.
sa-ti-ate (*sā'shi-āt*), *v. t.* to fill, or gratify fully; surfeit; glut; *adj.* glutted.
sa-ti-e-ty (*sā-ī'ĕ-ti*), *n.* fullness of gratification beyond desire; repletion.
★sat-in (*sat'in,* not *sat'n*), *n.* a closely woven glossy silk: *adj.* made of, or like, satin.
sat-ire (*sat'ir*), *n.* a species of poetry in which contemporary vice and folly are held up to ridicule; sarcasm; ridicule.
sa-tir-ic (*sa-tir'ik*), *adj.* pertaining to, or containing, satire; addicted to satire. [Also *satirical.*]
sat-ir-ist (*sat'ĕr-ist*), *n.* a writer of satire; one who satirizes.
sat-ir-ize (*sat'ĕr-īze*), *v. t.* to assail or ridicule with satire.
sat-is-fac-tion (*sat-is-fak'shun*), *n.* the act of satisfying; the state of being satisfied; contentment. [CONTENTMENT, COMPENSATION.]
sat-is-fac-to-ry (*'tō-ri*), *adj.* giving satisfaction or content; making redress.
sat-is-fy (*'is-fī*), *v. t.* to gratify to the fullest degree; pay in full; discharge: *v. i.* to give satisfaction.
Syn. SATISFY, please, gratify. What *satisfies* is not always calculated to *please;* nor is that which *pleases* that which will always *satisfy;* plain food *satisfies* a hungry person, but does not *please* him when he is not hungry; *to gratify* is *to please* in a high degree, to produce a vivid *pleasure;* we may be *pleased* with trifles; but we are commonly *gratified* with such things as act strongly either on the senses or the affections.
sat-u-rate (*'ū-rāt*), *v. t.* to soak or imbue.
sat-u-ra-tion (*-rā'shun*), *n.* impregnation of one substance by another until the latter can contain no more.
Saturday. The day of Saturn, one of the planets of the solar system.
sat-ur-nine (*-ur'nin*), *adj.* under the influence of the planet Saturn; dull; morose; gloomy; phlegmatic.
sa-tyr (*sā't ĕr*), *n.* a sylvan Greek deity, attendant on Bacchus, represented with long, pointed ears, short horns, a man's body, and the legs of a goat.
sauce (*saws*), *n.* a liquid condiment or seasoning for food; pertness: *v. t.* to put sauce into.
sauce-box (*'boks*), *n.* a pert, impudent person.
sau-cer (*saw'sĕr*), *n.* a shallow piece of china, etc., in which a tea or coffee cup is placed.
sau-ci-ness (*'si-nes*), *n.* impudent pertness or boldness.
sau-cy (*'si*), *adj.* [*comp.* saucier, *superl,* sauciest], pert; impudent.
sauer-kraut (*sour'krout*), *n.* a pickle of chopped cabbage packed in layers with salt between, which causes fermentation.
Saugatuck (*saw'ga-tuk*), **Conn.** Indian *sauketuck,* "at the mouth of the stream with tides."
saul (*sawl*), *n.* an Indian timber tree, used for building purposes, and yielding the resin called dammar.
Saul. From the Hebrew *Shaul,* which Simonis translates "exoratus," *i. e.,* obtained by entreaty; and others, "asked for, or desired." Fr., *Saul;* Lat., *Saulus.*
Sault Ste. Marie, Mich. See *St. Marie, Sault.*
saun-ter (*sän'tĕr* or *sawn'tĕr*), *v. i.* to wander about idly; loiter; linger: *n.* a place for sauntering; idle walk or ramble. [LINGER].
sau-sage (*saw'sāj*), *n.* the gut of an animal stuffed with seasoned minced meat.
sau-terne (*-tärn'*), *n.* a French white wine.
sav-a-ble (*sāv'a-bl*), *adj.* capable of being saved.
★sav-age (*sav'āj*), *adj.* uncivilized; wild; cruel; fierce; pitiless: *n.* barbarian. [CRUEL, FEROCIOUS.]
sav-age-ry (*'āj-ri*), *n.* the state of being wild or uncivilized; barbarism; brutal roughness.
sa-van-nah (*sa-van'a*), *n.* an extensive open plain or meadow. [Also *savanna.*]
Savannah (*sa-van'na*). Town in Wayne county, New York, and city and river in Georgia. The name derived from the Spanish word *savanne,* meaning "grassy plain."
sa-vant (*-vänn*), *n.* a man of learning or science. [*French.*]
save (*sāv*), *v. t.* to bring out of danger or preserve from evil; rescue; lay by; take advantage of: *v. i.* to be economical: *prep.* except; not including. [DELIVER, KEEP.]
sav-in (*sav'in*), *n.* an evergreen tree or shrub with a dark foliage and bluish-green berries.
sav-ing (*sāv'ing*), *adj.* preserving; frugal; parsimonious: *n.* an exception or reservation. [FRUGALITY, PENURIOUS.]
sav-ior (*sāv'y ĕr*), *n.* one who saves.
Sav-ior, Sav-iour, *n.* Jesus Christ, the Redeemer (with *the*).
sa-vor (*sā'vĕr*), *n.* flavor; taste; relish; scent: *v. t.* to have a particular flavor or smell.
sa-vor-y (*'vĕr-i*), *n.* an aromatic plant.
sa-voy (*sa-voi'*), *n.* a kind of winter cabbage with crisp curled leaves.
saw (*saw*), *n.* a cutting steel instrument with a toothed edge: *v. t.* to cut with, or as with, a saw: *v. i.* to be cut with a saw: *p. t.* of *see.*
saw-yer (*'y ĕr*), *n.* one who saws timber into planks.
Saxon. Comes from the word *seax,* a short crooked sword; and so "the men of the sword."
Saxony (*saks'un-i*). A modern German kingdom, called *Sachsen* in German; the country of the Saxons.
sax-o-phone (*'ō-fōn*), *n.* a brass musical instrument with a single reed and clarinet mouthpiece.
say (*sā*), *v. t.* [*p. t.* and *p. p.* said (*sed*), *p. pr.* saying], to utter in words; declare; speak; decide: *v. i.* to speak; relate; answer: *imper.* tell me: *n.* speech. [SPEAK, ALLEGE, ANNOUNCE.]
scab (*skab*), *n.* an incrustation formed over a wound; a workman who takes the place abandoned by a striker.
scab-bard (*'ĕrd*) *n.* the sheath in which the blade of a sword is kept: *v. t.* to put into a scabbard.

scab-by (*skăb'ĭ*), *adj.* covered with, or full of, scabs; affected with scab.
scad (*skad*), *n.* the shad or horse mackerel.
scaf-fold (*skaf'ōld*), *n.* a temporary timber stage or structure; an elevated platform for the execution of a criminal: *v. t.* to furnish or support with a scaffold.
scaf-fold-ing (*-ing*), *n.* a scaffold; materials for erecting scaffolds; framework.
scal-a-ble (*skāl'ā-bl*), *adj.* capable of being scaled.
scal-a-wag (*skal'ā-wag*), *n.* a scamp; scapegrace.
scald (*skawld*), *v. t.* to burn with hot liquid or steam; injure by contact with any hot fluid: *n.* a burn or injury to the skin or flesh from a hot liquid or steam.
scald-ic (*'ĭk*), *adj.* pertaining to, or composed by, the scalds or Norse poets. [Also *skaldic.*]
scald-ing (*'ing*), *p. adj.* burning, as with a hot liquid or steam.
scale (*skāl*), *n.* a balance; the small bony or horny plates covering a fish, certain reptiles, and insects: *v. t.* to strip or clear of scales; clamber up; ascend by steps or by climbing: *v. i.* to separate and come off in thin layers.
★sca-lene (*skā-lēn'*, not *skā'lēn*), *adj.* having the sides and angles unequal: said of a triangle.
scal-lop (*skol'up*), *n.* a marine bivalve fish; a curving or recess: *v. t.* to cut the edge or border of in scallops or curves.
scal-loped oys-ters (*'upt ois'tĕrz*), *n. pl.* oysters baked with bread crumbs, etc.
scalp (*skalp*), *n.* the skin on the top of the head from which the hair grows: *v. t.* to deprive of the scalp.
scalp-el (*'el*), *n.* a small keen-edged knife.
scalp-er (*'ĕr*), *n.* one who scalps; a person who buys and sells the unused parts of railway tickets.
scal-y (*skāl'ĭ*), *adj.* covered with, or like, scales; mean; caddish.
scamp (*skamp*), *n.* a rascal; worthless fellow; rogue.
scam-per (*skam'pĕr*), *v. i.* to run with speed; hasten away: *n.* a hasty flight.
scan (*skan*), *v. t.* to examine by counting the metrical feet or syllables; scrutinize or examine carefully.
scan-dal (*'dal*), *n.* something uttered that is false and injurious to the reputation of a person; opprobrium; defamation; disgrace. [DISCREDIT.]
scan-dal-ize (*-iz*), *v. t.* to offend by some supposed improper action or conduct.
scan-dal-ous (*-us*), *adj.* giving offense to the conscience or moral sense; exciting condemnation or opprobrium. [INFAMOUS.]
Scandinavia (*skan-di-nā'vi-ā*). A convenient name for the Swedish and Norwegian peninsula adopted from a passage in Pliny where the correct reading is probably *Scadinavia*, which Mr. Bradley refers to the Teutonic *shadino*, "dark." *Scadinavia*, the "land of darkness," was possibly at first a mythical name for the dark north, which was afterward applied to the Swedish peninsula.
Scan-di-na-vi-an (*-di-nā'vi-an*), *adj.* pertaining to Scandinavia, its language, literature, or people. [Also *Scandian.*]
scant (*skant*), *adj.* [*comp.* scanter, *superl.* scantest], not full or abundant; scarcely sufficient: *v. t.* to stint; treat illiberally; limit: *v. i.* to fail or become diminished.
scant-ling (*'ling*), *n.* a piece of timber cut or sawed of small size; the size to which a piece of timber is to be cut.
scant-y (*'ĭ*), *adj.* [*comp.* scantier, *superl.* scantiest], narrow; barely sufficient; scant. [BARE.]
scape (*skāp*), *n.* the shaft of a column where it leaves the base.
scape-goat (*'gōt*), *n.* one who bears the blame for others.
scape-grace (*'grās*), *n.* a graceless, unprincipled fellow.
scap-ple (*skap'l*), *v. t.* to rough dress (stone) preparatory to hewing.
scap-u-la (*'ū-lā*), *n.* the shoulder blade.
scar (*skär*), *n.* a mark caused by a wound; mark or blemish: *v. t.* to mark with, or as with, a scar: *v. i.* to form a scar.
scar-ab (*skar'ab*), *n.* a lamellicorn beetle, scarabæus; a gem or seal cut in the form of a beetle, worn as a charm by the ancient Egyptians.
scarce (*skărs*), *adj.* not common; not plentiful; not equal to the demand. [RARE.]
scarce-ly (*'lĭ*), *adv.* seldom; rarely; with difficulty. [HARDLY.]
scare (*skâr*), *v. t.* to strike with sudden terror; frighten: *n.* a sudden fright or panic.
scare-crow (*'krō*), *n.* anything fantastic set up to scare away birds; a vain cause of terror; a guy.
scarf (*skärf*), *n.* a light handkerchief or tie for the neck; sash: *v. t.* throw on loosely; dress with a scarf.
scar-i-fy (*skar'ĭ-fī*), *v. t.* to scratch or cut; to stir up and prepare for planting: as, to *scarify* the soil.
scar-la-ti-na (*skär-la-tē'nā*), *n.* scarlet fever of a mild form.
scar-let (*'let*), *n.* a bright red color; cloth of such a color: *adj.* of a scarlet color.
scar-let fe-ver (*fē'vĕr*), a contagious febrile disease characterized by a scarlet eruption.
scarp (*skärp*), *n.* a slope or declivity, nearly perpendicular: *v. t.* to cut perpendicularly or nearly so.
scath-ing (*skath'ing*), *adj.* injurious; hurtful; very severe or bitter.
scat-ter (*skat'ĕr*), *v. t.* to strew or throw loosely about; disperse or dissipate: *v. i.* to be dispersed.
scat-ter-brained (*-brānd*), *adj.* giddy.
scav-enge (*skav'enj*), *v. t.* to cleanse, as streets, from mud and filth.
scav-en-ger (*'en-jĕr*), *n.* a man employed to clean the streets; any animal that devours refuse or any other deleterious matter.
sce-na-ri-o (*shā-nā'rē-ō*), *n.* the sketch of a plot or chief incidents of a libretto or play.
scene (*sēn*), *n.* the time, place, or circumstance, etc., in which anything occurs; spectacle; exhibition.
scen-er-y (*'ĕr-ĭ*), *n.* the appearance of anything presented to the vision; general aspect.
scen-ic (*sen'ik*), *adj.* pertaining to scenery or to the stage; dramatic. [Also *scenical.*]
sce-no-gra-phy (*sē-nog'rà-fi*), *n.* the art of drawing in perspective.
scent (*sent*), *n.* odor; sense of smell; chase followed by means of the scent: *v. t.* to perceive by the olfactory nerves; smell; perfume.
scep-ter, scep-tre (*sep'tĕr*), *n.* a staff borne by a sovereign as the emblem of authority; royal mace.
sched-ule (*sked'ūl*), *n.* a written or printed paper or parchment containing a list, or inventory: *v. t.* to place in a schedule.
scheme (*skēm*), *n.* plan; contrivance; purpose; plot: *v. t.* to design or plan; plot: *v. i.* to form a scheme or plan.
Schenectady (*sken-ek'tà-dĭ*), **N. Y.** Originally spelled *Schenectada*, from the Indian *Schaunaughtada*, "river valley through or beyond the pine trees," there being a portage across the woodland neck, from the present site of Albany to the Mohawk river, at this point.
schism (*sizm*), *n.* a split or division.
schis-mat-ic (*siz-mat'ik*), *adj.* pertaining to, characteristic of, or implying, schism: *n.* one who creates or takes part in a schism.
schist (*shist*), *n.* any rock that splits into slates or slabs.
Schoharie (*skō-har'ĭ*), **N. Y.** Corruption of the Indian *to-wos-sho'her*, "drift wood," from its collecting at this point, where the Line Kil and Little Schoharie flowed into the main stream.
schol-ar (*skol'ĕr*), *n.* a student; disciple; man of letters; an undergraduate on the foundation of a college.
schol-ar-ly (*-lĭ*), *adj.* like a scholar: *adv.* in the manner of a scholar.
schol-ar-ship (*'ĕr-ship*), *n.* learning; erudition; maintenance for a scholar, awarded by an educational institution.
scho-las-tic (*skō-las'tik*), *adj.* pertaining to a scholar or to schools; scholar-like.
scho-las-ti-cism (*'ti-sizm*), *n.* the scholastic philosophy of the mediæval age.
Schönbrunn (*shön'broon*). Near Vienna, the suburban residence of the Austrian emperors, so called from a "beautiful spring" in the grounds of the palace, was erected in 1744 by Maria Theresa on the site of a former hunting seat.
school (*skōōl*), *n.* a place where instruction is given; scholars or pupils collectively; disciples of a particular teacher: *v. t.* to train or instruct. [TEACH.]
school-man (*'man*), *n.* [*pl.* schoolmen (*'men*)], one of the divines and philosophers in the middle ages.
schoon-er (*skōōn'ĕr*), *n.* a vessel with 2 masts, sometimes 3, rigged fore and aft; a tall beer glass
★schot-tische (*shot-ēsh'*), *n.* a kind of polka.
Schroon (*skrōōn*) **lake, N. Y.** Said to be a corruption of *Scharon*, and to have been applied in honor of the duchess of Scharon, favorite of Louis XIV. Others derive it from an Adirondack Indian word signifying "a child or daughter of the mountain."
Schuylkill (*skōōl'kil*) **river, Pa.** From the Dutch *schuylen-kill*, "hidden creek." The Swedes called it *Skierkillen*. Indian name was *ganshowehanne*, "the roaring stream."
sci-ag-ra-phy (*sī-ag'rà-fi*), *n.* the art or science of projecting or delineating shadows as they fall in nature.
sci-at-ic (*-at'ik*), *adj.* pertaining to, or affecting, the hip.
sci-at-i-ca (*'ĭ-kà*), *n.* neuralgia of the sciatic nerve.
sci-ence (*'ens*), *n.* systematized knowledge of any one department of mind or matter. [KNOWLEDGE.]
sci-en-tif-ic (*-en-tif'ik*), *adj.* pertaining to, used in, or skilled in, science; skillful.
sci-en-tist (*'en-tist*), *n.* one skilled in, or devoted to, science.
scim-i-tar (*sim'ĭ-tĕr*), *n.* an Oriental sword with a curved blade having its edge on the convex side. [Also *scimeter.*]
scin-til-late (*sin'til-āt*), *v. i.* to emit sparks, fire, or igneous particles; twinkle.
sci-on (*sī'on*), *n.* the sprout or shoot of a plant; a descendant; heir.
sci-op-tic (*-op'tik*), *adj.* pertaining to the art of exhibiting luminous images in a darkened room or camera obscura.
Scioto (*sī-ō'tō*) **river, Ohio.** Shawnoese Indian word meaning "hairy," its waters at flood in the spring being filled with hairs, attributed to the herds of deer drinking or bathing in the water at the season of shedding their coats.
scis-sors (*siz'ĕrz*), *n. pl.* a cutting instrument resembling shears but smaller.
scle-rot-ic (*sklē-rot'ik*), *adj.* hard; noting the firm white outermost membrane of the eyeball.
scoff (*skŏf*), *n.* an expression of scorn or contempt; ridicule; derision: *v. i.* to exhibit scorn or contempt: *v. t.* to treat or address with derision.
scold (*skōld*), *v. i.* to chide sharply or rudely: *v. t.* to find fault with: *n.* one who habitually scolds.
sconce (*skons*), *n.* a bulwark; small fort; protection.
scoop (*skōōp*), *n.* a large ladle; deep shovel; kind of scuttle: *v. t.* to take out, or up, with a scoop.
scoot (*skōōt*), *v. i.* to walk or run hastily.
scope (*skōp*), *n.* room or opportunity for free outlook or action; aim or intention; design: *suffix* meaning *an instrument for viewing*, as *microscope.*
scor-bu-tic (*skôr-bū'tik*), *adj.* pertaining to, or affected by, scurvy.
scorch (*skôrch*), *v. t.* parch, shrivel, or affect painfully with heat: *v. i.* to be scorched.
score (*skōr*), *n.* a notch or incision, especially one made as a reckoning; the number 20: *v. t.* to make a score of.
sco-ri-a (*skō'rĭ-ā*), *n.* [*pl.* scoriæ (*-ē*)], volcanic cinder; slag formed after the fusion of metallic ores.
sco-ri-a-ceous (*-ā'shus*), *adj.* pertaining to, or resembling, scoria.
scorn (*skôrn*), *n.* extreme and lofty contempt; haughty disdain: *v. t.* to hold in extreme contempt or disdain. [CONTEMN.]
scorn-ful (*'fool*), *adj.* full of scorn; contemptuous; disdainful.
scor-pi-on (*skôr'pĭ-un*), *n.* an individual of the genus Scorpio, furnished with lobster-like claws, and armed with a poisonous sting in the tail; a painful scourge.
scotch, *n.* a wedge, etc., to prevent slipping or rolling; a slight cut or incision: *v. t.* to cut or wound superficially.
sco-ti-a (*skō'shi-ā*), *n.* the hollow molding in the base of an Ionic column.
Scotland. Originally *Caledonia*, meaning, literally, the hilly country of the Caels, or Gaels, signifying "a hidden rover."
Scotland Yard. A short street in London, near Trafalgar square. Here formerly were the headquarters of the metropolitan police, now removed to new Scotland Yard on the Thames embankment, near Westminster bridge.
scoun-drel (*skoun'drel*), *n.* a man without honor or virtue; low, worthless fellow.
scour (*skour*), *v. t.* to clean by friction; cleanse from grease, dirt, and make bright; search thoroughly; purge.
scourge (*skûrj*), *n.* a whip with thongs used as a punishment: *v. t.* to whip severely; afflict or harass greatly.
scout (*skout*), *n.* a person sent out to obtain and bring in information, especially of the movements, etc., of an enemy: *v. i.* to act as a scout.
scow (*skou*), *n.* a large flat-bottomed boat with square ends: *v. t.* to transport in a scow.
scowl (*skoul*), *v. i.* look sullen or angry: *n.* the wrinkling of the brows in displeasure or anger; frown.
scrab-ble (*skrab'l*), *v. i.* to scrawl or scribble; make irregular, umneaning marks: *v. t.* to mark with irregular lines or letters.
scrag (*skrag*), *n.* anything thin, lean, or rough; something merely skin and bones.
scrag-gy (*'ĭ*), *adj.* lean, thin, and rough; rough, with irregular points.
scram-ble (*skram'bl*), *v. i.* to clamber with the hands and feet: *v. t.* to toss together at random: *n.* a rude, eager struggle.
scrap (*skrap*), *n.* a small or detached piece; fragment; a scrimmage: *v. i.* to engage in a scrimmage.
scrap-book (*'book*), *n.* a blank book for the pasting in of newspaper extracts, etc.
scrape (*skrāp*), *v. t.* to make a harsh or grating noise on; rub with something sharp; clean by rubbing: *n.* the act, noise, or effect of scraping; difficulty; perplexity.
scratch (*skrach*), *v. t.* to mark or tear the surface of with something pointed; wound slightly: *v. i.* to use the nails or claws in tearing or digging.
scrawl (*skrawl*), *v. t.* and *v. i.* to write or draw irregularly or hastily; scribble: *n.* hasty, irregular, or illegible writing; scribble.
screak (*skrēk*), *n.* a shriek; screech.
scream (*skrēm*), *n.* a sharp, shrill cry, as of fear or pain: *v. i.* to utter such a cry.
screech (*skrēch*), *n.* a harsh, shrill cry: *v. i.* to utter a harsh, shrill cry.
screed (*skrēd*), *n.* loud, shrill sound; a piece of poor prose or verse.
screen (*skrēn*), *n.* a light movable partition for protection; coarse sieve: *v. t.* to shelter or conceal; protect. [COVER.]
screw (*skrōō*), *n.* a cylinder of metal or wood grooved spirally: *v. t.* apply a screw to; twist.
screw pro-pel-ler (*-prō-pel'ĕr*), a spiral-bladed wheel at the stern of a steam vessel for propelling it; the vessel thus propelled.
scrib-ble (*skrib'l*), *v. t.* to write hastily and carelessly: *v. i.* write carelessly and without regard to correctness: *n.* hasty, careless writing.
scribe (*skrīb*), *n.* a writer; clerk; amanuensis; a teacher or copyist of the Jewish law: *v. t.* to adjust.
scrim (*skrim*), *n.* a kind of fabric of cotton or linen for making blinds, etc.
scrim-mage (*'āj*), *n.* a general quarrel or fight.

scrimp (*skrimp*), *v. t.* to make small, narrow, or short: *v. i.* to be parsimonious or miserly: *adj.* curtailed: *n.* a niggard or miser. [FRUGALITY.]
scrip (*skrip*), *n.* a satchel; schedule; certificate; writing.
script (*skript*), *n.* a piece of writing; style of writing.
scrip-tur-al (*skrip'tūr-al*), *adj.* pertaining to, contained in, or according to, the Scriptures; Biblical.
Scrip-ture (*'tūr*), *n.* sacred writing; biblical text: *pl.* the books of the Old and New Testaments; the Bible.
scrive-ner (*skriv'nĕr*), *n.* one who draws up contracts, prepares writings, etc.
scrof-u-la (*skrof'ū-la*), *n.* a disease caused by the formation and deposition of tubercle in the organs and tissues of the body.
scrof-u-lous (*-lus*), *adj* pertaining to, of the nature of, or affected with, scrofula.
scroll (*skrōl*), *n.* a roll of paper or parchment; a convoluted spiral ornament.
scro-tum (*skrō'tum*), *n.* the pouch which contains the testes.
scrouge (*skrouj*), *v. t.* to crowd or squeeze.
scrub (*skrub*), *v. t.* to rub hard; wash with rubbing or a wet brush: *v. i.* to clean or scour: *n.* one who labors hard and lives meanly.
scrub-by (*'i*), *adj.* mean and small; stunted in growth; covered with brushwood; unshaven.
scrump-tious (*skrump'shus*), *adj.* nice; excellent; fine.
scru-ple (*skrōō'pl*), *n.* 1-3 of a dram, or 20 grains; hesitation, especially from conscientious motives: *v. i.* to hesitate from conscientious motives.
scru-pu-lous (*'pū-lus*), *adj.* full of scruples; conscientious; exact; careful; strict.
scru-ti-nize (*'ti-niz*), *v. t.* to inspect or examine closely.
scru-ti-ny (*'ti-nī*), *n.* close inspection or examination; minute inquiry.
scud (*skud*), *v. i.* to run quickly; run before a gale of wind with little or no sail spread: *n.* the act of scudding.
scuf-fle (*skuf'l*), *v. i.* to fight or struggle confusedly: *n.* a struggle for mastery with close grappling.
scull (*skul*), *n.* one of a pair of short oars; an oar used at the stern of a boat with a scull or sculls: *v. i.* to impel a boat with a scull or sculls.
scul-ler-y (*'ĕr-i*), *n.* [*pl.* sculleries (*-iz*)], a place where culinary utensils, etc., are kept and cleansed.
scul-lion (*'yun*), *n.* a servant employed in the menial work of a scullery.
sculp-tor (*skulp'tĕr*), *n.* one who practices the art of sculpture.
sculp-tur-al (*'tūr-al*), *adj.* pertaining to sculpture.
sculp-ture (*'tūr*), *n.* the art of carving, cutting, or hewing stone or other material; carved work: *v. t.* to represent in, or fashion by, sculpture.
scum (*skum*), *n.* extraneous matter or impurities which rise to the surface of liquids; anything worthless or vile.
scup-per (*skup'ĕr*), *n.* a hole or tube in the side of a ship to carry off deck water.
scurf (*skĕrf*), *n.* minute, white, flaky scales; loosely adherent matter.
scurf-y (*'i*), *adj.* [*comp.* scurifier, *superl.* scurfiest], pertaining to, producing, covered with, or like, scurf.
scur-rile (*skur'il*), *adj.* befitting a buffoon or vulgar jester.
scur-ril-ous (*'il-us*), *adj.* using the low, indecent language of the vulgar; mean.
scur-ry (*skur'i*), *v. i.* [*p. t.* and *p. p.* scurried, *p. pr.* scurrying], to hasten or move rapidly along: *n.* hurried movement.
scur-vy (*'vi*), *adj.* affected by scurvy; vile; contemptible: *n.* a disease; a condition of anæmia.
Scutari (*skōō'tä-rē*). In Turkey, from *uskudar*, "a messenger," having been in remote periods, what it is to this day, a station for Asiatic couriers.
scutch (*skuch*), *v. t.* to dress (flax or cotton) by beating.
scutch-eon (*'un*), *n.* an escutcheon; shield for a keyhole.
scut-tle (*skut'l*), *v. i.* to hasten or hurry: *v. t.* to cut a hole or holes in (a ship) to sink it: *n.* a pan for holding coals; hatchway or small opening.
scythe (*sīth*), *n.* a curved cutting instrument used for mowing grass, etc.
sea (*sē*), *n.* an expanse of salt water; the ocean; swell of the ocean.
sea bear (*'bâr*), the polar bear.
sea calf (*'kăf*), the seal.
sea cow (*'kou*), walrus.
sea cu-cum-ber (*'kū-kum-bĕr*), the trepang.
sea dev-il (*'dev-il*), a fish with a large head and great mouth.
sea dog (*'dog*), an old sailor.
sea el-e-phant (*'el-ē-fant*), a variety of seal.
sea-far-ing (*'fâr-ing*), *adj.* following the occupation of a sailor.
seal (*sēl*), *n.* a carnivorous marine mammal, valuable for its skin and oil; a stamp or die engraved with some device; wax or other soft substance; that which seals or fastens: *v. t.* to fasten with a seal; ratify or confirm.
sea li-on (*sē' lī-un*), a name for several large species of seals.
seam (*sēm*), *n.* line of junction or union; thin layer: *v. t.* to form a seam upon or of; scar: *v. i.* to crack open.
sea-man (*sē'man*), *n.* one engaged in navigation.
Syn. SEAMAN, waterman, sailor, mariner. All these words denote persons occupied in navigation. The *seaman*, as the word implies, follows his business on the *sea;* the *waterman* is one who gets his livelihood on fresh *water;* the *sailor* and the *mariner* are both specific terms to designate the *seaman;* every *sailor* and *mariner* is a *seaman;* although every *seaman* is not a *sailor* or *mariner;* the former is one who is employed about the laborious part of the vessel; the latter is one who traverses the ocean to and fro, who is attached to the *water* and passes his life upon it.
sea mew (*sē' mū*), a species of gull.
seam-stress (*sēm'stres*), *n.* a needlewoman.
seam-y (*'i*), *adj.* showing, or like, seams.
seam-y side (*sid*), the worst side.
★**sé-ance** (*sē'ans*, French *sā'ŭNs*), *n.* a meeting of spiritualists.
sear (*sēr*), *v. t.* cauterize; brand; render callous or insensible.
search (*sĕrch*), *v. t.* to seek for: *v. i.* to make inquiry; seek: *n.* the act of seeking or looking for something. [SEEK.]
search war-rant (*'wor-ant*), *n.* a warrant to search a house.
seared (*sērd*), *adj.* hardened; callous; indifferent; cauterized.
sea-son (*sē'zn*), *n.* any particular time as distinguished from others: *v. t.* to mature; spice: *v. i.* to become mature, acclimated, inured. [TIME.]
sea-son-a-ble (*-a-bl*), *adj.* occurring, or done, in proper time. [TIMELY.]
sea-son-ing (*-ing*), *n.* that which is added to give relish to food.
seat (*sēt*), *n.* that on which any one sits; post or authority; site; residence: *v. t.* to place on a seat; cause to sit down; install; fix.
Seattle (*sē-at'l*). City in King county, Washington, named for the chief of the Duwamish tribe of Indians, *See-aa-thl.*
Sebago (*sē-bā'gō*) **pond, Me.** From the Indian, meaning "great water," or "place or region of river lake."
Sebastian (*sē-bas'chan*, Spanish *sā-bās-tē-ān'*). From the Greek rendering of Augustus, and signifying "to be venerated or reverenced", "venerable." Dutch, *Sebastiaan;* Fr., *Sebastien;* It., *Sebastiano;* Lat., *Sebastianus;* Port., *Sebastiao;* Russ., *Sevastian;* Sp., *Sebastian;* Sw., *Sebastian.*
Sebastopol (*sē-bās'tō-pōl*). The "august" or "imperial city," was founded and named by Potemkin soon after the conquest of the Crimea in 1783.
se-cant (*sē'kant*), *adj.* cutting into two parts.
se-cede (*sē-sēd'*), *v. i.* to withdraw from fellowship, communion, or association.
se-ces-sion (*-sesh'un*), *n.* the act of seceding.
se-clude (*-klōōd'*), *v. t.* to keep apart.
se-clu-sion (*-klōō'zhun*), *n.* separation or withdrawal from the society of others; privacy. [PRIVACY.]
se-clu-sive (*'siv*), *adj.* keeping in seclusion.
sec-o nd (*sek'und*), *adj.* immediately following the first; inferior; subordinate: *n.* one, or that, next the first; one who attends on the principal at a duel; backer; the 1-60th part of a minute of time or of a degree: *v. t.* to follow; assist; support. [ABET.]
sec-ond-a-ry (*'und-ā-ri*), *adj.* succeeding next in order to the first; subordinate; inferior.
se-cre-cy (*sē'krē-si*), *n.* [*pl.* secrecies (*-siz*)], the state or quality of being hidden; concealment.
se-cret (*'kret*), *adj.* hidden or concealed; silent; private: *n.* that which is concealed.
Syn. SECRET, hidden, latent, occult, mysterious. What is *secret* is known to some one; what is *hidden* may be known to no one; it rests in the breast of an individual to keep a thing *secret;* it depends on the course of things if anything remains *hidden.* The *latent* is the *secret* or concealed, in cases where it ought to be open; a *latent* motive is that which a person intentionally, though not justifiably, keeps to himself; an *occult* science is one that is hidden from the view of persons in general, which is attainable by but few; *occult* causes or qualities are those which lie too remote to be discovered by the inquirer; the operations of Providence are said to be *mysterious,* as they are past finding out. [See *clandestine, mysterious.*]
Ant. APPARENT, obvious, open, known.
★**sec-re-ta-ry** (*sek'rē-tā-ri*, not *sek'ē-tā-ri*), *n.* [*pl.* secretaries (*-riz*)], a person employed to assist another in correspondence, etc.; an escritoire.
se-crete (*sē-krēt'*), *v. t.* to hide or conceal; separate from the blood, sap, etc. [CONCEAL.]
se-cre-tion (*-krē'shun*), *n.* the act of secreting; any substance secreted.
se-cret-ive (*-krēt'iv*), *adj.* tending to keep secret.
se-cret-ive-ness (*-krēt'iv-nes*), *n.* the quality of being secretive.
se-cre-to-ry (*-krē'tō-ri*), *adj.* performing, or connected with, the office of secretion.
sect (*sekt*), *n.* a number of persons united by some particular religious doctrines.
sec-ta-ri-an (*sek-tā'ri-an*), *adj.* pertaining to, or characteristic of, a sect: *n.* a member of a sect.
sec-ta-ri-an-ism (*-an-izm*), *n.* the spirit, tendency, or principles of a sect; adherence to some particular sect.
sec-tion (*'shun*), *n.* the act of cutting, or separation by cutting; part or division; 1-36th of a township.
sec-tion-al-ism (*'shun-al-izm*), *n.* local patriotism.
sec-tor (*sek'tĕr*), *n.* that part of a circle included between two radii and the arc.
sec-u-lar (*sek'ū-lĕr*), *adj.* worldly; temporal: *n.* a layman.
sec-u-lar-ism (*-izm*), *n.* the principles or tenets of the secularists.
sec-u-lar-ist (*-ist*), *n.* one who objects to religious teaching in elementary schools.
sec-u-lar-i-ty (*-lar'i-ti*), *n.* worldliness.
sec-u-lar-ize (*'ū-lĕr-iz*). *v. t.* to render worldly or unspiritual.
se-cure (*sē-kūr'*), *adj.* free from danger; safe; protected; confident: *v. t.* to make safe; protect; confine; gain possession of. [CERTAIN.]
se-cur-i-ty (*'i-ti*), *n.* [*pl.* securities (*-tiz*)], the state or quality of being secure; assurance; certainty; pledge. [DEPOSIT.]
se-dan (*-dan'*), *n.* a portable covered chair or vehicle carried by two men by means of a pole on either side. [Also *sedan chair.*]
se-date (*sē-dāt'*), *adj.* calm; composed; quiet; serious; unruffled. [CALM, COMPOSED.]
sed-a-tive (*sed'ā-tiv*), *adj.* allaying nervous irritation and irritability; assuaging pain: *n.* medicine having such an effect.
sed-en-ta-ry (*'en-tā-ri*), *adj.* characterized by much sitting; inactive.
sedge (*sej*), *n.* a coarse grass of the genus Carex.
sedg-y (*'i*), *adj.* overgrown with sedge.
sed-i-ment (*sed'i-ment*), *n.* dregs; lees.
★**sed-i-men-ta-ry** (*-i-men'tā-ri*), *adj.* pertaining to, or formed by, or consisting of, sediment.
se-di-tion (*sē-dish'un*), *n.* any offense against the state less grave than insurrection or treason; the stirring up of such. [INSURRECTION.]
se-di-tious (*'us*), *adj.* pertaining to, of the nature of, or characterized by, sedition. [FACTIOUS.]
se-duce (*-dūs'*), *v. t.* to entice from the paths of rectitude, duty, or virtue.
se-du-cer (*-dū'sĕr*), *n.* one who seduces.
se-du-ci-ble (*'si-bl*), *adj.* capable of being seduced.
se-duc-tion (*-duk'shun*), *n.* the act or crime of seducing.
se-duc-tive (*'tiv*), *adj.* tending to seduce or lead astray; enticing.
se-duc-tive-ness (*-nes*), *n.* the state or quality of being seductive.
sed-u-lous (*sed'ū-lus*), *adj.* steadily industrious and persevering; diligent; untiring.
see (*sē*), *n.* diocese or jurisdiction of an archbishop or bishop: *v. t.* to perceive by the eye; observe; perceive mentally; pay a visit to; escort or accompany: *v. i.* to have the faculty of sight or of perceiving; take care or heed.
Syn. SEE, perceive, observe. The eye *sees* when the mind is absent; the mind and the eye or other senses *perceive* in conjunction; hence, we may say that a person *sees,* but does not *perceive;* we *observe* not merely by a simple act of the mind, but by its positive and fixed exertion.
seed (*sēd*), *n.* that part of a plant that contains the embryo of the future plant; semen; first principle or source; offspring: *v. i.* to sow, or shed the seed: *v. t.* to sprinkle with seed.
seed-y (*'i*), *adj.* abounding with, or run to, seeds; shabby.
see-ing (*sē'ing*), *n.* the act or power of sight: *conj.* inasmuch as; considering; since.
seek (*sēk*), *v. t.* [*p. t.* and *p. p.* sought, *p. pr.* seeking] to go in search of; look for; resort to; inquire for: *v. i.* to make search or inquiry; try or endeavor.
seem (*sēm*), *v. i.* to appear; look; pretend.
Syn. SEEM, appear. *Seem* is said of that which is dubious, contingent, or future; *appear* of that which is actual, positive, and past. A thing *seems* strange which we are led to conclude as strange from what we see of it; a thing *appears* clear when we have a clear conception of it.
seem-ly (*'li*), *adj.* fit or becoming; decent; proper; comely.
seer (*sēr*), *n.* prophet; one who sees.
see-saw (*sē'saw*), *n.* a reciprocating motion; a game played with a balanced plank: *v. i.* to move up and down with a reciprocating motion.
seethe (*sēth*), *v. t.* to boil: *v. i.* to be hot; be in a condition of boiling.
seg-ment (*seg'ment*), *n.* a part divided or set off; section.
seg-men-ta-tion (*-men-tā'shun*), *n.* the act of dividing into segments; state of being divided into segments.
seg-re-gate (*seg'rē-gāt*), *v. t.* to separate from others.
seign-ior (*sēn'yĕr*), *n.* a title of honor in use in southern Europe.
seign-ior-age (*'yĕr-āj*), *n.* something claimed or taken by virtue of sovereign prerogative.
seine (*sān*), *n.* a large fishing net.
seis-mic (*sīs'mik*), *adj.* pertaining to, or produced by, an earthquake.
seis-mo-graph (*'mō-grâf*), *n.* an instrument for recording seismic disturbances.
seis-mol-o-gy (*-mol'ō-ji*), *n.* the scientific study of earthquakes.
seiz-a-ble (*sēz'ä-bl*), *adj.* capable of being seized.
seize (*sēz*), *v. t.* to take possession of forcibly; grasp; snatch; take hold of. [LAY, ABDUCT.]
seiz-ure (*'ūr*), *n.* the act of seizing; sudden attack, as of a disease.
Selah. A masculine name derived from the Hebrew *shelah,* signifying a "weapon," "missile."
sel-dom (*sel'dum*), *adv.* rarely.
se-lect (*sē-lekt'*), *adj.* chosen or picked out: *v. t.* choose. [CHOOSE.]

se-lec-tion (*sē-lek'shun*), *n.* the act of selecting; the thing selected.
se-lect-man (*-lekt'man*), *n.* [*pl.* selectmen (*'men*)], one of the board of town officials.
se-le-ni-um (*-lē'ni-um*), *n.* a nonmetallic elementary substance, resembling lead.
sel-e-nog-ra-phy (*sel-ē-nog'rà-fi*), *n.* a description of the moon; the art of delineating the moon's surface.
self (*self*), *n.* [*pl.* selves (*selvz*)], one's own person; personal interest; personality: *adj.* very; particular.
self-ish (*'ish*), *adj.* attentive only to one's own interests.
se-li-um (*sē'li-um*), *n.* a metal claimed to have been discovered by Edward Mollard, a Frenchman. It is stated to have a density of 2.6, to be one-twelfth the cost of aluminium and lighter and stronger, melting point 600° C., is stronger than iron, but weaker than steel.
sell (*sel*), *v. t.* [*p. t.* and *p. p.* sold, *p. pr.* selling], to transfer to another for an equivalent: *v. i.* to practice selling; be sold: *n.* a hoax; an imposition.
selt-zer wa-ter (*selt's ĕr waw't ĕr*), a mineral water, mildly stimulative.
sel-vage (*sel'vej*), *n.* the edge of cloth; woven border. [Also *selvedge.*]
sem-a-phore (*sem'à-fōr*), *n.* a telegraphic apparatus for signaling by means of arms, lanterns, flags, etc.
sem-blance (*'blans*), *n.* likeness; resemblance; exterior. [PRETENSE.]
se-men (*sē'men*), *n.* sperm.
sem-i, *prefix* meaning *half, partially.*
sem-i-co-lon (*'i-kō-lon*), *n.* a mark in punctuation (;).
sem-i-nal (*'i-nal*), *adj.* pertaining to, containing, or consisting of, seed.
sem-i-na-ry (*sem'i-nā-ri*), *n.* [*pl.* seminaries (*-riz*)], a place of education.
Se-mit-ic (*sē-mit'ik*), *adj.* pertaining to Shem, or to his descendants; noting, or belonging to, one of the great divisions of races and languages.
sen (*sen*), *n.* a small Japanese coin.
sen-ate (*sen'āt*), *n.* the upper house of Congress or of a state legislature.
sen-ate (*sen'āt*), *n.* an assembly or body of elders.
sen-a-tor (*'à-t ĕr*), *n.* a member of a senate.
sen-a-to-ri-al (*-tō'ri-al*), *adj.* pertaining to, or befitting, a senator or a senate.
send (*send*), *v. t.* [*p. t.* and *p. p.* sent, *p. pr.* sending], to throw, cast, or impel; cause to go: *v. i.* to dispatch a messenger.
Seneca (*sen'ē-kà*) **lake, N. Y.** From a tribe of Indians, the *Senecas;* known as the "great hill people" from a tradition that they broke out of the earth from a large mountain, on Canandaigua lake, known as *ge-nun-de-wah* or "great hill."
Senegambia (*sen-ē-gam'bi-à*). A region of central Africa, so named because of its situation between the Senegal and Gambia rivers.
se-nile (*sē'nīl*), *adj.* pertaining to, characteristic of, or occasioned by, old age.
sen-ior (*sēn'y ĕr*), *adj.* prior in age, dignity, rank, or office: *n.* one older than another; one older in dignity, rank, or office.
sen-na (*sen'à*), *n.* the dried leaves of several plants of the genus Cassia.
sen-sate (*sen'sāt*), *adj.* perceived by, or through, the senses.
sen-sa-tion (*-sā'shun*), *n.* perception by the senses; an impression; state of excited feeling.
sen-sa-tion-al (*-al*), *adj.* pertaining to, having, or causing, sensation; emotional.
sen-sa-tion-al-ism (*-izm*), *n.* sensational writing or language.
sense (*sens*), *n.* the faculty by which objects are perceived; discernment; understanding; conviction; good mental capacity; correct judgment; opinion; meaning; signification; moral perception.
sense-less (*'les*), *adj.* incapable of sensation; foolish; stupid. [ABSURD.]
sen-si-bil-i-ty (*sen-si-bil'i-ti*), *n.* [*pl.* sensibilities (*-tiz*)], the state or quality or capacity of being sensible; delicacy of feeling.
sen-si-ble (*'si-bl*), *adj.* capable of being perceived by the senses or the mind; delicate; reasonable; intelligent. [FEEL, PHYSICAL.]
sen-si-tive (*'si-tiv*), *adj.* having keen sense or feeling; easily affected or moved; pertaining to, or depending upon, sensation.
sen-si-tize (*-tiz*), *v. t.* to render sensitive, etc.
sen-su-al (*'shū-al*), *adj.* pertaining to, consisting in, or affecting, the senses; carnal; voluptuous.
sen-su-al-ism (*-izm*), *n.* sensuality.
sen-su-al-ist (*-ist*), *n.* one who is sensual.
Syn. SENSUALIST, voluptuary, epicure. The *sensualist* lives for the indulgence of his *senses;* the *voluptuary* is devoted to his pleasures, and, as far as these pleasures are the pleasures of *sense,* the *voluptuary* is a *sensualist;* the *epicure* is one who makes the pleasures of *sense* his god, and in this sense he is a *sensualist* and a *voluptuary.* In the application of these terms, however, the *sensualist* is one who is a slave to the grossest appetites; the *voluptuary* is one who studies his pleasures so as to make them the most valuable to himself; the *epicure* is a species of *voluptuary* who practices more than ordinary refinement in the choice of his pleasures.
sen-su-al-i-ty (*-al'i-ti*), *n.* the state or quality of being sensual; indulgence of carnal gratifications.
sen-su-al-ize (*'shū-al-īz*), *v. t.* to make sensual.
sen-su-ous (*'shū-us*), *adj.* pertaining to, or addressed to, the senses; connected with sensible objects; full of passion.
sen-tence (*sen'tens*), *n.* judgment, opinion, or decision; series of words so arranged as to convey a complete thought: *v. t.* to condemn by judgment of a court. [DECISION, CONDEMN.]
sen-ten-tious (*-ten'shus*), *adj.* short and energetic; terse.
sen-ti-ence (*'shi-ens*), *n.* the state or quality of being sentient. [Also *sentiency.*]
sen-ti-ent (*'shi-ent*), *adj.* having the faculty or faculties of sensation and perception.
sen-ti-ment (*'ti-ment*), *n.* a thought prompted by passion or feeling; opinion; thought; maxim; a toast.
sen-ti-men-tal (*-men'tal*), *adj.* having, expressing, or given to, sentiment; romantic.
sen-ti-men-tal-ism (*-izm*), *n.* the quality of being sentimental. [Also *sentimentality.*]
sen-ti-nel (*'ti-nel*), *n.* one who watches or guards.
sen-try (*'tri*), *n.* [*pl.* sentries (*'triz*)], a sentinel, guard or watch.
se-pal (*sē'pal* or *sep'al*), *n.* one of the leaf-like divisions of the calyx of a flower.
sep-a-ra-bil-i-ty (*sep-à-rà-bil'i-ti*), *n.* the quality of being separable or divisible.
sep-a-ra-ble (*'à-rà-bl*), *adj.* capable of being separated or divided.
sep-a-rate (*'à-rāt*), *v. t.* to part or divide; disunite; disconnect; set apart: *v. i.* to part; withdraw: *adj.* divided from the rest; disconnected; distinct. [ABSTRACT, DIVIDE.] [pigment.
se-pi-a (*sē'pi-à*), *n.* [*pl.* sepias (*-az*)], a dark-brown
se-poy (*'poi*), *n.* [*pl.* sepoys (*'poiz*)], an Indian native employed as a soldier in the British service in India.
sep-sine (*sep'sin*), *n.* ptomaines of septic poisoning.
sep-sis (*sep'sis*), *n.* infection by pathogenic bacteria; a putrefactive condition.
sept (*sept*), *a prefix* meaning 7, as *sept*angular: *adj.* having 7 angles.
September. The seventh month of the old Roman calendar, counted from March, which commenced the year previous to the addition of January and February by Numa in the year 713 B. C.
sep-ten-ni-al (*sep-ten'i-al*), *adj.* occurring once in, or containing, 7 years.
sep-tet (*sep-tet'*), *n.* a musical composition for 7 voices. [Also *septette.*]
sep-tic (*'tik*), *adj.* having the power to promote putrefaction: *n.* a substance having such an effect.
sep-til-lion (*-til'yun*), *n.* in the French system of numeration, followed in the United States, a number expressed by unity with 24 ciphers annexed; in the English system a number expressed by unity with 42 ciphers annexed.
sep-tu-a-ge-na-ri-an (*-tū-à-jē-nā'ri-an*), *n.* a person 70 years old.
sep-ul-cher, sep-ul-chre (*sep'ul-k ĕr*), *n.* a grave or tomb; place of burial: *v. t.* to bury; entomb.
se-pul-chral (*sē-pul'kral*), *adj.* pertaining to a sepulcher; deep, grave, or hollow toned.
sep-ul-ture (*'ul-tūr*), *n.* burial. [BURIAL.]
se-quel (*sē'kwel*), *n.* succeeding part or result.
Syn. SEQUEL, close. When a work is published in distinct parts, those which follow at the end may be termed the *sequel;* if it appears all at once, the concluding pages are the *close.*
se-quence (*'kwens*), *n.* order of succession; series; result.
se-ques-ter (*-kwes't ĕr*), *v. t.* to separate from the owner for a time: *v. i.* to renounce. [Also *sequestrate.*]
seq-ues-tra-tion (*sek-wes-trā'shun*), *n.* the act of sequestering; retirement; seclusion.
Se-quoi-a (*sē-kwoi'à*), *n.* a genus of gigantic trees of the cypress family, comprising the redwood and "big tree" of California.
se-ragl-io (*sē-ral'yō*), *n.* the palace of the sultan of Turkey at Constantinople; a harem.
ser-aph (*ser'a/*), *n.* [*pl.* seraphs (*a/s*), seraphim (*'a-fim*)], an angel of the highest order.
se-raph-ic (*sē-raf'ik*), *adj.* pertaining to, composed of, or like, seraphs; sublime; angelic.
sere (*sēr*), *adj.* dry; wiltered.
Serena. A feminine name derived, perhaps, from Serena, a daughter of Theodosius; from the Latin *serenus,* "cheerful, quiet, calm."
ser-e-nade (*ser'ē-nād*), *n.* evening music in the open air; music sung or played by a lover: *v. t.* to entertain with a serenade.
se-rene (*sē-rēn'*), *adj.* clear and calm; unclouded; placid. [CALM.]
se-ren-i-ty (*-ren'i-ti*), *n.* the state or quality of being serene; calmness; equanimity. [Also *sereneness.*]
serf (*s ĕrf*), *n.* the lowest class of servants or slaves in the middle ages; formerly in Russia, one of the peasant class.
serf-age (*'āj*), *n.* the state or condition of a serf. [Also *serfdom; serfism.*]
serge (*s ĕrj*), *n.* a twilled woolen stuff.
ser-geant (*sär'jent*), *n.* a noncommissioned officer ranking next above a corporal.
ser-geant ma-jor (*mā'j ĕr*), a warrant officer who is attached to each company or troop.
se-ri-al (*sē'ri-al*), *adj.* pertaining to, or consisting of, a series; published in successive parts or numbers: *n.* a periodical; tale issued in parts.
se-ries (*sē'rēz*), *n.* a number of things or events standing or succeeding in order; sequence.
se-ri-o-com-ic (*sē-ri-ō-kom'ik*), *adj.* having a mixture of seriousness and comicality.
se-ri-ous (*'ri-us*), *adj.* grave in manner or disposition; in earnest. [GRAVE.]
ser-mon (*s ĕr'mun*), *n.* a discourse on a text of Scripture; serious exhortation.
ser-mon-ize (*-iz*), *v. i.* to compose or write a sermon; preach: *v. t.* to preach a sermon to.
se-rous (*sē'rus*), *adj.* pertaining to serum; thin, watery.
ser-pent (*s ĕr'pent*), *n.* a reptile of the order Ophidia, with a very long body without feet.
ser-pen-tine (*'pen-tin*), *adj.* pertaining to, like, or having the qualities of, a serpent; subtle: *n.* a rock composed of a hydrated silicate of magnesia.
ser-ried (*ser'id*), *adj.* crowded; pressed together.
se-rum (*sē'rum*), *n.* the thin yellowish watery fluid secreted by the serous membranes.
serv-ant (*s ĕrv'ant*), *n.* one who serves, or is in the service of, another.
Syn. SERVANT, domestic, menial, drudge. In the term *servant* is included the idea of the service performed; in the term *domestic,* the idea of one belonging to the house or family; in the word *menial* is included the idea of labor; and the term *drudge,* that of *drudgery.*
serve (*s ĕrv*), *v. t.* to work for; perform duties for; supply with, as food, etc.; treat or requite; present (a writ): *v. i.* to be a servant; suit or be convenient; be in subjection.
Servia (*s ĕr'vi-à*). A kingdom of the Balkan peninsula, known by the Romans as *Suedia,* district peopled by the Suevi, who afterward settled in the territory now called Sweden.
serv-ice (*s ĕrv'is*), *n.* the condition or occupation of a servant; duty required or performed; course of dishes at table.
serv-ice-a-ble (*'is-à-bl*), *adj.* useful; beneficial.
serv-ile (*'il*), *adj.* pertaining to, characteristic of, or befitting, a slave or servant; meanly submissive or obsequious.
ser-vil-i-ty (*s ĕr-vil'i-ti*), *n.* mean submission; baseness. [Also *servileness.*]
serv-i-tude (*s ĕrv'i-tūd*), *n.* the condition of a servant or slave.
★**ses-a-me** (*ses'à-mē*), *n.* a plant yielding flat seeds from which an oil is expressed.
ses-a-moid bones (*'à-moid bōnz*), small bones formed at the articulation of the great toes, fingers, etc.
ses-qui, a *prefix* meaning *a whole and a half,* as *sesqui*oxid, an oxide containing 3 atoms of oxygen, 2 atoms of a metal.
ses-sion (*sesh'un*), *n.* the actual sitting or assembling of a court, council, or legislative body.
ses-terce (*ses't ĕrs*), *n.* an ancient Roman coin, value about 4 cents.
ses-ter-ti-um (*-t ĕr'shi-um*), *n.* a sum of 1,000 sesterces.
ses-tet (*'tet*), *n.* the last 6 lines or the second division of a sonnet.
set (*set*), *v. t.* to place or put in any position; render motionless; replace; regulate or adjust: *v. i.* to sink below the horizon; strike root; congeal; start (with *out*): *adj.* fixed or established; firm; formal; obstinate: *n.* the act of setting; clique; number of things of the same kind intended for use together; a young plant for growth; descent below the horizon. [PUT, CLASS.]
Seth. From the Hebrew *Sheth,* signifying "appointed." Fuerstius writes the name *S'et,* and renders it "war bustle or noise."
set-tee (*set-tē'*), *n.* a long seat with a back, made to seat several persons at once.
set-ter (*'ĕr*), *n.* one who, or that which, sets; a species of hunting dog.
set-ting (*'ing*), *n.* the act of one who, or that which, sets; that which sets or holds; hardening.
set-tle (*set'l*), *v. t.* to place or set in a fixed state; establish; free from uncertainty; pay; make pure or clear; colonize: *v. i.* to become fixed, or permanent; grow calm or clear; sink; adjust differences or accounts. [COMPOSE.]
set-tle-ment (*-ment*), *n.* the act or state of being settled; subsidence; a colony newly settled.
set-tler (*'lĕr*), *n.* a colonist; something that finally settles or decides a contest.
set-to (*tōō'*), *n.* a contest in boxing; argument.
sev-en (*sev'n*), *n.* the sum of six and one; the symbol representing 7 units: *adj.* consisting of one more than 6.
sev-en-fold (*-fold*), *adv.* 7 times as much.
sev-en-teen (*-tēn*), *adj.* one more than sixteen.
sev-en-ti-eth (*'n-ti-eth*), *adj.* next in order after the sixty-ninth: *n.* one of 70 equal parts.
sev-en-ty (*-ti*), *n.* [*pl.* seventies (*-tiz*)], the sum of 10 times 7; the symbol representing 70 units.
sev-er (*sev' ĕr*), *v. t.* to divide or separate with violence; keep distinct or apart: *v. i.* to make a separation or distinction.
★**sev-er-al** (*sev' ĕr-al*), *adj.* distinct; separate; consisting of a number more than two, but not many;
sev-er-ance (*-ans*), *n.* the act of severing; the state of being severed; separation; partition.
se-vere (*sē-vēr'*), *adj.* strictly adhering to rule; strict; austere; rigid; harsh; grave; serious. [STRICT].
se-ver-i-ty (*-ver'i-ti*), *n.* the quality of being severe; harshness; rigor. [ACRIMONY.]
Sè-vres (*sā'vr*), *n.* china or porcelain manufactured at Sèvres, France.
Sèvres. A city of France near Paris. Named from

the two rivers which traverse it; anciently called *Villa Savara.*

sew (*sō*), *v. t.* to unite or fasten together with a needle and thread: *v. i.* to practice sewing.

sew-age (*sū'āj*), *n.* the foul matter carried off by a sewer.

sew-er (*'ēr*), *n.* a pipe or channel to carry off the used or surface water and foul matter of a town, etc.; (*sō'ēr*) one who sews.

sew-er-age (*-āj*), *n.* drainage by sewers.

sex, a *prefix* meaning *six,* as *sexennial, adj.* occurring once in, or lasting, six years.

sex (*seks*), *n.* the physical distinction between male and female.

sex-a-ge-na-ri-an (*-ā-jē-nā'ri-an*), *n.* one who is sixty years old.

sex-tant (*'tant*), *n.* the sixth part of a circle; an instrument for measuring angular distances between objects.

sex-til-lion (*-til'yun*), *n.* in the French system of enumeration, followed in the United States, the 7th power of a thousand, equal to 1 with 21 ciphers annexed; in the English system, a million raised to the 6th power, equal to 1 with 36 ciphers annexed.

sex-ton (*'tun*), *n.* an inferior official of a church whose duty it is to attend to burials, the church, etc.

sex-u-al (*'ū-al*), *adj.* pertaining to, characteristic of, based on, or distinguishing, sex.

sex-u-al-i-ty (*-al'i-ti*), *n.* the state or quality of being distinguished by sex.

sex-u-al-ize (*'ū-al-īz*), *v. t.* to attribute sex to.

shab-by (*shab'i*), *adj.* threadbare or worn; mean; despicable.

shack (*shak*), *n.* hut; log cabin.

shac-kle (*shak'l*), *n.* fetters; handcuffs: *v. t.* to fetter, embarrass or hinder; unite or fasten with a shackle.

shad (*shad*), *n.* an anadromous fish, valued as food.

shade (*shād*), *n.* comparative obscurity caused by the interception of the rays of light; darkness; screen or cover; the soul: *v. t.* to screen from light or heat; darken or obscure; shelter.

Syn. SHADE, shadow. Both these terms express that darkness which is occasioned by the sun's rays being intercepted by any body; but *shade* simply expresses the absence of the light, and *shadow* signifies also the figure of the body which thus intercepts the light.

shad-ow (*shad'ō*), *n.* shade within defined limits; dark part of a picture; obscurity or darkness; reflected image; faint representation; small degree: *v. t.* to shade; darken or cloud; conceal or screen; attend closely as a shadow. [SHADE.]

shad-ow-y (*'i*), *adj.* full of, or causing, shade or shadows; sheltered from light or heat; dim.

shad-y (*shād'i*), *adj.* [*comp.* shadier, *superl.* shadiest], abounding in, or causing, shade; sheltered from the glare of light or heat.

shaft (*shaft*), *n.* an arrow; anything resembling an arrow; the long, narrow entrance to a mine; carriage pole; handle; body of a column.

shaft-ing (*'ing*), *n.* a system of shafts for transmitting power.

shag (*shag*), *n.* a kind of tobacco; rough, woolly hair.

shag-gy (*'i*), *adj.* rough with long hair or wool; rough; rugged.

sha-green (*shā-grēn'*), *n.* the skins of various animals, grained to resemble the skins of sharks; the rough skin of sharks and dogfishes: *adj.* made of shagreen.

shah (*shä*), *n.* the sovereign of Persia.

shake (*shāk*), *v. t.* [*p. t.* shook, *p. p.* shaken, *p. pr.* shaking], to cause to shiver; move with a quick, short motion; agitate: *v. i.* to tremble or quake.

shake-down (*'doun*), *n.* a temporary bed; money or other consideration given, generally under coercion, as for immunity from arrest or from legal punishment.

shak-y (*shāk'i*), *adj.* [*comp.* shakier, *superl.* shakiest], in a shaking condition; feeble.

shale (*shāl*), *n.* a laminated argillaceous rock.

shall (*shal*), *v. i.* and *auxil.* [*p. t.* should], to be under obligation, used in the future tense of the verb.

shal-low (*'ō*), *adj.* having little depth; not profound; superficial; trifling: *n.* shoal: *v. i.* to become shallow.

sham (*sham*), *n.* a trick, fraud, or make-believe: *adj.* feigned; false; unreal: *v. i.* to make false pretenses: *v. t.* to make a pretense of.

sham-ble (*sham'bl*), *v. i.* to walk awkwardly and unsteadily; shuffle: *n. pl.* a slaughterhouse; meat market.

shame (*shām*), *n.* a painful sensation caused by the sense of guilt, impropriety, or dishonor; that which causes shame; modesty or decorum: *v. t.* to make ashamed; cover with disgrace. [ABOMINATION, ABASE.]

shame-faced (*'fāst*), *adj.* bashful.

shame-ful (*'fool*), *adj.* causing shame; disgraceful; indecent.

sham-poo (*-pōō'*), *v. t.* to cleanse and rub (the head) with soap, etc.: *n.* the act of shampooing.

sham-rock (*'rok*), *n.* a trefoil clover plant; the Irish national emblem.

shank (*shangk*), *n.* the leg from the knee to the ankle.

shan-ty (*shan'ti*), *n.* a rude hut.

shape (*shāp*), *n.* the form or figure of a thing: *v.* to make into a particular form. [FORM.]

shape-ly (*li*), *adj.* well-formed; symmetrical; comely.

share (*shâr*), *n.* a portion or part: *v. t.* to part among two or more; take or possess in common: *v. i.* to have a share or part. [DIVIDE.]

shark (*shärk*), *n.* a large, voracious fish with sharp teeth; a rapacious, artful fellow.

sharp (*shärp*), *adj.* having a very thin edge or fine point; peaked or ridged; keen; severe; subtle: *n.* a character in music which raises a note a semitone.

Syn. SHARP, acute, keen. The general property expressed by these epithets is that of *sharpness,* or an ability to cut. The term *sharp* is generic and indefinite; the two others are modes of *sharpness* differing in the circumstance of the degree; the *acute* is not only more than *sharp* in the common sense, but signifies also *sharp*-pointed; a knife may be *sharp;* but a needle is properly *acute.* Things are *sharp* that have either a long or a pointed edge; but the *keen* is applicable only to the long edge; and that in the highest degree of *sharpness;* a common knife may be *sharp;* but a razor or a lancet are properly said to be *keen.* [See *acrimony.*]

sharp-en (*'en*), *v. t.* to make sharp or sharper; make more acute: *v. i.* to become sharp.

shat-ter (*shat'ēr*), *v. t.* to break into many pieces at once; overthrow; dissipate: *n. pl.* broken fragments.

shave (*shāv*), *v. t.* to cut or pare off with a razor or other sharp-edged instrument; plunder or fleece: *v. i.* to use the razor in removing hair: *n.* a thin slice; the operation of shaving.

shawl (*shawl*), *n.* a loose, square cloth covering for the shoulders, etc.

sheaf (*shēf*), *n.* [*pl.* sheaves (*shēvz*)], a bundle.

shear (*shēr*), *v. t.* to cut or clip: *v. i.* to use shears: *n. pl.* a cutting instrument like scissors.

shear steel (*'stēl*), a kind of fine steel, specially tempered, etc.

sheath (*shēth*), *n.* a scabbard; any sheath-like covering.

sheathe (*shēth*), *v. t.* to put into a sheath or scabbard; case with a protecting covering.

sheath gown (*shēth' goun*), a form of close-fitting gown for women slit up the side almost to the knee.

Sheboygan (*shē-boi'gan*) **river, Mich.** So called from the Indian *shawbwawaygum,* "the stream that comes from the ground."

shed (*shed*), *v. t.* cause to flow out; emit: *v. i.* to let fall or cast off: *n.* a slight building. [POUR.]

sheen (*shēn*), *n.* brightness; splendor: *adj.* bright; glittering. [Also *sheeny.*] *v. i.* to shine or glisten.

sheep (*shēp*), *n. s.* and *pl.* any ruminant animal of the genus Ovis, valued for its wool and flesh.

sheer (*shēr*), *adj.* pure; unmixed; very thin or transparent; precipitous: *v. i.* to deviate from the proper course.

sheet (*shēt*), *n.* a large, thin slice of anything; broad piece of linen or paper; broad expanse or surface; rope attached to a sail.

sheik (*shēk* or *shāk*), *n.* the head of a Bedouin family, tribe, or clan.

shek-el (*shek'el*), *n.* an ancient Jewish coin: *pl.* money.

shelf (*shelf*), *n.* [*pl.* shelves (*shelvz*)], a flat ledge or board for holding anything.

shell (*shel*), *n.* a hard outside covering; any framework; projectile: *v. t.* to strip off or remove the shell of; take out of the shell; throw shells upon or into.

shel-lac (*-ak'*), *n.* crude resin lac melted and formed into thin plates.

shel-ter (*'ēr*), *n.* that which protects or shields; security; defense: *v. t.* to protect or shield; conceal: *v. i.* to take or give shelter. [COVER.]

shelve (*shelv*), *v. t.* to place on a shelf; furnish with a shelf: *v. i.* slope.

shelv-ing (*'ing*), *n.* materials for shelves; shelves collectively.

Shenandoah (*shen-an-dō'ä*). County and river in Virginia, city in Page county, Iowa, borough in Schuylkill county, Pennsylvania, and town in Page county, Virginia. An Indian word, said by some to mean "the sprucy stream"; by others, "a river flowing alongside high hills and mountains"; and still another authority states that it means "daughter of the stars."

shep-herd (*shep'ērd*), *n.* one who tends sheep; a pastor.

sher-bet (*shēr'bet*), *n.* a cooling beverage of water and fruit juices, sweetened, etc.

sher-iff (*sher'if*), *n.* the chief executive officer of a shire or county.

sher-ry (*'i*), *n.* a dry amber-colored wine, originally obtained from Xeres, Spain.

Sherwood forest. A forest in Nottinghamshire, England, fourteen miles north of Nottingham. It was formerly of large extent. It is the principal scene of the legendary exploits of Robin Hood.

Shetland isles. A group of islands north of Scotland. Norse for the "viking island," conformably with the native prenomen *hyalti,* "a viking." The term viking, meaning pirate, derived from the *vik,* or creek, in which he lay concealed.

shield (*shēld*), *n.* a piece of armor, carried on the arm; defense or protection; an escutcheon: *v. t.* to protect.

shift (*shift*), *n.* change; substitution; chemise: *v. t.* to change: *v. i.* resort to expedients; to alter or change.

shift-less (*'les*), *adj.* destitute of expedients; lazy; improvident.

shift-y (*shift'i*), *adj.* full of expedients; changeable.

shil-la-lah (*shil-ā'lä*), *n.* an oaken cudgel (*Irish.*)]Also *shillelah, shillelagh.*]

shil-ling (*'ing*), *n.* a silver British coin, value about 24 cents.

shil-ly-shal-ly (*'i-shal-i*), *adv.* in an irresolute, undecided manner.

shim-mer (*shim'ēr*), *v. t.* to shine unsteadily or tremulously; flicker: *n.* a tremulous gleam; flicker.

shin (*shin*), *n.* the forepart of the leg between the ankle and knee: *v. i.* to climb a tree, etc.

shine (*shīn*), *v. i.* to emit rays of light; be bright; beautiful, eminent, or conspicuous: *v. t.* to cause to shine.

shin-gle (*shing'gl*), *n.* a thin piece of wood used for roofing: *v. t.* to cover or roof with shingles.

shin-y (*shīn'i*), *adj.* [*comp.* shinier, *superl.* shiniest], diffusing light; bright.

ship (*ship*), *n.* any large vessel for the conveyance of passengers or merchandise: *v. t.* to place on board a ship; carry by water: *v. i.* engage for service on board ship.

ship-board (*'bōrd*), *n.* the deck of a ship.

ship-shape (*'shāp*), *adj.* in good order: *adv.* neatly.

Shiraz (*shē'rāz*) **Persia.** Name signifies "lion's paunch," because at one time, like the lion, it consumed much, but produced nothing.

Shirvan (*shir-vän'*). River and district of Persia, named after *Nieshirvan,* a king of Persia.

Shock (*shok*), *v. t.* to strike as with disgust or horror.

shock-er (*shok'ēr*), *n.* one who, or that which, shocks.

shock-ing (*'ing*), *adj.* extremely offensive or disgusting. [FORMIDABLE.]

shod-dy (*shod'i*), *n.* old woolen fabrics remade with fresh wool: *adj.* not genuine; sham.

shoe (*shōō*), *n.* [*pl.* shoes (*shōōz*)], a low covering for the foot: *v. t.* [*p. t.* and *p. p.* shod, *p. pr.* shoeing], to furnish with a shoe or shoes.

shoot (*shōōt*), *v. t.* to let fly or discharge with a sudden force; hurl; emit: *v. i.* to be shot or propelled forcibly; rush along; sprout: *n.* a young branch or growth.

shop (*shop*), *n.* a building where goods are sold by retail; place where mechanics carry on their trade: *v. i.* to visit shops to purchase goods.

shop-lift-ing (*'lift-ing*), *n.* stealing goods from a shop.

shore (*shōr*), *n.* the coast or land adjacent to the sea, etc.; a prop or support: *v. t.* to support by a shore or shores.

short (*shôrt*), *adj.* not long, either in space or time; abrupt: *adv.* abruptly; quickly.

Syn. SHORT, brief, concise, succinct, summary. We may term a stick, a letter, or a discourse, *short;* but we speak of *brevity* only in regard to the mode of speech; *conciseness* and *succinctness* as to the matter of speech; *summary* as to the mode either of speaking or acting; the *brief* is opposed to the prolix; the *concise* and *succinct* to the diffuse; the *summary* to the circumstantial or ceremonious.

short-en (*'n*), *v. t.* to make short or shorter in time, extent, or measure. [ABBREVIATE.]

short-hand (*'hand*), *n.* a system of writing by abbreviated symbols.

short-ly (*'li*), *adv.* soon; quickly; curtly.

shot (*shot*), *n.* the act of shooting; discharge of a firearm, etc.; missile; a marksman; range of a missile.

shot-silk (*'silk*), *n.* a silk fabric of changeable tints.

shoul-der (*shōl'dēr*), *n.* the articulation connecting the human arm, or the foreleg of a quadruped, to the body; that which resembles a shoulder: *v. t.* to take upon the shoulder; assume the responsibility of; jostle.

shout (*shout*), *n.* a loud and sudden cry: *v. i.* to utter a loud and sudden cry: *v. t.* to utter with a shout. [CALL.]

shove (*shuv*), *n.* a forcible push: *v. t.* to push along: *v. i.* to push forward or off.

shov-el (*'l*), *n.* an implement with a broad scoop and a handle: *v. t.* to take and throw up with a shovel.

show (*shō*), *v. t.* [*p. t.* showed, *p. p.* shown, *p. pr.* showing], to present to view; make clear: *v. i.* to appear: *n.* the act of showing; exhibition or spectacle; pretense.

Syn. SHOW, exhibition, representation, sight, spectacle. The *show* consists of that which merely pleases the eye; it is not a matter either of taste or art, but merely of curiosity; an *exhibition,* on the contrary, presents some effort of talent or some work of genius; and a representation sets forth the image or imitation of something by the power of art; hence we speak of a *show* of wild beasts, an *exhibition* of paintings, and a theatrical *representation. Sights* and *spectacles* present themselves to view. Whatever is to be seen to excite notice is a *sight;* a *spectacle* on the contrary, is that species of *sight* which has something in it to interest either the heart or the head of the observer; processions are *sights;* but battles or bull-fights are *spectacles.* [See *pretense.*]

show-er (*shou'ēr*), *n.* a fall of rain or hail of short duration: *v. t.* to water copiously; bestow liberally: *v. i.* to rain in showers.

show-y (*shō'i*), *adj.* ostentatious; gay.

shred (*shred*), *n.* a long narrow piece torn or cut off: *v. t.* to tear into small pieces.

shrew (*shrōō*), *n.* a scolding, vexatious woman.

shrewd (*shrōōd,*) *ad.* sharp-witted or clever in practical affairs. [ACUTE.]

Shrewsbury (*shrūz'ber-i*) **river, N. J.** Named from a town of England. Anglo-Saxon *scrobbes,* "of a bush," *buhr,* "a fortress," literally, "a fortress near which were many shrubs."

★**shriek** (*shrēk,* not *srēk*), *v. i.* to utter a shriek: *n.* a sharp, shrill outcry. [CALL.]

shrill (*shril*), *adj.* sharp and piercing in tone: *v. i.* to utter an acute, piercing sound.

shrimp (*shrimp*), *n.* a small shellfish allied to the lobster.

shrine (*shrīn*), *n.* a case or receptacle for sacred relics; an altar: *v. t.* to place in a shrine.

shrink (*shringk*), *v. i.* [*p. t.* shrank, *p. p.* shrunk, *p. pr.* shrinking], to contract spontaneously; recoil; *v. t.* to cause to contract: *n.* contraction; withdrawal.

shrink-age (*'āj*), *n.* the act of shrinking; decrease.

shriv-el (*shriv'l*), *v. i.* to be drawn into wrinkles; contract: *v. t.* to cause to contract into wrinkles.

shroud (*shroud*), *n.* anything that covers or conceals: *v. t.* to cover with, or as with, a shroud; conceal.

shrub (*shrub*), *n.* a woody plant of less size than a tree.

shrub-ber-y (*'ĕr-i*), *n.* [*pl.* shrubberies (*-iz*)], a collection of shrubs.

shrug (*shrug*), *v. t.* [*p. t.* and *p. p.* shrugged, *p. pr.* shrugging], to contract or draw up (the shoulders): *v. i.* to raise the shoulders: *n.* a raising of the shoulders.

shuck (*shuck*), *n.* a shell or husk: *v. t.* to deprive of shells or husks.

shud-der (*shud'ĕr*), *n.* a trembling with fear or horror: *v. i.* to feel a cold tremor; quake.

shuf-fle (*shuf'l*), *v. t.* to push from one to another; change the relative positions of: *v. i.* to change cards in a pack; drag the feet: *n.* the act of shuffling; irregular gait.

shun (*shun*), *v. t.* [*p. t.* and *p. p.* shunned, *p. pr.* shunning], to avoid; keep clear of.

shunt (*shunt*), *v. t.* to turn off, on, or as on, a side rail: *v. i.* to be turned aside: *n.* a turning off.

shut (*shut*), *v. t.* to close so as to prevent entrance or exit: *v. i.* to become closed: *adj.* closed. [CLOSE.]

shut-ter (*'ĕr*), *n.* one who, or that which, shuts.

shut-tle (*'l*), *n.* an instrument used in weaving.

shy (*shī*), *adj.* timid; cautious; modest: *v. i.* to start aside from fear: *v. t.* to throw sidewise with a jerk; fling: *n.* the act of starting aside from fear; a side throw.

shy-ster (*'stĕr*), *n.* one who carries on legal business in a mean and tricky manner.

Siam (*si-am', sē-ăm'*). A kingdom of southeastern Asia; name corrupted from Malay *Siyam,* identical with the name *Shian* or *Shan* given by the Burmese to their eastern neighbors.

Siberia (*si-bē'ri-ā*). A region of northern Asia belonging to Russia. In Russian, *Sibir* is so called from *Sibir* or *Ssibir,* a town on the Irtish near Tobolsk, which no longer exists. *Sibir* was the capital of a Tartar khanate of the same name, which was conquered in the 16th century by Yermak, the hetman of the Don Cossacks.

sib-i-lance (*sib'i-lans*), *n.* the state or quality of being sibilant. [Also *sibilancy.*]

sib-yl (*'il*), *n.* a woman endowed with a spirit of prophecy.

Sibyl. From Lat., meaning "wise old woman." Dutch, *Sibylla;* Fr., *Sibylle;* Gr., *Sibulla;* Lat., *Sibylla.*

★**sib-yl-line** (*-in*), *adj.* pertaining to, uttered, or written by, a sibyl.

Sicily (*sis'i-li*). The English form of *Sicilia,* so called from the *Siculi,* who possessed a great part of the island when the Greek colonists arrived.

sick (*sik*), *adj.* ill in health; affected with nausea; disgusted; indisposed.

Syn. SICK, sickly, diseased, morbid. *Sick* denotes a partial state, *sickly* a permanent state, of the body, a proneness to be *sick;* he who is *sick* may be made well; but he who is *sickly* is seldom really well. *Sickly* expresses a permanent state of indisposition unless otherwise qualified; but *diseased* expresses a violent state of derangement without specifying its duration; *sickly* and *morbid* are applied to the habitual state of the feelings or character; a *sickly* sentimentality; a *morbid* sensibility. *Morbid* is used in no other, except in a technical sense.

sick-en (*'n*), *v. i.* to become sick; fall ill; *v. t.* to make sick; disgust

sick-le (*'l*), *n* a reaping hook.

sick-ly (*'li*), *adj.* ailing; weak; habitually indisposed. [SICK.]

sick-ness (*'nes*), *n.* the state of being sick or in bad health.

side (*sīd*), *n* one of the surfaces that define or limit a solid; edge; part between the shoulder and hip; aspect: *v. i.* to embrace the cause or tenets of a party.

side-board (*'bōrd*), *n.* a piece of dining-room furniture.

si-de-re-al (*sī-dē'rē-al*), *adj.* pertaining to the stars.

side-wheel (*sīd'hwēl*), *n.* a paddle wheel at the side of a boat.

sid-ing (*'ing*), *n* a railroad track by the side of the main track.

si-dle (*sī'dl*), *v. i.* to go or move side foremost.

siege (*sēj*), *n.* the surrounding of a place to compel its surrender, continued endeavor to obtain possession, *v. t.* to besiege.

si-en-na (*si-en'ä*), *n.* red or brown clay; used as a pigment.

Sierra (*sē-er'rä*). This is a Spanish word signifying "a saw." Its application to ranges of mountains, whose peaks, rising in succession, like those of the Sierra Nevada, resemble the teeth of a saw, is peculiarly picturesque and poetical.

Sierra Nevada (*sē-er'rä nē-vä'dä.* Spanish, *sē-er'rä nä-vä'thä*) **mountains.** In California. Spanish words *serrado,* "separate or saw-toothed," *nevada,* "snowy," *i. e.,* "snowy mountains," the application taken from the Sierra Nevada mountains of Granada, Spain.

sieve (*siv*), *n.* a utensil for separating the finer from the coarser parts of a substance.

sift (*sift*), *v. t.* to separate with, or as with, a sieve; scrutinize.

sigh (*sī*), *v. i.* to inhale and respire with a long, deep, and audible breathing; grieve; lament: *v. t.* to express by sighs; mourn: *n.* the act of sighing.

sight (*sīt*), *n.* the act of seeing; spectacle; view: *v. t.* to see; adjust the sight of. [SHOW.]

sight-ly (*'li*), *adj.* pleasing to the eye.

Sigismund (*sij'is-mund*). A masculine name from *sieg-mund,* "man of victory, triumphant man." Dutch, *Sigismundus;* Fr., *Sigismond;* Ger., *Sigismund* or *Sigmund;* Lat., *Sigismundus;* Sp., *Sigismundo;* Sw., *Sigismund.*

sign (*sīn*), *n.* that by which anything is known or represented; indication; omen: *v. t.* to affix a signature to: *v. i.* to make a sign or signal.

Syn. SIGN, signal. The *sign* enables us to recognize an object; it is, therefore, sometimes natural; *signal* serves to give warning; it is always arbitrary.

sig-nal (*sig'nal*), *n.* something to attract the eye or ear: *adj.* memorable; remarkable; pertaining to signals: *v. t.* to convey by signals; make signals to. [SIGN.]

sig-nal-ize (*-īz*), *v. t.* to make especially conspicuous.

sig-na-ture (*'nä-tūr*), *n.* name of a person written by himself; flats or sharps [*Music.*]

sig-net (*sig'net*), *n.* a seal.

sig-nif-i-cant (*-nif'i-kant*), *adj.* designed to signify; important.

sig-ni-fi-ca-tion (*-kā'shun*), *n.* the act of signifying; that which is signified; meaning.

sig-ni-fy (*'ni-fī*), *v. t.* to show by a sign, mark, or token: *v. i.* to be of consequence. [DENOTE.]

Silas (*sī'las*). A name corrupted from *Silvanus.*

si-lence (*sī'lens*), *n.* entire absence of sound; taciturnity: *v. t.* to make silent.

si-lent (*'lent*), *adj.* noiseless; taciturn.

Silesia (*si-lē'shi-ä*). A region of central Europe. From *zlezia,* "the bad land."

sil-hou-ette (*sil-ōō-et'*), *n.* the outline or profile filled in with black: *v. t.* to represent by a silhouette.

sil-i-con (*'i-kon*), *n.* a nonmetallic element.

silk (*silk*), *n.* a fine, soft, tenacious thread spun by certain caterpillars; cloth made of silk: *adj.* pertaining to, or made of, silk.

silk-en (*'en*), *adj.* made of, or like, silk.

silk-y (*'i*), *adj.* pertaining to, made of, or resembling, silk; silken.

sill (*sil*), *n.* a timber at the bottom of a door or window.

sil-ly (*'i*), *adj.* weak in intellect; foolish; indiscreet.

si-lo (*sī'lō*), *n.* a store pit for green fodder, potatoes, etc.

silt (*silt*), *n.* mud or sand deposited by running or standing water.

Silvanus (*sil-vā'nus*). From the Roman name *Silvanus* or *Sylvanus;* also the appellation of a god of forests and fields; from *silva, sylva,* "a forest," "wood." Dutch, *Silvanus;* Fr., *Sylvain* or *Silvain;* It., *Silvano;* Lat., *Silvanus;* Sp., *Silvano.*

sil-ver (*sil'vĕr*), *n.* a soft, white, metallic element; money; anything resembling silver: *adj.* pertaining to, or made of, silver; *v. t.* to cover or coat with silver.

Silvester, Sylvester (*sil-ves'tĕr*). A masculine name derived from the Latin *silvester,* "wild," "found in a wood"; from *silva,* "a wood." Fr., *Silvestre;* It., *Silvestro;* Lat., *Silvester;* Sp., *Silvestre.*

Silvia. See *Sylvia.*

Simeon (*sim'ē-on*). From the Hebrew *shama,* meaning "obedient," or "hearing with acceptance." Fr., *Siméon;* Ger., *Simeon;* It., *Simeone;* Lat., *Simeon;* Port., *Simeao;* Sp., *Simeon.*

sim-i-an (*sim'i-an*), *adj.* pertaining to, characteristic of, or like, an ape: *n.* an ape or monkey.

sim-i-lar (*'i-lĕr*), *adj.* having a general likeness or correspondence; alike.

sim-i-lar-i-ty (*-lar'i-ti*), *n.* resemblance. [LIKENESS.]

sim-i-le (*'i-lē*), *n.* [*pl.* similes (*-lēz*)], a likening by comparison to illustrate something.

sim-mer (*'ĕr*), *v. t.* and *v. i.* to boil gently.

Simon (*sī'mon*). Originally the same as *Simeon.* Dutch, *Simon;* Fr., *Simon;* Ger., *Simon;* Hung., *Simon;* It., *Simone;* Lat., *Simon;* Sp., *Simon;* Sw., *Simon.*

sim-o-ny (*sim'ō-ni*), *n.* the act or crime of buying or selling ecclesiastical preferment.

si-moom (*si-mōōm'*), *n.* a hot, dry, suffocating wind which blows from the deserts of Arabia, etc., laden with minute particles of sand. [Also *simoon.*]

sim-per (*sim'pĕr*), *v. i.* to smile in an affected or silly manner: *n.* affected or silly smile.

sim-ple (*sim'pl*), *adj.* [*comp.* simpler, *superl.* simplest], single, not complex; undivided; unadorned; clear; weak in intellect. [CANDID.]

Syn. SIMPLE, single, singular. We may speak of a *simple* circumstance as independent of anything; of a *single* instance; circumstance as unaccompanied by any other and a *singular* instance as one that rarely has itslike.

sim-ple-ton (*sim-pl-tun*), *n.* one who is foolish or of weak intellect. [CANDID.]

sim-plic-i-ty (*-plis'i-ti*), *n.* the state or quality of being simple.

sim-pli-fy (*'pli-fī*), *v. t.* to make simple.

sim-u-late (*'ū-lāt*), *v. t.* to pretend or counterfeit.

sim-u-la-tion (*-lā'shun*), *n.* the act of simulating or feigning.

Syn. SIMULATION, dissimulation. *Simulation* is the making one's self like what one is not; and *dissimulation* is the making one's self appear unlike what one really is. The hypocrite puts on the *semblance* of virtue to recommend himself to the virtuous; the *dissembler* conceals his vices when he wants to gain the simple or ignorant to his side. [See *pretense.*]

Ant. SINCERITY, unaffectedness.

si-mul-ta-ne-ous (*sī-mul-tā'nē-us*), *adj.* happening, done, or existing, at the same time.

sin (*sin*), *n.* neglect of morality and religion: *v. i.* to commit sin; transgress or offend. [CRIME.]

Sinai (*sī'nā, sī'nā-i, sī'nī*). Is usually supposed to have been named from the Hebrew *seneh,* the "acacia tree," but is more probably the mountain of *Sin,* the moon-god of the Babylonians.

since (*sins*), *adv.* from that time; before this or now: *prep.* from the time of; after: *conj.* because; seeing that; considering.

sin-cere (*sin-sēr'*), *adj.* true; honest; frank; upright; pure. [HEARTY.]

sin-cer-i-ty (*-ser'i-ti*), *n.* the state or quality of being sincere. [Also *sincereness.*]

sin-ew (*sin'ū*), *n.* a tendon; anything supplying strength.

sin-ful (*'fool*), *adj.* full of sin; wicked; impious; unholy.

sing (*sing*), *v. i.* to utter melodious sounds: *v. t.* to celebrate in song.

Singapore (*sing-gä-pōr'*). An island and city in the Straits Settlements, Malay peninsula; name means the "lion city." The form *Singapore* was adopted by Sir Stamford Raffles for the city which he founded in 1819 on an island which since the middle ages had been called *Sinhapura,* from a town of that name built in the fourteenth century by Malay or Javanese settlers.

singe (*sinj*), *v. t.* to burn slightly or on the surface: *n.* a slight burn.

sin-gle (*sing'gl*), *adj.* consisting of one only; alone; separate; unmarried: *v. t.* to select: *n.* a unit. [SIMPLE.]

Sing Sing, N. Y. Mohegan Indian word *Sin-Sing* or *Sink-Sink,* said to signify "stone upon stone."

sing-song (*sing'sŏng*), *adj.* monotonous.

sin-gu-lar (*'gū-lĕr*), *adj.* not complex or compound; noting one person or thing; uncommon; eminent; *n.* in grammar, the number denoting one person or thing. [SIMPLE, RARE.]

sin-gu-lar-i-ty (*-lar'i-ti*), *n.* [*pl.* singularities (*-tiz*)], the state or quality of being singular; peculiarity; oddity.

sin-is-ter (*sin'is-tĕr*), *adj.* inauspicious; unlucky; evil; on the left hand or side.

sink (*singk*), *v. i.* to fall or go downward; decline gradually; enter deeply; subside: *v. t.* to cause to sink: *n.* a drain to carry off water. [ABATE.]

sin-ner (*sin'ĕr*), *n.* one who sins.

sin-u-os-i-ty (*-ū-os'i-ti*), *n.* the character of being sinuous.

sin-u-ous (*'ū-us*), *adj.* bending in and out.

si-nus (*sī'nus*), *n.* a bay or recess; cavity or depression; fistula.

Sioux (*sōō*). Many places in the United States bear the name of this tribe of Indians, among them the counties in Iowa and Nebraska. The word means a "species of snake," the appellation of the tribe being "enemies."

sip (*sip*), *v. t.* to imbibe in small quantities: *v. i.* to drink a small quantity: *n.* the act of sipping; taste.

si-phon (*sī'fun*), *n.* a bent pipe or tube having one end longer than the other, used for drawing off liquids from a higher to a lower level: *v. t.* to convey or draw off by a siphon. [Also *syphon.*]

si-phon-age (*-āj*), *n.* the action of a siphon.

Sir (*sĕr*), *n.* the title of a baronet or knight; a term of respect.

sire (*sīr*), *n.* a title of respect; head of a family; male of beasts: *v. t.* to procreate.

si-ren (*sī'ren*), *n.* one of certain fabulous nymphs that lured mariners to their destruction, hence a woman dangerous from her fascinating, enticing wiles; a foghorn: *adj.* pertaining to, characteristic of, or like, a siren; bewitching.

Sir-i-us (*sir'i-us*), *n.* the dogstar.

sir-loin (*sĕr'loin*), *n.* the loin, or upper part of the loin, of beef.

sis-al grass (*sis'al gras*), the prepared fiber of the American aloe, used for cordage, etc.

sis-ter (*sis'tĕr*), *n.* a female born of the same parents as another person; nun; one of the same kind or condition.

sis-ter-hood (*-hood*), *n.* number of females belonging to the same religious society, etc.

sis-ter-in-law (*-in-law*), *n.* [*pl.* sisters-in-law], the

sister of one's husband or wife; wife of one's brother.

Sistine (*sis'tin*), or **Sixtine** (*siks'tin*) **chapel.** The papal private chapel in the Vatican constructed by Pope Sixtus IV., whence the name.

sit (*sit*), *v. i.* to rest on the lower part of the trunk of the body; rest or lie; occupy a seat officially: *v. t.* to sit upon.

site (*sīt*), *n.* local position or situation; ground-plot.

Sitka, Alaska. Named from a tribe of Indians, the *Sitkayans.*

sit-ting (*sit'ing*), *adj.* resting on the haunches: *n.* the state, posture, or act of one who sits; a seat in a church, etc.; a session: time during which one sits; set of eggs.

sit-u-a-tion (*-ū-ā'shun*), *n.* position; locality; circumstances; office; employment.

six (*siks*), *adj.* one more than 5: *n.* the number greater by one than 5; the symbol representing 6 units.

six-pence (*'pens*), *n.* a small British silver coin, value 12 cents.

six-pen-ny (*'pen-i*), *adj.* worth sixpence.

six-teen (*'tēn*), *adj.* 15 and one more.

sixth (*sikṡth*), *adj.* first after the fifth.

six-ti-eth (*siks'ti-eth*), *adj.* next in order after the fifty-ninth.

six-ty (*'ti*), *n.* [*pl.* sixties (*'tiz*)], the product of 6 and 10: *adj.* 10 times 6.

siz-a-ble (*siz'ā-bl*), *adj.* of considerable or suitable size.

size (*siz*), *n.* a kind of thin, weak glue; magnitude or bulk: *v. t.* to prepare, or cover with, size.

siz-zle (*siz'l*), *v. i.* to make a hissing sound; fry: *n.* a hissing sound.

Skager Rack (*skag-ĕr-rak', skag'ĕr-răk*). The channel between Norway and Jutland, means "cape strait." The word *rack* denotes a crooked channel, and the *Skager Rack* is so called from the town of *Skagen*, situated on Cape Skagen (*skaw*, a "promontory"), the *Skaw* of English sailors, which forms the northern point of Jutland.

Skaneateles (*skan-ē-at'les*). Lake, town, and village in Onondaga county, New York. An Indian word meaning "long lake."

skate (*skāt*), *n.* a kind of flatfish of the ray family; a metallic runner to slide over ice: *v. i.* to slide on skates.

ske-dad-dle (*skē-dad'l*), *v. i.* to run away, especially in terror.

skein (*skān*), *n.* a quantity of thread, silk, etc., coiled together.

skel-e-ton (*skel'ē-tun*), *n.* framework or bones of anything; outline.

skel-e-ton key (*kē*), a thin, light key to open many locks.

skep-tic (*skep'tik*), *n.* one who doubts the truth of any doctrine or system.

skep-tic-al (*'ti-kal*), *adj.* pertaining to, or characteristic of, a skeptic; characterized by skepticism.

skep-ti-cism (*'ti-sizm*), *n.* incredulity; doubt; unbelief in any particular doctrine or system.

sketch (*skech*), *n.* an outline; first rough draft: *v. t.* to draw the outline or give principal features of; *v. i.* to make sketches.

skew (*skū*), *adj.* oblique: *adv.* obliquely.

skew-er (*'ĕr*), *n.* a pin of wood or metal for securing meat, etc.: *v. t.* to fasten with, or as with, a skewer.

ski (*skē*), *n. pl.* long narrow pieces of wood used as snowshoes.

skid (*skid*), *n.* a sliding wedge or drag to retard the motion of a vehicle. *v. t.* to cause to move on, retard by, or protect with, a skid: *v. i.* to slip along obliquely.

skiff (*skif*), *n.* a small, light boat.

skill (*skil*), *n.* expertness in any art or science; aptitude; power to discern and execute.

skil-let (*'et*), *n.* a small culinary vessel.

skill-ful (*skil'fool*), *adj.* having or displaying, skill. [CLEVER.]

skim (*skim*), *v. t.* to remove the scum from; brush the surface of lightly: *v. i.* to pass lightly over.

skim-mer (*'ĕr*), *n.* one who, or that which, skims.

skimp (*skimp*), *v. t.* to do carelessly or superficially: *v. i.* to be parsimonious: *adj.* scanty.

skin (*skin*), *n.* the external covering of an animal body; anything resembling a skin: *v. t.* to remove or strip the skin from: *v. i.* to become covered over with skin.

skin-flint (*'flint*), *n.* a niggard.

skin-ny (*'i*), *adj.* consisting only of skin; very lean.

skip (*skip*), *v. t.* to leap lightly over; omit: *v. i.* to leap or bound lightly; pass without noticing: *n.* a light leap or bound; omission.

skip-per (*'ĕr*), *n.* one who, or that which, skips; a sea captain.

skir-mish (*skĕr'mish*), *n.* a slight combat or irregular fight between two small parties: *v. i.* fight irregularly.

skirt (*skĕrt*), *n.* the lower and loose part of a coat, dress, or other garment; margin or border: *v. t.* to cover with a skirt; border; run or pass along the edge of: *v. i.* to be on the border.

skit (*skit*), *n.* brief satire; burlesque.

skit-tish (*'ish*), *adj.* shy; easily frightened; vivacious.

Skowhegan (*skou-hē'gan*), **Me.** Indian word meaning "spearing."

skulk (*skulk*), *v. i.* to withdraw into a corner for concealment; lurk: *n.* a skulker.

skull (*skul*), *n.* the bony case inclosing the brain.

skunk (*skungk*), *n.* an American carnivorous animal allied to the weasel; a vile, contemptible fellow.

sky (*skī*), *n.* [*pl.* skies (*skīz*)], the apparent vault of the heavens.

sky-lark (*'lärk*), *n.* a species of lark.

sky-lark-ing (*-ing*), *n.* frolicking.

sky-scrap-er (*'skrāp-ĕr*), *n.* a lofty building.

slab (*slab*), *n.* a flat piece of anything, especially marble or stone: *adj.* thick; glutinous.

slack (*slak*), *adj.* relaxed or loose; inattentive; not busy: *n.* that part of anything that hangs loose.

Syn. SLACK, loose. *Slack* is said only of that which is tied, or that with which anything is tied; while *loose* is said of any substances, the parts of which do not adhere closely.

Ant. TAUT, tight.

slack-en (*'n*), *v. i.* to become slack; be remiss or less diligent; become slower. [ABATE.]

slag (*slag*), *n.* the dross of a metal; vitrified cinders.

slake (*slāk*), *v. t.* to quench; extinguish; mix with water: *v. i.* to be mixed with water.

slam (*slam*), *v. t.* to shut or put down violently and with a loud noise: *v. i.* to strike violently or noisily: *n.* a violent and noisy banging.

slan-der (*slan'dĕr*), *n.* verbal defamation: *v. t.* to defame or calumniate. [ABUSE.]

slan-der-ous (*-us*), *adj.* uttering slanders.

slang (*slang*), *n.* colloquial language or expression.

slant (*slant*), *n.* an inclined plane: *v. t.* to give a sloping direction to: *adj.* inclined from a straight line.

Syn. SLANT, slope. *Slant* is said of small bodies only; *slope* is said indifferently of all bodies large and small; a book may be made *to slant* by lying in part on another book on a desk or a table; but a piece of ground is said *to slope.*

slap (*slap*), *n.* a blow given with the open hand: *v. t.* to strike with the open hand or with anything broad: *adv.* with a sudden, violent blow; direct; quick.

slap-jack (*'jak*), *n.* a kind of flat batter cake.

slash (*slash*), *n.* a long or random cut: *v. t.* to cut by striking violently and at random; cut into long slits: *v. i.* to strike violently and at random.

slat (*slat*), *n.* a thin, narrow strip of wood or metal.

slate (*slāt*), *n.* any rock that splits into thin plates; list of candidates: *v. t.* to cover with slate; register for office; criticise.

slat-tern (*slat'ĕrn*), *n.* a careless, slovenly woman.

slat-y (*slāt'i*), *adj.* like slate.

slaugh-ter (*slaw'tĕr*), *n.* great destruction of life; killing of oxen, etc., for human food: *v. t.* to slay or kill. [CARNAGE.]

Slav (*slāv*), *n.* one of the great divisions of the Aryan family or language: *adj.* Slavonic.

slave (*slāv*), *n.* a human being held in bondage: *v. i.* to work like a slave.

slav-er-y (*'ĕr-i*), *n.* [*pl.* slaveries (*-iz*)], the state of entire subjugation to the will of another; condition of a slave.

slav-ish (*'ish*), *adj.* pertaining to, befitting, or characteristic of, a slave.

slaw (*slaw*), *n.* sliced cabbage.

slay (*slā*), *v. t.* to kill or put to death suddenly or with violence.

sleave (*slēv*), *n.* the knotted or entangled part of silk or thread.

sled (*sled*), *n.* a carriage or vehicle on runners for traveling over snow or ice. [Also *sledge.*] *v. t.* to convey or transport on a sled or sledge.

sledge (*slej*), *n.* a large, heavy hammer; another form of *sled.*

★sleek (*slēk*, not *slik*), *adj.* smooth; glossy.

sleep (*slēp*), *n.* slumber; rest; death: *v. i.* to take rest in sleep; be motionless or inactive.

sleep-y (*'i*), *adj.* inclined to, or overcome by, sleep; sluggish.

sleet (*slēt*), *n.* rain mingled with snow or hail: *v. i.* to hail or snow with rain mingled.

sleeve (*slēv*), *n.* the part of a garment that covers the arm.

sleigh (*slā*), *n.* a variety of sled.

sleight (*slīt*), *n.* dexterity; cunning; artful trick.

slen-der (*slen'dĕr*), *adj.* small or narrow in proportion to the length or height; feeble.

slice (*slīs*), *n.* a thin, broad piece of anything: *v. t.* to cut into parts; divide.

slide (*slīd*), *v. i.* glide; slip: *v. t.* to thrust along; cause to slip: *n.* a smooth surface for sliding upon; smooth declivity; picture on glass for exhibition; fall of a mass of rock or snow. [SLIP.]

slight (*slīt*), *adj.* feeble; inconsiderable; unimportant; slender: *n.* neglect; oversight: *v. t.* to disregard; neglect. [CURSORY, DISREGARD.]

slim (*slim*), *adj.* of small diameter; weak; slender.

slime (*slīm*), *n.* glutinous mud.

slim-y (*slīm'i*), *adj.* consisting of, covered over with, or like, slime.

sling (*sling*), *n.* an instrument for throwing stones; hanging bandage: *v. t.* to hurl with, or as with, a sling; hang so as to swing.

slink (*slingk*), *v. i.* to creep away as if ashamed; sneak off.

slip (*slip*), *v. i.* miss one's foothold; escape observation; depart or escape: *v. t.* to cause to move quickly and smoothly; omit: *n.* the act of slipping; an oversight or omission; twig from a stock; petticoat.

Syn. SLIP, slide, glide. *To slip* is an involuntary, and *slide* a voluntary, motion; those who go on the ice in fear will *slip;* boys *slide* on the ice by way of amusement. *To slip* and *slide* are lateral movements of the feet; but *to glide* is the movement of the whole body, and just that easy motion which is made by *slipping, sliding,* flying, or swimming; a person *glides* along the surface of the ice when he *slides;* a vessel *glides* along through the water.

Ant. STAND, stand still.

slip-per (*slip'ĕr*), *n.* one who, or that which, slips; a kind of loose shoe.

slip-per-y (*'ĕr-i*), *adj.* nonadhesive; without firm hold or footing; unstable; smooth; cunning.

slip-shod (*'shod*), *adj.* slovenly; careless.

slit (*slit*), *v. t.* to cut lengthwise or into long strips; split: *n.* a long cut; narrow opening.

sliv-er (*sliv'ĕr* or *sliv'ĕr*), *v. t.* to cut into long thin, or very small pieces: *n.* a splinter.

slo-gan (*slō'gan*), *n.* the war-cry or gathering-cry of a highland clan.

sloop (*slōōp*), *n.* a one-masted vessel with a fore-and-aft rig.

slop (*slop*), *n.* water carelessly spilled; puddle: *pl.* dirty water: *v. t.* to soil by letting liquid fall upon.

slope (*slōp*), *n.* surface inclining gradually downward: *v. t.* to incline or slant; direct obliquely: *v. i.* to take an oblique direction. [SLANT.]

slop-py (*slop'i*), *adj.* wet; muddy; splashed.

slot (*slot*), *n.* narrow aperture: *v. t.* to groove.

sloth (*slōth*), *n.* idleness; habitual indolence; a South American arboreal quadruped.

slouch (*slouch*), *n.* ungainly, clownish gait; awkward, dull fellow: *v. t.* to cause to hang down; depress at the side: *v. i.* to walk in a clumsy manner.

★slough (*slou*), *n.* a bog.

★slough (*sluf*), *n.* the cast-off skin of a serpent: *v. i.* to separate dead matter from the sound flesh.

slov-en (*sluv'en*), *n.* one who is habitually untidy.

slow (*slō*), *adj.* not quick or rapid in motion; behind in time; not progressive.

slug (*slug*), *n.* a shell-less mollusk; a sluggard; a kind of oval bullet.

slug-gard (*'ĕrd*), *n.* one who is habitually lazy and idle.

slug-gish (*'ish*), *adj.* habitually lazy and idle; dull.

sluice (*slōōs*), *n.* a gate for excluding or regulating the flow of water in a canal, etc: *v. t.* to wash with water from, or as from, a sluice.

slum (*slum*), *n.* a low, dirty street or district of a city or town: *v. i.* to visit slums.

slum-ber (*'bĕr*), *v. i.* to sleep lightly; doze: be in a state of inactivity or negligence.

slump (*slump*), *n.* a sudden fall, as of shares, etc: *v. i.* to fall or sink suddenly.

slur (*slĕr*), *v. t.* to disparage; pronounce indistinctly: *n.* an insult; stigma.

slush (*slush*), *n.* half-melted snow.

sly (*slī*), *adj.* artfully cunning; underhand and crafty.

smack (*smak*), *n.* a quick, smart blow; quick, sharp noise with the lips; flavor; a one-masted coasting or fishing vessel: *v. t.* to kiss with a noise; strike with a smart blow: *v. i.* to make a noise with the lips.

small (*smawl*), *adj.* little in quantity or degree; inconsiderable; not large in dimensions; mean. [LITTLE.]

small-pox (*'poks*), *n.* a contagious, feverish disease, characterized by eruptions.

smart (*smärt*), *adj.* causing a quick, sharp pain; sharp; brilliant; witty; showy: *n.* a quick, pungent, lively pain; poignant grief: *v. i.* to feel a lively, pungent pain; endure punishment.

smash (*smash*), *v. t.* to break in pieces by violence: *n.* a breaking to pieces.

smat-ter-ing (*smat'ĕr-ing*), *n.* superficial knowledge.

smear (*smēr*), *v. t.* to overspread with anything unctuous, viscous, or adhesive; daub; pollute: *n.* a blot or stain.

smell (*smel*), *v. t.* to perceive by the nose; obtain the scent of: *v. i.* to affect the nose or olfactory nerves; exercise the sense of smell: *n.* odor.

smi-lax (*smī'laks*), *n.* a climbing plant of the lily family.

smile (*smīl*), *v. i.* to look gay, cheerful, or happy; favor: *v. t.* to express by a smile: *n.* the act of smiling; a look of pleasure, etc.

smirch (*smĕrch*), *v. t.* to smear; dirty.

smirk (*smĕrk*), *v. i.* to smile affectedly or conceitedly: *n.* an affected smile: *adj.* spruce.

smite (*smīt*), *v. t.* to strike, as with the hand or a weapon: *v. i.* to strike.

smith (*smith*), *n.* worker in metals.

smith-y (*'i*), *n.* a smith's workshop.

smock (*smok*), *n.* a chemise.

smock frock (*'frok*), a laborer's loose outer shirt.

smoke (*smōk*), *n.* the vapor or substance that escapes when a substance is burned; vapor; act of smoking pipe or cigar: *v. t.* to apply smoke to; inhale and puff out the smoke of; expel by smoke: *v. i.* to emit smoke; burn tobacco in a pipe, etc.

smok-y (*'i*), *adj.* giving out, or filled with, smoke.

smol-der (*smōl'dĕr*), *v. i.* to burn slowly or smoke without vent; exist in a stifled condition.

smooth (*smōōth*), *adj.* not rough; even surfaced; frictionless; bland; flattering: *v. t.* to make smooth; calm: *v. i.* to become smooth. [CALM.]

smoth-er (*smuth'ĕr*), *v. t.* to destroy the life of by suffocation; stifle; conceal: *v. i.* to be suffocated.

smoul-der. Same as *smolder.*

smudge (*smuj*), *n.* a smear or stain; suffocating smoke: *v. t.* to smear or stain; blacken or stifle with smoke.

smug (*smug*), *adj.* affectedly precise or prim; spruce; neat.
smug-gle (*'l*), *v. t.* to convey or introduce clandestinely: *v. i.* to practice smuggling.
smut (*smut*), *n.* a spot or stain made by dirty matter; obscenity: *v. t.* to soil or blacken with, or as with, smut: *v. i.* to become converted into smut; give off smut.
smut-ty (*'i*), *adj.* soiled or stained with smut; affected with smut.
snaf-fle (*snaf'l*), *n.* a bridle consisting of a joint in the middle and rings at the ends: *v. t.* to put a snaffle in the mouth of.
snag (*snag*), *n.* a short rough branch; trunk of a tree fixed in the bed of a river: *v. t.* to injure or destroy by contact with a snag.
snail (*snāl*), *n.* a slimy, slow-creeping gasteropod of the genus Helix; hence any slow-moving person.
snake (*snāke*), *n.* a serpent.
Snake river, Idaho. Name suggested by its windings and given to a tribe of Indians on its banks.
snap (*snap*), *v. t.* to break short or instantaneously; produce a sharp, sudden sound: *v. t.* to break at once; crack; bite suddenly and unexpectedly: *n.* the act of snapping; noise made by snapping; spring catch: *pl.* a kind of crisp cake.
snap-drag-on (*'drag-un*), *n.* a plant with a corolla that shuts with a snap when opened.
snare (*snār*), *n.* anything that entangles or entraps one; the gut across a drum: *v. t.* to catch or entangle with, or as with, a snare.
snarl (*snärl*), *v. i.* to growl like an angry dog; speak surlily: *v. t.* to complicate or entangle, as thread or hair: *n.* the act of snarling; angry contention or quarrel; a complicated entanglement of hair, etc.
snatch (*snach*), *v. t.* to take or seize abruptly and suddenly: *v. i.* to attempt to seize anything: *n.* a hasty catch or seizing. [LAY.]
sneak (*snēk*), *v. i.* to creep or steal away privately or meanly; slink: *n.* a mean, servile fellow.
sneer (*snēr*), *v. i.* to show contempt by some facial expression; insinuate; scoff: *n.* an indirect expression of contempt or scorn.
sneeze (*snēz*), *v. i.* to emit a sudden and violent rush of air through the mouth and nostrils, audibly and convulsively: *n.* the act of sneezing.
snick-er (*snik'ẽr*), *n.* a half-suppressed laugh; a giggle: *v. i.* to laugh slyly; giggle.
sniff (*snif*), *v. i.* to draw in the breath through the nose: *v. t.* to smell or scent: *n.* the act of sniffing.
snip (*snip*), *v. t.* to cut or clip off: *n.* a single cut with scissors; small piece.
snipe (*snīp*), *n.* a long-billed fen fowl.
sniv-el (*sniv'el*), *v. i.* to run at the nose; cry, as a child.
snob (*snob*), *n.* a vulgar person who apes gentility; vulgar upstart.
snob-bish (*'ish*), *adj.* pertaining to, characteristic of, or like, a snob.
snooze (*snōōz*), *v. i.* to nap: *n.* a nap.
snore (*snōr*), *v. i.* to breathe with roughness or hoarseness in sleep: *n.* a noisy breathing in sleep.
★**snout** (*snout*, not *snōōt*), *n.* the projecting nose of a beast.
snow (*snō*), *n.* frozen particles of vapor in the atmosphere in the form of white feathery flakes: *v. i.* to fall in snow.
snub (*snub*), *v. t.* to check, treat, or reprimand with sarcasm or asperity: *n.* an intended slight.
snuff (*snuf*), *v. t.* to draw in through the nose: *v. i.* to snort or sniff; take snuff into the nostrils: *n.* powdered tobacco inhaled through the nose.
snuf-fle (*'l*), *v. i.* to speak or breathe hard through the nose: *n.* a speaking through the nose.
snug (*snug*), *adj.* concealed; lying close and warm; compact and convenient: *v. i.* to lie close and warm (with *up* or *together*).
snug-gle (*'l*), *v. i.* to lie close for warmth and comfort.
so (*sō*), *adv.* in a like manner or degree; in high degree; as has been stated; for this reason: therefore; more or less: *conj.* on condition that; if; therefore: *interj.* stop!
soak (*sōk*), *v. t.* to cause to suck in moisture; wet thoroughly: *v. i.* to become saturated or steeped in fluid.

Syn. SOAK, drench, steep. A person's clothes are *soaked* in rain when the water has penetrated every thread; he himself is *drenched* in the rain when it has penetrated, as it were, his very body; to *steep* is a species of *soaking* employed as an artificial process; *to soak* is, however, a permanent action by which hard things are rendered soft; *to steep* is a temporary action by which soft bodies become penetrated with a liquid; thus salt meat requires to be soaked; fruits are *steeped* in brandy.

soap (*sōp*), *n.* a compound used for washing and cleansing: *v. t.* to rub over, or wash, with soap.
soap-stone (*'stōn*), *n.* a variety of steatite.
soap-y (*'i*), *adj.* covered with, or like, soap; soft and smooth.
soar (*sōr*), *v. i.* to fly aloft, as a bird; rise in imagination: *n.* a lofty flight.
sob (*sob*), *v. i.* to sigh in a convulsive manner with tears: *v. t.* to utter with a sob: *n.* a convulsive sigh.
so-ber (*sō'bẽr*), *adj.* habitually temperate; calm; sedate: *v. t.* to make sober: *v. i.* to become sober.
so-bri-e-ty (*-brī'ē-ti*), *n.* habitual temperance; seriousness.
so-bri-quet (*sō-brē-kā'*), *n.* a nickname. [*French.*]
so-cia-ble (*sō'shā-bl*), *adj.* social; companionable; affable: *n.* a social gathering. [SOCIAL.]
so-cial (*'shal*), *adj.* pertaining to men as living in society; convivial.

Syn. SOCIAL, sociable. *Social* people seek others; *sociable* people are sought for by others. [See *convivial.*]

so-cial-ism (*-izm*), *n.* an economic theory or system of the reconstruction of society on the basis of coöperation of labor and community of property.
so-cial-ist (*-ist*), *n.* an advocate of socialism.
so-ci-e-ty (*-si'ē-ti*), *n.* [*pl.* societies (*-tiz*)], a number of persons united for a common interest; the more cultivated portion of any community.
Society Islands. A large group of islands in the South Pacific. Received their name from Captain Cook in honor of the Royal Society.
so-ci-ol-o-gy (*-shi-ol'ō-ji*), *n.* social science.
sock (*sok*), *n.* a short stocking.
sock-et (*'et*), *n.* a hollow into which something is fitted.
sod (*sod*), *n.* turf; sward: *v. t.* to cover with sod; turf.
so-da (*sō'dà*), *n.* impure carbonate of soda; sodium oxide.
so-da wa-ter (*waw-tẽr*), aërated water containing bicarbonate of soda.
sod-den (*sod'n*), *adj.* boiled; saturated: *v. i.* to be soaked or seethed: *v. t.* to saturate.
so-di-um (*sō'di-um*), *n.* a metallic element.
so-fa (*sō'fà*), *n.* a long seat with stuffed bottom, back, and arms.
Sofia. See *Sophia.*
soft (*sôft*), *adj.* easily yielding to pressure; malleable; smooth to the touch; not glaring; effeminate; quiet; easy; mild; weak in intellect: *adv.* softly; quietly: *interj.* gently! stop!
soft-en (*sôf'n*), *v. t.* to make soft or softer; tone down; assuage; make effeminate: *v. i.* to become soft or softened.
sog-gy (*sog'i*), *adj.* soaked; wet.
soil (*soil*), *n.* land; dirt; manure; stain: *v. t.* to make dirty; stain or mar: *v. i.* to become soiled. [STAIN.]
Soissons (*swäs-sôn'*). Town in France, was so named from the *Suessiones*, a Belgic tribe.
so-journ (*sō'jûrn* or *sō-jûrn'*), *v. i.* to dwell for a time: *n.* (*sō'jûrn*) a temporary residence. [ABIDE.]
★**sol-ace** (*sol'ās*, not *sō'lās*), *n.* comfort in sorrow; consolation: *v. t.* to comfort in sorrow.
so-lar (*'lẽr*), *adj.* pertaining to the sun.
so-lar-year (*-yēr*), *n.* the period during which the earth makes one complete revolution around the sun, 365 days 5 hours 48 minutes 52 seconds.
sold-er (*sod'ẽr* or *sol'dẽr*), *n.* a metallic alloy for uniting metals: *v. t.* to unite by solder.
sol-dier (*sōl'jẽr*), *n.* a person engaged in military service: *v. i.* to serve or act as a soldier; make a pretense of work. [MARTIAL.]
sole (*sōl*), *n.* the underside of the foot; boot or shoe, etc.; a flatfish of the genus Solea: *v. t.* to furnish with, or as with, a sole: *adj.* alone; being or acting by one's self.
★**sol-e-cism** (*sol'ē-sizm*, not *sō'lē-sizm*), *n.* a breach of the rules of syntax, or idiom of a language; impropriety; absurdity.
sol-emn (*sol'em*), *adj.* inspiring awe; serious; devout; formal. [GRAVE.]
so-lem-ni-ty (*sō-lem'ni-ti*), *n.* [*pl.* solemnities (*-tiz*)], a religious rite or ceremony; ceremony adapted to inspire awe; gravity; impressiveness.
sol-em-nize (*'em-nīz*), *v. t.* to perform with ceremonies; celebrate.
so-lic-it (*sō-lis'it*), *v. t.* to ask for with earnestness; endeavor to obtain: *v. i.* to canvass. [BEG.]
so-lic-i-ta-tion (*-i-tā'shun*), *n.* importunity; alluring or enticing influence.

Syn. SOLICITATION, importunity. *Solicitation* is general; *importunity* is particular; it is *importunate* or troublesome *solicitation*. *Solicitation* is itself indeed that which gives trouble to a certain extent, but it is not always unreasonable; there may be cases in which we may yield to the *solicitations* of friends, to do that which we have no objection to be obliged to do; but *importunity* is that *solicitation* which never ceases to apply for that which it is not agreeable to give.

so-lic-it-or (*'it-ẽr*), *n.* one who solicits; an attorney; a canvasser.
so-lic-i-tous (*'i-tus*), *adj.* eager; anxious; apprehensive; concerned.
so-lic-i-tude (*'i-tūd*), *n.* the state of being solicitous; concern; anxiety; carefulness. [ANXIETY.]
sol-id (*sol'id*), *adj.* having the particles so close or firmly adhering as to resist impression; compact; not hollow; heavy: *n.* a body having its constituent particles firmly adhering together. [FIRM, HARD.]
sol-i-dar-i-ty (*-i-dar'i-ti*), *n.* community of interests and responsibilities.
so-lid-i-fy (*sō-lid'i-fī*), *v. t.* to make solid: *v. i.* to harden.
so-lid-i-ty (*'i-ti*), *n.* density; stability; truth; moral firmness.
so-lil-o-quize (*sō-lil'ō-kwīz*), *v. i.* to utter a soliloquy.
so-lil-o-quy (*'ō-kwi*), *n.* a talking or discourse to one's self.
sol-i-taire (*sol-i-tār'*), *n.* a game played by one person; precious stone in single setting.
sol-i-ta-ri-ly (*'i-tā-ri-li*), *adv.* in a solitary manner.
sol-i-ta-ry (*'i-tā-ri*), *adj.* lonely; single; done, passed, or suffered, alone; remote; unoccupied; gloomy.

Syn. SOLITARY, desert, desolate. *Solitary* simply denotes the absence of all beings of the same kind; thus a place is *solitary* to a man where there is no human being but himself; *desert* conveys the idea of a place made *solitary* by being shunned, from its unfitness as a place of residence; *desolate* conveys the idea of a place made *solitary*, or bare of inhabitants, and all traces of habitation, by violent means.

Ant. CROWDED, plural.

sol-i-tude (*sol'i-tūd*), *n.* the state of being by one's self; loneliness; seclusion; desert.
so-lo (*sō'lō*), *n.* [*pl.* solos (*'lōz*)], an air, or musical piece performed by a single instrument or performer.
so-lo-ist (*-ist*), *n.* one who performs or sings a solo.
Solomon (*sol'ō-mon*). From the Hebrew *Sh'lomoh*, signifying "peaceable." Arabic, *Soliman* or *Suleyman*; Dutch, *Salomo*; Fr., *Salomon*; Ger., *Salomon*; Gr., *Solomon*; Hungarian, *Salamon*; It., *Salomone*; Lat., *Salomon*; Polish, *Salomon*; Port., *Salomao*; Sp., *Salomon.*
sol-stice (*sol'stis*), *n.* that point in the ecliptic at which the sun is farthest from the equator.
sol-u-ble (*'ū-bl*), *adj.* capable of solution.
so-lu-tion (*sō-lū'shun*), *n.* the act of dissolving by means of a fluid; deliverance; explanation.
solv-a-ble (*solv'a-bl*), *adj.* capable of being solved.
solve (*solv*), *v. t.* to explain; clear.
solv-ent (*solv'ent*), *n.* any liquid that dissolves another substance: *adj.* able to discharge debts; having the power of dissolving.
som-ber (*som'bẽr*), *adj.* dull; melancholy; dark; gloomy.
som-bre-ro (*sōm-brā'rō*), *n.* a kind of broad-brimmed hat.
some (*sum*), a *suffix* meaning *like*, *same*, as win*some*, glad*some*, etc.: *adj.* more or less; expressing an indeterminate number, person, or quantity; one or the other; about.
some-bod-y (*'bod-i*), *n.* some person; a person of importance.
some-how (*'how*), *adv.* in one way or another.
som-er-sault (*'ẽr-sawlt*), *n.* a leap in which a person turns with his heels over his head.
some-thing (*'thing*), *n.* a thing unknown, or not specified; part or portion: *adv.* in some degree.
some-time (*'tīm*), *adv.* at a time indefinitely; formerly; once.
some-what (*'hwhot*), *n.* more or less: *adv.* in some degree or extent.
some-where (*'hwâr*), *adv.* in one place or another.
som-nam-bu-lism (*som-nam'bū-lizm*), *n.* the act or practice of walking in sleep.
som-nam-bu-list (*-list*), *n.* a sleep-walker.
som-no-lent (*'nō-lent*), *adj.* inclined to sleep.
son (*sun*), *n.* a male child, or descendant; native or inhabitant.
★**so-na-ta** (*sō-nä't'tà*), *n.* a musical composition for one instrument.
so-na-ti-na (*-nä't'tē'nà*), *n.* a short, simple sonata.
song (*sông*), *n.* a lyrical poem or ballad; notes of birds; trifle.
son-in-law (*sun'-in-law*), *n.* [*pl.* sons-in-law (*sunz'*)], the husband of one's daughter.
son-net (*son'et*), *n.* a short lyric poem of fourteen lines.
son-net-eer (*-et-ēr'*), *n.* a composer of sonnets; minor poet: *v. i.* to compose sonnets.
so-no-rous (*sō-nō'rus*), *adj.* giving a clear sound; loud; deep-toned.
soon (*sōōn*), *adv.* in a short time; quickly; without delay.
soot (*soot*), *n.* finely divided carbon.
sooth (*sōōth*), *n.* truth.
soothe (*sōōth*), *v. t.* to please or calm; allay; pacify; assuage. [ALLAY.]
sooth-say-er (*-ẽr*), *n.* one who foretells or prognosticates.
soot-y (*soot'i*), *adj.* pertaining to, producing, or like, soot; dusky, black.
sop (*sop*), *n.* anything steeped, dipped, or softened in a liquid; something given to pacify: *v. t.* to steep or dip in a liquid.
Sophia (*sō-fī'à*). A name derived from the Greek *sophos*, "knowledge," "wisdom," prudence." Danish, *Sophie*; Dutch, *Sophie*; Fr., *Sophie*; Ger., *Sophie*; Gr., *Sophia*; It., *Sofia*; Lat., *Sophia*; Russ., *Sofia*; Sp., *Sofia*; Sw., *Sofia.*
Sophie. The French form of *Sophia.*
soph-ism (*sof'izm*), *n.* a specious but fallacious argument; fallacy.
soph-ist (*'ist*), *n.* one of a body of men in ancient Greece (5th century B. C.) who taught philosophy, eloquence, and politics; a fallacious or captious reasoner.
so-phis-tic-al (*sō-fis'ti-kal*), *adj.* pertaining to, or characteristic of, a sophist; fallacious. [Also *sophistic.*]
so-phis-ti-cate (*'ti-kāt*), *v. t.* to render worthless; pervert; vitiate.
soph-o-more (*sof'ō-mōr*), *n.* a student in his second academic year.
Sophronia (*sō-frō'ni-à*). A feminine of *Sophronius*, formed from *Sophron*; means "sober," "modest," "discreet."
sop-o-rif-ic (*sop-ō-rif'ik*), *adj.* causing, or tending to induce, sleep: *n.* an opiate or anodyne.
★**so-pra-no** (*sō-prä'nō*, not *sō-pran'ō*), *n.* [*pl.* sopranos (*'noz*), soprani (*'nē*)], the highest kind of voice; a singer with such a voice.
Sorbonne (*sôr-bon'*). A famous Parisian school,

named from Robert de Sorbonne, almoner of St. Louis.

sor-cer-er (*sôr'sĕr-ĕr*), *n.* a magician, wizard, or enchanter. [Fem. *sorceress.*]

sor-cer-y (*-i*), *n.* [*pl.* sorceries (*-iz*)], divination by the aid of evil spirits; witchcraft; magic.

sor-did (*'dĭd*), *adj.* mean; vile; base; niggardly; avaricious.

sore (*sôr*), *adj.* tender or painful; sensitive; grievous; severe: *adv.* grievously; severely: *n.* a painful or diseased part; ulcer; wound; sorrow; trouble.

sor-ghum (*sôr'gum*), *n.* a canelike grass resembling broom corn; molasses prepared from sorghum.

sor-rel (*sor'el*), *n.* a dock-like plant; a reddish-brown color.

sor-row (*'ō*) *n.* mental pain or uneasiness; grief; distress: *v. i.* to grieve; lament; be sad. [AFFLICTION, GRIEF.]

sor-ry (*'i*), *adj.* feeling regret for loss; vexed; pained; worthless.

sort (*sôrt*), *n.* a kind or species; class, rank, or order: *v. t.* to separate and place in different divisions or classes; select.

sot (*sot*), *n.* an habitual drunkard.

Soudan (*sōō-dän'*). From the Arabic *Belad-ez-Suden*, the "district of the blacks."

★**sough** (*suf*), *n.* a hollow murmur or whistling: *v. i.* to murmur or whistle.

soul (*sōl*), *n.* the spiritual, rational, and immortal part in man; essence; human being.

sound (*sound*), *adj.* whole; unbroken; healthy; not decayed; founded on truth or right; firm; safe; strong; laid on with force: *n.* noise; report; a strait or narrow passage of water: *v. t.* to measure or ascertain the depth of; cause to make a noise; examine or try: *v. i.* to make a noise or sound.

Syn. SOUND, sane, healthy. *Sound* is extended in its application to all things that are in the state in which they ought to be, so as to preserve their vitality; thus, animals and vegetables are said to be *sound* when in the former there is nothing amiss in their breath, and in the latter in their root. *Healthy* expresses more than either *sound* or *sane;* we are *healthy* in every part, but we are *sound* in that which is essential for life. He who is *sound* may live, but he who is *healthy* enjoys life; *sane* is applicable to human beings, in the same sense, but with reference to the mind; a *sane* person is opposed to one that is *insane.*

soup (*sōōp*), *n.* a kind of broth.

sour (*sour*), *adj.* having an acid, sharp, or astringent taste; disagreeable; cross; morose: *v. t.* to cause to become sour: *v. i.* become sour.

source (*sōrs*), *n.* that from which anything arises or originates.

souse (*sous*), *n.* anything steeped or preserved in pickle; a plunging in water: *v. t.* to steep in pickle; plunge into water: *v. i.* to make a sudden attack.

south (*south*), *n.* that one of the four cardinal points of the compass directly opposite the north: *adv.* toward the south: *adj.* pertaining to the south.

South, *n.* the southern portion of the United States (with *the*).

South Carolina. One of the South Atlantic states of the Union. As provinces, the two divisions of Carolina were one tract originally.

south-ern (*suth'ĕrn*), *adj.* pertaining to, situated in, or proceeding from or toward, the south.

South-ern-er (*-ĕr*), *n.* a native of the South.

South Sea Bubble. A financial scheme which originated in England about 1711 and collapsed in 1720.

★**sou-ve-nir** (*sōō-ve-nēr'*), *n.* a memento or keepsake.

sov-er-eign (*suv'ĕr-in* or *sov'*), *adj.* royal; supreme in power; effectual: *n.* a king, emperor, or queen; a British gold coin equal to 20 shillings, or about $4.86.

sov-er-eign-ty (*-ti*), *n.* supreme power or dominion.

sow (*sou*), *n.* a female pig.

sow (*sō*), *v. t.* to scatter, as seed upon the earth; disseminate; scatter on or over: *v. i.* to scatter seed for growth.

space (*spās*), *n.* extension; room; interval: *v. t.* to make intervals between.

spa-cious (*spā'shus*), *adj.* extending far and wide; roomy.

spade (*spād*), *n.* an implement for digging, etc., consisting of a broad blade of iron with a handle; one of a suit of cards: *v. t.* to dig or work with a spade.

Spain. A kingdom of southwestern Europe. Name is Eng. of *Hispania,* founded upon the Punic *span,* "a rabbit," from the number of wild rabbits found there.

span (*span*), *n.* a short space of time; spread or extent of an arch, etc.; yoke of oxen or horses: *v. t.* to measure by the span of the hand; reach (from one side to the other). *v. i.* to be matched for harness.

span-gle (*spang'gl*), *n.* a small plate or boss of shining metal; any glittering ornament: *v. t.* to set or adorn with, or as with, spangles.

Span-iard (*span'yĕrd*), *n.* a native of Spain.

span-iel (*'yel*), *n.* a variety of dog.

Span-ish (*'ish*), *adj.* pertaining to Spain, its language, or its inhabitants.

Spanish main. The southern banks of the West India islands, and the water extending for some distance into the Caribbean Sea, so called from the fact that the Spaniards confined their buccaneering enterprises to this locality.

spank (*spangk*), *v. t.* to strike with the open hand; slap: *n.* a sounding slap.

spar (*spär*), *n.* a lustrous crystalline mineral; a general name for a mast, yard, boom, etc.; a contest: *v. i.* to box; contest in words.

spare (*spâr*), *v. t.* to use in a frugal manner; part with; omit; treat tenderly: *v. i.* to live frugally; forbear or forgive: *adj.* thin or lean; scanty [FRUGALITY, PENURIOUS.]

spark (*spärk*), *n.* a small particle of fire or ignited substance; small shining body; gay young fellow.

spar-kle (*'l*), *v. i.* to emit sparks; glisten; scintillate; flash.

spar-row (*spar'ō*), *n.* a well-known small bird of the passerine family.

sparse (*spärs*), *adj.* thinly scattered; not dense.

Spar-tan (*spär'tan*), *adj.* pertaining to Sparta; hardy; undaunted.

spasm (*spazm*), *n.* a sudden, violent, involuntary contraction of the muscles.

spas-mod-ic (*spaz-mod'ik*), *adj.* pertaining to, or consisting in, spasms; convulsive; violent but short-lived. [Also *spasmodical.*]

spat-ter (*spat'ĕr*), *v. t.* to sprinkle with a liquid; defame: *v. i.* to undergo or cause scattering or splashing: *n.* a small splash.

spat-u-la (*spat'ū-là*), *n.* a broad, flat, thin, flexible knife.

spav-in (*spav'in*), *n.* a disease of horses, characterized by a swelling in the hock joint.

spawn (*spawn*), *n.* the ova of fishes, oysters, etc.; offspring or product: *v. i.* to produce and deposit spawn.

speak (*spēk*), *v. i.* to utter articulate sounds; talk; say; sound: *v. t.* to utter articulately; declare or pronounce.

Syn. SPEAK, announce, articulate, chat, chatter, converse, declaim, declare, deliver, discourse, enunciate, express, pronounce, say, talk, tell, utter. To *speak* may simply consist in uttering an articulate sound; but *to say* is to communicate some idea by means of words; a child begins to *speak* the moment it opens its lips to utter any acknowledged sound; but it will be some time before it can *say* anything; to *say* is to communicate that which passes in our own minds, to express our ideas and feelings as they rise; to *tell* is to communicate. To *utter* is to give forth as an audible sound, articulate or not; to *talk* is to *utter* a succession of connected words; to *speak* is to give articulate utterance even to a single word; to *chat* is ordinarily to *utter* in a familiar, conversational way. [See *address, utter.*]

spear (*spēr*), *n.* a long-pointed weapon used for thrusting or throwing; a shoot, as of grass: *v. t.* to pierce, or kill, with a spear.

spe-cial (*spesh'al*), *adj.* designed for a particular purpose; distinctive; uncommon; appropriate; specific.

spe-cial-ism (*-izm*), *n.* devotion to a particular and restricted branch.

spe-cial-ist (*-ist*), *n.* one who devotes himself to a particular branch.

spe-cial-i-za-tion (*-al-i-zā'shun*), *n.* application to a special function or use; act of specializing.

spe-cial-ize (*'shal-iz*), *v. t.* to particularize; assign to a specific use.

★**spe-cial-ty** (*'al-ti*), *n.* that for which a person is noted or distinguished.

spe-cie (*spē'shi*), *n.* coined money.

spe-cies (*'shēz*), *n.* a subdivision of a genus; kind; sort.

spe-cif-ic (*spē-sif'ik*), *adj.* pertaining to a species; definite or particular; precise: *n.* a remedy for a particular disease.

spec-i-fi-ca-tion (*spes-i-fi-kā'shun*), *n.* the act of specifying; detailed statement of particulars.

spec-i-fy (*'i-fi*), *v. t.* to mention or name particularly; designate verbally.

spec-i-men (*'i-men*), *n.* a sample. [COPY.]

spe-cious (*spē'shus*), *adj.* plausible; ostensible.

speck (*spek*), *n.* a spot; flaw; blemish; particle: *v. t.* to spot. [BLEMISH.]

spec-kle (*'l*), *n.* a small spot in anything different in substance or color: *v. t.* to variegate with spots.

spec-ta-cle (*'tà-kl*), *n.* something exhibited to view, especially something unusual: *pl.* an optical instrument to assist the vision. [SHOW.]

spec-tac-u-lar (*-tak'ū-lĕr*), *adj.* pertaining to shows or exhibitions; adapted to excite wonder.

spec-ta-tor (*-tā'tĕr*), *n.* a beholder.

spec-ter, spec-tre (*spek't ĕr*), *n.* a ghost or apparition.

spec-tral (*'tral*), *adj.* ghostly; pertaining to, or produced by, the spectrum.

spec-trum (*'trum*), *n.* [*pl.* spectra (*'trà*)], the colored and other rays of light separated by refraction through a prism.

spec-trum a-nal-y-sis (*à-nal'i-sis*), the determination of the composition of a body by means of the spectrum.

spec-u-late (*'ū-lāt*), *v. i.* to consider or meditate upon; purchase with a view to profit.

spec-u-la-tion (*-lā'shun*), *n.* intellectual examination; theory; purchase for future sale.

spec-u-la-tive (*'ū-lā-tiv*), *adj.* pertaining to, or given to, speculation; contemplative; risky.

spec-u-la-tor (*-tĕr*), *n.* one who engages in speculation.

speech (*spēch*), *n.* the faculty of uttering articulate sounds or words; act of speaking; formal discourse.

speed (*spēd*), *n.* velocity; swiftness; quickness; success: *v. i.* to make haste; move quickly; fare. [HASTEN.]

speed-om-e-ter (*spēd-om'ē-tĕr*), *n.* a speed indicator, as for an automobile.

speed-y (*'i*), *adj.* not dilatory or slow; prompt; quick; hasty.

spell (*spel*), *n.* a charm or incantation; time during which a person works; duration: *v. i.* to form words with the proper letters: *v. t.* to write, repeat, or point out, the proper letters of.

spelt (*spelt*), *n.* a kind of grain.

spend (*spend*), *v. t.* to lay out, as money; consume; drain of force or strength: *v. i.* to incur expense.

spend-thrift (*'thrift*), *adj.* prodigal; extravagant: *n.* one who is prodigal or lavish in expenditure.

sperm (*spĕrm*), *n.* the seminal fluid of animals; spermaceti.

sper-ma-ce-ti (*spĕr-mà-sē'ti*), *n.* a white waxy substance obtained from the head of the sperm whale.

sper-mat-ic (*-mat'ik*), *adj.* pertaining to semen. [Also *spermatical.*]

sper-ma-to-zo-ön (*-mà-tō-zō'on*), *n.* the male germ cell in animals and plants.

spew (*spū*), *v. i.* to vomit.

sphere (*sfĕr*), *n.* a globe or globular body; circuit or range of knowledge, etc.

spher-ic-al (*sfer'i-kal*), *adj.* globular.

sphe-roid (*sfē'roid*), *n.* a body resembling a sphere.

sphinx (*sfingks*), *n.* [*pl.* sphinxes (*'sez*)], a fabled monster having the head of a woman and the body of a lioness; a person of enigmatical character or policy.

spice (*spis*), *n.* any aromatic and pungent vegetable used for seasoning; relish: *v. t.* to season or flavor with, or as with, spice.

spick and span (*spik and span*), new.

spi-cy (*spi'si*), *adj.* flavored with, containing, or having the qualities of, spice; racy.

spi-der (*'dĕr*), *n.* any individual of the genus Arachnida that spins webs to ensnare its prey.

spig-ot (*spig'ot*), *n.* a pointed piece of wood used to stop the venthole of a cask.

spike (*spīk*), *n.* a large kind of nail: *v. t.* to fasten with spikes.

spike-nard (*'närd*), *n.* an aromatic plant from which an oil, the ancient *nardos,* is extracted.

spik-y (*'i*), *adj.* spike-like; set with spikes.

spill (*spil*), *n.* a thin strip of paper or wood for lighting a lamp, etc.; a tumble or overthrow: *v. t.* to suffer to run or fall out of a vessel: *v. i.* to fall out. [POUR.]

spin (*spin*), *v. t.* to draw out and twist into threads; protract; cause to whirl rapidly: *v. i.* to practice spinning; whirl; move swiftly: *n.* the act of spinning.

spin-ach (*'āj*), *n.* an esculent vegetable.

spi-nal (*spi'nal*), *adj.* pertaining to the spine.

spin-dle (*spin'dl*), *n.* the long, thin rod used on spinning wheels for twisting the thread; any axis of revolution.

spine (*spin*), *n.* in vertebrates, the backbone.

spin-et (*spin'el*), *n.* a keyed instrument, allied to the piano.

spin-ning jen-ny (*'ing jen-i*), a machine for spinning cotton.

spin-ster (*spin'stĕr*), *n.* an unmarried woman.

spi-ral (*spi'ral*), *adj.* winding around a center like the thread of a screw: *n.* a curve or curved line receding continually from the center.

spi-rant (*'rant*), *n.* a name applied to those consonants in which the breath is not entirely stopped in articulating.

spire (*spīr*), *n.* a tapering body; steeple.

Spires (*spīrz*) or **Speyer** (*spīr*). An historic place in Bavaria, Germany, so named from the river *Speyerbach.*

spir-it (*spir'it*), *n.* the soul; life; apparition; courage; vivacity; real meaning; essence; any liquid produced by distillation: *pl.* intoxicants; liveliness: *v. t.* to take away suddenly or secretly.

spir-it-u-al (*spir'it-ū-al*), *adj.* not material; possessing the nature or qualities of a spirit; pure; holy; heavenly-minded.

spir-it-u-al-ism (*-izm*), *n.* the state of being spiritual; the philosophical doctrine that nothing is real except soul or spirit.

spir-it-u-al-ist (*-ist*), *n.* a believer in spiritualism.

spir-it-u-al-i-ty (*-al'i-ti*), *n.* the state or quality of being spiritual.

spir-it-u-al-ize (*-iz*), *v. t.* to free from sensuality; make spiritual.

spir-it-u-ous (*spir'it-ū-us*), *adj.* having the quality of spirit; pure; immaterial; alcoholic; ardent.

spit (*spit*), *n.* a long, pointed rod on which meat is roasted: *v. t.* to thrust a spit through; impale: *v. i.* to eject saliva.

spite (*spit*), *n.* ill will or hatred; petty malice: *v. t.* to try to injure; annoy.

spit-fire (*spit'fīr*), *n.* a very violent or passionate person.

spit-tle (*'l*), *n.* saliva; sputum.

Spitzbergen (*spits-bĕrg'en*). A group of islands in the Arctic Ocean. Name is literal Dutch for "sharp-pointed mountains," referring to the granite peaks of the mountains which are so characteristic of this group of islands.

splash (*splash*), *v. t.* to spatter: *v. i.* to dash water about: *n.* a noise as from water thrown up, or by anything striking in, or upon, a liquid.

splat-ter (*splat'ẽr*), *v. t.* to splash.
splay (*splā*), *v. t.* to dislocate, as the shoulder bone of a horse: *adj.* turned or spreading outward.
spleen (*splēn*), *n.* a soft vascular organ near the large extremity of the stomach; fit of ill humor, melancholy, or latent spite.
splen-did (*splen'did*), *adj.* magnificent; brilliant; famous; celebrated; sumptuous.
splen-dor (*'dẽr*), *n.* the appearance of anything splendid; pomp. [MAGNIFICENCE.]
splice (*splīs*), *v. t.* to unite, as two ropes, by interweaving the strands; connect; unite: *n.* the union of ropes, etc.
splint (*splint*), *n.* a splinter; a thin piece of wood to keep a broken bone, etc., in position.
splin-ter (*splin'tẽr*), *n.* a thin piece of wood, etc.; fragment: *v. t.* to split or rend into long, thin pieces; shiver: *v. i.* to be rent into splinters.
split (*split*), *v. t.* to divide lengthwise; cleave; rupture; disunite: *v. i.* betray confidence; throb or ache violently. [BREAK.]
splotch (*sploch*), *n.* a stain; daub.
splurge (*splẽrj*), *n.* a great display.
splut-ter (*splut'ẽr*), *v. i.* to speak hastily and confusedly: *n.* a confused noise.
spoil (*spoil*), *v. t.* to plunder; vitiate; ruin; destroy: *v. i.* to become useless; decay: *n.* pillage; plunder; booty. [BOOTY.]
spoke (*spōk*), *n.* one of the bars of a wheel connecting the center with the rim: *v. t.* to furnish with spokes: *p. t.* of speak.
spo-li-a-tion (*spō-li-ā'shun*), *n.* the act of plundering or robbery.
spon-dee (*spon'dē*), *n.* a poetic foot of two long syllables.
sponge (*spunj*), *n.* the porous, elastic, fibrous framework of any species of Spongida; any substance resembling sponge; parasite: *v. i.* to suck in like a sponge; live upon others: *v. t.* cleanse or wipe with a sponge.
spon-gy (*spun'ji*), *adj.* like a sponge; having the quality of imbibing fluids.
spon-sor (*spon'sẽr*), *n.* a surety; a godfather or godmother.
spon-ta-ne-i-ty (*-tā-nē'i-ti*), *n.* the quality of being spontaneous.
spon-ta-ne-ous (*-tā'nē-us*), *adj.* proceeding from natural disposition or impulses; acting by internal impulse or natural law.
spook (*spōōk*), *n.* a ghost.
spool (*spōōl*), *n.* a hollow cylinder surrounded with a ridge at each end on which thread, etc., are wound.
★spoon (*spōōn*, not *spoon*), *n.* a small domestic implement consisting of a hollow bowl and handle: *v. t.* to take up in, or as in, a spoon: *v. i.* to act the part of a demonstrative lover.
spoon-y (*'i*), *adj.* demonstratively fond.
spoor (*spōōr*), *n.* the track or trail of any wild animal.
spo-rad-ic (*spō-rad'ik*), *adj.* occurring separately or apart from others of the same kind. [Also *sporadical.*]
spo-rad-ic dis-ease (*diz-ēz'*), a disease, usually epidemic, attacking only a few.
spore (*spōr*), *n.* a minute grain in cryptogamous plants which performs the function of a seed.
sport (*spōrt*), *n.* diversion; mirth; mockery; recreation: *v. i.* to play or frolic: *v. t.* to divert.
sport-ing (*'ing*), *p. adj.* pertaining to, characteristic of, or engaging in, sport or sports.
sport-ive (*'iv*), *adj.* frolicsome; merry. [PLAYFUL.]
sports-man (*spōrts'man*), *n.* [*pl.* sportsmen (*'men*)], one who pursues the sports of the field, as hunting, etc. [Fem. *sportswoman.*]
spot (*spot*), *n.* a blot or mark; blemish; disgrace or reproach; locality; place: *v. t.* to mark with spots; discolor; stain; disgrace or blemish; detect. [BLEMISH.]
spot light (*'līt*), an adjustable calcium light for throwing a shifting light on a stage.
Spottsylvania. County in Virginia, named for Alexander Spotswood, early lieutenant governor.
spot-ty (*'i*), *adj.* marked with, or full of, spots.
spouse (*spouz*), *n.* a married person.
spout (*spout*), *n.* the projecting mouth of a vessel; pipe for conducting a liquid: *v. t.* to throw out forcibly and abundantly, as from a pipe: *v. i.* to issue with violence.
sprain (*sprān*), *n.* an excessive strain of the muscles or ligaments: *v. t.* to overstrain.
sprat (*sprat*), *n.* a small fish.
sprawl (*sprawl*), *v. i.* to stretch the body carelessly; lie awkwardly.
spray (*sprā*), *n.* a small shoot or branch of a tree; small particles of water, etc.: *v. t.* to throw spray upon.
spread (*spred*), *v. t.* to extend in all directions; unfurl; open; scatter: *v. i.* to be extended or propagated: *n.* extent; feast.
Syn. SPREAD, expand, diffuse. *To spread* may be said of anything which occupies more place than it has done, whether by a direct separation of its parts, or by an accession to the substance; but *to expand* is *to spread* by means of extending or unfolding the parts; a mist *spreads* over the earth; a flower *expands* its leaves; *diffusion* is that process of *spreading* which consists literally in pouring out in different ways. [See *announce.*]
Ant. COLLECT, gather.
spread ea-gle (*spred' ē-gl*), defiantly bombastic: *n.* the figure of an eagle with its wings elevated and its legs extended.
spree (*sprē*), *n.* a carousal.
sprig (*sprig*), *n.* a small twig or shoot; scion.
spright-li-ness (*'li-nes*), *n.* vivacity.
spright-ly (*'li*), *adj.* vivacious; brisk; animated; airy; gay: *adv.* with vivacity. [ACTIVE.]
spring (*spring*), *v. i.* to arise; originate; dart; start or rise up suddenly; issue or proceed: *v. t.* to cause to spring up; leap over: *n.* a leap or bound; an elastic body used for various mechanical purposes; a flying back; source; a fountain of water; one of the four seasons of the year.
springe (*sprinj*), *n.* a gin or noose.
Springfield, Mass. Named in honor of the English residence of its founder, William Pynchon (1640). Indian name *Agawam.*
spring-ing (*spring'ing*), *n.* the act or process of leaping; growth.
spring-tide (*'tīd*), *n.* springtime.
spring-y (*'i*), *adj.* elastic; light; spongy.
sprin-kle (*spring'kl*), *v. t.* to scatter in small drops: *v. i.* to rain in small drops: *n.* a sprinkling.
sprint (*sprint*), *n.* a run for a short distance at full speed: *v. i.* to run at full speed.
sprout (*sprout*), *v. i.* to germinate: *n.* a shoot; bud.
spruce (*sprōōs*), *n.* a fir tree of the genus Picea: *adj.* smart; trim; neat: *v. t.* and *v. i.* to dress with affected neatness.
spry (*sprī*), *adj.* nimble; sharp. [ACTIVE.]
spunk-y (*'i*). *adj.* mettlesome; plucky.
spur (*spûr*), *n.* a rowel with sharp points worn on the heel for inciting a horse; any incentive to action; something projecting: *v. t.* to prick with a spur; incite to action; hasten: *v. i.* to travel with haste; push on.
spu-ri-ous (*spū'ri-us*), *adj.* not genuine; counterfeit; illegitimate.
spurn (*spûrn*), *v. t.* to drive away, as with the foot; reject with contempt: *v. i.* to manifest contempt: *n.* disdainful rejection.
spurt (*spûrt*), *v. i.* to issue forth suddenly in a stream; make a sudden brief effort: *v. t.* to throw out in a stream: *n.* a sudden or forcible ejection of a liquid; brief, sudden effort.
sput-ter (*sput'ẽr*), *v. i.* to throw out in scattered drops; speak rapidly and indistinctly: *v. t.* to emit in small particles with a spluttering noise: *n.* moist matter thrown out in small drops.
spu-tum (*spū'tum*), *n.* saliva; spittle.
Spuyten Duyvil (*spī'ten dī'vil*). Channel connecting the Hudson and Harlem rivers. So named on account of the oath sworn by a Dutch shipmaster that he would pass the mouth of the creek "in spite of the devil."
spy (*spī*), *v. t.* to gain sight of; detect; explore; examine secretly: *v. i.* to scrutinize; play the spy: *n.* one who keeps watch on others; secret agent. [EMISSARY.]
spy-glass (*'glas*), *n.* a small telescope.
squab (*skwob*), *n.* a person of short, fat figure; nestling of a pigeon: *adj.* short and fat; bulky: *adv.* with a heavy fall.
squab-ble (*'l*), *v. i.* to wrangle or dispute in a noisy manner: *n.* a noisy wrangle; dispute.
squad (*skwod*), *n.* a small party (of soldiers).
squad-ron (*'run*), *n.* two troops of a regiment of cavalry; detachment of war vessels.
squal-id (*skwol'id*), *adj.* extremely dirty; foul; poverty-stricken.
squall (*skwawl*), *n.* a sudden and violent gust of wind; a loud scream: *v. i.* to scream or cry violently.
★squa-lor (*skwā'lôr*), *n.* foulness; dirt.
squan-der (*skwon'dẽr*), *v. t.* to spend lavishly or wastefully: *v. i.* to be wasteful.
square (*skwār*), *n.* a parallelogram having 4 equal sides and 4 right angles; anything nearly resembling a square; instrument for measuring right angles; product of a number multiplied by itself: *adj.* having 4 equal sides and 4 equal angles; forming a right angle; true; upright; honest; just; well-set: *v. t.* to form with 4 equal sides and 4 equal angles; multiply by itself; adjust; regulate; place at right angles: *v. i.* to accord or agree; assume a boxing attitude (with *off*).
square root (*'rōōt*), that number or quantity which, multiplied by itself, produces the given number or quanity, as 2 is the square root of 4.
squash (*skwosh*), *v. t.* to crush: *n.* something soft and easily crushed; shock of soft bodies; a gourd.
squash-y (*'i*), *adj.* easily crushed.
squat (*skwot*), *v. i.* to sit down on the hams or heels; settle on land without a title: *adj.* crouching: *n.* the posture of one who squats.
squat-ter (*'ẽr*), *n.* one who squats.
squaw (*skwaw*), *n.* a North American Indian woman or wife.
squawk (*skwawk*), *v. i.* to utter a loud, harsh noise: *n.* a harsh squeak.
squeak (*skwēk*), *v. i.* to utter a short, shrill, sharp noise; break silence; confess: *n.* a short, shrill, sharp or disagreeable noise.
squeal (*skwēl*), *v. i.* to cry with a sharp, shrill, prolonged sound: *n.* a sharp, shrill, prolonged sound.
squeam-ish (*skwēm'ish*), *adj.* sickish at stomach; easily disgusted; nice to excess; fastidious.
squeeze (*skwēz*), *v. t.* to press between two bodies; embrace forcibly; compress: *v. i.* to press; push between close bodies: *n.* the act of squeezing; compression between bodies; a forcible embrace. [PRESS.]
squelch (*skwelch*), *v. t.* to crush; silence.
squib (*skwib*), *n.* a kind of firework; petty lampoon: *v. i.* to use or write squibs or sarcastic reflections.
squill (*skwil*), *n.* a genus of plants allied to the lily.
squint (*skwint*), *adj.* looking obliquely: *v. i.* to see or look obliquely: *v. t.* to cause to squint: *n.* the act or habit of looking obliquely.
squirm (*skwẽrm*), *v. i.* to wriggle.
squir-rel (*skwẽr'el*), *n.* a small, agile rodent with a long bushy tail.
squirt (*skwẽrt*), *v. t.* to eject in a stream; spurt: *n.* a small stream or jet; an instrument for ejecting.
stab (*stab*), *v. t.* to pierce with, or as with, a pointed weapon; kill or wound: *v. i.* to pierce; indict a wound: *n.* a thrust or wound with a sharp-pointed weapon.
sta-ble (*stā'bl*), *adj.* fixed; firm; constant: *n.* a building for lodging horses, cows, etc.: *v. t.* to put or keep in a stable: *v. i.* to dwell or shelter, as in a stable. [FIRM, PERMANENT.]
stack (*stak*), *n.* a large quantity of hay, corn, wood, etc., piled up; number of chimneys standing together: *v. t.* to pile into a stack.
sta-di-um (*stā'di-um*), *n.* [*pl.* stadia (*-ā*)], a Greek linear measure equal to 606¾ ft.; a race course.
staff (*staf*), *n.* a stick carried for support in walking, or for defense; support; handle; pole; stanza or a series of verses; the five lines and four spaces on which music is written; number of persons engaged in any undertaking.
Syn. STAFF, stay, prop, support. Anything may be denominated a *staff* which holds up after the manner of a *staff*, particularly as it respects persons; bread is said to be the *staff* of life; the *stay* makes a thing *stay* for the time being; it keeps it in its place; the *prop* keeps a thing up for a permanency: every pillar on which a building rests is a *prop*; *support* is a general term, and in its most general sense comprehends all the others as species; whatever *supports*, that is, bears the weight of an object, is a *support*, whether in a state of motion like a *staff*, or in a state of rest like a *stay* or *prop*.
stag (*stag*), *n.* the male of the red deer.
stage (*stāj*), *n.* an elevated platform; the theatrical profession; place of rest on a journey; field of action; degree of progress; coach: *v. t.* to put on the stage, as a play.
sta-ger (*stā'jẽr*), *n.* one who has long acted on the stage of life; one who is experienced; a player.
stag-ger (*stag'ẽr*), *v. i.* to totter or reel: *v. t.* to cause to totter or reel; shock; make less confident: *n.* a sudden reeling or tottering.
stag-ing (*stāj'ing*), *n.* a temporary structure of boards and posts; style of play production.
stag-nant (*stag'nant*), *adj.* not flowing, or running in a stream; motionless; not brisk; torpid; dull.
stag-nate (*'nāt*), *v. i.* to cease to flow or run; become torpid, dull or impure.
staid (*stād*), *adj.* sober; sedate; regular; steady.
stain (*stān*), *v. t.* to blot; spot; dye; tarnish; pollute: *v. i.* to take stains; become stained: *n.* discoloration; spot or blot; taint; cause of reproach.
Syn. STAIN, soil, sully, tarnish. All these terms imply the act of diminishing the brightness of an object, but the term *stain* denotes something grosser than the other terms, and is applied to inferior objects; things which are not remarkable for purity or brightness may be *stained*, as hands when *stained* with blood; nothing is *sullied* or *tarnished* but what has some intrinsic value; a fine picture or piece of writing may be easily *soiled* by a touch of the finger; the finest glass is the soonest *tarnished;* hence, in the moral application a man's life may be *stained* by the commission of some gross immorality; his honor may be *sullied*, or his glory *tarnished.*
stair (*stār*), *n.* one of a series of steps for ascending to a higher level; a step: *pl.* a flight of steps.
stair-case (*'kās*), *n.* a set of steps in a house with railings, etc.
stake (*stāk*), *n.* a post or strong stick sharpened at one end and fixed in the ground; that which is pledged, wagered; prize contested for: *v. t.* to fasten or support, defend with, or mark out the limits of, with stakes; wager or pledge.
stal-ac-tite (*stal-ak'tīt*), *n.* an icicle-like incrustation of carbonate of lime, etc., formed by percolation in caverns, etc.
stal-ag-mite (*-ag'mīt*), *n.* a cone of carbonate of lime, etc., formed on the floor of a cavern.
stale (*stāl*), *adj.* not fresh or new; vapid; tasteless; trite: *v. t.* to make stale; wear out.
stale-mate (*'māt*), *n.* the position of a king in chess, when he cannot move without being placed in check: *v. t.* to subject to stalemate.
stalk (*stawk*), *v. t.* to pursue stealthily and under cover: *v. i.* to walk with high and proud steps: *n.* the stem or main axis of a plant; anything like a stalk.
stall (*stawl*), *n.* that part of a stable where a horse or ox is kept and fed; small shelter where business is carried on: *v. t.* to place or keep in a stall: *v. i.* to kennel, as dogs.
stal-lion (*stal'yun*), *n.* an uncastrated male horse.
stal-wart (*stawl'wẽrt*), *a.* sturdy; strong; tall and stout.
sta-men (*stā'men*), *n.* the male organ of a flower.
stam-i-na (*stam'i-nā*), *n. pl.* tone and vigor of the animal system

stam-i-nal (*stam'i-nal*), *adj.* pertaining to, or consisting in, stamens or stamina; tonic.
stam-mer (*stam'ĕr*), *v. i.* to hesitate or falter in speaking: *v. t.* to utter or pronounce with difficulty or hesitation: *n.* difficulty in speaking; stutter. [HESITATE.]
stamp (*stamp*), *v. t.* to strike with the sole of the foot by thrusting it downward; impress; fix deeply; affix a stamp to: *v. i.* to strike or beat the foot forcibly on the ground: *n.* the act of stamping; die; the impression made; small piece of paper to be affixed to a letter, document, etc.
stam-pede (*stam-pēd'*), *n.* a sudden panic; any sudden flight or rush: *v. t.* to cause to take to sudden flight: *v. i.* to start off in a panic.
stanch (*stânch*), *adj.* firm; constant; trustworthy; zealous: *v. t.* to stop the flowing of, as blood. [Also *staunch.*]
stan-chion (*stan'shun*), *n.* a support or post of iron or wood.
stand (*stand*), *v. i.* to be erect; occupy a certain position; be at rest or fixed; continue; continue in force: *v. t.* to endure; sustain; abide by; set in an erect position: *n.* a stop or halt; raised platform for spectators; small table; resistance.
stand-ard (*'ĕrd*), *n.* an ensign or flag; established rule or model; criterion. [CRITERION.]
stand-ing (*'ing*), *n.* the act of stopping or of being erect on the feet; reputation; rank or status: *adj.* remaining erect; stagnant; lasting; fixed.
Stanislaus (*stan'is-laws*. From the Slavonic *slawa,* signifying "the place of glory or fame." The Bohemian form of the name is *Stanislaw.*
stan-na-ry (*stan'ă-ri*), *n.* [*pl.* stannaries (*-riz*)], a tin mine or works: *adj.* pertaining to tin mines.
stan-nous (*'us*), *adj.* of, pertaining to, or containing, tin.
stan-za (*'zȧ*), *n.* a number of lines or verses, usually ending in a pause.
sta-ple (*stā'pl*), *n.* principal element or topic; unmanufactured or raw material; loop of metal for holding a bolt, etc.: *adj.* chief; regularly produced; established in commerce, etc.
star (*stär*), *n.* any celestial body, especially one that is self-luminous; anything resembling a star; a person of distinguished eminence, especially in the theatrical profession: *v. t.* to set or adorn with stars: *v. i.* to shine as a star; be preëminent.
star-board (*'bȯrd*), *n.* the right-hand side of a vessel looking toward the bow: *adj.* pertaining to, or lying on, the right side of a vessel.
starch (*stärch*), *n.* a widely diffused vegetable substance: *v. t.* to stiffen with starch; make stiff.
starch-y (*stärch'i*), *adj.* consisting of starch; stiff; formal.
stare (*stâr*), *n.* a fixed look with wide-open eyes: *v. i.* to look with fixed eyes wide open: *v. t.* to gaze at. [GAPE.]
stark (*stärk*), *adj.* stiff; strong: *adv.* wholly or completely.
star-ling (*stär'ling*), *n.* a passerine bird of the genus Sturnus.
star-ry (*'i*), *adj.* abounding in, consisting of, or proceeding from, stars; star-shaped.
start (*stärt*), *v. i.* to be moved or twitched suddenly; move abruptly; set out; commence: *v. t.* to originate or set going; rouse suddenly from concealment: *n.* the act of starting; outset: a sudden motion or twitch; starting post.
star-tle (*stär'tl*), *v. i.* to feel sudden alarm: *v. t.* to frighten suddenly; shock.
star-va-tion (*stär-vā'shun*), *n.* the state of being starved.
starve (*stärv*), *v. i.* to suffer extreme hunger: *v. t.* subdue by famine; destroy by want of any kind.
starve-ling (*'ling*), *adj.* hungry; weak; lean: *n.* a thin, weak, pining animal or plant.
state (*stāt*), *n.* circumstances or condition; pomp; whole body of people united under one government; civil power: *adj.* pertaining to the body politic; ceremonial: *v. t.* to express the details of; narrate. [See *announce, allege.*]
Syn. STATE, realm, commonwealth. The ruling idea in the sense and application of the word *state* is that of government in its most abstract sense; affairs of *state* may either respect the internal regulations of a country, or they may respect the arrangements of different *states* with each other. The term *realm* is employed for the nation at large, but confined to such nations as are monarchical and aristocratical; the term *commonwealth* refers rather to the aggregate body of men and their possessions, than to the government of a country; it is the business of the minister to consult the interests of the *commonwealth.*
state-li-ness (*'li-nes*), *n.* the state or quality of being stately; majestic appearance.
state-ly (*'li*), *adj.* grand; majestic; dignified; displaying state.
state-ment (*'ment*), *n.* the act of stating; that which is stated.
Staten (*stat'n*) **Island, N. Y.** An island forming part of the city of New York. Named by Henry Hudson *Stadten Nylandt,* that is, "island of the state," in compliment to the states-general, under whose flag he was sailing. The Indian name was *monachnong,* "place of the bad woods."
State of Franklin. An old name of Tennessee, under which it was organized in 1785.
States-general. The name given to the legislative assemblies of France before the revolution of 1789, and to those of the Netherlands.
states-man (*stāts'man*), *n.* one who is skilled in public affairs; politician.
states-man-ship (*-ship*), *n.* the qualification or skill of a statesman.
stat-ic (*stat'ik*), *adj.* pertaining to bodies at rest or in equilibrium. [Also *statical.*] *n. pl.* that branch of mechanics which treats of bodies at rest.
sta-tion (*stā'shun*), *n.* place where a person or thing stands; position; place on a railway for passengers or goods; police office: *v. t.* to place in a certain post, rank, or situation. [CONDITION.]
sta-tion-a-ry (*-ă-ri*), *adj.* fixed; not moving; not improving.
sta-tion-er (*'shun-ĕr*), *n.* one who sells paper, pens, pencils, etc.
sta-tion-er-y (*-ĕr-i*), *n.* stationer's articles.
sta-tis-tic (*stă-tis'tik*), *adj.* pertaining to statistics.
stat-is-ti-cian (*stat-is-tish'an*), *n.* one skilled in statistics.
sta-tis-tics (*stă-tis'tiks*), *n.* the science of the classification and arrangement of facts.
stat-u-a-ry (*stat'ū-ă-ri*), *n.* the art of carving statues; statues collectively.
stat-ue (*'ū*), *n.* the representation of a living being sculptured or modeled in some solid material: *v. t.* to form a statue of; place, as a statue.
stat-u-esque (*-ū-esk'*), *adj.* having the characteristics of a statue.
stat-u-ette (*-ū-et'*), *n.* a little statue.
stat-ure (*'ūr*), *n.* the natural height.
sta-tus (*stā'tus*), *n.* condition; social standing or place; rank.
stat-ute (*stat'ūt*), *n.* written law; an act of a corporation.
stat-u-to-ry (*'ū-tō-ri*), *adj.* enacted by statute; depending on statute for its authority.
stave (*stāv*), *n.* one of the thin, narrow strips of wood forming the sides of a cask: *v. t.* to break a hole in; burst.
stay (*stā*), *n.* stop or stand; prop or support; abode or continuance in a place: *v. t.* to hold up or support; sustain; endure; restrain; delay: *v. i.* to remain or abide; stand still; continue; cease. [STAFF, OBSTRUCT, CONTINUE.]
stead (*sted*), *n.* the place or room which another had or might have.
stead-fast (*'fast*), *adj.* firmly fixed or established; steady; constant; uniform. [PERMANENT.]
★stead-y (*sted'i*, not *stid'i*), *adj.* fixed; regular; firm; resolute; unwavering; uniform: *v. t.* to make or keep steady or firm; regulate: *interj.* be fixed!
steak (*stāk*), *n.* a slice of beef.
steal (*stēl*), *v. t.* to take by theft or feloniously; withdraw or convey clandestinely: *v. i.* to commit theft; slip in and out unperceived.
stealth (*stelth*), *n.* secret means employed; underhand procedure.
stealth-y (*'i*), *adj.* done or performed by stealth; clandestine.
steam (*stēm*), *n.* vapor into which water is changed when heated to boiling point; vapor: *v. i.* to emit steam; rise or pass off in steam: *v. t.* to apply steam to.
steam-er (*'ĕr*), *n.* a vessel propelled by steam; an apparatus for steaming.
steam tur-bine (*tur'bin*), a steam engine in which the steam acts upon a rotating turbine.
steed (*stēd*), *n.* a horse, especially one which is spirited.
steel (*stēl*), *n.* iron refined and combined with carbon; anything made of steel: *adj.* made of, or resembling, steel: *v. t.* to overlay, edge, or tip with steel; make hard or invulnerable.
steel-ing (*'ing*), *n.* the process of overlaying, edging, or pointing with steel; acierage.
steel-y (*'i*), *adj.* made of, or like, steel; hard; inflexible.
steel-yard (*'yärd*), *n.* a kind of balance, consisting of a single weight moved along a graduated beam.
steep (*stēp*), *adj.* precipitous: *v. t.* to soak in a liquid; dip; imbue. [SOAK.]
steep-en (*'n*), *v. i.* to become steep or steeper.
stee-ple (*stē'pl*), *n.* a tower or turret tapering to a point; spire.
stee-ple-chase (*-chās*), *n.* a kind of cross-country horse race.
steer (*stēr*), *n.* a young male of the ox kind; bullock: *v. t.* to control; guide: *v. i.* to direct; move; be governed.
steer-age (*'āj*), *n.* the act or practice of steering; that part of a ship allotted to the poorer passengers.
Stella. A feminine name, from the Latin, signifying "a star."
stel-lar (*stel'ĕr*), *adj.* pertaining to stars; astral; starry. [Also *stellary.*]
stel-late (*'āt*), *adj.* starlike; radiated.
stel-lu-lar (*'ū-lĕr*), *adj.* radiated.
stem (*stem*), *n.* the principal axis of a tree or plant; anything resembling a stem; the unchangeable part of an inflected word: *v. t.* to resist or check; dam up: *v. i.* to move forward against an obstacle.
stench (*stench*), *n.* a strong offensive odor.
sten-cil (*sten'sil*), *n.* a thin plate of metal with a pattern, etc., cut out, used for marking, etc.; *v. t.* to mark or color with a stencil.
ste-nog-ra-pher (*stē-nog'ra-fĕr*), *n.* a shorthand writer. [Also *stenographist.*]
sten-o-graph-ic (*sten-ō-graf'ik*), *adj.* pertaining to, or written in, shorthand.
ste-nog-ra-phy (*stē-nog'ra-fi*), *n.* the art of writing in shorthand.
sten-to-ri-an (*sten-tō'ri-an*), *adj.* extremely loud.
step (*step*), *n.* pace; small distance; footstep; action; gait; stair: *pl.* stairs: *v. i.* to walk; advance or retire by pacing: *v. t.* to set, as the foot; measure by steps: *prefix* denoting *relation by marriage only.*
Stephen (*stē'vn*). From the Greek name signifying "a crown or garland." Danish, *Stephan;* Dutch, *Steven* or *Stephanus;* Fr., *Etienne;* Ger., *Stephan;* Gr., *Stephanos;* Hung., *Istvan;* Lat., *Stephanus;* Polish, *Szczepan;* Port., *Estevao;* Russ., *Stepan* or *Stefan;* Sp., *Esteban;* Sw., *Stefan.*
steppe (*step*), *n.* a name for the vast barren plains of Russia.
stereo, a *prefix* meaning *solid, firm,* as *stereo*gram, a picture representing objects on a plane surface as if in relief: *n.* an *abbr.* of stereotype. [Also *stereograph.*]
ste-re-op-ti-con (*stĕ-rē-op'ti-kon*), *n.* a magic lantern showing photographic slides as if in relief.
ste-re-o-scope (*stē'rē-ō-skōp*), *n.* a binocular optical instrument by means of which two pictures appear as one.
ste-re-o-type (*-tīp*), *n.* a metal plate cast from a mold taken from a page of movable types: *v. t.* to cast or print in stereotype; fix permanently: *adj.* pertaining to, or done by, stereotype.
ster-ile (*ster'il*), *adj.* barren; destitute of ideas.
ste-ril-i-ty (*stĕ-ril'i-ti*), *n.* barrenness; infecundity.
ster-il-i-za-tion (*ster-il-i-zā'shun*), *n.* the act or process of rendering sterile.
ster-il-ize (*'il-iz*), *v. t.* to make sterile.
ster-ling (*st ĕr'ling*), *adj.* pure; unadulterated; genuine; of high merit.
stern (*st ĕrn*), *adj.* austere; unrelenting; steadfast; being in the stern: *n.* the after part of a vessel.
ster-num (*st ĕr'num*), *n.* the breastbone.
stern-way (*'wā*), *n.* movement of a vessel backward.
ste-thom-e-ter (*stē-thom'ĕ-tĕr*), *n.* an apparatus for measuring the external movements of the chest.
steth-o-scope (*steth'ō-skōp*), *n.* an instrument for examining the chest, by sound produced in the thorax.
Stettin (*stet-ēn'*). From *zytyn,* "the place of green corn." A seaport of northern Prussia.
ste-ve-dore (*stē've-dōr*), *n.* one who loads or unloads a vessel.
stew (*stū*), *v. t.* to boil slowly or with a simmering heat: *v. i.* to be boiled slowly or gently: *n.* a dish prepared by stewing: *pl.* a brothel.
stew-ard (*'ĕrd*), *n.* one who manages the domestic concerns of a family or institution; a fiscal agent, etc.
stew-ard-ess (*-es*), *n.* a woman who attends to female passengers on board ship.
stick (*stik*), *n.* a small branch or shoot cut off a tree; walking stick; staff; printer's composing stick: *v. t.* to pierce; fasten; fix in; make to cohere: *v. i.* to be fixed; remain; cleave; adhere; hesitate (with *at*).
stic-kle (*'l*), *v. i.* to wrangle for something of little importance.
stick-y (*'i*), *adj.* adhesive; glutinous; viscous.
stiff (*stif*), *adj.* rigid; inflexible; stubborn; not liquid or fluid; not natural or easy; affected; formal.
stif-fen (*'n*), *v. t.* to make stiff: *v. i.* to become stiff; grow more obstinate.
stiff-necked (*'nekt*), *adj.* inflexibly obstinate; stubborn.
sti-fle (*sti'fl*), *v. t.* to suffocate; extinguish; suppress or conceal: *v. i.* to be suffocated.
stig-ma (*stig'mȧ*), *n.* [*pl.* stigmas (*'mȧz*), stigmata (*'mȧ-tȧ*)], a mark; mark of infamy or disgrace: *pl.* the counterparts of the marks of the wounds in Christ's body.
stig-ma-tize (*'mȧ-tiz*), *v. t.* to mark with a stigma or brand.
stile (*stil*), *n.* a set of steps to pass from one side of a fence or wall, etc., to the other.
sti-let-to (*sti-let'ō*), *n.* a small dagger with a thin blade.
still (*stil*), *adj.* at rest; without motion; silent: *adv.* nevertheless; always: *v. t.* to make still: *n.* an apparatus for distilling liquids. [CALM.]
stilt (*stilt*), *n.* a pole of wood with a rest for the foot, used in pairs in walking.
stim-u-lant (*stim'ū-lant*), *adj.* serving to stimulate; producing transient increase of vital energy: *n. pl.* medicines or alcoholic beverages having such an effect.
stim-u-late (*'ū-lāt*), *v. t.* to excite or rouse; excite greater vitality in: *v. i.* to act as a stimulus.
stim-u-la-tive (*'ū-lā-tiv*), *adj.* having the power of stimulating.
stim-u-lus (*'ū-lus*), *n.* [*pl.* stimuli (*-lī*)], that which stimulates.
sting (*sting*), *n.* the sharp-pointed, poisonous weapon with which certain animals and insects are furnished; anything that gives acute mental or physical pain; the thrust of a sting: *v. t.* to pierce or wound with, or as with, a sting.
sting-ing (*'ing*), *p. adj.* piercing, as with a sting; painful; pungent.
stin-gy (*stin'ji*), *adj.* close and covetous; miserly; niggardly.
stink (*stingk*), *v. i.* to emit a strong, offensive odor: *v. t.* to cause to stink: *n.* a strong, offensive odor.
stint (*stint*), *v. t.* to restrain within certain limits: *v. i.* to stop or cease: *n.* quantity assigned.
sti-pend (*sti'pend*), *n.* salary.
sti-pen-di-a-ry (*-pen'di'ă-ri*), *adj.* receiving stipend

or salary: *n.* one who performs services for a salary.
stip-ple (*stip'l*), *v. t.* to engrave or paint by means of dots.
stip-u-late (*'ū-lāt*), *v. i.* to arrange or settle definitely.
stip-u-la-tion (*-ū-lā'shun*), *n.* the act of stipulating; bargain; condition in a contract.
stir (*stĕr*), *v. t.* to put into motion; rouse; instigate: *v. i.* to be in motion: *n.* bustle; agitation; tumult.
Syn. STIR, move. We may *move* in any manner, but *to stir* is *to move* so as to disturb the rest and composure either of the body or mind. [See *awaken.*]
Stirling. From *Estrevelyn*, "the town of the Easterlings, from Flanders." A burgh and county of Scotland.
stir-rup (*stĕr'up* or *stir'up*), *n.* an iron hoop suspended by a strap in which a horseman sets his foot.
stitch (*stich*), *n.* a single pass of a needle and thread; sharp, local pain: *v. t.* to form stitches in; unite by stitches: *v. i.* to practice stitching.
stock (*stok*), *n.* the trunk or stem of a tree or plant; pillar, log, or post; race, family, or lineage; capital; cattle; stiff cravat; foundation of soups: *pl.* a wooden frame in which the legs of criminals were connned; shares of capital: *v. t.* to store up; fill; supply: *v. i.* to take in or obtain supplies: *adj.* kept in stock; permanent.
stock-ade (*-ād'*), *n.* a line of posts used as a barrier: *v. t.* to surround with, or defend by, a stockade.
Stockholm (*stok'hōlm*). The capital of Sweden is often said to have been so called because built like Venice on stocks or piles. According to the local legend, a stock or log floating up the Malar lake from Sigtuna guided the first settlers to the granite rocks on which Stockholm is built. The older form *Stakholm* explains the name as a *holm* or "island," in a *stak* or "sound."
stock-ing (*'ing*), *n.* a close-fitting covering for the foot and leg.
stock-job-ber (*'job-ĕr*), *n.* one who deals or speculates in stocks.
Stockton. City in California and Missouri and town in Chautauqua county, New York, named for Commodore R. F. Stockton, who took part in the conquest of California.
Sto-ic (*stō'ik*), *n.* a disciple of the Greek philosopher Zeno, who taught that a wise man should be governed by the reason; one who proposes such doctrines: *adj.* pertaining to the Stoics; indifferent to pleasure or pain. [Also *stoical.*]
★sto-i-cism (*stō'i-sizm*, not *stō'ik-izm*), *n.* the doctrines and maxims of the Stoics; real or assumed insensibility to pleasure or pain.
stoke (*stōk*), *v. t.* to maintain and tend fire: *v. i.* to act as a stoker.
stok-er (*'ĕr*), *n.* a fireman.
stole (*stōl*), *n.* a long, narrow scarf fringed at the ends: *p. t.* of steal.
stol-id (*stol'id*), *adj.* stupid; dull; impassive.
sto-lid-i-ty (*stō-lid'i-ti*), *n.* the state or quality of being stolid.
stom-ach (*stum'ak*), *n.* the principal organ of digestion in the body; inclination: *v. t.* to resent; put up with.
stom-ach-er (*'ak-ĕr*), *n.* an ornamental breast covering for women.
stone (*stōn*), *n.* a hard mass of earthy or mineral matter; gem; hard seed shell of certain fruits; a weight, 14 lbs. avoirdupois: *v. t.* to pelt or kill with stones; free from stones.
stone-blind (*'blīnd*), *adj.* quite blind.
stone-cut-ting (*'kut-ing*), *n.* hewing or dressing stone.
stone-ware (*'wār*), *n.* a coarse kind of pottery baked hard and glazed.
Stonington, Conn. Named from an English town. *Ston*, "stone," *ing*, "field," *ton*, "town," "a town situated in a field of stone." It was first called *Southerton.*
ston-y (*'i*), *adj.* pertaining to, of the nature of, or like, stone; rocky; hard; pitiless.
stool (*stōōl*), *n.* a seat without a back for one person, usually supported with 3 legs.
stoop (*stōōp*), *v. i.* to bend the body downward and forward; submit; condescend: *n.* inclination downward and forward; condescension; veranda.
stop (*stop*), *v. t.* to hinder, check, or impede; render impassable; desist from: *v. i.* to cease from any motion or action: *n.* the act of stopping; cessation: *interj.* stay! cease! [HINDER, OBSTRUCT.]
stop-gap (*'gap*), *n.* a temporary expedient.
stop-page (*'āj*), *n.* the act of stopping; state of being stopped.
stop-per (*'ĕr*), *n.* one who, or that which, stops.
stop-ple (*'l*), *n.* a cork or plug: *v. t.* to close with a stopple.
stor-age (*stōr'āj*), *n.* safe keeping of goods in a warehouse, etc.; price for storage.
store (*stor*), *n.* a large number or great quantity; abundance or plenty; shop: *pl.* naval and military arms, provisions, etc.: *v. t.* to furnish or supply with stores; accumulate; hoard.
sto-ried (*sto'rid*), *adj.* furnished with stories; told in a story.
stork (*stôrk*), *n.* a large wading bird with long legs and large pointed bill.
storm (*stôrm*), *n.* a violent atmospheric disturbance; tumult; calamity; violent assault: *v. t.* to attack with violence: *v. i.* to blow violently; be angry or rage. [BREEZE.]
storm-ing (*stôrm'ing*), *n.* the taking of a fortified place by a violent and open assault: *p. adj.* violently angry or raging.
storm-y (*'i*), *adj.* characterized by, or proceeding from, storms.
sto-ry (*stō'ri*), *n.* a fictitious narrative; stage or floor of a building.
Syn. STORY, tale. The *story* is either an actual fact or something feigned; the *tale* is always feigned; *stories* are circulated respecting the accidents and occurrences which happen to persons in the same place; *tales* of distress are told by many to excite compassion. [See *fiction.*]
stout (*stout*), *adj.* corpulent; lusty; brave; resolute: *n.* a strong kind of porter.
stove (*stōv*), *n.* an apparatus for inclosing a fire for cooking or heating: *p. t.* of stave.
stow (*stō*), *v. t.* to fill by packing closely; lay up; pack.
stow-age (*'āj*), *n.* the act of stowing; state of being stowed; accommodation for stowing things; money paid for stowage.
stow-a-way (*'a-wā*), *n.* one who conceals himself on a vessel.
strad-dle (*strad'l*), *v. t.* to stand or sit astride of: *v. i.* to stand or walk with the legs wide apart: *n.* the act of standing, sitting, or walking with the legs wide apart.
strag-gle (*strag'l*), *v. i.* to wander from the direct course or way.
straight (*strāt*), *adj.* not crooked; direct; upright: *adv.* in a straight manner, direct; at once.
straight-en (*'en*), *v. t.* to make straight.
straight-for-ward (*-fôr'wĕrd*), *adj.* not deviating; honest; open. [CANDID.]
straight-way (*'wā*), *adv.* at once.
strain (*strān*), *n.* stock; race; descent; tune or melody; a violent effort; injury: *v. t.* to put to its utmost strength; stretch; injure by overtasking; make uneasy or unnatural; filter: *v. i.* to make violent efforts; be filtered.
strait (*strāt*), *adj.* narrow; distressful; difficult: *n. pl.* a narrow passage of water connecting two seas; difficulty; poverty.
strait-en (*'en*), *v. t.* to make narrow; confine; put into difficulties: *v. i.* to become narrow.
strait-jack-et (*'jak-et*), *n.* a kind of garment for confining mad or delirious persons.
strait-laced (*'lāst*), *adj.* strict in manners or morals.
Strait of Gibraltar. See *Gibraltar.*
strand (*strand*), *n.* the shore of a sea, ocean, or large lake; one of the twists of a rope: *v. t.* to run aground; bring into a state of embarrassment: *v. i.* to be driven ashore.
strange (*strānj*), *adj.* belonging to another country; unusual; unfamiliar. [RARE.]
stran-ger (*stān'jĕr*), *n.* a foreigner; one who is unknown or unacquainted.
stran-gle (*strang'gl*), *v. t.* to choke; suppress or stifle.
stran-gu-la-tion (*-gū-lā'shun*), *n.* the act of strangling; state of being strangled; suffocation.
strap (*strap*), *n.* a long, narrow piece of leather or cloth; razor strop: *v. t.* to fasten or bind with a strap; beat with a strap.
strap-hang-er (*'hang-ĕr*), *n.* one unable to obtain a seat in a crowded public conveyance, and who hangs to one of the straps provided for standing passengers.
strap-ping (*'ing*), *adj.* tall; strong; well-made; handsome.
strat-a-gem (*strat'ā-jem*), *n.* an artifice or plan for deception of any kind.
stra-te-gic (*stra-tē'jik*), *adj.* pertaining to, or effected by, strategy or artifice [Also *strategical.*] *n. pl.* the science of military warfare.
strat-e-gy (*strat'ē-ji*), *n.* strategics; use of artifice or strategem.
strat-i-fi-ca-tion (*-i-fi-kā'shun*), *n.* the process of being arranged or deposited in layers.
strat-i-fied (*'i-fid*), *adj.* arranged in strata.
strat-i-fy (*'i-fī*), *v. t.* to form, deposit, or arrange, in strata.
★stra-tum (*strā'tum*), *n.* [*pl.* strata (*'tà*)], a bed of earth or rock consisting of a series of layers.
straw (*straw*), *n.* the stalk of grain.
straw-ber-ry (*'ber-i*), *n.* [*pl.* strawberries (*-iz*)], a plant of the genus Fragaria and its fruit.
stray (*strā*), *v. i.* to wander from limits or direct path; deviate; err: *v. t.* to mislead: *adj.* gone astray; wandering. [DEVIATE.]
streak (*strēk*), *n.* a line of color different from the ground color; stripe: *v. t.* to form, or mark with, streaks; stripe.
stream (*strēm*), *n.* a current of water or other fluid; river: *v. i.* to issue or flow in a stream.
Syn. STREAM, current, tide. All rivers are *streams*, which are more or less gentle according to the nature of the ground through which they pass; the force of the *current* is very much increased by the confinement of any water between rocks, or by means of artificial impediments; the *tide* is high or low, strong or weak, at different hours of the day; when the *tide* is high, the *current* is strongest.
stream-er (*'er*), *n.* a long narrow flag or pennon.
stream-let (*'let*), *n.* a little stream; a rivulet; a rill.
street (*strēt*), *n.* a public road in a city or town.
street Ar-ab (*ar'ab*), a neglected child of the streets.
street car (*strēt'kār*), a car that runs on a street railway.
street rail-way (*rāl'wā*), a railway laid on the surface of the streets.
strength (*strength*), *n.* the state or quality of being strong; active or passive power.
strength-en (*'en*), *v. t.* to make strong; confirm: *v. i.* to become stronger.
Syn. STRENGTHEN, fortify, invigorate. Whatever adds to the *strength*, be it in ever so small a degree, *strengthens;* exercise *strengthens* either body or mind; whatever gives *strength* for a particular emergency, *fortifies;* religion *fortifies* the mind against adversity; whatever adds to the *strength*, so as to give a positive degree of *strength*, *invigorates;* morning exercise in fine weather *invigorates.*
stren-u-ous (*stren'ū-us*), *adj.* ardent; zealous; strong; bold; earnest; valiant.
stress (*stres*), *n.* urgency; strain; pressure; force; importance; weight; accent.
stretch (*strech*), *v. t.* to draw out to a greater length or width; exaggerate: *v. i.* to be extended; reach: *n.* the act of stretching; state of being stretched; strain; effort.
stretch-er (*'ĕr*), *n.* one who, or that which, stretches; a frame or litter for carrying bodies.
strew (*stroō*), *v. t.* to spread by scattering; scatter loosely.
stri-ate (*stri'āt*), *adj.* marked, or formed with, striæ.
strict (*strikt*), *adj.* exact; severe; nice to an extreme; careful; rigidly interpreted.
Syn. STRICT, severe. He who has authority over others must be *strict* in enforcing obedience, in keeping good order, and a proper attention to their duties; but it is possible to be very *severe* in punishing those who are under us, and yet very lax in all matters that our duty demands of us.
Ant. MILD, gentle, lenient.
stric-ture (*strik'tūr*), *n.* a morbid contraction of any passage of the body.
stride (*strīd*), *n.* a long step; straddle: *v. i.* to walk with long steps; straddle: *v. t.* to pass by long steps.
stri-dent (*strī'dent*), *adj.* harsh; shrill; grating or creaking.
strife (*strif*), *n.* contention for superiority; discord; conflict.
Syn. STRIFE, contention. *Strife* is mostly used for verbal *strife*, where each party *strives* against the other by the use of contumelious or provoking expressions; *contention* is used for an angry *striving* with others, either in respect to matters of opinion or matters of claim, in which each party seeks the advantage. [See *discord, feud.*]
strike (*strik*), *v. t.* to hit with a blow or with force; collide; lower or take down; affect; light upon; make, as a bargain: *v. i.* to make a quick blow or thrust; hit; cease from work: *n.* cessation of work.
strik-ing (*'ing*), *adj.* affecting with strong emotions; impressive.
string (*string*), *n.* a small cord or line; series of things connected; *p. t.* to furnish with strings; file.
strin-gen-cy (*strin'jen-si*), *n.* the state or quality of being stringent.
strin-gent (*strin'jent*), *adj.* severe; rigid; strict; binding; tense.
string-i-ness (*string'i-nes*), *n.* the state or quality of being stringy.
string-y (*'i*), *adj.* consisting of, or like, string; filamentous.
strip (*strip*), *v. t.* to deprive of a covering; bereave; take away: *v. i.* to undress: *n.* a long, narrow piece.
stripe (*strīp*), *v. t.* to form stripes upon; *n.* a line or long, narrow division of anything of a different color from the ground; stroke made by a whip, etc.
strip-ling (*strip'ling*), *n.* a youth.
strive (*strīv*), *v. i.* to make exertions or efforts; aim; struggle; contend. [ENDEAVOR.]
stroke (*strōk*), *n.* a knock or blow; sudden effect; hostile blow or attack; touch of a pencil or pen: *v. t.* to rub gently with the hand; soothe.
stroll (*strōl*), *v. i.* to wander on foot: *n.* a leisurely ramble.
strong (*strông*), *adj.* having strength; robust; healthy; vigorous; having power of endurance; ardent; well-fortified. [COGENT.]
strong-hold (*'hōld*), *n.* a fortress.
strop (*strop*), *n.* a strip of leather for sharpening razors: *v. t.* to sharpen on a strop.
stro-phe (*strō'fē*), *n.* that part of a song or dance in the ancient Greek drama performed by the chorus.
stro-phic (*strō'fik*), *adj.* pertaining to, or consisting of, strophes.
struc-tur-al (*struk'tūr-al*), *adj.* pertaining to structure.
struc-ture (*'tūr*), *n.* an edifice or building; form; make.
strug-gle (*strug'l*), *v. i.* to use violent efforts; be in pain or agony; contend: *n.* a violent effort; pain or agony; labor; contest. [ENDEAVOR.]
strum (*strum*), *v. t.* and *v. i.* to play badly and noisily on a stringed instrument.
strut (*strut*), *v. i.* to walk with affected dignity: *n.* a proud step or walk.
strych-nic (*strik'nik*), *adj.* pertaining to, derived from, or containing, strychnine.
strych-nine (*'nin*), *n.* a highly poisonous alkaloid extracted from nux vomica.
stub (*stub*), *n.* the stump of a tree; a stub nail: *v. t.* to strike against some fixed obstacle.
stubbed (*stubd*), *adj.* short and thick. [Also *stubby.*]

stub-ble (*stub'l*), *n.* short stalks of grain left after reaping.
stub-born (*'ẽrn*), *adj.* obstinate; refractory. [OBSTINATE, PERVERSE.]
stuc-co (*stuk'ō*), *n.* [*pl.* stuccoes (*'oz*)], plaster used as a coating for walls or internal decorations; work executed in stucco: *v. t.* to overlay, or decorate, with stucco.
stud (*stud*), *n.* a large-headed ornamental nail; an upright beam or scantling; collection of breeding horses and mares; place where they are kept: *v. t.* to adorn with, or as with, studs.
stud-ding (*'ing*), *n.* material for studs or joists; studs or joists collectively.
stu-dent (*stū'dent*), *n.* one who is engaged in study; scholar.
stud-horse (*stud'-hôrs*), *n.* a stallion.
stu-di-o (*stū'di-ō*), *n.* an artist's workroom.
stu-di-ous (*'di-us*), *adj.* devoted to study or the acquisition of knowledge.
stud-y (*stud'i*), *n.* the application of the mind to acquisition of knowledge; any particular branch of learning: *v. i.* to apply the mind closely to a subject: *v. t.* to examine closely.
stuff (*stuf*), *n.* materials out of which anything is made; nonsense: *v. t.* to fill by crowding into: *v. i.* to eat gluttonously.
stuff-y (*'i*), *adj.* close or ill-ventilated.
stul-ti-fi-ca-tion (*stul-ti-fi-kā'shun*), *n.* the act of stultifying; the state of being stultified.
stul-ti-fy (*'ti-fī*), *v. t.* to render foolish; make nugatory.
stum-ble (*stum'bl*), *v. i.* to trip up or fall in walking; light (with *on* or *upon*); slide into error or crime: *n.* a trip in walking or running; failure or blunder.
stump (*stump*), *n.* that part of a tree which remains in the ground after the trunk is cut down: *v. t.* to lop off; reduce to a stump; defeat: *v. i.* to travel about making speeches; to walk clumsily.
stump or-a-tor (*ôr'ā-t ẽr*), one who harangues the people.
stump speech (*'spēch*), an electioneering speech.
stump-y (*'i*), *adv.* full of stumps; short and thick.
stun (*stun*), *v. t.* to render senseless by, or as by, a blow; astonish.
stunt (*stunt*), *v. t.* to check in growth or progress: *v. i.* to become stunted: *n.* a check in growth; a performance.
stu-pe-fac-tion (*stū-pē-fak'shun*), *n.* state of being stupefied; insensibility. [STUPIDITY.]
stu-pe-fac-tive (*'tiv*), *adj.* causing stupefaction.
stu-pe-fy (*'pē-fī*), *v. t.* to deprive of sensibility; make stupid.
stu-pen-dous (*-pen'dus*), *adj.* overcoming the senses by its vastness; astonishing.
stu-pid (*'pid*), *adj.* deficient in understanding; insensible; dull. [ABSURD.]
stu-pid-i-ty (*'i-ti*), *n.* extreme dullness of perception or understanding; crass ignorance; folly.
Syn. STUPIDITY, apathy, dullness, insensibility, obtuseness, stupefaction, stupor. *Stupidity* is sometimes loosely used for temporary *dullness* or partial *stupor*, but chiefly for innate and chronic *dullness* and *sluggishness* of mental action; *obtuseness* of apprehension, etc. *Apathy* may be temporary.
stu-por (*'pẽr*), *n.* numbness; lethargy; intellectual insensibility. [STUPIDITY.]
stur-dy (*stûr'di*), *adj.* hardy; robust; stout; strong; stubborn; vigorous.
stur-geon (*'jun*), *n.* a large, cartilaginous fish of the genus Acipenser.
stut-ter (*stut'ẽr*), *v. i.* to speak with hesitation or stammering: *v. t.* to utter in a stammering manner: *n.* hesitation or stammering in speech. [HESITATE.]
sty (*stī*), *n.* a pen or inclosure for swine; a kind of boil upon the eyelid.
Styg-i-an (*stij'i-an*), *adj.* pertaining to the Styx, the river of Hades; hence infernal; hellish.
style (*stīl*), *n.* a pointed instrument used by the ancients for writing; appellation or title; distinctive manner: *v. t.* to designate or name.
styl-ish (*'ish*), *adj.* fashionable.
styl-ist (*'ist*), *n.* a master of literary style.
styp-tic (*stip'tik*), *adj.* stopping bleeding.
sua-si-ble (*swā'si-bl*), *adj.* easily persuaded.
sua-sion (*'zhun*), *n.* persuasion.
sua-sive (*'siv*), *adj.* persuasive.
suave (*swāv* or *swäv*), *adj.* pleasant in manner.
suav-i-ty (*swav'i-ti*), *n.* urbanity; gentleness.
sub, *prefix* meaning *under, beneath, below, slightly.*
sub-ac-id (*sub-as'id*), *adj.* slightly acid.
sub-al-tern (*-aul'tẽrn*), *n.* a commissioned officer under the rank of captain: *adj.* inferior.
sub-al-ter-nate (*-tẽr'nāt*), *adj.* successive.
sub-due (*-dū'*), *v. t.* to overcome or conquer; vanquish; reduce.
sub-ja-cent (*sub-jā'sent*), *adj.* lying under or below.
sub-ject (*'jekt*), *adj.* subordinate; disposed; liable: *n.* one who is under the power or control of another; theme; topic; design: *v. t.* (*sub-jekt'*) to bring under the power or control of; expose.
sub-jec-tion (*-jek'shun*), *n.* the act of subjecting; state of being subjected.
sub-jec-tive (*'tiv*), *adj.* pertaining to the subject as opposed to the object.
sub-jec-tiv-ism (*-izm*), *n.* the philosophical doctrine that knowledge is relative or purely subjective.
sub-join (*-join'*), *v. t.* to affix. [ADD.]
sub-ju-gate (*'jū-gāt*), *v. t.* to conquer by force; bring under dominion.
sub-ju-ga-tion (*sub-jū-gā'shun*), *n.* the act of subjugating; state of being subjugated.
sub-junc-tive (*-jungk'tiv*), *adj.* noting a form of the verb expressive of contingency; conditional.
sub-li-mate (*'li-māt*), *v. t.* to convert (a solid) by heat into vapor.
sub-lime (*-līm'*), *adj.* awakening feelings of awe and reverence; exalted in nature, manner or style: *n.* that which is awe inspiring: *v. t.* to dignify or exalt; render noble: *v. i.* to be capable of sublimation. [GREAT.]
Sublime porte (*sub-līm' pōrt*). The synonym by which is designated the government of the sultan of Turkey. It is the French equivalent of *Bab-i-Humayoon*, "the high gate." The term contains an allusion to the Oriental custom of transacting public business at the principal gate of the city or palace, and from this practice the sultan's government is popularly styled in Turkey "the sultan's gate."
sub-lim-i-ty (*-lim'i-ti*), *n.* loftiness of style or sentiment; elevation; moral grandeur; excellence.
sub-ma-rine (*sub-mā-rēn'*), *adj.* under water.
sub-merge (*-mẽrj'*), *v. t.* to place under water; overwhelm: *v. i.* to be, or lie, under water.
sub-mer-sion (*-mẽr'shun*), *n.* the act of submerging; state of being submerged. [Also *submergence.*]
sub-mis-sion (*-mish'un*), *n.* the act of submitting or yielding.
sub-mis-sive (*-mis'iv*), *adj.* obedient; humble. [HUMBLE, OBEDIENT, COMPLIANT.]
sub-mit (*-mit'*), *v. t.* to yield to the authority of another; surrender; refer to judgment; comply with: *v. i.* to be subject; yield. [COMPLY.]
sub-or-di-nate (*-ôr'di-nāt*), *adj.* inferior in rank, value, power, or importance: *n.* one who is inferior to another in rank, etc.: *v. t.* to place in a lower order.
sub-or-di-na-tion (*-nā'shun*), *n.* the act of subordinating or placing in a lower order; state of being subordinate.
sub-orn (*-ôrn'*), *v. t.* to procure or induce to commit perjury. [FORSWEAR.]
sub-or-na-tion (*-ôr-nā'shun*), *n.* the act of inducing a person to commit perjury.
sub-pœ-na (*-pē'nä*), *n.* a writ commanding the attendance of a person in court as a witness: *v. t.* to serve with a subpœna.
sub-scribe (*-skrīb'*), *v. t.* to write or annex (one's name) to a paper or document: *v. i.* to give consent.
sub-scrip-tion (*-skrip'shun*), *n.* the act of subscribing; signature; sum of money subscribed.
sub-se-quent (*'sē-kwent*), *adj.* following or coming after in time or order.
sub-serve (*-sẽrv'*), *v. t.* to be subservient to; promote; serve instrumentally.
sub-side (*-sīd'*), *v. i.* to sink or fall to the bottom; settle; abate; become tranquil or calm. [ABATE.]
sub-si-dence (*-si'dens*), *n.* the act of subsiding or sinking down.
sub-sid-i-a-ry (*-sid'i-ā-ri*), *adj.* auxiliary; furnishing additional supplies: *n.* an auxiliary.
sub-si-dize (*'si-dīz*), *v. t.* to furnish with a subsidy.
sub-si-dy (*'si-di*), *n.* pecuniary aid granted by one government to another; public grant or subvention to aid an enterprise.
sub-sist (*-sist'*), *v. i.* to have existence; inhere; have the means of livelihood.
sub-sist-ence (*'ens*), *n.* means of support; maintenance; inherence.
sub-stance (*'stans*), *n.* matter or material; essential part of anything; purport.
sub-stan-tial (*-stan'shal*), *adj.* belonging to, or having, substance; solid; material.
sub-stan-ti-ate (*'shi-āt*), *v. t.* to establish the truth of.
sub-stan-tive (*'stan-tiv*), *adj.* expressing existence; real; essential: *n.* that part of speech which expresses the existence of anything material or immaterial; noun.
sub-sti-tute (*'sti-tūt*), *v. t.* to put in the place of another; *n.* one who, or that which, is put in the place of another. [CHANGE.]
sub-sti-tu-tion (*-tū'shun*), *n.* the act of substituting; state of being substituted.
sub-tend (*-tend'*), *v. t.* to extend under or be opposite to.
sub-ter-fuge (*'tẽr-fūj*), *n.* an evasion or artifice; trick; shift. [PRETENSE.]
sub-ter-ra-ne-an (*-rā'nē-an*), *adj.* below the surface. [Also *subterranean.*]
★**sub-tile** (*sub'til* or *sut'l*), *adj.* thin; delicately constructed; fine; refined; acute; cunning.
★**sub-tle** (*sut'l*) *adj.* artful; insinuating; crafty.
sub-tle-ty (*-ti*), *n.* acuteness of intellect; cunning.
sub-tract (*-trakt'*), *v. t.* to withdraw or take away; deduct.
sub-trac-tion (*-trak'shun*), *n.* the act of subtracting.
sub-tra-hend (*'trä-hend*), *n.* the quantity or number to be subtracted from another.
sub-urb (*sub'ûrb*), *n.* an outlying district of a city or town.
sub-ur-ban (*-ûr'ban*). *adj.* pertaining to, in, or living within, the suburbs.
sub-ven-tion (*-ven'shun*), *n.* a government grant or subsidy.
sub-ver-sion (*-vẽr'shun*), *n.* the act of subverting; overthrow; ruin.
sub-vert (*sub-vert'*), *v. t.* to turn upside down; ruin; overthrow; corrupt.
Syn. SUBVERT, destroy, overthrow, overturn, ruin, supersede, supplant. To *subvert* is to *overthrow, destroy,* bring to *ruin.* To *supersede* implies the putting of something in the place of that which is removed; to *supplant,* often personal, signifies to take the place of another; one is *superseded* by authority, *supplanted* by a rival.
sub-way (*'wā*), *n.* an underground passage.
suc-ceed (*suk-sēd'*), *v. t.* to take the place of; follow: *v. i.* to follow in order; obtain one's wishes; be successful. [FOLLOW.]
suc-cess (*-ses'*), *n.* the prosperous termination of any enterprise; prosperity.
suc-cess-ful (*-fool*), *adj.* ending in success; prosperous; fortunate.
suc-ces-sion (*-sesh'un*), *n.* the act of following in order; lineage; act or right of coming in the place of another. [TIME.]
suc-ces-sive (*-ses'iv*), *adj.* following in uninterrupted order; consecutive.
Syn. SUCCESSIVE, alternate. The *successive* may be accidental or intentional; the *alternate* is always intentional; it may rain for three *successive* days, or a fair may be held for three *successive* days; trees are placed sometimes in *alternate* order.
suc-ces-sor (*'ẽr*), *n.* one who succeeds or follows in the place or character of another.
suc-cinct (*-singkt'*), *adj.* tersely expressed. [SHORT.]
suc-cor (*'ẽr*), *v. t.* to help or relieve when in difficulty or distress; aid: *n.* relief; aid. [HELP.]
suc-co-tash (*'ō-tash*), *n.* a dish of green maize and beans.
suc-cu-lent (*'ū-lent*), *adj.* juicy: said of plants replete with juices.
suc-cumb (*-kum'*), *v. i.* to yield; submit.
such (*such*), *adj.* the same that, or as referred to; denoting a particular person or thing; certain.
suck (*suk*), *v. t.* to draw in with the mouth: *v. i.* to draw milk from the breast: *n.* the act of sucking. [ABSORB].
suc-kle (*'l*), *v. t.* to nurse at the breast.
suck-ling (*'ling*), *n.* an unweaned child or animal.
suc-tion (*suk'shun*), *n.* the act or process of sucking.
sud-den (*sud'n*), *adj.* happening unexpectedly; instantaneous; without notice; quick.
suds (*sudz*), *n. pl.* soapy water.
sue (*sū*), *v. t.* to prosecute at law: *v. i.* to entreat; beg; petition; pay court.
su-et (*'et*), *n.* the hard fat around the kidneys and loins of cattle.
Suez (*sōō'ez, sōō-ez'*). Is a Portugese corruption of *Bir Suweis,* the Arabic name of a fortified well of brackish water about an hour's journey from the town, where the pilgrims waited to embark for Mecca. From this well, by a curious accident, the Gulf and Isthmus of Suez and the Suez canal take their names.
suf-fer (*suf'ẽr*), *v. t.* to feel with a sense of pain; undergo; bear: *v. i.* to feel pain or punishment; be in distress; endure loss or injury. [ADMIT.]
suf-fer-a-ble (*ā-bl*), *adj.* that may be allowed or tolerated.
suf-fer-ance (*'fẽr-ans*), *n.* patience under pain; toleration; permission.
suf-fice (*-īs'*), *v. i.* to be sufficient: *v. t.* to satisfy.
suf-fi-cien-cy (*-fish'en-si*), *n.* the state or quality of being sufficient; competence.
suf-fi-cient (*'ent*), *adj.* equal to any end or purpose; adequate. [ENOUGH.]
suf-fix (*'iks*), *n.* a letter or syllable added at the end of a word: *v. t.* (*suf-iks'*) to add.
suf-fo-cate (*'ō-kat*), *v. t.* to choke by stopping respiration.
suf-fo-ca-tion (*-kā'shun*), *n.* the act of suffocating; state of being suffocated.
suf-frage (*'rāj*), *n.* vote, or right to vote; franchise.
suf-fra-gette (*-rä-jet'*), *n.* a woman who advocates female suffrage.
suf-fuse (*-fūz'*), *v. t.* to spread over as with a fluid or a color.
suf-fu-sion (*-fū'zhun*), *n.* the act of suffusing; state of being suffused.
sug-ar (*shoog' ẽr*), *n.* a sweet crystalline substance obtained from the sugar cane, beet, etc.: *adj.* pertaining to, like, made of, or yielding, sugar; sweet: *v. t.* to sprinkle or mix with sugar.
★**sug-gest** (*sug-jest'* or *sud-jest'*), *v. t.* hint; insinuate; allude or refer to: *v. i.* to make suggestions. [ALLUDE.]
sug-ges-tion (*-jes'chun*), *n.* the act of suggesting; thing suggested. [DICTATE.]
sug-gest-ive (*'iv*). *adj.* containing, or full of, suggestion.
su-i-ci-dal (*sū'i-sī-dal*), *adj.* pertaining to, or partaking of, suicide; fatal to one's own interests.
su-i-cide (*'i-sīd*), *n.* a person who kills himself; self-murder; ruin of one's own interests.
★**suit** (*sūt*), *n.* a set of things correspondent to each other; petition or prayer; courtship; an action or process at law: *v. t.* to be fitted to; accommodate; please: *v. i.* to correspond or accord; agree.
suit-a-ble (*'a-bl*), *adj.* fitting; appropriate. [CONFORMABLE, CONVENIENT.]
suit case (*'kās*), a hand bag used as for carrying a dress suit. [Also *dress-suit case.*]
★**suite** (*swēt*, not *sūt*), *n.* a retinue or company; set, as of rooms.
suit-or (*sūt'ẽr*), *n.* a petitioner; supplicant; lover.
sulk (*sulk*), *v. i.* to be sulky.

sulk-y (*sulk'i*), *adj.* silently sullen: *n.* a kind of two-wheeled carriage.
sul-len (*sul'en*), *adj.* morosely silent; gloomily angry; dismal.
sul-ly (*'i*), *v. t.* to tarnish or soil; dirty; stain: *n.* a tarnish or stain. [STAIN.]
sul-phur (*'fŭr*), *n.* a nonmetallic element, brittle, and of a yellow color.
sul-phu-rate (*-fū-rāt*), *v. t.* to combine with, or subject to the action of, sulphur: *adj.* pertaining to, or of the color of, sulphur.
sul-phu-re-ous (*-fū'rē-us*), *adj.* consisting of, impregnated with, or having the qualities of, sulphur. [Also *sulphurous.*]
sul-phu-ret-ted (*'fū-ret-ed*), *adj.* combined with sulphur.
sul-phu-ric (*-fū'rik*), *adj.* obtained from, or containing, sulphur.
sul-phur-y (*'fŭr-i*), *adj.* like sulphur.
sul-tan (*'tan*), *n.* the title of a Mohammedan sovereign, especially the sovereign of Turkey.
sul-try (*'tri*), *adj.* very hot, close, and oppressive; close and heavy with a moist heat.
sum (*sum*), *n.* whole; total; substance; utmost degree; arithmetical problem: *v. t.* to add into one amount; condense into few words. [ADD.]
su-mac (*sū'mak* or *shū'mak*), *n.* a plant or shrub the dried leaves and roots of which are used in tanning, dyeing, and medicine.
Sumatra (*sōō-mā'trā*). An island of Malay archipelago; name a corruption of *Trimatara*, which means "the happy land."
sum-ma-rize (*sum'a-rīz*), *v. t.* to state concisely.
sum-ma-ry (*'a-ri*), *adj.* brief; laconic; compendious: *n.* an abridgment; compendium. [ABRIDGMENT, SHORT.]
sum-ma-tion (*-ā'shun*), *n.* the act of forming a total; aggregate.
Sumer (*'ĕr*), *n.* that part of the year which comprises the hottest months, June, July, and August: *v. i.* to pass the summer.
sum-mit (*'it*), *n.* the top, or highest point.
sum-mon (*'un*), *v. t.* command; invite: *n. pl.* a citation to appear in court; authoritative call.
sump-tu-a-ry (*sump'tū-ā-ri*), *adj.* pertaining to, or regulating, expense.
sump-tu-a-ry laws (*lawz*), laws to limit excessive expenditure on dress or other luxuries.
sump-tu-ous (*'tū-us*), *adj.* expensive; costly; luxurious; magnificent.
sun (*sun*), *n.* the luminous body around which the earth and other planets, etc., of the solar system revolve; sunshine: *v. t.* to expose to the sun's rays.
Sunapee (*sun'a-pē*). Lake in New Hampshire, for which a town in Sullivan county and mountain in the same state are named. From an Indian word, *shehunknippe*, "wild goose pond."
Sunday. The first day of the week; word signifies the day upon which the sun was worshiped.
sun-der (*'dĕr*), *v. t.* to divide or rend.
sun-dry (*'dri*), *adj.* various; several.
sunk-en (*sungk'en*), *adj.* lying on the bottom of the sea; fallen or pressed down.
sun-ny (*'i*), *adj.* pertaining to, like, proceeding from, or exposed to, the sun; bright; warm; cheerful.
sun-shine (*'shīn*), *n.* the light or rays of the sun; warmth.
sun-stroke (*'strōk*), *n.* a kind of apoplexy, caused by the intense heat of the sun's rays.
sun-up (*'up*), *n.* sunrise.
sup (*sup*), *v. t.* to take into the mouth with the lips: *v. i.* to take supper: *n.* sip.
su-per-an-nu-at-ed (*sū-pĕr-an'ū-āt-ed*), *adj.* incapacitated by old age. [ANTIQUE.]
su-perb (*sū-pĕrb'*), *adj.* grand; proud; stately; elegant.
su-per-cil-i-a-ry (*-pĕr-sil'i-ā-ri*), *adj.* pertaining to, or situated above, the eyebrow.
su-per-cil-i-ous (*'i-us*), *adj.* haughty; proud; overbearing.
su-per-er-o-ga-tion (*-er-ō-gā'shun*), *n.* the performance of more than is required by duty.
su-per-e-rog-a-to-ry (*-ē-rog'ā-tō-ri*), *adj.* performed beyond what is required by duty.
su-per-fi-cial (*-fish'al*), *adj.* pertaining to, or being on, the surface; slight; not deep; unlearned.
su-per-fi-ci-al-i-ty (*-i-al'i-ti*), *n.* the state or quality of being superficial.
su-per-flu-i-ty (*-flōō'i-ti*), *n.* superabundance; excess. [EXCESS.]
su-per-flu-ous (*'flōō-us*), *adj.* more than enough or necessary.
su-per-in-duce (*-in-dūs'*), *v. t.* to bring in or upon as an addition to something else.
su-per-in-tend (*-in-tend'*), *v. t.* to have, or exercise, the charge of.
su-per-in-tend-ence (*-tend'ens*), *n.* supervision; oversight; control.
su-per-in-tend-ent (*'ent*), *n.* one who superintends; overseer.
su-pe-ri-or (*sū-pē'ri-ĕr*), *adj.* higher or above in place, position, rank, dignity, office, or excellence; beyond the power or influence of: *n.* one who is superior to others.
Superior. See *Lake Superior.*
su-pe-ri-or-i-ty (*-ri-or'i-ti*), *n.* the state or quality of being superior; preëminence; advantage.
su-per-la-tive (*-pĕr'lā-tiv*), *adj.* superior to all others: *n.* a word expressing the highest degree of anything.
su-per-nal (*'nal*), *adj.* celestial.
su-per-nat-u-ral (*sū-pĕr-nat'ū-ral*), *adj.* beyond, or exceeding, the powers or laws of nature.
su-per-nat-u-ral-ism (*-izm*), *n.* the state or quality of being supernatural; the doctrine that revelation is the only means by which man acquires the knowledge of God.
su-per-nat-u-ral-ist (*-ist*), *n.* one who believes in the doctrine of supernaturalism.
su-per-nu-mer-a-ry (*-nū'mĕr-ā-ri*), *n.* a person or thing beyond the stated or required number: *adj.* exceeding the number stated or required.
su-per-scrip-tion (*-skrip'shun*), *n.* the act of superscribing; the address or direction. [DIRECTION.]
su-per-sede (*-sēd'*), *v. t.* to set aside by superior power; take the place of. [SUBVERT.]
su-per-sti-tion (*-stish'un*), *n.* reverence for, and belief in, the supernatural, or objects which are not worthy of worship.
su-per-sti-tious (*'us*), *adj.* pertaining to, characterized by, proceeding from, or addicted to, superstition.
su-per-struc-ture (*-struk'tūr*), *n.* anything built or founded on something else; a building.
su-per-vene (*-vēn'*), *v. i.* to come in as something extraneous.
su-per-vise (*-vīz'*), *v. t.* to oversee.
su-per-vi-sion (*-vizh'un*), *n.* the act of supervising; superintendence.
su-per-vis-or (*-viz'ĕr*), *n.* an overseer.
su-per-vi-so-ry (*-vī'zō-ri*), *adj.* exercising supervision.
su-pine (*sū-pīn'*), *adj.* lying on the back; indolent; careless.
sup-per (*sup'ĕr*), *n.* the evening meal.
sup-plant (*-plant'*), *v. t.* to displace; supersede. [SUBVERT.]
★**sup-ple** (*sup'l*, not *sōō'pl*), *adj.* flexible; yielding: *v. t.* to make supple: *v. i.* to grow pliant. [FLEXIBLE.]
sup-ple-ment (*'lē-ment*), *v. t.* to add something to: *n.* something added to render anything more complete or supply defects or errors.
sup-pli-ant (*sup'li-ant*), *adj.* beseeching; entreating; suing: *n.* one who supplicates. [Also *supplicant.*]
sup-pli-cate (*-kāt*), *v. t.* to ask or beg humbly and earnestly; address in prayer; beseech; implore. [BEG.]
sup-pli-ca-tion (*-kā'shun*), *n.* the act of supplicating; humble and earnest prayer or entreaty.
sup-ply (*-li'*), *v. t.* to furnish with what is required; serve instead of: *n.* thing supplied; amount of money or food required for daily necessaries (usually *pl.*). [PROVIDE.]
sup-port (*-pōrt'*), *v. t.* to sustain; bear up; endure; uphold; favor: *n.* the act of supporting; that which supports. [COUNTENANCE, ABET, STAFF.]
sup-pose (*-pōz'*), *v. t.* to imagine; admit without proof. [APPREHEND, THINK.]
sup-po-si-tion (*-pō-zish'un*), *n.* the act of supposing; assumption.
sup-pos-i-ti-tious (*-poz-i-tish'us*), *adj.* supposed or imaginary; not genuine; counterfeit.
sup-press (*-pres'*), *v. t.* to subdue; crush; keep in or down; quell; conceal. [REPRESS.]
sup-pu-rate (*'ū-rāt*), *v. i.* to generate pus.
sup-pu-ra-tive (*'ū-rā-tiv*), *adj.* tending to produce, or accompanied by, suppuration: *n.* a medicine to promote suppuration.
su-prem-a-cy (*sū-prem'ā-si*), *n.* the state or quality of being supreme; highest authority.
su-preme (*-prēm'*), *adj.* highest in power or authority; most excellent; extreme; utmost.
sur, a *prefix* meaning *over, beyond, above, upon,* as *sur*charge (*sûr-chārj'*), *n.* an excessive charge, load, or burden: *v. t.* to charge more than is due; overload.
sur-cin-gle (*'sing-gl*), *n.* a girth, belt, or girdle for passing around the body of a horse.
surd (*sûrd*), *n.* a mathematical quantity that cannot be expressed by rational numbers, or has no root, as 3.
sure (*shōōr*), *adj.* fit to be depended upon; certain; reliable: *adv.* certainly; securely. [CERTAIN.]
sure-ty (*'ti*), *n.* certainty; guaranty; hostage; bail.
surf (*sûrf*), *n.* the swell of the sea.
sur-face (*sûr'fās*), *n.* the exterior part or upper face of anything.
surf-boat (*sûrf'bōt*), *n.* a strong, light boat for use in the surf.
sur-feit (*sûr'fit*), *n.* excess in eating or drinking: *v. t.* to feed to excess and sickness.
surge (*sûrj*), *n.* a large wave or billow; great roll; swell: *v. i.* to roll or rise high. [WAVE.]
sur-geon (*sûr'jun*), *n.* one who practices surgery.
sur-geon-cy (*-si*), *n.* the post of a surgeon in the army or navy.
sur-ger-y (*'jĕr-i*), *n.* the act and art of treating injuries or diseases by manual operations.
sur-li-ness (*'li-nes*), *n.* surly behavior.
sur-ly (*'li*), *adj.* gloomily morose; rough; uncivil.
sur-mise (*-mīz'*), *n.* guess or conjecture; suspicion: *v. t.* suspect; conjecture; fancy.
sur-mount (*-mount'*), *v. t.* to rise above; overcome; conquer.
sur-name (*'nām*), *n.* family name: *v. t.* to give the family name to.
sur-pass (*-pas'*), *v. t.* to exceed; excel.
sur-plice (*'plis*), *n.* the outer linen vestment with wide sleeves worn by officiating clergy and choristers.
sur-plus (*sûr'plus*), *n.* excess: *adj.* exceeding what is required. [EXCESS.]
★**sur-prise** (*sûr-priz'*, not *sup-priz'*), *n.* the act of taking unawares; astonishment: *v. t.* to take unawares; astonish.
sur-ren-der (*sur-ren'dĕr*), *v. t.* to yield to the power of another: *v. i.* to yield: *n.* the act of yielding; a yielding or giving up. [ABANDON.]
sur-rep-ti-tious (*-rep-tish'us*), *adj.* done by stealth or fraud.
sur-ro-gate (*sur'ō-gāt*), *n.* the deputy of a bishop.
sur-round (*-round'*), *v. t.* to inclose on all sides; encompass.

Syn. SURROUND, encompass, environ, encircle. We may *surround* an object by standing at certain distances all around it; in this manner a person may be *surrounded* by other persons; a garden is *surrounded* by a wall. *To encompass* is *to surround* in the latter sense, and applies to objects of a great extent; the earth is *encompassed* by the air. *To surround* is to go *round* an object of any form, whether square or circular, long or short; but *to environ* and *to encircle* carry with them the idea of forming a *circle* round an object; thus a town or a valley may be *environed* by hills, a basin of water may be *encircled* by trees, or the head may be *encircled* by a wreath of flowers.

sur-tout (*sûr-tōō'*), *n.* a wide-skirted coat reaching below the knees.
★**sur-vell-lance** (*sûr-vāl'yans* or *-vāl'lans*), *n.* watch; oversight; inspection.
sur-vey (*-vā'*), *v. t.* to inspect or take a view of; measure and estimate: *n.* (*sûr'vā*), the act of surveying; particular view or examination. [VIEW.]
sur-vey-or (*'ĕr*), *n.* one who surveys.
sur-vi-val (*-vī'val*), *n.* continuance beyond the life of another; any ancient use, custom, or belief continuing to the present day.
sur-vive (*-vīv'*), *v. t.* to live longer than; outlive: *v. i.* to remain alive.
sur-viv-or (*'ĕr*), *n.* one who outlives another.
Susa (*sōō'sa*). A city of ancient Persia, so called from the lilies in the neighborhood; name derived from *susa,* "a lily."
Susan (*sū'zan*) or **Susanna** (*sū-zan'nā*). The Hebrew word, derived from the Arabic *susan,* "a lily." Danish, *Susanna;* Dutch, *Susanna;* Fr., *Susanne;* Ger., *Susanne;* It., *Susanna;* Lat., *Susanna;* Sp., *Susana;* Sw., *Susanna.*
Susannah. See *Susan.*
sus-cept-i-bil-i-ty (*sus-sept-i-bil'i-ti*), *n.* the state or quality of being susceptible; impressibility.
sus-cept-i-ble (*'i-bl*), *adj.* easily acted upon; impressible.
sus-pect (*-pekt'*), *v. t.* to have a suspicion of; conjecture: *n.* (*sus'pekt*), a person suspected.
sus-pend (*-pend'*), *v. t.* to make to hang by anything; cause to cease for a time.
sus-pend-er (*'ĕr*), *n.* one who, or that which, suspends; *pl.* braces.
sus-pense (*-pens'*), *n.* a state of uncertainty, doubt, or anxiety; act of withholding. [DOUBT.]
sus-pen-sion (*-pen'shun*), *n.* the act of suspending.
sus-pi-cion (*-pish'un*), *n.* the act of suspecting; small quantity. [DISTRUST, JEALOUSY.]
sus-pi-cious (*'us*), *adj.* full of, open to, or exciting, suspicion; doubtful. [EQUIVOCAL.]
Susquehanna. River, county, and borough in Pennsylvania. From an Indian word, *suckahanne,* "water."
sus-tain (*-tān'*), *v. t.* to hold up or support; maintain. [ABET.]
sus-tained (*-tānd'*), *adj.* maintained at a certain pitch or level.
sus-te-nance (*'tē-nans*), *n.* that which supports life.
sus-ten-ta-tion (*-ten-tā'shun*), *n.* the act of sustaining; support or maintenance.
sut-ler (*sut'lĕr*), *n.* a person who follows an army and sells provisions, liquor, etc., to the troops.
su-ture (*sū'tūr*), *n.* the drawing together of the edges of a wound by sewing; lines of junction of the bones of the skull.
Suwanee (*sū-waw'nē*). County, town, and river in Florida, creek and town in Gwinnett county, Georgia. Interpretations of this Indian word are various; some stating that it is from *Shawnee,* the tribe, while others give its derivation as from *sawani,* meaning "echo," or "echo river"; others give it as a corruption of the name *San Juanita,* applied by the Spaniards to the stream, meaning "little St. John."
su-ze-rain (*sū'ze-rān*), *n.* a feudal lord, to whom fealty is due.
su-ze-rain-ty (*-ti*), *n.* the office, or dignity, of a suzerain.
swab (*swob*), *n.* a mop for cleaning decks, floors, etc.; clumsy person or lubber: *v. t.* to rub or clean with a swab.
swad-dle (*swod'l*), *v. t.* to swathe or bind tightly, especially infants.
swag (*swag*), *n.* an unequal, hobbling motion; thieves' booty.
swag-ger (*'ĕr*), *v. i.* to bully; strut haughtily: *n.* an affected manner of walking; noisy boastfulness.
swain (*swān*), *n.* a peasant; rustic lover; sweetheart.
swal-low (*swol'ō*), *n.* a well-known migratory passerine bird; as much as can be swallowed at once: *v. t.* to take into the stomach through the esophagus; absorb: *v. i.* to perform the act of swallowing. [ABSORB.]
swal-low-tailed (*-tāld*), *adj.* like a swallow's tail.

swamp (*swomp*), *n.* wet or boggy land: *v. t.* to plunge, overwhelm, or sink in, or as in, a swamp.
swamp-y (*'i*), *adj.* consisting of, or like, a swamp.
swan (*swon*), *n.* a web-footed bird of the genus Cygnus, with a very long neck.
swap (*swop*), *v. t.* to exchange or barter: *n.* barter.
sward (*swawrd*), *n.* the grassy surface of land.
swarm (*swawrm*), *v. i.* to throng together in a crowd: *n.* crowd or multitude in motion.
swarth-y (*swawrth'i*), *adj.* of a dark or tawny hue. [Also *swart*, *swarth*.]
swash (*swosh*), *n.* a dashing or splashing of water: *v. i.* to dash or splash water about.
swath (*swawth*), *n.* a line or ridge of grass or grain as cut down by the mower; sweep of a scythe in mowing.
swathe (*swāth*), *v. t.* to bind with a bandage or roller; wrap: *n.* a bandage or roller.
sway (*swā*), *v. t.* to move backward and forward; influence: *v. i.* to incline on one side: *n.* anything moving with power and bulk; authority; inclination or weight on one side.
swear (*swâr*), *v. i.* give evidence on oath; use profane language: *v. t.* to utter or affirm by appeal to God; cause to take, or bind by, an oath.
sweat (*swet*), *n.* the moisture which exudes from the pores of the skin: *v. i.* to exude moisture through the pores; perspire: *v. t.* to cause to sweat.
sweat-ing sys-tem (*'ing sis-tem*), the system by which middlemen employ people to work at their own homes for unfair wages.
Sweden (*swē'den*). A kingdom of northern Europe. A modern term made up of the Latin *Suedia*, signifying the land of the Suevi, a warlike tribe of the Goths, and the Anglo-Saxon *den*, testifying to its occupation by the Danes.
sweep (*swēp*), *v. t.* to brush, rub over, or clean, with a broom, etc.; drive or carry along or off: *v. i.* to pass with violence, speed, or pomp: *n.* the act of sweeping; extent.
sweep-stakes (*'stāks*), *n. pl.* the whole money or other things staked or won at gaming.
sweet (*swēt*), *adj.* pleasing to the senses, as smell, taste, etc.; tasting like sugar: *n.* a term of endearment: *n. pl.* confectionery.
sweet-bread (*'bred*), *n.* a calf's pancreas.
sweet-bri-er (*'bri-ẽr*), *n.* a thorny shrub of the rose kind.
sweet corn (*'kôrn*), a kind of maize of a sweet taste.
sweet-en (*'n*), *v. t.* to make sweet; render mild, or pleasing: *v. i.* to become sweet.
sweet flag (*'flag*), an aromatic plant; calamus.
sweet-heart (*'härt*), *n.* a lover.
sweet-meat (*'mēt*), *n.* a confection made of sugar.
sweet po-ta-to (*pō-tā'tō*), a plant and its edible root; yam.
sweet wil-liam (*wil'yam*), a beautiful flowering plant of the pink kind.
swell (*swel*), *v. i.* to expand or enlarge: *v. t.* to heighten; cause to rise or increase: *n.* extension of bulk; act or state of swelling; succession of large waves; fop: *adj.* dandified.
swel-ter (*'tẽr*), *v. t.* to perspire profusely.
swel-try (*'tri*), *adj.* sultry.
swerve (*swẽrv*), *v. i.* to turn aside; deviate; incline. [DEVIATE.]
swift (*swift*), *adj.* rapid; quick: *adv.* rapidly: *n.* a bird allied to the swallow.
swill (*swil*), *v. t.* to drink greedily or grossly: *n.* drink taken in excessive quantities; refuse or leavings of the kitchen.
swim (*swim*), *v. i.* to move progressively in the water by the hands and feet; be conveyed along by, or as by, a current: *v. t.* to cause to swim or float: *n.* the act of swimming.
swim-mer (*'ẽr*), *n.* one who swims.
swim-ming (*'ing*), *n.* the act or art of floating or moving progressively in the water by the hands and feet.
swin-dle (*swin'dl*), *v. t.* to cheat under pretense of fair dealing: *n.* a gross fraud.
swine (*swin*), *n.* any animal of the genus Sus with bristly skin and long snout; pig.
swing (*swing*), *v. i.* to wave or vibrate to and fro; be hanged: *v. t.* to move to and fro: *n.* the act or state of swinging; contrivance for swinging to and fro.
swin-ish (*swin'ish*), *adj.* pertaining to, like, or characteristic of, swine; bestial.
swipe (*swip*), *n.* a vigorous blow: *v. i.* and *v. t.* to deliver a strong blow; hit out with great force; purloin.
swirl (*swẽrl*), *v. i.* to rush along in, or form, eddies: *n.* a whirling or eddying motion.
swish (*swish*), *v. t.* to lash; flog.
Swiss (*swis*), *adj.* pertaining to Switzerland, its language, or its inhabitants.
switch (*swich*), *n.* a thin, flexible rod; a movable rail for transferring a railway carriage, etc., from one line to another; a device for connecting one electric circuit with another: *v. t.* to lash or flog; shunt.
Switz-er (*swits'ẽr*), *n.* An inhabitant of Switzerland.
Switzerland (*swit'zẽr-land*). An Anglicized form of the native Schweitz, the name of the three forest cantons whose people asserted their independence of Austria, afterward applied to the whole country.
swiv-el (*swiv'l*), *n.* something fixed in another body so as to turn round in it: *v. t.* and *v. i.* to turn on a swivel or pivot.
swoon (*swoōn*), *v. i.* to sink into a fainting fit: *n.* the act of swooning.
swoop (*swoōp*), *v. t.* to fall upon and seize at once: *n.* a sudden falling upon and seizing.
sword (*sôrd*), *n.* a keen-edged weapon for cutting and thrusting.
Sybil (*sib'il*). An old name corrupted from *Isabella*.
syc-a-more (*sik'a-mōr*), *n.* a tree of the maple family.
syc-o-phant (*'ō-fant*), *n.* a mean or servile flatterer; parasite. [FLATTERER.]
Sydney. The capital of New South Wales, was founded on January 26, 1788, and so named by Captain Phillip, after Thomas Townshend, first Lord Sydney, who, as home secretary, drew up, in 1786, a scheme for the transportation of convicts to New South Wales.
Sydney. A personal name corrupted from St. Denis, pronounced in French *san den-ē'*.
syl-lab-ic (*sil-ab'ik*), *adj.* pertaining to, or consisting of, a syllable.
syl-lab-i-ca-tion (*-i-kā'shun*) or **syl-lab-i-fi-ca-tion** (*-fi-kā'shun*), *n.* the formation of syllables.
syl-lab-i-fy (*'i-fī*), *v. t.* to form into syllables.
syl-la-ble (*'a-bl*), *n.* that part of a word which can be uttered distinctly by a single effort of the voice.
syl-la-bus (*'a-bus*), *n.* a table of contents; compendium of the heads of a discourse.
syl-lo-gism (*'ō-jizm*), *n.* an argument stated in logical form, consisting of three propositions, the first two being called the premises and the last the conclusion.
syl-lo-gis-tic (*-jis'tik*), *adj.* pertaining to, or consisting of, a syllogism.
sylph (*silf*), *n.* an imaginary being inhabiting the air; fairy.
syl-van (*sil'van*), *adj.* pertaining to, inhabiting, or growing in, a wood or grove.
Sylvanus. See *Silvanus*.
Sylvester. See *Silvester*.
Sylvia or **Silvia** (*sil'vi-a*). A Roman name, feminine of *Sylvius*. Fr., *Silvie*; It., *Silvia*; Sp., *Silvia*.
Sylvius (*sil'vi-us*). A Roman name, from *sylva*, "a wood." *Sylvius* was the name of the brother of Ascanius, so called from being born in the woods.
sym-bol (*sim'bol*), *n.* an emblem or sign representing something else.
sym-bol-ic (*'ik*), *adj.* pertaining to, serving as, or of the nature of, a symbol: *n. pl.* the study of creeds. [Also *symbolical*.]
sym-bol-ism (*'bol-izm*), *n.* the use of, or the being represented by, symbols.
sym-bol-ize (*sim'bol-īz*), *v. t.* to represent by a symbol: *v. i.* to have a typical resemblance; agree.
sym-met-ric-al (*-met'ri-kal*), *adj.* having corresponding parts or relations. [Also *symmetric*.]
sym-me-trize (*'ē-trīz*), *v. t.* to make symmetrical.
sym-me-try (*'ē-tri*), *n.* the due proportion of the several parts of a body to each other.
sym-pa-thet-ic (*-pa-thet'ik*), *adj.* pertaining to, expressing, or inducing, sympathy; compassionate. [Also *sympathetical*.]
sym-pa-thize (*'pa-thīz*), *v. i.* to have a mutual feeling with another; be compassionate.
sym-pa-thy (*'pa-thi*), *n.* mutual feeling of pleasure or pain; compassion.

Syn. SYMPATHY, compassion, commiseration, condolence. *Sympathy* has the literal meaning of fellow-feeling, that is, a kindred or like feeling, or feeling in company with another; *compassion*, *commiseration*, and *condolence* signify a like suffering, or a suffering in company; *sympathy* preserves its original meaning in its application, for we laugh or cry by sympathy. *Compassion* is altogether a moral feeling, which makes us enter into the distresses of others; *commiseration* is awakened toward those who are in an abject state of misery; *condolence* supposes an entire equality, and is often produced by some common calamity.

sym-phon-ic (*-fon'ik*), *adj.* agreeing in sound; pertaining to a symphony. [Also *symphonious*.]
sym-pho-ny (*'fō-ni*), *n.* [*pl.* symphonies (*-niz*)], harmony of sound; a musical composition for a full band of instruments.
sym-po-si-um (*-pō'zi-um*), *n.* [*pl.* symposia (*-a*)], a banquet; a drinking together.
symp-tom (*simp'tum*), *n.* token or sign.
symp-to-mat-ic (*-tō-mat'ik*), *adj.* pertaining to, serving as, or indicating, a symptom. [Also *symptomatical*.]
syn-a-gogue (*sin'a-gog*), *n.* Jewish place of worship.
syn-chro-nism (*sing'krō-nizm*), *n.* concurrence in time of two or more events.
syn-chro-nize (*'krō-nīz*), *v. t.* to cause to agree in time: *v. i.* to happen simultaneously.
syn-chro-nous (*'krō-nus*), *adj.* happening at the same time. [Also *synchronal*.]
syn-co-pate (*'kō-pāt*), *v. t.* to contract by omitting a letter or letters from the middle of (a word).
syn-co-pa-tion (*-pā'shun*), *n.* the act of syncopating.
syn-co-pe (*'kō-pē*), *n.* the omission of a letter or letters from the middle of a word; fainting.
syn-dic (*sin'dik*), *n.* chief magistrate; municipal or other official.
syn-di-cate (*'di-kāt*), *n.* a body of syndics; a combination of capitalists.
syn-od (*'ud*), *n.* a council or meeting of ecclesiastics.
syn-o-nym (*'ō-nim*), *n.* a word having nearly the same root signification as another.
syn-op-sis (*-op'sis*), *n.* a general or collective view of any subject.
syn-op-tic (*sin-op'tik*), *adj.* giving a general view of the whole. [Also *synoptical*.]
syn-tac-tic (*-tak'tik*), *adj.* pertaining to, or arranged according to, the rules of syntax. [Also *syntactical*.]
syn-tax (*'taks*), *n.* that part of grammar which teaches of the proper construction and arrangement of words in a sentence.
syn-the-sis (*'thē-sis*), *n.* [*pl.* syntheses (*-sēz*)], composition or putting of two or more things together: opposed to analysis.
syn-thet-ic (*-thet'ik*), *adj.* pertaining to synthesis. [Also *synthetical*.]
syph-i-lis (*sif'i-lis*), *n.* venereal disease.
syph-i-lit-ic (*-lit'ik*), *adj.* pertaining to, of the nature of, or affected with, syphilis.
sy-phon. Another form of *siphon*.
Syracuse (*sir'a-kūs*). The greatest Greek colony in Sicily, is believed to have replaced an older Phenician trading post which obtained its name from a marsh at the mouth of the Anapus called *Syraco*, "to stink."
Syracuse. City in Onondaga county, New York, named for the ancient city of Sicily, after passing through the names of Bogardus Corners, Milan, South Salina, Cossitt's Corners, and Corinth. In 1820, its present name was adopted at the suggestion of John Wilkinson, its first postmaster.
sy-ren. Another form of *siren*.
Syria (*sir'i-a*). A country of Asiatic Turkey; now called *Suristan* by the Turks and Persians, is the classical name which replaced the older name *Aram*, "the highlands." The name *Syria* first appears in Herodotus, and is doubtless a modification of the name *Assyria*, adopted by the Greeks at the time when Aram was included in the Assyrian empire. Assyria was thought to be the land of the deity *Assur* or *Asshur*, but it is now believed to have taken its name from the former capital *Assur*, a city on the Tigris, an Accadian name, meaning "the water bank."
Sy-rin-ga (*si-ring'gȧ*), *n.* a genus of plants, including the lilac.
★**syr-inge** (*sir'inj*, not *sir-inj'*), *n.* a small tube with a handle and worked like a pump: *v. t.* to inject or cleanse with a syringe.
★**syr-up** (*sir'up*), *n.* a saturated or medicated solution of sugar. [Also *sirup*.]
sys-tem (*sis'tem*), *n.* combination of parts in a whole; orderly arrangement. [BOD Y.]
sys-tem-at-ic (*-at'ik*), *adj.* methodical; according to system. [Also *systematical*.]
sys-tem-a-tize (*'tem-a-tīz*), *v. t.* to reduce to a system.
sys-to-le (*'tō-lē*), *n.* the shortening of a long syllable.

T

tab (*tab*), *n.* a shoe latchet; tag; border of a woman's cap.
tab-ard (*'ẽrd*), *n.* a loose garment or mantle worn over armor.
tab-by (*'i*), *adj.* brindled; having a variegated, wavy, or watered appearance: *n.* a kind of wavy or watered silk: tabby cat; *v. t.* to water or cause to look wavy.
tab-by cat (*'ikat*), a brindled cat.
tab-e-fac-tion (*-ē-fak'shun*), *n.* the act or condition of wasting away.
tab-er-na-cle (*'ẽr-na-kl*), *n.* the movable structure or place of worship carried by the Israelites in the wilderness; receptacle for the consecrated Host in Roman Catholic churches; place of worship: *v. i.* to sojourn; take up a temporary residence.
tab-er-na-cle work (*wẽrk*), sculptured tracery or canopy work.
ta-bes (*tā'bēz*), *n.* a gradual wasting away of the body; atrophy.
Tabitha (*tab'i-thȧ*). A female name, from *Tabitha*, Aramæan name of a Christian female, Hebrew *zebia*, "a gazelle." Calmet, who translates the name "wild goat or kid," says the Syriac word *tabitha* signifies "clear sighted." Lat., *Tabitha*.
tab-la-ture (*'la-tūr*), *n.* a painting on walls or ceilings.
ta-ble (*tā'bl*), *n.* a flat, smooth board, furnished with legs; flat surface; fare; tablet; index or syllabus: *pl.* collection of many particulars brought into view: *adj.* pertaining to a table: *v. t.* to catalogue or index.
tab-leau (*tȧb'lō*, French *tȧ-blō'*), *n.* [*pl.* tableaux (*'lōz*) or tableaux (*blō*)], a striking and vivid representation.
ta-ble-land (*tā'bl-land*), *n.* a plateau.
tab-let (*tab'let*), *n.* small flat cake, as of soap, sweetmeats, medicine, etc.
ta-boo (*tȧ-bōō'*), *n.* a religious rite formerly prevalent among the Polynesians by which persons and things were rendered sacred and inviolable; ban; prohibition: *v. t.* to forbid approach to, or use of. [Also *tabu*.]
ta-bor (*tā'bẽr*), *n.* a small drum, beaten with one stick. [Also *tabour*.]
tab-ou-ret (*tab'ōō-ret*), *n.* an ornamental cushioned stool.
Tabriz (*tȧ-brēz'*). The commercial capital of Persia, was the classical and mediæval *Tauris*, "the mountain town."

tab-u-lar (*tăb'ū-lĕr*), *adj.* pertaining to, or in the form of, a table.
tab-u-late (*'ū-lāt*), *v. t.* to reduce to, or arrange in, tables, or synopses.
ta-chom-e-ter (*tă-kom'ĕ-tĕr*), *n.* an instrument for measuring velocity.
tac-it (*tas'ĭt*), *adj.* implied, but not expressed verbally.
tac-i-turn (*'i-tûrn*), *adj.* habitually silent.
tac-i-tur-ni-ty (*-tûr'ni-tĭ*), *n.* habitual silence.
tack (*tak*), *n.* a small broad-headed nail; direction of a vessel: *v. t.* to fasten with tacks; attach: *v. i.* to change the course of a vessel.
tac-kle (*'l*), *n.* apparatus for raising or lowering, consisting of pulleys and ropes; implements or gear: *v. t.* to seize or lay hold of; deal with, or attack, vigorously.
tac-kling (*'lĭng*), *n.* the furniture of the masts and yards of a vessel; instruments of action.
Tacoma (*tă-kō'mă*). City in Washington; so called from the Indian word *tahoma*, meaning "the highest," "near heaven."
tact (*takt*), *n.* nice discernment and delicate skill in saying and doing exactly what is expedient.
tac-ti-cian (*-tish'an*), *n.* one skilled in tactics.
tac-tics (*'tiks*), *n.* naval and military evolutions.
tac-tile (*'tĭl*), *adj.* perceptible by the touch; capable of being touched.
tac-tu-al (*tak'tū-al*), *adj.* pertaining to the organs of touch.
tad-pole (*tad'pōl*), *n.* the young aquatic larva of an amphibian.
taf-fe-ta (*taf'ĕ-tă*), *n.* a fine, thin, glossy silken fabric.
taff-rail (*'răl*), *n.* the upper flat part of the stern of a ship; rail round a ship's stern.
taf-fy (*'i*), *n.* molasses candy.
tag (*tag*), *n.* something small attached to another; a children's game: *v. t.* to fix a tag to; follow closely or persistently.
Tagus (*tā'gus*) or **Tejo** (*tā'zhō*). Name of the longest river in the Spanish peninsula, meaning "the fish river."
Tahlequah (*tä-le-kwä'*). Former capital of Indian territory, is a Cherokee Indian word and properly spelled according to their pronunciation is *Talikwa*. The word as it stands probably means "place of two large towns."
tail (*tāl*), *n.* the end of the backbone of an animal's body, usually hanging loose; anything pendent.
tail-age (*'āj*), *n.* tax or toll. [Also *tillage.*]
tail-board (*'bōrd*), *n.* the movable board at the rear of a cart.
tai-lor (*tā'lĕr*), *n.* one whose business is to cut out and make men's clothes and women's costumes.
taint (*tānt*), *n.* corruption; infection; spot or stain; disgrace: *v. t.* to imbue or impregnate with anything noxious; *v. i.* to be corrupted. [CONTAMINATE.]
Taj Mahal (*tăzh mă-hăl'*) or **Taj Mehal** (*tăzh mĕ-hăl'*). The famous mausoleum erected at Agra, India, by Shah Jehan for his favorite wife. It literally means "gem of buildings."
take (*tāk*), *v. t.* to lay or seize hold of; obtain; choose; use or require; swallow; note or take down; make or perform; *v. i.* to have recourse; have the intended effect; please. [ABSORB.]
tal-bot (*tawl'bot*), *n.* a quick-scented hunting dog.
talc (*talk*), *n.* a hydrous silicate of magnesia.
tale (*tāl*), *n.* a narrative or story; fable; anecdote; reckoning. [STORY.]
tal-ent (*tal'ĕnt*), *n.* among the ancients, a weight, coin, or sum of money of varying value; skill; cleverness; gift. [ABILITY, INTELLECT.]
tal-ent-ed (*'ĕnt-ĕd*), *adj.* endowed with talents.
tal-is-man (*'is-măn*), *n.* [*pl.* talismans (*-mănz*)], a magical figure cut in metal or stone supposed to possess magical virtues in averting evil, etc.
talk (*tawk*), *v. i.* to utter words; converse; prattle: *v. t.* to utter; make a subject of conversation: *n.* familiar converse; colloquy. [SPEAK.]
talk-a-tive (*'a-tĭv*), *adj.* addicted to much talking.
tall (*tawl*), *adj.* high in stature; lofty; extravagant. [HIGH.]
Talladega (*tal-lä-dē'gä*), **Ala.** A Creek Indian word, *talua-atigi*, "the border town."
Tallahassee (*tal-lä-has'sē*). City in Florida, so named because it is supposed to have been the site of Indian cornfields in remote times. An Indian word, meaning "old town."
Tallahatchie (*tal-là-hach'ē*). County in Mississippi, named from the principal branch of the Yazoo river in the same state. An Indian word, meaning "river of the rock."
Tallapoosa (*tal-là-pōō'sä*). River in Georgia and Alabama, giving name to a county in Alabama and a city in Haraldon county, Georgia. An Indian word, meaning "swift current," or, according to some authorities, "stranger," "newcomer."
tal-low (*tal'ō*), *n.* the melted fat of oxen and sheep; candle grease: *v. t.* to grease with tallow.
tal-ly (*'i*), *n.* [*pl.* tallies (*'iz*)], one thing made to match or suit another: *v. t.* to make to correspond: *v. i.* to be fitted; match.
tal-ly-ho (*-hō*), *n.* a four-in-hand coach.
Tal-mud (*'mud*), *n.* the book which contains the whole body of the Jewish civil and canonical laws and traditions.
tal-on (*'un*), *n.* the claw of a bird of prey.
ta-lus (*tā'lus*), *n.* the ankle bone; sloping part.
tam-a-ble (*tām'ă-bl*), *adj.* capable of being tamed.
ta-ma-le (*tä-mä'lā*), *n.* a kind of dumpling, made of minced chicken and corn meal, seasoned with red pepper, and wrapped in corn husks.
tam-a-rack (*tam'ă-rak*), *n.* the American black larch.
tam-a-risk (*'ă-risk*), *n.* a tree or shrub of the genus Tamarix.
tam-bour (*'bōōr*), *n.* a drum-like frame on which a kind of embroidery is worked; drum; inclosure of stockade work: *v. t.* to embroider with, or upon, a tambour.
tam-bour-ine (*-ēn'*), *n.* a small hand-drum with little cymbals inserted in the hoop.
tame (*tām*), *adj.* domesticated; spiritless; insipid: *v. t.* to subdue. [GENTLE.]
tame-less (*'les*), *adj.* wild; not capable of being tamed.
tamp (*tamp*), *v. t.* to drive in or down by repeated gentle strokes.
Tampa (*tam'pä*). Bay and city on the west coast of Florida. From the Indian word *timpi*, "close to it," "near it." It was called by De Soto *Espiritu Santo*, "Holy Ghost."
tam-per (*'pĕr*), *v. i.* to meddle.
tam-pi-on (*'pi-un*), *n.* a stopper, especially for the mouthpiece of a cannon. [Also *tompion.*]
tan (*tan*), *n.* the bark of trees for tanning hides: *adj.* tan colored: *v. t.* to convert (a hide) into leather; make brown by exposure to the sun: *v. i.* to become sunburnt.
tan-dem (*'dem*), *adv.* with two horses or persons one before the other: *n.* a vehicle with two horses harnessed one before the other; a bicycle or tricycle for two, one riding before the other.
tang (*tang*), *n.* a strong taste or flavor: *v. i.* to make a ringing sound.
tan-gent (*tan'jent*), *adj.* touching: *n.* a straight line that meets or touches a circle or curve, but when projected, does not cut it.
tan-ger-ine (*-jĕr-ēn'*), *n.* a small orange.
tan-gi-ble (*'ji-bl*), *adj.* perceptible to the touch; capable of being possessed or realized. [PHYSICAL.]
tan-gle (*tang'gl*), *v. t.* to interweave so as to render difficult to unravel; implicate; embarrass: *v. i.* to be entangled: *n.* a knot interwoven confusedly; complication; perplexity.
tank (*tangk*), *n.* a large cistern or reservoir.
tank-ard (*'ĕrd*), *n.* a drinking vessel with a lid.
tan-ner (*tan'ĕr*), *n.* one who tans hides.
tan-ner-y (*-i*), *n.* [*pl.* tanneries (*-iz*)], a place where hides are tanned; process of tanning.
tan-nic (*'ik*), *adj.* pertaining to, or obtained from, bark.
tan-nic ac-id (*as'id*), an astringent principle in oak bark, and nutgalls. [Also *tannin.*]
tan-ning (*'ing*), *n.* the process of converting hides into leather.
tan-sy (*'zi*), *n.* a bitter aromatic plant with small yellow flowers.
tan-ta-lize (*'tà-līz*), *v. t.* to tease or torment by exciting hopes or fears which will not be realized; provoke. [AGGRAVATE, TEASE.]
tan-ta-mount (*'tà-mount*), *adj.* equivalent in value or signification.
tan-trum (*'trum*), *n.* a sudden outburst of temper or passion.
tap (*tap*), *v. t.* to strike or touch lightly; to let out (a fluid); bore into: *n.* a gentle blow, or touch; pat; pipe through which liquor is drawn.
tape (*tāp*), *n.* a narrow band of linen or cotton cloth.
ta-per (*tā'pĕr*), *n.* small wax candle: *adj.* growing smaller or regularly narrowed toward the point: *v. i.* to become gradually more slender: *v. t.* to narrow to a point.
tap-es-try (*tap'es-trĭ*), *n.* a textile fabric of wool or silk ornamented with a raised design, figures, etc., used for hangings: *v. t.* to hang, or adorn, with tapestry.
tap-es-try car-pet (*kär'pet*), a kind of carpet somewhat resembling Brussels.
tape-worm (*tāp'wĕrm*), *n.* a flat ribbon-like intestinal worm.
tap-i-o-ca (*tap-i-ō'kä*), *n.* a farinaceous food obtained from the root of the cassava.
tap-ping (*'ing*), *n.* a tap; act of tapping.
tap-root (*'rōōt*), *n.* the main root of a plant.
tar (*tär*), *n.* a thick, dark-brown, oily, viscous substance obtained by distillation from pine or fir trees, coal, etc.; a sailor: *v. t.* to smear with, or as with, tar.
tar-an-tel-la (*tar-an-tel'ä*), *n.* a wild, rapid Neapolitan dance.
ta-ran-tu-la (*tà-ran'tū-lä*), *n.* a large spider.
tar-di-ness (*tär'di-nes*), *n.* slowness of pace or motion; reluctance.
tar-dy (*'di*), *adj.* moving with a slow pace or motion: late.
tare (*târ*), *n.* darnel; weight of the cask, package, etc., which contains the commodity which is weighed with it and for which an allowance is made.
tar-get (*tär'get*), *n.* a small shield; butt or mark set up for rifle and artillery practice.
tar-iff (*tar'if*), *n.* a schedule or table of dutiable goods, specifying the customs rates, etc.; a duty levied: *v. t.* to fix a duty on.
tarn (*tärn*), *n.* a small mountain lake; marsh.
tar-nish (*tär'nish*), *v. t.* to diminish the luster of; sully: *v. i.* to lose luster; become dull. [STAIN.]
tar-pau-lin (*-paw'lin*), *n.* stout waterproof canvas.
Tarragona (*tär-rä-gō'nä*). Name of an important Spanish city, is derived from the ancient *Tarraco*, "the citadel or palace."
tar-ry (*tar'i*), *v. i.* to stay behind; delay; linger. [LINGER.]
Tarrytown. Village in Westchester county, New York. Modification of its former name of *Terwen*, "wheat town," given on account of its large crops of that cereal.
tar-sal (*tär'sal*), *adj.* pertaining to the tarsus.
tar-sus (*'sus*), *n.* the instep: *pl.* [tarsi (*'sĭ*)], the connective cartilages of the eyelids; foot of an insect or crustacean.
tart (*tärt*), *adj.* sharp to the taste; acid; severe; keen: *n.* a small open pie.
tar-tan (*tär'tan*), *n.* woolen cloth, checkered with various colors: *adj.* made from, or like, tartan.
tar-tar (*'tĕr*), *n.* the white earthy substance deposited on the teeth.
tar-tar e-met-ic (*ĕ-met'ik*), antimony combined with potassium and tartaric acid.
tar-tar-ic ac-id (*-tar'ik as'id*), an acid found in the juice of grapes, berries, etc.
Tartary (*tär'tà-ri*). The old name, now falling into disuse, for Turkistan, the parts of central Asia which are inhabited by the nomads of Turkish race called *Tartars* or *Tatars*. The name is said to to have arisen out of the designation *tha-ta*, "robbers," applied by the Chinese to the Mongols.
ta-sim-e-ter (*tà-sim'ĕ-tĕr*), *n.* an electrical instrument for measuring minute variations.
task (*täsk*), *n.* business or study imposed by another; duty; burdensome employment: *v. t.* to impose a task upon; burden. [WORK.]
Tasmania (*taz-mā'ni-ä*). Island and British colony of Australasia; so named in 1853 after Abel Tasman, who discovered it in 1642; previously called Van Diemen's Land from the governor general of the Dutch East India company.
tas-sel (*tas'l*), *n.* a pendent ornament of silk, wool, etc.
taste (*tāst*), *v. t.* to perceive by the tongue and palate; participate in; experience: *v. i.* to try food or drink by the palate; have a flavor: *n.* the sensation produced on the tongue and palate by something taken into the mouth; intellectual relish or discernment; a sample.
Syn. TASTE, genius. *Taste* seems to designate the capacity to derive pleasure from an object; *genius* designates the power we have for accomplishing any object.
taste-ful (*'fool*), *adj.* savory; characterized by, or showing, good taste.
tast-y (*'i*), *adj.* showing taste; savory.
tat (*tat*), *n.* coarse cloth made from jute.
tatt (*tat*), *v. t.* to make by tatting.
tat-ter (*'ĕr*), *n.* a loose hanging rag: *pl.* rags: *v. t.* to make ragged; rend.
tat-ting (*'ing*), *n.* a kind of narrow lace for edging; art of making such kind of lace.
tat-tle (*'l*), *v. i.* to talk idly or triflingly; prate; tell tales or secrets; *n.* trifling or idle talk.
tat-too (*-tōō'*), *n.* a beat of drum; marks made by puncturing the skin with a needle and rubbing a stain or dye into the wounds: *v. t.* to mark permanently by puncturing and staining the wounds.
taunt (*tänt or tawnt*), *adj.* lofty; *n.* bitter or sarcastic reproach: *v. t.* to reproach; revile. [TEASE.]
tau-ri-form (*taw'ri-fôrm*), *adj.* having the form of a bull.
taut (*tawt*), *adj.* tight; stretched.
tau-to-log-ic-al (*aw-tō-loj'i-kal*), *adj.* of the nature of tautology.
tau-tol-o-gy (*-tol'ō-ji*), *n.* repetition of the same thing or idea in different words; sameness of words or of meaning.
tav-ern (*tav'ĕrn*), *n.* an inn or public house; a hotel.
taw-dry (*taw'dri*), *adj.* showy or fine without elegance; gaudily dressed.
taw-ny (*'ni*) *adj.* of a yellowish-brown color.
tax (*taks*), *n.* a rate or duty on income or property; excise; impost; burdensome or oppressive duty: *v. t.* to impose a rate or duty upon; burden or oppress; accuse.
tax-a-ble (*'ă-bl*), *adj.* subject or liable to taxation.
tax-a-tion (*-ă'shun*) *n.* the act of taxing; rate or tax imposed.
tax-i-cab (*tax'i-kab*), *n.* a motor cab of recent invention, having a mechanical device for registering time and distance traversed.
tax-i-der-mist (*'i-dĕr-mist*), *n.* one who is skilled in taxidermy.
tax-i-der-my (*'i-dĕr-mi*), *n.* the art of stuffing and arranging specimens of natural history.
tax-in (*'in*), *n.* the resinous substance obtained from the leaves of the yew tree.
Tay (*tā*). The largest river of Scotland, flows from Loch Tay, where, probably, was the *Tamia* or *Ptolemy*, a name explained by the Gaelic *tamh*, "tranquil," or "smooth," the equivalent of the Pictish *tau* and the Cymric *taw*, of which an oblique case may be the source of the name *Tava*, given by Tacitus to the Firth of Tay.
tea (*tē*), *n.* the prepared leaves of the tea plant (*Thea sinensis*); the beverage obtained by the infusion of the dried leaves; afternoon repast at which tea is served; an infusion of other substances, as beef.
teach (*tēch*), *v. t.* to impart knowledge to; cause to learn or acquire skill in: *v. i.* to give instruction.
Syn. TEACH discipline, drill, educate, enlighten, inculcate, indoctrinate, inform, initiate, instill, instruct, nurture, school, train, tutor. To

teach is simply to communicate knowledge; to *instruct* is to impart knowledge with special method and completeness; to *educate* is to draw out or develop harmoniously the mental powers, and, in the fullest sense, the moral powers as well. To *train* is to direct to a certain result powers already existing; *discipline* is a severe word, and is often used as a euphemism for *punish*; *nurture* is a more tender and homelike word than *educate*. [See *instruct*.]

teal (*tēl*), *n.* a species of small, wild, fresh-water ducks.

team (*tēm*), *n.* two or more horses, etc., harnessed to the same vehicle; number of persons associated together to form a side in a game, or to perform a certain piece of work.

team-ster (*stĕr*), *n.* the driver of a team.

tear (*tēr*), *n.* a small drop of fluid secreted by the eye; anything tearlike, or shaped like a tear: (*târ*) a rent: *v. t.* (*târ*) to rend; disrupt; lacerate: *v. i.* to be rent; rave or rant.

tear-ful (*tēr'fool*), *adj.* shedding tears.

tease (*tēz*), *v. t.* to irritate or annoy: *n.* one who teases.

Syn. TEASE, vex, taunt, tantalize, torment. *To tease* is applied to that which is most trifling; *torment* to that which is most serious. We are *teased* by a fly that buzzes in our ears; we are *vexed* by the carelessness and stupidity of our servants; we are *taunted* by the sarcasms of others; we are *tantalized* by the fair prospects which only present themselves to disappear again; we are *tormented* by the importunities of troublesome beggars.

teat (*tēt*), *n.* the nipple of the female breast; mammilla.

★**tech-nic** (*tek'nik*), *adj.* relating to art, science, or to a particular profession. [Also *technical*.] *n. pl.* those branches of learning which relate to the arts.

tech-nique (*-nēk'*), *n.* artistic execution.

tech-nol-o-gy (*-nol'ō-ji*), *n.* the science of the industrial arts.

tec-ton-ics (*tek-ton'iks*), *n.* the science or art of construction.

te-di-ous (*tē'di-us*), *adj.* wearisome by continuance; tiresome.

te-di-um (*'di-um*), *n.* wearisomeness.

tee (*tē*), *n.* the mark aimed at in quoits and curling; nodule of earth from which the ball is struck at golf.

teem (*tēm*), *v. i.* to be prolific; be full; be stocked to overflowing.

teen (*tēn*), *n.* sorrow: *pl.* years of one's age ending in *teen*.

teeth-ing (*tēth'ing*), *n.* dentition.

tee-to-tal (*tē-tō'tal*), *adj.* pertaining to teetotalers.

tee-to-tal-er (*-ĕr*), *n.* a total abstainer.

tee-to-tum (*-tō'tum*), *n.* a child's toy used in games of chance.

teg-men (*teg'men*), *n.* [*pl.* tegmina (*'mi-nâ*)], a covering; inner layer of the coating of a seed: *pl.* scaly coat of the leaf-buds of trees.

teg-u-ment (*'ū-ment*), *n.* natural covering or envelope; skin.

te-hee (*tē-hē'*), *n.* a titter: *v. i.* to titter.

tel-e-gram (*'ē-gram*), *n.* a telegraphic communication.

tel-e-graph (*'ē-grâf*), *n.* an instrument or apparatus for communicating intelligence rapidly between certain points, especially by means of electricity: *v. t.* to convey by telegraph; signal: *v. i.* to send a telegraphic message.

te-leg-ra-pher (*tē-leg'rā-fĕr*), *n.* one who sends telegraphic messages; telegraphist.

tel-e-graph-ic (*tel-ē-graf'ik*), *adj.* pertaining to, done by means of, or communicated by, telegraph.

★**te-leg-ra-phy** (*tē-leg'rā-fi*), *n.* the science or art of constructing and working telegraphs.

tel-e-ol-o-gy (*tel-ē-ol'ō-ji*), *n.* the doctrine of final causes.

te-lep-a-thy (*tē-lep'à-thi*), *n.* the transference of thought from one person to another by the will.

tel-e-phone (*tel'ē-fōn*), *n.* an instrument for transmitting sound to a distance by means of electricity: *v. t.* and *v. i.* to communicate by telephone.

tel-e-phon-ic (*-fon'ik*), *adj.* pertaining to, or conveyed by means of, the telephone.

te-leph-o-ny (*tē-lef'ō-ni*), *n.* the science or art of transmitting sounds at a distance.

tel-e-pho-tog-ra-fy (*tel-ē-fō-tog'rà-fi*), *n.* the reproduction of photographs at a distance by aid of the telegraph.

tel-e-post (*tel'ē-pōst*), *n.* a new system of telegraphing by aid of a punched tape.

tel-e-scope (*tel'ē-skōp*), *n.* an optical instrument for viewing objects at a distance: *v. t.* to drive into one another.

tel-e-scop-ic (*-skop'ik*), *adj.* pertaining to, visible by, or like, a telescope. [Also *telescopical*.]

tel-e-sco-py (*tel'ē-skō-pi*), *n.* the art or science of using or constructing a telescope.

tell (*tel*), *v. t.* to narrate; enumerate; explain; confess: *v. i.* to give an account; act effectively. [SPEAK, ANNOUNCE.]

tell-er[1] (*'ĕr*), *n.* one who tells, narrates, or communicates; a bank clerk.

tell-tale (*'tāl*), *adj.* telling tales: *n.* a person who officiously or maliciously divulges the private concerns of others.

tel-lu-ri-um (*-lū'ri-um*), *n.* a rare element usually found associated with other metals.

tel-o-type (*tel'ō-tīp*), *n.* an electric telegraph that prints the message.

te-mer-i-ty (*tē-mer'i-ti*), *n.* foolhardiness; rashness; precipitancy. [RASHNESS.]

tem-per (*tem'pĕr*), *v. t.* to modify or regulate; calm; bring to a due proportion; bring to a degree of hardness: *n.* due proportion of different qualities or ingredients; mental disposition; mood; passion; irritation. [HUMOR, DISPOSITION.]

★**tem-per-a-ment** (*tem'pĕr-à-ment*, not *tem'pràment*), *n.* natural constitution or organization; due mixture of opposite or different qualities.

★**tem-per-ance** (*'pĕr-ans*), *n.* moderation, especially in respect to the appetites or passions.

tem-per-ate (*'pĕr-at*), *adj.* moderate; abstemious; calm.

tem-per-a-ture (*'pĕr-à-tūr*), *n.* state of a body with respect to sensible heat; degree of any quality.

tem-pered (*'pĕrd*), *adj.* constitutionally disposed; hardened.

tem-pest (*'pest*), *n.* wind rushing with great violence; tumult. [BREEZE.]

tem-pes-tu-ous (*-pes'tū-us*), *adj.* very stormy; pertaining to, or like, a tempest; violent.

Tem-plar (*'plĕr*), *n.* one of a religious and military order, especially the Templars in the 12th century.

tem-plate (*'plāt*), *n.* a mold or pattern used by masons, etc., in cutting or setting out their work. [Also *templet*.]

tem-ple (*'pl*), *n.* an edifice for the worship of a deity or deities; the flat part of either side of the head above the cheek bones.

tem-po-ral (*'pō-ral*), *adj.* pertaining to time; secular; civil or political.

tem-po-ra-ry (*-rā-ri*), *adj.* existing or continuing for a limited time.

tem-po-rize (*'pō-rīz*), *v. i.* to parley; delay.

tempt (*tempt*), *v. t.* to put to trial; test; allure; entice.

temp-ta-tion (*temp-tā'shun*), *n.* the state of being tempted; enticement.

tempt-er (*tempt'ĕr*), *n.* one who tempts; the devil (with *the*).

ten (*ten*), *adj.* denoting one more than 9 or twice 5: *n.* the sum of 5 and 5; ten units.

ten-a-bil-i-ty (*-à-bil'i-ti*), *n.* the state or quality of being tenable. [Also *tenableness*].

ten-a-ble (*'à-bl*), *adj.* capable of being held, or defended.

te-na-cious (*tē-nā'shus*), *adj.* holding fast or firmly; cohesive; tough; obstinate.

Syn. TENACIOUS, pertinacious. To be *tenacious* is to hold a thing close, to let it go with reluctance; to be *pertinacious* is to hold it out in spite of what can be advanced against it. A man of a *tenacious* temper insists on trifles that are supposed to affect his importance; a *pertinacious* temper insists on everything which is apt to affect his opinions.

te-nac-i-ty (*-nas'i-ti*), *n.* the state or quality of being tenacious; cohesiveness; adhesiveness.

ten-an-cy (*ten'an-si*), *n.* [*pl.* tenancies (*-siz*)], the holding of land or tenements; tenure.

ten-ant (*'ant*), *n.* one who holds lands or tenements; occupant: *v. t.* to hold as a tenant.

ten-ant-ry (*-ri*), *n.* tenants collectively.

tend (*tend*), *v. t.* to care for; attend; accompany: *v. i.* to move in a particular direction; contribute.

tend-en-cy (*tend'en-si*), *n.* inclination; aim; direction or course. [INCLINATION.]

ten-der (*ten'dĕr*), *adj.* sensitive; soft; easily influenced; gentle; careful: *n.* a vehicle attached to a locomotive containing coal and water; an offer: *v. t.* to offer for acceptance: *v. i.* to make an offer to do certain work or supply certain goods for a specified price.

ten-der-foot (*'dĕr-foot*), *n.* one who is new to life in a district.

ten-der-ness (*-nes*), *n.* kindness; sensibility; caution; soreness. [LOVE, MERCY.]

ten-don (*'dun*), *n.* the hard bundle of fibers which connects the muscles to the bones.

ten-dril (*'dril*), *n.* the slender, twining part of a plant.

ten-e-ment (*'ē-ment*), *n.* a house, shop, land, etc., held by a tenant.

Tenerife (*ten-ĕr-if'*). One of the Canaries, is a Portuguese corruption of *Chinerfe* or *Tinerfe*, the name of the last Guanche chief. From its snow-clad peak, the Romans called it *Nivaria*, the "snowy."

★**ten-et** (*ten'et*, not *tē'net*), *n.* a doctrine, dogma, opinion, or belief held as true.

Syn. TENET, position. The *tenet* is the opinion which we hold in our minds; the *position* is that which we lay down for others. Our *tenets* may be hurtful, our *positions* false. [See *doctrine*.]

ten-fold (*'fōld*), *adj.* and *adv.* ten times as much or as many.

Tennessee. Tributary of the Ohio river, which gives name to a state of the Union. Three different derivations are given the name. From *Tanase*, the name of the most important village of the Cherokee Indians; from an Indian word meaning "a curved spoon"; or from *Taensa*, an Indian tribe of the Watchesan family.

ten-nis (*'is*), *n.* a game played with rackets and balls.

Tenochtitlan (*ten-ōch-tēt-lān'*). The chief city of the Aztecs, occupying the site of the modern City of Mexico.

ten-on (*'un*), *n.* the end of a timber cut wedge-shaped for fitting into a mortise in another timber: *v. t.* to form tenons in.

ten-or (*'ĕr*), *n.* general tendency or drift; the highest kind of male voice: *adj.* pertaining to, or adapted for, tenor.

tense (*tens*), *adj.* drawn tightly; rigid; not lax: *n.* a modification in the inflection of a verb, expressing time of action.

ten-sion (*ten'shun*), *n.* the act of stretching or straining; the state of being stretched.

tent (*tent*), *n.* a temporary shelter or habitation, usually of canvas, supported by poles and ropes.

ten-ta-cle (*ten'tà-kl*), *n.* a process or organ in certain invertebrate animals used for feeling, prehension, or locomotion.

ten-tac-u-lar (*-tak'ū-lĕr*), *adj.* pertaining to tentacles.

ten-ta-tive (*'tà-tiv*), *adj.* experimental.

ten-ter (*'tĕr*), *n.* a frame for stretching cloth on by hooks; a tenter-hook: *v. t.* to hang or stretch on tenters.

ten-ter-hook (*-hook*), *n.* a sharp, hooked nail; anything that painfully strains.

tenth (*tenth*), *adj.* next in order after the ninth; the ordinal of ten.

te-nu-i-ty (*tē-nū'i-ti*), *n.* thinness; rarity.

ten-u-ous (*ten'ū-us*), *adj.* slender; not dense.

ten-ure (*'ūr*), *n.* conditions under which a tenement is held; term of holding.

tep-e-fac-tion (*tep-ē-fak'shun*), *n.* the act of warming or making tepid.

tep-e-fy (*'ē-fī*), *v. t.* to make tepid: *v. i.* to become tepid.

★**tep-id** (*tep'id*, not *tē'pid*), *adj.* moderately warm; lukewarm.

ter-cen-te-na-ry (*tĕr-sen'tē-nā-ri*), *adj.* comprising 300 years; indicating an event three centuries old.

ter-e-binth (*ter'ē-binth*), *n.* the turpentine tree.

ter-e-bin-thine (*-bin'thin*), *adj.* pertaining to, of the nature of, or like, turpentine.

Terence (*ter'ens*). From the Latin name *Terentius*. Macrobius says the name of the *Terentia gens* is derived by Varro from the Sabine word *terenus*, soft.

Teresa. See *Theresa*.

ter-gi-ver-sa-tion (*tĕr-ji-vĕr-sā'shun*), *n.* evasion; subterfuge.

term (*tĕrm*), *n.* a limit or boundary; limited time; condition or arrangement; word or expression noting something: *pl.* conditions or stipulations: *v. t.* to name, designate, or express.

ter-ma-gant (*tĕr'mà-gant*), *adj.* noisy and violent: *n.* a noisy, violent woman.

ter-mi-nal (*'mi-nal*), *adj.* pertaining to the end or extremity: *n.* a limit or boundary; end.

ter-mi-nate (*'mi-nāt*), *v. t.* to limit or bound; end: *v. i.* to be limited or ended. [END, COMPLETE.]

ter-mi-na-tion (*-nā'shun*), *n.* the act of terminating; a bound or limit; end; conclusion or result.

ter-mi-nol-o-gy (*-mi-nol'ō-ji*), *n.* the definition of technical terms.

ter-mi-nus (*'mi-nus*), *n.* [*pl.* termini (*-nī*)], a limit or boundary; station at the end of a railway.

ter-na-ry (*tĕr'nà-ri*), *adj.* proceeding by, or consisting of, threes: *n.* the number 3.

ter-race (*ter'ās*), *n.* a raised level space or platform of earth; row of houses: *v. t.* to form into a terrace.

ter-ra cot-ta (*à kot'à*), a composition of fine clay and sand used for statues, etc., and hardened by heat.

ter-ra Ja-pon-i-ca (*jà-pon'i-kà*), pale catechu or gambier.

ter-ra-pin (*'à-pin*), *n.* a species of fresh-water tortoise.

ter-ra-que-ous (*-rā'kwē-us*), *adj.* consisting of land and water.

Terre Haute (*ter'e hōt*, French *târ-hōt'*). City in Indiana, built upon a bank sixty feet above the river. French words, meaning "high land."

ter-res-tri-al (*-res'tri-al*), *adj.* pertaining to, existing on, or consisting of, earth; not celestial.

ter-ret (*'et*), *n.* one of the rings on a harness pad through which the driving reins pass.

ter-ri-ble (*ter'i-bl*), *adj.* exciting or causing fear or awe; dreadful. [FEARFUL, FORMIDABLE.]

ter-ri-er (*'i-ĕr*), *n.* a breed of small dogs.

ter-ri-fy (*'i-fī*), *v. t.* to frighten or alarm exceedingly.

ter-ri-to-ri-al (*-i-tō'ri-al*), *adj.* pertaining to a territory; limited to a particular district.

ter-ri-to-ry (*'i-tō-ri*), *n.* [*pl.* territories (*-riz*)], the extent of land within the jurisdiction of a state, sovereign, city, etc.; large tract of land.

ter-ror (*'ĕr*), *n.* extreme fear; fright; one who excites extreme fear.

Terry. A masculine name derived, like the French name Thierry, from *Theodoric*.

terse (*tĕrs*), *adj.* elegantly and forcibly concise.

ter-tian (*tĕr'shan*), *adj.* occurring, or recurring, every third day.

ter-ti-a-ry (*'shi-à-ri*), *adj.* of the third order, rank, or formation.

tes-sel-late (*tes'el-āt*), *v. t.* to lay with squares or checkered work.

test (*test*), *n.* that by which the nature of a substance is tried; standard; proof: *v. t.* to put to the proof; compare with a standard; try.

tes-ta-ceous (*tes-tā'shus*), *adj.* consisting of, or having, a hard shell.

tes-ta-cy (*'tà-si*), *n.* the state or fact of leaving a valid will.

tes-ta-ment (*'tà-ment*), *n.* will.

tes-ta-men-ta-ry (*-men'tà-ri*), *adj.* pertaining to, bequeathed by, or done by, a will. [Also *testamental*.]

tes-tate (*'tāt*), *adj.* having left a will.

tes-ta-tor (*tes-tā'tĕr*), *n.* one who makes and leaves a will. [Fem. *testatrix.*]
tes-tes (*'tēz*), *n. pl.* the testicles.
tes-ti-cle (*'ti-kl*), *n.* one of the two glands which secrete the seminal fluid in males.
tes-ti-fy (*'ti-fī*), *v. i.* to bear witness: *v. t.* to bear witness to.
tes-ti-mo-ni-al (*-ti-mō'ni-al*), *n.* a writing or certificate bearing testimony to character, proficiency, etc.; a present given as a token of respect, etc.: *adj.* pertaining to, or containing, testimony.
tes-ti-mo-ny (*'ti-mō-ni*), *n.* [*pl.* testimonies (*-niz*)], evidence; proof; solemn declaration; profession.
Syn. TESTIMONY, affidavit, affirmation, deposition, evidence, proof, witness. *Testimony*, in legal as well as in common use, signifies the statements of witnesses; *deposition* and *affidavit* denote *testimony* reduced to writng; the *deposition* differs from the *affidavit;* the latter is voluntary and without cross-examination; the former is made under questionings and subject to cross-examination.
tes-ty (*tes'ti*), *adj.* peevish; morose; irritable.
tet-a-nus (*tet'ā-nus*, not *tē'tā-nus*), *n.* lockjaw.
★**tête-ā-tête** (*tāt-ā-tāt'*), *n.* private or confidential conversation; a kind of settee.
teth-er (*teth'ĕr*), *n.* a rope for confining within certain limits; scope of freedom allowed: *v. t.* to confine witnin certain limits.
tet-ra-gon (*tet'rà-gon*), *n.* a plane figure with four sides.
te-tram-e-ter (*tē-tram'ē-tĕr*), *n.* a verse or line consisting of four measures.
tet-ra-pod (*tet'rà-pod*), *n.* a four-footed insect.
te-trarch (*tē'trärk*), *n.* a Roman governor over the fourth part of a province.
tet-ter (*'ĕr*), *n.* a cutaneous disease; herpes.
Teu-ton (*tū'ton*), *n.* one of the German race.
Teu-ton-ic (*'ik*), *adj.* pertaining to, or characteristic of, the Teutons or the Teutonic languages.
Texas. A southwest state of the Union, named from a small tribe of Indians that inhabited a village called *Tehas*, meaning "friendly." Name also means "the place of protection," referring to the fact that a colony of French refugees were afforded protection here by General Lallemont in 1817.
text (*tekst*), *n.* that on which a comment is written; topic.
text-book (*'book*), *n.* a standard book of instruction.
tex-tile (*teks'til*), *adj.* pertaining to, or formed by, weaving; capable of being woven.
tex-tu-al (*'tū-al*), *adj.* pertaining to, contained in, or serving for, a text.
tex-ture (*'tūr*), *n.* manner of weaving; web; filaments or fibers interwoven; tissue.
Thaddeus (*thad'ē-us*), **Thadeus** (*thad-ē'us*). From the Latin *Thaddæus*, in turn from the Hebrew, "one who praises and confesses." It., *Taddeo;* Lat., *Thadduæs;* Sp., *Tadeo.*
thal-as-sog-ra-phy (*thal-as-og'rà-fi*), *n.* the science of marine organisms.
Thames. River in England and America. (American *thāmz*, English *temz.*) The *Tamesis* of Cæsar, is a Celtic name meaning the "tranquil" or "smooth" river.
than (*than*), *conj.* used after the comparative degree of adjectives and adverbs expressing diversity or comparison.
than-a-tol-o-gy (*-à-tol'ō-ji*), *n.* a treatise on, or the doctrine of, death.
thane (*thān*), *n.* a title of honor or dignity among the Anglo-Saxons, held by persons having large territorial possessions.
thank (*thangk*), *v. t.* to express gratitude or obligation to. [gratitude.
thank-ful (*'fool*), *adj.* grateful: also **thankfulness**, *n.*
Syn. THANKFULNESS, gratitude. Our *thankfulness* is measured by the number of our words; our *gratitude* is measured by the nature of our actions. A person appears very *thankful* at the time who afterward proves very *ungrateful.*
thank-less (*'les*), *adj.* ungrateful; not obtaining, or deserving, thanks.
thanks (*thangks*), *n. pl.* an expression of gratitude or obligation.
thanks-giv-ing (*thangks-giv'ing*), *n.* the act of expressing gratitude for favors and mercies.
Thanks-giv-ing day (*dā*), *n.* a day set apart annually, usually the last Thursday in November, for thanksgiving to God.
that (*that*), *pron.* and *adj.* [*pl.* those (*thōz*)], not this but the other: *conj.* because; since.
thatch (*thach*), *n.* straw, reeds, etc., used for covering the roofs of cottages, stacks, etc.: *v. t.* to cover with, or as with, thatch.
thau-ma-tur-gic (*thaw-mà-tûr'jik*), *adj.* pertaining to, or done by, thaumaturgy.
thau-ma-tur-gy (*'mà-tûr-ji*), *n.* the act of performing miracles.
thaw (*thaw*), *v. i.* to melt or become liquid, as ice or snow: *v. t.* to dissolve: *n.* the melting of ice or snow.
★**the-a-ter, the-a-tre** (*thē'à-tĕr*, not *thē-ā'tĕr*), *n.* a public building where dramatic representations are given; scene or sphere of action.
the-at-ric-al (*-at'ri-kal*), *adj.* pertaining to, or adapted for, a theater; resembling the manner of actors: *n. pl.* dramatic performances.
the-at-ro-phone (*'rō-fōn*), *n.* an automatic telephone connected with a theater.
The-ban (*thē'ban*), *adj.* pertaining to Thebes, or to its inhabitants.
Thebes (*thēbz*). In Bœotia, the Greek *Thebae*, is now *Pheba* or *Phiba.* The site of the acropolis was a small hill, and we learn from Varro that *teba* meant a "hill." In the name of the Egyptian *Thebes* we have a Greek corruption of the popular Egyptian designation of the city, which was called *t'ape*, "the capital."
theft (*theft*), *n.* the act of stealing; robbery.
the-ism (*thē'izm*), *n.* the belief in the existence of a God.
the-ist (*'ist*), *n.* one who believes in the existence of a God.
the-is-tic (*-is'tik*), *adj.* pertaining to theism or theists. [Also *theistical.*]
theme (*thēm*), *n.* the subject or topic of a discourse or dissertation; short essay.
then (*then*), *conj.* in consequence; therefore; in that case: *adv.* next; at that or another time; immediately.
thence (*thens*), *adv.* from that place or time.
Theobald (*thē'ō-bawld, tib'ald*). From the Old German *teut-bald*, "strong or bold leader." Danish, *Theobald;* Dutch, *Tiebout;* Fr., *Thibaut;* Ger., *Theobald;* It., *Teobaldo;* Lat., *Theobaldus;* Sp., *Teobaldo;* Sw., *Theobald.*
the-oc-ra-cy (*-ok'rà-si*), *n.* the government of a state by the immediate direction of God; the state thus governed.
the-oc-ra-sy (*'rà-si*), *n.* a mixture of the worship of different deities; the intimate union of the soul with God in contemplation.
the-o-crat (*'ō-krat*): *n.* one living under a theocracy.
the-o-crat-ic (*-krat'ik*), *adj.* pertaining to a theocracy.
the-od-i-cy (*-od'i-si*), *n.* a vindication of the dealings of divine Providence and the freedom of the human will.
Theodora (*thē-ō-dō'rà*). A feminine name derived from *Theodore.*
Theodore (*thē'ō-dōr*). From the Greek name *Theodorus*, signifying "the gift of God." Danish, *Theodor;* Dutch, *Theodorus;* Fr., *Théodore;* It., *Teodoro;* Lat., *Theodorus;* Port., *Theodoro;* Russ., *Feodor;* Sp., *Teodorio;* Sw., *Theodor.*
Theodoric (*thē-od'ō-rik*) or **Theoderick.** An Old German name from *teut-reich*, "powerful lord." Dutch, *Diederick;* Fr., *Théodoric;* Ger., *Theodorich* or *Dietrich;* It., *Teodorico;* Lat., *Theodoricus;* Sp., *Teodorico.*
Theodosia (*thē-ō-dō'shi-à*). Fem. of *Theodosius.* Gr., *Theodosie;* It., *Teodosia;* Lat., *Theodosia.*
Theodosius (*thē-ō-dō'shi-us*). From the Greek, meaning "given by God." Fr., *Théodose;* It., *Teodosio;* Lat., *Theodosius;* Sp., *Teodosio.*
the-og-o-ny (*-og'ō-ni*), *n.* that branch of mythology which treats of the origin or genealogy of ancient deities.
the-o-lo-gi-an (*-ō-lō'ji-an*), *n.* one versed in theology.
the-o-log-ic-al (*-loj'i-kal*), *adj.* pertaining to theology.
the-ol-o-gy (*-ol'ō-ji*), *n.* [*pl.* theologies (*-jiz*)], the science that treats of the existence, nature, and attributes of God.
Theophilus (*thē-of'il-us*). From the Greek name signifying "a friend of God." Danish, *Gottlieb;* Dutch, *Theophilus;* Fr., *Théophile;* It., *Teofilo;* Lat., *Theophilus;* Port., *Theophilo;* Sp., *Teofilo.*
the-o-rem (*'ō-rem*), *n.* a proposition to be proved.
the-o-ret-ic-al (*-ō-ret'i-kal*), *adj.* pertaining to, or depending on, theory; not practical; speculative. [Also *theoretic.*]
the-o-rist (*'ō-rist*), *n.* one who theorizes; speculatist.
the-o-rize (*'ō-riz*), *v. i.* to form a theory or theories; speculate.
the-o-ry (*'ō-ri*), *n.* [*pl.* theories (*-riz*)], an exposition of the abstract principles of a science or art; hypothesis.
the-o-soph-ic (*-ō-sof'ik*), *adj.* pertaining to theosophy or theosophists. [Also *theosophical.*]
the-os-o-phism (*-os'ō-fizm*), *n.* pretension to divine wisdom or illumination.
the-os-o-phist (*'ō-fist*), *n.* a believer in theosophy. [Also *theosoph.*]
the-os-o-phy (*'ō-fi*), *n.* a system of philosophy which professes to investigate the unexplained laws of nature, the powers of man over nature, and the direct knowledge of God.
ther-a-peu-tic (*ther-à-pū'tik*), *adj.* curative: *n. pl.* the art or science of curing diseases.
there (*thâr*), *adv.* in that place; at that point or stage.
there-fore (*thâr'* or *thĕr'fōr*), *adv.* and *conj.* for that or this reason; for that reason or purpose.
Theresa (*the-rē'sà*). Probably from the Greek *theriso*, "to reap or gather in the crop." Dutch, *Theresia;* Fr., *Thérèse;* Ger., *Therese;* It., *Teresa;* Lat., *Theresa;* Sp. *Teresa;* Sw., *Theresa.*
ther-mal (*thĕr'mal*), *adj.* pertaining to heat; warm.
ther-mom-e-ter (*-mom'e-tĕr*), *n.* an instrument for measuring the degree of heat of bodies.
ther-mo-met-ric (*-mō-met'rik*), *adj.* pertaining to, made or ascertained by, a thermometer. [Also *thermometrical.*]
Thermopylæ (*thĕr-mop'i-lē*). A mountain pass of central Greece; name means "the defile of the warm springs."
ther-mo-stat (*'mō-stat*), *n.* an automatic apparatus for regulating temperature.
the-sau-rus (*thē-saw'rus*), *n.* a storehouse or treasury; lexicon or dictionary.
the-sis (*thē'sis*), *n.* [*pl.* theses (*'sēz*)], an essay or dissertation.
Thes-pi-an (*thes'pi-an*), *adj.* pertaining to Thespis, the founder of Greek drama, hence dramatic.
the-ur-gic (*thē-ĕr'jik*), *adj.* pertaining to theurgy or magic.
thews (*thūz*), *n. pl.* muscles; strength.
they, *pl.* of he, she, or it.
Thian-shan (*tē-ān'shān*). Mountain system of Asia. Chinese, meaning "the celestial mountains."
Thibet or **Tibet** (*tib'et, ti-bet'*). A region of central Asia; name possibly a corruption of *Thupo*, "high country," the country of the *Thou*, a people who founded an empire there in the sixth century.
thick (*thik*), *adj.* not thin; dense; dull; very intimate; crowded: *adv.* closely; indistinctly; to a great depth; fast.
Syn. THICK, dense. We speak of *thick* in regard to hard or soft bodies, as a *thick* board or *thick* cotton; solid or liquid, as a *thick* cheese or *thick* milk; but the term *dense* mostly in regard to the air in its various forms, as a *dense* air.
Ant. THIN, sparse.
thick-en (*'n*), *v. t.* to make thick or thicker; make dark or obscure: *v. i.* to become thick or thicker.
thick-en-ing (*'en-ing*), *n.* something added to a substance to make it thicker.
thick-et (*'et*), *n.* a close wood or cluster of trees.
thick-set (*'set*), *adj.* closely planted; having a thick body: *n.* a close, thick hedge.
thief (*thēf*), *n.* [*pl.* thieves (*thēvz*)], one who takes unlawfully what is not his own.
thieve (*thēv*), *v. t.* and *v. i.* to steal.
thiev-ish (*'ish*), *adj.* addicted to theft; dishonest.
thigh (*thī*), *n.* the thick muscular part of the leg above the knee.
thill (*thil*), *n.* the shaft of a cart or other vehicle.
thim-ble (*thim'bl*), *n.* a cup-shaped metallic protective cover for the finger in sewing; anything like a thimble.
thin (*thin*), *adj.* having little thickness; slim; slender; slight; meager: *adv.* not thickly: *v. t.* to make thin: *v. i.* to grow thin.
thine (*thin*), *poss. pron.* and *adj.* belonging to, relating to, or being the property of, thee.
thing (*thing*), *n.* whatever is distinct, or conceived to be distinct; inanimate matter; part or portion: *pl.* clothes; furniture; luggage, etc.
think (*thingk*), *v. i.* to have the mind occupied on some subject; believe; judge: *v. t.* to imagine.
Syn. THINK, suppose, imagine, believe, deem. We *think* a thing right or wrong; we *suppose* it to be true or false; we *imagine* it to be real or unreal. I *think* that a man has acted wrong; *to suppose* is to take up an idea arbitrarily or at pleasure; *to imagine* is to take up an idea by accident, or without any connection with the truth or reality; *to deem* is to form a conclusion; things are *deemed* hurtful or otherwise in consequence of observation; we *think* as the thing strikes us at the time; we *believe* from a settled deduction.
third (*thĕrd*), *adj.* the next after the second; the ordinal of three; noting one of three equal parts: *n.* a third part of anything.
thirst (*thĕrst*), *n.* the sensation of a desire to drink; great desire for drink: *v. i.* to be thirsty.
thirst-y (*'i*), *adj.* [*comp.* thirstier, *superl.* thirstiest], feeling thirst.
thir-teen (*thĕr'tēn*), *adj.* 10 and 3: *n.* the number of 10 and 3.
thir-ty (*'ti*). *adj.* three times more than 10: *n.* the sum of three tens.
Thirty, Battle of the. A fight between thirty Bretons and thirty Englishmen, pitted by Jean de Beaumanoir and Bemborough, an Englishman, against each other, to decide a contest. The fight is said to have taken place between the castles of Josselin and Ploermel in France in 1351. The English were beaten.
this (*this*), *pron.* and *adj.* [*pl.* these (*thēz*)], that which is present; that which is just now or last mentioned.
this-tle (*this'l*), *n.* a plant with a prickly stem and leaves, of the genus Carduus.
thith-er (*thith'ĕr*), *adv.* to that place or end.
thole (*thōl*), *n.* a pin set in the gunwale of a boat to serve as a fulcrum for the oar.
Thomas (*tom'as*). From an Aramaic word, meaning "a twin." Danish, *Thomas;* Dutch, *Thomas;* Gr., *Thomas;* Ger., *Thomas;* Fr., *Thomas;* Hung., *Tamas;* It., *Tommaso;* Lat., *Thomas;* Polish, *Tomasz;* Port., *Thomas* or *Thomar;* Sp., *Tomas;* Sw., *Thomas.*
thong (*thông*), *n.* a thin leather strap or string; striking part of a whip.
tho-rac-ic (*thō-ras'ik*), *adj.* pertaining to the thorax.
tho-rax (*'raks*), *n.* the chest, containing the heart, lungs, etc.
thorn (*thôrn*), *n.* a prickle or spine; prickly tree or shrub; anything that troubles or annoys; care.
thorn-y (*'i*), *adj.* full of thorns; harassing; annoying.
thor-ough (*thur'ō*), *adj.* passing through or to the end; complete.
thor-ough-bred (*-bred*), *adj.* of pure and unmixed breed; high-spirited.
thor-ough-fare (*-fâr*), *n.* a passage from one street opening to another; an unobstructed way.
thor-ough-ly (*-li*), *adv.* completely; fully.
those, *pl.* of that.
thou (*thou*), *pron.* [*pl.* you], *second per. sing.* of **I.**

though (*thō*), *conj.* granting, or supposing that; notwithstanding that; if: *adv.* nevertheless; however.

thought (*thawt*), *n.* the act of thinking; that which the mind thinks; meditation; study: *p. t.* and *p. p.* of think. [IDEA.]

thought-ful (*'fool*), *adj.* full of thought; contemplative; attentive; considerate for others.

thought-less (*'les*), *adj.* unthinking; heedless; inattentive. [ABSTRACTED.]

thou-sand (*thou'zand*), *adj.* consisting of 1,000: *n.* 1,000; a large number.

Thrace. A region of southeastern Europe. Named from Greek *trachus*, meaning "the rough land."

thral-dom (*thrawl'dum*), *n.* serfdom; slavery.

thrall (*thrawl*), *n.* a slave; serf.

thrash (*thrash*), *v. t.* to beat out (grain) from the husk; flog soundly: *v. i.* to perform the operation of thrashing.

thread (*thred*), *n.* a very thin line or cord twisted and drawn out; uniform tenor: *v. t.* to pass through the eye of; pierce through.

thread-bare (*'bâr*), *adj.* worn to the threads; hackneyed.

threat (*thret*), *n.* a menace: *v. t.* and *v. i.* to menace.
Syn. THREAT, menace. We may be *threatened* with either small or great evils, but we are *menaced* only with great evils.

threat-en (*'n*), *v. i.* to use threats: *v. t.* to terrify by menaces. [See *imminent*.]

three (*thrē*), *adj.* noting the sum of 2 and 1: *n.* a number the sum of 2 and 1.

three-pence (*thrip'ens*), *n.* a small British silver coin, value 6 cents.

thren-o-dy (*thren'ō-di*), *n.* a dirge.

thresh. Same as *thrash*.

thresh-old (*thresh'ōld*), *n.* the sill of a door; entrance; door.

thrice (*thris*), *adv.* three times; repeatedly.

thrift (*thrift*), *n.* frugality; economical management; good husbandry. [FRUGALITY.]

thrift-y (*'i*), *adj.* characterized by economy and good management; frugal. [FENURIOUS.]

thrill (*thril*), *v. t.* to cause to have a shivering, tingling, or exquisite sensation: *v. i.* to penetrate, as something sharp; feel a sharp tingling or exquisite sensation: *n.* a thrilling sensation.

thrive (*thrīv*), *v. i.* to prosper by industry, economy, and good management; increase or flourish.

throat (*thrōt*), *n.* the fore-part of the neck of an animal containing the windpipe and gullet.

throat-y (*'i*), *adj.* guttural.

throb (*throb*), *v. i.* to beat with more than usual force; palpitate: *n.* a strong pulsation.

throe (*thrō*), *n.* agony; extreme pain: *v. i.* to be in agony.

throne (*thrōn*), *n.* a chair of state: *v. t.* to place upon a throne.

throng (*thrông*), *n.* a multitude; crowd: *v. t.* to crowd or press together: *v. i.* to come in multitudes.

throt-tle (*throt'l*), *v. t.* to strangle or choke: *n.* the windpipe.

throt-tle valve (*valv*), a valve in the steam pipe of a boiler for controlling the flow of steam.

through (*thrōō*), *prep.* from end to end of; between the sides of; in the midst of; among; by the agency of: *adv.* from end to end; from the beginning to the end.

throw (*thrō*), *v. t.* to fling or hurl; cast in any manner: *n.* the act of flinging or hurling; distance a missile can be thrown.

thrum (*thrum*), *n.* coarse yarn: *v. t.* to play idly or unskillfully on (a stringed instrument): *v. i.* to strum; drum.

thrush (*thrush*), *n.* a sweet-songed bird of the genus Merula.

thrust (*thrust*), *v. t.* to push or drive with force: *v. i.* to push forward; intrude: *n.* a violent or sudden push; stab.

thud (*thud*), *n.* a dull sound produced by a body falling on a comparatively soft substance.

thug (*thug*), *n.* one of a fraternity of robbers and assassins in India; a ruffian.

thumb (*thum*), *n.* the short, thick digit of the human hand: *v. t.* to handle awkwardly; soil with the thumb.

thumb-screw (*'skrōō*), *n.* a screw to turn with the finger and thumb; an instrument of torture.

thump (*thump*), *n.* a hard, heavy blow: *v. t.* to strike or beat with dull, heavy blows: *v. i.* to fall or strike with a dull, heavy blow.

thun-der (*thun'dẽr*), *n.* the noise accompanying a flash of lightning; loud noise: *v. i.* to produce thunder; make a loud noise: *v. t.* to utter with a loud and threatening voice.

thun-der-bolt (*-bōlt*), *n.* a shaft of lightning; a belemnite.

thun-der-ing (*-ing*), *adj.* emitting, or producing, a great noise like thunder: *n.* the report accompanying lightning.

thunder-struck (*-struk*), *p. adj.* astonished or struck dumb by sudden amazement, etc.

thu-ri-ble (*thū'ri-bl*), *n.* a censer.

thu-ri-fer (*'ri-fẽr*), *n.* one who attends the priest at mass, etc., and carries the thurible.

Thursday. The fifth day of the week. Literally the day of Thor, the son of Odin (or Wodin) and the god of thunder.

thus (*thus*), *adv.* in this or that manner; to this degree or extent; so: *n.* the resin of the spruce fir.

thwack (*thwak*), *v. t.* to strike with something flat and heavy: *n.* a heavy blow; thump.

thwart (*thwawrt*), *adj.* crosswise; oblique: *prep.* and *adv.* across: *n.* a seat in a boat extending from side to side: *v. t.* to oppose; run counter to; frustrate.

thy (*thī*), *pron. poss. case* of thou.

thyme (*tim*), *n.* a common aromatic herb of the genus Thymus.

thy-self. Emphatic for *thy*.

★**ti-a-ra** (*ti-ā'rà*, not *tē-ā'rà*), *n.* the triple crown worn by the pope; diadem.

Tiber (*ti'bẽr*), Italian **Tevere** (*tā-vā'rā*). A river of Italy; was the Roman *Tiberis*. From the name of the river was derived the Roman name *Tiberius*.

Tiberius (*ti-bē'ri-us*). Means "of the Tiber." Fr., *Tibère;* It., *Tiberio;* Lat. *Tiberius*.

tib-i-a (*tib'i-ā*), *n.* the inner and larger of the two leg bones.

tib-i-al (*'i-al*), *adj.* pertaining to the tibia.

tick (*tik*), *n.* a name for various parasites which infest dogs, etc.; a case for holding feathers, etc., for bedding; small mark; small, quick, distinct sound: *v. i.* to make a small, quick, distinct sound: *v. t.* to mark off by a tick.

tick-et (*'et*), *n.* a label or card giving its possessor some specific right; label; printed list of candidates: *v. t.* to distinguish by, or as by, a ticket.

tick-ing (*'ing*), *n.* cloth used for bed-ticks.

tic-kle (*'l*), *v. t.* to touch lightly so as to produce a thrilling sensation; gratify and amuse: *v. i.* to feel titillation.

tic-kler (*'lẽr*), *n.* one who, or that which, tickles.

tic-klish (*'lish*), *adj.* sensible to slight touches; easily tickled; precarious; difficult.

Ticonderoga (*ti-kon-dẽr-ō'gà*), **N. Y.** Indian *Cheonderaga*, signifying "brawling water," from the noise of the rapids in the outlet of Lake George as it falls into Lake Champlain.

tid-al (*tīd'al*), *adj.* pertaining to the tides; ebbing and flowing.

tide (*tīd*), *n.* the regular rising and falling of the sea, rivers, etc.; stream; time; season; turning point; tendency: *v. t.* to drive with the stream. [STREAM.]

ti-dings (*ti'dingz*), *n. pl.* news. [NEWS.]

tid-ol-o-gy (*tīd-ol'ō-ji*), *n.* the science of tides.

ti-dy (*tī'di*), *adj.* trim; neat; orderly: *n.* an ornamental cover for the back of a chair, etc.: *v. t.* to make neat or tidy.

tie (*tī*), *n.* a knot or fastening; bond; obligation; equality in numbers: *v. t.* to fasten; bind; restrict: *v. i.* to make an equal score.

tier (*tēr*), *n.* a row or rank, especially one of two or more rows placed one above the other.

Tierra del Fuego (*tē-er'rà del fwā'gō*). Spanish for "land of fire."

tiff (*tif*), *n.* a fit of anger; slight quarrel: *v. i.* to be in a pet.

ti-ger (*ti'gẽr*), *n.* a large, fierce, rapacious quadruped of the genus Felis.

ti-ger flow-er (*flou-ẽr*), a flower of the Iris order, spotted yellow and orange.

ti-ger lil-y (*lil-i*), a handsome lily having flowers spotted with orange.

tight (*tit*), *adj.* not loose; close; tenacious; taut; snug; parsimonious: *n. pl.* closely fitting underclothing.

ti-gress (*ti'gres*), *n.* the female of the tiger.

ti-grine (*'grin*), *adj.* tiger-like.

Tigris (*ti'gris*). A name rightly explained by Strabo, who says that it was so called from its "swiftness," for among the Medes *tigris* means "an arrow."

ti-grish (*'grish*), *adj.* resembling a tiger; fierce.

tile (*til*), *n.* a thin slab of baked clay, used for roofing, etc.; hat: *v. t.* to cover with tiles.

till (*til*), *n.* a money drawer in a desk or counter: *prep.* to the time of: *adv.* to the time when. *conj.* to the degree that; until: *v. t.* to prepare (land) for seed, etc.

till-age (*'āj*), *n.* land prepared for crops; husbandry; agriculture.

till-er (*'ẽr*), *n.* a husbandman; handle or lever for turning the rudder of a vessel.

tilt (*tilt*), *n.* a thrust; a mediæval military exercise with lances: *v. t.* to point or thrust with, or as with, a lance; raise on end; incline: *v. i.* to run or ride and thrust with a lance.

tilt-ing (*'ing*), *n.* inclination forward; act of one who, or that which, tilts.

tim-ber (*tim'bẽr*), *n.* the body or stem of a tree; wood suitable for buidings, etc.: *v. t.* to furnish or construct with timber.

tim-bre (*'bẽr*), *n.* tone or character of musical sound.

time (*tim*), *n.* measure of duration: particular period of duration; season; era; epoch; proper time; tense: *v. t.* to adapt to the time or occasion; regulate or measure: *v. i.* to keep or beat time.
Syn. TIME, age, date, duration, epoch, era, period, season, succession. *Sequence* and *succession* apply to events viewed as following one another; *time* and *duration* denote something conceived of as enduring while events take place and acts are done; *duration* and *succession* are more general words than *time;* we can speak of infinite or eternal *duration* or *succession*, but *time* is commonly contrasted with eternity.

time-li-ness (*'li-nes*), *n.* seasonableness.

time-ly (*'li*), *adj.* being or occurring in time; opportune.
Syn. TIMELY, seasonable. The former signifies within the *time*, that is, before the *time* is past; the latter according to the *season*, or what the *season* requires. A *timely* notice prevents that which would otherwise happen; a *seasonable* hint seldom fails of its effect because it is *seasonable*.

tim-id (*tim'id*), *adj.* wanting in courage: faint-hearted; fearful. [FAINT.]

ti-mid-i-ty (*ti-mid'i-ti*), *n.* want of courage.

tim-or-ous (*tim'ẽr-us*), *adj.* fearful of danger; full of scruples.

Timothy (*tim'ō-thi*). From the Greek name signifying "honoring or worshiping God." Danish, *Timotheus;* Dutch, *Timotheus;* Fr., *Timothée;* Ger., *Timotheus;* Gr., *Timotheos;* It., *Timotee;* Lat., *Timotheus;* Port., *Timotheo;* Sp., *Tumoteo;* Sw., *Timotheus*.

tim-o-thy grass (*gràs*), a valuable grass for fodder.

tin (*tin*), *n.* a silvery-white, soft, malleable, and fusible metal; vessel of tin: *v. t.* to cover with tin; put into tins for preservation.

tinc-to-ri-al (*tingk-tō'ri-al*), *adj.* pertaining to, or imparting, a color.

tinc-ture (*'tūr*), *n.* a tinge or shade; solution in or by means of spirits of wine: *v. t.* to dye or color; tinge.

tin-der (*tin'dẽr*), *n.* any inflammable material used to kindle a fire from a spark.

tine (*tin*), *n.* a tooth or spike.

tin-foil (*tin'foil*), *n.* tin beaten into thin leaf.

tinge (*tinj*), *v. t.* to stain or color; dye: *n.* a slight degree of some color, taste, or quality imparted to a substance.

tin-gle (*ting'gl*), *v. i.* to feel a thrilling sensation or pain: *v. t.* to ring; cause to tingle: *n.* a thrilling sensation or pain.

tink-er (*tingk'ẽr*), *n.* a mender of metal pots, kettles, etc.: *v. t.* to patch up: *v. i.* to meddle in an officious manner.

tin-kle (*ting'kl*), *n.* a small, quick, sharp, ringing sound: *v. i.* to make such a sound: *v. t.* to cause to give out a tinkle.

tin plate (*tin' plāt*), iron plate coated with tin.

tin-sel (*'sel*), *n.* thin glittering metallic plate; anything showy but of little value: *adj.* showy to excess; superficial.

tint (*tint*), *n.* a slight coloring distinct from the principal color; hue or shade: *v. t.* to give a slight coloring to.

ti-ny (*ti'ni*), *adj.* very small.

tip (*tip*), *n.* a point or top; end; ferrule or nozzle; private hint; tilt: *v. t.* to form a point to; cover the end of; give private hint to; tilt up.

Tippecanoe (*tip-pē-kà-nōō'*) **river, Ind.** So called from the Indian name given to a fish living in this stream, "the long-lipped pike," or "buffalo fish."

tip-pet (*'et*), *n.* a narrow cape, or covering of cloth or fur for the neck or shoulders.

tip-ple (*'l*), *v. i.* to drink spirits or strong liquors habitually.

tip-staff (*'staf*), *n.* a constable.

tip-sy (*'si*), *adj.* intoxicated.

tip-toe (*'tō*), *adv.* on tiptoe; stealthily: *v. i.* to walk or stand on tiptoe; be on the alert.

tip-top (*'top*), *n.* the highest point or degree; best of anything: *adj.* most excellent.

ti-rade (*ti-rād'*), *n.* a long, violent, declamatory speech.

tire (*tīr*), *n.* a band or hoop of iron or rubber binding the felloes of wheels: *v. t.* to weary or fatigue: *v. i.* to become weary or fatigued.

tire-some (*'sum*), *adj.* wearisome; tedious; fatiguing.

tis-sue (*tish-ōō'*), *n.* any thin or delicate texture or fabric; thin cellular organization of parts: *v. t.* to form tissue of; interweave.

tis-sue pa-per (*pā-pẽr*), very thin, gauzelike paper.

tit (*tit*), *n.* morsel or bit; titmouse; name for various species of small singing birds.

tit-bit (*'bit*), *n.* a choice morsel.

tit for tat (*fôr tat*), *n.* exact equivalent or fair retaliation.

tithe (*tīth*), *n.* the tenth part of anything; small part: *v. t.* to tax, or levy, a tithe of.

Titicaca (*tit-ē-kà'kà*). An island and lake near the peninsula of Copacabana, South America. It was a sacred place of the Incas, and "the birthplace of the sun," according to one of their legends.

tit-il-late (*tit'il-āt*), *v. t.* to tickle.

ti-tle (*ti'tl*), *n.* name; appellation of dignity, rank, distinction, or preëminence; claim of right.

ti-tle deed (*dēd*), the instrument or written evidence of right of ownership of property.

tit-mouse (*tit'mous*), *n.* a small, active, perching bird.

ti-tra-tion (*ti-trā'shun*), *n.* volumetric analysis.

tit-ter (*tit'ẽr*), *v. i.* to laugh with restraint: *n.* a restrained laugh.

tit-tle (*tit'l*), *n.* a small particle.

tit-tle-tat-tle (*-tat'l*), *n.* idle, trifling talk.

tit-u-lar (*'ū-lẽr*), *adj.* existing in name or title only: *n.* one who is invested with a title, but does not possess power.

Titus (*tī'tus*). From the Greek name signifying "honored." Fr., *Tite;* Ger., *Titus;* It., *Tito;* Lat., *Titus;* Sp., *Tito*.

to (*tōō*), *prep.* noting motion toward; in accordance with.

toad (*tōd*), *n.* a batrachian reptile, resembling the frog.

toad-eat-er (*'ēt-ẽr*), *n.* a sycophant.

toad-fish (*'fish*), *n.* a fish of the genus Batrachus, with a large head and wide mouth.

toad-stone (*tōd'stōn*), *n.* a local name for a kind of basaltic or igneous rock; bufonite.
toad-stool (*'stōōl*), *n.* a name of numerous species of fungi of the genus Agaricus.
toad-y (*'i*), *n.* a sycophant: *v. t.* to fawn upon as a sycophant: *v. i.* to play the sycophant.
toast (*tōst*), *n.* bread scorched or browned before the fire; one who is named when a health is drunk: *v. t.* to brown or heat at the fire; name when a health is drunk.
to-bac-co (*tō-bak'ō*), *n.* an American plant of the genus Nicotiana, the dried leaves of which are used for smoking, chewing, or as snuff.
to-bac-co-nist (*-nist*), *n.* a dealer in tobacco, cigars, etc.
Tobago (*tō-bā'gō*) **island.** An island of the British West Indies. So called by Columbus from its fancied resemblance to the *tobacco*, or inhaling tube of the aborigines, whence the word *tobacco* has been derived.
Tobias (*tō-bī'as*) or **Toby** (*to'bi*). From the Hebrew *tobh-mah*, which has been variously rendered "God's goodness" and "distinguished of the Lord." Danish, *Tobias;* Dutch, *Tobias;* Fr., *Tobie;* Ger., *Tobias;* It. *Tobia;* Lat. *Tobias;* Sp., *Tobias.*
to-bog-gan (*-bog'an*), *n.* a kind of sledge for sliding down snow-covered hills or inclines: *v. i.* to slide down hill.
toc-sin (*tok'sin*), *n.* an alarm bell.
tod-dle (*tod'l*), *v. i.* to walk with short, tottering steps like a child: *n.* a toddling walk.
toe (*tō*), *n.* one of the terminal members of the foot of a man or animal: *v. i.* to touch, reach, or strike with the toe.
to-ga (*tō'gà*), *n.* [*pl.* togas (*gàz*), toga (*'jē*)], the loose outer garment worn by the Romans.
to-geth-er (*tōō-geth'ĕr*), *adv.* in company or association; mutually; in union or concert.
tog-ger-y (*tog'ĕr-i*), *n.* clothes; articles.
tog-gle (*'l*), *n.* a small wooden pin tapering toward both ends and grooved round its center.
toil (*toil*), *n.* labor oppressive to mind or body; snare; net: *v. i.* to labor or work. [WORK.]
toi-let (*toi'let*), *n.* dressing table; style or manner of dressing; attire.
toil-some (*toil'sum*), *adj.* laborious; wearisome.
to-ken (*tō'kn*), *n.* a mark or sign; a symbol of anything.
Tokio or **Tokyo** (*tō'kē-ō*). The capital of Japan; is the "eastern capital," in contradistinction to *Saikio*, the "western capital." Formerly called *Yeddo.*
Toledo (*tō-lē'dō*, Spanish *tō-lā'thō*). The capital of Gothic Spain; was the Roman *Toletum*, a name of unknown etymology, widely supposed to be of Phenician origin, meaning the "city of generations."
tol-er-a-ble (*tol'ĕr-à-bl*), *adj.* endurable; supportable; fairly good.
tol-er-ance (*'ĕr-ans*), *n.* endurance; toleration.
tol-er-ant (*'ĕr-ant*), *adj.* disposed to, or favoring, toleration.
tol-er-ate (*'ĕr-āt*), *v. t.* to endure; permit; allow so as not to hinder. [ADMIT.]
tol-er-a-tion (*-ā'shun*), *n.* the act of tolerating; allowance; recognition of the right of private judgment; freedom from bigotry.
toll (*tōl*), *n.* the sound of a bell slowly repeated at short intervals; tax or duty paid for some privilege: *v. i.* to sound or ring slowly, as a bell.
to-lu (*tō'lū*), *n.* a balsam produced by a South American tree.
tom-a-hawk (*tom'à-hawk*), *n.* a hatchet used by the North American Indians: *v. t.* to strike, or kill, with a tomahawk.
Tomas. See *Thomas.*
to-ma-to (*tō-mā'tō* or *tō-mà'tō*), *n.* [*pl.* tomatoes (*t'ōz*)], a plant and its well-known fleshy fruit. [Also *loveapple.*]
tomb (*tōōm*), *n.* a grave or vault; monument erected over the dead.
Tombigbee river, Fla. So called from the Choctaw Indian word *ittumbibikpi;* the literal translation would be "an undertaker," it being a name given to the old men of the tribe who were employed in preparing their dead for the "bonehouses."
tom-boy (*tom 'boi*), *n.* a wild, romping girl.
tom-cat (*'kat*), *n.* a full-grown male cat.
tome (*tōm*), *n.* a large book.
tom-fool (*tom'fōōl*), *n.* a great fool; silly trifler.
tom-fool-er-y (*'ĕr-i*), *n.* nonsense; absurd trifles or ornaments.
Tommaso. See *Thomas.*
Tom, Mount, Mass. Named in honor of a neighboring resident, Rowland Thomas, probably familiarly known as "Tom."
tom-pi-on (*tom'pi-un*), *n.* the stopper or plug of a cannon. [Also *tampion.*]
tom-tom (*'tom*), *n.* a drum flat at one end and convex at the other. [Also *tam-tam.*]
ton (*tun*), *n.* 20 hundredweight; 40 cubic feet in ship measurement; (*tôN* prevailing fashion.
tone (*tōn*), *n.* sound, or character of sound; note; accent; harmony of the colors of a painting; interval of sound: *v. t.* to bring to a required shade of color; mitigate.
tongs (*tôngs*), *n. pl.* a metal instrument with two jointed limbs for grasping anything.
tongue (*tung*), *n.* the chief instrument of speech, and the organ of taste; dialect; idiom; discourse; clapper of a bell; anything resembling a tongue.
ton-ic (*ton'ik*), *adj.* pertaining to, or based on, the keynote; strengthening: *n.* a strengthening medicine.
ton-nage (*tun'āj*), *n.* the weight of goods carried in a boat or ship; carrying capacity of a vessel.
ton-neau (*tō-nō'*), *n.* a barrel-like body of certain motor cars.
Tonquin (*ton-kēn'*), Chinese *Tang-king*, the eastern capital.
★**ton-sil-i-tis** (*ton-sil-ī'tis*, not *ton-sil-ē'tis*), *n.* inflammation of the tonsils.
ton-sils (*ton'silz*), *n. pl.* two almond-shaped glands situated one at each side of the fauces of the throat.
ton-so-ri-al (*ton-sō'ri-al*), *adj.* pertaining to shaving or to a barber.
ton-sure (*'shūr*), *n.* the act of clipping the hair or of shaving the crown of the head; corona thus worn by clerics: *v. t.* to give the tonsure to.
too (*tōō*), *adv.* more than enough; likewise; in addition; over and above; also.
tool (*tōōl*), *n.* an instrument of manual operation; one who acts as the instrument of another: *v. t.* to shape with a tool.
toot (*tōōt*), *v. t.* to sound, as a horn or flute: *n.* a blast on a horn.
tooth (*tōōth*), *n.* [*pl.* teeth (*tēth*)], one of the hard bony processes growing in the jaws for biting and chewing; any projection resembling a tooth: *v. t.* to indent or form into teeth.
tooth-some (*'sum*), *adj.* palatable.
top (*top*), *n.* the highest part; summit; upper side or surface; a child's toy: *v. t.* to cover or place on the top; rise to the top of; excel.
to-paz (*tō'paz*), *n.* a crystallized mineral of various colors used as a gem.
top-boots (*top'-bōōts*), *n. pl.* high boots with light colored tops.
Topeka (*tō-pē'kà*), **Kan.** An Indian word, *topeakae*, "a good place to dig potatoes."
to-per (*'pĕr*), *n.* a drunkard.
To-phet (*tō'fet*), *n.* a place in the valley of Hinnom, where fire was burnt in honor of Moloch; hence hell.
top-ic (*top'ik*), *n.* a subject of discourse, conversation, or argument; theme.
top-ic-al (*'i-kal*), *adj.* pertaining to, or consisting of, a topic or topics; relating to a place; local.
top-mast (*'mast*), *n.* the second mast from the deck of a ship.
to-pog-ra-pher (*tō-pog'rà-fĕr*), *n.* one who describes particular places in writing.
to-pog-ra-phy (*tō-pog'rà-fi*), *n.* the scientific description of a particular place, etc.; the features of a region or locality.
top-ping (*top'ing*), *adj.* rising above; surpassing: *n.* the act of cutting off the top.
top-ple (*'l*), *v. t.* to overturn: *v. i.* to fall forward; tumble down.
top-sy-tur-vy (*'si-tûr'vi*), *adv.* in an inverted position; in confusion: *adj.* disordered; chaotic.
toque (*tōk*), *n.* a kind of bonnet.
torch (*tôrch*), *n.* a large light formed of resinous wood, flax, etc., soaked in some inflammable substance.
to-re-a-dor (*tō-rā-à-dōr'*), *n.* a bullfighter.
tor-ment (*tôr'ment*), *n.* extreme pain; torture; anguish: *v. t.* (*tôr-ment'*) to put to extreme pain, physical or mental.
Syn. TORMENT, torture. *Torture* is an excess of *torment*. We may be *tormented* by a variety of indirect means; but we are mostly said to be *tortured* by the direct means of the rack, or similar instrument. [See *tease.*]
tor-na-do (*tôr-nā'dō*), *n.* [*pl.* tornadoes (*'dōz*)], a violent tempest or whirlwind.
Toronto (*tō-rŏn'tō*). Many towns and cities in the United States bear this Indian name, meaning "oak tree rising from the lake," which has been transferred to them from the city in Canada.
Toronto, Canada. Now the capital of the Canadian province of Ontario. The name at first denoted the country of the Huron tribe, to which the Bay of Toronto gives access. Here a French trading post was built on the site of the present city, and called *Fort Toronto.* In 1793, the name was changed to *York* in honor of the duke of York, but in 1834 the old name *Toronto* was revived.
tor-pe-do (*tôr-pē'dō*), *n.* [*pl.* torpedoes (*'dōz*)], a submarine apparatus for destroying ships by explosion; kind of firework: *v. t.* to destroy by a torpedo.
tor-pid (*'pid*), *adj.* numb; inactive.
tor-pi-fy (*'pi-fi*), *v. t.* to make torpid; benumb.
tor-por (*'pĕr*), *n.* numbness; inactivity.
tor-rent (*tor'ent*), *n.* a violent and rapid stream; heavy fall, as of rain.
tor-rid (*'id*), *adj.* dried with heat; extremely hot; burning.
tor-sion (*tôr'shun*), *n.* the act of turning or twisting.
tor-so (*'sō*), *n.* [*pl.* torsos (*'sōz*), torsi (*'sē*)], the trunk of a statue.
tort (*tôrt*), *n.* in law, any wrong, injury or damage.
tor-tile (*tôr'til*), *adj.* bent; twisted; wreathed.
tor-toise (*tôr'tis*), *n.* a reptile of the family Testudinidae with a very hard shell or test; a testudo.
Tortugas (*tôr-tōō'gàz*) **islands, Fla.** Spanish word meaning "tortoise," the name given by the Spaniards from the number of tortoise found on them.
tor-tu-ous (*'tū-us*), *adj.* crooked; twisted; wreathed; underhand.
tor-ture (*'tūr*), *n.* agony of mind or body; excruciating pain: *v. t.* to punish with, or as with, torture; vex; wrest from the true meaning. [TORMENT.]
To-ry (*tō'ri*), *n.* [*pl.* Tories (*'riz*)], in English politics, a Conservative: *adj.* pertaining to Conservatives.
toss (*tos*), *v. t.* to throw with the hand; throw upward; cause to rise and fall: *v. i.* to roll or tumble; be tossed: *n.* a throwing upward.
tot (*tot*), *n.* anything small or insignificant: *v. t.* to add; count up.
to-tal (*tō'tal*), *adj.* whole; complete; full; *n.* the whole sum or amount; completeness. [WHOLE.]
tote (*tōt*), *v. t.* to carry.
to-tem (*tō'tem*), *n.* an animal used as the symbol or name of a tribe or clan.
tot-ter (*tot'ĕr*), *v. i.* to shake as if about to fall; be unsteady.
touch (*tuch*), *v. t.* to come in contact with; perceive by feeling; reach; attain to; affect the senses or sensibility of: *v. i.* to be in contact: *n.* the act of touching; state of being touched.
touch-ing (*'ing*), *adj.* pathetic: *n.* the act of coming in contact with: *prep.* with respect to; concerning.
touch-stone (*'stōn*), *n.* Lydian stone or basanite, used for testing the purity of gold and silver; hence a criterion.
touch-wood (*'wood*), *n.* dried fungus or decayed wood, which easily ignites and burns slowly.
touch-y (*'i*), *adj.* irritable; peevish.
tough (*tuf*), *adj.* flexible without being brittle; not easily broken or fractured; strong; firm; tenacious; viscous; difficult: *n.* a rough.
tough-en (*'n*), *v. i.* to grow or become tough: *v. t.* to make tough.
Toulon (*tōō'lon*, French *tōō-lôN'*). French city; is from the ancient *Telonium* or *Telo Martius*, named after its founder.
tou-pee (*tōō-pē'*), *n.* a small wig.
★**tour** (*tōōr*), *n.* excursion; trip: *v. i.* to make a tour: *v. t.* to make a tour or circuit of. [EXCURSION.]
tour-ist (*'ist*), *n.* excursionist.
tour-na-ment (*'nà-ment*), *n.* a mock fight by knights on horseback; contest of skill. [Also *tourney.*]
tou-sle or **tou-zle** (*tou'zl*), *v. t.* to pull or tear; worry; put in disorder.
tout (*tout*), *v. i.* to look out for customers: *n.* one who secretly watches race horses in training, in order to give private information; a touter.
tout-er (*tout'ĕr*), *n.* one who hangs about to secure the custom of tourists for a particular hotel, etc.
tow (*tō*), *n.* the coarse part of flax or hemp: *v. t.* to drag, as a vessel, through the water by means of a rope.
tow-age (*'āj*), *n.* the act of towing; price paid for towing.
to-ward (*tō'ĕrd*), *prep.* in the direction of; with a tendency to; with respect to: *adv.* near; at hand. [Also *towards.*]
tow-el (*tou'el*), *n.* a cloth for wiping the hands, etc.
tow-er (*tou'ĕr*), *n.* a lofty building, square or circular, usually flat on the top: *v. i.* to rise to a great height.
town (*toun*), *n.* any collection of houses larger than a village, not being a city; township.
town-ship (*'ship*), *n.* the district or territory subordinate to the county.
tox-ic (*toks'ik*), *adj.* poisonous.
tox-i-col-o-gy (*-i-kol'ō-ji*), *n.* the science that treats of poisons.
tox-in (*toks'in*), *n.* a poison produced by the action of bacteria upon organic matter.
toy (*toi*), *n.* something of no real value; bauble; plaything: *v. i.* to dally amorously; trifle.
Toynbee (*toin'be*) **hall.** An institution in Whitechapel, London, founded in 1885, as the outcome of plans set on foot by the members of Oxford and Cambridge universities "to provide education and the means of recreation and enjoyment for the people of the poor districts of London," etc.
trace (*trās*), *n.* a mark left by anything passing; small quantity: *pl.* the straps, etc., by which a vehicle is drawn: *v. t.* to delineate by marks; follow by tracks or footsteps. [DERIVE, MARK.]
trace-a-ble (*'à-bl*), *adj.* capable of being traced.
tra-che-a (*trà-kē'à*), *n.* the windpipe.
track (*trak*), *n.* a mark or impression left by the foot; beaten path; course or way: *v. t.* to pursue by following the footprints or marks. [MARK.]
tract (*trakt*), *n.* a short treatise; region of indefinite extent.
tract-a-bil-i-ty (*-à-bil'i-ti*), *n.* docility.
tract-a-ble (*'à-bl*), *adj.* docile; easily instructed or managed.
tract-ate (*trakt'āt*), *n.* a small book or treatise.
trac-tion (*trak'shun*), *n.* the act of drawing; state of being drawn.
trade (*trād*), *n.* commerce; business; traffic; persons engaged in a particular business: *adj.* pertaining to, carried on by, or characteristic of, a trade: *v. i.* to sell or exchange. [BUSINESS.]
trade-mark (*'märk*), *n.* a distinguishing device affixed by a merchant to his goods.
trade-price (*'prīs*), *n.* price of an article to the retailer.
trad-er (*'ĕr*), *n.* one engaged in trade or commerce; vessel engaged in trade.
trades un-ion (*trādz' ûn-yun*), *n.* an organized combination of workmen.
trade winds (*trād' winds*), certain ocean winds in or near the torrid zone that blow steadily from the same quarter periodically. [Also *trades.*]
tra-di-tion (*trà-dish un*), *n.* the oral transmission of events, opinions, doctrines, practices, etc., through successive generations; that which is so handed down.

tra-di-tion-al (*trȧ-dĭsh'un-al*), *aāj.* pertaining to, derived from, or handed down by, tradition.
tra-duce (*trȧ-dūs'*), *v. t.* to slander.
Trafalgar (*trȧ-fal'gar*) **square.** One of the principal squares in London, about one and one-half miles west by south of St. Paul's. It contains the Nelson monument, and the site of Charing Cross and the National gallery faces on it.
traf-fic (*traf'ik*), *n.* business or trade; commerce; intercourse: *v. i.* to trade; bargain: *v. t.* to barter.
trag-a-canth (*trag'ȧ-kanth*), *n.* a gum obtained from various species of Astragalus.
tra-ge-di-an (*trȧ-jē'dĭ-an*), *n.* an actor or writer of tragedies.
trag-e-dy (*traj'ē-dĭ*), *n.* [*pl.* tragedies (*-dĭz*)], a dramatic poem having usually a fatal ending; a melancholy and fatal event.
trag-ic (*'ik*), *adj.* pertaining to tragedy; terrible. [Also *tragical.*]
trail (*trāl*), *v. t.* to draw or drag along the ground; hunt or follow by tracking: *v. i.* to be drawn out in length; fall or hang down: *n.* the track followed; scent left by a track; anything drawn out in length.
train (*trān*), *n.* a series of railway carriages or trucks coupled together; something drawn or dragged behind; retinue; suite; process: *v. t.* to drill; educate; draw along; discipline or tame for use: *v. i.* to prepare for contests or horse racing. [TEACH.]
train oil (*'oil*), oil obtained by boiling whale's blubber.
trait (*trāt*), *n.* a peculiar feature or characteristic; touch.
trai-tor (*trā'tĕr*), *n.* one who is guilty of treason; one who betrays any confidence; a deceiver. [Fem. *traitress* or *traitoress.*]
trai-tor-ous (*'tĕr-us*), *adj.* guilty of treason; perfidious.
tra-jec-to-ry (*trȧ-jek'tō-rĭ*), *n.* the curve described by a body in space.
tram (*tram*), *n.* a tramway; tramway car.
tram-mel (*'el*), *n.* anything that impedes progress, action, or freedom: *v. t.* to impede or hinder; shackle.
tramp (*tramp*), *v. t.* to tread upon forcibly and repeatedly; travel over on foot: *v. i.* to wander: *n.* a vagrant foot traveler; journey on foot; sound of tramping.
tram-ple (*'pl*), *v. t.* to tread under the feet: *v. i.* to stamp rapidly and repeatedly with the feet.
tram-way (*'wā*), *n.* a street railway; metal track for wagons or trucks. [Also *tramroad.*]
trance (*trans*), *n.* temporary suspension of sensation and volition while the heart and lungs continue to act: *v. t.* to place in, or as in, a state of trance.
tran-quil (*trang'kwil*), *adj.* calm; quiet; undisturbed. [CALM, PEACE.]
tran-quil-ize (*'kwil-īz*), *v. t.* to make tranquil or calm.
trans-act (*trans-akt'*), *v. t.* to manage, as business; negotiate.
trans-ac-tion (*-ak'shun*), *n.* the management of any business or affair; that which is done or performed. [PROCEEDING.]
tran-scend (*tran-send'*), *v. t.* to rise above; surpass; surmount.
tran-scend-en-cy (*'en-sĭ*), *n.* the state or quality of being transcendent; supereminence. [Also *transcendence.*]
tran-scend-ent (*'ent*), *adj.* surpassing others in excellence.
tran-scen-den-tal (*-sen-den'tal*), *adj.* noting that which lies beyond the limits of experience, or is external to the senses. [MYSTERIOUS.]
tran-scen-dent-al-ism (*'al-izm*), *n.* the Kantian philosophy which affirms that the primary principles of knowledge are ascertained by the investigation of that which is *a priori*, or independent of experience; a religious movement in the United States, 1839, associated with Emerson and Channing.
tran-scribe (*-skrīb'*), *v. t.* to copy. [COPY.]
tran-script (*'skript*), *n.* a written copy from an original.
tran-scrip-tion (*-skrip'shun*), *n.* a copy.
tran-sept (*'sept*), *n.* that part of a church at right angles on either side to the chancel.
trans-fer (*trans-fĕr'*), *v. t.* to convey from one person or place to another: *n.* (*trans'fĕr*) conveyance of a right, title, property, etc.; deed by which such a transfer is executed; removal; drawing or writing printed off from one surface to another.
trans-fer-a-ble (*'ȧ-bl*), *adj.* capable of being transferred.
trans-fig-u-ra-tion (*-fig-ū-rā'shun*), *n.* a change of form or appearance.
trans-fig-ure (*-fig'ūr*), *v. t.* to change the outward form or appearance of.
Syn. TRANSFIGURE, transform, metamorphose. *Transfigure* is to make to pass over into another figure; *transform* and *metamorphose* are to put into another *form*. *Transformation* is commonly applied to that which changes its outward form; in this manner a harlequin *transforms* himself into all kinds of shapes and likenesses. *Metamorphosis* is applied to the form internal as well as external, that is, to the whole nature.
trans-fix (*-fiks'*), *v. t.* to pierce through.
trans-fix-ion (*-fik'shun*), *n.* the act of transfixing; state of being transfixed.
trans-form (*-fōrm'*), *v. t.* to change the shape, appearance or character of; transmute. [TRANSFIGURE.]
trans-for-ma-tion (*trans-fōr-mā'shun*), *n.* the act of transforming; state of being transformed.
trans-form-er (*-fōrm'ĕr*), *n.* an induction coil for raising or lowering electrical pressure.
trans-fuse (*-fūz'*), *v. t.* to pour out of one vessel into another; instill.
trans-gress (*-gres'*), *v. i.* to offend by the violation or infraction of any law, rule, etc.; sin: *v. t.* to break or violate.
trans-gres-sion (*-gresh'un*), *n.* the act of violating any law or rule of moral duty.
tran-sient (*tran'shent*), *adj.* fleeting; brief.
tran-sit (*tran'sit*), *n.* a passage through or over.
tran-si-tion (*-sish'un*), *n.* the passage from one place or state to another.
tran-si-tive (*'si-tiv*), *adj.* noting an action passing from a subject to an object.
tran-si-to-ry (*'si-tō-rĭ*), *adj.* continuing but a short time.
trans-late (*trans-lāt'*), *v. t.* to render from one language into another; remove to another place or position.
trans-la-tion (*-lā'shun*), *n.* the act of translating; that which is translated. [DEFINITION.]
trans-lu-cent (*-lū'sent*), *adj.* semitransparent.
trans-mi-gra-tion (*-mi-grā'shun*), *n.* the passing of the soul after death from one body into that of another.
trans-mis-si-ble (*'i-bl*), *adj.* that may be passed from one to another, or through a body or substance.
trans-mis-sion (*-mish'un*), *n.* the act of transmitting; the things transmitted.
trans-mit (*-mit'*), *v. t.* to cause or suffer to pass over or through; send from one place or person to another.
trans-mu-ta-tion (*-mū-tā'shun*), *n.* change from one form, nature, substance, or species into another.
trans-mute (*-mūt'*), *v. t.* to change from one form, nature, substance, or species into another.
tran-som (*tran'sum*), *n.* a crossbeam over a door; horizontal mullion or crossbar in a window.
trans-par-en-cy (*trans-pâr'en-sĭ*), *n.* the state or quality of being transparent; a picture painted on a semitransparent material.
trans-par-ent (*'ent*), *adj.* having the property of transmitting rays of light; clear. [PELLUCID.]
tran-spire (*tran'spīr*), *v. i.* become known; come to pass; occur: *v. t.* to perspire; exhale.
trans-plant (*trans-plant'*), *v. t.* to remove and plant in another place; remove and establish.
trans-port (*-pōrt'*), *v. t.* to carry across or from one place to another; carry away by violence of motion: *n.* (*trans'pōrt*) conveyance for baggage or stores; a vessel employed for carrying troops, stores, etc.; rapture.
trans-pose (*-pōz'*), *v. t.* to change the place or order of, by putting each in the place of the other.
trans-po-si-tion (*-pō-zish'un*), *n.* the act of transposing; state of being transposed. [Also *transposal.*]
tran-sub-stan-ti-a-tion (*tran-sub-stan-shi-ā'shun*), *n.* the doctrine that after consecration the elements in the Eucharist are converted into the veritable body and blood of Christ.
Transvaal (*trans-vâl'*). That territory in South Africa beyond the river Vaal.
trans-verse (*trans-vĕrs'*), *adj.* lying, or being, across or crosswise; broader than long.
trap (*trap*), *n.* an instrument shutting suddenly with a spring, for snaring game, vermin, and other animals; snare; ambush; stratagem; a carriage on springs; contrivance for preventing the escape of foul air from a drain: *pl.* baggage; portable articles: *v. t.* to catch in, or as in, a trap: *v. i.* to set traps for game.
tra-peze (*trȧ-pēz'*), *n.* a swinging horizontal bar.
tra-pe-zi-um (*-pē'zi-um*), *n.* a plane figure bounded by 4 straight lines, of which no two are parallel.
trap-e-zoid (*trap'e-zoid*), *n.* a plane figure with 4 sides, having 2 sides parallel to each other.
trap-per (*'ĕr*), *n.* one who traps animals.
trap-pings (*'ingz*), *n. pl.* ornamented articles.
trash (*trash*), *n.* refuse; worthless or useless matter; rubbish.
trash-y (*'i*), *adj.* worthless; useless.
trav-ail (*trav'āl* or *'il*), *n.* labor with pain; parturition: *v. i.* to suffer the pains of childbirth.
trav-el (*trav'el*), *v. i.* to journey; proceed; move: *v. t.* to journey over: *n.* the act of journeying. [JOURNEY.]
trav-el-er (*'el-ĕr*), *n.* one who travels.
trav-erse (*'ĕrs*), *adj.* lying or being across: *adv.* athwart; crosswise: *v. t.* to lay or place in a cross direction; travel or pass over: *v. i.* to turn as on a pivot; move round.
Traverse bay, Mich. Named by Marquette *Petit Traverse* and *Grand Traverse*, "little, small, and large breadth or crossings"; applied because of its being shorter to cross the bay than follow along the shores.
trav-es-ty (*'es-tĭ*), *n.* [*pl.* travesties (*-tiz*)], a burlesque or parody: *v. t.* to burlesque or parody.
trawl (*trawl*), *n.* a large net of peculiar construction: *v. i.* to fish with a trawl.
tray (*trā*), *n.* [*pl.* trays (*trāz*)], a broad, flat vessel for holding or carrying.
treach-er-ous (*trech'ĕr-us*), *adj.* betraying a trust; perfidious. [FAITHLESS.]
treach-er-y (*'ĕr-ĭ*), *n.* treasonable or perfidious conduct; perfidy.
trea-cle (*trē'kl*), *n.* a sirup drained from sugar; molasses.
tread (*tred*), *v. i.* to step or walk: *v. t.* to walk on.
trea-dle (*tre'dl*), *n.* that part of a machine moved by the foot.
tread-mill (*'mil*), *n.* a large wheel driven by persons treading on the steps of the periphery.
trea-son (*trē'zn*), *n.* the offense of betraying the state.
treas-ure (*tresh'ūr*), *n.* accumulated wealth; abundance; plenty; something highly valued: *v. t.* to hoard; accumulate; value highly.
treas-ur-er (*-ĕr*), *n.* one who has the charge of a treasure.
treas-ur-y (*'ūr-ĭ*), *n.* [*pl.* treasuries (*-iz*)], a place or building where the public revenues are deposited and the public debts discharged; collection of valuable information or facts.
treas-ur-y note (*nōt*), a demand note issued by the United States treasury.
treat (*trēt*), *v. t.* to handle or manage in a particular manner; behave toward; entertain with food or drink; discourse on: *v. i.* to discuss; negotiate; agree; give a gratuitous entertainment: *n.* an entertainment given; something which affords pleasure.
trea-tise (*trē'tis*), *n.* a written composition.
treat-ment (*trēt'ment*), *n.* act or manner of treating.
trea-ty (*trē'tĭ*), *n.* [*pl.* treaties (*'tiz*)], the act of treating for the adjustment of differences or for forming an agreement.
Trebizond (*treb-i-zond'*). A seaport on the Black Sea; named from the Greek *trapezus*, "table," so called from its form.
tre-ble (*treb'l*), *adj.* threefold; triple; pertaining to the highest vocal or instrumental part. [*Music.*] *n.* the highest vocal or instrumental part: *v. t.* to make threefold: *v. i.* to become threefold.
tree (*trē*), *n.* any woody plant having a single trunk and branches; anything resembling a tree: *v. t.* to drive to a tree; place in difficulty: *v. i.* to take refuge in a tree.
trel-lis (*trel'is*), *n.* a structure or frame of latticework.
trel-lis-work (*-wĕrk*), *n.* small bars nailed together crosswise.
trem-ble (*trem'bl*), *v. i.* to shake involuntarily, as with fear, cold, weakness, etc.: *n.* shiver.
trem-bling (*'bling*), *v. i.* agitated, shaking with fear.
Syn. TREMBLING, tremor, trepidation. *Trembling* expresses any degree of involuntary shaking of the frame, from the affection either of the body or the mind; cold, nervous affections, fear, and the like, are the ordinary causes of *trembling; tremor* is a slight degree of *trembling*, which arises mostly from a mental affectation; then when the spirits are agitated, the mind is thrown into a *tremor* by any trifling incident; *trepidation* is more violent than either of the two.
tre-men-dous (*trē-men'dus*), *adj.* exciting fear or terror; dreadful. [FEARFUL.]
tre-mo-lo (*trā'mō-lō*), *n.* a tremulous or fluttering effect in music.
tre-mor (*trē'mor*), *n.* an involuntary trembling. [TREMBLING.]
trem-u-lous (*trem'ū-lus*), *adj.* trembling; quivering; shaking.
trench (*trench*), *n.* a long, narrow cut or ditch excavated in the earth: *v. t.* to form a ditch in.
trench-ant (*'ant*), *adj.* sharp; keen; severe.
trench-er (*'ĕr*), *n.* one who trenches; a large wooden plate.
trend (*trend*), *n.* inclination in a particular direction: *v. i.* to have a particular direction.
Trenton, N. J. First called *Trent Town*, so named from Col. William Trent of Philadelphia, a speaker of the house of assembly in 1720.
tre-pan (*trē-pan'*), *n.* a cylindrical saw of peculiar construction used in the operation of trepanning: *v. i.* to perform the operation of trepanning: *v. t.* to perforate with a trepan.
trep-i-da-tion (*trep-i-dā'shun*), *n.* an involuntary trembling. [TREMBLING.]
tres-pass (*tres'pas*), *v. i.* to commit any offense; sin; enter unlawfully upon the land of another: *n.* the act of trespassing; transgression; sin.
tress (*tres*), *n.* a lock of hair.
tres-tle (*tres'l*), *n.* a movable form for supporting anything.
tres-tle board (*bōrd*), a draftsman's designing board.
tres-tle-work (*-wĕrk*), *n.* a viaduct, pier, or scaffold supported on trestles.
tri, a *prefix* meaning *three, threefold,* as *tri*angled, *adj.* having 3 angles.
tri-ad (*trī'ad*), *n.* a union of 3.
tri-al (*trī'al*), *n.* an attempt or endeavor; test; proof; verification; judicial examination.
tri-an-gle (*'ang-gl*), *n.* a plane figure bounded by 3 lines, and having 3 angles; a musical instrument of steel in the form of a triangle.
tri-an-gu-lar (*-ang'gū-lĕr*), *adj.* having 3 angles; shaped like a triangle.
tri-an-gu-late (*'gū-lāt*), *v. t.* to divide into triangles; survey by means of triangles.
tri-an-gu-la-tion (*-lā'shun*), *n.* the act of triangulating.
Trianon, Grand (*grȧN trē-ȧ-nôN'*). A small palace at Versailles of only one story but considerable length, built by Louis XIV. for Mme. de Maintenon, and since used by successive French sovereigns as a private residence.
Trianon, Petit (*ptē trē-ȧ-nôN'*). A graceful, neo-

classical villa in the park at Versailles, built by Louis XV., and closely associated with the memory of Marie Antoinette, whose favorite abode it was.
tri-bal (*trī'bal*), *adj.* pertaining to, or characteristic of, a tribe.
tri-bal-ism (*-izm*), *n.* the state of existing in tribes; tribal characteristics or feeling.
tribe (*trīb*), *n.* a family, race, or class, constituting a distinct portion of a people.
tri-brach (*trī'brak*), *n.* a poetic foot of 3 short syllables.
trib-u-la-tion (*trib-ū-lā'shun*), *n.* severe affliction; deep sorrow. [GRIEF.]
tri-bu-nal (*trī-bū'nal*), *n.* the seat of a judge; court of justice.
trib-une (*trib'ūn*), *n.* an ancient Roman official, elected by the people to safeguard their liberties.
trib-u-ta-ry (*trib'ū-tā-rī*), *adj.* paying tribute; yielding supplies; contributing to make up a greater object of the same kind: *n.* a state or government which pays tribute to a superior; river flowing into a larger one.
trib-ute (*'ūt*), *n.* an annual or stipulated sum of money, etc., paid; personal contribution made.
trice (*trīs*), *n.* an instant.
tri-ceps (*trī'seps*), *n.* the great three-headed extensor muscle of the arm.
★**tri-chi-na** (*trī-kī'nā*), *n.* [*pl.* trichinæ (*'nē*)], a parasitic worm which infests the muscles.
trick (*trik*), *n.* a stratagem or artifice; deception; imposition: *pl.* frolic: *v. t.* to cheat. [PRETENSE, CHEAT.]
trick-er-y (*'ėr-ī*), *n.* deception; cheating; fraud; imposture.
tric-kle (*'l*), *v. i.* to flow gently down or in a small stream: *n.* a small gentle stream.
trick-ster (*'stėr*), *n.* a cheat; deceiver.
trick-y (*'ī*), *adj.* given to tricks; knavish; shifty; artful; cunning.
tri-col-or (*trī'kul-ėr*), *n.* a national flag of 3 colors arranged in equal stripes.
★**tri-cy-cle** (*trī'si-kl*, not *trī'si-kl*), *n.* a three-wheeled modernized form of velocipede: *v. i.* to ride on a tricycle.
tri-dent (*'dent*), *n.* a scepter or spear with 3 prongs.
tri-en-ni-al (*trī-en'i-al*), *adj.* occurring in, or continuing for, three years.
tri-er (*'ėr*), *n.* one who tries or makes experiments; a judge; test.
tri-fle (*'fl*), *n.* anything of little value or importance: *v. i.* to act or talk with levity: *v. t.* to waste or fritter away.
trig (*trig*), *adj.* trim; neat.
trig-ger (*'ėr*), *n.* a catch which, when pulled, releases the hammer of a gun.
trig-o-nom-e-try (*-ō-nom'ē-trī*), *n.* the science of measuring the sides and angles of triangles.
tri-he-dron (*trī-hē'dron*), *n.* a figure having 3 sides.
tri-lat-er-al (*-lat'ėr-al*), *adj.* three-sided.
trill (*tril*), *n.* a shake or quaver of the voice: *v. t.* to sing with a quaver: *v. i.* to quaver.
tril-lion (*tril'yun*), *n.* in the French system of numeration, followed in the United States, a unit with 12 ciphers annexed; in the English system, a unit with 18 ciphers annexed.
tril-o-gy (*tril'ō-ji*), *n.* a series of three dramas, each complete in itself.
trim (*trim*), *adj.* neat; compact; in good order or service: *v. t.* to decorate or adorn; make trim.
trim-mer (*'ėr*), *n.* one who trims.
Trinidad (*trin-i-dad'*, Sp. *trē-nē-thāth'*). Island of British West Indies. So named by Columbus from its three peaks, emblematic of the Holy Trinity.
Trin-i-ta-ri-an-ism (*-tā'ri-an-izm*), *n.* the doctrine that there are three persons in the Trinity.
Trin-i-ty (*'i-ti*), *n.* the union of the Father, the Son, and the Holy Ghost in one Godhead.
trin-ket (*tring'ket*), *n.* small ornament or jewel.
tri-o (*trē'ō*), *n.* a set of 3; 3 united; composition for 3 voices or instruments.
trip (*trip*), *v. i.* to run or step lightly or nimbly; stumble; err: *n.* stumble; mistake; journey. [EXCURSION.]
trip-ar-tite (*trip'ār-tīt* or *trī-pār'tīt*), *adj.* divided into 3 parts.
tripe (*trīp*), *n.* the large stomach of a ruminating animal prepared for food.
triph-thong (*trif'thong* or *trip'*), *n.* a combination of 3 vowels in one sound.
tri-plane (*trī'plān*), *n.* a form of aëroplane consisting of three planes arranged one above the other; distinguished from *monoplane* and *biplane*.
tri-ple (*trip'l*), *adj.* threefold; consisting of 3 united; 3 times repeated: *v. t.* and *v. i.* to increase threefold.
trip-let (*'let*), *n.* 3 united: *pl.* 3 children at one birth.
tri-pod (*trī'pod*), *n.* a three-legged stool or table.
tri-sect (*trī-sekt'*), *v. t.* to divide into three equal parts.
Tristram (*tris'tram*). From the Latin, meaning "sorrowful." Lat., *Tristramus;* Port., *Tristao.*
tri-syl-la-ble (*trīs-sil'a-bl*), *n.* a word of three syllables.
trite (*trīt*), *adj.* worn out; stale.
tri-the-ism (*trī'thē-izm*), *n.* the doctrine that the three persons in the Trinity are three distinct Gods.
trit-u-rate (*trit'ū-rāt*), *v. t.* to rub, grind, or bruise, to powder.
tri-umph (*trī'umf*), *n.* a grand procession in honor of a general who has gained a decisive victory; state of joy at success; victory; conquest: *v. i.* to rejoice over success; obtain a victory.
tri-um-phal (*trī-um'fal*), *adj.* pertaining to, indicating, or in honor of, a triumph.
tri-um-phant (*'fant*), *adj.* rejoicing for victory; victorious.
tri-une (*'ūn*), *adj.* 3 in one.
triv-i-al (*triv'i-al*), *adj.* trifling; commonplace.
tro-che (*trō'kē*), *n.* a medicinal lozenge.
tro-chee (*'kē*), *n.* a metrical foot of 2 syllables, the first long, the second short.
trog-lo-dyte (*trog'lō-dīt*), *n.* a cave dweller: said of certain tribes.
troll (*trōl*), *n.* a giant or giantess of supernatural powers; reel on a fishing rod: *v. t.* to sing the parts of in succession: *v. i.* to fish.
trol-ley (*trol'i*), *n.* a kind of truck; a grooved metal wheel.
trom-bone (*trom'bōn*), *n.* a large brass instrument of the trumpet kind.
troop (*troop*), *n.* a multitude; small body of cavalry, usually 60; company of performers: *v. i.* to march in a body; collect in crowds.
troop-er (*'ėr*), *n.* a cavalryman; troop ship.
trope (*trōp*), *n.* a word or expression used in a sense different from its usual signification; figurative word.
tro-phy (*trō'fi*), *n.* [*pl.* trophies (*'fiz*)], a memorial of a victory; memento.
trop-ic (*trop'ik*), *n.* one of the two small circles of the celestial sphere, situated at each side of the equator, at a distance of 23° 28′ and parallel to it, within the limits of which the sun moves in its yearly course; region between the tropics.
trop-ic-al (*'i-kal*), *adj.* pertaining to, or situated within, the tropics; also used figuratively.
trot (*trot*), *v. i.* to move faster than a walk: *v. t.* to cause to trot: *n.* the pace of a horse a little faster than a walk.
troth (*trōth*), *n.* betrothal; fidelity.
trou-ba-dour (*trōō'ba-dōōr*), *n.* one of a class of lyric poets who flourished in the 11th to 13th centuries.
trou-ble (*trub'l*), *n.* mental agitation, distress, or worry: *v. t.* to distress, or worry. [ANXIETY.]
Syn. TROUBLE, disturb, molest. *Trouble* is the most general in its application; we may be *troubled* by the want of a thing, or *troubled* by that which is unsuitable; we are *disturbed* and *molested* only by that which actively *troubles*. Pecuniary wants are the greatest *troubles* in life. *Trouble* may be permanent; *disturbance* and *molestation* are temporary, and both refer to the peace which is destroyed; a *disturbance* ruffles or throws out of a tranquil state; a *molestation* affects either the body or the mind. [GRIEF.]
troub-le-some (*-sum*), *adj.* causing trouble.
trough (*trôf*), *n.* anything hollowed out.
trounce (*trouns*), *v. t.* to beat soundly.
troupe (*trōōp*), *n.* a company of performers.
trou-sers (*trou'zėrz*), *n. pl.* a garment worn by men and boys, covering each leg separately.
★**trous-seau** (*trōō-sō'*), *n.* a bride's outfit.
trout (*trout*), *n.* a fresh-water fish allied to the salmon.
trow (*trō*), *v. i.* to believe; trust.
trow-el (*trou'el*), *n.* a flat, triangular tool.
Troy, N. Y. Prior to present name known as *Vanderheyden's;* the name *Troy* adopted at a town meeting, January 5, 1789, on the suggestion of Christopher Hutton.
troy weight (*troi' wāt*), a weight of 12 ounces to the pound.
tru-ant (*trōō'ant*), *n.* one who idly stays away from duty or business: *adj.* pertaining to, or characteristic of, a truant.
truce (*troos*), *n.* a temporary peace or cessation.
truck (*truk*), *n.* a wheeled vehicle for carrying goods; vegetables: *v. t.* to send by truck; peddle; hawk: *v. i.* to barter; negotiate.
truc-kle (*'l*), *n.* a small wheel or caster: *v. t.* to trundle; move on rollers: *v. i.* to yield obsequiously.
tru-cu-lent (*trū'kū-lent*), *adj.* ferocious; of fierce aspect.
trudge (*truj*), *v. i.* to travel on foot.
true (*trōō*), *adj.* conformable to fact; faithful or loyal; genuine.
true-blue (*'blū*), *adj.* of inflexible honesty and fidelity.
truf-fle (*truf'l*), *n.* a fleshy underground fungus.
tru-ism (*trōō'izm*), *n.* a self-evident truth.
tru-ly (*'li*), *adv.* in agreement with truth or fact; precisely; sincerely; honestly.
trump (*trump*), *n.* a trumpet; a winning card; good fellow: *v. i.* to take with a trump card: *v. i.* to play a trump card.
trump-er-y (*'ėr-ī*), *n.* worthless finery; rubbish: *adj.* worthless.
trump-et (*'et*), *n.* a metal wind instrument formed of a single curved tube: *v. t.* to publish by, or as by, the sound of trumpet.
trump-et-er (*'ėr*), *n.* one who sounds a trumpet.
trun-cheon (*trun'shun*), *n.* a short staff or cudgel: *v. t.* to beat with a truncheon.
trun-dle (*'dl*), *v. t.* to roll along; roll, as on small wheels: *n.* a little wheel; truck.
trun-dle-bed (*'bed*), *n.* a low bed that runs on casters.
trunk (*trungk*), *n.* main body of anything; elephant's proboscis; large traveling box or chest. [BODY.]
trunk hose (*'hōz*), large breeches reaching to the knees.
project from the opposite sides of a cannon.
truss (*trus*), *n.* a surgical apparatus; timbers fastened together for the support of a roof: *v. t.* to bind or pack close; skewer; make fast.
trust (*trust*), *n.* confidence; faith; credit; combination of capitalists; an estate held for the benefit of another: *v. t.* to place confidence in; rely upon; credit; sell upon credit to: *v. t.* to have trust in: *adj.* held in trust. [CONFIDE, COMMIT.]
trus-tee (*trus-tē'*), *n.* a person to whom management of property is committed for the benefit of others.
trust-y (*'i*), *adj.* justly deserving confidence; faithful. [FAITHFUL.]
truth (*trōōth*), *n.* agreement with reality; eternal principle of right, or law of order.
Syn. TRUTH, veracity. *Truth* belongs to the thing, *veracity* to the person; the *truth* of the story is admitted upon the *veracity* of the narrator.
truth-ful (*-ful*)*a.* true, veracious. [CANDID.]
try (*trī*), *v. t.* to prove by experiment; test; examine; purify or refine: *n.* an attempt or experiment.
tryst (*trist*), *n.* a rendezvous; appointment to meet.
Tsarskoe Selo (*tsär'skō-yē sye-lō'*). A town in the government of St. Petersburg, Russia, about fifteen miles south of St. Petersburg. It contains a famous imperial palace, a favorite summer residence of the court.
tub (*tub*), *n.* a small cask; sponge bath: *v. t.* to place in a tub: *v. i.* to take a sponge bath.
tube (*tūb*), *n.* pipe: *v. t.* to furnish with a tube.
tu-ber (*tū'bėr*), *n.* a thickened, roundish, underground stem.
tu-ber-cu-lar (*'kū-lėr*), *adj.* full of small knobs or tubercles.
tu-ber-cu-lo-sis (*-lō'sis*), *r.* a disease accompanied by the formation of small tubercles.
tube-rose (*tūb'rōz* or *tū'bėr-ōs*), *n.* an odoriferous plant with a tuberous root.
tub-ing (*'ing*), *n.* material for tubes.
tuck (*tuk*), *n.* a fold in a dress: *v. t.* to thrust or press in; gather, or turn up.
tuck-er (*'ėr*), *n.* ornamental frilling or article of dress for covering the bosom of a woman.
Tucson (*tū-son'* or *tuk'sun*), **Ariz.** So called from a word in the Pima dialect, meaning "black spring."
Tuesday. The third day of the week; literally the day devoted to Tiw, the god of war.
tu-fa (*tōō'fa*), *n.* friable volcanic rock or scoriæ.
tuft (*tuft*), *n.* a collection of small things forming a knot or bunch: *v. t.* to separate into, or adorn with, tufts.
tug (*tug*), *n.* a pull with great effort; steam towing vessel: *v. t.* to pull or draw with continued effort; tow: *v. i.* to strain in labor. [DRAW.]
tu-i-tion (*tū-ish'un*), *n.* act or business of teaching; instruction; fee for instruction.
Tulare (*tōō-lär'*, Spanish *Loo-lä'rā*) **lake, Cal.** Called by the Spaniards *tagana Grande de los Tulares*, from a dense growth of "tule" found in its waters and on the shores.
tu-lip (*tū'lip*), *n.* a liliaceous plant.
tum-ble (*tum'bl*), *v. i.* to fall suddenly and violently; roll about: *v. t.* to throw down; turn over: *n.* a fall; a rolling over.
tum-brel (*'brel*), *n.* a cart that may be tilted up. [Also *tumbril.*]
tu-mid (*tū'mid*), *adj.* swollen; distended; bombastic; pompous.
tu-mor (*'mėr*), *n.* a morbid swelling of any part of the body.
tu-mult (*tū'mult*), *n.* the commotion of a number of people. [BUSTLE.]
tu-mul-tu-ous (*-mul'tū-us*), *adj.* characterized by, or full of, tumult; disorderly; agitated.
tu-mu-lus (*'mū-lus*), *n.* [*pl.* tumuli (*-lī*)], an artificial hillock.
tun (*tun*), *n.* a large cask; measure of wine equal to 252 gallons.
tun-a-ble (*tūn'a-bl*), *adj.* capable of being tuned; harmonious.
tune (*tūn*), *n.* melody; short musical composition; just intonation; fit disposition or right mood: *v. t.* to cause to produce the proper sounds; harmonize.
tune-ful (*'fool*), *adj.* musical; harmonious.
tu-nic (*tū'nik*), *n.* loose kind of frock worn by women and boys; military coat.
Tunis (*tū'nis*). A city and district of northern Africa. Anciently known as *Tunentum*, "the land of the Tunes."
tun-nel (*tun'el*), *n.* a vaulted underground passage cut through a hill or under a river: *v. t.* to form a tunnel through or under.
Tu-ra-ni-an (*tū-rā'ni-an*), *adj.* noting generally those languages and peoples not included in the Aryan and Semitic families.
Turanian. A legendary ancestor of the Turks. The word is loosely and indefinitely used to designate a family of languages and also an ethnological group.
tur-ban (*tûr'ban*), *n.* the headdress worn by Orientals.
tur-bine (*'bin*), *n.* a wheel turning on a vertical axis and driven by steam or water.
tur-bu-lence (*'bū-lens*), *n.* disorder; agitation.
tur-bu-lent (*'bū-lent*), *adj.* tumultuous; agitated; riotous.
tu-reen (*tū-rēn'*), *n.* a deep table vessel for holding soup.
turf (*tûrf*), *n.* the grassy surface of untilled land: *v. t.* to cover with turf.
turf-y (*'ī*), *adj.* abounding in, or like, turf.

tur-ges-cent (*tûr-jes'ent*), *adj.* growing inflated.
tur-gid (*'jid*), *adj.* distended beyond the natural size: bombastic.
tur-gid-i-ty (*-jid'i-ti*), *n.* the state of being turgid. [Also *turgidness.*]
Turin (*tû'rin*), It. **Torino.** A city of northern Italy. Anciently *Augusta-Taurinorum,* named from the *Taurini, i. e.,* "dwellers among hills."
Turk (*tûrk*), *n.* a native of Turkey; Mohammedan.
Turkestan (*tôôr-kes-tän'*). The country of the Turks. [See *Turkey.*]
tur-key (*tûr'ki*), *n.* a large gallinaceous bird.
Turkey. The English name of the Ottoman empire, appears to have been derived from *Turcia,* the Latinized form of the Arabic name *Al-Turkiyah,* the "land of the Turks." *Turkestan* in central Asia is a Persian form of the same name, denoting the land occupied by the Usbeks, the Kirghis, the Turcomans, and other Turkic races. The name *Turk* has been supposed to be a corruption of the name *Tu-kiu* of the Chinese historians, or from the Arabic *turkur,* "robbers." It is probably a Tartar word meaning "brave."
tur-moil (*'moil*), *n.* harassing labor; worrying confusion; noise.
turn (*tûrn*), *v. t.* to cause or make to go round; change the direction of; convert: *v. i.* be changed; move as on a pivot: *n.* the act of turning; bend or curve; change of direction; opportunity; short spell; form or cast; fright or shock.
Syn. TURN, bend, twist, distort, wring, wrest, wrench. We *turn* a thing by moving it from one point to another; thus we *turn* the earth over; *to bend* is simply to change its direction; thus a stick is *bent,* or a body may *bend* its direction to a certain point; *to twist* is *to bend* many times, to make many *turns; to distort* is *to turn* or *bend* out of the right course; thus the face is *distorted* in convulsions. *To wring* is *to twist* with violence; thus linen which has been wet is *wrung; to wrest* or *wrench* is to separate from a body by means of *twisting;* thus a stick may be *wrested* out of the hand, or a hinge *wrenched* off the door.
★**tur-nip** (*tûr'nip,* not *tûrn'up*), *n.* a well-known plant with a solid bulbous root.
turn-key (*tûrn'kē*), *n.* a prison warder.
turn-pike (*'pik*), *n.* a gate or bar to stop vehicles until toll is paid.
tur-pen-tine (*tûr'pen-tin*), *n.* the resinous juice of pine trees.
tur-pi-tude (*'pi-tûd*), *n.* moral depravity.
tur-quoise (*tûr'koiz*), *n.* a precious stone.
tur-ret (*tur'et*), *n.* a small tower.
tur-tle (*tûr'tl*), *n.* a large edible sea tortoise; the turtledove.
tur-tle-dove (*-duv*), *n.* a species of dove.
Tuscaloosa (*tus-ka-lōō'sa*). County and city in Alabama named for an Indian chief, the name meaning "black warrior."
Tuscany (*tus'ka-ni*), It. **Tuscana.** A district of central Italy. It bears the name of its ancient inhabitants, the *Tusci* or *Etrusci.* The Etruscans were called *Tyrrheni* by the Greeks, whence the name Tyrrhenian Sea, given to that part of the Mediterranean which lies between the mainland and the islands of Corsica and Sardinia.
tush (*tush*), *interj.* an expression of contempt, rebuke, or silence.
tusk (*tusk*), *n.* the long, pointed tooth on each side of the upper jaw of certain mammals.
Tuskegee (*tus-kē'gē*). Town in Macon county, Alabama. Probably derived from the Indian word *taskialgi,* "warriors."
tus-sle (*'l*), *n.* a scuffle: *v. i.* to scuffle or struggle.
tut (*tut*), *interj.* hush! be quiet!
tu-te-lage (*tū'tē-lāj*), *n.* guardianship.
tu-tor (*'tēr*), *n.* a teacher; guardian: *v. t.* to instruct; discipline. [TEACH.]
Tuxedo (*tuks-ē'dō*). A few places in the United States bear this Indian name, which undoubtedly is derived from *P'tauk-seet-tough,* meaning "the place of bears."
twad-dle (*twod'l*), *n.* silly talk: *v. t.* to talk in a silly manner.
twain (*twān*), *n.* and *adj.* two.
twang (*twang*), *n.* a sharp, quick, vibrating sound; affected nasal tone of voice: *v. t.* and *v. i.* to sound with a vibrating noise.
tweak (*twēk*), *v. t.* to pinch or pull with a sudden jerk and twist: *n.* a sudden sharp pull or pinch.
twee-zers (*twē'zərz*), *n. pl.* small pinchers for pulling out hairs.
twelfth (*twelfth*), *adj.* next in order after the eleventh: *n.* one of 12 equal parts.
twen-ti-eth (*twen'ti-eth*), *adj.* the ordinal of 20: *n.* one of 20 equal parts.
twice (*twis*), *adv.* two times; doubly.
twid-dle (*twid'l*), *v. t.* to twirl in a light manner; touch lightly: *v. t.* to move with a quivering motion: *n.* a twist of the fingers.
twig (*twig*), *n.* a small shoot or branch: *v. t.* to notice; understand: *v. i.* to comprehend.
twi-light (*twī'līt*), *n.* the faint light before sunrise and after sunset: *adj.* obscure; shaded.
twill (*twil*), *n.* an appearance of diagonal lines in textile fabrics; fabric woven with a twill.
twin (*twin*), *adj.* double; closely resembling: *n.* one of two born at a birth; any person or thing very like another.
twine (*twin*), *v. t.* to twist; wind round; unite closely: *v. i.* to be closely united by twisting: *n.* a twist; strong thread.
twinge (*twinj*), *v. t.* to affect with a sudden sharp pain; twitch: *v. i.* to suffer a twinge: *n.* a sudden sharp pain.
twin-kle (*twing'kl*), *n.* a quick motion of the eye; short, tremulous light; an instant: *v. i.* to blink; shine with a tremulous, sparkling light; quiver.
twirl (*twērl*), *v. t.* to move or turn round rapidly; whirl: *v. i.* to rotate rapidly: *n.* a quick, circular motion; convolution.
twist (*twist*), *v. t.* to unite or form by winding together; writhe or contort: *v. i.* to be contorted; move in a curve: *n.* the act of twisting; manner of twisting; cord or thread. [TURN.]
twit (*twit*), *v. t.* to annoy by reminding of a fault, etc.
twitch (*twich*), *v. t.* to pull with a sudden jerk: *v. i.* to contract or move quickly or spasmodically: *n.* a sudden jerk or puff.
twit-ter (*twit'ər*), *v. i.* to make a succession of small, tremulous sounds: *n.* a small, tremulous noise.
two (*tōō*), *adj.* one and one: *n.* the number of one and one.
two-pen-ny (*tup'en-i*), *adj.* of the value of twopence; trumpery.
two-ply (*tōō'plī*), *adj.* of two thicknesses.
tym-pa-num (*tim'pa-num*). *n.* the membranous wall which separates the internal from the external ear; the drum of the ear.
type (*tip*), *v. t.* to typify; reproduce by a typewriter: *n.* an emblem, sign, or symbol; general form or structure; original design; a letter in metal or wood for printing from. Different sizes of printing types are indicated by distinguishing names and by means of a unit of type measurement, which in the United States is one-twelfth of a pica.
type met-al (*'met-al*), an alloy of lead, antimony, and tin.
type-writer (*'ri-tēr*), *n.* a mechanical contrivance for producing letters by means of an inked ribbon and types; an operator of a typewriting machine.
ty-phoid (*tī'foid*), *adj.* pertaining to, or like, typhus: *n.* an enteric fever.
ty-phoon (*-foon'*), *n.* a violent tornado at sea.
ty-phus (*'fus*), *n.* a contagious fever.
typ-ic-al (*tip'i-kal*), *adj.* figurative.
typ-i-fy (*'i-fī*), *v. t.* to represent by an image or emblem.
typ-ist (*tīp'ist*), *n.* one who operates a typewriting machine.
ty-pog-ra-pher (*tī-pog'ra-fēr*), *n.* a printer.
ty-pog-ra-phy (*-pog'ra-fi*), *n.* the art of printing.
ty-ran-nic-al (*-ran'i-kal*), *adj.* pertaining to, or characteristic of, a tyrant; despotic; cruel. [ABSOLUTE.]
tyr-an-nize (*tir'an-īz*), *v. i.* to act like a tyrant.
tyr-an-ny (*'ăn-i*), *n.* the government or conduct of a tyrant; severity; absolute monarchy.
ty-rant (*tī'rant*), *n.* an oppressor; despot.
ty-ro (*tī'rō*), *n.* a beginner; novice.

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u-biq-ui-ty (*ū-bik'wi-ti*), *n.* omnipresence.
ud-der (*ud'dēr*), *n.* the glandular organ of a mammal which secretes the milk.
ug-ly (*ug'li*), *adj.* that which is offensive to the eye; deformed.
u-kase (*ū-kās'*), *n.* a Russian imperial decree.
ul-cer (*ul'sēr*), *n.* a sore.
ul-cer-ate (*-āt*), *v. t.* to affect with an ulcer: *v. i.* to be formed into an ulcer.
ul-na (*'nä*), *n.* the larger of the two bones that form the forearm.
ul-ster (*ul'stēr*), *n.* a long, loose overcoat of coarse cloth.
ul-te-ri-or (*-tē'ri-ēr*), *adj.* lying beyond or on the further side; more distant.
ul-ti-mate (*'ti-māt*), *adj.* being the last; utmost; furthest; extreme; final.
★**ul-ti-ma-tum** (*ul-ti-mā'tum,* not *ul-ti-mā'tum*), *n.* [*pl.* ultimatums (*'tumz*), ultimata (*'tä*)], final conditions offered as the basis of an agreement.
ul-ti-mo (*'ti-mō*), *adv.* in the month preceding the present.
ul-tra (*'trä*), *adj.* extreme.
ul-tra-ma-rine (*-trä-mä-rēn'*), *n.* a permanent, blue pigment.
ul-u-la-tion (*ul-ū-lā'shun*), *n.* a howling like a dog.
Ulysses (*ū-lis'ēz*). A masculine baptismal name, the Latin form of the Greek *Odysseus,* "to cause pain." Fr., *Ulysse;* Gr., *Odysseus;* It., *Ulisse;* Lat., *Ulysses or Ulyzes.*
Umatilla (*ū-ma-til'lä*). River and county in Oregon, said by some to be named for a tribe of Indians. Others state that it is derived from *U-a-talla,* meaning "the sand blew bare in heaps," this part of the country having ridges of sand alternating with bare ground.
Umbagog (*um-bā'gog*). Lake lying partly in New Hampshire and partly in Maine. An Indian word, said to mean "doubled up." Other authorities favor "clear lake, shallow," or "great waters near another."
um-ber (*'bēr*), *n.* a brown pigment: *adj.* of an olive-brown color.
um-bil-ic-al (*-bil'i-kal*), *adj.* pertaining to, or formed like, the navel.
um-brage (*'brāj*), *n.* screen of trees or foliage; offense.
um-bra-geous (*-brā'jus*), *adj.* shady.
★**um-brel-la** (*um-brel'ä,* not *um-bēr-el'ä*), *n.* a covered sliding frame carried in the hand as a screen against the rain.
um-pire (*um'pir*), *n.* a third party to whom a dispute is referred for settlement: *v. i.* to act as umpire.
Una (*ū'nä*). A Gaelic feminine name, corrupted from Winifred. [ion.
u-nan-i-mous (*-nan'i-mus*), *adj.* agreeing in opin-
un-bend (*-bend'*), *v. i.* to free from flexure; relax: *v. i.* to become relaxed; act with freedom or condescension.
un-be-lief (*-bē-lēf'*), *n.* lack of belief; incredulity.
Syn. UNBELIEF, infidelity, incredulity. The Jews are *unbelievers* in the mission of our Savior; the Turks are *infidels,* inasmuch as they do not believe in the bible; deists and atheists are likewise *infidels,* inasmuch as they set themselves up against divine revelation; well-informed people are always *incredulous* of stories respecting ghosts and apparitions. [See *disbelief.*]
un-can-ny (*-kan'i*), *adj.* weird; mysterious; dangerous.
un-cer-tain (*-sēr'tin*), *adj.* not certain. [EQUIVOCAL.]
un-cle (*ung'kl*), *n.* the brother of one's parent; husband of one's aunt.
un-con-cern (*un-kon-sērn'*) *n.* want of concern. [INDIFFERENT.]
un-con-di-tion-al (*-dish'un-al*), *adj.* not conditional.
un-con-scion-a-ble (*un-kon'shun-ä-bl*), *adj.* out of all reason or expectation.
un-cov-ered (*kuv' ērd*), *adj.* not covered.
unc-tion (*ungk'shun*), *n.* the act of anointing; ointment; anything soothing; suavity.
★**unc-tu-ous** (*ungk'tū-us*), *adj.* oily; soothing.
un-daunt-ed (*dänt'ed*), *adj.* not daunted. [BOLD.]
un-der (*'dēr*), *prep.* beneath; subordinate to; in subjection to; less than; during the time of.
un-der-go (*-gō'*), *v. t.* to pass through or experience; suffer.
un-der-grad-u-ate (*-grad'ū-āt*), *n.* a member of a university who has not taken his first degree.
un-der-hand (*-hand'*), *adj.* done by meanness or fraud; clandestine.
un-der-stand (*-dēr-stand'*), *v. t.* to perceive by the mind: *v. i.* to have understanding; be informed. [CONCEIVE.]
un-der-stand-ing (*'ing*), *n.* the rational faculties; intellect; skill.
Syn. UNDERSTANDING, intellect, intelligence. *Understanding* is employed to describe a familiar and easy power or operation of the mind in forming distinct ideas of things. *Intellect* is employed to mark the same operation in regard to higher and more abstruse objects. The *understanding* applies to the first exercise of the rational powers; *intellect,* being a matured state of the *understanding,* is most properly applied to the efforts of those who have their powers in full vigor; we speak of *understanding* as the characteristic distinction between man and brute; *intellect* is applied merely to human power, and *intelligence* to the spiritual power of higher beings; when applied to human beings, it is taken in the most abstract sense for the *intellectual* power; hence we speak of *intelligence* as displayed in the countenance of a child whose looks evince that he has exerted his *intellect,* and thereby proved that it exists.
un-der-take (*-tāk'*), *v. t.* to take under one's management; assume; attempt; answer for: *v. i.* to take upon one's self.
un-der-tak-er (*'dēr-tāk-ēr*), *n.* one who undertakes: one who manages funerals.
un-der-write (*-rīt*), *v. t.* to subscribe one's name to: *v. i.* to follow the calling of an underwriter.
un-der-wri-ter (*-ēr*) *n.* one who sells insurance.
un-due (*un-dū'*), *adj.* improper.
un-du-late (*'dū-lāt*), *v. t.* and *v. i.* to wave, or move like waves.
un-du-la-tion (*-lā'shun*), *n.* a waving motion or vibration.
un-du-ly (*'li*), *adv.* excessively; improperly.
un-earned in-cre-ment (*-ērnd' in'krē-ment*), the increase of the value of land or property without labor or expenditure on the part of the proprietor.
un-e-qual (*-ē'kwal*), *adj.* not equal; not regular or uniform; ill-matched; disproportionate.
un-e-quiv-o-cal (*-kwiv'ō-kal*), *adj.* not equivocal.
un-e-ven (*-ē'vn*), *adj.* not even.
un-feel-ing-ness (*-fēl'ing-nes*), *n.* the state of being without feeling or sympathy.
un-guent (*ung'gwent*), *n.* an ointment.
un-hap-py (*-hap'i*), *adj.* not happy.
uni, a *prefix,* meaning *one,* or *producing one,* as *unicellular: adj.* formed of one cell.
u-ni-corn (*ū'ni-kôrn*), *n.* a fabled animal resembling a horse, but with a straight horn projecting from the forehead.
u-ni-form (*'ni-fôrm*), *adj.* having only one form; same in form, manner, or character; equable: *n.* an official or regulation dress. [EQUAL.]
u-ni-fy (*'ni-fi*), *v. t.* to form into one; make a unit of.
un-ion (*ūn'yun*), *n.* the act of uniting or making one; concord; conjunction; harmony in color.
un-ion-ize (*-īze*), *v. t.* [*p. t.* and *p. p.* unionized (*-īzd*), *p. pr.* unionizing (*-īz-ing*)], to cause to join a trades union, as the members of a handicraft.

un-ion jack (*ūn'yun-jak*), the national flag of Great Britain.
u-ni-ped (*ū'ni-ped*), *adj.* one-footed
u-nique (*-nēk'*), *adj.* without another of the same kind. [RBRE.]
u-ni-son (*'ni-sun*), *n.* accordance of sound; concord; harmony. [ard.
u-nit (*'nit*), *n.* one; a single person or thing; stand-
U-ni-ta-ri-an (*-ni-tā'ri-an*), *n.* one who denies the doctrine of the Holy Trinity, regarding the God-head as unipersonal: *adj.* pertaining to Unitarians.
u-nite (*-nīt'*), *v. t.* to incorporate into one; join by a legal or moral bond: *v. i.* to become one; combine. [CONNECT.]
u-ni-ty (*'ni-ti*), *n.* the state of being one; concord; uniformity.
u-ni-ver-sal (*-ni-vĕr'sal*), *adj.* all-pervading; embracing or comprehending the whole; general. [GENERAL.]
U-ni-ver-sal-ism (*-izm*), *n.* the doctrine that all mankind will ultimately be saved.
u-ni-verse (*'ni-vĕrs*), *n.* the whole system of created things; world.
u-ni-ver-si-ty (*-vĕr'si-ti*), *n. pl.* universities (*-tiz*)], an assemblage of colleges.
un-kempt (*un-kempt'*), *adj.* uncombed; rough.
un-kind-ness (*-kind'nes*), *n.* the quality or act of being unkind. [ACRIMONY.]
un-learned (*-lĕrnd'*), *adj.* not educated. [IGNORANT.]
un-less (*-les'*), *conj.* except; if not.
Syn. UNLESS, except. *Unless*, which is equivalent to if less, if not, or if one fail, is employed only for the particular case; but *except* has always a reference to some general rule, of which an *exception* is hereby signified; I shall not do it *unless* he asks me; no one can enter *except* those who are provided with tickets.
un-let-tered (*-let'ĕrd*), *adj.* untaught. [IGNORANT.]
un-like (*-līk'*), *adj.* dissimilar. [DIFFERENT.]
un-lim-it-ed (*-lim'it-ed*), *adj.* not limited. [BOUNDLESS.]
un-mer-ci-ful (*-mĕr'si-fool*), *adj.* not merciful.
un-prin-ci-pled (*-prin'si-pld*), *adj.* being without principles. [ABANDONED.]
un-qual-i-fied (*-kwol'i-fid*), *adj.* not qualified.
un-ques-tion-a-ble (*-kwes'chun-a-bl*), *adj.* not questionable. [INDUBITABLE.]
un-rea-son-a-ble (*-rē'zn-a-bl*), *adj.* not reasonable. [ABSURD.]
un-re-lent-ing (*-rē-lent'ing*), *adj.* not relenting.
un-ru-ly (*-rū'li*), *adj.* disregarding restraint or authority; turbulent.
un-sex (*-seks'*), *v. t.* to deprive of the characteristic qualities of sex.
un-speak-a-ble (*-spēk-a-bl*), *adj.* unutterable; that which cannot be expressed.
Syn. UNSPEAKABLE, ineffable, unutterable, inexpressible. The *unspeakable* is said of objects in general, particularly of that which is above human conception, and surpasses the power of language to describe, as the *unspeakable* goodness of God; *ineffable* is said of such objects as cannot be painted in words with adequate force; as the *ineffable* sweetness of a person's look; *unutterable* and *inexpressible* are extended in their signification to that which is incommunicable by signs from one being to another; thus grief is unutterable which it is not in the power of the sufferer by any sounds to bring home to the feelings of another; grief is *inexpressible* which is not to be *expressed* by looks, or words, or any sign.
Unter den Linden (*oon'tĕr den lin'den*). A famous street in Berlin which extends from the Brandenburg gate eastward about three-fifths of a mile. Bordering it are the imperial and princely palaces, the university, the academy, the statue of Frederick the Great, etc. Literally "under the lindens."
un-to (*'tōō*), *prep.* to.
un-truth (*-trōōth'*), *n.* the quality of being untrue.
un-ut-ter-a-ble, *adj.* inexpressible. [UNSPEAKABLE.]
un-wor-thy (*-wĕr'thi*), *adj.* not worthy.
Syn. UNWORTHY, worthless. *Unworthy* is a term of less reproach than *worthless;* for the former signifies not to be *worthy* of praise or honor; the latter signifies to be without all *worth*, and consequently in the fullest sense bad. There are many *unworthy* members in every religious community; but every society that is conducted upon proper principles will take care to exclude *worthless* members.
Ant. WORTHY, valuable.
up (*up*), *adv.* on high; above the horizon; from a lower to a higher position.
up-braid (*up-brād'*), *v. t.* to reproach. [BLAME.]
up-cast (*'kast*), *adj.* directed upward.
up-heave (*-hēv'*) *v. t.* to lift up from beneath.
up-hold (*hōld'*), *v. t.* to hold up.
up-hol-ster-er (*hōl'stĕr-ĕr*), *n.* one who provides and places curtains, carpets, etc.
up-hol-ster-y (*'stĕr-i*), *n.* the business of an upholsterer; articles of house furnishing.
up-on (*-on'*), *prep.* on; resting on the top or surface; relating to; noting assumption, security, or time.
up-per (*'ĕr*), *adj.* higher in place, rank, or dignity.
up-pish (*'ish*), *adj.* arrogant; assuming.
up-right (*'rit*), *adj.* erect; just; honest; timber supporting a rafter.
up-roar (*'rōr*), *n.* noisy disturbance; bustle and clamor. [BUSTLE.]
up-set (*up-set'*), *v. t.* to overthrow; put out of normal condition: *n.* (*up'set*) the act of upsetting; state of being upset: *adj.* fixed.
up-shot (*'shot*), *n.* final result.
up-start (*'stärt*), *n.* one who suddenly rises from a humble position to wealth or influence: *adj.* suddenly raised to a position of wealth and influence.
up-turn (*-tûrn'*), *v. t.* and *v. i.* to turn up.
up-ward (*'wĕrd*), *adv.* toward a higher place or source. [Also *upwards.*]
Ural (*ū'ral*). The mountan chain dividing Europe from Asia, means the "girdle" or "belt," *ural-tau* being a Turkic word meaning a "mountain chain," while *urr* means a "chain" in Ostiah. The Russians call the *Ural* mountains by the translated name *Poyas*, the "girdle." The mountains have given their name to the river *Ural*, which flows from them into the Caspian.
u-ra-ni-um (*-rā'ni-um*), *n.* a metallic element from which radium is extracted.
u-ra-nog-ra-phy (*-rā-nog'rā-fi*), *n.* a description of the heavens; the construction of celestial maps, globes, etc.
ur-ban (*ûr'ban*), *adj.* pertaining to a city or town.
Urban. From the Latin *urbanus*, signifying "civil," courteous," "polite," "refined"; literally, "of, or belonging to, a city" (*urbs*). Dan., *Urban;* Dutch, *Urbanus* or *Urbaan*. Fr., *Urbain;* Ger., *Urban;* It., *Urbano;* Lat., *Urbanus;* Sp., *Urbano;* Sw., *Urban.*
ur-bane (*-bān'*), *adj.* polite; refined.
ur-chin (*'chin*), *n.* a pert or rough little fellow: *adj.* mischievous.
urge (*ûrj*), *v. t.* to incite; impel; provoke: *v. i.* to act with earnestness; insist upon; allege proofs. [PERSUADE.]
ur-gent (*ûr'jent*), *adj.* pressing; calling for immediate attention.
Uriah (*ū-ri'a*). From the Hebrew, meaning "light of Jehovah," or "fire of the Lord." Fr., *Urie;* Ger., *Urias;* It., *Uria;* Lat., *Urias.*
u-ri-nal (*'ri-nal*), *n.* a place of convenience.
u-ri-na-ry (*'ri-nā-ri*), *adj.* pertaining to, or like, urine.
u-rine (*'rin*), *n.* the excretion from the kidneys.
urn (*ûrn*), *n.* a roundish vessel of various materials, bulging in the middle, usually with a foot or pedestal.
ur-sine (*ûr'sin*), *adj.* pertaining to, or resembling, a bear.
Ursula (*ûr'sū-la*). A feminine name derived from the Latin *ursula*, "a young, or small, she-bear." Dutch, *Ursula;* Fr., *Ursule;* Ger., *Ursula;* It., *Ursula;* Lat., *Ursula;* Sp., *Ursula;* Sw., *Ursulo.*
Uruguay (*ū'roo-gwā*, Spanish *ōō-roo-gwī'*). Name of a river in South America, meaning "the golden water."
us-a-ble (*ūz'a-bl*), *adj.* that can be used.
us-age (*'āj*), *n.* mode of using; treatment; habitual or long continued use or custom.
Syn. USAGE, custom, prescription. The *usage* is what one has been long used to do; *custom* is what one generally does; *prescription* is what is *prescribed* by usage to be done. The *usage* acquires force and sanction by dint of time; the *custom* acquires sanction by the frequency of its being done or the numbers doing it; the *prescription* acquires force by the authority which *prescribes.*
use (*ūs*), *n.* the act of using; application of anything to a particular purpose; custom or practice: *v. t.* (*ūz*) to make use of; employ; habituate: *v. i.* to be accustomed. [EMPLOY.]
use-ful (*ūs'fool*), *adj.* full of use, profit, or advantage; beneficial.
use-less (*'les*), *adj.* having, or being of, no use.
ush-er (*ush'ĕr*), *n.* a doorkeeper; an officer who introduces strangers: *v. t.* to introduce or escort.
u-su-al (*ū'zhū-al*), *adj.* habitual; customary; usually. [COMMONLY.]
u-su-fruct (*'zū-frukt*), *n.* the temporary use and enjoyment of lands and tenements belonging to another.
u-sur-er (*'zhūr-ĕr*), *n.* one who lends money at an exorbitant rate of interest.
★u-surp (*ū-zĕrp'*, not *ū-s ĕrp'*), *v. t.* to take possession of by force, or without right.
u-surp-er (*-z ĕrp'ĕr*), *n.* one who usurps.
u-su-ry (*'zhū-ri*), *n.* interest on money beyond the current rate of interest; practice of lending money at exorbitant interest.
Utah (*ū'tä, ū'taw*). State in the Union, county and lake in same state, named for the Ute Indians, the word meaning "home, or location, on the mountain top."
u-ten-sil (*-ten'sil*), *n.* an implement.
u-ter-ine (*'tĕr-in*), *adj.* pertaining to the womb.
u-ter-us (*'tĕr-us*), *n.* the womb.
Utica (*ū'ti-ka*). City in New York, named for the ancient city in Africa; town in Livingston county, Missouri, and Hinds county, Mississippi, and village in Macomb county, Michigan, named for the above.
u-til-i-ta-ri-an-ism (*ū-til-i-tā'ri-an-izm*), *n.* the doctrine that virtue is defined and enforced by its tendency to promote the highest happiness of mankind.
u-til-i-ty (*-til'i-ti*), *n.* usefulness; intrinsic value.
u-til-ize (*'til-iz*), *v. t.* to make useful or profitable.
ut-most (*ut'mōst*), *adj.* in the greatest degree; most distant; furthest; extreme: *n.* the extreme limit or extent.
U-to-pi-an (*ū-tō'pi-an*), *n.* pertaining to the imaginary island, described by Sir Thomas More in his *Utopia*, where the most perfect system of laws and institutions existed; hence ideal, visionary.
ut-ter (*ut'ĕr*), *adj.* entire; absolute; unqualified; total: *v. t.* to speak.
Syn. UTTER, speak, articulate, pronounce. *Utter* signifies to put out; that is, to send forth a sound. We may *utter* a groan; we *speak* words only, or that which is intended to serve as words. *To speak*, therefore, is only a species of utterance; a dumb man has *utterance*, but not *speech*. *Articulate* and *pronounce* are modes of *speaking; to articulate*, is *to pronounce* distinctly the letters or syllables of words; which is the first effort of a child beginning to speak. *To pronounce* is a formal mode of speaking. [See *speak.*]
Ant. BE SILENT.
ut-ter-ance (*-ans*), *n.* vocal expression; speech.
ut-ter-most (*'ĕr-mōst*), *adj.* extreme; in the furthest, greatest, or highest degree: *n.* the furthest extent or degree.
u-vu-la (*ū'vū-la*), *n.* the fleshy, conical body attached to the soft palate.
ux-o-ri-ous (*uks-ō'ri-us*), *adj.* foolishly or excessively fond of a wife.
Uzziah (*uz-zī'a*). From the Hebrew, signifying, the strength of the Lord." Lat., *Uzzias.*

V

va-can-cy (*vā'kan-si*), *n.* state of being vacant or empty; listlessness; open or unoccupied space.
va-cant (*'kant*), *adj.* empty; free from thought or reflection; not occupied.
va-cate (*'kāt*), *v. t.* to make vacant; annul; give up the possession of. [ABOLISH.]
va-ca-tion (*-kā'shun*), *n.* the act of vacating; intermission of a stated employment, or judicial proceedings.
vac-ci-nate (*vak'si-nāt*), *v. t.* to inoculate with vaccine matter.
vac-cine (*'sin*), *n.* a liquid taken from a cow affected with cowpox.
vac-il-late (*vas'il-āt*), *v. i.* to be unsteady; waver.
va-cu-i-ty (*vā-kū'i-ti*), *n.* emptiness.
vac-u-ous (*vak'ū-us*), *adj.* empty; vacant.
vac-u-um (*-um*), *n.* a space devoid of all matter; void.
vag-a-bond (*vag'a-bond*), *adj.* without fixed habitation; roaming; idle: *n.* a vagrant; scamp.
★va-ga-ry (*vā-gā'ri*, not *vā'gā-ri*), *n.* a wild freak; whim.
va-gi-na (*-ji'nā*), *n.* the canal which leads from the external orifice to the uterus; sheath.
va-gran-cy (*vā'gran-si*), *n.* a state of wandering without a settled home; habits and life of a vagrant.
★va-grant (*vā'grant*, not *vag'rant*), *adj.* wandering from place to place: *n.* a tramp.
vague (*vāg*), *adj.* indefinite; unsettled.
vain (*vān*), *adj.* empty; unreal; deceitful; producing no results; conceited.
vain-glo-ri-ous (*-glō'ri-us*), *adj.* elated by one's achievements. [PRIDE.]
vale (*vāl*), *n.* a valley.
val-e-dic-to-ry (*val-ē-dik'tō-ri*), *adj.* bidding farewell. [FAREWELL.]
va-lence (*vā'lens*), *n.* the degree of combining power of an atom.
Valencia (*vā-len'shi-a*, Spanish *vā-lān'thē-ä*). City in Spain, was the ancient *Valentia*, "the powerful."
Valenciennes (*vā-len-si-enz'*, French *vä-lăN-syen'*), also **Valenza** and **Valence.** A city of France. Said to have been named after the western Roman emperor, Valentinian.
Valentina (*val-en-tī'nä*). Feminine name derived from *Valentine.*
val-en-tine (*val'en-tīn*), *n.* a sweetheart chosen on St. Valentine's day; love missive sent on February 14th.
Valentine. A name derived from St. Valentine, from the Latin *Valentinus*, of, or belonging to, *Valentia*, one of the ancient names of Rome; also of towns in Spain, Italy, and Sardinia, and the appellation of a goddess worshipped at Oriculum in Italy; originally from *valens*, "puissant," "mighty," "strong." Danish, *Valentin;* Dutch, *Valentijn;* Fr., *Valentin;* Ger., *Valentin;* It., *Valentino;* Lat., *Valentinus;* Port., *Valentin;* Sp., *Valentin;* Sw., *Valentin.*
Valeria (*vā-lē'ri-ä*). The feminine of *Valerius.* Fr., *Valerie;* It., *Valerie;* Lat., *Valeriæ.*
Valerian (*vā-lē'ri-an*). From the Latin *valere*, "to be strong, healthy." Dutch, *Valerianus;* Fr., *Valerien;* It., *Valeriano;* Lat., *Valerianus.*
Valerie. See *Valeria.*
val-et (*val'ā*), *n.* a servant who attends on a gentleman's person: *v. t.* to act as valet to.
val-e-tu-di-na-ri-an (*-ē-tū-di-nā'ri-an*), *adj.* sickly; seeking to recover health: *n.* an invalid.
val-iant (*'yant*), *adj.* brave; heroic.
val-id (*'id*), *adj.* having legal force; not weak or defective.
va-lise (*vä-lēs'*), *n.* a small portmanteau.
val-ley (*val'i*), *n.* [*pl.* valleys (*'iz*)], a tract of land situated between mountains.
Valley Forge. Village in Chester county, Pennsylvania, so named because situated at the mouth of Valley creek, where a forge was erected in the days antedating the Revolution, by Isaac Potts.
val-or (*val'ĕr*), *n.* bravery. [BRAVERY.]

val-or-ous (*val'ẽr-us*), *adj.* brave.
val-u-a-ble (*'ŭ-a-bl*), *adj.* possessing useful qualities; having value or worth: *n.* a thing of value.
val-ue (*'ŭ*), *n.* that which renders anything useful or estimable; price: *v. t.* to estimate the worth of; esteem.
Syn. VALUE, prize, esteem. *To value* is to set any *value*, real or suppositious, relative or absolute, on a thing; in this sense men *value* gold above silver, or an appraiser *values* goods. *Prize* and *esteem* are taken only as mental actions; the former in reference to sensible or moral objects, the latter only to moral objects; we may *value* books according to their market price, or we may *value* them according to their contents; we *prize* books only for their contents, in which sense *prize* is a much stronger term than *value*.
Ant. THINK LIGHTLY OF.
valve (*valv*), *n.* a lid or cover opening in one direction and shutting in another.
va-mose (*vă-mōs'*), *v. i.* to decamp.
vamp (*vamp*), *n.* the upper leather of a boot or shoe: *v. t.* to furnish with an upper leather.
vam-pire (*vam'pīr*), *n.* a fabled demon or ghost that sucks the blood of persons asleep.
van (*van*), *n.* the front of an army or fleet; a large covered wagon for moving.
Vancouver (*van-kōō'vẽr*). A rising city which forms the western terminus of the Canadian Pacific railway, bears the name of Captain George Vancouver, R. N., who, as a midshipman in Cook's last voyage, visited the coast in 1776, and surveyed it in 1792.
Vancouver island. Named in memory of Captain Vancouver, a midshipman under Captain Cook, who discovered it in 1792, while cruising about in search of a river on the west coast of North America.
van-dal (*van'dal*), *n.* one who ruthlessly destroys.
vane (*vān*), *n.* a weathercock.
van-guard (*van'gärd*), *n.* the advance guard of an army.
va-nil-la (*vă-nil'a*), *n.* the dried fruit of an orchid, used for flavoring.
van-ish (*van'ish*), *v. i.* to disappear. [DISAPPEAR.]
van-i-ty (*'i-ti*), *n.* [*pl.* vanities (*-tiz*)], love of indiscriminate admiration; empty pride or conceit; idle show; emptiness. [PRIDE.]
★**van-quish** (*vang'kwish*, not *van'kwish*), *v. t.* to conquer; subdue.
van-tage (*'tāj*), *n.* advantage; in lawn tennis, the first point after deuce.
va-por (*vā'pẽr*), *n.* steam; mist: *v. i.* to pass off in vapor; bully.
va-por-ize (*vā'pẽr-īz*), *v. t.* to convert into vapor.
va-por-ous (*'pẽr-us*), *adj.* full of, or like, vapor; unreal.
va-ri-a-ble (*'ri-a-bl*), *adj.* changeable; inconstant; fickle.
va-ri-ance (*'ri-ans*), *n.* difference; quarrel.
va-ri-ant (*'ri-ant*), *adj.* variable; different: *n.* a different form of substantially the same thing.
va-ri-a-tion (*-ri-ā'shun*), *n.* a partial change; difference. [DIFFERENCE.]
var-i-co-cele (*var'i-kō-sēl*), *n.* a swelling of the veins.
var-i-cose (*'i-kōs*), *adj.* abnormally swollen or enlarged.
va-ried (*vā'rid*), *adj.* altered; partially changed; various.
va-ri-e-gate (*vā'ri-ē-gāt*), *v. t.* to mark with different colors.
va-ri-e-ty (*vă-rī'e-ti*), *n.* [*pl.* varieties (*-tiz*)], intermixture or succession of different things; diversity. [DIFFERENCE.]
va-ri-o-rum (*vā-ri-ō'rum*), *adj.* noting an edition of a book with the notes of various commentators.
va-ri-ous (*'ri-us*), *adj.* different; several.
var-let (*vär'let*), *n.* formerly a servant, footman, or page; a scoundrel.
var-nish (*'nish*), *n.* a viscid, resinous liquid used for giving a gloss to wood or metal work: *v. t.* to cover with varnish; give a gloss to or over; palliate.
va-ry (*vā'ri*), *v. t.* to change; make of different kinds; alter: *v. i.* to undergo a change; disagree.
vas-cu-lar (*vas'kū-lẽr*), *adj.* consisting of, or containing, vessels.
★**vase** (*vās* or *vāz*), *n.* a vessel for various purposes.
vas-e-line (*vas'ẽ-lin*), *n.* petroleum jelly.
Vashti (*vash'-ti*). Feminine name, so called from *Vashti*, wife of Ahasuerus, signifying "beauty," "goodness."
Vasili or **Vasili.** See *Basil.*
vas-sal (*vas'al*), *n.* a feudal tenant; bondman: *adj.* servile.
vas-sal-age (*-āj*), *n.* the state of being a vassal; territory held in vassalage.
vast (*vast*), *adj.* of great extent; great in number or degree; very spacious; immense: *n.* boundless space.
vat (*vat*), *n.* a large tub or vessel.
Vat-i-can (*vat'i-kan*), *n.* the palace of the pope at Rome; the papal authority.
Vatican. A hill of Rome, on the right bank of the Tiber, opposite the Pincian. On it stands St. Peter's and the Vatican palace.
★**vaude-ville** (*vōd'vil*, French *vōd-vēl'*), *n.* a light, gay, or topical song; a short drama with comic songs; a varied dramatic entertainment.
vault (*vawlt*), *n.* an arched roof; cellar; prison; cavern; sky; leap: *v. t.* to shape as a vault; arch: *v. i.* to leap, spring, or bound.
vaunt (*vänt* or *vawnt*), *v. i.* to boast: *v. t.* to brag of; display boastfully: *n.* a boast. [GLORY.]
veal (*vēl*), *n.* calf's flesh.
vec-tor (*vek'tẽr*), *n.* a directive quantity, as a straight line, force, or velocity.
Ve-da (*vā'dä*), *n.* [*pl.* Vedas (*'däz*)], one of the four oldest sacred books or collection of hymns of the Hindus.
veer (*vēr*), *v. i.* to change direction, as the wind; wear: *v. t.* to turn; direct to a different course.
veg-e-ta-ble (*vej ẽ-tä-bl*), *adj.* pertaining to, having the nature of, produced by, or consisting of, plants: *n.* a plant or root cultivated for the table, etc.
veg-e-ta-ri-an (*-tā'ri-an*), *n.* one who abstains from a meat diet: *adj.* pertaining to vegetarians or vegetarianism.
veg-e-tate (*'ẽ-tāt*), *v. i.* to grow, as a plant.
veg-e-ta-tion (*-tā'shun*), *n.* plants or vegetables collectively.
veg-e-ta-tive (*'ẽ-tā-tiv*), *adj.* growing, as plants.
★**ve-he-ment** (*vē'hẽ-ment*), *adj.* very violent or forcible; passionate. [VIOLENT, EAGER.]
ve-hi-cle (*vē'hi-kl*), *n.* any kind of carriage or conveyance.
ve-hic-u-lar (*-hik'ū-lẽr*), *adj.* pertaining to, or serving as, a vehicle.
veil (*vāl*), *n.* curtain or covering for concealment: *v. t.* to cover with, or as with, a veil; hide, conceal.
vein (*vān*), *n.* one of the vessels which convey blood from the arteries to the heart; branching rib of a leaf; seam of rock filled with metallic or mineral matter; particular disposition, genius, or style: *v. t.* to fill or cover with, or as with, veins.
vein-ous (*vān'us*, not *vē'nus*), *adj.* full of, or provided with, veins.
vel-lum (*vel'um*), *n.* fine parchment.
ve-loc-i-pede (*vẽ-los'i-pēd*), *n.* a light carriage propelled by the feet.
ve-loc-i-ty (*'i-ti*), *n.* [*pl.* velocities (*-tiz*)], speed; rate of movement.
vel-vet (*vel'vet*), *n.* a silk fabric with short, close, soft nap.
vel-vet-een (*-ēn'*), *n.* imitation velvet.
ve-nal (*vē'nal*), *adj.* mercenary; of, or pertaining to, the veins.
vend (*vend*), *v. t.* to sell.
ven-det-ta (*ven-det'ä*), *n.* a kind of blood-feud. [*Italian.*]
ven-dor (*'dẽr*), *n.* the seller. [Also *vender.*]
ve-neer (*vẽ-nẽr'*), *v. t.* to overlay with a thin slice of ornamental or more valuable wood.
ven-er-a-ble (*ven'ẽr-a-bl*), *adj.* worthy of being venerated or reverenced.
ven-er-ate (*'ẽr-āt*), *v. t.* to regard with the highest respect. [ADMIRE.]
ve-ne-re-al (*vẽ-nẽ'rẽ-al*), *adj.* pertaining to, or arising from, sexual intercourse.
Venezuela (*ven-ez-wē'lä*, Spanish *vā-neth-wā'lä*). A republic of northern South America. Name is the Spanish for "Little Venice," which designation was given to this country owing to the discovery of some Indian villages built upon piles after the manner of the "Silent City" on the Adriatic Sea.
venge-ance (*venj'ans*), *n.* the infliction of pain on another for an injury received.
venge-ful (*'fool*), *adj.* vindictive; retributive.
ve-ni-al (*vē'ni-al*), *adj.* pardonable.
Syn. VENIAL, pardonable. *Venial* is applied to what may be tolerated without express disparagement to the individual, or direct censure; but the *pardonable* is that which may only escape severe censure, but cannot be allowed; garrulity is a *venial* offense in old age; levity in youth is *pardonable* in single instances.
Venice (*ven'is*). It., *Venezia;* Ger., *Venedig.* Is the French name for the city founded on the east coast of Italy by fugitives from the Roman province of Venetia. The word means "blessed."
ven-i-son (*ven'i-zn*), *n.* deer's flesh.
ven-om (*'um*), *n.* poison introduced into the system by a bite or sting; spite. [POISON.]
ven-om-ous (*-us*), *adj.* poisonous; malignant.
★**ve-nous** (*vē'nus*, not *vā'nus*), *adj.* pertaining to veins.
vent (*vent*), *n.* a small opening for the escape of air, etc.; utterance: *v. t.* to give an opening to.
ven-ti-late (*ven'ti-lāt*), *v. t.* to open to the free passage of air.
ven-tri-cle (*'tri-kl*), *n.* a small cavity in an animal body.
ven-tril-o-quism (*-tril'ō-kwism*), *n.* the act or art of speaking as from another source than the voice.
ven-tril-o-quist (*-kwist*), *n.* one who practices ventriloquism.
ven-ture (*'tūr*), *n.* an undertaking of chance or danger: *v. t.* send on a venture: *v. i.* to dare. [HAZARD.]
ven-ue (*ven'ū*), *n.* the place where an action in law is laid.
ve-ra-cious (*vẽ-rā'shus*), *adj.* truthful.
ve-rac-i-ty (*-ras'i-ti*), *n.* truthfulness; truth. [TRUTH.]
ve-ran-da (*-ran'dä*), *n.* a kind of covered balcony or open portico supported by light pillars.
verb (*vẽrb*), *n.* that part of speech which signifies to be, to do, or to suffer.
ver-bal (*vẽr'bal*), *adj.* expressed in words: *n.* a noun derived from a verb.
★**ver-ba-tim** (*vẽr-bā'tim*, not *vẽr-bat'im*), *adv.* word for word.
ver-bi-age (*'bi-āj*) *n.* superabundance of words.
ver-bose (*-bōs'*), *adj.* wordy.
ver-dant (*uẽr'dant*), *adj.* green; inexperienced.
ver-dict (*'dikt*), *n.* the finding of a jury on a trial.
ver-di-gris (*'di-grēs*), *n.* the blue-green substance which forms on copper or brass: used as a pigment.
ver-dure (*'dūr*), *n.* freshness of vegetation.
verge (*vẽrj*), *n.* a rod, mace, etc.; shaft of a column; spindle of a watch-balance; border or limit: *v. i.* to approach or come near something.
ver-i-fi-ca-tion (*ver-i-fi-kā'shun*), *n.* the act of proving to be true; confirmation.
ver-i-fy (*'i-fī*), *v. t.* to prove to be true.
ver-i-ly (*'i-li*), *adv.* in truth.
ver-i-si-mil-i-tude (*-i-si-mil'i-tūd*), *n.* the appearance of truth; probability.
ver-i-ta-ble (*'i-tä-bl*), *adj.* true; genuine.
ver-i-ty (*'i-ti*), *n.* [*pl.* verities (*-tiz*)], agreement with fact.
ver-mi-cel-li (*-mi-sel'i*), *n.* a stiff paste or dough of fine flour made into tubes.
ver-mil-ion (*-mil'yun*), *n.* a brilliant red pigment: *v. t.* to color or dye with vermilion.
ver-min (*'min*), *n.* noxious small animals or insects, as rats, fleas.
Vermont. When the French were in possession of the St. Lawrence valley they called the mountains of the southern section *Vermont, vert,* "green," *mont,* "mountain," and the inhabitants of that section in their Declaration of Independence, January 16, 1777, adopted the name for the state. One of the New England states.
ver-nac-u-lar (*-nak'u-lẽr*), *adj.* pertaining to, or characteristic of, one's native country or language: *n.* native idiom.
ver-nal (*'nal*), *adj.* pertaining to the spring.
Veronica (*vẽ-ron'i-kä*). From the Greek word meaning, "true picture." Fr., *Veronique;* It., *Veronica.*
Versailles (*vẽr-sālz'*, French *ver-sä'yi*), **Palace of.** A famous royal palace in the French city of the same name, a great part of which is now occupied by the Museum of French History, consisting chiefly of paintings; but some of the apartments are still preserved with the fittings of a royal residence.
ver-sa-tile (*'sa-til*), *adj.* turning with ease from one thing, subject, or opinion to another.
verse (*vẽrs*), *n.* a measured line of poetry.
versed (*vẽrst*), *adj.* skilled; conversant.
ver-si-fi-ca-tion (*vẽr-si-fi-kā'shun*), *n.* the art or practice of composing metrical verses.
★**ver-sion** (*vẽr'shun*, not *vẽr'zhun*), *n.* a translation from one language into another; particular account or description.
ver-te-bra (*'te-brä*), *n.* [*pl.* vertebræ (*-brē*)], a single bone of the spinal column.
ver-te-bral (*'tẽ-bral*), *adj.* pertaining to, or forming part of, the vertebræ.
Ver-te-bra-ta (*-brā'tä*), *n. pl.* one of the great divisions of the animal kingdom.
ver-tex (*'teks*), *n.* [*pl.* vertices (*'ti-sēz*)], the top, summit, or crown.
ver-ti-cal (*'ti-kal*), *adj.* perpendicular to the plane of the horizon.
ver-ti-go (*'ti-gō*), *n.* giddiness.
verve (*vẽrv*), *n.* the enthusiasm which animates a poet or artist; spirit; energy.
ver-y (*ver'i*), *adj.* real; actual; true: *adv.* extremely.
ves-i-ca-tion (*ves-i-kā'shun*), *n.* the process of raising blisters on the skin.
ves-i-cle (*'i-kl*), *n.* a bladder-like vessel or cavity.
ves-pers (*ves'pẽrz*), *n. pl.* evening songs.
★**ves-sel** (*ves'el*, not *ves'l*), *n.* a utensil for holding something, especially liquids; hollow structure made to float on water; ship; tube or canal in which the fluids of a body are contained.
vest (*vest*), *n.* body garment, usually with short sleeves: *v. t.* to clothe with, or as with, a garment; give fixed right of possession.
ves-tal (*ves'tal*), *adj.* chaste; pure: *n.* a virgin; nun.
vest-ed (*vest'ed*), *adj.* clothed; fixed.
ves-ti-bule (*ves'ti-būl*), *n.* porch or entrance into a house.
ves-tige (*'tij*), *n.* a mark left in passing. [MARK.]
vest-ment (*vest'ment*), *n.* a garment.
ves-try (*ves'tri*), *n.* [*pl.* vestries (*'triz*)], a room in a church where ecclesiastical vestments, etc., are kept.
ves-ture (*'tūr*), *n.* clothing; covering.
Vesuvius (*vẽ-sū'vi-us*), **Mt.** The only active volcano on the continent of Europe, and the most noted one in the world, situated on the Bay of Naples, Italy. The Italian form is *Vesuvio,* and the French form, *Vesuve;* the word originally meant "emitter of smoke."
vet-er-an (*vet'ẽr-an*), *adj.* long exercised or experienced, especially in military life: *n.* one thus experienced.
★**vet-er-i-na-ry** (*vet'ẽr-i-nā-ri*, not *vet'rin-ā-ri*), *adj.* pertaining to the art of healing the diseases of domestic animals.
ve-to (*vē'tō*), *n.* the right of stopping or preventing the enactment of a law: *v. t.* to reject by veto.
vex (*veks*), *v. t.* to irritate by small annoyances or provocations. [TEASE.]
vex-a-tion (*-ā'shun*), *n.* the act of vexing.
vex-a-tious (*'shus*), *adj.* causing vexation.
vexed (*vekst*), *adj.* much debated or contested, but not settled.
vi-a-duct (*vi'ä-dukt*), *n.* an arched structure for conveying a railway, road, etc., over low ground.
vi-al (*'al*), *n.* a small glass bottle or vessel: *v. t.* to put in a vial.

vi-ands (*vī'andz*), *n. pl.* dressed meat; food.
vi-brate (*'brāt*), *v. i.* to move backward and forward; oscillate: *v. t.* to cause to quiver.
vi-bra-tion (*-brā'shun*), *n.* the act of vibrating; oscillation.
vic-ar (*vik'ĕr*), *n.* a deputy.
vi-ca-ri-ous (*vī-kā'ri-us*), *adj.* substituted, or performed, in the place of another.
vice (*vis*), *n.* immoral practice or habit. [CRIME.]
vice, *prefix* meaning *in place of, second in rank.*
vice-ge-rent (*-jĕ'rent*), *n.* one deputed by superior authority to exercise the functions of another.
vice-roy (*'roi*), *n.* a governor of a country ruling in the name, and by the authority, of the sovereign.
Vi-chy wa-ter (*vē'shi waw'tĕr*), a mineral effervescent water.
vi-cin-i-ty (*vi-sin'i-ti*), *n.* nearness in place; proximity. [NEIGHBORHOOD.]
vi-cious (*vish'us*), *adj.* characterized by vice or blemish. [ABANDONED.]
vi-cis-si-tude (*vi-sis'i-tūd*), *n.* change.
Vicksburg. City in Mississippi, named for Neivitt Vick, its founder.
★**vic-tim** (*vik'tim*, not *vik'tum*), *n.* a living being sacrificed to a deity; some person or thing destroyed or injured in the pursuit of some object, or by some accident.
vic-tim-ize (*-īz*), *v. t.* to make a victim of. [ABUSE.]
vic-tor (*'tĕr*), *n.* conqueror; one who wins or gains an advantage. [CONQUERER.]
Victoria (*vik-tō'ri-ā*). From the Latin, meaning "victory." Fr., *Victoire;* It., *Vittoria;* Lat., *Victoria;* Sp., *Vitoria.*
vic-to-ri-ous (*-tō'ri-us*), *adj.* having conquered in battle or contest.
vic-to-ry (*'tō-ri*), *n.* [*pl.* victories (*-riz*)], the defeat of an enemy in battle, or an antagonist in a contest.
vict-ual (*vit'l*), *v. t.* to supply or store with provisions for food: *n. pl.* food; meat.
★**vi-cu-ña** (*vē-kōōn'yā*), *n.* an animal of Mexico and Chili, allied to the llama, furnishing a fine long, reddish wool.
vie (*vi*), *v. i.* to strive for superiority; rival.
Vienna (*vi-en'ā*). Ger., *Wien;* Fr., *Vienne.* Capital of Austro-Hungary. Originally, *Vindobona,* a name probably of Celtic origin, meaning either "white castle," or "town of the Wends."
view (*vū*), *v. t.* to look upon; see; survey mentally: *n.* the act of seeing; prospect; purpose; sketch or picture; judgment; opinion.
Syn. VIEW, survey, prospect. We take a *view* or *survey;* the *prospect* presents itself; the *view* is of an indefinite extent; *the survey* is always comprehensive in its nature. Ignorant people take but narrow *views* of things; the capacious mind of a genius takes a *survey* of all nature; our *prospects* are very delusive. Sometimes our *prospects* depend upon our *views;* erroneous *views* of a future state has but a wretched *prospect.*
vig-il (*vij'il*), *n.* a watching; eve preceding a feast of the church.
vig-i-lant (*'i-lant*), *adj.* attentive to discover and avoid danger; alert; cautious. [WAKEFUL.]
vi-gnette (*vin-yet'*), *n.* a portrait of the head and bust only.
vig-or (*vig'ĕr*), *n.* physical or mental strength and energy; force. [ENERGY.]
vig-or-ous (*'ĕr-us*), *adj.* full of physical or mental strength and energy; robust; forcible. [ACTIVE.]
vi-king (*vī'king*), *n.* one of the old Scandinavian pirates.
vile (*vīl*), *adj.* worthless; despicable. [ABANDONED.]
vil-i-fy (*'i-fī*), *v. t.* to defame; debase by slander. [ABUSE.]
vil-la (*'ā*), *n.* a country seat; suburban residence.
vil-lage (*'āj*), *n.* a small assemblage of houses, less than a town but larger than a hamlet.
vil-lain (*'in* or *'ān*), *n.* scoundrel.
vil-lan-age (*'an-āj*), *n.* the state or condition of a serf.
vil-lous (*'us*), *adj.* covered with long, thin, soft hairs.
Vincennes (*vin-senz'*, French *van-sen'*). City in Indiana, named from the fort built by Sieur de Vincennes.
Vincent (*vin'sent*). From the Latin name, *Vincentius,* from *vincere,* "to conquer." Dutch, *Vincentius;* Fr., *Vincent;* It., *Vincente;* Lat., *Vincentius;* Port., *Vicente;* Sp., *Vicente* or *Vincente.*
vin-di-cate (*vin'di-kāt*), *v. t.* to defend successfully; assert a right to; justify. [DEFEND, ASSERT.]
vin-di-ca-tion (*-kā'shun*), *n.* justification against denial, censure, or oppression.
vin-dic-tive (*-dik'tiv*), *adj.* given to, or prompted by, revenge.
vine (*vin*), *n.* any woody, climbing plant of the genus Vitis.
vin-e-gar (*vin'ē-gĕr*), *n.* an acid obtained by fermentation from wine, beer, etc.; hence anything sour.
vi-ner-y (*vī'nĕr-i*), *n.* a place where grapes are cultivated artificially.
vine-yard (*vin'yĕrd*), *n.* a plantation of vines producing grapes.
vi-nous (*vī'nus*), *adj.* pertaining to wine.
vin-tage (*vin'tāj*), *n.* the yearly crop or produce of the grape.
vi-ol (*vī'ol*), *n.* a four-stringed musical instrument played with a bow.
vi-o-la (*vī'ō-lā* or *vē-ō'lā*), *n.* the tenor violin.
Viola (*vī'ō-lā*, Italian *vē-ō'lā*). A feminine name derived from the Latin *viola,* "a violet."
Violante. A feminine name derived from the name *Violet.*
vi-o-late (*'ō-lāt*), *v. t.* to transgress; ravish; treat with irreverence. [ABUSE.]
vi-o-la-tion (*-lā'shun*), *n.* the act of violating, infringing, or injuring.
vi-o-lence (*'ō-lens*), *n.* physical or moral force; unjust strength or power applied to any purpose. [FORCE.]
vi-o-lent (*'ō-lent*), *adj.* urged or driven by force.
Syn. VIOLENT, furious, boisterous, vehement, impetuous. A man is *violent* in his opinions, *violent* in his measures, *violent* in his resentments; he is *furious* in his anger, or has a *furious* temper; he is *vehement* in his affections or passions, *vehement* in love, *vehement* in zeal, *vehement* in pursuing an object; *violence* transfers itself to some external object on which it acts with force; but *vehemence* respects that species of *violence* which is confined to the person himself; *impetuosity* is rather the extreme of *violence* or *vehemence;* an *impetuous* character is an excessively *vehement* character. *Boisterous* is said of the manner and the behavior rather than the mind.
Ant. GENTLE, mild, calm, controlled.
vi-o-let (*'ō-let*), *n.* a plant of the genus Viola; a color like that of the violet.
Violet. A feminine name derived from French *violette,* from the Latin *viola.*
Violetta. A diminutive of the name *Violet,* or direct from Italian *Violetta.*
vi-o-lin (*-ō-lin'*), *n.* a four-stringed musical instrument, played with a bow.
vi-o-lon-cel-lo (*vē-ō-lon-chel'ō* or *sel'ō*), *n.* a large four-stringed instrument of the viol class.
vi-per (*vī'pĕr*), *n.* a venomous serpent of various species.
vi-ra-go (*vi-rā'gō*), *n.* a bold, turbulent woman.
Vergil or **Virgil** (*vĕr'jil*). Derived, like the surname *Vergil,* from the bard of Mantua. Angelus Politianus writes the poet's name *Vergilius;* Pierius, *Virgilius.* The name has been variously derived from *Vergiliæ,* the stars called the Pleiades, and from *virga,* "a garland or laurel."
vir-gin (*vĕr'jin*), *n.* a woman who has preserved her chastity; maiden: *adj.* pertaining to, or becoming, a virgin.
Virginia (*vĕr-jin'i-ā*). A Roman name, feminine of *Virginius,* from root of *virgo,* "a virgin." Dutch, *Virginie;* Fr., *Virginie;* Ger., *Virginia;* It., *Virginia;* Lat., *Virginia.*
vir-gin-al (*'jin-al*), *adj.* maidenly; chaste: *n.* a 16th century musical instrument.
vir-ile (*vir'il*), *adj.* pertaining to mature manhood.
vir-tu-al (*vĕr'tū-al*), *adj.* in essence or effect, though not in fact.
vir-tue (*'tū*), *n.* rectitude, strength; efficacy; valor; chastity; legal force.
vir-tu-o-so (*-tū-ō'sō*), *n.* [*pl.* virtuosi (*'sē*)], one skilled in the fine arts, or in antiquities.
vir-tu-ous (*'tū-us*), *adj.* possessing, or exhibiting, virtue.
vir-u-lence (*vir'ū-lens*), *n.* the state or quality of being virulent. [ACRIMONY.]
vir-u-lent (*'ū-lent*), *adj.* very poisonous or venomous; actively injurious to life or health.
vis-age (*viz'āj*), *n.* the countenance.
vis-ce-ra (*vis'ē-rā*), *n. pl.* the intestines.
vis-cid (*'id*), *adj.* sticky.
vis-count (*vī'kount*), *n.* a nobleman next in rank below an earl.
vis-cous (*vis'kus*), *adj.* adhesive.
vise (*vīs*), *n.* a two-jawed instrument for holding work.
vis-i-ble (*viz'i-bl*), *adj.* perceptible by the eye; in view. [APPARENT, PHYSICAL.]
vi-sion (*vizh'un*), *n.* the act or sense of seeing; object of sight.
vi-sion-a-ry (*-ā-ri*), *adj.* existing only in the imagination: *n.* an unpractical schemer.
vis-it (*viz'it*), *n.* the act of calling to see another: *v. t.* to call upon: *v. i.* to be in the habit of making calls.
vis-i-tor (*viz'i-tĕr*), *n.* one who visits. [GUEST.]
vis-or. See *vizor.*
vis-ta (*vis'tā*), *n.* [*pl.* vistas (*'taz*)], a view.
vis-u-al (*vizh'ū-al*), *adj.* pertaining to sight.
vi-tal (*vī'tal*), *adj.* pertaining to life; essential.
vi-tal-i-ty (*-tal'i-ti*), *n.* vital force.
vi-tal-ize (*'tal-īz*), *v. t.* to endow with life.
vi-tals (*'talz*), *n. pl.* the organs of the body essential to life, as the heart, lungs, etc.
vi-ti-ate (*vish'i-āt*), *v. t.* to render faulty or defective.
vit-i-cul-ture (*vit'i-kul-tūr*), *n.* vine culture.
vitreo, a *prefix* meaning *pertaining to,* or *like, glass,* as *vitreo*-electric, exhibiting positive or vitreous electricity.
vit-re-ous (*vit'rē-us*), *adj.* consisting of, like, or obtained from, glass.
vi-tres-cent (*vi-tres'ent*), *adj.* capable of being turned into, or becoming like, glass.
vit-ri-fy (*vit'ri-fī*), *v. t.* to convert by heat and fusion into glass: *v. i.* to be converted into glass.
★**vit-ri-ol** (*vit'ri-ul*, not *vit'rul*), *n.* the popular name for sulphuric acid.
vi-tu-per-ate (*vī-tū'pĕr-āt*), *v. t.* to censure abusively. [ABUSE.]
vi-va-cious (*vī-vā'shus*), *adj.* lively; gay.
vi-vac-i-ty (*-vas'i-ti*), *n.* liveliness; animation.
vi-va vo-ce (*vī'vā vō'sē*), orally.
Vivian, Vyvian (*viv'i-an*). A Cornish name derived from locality, from *vy-vian,* "the small water." Fr., *Vivien;* Lat., *Vivianus.*
viv-id (*viv'id*), *adj.* lifelike; realistic; forming brilliant images. [CLEAR.]
viv-i-fy (*viv'i-fī*), *v. t.* to endue with life; quicken.
viv-i-sect (*-i-sekt'*), *v. t.* to dissect the living body of.
vix-en (*viks'n*), *n.* a female fox; quarrelsome, ill-tempered woman.
viz. (*viz*), *adv.* namely.
viz-or (*viz'ĕr*), *n.* the upper movable part of a helmet; the forepiece of a cap.
vo-ca-ble (*vō'kā-bl*), *n.* a word; term.
vo-cab-u-la-ry (*-kab'ū-lā-ri*), *n.* [*pl.* vocabularies (*-riz*)], a collection of words of a language, science, etc., arranged alphabetically and explained; words used. [DICTIONARY.]
vo-cal (*vō'kal*), *adj.* pertaining to, full of, or endowed with, voice or speech; oral.
vo-ca-tion (*-kā'shun*), *n.* calling; occupation.
voc-a-tive (*vok'ā-tiv*), *adj.* noting the case of a noun, adjective, or pronoun in which a person or thing is addressed: *n.* the vocative case.
vo-cif-er-ate (*vō-sif'ĕr-āt*), *v. i.* to clamor; bawl: *v. t.* to utter loudly. [CALL.]
vogue (*vōg*), *n.* fashion.
voice (*vois*), *n.* utterance or mode of utterance; faculty of speech; language; expressed opinions: *v. t.* to give utterance or expression to.
void (*void*), *adj.* empty; wanting: *v. t.* to nullify; to emit or send out: *n.* a vacuum.
★**vol-a-tile** (*vol'a-til*, not *vol'a-tĕl* or *vol'a-tīl*), *adj.* easily passing into the aëriform state.
vol-can-ic (*-kan'ik*), *adj.* pertaining to, proceeding from, or produced by, a volcano.
vol-ca-no (*-kā'nō*), *n.* [*pl.* volcanoes (*'nōz*)], a conical hill or mountain from which the products of volcanic action are ejected with great heat in the form of lava, etc.
Volga (*vol'gā*). The greatest European river; bears a name which is from the Old Slavonic *wolkoi* or *wolkoia,* "great."
vo-li-tion (*vō-lish'un*), *n.* the act or power of willing or exerting choice.
vol-plane (*vōl-plān'*), *v. i.,* the act of alighting, like a bird, by gently floating down from a height; said of an aeroplane.
volt (*vōlt*), *n.* standard unit of electro-motive force.
vol-ta-ic (*vol-tā'ik*), *adj.* pertaining to electricity generated by chemical action or galvanism.
vol-u-ble (*'ū-bl*), *adj.* fluent in speech.
★**vol-ume** (*'ūm*), *n.* a single book; space occupied, measured in cubic units; mass or bulk: *pl.* a great deal.
vo-lu-mi-nous (*vō-lū'mi-nus*), *adj.* extensive; copious.
★**vol-un-ta-ri-ly** (*vol'un-tā-ri-li*, not *vol-un-tā'ri-li*), *adv.* spontaneously.
vol-un-ta-ry (*'un-tā-ri*), *adj.* acting from choice or free will: *n.* an organ solo. [GRATUITOUS.]
vol-un-teer (*-un-tēr'*), *n.* one who enters into any service of his own free will: *v. i.* to offer one's services voluntarily: *v. t.* to offer or bestow.
vo-lup-tu-a-ry (*vō-lup'tū-ā-ri*), *n.* one given to sensual enjoyments or luxury: *adj.* devoted to luxury. [SENSUALIST.]
vo-lup-tu-ous (*'tū-us*), *adj.* given to the enjoyment of sensual pleasures or luxury; sensual.
vo-lute (*vō-lūt'*), *n.* a spiral scroll.
vom-it (*vom'it*), *v. i.* to eject the contents of the stomach by the mouth: *v. t.* to throw up from the stomach; discharge with violence.
voo-doo (*vōō-dōō'*), *n.* a system of magic and superstitious rites, said to be accompanied with cannibalism and human sacrifices, prevalent among certain negro races.
vo-ra-cious (*vō-rā'shus*), *adj.* greedy in eating; ravenous. [RAPACIOUS.]
vor-tex (*vôr'teks*), *n.* [*pl.* vortices (*'ti-sēz*)], the hollow and circular form assumed by a liquid when set in rotation; whirlpool.
vo-ta-ry (*vō'tā-ri*), *n.* one addicted to some particular pursuit or condition of life.
vote (*vōt*), *n.* an expression of choice or preference by ballot or other method of suffrage; decision by the majority: *v. t.* to choose by suffrage: *v. i.* to give a vote.
vo-tive (*vō'tiv*). *adj.* given, consecrated, or promised by vow.
vouch (*vouch*), *v. t.* to attest.
vouch-safe (*-sāf''*), *v. t.* to condescend to grant; concede.
vow (*vou*), *n.* a solemn promise or pledge; pledge of fidelity or affection: *v. t.* to promise solemnly: *v. i.* to make a solemn promise.
vow-el (*'el*), *n.* a simple vocal sound; a letter representing such a sound: *adj.* vocal.
voy-age (*voi'āj*), *n.* a journey by water from one country or place to another: *v. i.* to make a voyage: *v. t.* to travel or pass over. [JOURNEY.]
vul-can-ize (*vul'kan-īz*), *v. t.* to change the properties of (india rubber) by combination with sulphur, white lead, and other substances, rendering it hard and nonelastic.
vul-gar (*'gĕr*), *adj.* common; general; unrefined; coarse; mean: *n.* the uneducated or unrefined class.
vul-gar-ism (*-izm*), *n.* a vulgar phrase or expression.
vul-gar-i-ty (*-gar'i-ti*), *n.* coarseness of manners or language.
Vul-gate (*'gāt*), *n.* an ancient Latin version of the Scriptures in use in the Roman Catholic church,

made originally by St. Jerome: *adj.* pertaining to, or contained in, the Vulgate.

vul-ner-a-ble (*vul'nĕr-ȧ-bl*), *adj.* capable of being wounded; susceptible of wounds or injury.

vul-ture (*'tŭr*), *n.* a large, carnivorous, voracious bird of prey.

W

Wabash (*waw'bȧsh*). County in Indiana and Illinois, river flowing through both states, and city in Indiana. From the Indian word *Uuabache*, "cloud borne by an equinoctial wind," or, according to another authority, "white water."

wab-ble. Same as *wobble.*

wad (*wod*), *n.* small mass of tow, etc., used for keeping the powder, etc., in place in a gun; a kind of plumbago: *v. t.* to form into, or stuff with, a wad.

wad-ding (*'ing*), *n.* a soft stuff of loose texture used for stuffing garments, etc.

wad-dle (*'l*), *v. i.* to move from side to side in walking: *n.* a clumsy, rocking gait.

wade (*wād*), *v. i.* to walk through any substance that yields to the feet, as water, snow, etc.: *v. t.* to ford.

wa-fer (*wā'fĕr*), *n.* small disk of unleavened bread used in the Eucharist in the Roman Catholic church.

waf-fle (*wof'l*), *n.* a soft indented cake, baked in an iron utensil over a flame or coals.

waft (*wȧft*), *v. t.* to bear along on a buoyant medium: *v. i.* to float.

wag (*wag*), *v. i.* to move backward and forward: *v. t.* to cause to oscillate: *n.* the act of wagging; a humorous, witty person.

wage (*wāj*), *v. t.* to engage in, or carry on, especially war; venture: *n.* payment for service rendered.

wa-ger (*wā'jĕr*), *n.* a subject on which bets are laid: *v. t.* to hazard; to stake: *v. i.* to bet.

wag-er-y (*wag'ĕr-i*), *n.* mischievous merriment; tricks of a wag; good-humored sarcasm.

wag-gish (*'ish*), *adj.* humorous, sportive.

wag-gle (*'l*), *v. i.* and *v. t.* to move from side to side: *n.* a movement from side to side.

wag-on (*'un*), *n.* a four-wheeled heavy vehicle for carrying goods, agricultural produce, etc.

waif (*wāf*), *n.* anything found without an owner; a homeless wanderer.

wail (*wāl*), *v. t.* to lament: *v. i.* to express sorrow audibly: *n.* loud lamentation. [Also *wailing.*]

wain (*wān*), *n.* a wagon.

wain-scot (*'skot*), *n.* paneled wooden lining on walls: *v. t.* to line with paneled boarding.

waist (*wāst*), *n.* the narrowest part of the body just below the ribs; middle part.

waist-coat (*wāst'kōt*, colloq. *wes'kut*), *n.* a short, sleeveless men's garment covering the chest and waist.

wait (*wāt*), *v. i.* to stay in expectation; lie in ambush; watch; remain quiet: *v. t.* to await; postpone.

wait-er (*'ĕr*), *n.* a servant in attendance at table; salver or tray. [Fem. *waitress.*]

waits (*wāts*), *n. pl.* nocturnal musicians who perform in the streets of English towns at Christmastide.

waive (*wāv*), *v. t.* to give up a claim to; forego.

wake (*wāk*), *v. i.* to be roused from sleep; cease to sleep; be active: *v. t.* to rouse from sleep; revive; watch: *n.* a vigil.

wake-ful (*'fool*), *adj.* remaining awake.

Syn. WAKEFUL, watchful, vigilant. *Wakefulness* is an affair of the body, and depends upon the temperament; *watchfulness* is an affair of the will, and depends upon the determination; some persons are more *wakeful* than they wish to be; few are as *watchful* as they ought to be. *Vigilance* expresses a high degree of *watchfulness;* a sentinel is *watchful* who on ordinary occasions keeps good *watch;* but it is necessary for him, on extraordinary occasions, to be *vigilant.*

wale (*wāl*), *n.* a mark left by the stroke of a whip, etc.: *v. t.* to mark with a wale.

Wales. A principality of Great Britain in the southwest corner of England. Name derived from *Wealas,* "foreigners," or "Welsh," a name given by the Anglo-Saxon invaders to the natives of Britain. Wales is a plural form denoting the people, which afterward acquired a territorial significance.

walk (*wawk*), *v. i.* to advance by alternate steps; go at a moderate pace: *v. t.* to traverse; cause to walk: *n.* act or manner of walking; place for pedestrian exercise. [CARRIAGE.]

wall (*wawl*), *n.* a structure of stone, brick, etc.; side of a building; rampart; means of protection: *v. t.* to inclose with, or as with, a wall.

Walla Walla (*wol'lȧ wol'lȧ*), **Wash.** The Indian *walawala* means "waving," "throwing up waves," "ripples."

wal-let (*wol'et*), *n.* a bag or knapsack; a pocketbook.

wall-eye (*wawl'-i*), *n.* an eye, the iris of which is white (said of horses).

wall-flow-er (*'flou-ĕr*), *n.* a plant of the genus Cheiranthus with sweet-scented flowers; one who, at a ball or party, takes no part.

Wall of Antoninus. A rampart erected in the southern part of Scotland, in the reign of Antoninus Pius, to check the barbarians in the north of Britain. It extended from the Firth of Forth to the Firth of Clyde.

Walloons (*wol-lōōnz'*). A people found chiefly in southern and southeastern Belgium, also in the neighboring parts of France, and in a few places in Rhenish Prussia near Malmedy. They are descended from the ancient Belgæ, mixed with Germanic and Roman elements.

wal-lop (*wol'up*), *v. i.* to boil with a continued bubbling: *v. t.* to beat soundly: *n.* a blow.

wal-low (*'ō*), *v. i.* to tumble or roll in anything soft; live in vice or filth: *n.* a place to which an animal resorts to wallow.

wal-nut (*wawl'nut*), *n.* a tree of the genus Juglans, yielding an edible fruit and valuable wood.

wal-rus (*wol'rus*), *n.* a large, carnivorous marine mammal with powerful tusks.

Wall street. A street in the lower part of New York city which extends from Broadway, opposite Trinity church, to the East river, famous as a financial and speculative center. A figurative term for the money power of the country.

Walter. From the Ger. *walt-her,* "powerful lord"; literally, a "wood-master." Dutch, *Wouter;* Fr., *Gautier;* Ger., *Walter;* It., *Gualterio;* Lat., *Gualterus;* Port., *Gualter;* Sp., *Gualterio;* Sw., *Walter.*

waltz (*wawltz*), *n.* a kind of dance; music for such a dance: *v. i.* to dance a waltz.

wam-pum (*wom'pum*), *n.* beads made of shells, used by the North American Indians as money and for ornamental belts.

wan (*won*), *adj.* pale; sickly.

wand (*wond*), *n.* a long, slender rod; staff of authority.

wan-der (*won'dĕr*), *v. i.* to ramble about aimlessly; stroll; depart from; be delirious. [DEVIATE.]

wane (*wān*), *v. i.* to grow less; fail: *n.* the decrease of the illuminated part of the moon. [ABATE.]

want (*wawnt*), *n.* deficiency; necessity; penury: *v. t.* to have need of; desire: *v. i.* to be deficient; come short.

Syn. WANT, need, lack. *To want* is to be without that which contributes to our comfort, or is an object of our desire; *to need* is to be without that which is essential for our existence or our purposes: *to lack* expresses little more than the general idea of being without, unaccompanied by any collateral idea; it is usual to consider what we *want* as artificial, and what we *need* as natural and indispensable.

Ant. HAVE, hold, possess.

wan-ton (*won'tun*), *adj.* licentious; lustful; unrestrained; roving; sportive; luxurious; trifling: *n.* a lascivious man or woman.

war (*wawr*), *n.* a contest between states carried on by force; armed conflict: *v. i.* to fight; strive violently. [MARTIAL.]

war-ble (*wawr'ȯl*), *v. t.* and *v. i.* to sing in a trilling or quavering manner: *n.* a soft, sweet flow of melodious sounds; carol.

ward (*wawrd*), *v. t.* to guard; defend from danger: *v. i.* to be vigilant; act on the defensive: *n.* defense; particular division of a city or town.

ward-en (*'en*), *n.* a guardian; keeper; head official; churchwarden.

ward-robe (*'rōb*), *n.* portable closet for clothes; wearing apparel.

ware-house (*wâr'hous*), *n.* a building for storing goods: *v. t.* to deposit in a warehouse.

wares (*wârz*), *n.* merchandise; goods.

war-fare (*wawr'fâr*), *n.* hostilities; war; contest; military life or service.

warm (*wawrm*), *adj.* having heat in a moderate degree; subject to heat; zealous; excited: *v. t.* to make warm. [HEARTY.]

warmth (*wawrmth*), *n.* moderate heat; earnestness or irritability.

warn (*wawrn*), *v. t.* to give notice of possible danger; caution; expostulate; summon by authority.

warp (*wawrp*), *n.* the threads which extend lengthwise in the loom, and are crossed by the woof; towing rope: *v. t.* to turn or twist out of shape: *v. i.* to swerve or deviate.

war-rant (*wor'ant*), *v. t.* to guarantee; give assurance to; authorize; maintain; mark as safe: *n.* writ for arresting a person.

war-rior (*wawr'y ĕr, wor'i-ĕr*), *n.* a soldier; fighter.

Warsaw. Formerly *Varsovia* (Polish *Warszawa*), takes its Slavonic name from a "castle," or "fortified place," built in the ninth century by Conrad, duke of the surrounding palatinate of Mazovia. Here originated the mazurek, a dance of the Polish peasantry, which we call the mazurka.

wart (*wawrt*), *n.* a dry exorescence on the human skin and certain animals.

wa-ry (*wā'ri*), *adj.* [*comp.* warier, *superl.* wariest], cautious; circumspect. [CAUTIOUS.]

wash (*wosh*), *v. t.* to cleanse with water; cover with water: *v. i.* to cleanse by washing: *n.* the act of washing; cosmetic lotion.

wash-er (*'ĕr*), *n.* one who, or that which, washes; ring of metal, leather, etc., used to secure the tightness of a joint, screw, etc.

Washington. The name of two places in England, one in Durham, the other in Sussex (Anglo-Saxon *Hwessingatun* and *Wassingatun*), which signifies the *tun,* or "town," of the Hwessings or Wassings. From the Durham village the ancestors of George Washington, the first president of the United States (1789-1797), are believed to have derived their territorial surname. In his honor the city of Georgetown, in Maryland, selected in 1790 for the Federal capital, was renamed *Washington.*

wasp (*wosp*), *n.* a winged insect with a sharp sting; peevish, irritable person.

waste (*wāst*), *v. t.* to destroy wantonly; diminish; squander; impair: *v. i.* to be diminished: *adj.* lying unused; unproductive: *n.* useless expenditure; refuse. [DESTROY, EXCESS.]

waste-ful (*'fool*), *adj.* causing waste; spending property extravagantly or uselessly. [EXCESS.]

watch (*woch*), *n.* close observation; guard; vigilance; sentry; pocket timepiece: *v. i.* to keep guard: *v. t.* to tend; keep in view. [GUARD, OBSERVE.]

watch-ful, *adj.* vigilant. [WAKEFUL.]

watch-word (*'wĕrd*), *n.* a password.

***wa-ter** (*waw't ĕr,* not *wot' ĕr*), *n.* a colorless, inodorous, transparent fluid; rain; sea; any collection of water: *v. t.* to supply with water; irrigate.

wa-ter-man, *n.* boatman. [SEAMAN.]

Watervliet (*waw-tĕr-vlēt'*). City on the Hudson, in Albany county, New York. From the Dutch, meaning "flowing stream."

wa-ter-y (*'tĕr-i*), *adj.* pertaining to, or like, water; transparent or thin; tasteless; tearful.

watt (*wot*), *n.* an electrical unit of power.

wat-tle (*'l*), *n.* a twig or flexible rod; fleshy lobe under the throat of a fowl, turkey: *v. t.* to twist or interweave (twigs or rods) one with another.

waul (*wawl*), *n.* the cry of a cat.

wave (*wāv*), *n.* the alternate rising and falling of water above its natural level; state of vibration propagated through a system of particles or elastic medium: *v. i.* to move like a wave: *v. t.* to brandish; beckon.

Syn. WAVE, billow, surge, breaker. Those *waves* which swell more than ordinarily are termed *billows;* those *waves* which rise higher than usual are termed *surges;* those *waves* which dash against the shore, or against vessels, with more than ordinary force, are termed *breakers.*

wav-er (*'ĕr*), *v. i.* to move to and fro; vacillate; hesitate or be undetermined. [FLUCTUATE.]

wav-y (*'i*), *adj.* rising and swelling in waves; full of waves; undulating.

wax (*waks*), *n.* beeswax; any tenacious substance like beeswax: *v. t.* to smear, rub, or join, with wax.

wax-en (*'en*), *adj.* made of, like, or consisting of, wax.

wax-y (*'i*), *adj.* consisting of, or like, wax: adhesive.

way (*wā*), *n.* a road; route; progression; motion; course; manner.

way-lay (*'lā*), *v. t.* to beset by the road or in ambush.

way-ward (*'wērd*), *adj.* perverse; froward. [PERVERSE.]

we (*wē*), *pron. pl.* of I.

weak (*wēk*), *adj.* wanting strength, vigor, spirit, discernment, or wisdom.

Syn. WEAK, feeble, infirm. We may be *weak* in body or mind; but we are commonly *feeble* and *infirm* only in the body; we may be *weak* from disease, or *weak* by nature, it equally conveys the gross idea of a defect; but the terms *feeble* and *infirm* are qualified expressions for weakness; an old man is *feeble* from age; the latter may likewise be *infirm* in consequence of sickness. [See *faint.*]

weal (*wēl*), *n.* welfare; prosperity.

wealth (*welth*), *n.* riches; affluence.

wealth-y (*'i*), *adj.* [*comp.* wealthier, *superl.* wealthiest], rich; affluent.

wean (*wēn*), *v. t.* to accustom and reconcile to a want or deprivation of the breast; alienate, as the affections from any object or habit.

weap-on (*wep'n*), *n.* any instrument of offense or defense.

wear (*wâr*), *v. t.* [*p. t.* wore, *p. p.* worn, *p. pr.* wearing], to impair or waste by time, usage, friction, etc.: carry as covering on the body: *v. i.* to last under use: *n.* the act of wearing.

wea-ri-some (*wē'ri-sum*), *adj.* fatiguing; tedious.

wea-ry (*'ri*), *adj.* [*comp.* wearier, *superl.* weariest], worn out physically or mentally; irksome: *v. t.* to harass by something irksome: *v. i.* to become weary, tired, or fatigued. [FAINT, FATIGUE.]

wea-sel (*'zel*), *n.* a small carnivorous animal with short legs and a long body.

weath-er (*weth' ĕr*), *n.* the state of the atmosphere with respect to cold, heat, wet, dryness, etc: *v. t.* to expose to, or season by exposure to, the air.

weath-er-cock (*-kok*), *n.* a vane.

weave (*wēv*), *v. t.* to twist or interlace, as threads, together; compose or fabricate: *v. i.* to practice weaving; work with a loom.

wea-zen (*wē'zn*), *adj.* sharp and thin; withered.

web (*web*), *n.* texture of threads, or threadlike materials; tissue or texture: *v. t.* to unite or surround with, or as with, a web; entangle.

wed (*wed*), *v. t.* [*p. t.* and *p. p.* wedded or wed, *p. pr.* wedding], to marry; unite together: *v. i.* to contract marriage. [ADDICTED.]

wed-ding (*'ing*), *n.* marriage; nuptial ceremonies or festivities.

wedge (*wej*), *n.* a piece of wood or metal, thick at one end and thin at the other, used for rending or compressing, etc.: *v. t.* to cleave, force, drive, or fasten, with a wedge.

wed-lock (*wed'lok*), *n.* matrimony.

Wednesday. The fourth day of the week. Formerly the day set apart for the worship of Odin, or Wodin, the norse All-Father, father of gods and men.

wee (*wē*), *adj.* very small.

weed (*wēd*), *n.* any plant growing uncultivated or noxious to cultivated crops: *v. t.* to free from weeds.

weed-y (*wēd'i*), *adj.* pertaining to, or consisting of, weeds; long-legged, thin, and lank.
Weehawken (*wē-haw'ken*), **N. J.** Named from the Delaware Indian name *weachin*, "maize lands."
week (*wēk*), *n.* a period of seven days.
week-day (*-dā*), *n.* any day of the week except Sunday.
week-ly (*'li*), *adj.* continuing for, produced within, or happening in, a week: *adv.* once a week: *n.* [*pl.* weeklies (*'liz*)], a periodical issued once a week.
ween (*wēn*), *v. i.* to think, fancy.
weep (*wēp*), *v. i.* to express grief by shedding tears: *v. t.* to lament; pour forth. [CRY.]
weft (*weft*), *n.* the woof or piling of cloth crossing the warp.
weigh (*wā*), *v. t.* to ascertain the weight of; reflect on carefully: *v. i.* to have weight; bear heavily: *n.* a certain quantity by weight.
weight (*wāt*), *n.* gravity; quantity of matter as ascertained by the balance; pressure; power importance.
Syn. WEIGHT, burden, load. A person may sink under the *weight* that rests upon him; a platform may break down from the *weight* upon it; a person sinks under his *burden* or *load*; a cart breaks down from the *load*.
Ant. LIGHTNESS.
weight-y (*'i*), *adj.* [*comp.* weightier, *superl.* weightiest], heavy; ponderous; momentous; important.
weir (*wēr*), *n.* a dam across a stream to raise the level of the water; inclosure of twigs, etc., for catching fish.
weird (*wērd*), *adj.* pertaining to, or connected with, fate or destiny; supernatural.
wel-come (*wel'kum*), *adj.* received with gladness or hospitality: *n.* kind reception to a guest or newcomer: *v. t.* to salute with kindness. [ACCEPTABLE.]
weld (*weld*), *v. t.* to unite together by hammering or fusion, as two pieces of heated iron.
wel-fare (*wel'fâr*), *n.* prosperity; happiness.
wel-kin (*'kin*), *n.* the sky.
well (*wel*), *n.* a spring or fountain; shaft sunk to reach a supply of water or other liquid: *v. i.* to flow or issue forth: *adv.* right; justly; favorably: *adj.* fortunate; sound in body; healthy; safe.
well-be-ing (*-bē'ing*), *n.* well-conditioned existence; moral or physical welfare.
well-bred (*'bred*), *adj.* refined in manners; cultivated.
Wellsburg, W. Va. Named in honor of Alexander Wells, an early settler.
Welsh (*welsh*), *adj.* pertaining to Wales, its inhabitants, or language: *n.* the people of Wales collectively; the language of Wales.
Welsh rab-bit (*rab'it*), melted cheese mixed with ale and condiments spread upon toast.
welt (*welt*), *n.* a narrow strip of leather around a shoe between the upper leather and sole: *v. t.* to furnish with a welt.
wel-ter (*wel'tĕr*), *v. t.* to roll in mud or foul matter; wallow: *v. t.* to cause to rise and fall, as waves: *n.* that in which any person or animal welters: *adj.* pertaining to, or noting, the most heavily weighted race of a meeting.
wen (*wen*), *n.* a fleshy and movable tumor.
wench (*wench*), *n.* a young girl or maiden: usually in an invidious or bad sense.
wend (*wend*), *v. i.* to go; pass: *v. t.* to direct (one's way or course).
Wes-ley-an-ism (*wes'li-an-izm*), *n.* the doctrines and church polity of the sect of Arminian Methodists, founded by John Wesley, 1739; Methodism.
west (*west*), *n.* one of the 4 cardinal points, exactly opposite the east; point where the sun appears to set: *adv.* toward the west.
west-ern (*west'ĕrn*), *adj.* tending to, or passing toward, the west.
Western Reserve, The. When, by the treaty of 1783, Great Britain relinquished the territory south of the Great Lakes and east of the Mississippi river, disputes arose among the states of Virginia, New York, Massachusetts, and Connecticut as to the right of occupancy in that locality. The difficulty was finally settled by the cession of the whole to the federal government, but Connecticut reserved a tract of nearly 4,000,000 acres on Lake Erie. That state finally disposed of this in small lots to colonists, and so accumulated a magnificent school fund.
Westminster hall. A structure adjoining the British houses of Parliament on the west, forming part of the ancient palace of Westminster.
Westminster palace, London. The houses of Parliament. A palace is supposed to have existed at Westminster in the reign of Canute (1017-35). Its importance, however, begins with Edward the Confessor (1042-66), and the name has been conferred upon the great legislative edifice of the British empire.
West Virginia. See *Virginia* for the word *Virginia*: the western division of Virginia separated from the eastern, owing to civil war issues, as provided in amnesty proclamation of President Lincoln, December 8, 1863, affecting section of states in rebellion. It was proposed at one time to call the state *Kanawha*, from its principal river.
west-ward. (*'wĕrd*), *adv.* toward the west. [Also *westwards*.]
wet (*wet*), *v. t.* to make wet, with water or some other liquid: *n.* water; moisture: *adj.* containing, consisting of, or soaked with, water or some other liquid; very damp; rainy or misty.
wet nurse (*wet"nûrs*), a nurse who suckles the child of another.
Wetterhorn (*vet'tĕr-hôrn*). A mountain of the Bernese Alps, canton of Bern, Switzerland, situated near Grindelwald, fourteen miles east-southeast of Interlaken. Means, literally, "storm peak."
Wettin (*vet-tēn'*). A town in the province of Saxony, Prussia, situated on the Saale, thirty-two miles northwest of Leipzig. It contains the ancestral castle of the Saxon line of *Wettin*, from which King Edward VII. of England is descended.
whack (*hwak*), *n.* a smart resounding blow; large piece: *v. t.* to strike with a smart resounding blow.
whale (*hwāl*), *n.* a large mammal of the Cetacea, many species of which yield oil and whalebone; a fish of great size.
wharf (*hwawrf*), *n.* [*pl.* wharfs (*hwawrfs*), or wharves (*hwawrvz*)], a quay or erection on the shore of a harbor, river, etc., for discharging or taking in cargoes, passengers, etc.
what (*hwot*), *pron.* that which; the thing that; how great; something: *adj.* of what sort, character, etc.
what-not (*'not*), *n.* an article of furniture with shelves for books, ornaments, etc.
wheat (*hwēt*), *n.* an annual cereal grain from which flour is manufactured.
wheat-en (*'n*), *adj.* made of wheat.
whee-dle (*hwē'dl*), *v. t.* to entice with flattering words; cajole; coax.
wheel (*whēl*), *n.* a circular frame or solid piece of wood or metal turning on its own axis: *v. t.* to cause to rotate: *v. i.* to turn on, or as on, an axis.
Wheeling. City in West Virginia, so named because the Indians placed the head of a white victim on a pole and gave the place the name of *weal-ink*, "a place of a human head." The present name of the place is a corruption of the Indian name.
wheel-wright (*'rīt*), *n.* a maker of wheels and wheeled carriages.
wheeze (*hwēz*), *v. i.* to breathe hard and audibly: *n.* a puffing or blowing, as in labored breathing.
whelm (*hwelm*), *v. t.* to overwhelm.
whelp (*hwelp*), *n.* the young of a dog, lion, fox, etc.; cub: *v. i.* to bring forth young.
when (*hwen*), *adv.* at, or after, the time that; at what time; although.
whence (*hwens*), *adv.* from what place, source, or origin; how.
where (*hwâr*), *adv.* at which place or places; whither.
where-as (*-az'*), *adv.* when in fact or truth; since.
where-fore (*'fôr*), *adv.* for which or what reason; why.
whet (*hwet*), *v. t.* [*p. t.* and *p. p.* whetted, *p. pr.* whetting], to sharpen, especially by rubbing or friction; stimulate.
wheth-er (*hweth'ĕr*), *pron.* which of two: *conj.* which of two alternatives (followed by *or*).
whet-stone (*hwet'stōn*), *n.* a stone for sharpening edged tools, etc.
whey (*hwā*), *n.* the thin, sweet, watery part of milk, after separation from the curd.
★**which** (*hwich*, not *wich*), *pron.* a word of interrogation in all genders; the relative serving as the neuter of *who*.
whiff (*hwif*), *n.* a sudden breath of air, smoke, etc., as from the mouth; light puff: *v. t.* to puff or emit in whiffs.
whif-fle-tree. Same as *swingletree*.
Whig (*hwig*), *n.* one of a political party in the United States that favored a protective tariff, and was succeeded by the present Republican party: *adj.* pertaining to Whigs.
while (*hwīl*), *n.* space of time; duration: *conj.* during the time that: *v. t.* to cause to pass; spend: usually followed by *away*.
whim (*hwim*), *n.* a capricious fancy; freak; notion.
whim-per (*'pĕr*), *v. t.* to utter in a low, whining, or crying tone: *v. i.* to cry with a low, whining, broken voice.
whim-si-cal (*'zi-kal*), *adj.* full of whims, fantastical; odd in appearance. [FANCIFUL.]
whine (*hwin*), *v. i.* to express sorrow by a plaintive cry; murmur in an unmanly manner: *n.* a plaintive tone.
whin-ny (*hwin'i*), *v. i.* to utter a sound like the cry of a horse: *n.* the act of whinnying: *adj.* abounding in whin, or furze.
whip (*hwip*), *v. t.* to strike or punish with a lash; flog; lash with sarcasm: *v. i.* to move nimbly: *n.* an instrument for driving horses or for correction.
whip-poor-will (*hwip'-poor-wil*), *n.* a small American bird, named from its cry.
whir (*hwĕr*), *v. i.* to revolve quickly with a whizzing noise: *n.* a whizzing noise.
whirl (*hwĕrl*), *v. t.* to turn round rapidly: *v. i.* to turn or move round with velocity: *n.* rapid rotation.
whirl-i-gig (*'i-gig*), *n.* a child's toy which is whirled or spun round.
whirl-pool (*'pōōl*), *n.* a body of water moving with a circular motion, forming a vortex or gulf.
whirl-wind (*'wind*), *n.* a violent wind moving spirally; sudden violent rush.
★**whisk** (*hwisk*, not *wisk*), *v. t.* to sweep or stir rapidly; move, or carry off, nimbly: *v. i.* to move rapidly and nimbly: *n.* the act of whisking.
whisk-ers (*'ĕrz*), *n. pl.* the hair on a man's cheeks; the bristly hairs on the upper lip of a cat, etc.
whis-ky (*hwis'ki*), *n.* an intoxicant distilled from barley, rye, etc. [Also *whiskey*.]
whis-per (*hwis'pĕr*), *v. i.* to speak in a low voice: *v. t.* to say under the breath: *n.* a low, soft tone of voice, audible only to the listener.
whist (*hwist*), *n.* a card game: *interj.* hush!
whis-tle (*hwis'l*), *v. i.* to make a shrill sound by forcing the breath through the contracted lips: *v. t.* to call or signal by a whistle: *n.* small wind instrument.
whit (*hwit*), *n.* the smallest particle.
white (*hwit*), *adj.* being without color, hence pure; innocent: *n.* a white man; albumen of an egg.
white-cap (*'kap*), *n.* a redstart; one of a self-constituted tribunal of persons who visit the houses of offenders against morality and punish them by whipping.
Whitechapel. A quarter in the eastern part of London, named from a certain chapel from which distances out of London used to be measured.
Whitehall. In modern London, the main thoroughfare between Trafalgar square and the houses of Parliament.
Whitehall palace. A palace in London, England, originally built by Hubert de Burgh in the reign of Henry III.
White House, The. The official residence of the president of the United States in Washington. It is a handsome mansion in the English Renaissance. Its classical details are sober and well designed, both outside and inside.
white lie (*'li*), pious fraud.
white-liv-ered (*'liv-ĕrd*), *adj.* cowardly.
White mountains, N. H. Named from the color of the tops; being covered with snow (white), this has always been the groundword of various appellations. The first English explorers (1632) called them the *Crystal hills*. The Indian name was *Waumbekket*.
whit-en (*'en*), *v. t.* to make white; blanch.
White Sea. An arm of the Atlantic Ocean: so called from its proximity to the sterile regions of snow and ice.
white-wash (*whīt'wosh*), *n.* a composition for whitening ceilings, etc.: *v. t.* to whiten with whitewash.
whith-er (*hwith'ĕr*), *adv.* to what place; to what; how far.
Whitney. Loftiest peak of the Sierra Nevadas, named for Prof. J. D. Whitney, state geologist of California.
Whit-sun (*'sun*), *adj.* pertaining to, or observed at, Whitsuntide, or the season of Pentecost.
Whit-sun-day (*'sun-dā*), *n.* the seventh Sunday after Easter, commemorating the day of Pentecost.
whit-tle (*hwit'l*), *v. t.* to cut, dress, or sharpen with a knife.
whiz (*hwiz*), *v. i.* to make a humming or hissing noise: *n.* a humming or hissing noise.
who (*hōō*), *pron.* referring to one or more persons: used relatively and interrogatively.
who-ev-er (*-ev'ĕr*), *pron.* every one who; whatever person.
★**whole** (*hōl*, not *hōl*), *adj.* containing all; complete; not defective; hale and sound; unbroken.
Syn. WHOLE, entire, complete, total, integral. *Whole* excludes subtraction; *entire* excludes division; *complete* excludes deficiency; a *whole* orange has had nothing taken from it; an *entire* orange is not yet cut; and a *complete* orange is grown to its full size; *total* is the opposite of partial; *integral* is applied now to parts or numbers not broken.
Ant. PART, division, share, portion.
whole-sale (*'sāl*), *n.* sale of goods by the piece or in large quantity: *adj.* buying or selling in large quantities.
whole-some (*'sum*), *adj.* sound; salubrious; salutary. [HEALTHY.]
whom (*hōōm*), *pron. objective* of who.
whoop (*hōōp*), *v. i.* to utter a loud, shrill, and prolonged cry; shout: *n.* a loud shout of, or as of, pursuit or attack.
★**whoop-ing-cough** (*hōōp'ing-kôf*, not *hoop'ing-*) *n.* a violent, convulsive cough, characterized by its whooping sound.
whop-per (*hwop'ĕr*), *n.* something unusually large; a monstrous lie.
whorl (*hwĕrl* or *hwôrl*), *n.* any set of organs or appendages arranged in a circle round an axis, as flowers or leaves.
whor-tle-ber-ry (*hwĕr'tl-ber-i*), *n.* a small shrub and its edible blue fruit.
whose (*hōōz*), *pron. poss.* of who or which.
why (*hwī*), *adv.* for what cause, reason, or purpose: *interj.* used emphatically: *n.* the reason or cause.
wick (*wik*), *n.* the cotton or substance of a candle or lamp which supplies the flame.
wick-ed (*'ed*), *adj.* evil in principle or practice; sinful; immoral; roguish.
Syn. WICKED, iniquitous, nefarious. It is *wicked* to deprive another of his property unlawfully, under any circumstances; but it is *iniquitous* if it be done by fraud and circumvention; and *nefarious* it if involves any breach of trust.
Ant. RIGHTEOUS, upright, moral, noble.
wick-er (*'ĕr*), *n.* a pliant osier: *adj.* made of plaited osiers.
wick-et (*'et*), *n.* a small gate; the three upright stumps in cricket at which the ball is bowled.
wide (*wid*), *adj.* extended far each way; broad; vast: *adv.* to a great distance; far apart: *n.* a ball bowled outside the bowling crease. [LARGE.]

wid-en (*wid'en*), *v. t.* to make wide; throw open: *v. i.* to enlarge.

★**wid-ow** (*wid'ō*, not *wid'u*), *n.* a woman bereaved of her husband and remaining unmarried.

wid-ow-er (*-ẽr*), *n.* a man bereaved of his wife and remaining unmarried.

width (*width*), *n.* extent of a thing from side to side.

wield (*wēld*), *v. t.* to use or employ with the hand; control or sway; handle.

wife (*wīf*), *n.* [*pl.* wives (*wīvz*)], a woman united in lawful wedlock to a man.

wig (*wig*), *n.* false hair worn on the head.

wig-gle. Same as *wriggle.*

wight (*wīt*), *n.* a human being.

wig-wag (*wig'wag*), *n.* a signaling flag: *v. t.* and *v. i.* to wave to and fro.

wig-wam (*wig'wawm*), *n.* an Indian hut.

wild (*wīld*), *adj.* living in a state of nature; untamed; passionate; unreasonable; reckless: *n.* a desert. [ABSURD.]

wild-cat (*wīld'kat*), *adj.* unsafe; speculative; running without control.

wil-der-ness (*wil'dẽr-nes*), *n.* a region or tract of land uncultivated and uninhabited; desert.

wile (*wīl*), *n.* a sly artifice; trick: *v. t.* to cause to pass pleasantly; cajole. [PRETENSE.]

Wilford. A name corrupted from *Wilfred.*

Wilfred, Wilfrid. This name has been translated "much peace," or "resolute peace," but the name is rather from *viel-frid*, "powerful protector."

Wilhelm. See *William.*

Wilhelmina (*vil-hel-mē'nā*). A feminine name derived from the German name *Wilhelmine*, from *Wilhelm.*

Wilhelmine (*wil'hel-mēn'*, German *vil-hel-mē'-nē*). A feminine name derived from *Wilhelm.* It., *Guglielma.*

Wilkesbarre (*wilks'bar-i*). City in Luzerne county, Pennsylvania, named for two members of the British Parliament, American sympathizers, John Wilkes and Colonel Barre.

will (*wil*), *n.* the faculty of the mind by which one chooses or determines; legal disposition of one's property at death: *v. i.* to decree: *v. t.* to determine in the mind.

Syn. WILL, wish. We can *will* nothing but what we can effect; we may *wish* for many things which lie above our reach.

Ant. DEPRECATE.

William. A name corrupted from the Old German name *Wilhelm*, derived from *weil-helm*, "protector of rest," "defender of tranquillity," or *vil-helm*, "strong protector." Danish, *Wilhelm;* Dutch, *Willem;* Fr., *Guillaume;* Ger., *Wilhelm;* It., *Guglielmo;* Lat., *Gulielmus, Wilhelmus,* or *Willielmus;* Sp., *Guillermo;* Sw., *Wilhelm.*

Willamette (*wil-a'met*). River in Oregon. Indian word said to have originally been *Wallamet*, derived from the same root as *Walla Walla* and *Wallula;* when applied to water, meaning "running." Another authority gives its definition as "the long and beautiful river."

Willimantic (*wil-li-man'tik*). River, and a city in Windham county, Connecticut. Indian word, meaning a "good lookout," or, according to another authority, "good cedar swamps."

will-ing (*'ing*), *adj.* inclined to do or grant; complying; spontaneous; voluntary.

will-ing-ly (*-li*), *adv.* in a willing manner; voluntarily; cheerfully.

Wilmington. City in Delaware, the present name a corruption of the name *Willington*, given it in honor of Thomas Willing.

Wilmington, N. C. Named in honor of the earl of Wilmington, England; orginally called *Newton.*

Wil-ton car-pet (*wil'tun kär'pet*), a kind of carpet manufactured in England.

wi-ly (*wī'li*), *adj.* cunning; crafty.

wim-ple (*wim'pl*), *n.* a kind of silk or linen head-covering formerly worn by women.

win (*win*), *v. t.* [*p. t.* and *p. p.* won, *p. pr.* winning], to gain by superiority in a contest or competition: *v. i.* to be successful; triumph. [PERSUADE.]

wince (*wins*), *v. i.* to twist or turn as in pain or uneasiness; shrink; kick: *n.* the act of wincing.

winch (*winch*), *n.* the crank of a wheel or axle.

wind (*wind*), *n.* air in perceptible motion; breath; idle words: *v. t.* render scant of breath: *v. i.* (*wīnd*) to turn round something; twist; meander: *v. t.* to coil or encircle.

wind-fall (*'fawl*), *n.* fruit blown down by the wind; unexpected good fortune.

wind-ing sheet (*wind'ing shēt*), a cerecloth.

wind-lass (*wind'las*), *n.* a horizontal cylinder or roller by means of which heavy weights, etc., are raised.

★**win-dow** (*win'dō*, not *win'du*), *n.* an aperture, usually glazed, in a building to admit light; frame in such an opening; anything resembling a window.

wind-pipe (*wind'pīp*), *n.* the trachea.

Windsor (*win'zẽr*). A contraction of the Anglo-Saxon name *Windlesofra, Windelsora, Wendelsore,* or *Windelesore,* is usually explained as the place by the "winding shore."

Windsor castle. A famous royal residence, founded by William the Conqueror, extended by his successors, especially by Edward III., and restored by Queen Victoria as a memorial of her husband. The interior is decorated in so lavish a manner that it forms one of the most remarkable existing examples of such work.

wind-ward (*wind'wẽrd*), *n.* the direction from which the wind blows: *adv.* toward the wind: *adj.* on the side toward the point from which the wind blows.

wind-y (*wind'i*) *adj.* [*comp.* windier, *superl.* windiest], pertaining to, like, or consisting of, wind; boisterous; windward; flatulent.

wine (*win*), *n.* liquor made from the juice of certain fruits.

wing (*wing*), *n.* one of the two anterior limbs of a bird, or insect, by which it flies: *v. t.* to furnish with, or as with, wings: *v. i.* to fly.

Winifred (*win'i-fred*). A feminine name, which some consider a Saxon compound signifying "winning peace"; it comes rather from the Old German *win-frid*, "beloved protector." Dutch, *Winfried;* Fr., *Winifred;* Lat., *Winfreda;* Sw., *Winfrid.*

wink (*wingk*), *v. i.* to close and open the eyelids with a quick motion: *n.* act of winking; hint given.

Winnepesaukee (*win-ē-pē-saw'kē*). Lake in New Hampshire. Indian word *winnepesaukee*, meaning "good water discharge," or "the beautiful lake of the highland."

Winnipeg (*win'i-peg*) **city.** The capital of the Canadian province of Manitoba; is built on a spit at the junction of the Red river and the Assiniboine, whose united waters after a course of forty-five miles reach Lake Winnipeg, which bears an Algonquin name meaning "the muddy water," the water being discolored by the Saskatchewan, which brings down much clay in solution.

win-now (*win'ō*), *v. t.* to separate and drive the chaff from (grain) by the wind; fan; sift or examine: *v. i.* to separate chaff from grain.

Winona (*wi-nō'nā*), **Minn.** A Dakota name applied to the first born, if a daughter, hence, "first born." If a boy, he is spoken of as *Chaske.*

Winooski (*wi-nōōs'ki*) **river, Vt.** Composed of two Algonquin words meaning "land of onions." The stream is often called the *Onion river*, also *French river*, the latter term from the circumstance of this valley being the line of travel of the French and Indians (1755).

win-some (*win'sum*), *adj.* attractive; pretty.

win-ter (*'tẽr*), *n.* the cold season of the year: *v. i.* to pass the winter; hibernate: *v. t.* to feed or maintain during the winter.

Winter palace. An imperial palace at St. Petersburg, Russia. The interior is remarkable for its series of Russian historical paintings and portraits, and for the splendid state apartments. The crown jewels are kept in this palace.

win-ter sol-stice (*'tẽr sol-stis*), the solstice when the sun enters Capricorn, about December 21.

wipe (*wīp*), *v. t.* to rub or dust the surface of with something soft; dry by rubbing: *n.* act of cleansing by rubbing.

wire (*wīr*), *n.* a metallic thread of uniform diameter: *v. i.* and *v. t.* to send a telegram.

wire-less (*'les*), *adj.*, without wires; not using wires, as *wireless telegraphy.*

wire-less te-leg-ra-phy (*wīr'les tē-leg'rā-fi*), any form of telegraphic communication effected by means of electricity without the use of wire circuits.

wire-less te-leph-o-ny (*tē-lef'ō-ni*), telephonic communication without the use of wire circuits.

wire-pull-ing (*'pool-ing*), *n.* secret influence or intrigue, especially for political purposes.

wir-y (*'i*), *adj.* made of, or like, wire; strong and flexible; lean and sinewy.

Wisby or **Visby** (*vēs'bū*). A famous old town on the west coast of the island of Gotland, Sweden. It contains a cathedral and ruined churches, towers, and walls.

Wisconsin (*wis-kon'sin*). From its principal river named by Marquette as *Masconsin*, "wild rushing channel," changed to *Ouisconsin*, then to *Wisconsin.* Present spelling from a misprint; all the early French documents have *Ouisconsing* or *Misconsing.*

wis-dom (*wiz'dum*), *n.* knowledge practically applied to the best ends; natural sagacity; prudence.

Syn. WISDOM, prudence. *Wisdom* directs all matters present or to come; *prudence*, which acts by foresight, directs what is to come. Rules of conduct are framed by *wisdom*, and it is the part of *prudence* to apply these rules to the business of life.

Ant. FOLLY, recklessness, rashness.

wis-dom tooth (*tōōth*), the name popularly given to the third molar in each jaw, appearing between the ages of 17 and 25.

wise (*wīz*), *adj.* possessing wisdom; skillful; learned; discreet.

wise-a-cre (*'ā-kẽr*), *n.* a would-be wise person; pretender to learning.

wish (*wish*), *v. i.* to have a strong desire: *v. t.* to desire or long for: *n.* strong or eager desire. [WILL, DESIRE.]

wish-ing bone (*'ing bōn*), the merrythought. [Also *wishbone.*]

wisp (*wisp*) *n.* a handful or small bundle, as of straw or hay.

Wissahickon (*wis-sā-hik'on*) **creek, Pa.** From the Delaware Indian word *misamekhan*, "catfish stream."

wist-ful (*wist'fool*), *adj.* sadly longing; pensive.

wit (*wit*), *v. i.* to know: *n.* knowledge; sagacity; talent; ingenuity; humorist. [INGENUITY.]

witch (*wich*), *n.* a woman supposed to have formed a compact with evil spirits, by whose means she possessed supernatural powers; sorceress; fascinating young woman: *v. t.* to bewitch; enchant.

witch-er-y (*'ẽr-i*), *n.* witchcraft; fascination.

witch-ha-zel (*wich'hā-zl*) *n.* a shrub or small tree of the genus Hamamelis.

Witenagemote (*wit'ē-nā-gē-mōt*). In Anglo-Saxon history, the great Saxon council or parliament, consisting of the king with his dependents and friends and sometimes the members of his family, the earldormen, and the bishops and other ecclesiastics.

with (*with*), *prep.* denoting nearness or connection: *prefix* meaning *opposition, departure, privation,* as *withstand, withhold,* etc.

with-draw (*draw'*), *v. i.* to depart; retreat.

withe (*with*), *n.* a tough flexible twig, especially of willow; band of twigs twisted together.

with-er (*with'ẽr*), *v. t.* to cause to fade and become dry; decay: *v. i.* to become sapless.

with-ers (*with'ẽrz*), *n. pl.* the highest part of a horse's back, between the shoulder blades.

with-in (*-in'*), *prep.* inside; in reach of: *adv.* inwardly.

wit-ness (*wit'nes*), *n.* attestation of a fact or event; testimony; evidence: *n.* one who attests: *v. t.* to have direct knowledge of; see: *v. i.* to give evidence. [DEPONENT, TESTIMONY.]

wit-ti-cism (*'i-sizm*), *n.* a witty remark.

wit-ting-ly (*'ing-li*), *adv.* with knowledge.

wit-ty (*'i*), *adj.* [*comp.* wittier, *superl.* wittiest], smartly or cleverly facetious; characterized by, or possessed of, wit; satirical.

wiz-ard (*wiz'ẽrd*), *n.* one supposed to possess supernatural powers; enchanter; sorcerer.

wiz-en (*'en*), *adj.* dried up; shriveled: *v. i.* and *v. t.* to dry up or shrivel.

woe (*wō*), *n.* sorrow; grief; misery. [GRIEF, PITEOUS.]

wolf (*woolf*), *n.* [*pl.* wolves (*woolvz*)], a fierce carnivorous animal of the dog kind, hence a person noted for rapacity or cruelty.

wol-ver-ene (*wool-vẽr-ēn'*), *n.* a carnivorous quadruped; the glutton. [Also *wolverine.*]

★**wom-an** (*woom'an*), *n.* [*pl.* women (*wim'en*)], an adult person of the female sex; female attendant; wife.

womb (*wōōm*), *n.* the uterus of a female; place where anything is produced; large or deep cavity: *v. t.* to breed in secret.

won-der (*wun'dẽr*), *n.* astonishment; cause of wonder; marvel; miracle; prodigy: *v. i.* to feel wonder; be astonished at.

Syn. WONDER, miracle, marvel, prodigy, monster. *Wonders* are natural; *miracles* are supernatural. The whole creation is full of *wonders;* the bible contains an account of the *miracles* which happened in those days. *Wonders* are real; *marvels* are often fictitious; *prodigies* are extravagant and imaginary; *monsters* are violations of the laws of nature. [See *admire.*]

Ant. APATHY, calmness, indifference.

won-der-ful (*-fool*), *adj.* exciting wonder; strange. [Also *wondrous.*]

wont (*wunt*), *adj.* used or accustomed: *n.* habit or custom.

wont-ed (*'ed*), *adj.* habitual; usual.

woo (*wōō*), *v. t.* to solicit in love; invite with importunity: *v. i.* to court. [ADDRESS.]

wood (*wood*), *n.* a large and thick collection of growing trees; solid part of trees.

wood-cock (*'kok*), *n.* a wild fowl allied to the snipe.

wood-en (*'n*), *adj.* made, or consisting of, wood; produced as from wood; stiff; awkward.

wood-man (*'man*), *n.* a forest officer; forester; one who fells timber; a hunter.

wood-peck-er (*'pek-ẽr*), *n.* a bird that taps the trunks of trees to discover insects.

wood-y (*'i*), *adj.* abounding in woods; consisting of, or composed of, or like, wood.

woof (*wōōf*), *n.* the weft or cross-threads in weaving; texture.

wool (*wool*), *n.* the soft, fine hair which covers sheep, goats, etc.; fine fiber resembling wool; soft, thick hair.

wool-en (*'en*), *adj.* made of wool: *n.* cloth made of wool: *pl.* woolen goods.

wool-ly (*'i*), *adj.* consisting of, like, or clothed with, wool.

Worcester (*woos'tẽr, wōōs'tẽr*), **England.** Named from the ancient *Huic-wara-ceaster*, "the camp of the *Huicci*, or *Hwiccos*," a Celtic tribe.

Worcester (*wōōs'tẽr, woos'tẽr*), **Mass.** County and city in Massachusetts, named for the county in England.

word (*wẽrd*), *n.* an articulate sound, or combination of sounds, expressing an idea; tidings; promise: *pl.* language; speech: *v. t.* to express in words; phrase. [PROMISE.]

word paint-ing (*'pānt-ing*), the description of an event, etc., in vivid, realistic language.

word-y (*'i*), *adj.* pertaining to, consisting of, or containing many words; verbose.

work (*wẽrk*), *n.* physical or intellectual effort directed to some end; labor; employment; duty; *pl.* moving parts of a mechanism; industrial manufacturing establishment: *v. i.* to perform; act; ferment.

Syn. WORK, labor, toil, drudgery, task. Every member of society must *work* for his support if he is not in independent circumstances; the poor are obliged to *labor* for their daily subsistence; some are compelled to *toil* incessantly for the pittance which they earn; *drudgery* falls to the lot of those who are the lowest in society. A man wishes to complete his *work;* he is desirous of resting from his *labor;* he seeks for a respite from his *toil;* he submits to *drudgery.* *Task* is a *work*

imposed by others, and is, consequently, more or less burdensome. [See *performance.*]
Ant. PLAY, pleasure.

work-house (*wĕrk'hous*), *n.* a poorhouse; a house where convicts are confined to labor.

world (*wĕrld*), *n.* the earth and its inhabitants; whole system of created things; universe.

world-ling (*'ling*), *n.* one who is devoted to the pleasures and advantages of the present.

world-ly (*'li*), *adj.* pertaining to, or devoted to, this life and its enjoyments and advantages.

worm (*wĕrm*), *n.* any small creeping animal entirely destitute of feet: *v. i.* to work slowly, secretly, and gradually: *v. t.* to undermine by slow and secret means.

worm-wood (*'wood*), *n.* the bitter plant Absinthium, used as a powerful tonic; source of bitterness.

wor-ri-ment (*wur'i-ment*), *n.* anxiety; trouble.

wor-ri-some (*'i-sum*), *adj.* causing worry.

wor-ry (*'i*), *v. t.* to harass with anxiety or care; vex or annoy; tease: *v. i.* to be fretful: *n.* anxiety; perplexity. [ANXIETY.]

worse (*wĕrs*), *adj.* [*comp.* of bad], less good: *n.* loss; defeat; inferior state or condition: *adv.* bad in a greater degree.

wor-ship (*wĕr'ship*), *n.* act of paying divine honor to God: *v. t.* to reverence with great respect: *v. i.* to perform acts of homage or adoration.

worst (*wĕrst*), *adj.* [*superl.* of bad], bad or evil in the highest degree: *n.* the most evil or calamitous state.

worst-ed (*woost'ed*), *n.* twisted thread spun out of woolen yarn: *adj.* made of worsted.

worth (*wĕrth*), *n.* value; price; moral excellence: *adj.* equal in value to; having estate or wealth to the value of; deserving of. [DESERT.]

worth-less (*wĕrth'les*), *adj.* having no value, virtue, or excellence; morally bad; contemptible. [UNWORTHY.]

wor-thy (*wĕr'thi*), *adj.* [*comp.* worthier, *superl.* worthiest], having worth or excellence; estimable.

would-be (*wood'-bē*), *adj.* pretending, or desirous of being thought, to be: *n.* a vain pretender.

wound (*wōond* or *wound*), *n.* hurt; injury: *v. t.* to make a wound in; lacerate; injure; hurt the feelings of.

Wouter. See *Walter.*

wrack (*rak*), *n.* seaweed cast ashore; ruin; destruction.

wraith (*rāth*), *n.* the supposed ghost of a person in his exact likeness seen immediately before, or at the time of, his death.

wran-gle (*rang'gl*), *v. i.* to dispute angrily or noisily: *n.* an angry or noisy dispute.

wran-gler (*'glĕr*), *n.* one who wrangles; an angry or noisy disputant.

wrap (*rap*), *v. t.* to roll or wind together; involve; conceal by enveloping: *n.* a wrapper; shawl.

wrap-per (*'ĕr*), *n.* one who, or that which, wraps; loose over or upper garment.

★**wrath** (*rath*, not *rath*), *n.* violent anger; indignation. [ANGER.]

wrath-ful (*'fool*), *adj.* violently angry.

wreak (*rēk*), *v. t.* to execute in vengeance or passion; inflict.

wreath (*rēth*), *n.* anything curled or twisted; garland or chaplet.

wreathe (*rēth*), *v. t.* to twist into a wreath; intertwine: *v. i.* to be interwoven.

wreck (*rek*), *n.* the destruction of a ship by being driven ashore, or on a rock; remains of anything ruined; destruction: *v. t.* to ruin or destroy.

wreck-age (*'āj*), *n.* remains of a wrecked vessel; act of wrecking; state of being wrecked.

wreck-er (*'ĕr*), *n.* one who plunders, or causes, wrecks; one who removes the cargo from a wrecked vessel.

wrench (*rench*), *v. t.* to wring or pull with a twist; strain: *n.* a violent twist; sprain; instrument for exerting a twisting strain. [TURN.]

wrest (*rest*), *v. t.* to twist, wrench, or force from by violence; distort: *n.* violent pulling or twisting. [TURN.]

★**wres-tle** (*res'l*, not *rest'l*), *v. i.* to contend, by grappling with, or striving to trip or throw down, another; strive earnestly: *v. t.* to contend against in wrestling.

wretch (*rech*), *n.* a despicable or worthless person; one sunk in the deepest woe.

wretch-ed (*'ed*), *adj.* miserable; unhappy; worthless; of miserable quality or character.

wrig-gle (*rig'l*), *v. i.* to twist to and fro: *v. t.* to move by, or as by, wriggling: *n.* a wriggling motion.

wring (*ring*), *v. t.* to twist; turn and strain; force or compress; extort: *n.* a forcible twist. [TURN.]

wrin-kle (*ring'kl*), *n.* a small ridge or furrow on a smooth surface; crease: *v. t.* to form or cause wrinkles; crease: *v. i.* to become wrinkled.

wrist (*rist*), *n.* the joint uniting the hand to the arm.

writ (*rit*), *n.* anything written; a written document to enforce obedience to an order of a court of justice.

write (*rīt*), *v. t.* [*p. t.* wrote, *p. p.* written, *p. pr.* writing], to form with a pen or similar instrument on paper, etc.; express in writing: *v. i.* to form letters with the pen.

writ-er (*'ĕr*), *n.* one who, or that which, writes; clerk or amanuensis; author; journalist.

Syn. WRITER, author. *Writer* refers us to the act of *writing; author* to the act of inventing. There are, therefore, many *writers* who are not *authors;* but there is no *author* of books who may not be termed a *writer;* compilers and contributors to periodical works are properly *writers,* though not always entitled to the name of *authors.* Poets and historians are properly termed *authors* rather than *writers.*

writhe (*rīth*), *v. t.* to twist with violence; pervert: *v. i.* to contort the body.

wrong (*rông*), *adj.* not morally right; false; unjust; mistaken: *adv.* unjustly; erroneously. [INJUSTICE, ABUSE.]

wrong-ful (*'fool*), *adj.* contrary to moral law or justice; injurious.

wroth (*rawth*), *adj.* much exasperated.

wry (*rī*), *adj.* distorted; twisted; perverted; false.

Wyoming (*wī-ō'ming*). A western state of the Union. Name carried to the west by emigrants from the Wyoming valley of eastern Pennsylvania. In its native location, the word derived from the Delaware expression, *maugh-wauwame,* meaning "the large plains."

X

xan-the-in (*zan'thē-in*), *n.* the yellow coloring matter of certain plants and flowers.

xantho, a *prefix,* meaning *yellow,* as *xantho*carpous: *adj.* having yellow fruit.

xan-thous (*'thus*), *adj.* yellow; noting races having brown, flaxen, or red hair and blue eyes.

xe-bec (*zē'bek*), *n.* a small three-masted vessel with lateen and square sails.

xeno, a *prefix,* meaning a *stranger,* as *xeno*genesis, heterogenesis.

xe-non (*zē'non*), *n.* a newly discovered gas, associated with argon.

xe-ro-der-ma (*zē-rō-dĕr'mȧ*), *n.* a disease of the skin characterized by dryness.

xe-roph-thal-mi-a (*-rof-thal'mi-ȧ*), *n.* abnormal dryness of the eyeball, accompanied by redness and irritation.

X rays (*eks' rāz*), the Roentgen rays.

xylo, a *prefix,* meaning *wood.*

xy-lo-graph (*zī'lō-grȧf*), *n.* an engraving on wood; an impression from such an engraving.

xy-log-ra-phy (*-log'rȧ-fi*), *n.* the art or process of making prints from the natural grain of wood; a kind of decorative painting on wood.

xy-lon-ite (*'lon-īt*), *n.* a kind of compressed gun cotton, resembling ivory.

xy-lo-phone (*'lō-fōn*), *n.* a musical instrument.

xys-ter (*zis'tĕr*), *n.* a surgical instrument for scraping bones.

xys-tos (*'tos*), *n.* a long covered portico for athletic exercises. [Also *xystus.*]

Y

★**yacht** (*yot*), *n.* a light and quick-sailing vessel used for pleasure or racing: *v. i.* to sail or cruise about in a yacht.

Yadkin (*yad'kin*). County in North Carolina, said to be named for a tribe of Indians, though some authorities favor the idea that it was named for an early settler.

ya-hoo (*yȧ-hōō'*), *n.* a savage, from the race of brutes in Gulliver's Travels.

yam (*yam*), *n.* a large edible tuber of various climbing plants of the genus Dioscorea.

Yang-tse-Kiang (*yang-tsē-ki-ăng'*) **river.** "The son of the great water." The largest river of China.

yank (*yangk*), *v. t.* to jerk or twist: *v. i.* to work cleverly and pushingly: *n.* a jerk or twist.

Yan-kee (*yang'kē*), *n.* the popular name of New England Americans: *adj.* pertaining to, or characteristic of, citizens of the United States.

Yankee. This word is believed to have been derived from the manner in which the Indians endeavored to pronounce the word English, which they rendered *Yenghees,* whence the word *Yankee.*

Yan-kee-ism (*-izm*), *n.* a Yankee idiom, practice, or custom.

Yankton (*yangk'tun*), **S. D.** Named from the Dakotah Indian word, *eyank-ton-wah,* "people of the sacred or spirit lake."

yap (*yap*), *v. i.* [*p. t.* and *p. p.* yapped, *p. pr.* yapping], to yelp or bark, as a dog: *n.* a yelp or bark.

yard (*yȧrd*), *n.* a standard measure of length equal to 3 feet; an inclosure adjoining, or attached to, a house.

yarn (*yȧrn*), *n.* spun thread; a sailor's story, especially one of doubtful veracity: *v. i.* to tell a story.

yaw (*yaw*), *v. i.* to steer wildly; deviate from the right course: said of a ship; rise in blisters or white froth.

yawl (*yawl*), *n.* a light, decked, two-masted boat; jolly-boat: *v. i.* to howl.

yawn (*yawn*), *n.* an involuntary opening of the jaws through drowsiness, etc.: *v. i.* to gape involuntarily.

yawp (*yawp*). Same as *yelp.*

Yazoo (*yaz'ōō*). County and river in Mississippi, named for a tribe of Indians, the name said to mean "to blow on an instrument"; another definition is given as "the ruins."

y-cleped (*i-klept'*), *adj.* called. [Also *yclept.*]

ye (*yē*), *pron.*; *nom. pl.* of thou.

yea (*yā*), *adv.* yes; truly.

year (*yēr*), *n.* the period during which the earth makes one complete revolution around the sun (365¼ days): *pl.* age; old age.

yearn (*yĕrn*), *v. i.* to feel an earnest desire; be filled with eager longing or desire. [EAGER.]

yeast (*yēst*), *n.* the barm or ferment of beer; any preparation for raising dough.

yell (*yel*), *n.* a sharp, discordant cry, as of agony: *v. t.* to scream: *v. i.* to utter a sharp, discordant cry. [CALL.]

★**yel-low** (*yĕl'lō*, not *yel'lu*), *adj.* of a bright, pure color resembling gold; jaundiced.

Yellow Sea. Arm of Pacific ocean lying between China and Korea. Named from the color of the water caused by the nature of its muddy soil.

Yellowstone. River in Montana and Wyoming. Name derived from its original French name, *roche. jaune,* "yellow rock or stone," though by some said to be from the Indian *mi-tsi-a-da-zi,* "rock yellow river."

yelp (*yelp*), *v. i.* to utter a sharp bark: *n.* a sharp bark.

Yemassee (*yem-ȧ-sē'*) **river, Ga.** From a tribe of Indians, *Yamassi,* signifying "peaceable."

Yenisei (*yen-ē-sā'ē*). The great river of Siberia, also written *Jenissy, Genisei,* or *Gelissy,* has been explained as "the water which flows down," or the river which "brings down ice."

yeo-man (*yō'mȧn*), *n.* [*pl.* yeomen (*'men*)], in England, a man possessed of a small landed estate; farmer.

yes (*yes*), *adv.* yea: opposed to no.

yes-ter-day (*'tĕr-dā*), *n.* the day last past; recent time: *adv.* on the day last past.

yet (*yet*), *adv.* in addition; still; moreover: *conj.* nevertheless; however.

★**yew** (*yū*), *n.* a large evergreen tree of the genus Taxus: *adj.* pertaining to yew trees.

Yid-dish (*yid'dish*), *n.* a kind of composite language spoken by foreign Jews in England.

yield (*yēld*), *v. t.* to submit; produce; concede: *v. i.* to assent: *n.* product; return. [BEAR, COMPLY.]

yield-ing (*'ing*), *adj.* inclined to give way or comply; accommodating: *n.* the act of producing; submission; compliance. [COMPLIANT.]

yo-del. Same as *jodel.*

yoke (*yōk*), *n.* a piece of hollowed timber for connecting two draft oxen together; service; mark of slavery: *v. t.* to join together; couple; enslave.

yo-kel (*yō'kl*), *n.* a rustic.

Yokohama (*yō-kō-hä'mȧ*). Now the chief port in Japan, was before 1854 a small fishing village. The name is believed to mean the "cross shore."

★**yolk** (*yōk*, not *yōlk*), *n.* yellow part of an egg; vitellus, the oily secretion from the skin of a sheep which renders the wool soft and pliable.

yon-der (*yon'dĕr*), *adj.* being at a distance within view: *adv.* at that place; there. [Also *yon.*]

Yonkers (*yong'kĕrz*). City in New York, named for a manor house built by the Dutch, the word meaning "young lord," and first applied in this country to Adrien Van der Douck, a patentee.

yore (*yōr*), *adv.* in old time; long ago.

York river, Va. After the duke of York; prior to this it was noted on the maps as *Salt river.* The Indian name was *Pamawnkee* or *Pamaunk.*

Yosemite (*yō-sem'it-ē*). An Anglicized or corrupted form of the Indian *a-hom-e-ta,* meaning "grizzly bear;" supposed to have been the title of a chief, and generally applied to a tribe that inhabited the region.

you (*ū*), *pron. nom.* and *obj. pl.* of thou: now used for thou and thee.

Youghiogheny (*yok-ō-gā'ni*) **river, Pa.** From the Indian *yukwiakhanna,* "a stream taking a roundabout course."

young (*yung*), *adj.* being in the early part of life or growth; inexperienced; not matured; raw: *n.* offspring collectively.

young-ster (*'stĕr*), *n.* a young person; lad.

Youngstown. City in Ohio, named for John Young, an early resident.

youn-ker (*'kĕr*), *n.* a young fellow; stripling.

your (*yūr*), *pron. poss. pl.* of thou or you. [Also *yours.*]

your-self (*-self'*), *pron.* [*pl.* yourselves (*-selvz'*)], you in your own person.

youth (*yūth*), *n.* [*pl.* youths (*yūths*)], early life: a young person; condition of being young.

youth-ful (*'fool*), *adj.* pertaining to youth or the early part of life; fresh; vigorous.

Syn. YOUTHFUL, juvenile, puerile. *Youthful* signifies full of *youth,* or in the complete state of *youth; juvenile* signifies the same; but *puerile* signifies literally boyish. Hence the first two terms are taken in an indifferent sense; but the latter in a bad sense, or at least always in the sense of what is suitable to a boy only. We expect nothing from a youth but what is *juvenile;* we are surprised and dissatisfied to see what is *puerile* in a man.

Ant. AGED, old, hoary, venerable, senile.

yowl (*youl*), *n.* a howl: *v. i.* to howl or yell.

Ypsilanti (*ip-sil-an'ti*). City in Michigan, named for a Greek prince.

Yucatan (*yōō-kȧ-tän'*). A compound Indian word meaning "what do you say?" which was the only answer the Spaniards could obtain from the natives to their inquiries concerning a description of the country.

Yukon (*yōō'kon*) **river, Alaska.** Named from the *Yakuts,* a Tartar tribe.

Yule (*yūl*) *n.* Christmas.

yule log (*yūl' log*), a large block of wood formerly put upon the hearth on Christmas eve to form the basis of the Christmas fire.
yule-tide (*'tīd*), *n.* Christmastide.
Yuste (*yōōs'tā*). A convent in Spain, east of Plasencia. It is noted as the place of retirement of the Emperor Charles V. after his abdication.

Z

Zaccheus (*zak-ē'us*). From the Hebrew *Zakkay*, "pure," "innocent." Others render it "pure of the Lord," making the last letter stand for *Yah*. Fr., *Zacchée;* It., *Zacheo;* Lat., *Zaccheus*.
Zacharian (*zak-à-ri'à*). From the Hebrew *Zakhar-Yah*, meaning "remembering the Lord." Danish, *Zacharias;* Dutch, *Zacharias;* Fr., *Zacharie;* Ger., *Zacharias;* It., *Zaccaria;* Lat., *Zacharias;* Sp., *Zacarias;* Sw., *Zacharias*.
Zachary (*zak'à-ri*). Same derivation as *Zachariah*.
Zadok (*zā'dok*). Means "righteous." Fr., *Zadoc;* Lat., *Zadocus*.
Zambezi (*zăm-bē'zē*, pop., *zam-bē'zi*). Is the "great river" of eastern Africa, whose upper waters and chief affluents are called *Jambaji* and *Luambezi*, dialectic forms of the same name.
Zanesville (*zānz'vil*). City in Ohio, named for Ebenezer Zane, who, with John McIntire, founded the city.
za-ny (*zā'ni*), *n.* a buffoon; merry-andrew.
Zanzibar (*zăn-zi-bär'*). The name of an East African island, was used before the fifteenth century in a more general sense to denote the East African coast south of the river Jubb. *Zanzibar* is a Port. form of the Arab. *Zanjebar*, which is itself a corruption of the Persian *Zangibar*, or *Zenquebar*, which means "the coast or region of the blacks," the name being formed like *Hindubar*, "the land of the Hindus," or *Malebar*, "the land of the mountains."
zeal (*zēl*), *n.* ardor for a cause; fervor.
Syn. ZEAL, ardor, fervor. *Zeal*, in reference to these other synonyms, is specific, while they are characteristic or habitual; *zeal* is passionate *ardor* in favor of a person or a cause; *ardor* is simply warmth or heat of passion in love, pursuit, or exertion; *fervor* denotes the constitutional state or temperament of individuals. We speak of the *fervor* of passion, declamation, supplication, desire, as demonstrative of warmth. *Ardor* is more deeply seated; as *ardent* friendship, love, *zeal*, devotedness.
Zealand (*zē'land*). A province in the Netherlands, "land surrounded by the sea."
zeal-ot (*zel'ot*), *n.* an enthusiast; fanatic.
Zeal-ot, *n.* one of a fanatical sect of Jews which carried on a desperate struggle with the Romans until the fall of Jerusalem (70 A. D.).
zeal-ous (*'us*), *adj.* ardent in the pursuit of an object; enthusiastic. [EAGER.]
ze-bra (*zē'brà*), *n.* a wild animal of Africa of the genus Equus, with black and white stripes.
Zebulon (*zeb'ū-lon*). From the Hebrew, meaning "dwelling." Fr., *Zabulon;* Lat., *Zabulon*.
ze-na-na (*zē-nà'nà*), *n.* in India, that part of a house reserved exclusively for women.
ze-nith (*zē'nith*), *n.* the point in the heavens directly over the head of the spectator; greatest height.
Zepp-e-lin (*tsĕp'e-lēn'*), a large airship invented by Count von Zeppelin, cylindrical in shape, and containing a number of separate compartments filled with gas. It has a large carrying capacity and, therefore, most formidable for war purposes.
zeph-yr (*zef'ĕr*), *n.* the west wind; soft, gentle breeze.
ze-ro (*zē'rō*), *n.* a cipher; nothing; neutral point (0) between any ascending or descending scale or series.
zest (*zest*), *n.* relish; keen enjoyment.
zig-zag (*zig'zag*), *adj.* having short, sharp turns: *n.* something with short, sharp turns.
zinc (*zingk*), *n.* a bluish-white metal.
zin-cog-ra-phy (*zing-kog'rà-fi*), *n.* the art of drawing upon, or printing from, zinc plates.
Zion (*zī'on*) or **Sion** (*sī'on*), **Mount.** A hill on which was situated the old city of Jerusalem; the "city of David." Now used symbolically of the Christian church and of heaven.
Zi-on-ism (*-izm*), *n.* a project for the reëstablishment of the Jews as a nation in Palestine.
zith-er (*zith'ĕr*), *n.* a stringed musical instrument, consisting of a sounding box and 28 to 31 strings.
zo-di-ac (*zō'di-ak*), *n.* an imaginary broad belt in the heavens, containing the 12 constellations or signs of the zodiac, which the sun traverses annually.
★**zo-di-a-cal** (*zō-dī'à-kal*, not *zō'di-ak-al*), *adj.* pertaining to, or situated within, the zodiac.
Zoe (*zō'ē* or *zō*). From the Greek name, signifying "life."
Zo-la-ism (*'là-izm*), *n.* excessive realism in the literary treatment of the worse side of human life or nature, from Emile Zola, the French realistic novelist.
zone (*zōn*), *n.* one of the 5 great belts into which the surface of the earth is divided with respect to latitude and temperature; a girdle or belt: *v. t.* to encircle with, or as with, a zone.
zoō, a *prefix* meaning *animal*, as *zoō*chemistry, animal chemistry.
zoo (*zōō*), *n.* a park or other large inclosure in which live animals are kept for public exhibition.
zo-ō-ge-og-ra-phy (*zō-ō-jē-og'rà-fi*), *n.* the study of the geographical distribution of animals.
zo-ōg-ra-phy (*-og'rà-fi*), *n.* the description of animals, their forms and habits.
zo-ōl-o-gy (*-ol'ō-ji*), *n.* that part of biology that treats of animals, their structure, classification, habits, and distribution.
zo-ō-mor-phism (*-ō-mōr'fizm*), *n.* the representation of a deity in the form, or with the attributes, of an animal.
zo-ōph-i-list (*-of'i-list*), *n.* a lover of animals.
zo-ō-phyte (*'ō-fīt*), *n.* an animal of low organization, bearing some external resemblance to a plant.
zo-ōt-o-my (*-ot'ō-mi*), *n.* the dissection or anatomy of animals.
zou-ave (*zōō-āv'*), *n.* a soldier of a light infantry corps of the French army, wearing an Arab dress.
Zu-lu (*zōō'lōō*), *n.* one of a warlike tribe of Kaffirs, north of Natal.
Zululand (*zōō'lōō-land*). The country of Zulus.
Zurich (*zōō'rik*). A canton and city of Switzerland. Named from the ancient *Thiouricum*, "the town of the Thuricii," who built it after it had been destroyed by Attila.
Zuyder Zee (*zī'dĕr zē*, Dutch *zoi'der-zā*). The Dutch for the "South Sea," in relation to the North Sea or German Ocean, of which it is an arm.
Zwinger (*tsving'ĕr*). A famous museum in Dresden. Its picture gallery contains about 2,500 paintings, also collections of drawings, casts, etc.
zyme (*zim*), *n.* the germ supposed to be the poisonous cause of zymotic diseases.
zym-ic (*zim'ik*), *adj.* produced by fermentation.
zy-mol-o-gy (*zi-mol'ō-ji*), *n.* the doctrine of fermentation.
zy-mo-sis (*zi-mō'sis*), *n.* a fermentation.
zy-mot-ic (*-mot'ik*), *adj.* producing fermentation, or a disease in which a virus works through the body like a ferment, as cholera.
zy-mur-gy (*zī'mûr-ji*), *n.* that branch of industrial chemistry which deals with the processes of fermentation in brewing, wine-making, etc.

CURRENT GLOSSARY

The list of words to be found in the Current Glossary is made up of proper names; of new words added to the language by the World War; of new words from other sources, including moving pictures, radio and aeronautics; of old words with new meanings; and of terms in common use in America that are not in the body of the Multiplex Dictionary.

Frequent use has been made of Webster's "New International Dictionary" and Funk and Wagnall's booklet "War Words,"

NOTE—The words in this list marked with a double cross (♯) are to be found also in the body of the dictionary, but are used here with a special meaning.

A battery. In radio, an electric battery for heating the filament in an electron tube.
A B C. The first letters of the names of Argentine, Brazil and Chile which have acted together in international affairs and are hence referred to as the A B C powers.
absolute scale. A scale of temperature with absolute zero as -273.1° Centigrade.
♯absorption. A radio term denoting reduction of power, associated with radio waves, and due to a variety of causes.
A.C. or **a.c.,** abbr. Alternating current.
ac-cel'er-ant (*ăk-sĕl'ĕr-ănt*), n. A substance which effects a chemical reaction without itself being changed.
♯accept'ance, n. Commercially, an accepted bill or the amount contained therein.
♯ace, n. An aviator who has brought down five or more enemy planes, applied first in the French forces during the World War and now generally to any nation's airmen. Also applied to one who surpasses in any line, as a football ace.
ac'i-do'sis (*ăs'ĭ-dō'sĭs*), n. An acid condition in the body.
acid test. A difficult or deciding test of merit, probably originated from the custom of testing gold with an acid.
ac'ro-bat'ics (*-băt'ĭks*), n. Performances such as tumbling, looping, spinning, etc.
Ad'am-son Act. An act of Congress, effective since 1917, providing among other things for an eight-hour day for interstate commerce carrier employees.
ad'dict (*ăd'ĭkt*), *n.* One having a habit, especially the drug habit.
♯addi'tion (*ă-dĭsh'ŭn*), *n.* A new allotment of land to be added to a city, as Smith's addition in Detroit.
ad-dres'so-graph (*ă-drĕs'ō-grăf*), *n.* A machine that prints from type, used in addressing letters etc.
A.E.F. abbr. American Expeditionary Force (or Forces).
♯a-e'ri-al (*ā-ē'rĭ-ăl*), *n.* In radio, an elevated system of wires or other equipment, insulated, generally connected to the earth, and used to radiate energy in the form of ether waves and to receive energy in the form of oscillations.
ae'rial sickness (*ā-ē'rĭ-ăl*), *n.* A sickness felt by aeronauts, much like seasickness.
a'er-o-boat (*-bōt*), *n.* A seaplane.
a'er-o-bus (*-bŭs*), *n.* An airplane built to hold more than one occupant.
a'er-o-do-net'ics (*ā'ĕr-dō-nĕt'ĭks*), *n.* Science dealing with problems of stability of bodies in flight or soaring.
a'er-o-gun' (*-gŭn*), *n.* A kind of cannon used against aircraft.
a'er-o-stat (*-stăt'*), *n.* A balloon.
A.F. or **a.f.,** abbr. Audio-frequency.
A. F. of L., abbr. American Federation of Labor.
ai'le-ron (*ā'lē-rŏn*), *n.* A small hinged plane employed by the pilot of an aeroplane as a stabilizer.
♯air, *n.* In radio, the sending medium of radio waves. —**on the air** refers to broadcasting.
air base. A center where aircraft are kept and from which they operate.
air'craft' (*ăr'kraft'*), *n.* Any mechanism used for flying in the air.
air'drome' (*ăr'drōm'*), *n.* A field equipped for the landing, taking off and care of aircraft.
air fleet. A group of aircraft especially when organized for a military purpose.
air hole, *n.* A local condition of the atmosphere that does not afford suitable support for aircraft.
air lane, *n.* A path of invariable winds, which makes flying easy.
air'mail. Sending mail by aircraft; also, the equipment used and the mail thus carried.
air'man (*ăr'măn*), *n.* A man who flies in an aircraft.
air'plane' (*ăr-plān'*), *n.* A heavier than air aircraft. The form airplane is official with the United States Army and Navy, Bureau of Standards, etc. Aeroplane is used in many countries, especially in England.
air pocket. An air hole.
air raid. A raid by aircraft, especially with the accompaniment of dropping bombs.
air'way (*ăr'wā'*), *n.* A marked route for aircraft.
air'worthy (*-wûr'thy*), *a.* In suitable condition for travel in the air, as an airplane.
alarm'ist (*ă-lärm'ĭst*), *n.* One who is easily excited over public questions and who seeks to excite others.
al'tigraph (*ăl'tĭ-grăf*), *n.* An altitude-recording instrument, resembling the aneroid barometer.
al-timet'er, *n.* An altitude-indicating barometer.
American Federation of Labor. An American organization of trade and industrial unions with headquarters at Washington, D. C.
American Legion. An American organization of men and women who served in the World War; incorporated in 1919 by an Act of Congress
am'pli-fier, *n.* In radio, a contrivance to magnify electric impulses.
animal husbandry. That part of agriculture which deals with farm animals.
♯antenna. In radio, a receiving aerial.
an'ti-air'craft' (*ăn'tĭ-ăr'kraft'*), *a.* Used for protection from enemy aircraft, as a gun, etc.
Anti-Saloon League of America. An American organization aimed at the suppression of traffic in liquor.
An'zac (*ăn'zăk*), *n.* A word made from the initial letters of Australian and New Zealand Army Corps and referring to fighters from Australia and New Zealand, especially in the World War.
ar'bo-rize (*ăr'bō-rīz*), *v.* Also **arborise.** To make look like a tree.
arc transmitter. In radio, a sending set using an arc generator.
Ar'gentine ant (*ăr'jĕn-tēn; tĭn*). A little brown ant imported into the southern United States from Argentina; it has become a pest in households and in orchards.
ar'gy-rol (*ăr'jĭ-rōl; rŏl*), *n.* A silver salt used in a water solution as an antiseptic, especially for eyes and throat.
Armistice Day. Nov. 11th, the day in the World War when hostilities ceased by declaration of a general armistice.
army of'ficers. The leaders of European armies are called field marshals, but this title is not used in the United States. Next under field marshals are generals; this title has been given to only four or five commanders in the United States. The other titles follow in order; lieutenant-general, major-general, brigadier-general, colonel, lieutenant-colonel, major, captain, lieutenant, second liqutenant.

In the United States, the president is commander in chief of army and navy; the highest officer leading the forces in the field being either a general or one of the three ranks immediately below a general.
as'pi-rin (*ăs'pĭ-rĭn*), *n.* A white compound used as a drug.
♯as-sem'bly, *n.* A number of parts which, when assembled, make one unit of a machine, as an engine assembly.
atomic number. A number said to be the same as the number of positive electric charges carried by an atom. Atomic numbers form a series much used by chemists.
auc'tion bridge. A kind of bridge introduced in 1907. The game differs from ordinary bridge in that the declaration of trump lies with each player in turn, the dealer bidding first. The player who makes the trump suffers a severe penalty if he does not make his bid.
♯au'di-ence, *n.* A group of onlookers as at a theater.
au'di-o-fre'quen-cy, *a.* In radio, relating to the frequency of electric waves that are heard normally by the human ear.
Australian crawl. In swimming a kind of crawling stroke in which arm and leg motions alternate causing the body of the swimmer to roll from side to side.
au'to-bus' (*ô'tō-bŭs'*), *n.* A motor car used as an omnibus.
au'to-mo'tive (*ô'tō-mō'tĭv*), *a.* Self-propelling, as a motor car.
au'to-sta-bil'i-ty (*ô'tō-stă-bĭl'ĭ-tĭ*), *n.* The ability of an aircraft to keep its equilibrium, either by a self adjusting mechanism or by its proportions alone.
au'to-sug-ges'tion (*ô'tō-sŭg-jĕs'chŭn*), *n.* A suggestion from within as opposed to one from another person.
a'vi-a'tress (*-ā'trĕs*), **a'vi-a'trice** (*-trĭs*), **a'vi-a'trix** (*-ā-trĭks*), *n.* A female aviator.
a'vi-ette' (*ā'vĭ-ĕt'*), *n.* A flying machine heavier than air and propelled by the motive power of the aviator.
A. W. L. or **a. w. l.,** abbr. Absent without leave.
A. W. O. L. or **a. w. o. l.,** abbr. Absent without official leave.
A-zo'to-bac'ter (*ăzō'tō-băk'tĕr*), *n.* Certain bacteria which fix atmospheric nitrogen, thus being helpful to the farmer in keeping the soil fertile.
Bab'bitt (*băb'ĭt*). From a character in Sinclair Lewis's novel "Babbitt," a well-to-do real estate dealer; hence, one who lives by the standards of Babbitt and his social group.
baby beef. A well-fattened beef slaughtered at from one to two years of age.
baby bond. A bond with a face value of only $50 or $100.
bac'te-rin (*băk't-rĕĭn*), *n.* A preventive inoculation against bacteria.
Ba-hai' (*bä-hä'e*), *n.* A member of a religious sect called Babis.
ba'ke-lite (*bā'kē-līt*), *n.* A product made from phenols and formaldehyde and named after its discoverer, Leo H. Baekeland. Its use is similar to that of hard rubber or celluloid. Bakelite is commonly black or brown.
♯bal'ance, *n.* What is left of anything.
bal'ance of pow'er. A condition existing among nations that does not permit one nation of a group of nations to imperil the liberty of any other.
balloon cloth. A fabric, usually cotton, from which balloon cloth is made.
balloon tire. Also **balloon,** *n.* A large, thin-walled rubber tire which is inflated to a low pressure. It is efficient in absorbing shocks.
Barac'a (*bă-răk'ä*), *n.* A worldwide organization of Bible classes of young men.
bar'o-graph (*băr'ō-grăf*), *n.* In aeronautics, an instrument to record variations in barometric pressure.
barrage (*bă'räj*). A barrier; hence a barrier of artillery fire protecting advancing troops from enemy attack, or cutting off front line positions of the enemy from reserves, or in general stopping the advance of troops.
♯bas'ket, *n.* The car hung below a balloon.
ba'tik (*bä'tek*), *n.* Also **bat'tik.** A system of color design on fabrics, originating with the natives of the Dutch East Indies. Parts of the fabric that are not to be dyed are coated with wax which is later removed by boiling.
battery eliminator. In radio, a contrivance to supply voltage direct from the regular electric power supply.
battle cruiser. A warship of the highest speed and battery class, but not as heavily armored as a battleship. It is made for speed and for long-range fighting.
B battery. In radio, the battery between the plate and the filament of an electron tube to effect the flow of electron current in the tube.
♯bee, *n.* Any kind of social gathering of neighbors.
berlin' (*bĕr'lĭn'*). A limousine having the driver's seat entirely enclosed.
bible paper. A strong, thin paper, originally used for Bibles, and reducing bulk in volumes.
bill fold. A pocketbook with one or more compartments for bills, or banknotes. The bills are inserted flat and the container then folded.
Binet' (*bē-nĕ'*) or **Bi'net'-Si'mon'** (*bē-nĕ'-sē-mōn'*) **test.** An educational test consisting of graded questions and tasks intended to test the intellectual ability of children. It was originally designed for children up to the age of twelve, but has been extended to older children and to adults.
bird'man (*bûrd'măn*), *n.* A man, who flies; aviator. *Colloq.*
birth control. Control of number of children born, as by use of contraceptives.
♯bit, *n.* Twelve and one-half cents.
black canker. A fungous disease of the European chestnut.
black'heart, *n.* A physiological disease of potatoes in which interior parts of the tubers are blackened.
black'leg, *n.* A disease of cabbage; also a disease of potato plants.
black shirt. A member of the Italian Fascisti, an organization whose members wear black shirts as a distinctive part of their uniform.
black stem rust. A kind of wheat rust wherein black lines occur on the plant stem.
bleachers (*blēch'ĕrs*), *n.* The seats in an athletic field, exposed to the weather.
blimp (*blĭmp*), *n.* A small airship driven by an engine. *Slang.*
blind pig, *n.* An unlicensed liquor-selling establishment.
block (*blŏk*), *n.* A space in a city, enclosed by streets.
blood pressure. The pressure of the blood in the blood vessels, which varies with conditions and especially with age.
blos'som-end rot. A disease caused in various ways and causing fruit to rot at the blossom end.
blow'-out. The bursting of a pneumatic tire or the hole thus made in the tire.
Blue Cross. A society originally for the relief of dogs and horses. The American Blue Cross aids in securing humane treatment for various animals.
blue'sky' law. A law, protecting the public from investment companies making false promises as pleasing as the blue sky.
bo-liv'ia (*bō-lĭv'ĭ-ä*), *n.* A woolen cloth with a silky finish used for women's and children's coats.
Bol'she-vik' or **bol'she-vik'** (*bŏl shĕ-vĕk'*), *n.* A member of the radical socialist group in Russia. Since 1918 the Bolsheviki have called their party the **Communist party.**
bomb, *v.* To drop bombs.
bomb'er (*bŏm'ĕr*), *n.* A bomb thrower; an aircraft used to drop bombs.
bo'na fi'de (*bō'nä fī'dē*). In good faith: actually.

bon'naz' (*bŏ'nàz'*), *n.* A kind of machine-made embroidery, taking its name from the inventor of the machine.
boot'legger, *n.* One who carries or sells intoxicating liquor in forbidden territory. Also one who deals in any forbidden product, as uninspected nursery stock, etc.
bot'u-lism, *n.* A kind of food poisoning, due to a bacillus.
bou'le-vard, *n.* A street for pleasure vehicles only.
box ball. A bowling game in which the five pins are reset by a lever and the balls are returned from a box to the player by means of gravity.
box tail. A box-like form used as the rudder of an aircraft.
boy scout. A boy who belongs to the movement inaugurated in England in 1908 by Lieutenant-General Sir Robert S. S. Baden-Powell. Boys are trained in wholesome and useful living, especially in the outdoors, by informal methods appealing to the spirit of play.
B. P. O. E., *abbv.* Benevolent and Protective Order of Elks.
bras'siere' (*brà syâr'*), *n.* [F.] A reinforced underwaist worn by women.
bread line. A line of persons to whom is given food as charity.
broad'cast, *v.* In radio, to send to any listeners messages or programs from a radio sending station
brough'am (*br ōō'ŭm*), *n.* A limousine with no roof over the driver's seat.
brown ring. A bacterial disease of the potato.
buck'a-roo' (*bŭk'à-rōō'*), *n.* An expression used in the West to denote a cowboy.
bud'dy (*bŭd'ĭ*), *n.* Brother; companion; intimate associate; used by soldiers in referring to their comrades in the army.
Bull Moose. A member of the progressive party founded by Colonel Roosevelt in 1912; the Bull Moose party.
Bur'ley or **bur'ley** (*bŭr'lĭ*), *n.* A kind of tobacco grown in Kentucky and elsewhere and used especially for chewing.
cab'a-ret' (*kà'bà-rā'*), *n.* An American restaurant in which dancers and singers perform between the tables.
cab'ri-o-let' (*kăb'rĭ-ō-lā'*), *n.* A coupe-like automobile with folding top and doors with glass windows.
caf-e-te'ri-a (*kăf'ē-tē'rĭ-à*), *n.* A self-serve restaurant.
cam'er-a-man' (*kăm'ĕr-à-măn'*), *n.* The photographer who takes motion pictures, usually as an expert operator.
ca'mion' (*kà myŏn'*), *n.* [F.] A motor truck, especially as in the World War.
cam'i-sole, *n.* A very short shirtlike garment worn by women.
ca'-mou'-flage' (*kà'-mōō'-flăzh'*), *n.* Deception through coloring; much used in World War for concealment. Flippantly used in the sense of flimflam.
camp'craft' (*kămp'krăft'*), *n.* Expertness in the work and duties of camping.
camp'-fire'girl. One who is a member of the Camp Fire Girls of America. The age limits are twelve and twenty years. The objectives are outdoor life, character development, helpfulness, assistance in home duties, etc.
ca-na'di-um (*kà-nā'dĭ-ŭm*), *n.* A recently discovered element, native as a soft, white metal in British Columbia.
can'ton-ment (*kăn'tŏn-mĕnt*). A place where troops are quartered. The American cantonment is more or less permanently built.
ꟻcape, *n.* An abbreviation used for **capeskin,** a leather made from the pelts of sheep and goats.
capital levy. A tax on capital in addition to other taxes and planned to reduce war debts.
captive balloon. A military balloon anchored to the earth and used for the purpose of observation.
car-a-cul' (*kà'rà-k ōōl'*), *n.* A fine quality of astrakhan. Karakul.
ꟻcar'rier, *n.* In medicine, a person who spreads the germs of a disease to which he himself is immune; also an animal doing the same thing.
ꟻcarry, *n.* A place where one must carry overland between navigable waters.
car'ry-o'ver (*kăr'ĭ-ō'vĕr*), *n.* A part of a crop, as wheat, not used but retained for marketing or consumption the next season.
Ca-sa'ba or **Ca-sa'ba mel'on** (*kà-sà'bà*), *n.* A yellow-skinned kind of muskmelon with a sweetish flavor to the flesh.
cas'ca-ron' (*kàs'kà-rōn'*). *n.* An egg shell; thus an egg shell container used in the West for throwing confetti.
cas'ing (*kās'ĭng*), *n.* The outer covering, or case, of a pneumatic tire.
cas'se-role, *n.* A porcelain, glass or earthenware vessel for baking and in which the food is served also.
ꟻcat'er-pil'lar, *n.* or **caterpillar tractor.** A tractor which travels on endless belt platforms, one on each side, which enable the machine to traverse very rough ground.
cat'ta-lo (*kăt'à-lō*), *n.* A cross between an American bison and a cow. Same as Catalo.
cat'walk' (*kăt'wôk'*), *n.* The narrow footpath along the keel of a dirigible.
C battery. In radio, a battery between the grid and the filament of an electron tube, to govern the amount of average plate current.
ꟻceiling, *n.* In aeronautics, the highest altitude an aircraft can reach under specified conditions.
chain store. One of a group of retail stores under one ownership and selling the same kind of goods.
chair car. A railroad car having seats wherein the passenger may recline as in an adjustable-backed chair.
cham'oi-sette' (*shăm'wà-zĕt'*), *n.* A trade-mark name for a cotton fabric used especially for gloves.
ꟻchar'ger, *n.* or **battery charger.** A contrivance used in charging a storage battery.
char'meuse' (*shär'mûz'*), n. [F.] A satin fabric, light in weight and with a shining surface on one side only.
ꟻChau-tau'qua or **chautauqua** (*shà-tô'kwà*), *n.* An educational lecture or entertainment or a group of such meetings, often held in a tent.
check'-off' (*chĕk'ôf*), *n.* A plan whereby a union receives the dues, fees, etc., of its members direct from the employer, who takes the money out of the employees wages.
chestnut blight. A serious fungous disease of the American chestnut tree; called also **chestnut bark disease.**
chev'on (*shĕv'ŭn*), *n.* Goat flesh, used as meat.
chief of staff. The officer of highest rank on a general's staff.
choke off, *v.* To make silent, as if by choking.
citrus canker. A destructive bacterial disease of citrus fruits, as of the orange, lemon, etc.
citrus scab. A prevalent fungous disease of citrus fruits affecting tree, leaf and fruit.
city-manager plan. A nonpolitical plan of city government. The central executive is called the **city manager.**
Clayton Act. An anti-trust act passed by Congress in 1914 to supplement the Sherman Act of 1890.
clean'-cut, *adj.* In definite outline.
cloche (*klōsh*), *n.* A mechanism for the steering of an airplane.
close'-up' (*klōs'ŭp'*), *n.* In moving pictures, a scene taken closer to the camera than is customary, to show detail. Any picture taken close to the camera.
club car. A railroad parlor car with movable chairs and other equipment suggestive of a room in a club.
C. M. T. C., *abbr.* Citizens' Military Training Camp.
ꟻcoach, *n.* An automobile built like a sedan but usually less expensive and with two doors instead of four.
cold-pack method. A method of canning food wherein the processes are (1) scalding, (2) dipping in cold water, (3) packing in clean, hot containers, (4) sterilizing and (5) sealing while hot.
Colum'bus Day (*kō-lŭm'bŭs*). October 12th, the day of the month on which Columbus discovered America; also called Discovery Day.
col'um-nist, *n.* A newspaper writer who prepares a regular department, usually a column in width, and with a regular title.
ꟻcom'bi-na'tion, *n.* An undergarment in one piece, combining corset cover, drawers and petticoat, or undervest and drawers.
com'ic strip. A strip of drawings of a humorous nature, depicting consecutive happenings to characters created by the artist, usually occurring in newspapers and continued daily.
com'merce destroy'er. A ship that preys upon the merchant vessels of an enemy; usually a light cruiser or a merchantman made over to the uses of war.
ꟻcommis'sion (*kŏ-mĭsh'ŭn*), *n.* In military, a paper by which the government confers rank.
com-mis'sioned officer. An officer that is given his position by government commission. See **commission.**
communique' (*ko'mū-nĭ-kē'*), *n.* A French term signifying an official bulletin.
community chest. A general fund collected from individuals to pay for all demands for charity that may be made in the community.
ꟻcom'pact (*kŏm'păkt*), *n.* A small container for face powder, usually including also a powder puff and mirror.
con'ning-to'wer, *n.* A heavily armored protection for the commanding officer and helmsman on a warship, a pilot house.
conscientious objector. One who objects to military service because of his conscience.
con-sor'ti-um, *n.* An arrangement made by banking interests of two or more nations for aiding financially another nation.
continuity writer. One who arranges and adapts a story for moving pictures.
ꟻcon'tra-band (*kŏn'trà-bănd*), *n.* Unlawful traffic. **Absolute contraband** refers to actual military equipment such as arms and ammunition. **Occasional contraband** refers to non-military supplies, such as grain and vehicles which may be put to the uses of war.
con'trast-y (*kŏn'trăs-tĭ*), *a.* Photographs with heavy shadows and marked white high lights, caused by too short exposure or by too long development of the negative.
ꟻcontrol' (*kŏn-trōl'*), *n.* The mechanism used to guide a machine.
Cool'idge tube. A recently invented tube for the generation of X-rays, named after Dr. William Coolidge, the inventor.
coon-can' (*kōōn-kăn'*), *n.* A card game, usually two-handed, played with one or two decks of cards.
co-ŏp'er-a-tive (*kŏ-ŏp'ĕr-ā-tĭv*), *n.* A jointly operated establishment or enterprise.
co'pen-ha'gen, *n.* A light tint of blue.
cor'dite (*kôr'dīt*), *n.* A powerful explosive in which nitro-glycerine is used.
cor'do-ba (*kôr'dō-và*), *n.* The Nicaraguan monetary unit equal to the gold dollar in the United States.
Cos'sack (*kŏs'ăk*), *n.* One of a large class in Russia agreeing to give military service, usually in irregular cavalry, for certain privileges from the government.
cost plus. Relating to a method of figuring the payment for contract work, as the construction of a building, the entire price of which is arrived at by adding to the actual cost a certain percent of the cost as profit.
cou'pe' (*k ōō'pā'*), *n.* An enclosed vehicle, seating two or three.
cou'pler, *n.* In radio, a contrivance connecting two electric circuits.
cou'tu'rier' (*k ōō'tü'ryā'*) or **cou'tu'riere'** (*-ryâr'*), *n.* [F.] A dressmaker.
ꟻcov'er, *v.* To report, as for a newspaper, the happenings of a meeting or an event.
cov'er-age (*kŭv'ĕr-āj*), *n.* The risks covered by an insurance policy.
C. Q. In radio, a general call directing attention to signals from a radiotelegraph station.
crank case, or **crank'case',** *n.* The cover containing the crank shaft of an engine, as in an automobile.
ꟻcrash, *v.* In aeronautics the falling or bringing down of an airplane violently and in a manner to damage the machine.
croix'de guerre' (*krwà'dĕ gâr'*), [F.] A badge of rare distinction awarded by the French government for bravery in war.
cross'-word'puz'zle. A word-guessing puzzle wherein words, when correctly completed, cross each other vertically and horizontally with most of the letters entering into two words.
cub'ism (*kūb'ĭz'm*), *n.* The theory and practice of giving artistic expression by means of geometrical figures of forms.
cuirassier' (*kwē'rà-sēr'*), *n.* A cavalryman protected by a leather or metal jacket.
cy'cle-car' (*sī'k'l-kär'*), *n.* A light vehicle of narrow gauge propelled by a motor.
cy'per (*sī'per*), *n.* The fur of the common cat when streaked with black and another color.
C. Z., *abbr.* Canal Zone.
Dail Eireann (*dàl âr'ĭn*). [Ir.] The lower house of the Legislature of the Irish Free State.
dash'een' (*dăsh'ēn'*), *n.* A plant of the tropics with an edible root. It has been introduced into the United States.
Dawes plan. A financial plan for payment of reparations by Germany to the Allies, begun in 1924;—named after Gen. Chas. G. Dawes, chairman of the reparation committee which drew up the plan.
daylight saving. Using daylight by advancing clocks, usually an hour, during certain months, commonly from April to September.
D. C. M., *abbr.* Distinguished Conduct Medal.
dead spot. In radio, an area of unusually poor reception as contrasted with that of nearby areas.
de-cath'lon (*dē-kath'lŏn*), *n.* An athletic contest made up of ten distinct events.
de-cel'er-ate (*dē-sĕl'ĕr-āt*), *v.* To slow up; to move with decreasing speed.
de-cod'e (*dē kōd'*), *v.* To translate a message in symbols into commonly understood language.
de-mount'a-ble (*dē-moun'tà-b'l*), *a.* A term describing a kind of rim for the wheel of an automobile that may be removed with the tire.
ꟻde-pres'sion, *n.* An area of low pressure (barometric) surrounded by regions of higher pressures.
ꟻdestroy'er, *n.* A warship designed to destroy the torpedo boat.
de-tec'tor, *n.* In radio, a device for changing the oscillations received by the aerial into signs which may be seen or heard. The **three-electrode electron tube** and the **crystal detectors** are well known examples of detectors.
dic'ta-phone (*-fōn*), *n.* A kind of phonograph used for recording letters, etc., from dictation and later reproducing them.
dic'to-graph (*dĭk'tà-grăf*), *n.* An instrument like a telephone with a mechanism for increasing the sound so that the usual mouthpiece is not needed.
Die'sel engine (*dē'zĕl*). A kind of internal combustion engine in which heat generated by air under high pressure is used to ignite the fuel.
ꟻdip, *n.* In aeronautics, a quick downward movement of a machine with an immediate turn to a higher elevation.
direct nomina'tion. The method of nominating officers by popular vote, without the employment of a convention or a group of delegates selected to make the nomination for the people.
direct' pri'mary. A primary for making direct nominations.
dirt farmer. A farmer who actually tills the soil himself.
disappear'ing car'riage. A mechanism for raising a coast gun to fire it and for lowering it to reload.
Discovery Day. Columbus Day.
ꟻdis-solve' (*dĭ-zŏlv'*), *n.* The gradual fading of one picture into another, in moving pictures; this result is accomplished by double exposure of the film.
Distinguished Service Cross. A United States decoration for great bravery in military action against an armed foe. A British decoration for "distinguished service before the enemy."

Distinguished Service Medal. U. S. medal for distinguished service in a responsible duty in war time. A British medal for distinguished war service.
#dive, *v.* In aviation, to drop sharply at an angle greater than the gliding angle.
#divi'sion, *n.* An army unit made up of several brigades under a single officer.
dol'lar diplo'macy. Diplomacy that depends on the wealth of a nation to further the purposes of that nation abroad.
dou'ble-sur'faced (*-sur'fāst*), *a.* Referring to the covering on the two sides of the frame of an airplane wing.
down'-lead' (*down'lēd'*), *n.* In radio, the part of the antenna connecting the elevated part with the transmitting or receiving instruments.
draw a bead on. To aim a rifle accurately. *Colloq.*
#drift, *n.* In aeronautics, the lateral speed of an aircraft.
#drive, *n.* A military offensive. A vigorous campaign for any cause, as for charitable purposes. In an automobile, the apparatus for driving, as a left-hand drive.
dry farming. Methods whereby farming without irrigation is carried on in regions of slight rainfall.
D. S. C., *abbr.* Distinguished Service Cross.
D. S. M., *abbr.* Distinguished Service Medal.
duck'-pin (*dŭk'pĭn*), *n.* A short, thick pin used in bowling.
dum'dum or **dumdum bullet** (*dŭm'dŭm*). A bullet with a soft center that expands easily when it strikes, thus causing lacerated wounds.
dump'ing, *n.* Selling goods very cheap to kill competition or dispose of a surplus.
du'o-graph (*dū'o-graf*), *n.* A picture resulting from the use of two halftone plates with the screen set at unlike angles.
du'o-tone (*-tōn*), *n.* A picture printed in two tones of one color.
du'o-type (*dū'o-tīp*), *n.* A picture resulting from two halftone plates of the same negative, differently etched.
duplex house. A two-family dwelling with each family occupying separate floors.
du-ral'u-min (*dū răl'ū mĭn; dū rä-lū'mĭn*), *n.* An aluminum alloy containing aluminum, copper, manganese and magnesium.
du've-tyn' (*dōō vĕ-tēn'*), *n.* A soft fabric, as of wool or silk with long velvety nap.
Einstein theory. The theory of relativity worked out by Albert Einstein of Germany.
electric steel. Steel from the electric furnace. Also called **electro-steel.**
#elk, *n.* A special chrome-tanned calfskin, used especially in shoes for sportsmen.
Elk, *n.* A member of the Benevolent and Protective Order of Elks, a fraternal organization.
em'pen-nage (*ĕm-'pĕ-näj*), *n.* [F.] In aeronautics the tail of a flying machine used to aid in preserving an equilibrium.
enfilade' (*ĕn'fĭ-lād'*), *n.* A fire that passes lengthwise of trenches or lines of soldiers.
#en'gineer', *n.* One of those in an army who constructs bridges, makes roads, etc.
#engineer', *v.* To carry an idea through; to act upon a plan.
en'tente', *n.* [F.] An understanding, usually between nations. The Entente, or the Triple Entente, refers to the understanding between England, France and Russia that led to their union in the war.
Es'pe-ranti'do (*ĕs pĕ-răn-tē'dō*), *n.* A simplified form of the international language, Esperanto.
eth'yl gas. Gasoline containing a small quantity of lead tetraethyl.
eu-then'ics (*ū-thĕn'ĭks*), *n.* The science that seeks the improvement of the race through improvement of the conditions under which it lives.
ex'tra ter'ri-to-ri-al'i-ty (*ĕk'strȧ tĕr'ĭ-tō'rĭ-ăl'ĭ-tĭ*), *n.* Unusual freedom of an individual from the restraints of a government not his own, but under which he is living; the freedom of a foreign representative in contrast to the restraint of a native.
#ex-trude' (*ĕks-trōōd'*), *v.* To shape metal softened by heat, by forcing it through dies with water power.
fab'ri-koid (*făb'-rĭ-koid*), *n.* A waterproof fabric resembling leather, used in binding for books, luggage, upholstery, etc.
fad'ing, *n.* In radio, a variation in intensity of received wave while adjustments of sending and receiving devices remain unchanged.
Far'mer-La'bor par'ty. A political party formed in 1920 and later (1924) broken up into factions. It asked for government control of railroads, mines and banks; for Federal loans to farmers at low interest rates, and for election of the Federal judges.
Fa-sci'sti (*fä-shē'stē*), *n.* pl. [It.] A patriotic, anti-radical organization in Italy, founded in 1919 and which, under the leadership of Mussolini, rapidly became dominant.
fa'vorite son. The man chosen by a state as its nominee for political office, usually the presidency.
fa'vor, *v.* To look like some one.
Federal Land Bank. One of the regional banks, twelve in number, formed under the Federal Farm Loan or Rural Credits, in 1913, to arrange for long-time loans to farmers.
Federal Reserve System. A Federal banking system organized in 1913. Twelve district banks were established. The system aids in centering the banking resources of the country and helps to provide an elastic currency.
Federal Trade Commission. A commission of five members provided for in an Act of 1914. The duties of the commission include the investigation of unfair business methods.
feed'stuff' (*fēd'stŭf'*), *n.* Farm-grown products used as feed for live stock.
fiber silk. Artificial silk. Rayon.
fil'a-ment, *n.* In electricity, the heated electrode in an electron tube. It is generally a wire.
filament battery. See A BATTERY.
#film, *n.* In moving pictures, a thin flexible strip of celluloid used as a photographic plate; also, a moving picture.
film play. A moving picture production.
#fin, *n.* In aeronautics, a stable vertical surface that keeps the machine from rolling.
fi'nal-ist (*fī'năl-ĭst*), *n.* One who plays in the last game of an elimination series, as in the finals of a tennis tournament.
fin'ger-print (*fĭn'gĕr-prĭnt'*), *n.* The impression of a finger or thumb made to show the characteristic markings, which differ with every person, and which make such an imprint valuable as a means of identification.
fire'-control', *n.* In the navy, a means of regulating the fire of all guns on a ship from some one position.
fireless cooker. A cooking apparatus made of insulated compartments. No fire is applied, but, previous to use, heated plates or hot foods are put into the cooker.
fire test. A test to discover the burning temperature of a lubricating oil.
Flag Day. In the United States, the anniversary of the date, June 14, 1777, on which the national flag was adopted.
#flash, *n.* In moving pictures, a quickly-passing view, incidental or explanatory to the main picture and story.
float'ing dock, *n.* A partially submerged structure with water compartments, which raises vessels placed upon it when the water is forced from the compartments.
floa'ter (*flō'tĕr*), *n.* A voter who changes from one party to another.
#flo-ta'tion (*flō-tā'shŭn*), *n.* A method of separating finely crushed minerals by taking advantage of their relative difference in capacity to float on a liquid.
#flush, *v.* To mine where water is not plentiful by periodic flooding with water that has been gathered behind a dam.
#fly, *v.* In aeronautics, to handle in flight, as to fly a seaplane. To fly in an aircraft.
flying boat. In aeronautics a seaplane capable of floating on water.
Fok'ker (*fŏk'ĕr*), *n.* [After the Dutch inventor of the same name.] A monoplane of German make of great speed and quick response to control.
folks (*fōks*), *n.* One's immediate family, or one's relatives. *Colloq.*
folk dance. A dance of the common people of a nation.
fool-proof, *a.* Said of anything, usually a mechanism, that is sure to go as it should no matter how ignorant the operator may be.
Ford'ney-McCum'ber Tar'iff Act. A regulatory tariff act passed by Congress in 1922, revising many rates upward.
form letter. A general letter suitable to send unchanged to different persons.
#fo'rum. Public meetings where topics of interest are discussed by leaders and audience.
Four'-Pow'er Treaty. A treaty of 1921 signed by England, France, Japan and the United States pledging the observance of certain rights in regard to island possessions in the Pacific.
frame-up', *n.* A preconceived plan to bear false witness. *Slang.*
franc-ti'reur (*frän'tē'rûr'*), *n.* One of a company of French irregular troops.
free lance (*lăns*), *n.* A rover in literature, a writer not in the employ of one firm.
free verse. Verse without regular measure; also called *verse libre.*
#frisk, *v.* To make a rapid search, as by running the hand over a person's clothing, to detect concealed weapons, etc. To take from a person's clothing in this way. *Slang.*
full'-fash'ioned, *a.* Knitted to conform to the bodily shape; used of hosiery, underwear, etc.
fundamentalism (*fŭn'dȧ mĕn' tăl ĭz'm*), *n.* [often cap.] A religious movement emphasizing various historical beliefs as fundamental.
fu'se-lage (*fū'ze-laj'*), *n.* The long body of an aircraft.
fu'tur-ism (*fū'tur-ĭz'm*), *n.* A recent development in modern art, which attempts to present at one time a number of movements and impressions in abtract expression.
gab'ar-dine' (*găb ar-dēn'*; *găb'ar-dēn*), *n.* A serge-like cloth of wool; also one of cotton.
gang'ster (*găng'stĕr*), *n.* One of a group or band of roughs, thieves or hired criminals. *Colloq.*
Gary school system. An educational system originating at Gary, Indiana, wherein ordinary study, vocational work and play are coordinated and with special teachers. In this system one classroom is used by two classes at different periods.
#gas, *n.* Gasoline. *Colloq.*
gat (*găt*), *n.* [abbreviation of **Gatling gun**]. A revolver. *Slang.*
general strike. A strike by workmen of many or all trades, over a considerable area; or of all workmen in an industry.
ge-o-chem'is-try (*je'o-kĕm'ĭs-trĭ*), *n.* The science of the chemistry of the earth's crust.
Geor-gette'crepe, or **geor-gette'** (*jôr-jĕt'*), *n.* [named after a French modiste.] A thin and more or less transparent silk crepe.
get'-a-way', *n.* Action of getting away; hence, [*Slang*] a break or escape.
G. H. Q. *abbr.* General Headquarters.
girl scout. A member of the American organization of Girl Scouts, formed in 1912 as "Girl Guides" and changed the following year to Girl Scouts.
#glide, *n.* The downward motion of an aircraft when not under its own power.
go'-gett'er (*gō gĕt'ĕr*), *n.* One who goes after and gets what he desires. *Slang.*
gon'dola (*gŏn'dō lȧ*), *n.* The car attached to a dirigible balloon.
grand, *n.* A thousand [dollars]. *Slang.*
gray'fish', *n.* The name given to the ordinary dogfish since it has been found valuable as food.
Great White Way. That part of Broadway, New York City, made most brilliant when lighted at night.
grid, *n.* In radio, a device, usually of wire gauge, between and insulated from the plate and filament of a vacuum tube.
Gound, *n.* In radio, the place on the ground, or metal leading to the ground, to which the ground wire is attached.
gruesd'ism (*gĕd'ĭzm*), *n.* The socialism of Guesde which seeks reform through revolution.
#gun, *n.* Commonly any firearm from a small revolver to the largest cannon. In military use *gun* refers to a piece of artillery mounted on a carriage.
gun'man, *n.* One who uses a "gun" with criminal intent.
gy'ro-com'pass (*jī rō-kŭm pȧs*), *n.* A type of continuously-driven gyroscope, the axis of which always lies in a north-and-south direction.
ha'ba-ne'ra (*hä'bä-nä'rä*; Sp. *ä'bä-*), *n.* A Cuban dance; also the music for this dance.
hal'i-to'sis (*hăl'ĭ-tō'sĭs*), *n.* Disagreeable breath.
Hall of Fame. At the New York University in New York City a permanent memorial for great Americans. There are places for 150 bronze tablets. Five new names are added each five years.
H. C. L. or **H. C. of L.** abbr. High cost of living. *Colloq.*
head'phone' (*hĕd'fōn'*), *n.* A receiver, with telephone or radio, kept over the ear by a band worn over the head.
hec'tic, *a.* Affected as by fever; restless. *Slang.*
Hepburn Act. An act of Congress in 1906 to regulate rates for railroads and interstate carriers.
hes'-i-ta'tion, *n.* A waltz including gliding or "hesitating" steps.
high'brow' (*hī'brou'*), *n.* A person with a high brow; hence, a learned person or one who pretends to be learned. *Slang.*
High'lander. A member of a kilted regiment of Scotchmen, or a Scotchman from the highlands.
#high'way', *n.* An improved road which forms part of a route for long-distance motor travel, as the **Lincoln Highway.**
ho'kum (*hō'kŭm*), *n.* Absurd talk or action by an actor designed to get a laugh from the audience.
honeydew melon. A variety of melon with yellow rind and sweetish, pale-green flesh.
hooch (*hōōch*), *n.* In the United States, intoxicating liquor secretly made or secured. *Slang.*
hook'-up' (*hŏŏk'ŭp'*), *n.* In radio, the arrangement for the putting together of parts used in sending or receiving.
#hop, *v.* In aeronautics, to start an airplane in flight.—**to hop off,** or begin an air flight.
hor'mone (*hôr'mōn*), *n.* A chemical substance that when carried by blood from the organ in which it originates to another, stimulates the second organ.
house organ. A business publication issued by a concern for its employees, and sometimes also for its customers.
hun'ger strike. An attempt on the part of a prisoner to obtain freedom by refusing to eat enough to keep him alive.
hy'dro-air-plane, *n.* An aquatic type of airplane, which can travel on the surface of water or rise from it.
hy'phenate (*hī'fĕn-āte*), *n.* A citizen of the United States who feels obligations to another country so keenly that his loyalty to the United States may be weakened. *Colloq.*
I. C. C. *abbr.* Interstate Commerce Commission.
I'do (*ē'dō*), *n.* An artificial language intended for world-wide use. Published in France in 1907 and carefully revised since that time.
illinium, (*ĭ-lĭn'ĭ-ŭm*), *n.* A recently discovered element, named after the University of Illinois, where it was discovered.
Im'mel-mann turn. In aviation, a reverse turn with an airplane.
improved' prop'erty. Usually property on a paved street with sidewalks and modern conveniences, such as city water mains, gas mains, etc.
Industrial Workers of the World. An organization of skilled and unskilled workers of any trades, which asks for the doing away of the wage system and favors socialism.

inferiority complex. In psychology, a term denoting a feeling of inferiority, which manifests itself in various ways.

in-i'ti-a-tive (*ĭn-ĭsh'ĭ-ə-tĭv*), *n.* A right of the people under certain governments to pass laws directly without the aid of the legislature.

in'su-lin (*ĭn'sə lĭn*), *n.* The active principle of the islands of Langerhans in the pancreas, which aids the use of sugar in the body. A solution of the above, used in treating diabetes. Insulin was discovered by Dr. Banting and Dr. MacLeod in Toronto in 1923.

in'swept (*ĭn'swĕpt'*), *a.* Referring to an automobile body the front end of which is narrower than the rear.

intelligence quotient. A number said to indicate a person's intelligence.

intelligence test. A set of questions and problems designed to give the mental age or intellectual capacity of a person.

in'terfer'ence, *n.* In radio, a confusion of received signals, or that which causes such confusion.

in-tern' (*-tûrn*), *v.* To force to stay in one place; men or ships of a belligerent discovered in neutral territory are interned by the neutral, the men immediately, the ships after a certain time limit.

I. Q. or **IQ.** *abbr.* Intelligence quotient.

Iron Cross. German reward given for distinguished military service.

I'to (*ē'tō*), *n.* A word made up of the initial letters in the term Jewish Territorial Organization, no distinction being made between I and J.

I. W. W. *abbr.* Industrial Workers of the World.

jay'walker' (*jā'wôk'ĕr*), *n.* One who crosses streets carelessly or at the wrong places, endangering himself thereby.

jazz (*jăz*), *n.* A type of American music based on ragtime and marked by eccentric sounds and melodies, especially used as dance music.

ji-had' (*jē-häd'*), *n.* A Mohammedan holy war against unbelievers.

#jin'go (*jĭn'gō*), *n.* An excitable person always foreseeing war in the near future, and always sure he can meet it successfully.

jinx (*jĭnks*), *n.* Anything believed to be the cause of ill luck. *Slang.*

jit'ney (*jĭt'nē*), *n.* Originally five cents; now usually an automobile traveling over a regular route, and on which the fare was originally five cents.

joy ride. A ride, as in an automobile, for pleasure and often secretly arranged.

junior college. A college giving only two years of regular college work.

junior high school. A school consisting of the seventh and eighth grades and the first year of high school.

juvenile court. In law, a court for children up to about eighteen years of age. Private hearings and personal guidance by the judges mark such a court.

K. C. or **K. of C.,** *abbr.* Knights of Columbus.

Ke-mal'ist (*kĕ-mäl'ĭst*), *n.* A follower of Mustafa Kemal Pasha, Turkish leader and first president of the Republic of Turkey.

key'noter (*kē-nōt'ĕr*), *n.* In politics, the one who presents the main campaign issues in a speech.

#kid'ney (*kĭd'nē*), *n.* Sort or kind.

ki-ne'to-phone (*kĭ-nē'tō-fōn*), *n.* A combination talking machine and moving picture machine.

klieg light (*klēg*). A brilliant arc light used in motion picture photography.

Knights of Columbus. A fraternal order composed of Roman Catholic men, founded in 1882.

kraft (*kräft*) or **kraft paper,** *n.* A strong paper made from sulphate pulp and used for wrapping.

Ku Klux Klan. A fraternal organization, secret as to membership, said to renew the older Ku-Klux. Membership is said to include only American-born Protestant whites.

Kultur', *n.* A German term for culture and civilization.

ky'ack (*kī'ăk*), *n.* A kind of pack sack common in western United States.

lan'dau-let' (*lăn'dô-lĕt'*), *n.* A closed automobile with folding top.

lav'a-liere' or **lav'a-lier'** (*lăv'ə lēr'*), *n.* A chain with one pendant, used for a neck adornment.

l. c. l., *abbr.* A railroad term, meaning "less than a carload lot."

lead'-in. In radio—**down-lead.**

leaf roll. A disease of the potato wherein the leaves curl up, resulting in smaller and fewer tubers.

League of Nations. An organization of nations, under the Covenant of the Peace Conference at the end of the World War, to reduce the probability of war by arbitration, limitation of armaments and united action against aggressors.

Le'gion of Honor (*lē'jŭn*), *n.* A French order formed in 1802, membership to which is a reward given for services to France.

let'ter-gram (*lĕt'tĕr-grăm*), *n.* A long telegram that is sent at a lower rate than the ordinary message because it is held until the lines are unoccupied with regular telegrams.

Liberty Bond. Any bond of five "Liberty Loan" issues put out by the United States between 1917 and 1919.

lightning arrester. In radio, a device to protect receiving sets by carrying lightning discharges to the ground.

#lil'y (*lĭl'ĭ*), *n.* A term used in auction bridge to refer to a royal spade.

limousine, *n.* A closed automobile with driver's seat outside but covered with a roof.

li-nene' (*lĭ-nēn'*), *n.* A coarse cloth resembling linen crash, usually of cotton.

#lion, *n.* [cap.] A member of a club belonging to the group known as the International Association of Lions Clubs, founded in 1918. Objectives are good government, better citizenship, community welfare and good fellowship.

lip stick, *n.* Rouge for the lips put up in stick form.

lob'bying, *n.* The practice on the part of interested organizations or individuals of urging members of a legislative body to vote for a bill by appearing in the lobby of the legislative chamber and exerting direct personal influence on the members.

Locarno Pact or **Treaty.** Treaties and agreements, five in number, between Germany and Belgium, France, England, Italy, Poland and Czechoslovakia, made at Locarno, Switzerland, in October, 1925. Important parts of the pact include agreements on the boundaries between Germany and Belgium and France, also stipulations regarding demilitarized zones on the Rhine.

L. O. M., *abbr.* Loyal Order of Moose.

loud-speaker, *n.* In radio, a telephone receiver making sounds loud enough to be heard by anyone without holding the receiver to the ear. The horn and the cone types are most common.

low'brow' (*lō'brou'*), *n.* A person with a low brow; hence one who is not intellectual. *Slang.*

lydd'ite (*lĭd'-ĭt*), *n.* An explosive deriving its name from its use on the artillery ranges near the town of Lydd, England.

mack'inaw (*măk'ĭ-nô*). A kind of heavy coat for winter wear.

mac'ro-graph (*măk'rō-grăf*), *n.* A picture that presents an object as seen by the naked eye.

mah'jong' (*mä jŏng'*), or **mah'jongg',** *n.* A Chinese game played with "tiles" resembling dominoes.

mandate, *n.* An order by the League of Nations to a member nation for the setting up of a responsible government over German or other conquered territory inhabited by backward peoples, and for the development thereof.

man-za-nil'la (*măn za nĭl'ə*), *n.* A kind of small olive usually stuffed with pimentos when pickled.

mar'cel' (*mär'sĕl'*), *n.* A form of hairdressing.

ma-rim'ba, *n.* A musical instrument resembling the xylophone.

mar'qui-sette' (*mär'kĕ-zĕt'*). A sheer cloth of cotton or of silk.

Max'imalist. Russian extreme radical of the former Social Revolutionary party.

Mediterra'nean fruit fly. A fly, found in Mediterranean countries, the larvae of which destroys many fruits before they are ripe.

mel'i-nite (*mĕl'ĭ-nīt*), *n.* An explosive used by the French.

mend'ing fen'ces. A politician working with his constituency to increase his standing and popularity.

Menshevik (*mĕn-shĕ-vĕk'*). A moderate Russian socialist, opposed to the radical methods of the Bolsheviki.

mi'cro-phone *n.* In radio, a device used in broadcasting stations to receive and transmit sounds.

middy blouse, or **middy,** *n.* A blouse with a sailor collar.

Min'i-mal-ist (*mĭn'ĭ-măl-ĭst*), *n.* In Russia, a member of the less radical part of the former Social Revolutionary party; opposed to Maximalist.

min-yan' (*mĕn-yän'*), *n.* The number necessary for conducting public worship in the Jewish religion.

mi-tra illeuse' (*mē'trä-yûz'*), *n.* A machine gun made of several barrels that may be fired at once or one after another.

mod'ern-ism, *n.* (often cap.) A religious movement stressing ethical and spiritual values rather than creeds and dogmas.

Mon'tes-so'ri method (*mŏn'tĕs-sō'rē*). A method of teaching young children, orginated by Dr. Maria Montessori. The children are given physical freedom, much individual attention, and a careful training of the senses.

moonlight school. An evening school for illiterate adults, so called because in Kentucky the mountain schools were first opened on moonlit nights.

#Moose (*mōōs*), *n.* A progressive; member of the Bull Moose party.

#mo rale', (*mō-răl'*) (*Military*). The mental condition of troops, confidence, spirit, etc.

mo'ron (*mō'-rŏn*), *n.* A feeble-minded person, usually one whose normal development stops at the age of eight and who never comes to know more than a normal child of twelve.

#mor'tar (*môr'tĕr*) (*Military*), *n.* A short-barreled artillery piece of large bore to be fired at such great elevation that the shells drop from above upon the target.

Mother's Day. A day set aside by legislative enactment in 1913 to honor motherhood by wearing a white carnation, sending gifts, etc. The second Sunday in May for churches and the Friday and Saturday preceding for schools and business places are the periods for celebration.

mo'tor bus or **mo'tor-bus',** *n.* An automobile constructed to serve the purpose of a bus.

mo'tor truck or **mo'tor-truck',** *n.* An automobile built to serve the purpose of a truck.

mov'ie (*mōōv'ĭ*), *n.* A moving picture entertainment, used in the plural as "the movies." *Colloq.*

mov'ing picture. Many pictures taken in such a series that actions are photographed as though static. When these pictures are reproduced in a rapidly moving series upon a suitable screen, objects photographed appear as in nature and characters seem to move as in natural life.

mud gun. A device in metal industries for forcing stiff mud into an opening, as in closing the tap hole of a blast furnace in making iron.

mul'ti-graph (*mŭl'tĭ-grăf*), *n.* A machine that both sets type and prints.

mul'ti-plane (*-plān*), *n.* An aircraft with more than two main planes superimposed.

naval officers. The officers of the U. S. Navy, in the order of their rank are admiral of the fleet, corresponding to the general in the army; vice-admiral, to lieutenant-general; rear-admiral, to major-general; commodore, to brigadier-general; captain, to colonel; commander, to lieutenant-colonel; lieutenant-commander, to major; lieutenant (senior grade), to captain; lieutenant (junior grade), to first lieutenant; ensign, to second lieutenant.

national forest. Forest area reserved by the United States government.

national monument. A natural feature set aside by the United States government as public property, as the Grand Canyon.

national park. An area set aside by the Congress of the United States as public property, as Glacier National Park.

N. E. A., *abbr.* National Education Association.

near beer. Any malt liquor that may be drunk in quantity without intoxication.

New Economic Policy. In Russia, an industrial program adopted in May, 1921, whereby smaller industries reverted to private ownership while control of large plants and mines remained with the Soviet government; also called **Nep.**

news'print' (*nūz'prĭnt'*), *n.* Also **news print.** A wood pulp paper used for newspapers.

New Thought. A belief based on the theory that an optimistic mental attitude towards life results in better physical health and greater capacity for usefulness.

Nip'pon-ese' (*nĭp'ŏ-nēz'*), *n.* [From **Nippon,** Japanese name for Japan.] A Japanese; the Japanese.

non-com'ba-tant (*nŏn-kŏm'băt-ănt*), *n.* [*Military*] One who does not belong to a fighting unit or one that does so belong but does not take an active part in fighting, as a member of an ambulance corps.

non-commis'sioned of'ficer. An officer of low rank who does not receive his position by government commission; one who is appointed by another officer.

Nonpartisan League. An organization founded in 1915 in North Dakota to aid in marketing farm products and directed toward government ownership of public necessities.

nonunion shop. A shop where no union workers are employed.

norther (*nôr'thĕr*), *n.* A strong north wind.

nose dive. In aviation, a sharp downward plunge.

ob'serv'er (*-zûr'vĕr*), *n.* [*Aeronautics*]. One who accompanies the pilot of an aircraft for the purpose of taking pictures of enemy positions, making notes, etc.

o'keh' (*ō'kā'*), *adv.* and *interj.* All right; "O.K." *Cant.*

O-lym'pi-ad (*ō-lĭm'pĭ-ăd*), *n.* A meeting once every four years for the Olympic games.

one'-step', *n.* A modern dance consisting of walking steps with possible variations such as the whirl, dip, etc.

one'-way', *a.* For one direction only, as **one-way** traffic.

over-head', *n.* [*Accounting*]. Expenses that cannot be charged to any one part of a business, as rent, taxes, insurance, heating, lighting, etc.

own up, *v.* To confess.

pac'ifist (*păs'ĭ-fĭst*), *n.* In general, one who opposes war.

Pan-American Union. An organization, with headquarters in Washington, D.C., composed of the twenty-one American republics.

#pan'el (*păn'ĕl*), *n.* A section or segment of the wing of an airplane.

par'cel post. A service established in 1912 in connection with the mail service of the United States for the distribution of packages.

#park, *v.* To stop a vehicle outdoors and leave it. To stop while in a vehicle.

#pas'sive (*păs'ĭv*), *a.* [*Aeronautics*]. The condition of an aircraft when not under its own power or when without power of its own.

pas-to'ri-um (*păs-tō'rĭ-ŭm*), *n.* A term used in the South in Baptist churches in referring to the parsonage.

pen-tath'lon (*pĕn-tăth'lŏn*), *n.* An athletic contest in the modern Olympi d made up of a 1500 meter run, 200 meter run, a running broad jump, throwing the javelin, and throwing the discus.

pe-rip'-ter-y (*pĕ-rĭp'tĕr-ĭ*), *n.* In aeronautics, the region about an aircraft in which there are circular or whirling movements of the air.

Phi-la'the-a (*fĭ-lā'thē-ə*), *n.* A world wide organization of Bible classes composed of young women from all denominations.

pho'to-play (*fō'tō-plā'*), *n.* A play written for reproduction by a moving picture machine, or the reproduction itself.

#pi-lot (*pī'lŭt*). In aeronautics, one who flies or is qualified to fly an aircraft.

pi'lot balloon'. An unmanned balloon used to determine the direction of air currents.
pi-mien'to (*pē-myĕn'tō*), *n.* The sweet pepper from Spain used in stuffing olives; also the sweet pepper plant.
pinch hitter. In baseball, a player who goes in to bat in the place of another in an emergency.
#pit, *v.t.* To remove the stone, or pit, from fruit.
plain'-clothes'man. A detective or policeman who does not wear a uniform when on duty.
#plane (*plān*), *n.* An airplane. *Colloq.*
plas'mon (*plăz'mŏn*), *n.* A food made from skim milk.
plate circuit, *n.* In radio, the electric circuit that includes both plate and filament of an electric tube.
plate current, *n.* In radio, the current that flows between the plate and filament of an electron tube.
plate voltage, *n.* The voltage of a radio B battery.
platoon school. A school divided into two general divisions, so that one half may use rooms for study and ordinary class work while the other half are engaged in vocational, laboratory, gymnasium work, etc. The two divisions then reverse the use of facilities, thus using the equipment fully.
player piano, *n.* An automatic piano containing a mechanism that plays the instrument without pressing the keys.
plum'cot (*plŭm'kŏt*), *n.* A fruit resulting from crossing the plum and the apricot.
plus fours. A kind of loose baggy knickerbockers, worn especially in sports.
ply'wood' (*plī'wo͝od'*), *n.* Two or more layers of wood glued together with the grain of the various layers usually at right angles to each other in order to strengthen the wood and lessen warping.
po-di'a-trist (*pō-dī'ă-trĭst*), *n.* A person who takes care of the feet, a chiropodist.
po-di'a-try (*trĭ*), *n.* In medicine, the science and care of diseases of the feet.
pog'o-nip (*pŏg'ō nĭp*), *n.* A thick winter fog containing frozen particles, formed in deep mountain valleys. A term used in western United States.
poilu, *n.* A name for the French fighting man.
point-ed fox, *n.* The common red fox pelt, dyed and pointed, that is, with white hairs inserted, to resemble silver fox. A trade name used by furriers.
poi'ret' twill (*pwä'rĕ'*), *n.* A variety of woolen dress material woven to show a diagonal ribbed design.
polar front, *n.* A meteorological term, denoting the boundary between the cold air of polar regions and that of the warmer air of more temperate latitudes.
police dog. A dog trained to help the police, developed in Europe by crossing the domesticated dog with the wolf.
po-lice'wom'an, *n.* A woman who is in the police service; a woman assigned to police duties.
Pol'ly-an'na, *n.* A cheery optimist. The word is derived from the name of a young girl heroine of stories by Eleanor H. Porter. The word is also used as an adjective.
po-ma'to (*pō-mā'tō*), *n.* A plant produced by grafting tomato buds or shoots on potato plants. The fruit is tomatolike, usually eaten raw in salads.
#pork, *n.* American political slang for money or special favor given through political patronage rather than earned by actual service.
pork barrel, *n.* American political slang for money appropriated to public works for political ends rather than because the work in question is especially needed. These appropriations may also be in excess of actual amounts needed for the work.
post-op'er-a-tive, *a.* In surgery, a condition occurring after an operation.
post'war', *a.* After a war; especially, after the World War.
pow'er am'pli-fi-er, *n.* In radio, an amplifier that increases power.
pow'er boat or **pow'er-boat',** *n.* A motor boat, or boat propelled by an engine.
pow'er plant, *n.* An industrial building used to house a power-generating plant; or, engines and other parts that generate power in aircraft, boats and automobiles.
pre-can'cel, *v.t.* To cancel before use, usually applied to precancelled postage stamps.
pre-cool', *v.t.* To cool beforehand, as cooling of perishables such as fruits and flowers, before shipment.
preferen'tial vot'ing. A method of balloting by which the voter is permitted to indicate more than one choice for an office.
pre-par'ed-ness, *n.* The state of being in readiness, especially in regard to war.
pre'school, *n.* A school for children under regular school age, devoted mainly to social, educational and habit-forming training. The children are usually grouped by age; *a.* the period before a child reaches school age.
pres'sure cook'er, *n.* A cooker that is closed so tightly that the steam is retained and adds to the high temperature of the cooking contents.
pre'vo-ca'tion-al (*prē'vō-kā'shŭn-ăl*), *a.* Work or instruction in useful arts or manual training as given in schools that prepare students for the grades of the vocational schools.
pre-war', *a.* Before a war; especially, before the World War.
prick'ly heat (*prĭk'lĭ-*). A rash caused by extreme heat.
prof'it-eer' (*prŏf'ĭ-tēr'*), *n.* A person who makes an excessive profit, especially as in time of war.
Progres'sive par'ty. A political party under the leadership of Theodore Roosevelt, formally organized and named August 7, 1912.
#proj'ect, *n.* In educational work, a constructive task to be worked out by the student.
pro-jec'tor (*prō-jĕk'tĕr*), *n.* An appliance made to throw a picture on a screen by reflecting light.
pro'ton (*prō'tŏn*), *n.* The smallest unit of positive electricity.
protract'ed meet'ing. A religious meeting sometimes extending over several weeks.
pul'mo'tor (*pŭl'mō'tĕr*), *n.* A machine for producing artificial respiration in cases of asphyxiation, etc.
pulp'wood', *n.* Wood that is made into a pulp for manufacturing purposes, largely.
pure'bred', *a.* Bred from pure blood, usually used in relation to pedigreed live stock, but sometimes to denote purity in plants or seeds.
push'ball', *n.* A game played with an inflated ball six feet in diameter by two opposing groups of players, who attempt to push the ball across the field and under or over the bar that marks the opposing team's goal.
quan'tum (*kwŏn'tŭm*), *n.* [*Physics.*] The smallest amount of energy radiated or absorbed by matter. It varies as the frequency of the vibration associated with the ether wave.
quan'tum theory. The theory that energy exists in space in variable particles known as "quanta."
#quar'an-tine, *n.* Restraint of transportation of animals, goods or plants that may be carriers of disease, destructive insect life or other pest.
queen olive. A large olive of excellent quality grown near Seville, Spain, and pickled when green. Generally, any green pickled olive.
ques'tion'naire' (*kwĕs'chŭn'ār'*), *n.* A group of questions to be submitted to a person or persons.
race su'icide. Intentional restriction of child bearing; in general, any weakening of the vitality of a race.
ra'dial engine (*rā'dĭ-ăl*), *n.* [*Mach.*] An engine in which the cylinders are arranged like spokes in a wheel.
ra'di-o (*rā'dĭ-ō*), *a.* Usually referring to the radiant energy of electric waves, as used in radiotelegraphy or radiotelephony. *n.* radiotelegraphy or radiotelephony, radio message.
ra'di-o bea'con, *n.* A radio transmitting station that sends out special radio signals to serve as direction finders for those receiving them. Used largely to direct vessels at sea and aircraft.
ra'di-o-phone', *n.* Either a transmitting set for radiotelephony or a receiving set for that purpose.
ra'di-o-tron (*rā'dĭ-ō-trŏn*), *n.* An electron tube used in radios; a trademarked name.
ra'don (*rā'dŏn*), *n.* A gaseous element resembling argon.
#rag, *v.* [*Music.*] To play in syncopated time.
#rail'road (*rāl'rōd'*), *v.* To hasten; used in relation to bills in congress. *Colloq.*
range'find'er. In gunnery, an instrument for establishing the relative location and the distance from the gunner of anything to be shot at.
ray'on, *n.* An artificial silk made from cellulose by forcing it through small holes and drying the threads thus formed; also the cloth made from the fibers.
re'al-tor (*rē'ăl tŏr*), *n.* A real estate dealer who belongs to a local board having membership in the National Association of Real Estate Boards.
#re-call', *n.* The right of the people of a state upon petition of a sufficient number, to vote to remove a government official from office before he has completed his full term of service.
receiving set. In radio, the apparatus for receiving radio signals, messages and programs.
re'con-di'tion, *v.t.* To put into good condition some article that needs to be made over or have new parts supplied, the term being largely used for repaired second-hand automobiles.
red'-light' district. A part of a city in which there are many places of ill repute, some of which have red lights before them. *Colloq.*
#reg'is-ter, *v.t.* To convey an idea or feeling photographically, as an actor registers various emotions; also used in relation to voice reproduction in talking motion pictures.
rel'a-tiv'i-ty, *n.* A principle based on the assumption that our knowledge of velocity is relative, and leading to the conclusions that do not agree with previously accepted principles of mechanics. Also called the Einstein theory because first propounded by Albert Einstein.
#re-lease', *v.t.* To signify a specific date on which a play, phonograph record or printed matter, etc., may be published, put on sale, or given public exhibit; *n.* any play, book, record, etc., that has been given a release date.
re-vue' (*rē-vū'*), *n.* [Fr.] A musical comedy in which recent events and plays are imitated and somewhat burlesqued in an imitation of their outstanding scenes and actors.
rig'ger (*rĭg'gĕr*), *n.* A thin pointed brush made from the hair of sable, used by marine painters.
right of way. The customary or lawful right of traffic to take precedence over other traffic.
rŏ'bŏt (*rō'bŏt*), *n.* An efficient, automatic type of worker; an automaton. Karel Capek created the word to designate artificially created workmen that appeared in his play, *R. U. R.*
ro'de-o (*rō'dē-ō*), *n.* A market where cattle are collected; a public exhibition featuring the exciting incidents of a round-up, including roping and tying of cattle; riding and breaking wild horses, steer bulldogging, etc.
roll'er, *n.* A canary that is bred and trained to have a special roll, or trill, in its song.
#road'ster (*rōd'stĕr*), *n.* An open automobile seating two or three. It may have additional seats on running boards or in rear deck.
ro'to-gra-vure' (*-grā-vūr'*; *grā'vûr*), *n.* A kind of photogravure where etched cylindrical plates on a rotary press print pictures and text; also an illustration thus printed.
rough'neck, *n.* A rough or rowdy person. *Slang.*
rub'ber-stamp', *v.t.* To sign with a rubber stamp; a term for approving or disposing of a matter in routine fashion without giving it any thought. *Colloq.*
ruck'sack (*rŭk'săk*), *n.* A knapsack of canvas or other flexible material that is carried on the back, supported from straps over the shoulders.
rum'run'ner, *n.* A person who brings prohibited alcoholic liquor into a district or country, especially one who brings it for sale illegally.
sa'bo-tage' (*să'bō tăj'*), *n.* Deliberate damage done to an employer's property, whether goods, machinery, or plant; refusal to work, and interference with other workers.
safe'ty is'land, *n.* A space at the center of a street crossing which is raised or marked off for the protection of pedestrians in crossing
sas-tru'ga or **zas tru'ga,** *n.*, [*pl.*, **gi.**] Hard snow that has been blown by the wind into wavelike ridges with sharp, icy, overhanging edges. Occurs on level stretches in arctic and antarctic regions. These formations slope to windward and are sometimes several feet high.
#sat'urate, *v.* To completely or nearly completely charge with magnetism a mass of iron or steel, such as the field or armature core of a dynamo.
scamp'ing, *n.* A trade-union term, denoting inefficient work by an employee, or work done in excess of agreed rate of production in order to gain personal advancement at the expense of other workers.
scoff'law' (*skôf'lô'*). *n.* One who flouts the law, especially a prohibition-enforcement law.
#scout, *n.* A member of the Boy Scouts or Girl Scouts. In aeronautics, an airplane used for reconnoitering. It is usually armed with one machine gun and may be used also for a pursuit plane.
screen (*skrēn*), *v.* To throw upon a screen, as to screen a photoplay.
seal'ine' (*sēl'ĭn'*), *n.* A trade name for imitation seal fur, made from New Zealand rabbit pelts.
sea'plane, *n.* A hydro-airplane, made for use on the sea.
search'light', *n.* A strong light with reflector so adjusted as to throw its intense beams in any direction.
se-dan' (*sē-dăn'*), *n.* A closed car seating four or more, all in one compartment.
se'lec-tiv'i-ty. *n.* In radio, the ability of an apparatus to respond to impulses of the frequency to which it is adjusted or tuned and to give no response to other frequencies.
self-de-ter'mi-na'tion, *n.* In international law, the decision of people within a given district to decide for themselves its status, especially in regard to its form of government, independence or alliances.
self'-ser'vice, *a.* A type of store or other business in which the customers help themselves to what they wish, employees check up goods taken and patrons pay before leaving. Some establishments have a partial self-service, waiting on customers for certain items. Used largely in groceries, restaurants and some notion shops.
self-starter', *n.* An appliance using electricity, gas, etc., to start an engine, as an automobile engine, without cranking by hand.
#set, *n.* In moving pictures, the artificial setting for a scene of a photoplay.
sharp'shooter (*shärp'shōōt'ĕr*), *n.* A skilled marksman. In the United States Army, one making 60 per cent with slow fire at 800 and 1000 yards and with rapid fire at 500 yards.
#shed, *n.* See Hangar.
shell shock, *n.* A medical term for a number of nervous disorders usually caused by battle service and resulting from nervous strain or from concussion of exploding shells; *v.t.*, to cause shell shock.
shock absorb'er. A device designed to reduce the severity of the road shocks communicated from the running gear to the body of a vehicle, by regulating the action of the springs, especially by checking the violence of their recoil.
short story, or **short'-story.** A short prose story.
shrap'nel (*shrăp'nĕl*), *n.* A shell filled with small bullets and an explosive with fuse to discharge the shell in its flight.
side car. A small car attached to the side of a motorcycle.
#sign [off], *v.i.* In radio, to announce the end of a program or message.
sin'gle-sur'faced (*sŭr'fâst*), *a.* In aeronautics, referring to any part of the frame of an airplane covered on one side only.
sip'pi-o (*sĭp'ĭ-ō*), *n.* A game like bagatelle played with balls and cue.
#si'ren, *n.* A kind of automobile horn, producing sounds varying in pitch.
#skid, *n.* One of the two sledlike runners on some kinds of aircraft to simplify landing.
sky-scrap'er (*ski-scrăp'ĕr*), *n.* A very high building, hence any tall object. *Colloq.*
sky'man (*skī'măn*), *n.* An aviator. *Slang.*
sky pil'ot, *n.* See Pilot.

slacker, *n.* One who shirks responsibility, especially as in wartime by evading military service.
slea'zy (*slā'zĭ*), *a.* Said of cloth or other fabric that is very thin or loosely woven.
slick-er (*slĭk'ẽr*), *n.* A long waterproof coat.
slum'gum (*slŭm'gŭm'*), *n.* The mass of impurities remaining after the wax has been taken from the honeycomb.
#smock, *n.* A loose overgarment worn by artists, and recently especially by women in various occupations.
snide (*snīd*), *a.* Low, tricky. *Slang.*
#snipe (*snīp*), *v.* To take a long range shot at an enemy from concealment.
snow ban'ner, *n.* A stream of snow, sometimes miles in length, blown in the sky from a mountain peak.
#soar, *v.* In aeronautics, to move under impetus of the wind.
social service, *n.* Aid given the dependent, defective and delinquent classes, and those in temporary need in order to rehabilitate them as far as possible to normal living. Special workers are trained to render such service and usually work under organized charity supervisors, psychoanalysts, etc.
sock-dol'ager (*sŏk-dŏl'ă-jẽr*), *n.* Anything which firmly settles a matter. *Slang.*
sol'sette' (*swä'zĕt'*), *n.* A thin cotton fabric with plain weave that is mercerized to resemble China silk.
Sokol (*sō'kŏl*), *n.* [Bohem. *sokol*, a falcon.] A name applied to various Slavic gymnastic societies in Europe and in the United States which foster in their members the qualities of the falcon, such as strength of body, keenness and valor. The first Sokol had its origin in Prague in 1862. A member of one of these societies.
S O S. International wireless signal of distress.
son'der-class' (*zŏn'dẽr-klăs'*), *n.* A class of small yachts.
soon'er (*sōōn'ẽr*), *n.* One who occupies government land before it has been opened for homesteading by the government, thus gaining an unfair advantage over others; in general anyone who is unfair in such a way. *Slang.*
sour'dough, *n.* A prospector, trapper or other person leading an outdoor life in Alaska or northern Canada, so called from the piece of "sour dough" carried for bread making when camping. Also used to designate those who live the year round in these regions instead of leaving for the winter.
south'paw' (*south'pô'*), *n.* A left-handed pitcher.
so'viet' (*sō'vyĕt'*), *n.* [Russ.] A council and [*cap.*] in Russia the primary organs of government.
speed trap. A place along a motor road where motorists are trapped for speeding.
#spin, *n.* In aviation, letting an airplane descend while turning or spinning on its own axis.
#spir'it-u-al, *n.* A kind of religious song composed and sung by American Negroes, frequently pitched in a minor key.
spit ball, *n.* A ball pitched when the pitcher's fingers on one side of the ball are covered with saliva thus lessening the friction on that side and causing the ball to curve.
squeeze play, *n.* A play in baseball in which when there is not more than one out and a man is on third base, that man knows by signal that the batter is going to bunt a certain ball, and beginning to run when the pitcher lifts his arm to throw gains an advantage frequently enabling him to score.
#stat'ic (*stăt'ĭk*), *n.* In radio, an atmospheric disturbance.
sub-merg'i-ble (*-mûr'jĭ-b'l*), *n.* A submarine boat that may be entirely submerged.
sub-mers'i-ble (*-mûr'sĭ-b'l*), *n.* See Submergible.
sul'phite (*sŭl'fīt*), *n.* A spontaneous thinker. *Slang.*
sun'cup (*sŭn'kŭp'*), *n.* A variety of evening primrose bearing yellow flowers found in California.
su'per-man' (*sū'pẽr-măn'*), *n.* One so much stronger than others both physically and mentally that he is capable of dominating them; one sure to survive in the struggle for existence.
sur'tax', *n.* In the United States, a tax in addition to the normal income tax.
swale (*swāl*), *n.* Low, swampy land. *Dial.*
syn'di-cal-ism (*sĭn'dĭ-kăl-ĭz'm*), *n.* The idea of destroying political and social systems by a strike extending throughout all the land.
tag day. Any day on which those interested in a cause seek contributions to it, by petitioning people on the street, and give all those who contribute a tag to wear.
tail'-light', or **tail'-lamp',** *n.* A red light on the rear end of a vehicle.
tan'go (*tăn'gō*), *n.* A popular dance originating in Spain.
taxim'eter (*tăk-sĭm'ẽ-tẽr*), *n.* A mechanism used on public automobiles to keep passengers informed from moment to moment of the cost of the trip.
tear bomb, *n.* A bomb filled with chemicals which when they explode form a gas that blinds with tears anyone within its range.
tel'e-type (*tĕl'ẽ-tīp*), *n.* A typewriter that can be operated from a distance by electric signals. A trade marked name.
Ter'ri-to'ri-al-ism (*tẽr'ĭ-tō'rĭ-ăl-ĭz'm*), *n.* The movement among Jews towards a permanent home for the race, established in a territory where they may rule themselves.
Tex'as lea'guer, *n.* In baseball, a fly that falls between the areas usually covered by infielders and outfielders.
throm'bo-gen (*thrŏm'bō-jĕn*), *n.* In physiological chemistry, a substance thought to exist in the blood that gives rise to thrombin or fibrous ferment.
throw'back, *n.* Reversion to earlier type in race or ancestry, shown in form, thought, habit, etc. In motion pictures, the introduction between scenes of present time action of scenes that occurred at some earlier time.
tick'er, *n.* A telegraphic instrument that automatically prints on a narrow, continuous ribbon or tape. Usually used in referring to a stock ticker that records stock quotations.
Tom'my At'kins. A white British soldier.
tone poem, *n.* A musical composition for orchestra that attempts to express poetic images; a variant of the symphonic poem.
tong (*tŏng*), *n.* In the United States, a Chinese secret society.
ton'sil-lec'to-my (*tŏn'sĭ-lĕk'tŏ-mĭ*), *n.* Removal of the tonsils by surgical operation.
top grafting, *n.* A horticultural term for plant grafting, in which bud, shoot or other portion of a plant is grafted into the top portion of another plant.
#torpe'do, *n.* A torpedo-shaped automobile.
tour'ing car (*tōōr'ĭng*), *n.* An open car seating four or more with direct entrance to tonneau.
#track, *n.* In athletics, several competitive exercises, including foot races, weight throwing, hurdling, jumping, etc.; *a.* One who is a member of a track team is a track athlete.
trac'tor (*trăk'tŏr*), *n.* An automobile made to draw vehicles or machines, as a farm wagon or a plow.
trade acceptance, *n.* A bill of exchange covering the purchase price of merchandise drawn on the buyer by the seller, the former accepting by writing his name across the face of the bill.
trade agreement, *n.* An agreement between an employer and a trade-union to fix hours of labor, wages and working conditions.
#traf'fic, *n.* Vehicles and persons passing along a road, or vessels passing along a watercourse.
traf'fic man'a-ger, *n.* A superintendent in an industrial establishment who routes shipments, checks waybills and may also adjust claims.
trans'at-lan'tic, *n.* Somebody or something that is across the Atlantic; *a.* Used to modify a noun, as: transatlantic routes.
#trans-mis'sion, *n.* In radio, the passage of radio waves between transmitting and receiving stations; the act of transmitting.
tre'fa (*trā'fäh*), *a.* Ceremonially unclean according to Jewish law, usually applied to foods; the opposite of *kosher*, clean.
tric'o-lette', *n.* A cotton or rayon fabric woven like Jersey cloth.
try'out', *n.* A test or trial of a person to determine his efficiency, from the custom in sports of testing a contestant to establish in which class he belongs.
tu'la-rae'mi-a (*tōō'lă-rē'mĭ-ă*), *n.* A disease appearing in rodents, transmitted by insects, especially the deer fly, that manifests itself in man by a depressing fever that continues several weeks.
#tune, *v.*, **to tune in,** a radio expression for adjustment of receiving instruments for reception. —**to tune out,** to keep out undesired signals, messages, etc.
tur'key-trot (*tûr'kĭ-trŏt'*), *n.* A dance with feet wide apart and eccentric rise and drop of the feet.
turn'o-ver, *n.* A completed merchandise transaction of purchase, sale and replacement of stock, usually in relation to a given period of time, business success depending on a certain rate of turnover that varies according to the type of goods handled, etc. Also, the labor turnover, or number of new persons hired within a given period to replace others who are dropped or leave, this number being taken in proportion to the entire force.
twi'light sleep, *n.* A method of painless child birth by the use of two drugs, scopolamin and morphine. The success of the method is in dispute by members of the medical profession.
#twist, *v.t.* In life insurance, persuading a person to drop a life insurance policy already in force and to take out a new one in its place.
typh-lol'o-gy (*tĭf-lŏl'ô-jĭ*), *n.* Scientific study of the causes and effects of blindness.
typh' o ma la'ri a (*tĭ'fō mā lā'rĭ ā*), *n.* A disease supposed to be malarial in origin but exhibiting typhoid symptoms.
ty'po-script, *n.* Typewritten matter.
u-'kule'le (*ū'kōō-lā'lē*). A small four-stringed guitar, originally from Hawaii.
un'der-sea', *a.* Something that is, or is going on, beneath the surface of the sea; as: under-sea photography.
un'der-slung (*ŭn'dẽr-slŭng'*), *a.* Said of an automobile so constructed that the frame of the chassis is below the axles. Underhung.
un-scram'ble, *v.t.* To separate a thing into its original parts, a phrase ascribed to J. P. Morgan, that "you can't unscramble eggs," when attempts were made to dissolve certain trusts.
#u-til'i-ty, *n.* A shortened form of **public utility,** a business that supplies the public with some commodity or service, such as electric light, gas, water, etc.
vacuum bottle. A bottle made on the Dewar principle, for keeping the contents either cold or hot.
#vamp, *n.* A vampire; *v.i.*, to act the part of a vampire, to beguile. *Slang.*
#vampire, *n.* A figurative expression for a seductive person, usually a woman who lives by preying on others.
#van'i-ty, n. A small bag or box fitted with toilet articles, usually powder and rouge.
vel'ou-tine' (*vĕl'ōō tēn'*), *n.* A velvet-finish corded fabric of somewhat lighter weight than corduroy.
ve-ne'tian, *n.* A type of twilled cotton fabric of fairly light weight.
ver'ni-er (*vûr'nĭ ẽr*), *n.* In radio, a small auxiliary part that is used with a main device in order to attain sensitive adjustment.
vest'ee' (*vĕs tē*), *n.* A garment resembling the front of a vest, but without sleeves or armholes, worn to fill in the front of a dress or riding habit.
#vic-to'ri-a, *a.* An automobile touring car with calash top, usually extending only over the rear seat.
Victo'ria Cross. A Maltese cross given for bravery first by Queen Victoria in 1857.
violet rays, *n.* The shortest rays of the spectrum that are visible to mankind, sometimes incorrectly applied also to the therapeutic ultra-violet rays of the spectrum.
vi'ta-min, also **vi'ta-mine,** *n.* A constituent found in many foods, the absence of which in food causes a weakening of bodily tissues, resulting in disease such as beri-beri, pellagra, scurvy, etc. Usually food containing vitamins will cure the disease previously caused by their absence.
vod'ka (*vŏd'kă*), *n.* A Russian intoxicating liquor made usually from rye as a government monopoly, prohibited at the beginning of the World War.
vol'plane (*vŏl'plān*), *v.* To glide in an aircraft.
Volstead Act. An act of Congress providing for enforcement of the eighteenth or Prohibition Amendment to the Constitution.
walk'a-way', *n.* An easily won contest, especially when the winner of a race lessens his speed at the finish because other contestants are so far behind.
wan'gle, *v.t.* Adjusting in makeshift manner; swindle, deceive.
Washington Conference. An armaments limitation conference held at Washington, D. C., from Nov. 12, 1921, to Feb. 6, 1922, in which the United States and eight other nations participated.
Wasserman test. A test for syphilis.
#wave, *n.* A nation-wide movement of whatever kind, as the farm relief wave.
weed'less, *a.* A term applied to a kind of propeller for a motor boat, so constructed that it does not gather weeds.
wheeze, *n.* A joke or tale so old that it is familiar to those who hear it. *Slang.*
white' col'lar, *a.* People whose work is of such nature that they can wear white collars while at work; specifically, salespeople and clerical workers in contrast with manual laborers.
white gold, *n.* Gold alloyed with nickel, zinc, iron, silver or other metal that will produce a whitish alloy.
white plague. Tuberculosis, usually of the lungs.
white slave. A woman detained against her wishes and forced into unwilling prostitution.
wie'ner-wurst' (*vē'nûr wōōrst*), *n.* A beef sausage, or beef and pork sausage, made in a link about a half-inch in diameter.
#wild'fire, *n.* A quick-spreading disease of the tobacco plant that appears in brown spots on the leaves. These spread or drop out, spoiling the leaves for use.
wind'shield, *n.* A shield of transparent material, usually glass, set in a frame to protect the occupants of an automobile or open-cockpit airplane from wind and rain.
#wire, *n.* A telegram. *Colloq.*
World Court. The Permanent Court of International Justice; also a proposed court similar to this one, but separate from the League of Nations.
World War. The war between the nations that began July 28, 1914, and ended with the armistice of Nov. 11, 1918. The peace treaty [Treaty of Versailles] was signed June 28, 1919.
wrist watch, *n.* A small watch that is worn on a bracelet, ribbon, strap or cord around the wrist.
xy-lot'o-my (*zī lŏt'ŏ mĭ*), *n.* The cutting of sections of wood by a microtome in preparation for their examination under a microscope.
#yaw, *v.t., v.i.* In aeronautics, to turn an airplane from its line of flight by an angular motion about its vertical axis.
yer'ga (*yûr'gă*), *n.* A coarse woolen material. Its chief use is for horse blankets.
yu'an (*yōō'ăn*), *n.* A silver coin that has been the monetary unit of the Chinese Republic since January, 1914; worth about .464 cent in coin of the United States.
#ze'ro, or **zero hour,** *n.* In British military science the zero hour is the one at which a previously planned movement starts, all other movements being planned for a certain length of time before or after the zero hour. Often used figuratively. In American military regulations, **H hour** is the regular term.
zirc'ite, or **zirk'ite** (*zûr'kīt*), *n.* Natural zirconium oxide, used in making bricks for furnace linings because of its reflection of heat.
zlo'ty (*zlō'tĭ*), *n., pl. zlotys.* The gold monetary unit of Poland, worth about 19.3 cents in American money; also a silver coin of the same value.
#zone, *n.* Any one of the circular areas about a shipping point designated by the Parcel Post Act of 1912. *v.t.*, city planning, to partition a town or city by ordinance into sections that are limited to certain heights, uses or types of buildings, such as residence, business, manufacturing establishments. From this arise the names: zoning commission, zoning ordinances, etc.

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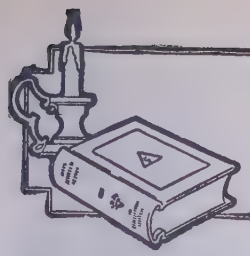
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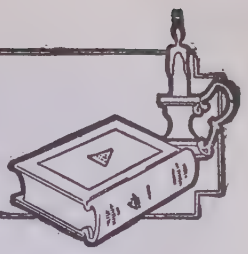
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OBJECTS AND DESIGNS FOR PRIMARY NUMBER AND BEAD WORK



BOOK X

MATHEMATICS



The Magic of Number.—Number has always been a mysterious thing, endowed with magic powers. From ancient times till now, philosophers no less than the masses of men have attributed to them faculties to affect the life and fate of human beings favorably or disastrously. Superstitions attach to certain numbers even in our present enlightened times. The number Three has always been considered as particularly sacred. This may be due to the fact that, in primitive number conception, it was an enormous step for humans to distinguish "three" from "many".

To our modern conception this may seem preposterous. But it is not. To us, the concept "three" is so elementary, so obvious, that we can hardly believe there was a time when it was as hazy to all as to us is a million. But do we not even now speak of a man who appears stupid as one "who cannot count three?" The origin of languages shows how these concepts developed. We have the "singular" number of nouns, meaning one object; this is a clear concept. What was beyond "one" was hazy, undefined, "many", expressed by the "plural". In some languages, the step from "one" to "two" is preserved; the classic example is the ancient Greek language which has a "dual" form of nouns, denoting "two" objects of the same kind. What was beyond "two", was "many", an indefinite number. Numerals, to denote definite larger numbers, developed slowly. Definiteness in number conception has been a painfully laborious acquisition of the human race. The science of number was the first exact science which had to be evolved before any other of the exact sciences, like physics, chemistry, astronomy, etc., could be created—but it was only in the time of classic Greece that this fundamental step was accomplished.

Number and the Child.—Shall we wonder, then, that our children are slow in developing a real understanding of number relations, of quantity, of precise statements? Children, in their mental growth from infancy to maturity, follow in a measure the steps the race has taken in its evolution from primitive culture to modern civilization, and we can understand a child's difficulties better if we take this fact into careful consideration.

The child is subject to the same process of evolving "precise cognition" from the initial hazy concepts which has been followed by the race. To proceed from a clear concept of unity, of "one" object, to that of more than one, is the first step. To realize duality, that is to say, "two" objects, either like, or different objects, is a very fundamental step; and to proceed from that to the identification of the trinity, or three-ness, is the beginning of real number conception.

Methods of Developing Number Concepts.—Just as the race has used primitive methods of achieving results in this process, the child needs primitive devices to conquer the world of number. It is a very slow process, let us remember. And we must lay the earliest foundations most carefully, never be impatient, or try to follow a short cut, or omit an essential step. We must rather follow the lead of the child, not force him along the way which seems to be easy for us. It may surprise us at times to discover that it is not the child's method (neither has it been the method of the race) to follow the logical path, to do the simple and obvious thing. He treads devious paths, backward and forward, sideways and curving around, trying now this and now that strange device, until finally he finds the solution of his problem—not at all where we ourselves would have been looking for it.

We may therefore give him an opportunity, or rather plenty of opportunities, to occupy himself in a primitive manner, using his fingers, natural objects, like pebbles, leaves, acorns, etc., or beads, and strings and knots, and what not, to gradually evolve in his mind ideas which will give definite arithmetical and geometrical outlines to the world of knowledge—remembering that this world of his is very small at first.

Home Training in Number.—The suggestions given here are not intended for the teacher, although perhaps many a teacher may learn some facts and tricks of procedure from what is presented here. But we have primarily the parent in mind, and wish to give him, or her (for it may be mostly the mother whose share this training will be) advice in the matter of practical methods for developing the child's conception of number relations.

The suggestions refer *first*, to the preschool period of the child—in fact, to the entire period of the child from birth to the kindergarten age. *Secondly*, to the kindergarten period itself. Whether the mother has the opportunity of sending her child to a good kindergarten or not, it will be advantageous for her to understand the needs of this period, and the "gifts", "occupations", and games which are employed in the kindergarten to awaken an appreciation of number and form, at least in a measure. *Thirdly*, the suggestions include the period of primary school work. Here a special caution is needed.

School methods, and school grading, are not ideal; they are adapted to the needs of great numbers of children of an average mental type; they are dependent upon the understanding and skill of teachers who are often young and inexperienced, and have no intimate knowledge of child needs. Again, their opportunities are limited to school hours and school organization. The parent at home has almost unlimited opportunities, in play and work, on walks and in heart-to-heart talks, and in a thousand other ways such as the routine of the home affords, to approach the child's number problems. In the home, perhaps, more can be accomplished in giving the child a thorough grounding in the true principles of number conception than in the school itself.

But we must understand that the process cannot be so logically graded as the school endeavors to do. To illustrate this, the author will tell how one little boy made his start in number.

This little boy, now between seven and eight, has not gone to school yet, for certain reasons. He is in many ways an exceptional boy, and brought up somewhat differently from the ordinary type of boys who attend school in the regular way.

Although even now he has only begun to write his figures, he has learned a great deal of arithmetic by absorption and observation. He began, as all children do, as we shall see later, by counting. At first, the sequence of number names was not clear in his memory, and he told them in confused order. When he had learned to say the big number names, like one hundred or so, even when he was quite young, he took great delight in mixing them into his speech. He had a hundred marbles, or five hundred and six blocks. A few hundred more or less made no difference. These words were substitutes for "many". He acted in this respect as some ancient peoples did, like the Hindoos, who talked in their religious stories and mythologies of hundreds of thousands and even millions of years as if they were bean bags.

Finally the little boy settled down to hard facts. In a general way, he proceeded from simple numbers, the larger ones remaining hazy quantities to him for a while. He began by distinguishing "few" and "many". Then he knew clearly about two and three things. After this, his progress was accelerated. Indeed, he was not always quite sure about the difference between four and five things or so, but he worked hard. He usually dealt with concrete things, the number of his playthings, or of people, but did not altogether tie himself down that way. He arrived at larger numbers by addition, adding one or two or three at a time. But he defied the schoolmaster's theory that he should not proceed to four until he had exhausted the possibilities of three; or to six, until he had studied five thoroughly. He jumped. He was an arithmetical acrobat. He turned around and went backwards; he twisted and wound and unwound things so that you could not follow him. No set rule of method would have reached him. He was a law unto himself.

This is one of the reasons why in the following pages we will not offer a strictly systematized course of procedure. We shall make constant connections and associations, and will suggest to the parent using these suggestions that they will be guided rather by their children's interest and individual method than by anything we or anybody else can offer in the matter of "proper sequence".

The little boy we are speaking of taught himself multiplication and division by such questions as: "Isn't two threes six?" "Isn't twelve two times six?" And so on. Subtraction is even now a poser to him, and it is a strange fact that it is for most children a curious stumbling-block. But he has mastered, all by himself, without any planned out teaching, such quantities

as the dozen, the dollar, and their divisions, and has a very fair conception of mathematical relations, usually expected only of much older children. But he will disappoint you at times, seeming to have lost all he had known, and beginning all over again. Soon after, he will make another big jump and astound you by a bit of calculation; going to the stores, making the right change in buying different things, selecting bargains, and telling the storekeeper very plainly what is in his mind if there seems to be anything wrong. Recently, on a visit to the seashore, he went alone to take his breakfast at a restaurant, paid for it, and left a tip for the waitress. What school method would keep up with such a child's development?

Earliest Number Training.—Strange as it may seem, but training in number conception begins in the cradle, or on the mother's lap.

The fundamental operations upon which all other, more and more complex ideas of arithmetical relations are based, are:

(1) *Counting* and *tallying.*

(2) Concepts of *space.*

Counting begins with the earliest *finger and toe games* which the mother plays with her child. "This little pig went to market," etc., introduces a primitive counting, tallying the equal number of toes on each foot. "This is the thumb," etc., brings the fingers into play, with the same tallying process.

The development of the consciousness of fingers and toes is of very great importance. That there are five toes to be counted on each foot, and five fingers (thumb included) on each hand, is the basis of our decimal system of computation. One hand, or one foot, equals five, in ancient or primitive methods of counting. Two hands, or both feet, represent the ten; "the whole body" (both hands and both feet) is twenty. Even the divisions of the fingers play their part in early measurement: one link, or joint, representing an ancient inch. The term "digits", still used in denoting the numbers from one to ten, means the ten fingers. It is therefore of significance not to speak of the thumb as not being a "finger" as is customary in some places. The thumb has its place in this system of computation.

Finger reckoning is as ancient as the race, one might say. We may well use it today in the development of the number concept with young children. It is replaced by more or less symbolic forms through the introduction of *beads, knotted cords,* etc., of which we shall speak presently; the *abacus,* or *number frame,* is one of the more systematic forms of mechanical contrivances to represent finger reckoning. The Chinese and Japanese employ it to this day in their daily tasks.

Mothers will do well to become acquainted with Miss Emilie Poulsson's admirable *Finger Plays,* intended for the use in the kindergarten and the home. Much of the material suggested by Miss Poulsson can be used by the mother with her baby on her lap.

Before the concept of number in its precise value is formed by the child, it has the realization of "larger" and "smaller", which later assumes the distinction between "more" or "less". If you place before the child two different heaps of beads, or sticks, and ask for the larger heap, the child will soon select the one containing more objects, without at once understanding that the larger heap also contains "more" beans or sticks than the smaller. The child may develop a rather high degree of discrimination between "larger" and "smaller", or "equal" heaps, and be able to detect small differences, without knowing that it has begun to have a dawning conception of real "quantity". We may not be justified in ascribing to a cat, or a dog, the faculty of counting their litter, but the cat mother and the dog mother know whether all their young ones are there or not. This knowledge is based, apparently upon that same faculty of making nice discriminations of mass relations, taking their litter as a "heap", and discovering a diminishing of that heap, which the child develops before he learns really to count.

Even at this period of hazy number conception, when there is mainly a concept of larger or smaller space, or body, it is essential to hold the child to *tallying.* Tallying means comparison. Comparison establishes the relation of one quantity to another. On this idea of relationship, of comparison, of tallying, all number work is based. Even when we measure the stars, or the relativity of the universe, with Professor Einstein, we are dealing with comparative values; otherwise these figures would have no meaning to us.

Thus, let the child compare the "larger" and the "smaller" things or masses, the "more" or "less" of objects, constantly. This is no strain to the child at all; quite the contrary. It is an innate desire of the normal child to keep on counting and tallying.

Real counting will begin also quite early; only one must not be discouraged if the child makes slow progress at first in remembering the *number names* and placing them in the right sequence. Confusion in names does not necessarily signify confusion in actual perception or count; just as little as confusion in color names means confusion in color perception.

As said before, the mastering of the first three precise counts, one, two, three, requires the longest time; it is fundamental. Twos, that is, pairs, can be readily found in the child's closest perceptions: he has two hands, two feet, two ears, two eyes, two lips, two rows of teeth. He perceives the same fact in others. Pairs are also observable in objects which, like garments, are balanced in arrangement; again, there are always two ends to a stick; two sides, as to a plate. And so on. All these things can be utilized to impress the idea of two, and of pairing. The idea of pairing introduces also the first glimmer of arrangement, or harmony, of balance and symmetry, and later on of the fundamental operations.

The transition to three and then to four is much more difficult. Three is the first odd number after one, and has no seeming relationship to the outside world or to other quantities until later developments are reached. That is why its conception is so difficult, why it has been held in awe by millions of generations of human beings. It is best understood as a combination of the first two concepts, the one and the two. It may be introduced by contrast: the child has two eyes, and two ears, and two hands, but only one mouth, one nose. Then we have the story of Little One-Eye, Little Two-Eyes, and Little Three-Eyes, which will help.

Further development can be well connected with many interesting occupations and games.

But even before they are introduced, counting, plain and simple, should be fostered. That is to say, the child should learn the number NAMES in sequence. This is not irrational, for the reason that the child delights in this very process, and that this early age is the period in which the memory is strong for words. It is a learning of names.

So let the child count, and count again, even if he does not connect a definite number concept with the names. But do not forget to have him count *things* right along with the drill in memorizing the names.

Let him count anything and everything: his playthings, the steps he takes up and down stairs, pebbles, rings, cutlery and dishes on the table, the persons in the room, and what not. The whole world should be embraced in this counting process, as far as his little mind can fathom it.

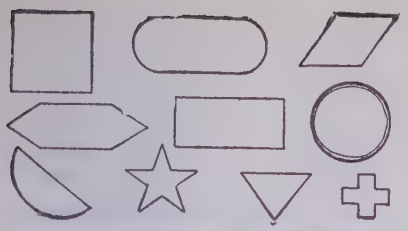
Special Exercises and Occupations.—How little reliance can be placed upon a young child's capacity for remembering and understanding number, may be illustrated by one of the early attempts to measure intelligence. In the original "Binet" Scale, a child of three is expected to be able to repeat but two number names after hearing them once, like 6–4; a child of four is put down as being able to repeat five numerals. A child of five is expected to count only 4 pennies; one of seven, to tell how many fingers he has on one hand, on both hands; or to count 13 pennies. These are very low estimates, indeed, and it will be found that normal children can do vastly more if properly trained.

We shall suggest a number of exercises, widely used in kindergartens and schools, which can be fitly employed by parents long before the child enters kindergarten, or certainly during the early kindergarten age.

The use of *Building Blocks* can be introduced early. The child likes building. Use large size blocks instead of the ordinary type; but even an ordinary box will supply occupation. First let the child play at will, in his own imaginative and constructive way. Then let him count the blocks, arrange them in twos, threes, etc. If you use colored blocks, a great variety of exercises can be obtained.

A large *Peg-Board* with white and colored pegs will offer much delight and exercise in arrangement and counting. The child can make borders, single and double, counting the pegs; diagonals, rows of two or three each, etc. With the colored pegs, you can arrange designs and borders, as well as rows, using twos, threes, fours, etc., of blue, red, yellow, and the other colors alternating.

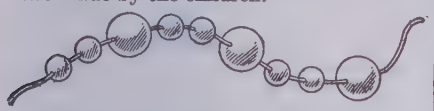
The peg-board has this advantage over sticklaying that it gives the child a definite place for each peg. The muscular coordination required for fitting a peg in its hole is less minute than that which is needed in laying light sticks in rows with any degree of accuracy. Yet, even the use of the peg-board may require, with some children, a preparation. This is afforded by the so-called *Form-Boards.* Some of these are intended merely to test children as to their conception of form, that is to say, of geometrical figures. Here is the picture of one which was first introduced for testing imbeciles, or suspected imbeciles, but which has its special value outside of this; it will teach a young child some of the fundamental forms. The board in which the figures are to be fitted is carved out in corresponding grooves.



There are other form-boards, used for a variety of teaching and testing purposes; but we are here dealing with number teaching only we need not specify them. Some of the Montessori Educational Apparatus, especially the graduated cylinders, are of value as they teach relative size.

Another early exercise for impressing number concepts, requiring but a modicum of muscular co-ordination is *Bead Stringing.*

First use shoestrings and the large wooden "beads" in the form of balls, cubes, cylinders, etc., as purchasable in any toy or kindergarten store. Later, beads of smaller size, different material, and varied colors can be introduced. Of course, the very first exercises will not emphasize number or counting; they will merely teach the trick of the stringing. But as soon as that is mastered, there will be first of all a counting of the beads irrespective of their form size, or color. Then, we may have the child string small and large beads, or cubes, balls, cylinders, etc., in alternate numbers of two, three, or what not. Different colors will be introduced in the same way, until quite elaborate patterns are made by the children.



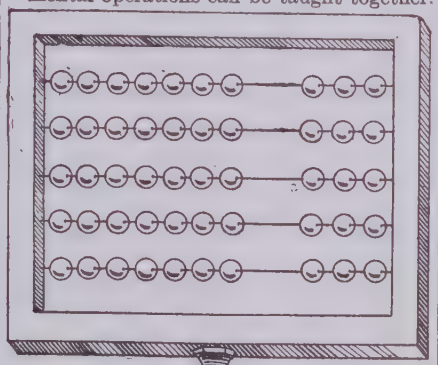
Let us not forget, however, that the child will at first not always be sure of the exact number he uses, or of the number name fitting the number itself. We must be patient. The child will often string his beads correctly without being perfectly conscious of the number he uses; his will be a space concept, or a geometrical concept, rather than a numerical concept. But he will subconsciously store up the experience, and will soon surprise us by a correct understanding of the numerical value.

Let us further understand that this counting process, although it would seem mere addition, introduces from the start the other operations. The one will appear as two less one; the three, as four less one, etc. Again, the grouping of twos or any other sequence of equal numbers will suggest multiplication as well as division. The groups may be distinguished by using different forms, or sizes, or colors.

The beads strung on taut wire and fastened to a frame, as in the *NUMBER Frame* or *Abacus*, would seem to be simpler to handle than when loose, and to be strung by the child. But first of all the abacus requires balancing by the child with his left hand to give him the chance of moving the beads with his right; this is not so easy to many young children as stringing large beads on a shoestring. The fastening of an abascus arrangement to children's desks will, of course, obviate this objection. But the use of the abacus is more formal than the stringing of beads which offers more variety and a play interest; besides, it has an ormental character as the child can construct necklaces, bracelets, and all kinds of festoon arrangements. A further development of the beadstringing exercise is found in the use of leaves, acorns, nuts, flowers, etc., in place of the beads, thus leading to nature study as well as to aesthetic training, while the numerical element remains.

But the abacus affords new possibilities. The beads are arranged in rows of ten, each row showing a different color. There are usually ten beads in a row; and five, or ten, rows. Some larger forms show an arrangement by twelves. This is not so good for primary beginnings, but can be used to teach the multiplication table up to twelve.

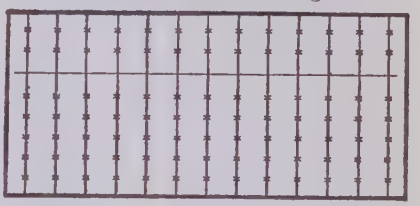
Mere counting will initiate this exercise, as in all other exercises. The child will learn that the beads are arranged in rows of ten, and that there are fifty, or whatever the total may be, all together. Now the child again may arrange the beads in groups of twos, threes, and so forth. He will move over 1 red bead, 2 orange beads, 3 yellow beads, 4 green beads, 5 blue beads, etc. He will construct different numbers by combining several rows; f. i.: 13—10 in one row plus 3 in another. He will discover that the ten in one row can be arranged in five groups of two each, learning the division of ten, and the multiplication of two, and by dividing the ten into two groups of five each, the multiplication of five by two. There is an endless variety of these exercises, and we may well be reminded at each step that all four fundamental operations can be taught together.



Abacus showing multiplication of 3 by 5, as well as of 7 by 5; and addition of 7 plus 3.

The *Chinese number frame* is a shallow box, arranged in two lengthwise compartments, one only one-half as wide as the other. Thirteen thin reeds or rods, on which beads are strung, are so placed across the box that in the wider section of the box, there are five beads on each; on the narrower, only two. Beginning at the left end, the five beads in the lower, wider section represent five units, from one to five. After counting the five you move one of the two beads in the narrower section up; this represents the total of five. Counting the beads in the wider section over again, you have another five; then you move the second bead in the narrower section and now have two beads there, each representing five, or a total of ten. The tens are in the second reed next to this to the right; each bead of the five in the lower section represents ten, or a value equal to the sum of the two beads on the first reed. In this wise you go on. It sounds very complicated, but is not when you once manipulate one of these frames which are today used in every Chinese laundry in this country to compute the amount of your bill. The introduction of this Chinese counting board will give you and your children a very great selection of number constructions, in all the four operations, up to very large numbers indeed.

The apparatus looks something like this:



Sticklaying is another very valuable device in teaching the fundamentals of number. Sticks, natural wood and dyed, can be bought in toy and kindergarten stores, by the box, and in different lengths. They offer opportunities not only for sticklaying but for comparing lengths. For the mere laying of sticks, to teach counting and computation in the four fundamental operations, toothpicks can be used, which may be dyed with Easter egg dyes. But the objection to them is that they are too small for the tiny fingers to handle; the bought sticks are more substantial. The Montessori Apparatus offers graduated rods from 1 meter length down to 1 decimeter; these are very helpful on account of their size, but rather expensive.

Sticks may be laid in rows, first, one in the first, two in the second, etc., like this:

I
II
III
IIII
IIIII, etc.

In rows of twos, threes, etc.

II II II II
III III III III

It will be observed that such an arrangement combines the space relation with the numerical relation, which is very helpful

Then in rows of equal numbers:

IIII
IIII
IIII
IIII, etc.

All the combinations of each number, as this, of 5;

I I I I I
II II I
III II
IIII I
IIIII

The multiplication tables can be easily demonstrated in this fashion. Here is the table of two:

II
II II
II II II
II II II II
II II II II II, etc.

Again, here is division:

IIII=II II.

This can be extended as far as the child can follow. In place of the sticks, beans, seeds, beads, almost any other object can be used. Introducing the colors, variations may be effected.

With sticks of different lengths, the first exercise would be assorting them, the one-inch sticks in one pile or box; the two-inch sticks, in another, and so on. Then they may be laid out and arranged according to their relative lengths; first, merely in the form of ascending steps, then by matching lengths. There may be combinations of matching a five-inch stick with one two-

inch stick, and one three-inch stick; or one four-inch stick and a one-inch stick. Or you will have the child discover that two two-inch sticks match the length of a four-inch stick, and so forth.

This may be, in many cases, a convenient time to introduce the *backward* counting, as now the children will have achieved considerable facility. Have them count backward by ones, first from three to one, then from four to one, and so on. Then, by twos, by threes, etc. All this gives drill in the process of subtraction and even in the foundations of division. Let us remember that multiplication is merely the repeated addition of the same number; and we may consider division, in one sense, as a continued subtraction of the same number, from the principal.

Further opportunity for number exercise is given in *ringlaying*, *tablellaying*, the *weaving of mats*, and similar kindergarten occupations which afford the child a great deal of pleasure. These occupations introduce a larger element of beauty and form arrangement; designs, borders and the like can be utilized in the development of an understanding of number relations, of harmony, of balance, of symmetry. In place of the tablets of wood in different natural colors, the child may use gummed paper pasters, in many colors and different geometrical forms: circles, squares, oblongs, stars, and what not.



Forms for Ringlaying.

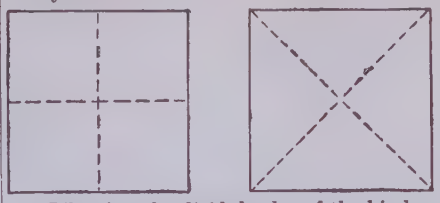
A very acceptable pastime for even young children is *printing*. The Prang Company has produced a very helpful set of print sticks with which a great variety of exercises can be suggested. These sticks reproduce the geometrical forms already learned by the child, and allow of the making of all kinds of designs. Above are squares and circles of different sizes: triangles, oblongs, and even wavy lines.

These forms make it possible to teach the division of figures with ease; halves, thirds, fourths, etc., can be easily demonstrated. Of course, the child should be encouraged also to divide real things, like apples, the kernel of walnuts, and other things; and parents should not be too much disappointed if the division is not very accurate. Accuracy is acquired slowly.

Some firms offer cardboard disks to teach the division of the circle; different colors are employed to distinguish the halves, thirds, quarters, etc., which have to be matched with the circle itself.

One caution is needed: the children must learn to understand that division means dividing the whole into *equal parts*. As soon as actual wholes are divided, like a circle, or a square, or an apple, this must be emphasized. Unequal parts must be shown and used for the demonstration that they are not equal, although they may represent a division of the whole.

Paper Folding is another help in teaching divisions. Use square or round pieces of paper; fold diagonals, or at right angles. Divide the folds again and again. The folded parts may be cut out and matched. By using colored paper, a multiplicity of designs may be produced, pasting the pieces upon tinted backgrounds in various ways.



Likewise, the *divided cubes* of the kindergarten gifts will assist in teaching divisional parts, as well as form, in the matter of geometrical solids.

In order to develop the idea of relative quantity, *measuring* is a very important exercise. In fact, it should accompany all other work. The child should be encouraged to measure lengths, bulk, liquids, etc., all the time. Not that the idea of inches and feet, of pints and quarts, or other standards, should be at once introduced. No. Just as the child will first acquaint himself with the *general differences* in the length of sticks, cords, etc., and will only in time recognize standards of measurement and denote these differences with something like precision, so we want to first give him the notion of larger and smaller, of more and less.

He may use strings and rulers to measure the length and width of table tops, windows, the length of walls, etc., etc. He may then learn to determine the exact length in inches and feet, or yard. Begin with the larger measure, and work down to the smaller. It makes little difference whether the child at once remembers the term "yard", "foot", or not, as long as he recognizes variations in length. Let him cut strings which represent the length, of, say, a window sill; or apply his knowledge in making a cover for his bureau. Let him make knots in his strings to denote different measures he has discovered. Counting knots in strings was one of the primitive methods of computation. The child should have small and large bottles, dry measures (first merely cups and pots), and constantly learn to compare. Gradually he will employ the standard measures and commit the "tables" to memory.

On his walks, let him measure the number of steps he takes; the relation of the length of his step to the foot, or the yard, the rod, the mile. He will soon learn to estimate distances much more accurately than you may expect. Let him measure or estimate the height of bushes, of trees, of poles; the width of a road or a brook. Nature offers such an abundance of material that it is unnecessary to say more. Always be satisfied at first with rough statements; accuracy will be achieved in time.

Of course, all these exercises imply the four operations.

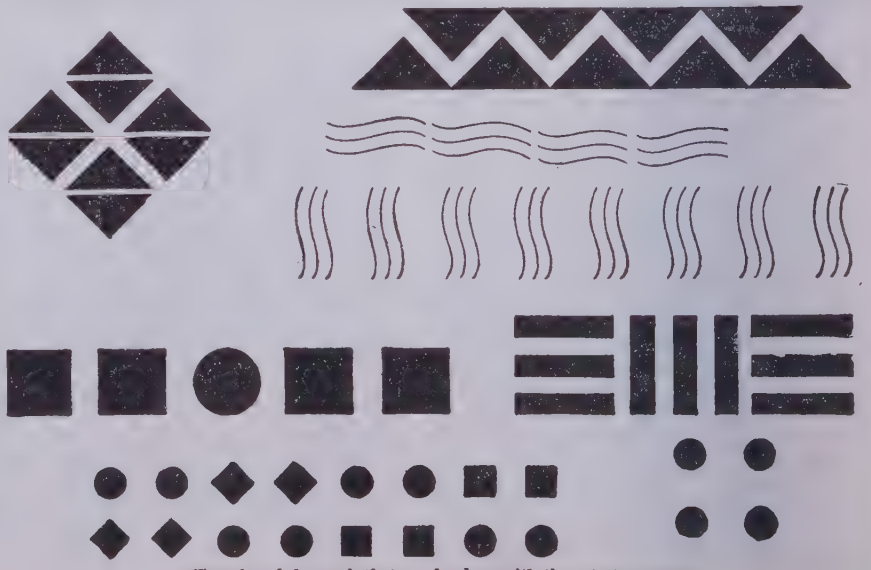
* * *

So far, we have been dealing with concrete things only, in other words, with *denominate number*. That is to say, not entirely. The child, in his early efforts to count, and to use number names, is already abstracting his ideas from the concrete to the un-named, the indenominate, the mere number concept. In fact, as soon as he masters number names, he will do a great deal of computing, in adding, subtracting, multiplying, and dividing, abstractly. When the little boy whose learning process was described on p. 305 asked himself and others the questions: "Isn't two fours eight?" and so on, he was not thinking of four or eight marbles, but of abstract numbers.

With the introduction of the *symbols*, that is to say the *figures*, from 1 to 9 and 0, another element enters.

Perhaps, a child has at first difficulty in understanding the *Arabic figures* which are so familiar to us. A transition method would be to use the sticks as symbols, or rather the marking of sticks on paper, such as we often do in tallying at card games, or in scoring votes. Every group of five is denoted thus: 𝍸, or 𝍸. Thirteen would appear thus: 𝍸 𝍸 III. Some have suggested that it may be advantageous to use the *Roman numerals* before we use the Arabic numerals as they also operate with simple additions and subtractions. When once it is known that V means five, and X means ten, it is easy to construct III = 3, IV = 4, or five minus one; XI = 11, or ten plus one; XX = 20, or two tens, and so on. Of course, computation is less comfortable with the use of these symbols than with the Arabic notation.

Even before the use of numerals, however, the *multiplication table* may be learned by heart; one table after the other. There is no need of hurry, or of anxiety. True,



(Samples of the work that can be done with the printing sticks.)

the tables will mean nothing to the young child at this time, except as far as he can verify the tables by actual experience in his number work with objects. Many years ago, a clever English educator expressed himself in this manner: "A boy may say 7 times 5 equals 35, when he does not know much about 5 or 7, except that he has had 7 marbles or 5 balls; and he has no conception whatever of what 35 represents; he has only learned to make certain noises in a certain sequence." This is correct. But this is also the period in a child's life when he has a retentive memory of a more or less "mechanical" kind, as it is called. By committing the tables to his memory he stores up a set of tools which will come in useful later, for rapid calculation. Many early activities of a child have no purpose in themselves but are a preparation for future purposeful performances.

As soon as the child masters the numerals, the multiplication table can be practised with the use of a table like this:

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6										
4	8										
5	10										
6	12				36						
7	14										
8	16										
9	18										
10	20										
11	22										
12	24										

The table is either drawn on a large manila board, or on the blackboard. It contains 144 squares, arranged in 12 rows of 12 squares each. In the upper horizontal row write the figures from 1 to 12; likewise in the first vertical row on the left side. The exercise may be played as a game, either by several children, or by parent and child. The idea is to multiply the figures of the top row with those of the left row, or vice versa, and to write the results in the corresponding squares.

The second row would then contain the figures, as indicated, 2 times 2=4, 2 times 3=6, 2 times 4=8, etc. In the sixth row, we would find, as also indicated, that 6 times 6=36. The product can always be found in the square where the two rows meet.

Further, compare the rows, f. i., the second with the fourth, and you will also find that 2 is $\frac{1}{2}$ of 4, 4 is $\frac{1}{2}$ of 8, 5 is $\frac{1}{2}$ of 10, etc., so that we have also a demonstration of quotients.

It may have been noticed that we have used the term "times" written out, and not the sign x. We have done this for a good purpose. It will make it far easier for the children if they learn to use the arithmetical signs in the proper manner from the start; there is as a rule too much confusion in their reading. The sign "x" does *not* mean "times", but "multiplied by." *The number to be operated upon always stands first.* When we say, 3+4=7, we mean that 4 has been added to *3*; 3—1=2, means that one has been taken away from the *3*; in the same way 3x4=12 indicates that the *3* has been taken 4 times, or has been "multiplied by" 4, and not that the four has been taken three times. Likewise, when we say 12÷4=3, we mean to say that the *12* has been divided by 4.

In introducing division in the form of examples, we must also remember that division really implies *two different processes.* The one is to find the number of times a smaller number is contained in a larger one, with or without a remainder; the second, to divide a number into so and so many equal parts. Thus: 12÷4 may mean that we wish to discover that the 4 is contained three times in 12; or again, that when we divide 12 into four equal parts, each part contains three. If we, f. i., ask how many times are four inches contained in one foot or 12 inches, we shall find that we have three times four inches. But if we ask what is one fourth part of one foot, we shall put it down as containing three inches. To write the two examples correctly would therefore make them look like this:

12 in.÷4=3 in., and
12 in.÷4 in.=3.

These are two different things, and unless they are clear in the child's mind from the start, he will have difficulties in analyzing his examples later.

Another difficulty which ordinary methods introduce is the distinction between "long" and "short" division. There is no difference at all between the two processes. "Short" division examples are short because smaller numbers are used, and there is usually no remainder; "long" division examples are long because larger numbers are used. It is best not to make this distinction, and also to adhere from the first to the form of an equation, like this:

12÷4=3, or 4)12=3.

It is evident that these two forms exemplify the two types of division explained; the first really means, 12 divided by 4 gives 3; the second, 4 is contained in 12, 3 times. The second form may be chosen in preference to the first for all examples because it introduces the longer division examples with greater ease.

To lead over to the so-called long division we may have the child write the tables this way:

3=1 three
4=1 three plus 1
5=1 three plus 2
6=2 threes
7=2 threes plus 1
20=6 threes plus 2
21=7 threes
22=7 threes plus 1
23=7 threes plus 2
24=8 threes, etc.
6 x 1 plus 3=9
6 x 2 plus 3=15
6 x 3 plus 3=21, etc.

This will be an easy process after the children have performed all the try-out exercises described before, with objects of all kinds, and if they are encouraged to "prove" their computations by constant recourse to actual values. At this stage there will be ample opportunity for such proving in connection with the *manual training* exercises a child will indulge in now, in measuring and computing lengths, widths, etc.

To lead over to the more complex problems in division it will be helpful to suggest to the child to write out even his simplest forms completely, without omission of the intervening steps. Thus:

3)12 = 4.	3)128 = 40 plus 2 plus	
12	120	$\frac{2}{3}$ = 42$\frac{2}{3}$
00	8	
	6	
	2	

The complete statement would refer to the fact that we first want to find, in the second example, one third of 12 tens, which is 4 tens, or 40; then one third of 8 units which is 2 with 2 left over which adds $\frac{2}{3}$ to the entire quotient so as to make it 4 tens, 2 units and $\frac{2}{3}$ of a unit, or 42$\frac{2}{3}$.

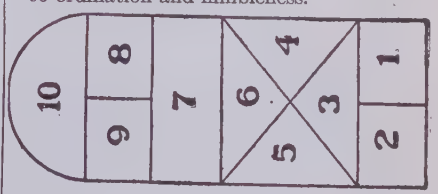
The same process can be followed out with the longer examples. Perhaps at first this will require time and patience, and may seem to some unnecessary. But it is these initial steps which must be fully mastered. Afterwards short cuts may be introduced, for the child will always understand the underlying principle.

Number Games and Songs.—There are numerous games and songs which will help in impressing the concepts of quantity, order, and number relation. The song of the "Five Little Chickadees" is well known to kindergarteners, and can be played as a game.

There is the old game of "Hop-Scotch" which all children like to play. The figure as here given in the diagram should be described on the ground, about twelve feet in length. From a line, or spot, a short distance from No. 1, a stone is tossed into No. 1. William Wells Newell, in his book, *Games and Songs of American Children* (Harper Bros.), describes the game as follows:

The boy or girl hops on one foot into No. 1 and kicks out the stone which is then thrown into No. 2. The player now hops into No. 1, and jumps into No. 2, in such a way that one foot is in the division 2, and one foot in 1. The stone is kicked into 1, and then out, and so on. In passing through divisions 1 and 2, 4 and 5, 8 and 9, a straddle must be made, one foot being placed in each; in the others a hop only must be taken. A failure to throw the stone into the right place, or to kick into the right division, or leaving it on any line, or touching the raised foot, or stepping on a line, puts out, and the next takes his or her turn. In other localities, no straddling step is taken, but the player, in certain divisions, is allowed to place the stone on his foot, and so expel it from the figure at a single kick; the compartments also vary in number and arrangement.

This game does not only impress the first ten numbers upon the child's mind but implies a splendid exercise in muscle-co-ordination and nimbleness.



"Odd and Even" is a guessing game. It is played by two players one of which may be the parent, with a small number of beans or other counters held in the hand of each. Then one asks the other, "Odd or Even?" If the guess be even, and the true number be odd, it is said, "Give me one to make it odd," and vice versa. The game is continued until all the counters belong to one or the other of the two players.

A similar game is "How Many Fingers?" A child hides his head in another's lap and guesses the number of fingers raised. Sometimes this rhyme accompanies the question:

Mingledy, mingledy, clap, clap, clap,
How many fingers do I hold up?
"Three."
Three you said and two it was, etc.

This game, known as "Morra", has been played from the time of the ancient Egyp-

tians; in the more complex forms the sum of the fingers raised and guessed right by each of the two players is counted up and scored.

Many other games can be invented by the children themselves and developed by the parent.

Ball games are naturally in this group. Matching one another in the number of catches; measuring and comparing the distances from which the ball is thrown and caught, and numerous other variations of the same counting and tallying game will arouse and hold the interest of children for a long time.

Dominoes afford much sport and training. You can use them in the ordinary games, matching the numbers, and counting up the losses; or you can vary the game by requiring the players to complete a certain number, as 10, or 12, by placing the needed numbers together: 4 and 6, 5 and 5, to make 10; or 6 and 6, 5 and 6 and 1, etc., to make 12, etc. The doublets, like 2 twos, 2 threes, etc., also introduce some opportunities for multiplication and division, and with the use of more than one domino block at the same time, the number games can be varied and extended.

Some manufacturers of toys and of school material have produced new varieties of domino games by offering cards with the domino arrangement of dots, using higher numbers, up to 10 and more, instead of merely those from 1 to 6, as in the domino game proper. With the use of them, all the four operations can be successfully played.

Other cards add to the number forms composed of dots, the corresponding figures, or number symbols, on the reverse side, for study and comparison. Still others introduce pictures of flowers and animals, for *quick perception and computation.*

To develop quick perception and computation, the cards are held up to the child's inspection for only a very short time, and he is expected to perceive quickly what number is represented, or what sum is required by adding up the two divisions of the card. Naturally, it is well to begin with a longer exposure, of, say, five or six seconds, gradually diminishing the time of exposure until only a moment is allowed, so that the child's perception is quickened. Caution is in order against the child falling into the habit of merely guessing.

This very valuable exercise in rapid and accurate number perception and computation can also be played with *dice*, first with one, then with two, where addition comes in, and even more. By removing one or or two dice after the first simultaneous exposure the exercise may introduce subtraction.

Another helpful adjunct to number training is afforded by our ordinary *playing cards.* Here, in addition to the number, or pip, cards proper, we have the court, or figure, cards, to which, as to the ace, different values may be given, as 11 to the knave, 12 to the queen, and 13 to the king, and, in some cases, 14 to the ace.

The first exercise for a young child is merely to assemble the shuffled cards in suits; then to arrange each suit in the order of counts. He may then play by putting the four aces together, adding them up as ones; in the same way, the twos, threes, and so forth. It is evident, that games of subtraction, multiplication and division are offered by the use of cards from the very start.

But then we have our regular games, such as introduce scoring and tallying, and will train the child's power of memory retention. One of the simplest games of this kind is Fan Tan; then we have Casino, Hearts, Sixty-Six, all of which can be played in various ways. Some of the more popular family games like Old Maid, have their value. They will afford endless amusement no less than training to the children.

One of the supplementary advantages of using cards and similar games with children as tests of their skill in mastering number relations and in thinking out possibilities, is that children will enjoy the sport without attaching the gambling idea. For it must be strictly avoided to have them play for prizes of any kind, and if it were even only a collection of pins or marbles. The fun to them must be in playing the game as such.

Even young children may be taught some of the simpler *Solitaire* games. "Canfield" is one of them. It can also be played by two players, and is then known by some as "Idiots' Delight". A helpful solitaire game for children is "Basset". It is played as follows:

Lay out four cards: ace, two, three, four. On these build as follows: On the ace will go the two, three, four, five, etc. On the two will go the four, six, eight, ten, etc. On the three will go the six, nine, etc. On the four, the eight, twelve. The court cards are used as numbers, 11, 12, and 13 (knave, queen, king). When the cards are played successfully, all will be distributed on the four piles, with the kings on top.

"Tit-Tat-To" is a solitaire game which introduces a new feature which will be used again in another set of number games. It is played with nine cards in sequence from ace to nine. They are to be placed in three rows of three cards each. Then, by changing their position they must be so disposed that the number of pips in each row, counting the cards horizontally, perpendicularly, and diagonally, will make the sum of fifteen each time.

As soon as the child masters the *figure symbols*, there is a variety of games and pastimes. We have the old game of *Lotto* which can be introduced quite early and will assist in the fixing of number symbols. Again, we have the *Fishpond, Parcheesi*, and a multitude of other games as offered by the toy stores.

Now, the Tit-Tat-To principle can be employed in the development of the *Magic Squares* and *Magic Triangles.* To work them out, the child should use counters, with the figures written or printed on; the number counters of a Lotto game will do very well. To illustrate:

A
B C
D E F

The figures from 1 to 6 should be so arranged that A plus B plus D = 9; A plus C plus F = 9; and likewise the third side, D plus E plus F = 9. This is one solution:

2
6 4
1 5 3

The same counters can be so arranged that the sum each time is 10, or 11, or 12. Again, a larger number of counters can be introduced, with larger sums. In the same way, "magic" squares are used; here is one example:

A B C
D E F
G H I

This is a so-called solid square, with a counter in the center; hollow squares omit this center counter. In the sample given, the numbers from 1 to 9 can be so arranged that they give 15 whichever way you add three numbers, vertically down any of the three columns, or horizontally, or diagonally. This is a solution:

4 9 2
3 5 7
8 1 6

These arrangements are a source of never-ending delight with children and develop in them facility of number combination which will stand them in good stead in many "practical" examples.

An example of a subtraction puzzle with counter is this:

Arrange nine counters as follows:

1 5 9
3 4 8
2 6 7

Now tell the child to move ONE counter from its present position to another pile, in order to make the sum of the counters in all the three piles the same. Of course, this is accomplished by moving the 9 from the third pile to the first.

The more of the *puzzle interest* of the child we can employ in teaching him number the more sustained will be his application, the more eager will he be to find the right solution. In fact, all problems or examples can arouse this puzzle interest when rightly presented. Every solution means a mastery over an obstacle, the conquest of a difficulty, the solution of a riddle.

Some of the special devices that may be used in this connection are the "Prestocard Multiplication Table" (Glen Ridge, N. J.), and the "Quiz Educational Toy" (Zestoy Mfg. Co., New York).

The following *drill charts* used by the author in many ways will assist greatly in fixing the decimal system of number relations in the mind of the child. Charts I and II are dealing with tens; the third chart, with hundreds, up to 10,000.

The arrangement of the charts is such that the relationship of numbers within the tens is readily grasped. The child should read each row separately at first, like this:
1 2 3 4 5 6 7 8 9 10;
then, the second row, the third, and so on. The next step would be to read the tens from the top line down to the bottom line:
10 20 30 40 50 60 70 80 90 100.

It will be well to call these first "tens", naming them "one ten", "two tens", etc., to "ten tens", so as to impress the decimal relationship; substituting the terms "twenty", "thirty", etc., only after this relationship is fully grasped.

The child will soon become interested in discovering further relations of tens, counting downward in the first compartment: 1, 11, 21, 31, etc. Also: 2, 12, 22, 32, etc., and so through the compartments. Further, he will discover that, going diagonally from the upper left corner to the lower right corner, he adds up by elevens (11 being the number given under 1): 1, 12, 23, 34, etc. Choosing the second number given below 1, viz. 21, he will find the corresponding sums by first taking the next number to the right of 21, viz. 22, and then following the same rule: going down two and one to the right, in the further operation: after 22, 43, then 64, 85; here we stop as this Chart I does not go beyond 100. But tacking on the corresponding columns of Chart II, we find 106, 127, 148, 169 and 190.

Parents and children will vie with each other in discovering more and more of

these games of addition. Chart III allows of the same illustration with hundreds, emphasizing the fundamental principles of the decimal system still further.

The Groszmann Drill Chart of Tens, I.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

The Groszmann Drill Chart of Tens, II.

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

The Groszmann Drill Chart of Hundreds

100	200	300	400	500	600	700	800	900	1000
1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
2100	2200	2300	2400	2500	2600	2700	2800	2900	3000
3100	3200	3300	3400	3500	3600	3700	3800	3900	4000
4100	4200	4300	4400	4500	4600	4700	4800	4900	5000
5100	5200	5300	5400	5500	5600	5700	5800	5900	6000
6100	6200	6300	6400	6500	6600	6700	6800	6900	7000
7100	7200	7300	7400	7500	7600	7700	7800	7900	8000
8100	8200	8300	8400	8500	8600	8700	8800	8900	9000
9100	9200	9300	9400	9500	9600	9700	9800	9900	10000

Subtraction in this case is merely the reverse process, "counting backwards".

After exercising with the charts in full view of the child, the charts should be withdrawn, so that the child may test his ability to retain a mental picture of them. Rather than allow erroneous impressions to creep in, it will be well to show the charts again and again, until their image is firmly fixed upon the child's mind. Remember: this is not a *test*, but an *exercise*. It is of the utmost importance that the child should form and retain clear and correct mental images of these number relations.

The arrangement of the charts also allows their use in multiplication and division drills. For instance: 2x2 = 4; 2x3 = 6, etc. Also, 2x11 = 22; 2x21 = 42, etc. It will be seen that there is a geometrical relation of the figures representing these values. Children will delight in drawing pencil lines to mark these steps. For such exercises it is suggested that the charts be manifolded (hectographed or mimeographed) for individual use.

The difference between *prime numbers* and *composite numbers* can be studied at home by way of a game, using the so-called "sieve" of the famous Greek mathematician Eratosthenes, who lived several hundred years before Christ. Divisors and multiples can be discovered by using the same device. This is the sieve:

~~1~~	11	~~21~~	31	41	~~51~~	61	71	~~81~~	~~91~~
2	~~12~~	~~22~~	~~32~~	~~42~~	~~52~~	~~62~~	~~72~~	~~82~~	~~92~~
3	13	23	~~33~~	43	53	~~63~~	73	83	~~93~~
~~4~~	~~14~~	~~24~~	~~34~~	~~44~~	~~54~~	~~64~~	~~74~~	~~84~~	~~94~~
5	~~15~~	~~25~~	~~35~~	~~45~~	~~55~~	~~65~~	~~75~~	~~85~~	~~95~~
~~6~~	~~16~~	~~26~~	~~36~~	~~46~~	~~56~~	~~66~~	~~76~~	~~86~~	~~96~~
7	17	~~27~~	37	47	~~57~~	67	~~77~~	~~87~~	97
~~8~~	~~18~~	~~28~~	~~38~~	~~48~~	~~58~~	~~68~~	~~78~~	~~88~~	~~98~~
~~9~~	19	29	~~39~~	~~49~~	59	~~69~~	79	89	~~99~~
~~10~~	~~20~~	~~30~~	~~40~~	~~50~~	~~60~~	~~70~~	~~80~~	~~90~~	~~100~~

"This sieve," says Dr. Winifred Sackville Stoner who had used it in the training of her own daughter, "seems to amuse all children who like to mark out the composite numbers with red ink, and it impresses on their mind all prime numbers so that they recognize a Mr. Prime whenever they see him." It will be noticed that this "sieve" is similar to the Ten-Table of the author which can be used in various ways.

Mrs. Stoner, in her book, *Natural Education* (Bobbs Merrill), also describes the manner in which she taught her daughter *cancellation* as a short route and interesting game. With her permission we quote:

"In a box we place all sorts of numbers not exceeding two figures. These are to be our soldiers. Then we choose a name for ourselves, Wellington being a favorite with Winifred and Napoleon with me. We draw a line of battle and we are ready to begin. Winifred draws a number from the box. Suppose it is ten and that she has chosen the upper position above the line for her men. Then she puts 10 (in writing) above the line. I draw and get only two men, but I place them below the line ready for battle and feeling hopeful that my next draw will make my army larger than Winifred's. She draws and gets only two men, whom she places ready for action while I make my second draw and win five. Again Winifred draws and gains four. Now her line of battle is ten times two times four. I draw another two and my men stand two times five times two. At a glance you see that she has beaten me in number but we fight the battle to see how many of her men I can kill. My first battalion of two advances against her ten and is wiped out of existence though reducing the ten to five. Then she uses this five to kill my five but they die in battle. My two march against her two and both fall, but she has still four men remaining and so Wellington has won another Waterloo. This is how the battlefield is arranged:

~~5~~
~~10~~x~~2~~x4 Wellington's men
=4

~~2~~x~~5~~x~~2~~ Napoleon's men
=1

This is really a very interesting game for all children to play.

The only difficulty may be that the children will argue that Napoleon had not one, but no man left. That "cancellation" reduces the cancelled numbers to the value of one is one of those mathematical axioms which it is almost impossible to explain to children. Of course, 4 divided by 1 is still 4, and the children will have to be satisfied with this, just as we older ones will have to take Einstein's theory of relativity on faith. If the position of the forces had been reversed, so that $\frac{1}{4}$ had been the result, the explanation would perhaps be easier.

Fractions. When once the idea of fractions is understood, their manipulation is relatively easy. In common fractions, the only puzzling thing seems to be their multiplication and division. But it can be made plain in something like this manner:

Suppose the problem is to find $\frac{1}{2}$ of $\frac{3}{4}$. Let the child understand $\frac{3}{4}$ means 3 *fourths*, that is to say three definite things. "*Fourths*" is really a denomination. As we would say, $\frac{1}{2}$ of 3 apples is one and one-half apples, as $\frac{1}{2}$ of three is one and one-half, so we have here $\frac{1}{2}$ of 3 fourths = one and one-half fourths. Now we know that one-half of one-fourth is one-eighth; so we have as an answer, one-fourth and one-eighth. To express this in one quantity we remember that one-fourth = two-eighths; thus, by adding, we have $\frac{2}{8}$ plus $\frac{1}{8}$, or $\frac{3}{8}$. Consequently $\frac{1}{2}$ of $\frac{3}{4}$ is $\frac{3}{8}$. Let the child fully understand each step. He will then joyfully appreciate the discovery that there is a short cut to the finding of the answer, namely, that we merely multiply. Thus:

$$\frac{1}{2} \text{ of } \frac{3}{4} = \frac{1 \times 3}{2 \times 4} = \frac{3}{8}$$

This is *multiplication of fractions*; the problem can also be written in this manner: $\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$, or better: $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$, just as we would write $\frac{1}{2}$ of $\frac{1}{2}$ apple = $\frac{1}{4}$ apple, or $\frac{1}{2}$ apple x $\frac{1}{2}$ = $\frac{1}{4}$ apple.

In *division of fractions*, we may argue in this form:

$\frac{6}{6} \div \frac{1}{6}$ means: how many times is $\frac{1}{6}$ contained in $\frac{6}{6}$; obviously 6 times.

This is the same as, with inverted divisor:

$$\frac{6 \times 6}{6 \times 1} = \frac{36}{6} = 6.$$

How many times is $\frac{2}{3}$ contained in $\frac{3}{4}$?

The same as: $\frac{3}{4} \div \frac{2}{3}$. $\frac{3}{4} = \frac{9}{12}$; $\frac{2}{3} = \frac{8}{12}$. $\frac{8}{12}$ is contained in $\frac{9}{12}$ one and one-eighth times, or $1\frac{1}{8}$.

Short cut process:

$$\frac{3 \times 3}{4 \times 2} = \frac{9}{8} = 1\frac{1}{8},$$

by inverting the numerator and denominator of the divisor and multiplying.

Decimal Fractions. These can be most easily introduced through a previous manipulation of U. S. money. The division of the dollar into 100 cents forms the basis. There is not a child that will not at an early age become interested in money. The toy stores sell toy money in boxes, representing on card disks of corresponding sizes and with the denominations printed thereon, the various divisions of the dollar. For later exercises in buying and selling, in connection with store-keeping, such as has been elaborated by the "Model Store" movement (Educational Foundations, Brooklyn), it can be used to advantage. But young children are not interested in it; they want the real coins, and want to buy real things. They soon learn to manipulate pennies, nickels and dimes. Then they will understand the quarter, and that four quarters make one dollar. Out of practical experience in making change they will learn to master the rudiments of the decimal fraction idea, and will be more ready to transfer their knowl-

edge to decimal fractions in the abstract, or in application to other values. The same is true of *percentage*. Just as 25 cents are $^{25}/_{100}$ of a dollar, or a fourth (a quarter) of a dollar, the sum represents 25 per cent of the same amount. 10 cents is ten per cent, or 10%. And so on. The child will easily learn to add, subtract, multiply and divide decimal fractions. Indeed, he will find it much easier to manipulate them than the so-called common fractions, and will hope for the time when all our measures of length, distance, liquids and dry stuffs will be of the centigrade order.

The teaching of *time* is a slower process than one would imagine. But when the child has learned the divisions of circular objects, there will be an early opportunity to teach him at least the hours, and their main divisions. The recognition of minutes comes much later.

Area and *bulk* are best introduced through the kindergarten blocks and tablets. By arranging squares, especially if they have a definite size corresponding to the measuring standards in use (inches, feet), the first problems in area can be understood by the child. He will learn without difficulty that a one-inch square covers one square inch of surface; but if there is an area twice the length and twice the width, he needs four squares, in other words, that with a two-inch width and a two-inch length, he needs four one-inch squares to cover four square inches. And so on. He will also learn to appreciate *scale*, substituting feet of a real room for the inches of his drawing on the paper, and learning gradually the significance of map-drawing to a scale.

ARITHMETIC.—First Steps in Number Training.—Arithmetic in the first three grades is called "number work". It expresses in the simplest way the numbering sense or the counting instinct by which the child first gets hold of quantitive values in his environment. First year number work to the child is largely incidental, though the teacher must have definite aims and purposes. The simplest way to get number ideas is to count small groups of similar objects and find "how many" in a group. The mere rhythm of counting is pleasing to children, counting by 1's to 100; by 10's and 5's to 100; by 2's to 12 or 20; by 3's to 12 or 15; count backward by 1's and 10's. Children will have practical use for this knowledge in connection with games, songs, stories, manual work, and in the daily business of the schoolroom and the home. Through rhymes and jingles as in this *Ten Little Indians* song they have the concrete lesson, the physical exercise and the merry game all in a delightful combination.

One little, two little, three little Indians.
Four little, five little, six little Indians.
Seven little, eight little, nine little Indians.
Ten little Indian boys.

Ten little, nine little, eight little Indians.
Seven little, six little, five little Indians.
Four little, three little, two little Indians.
One little Indian boy.

Games in great varieties may be arranged that will bring into exercise this number sense and the delight of dramatization.

Reading and writing numbers may be taught the first year to one hundred and the second year to one thousand. Make practical use of numbers taught, as finding pages of books, numbers of houses, etc. The teacher must always study her class and suit her pace to theirs.

Teach various forms expressing number relations, as: Three and three are six. Six divided into twos are three twos. Three twos are six. Six less three are Three. Two threes are six. One-third of six is two. Six divided into threes are two threes. Two-thirds of six are four.

With the operation teach also the appropriate sign as +, —, =, ×, ÷.

Appropriate combinations for drill should be presented after the child has formed a concrete image of the number relation. He should see one-half and be able to think one-half before he is asked to repeat the statement that one-half of six is three.

Developing the Idea of Fractions.—Children easily grasp the idea of fractional parts, but the teacher should keep in mind the completeness of the fractional idea, as Professor David Eugene Smith in his monograph on the teaching of arithmetic has pointed out in the following illustration: "We should remember that a fraction, say ½, is commonly used in three distinct ways, and that it is our duty to see that little by little all these become familiar to the child. These ways are as follows: 1. ½ of a single object, the most natural idea of all, the breaking of an object into 2 equal parts. 2. ½ as large, as where a six-inch stick is ½ as long as a foot rule, not half of it, but half as long as it is. This is essentially the ratio notion, and it is necessary to the child's stock of knowledge, but it is not necessary to make it hard by talking about ratios at this time. 3. ½ of a group of objects, as in case of ½ of 10 children."

New Facts and Processes.—Whenever new facts and processes have to be learned they should be learned in comparison with known facts. The child should handle and measure and be the aid of drawing get graphic representation of mathematical relationships. Use different magnitudes. Do not neglect to follow up with abstract drill work. Drill, fix, learn. Abstract drill work may be made as interesting as concrete, for all the joy of the game element in education may be made to enter into it.

Seat Occupation for Number Work in Primary Grades.—Devices for making number work practical have been worked out in great abundance. Every resourceful teacher has devices of her own. A few have been gathered here as suggestions.

Make pasteboard rulers 4 inches long, a foot long. Mark off into inches. Later mark off into fractions of an inch. Use these rules in measuring many things. Compare lines, surfaces and solids, with similar lines, surfaces and solids, as: This line is three times as long as that line. This line is one-fourth as long as that line. This rectangle is one half that rectangle. Find lines and surfaces in the room, and compare. Teach the child to see many things through the one. Unless that which he sees aids him in interpreting something else his observation is of no use to him. Cut, fold, paste paper furniture according to directions. Paint flags or cut badges of paper for holidays.

Rule lines, squares, oblongs to dictation and scale, sheets for weather record, record sheets, score cards for games. In all construction children should make the necessary computation to get total lengths and beaths and effect of any allowances, *e. g.*, laps in making boxes, for cover of a box compared with the box itself.

Have children measure each other, measure the growth of twigs, make comparisons in weights and measures. Arithmetic of a very practical kind is found in nature study, manual training, and in sewing and cooking. Boys and girls in industrial courses must measure and weigh with accuracy and skill.

Construction work when properly taught affords the finest mental discipline. Let children work out their own knowledge and make them personally responsible for their own results. Encourage them to tell what they know in free conversation. Such free work is far more valuable than formal recitation.

Test-Book.—A text-book is usually placed in the hands of pupils as early as the second half of the third year. From this time on the teacher follows the outlined course of study. Each year she must see to it the class thoroughly reviews the essential features of the preceding year's work and that such forward steps as are marked out for her grade be intelligently taken. Each year the work involves more difficult combinations and more complicated processes. The exact groundwork to be covered grade by grade differs in different schools according to the course of study outlined by different boards of education, but everywhere the essentials of class work are the same.

Class Work.—Cultivate the habit of first grasping the conditions of a problem, what is given, what is required, the relations between the two, the solution. Dictate original problems. Call for restatements of facts and conditions. Let pupil state process without solving. Dictate work slowly and distinctly without repeating. Demand close and lively attention. Call for original problems to illustrate principles. Secure familiarity with arithmetical facts and accuracy and ease of language. Typical problems, from Professor Smith's *Monograph*, to which this article is already under great obligations, have been borrowed here to show the nature of original work that may be done in different grades.

Two Groups of Problems Give to a Third-Year Class.—

Oral Exercise (without pencil and paper).

1. The coffee for our breakfast cost 6c, the potatoes 4c, the meat 32c, and the bread 4c. How much did the bread and meat cost? How much did the food cost?

2. The oatmeal for a breakfast cost 8c, the milk 4c, the fruit 10c, the rolls and butter 5c, and the eggs 8c. How much did this food cost?

3. For a dinner the meat cost 30c, the vegetables 20c, the dessert 20c, the coffee 15c, and the other food 15c. Find the total cost.

4. The meals for a small family cost $1.70 on one day and $2.20 on another day. How much did they cost for these two days?

Written Exercise.—The toad is one of man's best friends. One toad will keep a garden of 800 sq. ft. free from harmful insects.

1. At this rate, how many toads would protect from insects a garden 80 ft. wide and 100 ft. long?

2. The eggs of four toads were counted and found to be 7,547, 11,540, 7,927, and 9,536: How many were there in all?

3. If one out of 50 hatched, how many hatched? (Divide all by 50.) If 715 of these were destroyed by other animals, how many survived?

4. If each of these survivors destroys insects that would cause $10 worth of damage, how much are they all worth to a village?

Typical Problems for the Fourth or Fifth Grades.—1. Sarah's mother bought 4⅘ yds. of cloth for a coat, at $1.25 a yd. What did she pay for it?

2. She also bought 3½ yds. of lining at 50c a yd. and 4¼ yds. of braid at 20c a yd. How much did these cost?

3. She also bought 6 pearl buttons at $1.50 a dozen, and 2 spools of silk at 8c a spool. How much did these cost?

4. A dressmaker charged $5 for making the coat. What did the materials and making cost?

Typical Problems for the Sixth or Seventh Grades.—1. The following is, by weight, a good mixture of seed for a pasture: Kentucky blue grass 25%, white clover 12½%, perennial rye 28⅛%, red fescue ⅜%, redtop 25%. At 32 lbs. to the acre, how many pounds of each are used?

2. A farmer puts 5 acres into celery, setting out 20,000 to the acre. The yield being 1,500 doz. heads to the acre, what is the ratio of the plants matured to the others?

3. He pays $95 an acre for seed, fertilizer, labor, and other expenses, and sells the crop at 15c a dozen heads. What is his profit on the 5 acres?

An outline of the course in arithmetic in the eighth school year in Munich will show how the German schools are working out some practical ideas for girls who are soon to be the home makers. It is more complete than anything we have yet worked out in America.

The work for the year is as follows: 1. Simple domestic bookkeeping. 2. Calculation of the prices of foods, bought in large or in small quantities, together with the question of discounts. 3. Cost of meals for the home. 4. Daily, monthly, and yearly supplies for the kitchen.

Too much importance cannot be placed upon the nature of the original problems. They enliven class interest and give ample opportunity for correlation with other school subjects and with the livelier interests of the social environment. They should strain the powers of the child to think and compute, but they should not be too hard for him to master them independently. In every way problems should help the teacher to make school work practical.

Summary of Suggestions for the Teacher of Arithmetic.—1. There are a few things primarily essential in arithmetic that should be learned by every child. He should think in numbers as readily as he thinks in other subjects. He should be ready to execute his thought with quickness and precision.

2. Drill and repetition for accuracy and speed should be given day after day that the child may early master the mechanical difficulties of the subject, but drill should not become a lifeless mechanical repetition; it should be so varied as to produce thought and animation.

3. Such processes as addition, subtraction, multiplication, and division should be mastered early. Often much time is wasted in the upper grades learning facts and processes that should have been mastered in the lower grades when the child is passing through the stage in which this work can be done most easily.

4. The introduction of too many topics at a time should be avoided. The pupil should be required to meet but one difficulty at a time.

5. Begin with the concrete, then drill on number facts and processes. In the primary grades teach number facts for the most part in connection with the study of other subjects. Use material drawn from the number side of school experience and the simpler and more evident relation of home life. The continued use of any particular set of objects is tiresome and narrowing.

6. It is important to use objects freely whenever they assist in understanding number relations, but care should be taken not to fetter the mind with objects when it is ready for the abstract. Pass from observation to reasoning, from concrete to abstract, from facts to principles, from particular to general, and, very slowly, from the simple to the complex. The child passes through the stage of objects to that of representation of objects, to that of symbols. Noticeable progress begins when he can think of things not present to his senses.

7. In the intermediate grades emphasis should be laid upon the scientific aspects of the work, that is, rules and principles, in order to secure mastery of fundamental operations of numbers.

8. In the grammar grades considerable attention should be paid to the use of numbers in connection with the commercial and industrial activities of the community. Practical problems for all grades should be taken from industrial life.

9. In the working out of problems the child should be taught from the beginning to determine for himself the approximateness of results, appeal being made to the common sense check "Is this result reasonable?" "Does it agree with the conditions?"

10. Problems of graded difficulty should be given in all classes in order that even the weakest pupil may find enough that he can do to keep him trying. The exercise should bring in all the primary combinations of numbers and all the fundamental processes. The tendency to overuse a few combinations at the expense of others must be guarded against.

11. The teacher must exercise judgment as to the amount of written work. Oral expression should always precede written. In primary grades number work is largely given orally—good, clear, well worded expression. A little work well done is much better than a large amount of work over-hurried.

12. Insist upon neatness and a proper statement of steps taken.

13. Accuracy, facility, orderly arrangement, self-reliance, are cardinal virtues in number work.

14. In the assignment of work, assign some purely for drill and some purely to train the reasoning powers. If reasoning is difficult, mechanical processes should be simple.

15. Aim to obtain efficiency through the discipline of numbers. "The prime desideratum," it has been said, "is the ability to work accurately, with reasonable rapidity and with interest, and to know how to apply numbers to the ordinary affairs of life." There is moral value in the integrity of numbers that "cannot lie."

PRACTICAL HELPS IN ARITHMETIC

ADDITION AND SUBTRACTION

The following plan is suggested in teaching the combinations in addition and subtraction:—

1. Add **1** to every number up to **10**; later to **20**.
2. Subtract **1** from every number up to **10**; later to **20**.
3. Add

2	3	4	5	6	7	8	9	10
+2	+3	+4	+5	+6	+7	+8	+9	+10

Here the addends are equal and easily added. The figures should be placed as above and not 2+2, 3+3, etc., because the vertical form is the natural one which the child will use all through life. It does not look so formal and represents better what he really does with the objects.

4. Add

1	2	3	4	5	6	7	8	9
+2	+3	+4	+5	+6	+7	+8	+9	+10

Here one addend exceeds the other by **1**.

5. Subtract

2	3	4	5	6	7	8	9	10
−1	−2	−3	−4	−5	−6	−7	−8	−9

Here the minuend is **1** greater in each case.

6. Teach the parts of **10**.

5	2	3	4	9
+5	+8	+7	+6	+1

7. In adding **9** to numbers have the child think of **9** as **10**

thus $\begin{matrix}9\\+6\end{matrix} = \begin{matrix}10\\+5\end{matrix}$ and $\begin{matrix}9\\+8\end{matrix} = \begin{matrix}10\\+7\end{matrix}$

8. Teach the corresponding subtractions.
9. Add **8** to each number up to **10**.
10. Teach the corresponding subtractions.
11. Add **7, 6,** and **5** to each number up to **10**.
12. Teach the corresponding subtractions.
13. Review and give combinations not taught above.

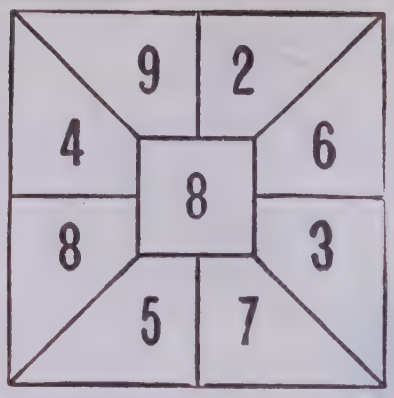
Note.—Objects should be grouped by tens and units, in showing numbers above **10**. The numbers written should represent objects counted.

The Forty-Five Facts of Addition

1	2	2	3	3	4	3	4	5
1	1	2	1	2	1	3	2	1
2	3	4	4	5	5	6	6	6
4	5	6	4	5	6	7	5	6
3	2	1	4	3	2	1	4	3
7	7	7	8	8	8	8	9	9
7	8	5	6	7	8	9	6	7
2	1	5	4	3	2	1	5	4
9	9	10	10	10	10	10	11	11
8	9	6	7	8	9	7	8	9
3	2	6	5	4	3	6	5	4
11	11	12	12	12	12	13	13	13
7	8	9	8	9	8	9	9	9
7	6	5	7	6	8	7	8	9
14	14	14	15	15	16	16	17	18

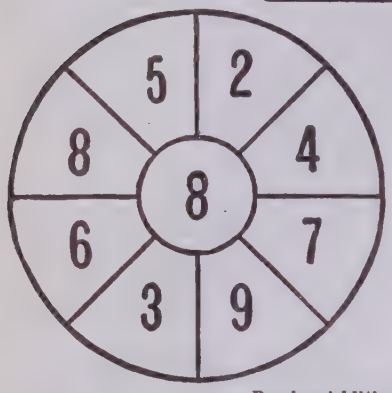
Note.—Be sure that the nine facts underscored are thoroughly learned. They give most trouble.

Drills in Addition



Draw on a sheet of paper a large square and a circle. Divide them like these. Put, say the figure 8, in the center with the other numbers around it.

Write any figure in the center where the 8 is. Then drill, by pointing to the figures around it, while the child names at once the sum of the center figure and the one pointed at.



Use exercises like this frequently and give many problems, using the combinations with which you find the child has difficulty.

Exercises in which the child counts by 2's, by 3's, etc., to 100 are valuable.

Proving Addition

You may early teach how to prove an addition. There are a number of ways of doing this. Use the way the child's teacher uses. It is a good way.

One Way

Add the columns down. If the result is the same as when the columns were added up, the result is correct.

Second Way

Write the numbers in two groups. Find the sum of each group. Add the sums of the two groups. If the result is the same as when the numbers were added in one group, the result is correct.

Illustration of second way:—

273 }	—— 273	
456 }	456	
	729	729
629 }	—— 629	
384 }	384	
1742	1013	1013
		1742

The Accountant's Proof

This is a modification of the plan called *casting out the nines.*

Illustration

7926—24—6	}
4356—18—9	
1824—15—6 +	}31—4
9263—20—2	
7856—26—8	}
31225—13—4	

Explanation

First add the columns in the regular way. Add each column horizontally, left to right. The results are 24, 18, 15, etc. Add these horizontally and you have 6, 9, 6, etc.

You have now reduced all to one column. Take the sum of this column. It is 31. This added horizontally is 4.

Add the sum 31225 horizontally until you have but one figure in it and you also have 4. This proves your answer correct.

Another Illustration

This illustrates where it is necessary to carry the horizontal additions a step further:—

986745—39—12—3	}
726324—24— 6—6 +	}16—7
916348—31— 4—4	
992973—39—12—3	}
3622390—25— 7—7	

Note.—With some practice it will be necessary to write the last line of figures only.

Rapid Adding Exercises

When pupils have learned to add they quickly acquire skill by an occasional rapid adding exercise. A few minutes serves the purpose.

It may be made competitive by each pupil writing the numbers and at a given signal beginning the addition.

Slow and correct work is preferable to rapid work that is incorrect. Incorrect work is of no value here.

Civil Service Method of Adding

Employees under the civil service bureau, bank clerks and others who perform additions while surrounded by people engaged in conversation use the following method in their additions.

This method is safe because one can detect and change an error very quickly.

$5280	16
9760.50	21
349	19
4006.75	23
6522.89	18
132.12	24
	$26,051.26

The Banker's Method of Adding

This method is the same as that used by the civil service employees, with one change. In adding the columns the number carried is "added in" to each partial sum.

$5280	16
9760.50	22
349	21
4006.75	25
6522.89	20
132.12	26
	$26,051.26

The banker's method is an improvement on the civil service method as it does not require a second addition. The number to be carried is always in sight in the banker's method, being the tens figure of the last partial sum written. The sum can be written at once.

SUBTRACTION

The differences of all these combinations should be learned so thoroughly that the pupil will be able to name difference of any combination *on sight.* This will take time, but it is time well spent.

Use devices similar to those used in the drills on the addition table.

Give many problems for oral work. Let the pupil make many problems and give the difference in each case.

Combinations in Subtraction

1	2	3	4	5	6	7	8	9	10
—1	—1	—1	—1	—1	—1	—1	—1	—1	— 1
—	—	—	—	—	—	—	—	—	—
2	3	4	5	6	7	8	9	10	11
—2	—2	—2	—2	—2	—2	—2	—2	— 2	— 2
—	—	—	—	—	—	—	—	—	—
3	4	5	6	7	8	9	10	11	12
—3	—3	—3	—3	—3	—3	—3	— 3	— 3	— 3
—	—	—	—	—	—	—	—	—	—
4	5	6	7	8	9	10	11	12	13
—4	—4	—4	—4	—4	—4	— 4	— 4	— 4	— 4
—	—	—	—	—	—	—	—	—	—
5	6	7	8	9	10	11	12	13	14
—5	—5	—5	—5	—5	— 5	— 5	— 5	— 5	— 5
—	—	—	—	—	—	—	—	—	—
6	7	8	9	10	11	12	13	14	15
—6	—6	—6	—6	— 6	— 6	— 6	— 6	— 6	— 6
—	—	—	—	—	—	—	—	—	—
7	8	9	10	11	12	13	14	15	16
—7	—7	—7	— 7	— 7	— 7	— 7	— 7	— 7	— 7
—	—	—	—	—	—	—	—	—	—
8	9	10	11	12	13	14	15	16	17
—8	—8	— 8	— 8	— 8	— 8	— 8	— 8	— 8	— 8
—	—	—	—	—	—	—	—	—	—
9	10	11	12	13	14	15	16	17	18
—9	— 9	— 9	— 9	— 9	— 9	— 9	— 9	— 9	— 9
—	—	—	—	—	—	—	—	—	—
10	11	12	13	14	15	16	17	18	19	20
—10	—10	—10	—10	—10	—10	—10	—10	—10	—10	—10
—	—	—	—	—	—	—	—	—	—	—

The Computer's Method

In making change, the method below is nearly always used. Computers find it the more practical way. It gives greater rapidity and accuracy than the other method.

Many of the best teachers use it alone in teaching subtraction.

This plan is called the Austrian method by some.

Example

Find the difference between 725 and 432.

Work:

725	*Explanation*
——	Let the pupil imagine he is adding with the sum written above.
432	He inserts the missing figures to form the sum as he works, 3, 9, 2.
293	He thinks of 2 and 3 as 5; 3 and 9 as 12; 5 and 2 as 7. He may
——	talk it this way: 3 and 2, 5; 9 and 3, 12; 3 and 4, 7.

Use that method with these examples:—

42,936	2034	7825	6243
—17,245	—1456	—1504	—1428
25,691	578	6321	4815

Note.—With practice the pupil will come to prefer this method and should be helped in its use. It is practical since conducive to both *rapidity* and *accuracy.*

Proofs of Subtraction

To prove a subtraction *add* the *subtrahend* to the *remainder*. The result will be the *minuend* if the work is correct.

Example	*Proof*
425 *minuend*	173
—173 *subtrahend*	252
252 *remainder*	425

425 is the same as the minuend, hence the work is correct.

Another Proof

Take the remainder from the *minuend*. If the work is correct the subtrahend will be left.

If in the last example given we write

425
—252

we get **173**, which is the subtrahend used above, hence the work is correct.

Note.—Either proof may be used. Show the child why these two proofs are true. Use small numbers to do this like 7—2. Later use larger ones.

NUMBER STORIES IN MULTIPLICATION

Example

$3 \times 4 =$—

Facts Given by Child

3 ×**4** means **3 4's.**
I count my blocks by fours—I take **1** four, another, another.
I find that **3 4's** are **12.**
3 ×**4** =**12.**

To the Teacher

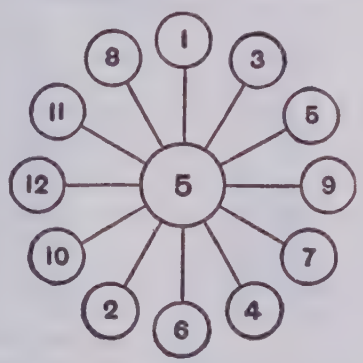
Now the child is ready to give a number story about **3** ×**4.**

Note.—If the pupil is in doubt about any part of the work in number stories, he should use objects, and then practice much without them.

Drills in Multiplication

The drill opposite is very good and effective, if a rapid answering exercise is made of it. Products should be given at once.

To vary it use squares.



Draw a diagram like this one and let the pupil fill in the squares with the proper products. Fix a time limit. Have results put in quickly.

1	2	3	4	5	6	7	8	9
2								
3								
4						28		
5								
6								
7					42			
8								
9								
10								

4 X 1 = 4
4 X 2 = 8
4 X 3 = 12

Make diagrams like these, and let the pupils fill them in.

In this work it is not intended that the pupil should at first learn "his tables" in order, the 2's first, then the 3's, then the 4's, etc. He remembers many of the facts of multiplication from his primary work in numbers. These drills are to complete and fix firmly in the pupil's mind the completed multiplication tables.

7 X 1 = 7
7 X 2 = 14
7 X 3 = 21

Proofs in Multiplication

The Multiplication	*The Proof*
42	25
×25	×42
210	50
84	100
1050	1050
123	475
×475	×123
615	1425
861	950
492	475
58,425	58,425

The proof consists merely in reversing the positions of the multiplicand and multiplier, and performing the multiplication in the usual way. If the product is the same in both cases the work is correct.

PRIMARY IDEAS OF DIVISION

In teaching the two ideas of division—division by measurement (division proper) and the fractional idea of division (partition)—proceed very slowly and see that each step is thoroughly understood.

The following suggestions may be useful:—

Division by Measurement

Use colored blocks or any other counters in illustrating the process.

Example

4)12

The teacher should ask the child, "How would you count this story?"

Facts Given by Child

12 =whole number of blocks.
4 =number in each part.
We want to know the number of parts.
We place the blocks so, **4** in each part:—



There are **3** parts.

Division by Partition

Make use of colored blocks or substitutes to show the process here.

Example

¼ of **12** =**3**

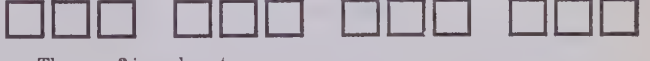
The teacher should ask the child, "How would you count this story?"

Facts Given by Child

12 =whole number of blocks.
4 =number of parts.
We want to know the number in each part.
We place the blocks so, as we know there are **4** parts:—



We have put one in each part.
Now we will put one in each part until the **12** blocks are gone:—



There are **3** in each part.

The Three Uses of Division

First Use Explained (Partition)

What is ¼ of 24 cents?

Here 24 cents is the sum of money to be divided. It is to be divided by 4. The result shows the size of each part.

Number of equal parts **4**) **24**c money to be divided.

6c size of each part.

Second Use Explained (Division by Measurement)

How many times is 8 cents contained in 32 cents?

Here 32 cents is the sum of money to be divided. The size of each part is 8 cents, and the result gives the number of equal parts.

Size of each part 8c) 32c money to be divided.

4 number of equal parts.

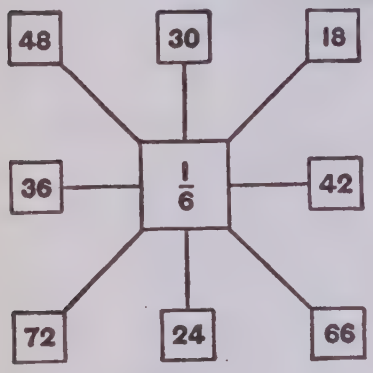
Third Use Explained (Ratio Idea)

There are 36 acres in one lot and 9 acres in another. The first lot is how many times as large as the second?

From division we know that 36 acres contains 9 acres 4 times. Then 36 acres is 4 times as large as 9 acres; or, 36 acres is to 9 acres as 4 acres is to 1 acre.

Note.—This on the ratio idea leaves the impression that the other work does not embrace the ratio principle. Any comparison of numbers embraces the ratio idea.

Division Drills



It is well to use drills of different kinds to help fix the facts of the division table in mind. At no time, at this stage, are you sure that the pupil remembers from one day to the next.

Diagram drills are given here as suggestive of what may be made use of. Use other numbers in order to get drill on the whole division table.

Be sure to make the drill work brisk and of short duration.

The Drill

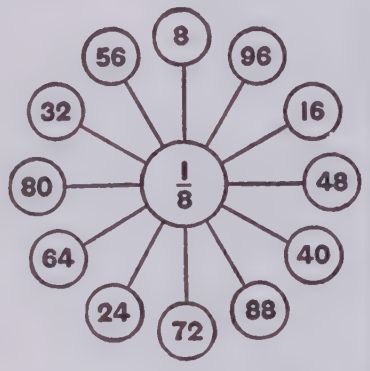
The teacher points to any of the numbers in the small squares and the child answers simply the quotient number. Skip about rapidly. Draw the same diagram on the blackboard and frequently change the fraction in the center square.

The Drill

Allow no "thinking out" of results. The child should have the table at his tongue's end.

Change center fraction repeatedly.

The supreme test of his mental activity is to think quickly and tell correctly.



Proofs in Division

The best way to prove work in division is to multiply the quotient by the divisor and add the remainder, if there is one.

The result will equal the dividend if the work is correct.

Example

Divide 600,181 by 937.

Work

640 501/937

937)600181
5622
3798
3748
501

Proof

640
937
4480
1920
5760
599680
501
600181

READING NUMBERS

When we spell a word, that is, when we read the letters in the word, we read from *left to right.*

To read a number we do the same thing for we read the figures from left to right.

325 is read "three hundred twenty-five."

The number is read differently if we wish to tell the *place* and *value* of a certain figure, for then we read the figures themselves from *right to left.* thus—

325 means 5 units, 2 tens, 3 hundreds.

Never use "AND" in reading whole numbers.

325 should never be read "three hundred and twenty-five," but "three hundred twenty-five."

Numbers between 100 and 1000 are read by naming the hundreds, tens, and units in succession. Thus—

192—one hundred ninety-two.
652—six hundred fifty-two.
207—two hundred seven.

Above 1000

Read 1,892,632.

Here the 2 represents 1's, or units of the *first order.*
the 3 represents 10's, or units of the *second order.*
the 6 represents 100's, or units of the *third order.*
the 2 represents 1000's, or units of the *fourth order.*
the 8 represents 100000's, or units of the *sixth order,* etc., etc.

The order of any figure is the number of its place, starting from the right.

In reading large numbers we arrange the orders into groups of three figures each.

We call each group a *period.* Commas are used to keep the periods separate.

Names of the Periods

units,	billions,	quintillions,	octillions,
thousands,	trillions,	sextillions,	nonillions,
millions,	quadrillions,	septillions,	decillions.

trillions	billions	millions	thousands	units
225,	902,	302,	472,	399.

FACTS ABOUT ROMAN NUMERALS

The following facts about the origin and development of Roman notation can be made very interesting, and will tend to fix the characters in one's mind—

At first one	was written	I,
two	was written	II,
three	was written	III,
four	was written	IIII,
five	was written	IIIII,
six	was written	IIIIII,
seven	was written	IIIIIII,
eight	was written	IIIIIIII,
nine	was written	IIIIIIIII.

It took too long to make ten marks, and too long to count them after they were made, so one mark with another across it was used to denote 10, thus **X.** The upper or first half of the **X,** or **V,** was used to show 5.

At first twenty	was written	XX,
thirty	was written	XXX,
forty	was written	XXXX,
ninety	was written	XXXXXXXXX.

It took too long to make the crosses and too long to count them in reading, so **D** was used to show 100. Half of the **D** or **L** was used to show 50. The **D** gradually became **C** in trying to make the **D** rapidly.

Write these where the child can see them plainly

I = 1	XX = 20	XXXIX = 39
II = 2	XXI = 21	XL = 40
III = 3	XXII = 22	XLI = 41
IV = 4	XXIII = 23	XLII = 42
V = 5	XXIV = 24	XLIII = 43
VI = 6	XXV = 25	XLIV = 44
VII = 7	XXVI = 26	XLV = 45
VIII = 8	XXVII = 27	XLVI = 46
IX = 9	XXVIII = 28	XLVII = 47
X = 10	XXIX = 29	XLVIII = 48
XI = 11	XXX = 30	XLIX = 49
XII = 12	XXXI = 31	L = 50
XIII = 13	XXXII = 32	LX = 60
XIV = 14	XXXIII = 33	LXX = 70
XV = 15	XXXIV = 34	LXXX = 80
XVI = 16	XXXV = 35	XC = 90
XVII = 17	XXXVI = 36	C = 100
XVIII = 18	XXXVII = 37	D = 500
XIX = 19	XXXVIII = 38	M = 1000

PRIME NUMBERS

Some numbers, like 3, 5, 11, etc., can only be divided by themselves and unity. As they cannot otherwise be factored, we call them *prime numbers.*

Prime Numbers from 1 to 1000

(Use This Table for Reference)

1	59	139	233	337	439	557	653	769	883
2	61	149	239	347	443	563	659	773	887
3	67	151	241	349	449	569	661	787	907
5	71	157	251	353	457	571	673	797	911
7	73	163	257	359	461	577	677	809	919
11	79	167	263	367	463	587	683	811	929
13	83	173	269	373	467	593	691	821	937
17	89	179	271	379	479	599	701	823	941
19	97	181	277	383	487	601	709	827	947
23	101	191	281	389	491	607	719	829	953
29	103	193	283	397	499	613	727	839	967
31	107	197	293	401	503	617	733	853	971
37	109	199	307	409	509	619	739	857	977
41	113	211	311	419	521	631	743	859	983
43	127	223	313	421	523	641	751	863	991
47	131	227	317	431	541	643	757	877	997
53	137	229	331	433	547	647	761	881	

SIMPLE MEASURES—For the Child to Learn Objectively

2 pints make 1 quart.
8 quarts make 1 peck.
4 pecks make 1 bushel.
7 days make 1 week.*
16 ounces make 1 pound.
12 inches make 1 foot.
3 feet make 1 yard.
12 things make 1 dozen.
5 cents make 1 nickel.
10 cents make 1 dime.

LONG MEASURE

Teach the child to estimate distances and then to verify every estimate by actual measurement.

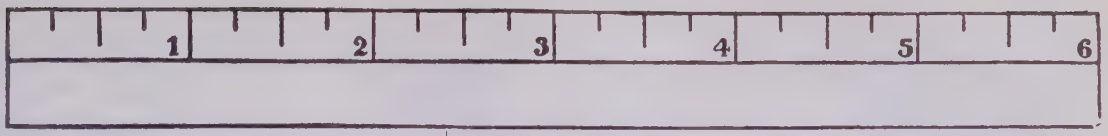
Teach half inches as well as inches.

For the Child to Do

1. Cut a strip of paper 12 inches long and 1 inch wide.
2. Mark the inches on it.
3. How many inches long is it?
4. What do you call a measure 12 inches long?
5. Draw a line 2 inches long, as near as you can, without using a ruler.
6. Measure it with a ruler. Did you guess nearly right? Try again.
7. Measure this page. How long is it? How wide?
8. Draw a line on the ground 1 yard long.
9. ½ of a foot is how many inches?
10. 1 yard is how many inches? What is measured by the yard?

*Objectively so far as pointing it out on a calendar.

11. Ask your mother how many yards of cloth she needs for a dress.
12. What is measured by the foot?
13. How tall are you?



PRIMARY IDEAS OF TIME



Turn to the paragraph on Roman numerals and note the facts about them.
60 minutes make 1 hour.
12 hours make 1 half day.
24 hours make 1 day.

A new day begins at midnight and lasts until next midnight.

One hour after midnight is 1 o'clock, 2 hours after midnight is 2 o'clock, and so on, until 12 o'clock at noon.

At noon one-half the day has gone and we begin the afternoon, which is the last half of the day.
One hour after noon is 1 o'clock, 2 hours after is 2 o'clock, etc.

If a person says he was at a certain place at 2 o'clock, he must say forenoon or afternoon, so we will know which half of the day he means. If it was 2 o'clock in the morning he would write 2 a. m., and if 2 o'clock in the afternoon, 2 p. m.

How to Teach a Child to Tell Time

First—Teach him to tell the hour hand from the minute hand.
Next—Teach him when he first looks at the dial, to find the hour hand and then notice which Roman numeral it is nearest. *This will tell about what time it is.*

Then—Find the minute hand. *The minute hand will tell exactly what time it is.*

To Illustrate

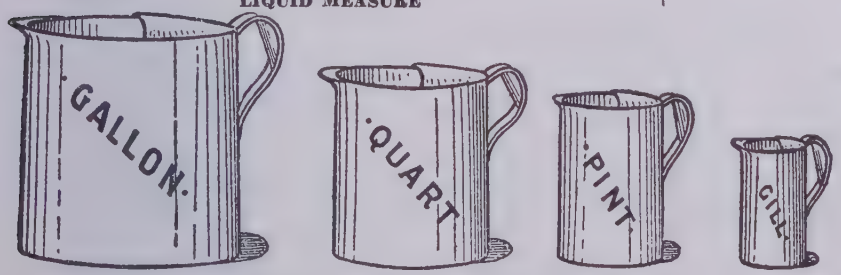


Take this clock. The hour hand is near the Roman numeral II, which stands for 2. Tell the child it is somewhere near two o'clock.
The minute hand will tell *how near.*



It must always point to the XII before it is exactly the hour. If it is one numeral away from the XII, toward the left, it is 5 minutes of two. If it is two numerals away to the left, it is 10 minutes of two, etc. If it is one numeral away to the right, it is 5 minutes after two, etc. Proceed in this way and keep at it.

LIQUID MEASURE



If you have quart and pint measures allow the child to empty water from one to the other.
On teaching the table of liquid measure proceed in this manner—
Here is a gill cup. I am going to fill it to see how many gills make a pint. Now I have poured one gill; now two; now three; now four. Is the pint cup full? How many gills in a pint?
Let us prove what you say by pouring the water back. One gill; two gills; three; four. Were we right then?
Let us write what we have just said and proved—
4 gills = 1 pint.
Proceed in this way with the other measures, only let the child do more of the work for himself.

MONEY

Use actual coins in teaching money. Lessons on money should be given frequently after the first year of school life.
Begin by teaching the value of the cent and the nickel, then the dime, then the quarter, then the half-dollar, and then the dollar.
Make problems involving change. Develop the ability to make change rapidly. The child may have some money of his own and he should be taught the comparative values of the coins. The correct method of making change follows.

10 cents make 1 dime.
2 five-cent pieces make 1 dime.
100 cents make 1 dollar.
A quarter of a dollar = 25 cents.
A half-dollar = 50 cents.
$ means dollars and *c* means cents.
A 5-cent piece is called a nickel because it is made of nickel.
A cent piece is made of copper.
The other coins named are made of silver.

HOW TO MAKE CHANGE

First—Name the cost of goods.
Then—Add enough money to make even money.
Last—Add the large coin.

To Illustrate

I bought some cloth for 35c and gave the clerk 50c. Count my change.
How to count it—
35c for cloth
And 5c makes 40c (to make even money)
And 10c makes 50c.

To Illustrate

I buy suspenders for 32c and give the clerk $1. Count my change.
How to count it—
32c for suspenders
And 3c makes 35c
And 5c makes 40c
And 10c makes 50c
And 50c makes $1
(to make even money)

Note.—Think of it in this way—32c, 35c, 40c, 50c, $1.

THE CALENDAR

Procure a calendar for the child to own.

A good way to make him familiar with the use of the days of the week and month, as found on a calendar, is to ask him to look up and tell on what day of the week the next Fourth of July will fall; Christmas; New Year; his birthday.

Have him distinguish between the day of the week and the day of the month.

1934 August 1934

Sun.	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.
First Quar. 1st 30th	Full Moon 9th	Last Quar. 17th	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	New Moon 23d

7 days make 1 week.
30 days make 1 month.

Days of the Week	*Months of the Year*
Sunday	January
Monday	February
Tuesday	March
Wednesday	April
Thursday	May
Friday	June
Saturday	July
	August
	September
	October
	November
	December

SQUARE MEASURE

How long is each side of the figure opposite?

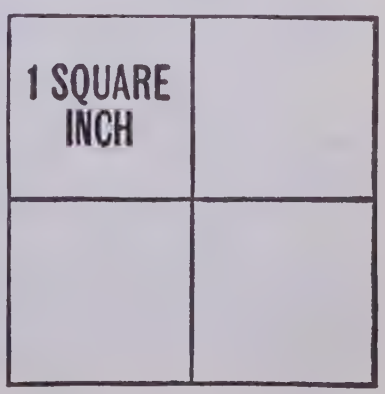
How many squares in the figure?

Because each square is one inch on each side, we call it a square inch.

How many square inches in the whole figure?

The number of squares is called the *area.*

4 square inches is the *area* of this figure.



Show by a drawing how many square inches in a figure 3 in. wide and 9 in. long.

Its area is 27 square inches.

We need not always draw a figure to get the area.

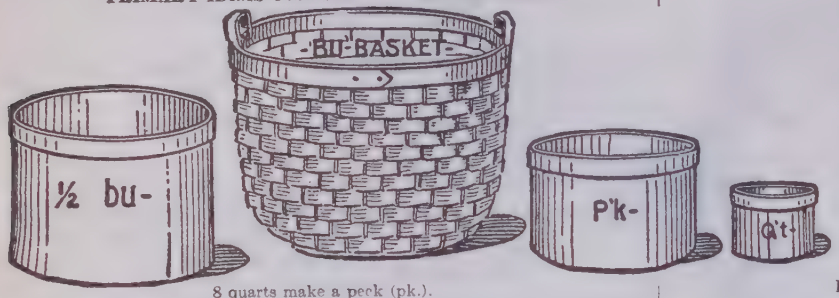
You will notice that the *length times the width will give the number of squares in the figure.*

Find the area of a figure 9 in. long and 5 in. wide, without a drawing. What did you do? *Make a rule.*

Cut out a piece of paper 1 in. wide and 4 in. long. Cut it into square inches. Place the cut squares so as to form a large square. How long is it now? How wide?

(*See section on weights and measures for advanced tables.*)

PRIMARY IDEAS CONCERNING DRY MEASURE



8 quarts make a peck (pk.).

4 pecks make a bushel (bu.).

Dry measure is sometimes used to measure dry articles. Formerly grains, vegetables, and fruits of all kinds were bought and sold by dry measure.

Don't teach the child, as most arithmetics say, that grains, fruits, and vegetables are bought and sold by the measured bushel. They are not.

The weight bushel, the case, and the box have come into common use for these articles.

Teach the names of the measures before you attempt to teach the number of one measure in another, etc.

SIMPLE FRACTIONS

A very good method of teaching the combinations in small fractions is by the use of paper or cardboard disks. (Children may call them circles.)

Cut out a large number of them, and, in order to avoid trouble later on, it might be better to have the disks all of one size—about 4 inches in diameter.

Teaching the Fraction $\frac{1}{2}$ with Disks

Say to the child:

I am going to cut this circle into two equal parts. What is this part called? What is this other part called? How many halves in the whole circle? One-half and one-half are what? One-half taken away from one leaves what? If I take a half *two times*, what do I get? How many halves in a whole?

Now I will write these—

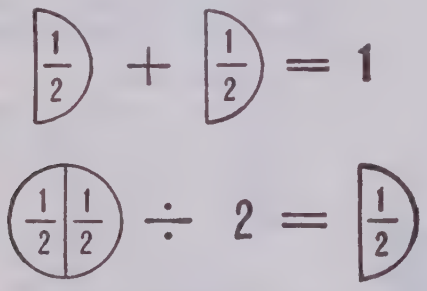
$\frac{1}{2} + \frac{1}{2} =$ 1 divided by $\frac{1}{2} =$

1 less $\frac{1}{2} =$ $1 \div 2 =$

$2 \times \frac{1}{2} =$ $1 - \frac{1}{2} =$

Give me the answers and I will write them.

Drawings showing the "placing" of disks for number stories can be made by the child; as,



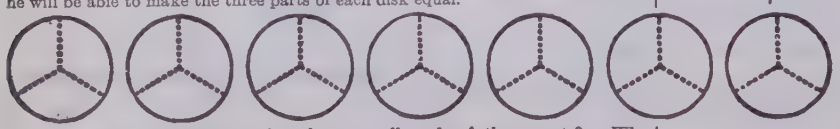
Ask the child to make similar drawings to tell about halves.

Proceed like this—How many halves in a pie? If a pie cost 10 cents, what will half a pie cost? Who can tell other stories about halves? etc.

Teach fourths along with halves.

Teaching the Fraction $\frac{1}{3}$ with Disks

Cut several disks into thirds. Have the child practice on cutting, so that he will be able to make the three parts of each disk equal.



Then proceed like this—What do you call each of these parts? Why are they called *thirds*? How many thirds in a circle? I am going to take a circle and cut it any way, so as to make three parts; do I call these unequal parts thirds? Why not? Let me write one-third on a piece of paper for you. (Write, ⅓.) Draw a circle for me. Instead of cutting it, draw lines where you would cut it to make thirds. Write one-third (⅓) on each third of a circle. I write this (⅓+⅓). Who can tell me what the answer is? Are two-thirds and two-thirds more than one? How much more? I have two-thirds of an apple and give Mary one-third, how much have I left? Who can give other story problems about thirds? Everybody try, etc.

Teach sixths along with thirds. Use disks, dots, marks, sticks, and inches to illustrate.

Remember that no advance should be made until each little part is understood.

Teaching the Fraction $\frac{1}{5}$ with Disks

Have fifths compared with fourths, thirds, and halves.

Be sure that the child sees that the number below the line shows the size of each part and the number above how many parts are taken.

Have the child illustrate every step with drawings. If at any time he cannot answer results at sight, let him show the work with disks.

Say to the child:

I am going to cut this circle into five equal parts. What is each part called? How many fifths in the whole circle? How many fifths here? (Show two-fifths.) One-fifth and one-fifth are how many fifths? One less two-fifths is what? If I take three-fifths, how many times one-fifth do I take? How many times one-fifth are left? Are two-fifths greater than one-third?

Give and ask for story problems and number stories telling about fifths.

Teach tenths along with fifths.

When twelfths are taught, show the relations between twelfths and sixths, fourths, thirds, and halves.

Equal Fractions in Different Forms

Have the child see how fractions may differ in form but still remain the same in value.

Begin with his knowledge of smaller fractions, as

$\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{4}{8}$, and $\frac{5}{10}$ of an apple

Let him show by the use of drawings that fractions may have large or small terms but be equal in value.

Things for the Child to Do

Fill out the numerators in the following fractions and prove each by a drawing:—

1. $\frac{1}{4} = \frac{2}{8} = \frac{4}{16} = \frac{8}{32} = \frac{16}{64}$
2. $\frac{1}{5} = \frac{?}{10} = \frac{?}{15} = \frac{?}{20} = \frac{?}{30}$
3. $\frac{1}{8} = \frac{?}{16} = \frac{?}{24} = \frac{?}{32} = \frac{?}{40}$
4. $\frac{3}{4} = \frac{?}{8} = \frac{?}{12} = \frac{?}{16} = \frac{?}{24}$
5. $\frac{2}{5} = \frac{?}{10} = \frac{?}{15} = \frac{?}{20} = \frac{?}{40}$

PRINCIPLES OF FRACTIONS

1. A fraction's value is the quotient obtained by dividing the numerator by the denominator.

$\frac{6}{2} = 3$ 3 is the value of $\frac{6}{2}$

$\frac{2}{3} = \frac{2}{3}$ $\frac{2}{3}$ is the value of $\frac{2}{3}$

2. Multiplying the denominator of a fraction divides the fraction by that number.

$\frac{1}{2 \times 4} = \frac{1}{8}$ $\frac{3}{7 \times 3} = \frac{3}{21}$ $\frac{2}{3 \times 9} = \frac{2}{27}$

3. Dividing the denominator of a fraction multiplies the fraction by that number.

$\frac{3}{8 \div 4} = \frac{3}{2}$ $\frac{10}{9 \div 3} = \frac{10}{3}$ $\frac{3}{10 \div 5} = \frac{3}{2}$

4. Multiplying the numerator of a fraction multiplies the fraction by that number.

$\frac{2 \times 2}{3} = \frac{4}{3}$ $\frac{1 \times 8}{9} = \frac{8}{9}$ $\frac{5 \times 3}{8} = \frac{15}{8}$

5. Dividing the numerator of a fraction divides the fraction by that number.

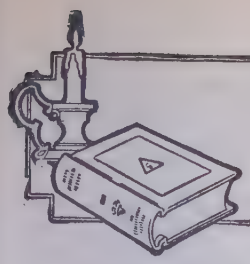
$\frac{4 \div 2}{7} = \frac{2}{7}$ $\frac{12 \div 12}{16} = \frac{1}{16}$ $\frac{3 \div 3}{7} = \frac{1}{7}$

6. Multiplying both numerator and denominator of a fraction by the same number does not change the value of the fraction.

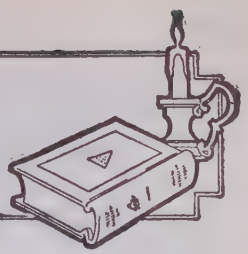
$\frac{1 \times 3}{3 \times 3} = \frac{3}{9} = \frac{1}{3}$ $\frac{6 \times 2}{7 \times 2} = \frac{12}{14} = \frac{6}{7}$

7. Dividing both numerator and denominator of a fraction by the same number does not change the value of the fraction.

$\frac{12 \div 3}{15 \div 3} = \frac{4}{5} = \frac{12}{15}$ $\frac{18 \div 9}{27 \div 9} = \frac{2}{3} = \frac{18}{27}$



Grammar School Arithmetic



APPLIED ARITHMETIC

In this section, arithmetic is presented in brief form for the aid of the busy student. Special emphasis is placed upon short methods and devices for checking results. Solutions of typical problems and tables are presented for review and aid in solving similar problems in business and school.

ADDITION

Addition is the process of combining numbers into a single equivalent number, called the sum, the amount or the total.

More than nine-tenths of the arithmetical work of a bookkeeper and business man consists in combining or adding numbers. To become successful as an accountant, cashier or clerk it is most essential that the ability to add be developed in a high degree. By constant drill one may become expert in adding units in rotation as follows:

(*A*)	(*B*)
4	42
8	24
2	36
6	72
7	81
27	255

In the above examples the worker simply runs up the columns taking one figure at a time as follows: 4 plus 8 equals 12, plus 2 equals 14, plus 6 equals 20, plus 7 equals 27, or the sum. The same operation would be carried out in the case of problem (*B*) with the exception of *after* obtaining the sum of the first column to the right to be 15, the worker puts the figure 5 under the column and adds the 1 to the next column to the left, making the sum of that column 25 and the total sum 255.

However, this method is slow and cumbersome and no one can hope to acquire great speed in addition who has to depend upon it.

Group Method.—In adding columns of figures it is advisable to group the numbers into totals as one proceeds up and down the columns. In the above problem (*A*): In adding 4, 8, 2, 6, and 7, think of each subtotal as follows: 12 (4 plus 8), 20 (2 plus 6 added to previous sub-total) and 27. The method rests on the ability to group two or more numbers together at a glance:

6 5 4 3 } equals 12
6 7 8 9 }
2 3 4 5 } equals 11
9 8 7 6 }

Thus in adding the following:

(*A*)	(*B*)	
8 3	3	(*A*) Read instantly the numbers in brackets as: 8, 9, 7, 8, and 7. When combining, read as follows: 8, 17, 24, 32, and 39.
5	10 5	
9 2	2	
7	5	
7 4	10 4	
3	1	(*B*) Process is same as in (*A*) except that three are joined instead of two. Should be read as follows: 10, 20, 27.
6	2	
8 2	7 2	
7	3	
39	27	

This may be carried to almost any extent; *e. g.*,

53 The worker should think in groups
27 of 10, as follows:
— 53, 63, 83, 80.
80

Some bookkeepers regularly add double columns after the above plan, or some variation of it. Thus in adding 56 and 67, he would think 50 plus 60 plus 6 plus 7.

All addition should be checked or tested by one of the following methods:

(*a*) Reverse addition; that is, adding down after adding up.

(*b*) After adding by consecutive numbers or group, check by adding in group by tens.

(*c*) Add the unit column and write the total to one side as in the following example:

3967	
8234	27
7987	32
4372	31
5976	26
30536	30536

The above is obtained by first adding the units' column and writing the sum, 26, to the right. Next add the tens' column and write the sum as shown above. The sums of the hundreds' and thousands' columns, 32 and 27, are written as shown. Beginning with the units' column and adding, the result agrees with that of the problem.

(*d*) Casting or counting out nines. This means add the digits in the number and whenever the sum equals or exceeds 9, discard 9, adding the remainder to succeeding digits.

426—3
824—5
936—0
1542—3
3728—2 check remainder.

Explanation: Take the first number, 426, the excess of the sum of the digits over nine is 3. Doing the same with the remaining digits and dividing by nine, we find the excess or final remainder. The sum of the digits in the sum, 3728, is then divided by nine and we find a remainder of 2. Adding the remainders to the right, the sum is 11. Dividing 11 by 9, we find a remainder of 2. If the final remainder equals the remainder of the sum, the sum may be presumed to be correct.

(*e*) Casting out elevens:

426—6 plus 4 minus 2 = 8
824—4 plus 8 minus 2 = 10
936—6 plus 9 minus 3 = 12
1542—2 plus 5—4— 1 = 2 32
3728—8 plus 7—3— 2 = 10

The sum of 8 plus 10 plus 12 plus 2 is 32, and 32 is two 11s' and 10 over.

Explanation: Find the sum of the digits in the odd places, beginning at units, and from it deduct the sum of the digits in the even places. In case the sum of the digits in the even places exceeds the sum of the digits in the odd places, add 11 to the sum of the digits in the odd places.

SUBTRACTION

Definition.—Subtraction is the process of finding the difference between two numbers.

Minuend, Subtrahend, Remainder, Sign of Subtraction.—In the example, 9 minus 7 equals 2, 9 is the minuend; 7 is the subtrahend, and 2 is the remainder. The sign of subtraction is —.

Use.—"Making change" is the simplest and most frequent use of subtraction in business. It is also used in finding the balance of accounts, finding the bank balance, and in finding profits or losses.

Subtraction is but a phrase of addition. The so-called Austrian or "Making change" method is the one most commonly used in the elementary schools today. It is the process of finding the number to be added to the lesser number in order that the sum may equal the greater.

Illustration:

Find the difference between 742 and 1937.

1937 Add to the subtrahend, digit by
742 digit until the minuend is obtained,
— thus: 2 (subtrahend) plus 5 = 7
1195 (minuend). Write the 5 as a unit difference. 4 (subtrahend) plus 9 = 13 (minuend). Write the 9 in tens' place and add the 1 to the 7 (subtrahend). 7 plus 1 = 8 (subtrahend) plus 1 = 9 (minuend). Write the 1 in hundreds' place of difference. 0 (subtrahend) plus 1 = 1 (minuend).

It is often more practical to place the lesser number above the greater, thus bringing out the process more concretely. The above example might be written:

742
1937
—
1195

MULTIPLICATION

Uses.—Multiplication is continually used in business. Probably it stands next to addition in the frequency of use. For this reason it should be thoroughly mastered by everyone who wishes to become a successful clerk, accountant or business man in any capacity. Very frequently situations arise when it is necessary for the business man to perform mental multiplications quick and accurately.

Definitions.—MULTIPLICATION, MULTIPLIER, MULTIPLICAND. Multiplication is the process of taking one number, called the multiplicand, as many times as the number one is contained in another number, called the multiplier.

—PRODUCT. The result obtained by multiplication is called the product.

—FACTORS. The multiplier and the multiplicand are called the factors of the product.

Example: 2×4=8. In this example, 2 is the multiplier; 4 is the multiplicand; 8 is the product, and 2 and 4 are the factors of 8.

MULTIPLICATION TABLES—All multiplication is based upon the multiplication of the numbers from one to ten, inclusive. In a large majority of the cases of multiplication in business, the factors are small numbers and the multiplication

should be performed mentally. This is especially true in billing. For this reason both the basic and supplementary tables given below should be perfectly memorized.

BASIC TABLE

	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

SUPPLEMENTARY TABLE

11	22	33	44	55	66	77	88	99	110
12	24	36	48	60	72	84	96	108	120
13	26	39	52	65	78	91	104	117	130
14	28	42	56	70	84	98	112	126	140
15	30	45	60	75	90	105	120	135	150
16	32	48	64	80	96	112	128	144	160
17	34	51	68	85	102	119	136	153	170
18	36	54	72	90	108	126	144	162	180
19	38	57	76	95	114	133	152	171	190
20	40	60	80	100	120	140	160	180	200

The process of multiplication is indicated by placing the sign × between the two numbers, thus: 5×7=35. This is read: Five times seven equals 35.

Multiplying by 10 or a Multiple of 10.—It is inherent in the decimal system of notation that the placing of a zero to the right of a number multiplies that number by ten; for example, 20 is ten times as great as 2; 200 is ten times as great as 20, etc. Therefore in multiplying by 10 or a multiple of ten it is only necessary to multiply by the integer or integers of value and add as many zeros as there are in the multiplier; e. g., 2000×68=136,000. (2×68=136; adding the three zeros of the 2000 gives the answer).

Multiplication Illustrated.—Multiply 4362 by 243. The process of performing this operation is as follows: (1) Multiply by the 3; (2) multiply by the forty represented by the 4 in the tens' place; (3) multiply by the 200 represented by the 2 in hundreds' place; (4) add the products; thus:

(*A*)		(*B*)		(*C*)	
4362		4362		4362	
243		243		243	
13086	(1)	13086	(1)	8724	(3)
174480	(2)	17448	(2)	17448	(2)
872400	(3)	8724	(3)	13086	(1)
1059966	(4)	1059966	(4)	1059966	(4)

In practice the zeros at the end of (2) and (3) are omitted and the work appears as in (*B*).

It is not absolutely necessary to begin with the units digit of the multiplier. By beginning with the highest order the work will appear as in (*C*). This method is sometimes advantageous.

When two numbers are to be multiplied, either may be taken as the multiplier. It is usually better to use the smaller as the multiplier. When one of the numbers contains 1's or 2's or two or more digits alike, it is easier to multiply by that number. In finding the cost of 748 machines at $112 each, use 112 as the multiplier.

When one of two numbers to be multiplied contains one or more zeros, that number should be taken as the multiplier. The product of zero and any number is zero. In example (*D*), since the products of the tens' and hundreds' places are zero, the results need not be written.

(*D*)

6348
1005
31740
6348
6379740

Checking Multiplication.—There are a number of methods by which multiplication may be checked. The most practical and commonly used ones follow:

1. By interchanging the factors; i. e., by taking the multiplicand as the multiplier in repeating the multiplication. (*A*)

2. By division. Dividing the product by either factor will give the other factor. (*B*)

3. By casting out 9's—sometimes called excess of 9's. (*C*)

4. By casting out 11's—sometimes called excess of 11's. (*D*)

(*A*)

45	36
36	45
270	180
135	144
1620	1620

(*B*)

45	45)1620(36
36	135
270	270
135	270
1620	

(*C*)

2345— 5	The excess of 9's in
317— 2	the multiplicand is 5.
16415 10—1	The excess of 9's in
2345	the multiplier is 2.
7035	The product of the
743365—1	excesses is 10 and the excess of 9's in this product is 1. The

excess of 9's in the product in the example is 1. THE EXCESS OF 9's IN THE PRODUCT IS EQUAL TO THE EXCESS OF 9's IN THE PRODUCT OF THE EXCESSES. (Explanation of finding excess of nines is given under Checking Addition).

(*D*)

2345— 2	The excess of 11's in
317— 9	the multiplicand is 2
16415 18—7	(5 minus 4 plus 3
2345	minus 2 equals 2).
7035	The excess of 11's in
743365—7	the multiplier is 9. (7 minus 1 plus 3 equals 9). The prod-

uct of these excesses is 18 and the excess of 11's in 18 is 7. The excesss of 11's in the product is 7. (5 plus 11 minus 6 plus 3 minus 3 plus 4 minus 7 equals 7). (The finding of the excess of 11's is explained under the checking of addition).

The first two of these checking methods are practical only when the factors are small. When the factors of the multiplication are large numbers the last two methods should be used. The casting out of either nines or elevens alone is not an absolute check but when the two are used together the possibility of error is so small as to be practically negligible.

Short Methods of Multiplication.—To multiply by 10, 100, 1000, etc. When the multiplicand is an integer, annex as many zeros as there are in the multiplier; e. g., 10×75=750; 100×75=7500. When the multiplicand is a decimal, move the decimal point as many places to the right as there are zeros in the multiplier; e. g., 100×.75=75.

To multiply numbers ending in zeros: When both the multiplicand and multiplier are integers, multiply by the significant figures and annex as many zeros as there are in the endings of both multiplier and multiplicand; e. g., 220×400 equals 4 times 22 with three zeros added to the right. When one of the numbers is a decimal fraction, multiply the significant numbers and move the decimal point as many places to the right as there are zeros in the ending of the integer. Thus: .256×200. .256×2=.512; moving the decimal point two places to right makes the answer 51.2.

To multiply by 21, 31, 41, etc. This can best be explained by taking an example, as 234×21=4914. The process is as follows: The first figure on the right is evidently 4; 2×4 plus 3 (1×3) equals 11. Write 1 and carry 1. 2×3 plus 1 (carried) plus 2 (1×2) equals 9, the third figure. 2×2 equals 4, the fourth figure in the product.

This same method of solution can be used in multiplying by 101, 201, 301, etc. In the example, 432×201=86832, it is evident the first two figures of the product are 32. Multiplying and adding, 2×2=4 plus 4 (1×4) equals 8, the third figure. Completing the multiplication by 2, the fourth figure is 6 and the fifth, 8.

To multiply by 9, 99, 999, etc. To multiply by 9, annex one zero to the multiplicand, thus multiplying it by 10. From this result subtract the number to be multiplied. Multiply 348 by 9.

Solution: 3480
348
3132

To multiply by 99, annex two zeros to the multiplicand, thus multiplying it by 100, and subtract the multiplicand. 348×99=34800−348=34452.

This same method of solution may be applied to multiplications by 19, 29, 39, etc., by multiplying by the significant figure, adding a zero and subtracting the number to be multiplied.

This short method may also be extended to multiplication by any number slightly less than 100, 1000, 10,000, etc. The method of multiplying by 101, 201, etc. may be extended to multiplication by any number slightly more than 100, 1000, 10,000, etc.

Multiply 321 by 997=321,000−963=320,037.

Multiply 321 by 102=32742.

To multiply by 11 or multiples of 11. The first figure of the product is the first figure of the multiplicand; the second figure of the product is the sum of the first and second figures of the multiplicand; the third figure of the product is the sum of the second and third figures of the multiplicand, etc. In case the sum of two figures is ten or more, the 1 must be carried. Multiply 247 by 11: The first figure is 7; the second figure is the sum of seven and 4, 11; the third figure is the sum of the 1 (carried) 4 and 2, 7; and the fourth figure is 2. The product is 2717. In the case of multiples of 11, multiply by 11 first mentally and then multiply that product by the factor necessary to produce the multiplier. Multiply 247 by 33: 11×247=2717. 3×2717=8151.

To multiply by 111: Multiply 132,476 by 111: By inspecting the solution by the ordinary method, it will be seen that the first figure in the product is the first figure in the multiplicand. The second figure in the product is the sum of the units' and tens' figures in the multiplicand; the third figure in the product is the sum of the units', tens' and hundreds' figures in the multiplicand; the fourth figure in the product is the sum of the tens', hundreds' and thousands' figure in the multiplicand, etc. When the sum is ten or more the tens' digit in the sum must be carried to the next sum.

132476
132476
132476
14704836

To multiply two numbers ending in 5: First case: When the sum of the digits to the left of the 5's is an even number. Rule: Set down 25 as the first part of the product. To the product of the digits to the left of the 5's add ½ their sum. Write this amount before the 25. Example: Multiply 65×45. Since the sum of 6 and

4 is even, 25 is the first part of the product. 6×4 plus ½ (6 plus 4) = 29. Setting the 29 before the 25, the product is 2925.

Second case: Rule: Set down 75 as the first part of the product. To the product of the digits to the left of the 5's add ½ their sum, disregarding the fraction. Example: 85×135. Since the sum of 8 and 13 is odd, 75 is the first part of the product. 8×13 plus ½ (8×13) = 114½. Drop the ½ and write 114 before the 75. The product is 11475.

To square any number of two figures. Multiply 32 by 32. The solution of this problem is based upon the algebraic solution of the problem $(a+b)^2=a^2+2ab+b^2$. The number 32, is composed of the two parts, 30 or 3 tens plus 2 units. Taking the formula from right to left the steps are as follows: (1) Square the units' digit and write this as the first figure in the product; in this case 4. (2) Multiply the product of the units' and tens' digit by 2 and write this as the second figure in the product. (3×2 equals 6; 2×6 equals 12. Write the 2 as the second figure and carry the 1). (3) Square the tens' digit and add any figure "carried". (3×3=9; 9 plus 1 equals 10. Write the 10 as the last part of the product. 1024 is the product).

To multiply by 25, 50, 75, 125, 250, etc. 25 is ¼ of 100. Multiplying by 100 gives a product four times as great as multiplying by 25. Therefore, to multiply by 25, annex two zeros to the multiplicand (thus multiplying by 100) and divide the result by 4. To multiply by 50, annex two zeros to the multiplicand and divide the product by 2. To multiply by 75, annex two zeros to the multiplicand and divide by 4, and multiply the result by 3.

125 is ⅛ of 1000. Hence, to multiply by 125, annex three zeros to the multiplicand and divide by 8. 250 is ¼ of 1000. Hence, to multiply by 250, annex three zeros and divide the result by 4.

(For further application of aliquot parts of 10, 100 and 1000 to multiplication, see Aliquot Parts.)

To multiply when one figure of the multiplier is a factor of the other figure or figures of the multiplier. Multiply 426 by 279. It will be noticed that 9 is a factor of 27. Therefore, multiply by 9 and then multiply this result by 3.

```
  426
  279
  ---
 3834   9×426
11502   3×3834
------
118854
```

Cross multiplication. This method is practical only for multiplication by a multiplier of two figures. With practice a high degree of speed and accuracy can be acquired. Multiply 43 by 27. 43×27 = 1161. (1) 3×7=21; write 1 and carry 2. (2) 7×4 plus 2 (carried) = 30; 2×3=6. Add 30 and 6, giving 36. Write 6 and carry 3. (3) 2×4=8; add the 3 (carried), equaling 11. Write the 11. NOTE: Always add the "carried" figure to the first product so that it may not be forgotten.

Supplement and complement methods of multiplication.

The supplement of a number is the difference between that number and the next lower MULTIPLE of 10. 2 is the supplement of 12; 8 is the supplement of 108. 25 is the supplement of 1025.

The complement of a number is the difference between that number and the next higher multiple of 10. 4 is the complement of 6; 7 is the complement of 93; 3 is the complement of 997.

To multiply two numbers slightly larger than 100 or 1000 or 10,000: Add the supplement of either number to the other and annex the same number of zeros as occur in the power of ten used. To this add the product of the supplements. 102×104. The supplement of 102 is 2. Add 2 to 104 and annex two zeros and the result is 10600. 2×4=8; add 8 to 10600 and the result, 10608, is the product of 102×104.

To multiply two numbers slightly less than 100, 1000 or 10,000: Subtract the complement of either number from the other number and annex as many zeros as occur in the power of 10 used. To this add the product of the complements. Multiply 93 by 97. The complement of 93 is 7; the complement of 97 is 3. 97−7=90; annexing two zeros, the result is 9000. 3×7=21. Add 21 to 9000 and the result, 9021, is the pr duct of 97 and 93.

DIVISION

Uses.—Division does not occur so frequently in business as either multiplication or addition, but problems involving division are frequently met and the business man and his employees should be able to divide with accuracy and reasonable speed. Furthermore, it is a rather awkward operation on an adding machine and few operators know how to use the machine for division. There are various types of machines upon which a skillful operator can divide with speed and accuracy.

Definitions.—DIVISION, DIVISOR, DIVIDEND, QUOTIENT, REMAINDER. Division is the process of finding how many times one number, called the *divisor*, is contained in another number, called the *dividend*.

The number to be found is called the *quotient*.

When the divisor is not a factor of the quotient; i. e., will not exactly divide the dividend, the part of the dividend remaining is called the *remainder*. Divide 20 by 6. 20 divided by 6 e als 3 with a remainder of 2. In this example, 20 is the dividend, 6 is the divis r, 3 is the quotient, and 2 is the remainder.

The SIGN OF DIVISION is ÷. 24÷6 is read "24 divided by 6". It indicates that the number preceding it is to be divided by the number following it. Division may also be indicated by fraction; e. g., 9/3 means 9 divided by 3.

Short Division.—The following illustrates short division:

```
6)2384616
  397436
```

Short division should be used in all cases where the divisor is 20 or under.

Long Division.—The following illustrates long division:

```
                146
          672)98746
100×672=  67200**
          -----
          31546
 40×672=  26880*
          -----
           4666
  6×672=   4032
          -----
            634
```

*In practice the zeros marked by * are omitted.

Division by Continued Subtraction.—Divide 754 by 142. Division by this method is sometimes required. It has been required on civil service examinations. It is the basis upon which division upon adding machines and the various calculating machines is performed.

```
754
1—142
612
2—142
470
3—142
328
4—142
186
5—142
Remainder 44
```

Checking Division.—The following are practical checking methods for division:

(1) Where the divisor and quotient are small numbers, the most practical method is to reverse the operation; i. e., multiply the quotient by the divisor and add the remainder to the product of these two. If the result of these operations is the dividend, the work is probably correct.

(2) Casting out nines. Find the excess of nines in the divisor, dividend, quotient, and remainder. Multiply the excess in the quotient by the excess in the divisor and add the excess in the remainder. The excess of nines in this result should equal the excess of nines in the dividend. See example *A*.

(3) Casting out elevens. Find the excess of elevens in the different parts of the division and proceed as in the proof by casting out nines. See example *B*.

A.

```
          146
672)98746
  672
  ---
  3154
  2688
  ----
   4666
   4032
   ----
    634
```

The excess of nines in the divisor is 6.
The excess of nines in the quotient is 2.
The excess of nines in the dividend is 7.
The excess of nines in the remainder is 4.
6×2 plus 4=16.
The excess of nines in 16 is 7. Since this is the same as the excess of nines in the dividend, the work is probably correct.

B Using the same example as in *A*.

The excess of elevens in the divisor is 1 (11 plus 2 minus 7 plus 6=12). Casting out the elevens in 12 gives an excess of 1.

The excess of elevens in the dividend is 10 (6 minus 4 plus 7 minus 8 plus 9=10).

The excess of elevens in the quotient is 3 (6 minus 4 plus 1=3).

The excess of elevens in the remainder is 7 (4 minus 3 plus 6=7). 3×1 plus 7=10. Since this result is the same as the excess in the dividend, the work is probably correct.

Casting out nines and elevens is a satisfactory method of checking the work when the numbers involved are large. Both the nine and eleven check should be used because one will catch the errors not checked by the other.

Short Methods.—To divide by 10, 100, 1000, etc. point off as many places as there are zeros in the divisor. Divide 47246 by 10. 47246÷10=4724.6. Divide 47246 by 100. 47246÷100=472.46.

To divide by 20, 300, 500, etc. point off as many places as there are zeros in the divisor and then divide by the significant figure.

Divide 3600 by 20. 3600÷20=360.0÷2=180.

Divide 3600 by 600. 3600÷600=36.00÷6=6.

To divide by 25, 50, 125, etc. Since 100 is 4 times 25, it follows that if we divide a number by 100 it will be ¼ of what it would be if divided by 25. Therefore, to divide by 25, first divide by 100 as indicated above and multiply the quotient by 4. For example, divide 32800 by 25. $32800 \div 25 = 328 \times 4 = 1312$.

Since 50 is ½ of 100, to divide by 50, divide by 100 and multiply the quotient by 2. $32800 \div 50 = 328 \times 2 = 656$.

125 is ⅛ of 1000. Therefore, to divide by 125, divide by 1000 and multiply the quotient by 8. $32800 \div 125 = 32.8 \times 8 = 262.4$.

(For further application of aliquot parts to division, see Aliquot Parts.)

AVERAGE

A merchant makes the following daily sales during a week: Monday, $1267.25; Tuesday, $1327.80; Wednesday, $1416.10; Thursday, $1409.65; Friday, $1386.30; Saturday, $1572.50. What are his average daily sales?

Monday	$1267.25
Tuesday	1327.80
Wednesday	1416.10
Thursday	1409.65
Friday	1386.30
Saturday	1572.50
6)8379.60	Total
$1396.60	Average

Rule: To find the average of several amounts, find their sum and divide by the number of amounts.

FACTORS, DIVISORS AND MULTIPLES

Definitions.—An INTEGER is a number of whole units.

The FACTORS of a number are the integers which multiplied together produce the given number. The factors of 12 are 3 and 2 and 2, or 3 and 4, or 2 and 6.

A PRIME NUMBER is a number that is not exactly divisible by any other number.

FACTORING is the process of finding the factors of a number.

Tests of Divisibility of Numbers.—

(1) Even numbers are divisible by 2.

(2) A number is divisible by 3 if the sum of the digits is divisible by 3. 4638 is divisible by 3.

(3) The number is divisible by 4 if the two right hand digits are zeros or express a number which is divisible by 4. 4600 and 4628 are divisible by 4.

(4) If the number ends in 5 or a zero, it is divisible by 5.

(5) Even numbers which are divisible by 3 are divisible by 6. Since 4638 is even and divisible by 3, it is divisible by 6.

(6) There is no practical test for divisibility by 7.

(7) If the number expressed by the last three digits of a number is divisible by 8 or if the last three digits are zeros, the number is divisible by 8. 164000 and 164128 are both divisible by 8.

(8) 7, 11, and 13 will divide 1001 and any of its multiples.

(9) If the sum of the digits of any number is divisible by 9, the number is divisible by 9; e. g., 1386 or 3168.

(10) If the right hand digit of any number is zero, the number is divisible by 10.

(11) If the two right hand digits are zeros or express a number which is divisible by 25, the number is divisible by 25. 14875 is divisible by 25.

(12) If the difference between the sums of the digits of the even and odd orders is divisible by 11, the number is divisible by 11. In the number 6324846, the sum of the digits of the even order is 22; the sum of the digits of the odd order is 11; and the difference, 11, is divisible by 11. Therefore, the number is divisible by 11.

(13) If the three right hand digits are zeros or represent a number divisible by 125, the number is divisible by 125. 78457250 is divisible by 125.

DIVISORS

Definitions.—A COMMON DIVISOR or FACTOR of two or more numbers is a factor of each of the numbers.

THE GREATEST COMMON DIVISOR is the greatest factor that is common to two or more numbers.

Finding the Greatest Common Divisor (G. C. D.)—To find the Greatest Common Divisor of two or more numbers, separate the numbers into their prime factors and find the product of the prime factors common to the numbers.

First Method:

Find the G. C. D. of 27−36−63

3)27−36−63

3)9−12−21

3− 4− 7 G. C. D. $= 3 \times 3 = 9$

Second Method: The G. C. D. of two numbers is their difference or a factor of their difference. Find the G. C. D. of 84 and 124. The difference between these numbers is 40 but this is not a factor of either of them. The factors of 40 are $2 \times 2 \times 2 \times 5$. Inspection shows that the numbers are not divisible, 5 nor 10 nor 8, but are divisible by 4. 4 is therefore the G. C. D.

The G. C. D. of three or more numbers is the smallest difference or a factor of this difference. Find the G. C. D. of 60, 96 and 120. The smallest difference is 24. The factors of 24 are $2 \times 2 \times 2 \times 3$. Inspection shows that they are not divisible by 24, but are divisible by 2, 4, 8 and 12. Therefore, 12 is the G. C. D.

The practical application of G. C. D. is in the reduction of common fractions to lower terms.

LEAST COMMON MULTIPLE

Definitions.—A MULTIPLE of a given number is a number that will exactly contain the given number.

A number that will exactly contain each of two or more numbers is called a COMMON MULTIPLE.

The smallest number that will exactly contain each of two or more numbers is called the LEAST COMMON MULTIPLE (L. C. M.)

The practical application of L. C. M. is found in addition and subtraction of common fractions.

To find the Least Common Multiple of two or more numbers:

First Method: Separate each number into its prime factors. Find the product of these factors using each factor the greatest number of times it occurs in any one of the given numbers.

Example: Find the L. C. M. of 24−36−21.

$24 = 2 \times 2 \times 2 \times 3$.

$36 = 2 \times 2 \times 3 \times 3$.

$21 = 3 \times 7$.

$2 \times 2 \times 2 \times 3 \times 3 \times 7 = 504$.

Second Method: Set the numbers down in a line and divide by any factor common to any two or more of the numbers. Bring down the quotients and the indivisible numbers on the next line. Repeat the operation until the quotients are prime to each other. The product of the divisors and last quotients is the L. C. M.

Example: Find the L. C. M. of 24−36−21.

A		*B*
3)24−36−21		3)24−36−21
2) 8−12− 7	or	4) 8−12− 7
2) 4− 6− 7		2− 3− 7
2− 3− 7		

C

12)24−36−21

or 3) 2− 3−21

2− 1− 7

A. $3 \times 2 \times 2 \times 2 \times 3 \times 7 = 504$.

B. $3 \times 4 \times 2 \times 3 \times 7 = 504$.

C. $12 \times 3 \times 2 \times 7 = 504$.

Third Method: Set the numbers down in a line. Use any one of them as a divisor and bring down the quotients, or the result of extracting common factors, or, in case a number is indivisible either by the divisor or a common factor, bring down that number.

Example: Find the L. C. M. of 24, 36 and 21.

24)24−36−21

1− 3− 7 $7 \times 24 \times 3 = 504$.

CANCELLATION

It sometimes happens that the product of several numbers is to be divided by the product of several other numbers. A problem of this kind can be quickly and simply solved by cancellation method.

Divide the product of $8 \times 6 \times 10 \times 15$ by the product of $3 \times 4 \times 9 \times 2$.

$$\frac{\cancel{8}^{2} \times \cancel{6}^{2} \times \cancel{10}^{5} \times \cancel{15}^{5}}{\cancel{3} \times \cancel{4} \times \cancel{9}^{3} \times \cancel{2}} = 100 = 33\ 1/3$$

Place the elements of the dividend above the line; the divisor below the line.

Process: Divide 3 and 6 by the common factor 3 and place the 2 above the 6. It is not necessary to write the 1 below the 3. Cancel the 3 and 6.

Divide 8 and 4 by the common factor, 4, and place the 2 above the 8. Cancel the 8 and 4.

Divide the 10 and 2 by the common factor, 2, and place the 5 above the 10. Cancel 10 and 2.

Divide 9 and 15 by the common factor, 3, and place the 5 above the 15 and the 3 below the 9. Cancel the 9 and 15.

As there is no factor common to numbers on opposite sides of the line, perform the indicated multiplication and division.

COMMON FRACTIONS

Use.—Quantities, prices, dimensions, relations, etc., in business are frequently stated in fractions. For this reason, anyone who wishes to be in a position to handle the arithmetic of business must understand fractions.

Definitions.—A FRACTION is one or more equal parts of a unit. If a pie be divided into five equal parts, each of these parts is called a fifth. If a person takes two of these equal parts, he will have two-fifths of the pie. The whole pie, or unit, contains five fifths.

A FRACTION is also defined as an indicated division.

A COMMON FRACTION is one usually expressed in the following form: ½.

The DENOMINATOR of a fraction is the number below the line and is the number which indicates into how many equal parts the unit is divided. In the fraction 2/5, the 5 shows that the unit has been divided into five equal parts.

The NUMERATOR of a fraction is the number written above the line and is the number which shows how many of these parts of the unit have been taken. In the fraction 2/5, the 2 is the numerator and it shows that two of the five equal parts have been taken.

The numerator and denominator of the fraction are called the TERMS of the fraction.

A PROPER FRACTION is one in which the numerator is smaller than the denominator; e. g., 2/3.

An IMPROPER FRACTION is one in which the numerator is as large as or larger than the denominator; e. g., 5/5; 5/2.

A MIXED NUMBER is a number which consists of a whole number and a fraction; e. g., 1½.

A COMPLEX FRACTION is one in which the numerator or denominator, or both, is a mixed number.

A fraction in which the numerator and denominator contain common factors may be reduced to its LOWEST TERMS by dividing both numerator and denominator by the common factor. $\frac{8}{16} = \frac{1}{2}$

A fraction may be raised to HIGHER TERMS by multiplying both numerator and denominator by the same number:

$$\frac{4\times2}{4\times3} = \frac{8}{12}$$

Reducing to lowest terms or raising to higher terms does not change the value of the fraction.

An improper fraction may be changed to a mixed number by performing the indicated division:

$12/3 = 4$ $\quad$ $7/2 = 3\frac{1}{2}$

A mixed number may be changed to an improper fraction by multiplying the whole number by the denominator of the fraction and adding the numerator to the product. The result is the numerator of the improper fraction. The denominator is the denominator of the fractional part of the mixed number. Change 2½ to an improper fraction. 2×2 plus 1=5. 5/2 is the improper fraction.

Fractions may be reduced to a common denominator by finding the common multiple of the denominators. When the common denominator is found, multiply both terms of the fraction by the number necessary to raise the denominator to the common denominator. Reduce 3/4 and 2/5 to a common denominator. The L. C. M. of 4 and 5 is 20. Multiply both terms of 3/4 by 5 and both terms of 2/5 by 4. The result is 3/4 equals 15/20 and 2/5 equals 8/20.

Addition of Fractions.—To add fractions:

(1) Reduce the fractions to the least common denominator.

(2) Add the numerators to form the numerator of the sum.

(3) Write the common denominator as the denominator of the sum.

(4) Reduce the result to its simplest form.

(5) If the fractions are mixed numbers, add the fractions and reduce to simplest form, and then add the sum of the whole numbers and the sum of the fractions.

(6) *Example*: Add 2/3, 4/5 and 3/4.

2/3—40
4/5—48
3/4—45

$$\frac{133}{60} = 2\frac{13}{60}$$

Add 5 1/2 and 6 2/3

5 1/2—3
6 2/3—4

11 $\quad$ 7/6=1 1/6
1 1/6

12 1/6

(7) To add two fractions having the same numerator: Find the product of the denominators for the denominator of the sum; multiply the sum of the denominators by the common numerator and this is the numerator of the sum. *Example*: Add 3/5 and 3/7. The numerator of the sum is 3×(5+7)=36. The denominator of the sum is 5×7=35. The sum is 36/35=1 1/35.

Subtraction of Fractions.—To subtract fractions:

(1) Reduce the fractions to the least common denominator.

(2) If the minuend is larger than the subtrahend, subtract the numerators and write the result as the numerator of the remainder and the common denominator as the denominator.

(3) If the minuend is a mixed number and the fractional part is smaller than that of the subtrahend, borrow one unit from the whole number of the minuend and add to the fractional part, making it an improper fraction. Subtract as in (2); subtract the whole numbers, remembering to take account of the unit borrowed, and add the two remainders.

(4) *Example*: Subtract 3/4 from 5/6.

5/6—10
3/4— 9

1

12

Subtract 1 5/6 from 3 3/4. 3 3/4−1 5/6=1 11/12.

3 3/4—21
1 5/6—10

1 11/12

Multiplication of Fractions.—To multiply fractions:

(1) Multiplication may be indicated by "×" or "of".

(2) Multiply the numerators to find the numerator of the product.

(3) Multiply the denominators to find the denominator of the product.

(4) Reduce to simplest form.

(5) Mixed numbers may be reduced to improper fractions and multiplied as above but see (8) and (9).

(6) The work of multiplication of fractions may be simplified by cancellation.

$$\frac{1}{\cancel{2}}\times\frac{\cancel{2}^{2}}{5} = \frac{2}{5}$$

(7) Where the multiplier is a whole number, multiply the numerator of the fraction by the whole number.

3×1/2=3/2=1 1/2

(8) Particularly where the whole numbers are large, the multiplication of a whole number by a mixed number may be simplified as follows:

(*a*) Multiply the whole number by the numerator of the fraction.

(*b*) Divide the above result by the denominator of the fraction.

(*c*) Proceed with the multiplication by the whole number of the mixed number and add the results.

Multiply 24 2/5×14.

24 2/5
14

5)28 $\quad$ =2×14
53/5=2/5×14
96
24

341 3/5

(9) Particularly when the integral parts of mixed numbers are large, the work may be simplified as follows:

(*a*) Multiply the fractional parts of the mixed numbers.

(*b*) Multiply the integral part of the multiplicand by the fractional part of the multiplier.

(*c*) Multiply the integral part of the multiplier by the fractional part of the multiplicand.

(*d*) Multiply the integral parts of the two numbers.

(*e*) Add the results.

(*d*) *Example*: 248 1/2×15 1/4:

1/2×1/4= 1/8
1/4×248= 62
1/2×15 = 7 1/2
15×248=3720

3789 5/8

(10) To square a mixed number ending in ½. Square the fraction. Add 1 to the whole number of the multiplicand and multiply by the whole number of the multiplier. 7½×7½=56¼. (7 plus 1)×7=56; ½×½=¼.

(11) To multiply two mixed numbers ending in ½.

(*a*) If the sum of the integers is even, square the fraction, and to the product of the integers add one-half their sum.

(*b*) If the sum of the integers is odd, write ¾ as the fractional part of the product. To this annex the product of the integers plus the one-half of their sum, dropping the fractional part of the sum.

Division of Fractions.—

(1) To divide a number by a fraction, invert the terms of the divisor and multiply. 3/4÷2=3/4×1/2=3/8.

(2) If the divisor is a mixed number or fraction and the dividend is a mixed number or fraction, the mixed numbers should be reduced to improper fractions.

(3) The work may be simplified in (2) by multiplying both numbers by the common denominator of the fractional parts.

Example: 48 3/4÷7 1/3. Reduce the mixed numbers to improper fractions having a common denominator. 48 3/4=585/12; 7 1/3=88/12. Since 585/12÷88/12=585/12×12/88=585/88, the common denominator may be disregarded and the numerator of the dividend divided by the numerator of the divisor. 88)585

6 57/88

(4) If the divisor is a whole number and the dividend is a mixed number, divide each part by the divisor and add the quotients.

24 1/2÷3=8 1/6
24÷3=8; 1/2÷3=1/6

(5) The work on (4) may also be performed as described in (3):

24 1/2÷3=8 1/6
24 1/2=49/2; 3=6/2; 49÷6=8 1/6

DECIMAL FRACTIONS

Use. In Business.—Fractions probably occur in the decimal form in business computations more frequently than in the

common form. As any common fraction can be changed to decimal form and is more easily handled in that form, every business man should acquire facility in handling them. When calculations involving fractions are performed on the various types of calculating machines, the fraction is nearly always reduced to the decimal form.

Definition.—A decimal fraction is one whose denominator is some power of ten. The denominator is indicated by the number of the places to the right of a period, called the decimal point, occupied by right-hand figure of significance. Thus, the indicated denominator of .2 is 10; the indicated denominator of .125 is 1000. The reading of the integral and decimal orders is indicated in the following table:

Integers	Order	Decimals
Units	1	Tenths
Tens	2	Hundredths
Hundreds	3	Thousandths
Thousands	4	Ten-thousandths
Ten-thousands	5	Hundred-thousandths
Hundred-thousands	6	Millionths
Millions	7	Ten-millionths
Ten-millions	8	Hundred-millionths
	etc.	

To Add Decimals.—Arrange the amounts to be added in such a way that the decimal points fall in a vertical line. Proceed as in ordinary addition. Place the decimal point in the sum directly below in a line with the decimal points in the numbers added. Add 28.5, 125.03, 1.5, 78.105.

```
  28.5
 125.03
   1.5
 78.105
 ------
233.135
```

To Subtract Decimals.—Arrange the amounts in such a way that the decimal points fall in a vertical line. Proceed as in ordinary subtraction of whole numbers. Place the decimal in the remainder directly below and in a line with the decimal points in the subtrahend and minuend.

Subtract .1463 from 2.46.

Solution:

```
 2.46
 .1463
------
2.3137
```

Multiplication of Decimals.—Multiply as with whole numbers. The number of decimal places in the product is the sum of the number of decimal places in both the multiplier and multiplicand. $416\times.25=104.00$. $.4016\times.025=.01004$.

Division of Decimals.—Divide as with whole numbers.

Rules for pointing off in the quotient:

Rule 1. The number of decimal places in the quotient is equal to the number of places in the dividend minus the number of places in the divisor. If there are more places in the divisor than in the quotient, add enough zeros to make the number of places equal to the number of places in the divisor. Example *A* and *A*2.

Rule 2. (*a*) If the divisor is a whole number, insert the decimal point in the quotient when it is reached in the dividend. Example *B*.

(*b*) If the divisor is not an integer, multiply both divisor and dividend by the least power of ten that will make the divisor a whole number and proceed as in (*a*). Example *B*2.

If there is a remainder in the division of decimals, zeros may be added and the division carried to as many places in the quotient as is desired.

When the quotient is required to be to the *nearest* tenth, hundredth, etc., carry the division one place further than the order required and then adjust the quotient.

Example A: Divide 3.9905 by 3.47. $39905\div347=115$.

4 places in the dividend minus 2 places in the divisor equals 2 places in the quotient. Therefore $3.9905\div3.47=1.15$.

*Example A*2: Divide 3990.5 by 3.47. Since there are two places in the divisor and but one in the dividend, add a zero to the dividend. $399050\div347=1150$. 2 places − 2 places = 0 places. Therefore $3990.50\div3.47=1150$.

Example B: Divide 399.05 by 347:

```
   1.15
347)399.05
   347
   ---
   520
   347
   ---
  1735
  1735
  ----
```

*Example B*2: Divide 399.05 by 34.7. Multiplying both dividend and divisor by 10 eliminates the decimal in the divisor. $3990.5\div347=11.5$

```
    11.5
347)3990.5
```

Division by 10, 100, 1000, etc. To divide by 10 or a power of ten, move the decimal point in the dividend to the left as many places as there are zeros in the divisor. It may be necessary to place zeros between the decimal point and the first left figure of significance in the quotient; thus, $24\div1000=.024$. This same principle may be extended to 20, 200, 3000, 5000, etc., by moving the decimal point and dividing by 2, 3, or 5 as the case may be.

Division by 25, 50, 125, etc. To divide by 25, divide by 100 and multiply the result by 4.

To divide by 50, divide by 100 and multiply the result by 2.

To divide by 125, divide by 1000 and multiply by 8.

For other applications of aliquot parts to division, see Aliquot Parts.

Changing Decimal Fractions to Equivalent Common Fractions.—To change a decimal fraction to its equivalent common fraction, omit the decimal point and write the indicated denominator. Reduce to lowest terms. *Example*:

$$.125=\frac{125}{1000}=\frac{1}{8} \qquad .16=\frac{16}{100}=\frac{4}{25} \qquad .2=\frac{2}{10}=\frac{1}{5}$$

Changing Common Fractions to Equivalent Decimal Fractions.—To change a common fraction to a decimal fraction, divide the numerator by the denominator, carrying the division to as many decimal places as desired. It is usually not necessary to carry the division further than four or five places.

Example:

```
7/16 = 16)7.0000        7/8 = 8)7.000
          64                    .875
          60
          48
         120
         112
          80
          80
```

Reciprocals.—The reciprocal of any number is unity divided by that number. ¼ is the reciprocal of 4. Where several numbers are to be divided by another number, as in pro-rating, it is frequently much easier to find the reciprocal decimal and multiply each number by it.

ALIQUOT PARTS

Definition.—An aliquot part of a number is that part which is contained an integral number of times in the given number. *Examples*: 2½ is an aliquot part of 10, 100, and 1000 because it is contained in each of these an even number of times. 25 is an aliquot part of 100 and 1000. 125 is an aliquot part of 1000.

Use.—The use of aliquot parts has been mentioned in the methods of multiplication and division. Through the use of the methods, which will now be further explained, the work of multiplication and division by certain numbers is made much easier and the results can be obtained very much more quickly. Since prices are very frequently fixed at aliquot parts of one dollar, the multiplication in billing and similar work can be very much simplified and speed can be developed by gaining facility in handling these short cuts.

Table.—The following is a general table of the more common aliquot parts. It will be noticed that only the simplest forms of fractions are given. The equivalents which are very seldom used have been omitted. Aliquot parts less frequently used have been marked with an asterisk (*).

Numbers	1/2	1/3	2/3	1/4	3/4	1/5	2/5
10	5	3 1/3	6 2/3	2 1/2	7 1/2	2	4
100	50	33 1/3	66 2/3	25	75	20	40
1000	500	333 1/3	666 2/3	250	750	200	400

Numbers	3/5	4/5	1/6	5/6	1/7*	1/8	3/8
10	6	8	1 2/3	8 1/3		1 1/4	3 3/4
100	60	80	16 2/3	83 1/3	14 2/7*	12 1/2	37 1/2
1000	600	800	166 2/3	833 1/3		125	375

Numbers	5/8	7/8	1/9*	1/11*	1/12	5/12	7/12
10	6 1/4	8 3/4					
100	62 1/2	87 1/2	11 1/9*	9 1/11	8 1/3	41 2/3	58 1/3
1000	625	875			83 1/3		

Numbers	11/12	1/15	1/16	1/10	1/20	1/30	1/40	1/50
100	91 2/3	6 2/3	6 1/4	10	5	3 1/3	2 1/2	2
1000			62 1/2	100	50	33 1/3	25	20

Multiplying by aliquot parts of 10:

$416\times2\ 1/2$. Since 2 1/2 is 1/4 of 10, $(416\times10)\div4=1040$.

$920\times7\ 1/2$. Since 7 1/2 is 3/4 of 10, $(920\times10\times3)\div4=6900$.

OR $(920\div4)\times10\times3=6900$.

Multiplying by aliquot parts of 100:

$32\times6\ 1/4$. Since 6 1/4 is 1/16 of 100, $(32\times100)\div16=200$.

25×288. Since 25 is 1/4 of 100, $(288\times100)\div4=7200$.

$640\times87\ 1/2$. Since 87 1/2 is 7/8 of 100, $(640\times100\times7)\div8=56000$.

OR $(640\div8)\times100\times7=56000$.

Multiplying by aliquot parts of 1000:
1280×125. Since 125 is 1/8 of 1000 (1280×1000)÷8=160000.
OR (1280÷8)×1000=160000.
1680×625. Since 625 is 5/8 of 1000, (1680×1000×5)÷8=1050000.
OR (1680÷8)×1000×5=1050000.
Dividing by aliquot parts of 10:
Divide 16 by 1 1/4. Since 1 1/4 is 1/8 of 10, the quotient of 16÷10 will be 1/8 of the quotient of 16÷1 1/4. Therefore, 16÷1 1/4=(16÷10)×8=12.8.
Dividing by aliquot parts of 100:
1720÷33 1/3=(1720÷100)×3=51.6.
1284÷37 1/2=[(1284÷100)÷3]×8=34.24.

Interchanging multiplier and multiplicand sometimes makes possible the application of the short methods of aliquot parts: .32×7500=.75×3200=2400.

DENOMINATE NUMBERS

Uses.—Civilized man makes constant use of measures and measurement. He buys and sells by units of measure; he indicates size and magnitude of quantity by measure; he compares quantities by measure. For example, he buys butter by the pound; he orders a bin to contain fifty bushels of wheat; and he finds that Henry's farm contains sixty-five acres, while Brown's farm contains sixty-two acres.

A Denominate Number is a concrete number whose unit of measure is established by law or custom.

A Simple Denominate Number is one that is expressed by the units of one denomination; e. g., five pounds, or three gallons.

A Compound Denominate Number is one that is expressed by the units of two or more denominations that are related to one another; e. g., five pounds six ounces, or three gallons one pint.

Tables.—The following tables show the most commonly used measures:

United States Money is the legal currency of the United States. It consists of gold, silver, nickel, and copper coins; treasury, and Federal Reserve Bank notes.

Table of United States Money

10 mills	= 1 cent	*c. ct. ¢*
10 cents	= 1 dime	*d.*
10 dimes	= 1 dollar	*$.*
10 dollars	= 1 eagle	*E.*

The mill is not coined; it is used only as the decimal part of a cent.

The following denominations are now coined
Gold.....$20, $10, $5.
Silver.....$1, 50c, 25c and 10c pieces.
Nickel.....5c piece.
Bronze.....1c piece.

WEIGHTS AND MEASURES.—Practically all the commerce of the world is conducted through the medium of two systems of weights and measures, namely, the English system and the metric system. Practicalily all the engineering work done in the world with the exception of that done in Japan is based upon one or the other of these systems. In the United States and in Great Britain and its possessions both systems are legal and in use, the English being used in all ordinary commercial transactions and the metric in all scientific work and to a lesser extent in technical work.

The English System.—The customary system of weights and measures in use in the United States is the same as the system in everyday use in Great Britain, with some important differences in some of the units which must be noted. For all practical purposes the units of length and mass are identical in value, although the fundamental standards of the two countries are quite different. In Great Britain the standaid yard is a bronze bar in the custody of the board of trade and preserved in the standards office, Westminster. Its legal value in terms of the international meter is, one yard equals $\frac{36}{39.370113}$ meters.

In the United States the meter is the fundamental standard and the yard is defined as $\frac{3600}{3937}$ meters. The difference in the value of the two yards in terms of the meter only amounts to a little more than one part in 400,000, which is about the difference found in comparing the imperial yard with its authentic copies at different periods. It is therefore doubtful whether there is a real difference between the length of the English bronze yard and United States yard derived from the meter.

A similar condition exists with respect to the avoirdupois pounds; in England a certain p'atinum cylinder deposited in the standards office is regarded as the standard pound, while in the United States the pound is defined as 453.5924277 grams, of which the international kilogram contains 1,000. This is the same as the legal value in Great Britain, so that the only difference in the two pounds is one of standards.

On the other hand the capacity measures of the two countries are quite different. The United States ga'lon of 231 cubic inches and the Winchester bushel of 2150.42 cubic inches have not been legal measures in Great Britain since 1825, having been superseded by the present imperial gallon, which is defined as the volume of 10 pounds of pure water at 62 degrees Fahrenheit, weighed against brass weights in air at the same temperature as the water, and with the barometer at 30 inches. The imperial bushel is defined as the volume of 80 pounds of water weighed under the same conditions as the gallon. The bushel of Great Britain is, therefore, exactly equal to 8 gallons.

The volume of the imperial gallon, according to the most reliable data available at this time, is 277.420 cubic inches and the bushel 2219.36 cubic inches, the first being larger than the United States gallon by approximately 20 per cent, and the latter larger than the United States bushel by 3.2 per cent.

The methods of subdividing and multiplying the yard, pound, gallon, and bushel in the two countries are substantially the same.

Standard Weights and Measures of United States

AVOIRDUPOIS WEIGHT

Dram	dr.	=27 1/2 grains (27.34375).
Ounce	oz.	=16 drams, 437.5 grains.
Pound	lb.	=16oz.,256dr.,7,000grains.
Legal stone	st.	=14 lbs.
Quarter (Eng.)	qr.	=28 lbs.
Quarter (Can.)	qr.	=25 lbs.
Cental or quintal	cent.	=100 lbs.
Hundredwgt.(Eng.),cwt.		=4 qrs., 112 lbs.
Hundredwgt.(Can.),cwt.		=4 qrs., 100 lbs.
Ton (Eng.)	T.	=20 cwt., 2,240 lbs.
Ton (Can.)	T.	=20 cwt., 2,000 lbs.

Ton of Coal.—The United States ton is legally defined in some states as 2,000 pounds and in other states as 2,240 pounds. In Arizona, Colorado, Connecticut, Idaho, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Montana, Nebraska, New Jersey (net ton), New York, Ohio, Rhode Island (net ton), Vermont, Washington, and Wisconsin, it is fixed at 2,000 pounds, and in the District of Columbia, Pennsylvania, New Jersey (gross ton), Rhode Island (gross ton), it is fixed at 2,240 pounds. For tariff purposes Congress has fixed the ton of coal at 2,240 pounds.

TROY WEIGHT

Carat		=3.17 grains.
Pennyweight	dwt.	=24 grains.
Ounce	oz.	=20 dwts., 480 grains.
Pound	lb.	=12 oz.,240dwts.,5,760grs.
Hundredweight	cwt.	=100 lbs.

Troy is the weight used by goldsmiths and jewelers. The grains troy, apothecaries', and avoirdupois are equal, and the same in England, France, the United States, Holland, and in most other countries.

The oz. troy and apothecaries' =1.09714 oz. avoirdupois; but the lb. troy and lb. apothecaries' =only 0.82286 lb. avoirdupois, while 175 lbs. troy and apothecaries' =144 lbs. avoirdupois.

APOTHECARIES' WEIGHT

Scruple	℈ =20 grains	= 20 grains.
Dram	ʒ = 3 scruples	= 60 grains.
Ounce	℥ = 8 drams	= 480 grains.
Pound	lb =12 ounces	=5,760 grains.

APOTHECARIES' FLUID MEASURE

		Marked
60 minims ♏ (drops)..	=1 fluid dram	f ʒ
8 drams	=1 ounce	f ℥
16 ounces	=1 pint	O
8 pints	=1 gallon	C., or Cong.

1 dram	=1 teaspoonful.
2 drams	=1 dessertspoonful.
4 drams	=1 tablespoonful.
2 ounces	=1 wineglassful.
3 ounces	=1 teacupful.

LIQUID MEASURE

		Cubic Inches
4 gills	1 pint (O)	= 28.875
2 pints	1 quart (qt.)	= 57.75
4 quarts	1 gallon (gal.)	=231.0
63 gallons	1 hogshead (hhd.).	
2 hogsheads	1 pipe or butt.	
2 pipes	1 tun.	

DRY MEASURE

		Cubic Inches
2 pints	1 quart (qt.)	= 67.20
4 quarts	1 gallon (gal.)	= 268.80
2 gallons, or 8 quarts	1 peck	= 537.60
4 pecks	1 struck bushel	=2150.42

HOUSEHOLD MEASURES

120 drops water	=1 teaspoon.
60 drops thick fluid	=1 teaspoon.
2 teaspoons	=1 dessertspoon.
3 teaspoons	=1 tablespoon.
16 tablespoons	=1 cup.
1 cup	= ½pt.
1 cup water	= ½lb.
4 tablespoons flour	=1 oz.
2 tablespoons butter	=1 oz.
3 teaspoons soda	= ½oz.
4 teaspoons baking powder	= ½oz.
2 cups granulated sugar	=1 lb.
2½ cups confectioners' sugar	=1 lb.
2½ cups wheat flour	=1 lb.
3½ cups whole wheat flour	=1 lb.
2½ cups buckwheat flour	=1 lb.
5½ cups coffee	=1 lb.
6½ cups tea	=1 lb.
2 cups rice	=1 lb.
2 cups lard	=1 lb.
2 cups butter	=1 lb.
2 cups graham flour	=1 lb.
2 cups rye flour	=1 lb.
2 cups corn meal	=1 lb.
2 cups rolled oats	=1 lb.
2 cups powdered sugar	=1 lb.
2 cups brown sugar	=1 lb.
2 cups raisins	=1 lb.
2 cups currants	=1 lb.
2 cups bread crumbs	=1 lb.
9 eggs	=1 lb.

CUBIC OR SOLID MEASURE

Cubic foot	=1,728 cubic inches.
Cubic yard	=27 cubic feet, 21,033 bushels.
Cord of wood	=128 cubic feet.
Shipping ton	=40 cubic feet merchandise.
Shipping ton	=42 cubic feet of timber.
Ton of displacement of a ship	=35 cubic feet.

LINEAR MEASURE

3 barleycorns, or 12 lines, or 72 points, or 1,000 mils (mi.).	1 inch (in.).
3 inches	1 palm.
4 inches	1 hand.
9 inches	1 span.
12 inches	1 foot (ft.).
18 inches	1 cubic.
3 feet	1 yard (yd.).
2½ feet	1 military pace.
5 feet	1 geometrical pace.
2 yards	1 fathom.
5½ yards	1 rod, pole, or perch.
66 feet, or 4 rods	1 Gunter's chain.
40 poles, or 220 yards	1 furlong (fur.).
8 furlongs, or 1,760 yards, or 5,280 feet	1 mile.
3 miles	1 league.

The hand is used to measure horses' height. The military pace is the length of the ordinary step of a man. One thousand geometrical paces were reckoned to a mile.

LAND MEASURE (LINEAR)

7.92	inches	1 link.
100	links, or	1 chain (ch.).
66	feet, or	
22	yards, or	
4	poles	
10	chains	1 furlong (fur.).
80	chains, or	1 mile.
8	furlongs	

LAND MEASURE (SQUARE)

144 square inches	1 square foot (sq. ft.).
9 square feet	1 square yard (sq.yd.).
30¼ square yards	1 sq.pole, rod,or perch.
16 square poles	1 square chain (sq.ch.).
40 square poles, or	1 square rood.
1,210 square yards	
4 square roods, or	
10 square chains, or	
160 square poles, or	1 acre.
4,840 square yards, or	
43,560 square feet	
640 acres, or	1 square mile.
3,097,600 square yards	
30 acres	1 yard of land.
100 acres	1 hide of land.
40 hides	1 barony.

GEOGRAPHICAL AND NAUTICAL MEASURE

6086.44	feet, or	=1 nautical mile.
1000	fathoms, or	
10	cables, or	
1.1528	statute miles	
1	nautical mile per hr.	=1 knot.
60	nautical miles, or	=1 degree.
67.168	statute miles	
360	degrees	=1 circumference of the earth at the equator.
1	league	=3 nautical miles.
1	cable's length	=120 fathoms.

TIME

The unit of time measurement is the same among all nations. Practically it is $\frac{1}{86400}$ of the mean solar day, but really it is a perfectly arbitrary unit, as the length of the mean solar day is not constant for any two periods of time. There is no constant natural unit of time.

1 minute	=60 seconds.
1 hour	=60 minutes, 3,600 seconds.
1 day	=24 hours, 1,440 minutes, 86,400 seconds.
1 sidereal day	=86,164.1 seconds.
1 sidereal month	=27.321661 mean solar days (average).
1 lunar month	=29.530589 mean solar days (average).
1 anomalistic month	=27.544600 mean solar days (average).
1 tropical month	=27.321582 mean solar days (average).
1 nodical month	=27.212222 mean solar days (average).
Mean solar year	=365 d. 5 h. 48 m. 46.045 s. with annual variation of 0.00539.

The change in the length of the mean sidereal day, *i. e.*, of the time of the earth's rotation upon its axis, amounts to 0.01252 s. in 2,400 mean solar years.

ANGULAR MEASURE

There is perfect unanimity as to the standard angle (i. e., the right angle) and practical unanimity as to its subdivision, for the subdivision into grades, etc., once favored by the French, is now abandoned.

1 minute of angle or arc =60 seconds.
1 degree of angle or arc =60 minutes.
90 degrees of angle or arc =1 right angle or ¼ of circumference.

Radian of angle or arc	=arc same length as radius.
Radian of angle or arc	=57.295779513082°.
Length of arc of 1°	= 0.017453292520.
Length of arc of 1′	= 0.015707963268.
Length of arc of 1″	= 0.000290888209.

Time on Shipboard.—The twenty-four hours are divided on board ship into seven parts, and the crew is divided into two parts or watches, designated *port* and *starboard watches*. Each watch is on duty four hours, except from 4 to 8 p.m., which time is divided into two watches of two hours each, called *dog watches*, by means of which the watches are changed every day, and each watch gets a term of eight hours' rest at night. *First watch*, 8 p.m. to midnight; *middle watch*, midnight to 4 a.m.; *morning watch*, 4 to 8 a.m.; *forenoon watch*, 8 a.m. to noon; *afternoon watch*, noon to 4 p.m.; *first dog watch*, 4 to 6 p.m.; *second dog watch*, 6 to 8 p.m. The bell is struck every half-hour to indicate the time, as follows:

1 bell	12.30 a.m.	1 bell	12.30 p.m.
2 bells	1.00 a.m.	2 bells	1.00 p.m.
3 bells	1.30 a.m.	3 bells	1.30 p.m.
4 bells	2.00 a.m.	4 bells	2.00 p.m.
5 bells	2.30 a.m.	5 bells	2.30 p.m.
6 bells	3.00 a.m.	6 bells	3.00 p.m.
7 bells	3.30 a.m.	7 bells	3.30 p.m.
8 bells	4.00 a.m.	8 bells	4.00 p.m.
1 bell	4.30 a.m.	1 bell	4.30 p.m.
2 bells	5.00 a.m.	2 bells	5.00 p.m.
3 bells	5.30 a.m.	3 bells	5.30 p.m.
4 bells	6.00 a.m.	4 bells	6.00 p.m.
5 bells	6.30 a.m.	1 bell	6.30 p.m.
6 bells	7.00 a.m.	2 bells	7.00 p.m.
7 bells	7.30 a.m.	3 bells	7.30 p.m.
8 bells	8.00 a.m.	4 bells	8.00 p.m.
1 bell	8.30 a.m.	1 bell	8.30 p.m.
2 bells	9.00 a.m.	2 bells	9.00 p.m.
3 bells	9.30 a.m.	3 bells	9.30 p.m.
4 bells	10.00 a.m.	4 bells	10.00 p.m.
5 bells	10.30 a.m.	5 bells	10.30 p.m.
6 bells	11.00 a.m.	6 bells	11.00 p.m.
7 bells	11.30 a.m.	7 bells	11.30 p.m.
8 bells	12.00 n'n.	8 bells	12.00 ngt.

Board and Timber Measure.—A board one foot square and one inch thick is the unit of board measure, the number of feet in a board being determined by the number of times its volume equals that of the unit: Thus a board 2 inches thick, 1½ feet wide and 10 feet long contains 30 feet. A board of the same length and width ½ inch thick would contain 7½ board feet.

The Doyle Rule.—Known in some sections as the Connecticut River Rule, the St. Croix Rule, the Thurber Rule, the Moore & Beeman Rule, and the Scribner Rule—is used throughout the entire country and is more generally employed than any other. It is constructed by the following formula: Deduct 4 inches from the diameter of the log as an allowance for slab; square one-quarter of the remainder and multiply the result by the length of the log in feet. It is the usual custom to measure the diameter inside the bark at the small end. One cord of wood is 128 cubic feet.

In metric countries all wood is measured in cubic meters.

Water Measure.—*The Miner's Inch* is usually defined as the quantity of water that will pass through an orifice 1 square inch in cross section under a given head. The head has been fixed in various localities at from 4 to 6½ inches to the center of the orifice. In states where the miner's inch is defined by statute it varies from $\frac{1}{40}$ to $\frac{1}{50}$ of a cubic foot per second. The miner's inch is rapidly becoming obsolete, its place being taken by the cubic foot per second or the gallon per second. The United States reclamation service uses the cubic foot per second.

Visibility Distance at Sea.—Table of elevations of objects above sea level, with their corresponding distances of visibility.

Height in Feet	Distance in Nautical Miles	Height in Feet	Distance in Nautical Miles
5	2.555	110	11.986
10	3.614	120	12.519
15	4.426	130	13.030
20	5.111	140	13.522
25	5.714	150	13.997
30	6.260	200	16.162
35	6.761	250	18.070
40	7.228	300	19.795
45	7.666	350	21.381
50	8.081	400	22.857
55	8.476	450	24.244
60	8.852	500	25.555
65	9.214	550	26.802
70	9.562	600	27.994
75	9.897	650	29.137
80	10.222	700	30.237
85	10.536	800	32.325
90	10.842	900	34.286
95	11.139	1000	36.140
100	11.428		

Metric System.—The unit of length in the metric system is the *meter*, a length originally planned to be equal to the one ten-millionth of the distance between the equator and the pole, measured along a terrestrial meridian. A platinum bar of this supposed length was constructed and deposited in the archives of the French republic in 1799. At the same time a platinum weight was constructed which was made equal to the mass of a cube of pure water at 4 degrees centigrade, the sides of the cube being one-tenth the length of the meter. This weight, which is equal to one thousand units of mass in the metric system, is called the *kilogram*.

Subsequent geodetic measures showed that the lengths of arcs differ on different parts of the earth and also that the value of the arc from which the meter was derived was in error by about one part in a thousand, causing a similar error in the length of the meter. Nevertheless the length of the original meter bar, known as the meter of the archives, has been retained, although its reference to the quadrant has been abandoned.

In 1875 an international bureau of weights and measures was established near Paris, France, by the concurrent action of the principal nations of the world for the purpose of constructing exact copies of the meter and kilogram deposited in the archives. Thirty-one standard meters of iridioplatinum and forty kilograms of the same alloy were constructed and carefully compared with the standards of the archives and with one another.

International Prototypes.—This great work was completed in 1889 and the meter and the kilogram which agreed most nearly with the original standards of the archives were called international prototypes and were deposited at the international bureau, where they are maintained to-day subject to the authority of the international committee on weights and measures.

The remaining meters and kilograms were distributed by lot to the different nations which contributed to the support of the bureau. The United States secured two copies of the meter and two copies of the kilogram, which are in the custody of the Bureau of standards at Washington. One of the meters known as No. 27 and one kilogram, No. 40, were selected as the United States standards, while the other meter and kilogram are used as working standards.

Determinations of the Units.—The length of the international meter has been determined in terms of the wave lengths of the red, green and blue radiations of cadmium, so that if every meter in the world were destroyed the length could be reproduced within less than one part in ten million. The number of wave lengths of the different radiations at 15 degrees centigrade and 760 millimeters pressure are as follows:

Red	1 m.	= 1,553,163.5
Green	1 m.	= 1,966,249.7
Blue	1 m.	= 2,083,372.1

The unit of capacity in the metric system is the *liter*, which was intended to be both equal to the volume of a cubic decimeter and to the volume of pure water under normal atmospheric pressure and at the temperature of maximum density (4°C.) that would exactly balance one kilogram in vacuo.

Extent of Use.—The use of the metric system is obligatory in France, Germany, Austria, Hungary, Belgium, Brazil, Bulgaria, Chili, Colombia, Denmark, Spain, Holland, Italy, Mexico, Montenegro, Peru, Portugal, Argentina, Roumania, Servia, Sweden, Norway, Switzerland, and Uruguay. Also in Cuba, the Philippine Islands, Porto Rico, and Guam. Its use is legal in the United States, Great Britain and possessions, in Russia, Japan, Egypt,

Bolivia, Greece, Guatemala, Nicaragua, Paraguay, Venezuela, Turkey, and Siam. The units of length, mass and capacity described are subdivided decimally and the Latin prefixes *milli*, *centi*, and *deci*, are used to indicate the order of the division, and multiplied by powers of ten, the order being indicated by the prefixes *deka*, *hecto*, *kilo* and *myria*.

THE METRIC SYSTEM AND ITS EQUIVALENTS.

Metric System	Equivalents in English Weights and Measures				
Measures of Length (Unit, meter)	Inches	Feet	Yards	Fathoms	Miles
1000 microns . . . = 1 millimeter	0.03937	0.003	0.001	0.000	0.000
10 millimeters = 1 centimeter	0.39371	0.032	0.010	0.005	0.000
10 centimeters = 1 decimeter	3.93708	0.328	0.109	0.054	0.000
10 decimeters . = 1 meter	39.37079	3.280	1.093	0.546	0.000
10 meters . . . . = 1 dekameter	393.70790	32.808	10.936	5.468	0.006
10 dekameters . = 1 hectometer	3937.07900	328.089	109.363	54.681	0.062
10 hectometers = 1 kilometer	39370.79000	3280.899	1093.633	546.816	0.621
10 kilometers . . = 1 myriameter	393707.90000	32808.991	10936.330	5468.165	6.213
Cubic or Capacity Measure (Unit, liter)	Cubic. In.	Cubic Ft.	Pints	Gallons	Bushels
1 milliliter . . . =	0.06103	0.000	0.001	0.000	0.000
10 milliliters . . = 1 centiliter, 1 decimeter	0.61027	0.000	0.017	0.002	0.000
10 centiliters . . = 1 deciliter, 1 meter	6.10271	0.003	0.176	0.022	0.002
10 deciliters . . . = 1 liter, or cu. decimeter	61.02705	0.035	1.760	0.220	0.027
10 liters . . . . . = 1 decaliter, or centistere	610.27052	0.353	17.607	2.200	0.275
10 dekaliters . . = 1 hectoliter, or decistere	6102.70515	3.531	176.077	22.009	2.751
10 hectoliters . . = 1 kiloliter, or stere	61027.05152	35.316	1760.773	220.096	27.512
10 kiloliters . . . = 1 myrialiter, or dekastere	610270.51519	353.165	17607.734	2200.966	275.120
Measures of Weight (Unit, gram)	Grains	Troy Oz.	Avoir. Oz.	Cwt. = 112 lb.	Ton = 20 Cwt.
1 milligram . . =	0.01543	0.000	0.000	0.000	0.000
10 milligrams . = 1 centigram	0.15432	0.000	0.000	0.000	0.000
10 centigrams . = 1 decigram	1.54323	0.003	0.000	0.000	0.000
10 decigrams . . = 1 gram	15.43235	0.032	0.002	0.000	0.000
10 grams . . . . . = 1 dekagram	154.32349	0.321	0.022	0.000	0.000
10 dekagrams . = 1 hectogram	1543.23488	3.215	0.220	0.001	0.000
10 hectograms = 1 kilogram	15432.34880	32.150	2.204	0.019	0.000
10 kilograms . . = 1 myriagram	154323.48800	321.507	22.046	0.196	0.009
Square, or Measures of Surface (Unit, are)	Square Feet	Yards	Perch	Roods	Acres
10000 square centimeters = 1 centiare, or square meter	10.764299	1.196	0.039	0.000	0.000
100 centaires = 1 are, or 100 square meters	1076.429934	119.603	3.953	0.098	0.024
100 ares = 1 hectare, or 10,000 sq. meters	107642.993419	11960.333	395.382	9.884	2.471

Metri† Equivalents for English System

Approximate		Exact
1 acre . . . . . = 0.4	hectare	0.4047
1 bushel . . . . . = 35.0	liters	35.24
1 cubic foot . . . . = 0.028	cubic meter . . .	0.0283
1 cubic inch . . . . = 16.0	cubic cent.† . . .	16.39
1 cubic yard . . . . = 0.76	cubic meter . . .	0.7645
1 foot . . . . . = 30.0	centimeters	30.48
1 gallon . . . . . = 3.8	liters	3.785
1 grain . . . . . = 0.065	gram	0.0648
1 gram . . . . . = 15.0	grains	15.43
1 inch . . . . . = 25.0	millimeters	25.40
1 mile . . . . . = 1.6	kilometers	1.609
1 ounce(avoir) . . . = 28.0	grams	28.35
1 ounce(troy) . . . = 31.0	grams	31.10
1 peck . . . . . = 8.8	liters	8.809
1 pint . . . . . = 0.47	liter	0.4732
1 pound . . . . . = 0.45	kilogram	2.2046
1 quart(dry) . . . . = 1.1	liters	1.101
1 quart(liquid) . . = 0.95	liter	0.9464
1 sq. foot . . . . . = 0.093	square meter . .	0.0929
1 sq. inch . . . . . = 6.5	square cent.† . .	6.452
1 sq. yard . . . . . = 0.84	square meter . .	0.8361
1 ton (2,000 lbs.) . = 0.91	metric ton	0.9072
1 ton (2,240 lbs.) . = 1.0	metric ton	1.017
1 ton (metric) . . . . = 1.1	ton (2,000 lbs.)	1.102
1 ton (metric) . . . . = 0.98	ton (2,240 lbs.)	0.9842
1 yard . . . . . = 0.91	meters	0 9144

†Centimeters.

UNITED STATES LEGAL WEIGHTS (in pounds) PER BUSHEL.

Prepared by the United States Bureau of Standards.

State or Territory	Federal Statutes	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	District of Columbia	Florida	Georgia	Hawaii	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming
COMMODITIES																																																			
Alfalfa Seed													60	60	60	60	60			60	60			60				60			60	60		60	60		60			60											
Apples*	50			b50			48			b48			b48	b47	48	48	48			44	b50			50				48	45	b48	b48	48	48	45	25	48	48	48	48		48	b50	48	b50	b50	48	45		b48	44	b48
Dried		24		24			25			24	24		24	24	25	24	24	24		25	28			22	28	26	24	..	24	24	25	25	24	24	24	24		25	25	24	24	24	28		25	28		24	25	
Apple Seeds																																		40						40										
Barley	48	47		48	50	48	48			48	47	48	48	48	48	48	48	47	32	48	48		48	48	48	48	48	48	48	48	48	48	48	48					48									48	
Beans*		60		a60		60	60						60	a50	50	60	60	a50		60	60			60	60	48	48	60	60	a60	60	60	60	60	60	60	60		48	48	48	48	48	48				48	48	48
Castor													46	46		c50	46	45			50			46		46		60	a60	60	60	60	60	60	60	60		60	60	60	60	60	a60		60	60		60	60	
Cocoa										c48			c48																									c46	46	46	46	c50	46		46			46	46	
Grass, Unshelled																56	38								56													30	50	30			28						
Grass or String													24							24								56			24																		
Lima															56					56				56						24	24													24					
Misc. Varieties										78			24							47					47									53															
Scarlet or White Runner Pole																																		47															
Shell																				50				50										50															
Soy																				28																													
Beet Greens														60						58														60															
Beets																				12										58	12	60																
Blackberries							60						56	60	60	56				60				56			56	56	56	60	12	60	56		50	60	56	60		56	50	50	56	50	60		60		55	50	56
Blue Grass Seed																				40										c48				c48					c48		c48							48		
Bran				14		14							14	14	14	14	14	14					14	14	14	14	14	18	14		14	14	20		14	14		14		14	14	14	14			14		14	14	
Bromus inermus				20			20			20	20		20	20	20	20		20		20	20				20	20	20	20	20	20	20	20	20	20	20		14	20		20	20	20		29	20			20	20	20	
Broom-Corn seed				48												14																																		
Buckwheat				52	40	52	48				52		50	52	50	48	48	56		48	48		48	50	48	52	52	50	50	48	48	50	52	48	44	30	45	48		50		42	50	42	48		50	57		50		
Cabbage																																		50	42	50	52		48	48	50	48	50	52		48	48		48	50	
Canary Seed																																		50					50									50	
Carrots							50						50	50	50	50	50			50	50			45		50	50	50	50	50	50	50	50	50	60														60	
Cement																																		45	50	50		50	50	50	50	50	50	50	50	50	50	50	50	50	50
Charcoal							20	20						30	20	20																			80					80									100	
Cherries																40	156											20			20	20		22					22	22		20						20	
Chestnuts																												40						156					156									156	
Clover Seed					60		60	60			60		60	b60	60	60	60	60		60	60		60	60	60	60	60	60	60	60		50	60	60	50	60	60	60		50	60	60	60	60		60	57		50		
Coal*														80		80																																	g60	g60	
Anthracite							80																																										80		
Bituminous																		76													75								75				80		80					
Mineral						80									80			76													70					80			75										
Stone																																																	
Coke																		76						80		80	76								80	80				80		80		80	80					
Cracked	56												40	40	40													40			40	40			40		40			40				40	40				40	
In Ear		70		j70		70					70		70	70	k68	70	j70	70		70	70		70	70	72	70	70	70	70		50				j70	70	68	70		j70	70	j70	70	70	k68		j70	70		68		70
In Ear Unhusked		75		74						70				75																50																			
Popcorn (In Ear)													70			70	70											70					72				72		74		74								
Popcorn (Shelled)													56	56	56													56							70						70	70							
Rice Corn																																			42														
Shelled	56	56		56	52	56	56	56		56	56	56	56	56	54	56	56	56	56	56	56		56	56	56	56	56	56	56		56	56	56		56	56	56			56	56	56	56	56		56	56		56	56	
Sweet																50																																		
Corn Meal*				48		50	50			48		48	48	48	50	48		50		50	48		50	48	50	50	48	50	50		50	50	50		48	45	48	50		50	50	50	50	50		50	50		50	50	
Bolted		46						44																48	50	50	50	48	48	50	50	50	50			48	50		50	50		50	50	45		48	50		48	50	
Unbolted		48						48					48											44																									46		
Cotton Seed*		32		32½						32	30		48											48																										
Sea Island							44			44			32											32	33												32												
Upland							30													44										30			44																
Cranberries													33	33						32																														
Cucumbers													48	48	48	48							40	36						32	22				36			32			32		33		32			35	33	
Currants																								48		48		48			48	48		48	48		48			48	48	48	48	48			48		50	50	
Dandelions																				40																														
Emmer																				12																														
Flaxseed (Linseed)	56			56			55				56		56	56	56	56	56	56		56	56		56	56	56	56	56	56	56		56	56	55		56	56	56			56	56	56	56	56		56	56		56	56	
Gooseberries													40	40																																			60		

UNITED STATES LEGAL WEIGHTS (in pounds) PER BUSHEL.—Continued

State or Territory	Federal Statutes	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	District of Columbia	Florida	Georgia	Hawaii	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming
COMMODITIES																																																		
Grapes											8																																							
Plastering*																																																		
Plast (Unwashed)													8	8																																				
Plast (Washed)													4	4																																				
Hemp Seed							44				44		44	44	44	44	44	44		44	44		44	50	44	44	44	44	48		44	44		44	50	44	44		44	44	44	44	44	44		44		44	44	
Herds Grass								45													45	40									45	45		45						45								45			
Hickory Nuts														50	50	50	50	50						5				50							50	50	50			50		50	50	50					50	50	
Hominy																																			62	60														
Horse Radish																																			50															
Hungarian Grass Seed													50	50		50		50		48	50		50	48	50	48	50		50	50	50	48	50	48	50	48	50	48		50	50	48	50	48	50		50	48		50	48	
Kafir Corn													56	56	56	56	56														56	56																	56	
Kale																					12														10																	
Lime*						80	70														70	80		70	80	80			70		80	70		80	70	80			80	70	80	80									
Malt													38	38							34				38	38																								
Millet*													50	50							50				48	50																								
Oats	32	32		32	32	32	32			32	32	32	32	32	32	32	32	32	32	32	32		32	32	32	32	32	32	32		32	32	32	32	32	32	32		32	32	32	32	32	32		32	32	32	32	32
Onions*				57		57	52			56	57		57	57	57	57	57			52	54		54	52	57	57	57		52	52	57	57	57	57	57	57			52	57	57	57	57		52	57		55	50	57
Top Onion Sets														v30			v28							v28				v28			28	v30		28	v28	28			28		v28	v30	v28	v30					v28	v	
Orchard Grass Seed					14									14	14	14				14	14		14	14				14			14	14							14		14	14	14	14			14		14		
Osage Orange Seed														32		32							33					32						33																
Parsnips							45						50	54		55	45	48		45			36	42			50	50	45	50	42		50	42	50	44			50	50	50	48	50	50		45	50		42	44	50
Peanuts*											54		48	48	48	48	48			48	40		48	48			48	48	48	48	48		50	48	48	48			48	48	50	48	50	50		48			48	48	48
Dried				33			33				24		33	33	33	33	33	32	39		33		28	28	33	35		33	33	33	33	33	33	25	28	33			33	33	26	28					38	33	
Dried (Unpealed)		33										33									w32																										32			
Dried (Pealed)		38										38																																				40			
Peanuts										22		25		20		22		24		20	22			22	24			22		20	20	22							23	20	23	20		20	22		23		
Pears*										55				58	50	45	50			58			45		48	45	45		58	58	48		56	45		48		50		36	45	56	58		58		50	48	
Dried																																									26									
Peas*	60	60		60			60				60		60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60		60	60	60	60	60	60		60	60		60	60	
Green Unshelled													32			30	30			28		28								28	28		30																	
Split																																																		
Wrinkled																				56		56		6																									56	56	
Plums										40						48	52											48					64															48		60	
Prunes																																																		
Irish or White		60		60		60	60			60	60		60	60	60	60	60	60		60	60	60	60	60	60	60	60	60	60	60	60	60	60	56	60	60	60		60	60	60	60	60	60		60	60		56	60	60
Sweet		55		50			54			56	55		50	50	50	50	50	55		54	60	54	56	55	54	56		50	50	54	54	50	54	45	50	55			54	54	50	54	56		54	56		54	54	50
Quinces										48				48	48	48	48			48								48		48	48	48		48					48		48	48	48	48		48					
Rape Seed														50	50	50						50		50				50								50														
Raspberries																				40															48													48		
Red Top or Red Top Seed				14										14	14	14				14	14		14	14		14		14			14			14	50				14	14	14	14	14	14		14	40		14	14	
Rhubard or Pie Plant																																																		
Rice Rough or Unhulled							45				43			45	45					44		44						45		45	44		45						45		44		43					45		
Rutabagas							60							50		60	50			60				52		50		60		60	50	45	60	52		56		60	50		50					50	56	
Rye	56	56		56	54	56	56			56	56	50	56	56	56	56	56	56	32	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56		56	56	56	56	56	56		56	56		56	56	56
Rye Meal							50							50							50																													
Salt*				50		80				60			80		80	80	80	56				56			50	50	50	80	80					50	80								50							
Coarse Salt							70							55	50					70	70									70		70						85	70		80		55		70		70	70	
Fine Salt							50							50	55			55		60	56									50		56						62	50				50		56		50	50	
Sand																130								130				130										100									130		
Shorts							20							20		20								20				20		20		20						20	20				20				20	20	
Sorghum Seed				50						56			50	80	50	50	50			50	50			57	42	42		50	50			50		50	57	40	50		50		50	45					57		
Spelt or Spelts														40		40	40							40				48								40									40			43
Spinach														12			14			12											12	12		10								30	12		12			15		
Strawberries																				40														48								48						48		
Timothy Seed				60		45	45				45		45	45	45	45	45	45	45	45	45		45	45	45	45	45	45	45	45	45	45	45	45	45	45	45			45	45	45	45	45	45		45	45		45	45	
Tomatoes													56	56	56	60	50	56		56	60			56	56	56	56	56	56	56	56	56	56	56	56	56	56			56	56	56	56	56	56		56	60		56	56	56
Turnips		55		57			50			54	55		55	55	55	55	55	60		50	60		58	55	55	42	50	55	56	56	55	55	56	50	60	60	42		50	50	50	50	50	55		60	65		55	42	56
Walnuts														50	50	50	50	50			50			50	50			50	50			50			50	50				50	50	50	50	50					50		
Wheat	60	60		60	60	60	60	60		60	60	60	60	60	60	60	60	60	60	60	60		60	60	60	60	60	60	60	60	60	60	60	60	60	60	60		60	60	60	60	60	60		60	60		60	60	60

NOTES FOR ENTIRE LEGAL WEIGHT TABLE

* Not defined.
a White beans.
b Green Apples.
c Shelled.
d Native.
e Undefined; dried 28 pounds.
f With stems; without stems, 64 pounds.
g Red and white; clover burr (for seed in Burr), 8 pounds; German Clover (also mere commonly called Crimson Clover), 60 pounds; Japan, Les Pedeza, in hulls, 25 pounds.
h Sweet unhulled, 33 pounds.
i Cannel coal.
j Husked.
k Corn in ear in Indiana, 70 pounds until Dec. 1st, next after grown; 68 pounds thereafter; in Texas, 70 pounds after Dec. 1st, and 72 pounds for new crop before Dec. 1st.
l In ear, 70 pounds from Nov. 1st, to May 1st, following, and from May 1st, to Nov. 1st, following, 68 pounds.
m With stems; without stems, 60 pounds.
n With stems.
o Unslacked; slacked, 40 pounds.
p Seventy pounds for a bushel of course saltor lime.
q Unslacked.
r Rye malt.
s Barley malt.
t Japanese barnyard millet, 35 pounds.
u Spanish onions, 30 pounds.
v Bottom sets, 32 pounds; in Kentucky, 36.
w Not stated whether dried or not.
x Dried.
y Black walnuts.
z Hulled.

COMMODITIES FOR WHICH BUSHEL WEIGHTS HAVE BEEN ESTABLISHED IN NOT MORE THAN THREE STATES.

Commodities	Weight	States
	Pounds	
Beggar weed	62	Florida
Blueberries (Dried)	42	Maine
Butternuts	28	Vermont
Cane Seed	50	Kansas and South Carolina.
Cantaloupe	50	North Carolina, South Carolina and Tennessee.
Chufas	54	Florida.
Cowpeas	60	Indiana, Maryland and Virginia.
Culm	80	Maryland.
Feed	50	Maine.
Feterita	56	Kansas.
Grass Seed, All Meadow and Fescue	14	North Carolina.
Grass Seed, Bermuda	40	New Mexico and Oklahoma; 14 pounds in North Carolina.
Grass Seed, Italian Rye	20	North Carolina, South Carolina and Tennessee.
Grass Seed, Johnson	28	Arkansas; 25 pounds in North Carolina.
Grass Seed, Perennial Rye	14	North Carolina.
Grass Seed, Rye	22	Nebraska.
Grass Seed, Sudan	40	Kansas; No. 1, 32 pounds; No. 2, 30 pounds; No. 3, 28 pounds in Texas.
Grass Seed, Tall Meadow, Tall Fescue	24	North Carolina.
Grass Seed, Velvet	7	North Carolina, South Carolina and Tennessee.
Guavas	54	Florida
India Wheat	46	Vermont
Land Plaster	100	North Carolina, South Carolina and Tennessee.
Lentils	60	Pennsylvania.
Mangel Wurzel	60	Connecticut and Maine.
Meal (Except Oatmeal)	50	Maine.
Middlings (Course)	30	Indiana.
Milo Maize	56	Kansas; 50 pounds in Texas.
Mustard Seed	58	North Carolina.
Parsley	8	Maine, New Hampshire and Vermont.
Peach Seed	50	North Carolina.
Peas, Blackeye and other Cowpeas	60	Virginia.
Radish Seed	50	Iowa and South Dakota.
Root Crops	50	Iowa, Nebraska and South Dakota.
Sage	4	North Carolina, South Carolina and Tennessee.
Salads	10	North Carolina; 12 pounds in South Carolina; 30 in Tennessee.
Sunflower Seed	24	North Carolina.
Teosinte	59	North Carolina.

Foreign Weights and Measures. — Japan.—In Japan the kwan, equal to 3.75 kilograms or 8.28 pounds avoirdupois, is the unit of mass. It is divided into 1,000 mommes, the mommes into 10 fuus and the fuu into 10 rins, the rin into 10 mos, and the mo into 10 shis.

The unit of length is the shaku, equal to $^{10}/_{33}$ (0.30303) meter, or 0.9941919 United States foot. The shaku is decimally divided into sun, bu, rin, mo, and shi. Multiples of the shaku are the ken, equal to 6 shaku; the cho, equal to 60 ken, and the pi, equal to 36 cho, or 12,960 shaku.

The shaku (land measure) is equal to 0.00033 are, or 0.988417534 square foot, 10 shaku equal 1 go and 10 gos equal 1 bu or tsubo, 30 bu equal 1 sé, 10 sé equal 1 tan, and 10 tan 1 cho.

The shaku (capacity measure) equals 0.01806 liter, or 0.180616 United States liquid quart, 10 shakus equal 1 go, 10 gos 1 sho, 10 shos 1 to, and 10 tos 1 koku. The metric weights and measures are

recognized as legal in accordance with the table of equivalents.

Russia.— The basis of Russian weights is the funt, equal to 0.40951241 kilogram, or 0.9028 pound avoirdupois. The funt is divided into 96 zolotniks or 32 loths, and the zolotnik is divided into 96 dolias; 40 funts equal 1 pood.

The basis of the length measure is the archine, equal to 28 inches or 0.71120 meter. The archine contains 16 verskops; 3 archines equal 1 sagene and 500 sagenes equal 1 verst.

The dessiatine, equal to 2,400 square soganes, or 2.6997 acres, is the unit for land measure.

The chetvert, equal to 2.09908 hectoliters, or 5.7748 United States bushels, is the unit for dry measure. The chetvert is divided into 8 chetveriks, and the chetverik into 8 garnetz. Twelve chetverts equal 1 lost.

The vedro, equal to 12.2993285 liters, or 3.249 United States gallons, is used for measuring liquids.

Chinese Measures.—The following gives the new system of weights and measures adopted by China in pursuance of the imperial rescript of August 28, 1908:

MEASURES OF LENGTH

Chinese.		Metric.
1 hao	=	0.0032 centimeter.
1 li	=	0.032 centimeter.
1 fen	=	0.32 centimeter.
1 tsun	=	3.2 centimeters.
1 chih	=	0.32 meter.
1 pu	=	1.6 meters.
1 chang	=	3.2 meters.
1 li	=	576.° meters.

MEASURES OF SURFACE

Chinese.		Metric.
1 hao	=	0.006144 are.
1 li	=	0.06144 are.
1 fen	=	0.6144 are.
1 fang pu	=	0.0256 are.
1 mu	=	6.144 ares.
1 ching	=	614.4 ares.

MEASURES OF CAPACITY

Chinese.		Metric.
1 shao	=	0.0104 liter.
1 ko	=	0.1035 liter.
1 sheng	=	1.0355 liters.
1 tou	=	10.355 liters.
1 hu	=	51.7734 liters.
1 tan or picul	=	103.5469 liters.

MEASURES OF WEIGHT

Chinese.		Metric.
1 hao	=	0.0037301 gram.
1 li	=	0.037301 gram.
1 fen	=	0.37301 gram.
1 chien	=	3.7301 grams.
1 liang	=	37.301 grams.
1 chin or catty	=	596.816 grams.

TABLE OF FOREIGN WEIGHTS AND MEASURES

Denominations	Where Used	American Customary Equivalents
Almude	Portugal	4.422 gallons
Ardeb	Egypt	7.6907 bushels
Are	Metric	0.02471 acre
Arobe	Paraguay	25 pounds
Arratel or libra	Portugal	1.011 pounds
Arroba (dry)	Argentine Republic	25.3175 pounds
	Brazil	32.38 pounds
	Cuba	25.3664 pounds
	Portugal	32.38 pounds
	Spain	25.36 pounds
	Venezuela	25.4024 pounds
Arroba (liquid)	Cuba, Spain and Venezuela	4.263 gallons
Arshine	Russia	28 inches
Arshine (square)	Russia	5.44 square feet
Artel	Morocco	1.12 pounds
Baril	Argentine Republic and Mexico	20.0787 gallons
Barrel	Malta (customs)	11.4 gallons
	Spain (raisins)	100 pounds
Batman or tabriz	Persia	6.49 pounds
Berkovets	Russia	361.12 pounds
Bongkal	India	832 grains
Bouw	Sumatra	7,096.5 square meters
Bu	Japan	0.119 inch
Butt (wine)	Spain	140 gallons
Caffiso	Malta	5.4 gallons
Candy	India (Bombay)	529 pounds
	India (Madras)	500 pounds
	Morocco	113 pounds
	Syria (Damascus)	575 pounds
	Turkey	124.7036 pounds
Cantaro (cantar)	Malta	175 pounds
Carga	Mexico and Salvador	300 pounds
Catty	China	1.316 pounds (avoir.)
	Japan	1.31 pounds
	Java, Siam and Malacca	1.35 pounds
	Sumatra	2.12 pounds
Centaro	Central America	4.2631 gallons
Centner	Bremen and Brunswick	117.5 pounds
	Darmstadt	110.24 pounds
	Denmark and Norway	110.11 pounds
	Nuremberg	112.43 pounds
	Prussia	113.44 pounds
	Sweden	93.7 pounds
	Vienna	123.5 pounds
	Zollverein	110.24 pounds
	Double or metric	220.46 pounds
Chetvert	Russia	5.7748 bushels
Chih	China	12.6 inches
Coyan	Sarawak	3,098 pounds
	Siam (Koyan)	2,667 pounds
Cuadra	Argentine Republic	4.2 acres
	Paraguay	78.9 yards
	Paraguay (square)	8.077 square feet
	Uruguay	Nearly 2 acres
Cubic meter	Metric	35.3 cubic feet
Cwt. (hundredweight)	British	112 pounds
Dessiatine	Russia	2.6997 acres
	Spain	1.599 bushels
Drachme	Greece	Half ounce
Egyptian weights and measures	(See Consular Reports No. 144)	
Fanega (dry)	Central America	1.5745 bushels
	Chili	2.575 bushels
	Cuba	1.599 bushels
	Mexico	1.54728 bushels
	Morocco	Strike fanega, 70 lbs.; full fanega, 118 lbs.
	Uruguay (double)	7.776 bushels
	Uruguay (single)	3.888 bushels
	Venezuela	1.599 bushels
Fanega (liquid)	Spain	16 gallons
Feddan	Egypt	1.03 acres
Frail (raisins)	Spain	50 pounds
Frasco	Argentine Republic	2.5096 quarts
	Mexico	2.5 quarts
Frasila	Zanzibar	35 pounds
Fuder	Luxemburg	264.17 gallons
Funt	Russia	0.9028 pound
Garnice	Russian Poland	0.88 gallon

Denominations	Where Used	American Customary Equivalents
Gram	Metric	15.432 grains
Hectare	Metric	2.471 acres
Hectoliter: Dry	Metric	2.838 bushels
Liquid	Metric	26.417 gallons
Joch	Austria-Hungary	1.422 acres
Ken	Japan	5.965 feet
Kilogram (kilo.)	Metric	2.2046 pounds
Kilometer	Metric	0.621376 mile
Koku	Japan	4.9629 bushels
Koree	Russia	3.5 bushels
Kwan	Japan	8.28 pounds
Last	Belgium and Holland	85.134 bushels
	England (dry malt)	82.52 bushels
	Germany	2 metric tons (4,480 pounds)
	Prussia	112.29 bushels
	Russian Poland	11¾ bushels
	Spain (salt)	4,760 pounds
League (land)	Paraguay	4,033 acres
Li	China	0.0126 inches
Libra (pound)	Argentine Republic	1.0127 pounds
	Central America	1.043 pounds
	Chili	1.014 pounds
	Cuba	1.0161 pounds
	Mexico	1.01465 pounds
	Peru	1.0143 pounds
	Portugal	1.011 pounds
	Spain	1.0144 pounds
	Uruguay	1.0143 pounds
	Venezuela	1.0161 pounds
Liter	Metric	1.0567 quarts
Livre (pound)	Greece	1.1 pounds
	Guiana	1.0791 pounds
Load	England (timber)	Square, 50 cubic feet; unhewn, 40 cubic feet; inch planks, 600 superficial feet
Manzana	Costa Rica	1 5-6 acres
	Nicaragua and Salvador	1.727 acres
Mare	Bolivia	0.507 pounds
Maund	India	82 2-7 pounds
Meter	Metric	39.37 inches
Mil	Denmark	4.68 miles
	Denmark (geographical)	4.61 miles
Milla	Nicaragua and Honduras	1.1493 miles
Morgen	Prussia	0.63 acre
Oke	Egypt	2.7225 pounds
	Greece	2.84 pounds
	Hungary	3.0817 pounds
	Turkey	2.82838 pounds
	Hungary and Wallachia	2.5 pints
Pic	Egypt	21¼ inches
Picul	Borneo and Celebes	135.64 pounds
	China, Japan and Sumatra	133⅓ pounds
	Java	135.1 pounds
	Philippine Islands	137.9 pounds
Pie	Argentine Republic	0.9478 foot
	Spain	0.91407 foot
Pik	Turkey	27.9 inches
Pood	Russia	36.112 pounds
Pund (pound)	Denmark and Sweden	1.102 pounds
Quarter	Great Britain	8.252 bushels
	London (coal)	36 bushels
	Argentine Republic	101.42 pounds
	Brazil	130.06 pounds
	Castile,* Chili, Mexico and Peru	101.41 pounds
Quintal	Greece	123.2 pounds
	Newfoundland (fish)	112 pounds
	Paraguay	100 pounds
	Syria	125 pounds
	Metric	220.46 pounds
Rottle	Palestine	6 pounds
	Syria	5¾ pounds
Sagene	Russia	7 feet
Salm	Malta	490 pounds
Se	Japan	0.02451 acre
Seer	India	1 pound 13 ounces
Shaku	Japan	11.9303 inches
		0.01806 liquid quart

TABLE OF FOREIGN WEIGHTS AND MEASURES—Continued

Denominations	Where Used	American Customary Equivalents
Sho	Japan	1.6 liquid quarts
Standard (St. Petersburg)	Lumber measure	165 cubic feet
Stone	British	14 pounds
Suerte	Uruguay	2,700 cuadras (see cuadra)
Sun	Japan	1.193 inches
Tael	Cochin China	590.75 grains (troy)
Tan	Japan	0.25 acre 9,884 sq. ft.
To	Japan	2 pecks
Ton	Space measure	40 cubic feet
Tonde (cereals)	Denmark	3.94783 bushels
Tondeland	Denmark	1.36 acres
Tsubo	Japan	98.84 square feet
Tsun	China	1.26 inches
Tunna	Sweden	4.5 bushels
Tunnland	Sweden	1.22 acres
Vara	Argentine Republic	34.1208 inches
	Central America	32.87 inches
	Chili and Peru	33.367 inches
	Cuba	33.384 inches
	Curacao	33.375 inches
	Mexico	33 inches
	Paraguay	34 inches
	Spain	0.914117 yard
	Venezuela	33.384 inches
Vedro	Russia	3.249 gallons
Vergees	Isle of Jersey	71.1 square rods
Verst	Russia	0.6629 mile
Vlocka	Russian Poland	41.98 acres

*Although the metric weights are used officially in Spain, the Castile quintal is employed in commerce in the peninsula and colonies, save in Catalonia; the Catalan quintal equals 91.71 pounds.

WEIGHTS AND MEASURES OF THE BIBLE

WEIGHTS

	Avoirdupois Lbs.	Oz.	Drs.	Troy. Lbs.	Oz.	Dwt.	Gr.
A gerah	0	0	0.439 =	0	0	0	12
10 gerahs = 1 bekah	0	0	4.39 =	0	0	5	0
2 bekahs = 1 shekel	0	0	8.78 =	0	0	10	0
60 shekels = 1 maneh	2	0	14.628 =	2	6	0	0
50 manehs = 1 talent	102	13	11.428 =	125	0	0	0

MEASURES

Long Measure	Feet	Inches
A digit, or finger (Jer. lii. 21)	0	0.912
4 digits = 1 palm (Exod. xxv, 25)	0	3.648
3 palms = 1 span (Exod. xxviii, 16)	0	10.944
2 spans = 1 cubit (Gen. vi, 15)	1	9.888
4 cubits = 1 fathom (Acts xxvii, 28)	7	3.552
1.5 fathoms = 1 reed (Ezek. xl, 3, 5)	10	11.328
13.3 reeds = 1 line (Ezek. xl, 3)	145	11.04

Land Measure	Eng. Miles	Paces	Feet
A cubit	0	0	1.824
400 cubits = 1 furlong (Luke xxiv, 13)	0	145	4.6
5 furlongs = 1 sabbath day's journey (John xi, 18; Acts i, 12)	0	727	3.0
10 furlongs = 1 mile (Matt. v, 41)	1	399	1.0
24 miles = 1 day's journey	33	76	4.0

Liquid Measure	Gallons	Pints
A caph	0	0.625
1.3 caphs = 1 log (Lev. xiv, 10)	0	0.833
4 logs = 1 cab	0	3.333
3 cabs = 1 hin (Exod. xxx, 24)	1	2
2 hins = 1 seah	2	4
3 seahs = 1 bath, or ephah (1 Kings vii, 26; John ii, 6)	7	4.5
10 ephahs = 1 kor, or homer (Isa. v, 10; Ezek. xiv, 14)	75	5.25

WEIGHTS AND MEASURES OF THE BIBLE—Continued

Dry Measure	Pecks	Gallons	Pints
A gachal	0	0	0.1416
20 gachals = 1 cab (2 Kings vi, 25; Rev. vi, 6)	0	0	2.8333
1.8 cabs = 1 omer (Exod. xvi, 36)	0	0	5.1
3.3 omers = 1 seah (Matt. xiii, 33)	1	0	1
3 seahs = 1 ephah (Ezek. xlv, 11)	3	0	3
5 ephahs = 1 letech (Hosea iii, 2)	16	0	0
2 letechs = 1 kor, or homer (Num. xi, 32; Hos. iii, 2)	32	0	0

N. B.—The foregoing table will explain many texts in the Bible. Take, for instance, Isa. v, 10. "Yea, ten acres of vineyard shall yield one bath, and the seed of an homer shall yield an ephah." This curse upon the covetous man was that 10 acres of vines should produce only 7 gallons of wine, *i. e.*, one acre should yield less than 3 quarts; and that 32 pecks of seed should only bring a crop of 3 pecks, or, in other words, that the harvest reaped should produce but one-tenth of the seed sown.

TIME

The natural day was from sunrise to sunset.

The natural night was from sunset to sunrise.

The civil day was from sunset one evening to sunset the next; for, "the Evening and the Morning were the first day."

Night (Ancient)	Day (Ancient)
First watch (Lam. ii, 19), till midnight.	Morning till about 10 a. m.
Middle watch (Judg. vii, 19), till 3 a. m.	Heat of day till about 2 p. m.
Morning watch (Exod. xiv, 24), till 6 a. m.	Cool of day till about 6 p. m.

Night (New Testament)	Day (New Testament)
First watch, evening = 6 to 9 p. m.	Third hour = 6 to 9 a. m.
Second watch, midnight = 9 to 12 p. m.	Sixth hour = 9 to 12 midday.
Third watch, cock-crow = 12 to 3 a. m.	Ninth hour = 12 to 3 p. m.
Fourth watch, morning = 3 to 6 a. m.	Twelfth hour = 3 to 6 p. m.

JEWISH MONEY

With its value in English and American money; the American dollar being taken as equal to 4s. 2d.

	English pound	s.	d.	American Dols.	Cents
A gerah (Exod. xxx, 13) =	0	0	1.36 =	0	2.73
10 gerahs = 1 bekah (Exod. xxxviii, 26) =	0	1	1.68 =	0	27.37
2 bekahs = 1 shekel (Exod. xxx, 13; Isa. vii, 23) =	0	2	3.37	0	54.74
50 shekels = 1 maneh =	5	14	0.75 =	27	37.50
60 manehs = 1 kikkar (talent) =	342	3	9 =	1,642	50
A gold shekel =	1	16	6 =	8	76
A kikkar of gold =	5,475	0	0 =	26,280	0

N. B.—A shekel would probably purchase nearly ten times as much as the same nominal amount will now. Remember that one Roman penny (8½d.) was a good day's wages for a laborer.

The Hebrew maneh, according to 1 Kings x, 17, compared with 2 Chron. ix, 16, contained 100 shekels; though according to one interpretation of Ezek. xiv, 12, it contained 60, but more probably 50. The passage reads thus: "Twenty shekels, five and twenty shekels, fifteen shekels shall be your maneh." This is variously interpreted: (1) 20 + 25 + 15 = 60. (2) 20, 25, 15 are different coins in gold, silver, and copper, bearing the same name. It is well to remark the meaning of these names: Shekel = simply, weight: Bekah = split, *i. e.*, the shekel divided into two: Gerah = a grain, as in our weights, a grain and a barleycorn, the original standard weight: Maneh = appointed, equivalent to sterling, a specific sum: Kikkar = a round mass of metal, *i. e.*, a weight or coin. Hebrew names of weights and coins are not found in the New Testament: *mna* in Luke xix, 13, is Greek, though possibly identical with the Hebrew *maneh*.

ROMAN MONEY

	English Pence		American Cents
A "farthing," quadrans (Matt. v, 26) = nearly	0.125	=	0.25
A "farthing," as in 4 quadrantes (Matt. x, 29) = nearly.	0.5	=	1
A "penny," denarius = 16 asses (Matt. xxii, 19) nearly.	8.50	=	17

The Roman sestertius = 2½ asses, is not named in the Bible.

N. B.—Here we learn that:—

Naaman's offering to Elisha of 6,000 pieces (shekels) of gold amounted to more than £10,000 = 48,000 dollars.

The Debtor (Matt. xviii, 24), who had been forgiven 10,000 talents, i. e., £3,000,000 = 14,400,000 dollars, refused to forgive his fellow-servant 100 pence *i. e.*, £3 10s. 10d = 17 dollars.

Judas sold our Lord for 30 pieces of silver, *i. e.*, £3 10s.8d. = 16 dollars 96 cents, the legal value of a slave, if he were killed by a beast.

Joseph was sold by his brethren for 20 pieces, *i. e.*, £2 7s. = 11 dollars 28 cents.

Time.—Three kinds of time are recognized by astronomers, *viz.*, sidereal, apparent solar and mean solar time.

Sidereal Time.—The sidereal day is the interval between two consecutive transits of some fixed celestial object across any given meridian, or it is the interval required by the earth to make one complete revolution on its axis. This interval is constant but it is inconvenient as a time unit because the noon of the sidereal day occurs at all hours of the day and night.

Apparent Solar Time.—The apparent solar day is the interval between two consecutive transits of the *sun* across any given meridian. On account of the variable distance between the sun and earth, the variable speed of the earth in its orbit, the effect of the moon, etc., this interval is not constant and consequently cannot be kept by any simple mechanism, such as a clock or watch.

Mean Solar Time.—To overcome the objection noted above, the mean solar day was devised. The mean solar day is the length of the average apparent solar day. Like the sidereal day it is constant, and like the apparent solar day its noon always occurs at approximately the same time of day.

The sidereal or astronomical day begins at mean noon and the hours run from one to twenty-four, while the civil day (mean solar) begins twelve hours earlier, at midnight, and the hours run from one to twelve, and then repeat from noon to midnight. The hours are in both cases divided into sixty minutes, and the minutes into sixty seconds.

The Year.—In dealing with longer periods, such as the life of a man, the day is too small a period, and for all chronological purposes the year has always been employed.

There are three different kinds of year used—the sidereal, the tropical, and the anomalistic.

The Sidereal Year is the time taken by the earth to complete one revolution around the sun from a given star to the same star again. Its length is 365 days 6 hours 9 minutes 9 seconds.

The Tropical Year is the time included between two successive passages of the vernal equinox by the sun, and since the equinox moves westward 50.2 seconds of arc a year the tropical year is shorter by 20 minutes 23.5 seconds in time than the sidereal year. As the seasons depend upon the earth's position with respect to the equinox, the tropical year is the year of civil reckoning.

Anomalistic Year.—The third kind of year is the anomalistic year—the interval between two successive passages of the perihelion, namely, the time of the earth's nearest approach to the sun. The anomalistic year is only used in special calculations in astronomy.

The Calendar.—Various attempts were made by the ancients to reconcile the month, which originally depended upon the changes of the moon, with the tropical year, but a satisfactory solution is not possible, and the calendars of civilized nations now disregard the moon entirely. The Mohammedan nations, however, still use a lunar calendar with a year of twelve lunar months, which alternately contain 355 and 356 days. According to their method of reckoning the same month falls

in different seasons, and their calendars gain one year on ours every thirty-three years.

The Julian Calendar, which was established 45 B. C., by Julius Cæsar, discarded all consideration of the moon and adopted 365¼ days as the true length of the year. He ordained that every fourth year should contain 366 days, and transferred the beginning of the year from March to January 1. The Julian calendar is still used in Russia and generally by the Greek church.

The Gregorian Calendar.—The true length of the tropical year is not 365¼ days, but 365 days 5 hours 48 minutes 45.5 seconds, a difference of 11 minutes 14.5 seconds by which the Julian year is too long. This amounts to a little more than three days in four hundred years, and consequently the date of the vernal equinox had in Pope Gregory's time fallen back to March 11th instead of occurring on March 21st as it did at the Council of Nice, A. D. 325. The pope therefore decreed that the calendar should be corrected by dropping ten days, so the day following October 4, 1582, should be called October 15th instead of October 5th, and also in the future only such century years shall be leap years as are divisible by 400. Thus 1700, 1800, 1900, etc., are not leap years, while 1600, 2000, 2400, etc., are. The change was immediately made by all Catholic countries, but it was not until 1752 that the Gregorian calendar was adopted by England.

Standard Time.—Prior to 1883 each city had its own time, which was determined by the time of passage of the sun across the local meridian. Consequently the traveler going from one city to another had to continually change his watch to the local time. Largely through the efforts of the railroads a system of standard time was introduced. According to this system the United States, which extends from 65 degrees to 125 degrees west longitude, was divided into four sections, each of 15 degrees longitude.

The *first* (or eastern) section includes all territory between the Atlantic coast and an irregular line drawn from Detroit, Mich., through Pittsburg to Charleston, S. C., its most southern point. The time of this section is that of the 75th meridian, which is five hours slower than Greenwich time.

The *second* (central) section includes all territory between the line mentioned and an irregular line drawn from Bismarck, N. D., to the mouth of the Rio Grande.

The *third* (mountain) section includes all territory between the last-named line and a line which passes through the western part of Idaho, Utah and Arizona.

The *fourth* (Pacific) section covers the rest of the country to the Pacific Ocean. Standard time is uniform in each of these sections, but the time in one section differs by exactly one hour from the section next to it. Thus the time of the first section is five hours slower than Greenwich time, the time of the central section six hours slower, the time of the mountain seven hours, and the time of the Pacific section is eight hours slower than Greenwich mean time.

In cities situated on the border line of two sections, as, for instance, Pittsburg and Atlanta, the standard times of both sections are used; for example, if at Pittsburg it is 7 a.m. eastern time, it is 6 a.m. central time, and in such cities when the time is given, it should be specified as eastern, central, etc.

The system of standard time has been practically adopted in almost all civilized countries. All continental Europe, except Russia, uses a time one hour faster than that of Greenwich; in Japan and Australia the time is nine hours faster, etc.

Temperature Scales.—Temperature is the term used to designate the state of a body as regards hotness or coldness. Two bodies are said to have the same temperature if, when they are put in contact, there is no tendency for one to get hotter while the other gets colder; if there is such a tendency, the one which tends to cool off is said to have the higher temperature.

A Scale of Temperature is a system of numbering temperatures, the numbers being larger as the temperatures are higher. Such scales are based upon two fixed temperatures, *viz.*, the "ice-point" or temperature at which pure ice melts, and the "steam point" or temperature at which pure water boils, both under the standard barometric pressure of 760 millimeters or 29.92 inches of mercury. Three such systems or scales are in use—the centigrade or Celsius, the Fahrenheit, and the Reaumur.

Centigrade.—On the centigrade scale, which is used almost universally in countries which have adopted the metric system of weights and measures, as well as in scientific work everywhere, the ice-point is numbered zero degrees (0° C.) and the steam-point one hundred degrees (100° C.), the unit of measurement, or the centigrade degree (1° C.) being the one-hundredth part of this interval.

Fahrenheit.—On the Fahrenheit scale, which is generally used in English-speaking countries, except among scientific men, the ice-point is numbered 32° F. and the steam-point 212° F., the difference being 180°, and the Fahrenheit degree (1° F.) being the one-hundred-eightieth part of this interval. The Fahrenheit degree is thus $\frac{100}{180}$ or $\frac{5}{9}$ as large as the centigrade degree. The Fahrenheit zero, at 32° below the ice-point, corresponding to $-\frac{5}{9} \times 32 = -17.8$°C., is approximately the lowest temperature that can be obtained with ordinary freezing mixtures of ice and common salt.

Reaumur.—The Reaumur scale is used in a few European countries, but is fast being superseded by the centigrade. It has 0° at the ice-point and 80° at the steam point, so that the Reaumur degree (1° R.) is $\frac{5}{4}$ of the centigrade degree or $\frac{9}{4}$ of the Fahrenheit degree.

Conversion.—*To convert from one scale to another* we have, in accordance with the above definitions, the following practical rules:

Centigrade to Fahrenheit; multiply by $\frac{9}{5}$ and add 32°.

Centigrade to Reaumur; multiply by $\frac{4}{5}$.

Fahrenheit to centigrade; subtract 32° and multiply by $\frac{5}{9}$.

Fahrenheit to Reaumur; subtract 32° and multiply by $\frac{4}{9}$.

Reaumur to centigrade; multiply by $\frac{5}{4}$.

Reaumur to Fahrenheit; multiply by $\frac{9}{4}$ and add 32°.

Care should be taken to make the addition or subtraction algebraically, *i. e.*, taking account of the negative sign when the temperature in question is below zero.

Absolute Temperature.—*By the absolute temperature* of a body is meant its temperature, measured in either of the three kinds of degrees, not from the ice-point or from the Fahrenheit zero, but from a point known as the absolute zero, which is at about —273.1°C. or—459.6°F. or—218.5°R. This mode of numbering temperatures is frequently convenient in scientific and engineering work. To convert centigrade temperatures into centigrade-absolute temperatures add 273.1°.

To convert from Fahrenheit to Fahrenheit-absolute add 459.6°. To convert from Reaumur to Reaumur-absolute add 218.5°. To convert in the other direction, subtract the same amounts. The Reaumur-absolute scale is seldom or never used, and the Fahrenheit-absolute scale only by engineers in English-speaking countries. When the term "absolute temperature" is used without further qualification, it usually means the centigrade temperature plus 273°, though this value, which may also be looked upon as the centigrade-absolute temperature of the ice-point, is sometimes taken as high as 274°.

Barometric Measurements.—By barometer reading is meant the height in inches or millimeters of the column of mercury, under standard conditions, that exactly balances the pressure exerted by the atmosphere at the instant the reading is made. The pressure exerted by a given column of mercury depends upon the altitude of the barometer, and upon the latitude, and it is customary, in order to get accurate comparisons, to refer the readings to latitude 45°, and to sea level. Also since the density of the mercury is affected by the temperature it is usually referred to 0° centigrade.

Since all air movements are the result of difference in pressure, important conclusions regarding the weather to be expected may be deducted from barometric readings, hence their use by mariners and weather experts.

Their value in determining altitudes depends upon the fact that the pressure of the atmosphere decreases with the altitude according to a fairly well established law, which is illustrated by the following table:

PRESSURE OF THE ATMOSPHERE AT DIFFERENT ELEVATIONS

Elev. Feet	Barom. Inches	Elev. Feet	Barom. Inches	Elev. Feet	Barom. Inches
0	29.9	600	29.25	4000	25.81
50	29.845	700	29.14	5000	24.88
100	29.79	800	29.03	6000	23.98
200	29.68	900	28.92	7000	23.11
300	29.57	1000	28.82	8000	22.28
400	29.46	2000	27.78	9000	21.48
500	29.35	3000	26.78	10000	20.70

Beaufort's Wind Scale.—The Beaufort Scale is used by seamen for recording the force of wind. For the guidance of those unaccustomed to its use, the corresponding velocity per hour in statute miles and in nautical miles is added. The force of wind varies from 0, a calm, to 12, a hurricane.

Intensity of Force of Wind — Beaufort's Scale	Velocity Statute miles per hour	Velocity Nautical miles per hour
0. **Calm.** Full rigged ship, all sail set, no headway	0 to 3	0 to 2.6
1. **Light Air.** Just sufficient to give steerageway	8	6.9
2. **Light Breeze.** Speed of 1 or 2 knots, "full and by."	13	11.3
3. **Gentle Breeze.** Speed of 3 or 4 knots, "full and by."	18	15.6
4. **Moderate Breeze.** Speed of 5 or 6 knots, "full and by."	23	20.0
5. **Fresh Breeze.** All plain sail, "full and by."	28	24.3
6. **Strong Breeze.** Topgallant sails over single-reefed topsails	34	29.5
7. **Moderate Gale.** Double-reefed topsails	40	34.7
8. **Fresh Gale.** Treble-reefed topsails (or reefed upper topsails and courses)	48	41.6
9. **Strong Gale.** Close-reefed topsails and courses (or lower topsails and courses)	56	48.6

Intensity or Force of Wind — Beaufort's Scale	Velocity Statute miles per hour	Velocity Nautical miles per hour
10. **Whole Gale.** Close-reefed main topsail and reefed foresail (or lower main top-sail and reefed foresail)	65	56.4
11. **Storm.** Storm staysails	75	65.1
12. **Hurricane.** Under bare poles	90 and over	78.1 and over

The word "force" used in connection with this scale has no relation to pressure, but refers to speed or velocity.

Speed of Winds in the United States.—United States weather bureau records of the average speed of wind in miles per hour at selected stations, and the highest speeds ever reported for a period of five minutes.

Station	Average	Highest
Abilene, Texas	11	66
Albany, New York	6	70
Alpena, Michigan	9	72
Atlanta, Georgia	9	66
Bismarck, North Dakota	8	74
Boise, Idaho	4	55
Boston, Massachusetts	11	72
Buffalo, New York	11	90
Charlotte, North Carolina	5	55
Chattanooga, Tennessee	6	66
Chicago, Illinois	9	84
Cincinnati, Ohio	7	59
Cleveland, Ohio	9	73
Denver, Colorado	7	75
Detroit, Michigan	9	76
Dodge City, Kansas	11	75
Dubuque, Iowa	5	60
Duluth, Minnesota	7	78
Eastport, Maine	9	78
El Paso, Texas	5	78
Fort Smith, Arkansas	5	74
Galveston, Texas	10	*84
Havre, Montana	11	74
Helena, Montana	6	60
Huron, South Dakota	10	72
Jacksonville, Florida	6	75
Kansas City, Missouri	9	74
Keokuk, Iowa	8	60
Knoxville, Tennessee	5	84
Louisville, Kentucky	7	60
Lynchburg, Virginia	4	50
Memphis, Tennessee	6	75
Miles City, Montana	6	62
Montgomery, Alabama	5	54
Nashville, Tennessee	6	75
New Orleans, Louisiana	7	66
New York, New York	9	83
North Platte, Nebraska	9	96
Omaha, Nebraska	8	66
Palestine, Texas	8	60
Philadelphia, Pennsylvania	10	75
Pittsburgh, Pennsylvania	6	69
Portland, Maine	5	61
Red Bluff, California	7	60
Rochester, New York	11	78
St. Louis, Missouri	11	80
St. Paul, Minnesota	7	102
Salt Lake City, Utah	5	66
San Diego, California	6	40
San Francisco, California	9	64
Sante Fe, New Mexico	6	53
Savannah, Georgia	7	80
Spokane, Washington	4	52
Toledo, Ohio	9	72
Vicksburg, Mississippi	6	62
Washington, D. C.	5	66
Wilmington, North Carolina	7	72

*Anemometer blew away at a velocity of 84 miles per hour, September, 1900.

Values of Foreign Coins.—The following values of foreign coins in terms of the United States gold dollar were established by the treasury department in October, 1910, for estimating the value of all foreign merchandise exported to the United States:

VALUE OF FOREIGN COINS PRIOR TO ABANDONMENT OF GOLD STANDARD, 1933.

Country	Standard	Monetary Unit	Value in Terms of U. S. Gold Dollar	Coins
Argentine Republic	Gold	Peso	$0.965	Gold: argentine ($4.824) and ½ argentine. Silver: peso and divisions.
Austria-Hungary	Gold	Crown	.203	Gold: 10 and 20 crowns. Silver: 1 and 5 crowns.
Belgium	Gold	Franc	.193	Gold: 10 and 20 francs. Silver: 5 francs.
Bolivia	Gold	Boliviano	.389	Gold: *Silver boliviano and divisions.
Brazil	Gold	Milreis	.546	Gold: 5, 10, and 20 milreis. Silver: ½, 1, and 2 milreis.
British Possessions, N. A. (except Newfoundland).	Gold	Dollar	1.000	
Central American States—				
Costa Rica	Gold	Colon	.465	Gold: 2, 5, 10, and 20 colons ($9.307). Silver: 5, 10, 25, and 50 centimos.
British Honduras, Guatemala, Honduras, Nicaragua, Salvador	Gold	Dollar	1.000	
	Silver	Peso	.383	Silver: peso and divisions.
Chile	Gold	Peso	.365	Gold: escudo ($1.825), doubloon ($3.650) and condor ($7.300) Silver: peso and divisions.
China	Silver	Tael—Amoy	.629	
		Tael—Canton	.627	
		Tael—Cheefoo	.601	
		Tael—Chin Kiang	.614	
		Tael—Fuchau	.581	
		Tael—Haikwan (customs)	.640	
		Tael—Hankow	.588	
		Tael—Kiaochow	.609	
		Tael—Nankin	.622	
		Tael—Niuchwang	.589	
		Tael—Ningpo	.604	
		Tael—Peking	.613	
		Tael—Shanghai	.574	
		Tael—Swatow	.581	
		Tael—Takau	.633	
		Tael—Tientsin	.609	
		Dollar—Hongkong	.413	
		Dollar—British	.413	
		Dollar—Mexican	.416	
Colombia	Gold	Dollar	1.000	Gold: condor ($9.647) and double condor. Silver: peso.
Denmark	Gold	Crown	.268	Gold: 10 and 20 crowns.
Ecuador	Gold	Sucre	.487	Gold: 10 sucres ($4.8665). Silver: sucre and divisions.
Egypt	Gold	Pounds (100 piasters)	4.943	Gold: pound (100 piasters), 5, 10, 20, and 50 piasters. Silver: 1, 2, 5, 10, and 20 piasters.
Finland	Gold	Mark	.193	Gold: 20 marks ($3.859), 10 marks ($1.93).
France	Gold	Franc	.193	Gold: 5, 10, 20, 50, and 100 francs. Silver: 5 francs.
German Empire	Gold	Mark	.238	Gold: 5, 10, and 20 marks.
Great Britain	Gold	Pound sterling	4.866½	Gold: sovereign (pound sterling) and ½ sovereign.
Greece	Gold	Drachma	.193	Gold: 5, 10, 20, 50, and 100 drachmas. Silver: 5 drachmas.
Hayti	Gold	Gourde	.965	Gold: 1, 2, 5, and 10 gourdes. Silver: gourde and divisions.
India (British)	Gold	Pound sterling†	4.866½	Gold: sovereign (pound sterling). Silver: rupee and divisions.
Italy	Gold	Lira	.193	Gold: 5, 10, 20, 50, and 100 lire. Silver: 5 lire.
Japan	Gold	Yen	.498	Gold: 5, 10, and 20 yen. Silver: 10, 20, and 50 sen.
Liberia	Gold	Dollar	1.000	
Mexico	Gold	Peso‡	.498	Gold: 5 and 10 pesos. Silver: dollar § (or peso) and divisions.
Netherlands	Gold	Florin	.402	Gold: 10 florins. Silver: 2½, 1 florin and divisions.
Newfoundland	Gold	Dollar	1.014	Gold: 2 dollars ($2.028).
Norway	Gold	Crown	.268	Gold: 10 and 20 crowns.
Panama	Gold	Balboa	1.000	Gold: 1, 2½, 5, 10, and 20 balboas. Silver: peso and divisions.
Persia	Silver	Kran	.072	Gold: ½, 1, and 2 tomans ($3.409). Silver: ¼, ½, 1 2 and 5 krans
Peru	Gold	Libra	4.866½	Gold: ½ and 1 libra. Silver: sol and divisions.
Philippine Islands	Gold	Peso	.500	Silver peso: 10, 20, and 50 centavos.
Portugal	Gold	Escudo	1.080	Gold: 1, 2, 5, and 10 milreis.
Russia	Gold	Ruble	.515	Gold: 5, 7½, 10, and 15 rubles. Silver: 5, 10, 15, 20, 25, 50 and 100 copecks.
Spain	Gold	Peseta	.193	Gold: 25 pesetas. Silver: 5 pesetas.
Straits Settlements	Gold	Pound sterling¶	4.866½	Gold: sovereign (pound sterling). Silver: dollar and divisions.
Sweden	Gold	Crown	.268	Gold: 10 and 20 crowns.
Switzerland	Gold	Franc	.193	Gold: 5, 10, 20, 50, and 100 francs. Silver: 5 francs.
Turkey	Gold	Piaster	.044	Gold: 25, 50, 100, 250, and 500 piasters.
Uruguay	Gold	Peso	1.034	Gold: peso. Silver: peso and divisions.
Venezuela	Gold	Bolivar	.193	Gold: 5, 10, 20, 50, and 100 bolivars. Silver: 5 bolivars.

Note.—The coins of silver-standard countries are valued by their pure silver contents, at the average market price of silver for the three months preceding the date of this circular.

*Gold standard adopted December 31, 1908, 12½ bolivianos equal the pound sterling or Peruvian pound ($4.866½).

†The sovereign is the standard coin of India, but the rupee ($0.3244½) is the current coin, valued at 15 to the sovereign.

‡Seventy-five centigrams fine gold.

§Value in Mexico, $0.498.

¶The current coin of the Straits Settlements is the silver dollar issued on government account and which has been given a tentative value of $0.567758½.

English Money.—The unit is the pound sterling or sovereign, which is equal to $4.8665 at a normal rate of exchange.

4 farthings (far.) = 1 penny (d.) equals $.0202 plus.

12 pence = 1 shilling (s.) equals $.2433 plus.

20 shillings = 1 pound (£) equals $4.8665.

Canadian Money.—The coinage system of Canada is very similar to that of the United States. Canadian currency is on a decimal scale. The unit of coinage is the dollar and decimal parts of the dollar are expressed in cents as in the United States. There are no Canadian gold coins, but those of Great Britain and the United States are in circulation.

French Money.—The money of France is on a decimal scale. The unit of value is the franc, valued at $.193 in United States money, at normal rate of exchange.

Table.—

10 millimes (ms.)	= 1 centime.....ct.
10 centimes	= 1 decime.....de.
10 decimes	= 1 franc.....fr.

German Money.—The principal units of German money are the mark and pfennig. 100 pfennig (pf.) = 1 mark (M.). The mark contains 5.5513 grains of pure gold, and is therefore equal to $.238 at normal rate of exchange.

Explanation of Leap Year.—The earth requires 365 days, 5 hours, 48 minutes, and 49.7 seconds to complete its revolution around the sun. This is a little less than 365¼ days, so by considering 3 successive years as common years of 365 days each and the fourth as a leap year of 366 days there is a gain of time. To correct this, the extra day is added to only every fourth centennial year. From the foregoing we derive the following statements for the deciding of leap years.

1. All years divisible by 4, except centennial years, are leap years.

2. All centennial years divisible by 400 are leap years.

Table of Months in the Year.—

No.	Month	Abbr.	Days.
1	January	Jan.	31
2	February	Feb.	28 or 29
3	March	Mar.	31
4	April	Apr.	30
5	May	.....	31
6	June	.....	30
7	July	.....	31
8	August	Aug.	31
9	September	Sept.	30
10	October	Oct.	31
11	November	Nov.	30
12	December	Dec.	31

Note.—The month should be known by its number.

Circular Measure.—

60 seconds of arc (″)	= 1 minute of arc (′).
60 minutes	= 1 degree.....(°).
30 degrees	= 1 sign.....S.
12 signs	= 1 circle.....Cir.
60 degrees	= 1 sextant.
90 degrees	= 1 quadrant or right angle.

Notes.—1. Minutes of the earth's circumference are nautical miles.

2. Every circle, great or small, is divisible into the same number of parts, but a division of one circle is not necessarily equal to a division of another, although it has the same name. Thus, every circle has 360 degrees, but a degree of one circle is not equal to a degree of every other circle.

MISCELLANEOUS MEASURES

Books.—The size of the page depends upon the number of times the sheet is folded. A sheet folded into—

2	leaves	making	4	pages,	is called a Folio
4	"	"	8	"	" a Quarto, or 4to.
8	"	"	16	"	" an Octavo, or 8vo.
12	"	"	24	"	" a 12mo.
16	"	"	32	"	" a 16mo.
18	"	"	36	"	" an 18mo.
24	"	"	48	"	" a 24mo.
32	"	"	64	"	" a 32mo.

1 size=⅛ inch. Used by shoemakers.

Paper Measure. Table.—

24 sheets	=1 quire....qr.
20 quires	=1 ream....rm.
2 reams	=1 bundle...bdl.
5 bundles	=1 bale.....bl.

Counting. Table.—

20 units	=1 score.
12 units	=1 dozen.....doz.
12 dozen	=1 gross.....gro.
12 gross	=1 great gr...gr. gro.

Metric System.—The Metric System is a decimal system of weights and measures, the principal unit of which is the meter.

1. The Metric System, which was first introduced in France, is required by law in South America, in parts of Asia, in nearly all European countries, and is legalized by Great Britain, Russia, and the United States.

2. The meter is a trifle less than one ten-millionth part of the distance measured on a meridian of the earth from the equator to the pole, and is equal to 39.37079, or 39.37 inches.

3. The standard meter (of which nearly every civilized nation has procured a copy) is a bar of platinum carefully preserved at Paris.

The Metric System has a number of advantages over our present system, some of which are:

1. It has only five primary units, viz: meter, square meter, cubic meter, liter, and gram.

2. Each primary unit suggests its measure.

3. It does away with the system of compound num ers.

4. As all divisions and multiplications are by 10, or based on the decimal system, it makes all computations relating to measure simpler.

5. It facilitates commerce and exchange by giving all nations a uniform system of weights and measures.

6. It is simpler, more concise, and yet, complete.

The Lower Denominations or Divisions of the primary unit are denoted by the Latin prefixes milli (1/1000), centi (1/100), and deci (1/10), while the Higher Denominations or Multiples are denoted by the Greek prefixes deka (10), hekto (100), kilo (1000), and myria (10000).

By knowing the unit of weight or measurement, it is very simple to prepare the tables, as we use the same prefixes in each case.

In the tables, the abbreviations for divisions often begin with small letters, while those for multiples begin with capital letters.

Wood Measure.—The unit is the *stere*, which is equivalent to the cu. meter.

10 Decisteres (ds.) =1 Stere (1 cu. meter).
10 Steres (s.) =1 Dekastere (10 cu. meters).

Reduction of Denominate Numbers.—

Reduction of denominate numbers is the process of changing from one denomination to another without changing the value.

Reduction descending is the process of changing from a higher to a lower denomination. Reducing 8 bushels to quarts is an example of reduction descending.

Reduction ascending is the process of changing from a lower to a higher denomination. Reducing 93678 pounds to tons, etc., is an example of reduction ascending.

Reduction Descending.—

Example 1. Reduce 2 miles 164 rods 2 yards to feet.

Solution:

mi.	rd.	yd.
2	164	2
320		
640		
164		
804 rd.		

Solution Continued

804 rd.
5½
402
4020
2
4424 yd.
3
13272 ft.

Explanation.—Since 1 mile=320 rods, multiply 2 by 320 and to the product add the given number of rods. Thus, 2×320 +164=804.

Since 1 rod=5½ yards, multiply 804 by 5½ and then add the given number of yards. Thus, 804×5½+2=4424.

Since 1 yard=3 feet, multiply 4424 by 3 to find the number of feet.

Reduction Ascending.—

Example 1. Reduce 6212 pence to higher denominations.

Solution.

12)6212d
20)517s+8d.
£25+17s.
£25 17s. 8d.

Explanation.—Since it takes 12 pence to make 1 shilling, there are as many shillings as 12 is contained times in 6212, or 517, and there is a remainder of 8. The result is 517s. 8d. The remainder has the same name as the dividend.

Since it takes 20 shillings to make 1 pound, there are as many pounds as 20 is contained times in 517, or 25, and there is a remainder of 17. The result of this division is £25 17s.

The equivalent higher denominations are £25 17s. 8d.

Addition of Compound Numbers.—

Example 1. Find the sum of 35 bu. 2 pk. 5 qt.; 29 bu. 3 pk. 7 qt.; 18 bu. 4 qt.; 19 bu. 3 pk.; and 37 bu. 1 pk. 7 qt.

Solution:

bu.	pk.	qt.
35	2	5
29	3	7
18	0	4
19	3	0
37	1	7
140	3	7

4)11 8)23
2+3 2+7

Explanation.—Write the numbers to be added, placing like denominations in the same column. Beginning at the right, add the first column. If the sum equals one or more of the next higher denomination, it must be reduced. Thus, 23 qt. equal 2 pk. and 7 qt. Write the remainder, 7 qt., under the first and carry 2 pk. to the next column. Treat each column in the same manner.

Subtraction of Compound Numbers.—

Subtraction involves reduction descending.

Illustrations.

	(1)			(2)	
	5 bu.	3 pk.	6 qt.	5 T. 7 cwt.	16 lb.
	2	1	3	2 5	46
Differences	3 bu.	2 pk.	3 qt.	3 T. 1 cwt.	70 lb.

Reduce 1 cwt. of the minuend to pounds. 116 lb.−46 lb.=70 lb.; 6 cwt.−5 cwt.= 1c wt., etc.

Multiplication of Compound Numbers. *Example*: Multiply 14 days 2 hours 21 minutes 29 seconds by 9.

Solution.

da.	hr.	min.	sec.
14	2	21	29
			9
126	21	13	21
	189		60)261
	4		4+21
	60)193		
	3+13		

Explanation.—Write the number as indicated and multiply, beginning with the lowest denomination. If the product equals 1 or more of the next higher denomination, divide it by the number necessary to make one of that denomination. Write the remainder, if there is one, under the first column and add the quotient to the product of the second column. Treat each column in like manner.

Division of Compound Numbers.—In division of denominate numbers the divisor may be either abstract or denominate.

Illustrations. (1) Compute the cost, per yd., of 80 yd. cloth invoiced at £180.

Solution (a).

80)£180

£ 2.25 = £2 5s. (cost).

Solution and Analysis (b). The cost per yd. is evidently 1/80 of £180. 1/80 of £180 = £2 and a remainder of £20. £20 = 400s. 1/80 of 400s. = 5s. 1/80 of £180 = £2 5s.

AREAS AND VOLUMES OF VARIOUS FIGURES

Parallelograms.—The area of any parallelogram is equal to the product of its base by its altitude.

Triangles.—The area of any triangle is equal to one-half the product of its base multiplied by its altitude.

The square of the hypotenuse of a right-angle triangle is equal to the sum of the squares of the other two sides. Therefore, to find the hypotenuse when the other two sides are given, find the sum of the squares of the two sides and extract the square root. To find the side when one side and the hypotenuse are given, subtract the square of the given side from the square of the hypotenuse and extract the square root of the remainder.

Circles.—The circumference of a circle is the diameter multiplied by 3.1416. For approximate results, 3 1/7 may be used instead of 3.1416.

The circumference divided by 3.1416 equals the diameter.

The area of a circle may be found in one of three ways:

1. The circumference multiplied by one-half the radius.

2. The square of the radius multiplied by 3.1416.

3. The square of the diameter multiplied by ¼ of 3.1416 (.7854).

To find the diameter of a circle whose area is given, divide the area by ¼ of 3.1416 (.7854) and extract the square root of the quotient. To find the circumference, multiply the diameter by 3.1416.

Prism or Cylinder.—To find the volume of a prism or cylinder, multiply the area of the base by the altitude. The result will be expressed in cube units.

To find the lateral surface of a prism or cylinder, multiply the perimeter of the base by the altitude.

To find the entire surface, add the area of the lateral surfaces to the area of the two bases.

Pyramid or Cone.—To find the volume of a pyramid or of a cone, multiply the area of the base by one-third the altitude. The result will be in cube units.

To find the lateral surface of a pyramid or cone, multiply the perimeter of the base by one-half the *slant* height.

To find the entire surface, add the lateral surface to the area of the base.

TYPICAL PROBLEMS AND SOLUTIONS IN PRACTICAL MEASUREMENTS

Measures of Time.—*Example*: Find the time by compound subtraction from Oct. 17, 1919, to May 15, 1922.

Solution.

1922— 5—15	
1919—10—17	15+30−17 = 28 da.
2— 6—28	4+12−10 = 6 mo.

Explanation.—Write the later date as the minuend, the earlier as the subtrahend, and subtract as in compound numbers.

The months are represented by their numbers. Thus, May being the fifth month is represented by 5 and likewise October by 10. The years and days are written as given.

Counting back or forward from a given date.

Example 1: Count forward 183 days from Nov. 30, 1922.

Example 2: Count back 145 days from Oct. 1, 1923.

Solutions.

1.	183 da.		93 da.
	0 Nov.		31 Mar.
	183		62
	31 Dec.		30 Apr.
	152		32
	31 Jan.		31 May
	121		1 June
	28 Feb.		June 1, 1923.
	93		
2.	145 da.		Proof
	1 Oct.		
	144		31
	30 Sept.		9
	114		22 M.
	31 Aug.		30 J.
	83		
	31 July		31 J.
	52		31 A.
	30 June		30 S.
	22		1 O.
			145 da.

May 31 − 22 = May 9, 1923.

Notes.— 1. In counting back, as shown above, we start with the later date and count it.

2. When the time is expressed in months, calendar months are meant. In counting back or forward a number of months from a given date the corresponding day of another month is found. Thus, 5 mo. forward from May 15 gives Oct. 15 (5th mo. + 5 = 10th mo.). Four months back from Aug. 27 is Apr. 27 (8th mo. − 4 = 4th mo.).

3. When counting calendar months forward, if there is not a corresponding day in the month to which we reckon, the last day of that month is taken. Thus, July 31 + 2 mo. = Sept. 30; Jan. 31 + 1 mo. = Feb. 28.

4. The time to be counted is often 30, 60, or 90 days. The correct dates in such cases can be found mentally by adding by 30's as follows:

(a.) The addition of 30 days to any date in a 30-day month produces the same date in the next succeeding month.

(b.) The addition of 30 days to any date (except the first) in a 31-day month produces 1 day less in the next succeeding month. By adding 30 days to the first of a 31-day month the last of that month is found. By adding 30 days to the 30th or 31st of January of a common year the 1st or 2nd of March is found, but in a leap year the same addition would bring Feb. 29 or Mar. 1.

(c.) The addition of 30 days to any date in February of a common year gives a date two days later in March but only 1 day later in a leap year.

(d.) The same rules can be applied in counting back, but the date is decided by the number of days in the preceding month.

Carpeting.—Carpet is made in various widths, the more common being 27 in. and 36 in. It is sold by the yard in length regardless of its width.

In estimating the number of yards of carpet required for a room, the "strip method" is generally used. The strips are laid either lengthwise or crosswise, and as there is usually some waste in matching the pattern, it is necessary to buy more carpet than would otherwise be required to cover the floor.

Example:—How many yards of carpet 27 in. wide will be required for a room 18′ 9″ long and 16′ 4″ wide, if the strips run lengthwise and 9 inches per strip are allowed for matching?

Solution.

16′ 4″ = 196 in.
196 ÷ 27 = 7 7/27 or 8 strips.
18′ 9″ + 9″ = 19½′, length of 1 strip.
19½′ × 8 = 156′, total length.
156 ft. ÷ 3 = 52 yd. carpet.

Explanation.—Since the strips run lengthwise, each strip covers 27 inches of the width of the floor. The number of strips is found by dividing the width of the room by the width of one strip. In this case 7 strips leave uncovered a strip 7 in. wide extending the entire length of the room, to cover which an additional strip must be purchased. Every strip must be as long as the room is *long*, and since 9 in. is wasted in matching, each strip must be purchased 9 in. longer than the room, or 18′ 9″ + 9″ = 19½ ft. The entire length of carpet is found by multiplying the length of each strip by the number of strips required. The length is then reduced to yards.

Papering.—Wall paper is put up in single rolls 8 yards long and in double rolls 16 yards long. For a room of ordinary height, 5 strips can be cut from a double roll but only 2 from a single roll. Therefore, double rolls are more economical than single rolls.

American wall paper is generally 18 inches wide, and unless otherwise stated that width is used in this work. Imported papers are of various widths.

If there was no waste in papering, the number of rolls could be found by dividing the area to be papered by the area of one roll. This method is not practical, however, and paper-hangers use the method explained in the following example.

Example: How many double rolls of paper will be required for the walls of a room 24 ft. long, 19 ft. wide, and 9 ft high, if 36 ft. are deducted for the width of doors, windows, mantels, etc.?

Perimeter of room = 24 × 2 = 48 ft. + 19 × 2 = 38 ft. = 86 ft.

86′ − 36′ = 50 feet of wall to be papered.

1 strip of paper is 18 in. or 1½ ft. wide.
50÷1 1/2=50×2/3=100/3=33 1/3 or 34 strips required.
Each roll=16 yd.=48 ft. long.
Each strip must be 9 ft., the height of the room.
48÷9=5 1/3 or 5 strips from 1 roll.
34÷5=6 4/5 or 7 rolls required.

Finding the Number of Board Feet.—When lumber is 1 inch or less in thickness, to find the number of board feet, *multiply the length in feet by the width in inches and divide the product by 12.*

Note—When the width is given in feet it is not necessary to divide by 12.

When more than 1 inch thick, *multiply the length in feet by the width and thickness in inches and divide by 12.*

In measuring inch material, every inch of the width of a board 12 ft. long is a board foot. This is often taken as a basis of measurement in selling lumber at the yard. When the length is uniform but the boards are of various widths, the entire width of the boards is measured and from this the correct number of board feet can readily be found. Thus, if the boards are 15 ft. long, every inch of the width is 1 1/4 bd. ft.; if 16 ft. long and 2 in. thick, every inch of the width is 1 1/3×2 or 2 2/3 board feet.

A pile of lumber can be measured by finding the number of cubic feet and then, by multiplying by 12, the number of board feet can be found.

Hewn or round timber is sometimes measured by cubic measure.

Example 1. How many board feet are there in a board 15 ft. long, 8 in. wide, and 1 in. thick?

Solution:
15×8=120
120÷12=10=10 bd. ft.

Or, by cancellation,

$$\frac{\overset{5}{\cancel{15}}\times\overset{2}{\cancel{8}}}{\underset{1}{\cancel{12}}}=10 \text{ bd. ft.}$$

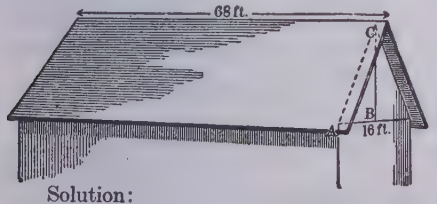
Example 2. How many feet, board measure, are there in a plank 15 ft. long, 10 in. wide, and 2 in. thick?

Solution:
15×10×2=300
300÷12=25=25 bd. ft.

Or, by cancellation,

$$\frac{\overset{5}{\cancel{15}}\times\overset{5}{\cancel{10}}\times\overset{1}{\cancel{2}}}{\underset{1}{\cancel{12}}}=25 \text{ bd. ft.}$$

The accompanying diagram represents the roof of a shed 16 ft. wide. If the ridge-pole is 68 ft., the pitch of the roof one half, and the projection of the rafters 18 in., how many shingles 16 in. long, laid 4½ in. to the weather, will be required to cover the roof?



Solution:
½ of 16 ft.=8 ft.=the base of the triangle *ABC*.

The pitch of the roof is ½; ½ of 16 ft.=8 ft.=the altitude of the triangle *ABC*. $8^2+8^2=128$; $128^1=11.31$, number of feet in the hypotenuse of *ABC*.

18 in.=1.5 ft.; 11.31 ft.+1.5 ft.=12.81 ft.=the length of the rafters or the width of each side of the roof.

2×68×12.81 ft.=1742.16 sq. ft.=the entire surface of the roof.

1742.16 sq. ft.=17.4216 squares; 17.4216×800 shingles=13937 shingles.

As bundles of shingles are not broken it will be necessary to buy 14000 shingles.

Excavation.—

Example: Find the cost of digging a cellar 30 ft. long, 24 ft. wide, and 7½ ft. deep, at 21c per cubic yard.

Solution:
30×24×7½=5400 cu. ft.
5400÷27 = 200 cu. yd.
200 cu. yd. @ 21c.=$42.00

Or, by cancellation,

$$\frac{\overset{10}{\cancel{30}}\times\overset{8}{\cancel{24}}\times\overset{5}{\cancel{15}}\times 21}{\underset{1}{\cancel{27}}\ \underset{9}{\cancel{2}}\ \underset{1}{\cancel{2}}}=4200=\$42.00$$

Explanation.—The product of length, breadth, and thickness is the number of cubic feet of earth to be thrown out in digging the cellar. Reduce the cubic feet to cubic yards by dividing by 27 and then multiply by the price per cubic yard.

In the solution by cancellation, all multipliers are written above the line and all divisors below the line.

Cylindrical.—How many gallons will fill a cylindrical tank 4 ft. in diameter and 12 ft. deep?

Solution:

4	192
4	5 7/8
16	168
12	960
192	1128=1128 gal.

Explanation.—Every unit of the capacity of a cylinder found by squaring the diameter and multiplying by the height is .7854 of a cubic foot. Since a cubic foot holds 7.48 gal., a unit of the cylinder holds .7854 of 7.48 gal.=5.87479 or 5 7/8 gal.

PERCENTAGE

Use.—Nearly all of the fractional relations in business are expressed in per cent. Percentage has a very wide and varied application in the different business activities. The business man is more likely to talk of per cents than of fractional parts.

Definition.—Per cent are two words derived from the Latin per centum, meaning by the hundred or hundredths. Percentage is, therefore a name applied to calculations in which fractional parts of a hundred are used as the basis. It is clear, therefore, that percentage is simply a special application of decimal fractions in which the indicated denominator is always 100.

Terms Used in Percentage:—

BASE. The number of which a number of hundredths or per cents are taken is called the base.

Example: 8% of 300=24. 300 is the base.

RATE is the number of per cents or hundredths taken. In the above example, 8 is the rate.

PERCENTAGE is the product of the rate times the base. In the above example, 24 is the percentage.

The AMOUNT is the sum of the base and the percentage.

The DIFFERENCE is the base minus the percentage.

Aliquot Parts and Percentage.—Since the indicated denominator is always 100 in percentage, it is frequently possible and advantageous to make use of the aliquot parts of 100 when working percentage. Care must be exercised in placing the decimal point in the result.

PROBLEMS IN PERCENTAGE are solved in accordance with the fundamental processes in handling decimal fractions. These problems may be grouped under these three headings:

1. Rate×base=percentage,
   Then, transposing,
2. Percentage÷base=rate
   And
3. Percentage÷rate=base.

To find the percentage:

When the base and rate are given and the percentage is to be found, express the rate as a decimal and multiply the base by it.

Example: Find 6% of $400.00.
6%=.06. Therefore, 6% of $400.00=.06×$400.00=$24.

To find the rate:

When the base and percentage are given and the rate is to be found, divide the percentage by the base.

Example: $24 is what per cent of $400?
$24÷$400=.06 or 6%

To find the base:

When the percentage and the rate are given and the base is to be found, express the rate as a decimal and divide the percentage by it, or divide the percentage by the rate to find 1% and multiply the quotient by 100 to find 100%.

Example: If a sum of money invested at 6% produces $24, what is the sum invested?
6%=.06 $24÷.06=$400.
OR
$24÷6=$4=1%
100%, the amount,=100×$4=$400.

Per cents of increase:

When the amount and the rate of increase are given and the base is to be found, divide the amount by the sum of the rate and 100% expressed as decimals.

Example: A merchant sold a hat for $8 and thereby gained 33 1/3%. What was the cost of the hat?
33 1/3%=.33 1/3
1.00 plus .33 1/3=1.33 1/3
$8.00÷1.33 1/3=$6.00, the cost.

When the rate is an aliquot part of $1.00, the solution is frequently easier by fractions.
33 1/3%=1/3 1 plus 1/3=4/3
4/3=$8, then 1/3=$2 and 3/3=$6.

Per cents of decrease:

When the difference and the rate are given and it is required to find the base, subtract the rate from 100% and divide the given difference by the difference in per cent expressed as a decimal OR divide the given difference by the difference in per cent to find 1% and then multiply the quotient by 100 to find 100%.

Example: A man sold his automobile for $600 and thereby lost 20%. What was the cost of the automobile?
100%−20%=80%=.80
$600.00÷.80=$750
OR
$600÷80%=$7.50=1%
100%=100×$7.50=$750.

In this case, as in the case of per cents of increase, the work may be simplified by the use of common fractions.

DISCOUNTS

A discount is an amount deducted from a sum owing. Discounts may be trade discounts (sometimes called commercial discounts) or cash discounts (sometimes called time discounts). The amount of a discount is usually indicated by a rate per cent.

A trade or commercial discount is an amount deducted from the list price of an article. Manufacturers and wholesalers publish price lists and catalogs at great expense. To avoid issuing a new catalog with every fluctuation of the market, they

issue discount sheets which show the discounts to which the prices in the catalog are subject. Trade discounts may also vary upon the size of the order, the desirability of the customer, etc. These variations are frequently expressed by two or more discounts called a DISCOUNT SERIES. When two or more discounts are quoted, one denotes a discount off of the list price; another, a discount off of the remainder; another, a discount off of that remainder, etc. It is immaterial in what order the discounts are deducted, as will be found by deducting a series in different order.

A cash or time discount is an allowance made for the payment of the bill in less time than allowed by the terms of the sale. These discounts are expressed upon the invoice in the following form: 5/10, 2/30, n/60 and are read, "five per cent off in ten days, two per cent off in thirty days, net in sixty days".

It will be evident that the amount of the commercial discount is determined by the quotation, while the amount of the cash discount is determined by the time of payment.

The amount of the invoice before any deductions are made is termed the GROSS AMOUNT. The amount of the invoice after deducting the discounts is termed the NET AMOUNT.

To find the net amount when the price is subject to trade discount:

(a) When there is only one discount:

Find the percentage and subtract from the price.

\$48 less 12 1/2% = \$48 × .12 1/2 = \$48 × 1/8 = \$6.
\$48 − \$6 = \$42 the net price.

(b) When the discount is expressed in a series:

\$50 less 25% and 20%
\$50 less 20% = \$40 and \$40 less 25% = \$30, the net amount.

OR

\$50 less 25% = \$37.50 and \$37.50 less 20% = \$30, the net amount. (It is evident that the work is rendered easier by selecting the order in which the discounts are deducted.)

(c) Finding a single rate of discount equivalent to a series of two discounts:

(1) Add the discounts;
(2) Multiply the discounts;
(3) Subtract the product (2) from their sum (1), and the result will be a single discount equivalent to the two. When there are three or more discounts, the first two may be combined as above and then this result and the third combined, etc.

Example: A certain article is sold subject to 25%, 20% and 20% off. The work may be simplified by finding a single discount equivalent to the series: Mentally find an equivalent discount for the first two (25% plus 20% minus 5%, the product, equals 40%). Now mentally combine this equivalent and the last rate of the series (40% plus 20% minus 8% equals 52%, the single equivalent of the series).

Finding the cash discount:

The cash discount is deducted from the invoice after the trade discounts have been deducted. Determine from the date of payment what discount is applicable and find this amount of the invoice.

Example: An invoice dated March 10 for \$2500 is subject to the following terms: 5/10, 2½/30, n/60. Find the net amount to be paid on March 18. Since it is to be paid within ten days, deduct 5%. 5% of \$2500 = \$125. \$2500 − \$125 = \$2375, the net amount.

PROFIT AND LOSS

Profit and Loss is one of the business applications of percentage. In these problems, the base is either the cost or the selling price. The percentage is the profit or loss. The rate is the rate of profit or loss. When the cost is taken as the base:

To find the selling price, add the profit to the cost, or subtract the loss from the cost.

To find the rate of profit or loss, find the profit or loss and then find how many per cent of the cost this is.

To find the cost when the selling price and the rate of profit are given, add the rate of profit to 100% and divide the selling price by this sum expressed as a decimal.

To find the cost when the selling price and the rate of loss are given, subtract the rate of loss from 100% and divide the selling price by the remainder expressed as a decimal.

Buying by the dozen and selling by the unit.

This kind of problem is of frequent occurrence in business.

The following table gives a short method to find the selling price per unit when the purchasing price is by the dozen and the profit is at a certain rate. Other rates of profit may be solved in the same way but the fractions are complicated.

Rate of Profit	Number of places to left decimal point is moved in cost per dozen	Fractional part of the result to be added
20%	1 place	0
25%	1 "	1/24
30%	1 "	1/12
33 1/3%	1 "	1/9
35%	1 "	1/8
40%	1 "	1/6
50%	1 "	1/4
60%	1 "	1/3
80%	1 "	1/2

Example: Hammers are bought for \$18 a dozen. What must be the selling price per hammer to gain 40%? From the table, \$2.10.

Proof: The cost of each hammer is $\frac{\$18}{12}$

The selling price is $1.4 \times \frac{18}{12} = \frac{1.4}{12} \times 18 = \frac{14}{12} \times 1.8 = (1 \text{ plus } 1/6) \times 1.8$.

MARKING GOODS

In large mercantile establishments, it is necessary to have both the price and cost marked upon each article. In order that this information may not come into the hands of those who should not have it, these prices are written in letters or characters. The following are examples of such schemes:

Cost Key
S I L K T H R E A D 3 25
1 2 3 4 5 6 7 8 9 0 L I T
Repeaters X and Y

Selling Price Key
P U R C H A S E N O W
1 2 3 4 5 6 7 8 9 0 Repeater 5.00 H O W

COMMISSION AND BROKERAGE

Use.—A large part of business is carried on through agents, brokers and factors. This is particularly true in the case of insurance, real estate, stocks and bonds, and certain classes of merchandise.

Definitions.—An AGENT, FACTOR, BROKER, or COMMISSION MERCHANT is one who transacts business for the account of another. The person or company for whom the business is transacted is called the PRINCIPAL.

The compensation paid to the agent or broker is called the COMMISSION or BROKERAGE. The commission is usually a certain per cent of the amount involved in the transaction, or a certain amount per unit handled. Commission merchants frequently make an additional charge for assuming some special risk in connection with the transaction; such as the quality of the goods, collection of the accounts, etc.

The goods sent to an agent is called a CONSIGNMENT. Sometimes the sender of the goods calls it a SHIPMENT and the agent calls it a CONSIGNMENT.

The person sending the goods is called the CONSIGNOR or SHIPPER; the one to whom they are sent is called the CONSIGNEE.

The statement rendered to the principal by the agent is called an ACCOUNT SALES in the case of a sale of goods and an ACCOUNT PURCHASE in the case of a purchase. The statements contain an account of the gross amount involved and the expenses and commission.

In the sale of goods, the GROSS PROCEEDS is the total amount received by the agent and the NET PROCEEDS is the amount received less the expenses and commissions. In the purchase of goods, the NET PRICE is the amount the agent actually pays for the goods and the GROSS PRICE is the amount after all expenses and commissions have been added.

Problems in commission and brokerage are merely special applications of percentage as the following comparison of terms will show.

The *sales price*, or the *purchase price*, is the *base* in percentage.

The *rate of commission* is the *rate* in percentage.

The *commission* is the *percentage*.

ACCOUNT SALES

Chicago, Ill., March 18, 1922

Sold for the account of Greenwood & Co.

By C. H. BAIR AND COMPANY

March	8	300 bbl. Flour	\$8.00			\$2400	00
	15	200 bbl. Pastry Flour	9.00			1800	00
		CHARGES					
March	7	Freight and Drayage		\$ 50	25		
	15	Commission 5%		210	00		
	16	Proceeds remitted		3939	75		
				\$4200	00	\$4200	00

ACCOUNT PURCHASE

Baltimore, Md., March 18, 1922

Purchased by **FRANCE AND BARRETT**
Commission Merchants

For the account and risk of Archer and Roe,
York, Pa.

100 boxes Oranges	$6.50	$650 00	
100 boxes Lemons	6.00	600 00	$1250 00
CHARGES			
Freight		$25 50	
Drayage		10 00	
Commission 2%		25 00	60 50
Amount charged to your account			$1310 50

The *gross cost* in the account purchase is the *amount* in *percentage*.

The *net proceeds* in the account sales is the *difference* in percentage.

TO FIND THE COMMISSION when the rate and price are given. This is the same as the problem of finding the percentage when the base and rate are given. Thus, if the selling or buying price is $2000 and the rate of commission is 5% the commission is 5% of $2000 or $100.

TO FIND THE NET PROCEEDS when the selling price and the rate of commission are given. This is the same as the problem of finding the difference when the base and rate are given. Thus, if the selling price is $2000 and the rate of commission is 5%, the net proceeds is $2000 − $100 = $1900.

TO FIND THE GROSS PRICE (the total sales or purchases) when the rate and commission are given. This is the same as the problem of finding the base when the rate and the percentage are given. Thus, if the commission is $100 and the rate is 5%, 1% equals $20 and 100% equals $2000.

TO FIND THE NET PRICE IN BUYING when the gross price and the rate of commission are given. This is the same as the problem of finding the base when the rate and amount are given. $2100 ÷ 105% = $20 or 1%; 100% = $2000.

It will be noticed that the commission is always computed upon the total amount of the sales or purchases.

SIMPLE INTEREST

Use.—Interest is the most common of all the applications of percentage. At one time or another, practically every one needs to figure interest. In business the problem of interest is of frequent occurrence and in the banking business it is in constant use.

Definitions.—INTEREST is the amount paid as compensation for the use of money. A man borrows $100 for a year and at the end of the year he must pay back $106. The extra $6 is paid for the use of the $100 for one year and is called interest.

The PRINCIPAL is the amount on which the interest is paid.

The AMOUNT is the principal plus the interest.

The RATE OF INTEREST is the percentage of the principal which is paid for the use of the principal for one year.

Since the rate of interest is nearly always expressed in terms of one year, the time is an important element in computing interest.

When the time is one year, problems in interest are problems of ordinary percentage, and

(*a*) The principal is the base;

(*b*) The rate of interest is the rate of percentage;

(*c*) The interest is the percentage;

(*d*) The amount is the same in both cases.

When the time is more than one year the interest is the interest for one year multiplied by the number of years. Thus, the interest on $100 for two years is 2 × $6 or $12.

When the time is less than one year the interest is the interest for one year multiplied by the fractional part of a year. Thus, the interest on $100 for six months is ½ of $6, or $3.

The legal and maximum rates of interest in the different states are determined by the laws of the different states. The legal rate of interest is the rate charged when no rate is agreed upon between the parties. The maximum rate is the highest rate allowed by law. A binding contract to pay more than the maximum rate of interest cannot be made. Charging more than the maximum rate of interest is called usury and is penalized in most of the states. The following table shows the legal and maximum rates of interest in the different states:

	Legal rate	Maximum rate
Alabama	8	8
Alaska	8	12
Arizona	6	10
Arkansas	6	10
California	7	any
Colorado	8	any
Connecticut	6	6
Delaware	6	6
District of Columbia	6	10
Florida	8	10
Georgia	7	8
Idaho	7	12
Illinois	5	7
Indiana	6	8
Iowa	6	8
Kansas	6	10
Kentucky	6	6
Louisiana	5	8
Maine	6	any
Maryland	6	6
Massachusetts	6	any
Michigan	5	7
Minnesota	7	10
Mississippi	6	8
Missouri	6	8
Montana	8	12
Nebraska	7	10
Nevada	7	12
New Hampshire	6	6
New Jersey	6	6
New Mexico	6	12
*New York	6	6
North Carolina	6	6
North Dakota	6	10
Ohio	6	8
Oklahoma	6	10
Oregon	6	10
Pennsylvania	6	6
Rhode Island	6	any
South Carolina	7	8
South Dakota	7	12
Tennessee	6	6
Texas	6	10
Utah	8	12
Vermont	6	any
Virginia	6	6
Washington	6	12
West Virginia	6	6
Wisconsin	6	10
Wyoming	8	12

*Corporations may contract to pay any rate of interest and any rate may be charged on call loans of $5000 and upwards.

Kinds of Interest.—The following kinds of interest will be discussed: Ordinary or commercial year interest, accurate interest, and compound interest.

Ordinary or commercial year interest is computed on a 360-day year basis.

Methods of Computing Ordinary Interest.—The most widely used method of computing interest for commercial purposes is what is known as the Bankers' Sixty-Day Method. It is based upon the 360-day year, 12 months of 30 days each, at 6%. Since the rate of interest for one year is 6%, the rate for 60 days or two months is 1% and the interest for six days is .1%. The work can therefore be simplified by working upon the basis of sixty days and aliquot parts of sixty days. Moving the decimal point two places to the left in the principal (which is the same as multiplying the principal by 1%) will give the interest for two months or sixty days; moving the decimal point three places to the left will give the interest for six days, and moving the decimal point one place to the left will give the interest for six hundred days at 6%.

Example 1. Find the interest on $1950 for three months at 6%.

$19 50	interest for two months
9 75	interest for one month (½ of two months)
$29 25	interest for three months (sum of two months and one month)

Example 2. Find the interest on $1250 for five months twenty days at 6%.

$12 50	interest for two months
25 00	interest for four months
6 25	interest for one month
4 166	interest for 20 days
$35 42	interest for five months and twenty days.

Example 3. Find the interest on $1396 for 46 days at 6%.

$ 1 396	interest for 6 days
9 772	interest for 42 days (7 × 6 days)
931	interest for 4 days (2/3 of 6 days)
$10 703	interest for 46 days at 6%.

OR (Working with a different combination of days also constitutes a check on the work).

$13 96	interest for 60 days
6 98	interest for 30 days (½ of 60)
3 49	interest for 15 days (½ of 30)
2326	interest for 1 day (1/30 of 30 days)
$10 7026	interest for 46 days.

Example 4. Find the interest on $4240 for 93 days at 6%.

$42|40 interest for 60 days
21|20 interest for 30 days
2|12 interest for 3 days
$65|72 interest for 93 days

Example 5. Find the interest on $2440 for 1 yr. 7 mo. 6 days at 6%.

$244|00 interest for 20 mo. or 600 days
12|20 interest for 1 month
231|80 interest for 19 months, 1 yr. 7 mo.
2|44 interest for 6 days
$234|24 interest for 1 year 7 months 6 days at 6%.

Interchanging Time and Principal.—It is sometimes possible to shorten the work a great deal by interchanging the time and the principal. This is particularly true where the interest is to be computed upon even hundreds of dollars at an odd number of days; e. g., $2400 for 117 days at 6%. The interest on $2400 for 117 days at 6% is the same as the interest of $117 for 2400 days at 6%.

$24|00 interest on $2400 for 60 days at 6%
48|00 interest on $2400 for 120 days at 6%
1|20 interest on $2400 for 3 days at 6%
$46|80 interest on $2400 for 117 days at 6%

Interchanging principal and time:

($117 for 2400 days at 6%)
$11|70 interest for 600 days
$46|80 interest for 2400 days (4×600 days)

To Find the Interest at Any Rate per Cent.—First find the interest for the given time at 6%. Divide this interest by 6 to find the interest at 1% and then multiply the interest at 1% by the given rate

Example: The interest on $60 for 36 days at 6% is 36c; the interest for the same time at 1% is 6c. The interest at 5% is 5×6c; at 7% it is 7×6c; etc.

The work may be somewhat simplified in the common rates of interest as follows:

Interest at 6% decreased by:
1/8 of itself equals 5¼% interest
1/12 of itself equals 5½% interest
1/6 of itself equals 5% interest
1/4 of itself equals 4½% interest
1/3 of itself equals 4% interest

Interest at 6% divided by:
2 equals the interest at 3%
3 equals the interest at 2%
6 equals the interest at 1%

Interest at 6% increased by:
1/12 of itself equals 6½% interest
1/8 of itself equals 6¾% interest
1/6 of itself equals 7% interest
1/4 of itself equals 7½% interest
1/3 of itself equals 8% interest
1/2 of itself equals 9% interest

Interest at 6% multiplied by 2 equals the interest at 12%.

The work can frequently be simplified and shortened by applying the above increases and decreases to the principal or time, since if either the principal or the time be increased or decreased by any fraction of itself, the interest is increased or decreased by the same fraction. *Example:* Find the interest on $480 for 77 days at 4½%. Since 4½% is ¼ less than 6%, decrease the principal by ¼ of itself and the result is $360. Interchanging principal and time, the problem is the interest on $77 for 360 days at 6%. The interest for 60 days is 77c and for 360 days, 6×77c, or $4.62.

Pointing Off for Rates Other Than 6%.—Pointing off two places in the principal will give the interest at the rates and for the time as follows:

At 1% for one year
2% for six months or 180 days
3% for four months or 120 days
4% for three months or 90 days
4½% for 80 days
5% for 72 days
7½% for 48 days
8% for 45 days
9% for 40 days
10% for 36 days
12% for 30 days

It is not necessary to remember these figures as they can easily be found as follows: 4% is 2/3 of 6%. To earn 1c it will take as many days as 60÷2/3=3/2×60=90.

The Six per Cent Method.—This method is very satisfactory when the tme is one year, or more than one year.

Method:
Multiply the number of years by $0.06
Multiply the number of months by $0.005
Multiply the number of days by $0.000 1/6
Find the sum of these products and multiply the principal by the sum.

Example: Find the interest on $250 for 1 year 8 months 15 days at 6%.

$0.06 interest on $1 for 1 year.
.04 interest on $1 for 8 months.
.0025 interest on $1 for 15 days.
$0.1025 interest on $1 for entire time.
250×$0.1025=$25.63 the required interest.

For rates other than 6% proceed as in the Banker's 60-Day Method.

Calculating Interest by Use of Interest Tables.—In banks and banking houses where a large portion of the work consists of interest computations, tables are employed to lessen the labor, speed up the work, and reduce the probability of error. The following is a sample page of such a table.

INTEREST TABLE AT 6%.

TIME	$1	$2	$3	$4	$5	$6	$7	$8	$9	$10	TIME
1 da.	.00017	.00033	.0005	.00067	.00083	.001	.00117	.00133	.0015	.00167	1 da.
2 da.	.00033	.00067	.001	.00133	.00167	.002	.00233	.00267	.003	.00333	2 da.
3 da.	.0005	.001	.0015	.002	.0025	.003	.0035	.004	.0045	.005	3 da.
4 da.	.00067	.00133	.002	.00267	.00333	.004	.00467	.00533	.006	.00667	4 da.
5 da.	.00083	.00167	.0025	.00333	.00417	.005	.00583	.00667	.0075	.00833	5 da.
6 da.	.001	.002	.003	.004	.005	.006	.007	.008	.009	.01	6 da.
7 da.	.00117	.00233	.0035	.00467	.00583	.007	.00817	.00933	.0105	.01167	7 da.
8 da.	.00133	.00267	.004	.00533	.00667	.008	.00933	.01067	.012	.0133	8 da.
9 da.	.0015	.003	.0045	.00667	.0075	.009	.0105	.012	.0135	.015	9 da.
10 da.	.00167	.00333	.005	.00667	.00833	.01	.01167	.01333	.015	.01667	10 da.
20 da.	.00333	.00667	.01	.01333	.01667	.02	.02333	.02667	.03	.03333	20 da.
1 mo.	.005	.01	.015	.02	.025	.03	.035	.04	.045	.05	1 mo.
2 mo.	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10	2 mo.
3 mo.	.015	.03	.045	.06	.075	.09	.105	.12	.135	.15	3 mo.
4 mo.	.02	.04	.06	.08	.10	.12	.14	.16	.18	.20	4 mo.
5 mo.	.025	.05	.075	.10	.125	.15	.175	.20	.225	.25	5 mo.
6 mo.	.03	.06	.09	.12	.15	.18	.21	.24	.27	.30	6 mo.
7 mo.	.035	.07	.105	.14	.175	.21	.245	.28	.315	.35	7 mo.
8 mo.	.04	.08	.12	.16	.20	.24	.28	.32	.36	.40	8 mo.
9 mo.	.045	.09	.135	.18	.225	.27	.315	.36	.405	.45	9 mo
10 mo.	.05	.10	.15	.20	.25	.30	.35	40	.45	.50	10 mo.
11 mo.	.055	.11	.165	.22	.275	.33	.385	44	.495	.55	11 mo.
1 yr.	.06	.12	.18	.24	.30	.36	.42	48	.54	.60	1 yr.
2 yr.	.12	.24	.36	.48	.60	.72	.84	.96	1.08	1.20	2 yr.

Example: Find the interest on $7560 for 9 days at 6%.

From the table:
$10.50=interest of $7000 for 9 days
.75=interest on $500 for 9 days
.09=interest on $60 for 9 days
$11.34=interest on $7560 for 9 days.

Accurate or Exact Interest.—Exact interest is based upon a year of 365 days and when the exact number of days between dates is taken. Exact interest is used by the United States Government and sometimes by bankers and city and state governments when the sum involved is very large.

Problems in exact interest can be solved best by the cancellation method using this formula: $\frac{\text{rate}\times\text{days}\times\text{principal}}{365}$ = exact interest. Exact interest may also be found by computing the interest in the usual way for the 360-day year and from the interest so obtained taking 1/73 of itself. Accurate or exact interest may be changed to ordinary interest by adding 1/72 of itself.

The Cancellation Method of Figuring Interest.—Since the interest equals the principal×rate×time, the problem may be solved by expressing the time as a fractional part of a year and using cancellation. This method is sometimes very advantageous. It is applicable to any rate and to either ordinary or accurate interest.

Example: Find the accurate interest on $1850 at 5% for 50 days.

$$\frac{\$1850\times\frac{1}{20}\times\frac{50}{365}}{} = \frac{925}{73} = \$12.67$$

COMPOUND INTEREST.

Compound interest is the interest computed at regular intervals on the sum of the principal and the unpaid interest. Interest may be compounded annually, semi-annually, or quarterly. Interest may be compounded monthly, but this is unusual. Compound interest cannot be collected at law but when it is accepted it does not constitute usury. Compound interest is allowed by savings banks and used by insurance companies in computing premiums. It is also used in computing sinking funds, etc.

Example: Find the compound interest on $100 at 5% for three years compounded annually.

$5.00=interest for the first year
105.00=amount at end of first year—new principal
5.25=interest for the second year
110.25=amount at the end of second year—new principal
5.51=interest for the third year
115.76=amount at the end of the third year
$115.76−$100=$15.76 the compound interest

Business institutions having compound interest to compute use a table of which the following is a sample page:

COMPOUND INTEREST TABLE.

Showing the amount of $1.00 for any number of periods up to 25, at the given rates.

No. Period	Rate Per Period									
	1%	1½%	2%	2½%	3%	3½%	4%	4½%	5%	6%
1	1.010000	1.005000	1.020000	1.025000	1.030000	1.035000	1.040000	1.045000	1.050000	1.060000
2	1.020100	1.030225	1.040400	1.050625	1.060900	1.071225	1.081600	1.092025	1.102500	1.123600
3	1.030301	1.045678	1.061208	1.076891	1.092727	1.108718	1.124864	1.141166	1.157625	1.191016
4	1.040604	1.061364	1.082432	1.103813	1.125509	1.147523	1.169859	1.192519	1.215506	1.262477
5	1.051010	1.077284	1.104081	1.131408	1.159274	1.187686	1.216653	1.246182	1.276282	1.338226
6	1.061520	1.093443	1.126162	1.159693	1.194052	1.229255	1.265319	1.302260	1.340096	1.418519
7	1.072135	1.109845	1.148686	1.188686	1.229874	1.272279	1.315932	1.360862	1.407100	1.503630
8	1.082857	1.126493	1.171659	1.218403	1.266770	1.316809	1.368569	1.422101	1.477455	1.593848
9	1.093685	1.143390	1.195093	1.248863	1.304773	1.362897	1.423312	1.486095	1.551328	1.689479
10	1.104622	1.160541	1.218994	1.280085	1.343916	1.410599	1.480244	1.552969	1.628895	1.790848
11	1.115668	1.177949	1.243374	1.312087	1.384234	1.459970	1.539454	1.622853	1.710339	1.898299
12	1.126825	1.195618	1.268242	1.344889	1.425761	1.511069	1.601032	1.695881	1.795856	2.012197
13	1.138093	1.213552	1.293607	1.378511	1.468534	1.563956	1.665074	1.772196	1.885649	2.132928
14	1.149474	1.231756	1.319479	1.412974	1.512590	1.618695	1.731676	1.851945	1.979932	2.260904
15	1.160969	1.250232	1.345868	1.448298	1.557967	1.675349	1.800944	1.935282	2.078928	2.396558
16	1.172579	1.268986	1.372786	1.484506	1.604706	1.733986	1.872981	2.022370	2.182875	2.540352
17	1.184304	1.288020	1.400241	1.521618	1.652848	1.794676	1.947901	2.113377	2.292018	2.692773
18	1.196148	1.307341	1.428246	1.559659	1.702433	1.857489	2.025817	2.208479	2.406619	2.854339
19	1.208109	1.326951	1.456811	1.598650	1.753506	1.922501	2.106849	2.307860	2.526950	3.025600
20	1.220190	1.346855	1.485947	1.638616	1.806111	1.989789	2.191123	2.411714	2.653298	3.207136
21	1.232392	1.367058	1.515666	1.679582	1.860295	2.059431	2.278768	2.520241	2.785963	3.399564
22	1.244716	1.387564	1.545980	1.721571	1.916103	2.131512	2.369919	2.633652	2.925261	3.603537
23	1.257163	1.408377	1.576899	1.764611	1.973587	2.206114	2.464716	2.752166	3.071524	3.819750
24	1.269735	1.429503	1.608437	1.808726	2.032794	2.283328	2.563304	2.876014	3.225100	4.048935
25	1.282432	1.450945	1.640606	1.853944	2.093778	2.363245	2.665836	3.005434	3.386355	4.291871

Solving the preceding example by the table, we find that $1 will amount to $1.157625 in three years. $100 will therefore amount to $115.76 and the compound interest is $15.76.

Sinking Funds.—A sinking fund is a fund set aside out of assets at regular intervals and accumulating interest for the purpose of paying off bonds or other obligations, replacing machinery, buildings or other assets. A state or city has an issue of bonds which mature in a certain time. It wishes to accumulate a fund by setting aside a certain amount periodically in order that it may have the money to pay off the bonds when they mature. A business wishes to accumulate a fund for the purpose of replacing dynamos or other machinery. Such funds are called sinking funds.

In the following table is shown the sum to which $1, paid at the beginning of each year, will increase at certain rates of compound interest in any number of years not exceeding twenty.

Yr.	2%	4%	4½%
1	1.020000	1.040000	1.045000
2	2.060400	2.121600	2.137025
3	3.121608	3.246464	3.278191
4	4.204040	4.416322	4.470709
5	5.308120	5.632975	5.716891
6	6.434283	6.898294	7.019151
7	7.582969	8.214226	8.380013
8	8.754628	9.582795	9.802114
9	9.949721	11.006107	11.288209
10	11.168715	12.486351	12.841178
11	12.412089	14.025805	14.464031
12	13.680331	15.626837	16.159913
13	14.973938	17.291911	17.932109
14	16.293416	19.023587	19.784054
15	17.639285	20.824531	21.719336
16	19.012070	22.697512	23.741706
17	20.412312	24.645412	25.855083
18	21.840558	26.671229	28.063562
19	23.297369	28.778078	30.371432
20	24.783317	30.969201	32.783136

To Find the Rate of Interest.—It frequently happens that a man investing money in a venture and making a certain profit, wishes to know what rate of interest he has realized on the transaction. *Example:* A man invested $1800 and in six months he had closed out the transaction and taken a profit of $108. What rate of interest did he make on the investment? Since six months are one-half of a year, the profit for a year at the same rate would have been $216 and this is 12% on $1800. For methods of finding this rate refer to method of finding rate of percentage.

To Find the Time When the Principal, Rate and Interest Are Given.—Divide the interest by the interest for one year. This problem does not occur frequently in business.

To Find the Principal When the Rate, Time and Amount Are Given.—Find the amount of $1 for the given time and rate and divide the given amount by it.

Example: Find the principal when the amount in three months at 6% is $2436.00. The interest on $1 for three months at 6% is $0.015 and the amount is $1.015. $2436.00 ÷ $1.015 = $2400.00, the principal.

A certificate of deposit is a negotiable instrument in which a bank certifies that the person named in the instrument has deposited the sum of money named. This money is payable to the person named or his order on the surrender of the certificate of deposit properly indorsed. The money so deposited is not subject to checks.

When a person has a negotiable instrument in his possession he is called the HOLDER. He may transfer it to another by delivery if it is made payable to bearer. If it is drawn to the order of the payee, he may transfer it by INDORSEMENT. An indorsement is any writing on the back of the instrument. Indorsements for the purpose of transferring the instrument are BLANK INDORSEMENTS, FULL OR SPECIAL INDORSEMENTS, or QUALIFIED INDORSEMENTS.

A Blank Indorsement is simply the signature of the holder.

A Full Indorsement is one which names the person to whom it is to be paid; e. g., "Pay to the order of J. G. Smith".

A Qualified Indorsement is one which limits the liability of the indorser by inserting the words, "Without Recourse".

In case of partial payments on a note, a record of the payment is indorsed on the note; e. g., Received on within note:

Jan. 6, 1922.....$500.00
May 15, 1922..... 300.00
June 7, 1922..... 200.00

A negotiable instrument which is not paid or accepted (as the case may be) when presented, is said to be DISHONORED.

Protest is a formal declaration made by a notary public certifying to the presentment, demand and dishonor of a negotiable instrument. It is used for the purpose of proving the proper handling of the instrument to protect the interests of the indorsers. It is required by law upon drafts drawn in one state and payable in another.

Days of Grace are three extra days beyond the due date allowed for the payment of negotiable instruments. Days of Grace have been abolished in all except a few of the states.

Bank Discount is a deduction made from the amount due at maturity on notes and drafts because they are cashed before maturity. It is the interest on the amount due at maturity and collected in advance for the time from the date of discount to the date of maturity.

The Term of Discount is the time from the date of discount to the maturity of the instrument. Banks always count the exact number of days.

The proceeds is the difference between the amount due at maturity and the discount on the instrument.

MATURITY TABLE

1	Jan.	−1	13
2	Feb.	+2	14
3	Mar.	−1	15
4	April		16
5	May	−1	17
6	June		18
7	July	−1	19
8	Aug.	−1	20
9	Sept.		21
10	Oct.	−1	22
11	Nov.		23
12	Dec.	−1	24

Bankers, and others having the counting of terms of discount to do, make use of a table like this.

To Find the Date of Maturity and Term of Discount.

Example: Find the maturity of a note dated June 10 and payable (a) three months after date, (b) ten months after date, (c) ninety days after date.

(a) Referring to the table, notice that June is the sixth month. Add 3 to the 6 months and the result is 9. The 9th month is Sept. (from table) and the note is due Sept. 10.

(b) Add 6 and 10 and the result is 16. The note is due in the 16th month, which, (from the table) is April. The note is therefore due on April 10.

TABLE OF TIME

FROM ANY DAY OF	TO THE SAME DAY OF THE NEXT											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
JANUARY	365	31	59	90	120	151	181	212	243	273	304	334
FEBRUARY	334	365	28	59	89	120	150	181	212	242	273	303
MARCH	306	337	365	31	61	92	122	153	184	214	245	275
APRIL	275	306	334	365	30	61	91	122	153	183	214	244
MAY	245	276	304	335	365	31	61	92	123	153	184	214
JUNE	214	245	273	304	334	365	30	61	92	122	153	183
JULY	184	215	243	274	304	335	365	31	62	92	123	153
AUGUST	153	184	212	243	273	304	334	365	31	61	92	122
SEPTEMBER	122	153	181	212	242	273	303	334	365	30	61	91
OCTOBER	92	123	151	182	212	243	273	304	335	365	31	61
NOVEMBER	61	92	120	151	181	212	242	273	304	334	365	30
DECEMBER	31	62	90	121	151	182	212	243	274	304	335	365

(c) Three months added to the 6th month (June) equals 9. The note is due in the 9th month, which is September. Since the note is payable in ninety days, exact time must be found. Notice in the table that one day must be subtracted for each of July and August. 10−2=8. The note is therefore due on September 8.

With a little practice it will be unnecessary to use such a table. Counting ahead the number of months or days will establish the due date.

The Term of Discount is found by counting the exact time in days from the date of discount to the date of maturity. *Example:* In a note due on July 14 and discounted on May 3, the term of discount is 72 days. This may be found as follows:

28 days remaining in May
30 days in June
14 days in July
72 days is the term of discount.

Bankers frequently use a table like the foregoing for the purpose of finding the exact number of days between the two dates:

The above example would be solved with the table by looking in the column marked "July" on a line with May. The number of days given there is 61, which indicates that there are 61 days from any date in May to the *same* date in July. From May 3 to July 3 there are 61 days; from July 3 to July 14, there are 11 days; the total is 72 days, and this is the term of discount.

To Find the Bank Discount of a Note or Draft, find the interest on the face of the note for the term of discount. This is a problem in simple interest and is explained under that subject.

To Find the Proceeds of a Discounted Note or Draft, subtract the bank discount from the face of the note.

To Find the Proceeds of an Interest-Bearing Note or Draft, find the interest for the time of the note at the rate of interest stated in the note and add this to the face of the note to find the amount due at maturity. Find the interest for the term of discount on the value of the note at maturity and subtract this interest from the value at maturity.

Example: A 90-day note for $2000 bearing interest at 5% was discounted at 6% 45 days before maturity. Find the proceeds.

Solution:

$2000.00	Face of note.
25.00	Interest on note
$2025.00	Amount due at maturity
15.19	Discount—Interest for 45 days at 6% on $2025
$2009.81	Proceeds of note.

Collection and Exchange Charges.—Banks sometimes make a small charge for collection and exchange on notes and drafts payable out of town. The rate of exchange and the charges for collection are usually expressed in a fraction of a per cent. These charges are computed upon the value of the instrument at maturity; i. e., on the face of a non-interest-bearing note and on the amount of an interest-bearing note.

When an interest-bearing note is discounted on the day it is made and the rates of discount are the same, the bank will usually give credit for the face of the note. When an interest-bearing note is discounted after the date of issue and the rate of interest is the same as the rate of discount, it is customary among some bankers to give the customer credit for the face of the note plus the interest to the date of discount.

BANK DISCOUNT

Negotiable Instruments.—A negotiable instrument is a written evidence of debt which may be transferred from one person to another by indorsement and delivery or by delivery alone. The most common negotiable instruments are checks, drafts, notes, and bonds.

A check is a bill of exchange drawn on a bank and payable on demand.

A Check

No. 126 ATLANTA, GEORGIA, March 25, 1943

THE MERCHANTS BANK.

Pay to the order of John P. Harrison $45.25

Forty-five and 25/100 DOLLARS

In College Currency

J. E. Hall

A draft (or bill of exchange) is an order drawn by one person (called the drawer) directing another (called the drawee) to pay a third (called the payee) or to bearer a certain sum of money at a certain time. Drafts may be made payable at sight, at a certain time after sight, or at a certain time after date.

A Sight Draft



SPECIMEN

$150.00 St. Louis, Mo., March 1, 1936

AT SIGHT Pay to

the order of OURSELVES

ONE HUNDRED FIFTY AND no/100 Dollars

COLLEGE CURRENCY

Value received and charge the same to account of

To J. B. Stone

No 9 Memphis, Tenn.

R. L. Downey and Co.

By R L Downey Pres.

Draft Payable Stated Time After Date



$350.00 St. Paul, Minn., October 5, 1938

SIXTY DAYS AFTER DATE Pay to

the order of HENRY J. WILBUR

THREE HUNDRED FIFTY and no/100 Dollars

COLLEGE CURRENCY

Value received and charge the same to account of

To Charles J. Fulton

No Springfield, Mass.

Standard Milling Co.

By A. B Miller Treas.

Draft Payable Stated Time After Sight



$567.80 Baltimore, Md., July 15, 1942

AT TEN DAYS SIGHT Pay to the

Order of THE FIRST NATIONAL BANK OF BALTIMORE

FIVE HUNDRED SIXTY-SEVEN and 80/100 Dollars

College Currency

Value received and charge the same to account of

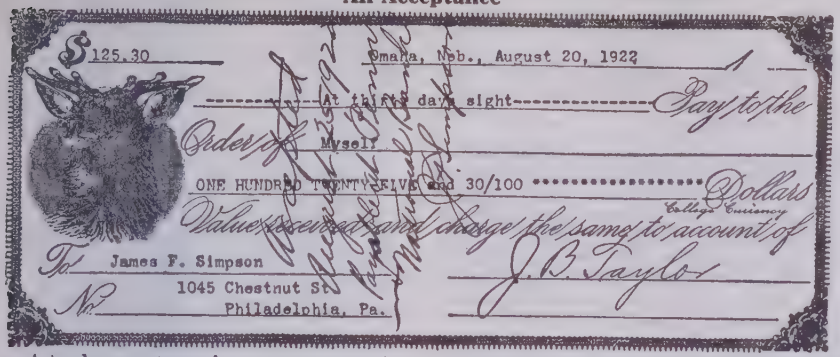
H. D Sanderson

To Wildman & Colvin

No 2 146 Main Street Richmond, Va.

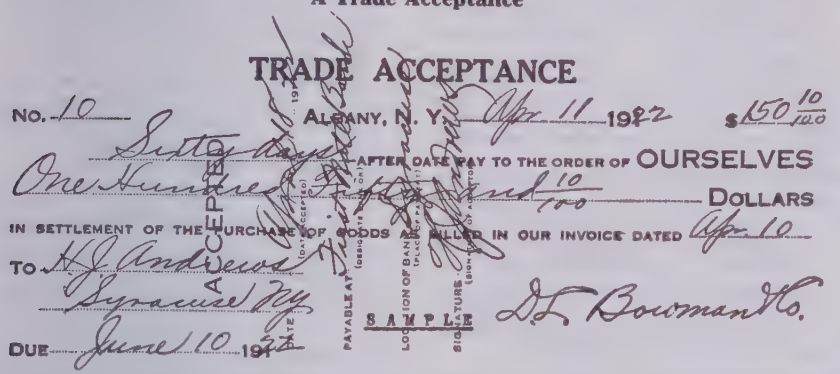
Before a draft can be enforced against the drawee, he must accept it. He does this by writing across the face (usually in different colored ink) "Accepted", the date and his signature. The instrument is then called an acceptance.

An Acceptance



A trade acceptance is an acceptance given at the time and for the amount of a purchase of merchandise.

A Trade Acceptance



A bank draft (sometimes called a New York draft or a Chicago draft from the name of the city upon which it is drawn) is a draft drawn by one bank upon another bank.

The Form of a Bank Draft

$1000.00 Buffalo, N. Y., Jan. 10, 1922

THE BANKERS TRUST COMPANY

Pay to the order of OSCAR D. WHITE

One Thousand and no/100 ********** DOLLARS

SAMPLE

To Equitable Trust Co.
New York City

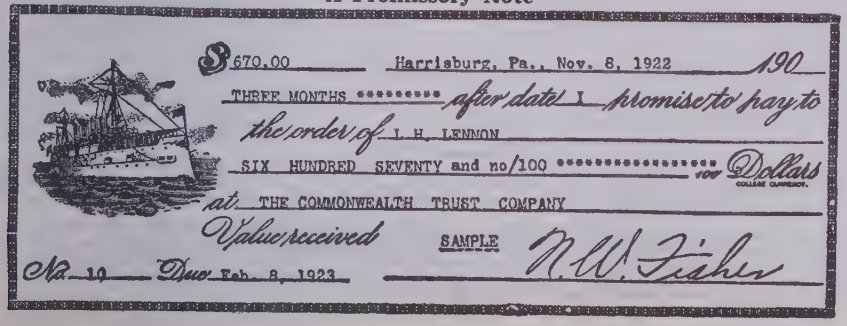
E. M. Blue, *Cashier*

A Promissory Note is an unconditional written promise to pay a sum certain in money to designated person or his order or to bearer on demand or at a fixed or determinable future time.

The one who signs a promissory note is called the maker. The one in whose favor it is made is called the payee.

A promissory note may be several or joint or joint and several. An ordinary note signed by one or two persons is a several note. A note reading "we jointly promise" is a joint note and one reading "we jointly and severally" is a joint and several note.

A Promissory Note



Find the Face of a Discounted Note.—It sometimes happens that it is desired to discount a note so that the proceeds will be a certain amount. *Example:* I wish to borrow $1990 for 30 days. What must be the face of my note discounted at bank at 6% to obtain the amount?

The bank discount on $1.00 for the time is $0.005.

The proceeds of $1.00 are $0.995.

$1990 (the proceeds required) ÷ $0.995 = $2000, the face of the note.

Proof: The discount on $2000 for 30 days is $10.00. $2000.00 − $10.00 = $1990.

Note.—It would be better to give the bank an interest-bearing note for the amount required and pay the interest when the note becomes due. This can also be done by giving a demand note and paying it in thirty days.

Present Worth and True Discount.—Similiar to the problem of finding the face of a note to produce a given proceeds is the problem of present worth. The PRESENT WORTH of a debt is a sum which, if put at interest, will amount to the value of the debt at maturity.

Example: A man owes a note for $2525 due in two months with interest. What is the present worth and the true discount on this note?

Solution: The interest on $1.00 for two months is $0.01

$1.00 will, in two months, amount to $1.01.

$2525 ÷ $1.01 = $2500, the present worth of the note.

The True Discount is the difference between the present worth and the amount of the note at maturity. In the above example it is $2525 − $2500 = $25.

Partial Payments.—When payments are made from time to time on a note or debt, these payments are called PARTIAL PAYMENTS.

Method of computing partial payments according to the United States Rule (so called because it has been adopted by the U. S. Supreme Court).

1. Find the amount of the note up to the date of the first payment. If this payment is sufficient to cover the interest up to that date, deduct it from the amount. The result is the new principal.

2. Using this new principal, find the amount of the note up to the date of the second payment and deduct payment as before.

3. Proceed in this manner until the final date is reached.

4. If a payment is not sufficient to cover the interest for the period next preceding, no deduction is made, but the payment is added to the next payment.

Example: On a note for $1200 dated Jan. 1 and bearing interest at 6%, payments were made as follows: Mar. 1, $212; July 1, $15; Sept. 1, $515. What was the amount due on Dec. 1?

Solution:

Face of note		$1200.00
Interest from Jan. 1 to Mar. 1 (2 mo.)		12.00
Amount due Mar. 1		$1212.00
Payment on Mar. 1		212.00
Balance due, new principal Mar. 1		$1000.00
Interest from Mar. 1 to July 1 (4 mo.) $20.00 (Interest greater than payment)		
Interest from July 1 to Sept. 1 (2 mo.)	$10.00	$30.00
Amount due Sept. 1		$1030.00
Payments July 1 and Sept. 1		530.00
Balance due, new principal Sept. 1		$500.00
Interest, Sept. 1 to Dec. 1 (3mo.)		7.50
Amount due Dec. 1		$507.50

Merchants' Rule.—This rule is frequently used by business men and sometimes by banks to settle short time notes or indebtedness.

(1) Find the amount of the principal to the date of final settlement.

(2) Find the amount of each payment to the date of final settlement.

(3) From the sum in (1) subtract the sum of (2). The remainder is the amount due.

Example: A note for $3000 bearing interest at 6% and dated March 1 was paid as follows: May 1, $1000.00; July 1, $500.00; Sept. 1, the balance was paid. What amount was required to settle on Sept. 1?

Solution:

Original principal		$3000.00
Interest March 1 to Sept. 1 (6 mos.)		90.00
Amount of note on Sept. 1		$3090.00
Payment May 1	$1000.00	
Interest May 1 to Sept. 1	20.00	
Amount of May 1 payment	$1020.00	
Payment July 1	$500.00	
Interest July 1 to Sept. 1	5.00	
Amount of July 1 payment	$505.00	
Total amount of payments		$1525.00
Balance due Sept. 1		$1565.00

TAXATION

A tax is a sum levied for the support of government or for other public purposes.

A DIRECT TAX is one levied on a person, his property or his business. Direct taxes are poll taxes, property taxes, licenses, and income taxes.

A POLL TAX is a tax on a person.

A TAX ON PROPERTY is called a PROPERTY TAX.

A tax on a business is called a LICENSE FEE.

AN INCOME TAX is a tax on a person's income.

INDIRECT TAXES are levied on imports, tobacco and other articles consumed in the country.

Determining the Rate of Taxation.—When it is determined what sum must be raised by property tax for the expenses of government, this amount is divided by the assessed valuation of all the taxable property in the governmental division. Assessors appraise the property in the city or county and in this way find the assessed valuation of the property of each person and the total assessed valuation for the city or county. The division of the sum to be raised by the total assessed valuation gives the tax rate and it is usually expressed in a certain number of mills per dollar, a certain number of cents per hundred dollars, or a certain per cent.

Example: The total assessed valuation is $2,500,000 and the total amount to be raised is $12,500. Dividing $12,500 by $2,500,000, the tax rate is found to be .5%.

To Find the Tax multiply the assessed valuation by that tax rate.

Example: Johnson's property is assessed at $2000. The tax rate is 1.4%. His tax amounts to 1.4%×$2000 or $28.

At the office where the taxes for each person are computed, a tax table shows the amount of tax at the required rate on every dollar from $10 to $100.

Income Tax.—The United States Government and some of the state governments now impose a tax on certain incomes. For the state taxes consult the laws of the several states. Wisconsin with the state income tax act of 1911, was a pioneer in this movement. Most of the states using income taxation have introduced their systems since 1911. In a general way the state income tax laws follow those of the federal government.

Federal Income Taxes.—The federal revenue act of 1936 provides a tax on incomes above certain levels. The normal tax on individuals now is 4% of the amount of the net income in excess of the credits against net income.

A single person is allowed a personal exemption of $1,000. A married person living with wife or husband is allowed a personal exemption of $2,500. A husband and wife living together receive but one personal exemption. An exemption of $400 for each dependent is granted, such dependent being other than husband or wife and dependent upon and receiving his chief support from the taxpayer if such dependent is under eighteen years of age or is incapable of self-support because mentally or physically defective.

Deductions for credits allowed individuals and corporations are too numerous and too much subject to changes to be listed here. The reader is referred to the offices of the collectors of internal revenue for complete current information.

Surtaxes.—A surtax is levied on the "surtax net income," i.e., the amount of the net income in excess of the credits against net income. There is no tax on a surtax net income of $4,000 or less. The surtax on surtax net incomes in excess of $4,000 and not in excess of $6,000 is 4% of such excess. Above $16,000 the surtaxes upon net incomes and the per cent in addition of net incomes in excess of the first sum named but not in excess of the second sum are stated in the table which follows, at the top of the first column on page 831.

The following is a COLLATERAL NOTE

$1,500.00 SAMPLE Albany, N. Y., Feb. 5, 1922.

**** ON DEMAND **** for value received, the undersigned jointly and severally promise to pay to the order of **THE NEW YORK STATE NATIONAL BANK OF ALBANY,** (hereinafter called the Bank), at its Banking Office in Albany, N. Y., the sum of **** Fifteen Hundred and no-100 **** Dollars in United States gold coin or its equivalent, with interest from date hereof, at the rate of .....per cent. per annum, having deposited with the Bank, as collateral security for the payment of this note, or any note given in extension or renewal thereof, as well as for the payment of any other obligation or liability, direct or contingent, of the undersigned, or any of them, to the Bank, due or to become due, whether now existing or hereafter arising, the following property, viz:

25 shares New York Central Stock

of a market value estimated by the undersigned at $2,000.00; and the undersigned agree to deliver to the Bank additional securities, or to make payments on account to its satisfaction, should the market value of the said securities, as a whole, suffer any decline. The undersigned hereby give to the Bank a lien for the amount of all such obligations and liabilities upon all the property or securities now or at any time hereafter given unto or left in the possession of the Bank by the undersigned, whether for the express purpose of being used by the Bank as collateral security, or for any other or different purpose, and also upon any balance of the deposit account of the undersigned, or any of them, with the Bank. The undersigned hereby jointly and severally agree that all assignments or other dispositions of any of said collateral securities by the undersigned, or any of them, are and shall be subject and subordinate to the Bank's lien thereon for the payment of this or of any other note or claim hereby secured or of any renewal or extension of any

On the non-performance of this promise, or upon the non-payment of any of the liabilities above mentioned or in case of the failure of the undersigned to meet at maturity any liability of the undersigned, either to said Bank or to any other party, or upon the failure of the undersigned forthwith, with or without notice, to furnish satisfactory securities in case of any decline in market value as aforesaid, or upon the declared insolvency or failure in business of, or appointment of a receiver for, or commission of any act of bankruptcy or commencement of any bankruptcy proceeding by or against the undersigned, or the entry of any judgment against the undersigned, or in case of any such default, insolvency, appointment of a receiver, bankruptcy proceedings or judgment by or against any endorser or guarantor of this note, all liabilities of the undersigned to said Bank including this note, shall, at the option of said Bank, immediately mature and become forthwith due and payable without demand or notice, and full power and authority are hereby given the said Bank to sell, assign, transfer and deliver the whole of said securities, or any part thereof or any substitutes therefor or any additions thereto or any other securities or property now or hereafter given unto or left in the possession of the said Bank by the undersigned, for safe keeping or otherwise at public or private sale or at the New York Stock Exchange, or at any other Exchange or Broker's Board, at such prices as it may deem best, and either for cash or on credit or for future delivery, at the option of said Bank, or of its President, or Cashier, without either demand, advertisement or notice of any kind, which are hereby expressly waived and if such collateral is disposed of at private sale, the said Bank shall be relieved from all liability or claim for inadequacy of price. At such sale, the said Bank may itself purchase the whole or any part of the property sold, free from any right of redemption on the part of the undersigned, which is hereby waived and released. In case of sale for any cause, after deducting all costs or expenses of any kind for collection, sale or delivery, including all charges for legal services arising from or incidental to the sale, realization or collection of any of such collateral, security, substitutions or additions, or of any of said demands, including this note, the said Bank may apply the residue of the proceeds of the sale or sales so made, to pay one or more or any or all of the said liabilities to the said Bank, as it or its President or Cashier shall deem proper whether then due or not due, making proper rebate for interest on liabilities not then due, returning the overplus, if any, to the undersigned, who agree to be and remain liable to, and to pay the said Bank for any deficiency arising upon such sale or sales, and if any compromise or settlement is made between the said Bank and the undersigned, or between the said Bank and the guarantors or endorsers hereof, or if payment is made to the said Bank by the undersigned, or by the guarantors or endorsers hereof, of any claim of the said Bank for which the undersigned shall be liable, without the sale of any such securities as aforesaid, then the undersigned agree to pay to the said Bank, all costs or expenses including charges for legal services as aforesaid, incurred by said Bank up to the time of such compromise, settlement or payment. The undersigned do hereby authorize and empower the said Bank at its option, at any time to appropriate and apply to the payment and extinguishment of this or any of the above named obligations or liabilities, including interest, costs and expenses, whether now existing or hereafter contracted, any or all moneys and securities now or hereafter in the hands of the said Bank, on deposit or otherwise, to the credit of or belonging to the undersigned, whether the said obligations or liabilities are then due or not due. It is also agreed that the provisions, agreements, terms and conditions hereof shall apply to, and govern any and all notes given in extension or renewal of this note.

The above described property may from time to time, by mutual consent, be exchanged for other property, which shall be held by said Bank subject to all the terms of this note. Upon the transfer of this note the collateral held therefor at the time of transfer or any part thereof, may be delivered to the transferee, who shall thereupon become vested with all the rights and powers above given to said Bank in respect thereto, and the said Bank shall thereafter be forever relieved and fully discharged from any liability or responsibility in the matter.

It is also further agreed that any moneys or other property at any time in possession of said Bank, belonging to the maker, any guarantor or endorser of this note, and any deposits, balance of deposits, or any sums at any time credited by or due from said Bank to any such parties, may at all times, at the option of the said Bank, be held and treated as collateral security for the payment of this note or any other liability of such maker, guarantor or endorser to the said Bank, whether due or not due, and said Bank may at any time, at its option, set off the amount due or to become due hereon, against any claim of any of said parties against said Bank. No delay on the part of the holder hereof in exercising any rights hereunder shall operate as a waiver of such rights.

SAMPLE

L. T. RICHARDS

SURTAX TABLE (Revenue Act of 1936)

Net Income	Surtax and Per Cent
$6,000 to $8,000	$80 and 5%
$8,000 to $10,000	$180 and 6%
$10,000 to $12,000	$300 and 7%
$12,000 to $14,000	$440 and 8%
$14,000 to $16,000	$600 and 9%
$16,000 to $18,000	$780 and 11%
$18,000 to $20,000	$1,000 and 13%
$20,000 to $22,000	$1,260 and 15%
$22,000 to $26,000	$1,560 and 17%
$26,000 to $32,000	$2,240 and 19%
$32,000 to $38,000	$3,380 and 21%
$38,000 to $44,000	$4,640 and 24%
$44,000 to $50,000	$6,080 and 27%
$50,000 to $56,000	$7,700 and 31%
$56,000 to $62,000	$9,560 and 35%
$62,000 to $68,000	$11,660 and 39%
$68,000 to $74,000	$14,000 and 43%
$74,000 to $80,000	$16,580 and 47%
$80,000 to $90,000	$19,400 and 51%
$90,000 to $100,000	$24,500 and 55%
$100,000 to $150,000	$30,000 and 58%
$150,000 to $200,000	$59,000 and 60%
$200,000 to $250,000	$89,000 and 62%
$250,000 to $300,000	$120,000 and 64%
$300,000 to $400,000	$152,000 and 66%
$400,000 to $500,000	$218,000 and 68%
$500,000 to $750,000	$286,000 and 70%
$750,000 to $1,000,000	$461,000 and 72%
$1,000,000 to $2,000,000	$641,000 and 73%
$2,000,000 to $5,000,000	$1,371,000 and 74%
$5,000,000 or more	$3,591,000 and 75%

Tax on Corporations.—Corporations pay normal taxes ranging from 8 to 15 per cent of their normal-tax net incomes plus surtaxes too complicated to describe here.

Miscellaneous Taxes.—Other federal income taxes include the following:

(1) *Estate Tax.*—This tax ranges from 2 per cent of the amount of the net taxable estate not over $10,000 up to 70 per cent of the amount by which the net estate exceeds $50,000,000.

(2) *Tax on Admissions and Dues.*—With certain minimum exemptions, this tax is levied on admissions to places of amusement, contests and so forth, and on club dues.

(3) *Tobacco Taxes* are levied on tobacco products, including cigars, cigarettes, tobacco and snuff.

(4) *Narcotic Taxes.*—Importers, manufacturers, compounders, and wholesale and retail dealers are taxed.

(5) *Liquor Taxes* are levied on alcoholic beverages, including still wine and distilled spirits.

(6) *A Documentary Stamp Tax* is levied on sales and transfers of stocks.

INSURANCE

Insurance is an agreement by one party (called the insurer) for a consideration (called the premium) to indemnify another party (called the insured) against losses arising from certain causes (called the risk).

The INSURANCE POLICY is the written or printed contract containing the agreement between the parties.

Property Insurance.—A VALUED or CLOSED policy agrees to pay a specified amount in case a certain loss is sustained.

An OPEN POLICY provides for an undetermined amount, depending upon the quantity of goods insured at the time of the damage. This policy is used where goods are being deposited and withdrawn from the store or warehouse.

Rate of premium. The premium in property insurance is usually stated at a certain per cent of the amount insured. Rates are usually quoted for a year. Lower rates are charged for long periods and higher rates (known as short term rates) are charged for short terms.

The ORDINARY POLICY is one in which the amount to be paid in case of loss is specified; i. e. the amount of the loss will be paid if it does not exceed the sum stated in the policy.

The AVERAGE CLAUSE provides that where one policy covers several different pieces of property and one of the properties is damaged, the company will pay only that proportion of insurance which the insurance on that property bears to the whole insurance.

The 80% or CO-INSURANCE CLAUSE. Under this clause the insured agrees that he will keep his property insured for a given percentage of its value (80% in New York is the usual percentage) and if he fails to do this, the company will pay only that percentage of the loss which the insured bears to the agreed percentage of the value of the property.

Example: The value of a property is $10,000 and it is insured under the 80% clause but the insured takes out only $4,000 on the property. The property is damaged to the extent of $2000. The company will pay only $\frac{4000}{8000}$ or ½ of the loss.

The PRO RATA CLAUSE is used where there is more than one policy upon the same property. Each company is required to pay the proportion of the loss which its policy bears to the total amount of insurance carried on the property.

Example: A man has his building insured for $5000 in X company, for $10,000 in Y company, and for $15,000 in Z company. The property is damaged by fire to the extent of $6000.

Solution: The total amount of insurance is $30,000.

X Company must pay $\frac{5000}{30000}$ or 1/6 of the loss =	$1000
Y Company must pay $\frac{10000}{30000}$ or 1/3 of the loss =	2000
Z Company must pay $\frac{15000}{30000}$ or 1/2 of the loss =	3000
Total	$6000

The ARITHMETIC PROBLEMS in insurance are simply an application of percentage.

The amount of the insurance is the base in percentage.

The rate of insurance is the rate in percentage.

The premium in insurance is the percentage.

Example: Goods valued at $3000 are insured at the rate of 50c per hundred. The premium for one year is $15.

Life Insurance is a contract in which the insurer, for a consideration called the premium, agrees to pay a specified sum of money upon proof of the death of the insured or at some fixed time.

A STRAIGHT LIFE POLICY is one in which the premiums are paid during the life of the insured and the insurance is paid upon the death of the insured.

A TERM POLICY is one in which the insurance is paid if the insured dies within a fixed period.

An ENDOWMENT POLICY is one in which the insurance is paid at a fixed date, or, if the insured dies before that date, at the death of the insured.

Some policies provide for the payment of the premium for a given number of years and a continuation of the policy after these payments have been made. These policies are named by the number of annual payments as, Twenty Payment Life Policy.

The beneficiary is the person indicated in the policy to receive the payment upon the death of the insured.

EXCHANGE

The system of settling debts between parties residing in different places without sending the actual cash is called EXCHANGE.

DOMESTIC EXCHANGE is the system of settling debts between persons in the same country.

FOREIGN EXCHANGE is the exchange between persons of different countries.

The instruments of exchange are personal checks, bank drafts, commercial drafts, postal money orders, express money orders and telegraphic money orders. The forms of checks, bank drafts and commercial drafts are given under Bank Discount. The form and rates of money orders can be had at post offices, express offices and telegraph offices.

Domestic Exchange. To Find the Cost of a Draft.—

Example: Find the cost of a draft on St. Louis for $400 when exchange is at 1/8% premium.

Solution:

Face of Draft	$400.00
Exchange 1/8% of face	.50
Cost of draft	$400.50

If exchange is at a discount, subtract the exchange from the face of the draft.

To Find the Proceeds of a Draft.—

Solution: Find the proceeds of a draft of $2400, exchange being 1/4%.

Solution: 1/4% of $2400 is $6.00. $2400 −$6.00 = $2394.00.

Foreign Exchange.—Bills of exchange on foreign countries are usually drawn in sets of two or three, called "First and Second of Exchange." These are duplicates and are sent by different mails, but the payment of one cancels the other.

The rates of exchange depend upon the variation of the balances due to or from the different countries. The World War caused great disturbances in exchange rates. The exchange rates used in examples here are the rates that obtain when exchange is in a normal condition. The most important exchange rates are quoted as follows:

Sterling	£1	= $4.8665
French	$1	= F. 5.18
German	M.4	= $.95

A Letter of Credit is a request issued by a bank and addressed to their correspondents in all parts of the world asking them to pay the owner of the letter sums of money up to the amount named in the letter.

To Find the Cost of a Bill of Exchange.—

Example 1. Find the cost of a bill of exchange on Liverpool for £275 15s. 3d. sterling, exchange being quoted at $4.86¼.

£275 15s. 3d. = £275.7625

$4.86¼ × 275.7625 = $1340.90

Explanation: £275 15s. 3d. is equivalent to £275.7625. As £1 sterling is quoted at $4.86¼, £275.7625 will be worth 275.7625 times $4.86¼ = $1340.90.

Example 2. What is the cost of a bill of exchange on Paris for 1449 francs, when exchange is quoted at 5.17½?

1449 ÷ 5.17½ = $280.00.

Explanation: As 5.17½ francs are worth $1, 1449, francs are worth as many dollars as 5.17½ is contained in 1449, or $280.

To Find the Proceeds of a Bill of Exchange.—

Example: Find the proceeds of a bill of exchange for F.4200 at 5.17½−1/32.*

Solution:

F.4200 ÷ F.517½ = 811.59

$811.59 = proceeds at 5.17½

1/32% of $811.59 = 25c

$811.59 − $.25 = $811.34, the proceeds.

*A certain small amount of change in the rate is called a point. When a large amount is to be transferred, the rate is sometimes given in this form.

STOCKS AND BONDS

A corporation is an artificial person created by law and endowed by it with many of the powers of an individual.

The capital of a corporation is divided into a number of shares called the capital stock. This stock may be either preferred or common stock. Preferred stock receives its share of profits first and may have other preferences over the common stock.

Dividends are declared out of the profits of the corporation. The dividend is usually a certain number of dollars per share or a certain per cent of the par value of the stock.

The par value of stock is the value stated in the stock certificate, which the shareholder holds.

The market value of the stock is determined by the price at which the stock can be sold. This price may be above or below par.

Shares of stock are bought and sold through stock brokers who charge a certain percentage, usually 1/8 % of the par value.

To Find the Income From Shares When the Rate Is Known.—

Example: What will be the yearly income from 300 shares of stock which pays 6%.

Solution: 6% means $6 per share of a par value of $100. Hence the income will be $1800.

To Find the Cost of Stock.—

Example: Find the cost of 200 shares at 98½.

Solution: If one share costs $98½, 200 will cost 200 × $98½ = $19,700.

Brokerage.—If stock is bought through a broker (as it usually is), his fee, which is usually 1/8%, must be added to the cost. If brokerage were charged on the above, the cost per share would be $98 5/8. If stock is sold through a broker, the brokerage must be subtracted from the price received per share.

To Find the Proceeds From Sale of Stock.

Example: Find the proceeds of 72 shares sold at 91 1/8 less brokerage 1/8%.

Solution: $91 1/8 less $1/8 = $91 per share, 72 shares will yield 72 × $91 = $6552.

To Find the Rate of Profit on an Investment in Stocks.—

Example: What is the rate of income on an investment in 6% shares costing 120.

Solution: The yield is $6 on an investment of 120. $6.00 ÷ 120 = 5 = the per cent of profit.

To Find the Price per Share Which Will Yield a Given Rate on the Investment.

Example: What must be paid for a 6% stock to yield 5% on the investment?

Solution: $6.00 is 5% of what number. $6 ÷ .05 = $120.

Bonds are long time notes of the national and state governments, cities, counties, and private corporations. A bond bears interest at a specified rate of interest.

A registered bond is one in which the name of the owner is recorded on the books of the issuing corporation.

Coupon bonds have coupons attached which may be clipped off and collected as the interest becomes due. There is one coupon for each interest period.

Bonds are designated by the name of the issues, date of maturity, and the rate of interest. U. S. 4's 1925 means United States bonds maturing in 1925 and bearing 4% interest.

The ordinary ARITHMETICAL PROBLEMS of bonds are the same as those discussed under stocks.

PARTNERSHIP

A Partnership is a contract relation existing between two or more competent parties, uniting their capital, labor, or skill, in some lawful enterprise, agreeing to share the gains, or bear the losses, in certain proportions.

The persons forming a partnership are called Partners or Copartners. Collectively, they are called a Company, House, or Firm.

Partners may be classified, as follows: Real or General, Nominal, Dormant, and Special or Limited.

A Real or General Partner is one who is known to the public as a partner, takes an active part in the management of the business, and is personally liable for all the firm's debts.

A Nominal Partner is one who allows his name to be associated with the partnership, but invests nothing. He is liable to innocent third parties only.

A Dormant Partner is one who makes an investment, but who conceals his identity as a partner from the public. He becomes liable for firm debts when his identity is discovered.

A Special or Limited Partner is one who makes a cash investment, but takes no active part in the management. He is not personally liable for an amount greater than that mentioned in the partnership agreement.

A Partnership Agreement is a contract in writing made between partners specifying the amount of each partner's investment in money, labor, or skill, the time the partnership is to continue, the division of losses and gains, and all other conditions forming the mutual understanding upon which the partnership is based.

Stock companies are often formed for the management of large business enterprises in order to avoid the personal liability involved in ordinary copartnerships and also to more easily perpetuate the business. Each state has special statutes regulating the formation of stock companies.

Sample Solution:

1. A, B, and C are partners to share gain or loss in proportion to investment. A invests $3000, B $4000, and C $5000. They gain $3600. Find each man's share of the gain.

$3000
4000
5000
$12000 whole capital

$\frac{3000}{12000}$ = 1/4 A's part of capital.

$\frac{4000}{12000}$ = 1/3 B's " " "

$\frac{5000}{12000}$ = 5/12 C's " " "

1/4 of $3600 = $900, A's gain.

1/3 of $3600 = $1200, B's gain.

5/12 of $3600 = $1500, C's gain.

Explanation.—The whole capital, $12000, is found by adding the investments of the individual partners. Since A invested $3000, his part of the whole capital is represented by the fraction $\frac{3000}{12000}$, or ¼. Likewise B's part of the whole capital is $\frac{4000}{12000}$, or 1/3, and C's $\frac{5000}{12000}$, or 5/12. A's capital being ¼ of the whole capital, his gain will be ¼ of the whole gain; hence A's gain is ¼ of $3600 = $900. For the same reason, B's gain is 1/3 of $3600 = $1200, and C's gain is 5/12 of $3600 = $1500.

Sample Solution:

2. C and D are partners in business, sharing the loss or gain in proportion to their average investments. C invests Jan. 1, $3000, June 1, $2000. D invests Jan. 1, $5000, and withdraws Aug. 1, $1500. Their net gain for the year is $2050. Find share of each.

$3000 × 5 = $15000 for 1 month.
5000 × 7 = 35000 " " "
C's investment = $50000 " " "
$5000 × 7 = $35000 " " "
3500 × 5 = 17500 " " "
D's investment = $52500 " " "
$50000
52500
$102500 = whole capital for 1 month.

$\frac{50000}{102500} = \frac{20}{41}$ C's share of the total investment.

$\frac{52500}{102500} = \frac{21}{41}$ D's share of the total investment.

$\frac{20}{41}$ of $2050 = $1000, C's gain.

$\frac{21}{41}$ of $2050 = $1050, D's gain.

Explanation.— C's first investment, $3000, was in the business unchanged until June 1, or 5 months. The use of $3000 for 5 months is equivalent to 5 times $3000, or $15000 for 1 month. June 1, C invested $2000 more, which made his total investment $5000. This $5000 was in the business the remainder of the year, or 7 months, which is equal to 7 times 5000, or $35000 for 1 month. By adding the $15000 and the $35000, C's total investment is found to be equivalent to an investment of $50000 for 1 month.

D's investment, $5000, was in the business unchanged until Aug. 1, or 7 months, which is equivalent to the use of $35000 for 1 month. On Aug. 1, D withdrew $1500, leaving him only $3500 in the business for the remainder of the year, or 5 months, which is the same as $17500 for 1 month. By adding $35000 and $17500, D's total investment is found to be equivalent to an investment of $52500 for 1 month. $50000 added to $52500 shows that the net investment of the firm is equivalent to an investment of $102500 for 1 month. Since C's investment is equal to $50000 for 1 month, his share of the whole investment is $\frac{50000}{102500}$ or $\frac{20}{41}$; hence, he is entitled to $\frac{20}{41}$ of the gain, or $1000. In the same manner, D's share of the whole investment is $\frac{52500}{102500}$ or $\frac{21}{41}$, and he is entitled to $\frac{21}{41}$ of the $2050, or $1050.

SQUARE ROOT

Rule.—

1. Point off the number into periods of two figures each, commencing at the right, or at the decimal point. Find the greatest square in the left-hand period, and write its square root as the first figure in the root. Subtract the square of this first root figure from the left-hand period and bring down the next period for a new dividend.

2. For a trial divisor, multiply the root already found by 2, and annex one cipher. Divide the new dividend by the result thus obtained, and write the quotient as the next figure in the root. Add the last-found figure of the root to the trial divisor, and multiply the sum by this same last-found figure of the root. Subtract the product from the new dividend and bring down the next period for a second new dividend.

3. Continue this process until all the remaining periods have been brought down and the root obtained.

Notes.—1. There must be a figure in the root for every period in the power.

2. In pointing off a number involving a decimal, as 31462.874, start at the decimal point and divide into periods going to the left on the whole number and to the right on the decimal. In case there is but one figure in the right-hand period of the decimal, annex a cipher to complete the period. Thus the above number pointed off into periods would appear, 3'14'61.87'40.

Example: Find the square root of 576 sq. ft.

Solution:

```
5'76|24
 4
44|176
  |176
```

CUBE ROOT

Rule.—

1. Separate the number into periods of three figures each, beginning at the right, or at the decimal point.

2. Find the greatest cube in the left-hand period, and place its cube root as the first figure of the required root. Subtract the cube of this root from the left-hand period, and bring down the next period to make a new dividend.

3. Multiply the square of the root already found by 3 and annex two ciphers, for a trial divisor. Divide the new dividend by this trial divisor and write the quotient as the next figure in the root.

4. Multiply 3 times the first part of the root by the last-found root figure, annex one cipher and add the square of the last root figure; then add this sum to the trial divisor for a complete divisor.

5. Multiply the complete divisor by the last figure of the root; subtract the product from the new dividend, and bring down the next period for a second new dividend.

6. Continue this process until the root has been found.

Example: Find the cube root of 91125 cu. in.

Solution:

```
91'125|45
 64
4800|27125
 600|
  25|
5425|27125
    |
```

SIMPLIFIED ARITHMETIC

A PRACTICAL TREATMENT

FOR

THE BUSINESS WORLD

EVERYDAY ARITHMETIC

Practical Arithmetic. Our treatment of the subject will be from the practical standpoint of the world of business; arithmetic as it is actually needed outside the school-room rather than the highly artificial work which is still, unfortunately, found in many text-books that are widely used.

In every day life we work commonly with integers, or integers and decimals, of not more than 4 places; we use $2.75 or 37 cents or $1.15 or 18 much more frequently than we use $27,500 or 3,287,246. Real and vital instruction will deal with the numbers such as we use constantly. In fractions we rarely use any other denominators than 2, 3, 4, 5, 6, 8, 10, 12 and 16; our practice work in fractions should deal largely with these denominators, until we can handle them easily and accurately. Problems to be solved without pencil and paper meet us every day and so do problems in which we need only a rough, an approximate answer; practise must be given in this kind of work. If taxes, stocks and bonds and life and fire insurance are to be presented to the children of our eighth grades then these topics should be treated as they are in real life. Arithmetic in every school should be adapted to the business life of the community in which the school is located.

RULES FOR SPEED

Mental Arithmetic—Speed Rules.

1. *Learn the 45 fundamental combinations of addition and multiplication.*
2. *Work from left to right, mentally, and not from right to left.*
3. *Use constantly, wherever possible, the fact that we have a decimal system of numbers, a system based on ten and powers of ten.*
4. *Learn to think numbers.*

ONLY FORTY-FIVE COMBINATIONS TO LEARN

The 45 addition and multiplication combinations must be made by drill absolutely automatic. The combination 7 when you look at it and *think* addition

8

–

must spell 15 in just the same way that *c a t* spells *cat*.

In drill work do not place —, +, or × signs before the lower digit: this retards the child's progress later. Drill on the combinations mentioned just as they are to be used; drill by having the combinations written at random, selecting from all those which are given in our tables but not keeping them in order.

RAPID ADDITION

How to Add Rapidly.

After learning the 45 combinations in addition the next step for rapidity is to learn to add mentally any two two-place numbers. With the 6 combination

8

associate such combinations as 16 6 6 46, and further those like 26 13 68
8 28 68 8 38 76 26
88. Read these sums from left to right; thus in reading 68 you think first 80,
46 26
then 94, a glance to the right showing that one is to be carried making the 80 into 90.

4 In reading the sums in column addition you begin by reading the sum
7 of the first two digits; read only the sums. Thus you here read 8, 17, 21,
8 27, 35, 42, 46 or 8, 17, 27 (since as you come to the 4 and 6 you notice that
6 this adds ten to the preceding 17), 35, 42, 46.

4 In adding numbers which are near to even hundreds notice that you
9 can frequently save time by adding the full number of hundreds and sub-
3 tracting the small difference.

5	396	388	693
–	425	475	281
	821	863	974

Think 400+425 less 4, gives 821; in the second problem think 400+475—12 =863; in the third, 700+281—7 =974.

SPEEDY MULTIPLICATION

How to Multiply Rapidly. No tables of elevens and twelves should be separately learned; particularly with a child who has difficulty with arithmetic these tables increase the troubles and give no return value. No one multiplies by 12 as a single multiplier and even in business there is no more need for the tables of elevens and twelves than for fourteens or eighteens. Learn the combinations automatically up to 9
9
—
81

Learn to multiply mentally any two place number by a single digit; multiply from left to right, and add mentally. So in getting the product 8×17 or 17,

8

think 8×10 is 80, 8×7 is 56, added gives 136. With a little practise you can do this mentally more quickly than you can say the partial products. In 8×27, *think* 160, 56, 216.

MULTIPLICATION TABLE UP TO 20 x 20 MADE EASY

An Easy Rule for the Product of Any Two Teens. To multiply any two numbers between 10 and 20 do as follows; to the whole of one-teen, add the units of the other, and annex a zero; to this number add the product of the units. Example, 18×17, the units are 8 and 7 respectively. To the whole of one, 18, add the units, 7, of the other, making 25; to this annex a zero (multiplies 25 by 10), and add to the result, 250, the product 56 of the units, 7 and 8, giving 306. Mentally to multiply 19 by 14, the following numbers pass rapidly before your mind's eye, 19, +4, 23, 230, 36, *266* which is the product.

Combining this rule with the preceding rule for the product of any two place number by a single digit gives the complete multiplication table up to 20x20. Thus in the product 8x19, the following numbers pass rapidly before the mind's eye, 80, 72, *152*, which is the product.

PRODUCTS OF EVEN TENS

When the Tens are the Same. If you have two numbers beginning with the same tens' digit, you add the whole of one number to the units of the other and multiply by the tens' digit; annex a zero, and to this number add the product of the units. 24×27 is 20×(20+4+7) +4×7; in doing this mentally, 27, you think
24
27, +4, 31, ×2, 62, 620, +28, 648. If the units sum to ten as in 87, 26, 92, or
83 24 98
35 the product has in the last two places the product of the units and in the first
35
one or two places the product of the ten's digit by a number one greater. Thus 87
83
begins with 8×9 and ends with 3×7, 7221; 26 has 6 in the first place (2, the
24
tens' digit ×3, one more than the tens' digit) and 4×6 in the last two places, 624; 92×98 is 9×10 placed before 8×2, or 9016; 35×35 is 3×4 placed before 5×5, or 1225.

LEARNING BY DOING

General Rules. Let the child begin real multiplication examples long before he has all the tables fully memorized; the work will help to make the tables automatic. With a backward child, allow him to write out the tables in vertical form,

2	3	4	5	6	7	8	9
8	8	8	8	8	8	8	8, and use these tables in working actual
—	—	—	—	—	—	—	—
16	24	32	40	48	56	64	72

problems; he will soon learn the tables by using them.

EASY MULTIPLIERS

Quick Multipliers. To multiply by 10, 100 or 1000, annex one, two, or three zeros, respectively, to the multiplicand. To multiply by 5, 50, or 500 multiply
10, 100,
by 10, 100, or 1000, as above, and divide by 2 since $5=\frac{}{2}$, $50=\frac{}{2}$ and $500=$
2
1000. To multiply by 2.5, 25 or 250, multiply by 10, 100 or 1000, as before, and
2
divide by 4, since $2.5=\frac{10}{4}$, $25=\frac{100}{4}$, and $250=\frac{1000}{4}$. To multiply by 7.5, 75,
4 4 4
or 750, multiply by 5, 50 or 500 and add to this product, in each case, ½ of itself.
4300
Examples: 25x48 is —— or 1200; 50×48 is 2400; 75×48 is 2400+1200 or 3600
4
To multiply by ¾, think of ¾ as ½+¼, to ½ the number add ½ of ½ of the number; ¾ of 48 is 24+12 or 36.

50 and 25 are called aliquot parts of 100; two other aliquot parts of 100 are frequently useful, 12½ or ⅛ of 100, and 33⅓ or ⅓ of 100. If you wish to know approximately what 34 or 35×186 you can at a glance state that 33⅓×186 is 186×100 or 6200, and 34×186 is 2/3 of 186 or 124 more than 6200.

3

EFFICIENCY RULES

Multiplication of Decimals Abbreviated. In finding the cost of 328.4 lbs. of milk at $3.38 per hundred it is not necessary to multiply in the ordinary way $3.38 by 3.284 as this gives numbers in the fifth decimal place where nothing finally beyond the second decimal place is needed.

3.380	In any product of decimals remember that the first place
3.284	times the first gives second place, and first times second gives
	third place, and so on. In such a product begin with the highest
10140	place of the multiplier and carry results one place farther
676	than desired in the final result. If both numbers have not
270	the same number of places make the number of places agree
13	by adding zeros as above.

11.099 or $11.10

Multiply .37628×.41329, retaining finally only 4 places of decimals.

.37628	Begin to multiply with the highest place of the multiplier, not
.41329	the lowest.
	Begin 4×2, 8 in 5th place, carry 3 from 4×8, making 11. Then
15051	4×6, 24+1, 25, etc. Cross out the 8 and the 2 in upper number.
376	Then 1×6, 6, nothing to carry since 1×2 is less than ½, etc. Cross out 6.
113	Then 3×7, 21, +2 carried from 3×6 =18, etc. Cross out 7.
7	Then 2×3, 6, +1 (from 14), 7. Cross out 3 above.
3	Then 3, carried from 9×3 =27 which is nearer 3 than 2 in the fifth
	place.
.15550	Final result, .1555.

EFFICIENCY IN DIVIDING

Short Cuts in Division. In division, many unnecessary figures can be cut off when only an approximate result is desired. If 3280 articles are manufactured at a total cost of $18,834, what is the cost per article, to one cent?

	5.742		5.74
3280)	18,834		3280) 18,834
	16,400		16,400
	2434	0	2434
	2296	0	2296
	138	00	138
	131	20	131
	6	800	7
	6	560	
		240	

After each division cut off one figure in the divisor and use the part left as new divisor; this will keep the right hand digit of all the partial products in a vertical line.

Long Division Made Short. Use the form of short division for long division, and teach children to see that it is the same process. Some children are assisted by having the complete form of quotients and partial products retained in the explanatory solution.

```
                7
               30
              400
              ---
134)58639     437
 53600      for 134)58639
 -----          536
  5039          ---
  4020          503
  ----          402
  1019          ---
   938          1019
   ---          938
    81          ---
                 81
```

ELIMINATING PARTIAL PRODUCTS

The Addition Method in Division.—By using the additive method of subtraction, subtracting from the dividend each part of each partial product as it is obtained, only the remainders need be written, leaving the work quite compact.

```
  437        4 in the quotient is obtained in the usual way.
134)58639
  50       Now 4×134 is to be subtracted, by the additive method,
 101       from 586.
  81         Then 4×4 is 16, +0, makes 6; the 0 is the first figure in the
             remainder; 4×3, 12, +1 carried from 16, 13, +5, makes 18. 4×1,
             4, +1 carried from 18, 5, +0 makes 5.
               Then 3×4, 12, +1, 13; 3×3, 9, +1, carried from 13, 10, +0, 0;
               3×1.
               3, +1 from 10, 4, +1 makes 5.
                 Then 7×4, 28, +1, 29; 7×3, 21, +2 from 28, 23, +8, 31;
                 7×1, 7, +3, 10.
                   50 is the first, 101 the second, and 81 the third remainder.
```

THE CHECK BY NINES

Casting Out Nines. When 4,328 is divided by 9 the remainder is the same as when 4+3+2+8 is divided by 9; 1000 is 999+1, 100 is 99+1, 10 is 9+1; when 1000 is divided by 9 the remainder is 1, when 100 is divided by 9 the remainder is 1, when 10 is divided by 9 the remainder is 1;

when 4000 is divided by 9 the remainder will be 4×1 or 4;
when 300 is divided by 9 the remainder will be 3×1 or 3;
when 20 is divided by 9 the remainder will be 2×1 or 2;
8 divided by 9 gives as remainder 8.

The total remainder of 4,328 divided by 9 is 4+3+2+8, the sum of the digits, and out of these we can *cast a nine* leaving 8 as remainder. When you have the sum of a column of figures nines can be cast out of all the summands, and the total remainder should be the same as the remainder when nines are cast out of the sum; in subtraction the difference of the remainders of minuend and subtrahend should be the same as the remainder when nines are cast out of the remainder (the answer); in multiplication the remainder, by nines, of the product is the same as the product of the remainders. In division the remainder of quotient, multiplied by remainder of divisor, and added to the remainder's remainder, equals the remainder of dividend

```
1346 rem. 5)
2347 rem. 7 | Sum of remainders, 13;   2347 rem. 7      247 rem. 4
1350 rem. 0 |     cast out 9, 4.      1346 rem. 5       25 rem. 7
3574 rem. 1)
-----  ---                           ---------  ---     ---------  ---
                                     1001 rem. 2       1235       28, rem. 1
8617 rem. 4                                             494
                                                        ---------
                                                        6175 prod. rem. 1
```

DECIMALS—SEE THE POINT

The Point about Decimals. If the decimal point is kept straight there is absolutely *no difference* between division of decimals and division of integers. If .1437 is divided by .123 your quotient will evidently be a little more than one, as 14 hundredths contain 12 hundredths once and a little over; .01437÷.123 gives .1 as first place in the quotient since .1 of .123 is .0123. If in doubt multiply both dividend and divisor by 10, 100, 1000, so as to have the divisor an integer; then the number of places in the dividend required to obtain your successive remainders equals the number of places in the quotient.

The Rule. The number of places in the quotient + the number of places in the divisor must equal the number of places in the dividend. Remember that the quotient multiplied by the divisor must equal the dividend, except for the small remainder.

```
                                        .01
                                       ----
For .123).00143, write 123)1.43, shifting the decimal point
                           1.23
                           ----
                            20
```

3 places in each number, or multiplying dividend and divisor by 1000

```
                                      .0002
                                     ------
For .62)000143, write 62).0143; or write .0002
                                     ------
                  124                .62).000143
                 -----                   ^124
                  19                     ---
                                          19
```

STANDARDIZING ARITHMETIC

Trouble Points.—How to Locate Them. In large factories they hold stop-watches on men who are doing the same kind of work to compare the daily out-put of the men; every man is expected to come up to a certain standard of production. In arithmetical operations there are certain standard rates at which pupils in different grades should be able to perform these operations.

```
7 6 3 0 8 9 1 6 4 2 7 2 5 4 8 3 9
8 4 2 5 5 4 3 6 3 7 5 8 9 6 1 0 8
- - - - - - - - - - - - - - - - -
```

Place on paper before the child, or have him copy, about 100 of these addition or multiplication combinations, be sure to include all combinations up to 9 with 9 and some combinations involving zero. Time the child, using a watch with a second hand; have paper and pencil prepared; have the child hold up his hand with the pencil, telling him 5 seconds before the minute hand reached 60 to get ready; at exactly the 60 mark, say "Write." The time of copying the examples is not to be included; take only the time of writing the series of answers to problems *previously* copied.

In one minute a child should be able to write the answers, correctly, as follows, depending upon the grade in school:

Addition Combinations	III 26	IV 34	V 42	VI 50	VII 58	VIII 63	Middle of Grade

The same combinations, recopied, can be used for multiplication; the inverse combinations can be used for subtraction and division (inverse of 7 is 15 or 15; 8 7 8 / 15 — inverse of 7 is 7)56 or 8)56)

```
  8
  -
  7
  -
 56
```

STANDARD SCORES

	III	IV	V	VI	VII	VIII
Multiplication	16	23	30	37	41	45
Subtraction	19	25	31	38	44	49
Division	16	23	30	37	44	49
Copying Digits	63	75	84	92	100	108

AVOID DRILL WITHOUT PURPOSE

If a child falls below standard in all four fundamental operations the probability is that he is slow in copying digits. The standard scores for copying digits are for copying, from a printed (or carefully written) sequence of digits, written in no systematic order, e. g., 3, 4, 0, 7, 6, 8, 5, 2, 4, 9, 1, 3, 5.

Take the time you make with each of the four operations. Find out in this way just where your arithmetical weakness lies. Having located the trouble point, drill on that particular work, following the methods indicated in the preceding articles.

Another good type of time drill, devised like the preceding by Mr. S. A. Courtis of Detroit, involves the actual fundamental operations in problems. In addition, place before the individual to be tested about 25 problems, each consisting of nine three-place numbers, time 8 minutes; in subtraction set 24 problems each consisting of an eight-place number to be subtracted from an eight or nine place, time 4 minutes; in multiplication, set 24 problems each consisting of a four place number to be multiplied by a two-place or a three-place number with a zero, like 250, time six minutes; in division place a 4 or 5 place number divided by a two place, having an exact quotient of three places, time eight minutes.

STANDARDS SET FOR THE PRECEDING EXERCISES

	IV	V	VI	VII	VIII
Addition	6	7	9	10	11
Subtraction	6	8	9	10	12
Multiplication	4	6	7	8	9
Division	3	5	6	7	9

After a child attains the standard for his grade in any operation his time should be devoted to bringing up his record in the other operations, and to practical applied problems.

BUSINESS ARITHMETIC

Interesting Interest. (See Index.) At the present time the rules of interest and the problems, should be concerned with the real practise of banks and particularly with war savings. Take the $5.00 first government war savings stamps, sold when issued at $4.12 which pay 4% compound interest. Find the interest on $4.12 and add it to the principal at the end of the first year; do this for five years, carrying the work only to the second decimal price; the result will be the $5.00 which the Government agreed to pay at the end of 5 years. The process illustrates fully the fundamental principles of compound interest. Discuss postal savings bank, according to the actual rules, and discuss the Liberty Bonds This will make interest interesting.

Problem.—Compound interest on $4.12 for 5 years at 4%.

```
$4.12   $4.12                    $4.28   $4.28
 .04     .16                      .04     .17
-----   -----                    -----   -----
 .1648  $4.28 end of 1st year.    .1712  $4.45 end of 2nd year.
$4.45   $4.45                    $4.63   $4.63
 .04     .18                      .04     .18
-----   -----                    -----   -----
 .1780  $4.63 end of 3rd year.    .1852  $4.81 end of 4th year.
        $4.81   $4.81
         .04     .19
        -----   -----
        .1924   $5.00 end of 5 years.
```

At the end of the fourth year, interest .1852, only 18 cents is credited as in the preceding year the next larger unit, .18, was taken instead of .1780.

NOTE NOTES

Notes on Interest on Notes. (See Index.) Ninety-nine notes out of a hundred are now drawn for 2 months, or 3 months or 6 months, and in most parts of the U. S. at 6% interest. Whether the interest is paid when the note becomes due, or whether it is taken out in advance as discount, the method of computation is the same. Since the interest for 12 months is 6%, the interest for 2 months is 1% of the principal; the interest for 1 month is ½% of the principal; the interest for 3 months or 6 months is respectively 1½% or 3%.

Moving the Decimal Point. The interest on a note of $490 for 2 months, or 60 days, at 6%, is obtained by simply moving the decimal point two places, $4.90 is this interest; moving the decimal point again gives the interest for one tenth of 60 days, or $0.49 for 6 days. For one month take one-half of the interest for 2 months; for 90 days add these two. Work from the interest for 60 days, and it will be easy.

To find the interest at 5% or 7%, subtract or add, respectively, to the interest which you find at the 6% rate, one-sixth of itself. For 4½% take from the interest at 6% one-fourth of itself.

Discount is Interest. The principles of discount are fully discussed in the preceding section, as discount is nothing but interest taken out *in advance*. The discount on a note of $490 for 60 days at 6% is $4.90; the bank gives to the maker of the note not $490, but $490 less the *discount*, $4.90.

COMPOUND INTEREST

How Money Grows. One dollar placed at interest for one year at 6% grows to $1.06; in five years at compound interest it grows to $1.338, and in ten years to $1.790; at the end of 12 years the dollar has more than doubled itself.

HOW ONE DOLLAR GROWS!

	4%	5%	6%
1 year	1.04	1.05	1.06
5 years	1.216	1.276	1.338
10 years	1.480	1.628	1.790
12 years	1.601	1.795	2.012
15 years	1.801	2.078	2.396
18 years	2.025	2.406	2.854
20 years	2.191	2.653	3.207
50 years	7.106	11.467	18.420
100 years	50.504	131.501	339.02

MEASURES AND MONEYS

Denominate Numbers. (See index for tables.) So far as practical problems are concerned these should deal, in general, with only two denominations; to change miles to inches is arithmetical exercise, but the practical value is almost *nil*. Children in public schools should not be required to learn Troy and apothecary tables, and obsolete measures; their work should be on the measures which ordinary people use in ordinary business.

SPENDING MONEY

How the Money Goes—Foreign and Domestic Exchange. (See Index.) Send the boy to the post-office to get a foreign and a domestic money order blank, send him to the Express office for similar blanks, show to the boy your checks as you send them even to out-of-town firms; when you have done these three things you can make clear to him the way money is sent from one place to another, whether at home or abroad. A boy who has *actually sent real money* by P. O. order, or by Express order, ot by his father's check knows more about domestic exchange than any book can teach him. Give the boy and girl a chance to do things in a real way, and arithmetic will become easy and interesting.

EXTRACTING THE ROOT

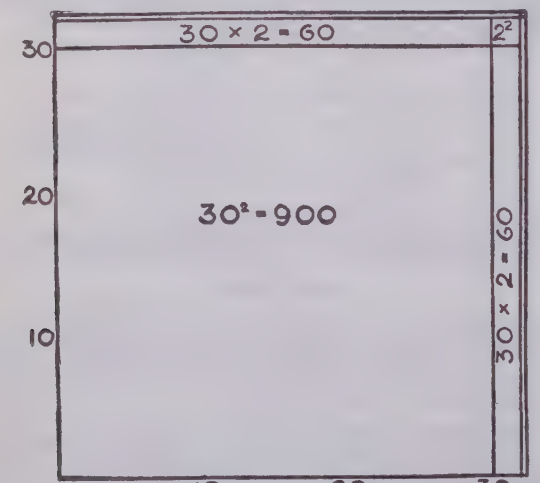
Square Root—the Easy Way. The easiest way to get square root is to find by trial, some number whose square is near to the given number; divide the given number by this trial root; half the sum of the trial root and the quotient, carried to only one place farther than the trial root, is a nearer trial root.

Example.—Find the square root of 153.16. Evidently 12 is near to the root.

```
  12.76
12)153.16
   12
   --
   33
   24
   --
   91
   84
   --
   76
   72
   --
    4
```

12 is too small; 12.76 is too large, since 12×12.76. Try $\frac{12+12.76}{2}$ or 12.38; taking the nearest number one place, farther gives 12.4 which is shown, by division, to be the exact root.

The ordinary process of square root can be readily explained by a diagram on cross-section paper which can be procured at any book-store, or supply house.



Build up on the diagram $(32.4)^2$ as $30\ (+2+.4)^2$. Note that 30^2 is 900, the larger square; 32^2 is $30^2 + 2 \times 30 \times 2$ (the two rectangles) $+2^2$ (the little square), $(32.4)^2$ is 32^2 (the second of the large squares, with side 32) $+2 \times 32 \times .4$, or the two rectangles, one at the side and one at the top, with longest dimension 32 and shorter dimension .4. Note that in extracting the square-root of 1049.76 you take out these squares and rectangles and little squares in the order mentioned. Looking at 1049 you see that 30 is the largest even ten who e square can be taken out of 1049.76. Doubling 30 gives 60, the total length of our two rectangles which are at the top and side of our square of side 30. Dividing 149 by 60 we see that the width of these two rectangles is greater than 2 and less than 3. We add the 2 to 60, making 62 and multiply by the 2, giving $2 \times 60 + 2 \times 2$ or the area of the two rectangles and the little square of side 2.

```
  32.4
30)1049.76
   900   the large square
60 149.76
62 124
 2
--  -----
64  2576
```

Now we have taken out $900+124$ or 1024 which is the square of 32. The total length of the two rectangles, at top and side of our square of side 32, is 64. Divide 25.76 by 64 and we get .4; evidently the other dimension of our long, narrow rectangles is near to .4; to the 64 add the .4 and multiply the sum by .4 giving the area of the two narrow rectangles $.4 \times 64$ or 25.6 and the area of the tiny square of side .4, $.4 \times .4$ or .16, total 25.76.

Problem. Extract the square root of 1176.49, both methods.

In each method begin by dividing 1176.49 off in periods of two digits each way from the decimal point. The root of this number will then have two places to the left of the decimal point. The first trial root is 30, since 30^2 is 900 and 40^2 is 1600.

By Division.

```
  39.2
30)1176.49
   90
   ---
   276
   270
   ---
    64
```

$1176.49 \div 30 = 39.2$

30 is too small; 39.2 is too large.

Try $\frac{1}{2}$ (30+39.2) or 34.6.

$1176.49 \div 34.6 = 34.00$

```
34.6)1176.490
   1038
   ----
   1384
   1384
   ----
     90
```

34.6 is too large; 34. is too small.

Try $\frac{1}{2}$ (34.6+34) or 34.3

```
  34.3
34.3)1176.49
   1029
   ----
   1474
   1372
   ----
   1029
   1029
```

34.3 is the number which multiplied by itself gives 1176.49.

By Regular Process.

```
 3 )1176.49
    9
   ---
64  276
    256
    ---
68.3 20.49
      2049
```

the 3 for 30, the 9 for 900, 30^2; the 6 (first 3 doubled) for 60; divide 276 by 60 gives 4; annex to 6, 64×4, gives two rectangles 4×30 and 4×30 and little square 4×4.

The 4 doubled, 68; and $20.49 \div$ by 68 (or 20 by 60) gives .3; annex to 68. $68.3 \times .3$ gives two rectangles $34 \times .3$ and $34 \times .3$ and tiny square $.3 \times 3$.

BIG BUSINESS

Stocks and Bonds. Stock brokers charge $\frac{1}{8}$ of one dollar for buying or for selling a share of stock, with a minimum charge of $1.25, the price of buying or selling 10 shares of stock. The minimum charge is disregarded in ordinary arithmetical work. To find the price of a share of stock to a purchaser add $\frac{1}{8}$ to the quotation, which on reliable stocks is given in dollars and fractions of dollars; to find the price received by one who sells given shares of stock through a broker, subtract from the market price, $\frac{1}{8}$, and multiply by the number of shares sold. Brokers usually make a separate item on the bill for their brokerage. On bonds the brokerage is commonly computed on each $100 of the face of the bond. To make this work mean anything to a boy or girl in the eighth grade, get a newspaper which gives stock quotations and make up actual problems from actual quotations in the paper.

GOVERNMENT ARITHMETIC

Duties, Customs, Commission. (See Index.) The fundamental idea in duties *ad valorem* (on the value) and commission on price of articles bought or sold is precisely the same. In each case a certain *percentage* of the money is found; when the government receives this percentage for permitting the goods to be imported into the country (or for permitting the manufacture as in liquor) it is called *duty*, but when the buyer or seller of goods receives the percentage as pay for buying or selling the goods, the percentage is called commission. A *duty* of 15% on books worth $400, at the price of purchase, is the same in value as a commission of 15% on selling 400 bushels of corn at $1.00 per bushel. *Customs revenue* or *tariff* or *duty* determined on the quantity of goods imported, irrespective of the cost, is called *specific duty*; to find this duty is always a matter of multiplication.

Problem. Find the import duty on 400 lbs. of Cigars, at $4.50 per lb. *Specific duty*, plus 25% *ad valorem*; value of cigars, $1200.

$4.50	$1200	$1800
400	.25	300
$1800 *specific* duty.	$ 300 *ad valorem* duty.	$2100 total import duty.

If these cigars were sold for $4500, with a commission of 10%, the importer would receive not $4500 from their sale but $4500 less 10% of $4500.

$4500	$4500
.10	450
$ 450 commission.	$4050 net proceeds of sale.

ARITHMETIC ON THE FARM

Gallons in a Gasolene Tank. Measure the diameter of the circular base and the height in inches; multiply the diameter by itself and the product by the height; take $\frac{1}{2}$ of 1% of this number and the result is the number, correct to one gallon for any tank holding less than 50 gallons. Where greater accuracy is desired, add to this 1 gallon for every 50 gallons, and proportionally for smaller parts (i.e., add 2% of your first result).

Find capacity in gallons of a tank 15 inches circular base, by 20 inches high, $15 \times 15 \times 20 = 4500$; 1% is 45; $\frac{1}{2}$ of 1% is 15. The tank holds 15 gallons, or, if accurately measured, you can add 2% of 15, or 3 gallons. A circular tank, 30 inches diameter by 36 inches high, holds $108 + 2.16$ gallons, or about 110 gallons. Computation $30 \times 30 \times 36 = 32400$; take $\frac{1}{2}$ after moving decimal point two spaces, gives 108; for greater accuracy, add 2% of 108 or 2.16. Total capacity, 110.16 gallons.

The 1918 Ford tank is 10 inches in diameter by 30 inches long. $10 \times 10 = 100$, $100 \times 30 = 3000$; 1% is 30; $\frac{1}{2}$ of this gives 10 gallons, *the capacity*.

The rule depends, of course, on the formula $\frac{3.1416 \times d^2 \times h}{4 \times 1728} \times \frac{15}{2}$. The area of a circle is $\frac{3.1416 d^2}{4}$ or $\frac{22 \times d^2}{7 \times 4}$ where d is the diameter; $\frac{22 \times d^2 \times h}{7 \times 4}$ is the volume of a circular cylinder of height, base of diameter d; $\frac{22 \times d^2 \times h}{7 \times 4 \times 1728}$ is the volume in cubic

feet, 1728 cu. in = 1 cu. foot; since a gallon contains 231 cu. in., a cubic foot equals 7½ gallons giving an error, of excess, of 2 gallons in 100 cu. feet (100 cu. ft. = 748.05 gallons). $\frac{22\times d^2\times h\times 15}{7\times 1728\times 2} = .00341\times d^2\times h$, and using the more accurate values 7.48 instead of $\frac{15}{2}$ and 3.14159 instead of $\frac{22}{7}$, gives .003399 or .003333 +.000066; now ⅓ of 1% is .003333, and 2% of this number is .000066; this sum gives our required .003399, and so the above rule.

THE CISTERN MEASURED

Barrels in a Cistern. Take the diameter and the height in feet, multiply the square of the diameter by the height; of this number take 1/6 and also take 2%; the sum gives the number of barrels within 1 barrel in 1000.

How many barrels in a cistern 8 feet in diameter, 9 feet high? 8×8×9 = 576; 1/6 of 576 = 94; 2% of 576 is 11.52; 94 + 11.52 = 105.52 bbl.

Check up on this by finding the number of cubic feet in the cistern $\frac{22\times d^2\times h}{7\times 4}$ and dividing by 4.21, which is the number of cubic feet in a barrel (31½ gallons).

For a square tank find the number of cubic feet and divide by 4.2 or 4.21; or take ¼ of the number of cubic feet and from this number subtract ½ of 1/10 of itself. Thus a tank 8×8×9 holds ¼ of 8×8×9 or 144 bbls. less 7.2 bbl. (1/10 of 144 is 14.4, and ½ of this is 7.2 bbl.).

GAUGING THE SILO

Capacity of Silos. To find the number of cubic feet of content within a silo, measure accurately the inside diameter. Square the diameter and divide the result by 4; this number multiplied by 3 1/7 gives the number of cubic feet per foot of height.

Problem. How many cubic feet in a silo 24 feet high, with inside diameter 12 feet, 14 feet, 16 feet?

12×12 = 144; 144÷4 = 36; 3 1/7 × 36 = 133 1/7 cu. feet per foot of height; 24×113 1/7 = 2715 cubic feet.

14×14 = 196; 196÷4 = 49; 3 1/7 × 49 = 154; 24×154 = 3696 cu. feet.

16×16 = 256; 256÷4 = 64; 3 1/7 × 64 = 201 1/7; 24×201 1/7 = 4827 cu. feet.

For 13, 15, and 17 foot diameters, you would get 3187, 4243, and 5450 cu. ft. for this height, or 132 5/6, 176 5/6, and 227 cu. ft., respectively, per foot of height. No appreciable error is made if with a 12½ foot silo, or 14½ foot silo, you take the middle value, thus between the 12 foot and 13 foot values of 113 1/7 and 132 5/6 you find 123 as middle value, ½ (113 1/7 + 132 5/6).

In general in measuring the capacity of silos the computation should not be carried out beyond whole cubic feet, as the measurements of silos are not sufficiently accurate to warrant carrying the computation to fractions.

A SILO CAPACITY TABLE

The Silo Table. This table gives for 12 to 18 foot circular silos the capacity in cubic feet and in tons, figuring 40 lbs. of silage to the cubic foot; heights of 20, 24, and 30 feet are given.

	12 Foot		13 Foot		14 Foot		15 Foot		16 Foot		17 Foot		18 Foot	
Height	Cu. Ft.	T'ns	Cu. Ft.	T'ns	Cu. Ft.	T'ns	Cu. Ft.	Tons	Cu. Ft.	Tons	Cu. Ft.	Tons	Cu. Ft.	Tons
20 feet..	2262	45.2	2655	53.1	3080	61.6	3536	70.7	4023	80.4	4541	90.8	5089	111.8
24 feet..	2715	54.3	3186	63.7	3696	73.9	4243	84.9	4827	96.5	5449	109	6107	122
30 feet..	3393	67.8	3983	79.6	4620	92.4	5304	106	6035	120.6	6811	136.2	7633	167.7

CANCELLATION

The Ice by Cancellation. Cancellation simplifies calculation in many problems that arise in business. A cubic foot of ice, containing 12×12×12 cubic inches, weighs 56 lbs. How much ice will your ice box hold if it takes a piece 24×18×15 inches?

$$\frac{\cancel{24}^{2}\times\cancel{18}^{3}\times 15\times\cancel{56}^{14}}{\cancel{12}^{1}\times\cancel{12}^{1}\times\cancel{12}^{1}} \text{ lbs. or } 15\times 14 \text{ lbs. or } 210 \text{ lbs.}$$

A piece 8×9×12 weighs $\frac{\cancel{8}^{2}\times\cancel{9}^{3}\times\cancel{12}^{1}\times\cancel{56}^{28}}{\cancel{12}^{1}\times\cancel{12}^{1}\times\cancel{12}^{1}}$ lbs., or 28 lbs.

The same principle applies to finding the weight of 500 sheets of paper of size 33×45 inches when you know that 500 sheets 25×36 inches weigh 50 lbs. 500×33×45 will be the number of square inches of paper in the new ream; but 50 lbs. contains 500×25×36 square inches; the weight of the new ream is then

$$\frac{\cancel{500}^{1}\times 33\times\cancel{45}^{9}\times\cancel{50}^{10}}{\cancel{500}^{1}\times\cancel{25}^{5}\times\cancel{36}^{4}} = \frac{165}{2} \text{ lbs.} = 82\tfrac{1}{2} \text{ lbs. per ream.}$$

FRACTIONS MADE EASY

Refractory Fractions. No one in business has any use for such fractions as $\frac{17}{53}$ and $\frac{173}{379}$; it would be well in arithmetic to confine the work largely to those fractions which are used in business. Work many problems with ½, ⅓, ⅔, ¼, ¾, ⅜, ⅝, ⅞, ⅛, 5/6, fifths, tenths, twelfths, and sixteenths; get the fundamental principles firmly fixed in mind with these easy fractions, by much practise, then the drill with more awkward denominators will be easy.

Practise of This Kind. Problems.—Add ½ yd., ¾ yd., ⅜ yd. Note that ¾ is ½ + ¼; in adding mentally, combine ½ and ¾, giving 1¼, or 1 2/8; then add the 3/8, making 1 5/8. *Three quarters is a half and a quarter.* Find the cost of ¾ yd. ribbon at 24c a yd. Note that ½ yd. costs 12c, and ¼ yd. 6 cents, hence ¾ yd. costs 18c. At 18c a yard, a clerk should say 9 + 4½, gives 13½; the rule is to charge 14 cents if change is made, or 13 cents if the customer has exact change.

A BURNING QUESTION

Coal in Your Coal-Bin. Anthracite coal varies somewhat in weight per cubic foot, depending on the size and slightly on quality. However, 32 cu. ft. to 34 cu. ft. to the ton is about the average in ordinary sizes of coal. For all practical purposes 3% of the number of cubic feet in a bin gives the number of tons of anthracite coal which a bin will hold; ½% of this is approximately the number of tons of coke; 2½% of the number of cubic feet gives the number of tons of bituminous coal, which runs about 40 cubic feet to the ton.

Problem. Find the number of tons of coal in a bin 8×10×6 feet high; 8×10×6 = 480; 3% of 480 is 14.40, the number of tons of anthracite which this will hold; 2½% of 480 is 12, the number of tons of bituminous (Pocahontas or soft coal) which the bin will hold.

HAY

Hay in the Mow. Alfalfa hay stacked 30 days runs about 512 feet to the ton. A simple rule is to find the number of cubic feet in the mow by multiplying length by breadth by height, all in feet, then move the decimal point over three places and multiply by 2. This will be too large by one ton in fifty, unless the hay has been standing longer.

A mow 30×40×8 contains 9600 cubic feet; shift the point three places making 9.6 and multiply by 2, gives 19.2 tons for the capacity.

Hay in the Stack. A stack consists of a cone on a cylinder; measure the circumference of the cylindrical base and the height up to the point where the stack begins to taper off; multiply the circumference by itself and by 8 and divide by 100, giving the number of cubic feet for each foot of height of the cylindrical part. Multiplying by the height of the cylindrical part and shifting the decimal point three places gives one-half the number of tons in the cylindrical part. As the tops vary so much it is better to estimate the top separately as a fractional part of the base.

A stack of hay measures 60 feet in circumference and 14 feet high to the point where it begins to taper to the top. How many tons of hay?

$\frac{50\times 50\times 14\times 8}{100} = 2800$ cubic feet; moving the decimal point three places gives 2.8 as half the number of tons, or 5.6 tons for a new stack; a six months' stack will contain at least one-fourth more, and an old stack almost one-half more.

WHERE YOU ARE AND WHEN

Latitude and Longitude. (See Index in book.) This topic belongs rather to geography than to arithmetic. The difference between Eastern and Central time should be clearly understood, but elaborate problems on finding the difference in time between two places when the longitude is given have no real meaning in fact except for the astronomer. The sun rises in the East and sets in the West; of two points the one farther east is reached first by the sun so that sunrise takes place earlier at this place, than at the place to the west of it, consequently the time of day, by the sun, is later at the place farthest east. It takes the earth 24 hours to complete the rotation of 360° about its axis, and hence it takes the sun 24 hours to complete the apparent rotation of 360° about the earth; in one hour the sun, or earth really, completes 1/24 of its course, or 1/24 of 360°; a difference of 1 hour in time corresponds then to a difference of 15° of longitude.

In our table of longitudes value are given in hours, minutes, and seconds; multiplying by 15 would give the longitude in degrees, minutes, and seconds. Note that Washington in Eastern time is given as 5 hr. 8 min. +West, or earlier than Greenwich; Chicago in the Central time belt is 5 hrs. 50 min. +West, or about one hour earlier; Denver in the Mountain time belt is 6 hrs. 59 min. +West; and San Francisco in Western time is 8 hrs. 9 min. West. Note that Honolulu is 10 hrs. 31 min. +West, or earlier time than Greenwich, while Yokohama in Japan is 9 hrs. 18 min. East, or later time than Greenwich. Between these two points lies the part of the Pacific which can be considered as either 180° East or 12 hrs. later or as 180° West or 12 hrs. earlier Greenwich; then on the West of this line the date is one day later than on the East. A person who goes around the world westward apparently loses a whole day at the international date line in the Pacific, but he gains by single hours 24 hours as he progresses westward.

SENSIBLE MEASURES

Metric System. (See Index.) The metric system should be understood as a matter of general information, since so much of the civilized world uses that system at the present time. The interest of the boy in this subject can be aroused today by a discussion of the famous French 75-millimeter gun, and by discussing the rations of soldiers and civilians in France and Italy. An item taken from the daily newspaper is worth ten taken from the arithmetic.

Problem. About how large in inches is the 75 mm. gun? the 375 mm.? Our table, page 388, tells us that 10 millimeters = 1 centimeters, and 1 centimeter = .3937 inches. Now 5 centimeters or 50 mm. equals 1.968 inches and 2.5 centimeters equals one-half of this or .984 inches. The total is 2.952 inches; for all practical purposes of discussion, but not for making shells, the 75 mm. gun can be thought of as a three inch gun.

1 cm. is nearly 2/5 of an inch; 5 cm. make 2 inches, lacking .0325 inches, an error of 1⅓%.

ALGEBRA IS HIGHER ARITHMETIC

Algebra Applied to Arithmetic. In elementary algebra you learn that $(x+a)(x+b) = x^2+ax+bx+ab$; now this rule is equally good if we substitute 10 for x. Then $(10+a)(10+b) = 10\times 10+10\times a+10\times b+ab$, or $10(10+a+b)+ab$. If you think of a and b as numbers between 1 and 9, this algebraic formula gives the complete explanation for the rule which we have given above, under multiplication, for the product of any two "teens." Note that 10 + a is the whole of one number; b as the units of the other; 10 + a + b is the sum of one plus the units of the other; 10x (10 + a + b) is the product of this sum by 10; ab is the product of the units.

An easy rule for squaring numbers under 100 follows from an easy algebraic formula. $(50+a)^2 = 2500+100a+a^2$, $(50-a)^2 = 2500-100a+a^2$; or $(50+a)^2 = 100(25+a)+a^2$ and $(50-a)^2 = 100(25-a)+a^2$. The rule then is: find the difference between your given number and 150; if greater than 50, add this difference to 25, and if less, subtract from 25; to this number, resulting, annex two zeros (to multiply by 100); to this number add the square of the difference between 50 and your given number. Find $(57)^2$, $(43)^2$, $(62)^2$. In 57, a is 7, 25 + 7 = 32, 3200, $7^2 = 49$, 3249 = 57^2; in 43, a is 7 as 43 is (50—7); 25—7 = 18, 1800, 7^2 is 49, 1849 = 43^2; in 62, a is 12, 25 + 12 = 37, 3700, $12^2 = 144$, 3844 is 62^2.

As you work problems in algebra learn to substitute numbers, and so make your algebra useful in arithmetical computation.

MATHEMATICS APPLIED TO LIFE PROBLEMS

The training in accuracy and the familiarity with computation which is given by the work explained above is absolutely essential for the individual who works along scientific lines, whether in agriculture, commercial lines, or in the laboratory.

ALGEBRA

WHAT ALGEBRA IS. For three thousand years men have been looking for a brief way to write the explanations of arithmetic problems. The result of this search we call algebra. It is a systematic way of putting down the steps taken to get the answers to problems. It may be thought of as a sort of shorthand, making hard problems easier.

It also shows how to write arithmetic rules very briefly. We call these rules **Formulas** and find them very useful in learning about many things in science and in business and all sorts of practical affairs. We have formulas for interest and engines, electricity and lighting, ships and sailing, and the study of the stars, and for a thousand other things.

Algebra is not hard if you will study the *reason* for each step you take. Do not think of it as a rule but as the most sensible way to meet the difficulty you have before you. If you will study these paragraphs in this way you will find that you can solve many kinds of problems yourself and that you can read books that have formulas in their explanations, and even use these formulas yourself.

EQUATIONS. The most important tool that algebra uses in doing these things is the equation. To learn what an equation is and how it works is the biggest part of the study of algebra. We are now ready to take some problems and to find how to solve them by means of equations. Very simple ones will be best so that we shall not have to think much about the problem but about the method. It is a curious thing about beginning algebra that you must not think at all about what the answer is. Think only about how to get the equation. The answer will take care of itself.

PROBLEM 1. Four hundred fifty dollars is to be divided between John and Mary so that Mary will have 4 times as much as John.

Let j stand for the number of dollars John gets. Then 4 times j will stand for the number of dollars Mary gets. The algebra way of writing 4 times j is merely $4j$. We read it "four j." We think of it as four j's or as four times j.

We now know that $j+4j=450$. This is our equation. The word "equation" comes of course from the word equals. All of our equations will contain this sign, =, which we read "equals."

① $j+4j=450$

One j and $4j$'s make $5j$'s, so our second equation becomes

② $5j=450$

We want to know how many dollars j stands for. We know that $5j=450$. How shall we find j? You can see for yourself that we must *divide* by 5.

③ $j=90$

This means that John gets \$90. We also want to know Mary's share. The second line we wrote tells us that $4j$ stands for the number of dollars Mary gets. To get $4j$ from ③ we must multiply by 4.

④ $4j=360$

The answer is \$90 for John and \$360 for Mary. We show that this is the correct answer by adding \$90 and \$360 which gives us the right total, \$450.

The numbers ①, ②, ③, and ④ are going to be very useful in talking and writing about our equations. Form the habit of numbering each equation you write.

① is read "equation one."

This problem and its solution are very simple but if you have understood each step you have already gone a long way toward understanding what algebra is, and you are ready to go ahead.

The next problem can be done in the same way. We will put it down without the explanation. Study it carefully, rereading the explanation of problem one. Remember that you are laying the foundation for all your understanding of algebra.

PROBLEM 2. Father and Mother have 1800 books in all. If Father has 24 times as many as Mother, how many has each?

Let M = the number of books Mother has.

Then $24M$ = the number of books Father has.

①	$M+24M=1800$	
②	$25M=1800$	
③	$M=72$	②÷25
④	$24M=1728$	③×24

Check	*Ans.*
1728	Mother, 72 books
72	Father, 1728 books
1800	

Notice that we do not set down the units in the equations. In problem 1 we did not write dollars in the equations: nor did we write "books" in the equations of Problem 2. We do however set down these words in the *first lines* and in the *answer*.

At the right of ③ and ④ is written the explanation or "history" which tells exactly what was done in getting ③, namely divide ② by 25; and in getting ④, namely multiply ③ by 24. Always write your history *before* you write your equation.

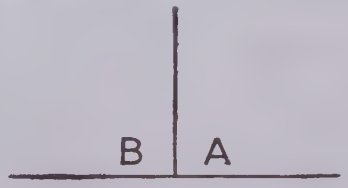
Where you have the answer to a problem your first question should be, "Is my answer right?" Look back to the problem. Both together had 1800 books. To see if we are correct, add the 72 books of Mother's to the 1728 of Father's and get the total 1800. This checks our solution. We *know* we are right.

The next problem is left for you to solve.

PROBLEM 3. There are twice as many lights on the first floor of a house as on the second floor. There are 48 lights on both floors. How many on each?

More of these problems can be found in the Evans & Marsh, First Year Mathematics.

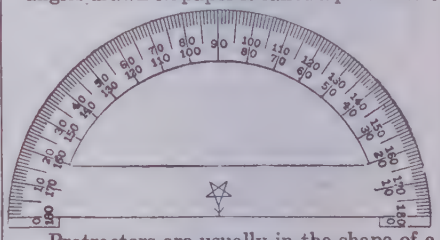
ANGLES. Our next problems are about angles. Before we are ready to solve them we will learn something about angles and their relations.



When two lines meet, as in the figure, so that $\angle A = \angle B$, (The symbol $\angle$ is read "angle"). Each angle is called a *right angle*. For the purpose of measuring smaller angles a right angle is divided into ninety equal parts called degrees. The angle A is 90 degrees. More briefly, $\angle A = 90°$. Also $\angle B = 90°$. If we let A stand for the numbr of degrees in the Angle A, we write

① $A = 90$
② $B = 90$
③ $A+B=180$ ①+②

The instrument used for measuring angles drawn on paper is called a protractor.



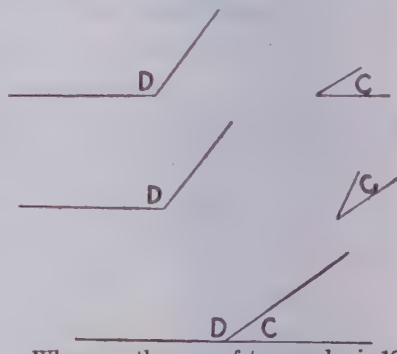
Protractors are usually in the shape of a half circle.

A very convenient form of protractor is the ruler-protractor made of celluloid.

In each protractor you will notice the division into 180 degrees.

In each of these figures

$\angle C = 180°$



Whenever the sum of two angles is 180° the angles are supplementary. 50° and 130° are *supplementary:* so are 10° and 170°, 20° and 160°, 27.5° and 152.5°.

Which of the following pairs of angles are supplementary? How do you know?

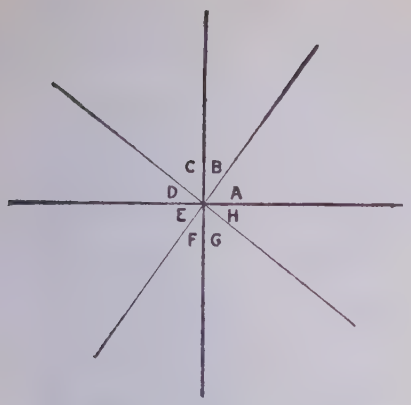
(a)	45°	135°	(d)	18°	148°
(b)	59°	121°	(e)	99°	81°
(c)	75°	105°	(f)	176°	22°

If you can get a protractor and draw these angles and measure them you will understand them much better.

In this diagram we have four right angles made by the heavy lines. Each right angle is divided into two parts by a light line.

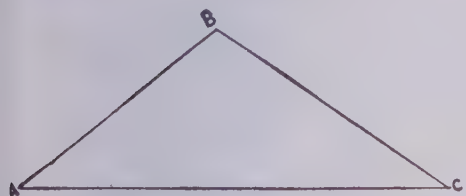
$A+B=90$
$C+D=90$
$E+F=90$
$G+H=90$

Two angles whose sum is 90° are *complementary.*

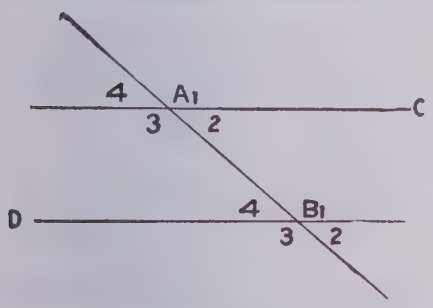


This figure is a triangle. If you measure its three angles and add them the total is 180. The sum of the angles of any triangle is 180 degrees.

$$A+B+C=180$$

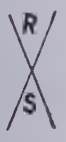


This figure is a stripe cut by a transversal. The lines CA and DB are parallel. that is they go in the same direction. AB is a transversal which cuts the two parallels. Eight angles are formed. $A_1+A_2=$ how many degrees? If you cannot answer reread the paragraph about supplementary



angles. You will find that ① $A_1+A_2=180°$ ② $A_3+A_4=180°$. ③ $B_1+B_2=180°$, ④ $B_2+B_3=180°$. Are there other pairs of supplementary angles?

Look at A_1 and A_3. They are equal because their sides are the same lines. Such angles as these, such as $\angle R$ and $\angle S$ in



this small diagram are *vertical* angles. Vertical angles are equal. Returning to the diagram of the stripe, A_1 and B_1 have their sides going in the same direction and are equal. $A_2=B_2$, and $A_3=B_3$ for the same reason.

We can sum this all up in these three statements, calling angles marked 1 and 3 odd, and 2 and 4 even. In a stripe:

① The four odd angles are equal

② The four even angles are equal

③ One odd added to one even angle makes 180 degrees.

These facts about angles will give us many interesting problems to solve.

PROBLEM 4. One of the angles in a stripe is 8 times another. How many degrees in each?

Let $x=$the number of degrees in the smaller angle.

Then $8x=$the number of degrees in the larger angle.

①	$x+8x=180$	
②	$9x=180$	
③	$x=20$	②÷9
④	$8x=160$	③×8

Check 20 + 160 = 180 — *Ans.* 20° and 160°

You can now make such problems, for yourself, and solve them.

PROBLEM 5. In the triangle $A\ B\ C$ angle B is twice angle A, and angle C is 3 times A. Find the angles.

Let $x=$no. of degrees in $\angle A$.
Then $2x=$no. of degrees in $\angle B$.
And $3x=$no. of degrees in $\angle C$.

Now we know that the sum of three angles of a triangle is 180 degrees, therefore

①	$x+2x+3x=180$	
②	$6x=180$	
③	$x=30$	②÷6
④	$2x=60$	③×2
⑤	$3x=90$	③×3

Check 30 + 60 + 90 = 180 — *Ans.* $A=30°$, $B=60°$, $C=90°$.

PROBLEM 6. In paying \$68, I used only \$5 and \$2 bills. The number of \$5 bills was 3 times the number of \$2 bills. How many of each?

Let $x=$the no. of \$2 bills
Then $3x=$the no. of \$5 bills

Now we cannot add the number of *bills* and get the number of *dollars*. Think this over carefully. If you count the number of bills in a pile, do you know how many dollars the pile is worth? Does it make a difference whether the bills are ones or twos or fives or tens? Seven \$5 bills make how much money? 10, \$5 bills? x, \$5 bills? The answers to these three questions are found by multiplying five by seven, five by ten and five by x. The answers are \$35, \$50 and $5x$ dollars. How many dollars in 8 \$2 bills? in 20 \$2 bills? in 3 \$2 bills?

Ans. \$16, \$40 and \$6.

Now look back at our problem. How many dollars in x\$2 bills? Answer $2x$ dollars. How many dollars in $3x$\$5 bills? Answer $15x$ dollars. The next two lines of our solution will be

$2x=$the no. of dollars in \$2 bills.
$15x=$the no. of d llars in \$5 bills.

Now we are ready to add *dollars* and find the number of dollars in all.

① $2x+15x=68$

Because the problem says there were 68 dollars in all.

②	$17x=68$	
③	$x=4$	②÷17
④	$3x=12$	③×3

Check 4 \$2 bills = \$ 8; 12 \$5 bills = 60; 68 — *Ans.* 4 \$2 bills, 12 \$5 bills

PROBLEM 7. To pay \$168 I use \$10 and \$2 bills only, 4 times as many 10's as 2's. How many of each?

Let $x=$the number of \$2 bills.
Then $4x=$the number of \$10 bills.
$2x=$the number of dollars in 2's.
$40x=$the number of dollars in 10's.
$2x+40x=$the number of dollars in all.
But $168=$the number of dollars in all, therefore.

①	$2x+40x=168$	
②	$42x=168$	
③	$x=4$	②÷42
④	$4x=16$	③×4

Check 4 2's = \$ 8; 16 10's = 160; 168 — *Ans.* 4, 2's; 16, 10's

The next problem does not read at all like problems 6 and 7 but it really is the same kind.

PROBLEM 8. A dealer sold out his stock of used Fords at \$430 each and Buicks at \$920 each. There were 3 times as many Fords as Buicks. He received in all \$15470. How many cars of each kind did he sell?

Let $x=$the number of Buicks sold.
Then $3x=$the number of Fords sold.

$920x=$the number of dollars received for the Buicks.

$1290x=$the number of dollars received for the Fords.

The $1290x$ was found by multiplying $3x$, the number of Fords, by 430, the number of dollars each Ford sold for.

①	$920x+1290x=15470$	
②	$2210x=15470$	
③	$x=7$	②÷2210
④	$3x=21$	③×3

Check 7 Buicks at 920 = 6440; 21 Fords at 430 = 9030; 15470 — *Ans.* 7 Buicks, 21 Fords

PROBLEM 9. A bookseller shipped dictionaries weighing $7\frac{1}{2}$ pounds each and 6 times as many algebra books weighing 2 pounds each.

The total weight of the shipment was 195 pounds. How many books of each kind?

Let $x=$the no. of dictionaries.
Then $6x=$the no. of algebras.
$7\frac{1}{2}x=$the no. of pounds the dictionaries weighed.

$12x=$the no. of pounds the algebras weighed.

Why is it $12x$? Because there are $6x$ algebras at 2 pounds each.

①	$7\frac{1}{2}x+12x=195$	
②	$19\frac{1}{2}x=195$	
③	$x=10$	②÷19½
④	$6x=60$	③×6

Check
10 dictionaries at $7\frac{1}{2}$ lb. = 75 lb.
60 algebras at 2 lb. = 120
195 lb.

Ans.
10 dictionaries
60 algebras

One more for you to solve. You can make more problems for yourself about bills or coins; or find them in Evans and Marsh, First Year Mathematics.

PROBLEM 10. To pay \$245 use \$20 and \$5 bills only. Three times as many 5's as 20's. How many of each?

SECOND KIND OF EQUATION

PROBLEM 11. One angle of a stripe is 8 degrees more than the other. Find the number of degrees in each angle.

Let x = the no. of degrees in the smaller angle.

Then $x+8$ = the no. of degrees in the larger angle.

To find a number 8 larger than x, we must add 8 to x. This gives us $x+8$.

① $x+x+8=180$

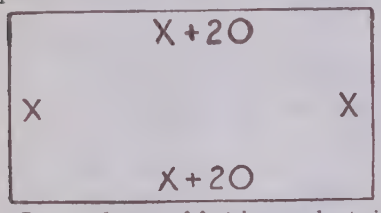
② $2x+8=180$

This equation cannot be solved by the steps we have been taking. What is the difficulty? Clearly the "8" is in the way. How can we remove it without making our equation untrue? If we have eight too much, the remedy must be to *subtract* eight.

③	$2x=172$	②−8
④	$x=86$	③÷2
⑤	$x+8=94$	④+8

Check	*Ans.*
86°	86°, 94°
94°	
180°	

PROBLEM 12. The perimeter of a rectangle is 136 feet. One side is 20 feet shorter than the other. Find the length of each side. The diagram shows a rectangle. Each of its angles is a right angle. You notice that the two short sides are equal, and the two long sides are equal. The perimeter is the sum of the four sides.



Let x = the no. of feet in one short side.

Then $x+20$ = the no. of feet in a long side.

Adding the four sides to get the perimeter we get $x+x+20+x+x+20$. Uniting these we get $4x+40$. Therefore

①	$4x+40=136$	
②	$4x=96$	①−40
③	$x=24$	③÷4
④	$x+20=44$	④+20

Check	*Ans.*
24	24 feet
44	44 feet
24	
44	
136	

PROBLEM 13. Solve problem 12 in case the perimeter was 150 feet, and one side was 35 feet shorter than the other. Answer 20 ft. and 55 ft.

Make many more of these problems and solve them.

PROBLEM 14. I sold canned corn at 11 cents a can and 5 times as many cans of tomatoes at 14 cents each, and one can of peas at 12 cents. If the total receipts were $4.98, how many cans of corn and tomatoes did I sell?

Let x = the no. of cans of corn.

Then $5x$ = the no. of cans of tomatoes.

$11x$ = the no. of cents for the corn.

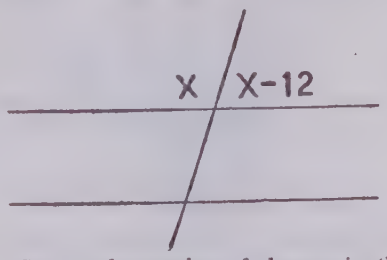
$70x$ = the no. of cents for the tomatoes—because there were $5x$ cans at 14 cents a can.

①	$11x+70x+12=498$	
②	$81x+12=498$	
③	$81x=486$	②−12
④	$x=6$	③÷81
⑤	$5x=30$	④×5

Check	*Ans.*
6 cans corn at .11 = $ .66	6 cans corn.
30 cans tom. at .14 = 4.20	30 cans tomatoes.
1 can peas at .12 = .12	
$4.98	

THE THIRD KIND OF EQUATION
SHORTAGES

PROBLEM 15. If one angle of a stripe is 12 degrees less than another angle of the same figure, fin the number of degrees in each angle.



Let x = the number of degrees in the larger angle.

Then $x-12$ = the no. of degrees in the smallerrangle—because 12 taken away from x gives $x-12$. This is read x less 12 or x minus 12.

① $x+x-12=180$

Because the sum of 2 angles of a stripe is 180°.

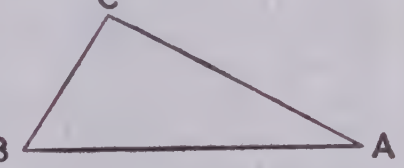
② $2x-12=180$

None of the steps we have taken so far will solve this equation. What is the difficulty? We are short 12. The left hand side is 12 less than $2x$. If it was just $2x$ we could go ahead. How can we make it just $2x$? By *adding* 12.

③	$2x=192$	②+12
④	$x=96$	③÷2
⑤	$x-12=84$	④−12

Check	*Ans.*
96°	96°, 84°
84	
180	

PROBLEM 16. The $\angle B$ of a triangle is double the $\angle A$, and $\angle C$ is 30 degrees less than the sum of A and B. How many degrees in each angle?



Let x = the no. of degrees in A.

Then $2x$ = the no. of degrees in B.

And $3x-30$ = the no. of degrees in C.

Because the sum of $\angle A$ and $\angle B$ is $3x°$. Thirty degrees less is $3x-30$.

But the sum of the three angles of a triangle is 180°.

①	$x+2x+3x-30=180$	
②	$6x-30=180$	
③	$6x=210$	②+30
④	$x=35$	③÷6
⑤	$2x=70$	④×2
⑥	$3x-30=75$	④+(5)−30

Check	*Ans.*
35	$A=35°$, $B=70°$, $C=75°$
70	
75	
180	

Problems like 11 and 12 will give equations of this kind if you let x stand for the *larger* number. Try them.

The Convenience of the Parenthesis in an Equation

PROBLEM 17. I paid $1.45 with nickels and dimes using 7 less nickels than dimes. How many of each?

Let x = the number of dimes.

Then $x-7$ = the number of nickels.

$10x$ = the number of cents in dimes.

$5(x-7)$ = the number of cents in nickels.

The ( ) is a parenthesis. A parenthesis is used to tie two or more terms together to show that they are all to be treated alike. Think of it as a string tieing together the terms inside. The parenthesis containing the $x-7$ merely tells us that the x and the minus 7 are to be treated alike. The 5 in front of the parenthesis means that both the x and the minus 7 are to be *multiplied* by 5. To read an expression with a parenthesis in it merely read "'5 times the parenthesis $x-7$" or "five times the quantity $x-7$."'

① $10x+5(x-7)=145$. Because this is the number of cents in all.

We will now carry out the instructions in the expression $5(x-7)$, namely multiply the $x-7$ by 5.

② $10x+5x-35=145$

Why is it *Minus* 35. Because we are short 7 five times, that is we are short 35 in all.

③	$15x-35=145$	
④	$15x=180$	③+35
⑤	$x=12$	④÷15
⑥	$x-7=5$	⑤−7

Check	*Ans.*
12 dimes = $1.20	12 dimes
5 nickels = .25	5 nickels
$1.45	

PROBLEM 18. John is twice as old as Will. Eighteen years ago John was five times as old as Will. How old are they?

Let x = the no. of years in Will's age now.

Then $2x$ = the no. of years in John's age now.

The next quantities we must list are their ages 18 years ago. If a man is 38 now how old was he 18 years ago? To answer you must *subtract* 18, therefore

$x-18$ = the no. of years in Will's age 18 years ago.

$2x-18$ = the no. of years in John's age 18 years ago.

But John was then 5 times as old as Will. This gives us the equation

① $5(x-18)=2x-18$

Now multiply both x and minus 18 by 5.

② $5x-90=2x-18$

We now have a shortage on each side of the equation. We must get rid of both of them. How? By adding the larger shortage, that is 90. Try it.

③ $5x=2x+72$ ②+90

Where did we get the 72? We were short 18 and added 90. If the thermometer stood at −18 and rose 90 where would it stand? If you owed a man $18 and you worked for him until you had earned 90, how much should he pay you to balance the accounts? Equation three might be written first in the form ③ $5x+90-90=2x+90-18$ then reduced to $5x=2x+72$.

There is another difficulty in ③. There is a term with x in it in *each* side. We want x on one side and a number on the other. The $2x$ is in the way. How can we get rid of it?

We must *subtract* $2x$.

④	$3x=72$	③−2x
⑤	$x=24$	④÷3
⑥	$2x=48$	⑤×2

Check			*Ans.*
NOW	18	Y's AGO	
Will	24	6	Will is 24
John	48	30	John is 48
24×2=48		6×5=30	

Do you understand the check? Is John twice as old as Will now? Eighteen years ago was he 5 times as old?

PROBLEM 19. A father is twice as old as his son. Twenty-two years ago he was 3 times as old. How old are they now?

Let x = the no. of years in son's age now.
Then $2x$ = the no. of years in father's age now.
$x-22$ = the no. of years in son's age 22 years ago.
$2x-22$ = the no. of years in father's age 22 years ago.

① $3(x-22)=2x-22$
② $3x-66=2x-22$
③ $3x=2x+44$ ②+66
④ $x=44$ ③−$2x$
⑤ $2x=88$ ④×2

Check *Ans.*

NOW	22 Y's AGO	Father 88 years
Father 88	66	Son 44 years
Son 44	22	

$22\times3=66$

PROBLEM 20. Apples cost 15 cents a dozen less than oranges. If 2 dozen apples and 3 dozen oranges cost $1.65, what is the cost of a dozen of each?

Let x = the no. cents for 1 doz. oranges.
Then $x-15$ = the no. cents for 1 doz. apples.
$3x$ = the no. cents for 3 doz. oranges.
$2(x-15)$ = the no. cents for 2 doz. apples.

① $3x+2(x-15)=165$
② $3x+2x-30=165$
③ $5x-30=165$
④ $5x=195$ ③+30
⑤ $x=39$ ④÷5
⑥ $x-15=24$ ⑤−15

Check *Ans.*

2 doz. at .24 = $ .48	Oranges $.39 a doz.
3 doz. at .39 = 1.17	Apples .24 a doz.
1.65	

We will now take some *equations* to practice on. They have been made from problems but just what the problems are we do not know.

Exercise 1

① $13(8-x)+2(x-6)=2x+1$

The first thing to do is to do the multiplying indicated by the parentheses. (Notice how the plural of this word is spelled.)

② $104-13x+2x-12=2x+1$

The next step is to unite the similar terms. $104-12$ gives 92. Short $13x+2x$ leaves us short $11x$.

③ $92-11x=2x+1$

The next step is to remove the shortage by adding $11x$.

④ $92=13x+1$ ③+$11x$

Which term is in the way now? Clearly the "one" because we want x on one side and a number on the other. Therefore take away the number which stands on the same side as the x term.

⑤ $91=13x$ ④−1

To find x we must divide by 13.

⑥ $7=x$ ⑤÷13

Ans. 7

Since there is no problem to check in, in order to discover whether our answer is correct, we must check in ①.

The only kind of a sentence that has an answer is a question. Equation one has an answer therefore it is a question, even though it is written without any question mark. What is the question? It is this. How big is x if $13(8-x)+2(x-6)$ equals $2x+1$.

Our solution indicates that 7 is the answer to this question. Let us see if 7 does make these two quantities equal.

① $13(8-x)+2(x-6)=2x+1$

Supposing x to be 7 we get:

$13(8-7)+2(7-6)=14+1$
$13(1)+2(1)=15$
$13+2=15$
$15=15$

Therefore 7 is the number which makes these two quantities equal. Try all the other numbers you want to. There is no other number which will do.

Exercise 2

① $15(7x-3)=8(13x+7)-20$
② $105x-45=104x+56-20$
③ $105x-45=104x+36$
④ $105x=104x+81$ ③+45
⑤ $x=81$ ④−$104x$

Check *Ans.*

$15(567-3)=8(1053+7)-20$ 81
$15(564)=8(1060)-20$
$8460=8480-20$
$8460=8460$

The parts of an equation which are separated by plus or minus signs are called *terms*. Any term with an x in it is called an x-term.

The steps to take in solving such simple equations as these are:

(1) Perform any indicated multiplications.

(2) Unite similar terms on each side.

(3) If there are any terms with minus signs before them, add enough to make up these shortages.

(4) Subtract from each side the smaller x-term.

(5) Subtract from each side the number that stands beside an x-term.

(6) Divide by the coefficient of the x-term.

You can see for yourself what the long word coefficient means. In exercise 1, the last history was ⑤÷13. In ⑤ the 13 is the coefficient of the x.

Rule (3) is interesting because the arabic word for this step is the source of the word Algebra from which our subject takes its name.

These rules were first formulated for modern students in the Evans & Marsh, First Year Mathematics, Merrill, which you will find very helpful in the further study of Algebra.

Try these exercises, thinking *first* which step you are going to take to meet the difficulty before you.

3. $3(x-7)=2x-11$
4. $2(x+5)=10x-6$
5. $2x+5=3x$
6. $5x-7=3(x+1)-4$
7. $7(x-2)=4(x-4)$
8. $6x=7(10-x)$
9. $8(x+10)=12(x+7)-8$
10. $5(x+4)=14x+2$

Try these problems, looking back, if necessary, to previous models.

PROBLEM 21. One angle of a stripe is seven less than twice the other. Find the number of degrees in each.

PROBLEM 22. Sugar costs 34 cents a pound less than tea. Ten pounds of sugar and 6 of tea cost $3.32. Price of each?

PROBLEM 23. Twenty-one coins, quarters and halves amount to $8.50. How many of each?

Let x = the no. of quarters.

What will stand for the number of halves? There are 21 coins in all x of them are quarters. How many does that leave for the halves?

If you cannot answer, imagine that x is 15. If there are 21 coins in all and 15 of them are quarters, how many are halves. Clearly $21-15$. If x of them are quarters there will be $21-x$ halves.

$21-x$ = the no. of halves.
$25x$ = the no. of cents in quarters.
$50(21-x)$ = the no. of cents in halves.

① $25x+50(21-x)=850$
② $25x+1050-50x=850$
③ $1050-25x=850$
④ $1050=850+25x$ ③+$25x$
⑤ $200=25x$ ④−850
⑥ $8=x$ ⑤÷25
⑦ $13=21-x$ 21−⑥

Check *Ans.*

8 quarters = $2.00	8 quarters
13 halves = 6.50	13 halves
$8.50	

PROBLEM 24. Sixteen coins, quarters and dimes amount to $2.95. How many of each?

PROBLEM 25. Forty pounds of tea, part costing 32 cents a pound and part 44 cents a pound come to $15.32. How many pounds of each?

HOW TO FORM AN EQUATION

One of the difficulties in solving the problems of algebra is the construction of the equation. Study of the problems we have solved shows that the steps to take are three. First make a list of the numbers talked about in the problem but not actually given in figures. Second select one of them to be represented by x and then represent the others according to their relations to this first one. Third, when this has been done make a statement that two things are equal, either by using some statement of the problem not used in making the list, or by using two abbreviations for the same number in the list.

Study of the models and of your problems with these three rules in mind will make the formation of equations easier.

Another great help is this: when the answer to a problem is found go over each statement of the problem very carefully to see if the answer meets every condition of the problem. This not only checks the accuracy of the answer but it makes clear the steps you took in forming your equation. Check the answer to every problem.

FRACTIONAL EQUATIONS

The next problems will give us equations with fractions. Suppose we have the equation

$$① \quad \frac{x}{2}=9$$

how shall we solve it? If x over 2 or $\frac{1}{2}x$ equals 9, how much is the whole of x? We must multiply by 2.

② $x=18$ ①×2

This then is the key to all fractional equations.

Exercise 1

$$① \quad \frac{x}{5}=8$$

② $x=40$ ①×5

PROBLEM 26. One half of a certain number and one fifth of it make 28. What is the number?

Let x = the number.

$\frac{x}{2}$ = one half the number.

$\frac{x}{5}$ = one fifth the number.

The statement in our problem which we have not used in our list is that one half the number and one fifth the number equal 28. Saying this fact and using the expression in our list we get,

$$① \quad \frac{x}{2}+\frac{x}{5}=28$$

This is read x over 2 plus x over 5 equals 28.

We can take care of the $\frac{x}{2}$ by multiplying by 2.

$$② \quad x+\frac{2x}{5}=56 \qquad ①\times 2$$

We can take care of the $2x$ by multiplying by 5.

$$\begin{array}{ll} ③\ 5x+2x=280 & ②\times 5 \\ ④\ \ 7x=280 & ③\text{ same values} \\ ⑤\ \ x=\ 40 & ④\div 7 \end{array}$$

Check	*Ans.*
One half of $40=20$	40
One fifth of $40=\ 8$	
28	

PROBLEM 26A. Two thirds of a number added to four sevenths of it make 520. What is the number?

Let x = the number.

$\frac{2x}{3}$ = two-thirds of the number.

This may be written $\frac{2}{3}x$ or $\frac{2x}{3}$. The first is read "two thirds x;" the second "two x over three."

$\frac{4x}{7}$ = 4/7 of the number.

$$① \quad \frac{2x}{3}+\frac{4x}{7}=520$$

Instead of multiplying first by 3 and then by 7, what one number can we multiply by? Twenty-one of course.

$$② \quad 14x+12x=10920 \qquad ①\times 21$$

To be sure of each term as you multiply, set it down.

$$\frac{2x}{3}\times 21=14x, \quad \frac{4x}{7}\times 21=12x$$

$$\begin{array}{ll} ③\ 26x=10920 & ③\div 26 \\ ④\ \ x=\ 420 & \end{array}$$

Check	*Ans.*
2/3 of $420=280$	420
4/7 of $420=240$	
520	

PROBLEM 27. One line is 3 times another, and half the shorter line is 20 in. less than the longer line. Find the length of each line.

Let x = the no. of inches in length of shorter line.

Then $3x$ = the no. of inches in length of longer line.

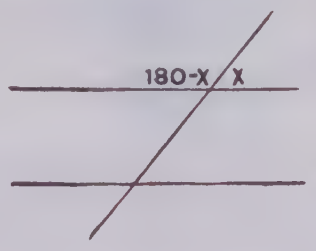
$\frac{x}{2}$ = the no. of inches in half of shorter line,

The fact not used in making our list is that "half the shorter is 20 in. less than the longer." To say this fact using the word "equals" we may write, half the shorter equals the longer less 20 inches. Say the same thing using the expressions in our list.

$$\begin{array}{ll} ① \quad \frac{x}{2}=3x-20 & \\ ② \quad x=6x-40 & ①\times 2 \\ ③\ \ x+40=6x & ②+40 \\ ④\ \ \ 40=5x & ③-x \\ ⑤\ \ \ \ 8=x & ④\div 5 \\ ⑥\ \ 24=3x & ⑤\times 3 \end{array}$$

Check	*Ans.*
½ of $8=4$	8 inches
4 is 20 less than 24	24 inches

PROBLEM 28. In the figure formed by a stripe and a transversal one half the smaller angle equals two-fifths of the larger angle. How many degrees in each angle?



Let x = the number of degrees in the smaller $\angle$.

How shall we represent the number of degrees in the larger $\angle$? The larger added to the smaller equals 180°. If the smaller is x the larger will be $180-x$.

$180-x$ = the no. of degrees in the larger $\angle$.

We are told that

1/2 the smaller = 2/5 the larger, that is:

$$① \quad \frac{x}{2}=\frac{2}{5}(180-x)$$

$$\begin{array}{ll} ②\ \ 5x=4(180-x) & ①\times 10 \\ ③\ \ 5x=720-4x & ②\text{ same values} \\ ④\ \ 9x=720 & ③+4x \\ ⑤\ \ \ x=\ 80 & ④-9 \\ ⑥\ 180-x=100 & 180-⑤ \end{array}$$

Check	*Ans.*
1/2 of $80°=40°$	80°
2/5 of $100°=40°$	100°

PROBLEM 29. Solve problem 28 changing it to read, one-third the smaller angle equals one-fifteenth the larger.

PROBLEM 30. One angle exceeds half of another by 10° and exceeds the complement of their sum by 30°. Find the angles.

This kind of problem often gives much trouble to beginners but if you will reread, "How to Form an Equation" on page 841 and if you will use care in making your list you will not find it hard.

Let x = the number of degrees in the second $\angle$.

The first $\angle$ exceeds half the second by 10°. That is:

$x/2+10$ = the no. of degrees in first $\angle$.

$x+x/2+10$ = the no. of degrees in the sum of the two $\angle$s.

The next quantity to set down in our list is, the complement of their sum. How do we find the complement of an angle? What is the complement of 10°, answer 90−10 or 80°; of x, answer $90-x$; of $x+x/2+10$, answer $90-(x+x/2+10)$, therefore $90-x-x/2+10$ = the no. of degrees in the complement of their sum. This completes our list and there is still one statement in the problem which we have not used. The (first) angle exceeds the complement of their sum by 30 degrees. Stating this with the word "equals" we have: The first angle equals the complement of their sum, plus 30°, which when translated from our list reads:

① $x/2+10=90-(x+x/2+10)+30$

② $x/2+10=90-x-x/2-10+30$ ① same values

Notice that the minus sign before the parenthesis told us to subtract all the terms in the parenthesis. Have we *subtracted* all three of them in ②?

③ $x+20=180-2x-x-20+60$

④ $x+20=220-3x$ ②×2

③ same values

Where do we get the $-3x$? You notice that we are *short* $2x$ and *short* x. This makes us *short* $3x$ in all.

$$\begin{array}{ll} ⑤\ 4x+\ 20=220 & ④-3x \\ ⑥\ \ \ 4x=200 & ⑤-20 \\ ⑦\ \ \ x=\ 50 & ⑥\div 4 \\ ⑧\ x/2+10=\ 35 & ⑥/2+10 \end{array}$$

Check	*Ans.*
1st $\angle=35°$	35°, 50°
Sum $=85°$	
Comp. of Sum $=5°$	
35° exceeds 5° by 30°	

PROBLEM 31. One angle exceeds half another by 15° and exceeds the complement of their sum by 20°. Find the angles.

Study problem 30 and do this one yourself.

Ans. 35°, 40°.

PROBLEM 32. John, James and Henry shared a sum of money so that John had $30 more than half, James $33 more than a third, and Henry had the rest which was $10. How much did John and James have?

Let x = no. of $ in all.

Then $x/2+30$ = no. of $ John has.

And $x/3+33$ = no. of $ James has.

Adding the shares of John, James, and Henry, we get

$$\begin{array}{ll} ① & x/2+30+x/3+33+10=x \\ ② & 3x+180+2x+198+60=6x \\ ③ & 5x+438=6x \\ ④ & 438=x \\ ⑤ & 249=x/2+30 \\ ⑥ & 179=x/3+33 \end{array}$$

Check

$249 John
179 James
10 Henry

438 Total

Ans.

John, $249
James, $179

Considerable practice is required to develop speed and accuracy with fractional equations.

1. $x/3+x/5+4=x-3$
2. $x/2+x/3+1/2=x-1$
3. $x/2-x/5=x/2-3$
4. $x/7-\frac{3x}{7x}=17$
5. $\frac{7x-6}{5}+\frac{-3x-5}{3}+\frac{x-1}{2}$

$$① \quad \frac{7x-6}{5}+\frac{x}{3}-\frac{3x-5}{2}=x-1 \qquad ①\times 30$$

$$\begin{array}{ll} ② & 42x-36+10x=45x-75+30x-30 \\ ③ & 52x-36=75x-105 \quad ②\text{same values} \\ ④ & 52x+69=75x \qquad ③\div 105 \\ ⑤ & 69=23x \qquad ④-52x \\ ⑥ & 3=x \qquad ⑤\div 23 \end{array}$$

Check *Ans.* 3

[Put 3 in place of x in ①]

$\frac{21-6}{5}+\frac{3}{3}=\frac{9-5}{2}+3-1$

$3+1=2+3-1$

$4=4$

6. $\frac{3x-7}{4}-\frac{3x}{11}=\frac{x-5}{2}$

7. $\frac{x+1}{2}+2+\frac{x+3}{4}=x$

8. $\frac{x-1}{7}+\frac{3x-1}{5}+\frac{1}{7}=\frac{x-7}{3}+\frac{4x-3}{5}$

9. $\frac{x-1}{2}-\frac{2}{5}-\frac{x+3}{5}=0$

① $\frac{x-1}{2}-\frac{2}{5}-\frac{x+3}{5}=0$

② $5x-5-4-(2x+6)=0$ ①×10

The parenthesis is left in ② because the two terms of the numerator of the last fraction must be both *multiplied* and *subtracted*. The minus sign before the fraction says to subtract, and our history, ①×10, says to multiply. Trying to do both of these at once often leads to errors.

③ $5x-9-2x-6=0$ ② same values

Notice that the last term is minus 6 because we are instructed to *subtract* both the $2x$ and the 6.

④ $3x-15=0$ ③ same values

⑤ $3x=15$ ④+15

⑥ $x=5$ ⑤÷3

Check *Ans.*

$\frac{5-1}{2}-\frac{2}{5}-\frac{5+3}{5}=0$ 5

$2-\frac{10}{5}=0$

$2-2=0$

10. $\frac{5x-x+7}{10}=8-\frac{1}{2}+\frac{x+1}{5}$

11. $\frac{x+5}{6}-\frac{x+1}{8}=\frac{x+3}{4}$

12. $\frac{x}{4}-\frac{x-5}{3}=\frac{x-8}{4}$

This example looks much like those above but is in fact much more troublesome.

① $\frac{x}{4}-\frac{x-5}{3}=\frac{x-8}{4}$

② $3x-(4x-20)=3x-24$ (1)×12

The quantity to be subtracted is $4x-20$; we are not told to subtract as much as $4x$, we are told to subtract 20 *less* than $4x$. Suppose it read $30-(25-20)$. This says to take from 30 a number which is 20 less than 25. This of course means from 30 take 5. The answer is 25. If we wrote $30-25$ we would be taking away too much, 20 too much because we were told to take away not 25 but 25 less 20. To correct our mistake we must *put back* the 20, and write $30-25+20$ which gives us 25, the correct answer.

③ $3x-4x+20=3x-24$ ② same values

Do you understand the +20? Study the explanation through again. We took the whole of $4x$ when we were told to take away $4x-20$. Consequently we must *put back* the 20. We took away 20 too much, then we put back the 20.

④ $-x+20=3x-24$ ③ same values

⑤ $44=4x$ ④+x+24

⑥ $11=x$ ⑤÷4

Check *Ans.*

$\frac{11}{4}-\frac{11-5}{3}=\frac{11-8}{4}$ 11

$11/4-6/3=3/4$

$11/4-2=3/4$

$11/4-8/4=3/4$

$3/4=3/4$

13. $\frac{x+5}{7}=\frac{x-4}{2}-\frac{x-5}{8}$

14. $\frac{7x-11}{45}-1=\frac{x+7}{15}-\frac{3x+1}{25}$

15. $5x+20-2(x+2)=40-4(x-15)$

① $5x+20-2(x+2)=40-4(x-15)$

② $5x+20-(2x+4)=40-(4x-60)$

① same values

We keep the parentheses in order to avoid the mistakes which come from trying to multiply and subtract at the same time.

③ $5x+20-2x-4=40-4x+60$

② same values

Why do we write -4, and $+60$? The $2x$ and 4 are *both* to be subtracted. In the last parenthesis however we are told to take away 60 less than $4x$. When we wrote $-4x$ we took away 60 too much. Then we *put back* the 60.

④ $3x+16=100-4x$ ③ same values

⑤ $7x+16=100$ ④+$4x$

⑥ $7x=84$ ⑤−16

⑦ $x=12$ ⑥÷7

Check *Ans.*

$60+20-2(14)=40-4(-3)$ 12

$80-28=40-(-12)$

Notice the last parenthesis. This is the strangest of all the subtraction cases. We are told to take away minus 12 from 40. Taking away minus 12 is the same as taking away a *debt* of 12, that is the same as adding twelve.

⑧ $80-28=40+12$

⑨ $52=52$

A rule is sometimes stated in algebra as follows: To remove any term from a minus parenthesis change its sign. This is a dangerous rule for two reasons. First because the "change of sign" seems to have something to do with the parenthesis while it really has to do instead with the subtraction which the *minus* sign before the parenthesis tells us to perform. Second because signs do not "change" in algebra and such statements lead us to think of algebra as a kind of juggling instead of something which we can reason out for ourselves. Never use such a rule unless you can tell definitely *why* you put down the plus or the minus sign.

16. $5(x-6)-110=-17-2(x-5)$

17. $2+x+3/5-2x-13/11=x/3$

18. $\frac{8x-3}{7}-\frac{4x-7}{5}=5x-13$

Problems of Rate, Time, and Distance

PROBLEM 33. A man can ride 11 miles per hour and walk 3 miles per hour How long will it take him to go 168 miles if he walks half the time and rides half the time.

Before trying to solve this problem we must understand the simple relation connecting rate, time, and distance. One of the tasks of algebra is to use the formulas which show the relations of such quantities.

If a man walks $3mi/h$ (this is read, three miles per hour) for 5 hours what distance does he walk? Clearly 5 times 3 or 15 miles. In general, the number of hours times the number of miles per hour gives the total number of miles. The *time* multiplied by the *rate* equals the distance. Stated in the symbols of algebra, $TR=D$.

You will notice that TR means T times R just as $5x$ means 5 times x. This equation may be transformed as follows:

① $TR=D$

② $T=D/R$ ①÷R

③ $R=D/T$ ①÷T

All three equations state the same relation but from different points of view. In studying such formulas it is important to be able to see all three of these facts by looking out any ONE of them. If time times rate equals distance, then time equals distance divided by rate, and rate equals distance divided by time.

One mistake to avoid. Do not try to *learn* these formulas. Learn to make up the formula from a simple illustration just as is done on this page.

Now reread these paragraphs thoughtfully, then reread the problem and we will solve it.

	T	R	D
WALKING	$\frac{X}{2}$	3 MI/H	$\frac{3X}{2}$
RIDING	$\frac{X}{2}$	11 MI/H	$\frac{11X}{2}$
TOTAL			168 MI.

Make a table and fill in the squares one at a time, beginning with the ones we know most about. In this case the R column can be filled in first, since we know both rates; and the total D is 168 miles.

Next we must decide on what x is to stand for.

Let x=the no. of hours it takes him to go 168 miles. Then $x/2=1/2$ the time, that is, the no. of hours he walks. We can now fill in the T column. The rest is easy because whenever we know two numbers in one *row* we can find the third by one of the three formulas.

This time we use $TR=D$.

The last step is to form an equation.

The D he walks plus the D he rides is the total D.

① $3x/2+11x/2=168$

② $3x+11x=336$ ① ×2

③ $14x=336$ ② same values

④ $x=24$ ③ ÷14

Check

12 h. at $3mi/h=$ 36 mi.

12 h. at $11mi/h=132$

168

Ans.

24 hours

12 hours riding and 12 hours walking.

PROBLEM 34. A boy can ride on his wheel 10 miles per hour and walk 4 miles per hour. How long will it take him to go 126 miles if he rides half the time and walks half the time? *Ans.* 18 hours.

PROBLEM 35. Soldiers can hike an average of 2 3/4 miles per hour, trucks transport them 13 miles per hour. How long will it take a regiment to cover 115 miles if they walk 1/3 of the time and ride in trucks 2/3 of the time?

	T	R	D
HIKING	$\frac{X}{3}$	2¾	$\frac{11X}{12}$
RIDING	$\frac{2X}{3}$	13	$\frac{26X}{3}$
TOTAL			115 MI.

The order of filling in the spaces is the same as in problem 33.

Notice the $D-$ hiking space. $x/3$ must be multiplied by $2\ 3/4, x/3 \times 11/4 = 11x/12$.

① $11x/12+26x/3 = 115$
② $11x+104x = 1380$ ① $\times 12$
③ $115x = 1380$ ② same values
④ $x = 12$ ③ $\div 115$

Check
4 h. at $2\ 3/4$ *mi/h* = 11 mi.
8 h. at 13 *mi/h* = 104
115

Ans.
12 hours
4 hours hiking
8 hours riding

PROBLEM 36. A boy has $3\frac{1}{2}$ hours for exercise: how far can he ride with his father, at the rate of 21 miles per hour, before getting out to walk back, if he walks $3\frac{1}{2}$ miles per hour?

	T	R	= D
WALKING	$\frac{2X}{7}$	$3\frac{1}{2}$ MI/H	X
RIDING	$\frac{X}{21}$	21 MI/H	X
TOTAL	3½H		

The known numbers go in first: they are the R's and the total T.

Let x = the no. of miles he can ride. The number of miles he must walk back will be the same.

To fill in the T column we use the formula that $T = D/R$. (Can you get this from the formula at the top of the table?)

$T-$walking will be $\frac{x}{3\frac{1}{2}}$. $T-$riding will be $x/21$.

The fraction $\frac{x}{3\frac{1}{2}}$ is rather clumsy. Write it $\frac{x}{\frac{7}{2}}$. It is still clumsy. We would like to get rid of the 2 in the denominator. How? Multiply the numerator and denominator by 2. $\frac{x}{\frac{7}{2}} \times \frac{2}{2} = \frac{2x}{7}$.

(Notice that the sign ≡ may be used when it is convenient, to show that two expressions are actually the same, though written in different form. This equation is not an equation to be solved. The right side is merely the left side simplified. Such equations are called *identities*.)

This completes the table. It remains to find an equation.

The time walking plus the time riding = the total time.

① $2x/7+x/21 = 3\frac{1}{2}$
② $12x+2x = 147$ ① $\times 42$
③ $14x = 147$ ② same values
④ $x = 10\frac{1}{2}$ ③ $\div 14$

Check
$10\frac{1}{2}$ mi. at 21*mi/h* take $\frac{1}{2}$ hour
$10\frac{1}{2}$ mi. at $3\frac{1}{2}$*mi/h* take 3 hours
$3\frac{1}{2}$ hours

Ans.
$10\frac{1}{2}$ miles

PROBLEM 37. A certain river flows one mile per hour. A fisherman finds that he can row upstream a few miles in 3 hours, but it takes him only one hour and 48 minutes to come back. How fast can he row in still water?

	T	R	= D
DOWN STREAM	1⅘H	X+1	9/5(X+1)
UP STREAM	3H	X-1	3(X-1)

The known numbers are the $T-$upstream and the $T-$downstream. The one hour and 48 min. may better be written 1 4/5 h.

Let x = the no. *mi/h* he rows in still water.

What then is the $R-$downstream? He rows through the water x miles per hour, and the current carries him along 1 mile per hour. His rowing and the current together carry him $x+1$ miles per hour.

Going upstream however the current carries him *back* one mile every hour. His rate will be $x-1$ miles per hour.

How can we fill in the D column? $D = TR$. $D-$upstream is $9/5(x+1)$. $D-$downstream is $3(x-1)$.

What fact will give us an equation?
Distance downstream = distance back.

① $9/5(x+1) = 3(x-1)$
② $9(x+1) = 15(x-1)$ ① $\times 5$
③ $9x+9 = 15x-15$ ② same values
④ $24 = 6x$ ③ $+15-9x$
⑤ $4 = x$ ④ $\div 6$

Check *Ans.*
$R-$upstream is $(4-1)$*mi/h* 4 *mi/h*
$R-$downstream is $(4+1)$*mi/h*
3*h* at 3 *mi/h* = 9*mi*
9/5 at 5 *mi/h* = 9*mi*

PROBLEM 38. A stream flows 4 miles per hour. A boat goes downstream for an hour and takes 3 hours to get back. How fast does the boat go in still water?

PROBLEM 39. A man rows 5 miles per hour in still water. It takes him 5 hours to row upstream a certain distance and only 4 hours to return. How fast does the current flow?

	T	R	= D
DOWN	4H	5+X	4(5+X)
UP	5H	5-X	5(5-X)

What are the known numbers?
$T-$downstream and upstream. Let x = the no. *mi/h* the stream flows.

How fast can the man go downstream? Five miles an hour by rowing, plus x miles an hour which the stream carries him. His rate upstream is five *mi/h* which he rows, minus x*mi/h* which the stream carries him back. Some pupils who try to do algebra problems without thinking do not know whether to write $x-5$ or $5-x$. Ask your self which is larger. If the stream flowed faster than the man rowed could he go upstream?

We now find D by the formula, as usual. $TR = D$

Next the equation: the $D-$up = the $D-$back.

① $4(5+x) = 5(5-x)$
② $20+4x = 25-5x$ ① same values
③ $9x = 5$ ② $+5x-20$
④ $x = 5/9$ ③ $\div 9$

Check *Ans.*
$R-$down = 5-5/9*mi/h* stream flows
$R-$up = 5-5/9 = 4 4/9*mi/h* 5/9*mi/h*
4*h* at 5 5/9*mi/h* = 22 2/9*mi*.
5*h* at 4 4/9*mi/h* = 22 2/9*mi*

PROBLEM 40. A boat goes 11 miles per hour in still water. It takes the boat $3\frac{1}{2}$ hours to reach a landing upstream, and only 2 hours to return. How fast does the current flow?

Problems of Ability and Time

PROBLEM 41. It takes B 12 days to do a certain piece of work which A can do in 4 days. In how many days will they do it if they work together?

Should we add the 12 days and 4 days together and answer 16 days for them both? If one man could do the work alone in 4 days would it take them both 16 days? Clearly this is not the way to proceed.

A can do what part of the work in one day? One-fourth.

B can do one-twelfth.

Let x = the no. of days for them both together.

If it takes them x days they would do each day $1/x$ of it.

For our equation: The *Part A* does in one day + the *Part B* does in one day = the part both do in one day.

① $1/4+1/12 = 1/x$
② $3x+x = 12$ ① $\times 12x$
③ $4x = 12$ ② same values
④ $x = 3$ ③ $\div 4$

Check *Ans.*
A does 1/4 each day 3 days for both
B does 1/12 each day together
Both do $1/4+1/12 = 4/12 = 1/3$

Therefore it takes them both 3 days.

PROBLEM 42. B can do a piece of work in 18 days which A can do in 15 days. How long will it take them if they work together?

PROBLEM 42. A boy can run around a block in 6 minutes. His father can walk it in 9 minutes. If they start from the same place, in opposite directions, how long before they will meet?

Let x = no. of minutes they go.

$1/6$ = *Part* of the distance boy can run in 1 minute.

$x/6$ = *Part* of the distance boy can run in x minutes.

$x/9$ = *Part* of the distance father can walk in x minutes.

If we add the *part* the boy runs and the *part* the father walks, what shall we get for the total? We shall get the whole distance. How shall we put this down in our equation? If the boy ran, say, 2/3 of the distance and the father walked 1/3, both would cover 3/3 or 1.

The *part* the boy runs + part father walks = total distance or 1.

① $x/6+x/9 = 1$
② $3x+2x = 18$ ① $\times 18$
③ $5x = 18$ ② same values
④ $x = 18/5$ ③ $\div 5$

Check *Ans.*
$18/5 \times 1/6 = \frac{3}{5}$ of distance. They will meet
$18/5 \times 1/9 = \frac{2}{5}$ of distance in 3 3/5 minutes.
1, or total distance.

PROBLEM 43. A man can walk to his office in 40 minutes, or he can ride it in10 minutes. How long will it take him if he walks half the time and rides half the time?

Let $2x$ = no. of minutes to reach office.
then x = no. of minutes he walks.
x = no. of minutes he rides.
$1/40$ = *Part* of distance he walks in one min.
$x/40$ = *Part* of distance he walks in x min.
$x/10$ = *Part* of distance he rides in x min.
The part he walks + the part he rides = the total distance or 1.

① $x/40 + x/10 = 1$
② $x + 4x = 40$ ① ×40
③ $5x = 40$ ② same values
④ $x = 8$ ③ ÷5

Check
$8 \times 1/40 = 1/5$ of distance
$8 \times 1/10 = 4/5$ of distance
1 = total distance.

Ans.
16 minutes to reach the office. 8 min. walking, 8 min. riding.

GRAPHS.

PROBLEM 44. Six horses and 11 cows cost \$810. Thirteen horses and 5 cows, at the same prices as before, cost \$1190. Find the cost of each animal.

Let x = the no. of \$ for 1 horse.
It is not easy to find an expression in x for the number of dollars for 1 cow We can however, choose some other letter to stand for this number of dollars.
Let y = the no. of \$ for 1 cow.
$6x$ = the no. of \$ for 6 horses.
$11y$ = the no. of \$ for 11 cows.
From the first statement in our problem:

① $6x + 11y = 810$

From the second statement:

② $13x + 5y = 1190$

Here we are faced by new difficulties. We have two equations to start with instead of one, and each equation has two letters in it. None of the methods previously studied enable us to find the values of x and y.

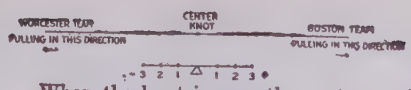
Mathematicians have found a method of solving these problems by drawing lines on ruled sheets of paper. The method has proved so interesting and helpful to the mathematicians, and has been found to have so many practical applications, that it is now one of the most fascinating chapters in algebra. We will take up the method step by step, and then apply it to the solution of problem 44.

SCALES

Study the scale of a thermometer. It is numbered up to perhaps 140° at the top and down to perhaps 40° below zero at the bottom. Temperatures are usually recorded by observers as + if above zero and as − if below zero. Our scale then goes from −40° to +140°. How many degrees is this in all? It is 140° above the zero mark and 40° below the zero mark, or 180° in all.

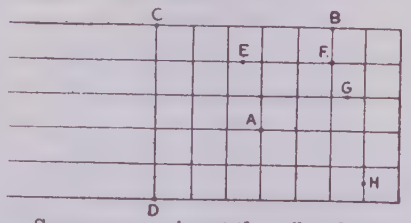
If you compare a very large thermometer with an ordinary small thermometer you will see that the space occupied by one degree on the large thermometer may be perhaps as much as one-fourth of an inch, while on the small one it is only perhaps one sixty-fourth of an inch. Evidently we can adapt the length of our degrees to fit any particular requirements. Would you use the same scale to record the temperature of molten iron and the temperature of a fever patient? The first step in the graphical method is to draw, on our paper, a scale suited to the numbers of our problem.

A scale could be drawn to show the changes in fortune in a tug of war.



When the knot is over the center mark neither team is ahead. When the knot is at 2, which team is ahead? Boston is, by 2 feet. When the knot is at −3 Boston is the loser by 3 feet. And so on.

Many of the cities of the United States are laid out in blocks, with streets at right angles to each other.



Suppose we arrive at the railroad station at A and ask directions to an office at B: we will be told to go 2 blocks east and 3 blocks north. What are the directions for going from A to C? Three blocks west and 3 blocks north. From A to D? Three blocks west and 2 blocks south. From A to E? Two blocks north and ½ block west. From A to F? A to G? G to H? Evidently every building in the city can be located by two numbers measured in two different directions.

The location of a ship at sea by its latitude and longitude depends upon the same idea.

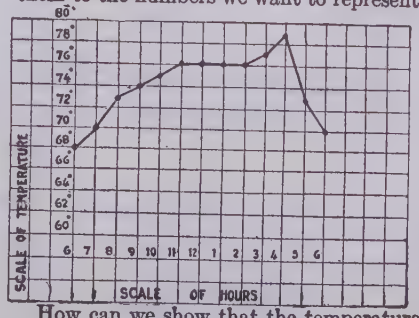
It is just this principle which mathematicians have hit upon for representing facts and solving problems by charts or graphs. As soon as we have illustrated some facts on these charts we shall be ready to use them for solving our problem.

Temperatures for a summer day are observed

to be 68° at	6 A.M.	76° at	1 P.M.
70° at	7 A.M.	76° at	2 P.M.
73° at	8 A.M.	77° at	3 P.M.
74° at	9 A.M.	79° at	4 P.M.
75° at	10 A.M.	73° at	5 P.M.
76° at	11 A.M.	70° at	6 P.M.
76° at	12 M.		

Here are numbers which are changing: the hour of the day, and the temperature. We will represent the hours of the day on a horizontal scale by marking the first line of the scale 6 A.M., the second line 7 A.M. and so on for 13 lines to the right which brings us to 6 P.M.

The temperature will be represented on a vertical — that is, up and down, scale. The range to be covered is from 68° to 79°. Suppose we call the lowest line 60°, the next line above 62° and so on up to 80°. We have now completed our two scales, at right angles to each other, and adapted them to the numbers we want to represent.



How can we show that the temperature was 68° at 6 A.M.? By a dot on the 6 A.M. line just high enough up to be on the 68° line. Can you find this dot? It is the first one at the left.

Next represent a temperature of 70° at 7 A.M. by a dot on the 7 A.M. line, and just high enough up to be on the 70° line. It is the second dot going toward the right. Continue to locate the dots as shown in the figure.

If we connect these dots with a curved line we shall have a graph which will show the approximate temperature at any hour of the day.

At about what time was the temperature highest? How does our graph show this? By the highest point at 4 P.M. At what hours was the temperature changing very little if at all?

At 11, 12, 1, and 2 the temperature stood at 76°.

What was the coolest hour of the day? Six A.M. This is shown by the lowest point on the graph.

As soon as we understand a graph we can see at a glance, facts that would take us some time to discover from a study of the table from which the graph was made. It is for this reason that graphs are used increasingly in magazines and by business and professional men.

If you secure from a stationer some properly ruled paper, you can draw these graphs yourself.

The next table shows the time two Boston and Albany trains leave the stations indicated. Notice that one train goes from Boston to Albany, the other from Albany to Boston.

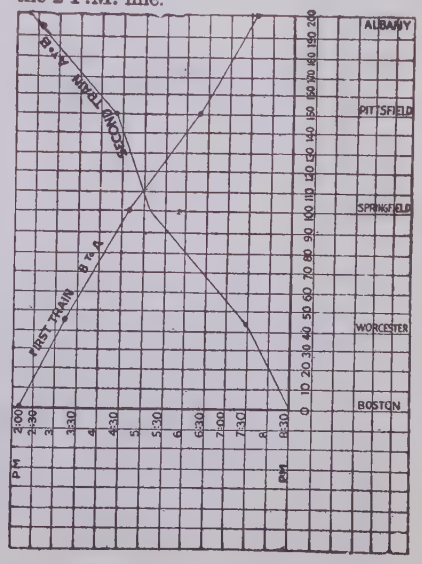
Miles		P.M.	P.M.
0	Boston	2:00	8:35
45	Worcester	3:15	7:25
100	Springfield	4:35	5:55
150	Pittsfield	6:20	4:18
200	Albany	7:35	2:42

The two numbers which are changing are the hour, and the number of miles from Boston. Represent the number of miles on the horizontal scale. To fit 200 miles to our scale we shall use how many miles for each space? Ten will do very nicely.

On the vertical scale we must represent the time. The range is from 2 P.M. to 8:35 P.M. or 6 hours and 35 minutes.

Let each space represent ½ hour.

To show that the first train leaves Boston at 2 P.M., we place a dot on the Boston line and high enough up to be on the 2 P.M. line.



This is the first dot to the right. Put in all the dots and connect them.

Construct the graph for the second train in the same way.

How far from Boston do the trains meet, and at what time? The two lines cross at a point which is on, or very near the 110 mile line. This means that the trains pass about 110 miles from Boston. This same point is on, or very close to the 5 o'clock line, therefore the trains will pass at about 5 P.M.

At 6 P.M. the railroad president steps into the office and asks where each train is at that time. A clerk glances at the graphs, letting his eye follow across the 6 P.M. line. He finds the first train 140 miles from Boston: the second train 80 miles from Boston.

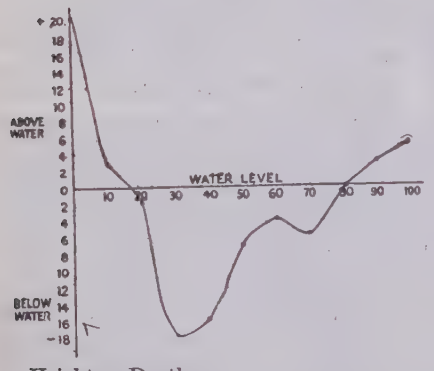
Several other facts can be seen immediately from the graphs after you are familiar with them. All trains from Boston to Albany will be represented by lines sloping *down* to the right: trains from Albany to Boston by lines sloping *up* to the right. The more slowly the train moves the steeper the line becomes. You will notice that the graph for the first train has the steepest slope between Springfield and Pittsfield. This is because it goes slowly between these cities because of the up grade. What similar fact can you discover concerning the second train? The fact that the slope of the graph shows the rate, leads to some very important studies farther along in mathematics.

One more illustration of the use of a graph to show facts at a glance.

Measurements are made of the height of the banks of a river and of the depth of the river, at intervals of ten feet, on a line that passes straight across the river from bank to bank.

The results are as follows, starting at the top of the left bank and making the measurements from the water level. For convenience heights *above* the water level are marked plus: depths below are marked minus.

Distance
From left to right
0 10 20 30 40 50 60 70 80 90 100



Height or Depth
+20 +3 −2 −18 −16 −7 −4 −6 0 +3 +5

The range on our horizontal scale will be 0′ to 100′. Let each space equal 5′.

The range on the vertical scale will be +20 to −18. Let each space equal 2′.

Locate the dots and connect them. This shows at a glance the approximate depth of the river at any point.

Where is the channel, or deepest part of the river? About 30 feet from the top of left bank. Where is a shallow place? About 20 feet from the right edge of the river. Which bank is the steeper?

THE SOLUTION OF PROBLEMS BY GRAPHS

If you will now reread problem 44 you will find that it gave us two equations:

① $6x+11y=810$

② $13x+5y=1190$

Each equation contains two quantities which may change in value, namely x and y. In ① if $x=124$, y will equal 6. Try it for yourself. Substitute 124 for x. $6x$ will then be 744.

③ $744+11y=810$

④ $11y=66$ ③ -744

⑤ $y=6$ ④ $\div 11$

In the same way if $y=0$ in ①

⑥ $6x+0=810$

⑦ $x=135$ ⑤ $\div 6$

Substitute any number you choose in place of y and you can find a value for x For every value of x there is a corresponding value for y.

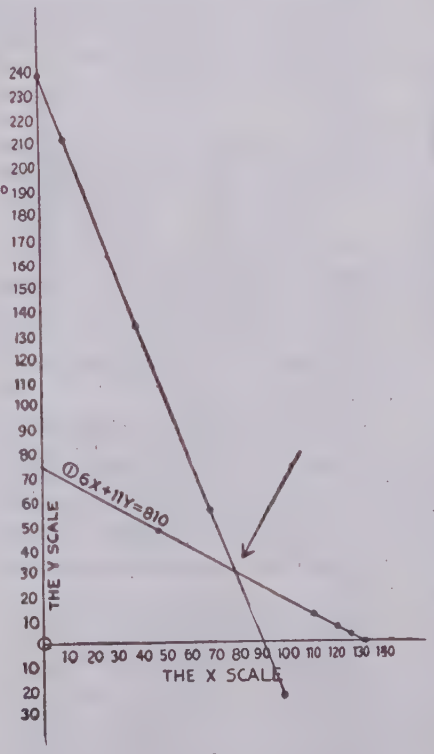
Equation one cannot be said to have an answer, but it has an unlimited number of *pairs* of *answers*. If $x=124$ and $y=6$, $6x+11y$ will equal 810. Try it. $744+66=810$.

Again if $x=135$ and $y=0$, $6x+11y$ will equal 810.

Try it $810+0=810$.

You have probably already discovered that we have just the conditions needed for a graph, namely two numbers that change together.

Make a table of values for equation one.



① x	y
0	73 7/11
135	0
129 1/2	3
124	6
113	12
47	48

The first pair was found by letting $x=0$. The second pair by letting $y=0$. The third by letting $y=3$. And so on. Make a similar table for

② x	y
0	238
91 7/13	0
10	212
40	134
70	56
100	−22

The complete range for x, in both equations, is from 0 to 135. Let each space represent 10. It is customary to represent x on the horizontal scale. The complete range for y is −22 to 238. Represent the values of y on the *vertical* scale, letting each space represent ten.

We are now ready to represent each pair of values by a dot on our chart. Take the first equation first. The first pair is 0 for x and 73 7/11 for y. Where is the 0 line for x? It is the vertical line marked 0, on which we have placed the y scale. How far upward on this line shall we go? Up to 73 7/11, that is about 1/3 of the distance from 70 to 80. Can you find this first dot?

Now the second dot, $x=135$, $y=0$. Where is the $x=135$ line? It is a vertical line midway between the numbers 130 and 140. How far upward on this line shall we go? Only to $y=0$. In other words we do not go upward at all. The dot is on the x scale line. The third dot, $x=129$ 1/2, $y=3$. This is almost over to the 130 line, and how far up? Up 3, that is about 1/3 of the distance from 0 to 10. Locate all the dots for equation ①.

Connect these dots with a line. A rather curious thing occurs. This line through all these dots is a *straight line*. It is called the graph or the locus of the equation. All such equations have straight line graphs and for this reason are called *linear* equations. (If you are not sure how to pronounce this word look it up in a dictionary).

Draw the graph of ② in the same way, locating the dots and connecting them with a line. This proves to be a straight line as we knew it would.

You have already noticed that every point on our chart can be located by two numbers, an x number and a y number, just as every building in our western city could be located by two distances, one north and one east, or one south and one west, etc., and just as every point on the surface of the earth can be located by a latitude number and a longitude number.

There is one peculiar point on our chart. The point where the two graphs cross. Can you find the two numbers which locate it? They are $x=80$ and $y=30$. Let us see just what must be true of these numbers. How many pairs of numbers will "satisfy" ①, that is make its two sides equal? All the pairs in our table and hundreds more pairs which we could have found in the same way. How many pairs of numbers will satisfy ②? Again the answer is an unlimited number. But of all these two sets of number pairs there is only *ONE* pair that will satisfy both equations, namely 80 and 30.

Try these two numbers in both equations.

① $6(80)+11(30)=810$
$480+330=810$
$810=810$

② $13(80)+5(30)=1190$
$1040+150=1190$
$1190=1190$

These two numbers are the answers to our two equations, and consequently the answers to our problem.

Look back to problem 44 and see if they will check.

6 horses at $80 cost	$480
11 cows at $30 cost	330
Total	$810
13 horses at $80 cost	$1040
5 cows at $30 cost	150
Total	$1190

Ans.
$80 for each horse
30 for each cow

The explanation of this problem has surely been long enough, but you will not wonder at it when you learn that college students often spend a year's time studying these graphs, and that our great statistical organizations have scores of clerks at work all the time making such graphs for the use of factories and business house.

PROBLEM 45. A farmer pays 6 men and 8 boys $32 for a day's work. The next day, paying the same wages, he pays 10 men and 2 boys $42 for the day's work. How much does he pay a man? A boy?

Let x = no. of $ for a man per day
Let y = no. of $ for a boy per day
① $6x+8y=32$
② $10x+2y=42$
A table of pairs of values for ①;
First let $x=0$, then how much is $6x$?
$6x=0$ and ① becomes $8y=32$. Divide by 8, $y=4$.
Next let $y=0$, $6x$ will equal 32, and x will equal 5 1/3
If we subtract $8y$ from ① it will read $6x=32-8y$
Dividing by 6 we get $x=\frac{32-8y}{6}$ or $x=\frac{16-4y}{3}$

①

x	y
0	4
5 1/3	0
2 2/3	2
1 1/3	3

①

X	Y
0	4
5⅓	0
2⅔	2
1⅓	3

Now substitute any number for y and it will be very easy to find the corresponding value of x.

If $y=2$, $x=\frac{16-8}{3}=2\ 2/3$
If $y=3$, $x=1\ 1/3$
A table of pairs of values for ②

② $10x+2y=42$
③ $2y=42-10x$ ②$-10x$
④ $y=21-5x$ ③$\div 2$
If $x=0$, $y=21$
If $y=0$, $x=4\ 1/5$
If $x=1$, $y=16$
If $x=5$, $y=4$
We are now ready to plot the graph.

②

x	y
0	21
4½	0
1	16
5	−4

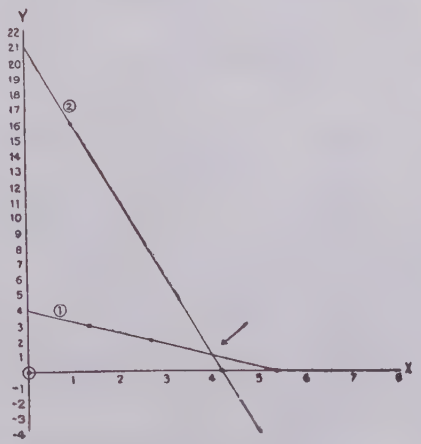
②

X	Y
0	21
4½	0
1	16
5	-4

The range for x is 0 to 5 1/3. Let one space on the x scale represent 1/3.

The range for y is −4 to 21.

Let each space on the y scale represent one. Locate the dots as before $x=0$, $y=4$. If x is 0 we do not go to the right at all. If y is 4 we go *up* 4. $x=5\ 1/3$, $y=0$. If x is 5 1/3 we go to the right 5 1/3. If y is 0 we do not go up at all. If x is 2 2/3 we go 2 2/3 to the right. If y is 2 we go up 2. This gives us a straight line graph for ①.



Plot ② in the same way. Notice the last pair. If x is 5 we go to the right 5. If y is −4 we of course go 4 *downward*.

Again the graphs intersect. What two numbers locate the intersection? $x=4$, $y=1$.

Try these two numbers in our problem.

Check *Ans.*

① 6 men at $4 =	$24	Men $4 per day
8 boys at $1 =	8	Boys $1 per day
	$32	
② 10 men at $4 =	40	
2 boys at $1 =	2	
	$42	

This is a somewhat cumbersome way to solve problems perhaps but there are two things to be said in its favor. With a little practice and with proper devices it gives solutions very rapidly. In fact modifications of this device are used more and more for the purpose of saving time.

Then too graphs are coming into such common use that we all need to know how to read them and, if need be, to make them.

PROBLEM 46. Find two numbers such that 5 times the first is 1 less than 8 times the second, and 15 times the first equals the amount by which 47 exceeds the second.

Let x = the first number
Let y = the second number
① $5x-8y=-1$
② $15x+y=47$
③ $5x=8y-1$ ①$+8y$
④ $x=\frac{8y-1}{5}$ ③$\div 5$
⑤ $y=47-15x$ ②$-15x$
$x=\frac{8y-1}{5}$ $y=47-15x$

①

x	y
−1/5	0
2 2/5	1
3	2
11	7
19	12

②

x	y
0	47
3 2/5	0
5	−28

The range for x is −1/5 to +31
The range for y is −28 to +47

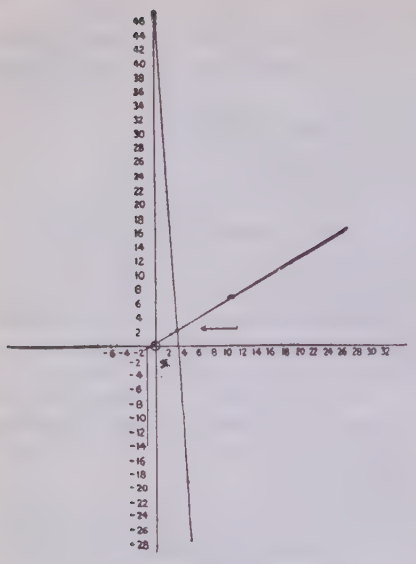
①

X	Y
-⅕	0
2⅖	1
3	2
11	7
19	12

②

X	Y
0	47
3⅖	0
5	28

Answer $x=3$, $y=2$
Checks
① $5(3)-8(2)=-1$
$15-16=-1$
$-1=-1$
② $15(3)+2=47$
$45+2=47$
$47=47$



Solve by the graphical method.

1. $x+2y=5$ $3x+7y=17$ *Ans.* 1, 2
2. $3x+7y=22$ $2x+y=11$ *Ans.* 5, 1

It is interesting to try to solve by the graphical method $x+y=8$ and $x+y=12$. Try it.

You will find that the graphs are parallel. They do not meet at all. Why not? Because it is impossible to find two numbers which will add to make 8 and at the same time add to make 12.

ADDITION AND SUBTRACTION

Before studying the *algebraic* method of solving these pairs of linear equations, it may be helpful to review what we have learned about combining terms.

Addition in algebra is more often arranged horizontally than vertically. Ordinarily we have such combinations as we have already made in solving equations.

Unite similar terms:

$3x+6-2x+5+x-3-12$

This is done mentally as follows:

$3x$ less $2x$ is x, plus x is $2x$
6 plus 5 is 11, less 3 is 8, less 12 is minus 4
Ans. $2x-4$

Unite

$6-7x+4-x-2+5x-3$
6 plus 4 is 10, less 2 is 8 less 3 is 5
Short $7x$ less x is short $8x$, plus $5x$ is short $3x$
Ans. $5-3x$

$12x+3-15x-3+8x-2$
$12x$ less $15x$ is short $3x$, plus $8x$ is $5x$
3 less 3 is 0, less 2 is short 2
Ans. $5x-2$

1. $10x-8+3x-2x+7-x$
2. $5x-4x-3x+6+8x-1$
3. $A+B-2A-3B+8A$

It will be found profitable to make several more exercises like these and practice them orally until they go quickly and easily. There are two illustrations which are very helpful. One is money or profit and loss, the other is the thermometer scale.

We wish to unite $8x$ and $-10x$. The illustration is: We *have* \$8, we *spend* \$10. This leaves us \$2 *in debt*. $8x-10x\equiv-2x$. Again $-12x+3x$. The thermometer stands at 12 *below*, it goes *up* 3. Where does it stand? At 9 *below*. $-12x+3x\equiv-9x$.

Use these illustrations while you are learning.

Add $3x-2y+8$
$4x-y-2$

We say mentally $3x$ and $4x$ is $7x$
Short $2y$ and short one more y is $-3y$
8 less 2 is 6

Our answer then is

$7x-3y+6$

Add $x-3y-5$
$2x+8y+5$

$3x+5y$

Add $-2x+8y-7$
$-2x-y+3$

$-4x+7y-4$

Add $A-B+C-8$
$-A-B-3C$

$-2B-2C-8$

Make more of these exercises for practice.

Perform the *subtraction* indicated

$3x-7y-(2x+8y)$

Noticing that the directions tell us to subtract *both* terms in the parenthesis, we write $3x-7y-2x-8y$. Uniting we have $x-15y$.

Again $17-4x-(2x+5)$

We can do this mentally: Say 17 *minus* 5 is 12. Why do we say *minus* 5? Because the 5 is in the parenthesis and we are told to *subtract* all the terms in the parenthesis.

Short $4x$ and *short* $2x$ gives a shortage of $6x$.

The answer is, $12-6x$.

$2A-6B-C-(A+B+C)$
$2A$ minus A is A
Short $6B$ minus B is short $7B$
Short C minus C is short $2C$
Ans. $A-7B-2C$

$2a+3b-(2a+2b+6c)$
$2a$ minus $2a$ is zero
$3b$ minus $2b$ is b

The $6C$ must also be subtracted but there is no C to subtract it from. If you have no money in your pocket and you order a pair of shoes at \$6, you *owe* \$6. From no C subtract $6C$ and we have minus C.

Ans. $b-6C$.

$7-(2a-3)$

Write this out because it is the hardest case in subtraction. $7-2a$——but what about the 3? The directions say from 7 take $(2a-3)$, that is take 3 less than $2a$. When we write $7-2a$ we have taken away too much. We were told to take away 3 less than $2a$, and we have taken away the whole of $2a$. Since we have taken away too much we must *put back* something. We took away 3 too much so we will *put back* 3.

Our answer is $7-2a+3$. Uniting the 7 and 3 we have $10-2a$.

A good illustration of what we have just done is this:

$15-(8-2)$

This says from 15 take $(8-2)$, that is take away 2 less than 8, or take away 6.

$15-6=9$

Writing it as we did in the preceding exercise: $15-8$——we have now taken away 2 too much. We must put back the 2.

$15-8+2=9$, the correct answer.

Another way to look at this case.

$7-(2a-3)$ We are told to take away a shortage of three, a debt of 3. Now taking away your debt is the same as *giving* you money. If your father pays \$3 that you owe at the store he helps you as much as if he gave you \$3 and let you pay the debt.

In other words taking away minus 3 is the same as adding 3. Hence we write $7-2a+3$.

$3x-2y+8-(x+3y-2)$

$3x$ less x is $2x$
Short $2y$ less $3y$ is short $5y$
8 *plus* 2 is 10. We say *plus* 2 because taking away a shortage is the same as *adding*.

Ans. $2x-5c+10$.

$7a-6b+2c-5-(7a-8b+3)$
$7a-6b+2c-5-7a+8b-3$
Ans. $2b+2c-8$

Compare the last three terms in the second line with the last three terms in the first line.

The $7a$ was plus $7a$: it is now minus $7a$.
The $8b$ was minus, now it is plus.
The 3 was plus and is now minus.

Subtracting then had the effect of making each plus sign into a minus and each minus into a plus.

A rule is often stated in algebra: to subtract change all the signs in the number to be subtracted and then add. By "change the signs" is meant to read each *plus* as a *minus*, and to read each minus as a plus.

This rule will do well enough if you remember that it applies only in subtraction and that merely means that to *take away* $2a$ we write $-2a$, while to take away $-3b$ we must add $3b$.

One of the most dangerous habits in algebra is to say glibly, "Change the signs" without thinking why. In reality there is no such process in algebra as changing the signs.

Subtract $3x-4y+5$
$2x+5y+3$

Say mentally $3x$ *minus* $2x$ is x
$-4y-5y-9y$
5 -3 is 2
Ans. $x-9y+2$

Subtract $2a+7b-8c-6$
$3a-5b+c-2$

$-a+12b-9c-4$

Mentally
$2a$ minus $3a$ is $-a$, $7b+5b$ is $12b$
$-8c-c$ is $-9c$, $-6+2$ is -4

The pupil who goes past this point in algebra without *understanding* how to subtract and without practicing enough to subtract well is almost sure to fail.

Before taking more exercises we want to learn how to check so that we may be sure that we are subtracting correctly.

Subtract 8
3
—
5

How can we be sure that 5 is the correct answer? By *adding* the 3 and 5 which gives us the 8 we started with.

Subtract $3x+7y-2$
$2x-3$

$x+7y+1$ *ans.*
$3x+7y-2$ *check*

Subtract $2a+3b-4c$
$3a-3b+3c+5$

$-a+6b-7c-5$ *ans.*
$2a+3b-7c$ *check.*

In doing the rest of these exercises do not depend too much on the rule. Better use your common sense in subtracting.

1. $2a-2b+3c-d-(5a-3b+4c-7d)$
2. $3x-7y+5xy-(2x-7y+3xy)$
3. $a-(2a-2b+3c-5)$

Subtract

4. $2-7x-5y$
   $3-6x+2y$
5. $2a+3b-c$
   $3a-b+5$

You can make more practice exercises for yourself.

SIMULTANEOUS EQUATIONS

The pairs of two-letter linear equations we solved in problems 44 and 45 are called by the long name, simultaneous, which means, "at the same time." This is because we solve them by finding one pair on numbers which will check both equations at the same time. Another and better name is, "linear pair."

We are now ready to solve them by algebraic means without using graphs.

1. $\begin{cases} ① \ x+2y=11 \\ ② \ x+\ y=\ 8 \end{cases}$

Why can we not solve this pair as we did our simple equations at the beginning of algebra? Because we have *two* letters. If we could get rid of one letter we could go ahead as before.

The question then is how to get rid of one letter. There is one step which will get rid of the x's in the two equations above.

Shall we add, subtract, multiply, or divide them?

Try it. The one which succeeds is subtraction.

③ $y=3$ ① − ②

This gives us one answer. Finding the other is an entirely different task. If we know that $x+y$ is 8 and that y is 3, how can we find x?

④ $x+3=8$ ③ substituted in ②

We substitute the 3 in place of y in ②

⑤ $x=5$ ④ -3

Check *Ans.*

① $5+2(3)=11$ $\begin{cases} x=5 \\ y=3 \end{cases}$

$5+6=11$

$11=11$

② $5+3=\ 8$

$8=\ 8$

2. $\begin{cases} ① \ 5x+y=21 \\ ② \ 3x+y=13 \end{cases}$

③ $2x=\ 8$ ① − ②

④ $x=\ 4$ ③ ÷ 2

⑤ $20+y=21$ ④ sub. in ①

⑥ $y=\ 1$ ⑤ − 20

Check *Ans.*

① $5(4)+1=21$ $\begin{cases} x=4 \\ y=1 \end{cases}$

$20+1=21$

$21=21$

② $3(4)+1=13$

$12+1=13$

$13=13$

3. $\begin{cases} ① \ 6x+y=22 \\ ② \ 5x+y=19 \end{cases}$

Ans.

$x=3$

$y=4$

4. $\begin{cases} ① \ x+\ 8y=16 \\ ② \ x+13y=16 \end{cases}$

5. ① $2x+7y=52$

② $2x-3y=\ 8$

③ $10y=60$ ① − ②

④ $y=\ 6$ ③ ÷ 10

⑤ $2x+42=52$ ④ in ①

⑥ $2x=10$ ⑤ − 42

$x=\ 5$ ⑥ ÷ 2

Check *Ans.*

① $10+42=52$ $x=5$

$52=52$ $y=6$

② $10-18=-8$

$-8=-8$

6. ① $8y+x=23$

② $6y-x=\ 5$

Here we have a little something new. Subtracting one of these equations from the other will not get rid of the x. What process will do so? Addition.

③ $14y=28$ ① + ②

④ $y=\ 2$ ③ ÷ 14

⑤ $16+x=23$ ④ in ①

$x=\ 7$ ⑤ − 16

Check *Ans.*

① $16+7=23$ $x-7$

$23=23$ $y=2$

② $12-7=\ 5$

$5=\ 5$

7. ① $6x+9y=66$

② $-6x-2y=-38$

③ $7y=28$ ① + ②

④ $y=\ 4$ ③ ÷ 7

⑤ $6x+36=66$ ④ in ①

⑥ $6x=30$ ⑤ − 36

⑦ $x=\ 5$ ⑥ ÷ 6

Check *Ans.*

$30+36=66$ $x=5$

$-30-8=-38$ $y=4$

8. $\begin{cases} 10x-2y=96 \\ 8x+2y=84 \end{cases}$

9. $\begin{cases} ① \ 5x+8y=34 \\ ② \ 9x+2y=24 \end{cases}$

In this pair of equations neither addition nor subtraction will eliminate, that is get rid of, either the x or the y. Why did the x's drop out in exercise 5 when we subtracted, while they will not do so in exercise 9? Because the two x's had the same coefficient. If we can alter our equations so that either the x's or the y's will have the same coefficient, we can subtract and go ahead. If we multiply ② by 4, what coefficient will y have?

③ $36x+8y=96$ ② × 4

④ $-31x\ \ =-62$ ① − ③

⑤ $62=31x$ ④ + 31x + 62

⑥ $2=x$ ⑤ ÷ 31

⑦ $10+8y=34$ ⑥ in ①

⑧ $8y=24$ ⑦ − 10

⑨ $y=\ 3$ ⑧ ÷ 8

Check *Ans.*

① $10\div24=24$ $x=2$

$34=34$ $y=3$

② $18+\ 6=24$

$24=24$

10. ① $6x+\ 4y=\ 90$

② $3x+15y=123$

First we shall make the coefficients of the x's alike.

③ $6x+30y=246$ ② × 2

④ $-26y=-156$ ① − ③

⑤ $156=\ 26y$ ④ + 26y + 156

⑥ $6=\ y$ ⑤ ÷ 26

⑦ $6x+24\ =\ 90$ ⑥ in ①

⑧ $6x=\ 66$ ⑦ − 24

⑨ $x=\ 11$ ⑧ ÷ 6

Check *Ans.*

① $66+24=\ 90$ $x=11$

$90=\ 90$ $y=\ 6$

② $33+90=123$

$123=123$

11. ① $2x+7y=49$

② $6x-5y=17$

① × 3

12. ① $4x+3y=22$

② $3x+5y=11$

In this pair we cannot make the coefficients of either x or y alike by multiplying either equation. How shall we accomplish it? By multiplying *both* equations.

③ $12x+\ 9y=66$ ① × 3

④ $12x+20y=44$ ② × 4

⑤ $-11y\ =22$ ③ − ④

⑥ $-22\ =11y$ ⑤ + 11y − 22

⑦ $-\ 2\ =\ y$ ⑥ ÷ 11

⑧ $4x+3(-2)=22$ ⑦ in ①

⑨ $4x-\ 6\ =22$ ⑧ same values

⑩ $4x=28$ ⑨ + 6

⑪ $x=\ 7$ ⑩ ÷ 4

Check *Ans.*

① $28-\ 6=22$ $x=\ 7$

$22=22$ $y=-2$

② $21-10=11$

$11=11$

We can just as well solve exercise 12 by eliminating the y's instead of the x's. Try it.

③ $20x+15y=110$ ① × 5

④ $9x+15y=\ 33$ ② × 3

⑤ $11x\ =\ 77$ ③ − ④

⑥ $x=\ 7$ ⑤ ÷ 11

⑦ $28+\ 3y=\ 22$ ⑥ in ①

⑧ $3y=-6$ ⑦ − 28

⑨ $y=-2$ ⑧ ÷ 3

The check consists in comparing this pair of answers with the pair obtained by the first method. *Ans.* $x=\ 7$, $y=-2$

13. ① $2x/3+3y/4=\ 700$

② $y+100=\ 5x/6$

③ $8x+9y=\ 8400$ ① × 12

④ $6y+600=\ 5x$ ② × 6

⑤ $-5x+6y=-\ 600$ ④ − 5x − 600

⑥ $16x+18y=\ 16800$ ③ × 2

⑦ $-15x+18y=-1800$ ⑤ × 3

⑧ $31x\ =\ 18600$ ⑥ − 7

⑨ $x=\ 600$ ⑧ ÷ 31

⑩ $4800+9y=\ 8400$ ⑨ in ③

⑪ $9y=\ 3600$ ⑩ − 4800

⑫ $y=\ 400$ ⑪ ÷ 9

Check *Ans.*

① $\frac{1200}{3}+\frac{1200}{4}=700$ $x=600$

$y=400$

$400+300\ =\ 700$

$700\ =\ 700$

② $\frac{\ }{\ }+\frac{\ }{\ }=3000$

$400+100\ =\frac{\ }{\ }$

$500=500\quad 6$

14. ① $\frac{x+3}{y+3}=\frac{5}{6}$

② $\frac{x-3}{y-3}=\frac{2}{3}$

③ $6(x+3)=5(y+3)$ ① × 6(y+3)

④ $6x+18=5y+15$ ③ same values

⑤ $6x-5y=-3$ ④ − 5y − 18

⑥ $3(x-3)=\ 2(y-3)$ ② × 3(y−3)

⑦ $3x-9\ =2y-6$ ⑥ same values

⑧ $3x-2y=\ 3$ ⑦ − 2y + 9

⑨ $6x-4y=6$ ⑧ × 2

⑩ $-y=-9$ ⑤ − ⑨

⑪ $9=y$ ⑩ + y + 9

⑫ $3x-18=\ 3$ ⑪ in ③

⑬ $3x=21$ ⑫ + 18

⑭ $x=\ 7$ ⑬ ÷ 3

Check *Ans.*

① $10/12=5/6$ $x=7$

$5/6=5/6$ $y=9$

② $4/6=2/3$

$2/3=2/3$

Turn back to problems 44, 45, 46 and see if you can solve their equations by the method of elimination and get the same results we got by the graphical method.

It was suggested that we try to solve by the graphical method the pair.

① $x+y=\ 8$

② $x+y=12$

If you tried it you found that the two graphs were parallel. They had no intersection. The equations were inconsistent, that is they could not both be true at the same time.

Try the new method on them.

① $x+y=\ 8$

② $x+y=12$

③ $0=-4$ ① − ②

Equation ③ is an absurdity.

When we subtract both x and y drop out. Again we have no answer.

Sometimes we have more than two unknown letters in a set of equations.

①	$3x+4y+5z=39$	
②	$x+2y+3z=19$	
③	$4x+5y+7z=51$	
④	$3x+6y+9z=57$	②×3
⑤	$-2y-4z=-18$	①−④
⑥	$4x+8y+12z=76$	②×4
⑦	$-3y-5z=25$	③−⑥

What have we accomplished so far? We have reduced our set from three equations with three unknowns to two equations with two unknowns. Now proceed as usual.

⑧	$-y-2z=-9$	⑤÷2
⑨	$-3y-6z=-27$	⑧×3
⑩	$z=2$	⑦−⑨
⑪	$-y-4=-9$	⑩ in ⑧
⑫	$5=y$	$11+y+9$
⑬	$3x+20+10=39$	⑩ and ⑫ in ①
⑭	$3x=9$	$13-30$
⑮	$x=3$	$14\div3$

Check	*Ans.*
① $9+20+10=39$	$x=3$
$39=39$	$y=5$
② $3+10+6=19$	$z=2$
$19=19$	
③ $12+25+14=51$	
$51=51$	

APPROXIMATE COMPUTATION AND MEASUREMENT

The first thing to decide in making any measurement is the unit in which to express the result. A distance may be measured in miles or feet or inches or meters or in any one of many other units. We ordinarily let our convenience decide what unit we shall use.

When the last measurement mark comes exactly at the end of the distance we are measuring, the length number is a whole number; when it does not come exactly at the end of the distance, the measurement is continued in subdivisions of the unit. We divide a foot up into 12 inches and divide the inch in halves, fourths, eights and so on. This system of subdivision is cumbersome and has been replaced where accurate work is done by a division of the foot into tenths. Why? You will see for yourself if you undertake to find the area of a rectangular field using first the ordinary subdivision and then the decimal subdivision.

Find the area of a rectangular field whose length is 32 feet 8 1/4 inches and width is 11 ft. 6 1/8 inches. The same problem stated decimally gives the length 32.7 ft. and width 11.5 ft. Which can you compute the more quickly? Wherever we can we shall use decimal subdivisions, to save time.

No human measurement is absolutely correct. This surprising statement may require considerable thought to convince you of its truth, but let us see. A carpenter in fitting boards measures them and saws them to perhaps the nearest eighth of an inch; for fine cabinet work he measures and saws to the nearest thirty-second of an inch. Only experienced and careful carpenters can do such fine work. A machinest making tools may work to the nearest thousandth of an inch; but no trained workman, no matter how expert, ever claims that his work is precisely correct. He tells instead how close it is. After making the finest measurements that have ever been made, using the most elaborate instruments and painstaking care, the expert discusses the *amount of his error.*

If you will measure the width of a block of wood yourself you will be convinced that a skilled workman with a better ruler could measure more accurately than you have. His measurement could be improved in turn by the use of a magnifying glass, and so on. No human measurement is absolutely correct.

The precision of measurement is shown by the *number of figures* required to express the result and not, as is often assumed, by the number of places *after* the decimal point. Suppose a length of a line is measured to the nearest hundredth of a foot, as 7.35 feet; the result may just as well be recorded as 88.2 inches, or 2.24 meters or even as .00139 miles. Each of these numbers expresses the same degree of accuracy though one of them has one place after the point and another has five places.

Quoting from the Evans & Marsh "First Year Mathematics": "Measurements which are expressed like these, in three figures, are said to be of three-figure accuracy: they may be made with ordinary instruments and skill. Five-figure accuracy requires good instruments and great care, as where a city building lot is measured to thousandths of a foot: six-figure accuracy is possible to experts: and eight-figure accuracy is beyond human skill at present."

Ordinary measurements are made as close as we need them for the use to which they are to be put. Some measurements are made as accurately as we can make them. Cases of the second kind are the standards of length which are kept by the United States government, or better still the international standard which is kept in Paris. It is measured just as accurately as men know how to measure.

Let us examine the last figure of a measured number. The length of a building lot is recorded as 43.7 feet. Is the 7 exactly 7 or may it be a little more than 7 or a little less? Suppose the field was remeasured with more care, the length might be found to be 43.72 feet. Again it might be measured with great care and this time the result might be 43.718. Now if the last measurement is correct to five figures, was the 7 of our first measurement exactly 7? No, it was really a little more than 7. It was the closest we could record it to three figures.

Change one third to a decimal. The answer is .3. But this is not exactly correct. Try again .33. Again our answer is not exact, .333 is closer, and .3333 is closer still. In fact we cannot write a decimal which is exactly equal to 1/3. The last figure is never exact. It is the best we can do to three figures or four figures or five figures, etc.

One more illustration: the number 3.1416 which is the ratio of the circumference of a circle to its diameter is not exactly 3.1416, more accurately stated it is 3.14159—and so on. For ordinary use 3.14 is sufficiently accurate, but the 4 is not exactly 4 as you know.

The last figure of all such numbers is peculiar; it is never an exact number: it is the best we can do in that place.

This has very important results in computing with such numbers. Let us find the area of a rectangular strip whose length is 43.72 ft. and width 3.831 feet. The last figure of each number is approximate. Whenever we multiply by the 2 or the 1 our product will be only approximate. Underline all the approximate figures.

```
  43.72
   3.831
  ------
   4372      The 9 is an approximation
  13116      only and all the figures after
 34976       the 9 are entirely worthless.
 13116       There are two things to be
-------      understood here.
167.49132
```

First that we do not *care* what the area of the strip is to the nearest $\frac{1}{100000}$ of a square foot, as our answer pretends to show. It is not necessary to measure land to such a degree of accuracy.

Second we *cannot* get our answer correct to more than four figures because we measured to only four figures.

The area of our field will then be set down as 167.5 square feet. This is as close as we can get it from our measurements and it is as close as we need it for any practical purposes.

Men who figure with measured numbers have resorted to various devices to shorten the labor of computation. A table of logarithms is one such device and a slide rule is another. Both these and other similar devices make use of the principle we have just learned: thay *cut off the number at the required number of places.*

The question for us is, Is there a method of multiplication which will save setting down these unnecessary figures? There is and it takes but a few minutes to learn it. Once learned it saves a great deal of time.

It will seem a little strange at first but after a little practice you will never multiply in the old way again.

The first thing to notice is that we can get the same result by multiplying "backwards" as forwards. It makes no difference whether we begin to multiply these numbers with the 7 or with the 2. The product is the same either way.

```
  134      134
  247      247
 ----     ----
  938      268
  536      536
268        938
-----    -----
32098    32098
```

One way is no harder or easier than the other, except that one way is strange and one is familiar.

We will now find the area of our rectangular strip again multiplying in the reverse or natural order.

```
 43.72
  3.831
 -----
 13116      The result is the same
 34976      as before.
  13116
   4372
 -------
167.49132 Square feet.
```

Now we will cut off the doubtful figures as we multiply.

```
  ' ' '
 43.72      We want only four figures
  3.831     in our result. When we
            multiply 43.72 by 3 we get
            five figures. Therefore we
```

check off the 2 before beginning to multiply. Then we say 3 times 2 is 6 but do not put down the 6; instead say carry one. 3 times 7 is 21 and 1 is 22. Set down 2 and carry 2.

1312 — Continue as usual.

Check off the 7. 8 times 7 is 56 do not put it down, but carry 6 because 56 is nearer to 6 tens than to 5 tens.

350 — Check off the 3. 3 times 3 is 9, carry 1.

13 — Check off the 4. 1 times 4 is 4, nothing to carry, because we do not carry to the next column unless we have 5 or more.

Add:

167.5 Square feet.

We still have to locate the point in our answer. We do this by common sense. The number we had to multiply was about 40. The number we had to multiply it by was about 4. Therefore our answer is about 40 times 4 or 130. Therefore our point goes after the 7. We *know* that our answer is 167.5 not 16.75 or 1.675 or 1675.

This is very important in handling numbers to know about how large our answer ought to be before we begin. This prevents absurd results.

We will check by setting the 3.831 above the 43.72 and multiplying again.

```
  ' ' ' '
3.831
43.72
------
1532
 115
  27
   1
------
167.5
Check
```

Estimate: 40×4 is 160. Check off the 1 and go ahead as before.

The "5 case"

The number we have last checked off never gives us anything to *set down* but it may give us something to *carry*.

```
15.25
2.123
------
3050
 153
  30
   5
------
32.38
```

Estimate: 15 times 2 is 30. We do not check off the 5 the first time because 15.25 times 2 gives us only 4 figures. Now check off the 5. 1 times 5 is 5, shall we carry 1 or nothing? 5 is just midway between 0 and 10. The simplest rule is to carry when we have 5 or more. Now say 1 times 2 is 2 and 1 is 3. Check off the 5. 3 times 5 is 15, carry 2. Point off after the 2 because we *know* our answer is about 30.

```
Check
2.123
15.25
------
2123
1062
  42
  11
------
32.38
```

Estimate: 2×15=30.

Make more exercises for yourself.

```
 345
21.6
------
 690
  35
  20
------
7450
```

350×20 is 7000

We must add a cipher in order to get about 7000.

```
Check
21.6
 345
------
 648
  86
  11
------
7450
```

20×300=6000.

Division

```
   2.19
  ------
  ' '
35.2)87.2
   704
  ------
    68
    35
    --
    33
    32
```

Estimate $\frac{80}{35}=2$

Now check off the 2 in the divisor because it would give us too many figures.

The point will come after the 2, because the answer must be about 2.

```
Check
  ' '
2.19
35.2
------
 657
 110
   4
------
87.1
```

35×2=70

It is clear that our answer, 2.19, is a little too small. When we check our product is 87.1. This is .1 too small. It is possible that 2.20 might be more accurate. Let us try it.

```
Second Check
  ' '
2.20
35.2
------
 660
 110
   4
------
87.4
```

This time we get 87.4 which is .2 more than the correct value. Therefore 2.20 is *not* a more accurate answer; 2.19 is the best possible answer to three-figure accuracy.

It is important to think correctly here. A great deal of the figuring done by practical men, in technical schools, and in the great fields of engineering, is done to three-figure accuracy only, because that is sufficient for their purpose.

Such men would call the answer to our division, 2.19, choosing always the *nearest* figure in the *last* place.

Divide 7267 by .1146.

```
  ' ' '
.1146
------
63410 Answer
------
7267
6876
------
 391
 344
------
  47
  46
  --
   1
```

It is a little more convenient to place the divisor over the dividend, leaving space for the answer.

Our estimate, or rough check, is 1/10 into 7000 = 70,000.

When we get the four figures of our answer, 6341 we have still to place the point.

We know that 1/10 will go into 7000 about 70,000 times. We must add a zero to make our answer 63,430.

```
Check
  ' ' '
63410
.1146
------
6341
 634
 254
  38
------
7267
```

1/10 of 60,000 = 6000

Divide 5.234 by 8.967.

```
  ' ' ' '
8.967
------
.5838 Answer
------
5.234
4484
------
 750
 717
------
  33
  27
  --
   6
```

Estimate 5/9 = .6

Point goes before the 5 because answer must be about .6.

```
Check
  ' ' ' '
.5838
8.967
------
4670
 525
  35
   4
------
5.234
```

5/10 of 9 = 5.

Square Root

What is the square root of 16? It is 4. If we divide 16 by 4 what is the answer? It is 4. Whenever we divide a number by its own square root we get the same square root for an answer. Stated another way that is merely saying that 4×4=16.

A square root may be defined as *one of the two equal factors* of a number.

There are several methods of finding the square root of a number. The guess and try method will teach you most about square root and most about dealing with numbers. The use of a table is the quickest. We will consider the guess and try method. You can learn the use of a table yourself.

Find the square root of 16. Suppose we do not know what it is. We *estimate* that it is 3. Divide 3 into 16. If 3 is the correct square root how will we know? The answer will be 3. But 3 into 16 goes about 5 times. Therefore 3 is not *one of the two equal factors* of 16, 3 is too small, 5 is too large. If we "split the difference" we get 4 which is the correct square root of 16.

These steps will find the square root of any number. Reread the last paragraph and find the square root of 41.12.

First we will make as good a guess as possible.

6×6=36 Therefore 6 is too small.
7×7=49 Therefore 7 is too big.
6.5×6.5=42.25 Therefore 6.5 is too big.

We will try 6.4.

First trial.

```
  ' ' ' '
6.400
------
6.426 Ans. 1.
------
41.12
3840
------
 272
 256
------
  16
  12
  --
   4
```

Our guess was 6.400. Our answer is 6.426. Our two factors are not equal. Split the difference. The difference is .026. Half of it is .013. Add this to the 6.400 or subtract it from the 6.426. In either case we get 6.413.

Second trial.

```
  ' ' '
6.413
------
6.413 Ans. 2.
------
41.12
3848
------
 264
 256
------
   8
   6
   -
   2
```

This time our two factors are equal.

The square root of 41.12 is 6.413.

Find the square root of 86.32.

8× 8= 64
9× 9= 81
10×10=100

86 is between 81 and 100, therefore the square root is between 9 and 10 but much nearer 9 than 10. Try 9.2.

First trial		Second trial
′ ′ ′ ′		
9.200	Difference .182	9.291
9.382		9.290
86.32		86.32
8280	1/2 of .182=.091	8363
352	9.200	269
276	.091	186
76	9.291	83
74		83
2		0

The only question remaining is whether 9.291 or 9.290 is nearer.

First check	Second check
9.291	9.290
9.291	9.290
8362	8361
186	186
83	83
1	
	85.30
86.32	

The first product is nearer the correct value, therefore 9.291 is the square root to four place accuracy.

Find to four places, the square root of 2.

1 ×1 =1
2 ×2 =4
1.5×1.5=2.25

The square root lies between 1 and 1.5 but nearer 1.5. Try 1.4.

First trial.		Second trial.
1.400		1.414
1.428	Difference .028	1.414 *Ans.*
2.000		2.000
1400		1414
600	1/2 of .028=.014	586
560		566
40		20
28		14
12		6
11		6

This is sometimes written $\sqrt{2}=1.414$.

In this way you can make a table for yourself. Next find the square root of 3, and so on.

Equations With Approximate Coefficients.

① $3.42x-4.25+8.13x=18.11$
② $11.55x=22.36$ ①+ 4.25
③ $x=1.94$ ②÷11.55

Check

$3.42\times1.94-4.25+8.13\times1.94=18.11$
$6.64-4.25+15.77=18.11$
$18.2=18.1$

Ans.
1.94

Notice that we expect this equation to check to 3 figures only.

COMPUTATION

′ ′ ′ ′
11.55
1.935
22.36
1155
1081
1040
41
35
6
6

$\frac{22}{11}=2$ 3.42 1.94 | 3×2=6 | 8.13 1.94 | 8×2=16 | 6.64 4.25 2.39 15.77 18.16

342 308 14 → 6.64
813 732 32 → 15.77

1. $2.73x-42.1+7.63x=54.6$
2. $82.7+36.1x=18.2x-3.00$

MULTIPLICATION

We have considered the simple and most common cases of multiplication:

$4(x-3)$ which equals $4x-12$.

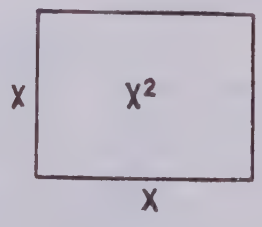
and $x-4(x-2)$ which equals $x-(4x-2)$ which equals $x-4x+8$. Now consider the case:

$(x+3)(x+5)$. This clearly means that both terms in the first parenthesis are to be multiplied by both terms of the second parenthesis.

That is $x(x+5)+3(x+5)$
$xx+5x+3x+15$
Uniting similar terms
$xx+8x+15$

The form xx becomes cumbersome if we have much multiplying to do. For convenience it is written x^2, and read x square.

The reason for this name is that it is the area of the square which is x on each side.



In the same way xxx is x^3, read $x-$ cube; $xxxx$ is x^4, read $x-$ fourth; $xxxxx$ is x^5, read $x-$ fifth, and so forth.

Multiply $(x-5)(x-6)$
$x(x-6)-5(x-6)$
$x^2-6x-(5x-30)$
$x^2-6x-5x+30$
$x^2-11x+30$

The same two multiplications may be more conveniently arranged thus: The four lines indicate the four steps of the multiplication. The x^2 and the 10 are called the straight products. The $3x$ and $5x$ are cross products.

$x+3x$
$+5x+15$
x^2+3x
$+5x+10$
$x^2+8x+10$

$x-5$
$x-6$
x^2-5x
$-6x+30$
$x^2-11x+30$

Just why it is +30 is not clear in this case but looking back to the other method we see that we had to subtract −30, which is the same as *adding* 30.

Whenever you have two numbers both with minus signs, to multiply, the product is plus because one of them in effect puts the other in a minus parenthesis.

x^2-5x-3
$-x+4$
$-x^3+5x^2+3x$
$4x^2-20x-12$
$-x^3+9x^2-17x-12$

$x-y$
$x+y$
x^2-xy
$+xy-y^2$

This is a very common case in multiplication and becomes so familiar that we remember it. Other illustrations of the same case are:

x^2-y^2
$(a+b)(a-b)\equiv a^2-b^2$
$(x+5)(x-5)=x^2-25$
$(ax+4)(ax-4)=a^2x^2-16$
$[(x-3)-5][(x-3)+5]\equiv(x-3)^2-25$
$[(x+2)-7][(x+2)+7]\equiv(x+2)^2-49$

There are other cases to remember.

$(x+3)(x+3)\equiv(x+3)^2\equiv x^2+6x+9$
$(x+8)^2\equiv x^2+16x+64$

$x+8$
$x+8$
x^2+8x
$+8x+64$
$x^2+16x+64$

Notice that 16 is *double* the 8, and that 64 is the *square* of 8.

$(x-3)^2\equiv x^2-6x+9$
$(x-8)^2\equiv x^2-16x+64$
$(x+y)^2\equiv x^2+2xy+y^2$
$(x-y)^2\equiv x^2-2xy+y^2$
$(x+10)^2\equiv x^2+20x+100$
$(x-10)^2\equiv x^2-20x+100$
$(x-10)(x+10)\equiv x^2-100$

x^2y+xy^2
$x-y$
$x^3y+x^2y^2$
$-x^2y^2-xy^3$
x^3y-xy^3

Division

If we multiply 2 by 6 we get 12. If we divide the 12 by the 6 we get back the 2. This gives us the key to division.

$x\times x=x^2$, therefore $\frac{x^2}{x}\equiv x$

This may also be written $\frac{xx}{x}\equiv x$

$2x)6x^2$ → $3x$

$5xy^2)10xy^3$ → $2y$

$7x^2y^3)21x^5y^3$ → $3x^3$

Now try a longer division.

First multiply $(x+6)(x+5)$

$x+6$
$x+5$
x^2+6x
$+5x+30$
$x^2+11x+30$

Divide $x^2+11x+30$ by $x+6$.

We know the answer must be $x+5$. We want a method for getting $x+5$. Arrange our work as in arithmetic.

$x+6$

x

$x^2+11x+30$

The first step is simple: x into x^2 goes x times. x then is the first term of the answer.

Looking back to the multiplication we see that the $11x$ is made of two parts, $6x$ and $5x$. We must get out the $5x$ in order to get the second term in our answer, namely 5.

$x+6$

$x+5$ *Ans.*

$x^2+11x+30$

x^2+6x

Multiply the $x+6$ by the x.

Subtract

$5x+30$

$5x+30$

This gives $5x+30$, the lower line of our product back again.

x into $5x$ goes 5 times.

There are than three steps in each long division divide, multiply, subtract; and these are repeated in the same order as many times as is needful.

Divide $x^2+5x-24$ by $x-3$.

$x-3$

$x+8$ *Ans.*

$x^2+5x-24$

x^2-3x

$8x-24$

$8x-24$

Divide $x^3+7x^2+14x+8$ by $x+2$.

$x+2$

x^2+5x+4 *Ans.*

$x^3+7x^2+14x+8$

x^3+2x^2

$5x^2+14x+8$

$5x^2+10x$

$4x+8$

$4x+8$

Divide $x^3+x^2y+xy^2+y^3$ by $x+y$.

$x+y$

x^2+y^2 *Ans.*

$x^3+x^2y+xy^2+y^3$

x^3+x^2y

xy^2+y^3

xy^2+y^3

Divide x^3-y^3 by $x-y$.

$x-y$

x^2+xy+y^2 *Ans.*

x^3-y^3

x^3-x^2y

x^2y-xy^2

x^2y-y^3

xy^2-y^3

xy^2-y^3

Notice that x^2y cannot be subtracted from $-y^3$ because they are not similar terms.

$x+y$

x^2-xy+y^2 *Ans.*

Check

x^2-xy+y^2

$x+y$

$x^3-x^2y+xy^2$

$+x^2y-xy^2+y^3$

x^3+y^3

x^3+x^2y

$-x^2y+y^3$

$-x^2y-xy^2$

x^3+y^3

xy^2+y^3

xy^2+y^3

Divide $a^5+15+10a-a^4-3a^3-4a^2$ by a^2+2a+3.

Notice that the terms are not arranged in systematic order.

Rearrange thus:

$a^5-a^4-3a^3-4a^2+10a+15$ putting the highest power first.

a^2+2a+3

a^3-3a^2+5 *Ans.*

$a^5-a^4-3a^3-4a^2+10a+15$

$a^5+2a^4+3a^3$

$-3a^4-6a^3-4a^2$

$-3a^4-6a^3-9a^2$

$5a^2+10a+15$

$5a^2+10a+15$

Check

a^3-3a^2+5

a^2+2a+3

$a^5-3a^4+5a^2$

$2a^4-6a^3+10a$

$3a^3-9a^2+15$

$a^5-a^4-3a^3-4a^2+10a+15$

FACTORING

The expression $5(x-2)$ tells us to multiply x and -2 both by 5. This gives $5x-10$. It is sometimes convenient to be able to reverse this process and take the five out again.

$5x-10\equiv 5(x-2)$. This simple process is called taking out a distributive factor. We take out the 5 which is distributed; that is which is in both the $5x$ and the -10, and put it out side the parenthesis.

Cover up the left hand row below and see if you can write them yourself.

$3x-9\equiv 3(x-3)$

$5x+50\equiv 5(x+10)$

$ax+a^2\equiv a(x+a)$

$3a^2b-3ab^2-6a^2b^2\equiv 3ab(a-b-2ab)$

$8x^2-72x+32\equiv 8(x^2-9x+4)$

Learn to recognize a distributive factor at a glance.

The three special cases of multiplication which were mentioned as worth remembering give us three more kinds of factoring.

First: $(x+y)^2=x^2+2xy+y^2$

$(x+9)^2=x^2+18x+81$

$(x+2a)^2=x^2+4ax=4a^2$

$(3x+5)^2=9x^2+30x+25$

Multiply out some of these yourself, both on paper and mentally.

A harder one:

$[(x+3)+a]^2$

We will do as we did before, square the first part $(x+3)^2$; then multiply the first by the second and double the answer $2a(x+3)$: then square the second a^2

$(x+3)^2+2a(x+3)+a^2$

Second: $(x-y)^2$

This is really just the same as the first only the sign of the y is minus instead of plus.

Multiply and discover for yourself how much of a change this makes in the product.

$(x-y)^2 \equiv x^2-2xy+y^2$

$(x-9)^2 \equiv x^2-18x+81$

$(3x-5)^2 \equiv 3x^2-30x+25$

$[(x+3)-a]^2\equiv(x+3)^2-2a(x+3)+a$

Third: $(x+y)(x-y)$

This is the odd case where the cross products disappear and only the end products remain.

$x+y$

$x-y$

x^2+xy

$-xy-y^2$

x^2-y^2

$(x+y)(x-y)\equiv x^2-y^2$

$(x+8)(x-8)\equiv x^2-64$

$(x+2a)(x-2a)\equiv x^2-4a^2$

$(3x+5)(3x-5)\equiv 9x^2-25$

$[(x+3)-a][(x+3)+a]\equiv(x+3)^2-a^2$

$[(x+5)-2][(x+5)+2]\equiv(x+5)^2-4$

Learn to go, in these columns, from left to right (multiplication) and from right to left (factoring).

Factor

$x^2+2xy+y^2$ *Ans.* $(x+y)^2$

$x^2-2xy+y^2$ *Ans.* $(x-y)^2$

$x^2-8x+16$ *Ans.* $(x-4)^2$

$x^2-10x+25$ *Ans.* $(x-5)^2$

x^2-25 *Ans.* $(x-5)(x+5)$

x^2-64a^2 *Ans.* $(x-8a)(x+8a)$

$25x^2-100y^2$ *Ans.* $(5x+10y)(5x-10y)$

$(x+2)^2-36$

Ans. $(x+2-6)(x+2+6)\equiv(x-4)(x+8)$

$(3x-4)^2-49$

Ans.

$(3x-4-7)(3x-4+7)\equiv(3x-11)(3x+3)$

x^4-y^4

Ans.

$(x^2-y^2)(x^2+y^2)\equiv(x-y)(x+y)(x^2+y^2)$

$a^2-20ab+100$ *Ans.* $(a-10b)^2$

Notice that in the first and second kinds the coefficient of the second term is a *double* and the last term is the *square* of the same number.

$x^2-10x+25\equiv(x-5)^2$

The 10 is double 5, the 25 is the square of 5.

If we multiply $x+3$ by $x+2$:

$x+3$

$x+2$

x^2+5x+6

The coefficient of the second term is the sum of the 3 and 2. The last term is the product of 3 and 2.

Factor

x^2+5x+6 *Ans.* $(x+3)(x+2)$

We factored this expression by finding two numbers whose sum is 5 and whose product is 6. It is another guess and try method. Practice it.

$x^2+8x+12$ *Ans.* $(x+6)(x+2)$

$x^2+10x+9$ *Ans.* $(x+9)(x+1)$

$x^2+18x+32$ *Ans.* $(x+16)(x+2)$

$x^2+22x+57$ *Ans.* $(x+3)(x+19)$

$x^2-11x+18$ *Ans.* $(x-9)(x-2)$

Here the signs of the 9 and 2 must be minus so that their sum will be -11.

$x^2-15x+50$ *Ans.* $(x-10)(x-5)$

$x^2-8a+12$ *Ans.* $(a-6)(a-2)$

$a^2-8ab+15b$ *Ans.* $(a-8b)(a-3b)$

$x^2+10x-24$ *Ans.* $(x+12)(x-2)$

The sum of $+12$ and -2 is $+10$: the product of $+12$ and -2 is -24.

$x^2+18x-63$ *Ans.* $(x+21)(x-3)$

$x^2+20x-125$ *Ans.* $(x+25)(x-5)$

$a^2+6ab-55b$ *Ans.* $(a+11b)(a+5b)$

$x^2-10x-24$ *Ans.* $(x-12)(x+2)$

The sum of -12 and $+2$ is -10; their product is -24.

$x^2-18x-63$ $(x-21)(x+3)$

$a^2-3a-460$ $(a-23)(a+20)$

$x^2-14xy-51y^2$ $(x-17y)(x+3y)$

The next kind is a little harder. At least it often takes more trials.

Multiply

$4x+15$

$2x+9$

$8x^2+30x$

$36x+135$

$8x^2+66x+135$

Factor $8x^2+66x+135$

To get $8x^2$ we may multiply x by $8x$
or $2x$ by $4x$
To get 135 we may multiply 1 by 135
or 3 by 45
or 9 by 15

We want the combination which will give cross products whose sum is $66x$
Try some:

x	1	
$8x$	135	
	$135x$	
	$8x$	
	$143x$	This is not the combination.
x	3	
$8x$	45	
	$24x$	
	$45x$	
	$69x$	Not the one
x	9	
$8x$	15	
	$72x$	
	$15x$	
	$87x$	No.
x	15	
$8x$	9	
	$120x$	
	$9x$	
	$129x$	No.
$2x$	15	
$4x$	9	
	$18x$	
	$60x$	
	$78x$	Not the one.
$2x$	9	
$4x$	15	
	$36x$	
	$30x$	
	$66x$	This is the combination we are seeking. Our factors are $2x+9$ and $4x+15$.

Factor $6x^2+46x+80$

$3x$	1		$3x$	40	
$2x$	80		$2x$	2	
	$240x$			$80x$	
	$2x$			$6x$	
	$242x$	No		$86x$	No
$3x$	8				
$2x$	10				
	$16x$				
	$30x$				
	$46x$	This is the one.			

Ans. $(3x+8)(2x+10)$

$3x$	80		$3x$	4	
$2x$	1		$2x$	20	
	$160x$			$8x$	
	$3x$			$60x$	
	$163x$	No		$68x$	No
$3x$	2		$3x$	20	
$2x$	40		$2x$	4	
	$120x$			$20x$	
	$4x$			$12x$	
	$124x$	No		$32x$	No

Factor $15x^2+28x+12$

$5x$	2		$5x$	6	
$3x$	6		$3x$	2	
	$6x$			$18x$	
	$30x$			$10x$	
	$36x$	No		$28x$	Yes

Ans. $(5x+6)(3x+2)$

Check

$5x + 2$
$3x + 2$

$15x^2+18x$
$10x+12$

$15x^2+28x+12$

Factor $20x^2-23x+6$

$4x$	2		$4x$	3	
$5x$	3		$5x$	2	
	$10x$			$8x$	
	$12x$			$15x$	
	$22x$	No		$23x$	Yes

Ans. $(4x-3)(5x-2)$

Multiply: $6x - 5$
$2x + 3$

$12x^2-10x$
$+18x-15$

$12x^2+ 8x-15$

Notice that the sign of the 15 is minus, and that the $8x$ is the *difference* between the $18x$ and the $10x$.

Now factor $12x^2+8x-15$

Try	$3x$	1		$6x$	3
	$4x$	15		$2x$	5
		$45x$			$30x$
		$4x$			$6x$
		$41x$	No		$24x$ No
	$3x$	15		$6x$	5
	$4x$	1		$2x$	3
		$60x$			$10x$
		$3x$			$18x$
		$57x$	No		$8x$ Yes: but it still remains to decide which is minus, the 5 or the 3.

Try making it -3. This gives us $-8x$. This is wrong.

Then it must be -5.

Ans. $(6x-5)(2x+3)$

Factor $24x^2-53x-7$

Ans. $(8x+1)(3x-7)$

Factor $6a^2-11a-10$

Ans. $(2a-5)(3a+2)$

Factor $12a^2-7ab-45b^2$

Ans. $(4a-9b)(3a+5b)$

It is not difficult to remember two more cases.

Factor x^3+y^3

Ans. $(x+y)(x^2-xy+y^2)$

Factor x^3-y^3

Ans. $(x-y)(x^2+xy+y^2)$

QUADRATIC EQUATIONS

PROBLEM 47. A farmer sets out apple trees so that the number of trees in a row is two more than the number of rows. If there are 624 trees, how many rows and how many trees in a row?

Let x=no. of rows.

Then $x+2$=no. of trees in a row.

$x(x+2)$=no. of trees in all (that is 624).

①	$x(x+2)=624$	
②	$x^2+2x=624$	① same values
③	$x^2+2x-624=0$	② -624
④	$(x+26)(x-24)=0$	③ factored

We have here two numbers multiplied together giving as a product zero. This is only possible if one or the other of the numbers equals zero.

⑤	$x-26=0$	
⑥	$x-24=0$	
⑦	$x=26$	⑤ $+26$
⑧	$x=24$	⑥ $+24$

Check

24 rows of 26 = 624 trees

Ans.

24 Rows. 26 trees in a row. The 26 rows would be the answer if the problem read, "two less trees in a row than rows."

Try problem 47 with these numbers.

1. 5 more trees in a row than rows, trees in all, 500.
2. 6 more trees in a row than rows, trees in all, 216.
3. 8 more trees in a row than rows, trees in all, 128.

PROBLEM 48. A rectangle is 15 feet long, and its area is 36 sq. ft. more than a square of the same width. How wide is it?

Let x=no. of ft. in width of rectangle (and square).

$15x$=no. of sq. ft. in area of rectangle.

x^2=no. of sq. ft. in area of square.

Area of square plus 36 sq. ft. = area of rectangle.

That is

①	$x^2+36=15x$	
②	$x^2-15+36=0$	① $-15x$
③	$(x-12)(x-3)=0$	② factored
④	$x-12=0$	
⑤	$x-3=0$	
⑥	$x=12$	④ $+12$
⑦	$x=3$	⑤ $+3$

Check

12′ by 12′ = 144
12′ by 15′ = 180
144 + 36 = 180

Ans.

Rectangle is 12 ft. wide

OR

3′ by 3′ = 9
3′ by 15′ = 45
9 + 36 = 45

Rectangle is 3 ft. wide

Here we have *two* answers to one problem and both answers are correct.

PROBLEM 49. A rectanglar room takes 68 feet of picture molding and 32 square yards of carpet. What is the size of the room?

Let x=no. of feet in width (short side).

$2x$=no. of feet in two short sides.

$68-2x$=no. of feet in two long sides, because there are 68 feet in all four sides.

$1/2(68-2x)$=no. of ft. in length. That is $34-x$.

$x(34-x)$=no. of sq. ft. in area. That is 288.

[Change 32 square yards to ft.]

①	$x(34-x)=288$	
②	$34x-x^2=288$	① same values
③	$0=x^2-34x+288$	② $+x^2-34x$
④	$0=(x-18)(x-16)$	③ factored
⑤	$x=18.$ 16	

Check

18
18
16
16

Ans.

18′ by 16′

68 ft. of molding
$18\times16=288$ sq. ft. $=32$ sq. yds.

PROBLEM 50. A fraction having 70 for its numerator is inverted and multiplied by 6. Its new value is one more than its original value. What is the fraction?

Let x=the denominator.

Then $\frac{70}{x}$=the fraction.

And $\frac{6x}{70}$=the fraction inverted and multiplied by 6.

The new value = one more than its original value.

$$\textcircled{1}\quad \frac{6x}{70}=\frac{70}{x}+1$$

$$\textcircled{2}\quad 6x^2=4900+70x \qquad \textcircled{1}\times 70x$$
$$\textcircled{3}\quad 6x^2-70x-4900=0 \qquad \textcircled{2}-70x-4900$$
$$\textcircled{4}\quad 3x^2-35x-2450=0 \qquad \textcircled{3}\div 2$$
$$\textcircled{5}\quad (x-35)(3x+70)=0 \qquad \textcircled{4}\ \text{factored}$$
$$\textcircled{6}\quad x=35$$
$$\textcircled{7}\quad 3x=-70$$
$$-70$$
$$\textcircled{8}\quad x=\frac{-70}{3}$$

Check

$$\frac{35}{70}\times 6=3$$
$$\frac{70}{35}=2$$
$$2+1=3$$

Ans. $\frac{-70}{3}$

The $\frac{-70}{3}$ will also check, though it makes a curious fraction.

Such equations as ④ above are often laborious to factor by the guess and try method. We need a more systematic process. "Completing the square" is such a process for factoring quadratics. Remember that if we square $x+6$ we get $x^2+12x+36$. The 12 is *double* the six and 36 is the *square* of 6. If we had the 12 but not the 36 how could we find the 36? By taking half of the double term and squaring it.

Factor $x^2+20x+96$.

The 20 is the double, therefore the original number is 10.

Its square is 100

$x^2+20x+100$ is the complete square.

$x^2+20x+100\ +96-100$ If we add 100 in order to get a perfect square, we must subtract 100 to bring the expression back to its former size.

Rewrite: $(x+10)^2-4$

or $(x+10)^2-(2)^2$

This is a familiar kind of expression to factor. It is called the difference of two squares.

$$(x+10-2)(x+10+2)$$

or $(x+8)(x+12)$ *Ans.*

Check

$$\begin{array}{r} x+8 \\ x+12 \\ \hline x^2+8x \\ +12x+96 \\ \hline x^2+20x+96 \end{array}$$

Solve

$$\textcircled{1}\quad x^2-6x-27=0$$
$$\textcircled{2}\quad x^2-6x+9-27-9=0$$
$$\textcircled{3}\quad (x-3)^2-36=0$$
$$\textcircled{4}\quad (x-3-6)(x-3+6)=0$$
$$\textcircled{5}\quad (x-9)(x+3)=0$$
$$\textcircled{6}\quad x=9,-3$$

Check

$$81-54-27=0$$
$$0=0$$
$$9+18-27=0$$
$$0=0$$

Ans. 9 or −3

Solve

$$\textcircled{1}\quad x^2+7x-18=0$$
$$\textcircled{2}\quad x^2+7x+\frac{49}{4}-18-\frac{49}{4}=0 \qquad \textcircled{2}+\frac{49}{4}-\frac{49}{4}$$

If 7 is the double, the original is $-\frac{7}{2}$. Its square is $\frac{49}{4}$.

$$\textcircled{3}\quad \left(x-\frac{7}{2}\right)^2-\frac{72}{4}-\frac{49}{4}=0$$
$$\textcircled{4}\quad \left(x-\frac{7}{2}\right)^2-\frac{121}{4}=0$$
$$\textcircled{5}\quad \left(x+\frac{7}{2}-\frac{11}{2}\right)\left(x+\frac{7}{2}+\frac{11}{2}\right)=0$$

Check

$$4+14-18=0$$
$$0=0$$
$$81-63-18=0$$
$$0=0$$

Ans. 2, −9

This is a hard way to solve an easy quadratic, and an easy way to solve a hard quadratic.

Solve

$$\textcircled{1}\quad 3x^2-x-2=0$$
$$\textcircled{2}\quad x^2-1/3x-2/3=0$$
$$\textcircled{3}\quad x^2-1/3x+1/36-2/3-1/36=0$$
$$\textcircled{4}\quad (x-1/6)^2-\frac{25}{36}=0$$
$$\textcircled{5}\quad (x-1/6-5/6)(x-1/6+5/6)=0$$
$$\textcircled{6}\quad (x-1)(x+4/6)=0$$
$$\textcircled{7}\quad x=1,\ -2/3$$

Check

$$3-1-2=0$$
$$0=0$$
$$3(4/9)+2/3-2=0$$
$$4/3+2/3-2=0$$
$$0=0$$

Ans. 1, −2/3

Solve

$$\textcircled{1}\quad x^2-8x+5=0$$
$$\textcircled{2}\quad x^2-8x+16+5-16=0$$
$$\textcircled{3}\quad (x-4)^2-11=0$$
$$\textcircled{4}\quad (x-4-\sqrt{11})(x-4+\sqrt{11})=0$$
$$\textcircled{5}\quad (x-4-3.32)(x-4+3.32)=0$$
$$(x-7.32)(x-.68)=0$$
$$\textcircled{7}\quad x=7.32 \text{ or } .68$$

Check

$$53.5-58.6+5=0$$
$$-5.1+5=0$$

Ans. 7.32 or .68

Notice the slight discrepancy in the check, which we always expect in approximate computation.

$$\begin{array}{rr} 7.32 & 7.32 \\ 7.32 & 8 \\ \hline 512 & 58.6 \\ 22 & \\ 1 & \\ \hline 53.5 & \end{array}$$

Try the second check for yourself.

We are now able to solve the three kinds of equations of elementary algebra. They are sufficient for the use of most of the equations and formulas you will find in your reading. The study of geometry and trigonometry will bring many more formulas within your reach.

PLANE GEOMETRY

INTRODUCTION

"The enemies of geometry, those who know it only imperfectly, look upon the theoretical problems, which constitute the most difficult part of the subject, as mental games which consume time and energy that might better be employed in other ways. Such a belief is false, and it would block the progress of science if it were credible. But aside from the fact that the speculative problems, which at first sight seem barren, can often be applied to useful purposes, they always stand as among the best means to develop and to express all the forces of human intelligence." —Abbé Bossut.

"It may seem strange that geometry is unable to define the terms which it uses most frequently, since it defines neither movement, nor number, nor space—the three things with which it is chiefly concerned. But we shall not be surprised if we stop to consider that this admirable science concerns only the most simple things, and the very quality that renders these things worthy of study renders them incapable of being defined. Thus the very lack of definition is rather an evidence of perfection than a defect since it comes not from the obscurity of the terms, but from the fact that they are so well known." —Pascal.

"We may look upon geometry as practical logic, for the truths which it studies, being the most simple and most clearly understood of all truths, are on this account the most susceptible of ready application in reasoning."—D'Alembert.

"The method of making no mistakes is sought by every one. The logicians profess to show the way, but the geometers alone ever reach it, and aside from their science there is no genuine demonstration."—Pascal.

HISTORICAL

Mathematics in general and geometry in particular have a very ancient and honorable history. Of all the sciences its development has been accompanied by the least error. One generation of mathematicians has not been chiefly occupied with the correction of the mistakes of the previous generation but has been free to devote its energies to further developments of the science.

The virtues of mathematics, precision in definition and logical exactness in reasoning, are especially evident in geometry. Its elements—the point, the line, and the plane—are the most universal of all concepts, and have always meant the same thing to all peoples, and this gives a common and undisputed ground for development. On the contrary, what may seem beautiful to one people at one time may not seem to be so at a later date. Even the moral values of acts are differently appraised by different ages and by different races, but the geometrical concepts have in them the elements of the unchangeable and eternal. The shortest distance between two points always has and always will bring to the mind the same concept—the line.

Our knowledge of what the ancients knew of geometry is limited to what may be inferred from inscriptions and tablets. Necessity often serves as the mother of invention, and hence the earliest geometry deals with the practical problems, such as the measurement of lands. The Babylonians had formulas for areas of squares, rectangles, and right triangles. They asserted that the circumference of a circle was three times its diameter. This is also the statement in the Bible in I Kings 7:23. The Egyptians, whose civilization goes back beyond record, had a practical use for geometry in the surveying of land, especially in the vicinity of the Nile, which so often floods its banks. In Herodotus we find: "They said also that this king divided the land among all Egyptians so as to give each one a quadrangle of equal size and to draw from each his revenues, by imposing a tax to be levied yearly. But every one from whose part the river tore away anything, had to go to him and notify what had happened; he then sent overseers, who had to measure out how much the land had become smaller, in order that the owner might pay on what was left, in proportion to the entire tax imposed. In this way, it appears to me, geometry originated, which passed thence to Hellas." The pyramids also are an enduring monument to the geometrical science of the Egyptians.

From the seventh century B. C. the Greeks came into active contact commercially and intellectually with the Egyptians. Plato, who visited Egypt said: "Whatever we Greeks receive, we improve and perfect." By 320 B. C. a Greek, Euclid, had written a geometry which in its translation has been used as the standard text almost universally in England until this century and is used at the present time in some places. The vogue of this text for over 2,200 years was deserved and has made the word Euclid synonymous with geometry. The Egyptians cared only for geometry as required in every day life but the Greeks were interested in the logical and speculative side of the science.

Soon there arose the three famous problems of geometry:

(1) To trisect an angle.

(2) To "double the cube", i. e., to find a cube whose volume is double that of a given cube.

(3) To "square the circle", i. e., to find a square exactly equal in area to a given circle.

These problems became the incentive of much geometrical study, and while they were never satisfactorily dealt with in ancient times those engaged in seeking the solutions were always finding out new and important geometrical truths. Many of the Greek philosophers, as Plato and Aristotle, were keenly interested in geometry. Plato wrote over the entrance to his school, "Let no one who is unacquainted with geometry enter here."

Euclid, whose name is by far the greatest in geometry, was born about 365 B. C. and wrote his Elements 330-320 B. C. He was extraordinarily skillful in arranging in an orderly and logical manner the facts and theorems of geometry. Very few of the separate proofs were his own, but his power to organize and systematize all the available knowledge of geometry entitles him to the high place he holds.

There are two stories handed down from the days of Euclid which indicate that human nature does not change and that the conflict between knowledge for its own sake and knowledge for utilitarian purposes only is not modern. When Ptolemy asked if there was no easy method of acquiring geometric knowledge Euclid replied: "There is no royal road to geometry." Literally hundreds of geometric texts have been written whose object is to make Euclid easy, but there are many who maintain that this product of Greek culture has never been surpassed.

A youth who had begun to read geometry with Euclid, when he had learned the first proposition inquired: "What do I get by learning these things?" So Euclid called his slave and said: "Give him three pence, since he must make gain out of what he learns." While the average man uses geometry very little yet he enjoys the advantages of modern inventions, all of which are the products of applied geometry.

Practical Utility.—How is geometry used? I walk a certain distance; here is the problem of the measurement of distance. I buy a piece of ground, a drawing must be made to indicate its shape and position for the deed; here is a problem of area. A tank must be constructed to hold so many gallons; here is a question of volume. A tunnel is to be made under a river, a bridge is to be constructed, a ship is to be built; all these are but a few of the many thousands of geometric problems. In war there are endless problems of geometry to solve. The position of a big gun, of an airplane, or of a submarine, is found by geometrical means.

Relation to Sciences.—Without a knowledge of geometry, progress in the study of physics is impossible. Indeed in the modern developments of physics, there has arisen a demand for peculiar concepts of space called non-Euclidean geometries and for what is known as four dimensional geometry. At present all matter is supposed to be composed of electric charges, positive and negative. The physical and chemical properties of all substances thus depend upon the manner in which these electrical charges are arranged. In the case of crystals many geometrical solids are found in nature.

Universality.—Geometry is founded upon statements about which there is universal agreement. History is supposed to deal with facts, but what passes for history in one country will not be accepted in another, and even in the same country opinions differ. Moreover, if the facts

themselves are not disputed, at least their interpretation is called in question. What is music to the Oriental ear is mere noise to the European. Often that which is considered beautiful in one age is derided in the next. But objects like the monuments of Greek architecture, which found their inspiration and proportions in the laws of geometry, have found universal admiration and approval, since the fundamental laws of geometry have been the same for all times and all peoples.

Essentials.—Geometry teaches the student to separate the essential from the non-essential. The statements of geometry when they have reached a final form are such that a single word can not be added or taken away without destroying the meaning.

Intellectual Beauty.—There is a unity, simplicity, and beauty in the development of geometry which appeals to many. Lincoln, whose writings and speeches are especially noteworthy for the above qualities, found joy in middle life in reading the proofs of Euclid.

Intellectual Requirements.—Geometry is especially fitted as a subject of study for the youthful mind. It demands intelligence, imagination, and diligence. Travel and experience add much to the ability to master many subjects but "there is no royal road to geometry."

1. Elements.—The elements first met with in plane geometry are the point and the line. We also require one plane in which all the points and lines are supposed to lie. Before we attempt to define these terms we must consider the nature of a definition.

2. Definition.—A definition is a statement explaining the precise meaning of a word or phrase. It should be complete and clear and in terms more simple and better known than the word defined.

3. Geometrical Definitions.—A few moments of thought will show the impossibility of definitions for the elements of geometry. We naturally choose for our fundamental elements the simplest; and if there were anything simpler than the point we should choose it as our first element rather than the point itself. Here is one of the advantages of geometry as a study: we all know what is meant by a point and a line and thus have a common body of knowledge upon which to build. There have been many clever descriptions of a point and of a line but one must acknowledge that if one did not know what was meant by the word point before reading the description one would not know afterward.

4. Point.—A point is that which has no part. A point is that which has position but no magnitude.

5. Line.—A line is that which has length without breadth or thickness. A line is breadthless length. Euclid's definition of a straight line is: A straight line is that which lies evenly with respect to the points on itself.

6. Axiom.—Certain facts are so elemental they can not be reduced to anything simpler. They are statements which meet with universal agreement and are called axioms.

7. Postulate.—A postulate is a geometric statement whose truth is assumed. The distinction between a postulate and an axiom is merely that the postulate is a geometric truth while the axiom is of broader application. Many ignore or neglect this distinction, and we shall at times.

There is a certain amount of freedom in our choice of axioms and postulates. There is always a choice in the fundamental unit. If one chooses the dollar as the unit then the cent is the one hundredth part of a dollar; if the cent is the unit then the dollar is one hundred cents.

Just as there are many different orders in which the separate stones of a building may be set, so also there have been many different lists of assumptions in geometry. We shall use the list from the New York State Syllabus in Geometry, which has itself been based on a list used by Harvard University in its entrance examinations.

8. One straight line, and only one, can be drawn through two given points.

9. Two points determine a straight line.

10. Two straight lines can intersect in only one point.

11. A straight line may be produced to any required length.

12. A straight line is the shortest path between two points.

13. A circle may be described with any given point as a center, and any given line as a radius.

14. Any figure may be moved from place to place without altering its size or shape.

15. Through any point outside a given line, one line, and only one, can be drawn parallel to the given line.

16. All straight angles are equal.

17. All right angles are equal.

18. From a given point in a given line, one perpendicular, and only one, can be drawn to the line.

19. Equal angles have equal complements, equal supplements, and equal conjugates.

If a careful man should build a house he might make a complete list of all the kinds of materials which entered into its construction and of the various tools which were necessary. Thousands of careful students and teachers have been over the subject of geometry and the above postulates, or assumptions, are the ones which have been found to be the most necessary and convenient.

Again, in the building of a house one might try to determine what was the least number of tools that were necessary, but in actual practice it is better to have a sufficient number. As a matter of fact, some of the above list of assumptions result from the others so the list is not so small as it might be. In a course in higher mathematics it would be proper to consider the question of the least number of assumptions, but for the beginner in geometry the number of the assumptions is not so important as their convenience. Having the assumptions listed, it is possible, when one becomes more familiar with the subject, to investigate their relations.

20. Equipment.—What equipment does a student need in the study of geometry? When we discuss this question we shall see the relation of the practical to the theoretical.

First, the student needs a sheet of paper, a slate, or a blackboard as a representation of a plane. On consideration it will be evident that no such thing as a perfect plane can be obtained. Your slate or blackboard is full of imperfections and your sheet of paper will refuse even to be flat unless it is placed on a good desk top. However, the idea of a perfect plane is fixed in our minds. We are content if a concrete sidewalk is fairly smooth, a plate glass window must be more accurately made, while the manufacturer of an astronomical instrument may work for months or years to obtain a smooth surface for an instrument requiring great accuracy. He must have a pencil, a piece of chalk, or an instrument of some kind to indicate points and draw lines. Any point we can make with a pencil has size but again as we make the point smaller, thus approaching the ideal, we increase the accuracy of our work. A ruler is necessary to aid in the drawing of straight lines and again this can only be approximately free from error. Finally a pair of compasses is necessary to draw circles. We shall leave to the reader the consideration of the question—why is a pair of compasses a more accurate instrument than a ruler?

From the earliest days the ruler and the compasses have been the only instruments that have been considered legitimate in the solution of plane geometry problems. To become proficient in many sciences requires elaborate equipment and costly apparatus but even crude drawings made in the sand enabled the ancient Greek scholars to attain their perfection in geometry.

21. Drawings.—We can now discuss the postulates §8-19 in reference to the making of geometrical drawings.

We represent points by small dots and put a capital letter as A in the vicinity of the point to label it.

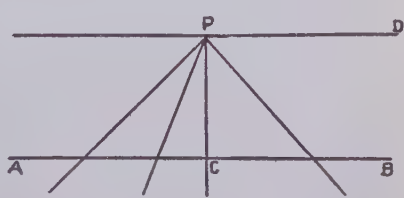
Two given points A and B determine the position of our ruler to draw the line with the symbol AB in agreement with §8-9 which line by §11 we can extend in either direction beyond the points A or B.

With our pencil we can draw any number of paths or curves between the points A and B but §12 tells us that the straight line drawn with our ruler is the shortest distance between the two points.

In the moving of a figure from one position to another according to §14 we have a theoretical and practical difference. Any physical object, if moved from one position to another on our earth, would in general experience many changes due to the alteration of the force of gravity, of the atmospheric pressure, of the temperature, etc., which would change its shape, but one readily imagines the ideal solid which experiences no change.

22. Uniqueness.—Geometry is particularly concerned with unique objects. The highest mountain, the largest city, the worst war have an immediate significance. The designation of any other mountain, city or war requires many words. When two points A and B are given the first unique object determined is the line AB which can be prolonged in either direction.

23. Segment.—When we consider the portion of the line AB which lies between A and B we have a second unique object called the line—segment AB, which has related to it a unique number called its length.

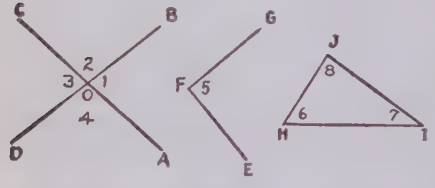


Consider the line AB and the point P outside it. Consider all the lines which can be drawn through P, two of these lines are unique in reference to AB, i. e., PC and PD.

24. Parallel.—(Symbol II). Two lines are called parallel when they lie in the same plane and do not intersect however far they are produced. There is one line and one only, §15, which passes through P and is parallel to AB, i. e. PD. This is a very famous axiom or postulate and in the past there have been many attempts by well known mathematicians to derive it from the other postulates.

The two rails of a railroad correspond to our ideas of parallel lines and if prolonged forever in straight lines we believe they would never meet, and it seems as if there should be some way to prove it.

The proof is impossible, for it has been shown that it is the realm of possibility for something entirely different to take place. Lobatschewski (1793-1856) showed that the postulate that more than one parallel can be drawn through a point to a given line leads to a consistent and at the same time a different geometry. In this geometry the sum of the angles of a triangle is less than two right angles. Riemann (1826-1866) took as his postulate that there is no parallel to a line from a point outside it. This leads to still another consistent geometry in which the sum of the angles of a triangle is greater than two right angles. This of course leaves it to experiment or observation to find out which is the true geometry. If the true geometry is that of Euclid then the sum of the angles of a triangle should be always two right angles. I see a man in New York and I again see him in Canton, China. He may have gone from one place to the other by way of the Atlantic or the Pacific oceans, but it is also a geometric possibility that he went through the center of the earth. How he did go can be accurately answered only from observation of his trip.



25. Ray or Half Line.—When two lines intersect in a point the plane is divided into four parts. AC and BD intersect in O dividing the plane into the four parts 1, 2, 3, 4.

We designate a line beginning at a definite point and extending indefinitely in only one direction as a ray or half line. OA and OC are half lines.

26. Angle.—(Symbol ∠). When two half-lines or rays extend indefinitely from a common point the figure formed is an angle. The concept of the half-line or ray is introduced to secure uniqueness. When two lines as AC and BD intersect in O we have four angles determined which we can designate by the numbers 1, 2, 3, 4. The common point is called the *vertex* and the two rays the *sides*. Thus angle 1 has the vertex O and the sides OA and OB and can be named the angle AOB or the angle BOA; the vertex letter is always written between the other two letters. When there is no danger of ambiguity we can designate the angle by a single letter or number, thus ∠JHI = ∠6 = ∠H; but it would not do to say the angle O, for there is not a unique angle at O.

27. Straight Angle.—Closely connected with the angle is the idea of a rotation. If OB turns about O as a fixed point counterclockwise while OA remains fixed the angle AOB will increase and OB will ultimately coincide with OC. The angle AOC or COA is called a straight angle. A straight angle is formed when the sides extend in opposite direction from a common vertex and form a straight line.

28. Geometric Figure.—Any combination of the geometric elements, points, lines, surfaces, and solids is a geometric figure.

29. Boundaries.—The boundaries of a geometric figure are the points, lines, or surfaces by which it is limited.

30. Polygon.—A polygon is a plane figure bounded by three or more straight lines.

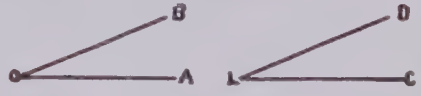
Triangle.—(Symbol △). A triangle is a portion of the plane bounded by three straight lines, and is the simplest of the polygons.

31. Equality.—(Symbol =). Equality has various meanings in geometry. The fundamental equality is congruence.

32. Congruence—(Symbol ≅). Two geometrical figures are congruent if they can be made to coincide in all their parts by use of postulate §14.



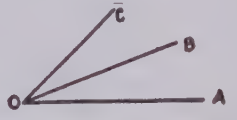
The segment AB is congruent or equal to segment CD if AB can be made to coincide with CD. A can be made to coincide with C, the line AB to coincide with the line CD, then if B falls on D the segments coincide throughout and are congruent. Also if AB ≅ CD then AB ≅ DC.



The two angles AOB and CLD are congruent if it is possible to place them so that OA coincides with LC at the same time that OB coincides with LD, or in general that the vertices and sides can be made to coincide at the same time. Also they can then be made to coincide in the reverse order, that is OA with LD and OB with LC. These two methods are denoted symbolically by ∠AOB ≅ ∠CLD or ∠AOB ≅ ∠DLC.

A circle and a square, however, may have equal areas, but they are not capable of being made to coincide.

The method of showing that two figures are congruent by placing one upon the other so they coincide in all their parts is called proof by the method of *superposition.*



33. Adjacent Angles.—Two angles which have the same vertex and the side between them common are adjacent. Thus ∠AOB and ∠BOC are adjacent and ∠AOC is their sum.

34. Right Angles.—When two straight lines meet so that any two of the adjacent angles are equal the angles are called right angles. An angle less than a right angle is called an acute angle. An angle greater than a right angle is an obtuse angle.

35. Perpendicular.—(Symbol ⊥). Two lines are perpendicular when they meet to form right angles. There is but one line perpendicular to a given line at a given point by postulate §18. This is the second unique line PC of §23.



36. Complementary Angle.—One angle is the complement of another when their sum is a right angle. ∠AOB and ∠BOC are complementary angles.



37. Supplementary Angles.—One angle is the supplement of another if their sum is a straight angle or two right angles. ∠AOB and ∠BOC are supplementary.



38. Conjugate Angles.—One angle is the conjugate of another if their sum is two straight angles or four right angles, ∠1 and ∠2 are conjugate.

AXIOMS

39. If equals are added to equals, the sums are equal.

40. If equals are subtracted from equals, the remainders are equal.

41. If equals are multiplied by equals, the products are equal.

42. If equals are divided by equals, the quotients are equal.

43. Like powers or like positive roots of equals are equal.

44. If unequals are operated on by positive equals in the same way, the results are unequal in the same order.

45. If unequals are added to unequals in the same order, the sums are unequal in the same order; if unequals are subtracted from equals, the remainders are unequal in the reverse order.

46. Quantities that are equal to the same quantity or to equal quantities are equal to each other.

47. A quantity may be substituted for its equal in an equation or in an inequality.

48. If the first of three quantities is greater than the second, and the second is greater than the third, then the first is greater than the third.

49. The whole is greater than any of its parts and is equal to the sum of all its parts.

50. Magnitude.—Any thing that is measurable is a magnitude. The above axioms are universal statements which apply to numerical quantities or magnitudes. They enumerate all the operations that are necessary in dealing with numbers.

Consider axiom 45.

7 is greater than 3 or in symbols $7>3$,
6 is greater than 4 or in symbols $6>4$,
Adding 13 is greater than 7 Adding $13>7$.
10 equals 10 or in symbols $10=10$
6 is greater than 4 or in symbols $6>4$
Subtracting 4 is less than 6 Subtracting $4<6$

Of course nothing can be said about the result of adding unequals to unequals which are in the reverse order, as can be seen below.

$10>6$,
$3<13$,
Adding $13<19$,
but $10>6$
$3<4$,
Adding $13>10$.

Thus the first sum may be either greater or less than the second. The reader can verify the other axioms for numbers in a similar way.

51. Solids.—All the objects which we can see are solids. Physics is concerned with the nature and properties of the substances of which the physical solids are constituted, while geometry is concerned only with the shape and size of the solid. Thus a geometrical solid can not be seen or touched and has its existence only in the imagination.

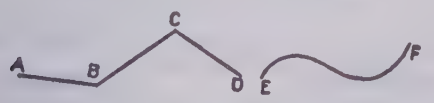
52. Geometrical Solid.—A geometrical solid is a limited portion of space.

53. Surface.—The boundaries of a geometric solid are called surfaces. Consider some water standing in a glass. The exposed surface of the water is neither air nor water, it is what is between the air and the water.

A sheet of paper is a representation of a surface, or rather of two surfaces, as its two faces are separated by the thickness of the paper.

54. Line.—A line is the intersection of two surfaces. Thus in the case of water standing in a glass the surface of the water meets the surfaces of the glass in a curved line or an approximate circle, if the glass is an ordinary drinking glass.

We have already considered the straight line in § 5.



55. Broken Line.—A broken line is composed of portions of straight lines. AB+BC+CD is a broken line.

56. Curved Line or Curve.—Any line which is neither straight nor broken is a curved line. EF is a curved line.

57. Motion in Geometry.—Since geometry is closely connected with mechanics, which discusses the motion of physical objects, we should see the relation of motion to the fundamental elements of geometry.

A moving point generates a line.
A moving line generates a surface unless it moves along itself.
A moving surface generates a solid unless it moves along itself.

58. Plane.—A definition of a plane can be given in terms of points and lines. A plane is a surface such that a straight line joining any two of its points lies wholly within the surface.

59. Theorem.—Geometry is the study of the properties of figures and the relations which exist between them. The results of these studies are formulated in statements called theorems. A theorem consists of two parts: the hypothesis and the conclusion. The *hypothesis* gives all the conditions which are granted or assumed. The *conclusion* gives the result of these conditions. From the stand point of the student, a theorem is something which is to be proved; that is, he is to reproduce the steps by which the original discovery was made.

60. Proof.—A proof is an argument or an ordered arrangement of statements by which we show the truth of an assertion. For each statement given, a reason must be assigned.

These reasons must be—
(1) granted in the hypothesis,
(2) an axiom or postulate,
(3) a definition,
(4) or a theorem which has itself been previously proved. The student must take every opportunity to learn what the axioms postulates, and definitions mean; then he will be able to write them in his own words.

Read every word in a theorem, and if there is a single word or phrase of which you do not know the exact meaning, consult the definitions; because you can not be honest with yourself if you attempt to prove something when you do not understand what it is you are about to prove.

61. Method of Writing a Proof.—
(1) Write the theorem.
(2) Draw a figure indicating what is given.
(3) Write down the hypothesis.
(4) Write down the conclusion.
(5) Draw a line down the middle of the page and for each step written on the left of the line give the reasons on the right. This method will be followed for only a part of the propositions.

62. Symbols.—

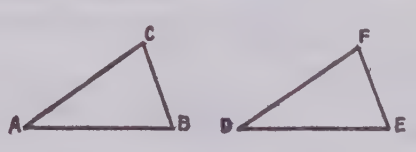
$+$ plus.	$\triangle$ triangle.
$-$ minus.	$\triangle\triangle$ triangles.
$\times$ or multiplied by.	$\perp$ perpendicular, is perpendicular to.
$=$ equals.	$\perp s$ perpendiculars.
$\backsim$ equivalent, is equivalent to.	$\parallel$ parallel, is parallel to.
$\cong$ congruent, is congruent to.	$\parallel s$ parallels.
$\sim$ similar, is similar to.	$\square$ parallelogram.
$>$ is greater than.	$\square s$ parallelograms.
$<$ is less than.	$\bigcirc$ circle.
$\therefore$ therefore.	$\bigcirc s$ circles.
$\because$ since.	π ratio of the circumference to the diameter of a circle.
$\angle$ angle.	
$\measuredangle$ angles.	
$\sqrt{}$ square root, $\sqrt{16}=4$.	
$^\circ$ degrees.	
$'$ minutes.	
$''$ seconds.	

63. Abbreviations.—

Adj.	Adjacent.
Alt.	Alternate.
Ax.	Axiom.
Con.	Conclusion.
Cons.	Construction.
Corresp.	Corresponding.
Def.	Definition.
Ext.	Exterior.
Hyp.	Hypothesis.
Int.	Interior.
Post.	Postulate.
Rect.	Rectangle, Rectangular.
Rt.	Right.
Str.	Straight.
Sup.	Supplementary.

ANGLES, TRIANGLES AND PERPENDICULARS.

64. Theorem 1.—
If two triangles have two sides and the included angle of one equal respectively to two sides and the included angle of the other, the triangles are congruent.



Hyp. Given the triangles ABC and DEF, in which AB equals DE, AC equals DF, and the angle A equals the angle D.
Con. The triangle ABC is congruent to the triangle DEF.

Proof.

Statements.	Reasons.
1. Place the triangle ABC on the triangle DEF so that the side AB coincides with its equal DE, and so that the point A falls on the point D and the point B on the point E.	1. §14. Postulate. Any figure may be moved from place to place without altering its size or shape. § 32. Definition. The segment AB is equal to the segment DE if AB can be made to coincide with DE.
2. The side AC will coincide with the equal side DF since the angle A equals the angle D.	2. §32. Definition. Two angles which are equal can be made to coincide. Angle A equals angle D by hypothesis.
3. Point C will fall on point F.	3. Segment AC equals segment DF by hypothesis.
4. Point B now coincides with point E, hence the side BC coincides with the side EF.	4. §8. Postulate. One straight line, and only one can be drawn through two given points.
5. Triangle ABC is congruent to the triangle DEF.	5. §32. Definition. Two geometrical figures are congruent if they can be made to coincide in all their parts.

Let us consider the proof of the theorem. It is obvious that when one looks at the drawing alone it is impossible to tell what is given or what is to be proved. There are six statements which can be made regarding the two triangles, (we will use the symbols of §62.)

$\angle A = \angle D$
$\angle B = \angle E$
$\angle C = \angle F$
$AB = DE$
$BC = EF$
$CA = FD$

But in geometry it is not enough to tell the truth. I may write down six truths

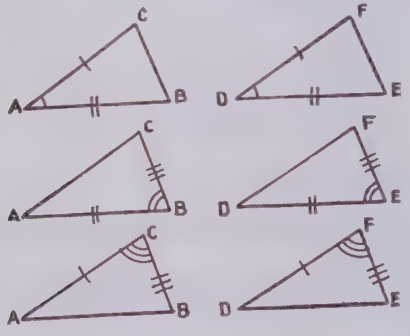
Water is wet.
The sky is blue.
The moon is a sphere.
There are seven days in the week.
Honesty is the best policy.
All crows are black.

It is impossible to trace any sequence in the above statements, or to show that one is the result of any number of the others, as is required in a geometric proof.

There are three ways in which the above figures can be used to prove the same theorem, starting with the three different hypotheses,

(1) $AB = DE$, $AC = DF$, $\angle A = \angle D$;
(2) $AB = DE$, $BC = EF$, $\angle B = \angle E$;
(3) $BC = EF$, $CA = FD$, $\angle C = \angle F$.

So it is especially important to know just which of these three cases has been chosen. This can often be indicated by markings on the equal segments and angles so that immediately on looking at the figure it will be possible to tell what facts are given in the hypothesis. The three figures below give in order the three possible hypotheses enumerated above.



From this point on we shall frequently make use of this method of indicating equal segments and angles.

65. Theorem 2.—
If two triangles have a side and the two adjoining angles of one equal respectively to a side and the two adjoining angles of the other, the triangles are congruent.

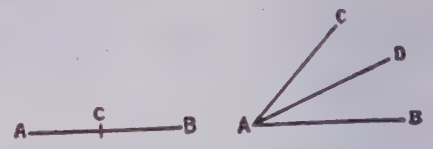


Hyp. In the triangles ABC and DEF, AB equals DE, angle A equals angle D, and angle B equals angle E.
Con. The triangles ABC and DEF are congruent.

Statements.	Reasons.
1. Place triangle ABC on triangle DEF so that segment AB coincides with its equal DE, with A falling on D and B on E.	1. §14. Postulate. Any figure may be moved from place to place without altering its size or shape. §32. Definition. The segment AB is equal to the segment DE if AB can be made to coincide with DE.
2. Then the line AC will coincide with the line DF and the line BC with the line EF, since angle A equals angle D and angle B equals angle E.	2. Angles are equal by hypothesis. They will coincide by definition, §32.
3. Point C will coincide with point F.	3. §10. Postulate. Two straight lines can intersect in only one point.
4. Triangle ABC coincides with triangle DEF. They coincide in all their parts.	4. Definition, §32.

66. Isosceles Triangle.—An isosceles triangle has two of its sides equal.

67. Bisect.—



To bisect a segment AB is to find the point C in the interior of the segment so that $AC = CB$. In which case C is called the mid-point of AB.

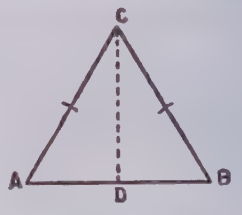
To bisect an angle BAC is to draw the half-line or ray AD so that $\angle BAD \cong \angle DAC$ in which case AB is called the bisector of the angle BAC.

How to actually find the point C and the line AD with the ruler and compasses will be shown later.

68. Corresponding, or Homologous Parts.—When two geometrical figures can be made to coincide, any two segments which coincide are called corresponding, or homologous, segments, and any two angles which coincide are called corresponding, or homologous, angles.

Corresponding, or homologous parts, of congruent figures are equal.

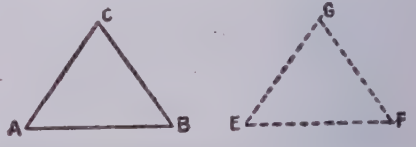
69. Theorem 3.—
In an isosceles triangle the angles opposite the equal sides are equal.



Hyp. In the triangle ABC, the side AC equals the side BC.
Con. The angle A equals the angle B.

Statements.	Reasons.
1. Draw CD the bisector of the angle C, meeting the side AB in D. Then the angle ACD equals the angle DCB.	1. §67. Definition of bisection.
2. Side AC equals side BC.	2. Hypothesis.
3. Side CD equals side CD.	3. Identical.
4. Triangle ACD is congruent to triangle BCD.	4. §64. Theorem. If two triangles have two sides and the included angle of one respectively equal to two sides and the included angle of the other, the triangles are congruent.
5. Angle A equals angle B.	5. Corresponding angles of congruent triangles, §68.

70. Theorem 4.—If two angles of a triangle are equal, the triangle is isosceles.



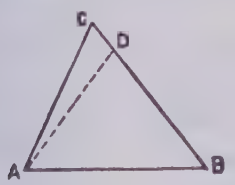
Hyp. Given $\triangle ABC$ with $\angle A = \angle B$.
Con. $AC = BC$ or $\triangle ABC$ is isosceles.

1. Suppose that EFG is ABC in a second position so that $ABC \cong EFG$.	1. Post. §14. Any figure can be moved from place to place without altering its size or shape.
2. Turn EFG over and place it on ABC so that F falls on A and E on B.	2. Post. §14. Same as above.
3. Since $\angle A = \angle B$, and $\angle B = \angle F$, $\angle A = \angle F$.	3. Ax. §46. Quantities that are equal to the same quantity or to equal quantities are equal to each other.

4. ∴ the line FG falls along the line AC.	4. Def. §32. Relative to congruent angles.
5. Similarly the line EG falls on the line BC.	
6. Hence G will coincide with C.	6. Post. §10. Two straight lines can intersect in only one point.
7. GF = AC.	7. §32. Definition.
8. But GF = CB.	8. Const.
9. ∴ AC = BC.	9. Ax. §46. Quantities that are equal to the same quantity or equal quantities are equal to each other.

71. Converse.—If the hypothesis and conclusion of a theorem are interchanged to form a new theorem, this theorem is called the converse of the original theorem. It will be observed that the theorem of §70 is the converse of the theorem of §69.

72. Theorem 5.—If one angle of a triangle is greater than a second angle, the side opposite the first angle is greater than the side opposite the second angle.



Hyp. Given △ABC with ∠A > ∠B.
Con. BC > AC.

1. Draw the line AD meeting the side CB in D forming the ∠BAD = ∠CBA.	1. Construction.
2. AD will be in the interior of the ∠CAB.	2. Ax. §49. The whole is greater than any of its parts.
3. AD + DC > CA.	3. Post. §12. A straight line is the shortest path between two points.
4. In △ABD, ∠DAB = ∠DBA, AD = BD.	4. Construction. Theorem 4, §70. If two angles of a triangle are equal, the triangle is isosceles.
5. Substitute BD for its equal in 3, BD + DC > CA.	5. Ax. §47 A quantity may be substituted for its equal in an equation or in an inequality.
6. BD + DC = BC, ∴ BC > CA.	6. Ax. §49. The whole is equal to the sum of its parts. Ax. §47. A quantity may be substituted for its equal in an equation or in an inequality.

73. Proof by Exclusion.—Sometimes it is not possible or feasible to give a direct proof of a theorem, as has been done with the theorems so far considered. Another method is to make a complete enumeration of all the possible things which can happen and then to eliminate them one by one until there remains but a single possibility, and this must be the true condition of affairs.

The success of this method depends upon the completeness of the enumeration. Because a color is not green does not prove it is red. You do not necessarily find the letter which you were to mail and which you have concealed in a pocket, if you overlook a single pocket in going through your clothes.

In plane geometry a line is either perpendicular to another line or it is not perpendicular to it. Hence you have but two possibilities here; disprove one and you prove the other. In the case of two numbers x and y there are three possibilities, x greater than y, x less than y, or x equal to y; here you must show that two of these are impossible to be certain of the true result.

We shall now have opportunity to use this method.

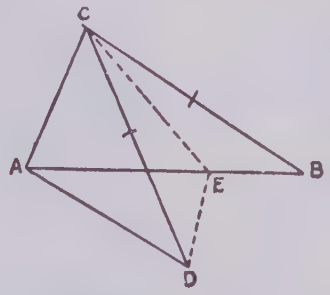
74. Theorem 6.—If one side of a triangle is greater than a second side, the angle opposite the first side is greater than the angle opposite the second side.



Hyp. Given △ABC with AC > BC.
Con. ∠B > ∠A.

1. There are only three possibilities regarding the ∠A and B, (I) ∠A = ∠B, (II) ∠A > ∠B, (III) ∠A < ∠B.	1. §73.
2. (1) If ∠A = ∠B then AC = BC, which is impossible.	2. Theorem 4. §70. If two angles of a triangle are equal the triangle is isosceles. Contradicts the hypothesis.
3. (II) If ∠A > ∠B then CB > AC, which is impossible.	3. Theorem 5. §72. If one angle of a triangle is greater than a second angle, the side opposite the first angle is greater than the side opposite the second angle. Contradicts the hypothesis.
4. ∴ ∠A < ∠B or ∠B > ∠A.	4. The only remaining possibility.

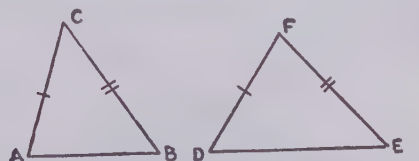
75. Theorem 7.—If two triangles have two sides of one respectively equal to two sides of the other, and the included angles unequal, the triangle which has the greater included angle has the greater third side.



Hyp. Given △ABC and ADC with AC = AC and CD = CB but with ∠ACB > ∠ACD.
Con. AB > AD.
Note. According to §14 we can imagine the two triangles moved until they have one pair of equal sides in common as AC.

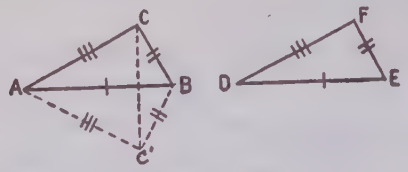
1. Draw CE the bisector of the ∠DCB which meets AB in E.	1. §67.
2. CD = CB, CE = CE, ∠DCE = ∠ECB.	2. Hypothesis, Identical, Construction.
3. ∴ △DEC ≅ △BEC.	3. Theorem 1, §64. If two triangles have two sides and the included angle of one respectively equal to two sides and the included angle of the other, the triangles are congruent.
4. DE = EB.	4. Corresp. parts of congruent triangles §68.
5. AE + ED > AD.	5. Post. §12. A straight line is the shortest distance between two points.
6. AE + EB > AD.	6. Replacing ED by its equal EB.
7. AB > AD.	7. Ax. §49. The whole is equal to the sum of all its parts.

76. Theorem 8.—If two triangles have two sides of one respectively equal to two sides of the other, and the third sides unequal, the triangle which has the greater third side has the greater included angle.



Hyp. Given △ABC and DEF with AC = DF, BC = EF, but DE > AB.
Con. ∠DFE > ∠ACB., or ∠F > ∠C.
Hint. There are only three possibilities; (1) ∠C = ∠F, by §73. (2) ∠C > ∠F, (3) ∠C < ∠F.
Prove that the first two are impossible hence the third must be true.

77. Theorem 9.—If two triangles have the three sides of one respectively equal to the three sides of the other, the triangles are congruent.



Hyp. Given the △ABC and DEF with AB = DE, BC = EF, and CA = FD.

Con. △ABC ≅ △DEF.

Let AB and DE be the longest sides of their respective triangles.

1. Suppose △DEF is brought into the position indicated by △ABC¹ so that DE coincides with its equal AB, D falling on A and E on B and F taking the position C¹.	1. Post. §14. Any figure may be moved from place to place without altering its size or shape.
2. Draw the line CC¹.	2 Post. §9. Two points determine a straight line.
3. AC = DF, DF = AC¹, ∴ AC = AC¹.	Ax. §47. A quantity may be substituted for its equal in an equation or in an inequality.
4. △C¹AC is isosceles and ∠ACC¹ = ∠AC¹C.	4. Theorem 3, §69. In an isosceles triangle the angles opposite the equal sides are equal.
5. In the same way ∠BCC¹ = ∠BC¹C.	
6. ∠ACC¹ + ∠BCC¹ = ∠AC¹C + ∠BC¹C.	6. Ax. §39. If equals are added to equals the sums are equal.
7. ∠ACB = ∠AC¹B.	7. Ax. §47. Same as above.
8. △ABC ≅ △AC¹B.	8. Theorem 1, §64. If two triangles have two sides and the included angle of one respectively equal to two sides and the included angle of the other, the triangles are congruent.
9. △AC¹B ≅ △DEF, ∴ △ABC ≅ △DEF.	9. Ax. §46. Quantities that are equal to the same quantity or to equal quantities are equal to each other.

78. Symmetrical Triangles.—Consider the three △, $A^1B^1C^1$, ABC, and $A^{11}B^{11}C^{11}$ with $AB = A^1B^1 = A^{11}B^{11}$, $BC = B^1C^1 = B^{11}C^{11}$, and $CA = C^1A^1 = C^{11}A^{11}$. If $\triangle A^1B^1C^1$ were cut out with a knife it

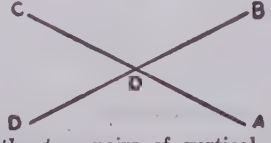


would be possible to slide it along to coincide with △ABC without removing it from its plane. In this case the two are called identical. But in order to make $\triangle A^{11}B^{11}C^{11}$ coincide with △ABC it is necessary to remove it from the plane and turn it over. Triangles ABC and $A^{11}B^{11}C^{11}$ are called symmetrical triangles.

Two triangles are identical when they have their sides arranged in the same order, symmetrical when they are arranged in the opposite order.

79. Vertical Angles.—Two angles are vertical when the sides of one are the prolongations of the sides of the other. See figure for theorem 10. Here are two pairs of vertical angles, ∡AOB, DOC and ∡AOD, BOC.

80. Theorem 10.—If two straight lines intersect each other, the vertical angles are equal.



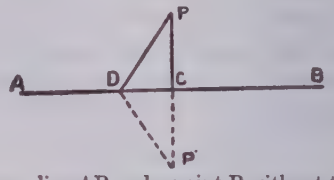
Hyp. Given the two pairs of vertical angles ∠AOB and ∠COD, ∠BOC and ∠AOD formed by the straight lines AC and BD intersecting in O.

Con. ∠AOB = ∠COD and ∠BOC = ∠AOD.

1. ∠AOB + ∠BOC = a straight angle.	1. Def. §27.
2. ∠BOC + ∠COD = a straight angle.	2. Def. §27.
3. ∴ ∠AOB + ∠BOC = ∠BOC + ∠COD.	3. Ax. §46. Quantities that are equal to the same quantity or equal quantities are equal to each other.
4. ∠AOB = ∠COD, subtracting ∠BOC from each side of the above equality. In the same way prove that ∠BOC = ∠AOD.	4. Ax. §40. If equals are subtracted from equals, the remainders are equal.

81. Theorem 11.—There is not more than one perpendicular from a given point without a line to a line.

(Note. We will assume that there is one perpendicular, the method of constructing this perpendicular will be given later on §240.)



Hyp. Given a line AB and a point P without the line, with PC ⊥ AB and PD any other line through P meeting AB in D.

Con. PD is not ⊥ AB.

1. Prolong PC through C to P^1 making $CP^1 = PC$ and draw DP^1.	1. Post. §11. A straight line may be prolonged any required length.
2. In △DPC and DP^1C, ∠PCD = ∠P¹CD.	2. Def. §35. All right angles are equal.
3. PC = P¹C.	3. Cons.
4. DC = DC.	4. Identical.
5. △DPC ≅ DP'C.	5. Theorem 1, §64.
6. ∴ ∠PDC = ∠P'DC.	6. Def. §68. Corresponding parts of congruent figures.
7. Since PCD' is a straight line PDP' can not be a straight line.	7. Post. §8. One straight line, and only one, can be drawn through two given points.
8. ∴ ∠PDC + ∠P'DC is not a straight angle.	8. Def. §27.
9. ∴ 2(∠PDC) is not a straight angle.	9. Ax. §47. A quantity may be substituted for its equal in an equation or in an inequality.
10. ∴ ∠PDC is not one half of a straight angle or a right angle.	10. Ax. §42. If equals are divided by equals, the quotients are equal. Def. §27, 34. A right angle is one half of a straight angle.
11. PD is not ⊥ AB.	11. Def. §35.

When we know how to draw the one perpendicular PC to the line AB we will be able to prove the theorem below.

From a given point without an unlimited straight line one perpendicular can be drawn to the line, and but one.

82. Theorem 12.—

The perpendicular is the shortest line that can be drawn from a point to a straight line.

We will merely indicate the steps in the proof leaving the reader to fill in the reasons. Making use of the figure of the previous theorem we must prove that PC is less than PD.

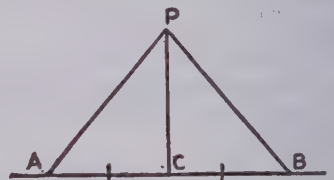
$PC = \frac{1}{2}(PP^1)$, $PD = \frac{1}{2}(PD + DP^1)$, but $PD + DP^1 > PP^1$.

∴ PD > PC.

83. Oblique Straight Line.—Any line which is not perpendicular to a given line is oblique to the line.

84. Theorem 13 —

If two oblique straight lines drawn from a point to a straight line meet the line at equal distances from the foot of the perpendicular drawn from the point to the line, they are equal.



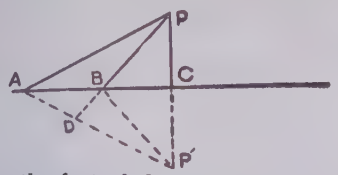
Hyp. PC is the ⊥ from P on AB, meeting it in C, the foot of the ⊥; PA and PB, two oblique straight lines, meeting AB in A and B respectively, so that AC = CB.

Con. AP = BP.

1. ∠ACP = ∠BCP.	1. Both are right angles.
2. PC = PC.	2. Identical.
3. AC = CB.	3. Hyp.

4. $\triangle ACP \cong \triangle BCP$. 4. Theorem 1, §64.
5. $AP = BP$. 5. Def. §68.

85. Theorem 14.—If two oblique straight lines drawn from a point to a straight line meet the line at unequal distances from the foot of the perpendicular, the more remote is the greater.



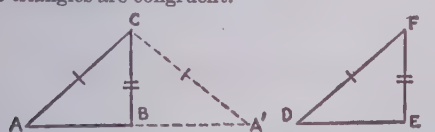
Hyp. C is the foot of the $\perp$ PC from P on AB. The two oblique lines PA and PB meet AB in A and B respectively so that $AC > BC$.

Con. $AP > PB$.

1. Prolong PC through C to P^1 so that $PC = CP^1$. Draw BP^1, AP^1. Let D be the intersection of AP^1 and PB, and if $AC > BC$ then D will be a point in the interior of the segment AP^1. 1. Post. §11.
2. $AD + AP > DP$. 2. Post. §12.
3. $AD + AP > DB + BP$. 3. Ax. §47.
4. $DB + DP^1 > BP^1$. 4. Post. §12.
5. Add the inequalities 3 and 4 $AD + AP + DB + DP^1 > DB + BP + BP^1$. 5. Ax. §45.
6. $DB = DB$. 6. Identical.
7. Subtract equation 6 from equation 5. $AD + AP + DP^1 > BP + BP^1$. 7. Ax. §44.
8. $AD + DP^1 = AP^1$. 8. Ax. §47.
9. $PA = AP^1$ and $PB = BP^1$. 9. Same proof as in Theorems 13, 84.
10. $2AP > 2BP$. 10. Ax. §47.
11. $AP > BP$. 11. Ax. §44.

86. Right Triangle.—A right triangle is a triangle which has one of its angles a right angle. The side opposite the right angle is called the hypotenuse. The other two sides are cal'ed the legs.

87. Theorem 15.—If two right triangles have the hypotenuse and a leg of one respectively equal to a hypotenuse and a leg of the other, the triangles are congruent.



Hyp. Given the two right triangles ABC and DEF with the right angles at B and E respectively. AC equals DF and CB equals FE.

Con. Triangle ABC is congruent to triangle DEF.

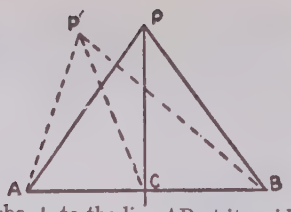
Hint. Place triangle DEF in the position CBA^1 so that FE coincides with its equal BC, E falling on B and F on C, while D takes the position A^1. Then ACA^1 is an isosceles triangle and $\angle A = \angle A^1$. (§69, Theorem 3. In an isosceles triangle the angles opposite the equal sides are equal.) Since $\angle A^1 = \angle D$, we have $\angle A = \angle D$. Now place triangle DEF on triangle ABC so that D falls on A and angle D coincides with its equal angle A. Since $AC = DF$, point F will coincide with C, while line DE falls along line AB. FE will fall along CB, since CB and FE are now perpendiculars from the same point to the same line. (§81. Theorem 11. From a given point without an unlimited straight line one perpendicular can be drawn to the line, and only one.) Hence CB coincides with FE and the triangle ACB and DEF are congruent.

88. Locus.—A locus consists of all points satisfying a given condition and of only those points satisfying the condition.

If you are given a box containing white and black balls and are told to sort out the white balls, you are to get all the white balls and none but the white balls.

In a locus problem you are to sort all the points in the plane and find those which satisfy the condition and those only. What makes the problem different from the sorting of the white and black balls is the fact that the number of points in the plane is very great, or infinite, so that in any particular problem some way must be likewise found to pick out a great number at once, such as finding a line, which consists of an infinite number of points, such that all the points of the line satisfy the condition.

89. Theorem 16.—The locus of points equidistant from two given points is the perpendicular bisector of the line joining them.



Hyp. PC is the $\perp$ to the line AB at its mid-point C.

Con. PC is the locus of points equidistant from A and B.

1. Let P be any point of the line PC and draw the lines AP and BP. 1. Pos. §9.
2. $AC = CB$, $\measuredangle ACP$ and BCP are rt. $\measuredangle$. 2. Hyp.
3. $\therefore \triangle APC \cong \triangle BCP$. 3. Theorem 15. §87.
4. $\therefore AP = BP$. 4. Corresponding parts of congruent triangles §68.

This proves that all points on CP are equidistant from A and B, but we must show that we have all points which are equidistant from A and B. Two methods are possible to complete the proof. First, we can show that all points which are equidistant from A and B are on PC. Second, we can show that any point which is not on PC can not be equidistant from A and B.

First Method.

5. Let P^1 be a point which is equidistant from A and B. Draw the straight lines AP^1, CP^1, and BP^1.
6. $AP^1 = P^1B$, $AC = CB$, $P^1C = P^1C$. 6. Assumed in 5. Hyp. Identical.
7. $\therefore \triangle AP^1C \cong \triangle BP^1C$. 7. Theorem 9, §77.
8. $\therefore \angle P^1CA = \angle PCB =$ a rt. $\angle$. and P^1C is $\perp$ AB at C. 8. Corresponding parts of congruent triangles, §68. Def. §35.
9. $\therefore$ Lines PC and P^1C coincide, P^1 must be on CP. 9. Pos. §18.

Second Method.

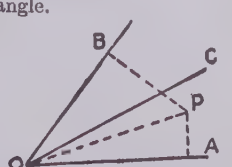
5. Let P^1 be a point which is not on CP^1, then draw AP^1, BP^1 and CP^1.
6. P^1C cannot be $\perp$ AB at C $\angle ACP^1$ cannot equal $\angle BCP^1$. 6. Pos. §18. Def. §35.
7. Consider the $\measuredangle ACP^1$ and BCP^1, 7.
$AC = CB$, Hyp.
$P^1C = P^1C$, Identical.
$\angle P^1CB > \angle P^1CA$. Reason in 6.
8. $P^1B > P^1A$. 8. Theorem 7. §75.

Hence any point P^1 not on PC is not equidistant from A and B.

90. Distance from a Point to a Line.—(Theorem 12, §82. The perpendicular is the shortest distance that can be drawn from a point to a line.) This is defined to be the distance from the point to the line.

91. Theorem 17.—

The locus of points equidistant from the sides of an angle is the bisector of the angle.



Hyp. OC is the bisector of the angle AOB.

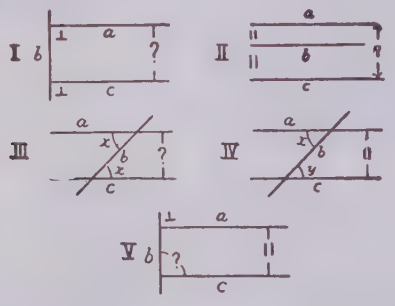
Con. OC is the locus of all points equidistant from OA and OB.

1. Let P be any point such that its distance PB from the line OB equals its distance PA from the line OA. Draw OP. 1. Def. §90.
2. In $\measuredangle OAP$ and OPB, 2.
$OP = OP$, Identical.
$PA = PB$, Assumed in 1.
$\angle PBO = \angle PAO =$ a rt. $\angle$. Def. §90.

3. $\therefore \triangle OAP \cong \triangle OBP$.	3. Theorem 15, §87.
4. $\therefore \angle AOP = \angle BOP$.	4. Corresponding angles of congruent triangles §68.
5. $\therefore$ OP coincides with OC, for an angle has but one bisector.	5. Ax. §42.
We now know that every point equidistant from OA and OB as P is on the bisector OC.	
It remains to prove that every point on the bisector is equidistant from OB and OA.	
6. Let P be considered as any point on OC and draw the $\perp$s PA and PB to OA and OB respectively, meeting them in A and B.	
7. Consider $\triangle$OAP and OBP,	7.
$\angle POA = \angle POB$,	Hyp.
$OP = OP$.	Identical.
8. Place $\triangle OBP$ on $\triangle OAP$ so that $\angle POB$ coincides with its equal $\angle POA$, with line OB falling on OA and line OP falling on OP.	8. Pos. §14.
Since $OP = OP$, O and P will remain fixed.	
9. PB will coincide with PA.	9. Theorem 11, §81.
10. $\therefore$ PB = PA.	10. Corresponding parts of congruent triangles.
And every point as P on OC is equidistant from A and B.	

PARALLELS AND PARALLELOGRAMS.

92.—There are many propositions in geometry which have to do with the relations of three objects to each other. If we are given three objects a, b, and c, they can be formed into pairs in three ways, a, b; b, c; and a, c. When we know the relations existing between the elements of two of the pairs, the problem is to find the relation between the two elements of the third pair. We shall give a few examples below, and the reader is advised to study the situation as indicated in each drawing as they are all important geometrical theorems.



It is a sine qua non of geometry to recognize these theorems at once. In each case we have three lines given which are denoted by a, b, and c.

Case I. Line a is perpendicular to line b, line b is perpendicular to line c; the question is the relation of a to c. In symbols, $a \perp b$, $b \perp c$, b ? c. The answer is given in the theorem—Two straight lines perpendicular to the same straight line are parallel.

Case II. Line a is parallel to line b, line b is parallel to line c, the question is the relation of line a to line c. In symbols a $\parallel$ b, b $\parallel$ c, a ? c. The answer is given in the theorem,—Two straight lines parallel to the same straight line are parallel to each other.

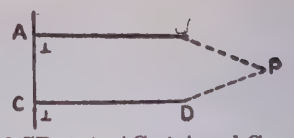
Case III. Line a forms the angle x with the line b, line c forms an angle equal to x with the line b; the question is the relation of line a to line c. The answer is given in the theorem,—When two straight lines are cut by a third, if a pair of corresponding angles are equal, the lines are parallel.

Case IV. Line a is parallel to line c, line b forms an angle x with the line a, line b forms an angle y with the line c; the question is the relation of angle x to angle y. The answer is the theorem,—If two parallel lines are cut by a third line, any two corresponding angles are equal.

Case V. a $\perp$ b, a $\parallel$ c, b ? c. The answer is the theorem,—If a straight line is perpendicular to one of two parallel lines, it is perpendicular to the other.

93. Theorem 18.—

Two straight lines perpendicular to the same straight line are parallel.



Hyp. AB and CD $\perp$ to AC at A and C respectively.

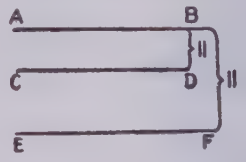
Con. AB $\parallel$ CD.

1. There are only two possibilities, either AB is $\parallel$ CD or AB is not $\parallel$ CD. Suppose that AB meets CD, when they are prolonged, in a point P.	1. §73. There are only two possibilities.
2. This is impossible as we would have two perpendiculars from a point to a line.	2. §81, Theorem 11. From a given point without an unlimited straight line one perpendicular, and only one, can be drawn to the line.
3. $\therefore$ AB $\parallel$ CD.	

94. Reductio ad absurdum.—The above proof is a sample of the proof called by some "reductio ad absurdum." It shows that any other assumption than the given one leads to an absurdity, which in geometry means to a violation of one of the postulates or axioms.

95. Theorem 19.—

Two straight lines parallel to the same straight line are parallel to each other.



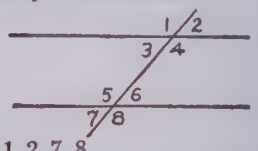
Hyp. CD and EF $\parallel$ AB.

Con. CD $\parallel$ EF.

1. Either CD is $\parallel$ EF or CD is not $\parallel$ EF.	1. §73. There are only two possibilities.
2. If CD is not $\parallel$ EF, suppose they meet in a point P, then there are two lines through P $\parallel$ AB, which is impossible.	2. §15. Pos. Through any point outside a given line, one line, and only one, can be drawn parallel to the given line.
3. Hence CD $\parallel$ EF.	

96. Transversal.—A transversal is a line cutting two or more lines.

97. Angles Formed by a Transversal.—



Exterior angles 1, 2, 7, 8.

Interior angles 3, 4, 5, 6.

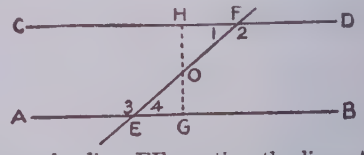
Alternate-interior angles, there are two pairs 3, 6; 4, 5.

Alternate-exterior angles, there are two pairs 1, 8; 2, 7.

Corresponding angles, there are four pairs 1, 5; 2, 6; 3, 7; 4, 8.

98. Theorem 20.—

When two straight lines are cut by a third, if the alternate interior angles are equal, the two straight lines are parallel.



Hyp. Given the line EF meeting the lines AB and CD in E and F respectively, forming the pairs of alternate interior angles 1, 4 and 2, 3, so that $\angle 1 = \angle 4$ and $\angle 3 = \angle 2$.

Con. Line AB is parallel to line CD.

1. Bisect EF and through the point of bisection O draw OH $\perp$ CD, meeting CD in H and AB in G.	1. §67. §81, Theorem 11.
2. Consider $\triangle$OEG and OHF	2.
OF = OE,	Construction.
$\angle 1 = \angle 4$,	Hypothesis.
$\angle EOG = \angle FOH$,	§80, Theorem 10.
$\therefore \triangle OEG \cong \triangle OHF$.	§65, Theorem 2.
3. OG $\perp$ AB or HG $\perp$ AB, since $\angle OHF = \angle OGE$.	3. Corresponding angles of congruent triangles.
4. HG $\perp$ CD.	4. Construction.
5. $\therefore$ CD $\parallel$ AB.	5. §93, Theorem 18.

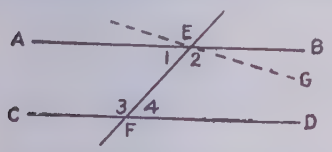
99. Theorem 21.—
When two straight lines are cut by a third, if a pair of corresponding angles are equal, the lines are parallel.

In referring to the figure of §97, it will be seen the equality of corresponding angles always demands the equality of the alternate interior angles, so the theorem follows from theorem 20.

100. Theorem 22.—
When two straight lines are cut by a third, if the sum of two interior angles on the same side of the transversal is equal to two right angles, the two lines are parallel.

Again referring to the figure of §97, if $4+6=$ two right angles, since $3+4=$ two right angles, then $3+4=4+6$ or $3=6$. Thus again we are brought to the equality of alternate interior angles.

101. Theorem 23.—
If two parallel lines are cut by a third line, the alternate interior angles are equal.



Hyp. Two parallel lines AB and CD are cut by the line EF in the points E and F respectively, forming the pairs of alternate interior angles 1 and 4, 2 and 3.

Con. $1=4$ and $2=3$.

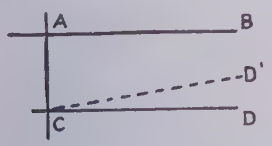
Hint. Draw the line EG through E so that $\angle GEF=3$, then EF meets CD and EG, so as to form equal alternate interior angles, and EG is parallel to CD. (§98, Theorem 20. When two straight lines are cut by a third, if the alternate interior angles are equal, the two straight lines are parallel.) But EG must coincide with AB, otherwise there are two lines through E parallel to CD, but this is impossible. (§15. Postulate. Through any point outside a given line, one line, and only one, can be drawn parallel to the given line.) $\therefore \angle GEF=2=3$.

102. Theorem 24.—
If two parallel lines are cut by a third straight line, any two corresponding angles are equal.

103. Theorem 25.—
If two parallel lines are cut by a third straight line, any two corresponding angles are equal.

Both these theorems follow at once from §101 using the figure and definitions of §97.

104. Theorem 26.—
If a straight line is perpendicular to one of two parallel lines it is perpendicular to the other.



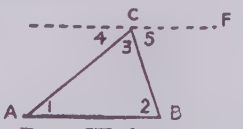
Hyp. AB parallel to CD and AB perpendicular to AC at A. CD meets AC in C.

Con. CD is perpendicular to AC at C.

Hint. Through C draw CD^1 perpendicular to AC, then AB is parallel to CD^1. (§93, Theorem 18. Two straight lines perpendicular to the same straight line are parallel.) Then CD and CD^1 coincide. (§15, Postulate. Through any point outside a given line, one line, and only one, can be drawn parallel to the given line.)

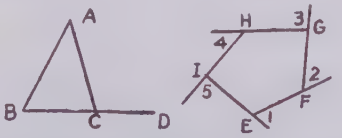
105. Theorem 27.—
If the sides of one angle are parallel respectively to the sides of another, the angles are either equal or supplementary. This follows at once from §101, §102, §103.

106. Theorem 28.—
The sum of the angles of any triangle is a straight angle.



Hint. Draw CF through C parallel to AB. Then $1=4$, $2=5$ alternate interior angles. $4+3+5=$ a straight angle, replacing 4 by its equal 1 and 5 by its equal 2 we have $1+2+3=$ a straight angle.

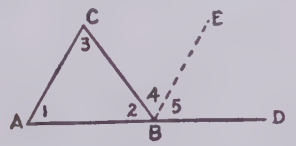
This is an important theorem. We may make the sides of a triangle vary as we please as long as the sum of any two sides is greater than the third, but the sum of the angles of a triangle is always the same. To know two angles of a triangle is the same as knowing all three; hence if two angles of one triangle are equal to two angles of another, the third angle of the first is equal to the third angle of the second.



107. Exterior Angle.—If a side of a triangle as BC is prolonged through a vertex C to a point D, the angle ACD is called an exterior angle of the triangle. Each triangle has six exterior angles, each side can be prolonged in two directions.

In the case of the polygon EFGHI, exterior angles are obtained by prolonging the sides in the same manner as for a triangle. 1, 2, 3, 4, 5 are one set of exterior angles, another set can be obtained by prolonging the sides in the opposite direction.

108. Theorem 29.—
Any exterior angle of a triangle is equal to the sum of the two opposite interior angles.

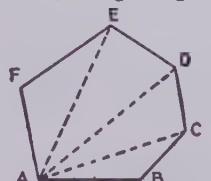


Hyp. AF, a side of the triangle ABC, is prolonged through B to a point D, giving the exterior angle CBD.

Con. $\angle CBD=\angle 1+\angle 3$.

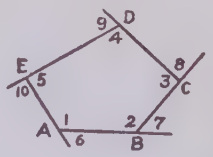
Hint. Draw BE through B parallel to AC. $3=4$ and $1=5$, therefore $1+3=4+5=\angle CBD$.

109. Theorem 30.—
The sum of the angles of a polygon of n sides is (n—2) straight angles.



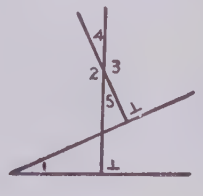
Hint. Study the number of triangles that a polygon of n sides can be cut into and remember that the sum of the angles of each triangle is one straight angle.

110. Theorem 31.—
The sum of the exterior angles of a polygon, made by producing each of its sides in succession, is equal to two straight angles.

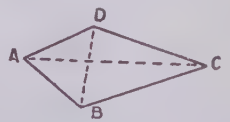


By the previous theorem $1+2+3+4+5=$ (n—2) straight angles. At each vertex the sum of the interior and exterior angles is one straight angle, i.e., at A we have $1+6=$ a straight angle. Hence $(1+6)+(2+7)+(3+8)+(4+9)+(5+10)=$ n straight angles. Subtracting the first equation from the second $6+7+8+9+10=$ n straight angles—(n—2) straight angles $=2$ straight angles.

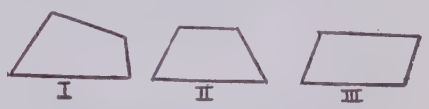
111. Theorem 32.—
If the sides of one angle are perpendicular respectively to the sides of another, the angles are either equal or supplementary.



From a drawing it is evident that $1=5=4$, but 1 is supplementary to both 2 and 3.



112. A quadrilateral is a portion of a plane bounded by four straight lines. The lines AB, BC, CD, DA are called the sides. The points A, B, C, D the vertices. The lines AC and BD joining the opposite vertices in pairs are the diagonals.



A trapezium is a quadrilateral no two of whose sides are parallel, I.

A trapezoid is a quadrilateral with two and only two sides parallel, II.

A parallelogram is a quadrilateral whose opposite sides are paralled, III.



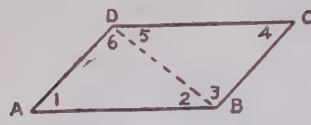
A rhomboid is a parallelogram whose angles are not right angles, and whose adjacent sides are unequal, I.

A rhombus is a parallelogram whose angles are not right angles, and whose adjacent sides are equal, II.

A rectangle is a parallelogram whose angles are right angles, III.

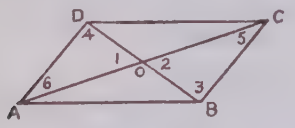
A square is a rectangle whose sides are equal, IV.

113. Theorem 33.—
The opposite sides of a parallelogram are equal, and the opposite angles are equal.



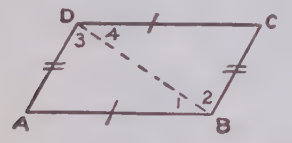
Hint. Draw the diagonal BD. Prove triangle ABD congruent to triangle BCD. (§65, Theorem 2. If two triangles have a side and the two adjoining angles of one respectively equal to a side and two adjoining angles of the other, the triangles are congruent). Hence DC equals AB, CB equals DA, and angle A equals angle C.

114. Theorem 34.—
The diagonals of a parallelogram bisect each other.



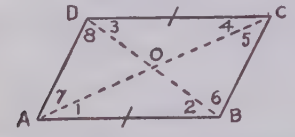
Hint. Prove triangles OAD and OBC congruent. AD = BC, 4 = 3, and 6 = 5. (§65, Theorem 2. If two triangles have a side and two adjoining angles of one respectively equal to a side and two adjoining angles of the other, the triangles are congruent.) Hence OB = OD and OA = OC.

115. Theorem 35.—
If the opposite sides of a quadrilateral are equal, the figure is a parallelogram.



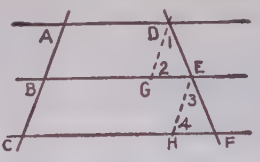
Hint. Draw the diagonal BD. Triangles ABD and BCD are congruent. (§77, Theorem 9. If two triangles have the three sides of one respectively equal to the three sides of the other, the triangles are congruent.) Hence the alternate interior angles 1 and 4 are equal and AB and DC are parallel. (§98, Theorem 20. When two straight lines are cut by a third, if the alternate interior angles are equal, the two straight lines are parallel.) In the same way since 2 = 3, the sides AD and BC are parallel.

116. Theorem 36.—
If two opposite sides of a quadrilateral are equal and parallel, the figure is a parallelogram.



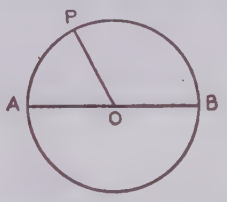
Hyp. AB and DC are parallel and equal.
Con. ABCD is a parallelogram.
Hint. Draw the two diagonals meeting at O. Prove triangles AOB and ODC congruent, then prove triangles OAD and OBC congruent. Then since the alternate interior angles 5 and 7 are equal the sides AD and BC are parallel.

117. Theorem 37.—
If a series of parallel lines cut off equal segments on one transversal, they cut off equal segments on any other transversal.



Hyp. The parallel lines AD, BE, CF cut off equal segments on AC or AB = BC.
Con. The parallel lines cut off equal segments on DF or DE = EF.
Hint. Draw through D, DG parallel to AB and through E, EH parallel to BC. Then ABGD and BCHE are parallelograms, hence DG = AB = BC = EH. Prove the triangles DGE and EHF congruent, 1 = 3, 2 = 4, and DG = EH. Therefore DE = EF corresponding sides of congruent triangles.

The Circle and the Measure of Angles.



118. Circle.—A circle is the curved line passing through all points in a plane which are at a given fixed distance from a fixed point of the plane. When there is no ambiguity a circle can be designated by its center.

119. Center of a Circle.—The fixed point is the center.

120. Radius.—A radius of a circle is a straight line drawn from the center to any point of the circle and is equal to the given fixed distance.

121. Diameter.—A diameter is a straight line passing through the center of the circle and having its two extremities on the circle.
In the above figure O is the center, OA and OB are radii, and AB is a diameter.

122. Circumference.—The length of a circle is the circumference. It is the distance traversed by a point in making a complete circuit of a circle.
Note. The word circle has two distinct meanings in ordinary language. We may mean the area bounded by the circumference or we may mean only the circumference itself. It is better, from the geometrical standpoint, to understand the circle to be a curved line and not the surface bounded by the line.
Note. A circle can be defined in terms of its locus properties, §88. A circle is the locus of points in a plane at a given fixed distance from a fixed point. When we choose a center and a radius we divide the points of the plane into three classes: (a) those which are at a greater distance from the center than the radius, and which are said to be outside the circle, (b) those which are at a lesser distance from the center than the radius, and which are said to be inside the circle: (c) those which are at the given distance and which constitute the circle itself.

123. Arc.—An arc is a continuous portion of a circle. AP is an arc.

124. Semicircle.—A semicircle is an arc which is half of a circle.

125. Major Arc.—An arc greater than a semicircle is a major arc.

126. Minor Arc.—An arc less than a semicircle is a minor arc.
If we choose two points as P and B, there are two arcs which have these for end points. A minor arc is described by a point which starts at P and moves clockwise to B, a major arc by a point which starts at P and moves counter clockwise to B. The addition of a point in the major arc will do away with this ambiguity, thus PB denotes the minor arc and PAB the major arc.

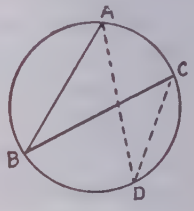
127. Central Angle.—A central angle is the angle formed by the radii of a circle. Since all radii pass through the center the vertex of a central angle is always at the center. Angle POB is a central angle.

128. Intercept and Subtend.—An angle is said to intercept an arc included between its sides and the arc is said to subtend the angle.
The angle POB intercepts the arc PB and the arc PB subtends the angle POB. Two parallel lines can also cut a circle in two pairs of points, thus they are said to intercept two arcs.

129. Chord.—A chord is a straight line joining the extremities of an arc, the chord is said to subtend the arc. Draw the line PB and you have a chord subtending the arc PB.

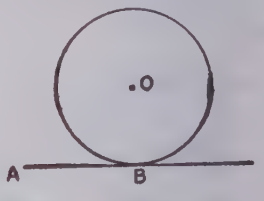
130. Segment.—A segment is a portion of the plane bounded by an arc of a circle and its chord.

131. Sector.—A sector of a circle is a portion of the plane included between an arc and the radii drawn to its extremities. The radii OA and OP with the arc AP bound a sector.



132. Inscribed Angle.—An angle whose vertex is on a circle and whose sides are chords is called an inscribed angle. Angle ABC is an inscribed angle. An angle is inscribed in a segment when its vertex lies on the arc of the segment and its extremities pass through the ends of the segment. Angles ABC and ADC are two angles inscribed in the same segment, the segment denoted by ABC, ADC or ABDC.

133. Concentric Circles.—Circles are concentric when they have the same center.



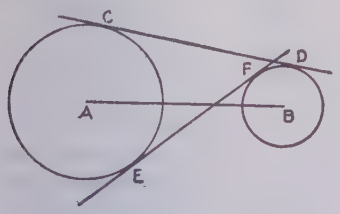
134. Tangent.—A straight line is said to be tangent to, or to touch a circle when it has but a single point in common with the circumference no matter how far the line is extended. The circle is also said to be tangent to the line. Line AB is tangent to the circle with center at O.

135. Point of Contact.—The single point which a line and circle have in common is called the point of contact.

136. Secant.—A straight line meeting a

circumference in two points is a secant.

137. Tangent Circles.—When two circles are tangent to the same line at the same point they are said to be tangent to each other or tangent circles. They are tangent internally or externally according as one circle lies entirely within or entirely without the other.



138. Common Tangent.—A line which is tangent to two circles is called a common tangent. An internal tangent as EF passes between the two circles. A tangent which does not pass between the circles is called an external tangent.

139. Line of Centers.—The line joining the centers of two circles is called the line of centers.

The following statements follow easily from the postulates and axioms.

140.—All radii of a circle are equal, also all diameters are equal.

141.—Two circles are congruent when their radii or diameters are equal.

142.—Two radii or diameters of equal circles are equal.

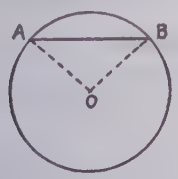
143.—Every diameter bisects the circle and its circumference.

144.—If the centers of two equal circles which lie in the same plane be made to coincide, the circles will coincide.

145.—A radius is equal to one half a diameter.

146. Theorem 38.—

The diameter of a circle is greater than any other chord.



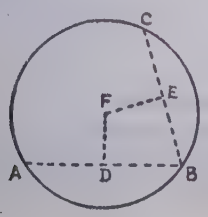
Hyp. AB is any chord of the given circle.

Con. AB is less than a diameter.

Draw the radii OA and OB. OA+OB >AB. (Postulate, §12. A straight line is the shortest distance between two points.) OA+OB is equal to a diameter. ∴ AB is less than a diameter.

147. Theorem 39.—

Through three points not lying in a straight line one circle, and only one, can be drawn.

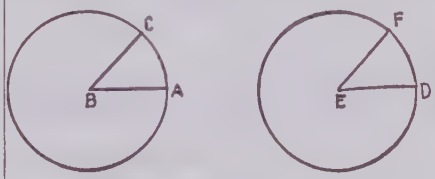


Hyp. Given the three points A, B, and C not in a straight line.

Con. One circle and only one can be drawn through A, B, and C. Imagine a circle drawn through A, B, and C and let F be the center of this circle. Then AF=BF=CF since they are radii of the same circle. Hence F must be on the perpendicular bisector of AB. (§89. The locus of points equidistant from two given points is the perpendicular bisector of the line joining them.) By the same reasoning F must be on the perpendicular bisector of CB. Hence F is the point of intersection of the perpendicular bisectors DF and EF. These two lines must intersect since if they do not they are parallel which means that A, B, and C are in a straight line. This proves that one center exists. There can not be more than one center because the two bisectors can only intersect in a single point.

148. Theorem 40.—

If in the same circle or in equal circles, two angles at the center are equal, the arcs which they intercept are equal.



Hyp. Given the two equal circles with the centers B and E, with the angles B and E equal, which intercept the arcs AC and DF respectively.

Con. The arc AC equals the arc DF.

Place the circle with center D on the circle with center B so that the angle B coincides with its equal E. Then the two circles will coincide and the point A will coincide with D and the point C with the point F. Hence AC will coincide with DF, the two end points of an arc determine the arc. If the angles are in the same circle, one angle can be rotated until it coincides with the other.

Note. Many theorems in plane geometry contain the expression "in the same circle or equal circles." The shortest distance between any two points on the surface of a sphere is the arc of a certain circle passing through the two points and this circle always has the same radius no matter what two points are chosen so the theorems are at once useful for different circles on the sphere. When we speak of the distance between New York and London we do not mean the straight line distance but the distance measured along the circumference of a circle drawn on the earth joining the two points. Also when we compare the distances between two pairs of places we are comparing arcs of two different equa/ circles.

149. Theorem 41.—

If in the same circle, or in equal circles, two arcs are equal, the angles which they subtend at the center are equal.

The figure of theorem 40 can be used.

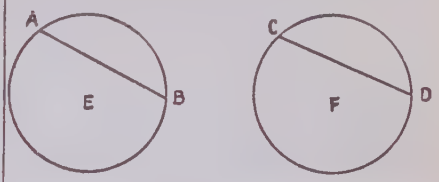
Hyp. Arcs AC and FD, drawn in the equal circles, are equal.

Con. Angles B and E are equal.

The proof is by superposition. Make the two circles coincide with the arcs AC and DF coinciding, then show that the angles B and E coincide. If the arcs are in the same circle make them coincide by a rotation.

150. Theorem 42.—

If in the same circle, or in equal circles, two arcs are equal the chords subtending them are equal.



Hyp. Given the equal circles E and F with the equal arcs AB and CD respectively.

Con. Chord AB equals the chord CD. The proof is by superposition.

151. Theorem 43.—

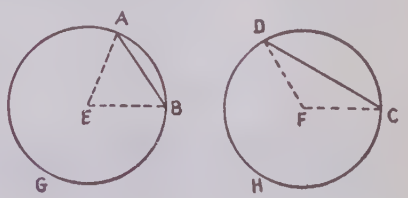
If in the same circle, or in equal circles, two chords are equal, the arcs subtended by them are equal. This is the converse of the previous theorem and the same method of superposition can be used.

Hyp. The chord AB equals the chord CD.

Con. The arc AB equals the arc CD.

152. Theorem 44.—

If in the same circle or in equal circles, two arcs, each less than a semicircle, are unequal, the chords subtending them are unequal; and the greater arc is subtended by the greater chord.



Hyp. Given the equal circles E and F with the unequal arcs AB and CD respectively, with minor arc DC greater than minor arc AB.

Con. Chord DC is greater than the chord AB.

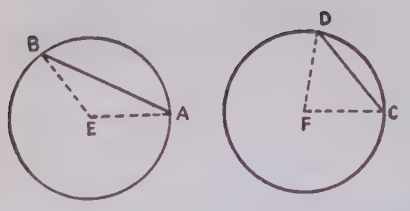
Draw the radii, EB, EA, FC, and FD. If the two circles are made to coincide, with FC coinciding with EB, then since arc DC is greater than arc BA, angle CFD is greater than angle BEA.

Consider the two triangles BEA and CFD. EB=EA=FC=DF, radii of the same or equal circles, but angle CFD is greater than angle BEA. (§75. If two triangles have two sides of one respectively equal to two sides of the other, and the included angles unequal, the triangle which has the greater included angle has the greater third side.) Hence DC is greater than BA.

Note. If we use the arcs which are greater than a semicircle as BGA and CHD, then the greater arc corresponds to the lesser chord.

153. Theorem 45.—

If in the same circle, or in equal circles, two chords are unequal, the arcs subtending them are unequal; and the greater chord subtends the greater arc, provided neither arc exceeds the semicircle.



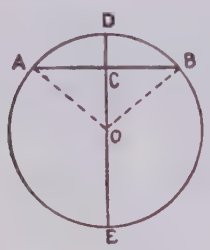
Hyp. Given the equal circles E and F with the chords AB and CD unequal and with AB greater than CD.

Con. Minor arc BA is greater than minor arc CD.

Draw the radii EA, EB, FC, and FD, which are all equal. Consider the triangles EAB and FCD. (§76. Theorem 8. If two triangles have two sides of one respectively equal to two sides of the other, and the third sides unequal, the triangle which has the greater third side has the greater included angle.) Therefore angle AEB is greater than angle CFD. Evidently the greater angle corresponds to the greater arc.

154. Theorem 46.—

The diameter perpendicular to a chord bisects the chord and the arcs which the chord subtends.

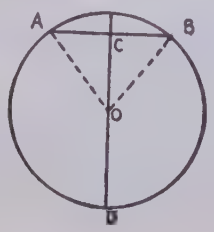


Hyp. The diameter ED is perpendicular to the chord AB, meeting it in the point C, and meeting the minor arc AB in the point D and the major arc AEB in the point E.

Con. AC equals CB, arc AD equals arc DB, and arc AE equals arc EB. Draw the radii OA and OB, which are equal. The right triangles OCA and OCB have OC common and AO equal to OB. (§87. Theorem 15. If two right triangles have the hypotenuse and a leg of one respectively equal to the hypotenuse and a leg of the other, the triangles are congruent.) Hence AC=CB. Also angle AOC equals angle COB. (§148. Theorem. Equal angles at the center subtend equal arcs.) Hence arc AD equals arc DB. Arc DAE equals arc DBE since both are semicircles. Subtracting the equal arcs AD and DB we have arc AE equals arc BE. (§40. Axiom. If equals are subtracted from equals, the remainders are equal.)

155. Theorem 47.—

The perpendicular bisector of a chord passes through the center of the circle.



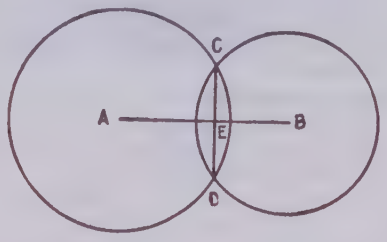
Hyp. CD is the line perpendicular to the chord AB at its mid-point C.

Con. CD passes through O, the center of the circle.

Draw OA and OB radii of the circle. All radii of the same circle are equal, hence OA equals OB, thus O is a point equidistant from A and B. (§89. Theorem 16. The locus of points equidistant from two given points is the perpendicular bisector of the line joining them.) Therefore O is on CD.

156. Theorem 48.—

When two circles intersect each other the straight line through their centers is the perpendicular bisector of their common chords.



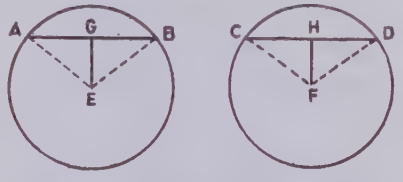
Hyp. The two given circles A and B intersect in C and D. CD is the common chord and AB the line of centers, intersecting in the point E.

Con. AB is the perpendicular bisector of CD.

If AB is not the perpendicular bisector of AB, draw the line perpendicular to CD at its midpoint. By the previous theorem, the line just drawn will pass through the centers of both circles, hence through the points A and B. Hence AB is the perpendicular bisector of AB. (§8. Postulate. One straight line, and only one, can be drawn through two given points.)

157. Theorem 49.—

If in the same circle, or in equal circles, two chords are equal, they are equally distant from the center.



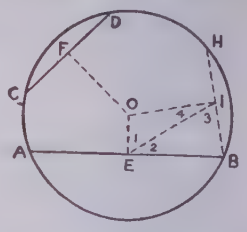
Hyp. Given the equal circles E and F with the equal chords AB and CD respectively. EG and FH the perpendiculars from the centers on their respective chords.

Con. EG equals HF.

Draw the radii FA and FC, which are equal. (§154. Theorem 46. The diameter perpendicular to a chord bisects the chord and the arc which the chord subtends.) Hence AG=½AB and CH=½CD but by hypothesis AB=CD, therefore AG=CH. (§46. Postulate. Quantities that are equal to the same quantity or to equal quantities are equal to each other.) Consider the right triangles AGE and CHF. (§87. Theorem. If two right triangles have a leg and the hypotenuse of one equal to a leg and the hypotenuse of the other, the triangles are congruent.) Therefore AGE and CHF are congruent and GE equals FH. The case where they are chords of the same circle permits of the same proof.

158. Theorem 50.—

If in the same circle, or in equal circles, two chords are unequal, the greater chord is at the less distance from the center.



Hyp. Chord AB is greater than the chord DC. OE is the perpendicular from O on AB, meeting it in E, and OF the perpendicular from O and CD, meeting it in F.

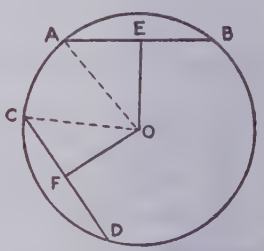
Con. OF is greater than OE.

Let BH be a chord equal to CD and let OI be the perpendicular from O on BH, meeting it in I. By the previous theorem OI equals OF. Draw EI. EB=½AB and BI=½BH. Since AB is greater than CD or its equal BH, EB is greater than BI. (§44. Axiom. If unequals are operated on by positive unequals in the same way, the results are unequal in the same order.) In the triangle EBI angle 3 is greater than angle 2. (§74. Theorem. If one side of a triangle is greater than a second side, the angle opposite the first side is greater than the angle opposite the second side.) $\angle 4+\angle 3=$ a right angle, $\angle 1+\angle 2=$ a right angle, therefore $\angle 1+\angle 2=\angle 3+\angle 4$. But $\angle 2<\angle 3$ therefore $\angle 4<\angle 1$. (§45, Axiom. If unequals are subtracted from equals the remainders are unequal in the reverse order.) Now consider triangle OEI with $\angle 4$ less than $\angle 1$; side OE is less than side OI. (§72. Theorem. If one angle of a triangle is greater than a second angle, the side opposite the first angle is greater than the side opposite the second angle.) If OE is less than OI, then OE is less than OF.

Note. The proof when the chords are in different circles is the same.

159. Theorem 51.—

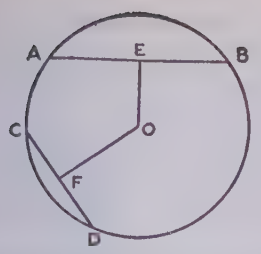
If in the same circle, or in equal circles, two chords are equally distant from the center, they are equal.



Hint. Prove that the two right triangles OEA and OCF are congruent. (§87. Theorem 15. If two right triangles have the hypotenuse and a leg of one respectively equal to the hypotenuse and leg of another, the triangles are congruent.)

160. Theorem 52.—

If in the same circle, or in equal circles, two chords are unequally distant from the center, the chord at the less distance is the greater.



Hyp. OE the perpendicular distance from O, the center of the circle to the chord AB, and OF the perpendicular distance to the chord CD. OF is greater than OE.

Con. AB is greater than CD.

Hint. Use the method of exclusion. There are three possibilities;

(a) AB equal to CD,

(b) AB less than CD,

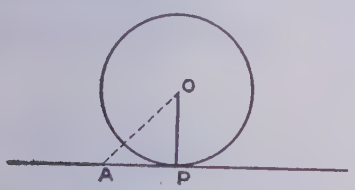
(c) AB greater than CD.

§157. **Theorem 49.**—If in the same circle, or in equal circles, two chords are equal, they are equally distant from the center. This would require in case (a) that OE equals OF, which is impossible.

§158. **Theorem 50.**—If in the same circle or in equal circles, two chords are unequal, the greater chord is at the less distance from the center. This would require in case (b) that OE was greater than OF. Hence only (c) remains as possible.

161. Theorem 53.—

A straight line tangent to a circle is perpendicular to the radius drawn to the point of contact.



Hyp. PA is the tangent to the circle O at the point P.

Con. AP is perpendicular to the radius OP at P.

From the definition of a tangent §134 it follows that the line AP is entirely outside the circle. Take any other point A of the tangent AP and draw AO. Evidently OA is greater than OP, and the least distance from O to AP is OP. Hence OP is perpendicular to AP. (§82. Theorem. The perpendicular is the shortest line that can be drawn from a point to a straight line.)

Note. This shows there is only one tangent to a circle at a given point. (§18. Postulate. From a given point in a given line, one perpendicular, and only one, can be drawn to the line.)

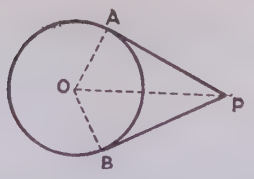
162. Theorem 54.—

A perpendicular to a tangent at the point of contact passes through the center of the circle.

Hint. There is only one tangent at a point and this tangent is perpendicular to the radius drawn to the point of contact by a previous theorem.

163. Theorem 55.—

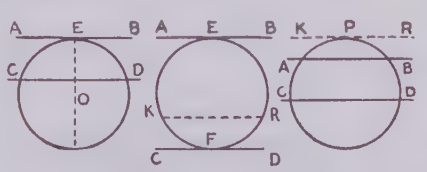
The tangents drawn to a circle from an external point are equal.



Hint. (§161. Theorem 53. A straight line tangent to a circle is perpendicular to the radius drawn to the point of contact.) Hence A and B are right angles. OA and OB are equal radii of the same circle and OP is common to the two right triangles OPA and OBP. (§87. Theorem 15. If two right triangles have the hypotenuse and a leg of one respectively equal to the hypotenuse and a leg of the other, the triangles are equal.) Therefore AP equals BP.

164. Theorem 56.—

Two parallel lines intercept equal arcs on a circle.



Case I Case II Case III

Case I. Only one of the parallels is tangent to the circle.

Hyp. Given AB tangent to the circle at E and CD parallel to AB meeting the circle in C and D.

Con. Arc EC equals arc ED.

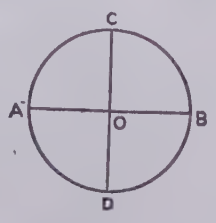
Draw EO which is perpendicular to AB. (§161. Theorem 53. A straight line tangent to a circle is perpendicular to the radius drawn to the point of contact.) Then OE is perpendicular to CD also. (§104. Theorem 26. If a straight line is perpendicular to one of two parallel lines it is perpendicular to the other also.) Arc CE equals ED. (§154. Theorem 46. The diameter perpendicular to a chord bisects the chord and the arcs, which the chord subtends.)

Case II. Both parallels are tangents.

Hint. Draw a line KR parallel to AB and meeting the circle in KR. By case I, arc EK = arc ER, and arc KF = arc FR, add these two equations and we have arc EK + arc KF = arc ER + arc RF or arc EKF = arc ERF.

Case III. Both parallels are secants.

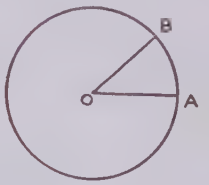
Hint. Draw KR parallel to AB and tangent to the circle at P. Then arc PC = arc PD and arc PA = arc PB, subtract the second equation from the first and we have arc PC − arc PA = arc PD − arc PB or arc AC = arc BD.



165. Measurement of Angles.—If we draw two perpendiculars diameters of a circle as AB and CD we divide the circumference of the circle into four equal arcs AD, BD, BC, and AC and they correspond to the four equal right angles at O. In the same way if we divide the circumference into any number of equal parts and draw the radii to the points of division we will have the same number of equal angles formed at the center of the circle.

166. Degree of Arc.—If the circumference of a circle is divided into 360 equal parts, one of these parts is called a degree of arc. This corresponds to dividing an arc like BC into 90 equal parts.

167. Degree.—If a right angle is divided into 90 equal angles, we call each angle an angle of one degree. Symbol °, A right angle = 90°.

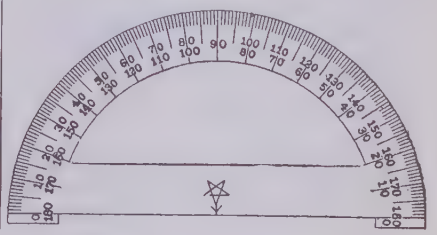


Minute.—If a degree is divided into 60 equal angles, each angle is called a minute. Symbol ′. 1° = 60′.

Second.—If a minute is divided into 60 equal angles, each angle is called a second. Symbol ″. 1′ = 60″.

A central angle is measured by its intercepted arc, where the angle is measured in angle degrees and the arc in arc degrees. When we say that AOB = 45°, we mean that ∠AOB is 45/360 of two straight angles or four right angles. When we say the arc AB is 45° we mean it is 45/360 of the circumference of the circle.

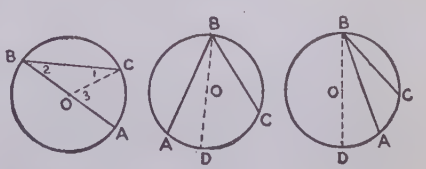
The numbers used in the measuring of the angle and the arc which it subtends are chosen so as to be the same for the sake of convenience. If the railroad fare were one cent a mile, then the number giving the miles would be the same as the number giving the cost of a ticket in cents, it does not mean that one cent is the same as one mile.



168. Protractor.—Based on the ideas just explained, the instrument in common use for the measurement of angles is called a protractor and is illustrated above.

169. Theorem 57.—

An angle inscribed in a circle is measured by one half of its intercepted arc.



Case I Case II Case III

Hyp. Given the inscribed angle ABC, intercepting the arc AC.

Con. Angle ABC is measured by one half the arc AC.

Case I. When one side passed through the center O.

Draw OC. Then triangle OBC is an isosceles triangle and $\angle 1 = \angle 2$. §69. Theorem. In an isosceles triangle the angles opposite the equal sides are equal.) But $\angle 3$ equals $\angle 1 + \angle 2$. (§108. Theorem. The exterior angle of a triangle is equal to the sum of the two opposite interior angles.) But by the previous section $\angle 3$ is measured by the arc AC, hence $\angle 2$, which is one half of $\angle 3$, is measured by one half the arc AC.

Case II. When the center of O falls inside the angle.

Hint. Draw the diameter BO meeting the circle in D. Then $\angle ABD$ is measured by one half arc AD and $\angle DBC$ is measured by one half the arc DC. Adding, we have $\angle ABC$ measured by one half arc AC.

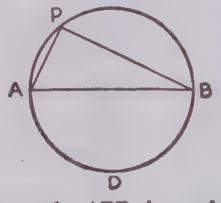
Case III. When the center O falls outside the angle.

Hint. Draw the diameter BO meeting the circle in D. $\angle ABC = \angle DBC - \angle DBA$. Apply case I to each of these angles.

If AC is 80 arc degrees, then angle B is 40 angle degrees.

170. Theorem 58.—

An angle inscribed in a semi-circle is a right angle.



Hyp. Angle APB is angle inscribed in a semi-circle.

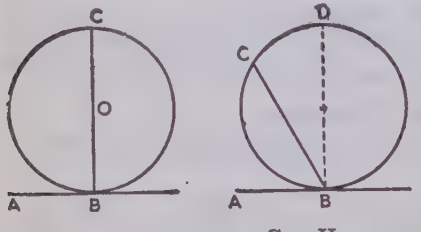
Con. Angle APB is a right angle.

By the previous theorem, APB is measured by one half the arc ADB which is a semi-circle. One half a semi-circle is 90 arc degrees, hence APB is 90 angle degrees.

Note. However P moves about the circle the angle APB will always be a right angle. The locus of a point which subtends a right angle with two fixed points is a circle having the two points for the extremities of a diameter.

171. Theorem 59.

An angle formed by a tangent and a chord through the point of contact is measured by one-half the intercepted arc.



Case I Case II

Hyp. Given an angle formed by a tangent at B, AB, and a chord CB.

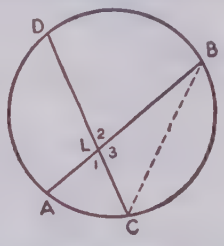
Con. The angle is measured by one-half the intercepted arc.

Case I. BC passes through O, the center of the circle. §161 Theorem 53. A straight line tangent to a circle is perpendicular to the radius drawn to the point of contact. Hence angle ABC is a right angle, or 90°. The intercepted arc BC is 180° arc degrees. Therefore $\angle ABC = \frac{1}{2}$ arc BC.

Case II. BC does not pass through O, the center of the circle. Draw the diameter BO meeting the circle in D. §169 Theorem 57. An angle inscribed in a circle is measured by one-half its intercepted arc. Therefore $\angle CBD = \frac{1}{2}$ arc CD. $\angle ABD = \frac{1}{2}$ arc ACD by Case I. Subtracting $\angle ABC = \frac{1}{2}$ arc BC.

172. Theorem 60.

An angle formed by two chords intersecting each other within a circle is measured by one-half the sum of the arc intercepted between its sides and the arc intercepted between the sides of its vertical angle.



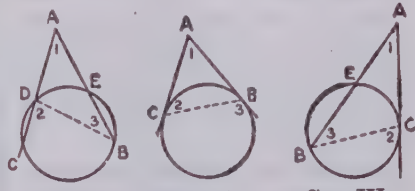
Hyp. Chords AB and CD intersecting in L to form the angle 1 and 2 which are vertical angles.

Con. $\angle 1$ and $\angle 2$ are measured by $\frac{1}{2}$ (arc AC + arc DB).

Draw CB. $\angle 1 = \angle B + \angle C$. (§108. Theorem 29. Any exterior angle of a triangle is equal to the sum of the two opposite interior angles.) $\angle C$ is measured by $\frac{1}{2}$ arc DB and $\angle B$ is measured by $\frac{1}{2}$ arc AC. (§169. Theorem 57. An angle inscribed in a circle is measured by one-half its intercepted arc.) Hence $\angle 1 = \angle 2$, is measured by $\frac{1}{2}$ (arc AC + arc DB).

173. Theorem 61.

An angle formed by two secants, or two tang nts, or a secant and a tangent, intersecting without a circle, is measured by one-half the difference of the intercepted arcs.



Case I Case II Case III

Case I. Hyp. AB and AC are two secants meeting in the point A, outside the circle.

Con. Angle A is measured by $\frac{1}{2}$ (arc BC — arc ED).

Draw DB. $\angle 2 = \angle 3 + \angle 1$. (§108. Theorem. Any exterior angle of a triangle is equal to the sum of the two opposite interior angles.) Therefore $\angle A = \angle 1 = \angle 2 - \angle 3$. $\angle 2$ is measured by $\frac{1}{2}$ arc BC, $\angle 3$ is measured by $\frac{1}{2}$ arc ED (§169. Theorem 57. An angle inscribed in a circle is measured by one-half its intercepted arc). Hence A is measured by $\frac{1}{2}$ (arc BC — arc ED).

Case II. Hint. $\angle 3 = \angle 2 + \angle 1$, therefore $\angle 1 = \angle 3 - \angle 2$.

Case III. Hint. $\angle 2 = \angle 3 + \angle 1$, therefore $\angle 1 = \angle 2 - \angle 3$.

Similar Polygons

We are perfectly familiar in every day life with objects which are just alike except for size. We speak for instance of enlarging a photograph to be two or three times its original size, or of drawing a map to a certain scale so that one inch represents a mile. It will be the purpose of the present chapter to give expression to these ideas in precise gometrical language.

174. Measurement.—The first problem of measurement is that of determining a length. The unit of length must be an arbitrary distance, the straight line distance between two marks on a rod which is fixed as the standard unit.

Each government preserves a platinum rod on which is indicated the standard unit of length and all other units are derived from this by comparison. The French government at the time the metric system was established intended that the unit of length, the meter, should depend upon the size of the earth; but the data upon which the calculations were made have since been found to be incorrect, so that the meter is also an arbitrary distance.

A E F B C D

What do I mean when I say that the rod or line AB is 3 feet long? If I take a rod or line CD, one foot long, and make it coincide with the line AB so that C coincides with A, then D will fall at some point E, and AE will be one foot, repeating the operation on EB, D will fall on some point F, again repeating the operation on FB, if D coincides with B, I say that AB is 3 feet long. When I wish to measure 5 inches, I must divide CD into 12 equal parts and measure off one of these units 5 times.

175. Ratio.—The ratio of one magnitude a to another magnitude b is the quotient resulting from dividing a by b or a/b. It is read, the ratio of a to b. The numerator a is called the antecedent and the denominator b is called the consequent.

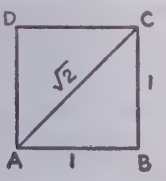
176. Relation of Ratio to Measurement.—When we measured the rod AB in §174 we were in reality finding the ratio of AB to the unit length CD, that is $AB/CD = 3$. In finding the value of a geometric ratio it is very important that the two distances are measured in the same units. If we were allowed to measure AB in inches while CD was measured in feet, $AB/CD = 36/1 = 36$. Thus any number of values could be obtained for the ratio, if this essential is neglected. The true value of the ratio is independent of the units used; thus if both AB and CD are expressed in inches $AB/CD = 36/12 = 3$.

177. Difficulties in Measurement. — There are difficulties in an exact treatment of measurement, which correspond to certain complications in our number system. We will illustrate some of these difficulties and show how they are related to measurement.

If we try to express 1/3 as a decimal we have a never ending sequence, $1/3 = .33333\ldots$ which is the same as $3/10 + 3/100 + 3/1000 + 3/10000\ldots$ This means that if we have any numbers of rods 1/10, 1/100, 1/1000 . . of an inch long and take 3 of the 1/10 inch rods, 3 of 1/100 inch rods, 3 of 1/1000 inch rods and place them end

to end we will obtain a length which is only approximately 1/3. No matter how many such rods we take we can never obtain exactly 1/3 of an inch. The mathematician prefers if possible to solve his problem in a definite number of steps. Perhaps we can imagine an infinite number of steps, but life is short and we can actually carry out only a finite number. Of course we can obtain 1/3 of an inch by dividing an inch into 3 equal parts.

But we now come to a difficulty that cannot be dismissed so easily.



If we take a square ABCD with each side one inch, then the length of the diagonal AC is $\sqrt{2}$ inches. What shall we mean by the ratio AC/AB? We should call this $\sqrt{2}$. But how are we to interpret it in terms of measurement? $\sqrt{2} = 1.4142\ldots. = 1+4/10+1/100+4/1000+2/10000\ldots.$ We can take a rod 1 inch long, 4 rods 1/10 inch long, one rod 1/100 inch long, 4 rods 1/1000 inch long, ...put them end to end and obtain an approximation to AC. In the case of 1/3 we could escape the difficulty by trisecting the unit instead of repeatedly dividing it into 10 parts, but there is no such escape here. There is no finite number of parts into which AB can be divided so that their sum will be exactly equal to AC. This is only a theoretical difficulty as it is evident that we can calculate the value of $\sqrt{2}$ as closely as we please. What gives the mathematician concern is that he must use an infinite number of processes to obtain the exact result, and these can only be carried out in the imagination.

178. Commensurable Magnitudes.—Two magnitudes are said to be commensurable when there exists a unit of measure which is contained an integral number of times in each. Lines of length 2 1/3 feet and 4 3/5 feet are commensurable, for $2\ 1/3 = 7/3 = 35/15$ and $4\ 3/5 = 23/5 = 69/15$, thus 1/15 of a foot is contained 35 times in 2 1/3 feet and 69 times in 4 3/5 feet.

179. Incommensurable Magnitudes.—Two magnitudes are said to be incommensurable when there is no unit of measure which is contained an integral number of times in each. As explained in §177, $\sqrt{2}$ and 1 are incommensurable.

180. Proportion.—Four magnitudes a, b, c, and d, are in proportion if the ratio of the first pair equals the ratio of the second. Symbol $a/b = c/d$ or $a:b = c:d$. This is read, a is to b as c is to d or a divided by b equals c divided by d.

There are many different forms that can be derived from the equality $a/b = c/d$ by use of the axioms.

I. Thus if $a/b = c/d$,

$1 = 1$, identity,

$a/b+1 = c/d+1$, §39,

therefore $\frac{a+b}{b} = \frac{c+d}{d}$ reducing to a common denominator. This is called the addition theorem of proportion.

II. Again, if $a/b = c/d$,

Then $bd(a/b) = bd(c/d)$, §41,

Thus $ad = bc$, reducing.

Dividing by cd, $\frac{ad}{cd} = \frac{bc}{cd}$ §42.

Reducing $a/c = b/d$.

This is called the alternation theorem in proportion.

III. Given $\frac{a}{b} = \frac{a_1}{b_1} = \frac{a_2}{b_2} = \frac{a_3}{b_3}$

Con. $\frac{a+a_1+a_2+a_3}{b+b_1+b_2+b_3} = \frac{a}{b} = \frac{a_1}{b_1} = \ldots\ldots\ldots$

Let $\frac{a}{b} = \frac{a_1}{b_1} = \frac{a_2}{b_2} = \frac{a_3}{b_3} = r.$

Then $a = br,$
$a_1 = b_1 r,$
$a_2 = b_2 r,$
$a_3 = b_3 r.$

Adding $a+a_1+a_2+a_3 = br+b_1r+b_2r+b_3r,$
$= (b+b_1+b_2+b_3)r.$

$\therefore \quad \frac{a+a_1+a_2+a_3}{b+b_1+b_2+b_3} = r.$

Hence $\frac{a+a_1+a_2+a_3}{b+b_1+b_2+b_3} = \frac{a}{b} = \frac{a_1}{b_1} = \ldots\ldots$

This is called the inversion theorem in proportion. (See Article 255, page 879.)

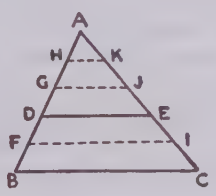
IV. **Mean Proportional.**—A mean proportional between two magnitudes a and b is the magnitude x defined by $a/x = x/b$, or $x = \sqrt{ab}$.

V. If $a/b = c/d$,
then $b/a = d/c$.

This is called the inversion theorem in proportion.

181. Theorem 62.—

A straight line parallel to the base of a triangle divides the other two sides proportionally.



Hyp. The line DE parallel to the base BC of the triangle ABC meets AB in D and AC in E.

Con. $\frac{AD}{DB} = \frac{AE}{EC}$

First we shall prove the so called commensurable case, that is where it is possible to find a segment as BF which is contained an integral number of times in the two segments BD and DA.

For the sake of clarity we will assume that BF is contained 2 times in BD and 3 times in DA. Let F, G, and H be the points corresponding to the division of the segments into multiples of BF. Then draw through each of the points F, G, and H, lines parallel to BC which meets AC in the points I, J, and K. Then by §117, Theorem 37. (If a series of parallel lines cut off equal segments on one transversal they cut off equal segments on any other transversal.) $CI = IE = EJ = JK = KA$

Hence $\frac{AD}{BD} = \frac{3(BF)}{2(BF)} = \frac{3}{2}$, and $\frac{AE}{EC} = \frac{3(IC)}{2(IC)} = \frac{3}{2}$

Therefore $\frac{AD}{BD} = \frac{AE}{EC}$, (§46, Axiom. Things equal to the same things are equal to each other).

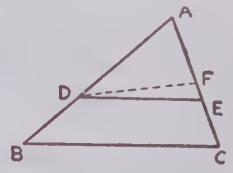
The proof of the incommensurable case goes beyond the work in a first reading of geometry.

It follows also by the method of §180, that $\frac{AD}{AB} = \frac{AE}{AC} = \frac{3}{5}$.

182. Theorem 63.

If a straight line divides two sides of a triangle proportionally, it is parallel to the third side.

This is the converse of the previous theorem.



Hyp. DE meets the sides AB and AC of the triangle ABC in the points D and E respectively, so that $\frac{AD}{DB} = \frac{AE}{EC}$

Con. DE is parallel to BC.

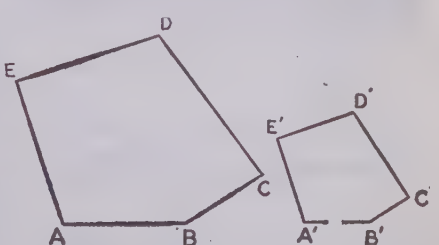
DE is either parallel to BC or it is not.

If it is not parallel, draw DF parallel to BC through D, meeting AC in F; but by the previous theorem, $\frac{AD}{DB} = \frac{AF}{FC}$ or $\frac{AD}{AB} = \frac{AF}{AC}$.

But if $\frac{AD}{DB} = \frac{AE}{EC}$ then $\frac{AD}{AB} = \frac{AE}{AC}$ by the previous theorem. Hence $\frac{AE}{AC} = \frac{AF}{AC}$ (§46 Axiom. Things equal to the same things are equal to each other.) Then $AE = AF$ (§41 Axiom. If equals are multiplied by equals the products are equal.) Therefore E coincides with F.

183. Polygon.—A polygon is a plane figure bounded by three or more straight lines. A polygon bounded by three lines is a triangle, one bounded by four lines is a quadrilateral, one bounded by five a pentagon, one bounded by six a hexagon, etc.

184. Convex and Reentrant Polygons.—A polygon is convex if each of its angles is less than two right angles and reentrant if one of its angles exceeds two right angles.



185. Similar Polygons.—Two polygons are similar (symbol ∼) when the angles of one are equal respectively to the angles of the other and the sides taken in order are proportional each to each. The conditions which must be satisfied in order that the two polygons ABCDE and $A^1B^1C^1D^1E^1$ may be similar are:

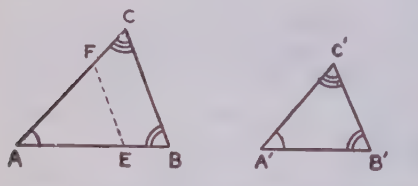
Angles equal $\angle A = \angle A^1$, $\angle B = \angle B^1$.

$\angle C = \angle C^1$, $\angle D = \angle D^1$, $\angle E = \angle E^1$,
Sides proportional

$$\frac{AB}{A^1B^1} = \frac{BC}{B^1C^1} = \frac{CD}{C^1B^1} = \frac{DE}{D^1E^1} = \frac{EA}{E^1A^1}$$

186. Theorem 64.—

If two triangles have the angles of one respectively equal to the angles of the other, the triangles are similar.



Hyp. Given the triangles ABC and $A^1B^1C^1$ with $\angle A = \angle A^1$, $\angle B = \angle B^1$ and $\angle C = \angle C^1$.

Con. $\frac{AB}{A^1B^1} = \frac{BC}{B^1C^1} = \frac{CA}{C^1A^1}$

Since $\angle A = \angle A^1$ it is possible to place triangle $A^1B^1C^1$ on ABC so that A^1B^1 takes the position AE, A^1C^1 the position AF, and B^1C^1 the position EF. Then FE is parallel to BC. (§99, Theorem 21. When two straight lines are cut by a third, if a pair of corresponding angles are equal, the lines are parallel.) Since $\angle E = \angle B^1 = \angle B$.

Then $\frac{AE}{AB} = \frac{AF}{AC}$, (§181, Theorem 62, A straight line parallel to the base of a triangle divides the other two sides proportionally.) Replace AE and AF by their equals A^1B^1 and A^1C^1 respectively we have $\frac{A^1B^1}{AB} = \frac{A^1C^1}{AC}$. The theorem can be completed by causing angle B^1 to coincide with B.

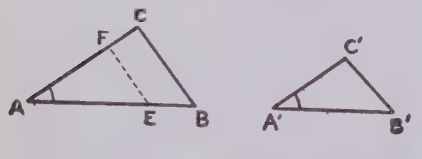
187. Theorem 65.—

If two triangles have two angles of one respectively equal to two angles of the other, the triangles are similar.

This follows at once from the previous theorem, for if two angles of one triangle are equal to two angles of another, the third angles are also equal. (§106, Theorem 28. The sum of the angles of any triangle is a straight angle.)

188. Theorem 66.—

If two triangles have an angle of one equal to an angle of the other and the sides including these angles proportional, the triangles are similar.



Hyp. Given the triangles ABC and $A^1B^1C^1$ with $\angle A = \angle A^1$ and $\frac{A^1C^1}{AC} = \frac{A^1B^1}{AB}$

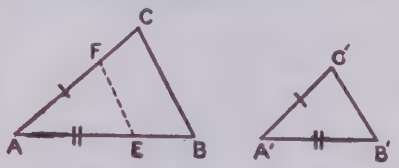
Con. ABC and $A^1B^1C^1$ are similar.

Hint. Place $A^1B^1C^1$ on ABC so that A^1 coincides with its equal A and B^1 takes the position E and C^1 the position F. Then EF divides AC and AB proportionally, which follows from replacing A^1B^1 and A^1C^1 by their equals AB and AF in $\frac{A^1C^1}{AC} = \frac{A^1B^1}{AB}$ to give $\frac{AF}{AC} = \frac{AE}{AB}$. Then FE is parallel to BC. (§182, Theorem 63. If a straight line divides two sides of a triangle proportionally it is parallel to the third side.) Then $\angle F = \angle C = \angle C^1$ and $\angle E = \angle B = \angle B^1$. (§102, Theorem 4. If two parallel lines are cut by a third line any two corresponding angles are equal.)

Hence the three angles of $A^1B^1C^1$ are equal to the three angles ABC and we are led back to the previous theorem. (§186, Theorem 64. If two triangles have the angles of one respectively equal to the angles of the other, the triangles are similar.)

189. Theorem 67.—

If the sides of two triangles are proportional, the triangles are similar.



Hyp. Given the two triangles ABC and $A^1B^1C^1$ with $\frac{AB}{A^1B^1} = \frac{BC}{B^1C^1} = \frac{CA}{C^1A^1}$

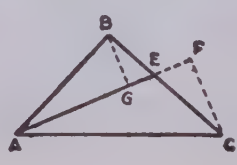
Con. The triangles ABC and $A^1B^1C^1$ are similar.

On AC measure off AF equal to A^1C^1 and on AB measure off AE equal to A^1B^1. Replace A^1B^1 and A^1C^1 by their equals AE and AF respectively in $\frac{AB}{A^1B^1} = \frac{AC}{A^1C^1}$ we have $\frac{AB}{AE} = \frac{AC}{AF}$. Hence triangles ABC and AEF are similar. (§188, Theorem 66. If two triangles have an angle of one equal to an angle of the other and the sides including these angles proportional, the triangles are similar.) Hence $\frac{FE}{CB} = \frac{AE}{AB}$ from the definition of similar triangles. Replace AE by its equal A^1B^1 and we have $\frac{FE}{CB} = \frac{A^1B^1}{AB}$, but $\frac{C^1B^1}{CB} = \frac{A^1B^1}{AB}$ by hypothesis. We now have two values for $\frac{A^1B^1}{AB}$, $\frac{FE}{CB}$ and $\frac{C^1B^1}{CB}$, and these are equal to each other. (§46, Axiom. Things equal to the same things are equal to each other.)

Hence $\frac{FE}{CB} = \frac{C^1B^1}{CB}$. Multiply both sides by CB and we have $FE = C^1B^1$. (§41, Axiom. If equals are multiplied by equals, the products are equal.) This shows that the triangle AEF has its three sides equal to those of the triangle $A^1B^1C^1$. Since AEF is similar to ABC its equal $A^1B^1C^1$ is also similar.

190. Theorem 68.—

The bisector of an angle of a triangle divides the opposite side into segments proportional to the adjacent sides.



Hyp. AE is the bisector of the Angle A of the triangle ABC.

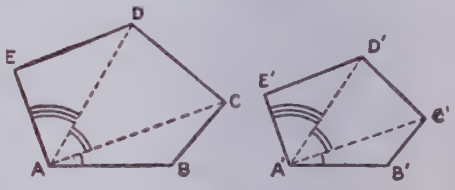
Con. $\frac{BE}{AB} = \frac{EC}{AC}$

Prolong AE sufficiently and draw the perpendicular from C to AE, meeting it in F, and draw the perpendicular from B on meeting it in G. Triangles ABG and AFC are similar; $\angle BAG = \angle FAC$ by hypothesis and $\angle G = \angle F$, both right angles. (§187, Theorem 65. If two triangles have two angles of one respectively equal to the angles of the other, the triangles are similar.) Therefore $\frac{AB}{AC} = \frac{BG}{FC}$, definition of similar triangles. $\angle BEG = \angle CEF$, being vertical angles; $\angle F = \angle G$, both being right angles.

Hence, by Theorem 65 quoted above, the triangles BGE and CEF are similar. Therefore $\frac{BG}{FC} = \frac{BE}{EC}$, definition of similar triangles. Equating the equal values for $\frac{BG}{FC}$ we have $\frac{AB}{AC} = \frac{BE}{EC}$.

191. Theorem 69.—

If two polygons are composed of the same number of triangles, similar each to each and similarly placed, the polygons are similar. We shall prove this for the case where the triangles of which each polygon is composed have a vertex in common.



Hyp. Two polygons ABCDE and $A^1B^1C^1D^1E^1$ composed of the same number of triangles which are similar each to each and similarly placed, that is, ABC similar to $A^1B^1C^1$, ACD similar to $A^1C^1D^1$.....

Con. ABCDE is similar to $A^1B^1C^1D^1E^1$.

Hint. The angles of the two polygons are equal because they are either equal angles or the sum of equal angles.

$\frac{A^1B^1}{AB} = \frac{B^1C^1}{BC} = \frac{A^1C^1}{AC}$, since ABC is similar to $A^1B^1C^1$.

$\frac{A^1C^1}{AC} = \frac{C^1D^1}{CD}$, since ACD and $A^1C^1D^1$ are similar.

Therefore $\frac{A^1B^1}{AB} = \frac{B^1C^1}{BC} = \frac{C^1D^1}{CD}$, (§46, Axiom. Things equal to the same thing are equal to each other.)

192. Theorem 70.—

If two polygons are similar, they can be resolved into the same number of triangles, similar each to each and similarly placed.

Hint. Use the figure of the previous theorem, and draw the lines, AC, AD, A^1C^1, and A^1D^1. First prove ABC similar to $A^1B^1C^1$, then ACD similar to $A^1C^1D^1$ and so on.

193. Theorem 71.—

The perimeters of two similar polygons are in the same ratio as any two corresponding sides.

Hint. Make use of the figure in theorem 69. From the definition of similar polygons, $\frac{A^1B^1}{AB}=\frac{B^1C^1}{BC}=\frac{C^1D^1}{CD}=\frac{D^1E^1}{DE}=\frac{E^1A^1}{EA}$.

Apply the result of §180, section III to the above gives $\frac{A^1B^1+B^1C^1+C^1D^1+D^1E^1+E^1A^1}{AB+BC+CD+DE+EA}=\frac{A^1B^1}{AB}=\frac{B^1C^1}{BC}=\cdots\cdots\cdots$

or $\frac{\text{the perimeter of P}^1}{\text{the perimeter of P}}=\frac{A^1B^1}{AB}=\frac{B^1C^1}{BC}$

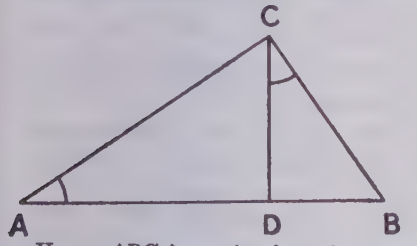
194. Theorem 72.—

If in the right triangle a perpendicular is drawn from the vertex of the right angle to the hypotenuse.

(a) the two triangles thus formed are similar to the given triangle and similar to each other.

(b) the perpendicular is the mean proportional between the segments of the hypotenuse.

(c) each leg of the right triangle is the mean proportional between the hypotenuse and the segment adjacent to that leg.



Hyp. ABC is a triangle with a right angle at C. From C a perpendicular is dropped on AB, the hypotenuse, meeting it in D.

Con. (a) ADC, BDC, and ABC are similar triangles.

(b) $(CD)^2=(AD)(DB)$. Definition §180, IV.

(c) $(AC)^2=(AB)(AD)$ and $(CB)^2=(AB)(DB)$. Definition §180, IV.

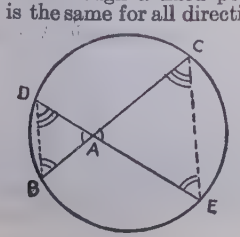
(a). $\angle A$ equals $\angle DCB$. (§111, Theorem. If the sides of one angle are perpendicular respectively to the sides of another, the angles are either equal or supplementary.) Hence the three triangles ABC, DBC, and ABC, have an acute angle equal, a right angle equal and hence all their angles equal. Therefore they are similar. (§187, Theorem 65. If two triangles have the angles of one respectively equal to the angles of the other, the triangles are similar.)

(b). Since the triangles ACD and CBD are similar, from definition we have $\frac{AD}{CD}=\frac{CD}{BD}$. Hence $(CD)^2=(AD)(BD)$.

(c). Since the triangles ACD and ABC are similar, from definition we have $\frac{AB}{AC}=\frac{AC}{AD}$. Hence $(AC)^2=(AB)(AD)$. In the same way we can prove that $(CB)^2=(AB)(DB)$.

195. Theorem 73.—

The product of the segments of a chord that passes through a fixed point within a circle is the same for all directions of the chord.



Hyp. Let A be any point within the circle and DE any chord through A.

Con. The product (AE)(AD) is a constant.

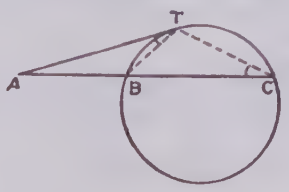
We will prove it a constant by taking any other chord through A as BC showing that (AE)(AD) = (AB)(AC).

$\angle BAD=\angle EAC$, (§80, Theorem 10. If two straight lines intersect each other, the vertical angles are equal.) Draw the lines CE and BD. $\angle DEC=\angle DBC$. (§169, Theorem 57. An angle inscribed in a circle is measured by one-half its intercepted arc.) Thus $\angle DEC$ and $\angle DBC$ are each measured by one-half the arc DC. In the same way $\angle BDE=\angle BCE$. Hence the two triangles AEC and BAD are similar. (§186, Theorem 64. If two triangles have the angles of one respectively equal to the angles of the other, the triangles are similar.) By definition of similar triangles,

$\frac{AE}{AB}=\frac{AC}{AD}$ or $(AE)(AD)=(AB)(AC)$.

196. Theorem 74.—

If through a point outside a circle a tangent and a secant are drawn, the tangent is the mean proportional between the whole secant and its external segment.

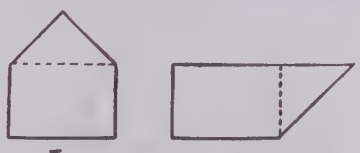


Hint. Show that the triangles ATB and ACT are similar. How is an angle formed by a tangent and a chord measured? See §171. Hence $\frac{AC}{AT}=\frac{AT}{AB}$ or $(AC)(AB)=(AT)^2$.

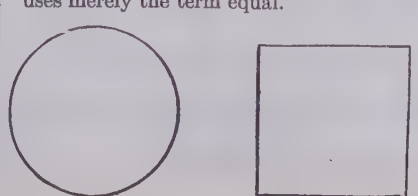
AREAS OF POLYGONS.

We now come to another fundamental concept of geometry, the area of a closed figure.

197. Equal Areas. Equivalence.—Two figures which can be made to coincide are identical and have the same area. But it may be possible in the case of two figures which do not coincide to cut one area up in such a manner that on rearranging its parts it coincides with the second figure. Evidently in this case we must also say that the areas are equal.



Thus figures I and II, which will not coincide as they stand, can be made to coincide by cutting off the triangle along the dotted line in figure I and moving it to the position indicated in figure II. In these circumstances the areas are called equivalent, symbol $\fallingdotseq$. However one ordinarily uses merely the term equal.



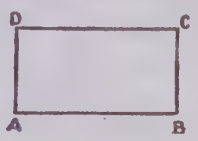
The circle and the square above may have the same area but it is not possible by a finite number of operations to divide the square into pieces so that they will coincide with the circle. We here encounter the same kind of difficulty that occurred in the case of the incommensurable quantities discussed in §177.

One of the famous problems of geometry is to "square the circle," i.e. to construct a square whose area is equal to the area of a given circle. In the process of cutting up the circle to form a square an infinite number of steps would be required, which can not actually be performed.

198. Unit of Area.—The unit of area which is most convenient is the area of a square whose side is one unit in length. This square is called the unit square. If we are measuring the length of straight lines in feet it is convenient to measure the area in terms of a square of side one foot.

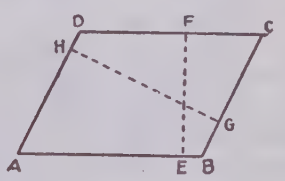
199. Area.—The area of a plane figure is its ratio to the unit square.

200. Base and Altitude of a Rectangle.—



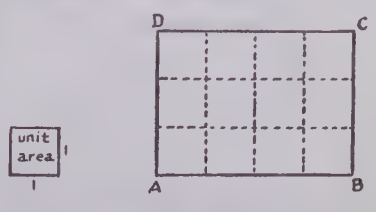
Either one of two adjacent sides of a rectangle can be considered its base. An altitude of a rectangle is a line drawn from any point in one base perpendicular to the other side. If AB is chosen as base, then AD is an altitude. If AD is chosen as base then AB is an altitude. If AB is chosen for the lower base, then DC is the upper base.

201. Base and Altitude of a Parallelogram.—



Either pair of parallel sides can be chosen for the bases, thus if BC is called the lower base then AD is the upper base. The corresponding altitude is the perpendicular distance between the bases. If AB and DC are the bases then EF is the altitude.

202. Area of a Rectangle.—



When the lengths of the two sides are commensurable with the side of the unit square there is no difficulty in proving that the area is the product of the base and the altitude. The rectangle above has its base AB, 4 units long, and its altitude

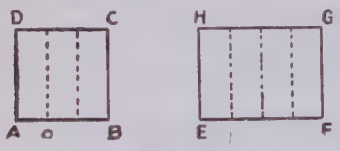
BC, 3 units long. It is evident that it can be cut into $4\times3=12$ squares, each congruent with the unit square. When AB and BC are not commensurable with the side of the unit square we encounter a difficulty which we mentioned before in §197. We pass over the proof of this incommensurable case and assume the truth in all cases of the following theorem:

203. Theorem 75.—

The area of a rectangle is equal to the product of its base and its altitude.

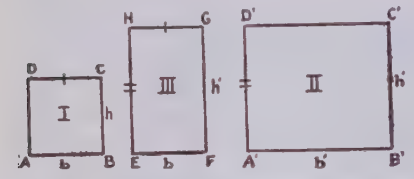
204. Theorem 76.—

The areas of two rectangles having equal altitudes are to each other as their bases.



Hint. If AB and EF are commensurable so that it is possible to find a length as AO which is contained in both AB and EF an integral number of time, the theorem is evident. $\frac{ABCD}{EFGH}=\frac{AB}{EF}=\frac{3}{4}$

205.—The areas of two rectangles are to each other as the product of their bases and altitudes.



Hyp. Given the rectangles ABCD and $A^1B^1C^1D^1$, with the bases b and b^1, and with the altitudes h and h^1 respectively.

Con. $\frac{ABCD}{A^1B^1C^1D^1}=\frac{bh}{b^1h^1}$.

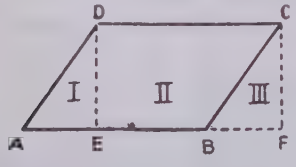
Hint. Construct the rectangle EFGH with the base $EF=b$ and the altitude $FG=h^1$. Rectangles I and III have equal altitudes, b, when BC and FG are considered the bases. Hence by the previous theorem $\frac{I}{III}=\frac{h}{h^1}$. In the same way $\frac{III}{II}=\frac{b}{b^1}$

Take the product of these two equations,

$$\frac{I}{III}\cdot\frac{III}{II}=\frac{I}{II}=\frac{hb}{h^1b^1}.$$

206. Theorem 78.—

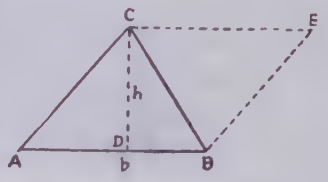
The area of a parallelogram is equal to the product of its base and its altitude.



Hint. Drop the perpendiculars from D and C on AB, meeting it in E and F. Show that triangle I is congruent to triangle III. The parallelogram ABCD is composed of I+II. The rectangle EFCD is composed of II+III. Since I=III, I+II=II+III. Hence the parallelogram is equivalent to the rectangle. The area of the rectangle is (DC)(DE). (§203, Theorem 75. The area of a rectangle is equal to the product of its base and its altitude.) Hence the area of the parallelogram is also (DC)(DE) = (base) (altitude); where DC is considered the base of the parallelogram and DE the altitude of the parallelogram.

207. Theorem 79.—

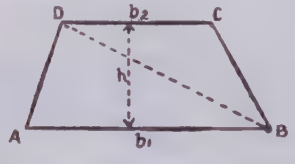
The area of a triangle is equal to half the product of its base and altitude.



Hint. Complete the triangle ABC into the parallelogram ABEC. Show that triangle BEC is congruent to the triangle ABC, hence ABC is one-half the area of the parallelogram. By the previous theorem the area of the parallelogram is bh, hence the area of the triangle is $\frac{1}{2}bh$. AB=b is the base of the triangle and CD=h, the perpendicular distance from C on AB is the altitude.

208. Theorem 80.—

The area of a trapezoid is equal to one-half the product of its altitude and the sum of its bases.



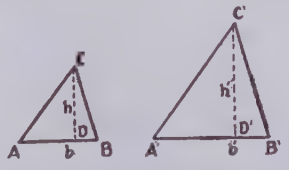
Hint. Draw the diagonal BD dividing the trapezoid ABCD into the two triangles ABD and BDC. $ABD=\frac{1}{2}b_1h$ and $BCD=\frac{1}{2}b_2h$. Therefore

$$ABCD=\frac{1}{2}b_1h+\frac{1}{2}b_2h=\frac{1}{2}(b_1+b_2)h.$$

Definition. The two parallel sides of a trapezoid are called the bases and the altitude is the perpendicular distance between the bases.

209. Theorem 81.—

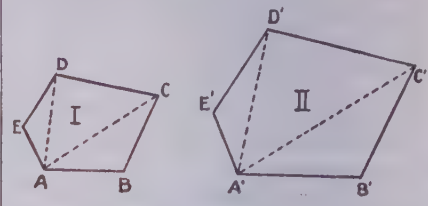
The areas of two similar triangles are to each other as the squares of any two corresponding sides.



Hint. Show that the triangles ACD and $A^1C^1D^1$ are similar. (§187, Theorem 65. If two triangles have two angles of one respectively equal to two angles of the other, the triangles are similar.) Hence $\frac{h}{h^1}=\frac{AC}{A^1C^1}$ but $\frac{AC}{A^1C^1}=\frac{AB}{A^1B^1}$ therefore $\frac{h}{h^1}=\frac{AB}{A^1B^1}=\frac{b}{b^1}$. Area $ABC=\frac{1}{2}bh$, area $A^1B^1C^1=\frac{1}{2}b^1h^1$. Thus $\frac{ABC}{A^1B^1C^1}=\frac{\frac{1}{2}bh}{\frac{1}{2}b^1h^1}$, replacing $\frac{h}{h^1}$ by its equal $\frac{b}{b^1}$, $\frac{ABC}{A^1B^1C^1}=\frac{b}{b^1}$.

210. Theorem 82.—

The area of two similar polygons are to each other as the squares of any two corresponding sides; and also as the squares of their perimeters.



Hint. §192, Theorem 70. If two polygons are similar, they can be resolved into the same number of triangles, similar each to each and similarly placed. Resolve ABCDE into triangles ABC, ACD, and ADE, which are similar to the triangles $A^1B^1C^1$, $A^1C^1D^1$, and $A^1D^1E^1$, respectively, into which $A^1B^1C^1D^1E^1$ is resolved.

Then $\frac{ABC}{A^1B^1C^1}=\frac{(AB)^2}{(A^1B^1)^2}$, $\frac{ACD}{A^1C^1D^1}=\frac{(CD)^2}{(C^1D^1)^2}$, and $\frac{ADE}{A^1D^1E^1}=\frac{(DE)^2}{(D^1E^1)^2}$ (§209, Theorem 81. The areas of two similar triangles are to each other as the squares of any two corresponding sides.)

From the definition of similar polygons we have $\frac{AB}{A^1B^1}=\frac{CD}{C^1D^1}=\frac{DE}{D^1E^1}$. Therefore $\frac{(AB)^2}{(A^1B^1)^2}=\frac{(CD)^2}{(C^1D^1)^2}=\frac{(DE)^2}{(D^1E^1)^2}$. (§43, Axiom. Like powers of equals are equal.) Hence $\frac{ABC}{A^1B^1C^1}=\frac{ACD}{A^1C^1D^1}=\frac{ADE}{A^1D^1E^1}=\frac{(AB)^2}{(A^1B^1)^2}$ Applying the properties of a proportion §180, III to this expression gives

$$\frac{ABC+ACD+ADE}{A^1B^1C^1+A^1C^1D^1+A^1D^1E^1}=\frac{(AB)^2}{(A^1B^1)^2},\text{ or}$$

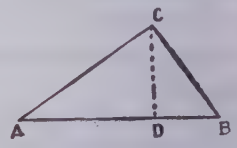
$$\frac{ABCDE}{A^1B^1C^1D^1E^1}=\frac{(AB)^2}{(A^1B^1)^2}.$$

The second part of the theorem follows from §193, Theorem 71. The perimeters of two similar polygons are in the same ratio as any two corresponding sides. Hence $\frac{\text{Perimeter of I}}{\text{Perimeter of II}}=\frac{AB}{A^1B^1}$, thus $\frac{(\text{Perimeter of I})^2}{(\text{Perimeter of II})^2}=\frac{(AB)^2}{(A^1B^1)^2}$. Therefore

$$\frac{ABCDE}{A^1B^1C^1D^1E^1}=\frac{(\text{Perimeter of I})^2}{(\text{Perimeter of II})^2}.$$

211. Theorem 83.—

The square of the hypotenuse of a right triangle is equal to the sum of the squares of the other two sides.

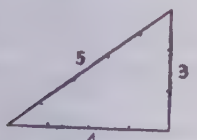


Hyp. Given the triangle ABC with a right angle at C.

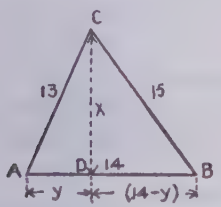
Con. $(AB)^2=(AC)^2+(BC)^2$.

Hint. Draw the perpendicular from C on AB, meeting it in D. Then $(AC)^2=(AB)(AD)$ and $(BC)^2=(AB)(DB)$. (§194, Theorem 72. Each leg of a right triangle is the mean proportional between the hypotenuse and the segment adjacent to

that leg.) Adding these two equalities, $(AC)^2+(BC)^2=(AB)(AD)+(AB)(DB)$ · $AB(AD+DB)=(AB)(AB)=(AB)^2$. This theorem is one of the most important of the theorems of plane geometry and is called the theorem of Pythagoras, a very celebrated Greek geometer (580-500 B. C.). The 3, 4, 5 right triangle was known to the Egyptians, who used a rope 12 units long with knots in it at the proper points to stake out a triangle whose sides should be 3, 4, and 5 units respectively, thus giving them a right angle opposite the side of 5 units.



212. Area of Any Triangle When the Three Sides are Given.—As an application of the theorem of Pythagoras we will find the area of a triangle whose three sides are 13, 14, and 15 inches.



Let ABC be the triangle with the given sides so that AB=14, BC=15, and CA=13. Drop the perpendicular from C on AB, meeting it in D. Let CD=x, and AD=y, then DB=14—y. Applying the theorem of Pythagoras to the two right triangles ADC and CDB gives

(1) $x^2+y^2=(13)^2$,
(2) $x^2+(14-y)^2=(15)^2$.

Square out (2) gives (3) $x^2+196-28y+y^2=225$.

Subtract (1) from (3) gives (4) $196-28y=56$,
or (5) $28y=140$,
or (6) $y=5$.

Substituting $y=5$ in (1) gives (7) $x^2+(5)^2=(13)^2$,
or (8) $x^2=144$,
or (9) $x=12$.

The area equals one half the base times the altitude $=\frac{1}{2}(14)(12)=84$ square inches. §207, Theorem 79.

By the same method a general formula can be obtained for the area of a triangle of sides a, b, c. The area is $\sqrt{s(s-a)(s-b)(s-c)}$, where $s=\frac{1}{2}(a+b+c)$. We will apply this formula to the example above.

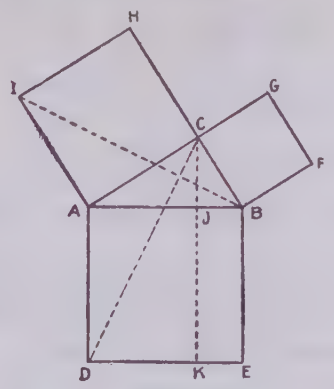
$a=15$
$b=13$
$c=14$

$2s=a+b+c=42$.
$\therefore s=21$.
$s-a=6$,
$s-b=8$,
$s-c=7$,

$\triangle=\sqrt{s(s-a)(s-b)(s-c)}=\sqrt{(21)(6)(8)(7)}=\sqrt{7056}=84$ square inches.

213.—The theorem of Pythagoras has a score of proofs. Its importance justifies the outline of a second proof. We will also change the wording

The square on the hypotenuse of a right triangle is equivalent to the sum of the squares on the other two sides.



Hyp. Given the triangle ABC with C a right angle. On AB erect the square DEBA, on BC the square FGCB, on AC the square HIAC.

Con. DEBA=FGCB+HIAC.

Draw CJ perpendicular to AB through C, meeting AB in J and DE in K. Draw CD and IB. Prove $\triangle IAB=\triangle CAD$, hence $2(\triangle IAB)=2(\triangle CAD)$. But $2(\triangle IAB)=$ HIAC and $2(\triangle CAD)=$ ADKJ. Hence square HIAC equals rectangle ADKJ. By drawing AF and CE, in just the same way, square FGCB=rectangle JKEB. Adding these equalities, square FGCB+square HIAC=rectangle ADKJ+rectangle JKEB =square ADEB.

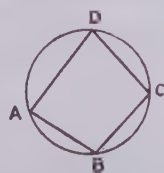
REGULAR POLYGONS AND THE MEASURE OF THE CIRCLE

214.—Equilateral Polygon.—A polygon all of whose sides are equal is an equilateral polygon.

215. Equiangular Polygon.—A polygon all of whose interior angles are equal is an equiangular polygon.

216. Regular Polygon.—A regular polygon is a polygon all of whose angles and all of whose sides are equal. It is both equilateral and equiangular.

217. Inscribed Polygon.—A polygon is inscribed in a circle when all its vertices lie on the circumference, as ABCD. The circle is said to circumscribe the polygon.

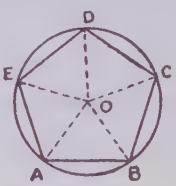


218. Circumscribed Polygon.—A polygon is circumscribed about a circle when all its sides are tangent to the circle, as EFGH. The circle is said to be inscribed in the polygon.



219. Apothem.—The apothem of a regular polygon is the perpendicular from the center of its circumscribed or inscribed circle to any side of the polygon.

220. Theorem 84.—
An equilateral polygon inscribed in a circle is a regular polygon.



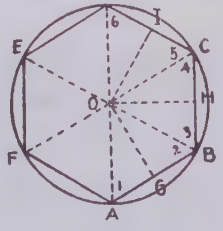
Hyp. The sides of the polygon ABCDE inscribed in the circle are equal, AB=BC=CD=DE=EA.

Con. The polygon is a regular polygon.

Hint. A regular polygon has all of its sides and all of its angles equal, §216. Since the sides are equal by hypothesis it remains to prove that the angles are equal. Angle A is measured by ½ arc BCDE, which is 3/5 of a circumference. (§169, Theorem 57. An angle inscribed in a circle is measured by one-half of its intercepted arc.) In the same way angle B is measured by ½ of the arc AEDC, which is 3/5 of a circumference. Hence $\angle A=\angle B=\angle C=\angle D=\angle E$.

A second method of proof is to draw the radii OA, OB, OC, OD, OE, and show that all the triangles OAB, ODC, OCD,. . . . , are congruent.

221. Theorem 85.—
A circle may be circumscribed about any regular polygon, and a circle may also be inscribed in it.



Hyp. Given the regular polygon ABCDEF.

Con. A circle may be circumscribed about ABCDEF, and a circle may be inscribed in ABCDEF.

Hint. Draw the circle through the three points A, B, and C. Let the center of this circle be O. (§147, Theorem 39. Through three points not lying in a straight line one circle, and only one, can be drawn.) Draw the radii OA, OB, OC and the line OD, which we do not know to be a radius of the circle, through A, B, C until we prove that it is. Consider the triangles OAB and OCD, OB=OC, AB=CD, $\angle 2+\angle 3=\angle 4+\angle 5$ but $\angle 3=\angle 4$, subtraction of equals from equals gives $\angle 2=\angle 5$. Hence the triangles OAB and OCD are congruent. (§64, Theorem 1. If two triangles have two sides and the included angle of one equal to two sides and the included angle of the other, the triangles are congruent.) Hence OA=OD, being corresponding sides of congruent triangles. Therefore OD is a radius of the circle.

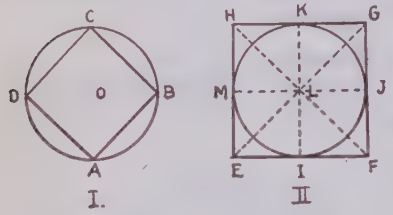
To prove that a circle can be inscribed. Draw all the perpendiculars from O to the sides of the polygon, as OG, OH, OI, ... and prove these all equal. Then a circle with O as center and OG for radius will pass through G, H, I...and this circle will be tangent to the sides AB, BC, CD,... (§161, Theorem 53. A straight line tangent to a circle is perpendicular to the radius drawn to the point of contact.) Hence the centers of the inscribed and circumscribed circle coincide.

222. Center of a Regular Polygon.—The center of a regular polygon is the common center of its circumscribed and inscribed circles, as the point O of §221.

223. Radius of a Regular Polygon.—The radius of a regular polygon is the radius of the circumscribing circle, as OA of §221.

224. Angle at the Center of a Regular Polygon.—The angle at the center of a regular polygon is the angle subtended by a side of the polygon considered as a chord of its circumscribed circle, as angle AOB of §221.

225. Theorem 86.—
If a circle be divided into any number of equal parts, the chords joining the successive points of division form a regular polygon inscribed in the circle; and the tangents drawn at the points of division form a regular polygon circumscribed about the circle



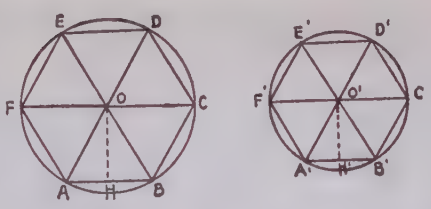
I. II.

See figure I. Hint. The sides AB, CB,... are equal, for the arcs AB, CB,... are equal by hypothesis. (§150, Theorem 42.) The angles A, B,..., are equal, for they are measured by equal arcs. (§169, Theorem 57.) See figure II. Hint. Triangles LJF and LIF are congruent. (§87, Theorem 15.) Hence IF = FJ = JG = ..., therefore the sides are equal, or FG = GH = HE .... Also ∠IFL = ∠LFJ = ∠LGJ = ..., hence the angles are equal, or ∠F = ∠G = = ∠H = ...

226. Theorem 87.—
Regular polygons of the same number of sides are similar.

Hint. We must prove their angles are equal and their sides are in proportion. They can be inscribed in circles. (§221, Theorem 85.) Their angles are equal, for they are measured by one half of the same fractional part of a circumference. Since all the sides of each polygon are equal, the ratio of a side of the first to a side of the second is constant, hence the corresponding sides are in proportion.

227. Theorem 88.—
The perimeters of regular polygons of the same number of sides are to each other as the radii of the circumscribed circles, or as the radii of the inscribed circles; and their areas are to each other as the squares of the radii.



Hint. $\frac{AB + BC + CD + DE + EF,}{A^1B^1 + B^1C^1 + C^1D^1 + D^1E^1 + E^1F^1} = \frac{6(AB)}{6(A^1B^1)} = \frac{AB}{A^1B^1} = \frac{OB}{O^1B^1}$, since triangles OAB and $O^1A^1B^1$ are similar. Also let OH and O^1H^1 be the perpendiculars upon AB and A^1B^1 from the centers O and O^1 respectively, then the triangles OHB and $O^1H^1B^1$ are similar and $\frac{OB}{O^1B^1} = \frac{OH}{O^1H^1}$. Thus

$$\frac{\text{perimeter of ABCDEF}}{\text{perimeter of } A^1B^1C^1D^1E^1F^1} = \frac{OB}{O^1B^1} = \frac{OH.}{O^1H^1}$$

$$\frac{\text{Area of ABCDEF}}{\text{Area of } A^1B^1C^1D^1E^1F^1} = \frac{(AB)^2}{(A^1B^1)^2} =$$

$$\frac{(\text{perimeter of ABCDEF})^2}{(\text{perimeter of } A^1B^1C^1D^1E^1F^1)^2}.$$

(§210, Theorem 82.) Since $\frac{AB}{A^1B^1} = \frac{OB}{O^1B^1} = \frac{OH}{O^1H^1}$, then $\frac{(AB)^2}{(A^1B^1)^2} = \frac{(OB)^2}{(O^1B^1)^2} = \frac{(OH)^2}{(O^1H^1)^2}$.

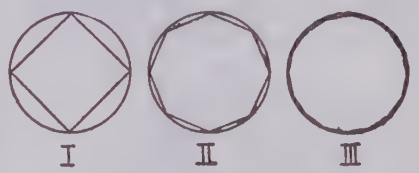
(§43, Axiom.) Therefore

$$\frac{\text{area of ABCDEF}}{\text{area of } A^1B^1C^1D^1E^1F^1} = \frac{(OB)^2}{(O^1B^1)^2} = \frac{(OH)^2}{(O^1H^1)^2}.$$

228. Theorem 89.—
The area of a regular polygon is equal to one-half the product of its perimeter and its apothem.

Hint. Use the figure of the previous theorem, area ABCDEF = 6(area ABO) = 6(½) (AB) (OH) = ½(6AB) (OH) = ½(perimeter of ABCDEF) (apothem). (§219. Definition).

229. Relation of the Regular Polygons to the Circle.—While the theorems on regular polygons have in themselves interest and use, they have been developed chiefly in order that they may be applied to the circle. We must look upon the circle as a regular polygon of an infinite number of sides.


I II III

Take a series of equal circles. In the first circle inscribe a regular polygon of 4 sides (a square), in the second inscribe a regular polygon of 8 sides, in the third inscribe a regular polygon of 16 sides, in the fourth inscribe a regular polygon of 32 sides.
As this process continues each time the area of the polygon more nearly approaches the area of the circle, the perimeter of the polygon more nearly approaches the circumference of the circle, and the apothem of the polygon more nearly approaches the radius of the circle. If we were able to continue this process an infinite number of times the polygon would coincide with the circle. We shall now restate our theorems for the regular polygons in such a manner that they apply to the circle.

230. Theorem 90.

The circumferences of two circles are to each other as the radii.

This follows from §227, replacing perimeter by circumference.

231. Theorem 91.—

The ratio of the circumference of any circle to its diameter is a constant.

Hint. Given two circles with the radii r and r_1, with the corresponding diameters d and d_1, and with the circumferences C and C_1, then $\frac{C}{C_1} = \frac{r}{r_1} = \frac{2r}{2r_1} = \frac{d.}{d_1}$. (§230, theorem 90.) Since $\frac{C}{C_1} = \frac{d}{d_1}$, $\frac{C}{d} = \frac{C^2.}{d^2}$ (§180, I).

Since $\frac{C}{d}$ or the ratio of the circumference to the diameter is the same for any two circles it must be a constant. This constant is always designated by π. Hence $\frac{C}{d} = \pi$ or $C = \pi d$.

232. Theorem 92.—

The areas of two circles are to each other as the squares of the radii.

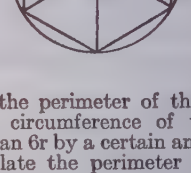
Hint. This follows from §227.

233. Theorem 93.—

The area of a circle is equal to half of the product of its circumference and its radius; or the product of the square of the radius and the constant number π.

Hint. From §228, Theorem 89, the area of a regular polygon = ½ (perimeter) (apothem), considering the circle as a regular polygon of an infinite number of sides, we must replace perimeter by circumference and apothem by radius. Therefore S = area of a circle = ½Cr = ½(2πr)(r) = πr², replacing C by its value 2πr from §231.

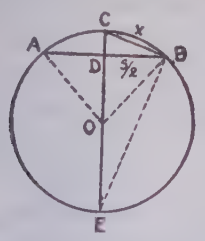
234. Computation of π. In §257 we will show that a regular hexagon can be inscribed in a circle and that its side is equal to the radius of the circumscribing circle.



Hence the perimeter of the hexagon is 6r. The circumference of the circle is greater than 6r by a certain amount. If we can calculate the perimeter of a regular polygon of 12 sides this will give us a value nearer to the circumference of the circle. (§229). Instead of calculating the side of a regular polygon of 12 sides in terms of r we will solve the more general problem below.

If s is the side of a regular inscribed polygon, x the side of a regular inscribed polygon having twice as many sides as the first, and r the radius of the circumscribing circle of both, find x in terms of s and r.

Hyp. Given a circle, center O and radius r. Let s = AB be the side of a regular inscribed polygon and x = CB be the side of a regular inscribed polygon of double the number of sides.



Required. To find the value of x in terms of s and r.

Hint. Draw the diameter CE, and the lines OB and BE. Since chord AC = chord CB, CO is perpendicular to AB and meets it in a point D. Triangle CBE is a right triangle, and $(CB)^2 = x^2 = (CD)(CE)$. (§194, Theorem 72c.) Hence $x = \sqrt{(CD)(CE)} = \sqrt{(CD)(2r)}$. But CD = CO—DO = r—DO and $DO = \sqrt{(OB)^2 - (DB)^2} = \sqrt{r^2 - \frac{(s)^2}{(2)}}$. (§211, Theorem 83.) Hence $CD = r - \sqrt{r^2 - \frac{(s)^2}{(2)}}$, replacing CD by this value in $x = \sqrt{2r(CD)}$ we have the formula desired

$$x = \sqrt{2r^2 - 2r\sqrt{r^2 - \frac{(s)^2}{(2)}}}.$$

If we now put s = r in this equation we will find the length of the side of a regular polygon of 12 sides.

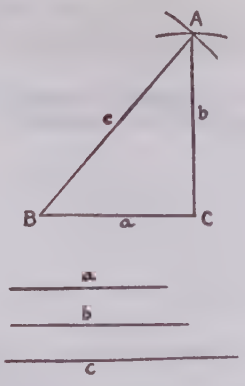
$$x = \sqrt{2r^2 - 2r\sqrt{r^2 - \frac{r^2}{4}}} = r\sqrt{2 - \sqrt{3}}.$$

Multiply this by 12 gives the perimeter of a regular polygon of 12 sides, the value is 6.211657r. It is possible to continue the calculations for regular polygons of, 24, 48, 96,... sides. When the value is calculated for a regular polygon of 1,536 sides, the perimeter of the polygon is 6.28318r, dividing by 2r gives the value of $\pi = 3.14159$, correct to 5 decimal places. In advanced mathematics other and easier methods have been developed for the calculation of this most important constant.

PROBLEMS OF CONSTRUCTION.

235. Constructions by ruler and compasses.—Because I can define an object does not prove that it exists. We define a secant line as a line which cuts a circle in two points. I might define a hypersecant as a straight line which cuts a circle in three points, but it is impossible to draw such a line; in fact it is possible to prove it does not exist. Having defined a geometrical object, the mathematician proceeds, if possible, to prove that it exists. For instance in §69 we made use of the bisector of an angle; we did not at that time tell how to obtain the bisector, we merely assumed that it was possible to obtain it in some as yet unknown manner. Again and again we have drawn lines which we assumed were perpendicular to each other. We will now proceed to show how to carry out these constructions with the use of the ruler and compasses. Note. The constructions are not always given in full, it being assumed that the methods of a previous construction need not be indicated in full in a drawing.

236. To construct a triangle, when the three sides are given.—

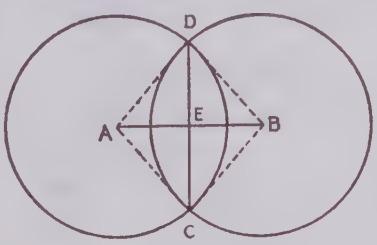


Given the three sides of a triangle a, b, and c.

Required to construct the triangle with these segments for sides.

By use of the compasses mark off BC equal to a. With B as center draw a circle of radius c, with C as center draw a circle of radius b, let these two circles intersect in A. Triangle ABC is the required triangle.

237. To bisect a given line.—

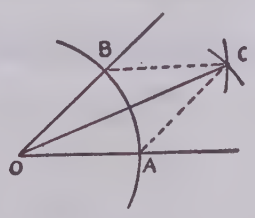


Given the line AB.

Required to construct the midpoint of AB.

Choosing a convenient radius, draw two circles with A and B as centers. Let these two circles intersect in C and D and let CD intersect AB in E. The required midpoint of AB is E. (§91. Theorem 17. The locus of points equidistant from two given points is the perpendicular bisector of the line joining them.) Since AD = BD = AC = BC, C and D are two points equidistant from both A and B, thus they determine the perpendicular bisector.

238. To bisect a given angle.—

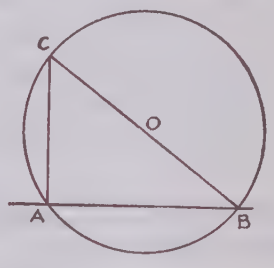


Given the angle AOB.

Required to construct the line bisecting the given angle.

Choosing a convenient radius, draw a circle intersecting the sides of the angle in A and B. Draw two circles with A and B as centers, both circles having the same radius, and let C be the point of intersection of these circles. Draw OC. Consider the triangles OAC and OBC, OA = OB—radii of the same circle; AC = BC—radii of two equal circles; OC is common. Therefore the triangles are congruent. (§77. Theorem 9. If two triangles have the three sides of one respectively equal to the three sides of the other, the triangles are congruent.) Angles AOC and BOC are equal, and AC is the bisector required.

239. At a given point in a straight line to erect a perpendicular to the line.—

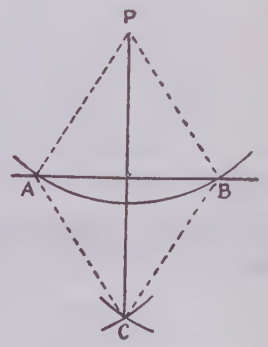


Given a line AB and a point A on it.

Required to construct the line through the point A perpendicular to the given line.

Choose a convenient point as O, and with a radius OA draw a circle cutting AB in A and a second point B. Draw the diameter of the circle BC and the line AC. Angle BAC is measured by one-half of a semicircle, and thus is a right angle. (§170, Theorem 58. An angle inscribed in a semicircle is a right angle.) Therefore AC is the required line.

240. From a given point to let fall a perpendicular upon a given line.—

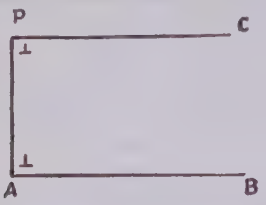


Given a line AB and a point P outside the line.

Required to construct the line through P perpendicular to AB.

Draw a circle with P as center cutting the given line in any two points as A and B. Draw two circles with A and B as centers and having the same radius. Let these two circles intersect in C. Then AP = PB—radii of the same circle; CA = CB—radii of equal circles. Therefore P and C are each equidistant from A and B. Hence PC is the required perpendicular. (§89, Theorem 16. The locus of points equidistant from two given points is the perpendicular bisector of the line joining them.)

241. Through a given point to draw a parallel to a given line.—

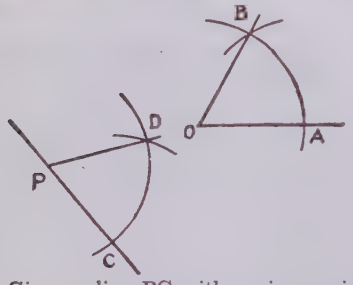


Given a line AB and a point P outside the line.

Required to construct the line through the point P parallel to the line.

From P draw the perpendicular to the line AB; let this line be PA. At P draw the perpendicular PC to the line PA. Then PC is the required parallel to AB. (§93, Theorem 18. Two straight lines perpendicular to the same straight line are parallel.)

242. Through a given point on a straight line, to draw a line making a given angle with the given line.—

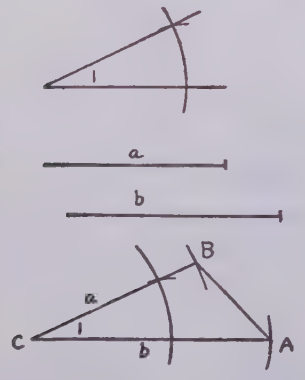


Given a line PC with a given point P upon it, let angle AOB be the given angle.

Required to draw the line through P forming with PC an angle equal to the given angle.

Draw a circle with O for center, cutting the sides of the given angle in the points A and B. With the same radius draw a circle with P for center. Draw a circle with C for center having AB for radius; let D be the point of intersection of the two arcs having P and C for centers. Angle CPD is the required angle. (§149, Theorem 41. If in the same circle, or in equal circles—two arcs are equal, the angles which they subtend are equal.)

243. To construct a triangle, when two sides and the included angle are given.—

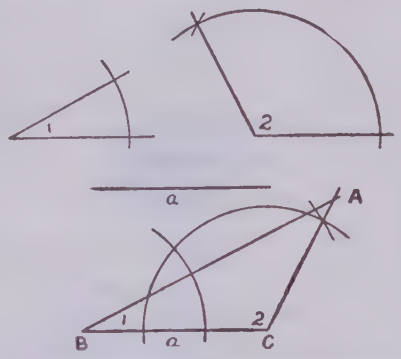


Given the angle 1 and the segments a and b.

Required to construct the triangle, which has a and b for two sides, including the given angle 1.

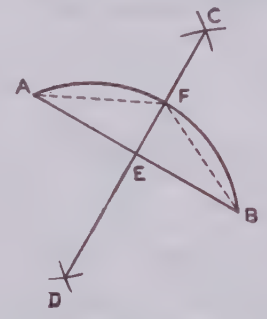
By the method of §242 construct the angle ACB equal to the given angle 1. Mark off CB equal to the segment a, and CA equal to the segment b. Draw AB. ABC is the required triangle.

244. To construct a triangle when two angles and the included side are given.—



The method is the same as the previous construction.

245. To bisect a given circular arc.—

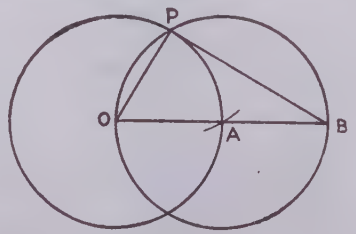


Given the circular arc AB.

Required to construct the mid-point of the arc.

Draw the chord AB and its perpendicular bisector CD. Let the line CD meet the chord AB in E and the arc AB in F. Draw AF and FB. Chord AF = Chord FB. (§89. Theorem 16, The locus of points equidistant from two given points is the perpendicular bisector of the line joining them.) Therefore arc AF = arc FB and F is the required mid-point. (§151, Theorem 43. If in the same circle, or in equal circles, two chords are equal, the arcs subtended by them are equal.)

246. At a given point on a given circle, to draw a tangent to the circle.—

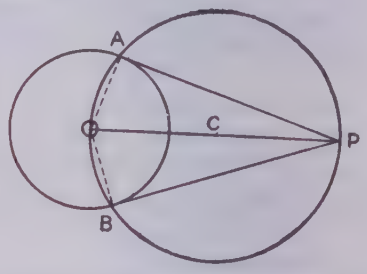


Given a circle of radius r with the center O and the fixed point P on it.

Required to construct the tangent to the given circle at the point P.

One method is to draw the radius OP and construct the line perpendicular to OP at the point P by method of §239. A second method is as follows. With P as center and with a radius equal to r, draw an arc cutting the given circle in A. With A for center draw a circle of radius r. This circle will pass through O and P. Draw OAB the diameter of the circle with the center A, and then draw the chord PB. Angle OPB is a right angle. (§170. Theorem 58. An angle inscribed in a semicircle is a right angle.) Therefore PB is the required tangent. (§161, Theorem 53. A straight line tangent to a circle is perpendicular to the radius drawn to the point of contact.) (18. Axiom. From a given point in a given line, one perpendicular and only one, can be drawn to the line.)

247. Through a given point outside a given circle to draw tangents to the circle.—

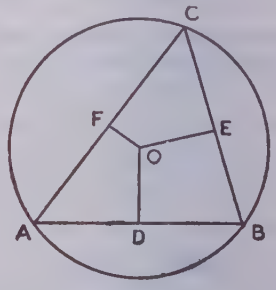


Given the circle with its center at O and the point P outside the circle.

Required to construct the tangents from P to the circle.

Draw the line OP, find the mid-point of this line C, and draw the circle with the center C and the radius OC. Let this circle intersect the given circle in the two points A and B. Draw the lines, OA, OB, AP, and BP. Angles OAP and OBP are right angles. (§170, Theorem 58. An angle inscribed in a semicircle is a right angle.) Therefore AP and BP are the required tangents. As in the previous construction, the tangent is perpendicular to the radius at its extremity.

248. To circumscribe a circle about a given triangle.—



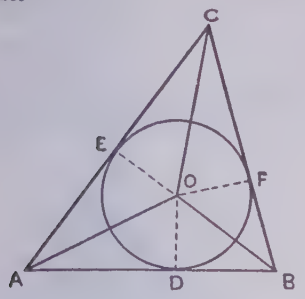
Given the triangle ABC.

Required to circumscribe a circle about ABC.

Draw the perpendicular bisectors of the sides AB and BC, let O be their point of intersection. Designate the perpendicular bisector of AB by DO and the perpendicular bisector of BC by EO. Point O, lying in OD, is equidistant from A and B, lying in OE; it is also equidistant from B and C or OA = OB = OC. Hence the perpendicular bisector of AC also passes through FO. (§89. Theorem 16. The locus of points

equidistant from two given points is the perpendicular bisector of the line joining them.) Since O is equidistant from A, B, and C it is the center of the required circle.

249. To inscribe a circle in a given triangle.—

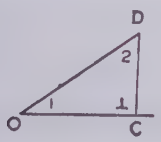


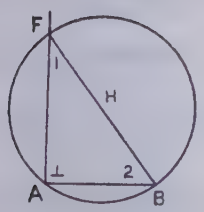
Given the triangle ABC.

Required to inscribe a circle in the triangle ABC.

Let the bisectors of the angles A and B meet in the point O. Then OA and OB are the bisectors of the angles A and B respectively. Draw the perpendiculars from O to AB, BC, and CA, let these be OD, OF, and OE respectively. Every point in AO is equidistant from AC and AB, hence OE=OD. Every point in OB is equidistant from BA and BC, hence OD=OF. We might observe that the bisector of angle C must also pass through the point O. (§91, Theorem 17. The locus of points equidistant from the sides of an angle is the bisector of the angle.) Therefore O is the center of the required circle and the radius =OD=OF=OE.

250. On a given straight line as a base, to construct a circular segment in which a given angle can be inscribed.—



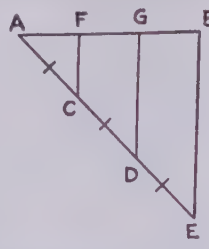


Given the angle COD and the straight line AB.

Required to construct the circular segment in which the given angle can be inscribed.

Take any point D on the side OD of the given angle and drop the perpendicular upon the side OC, meeting it in C. At the point A draw the perpendicular AF to AB; at the point B construct the angle ABF equal to the angle ODC. The triangles ABF and OCD are similar, and angle AFB equals the given angle COD. (§ 187, Theorem, 65. If two triangles have two angles of one respectively equal to two angles of the other, the triangles are similar.) Therefore the circular segment AFB is the segment required, for any angle APB with its vertex P on this segment has the same measure, i. e., one half of the arc AB, as the angle AFB. (§169, Theorem 57. An angle inscribed in a circle is measured by one half its intercepted arc.

251. To divide a given straight line into any number of equal parts.—

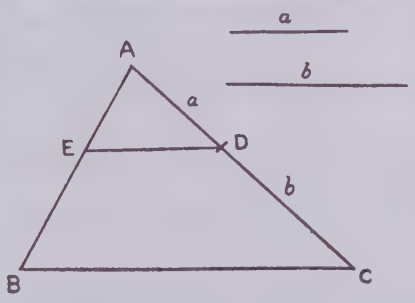


Given the straight line AB.

Required to divide AB into a certain number of equal parts, say three.

Upon any line through A, as AF, lay off by repeated use of the compasses the equal line segments, AC, CD, and DE. Draw the line BE, and the lines through C and D parallel to EB, meeting AB in the points F and G respectively. F and G are the required points to trisection. (§117, Theorem 37. If a series of parallel lines cut off equal segments on one transversal, they cut off equal segments on any other transversal.)

252. To divide a given straight line into parts proportional to two given lines.—



Given the straight line AB and two other given lines a and b.

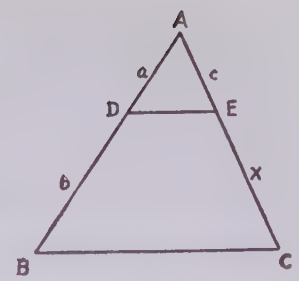
Required to divide the line AB in the ratio of a to b, or to find the point E on AB so that $\frac{AE}{EB} = \frac{a}{b}$

Draw a line through A and on it mark off AD, equal to a, and DC, equal to b.

Draw BC and ED parallel to BC through the point D, meeting AB in E. The required point of division is E. (§181, Theorem 62. A straight line parallel to the base of a triangle divides the other two sides proportionally.)

253. Fourth proportional.—A fourth proportional to three numbers or magnitudes a, b, and c, is the quantity x defined by $\frac{a}{b} = \frac{c}{x}$.

254. To find the fourth proportional to three given lines.—



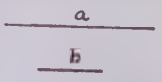
Given the three lines a, b, and c.

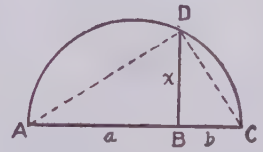
Required to construct the line which is the fourth proportional.

Draw two lines intersecting in a point A. On one of these lines lay off AD equal to a and DB equal to b, on the second line lay off AE equal to c. Draw the line DE and draw a line through B parallel to DE, meeting AE in C. Then EC=x is the fourth proportional required for $\frac{a}{b} = \frac{c}{x}$.

(§181, Theorem 62. A straight line parallel to the base of a triangle divides the other sides proportionally.)

255. To find the mean proportional between two given straight lines.—



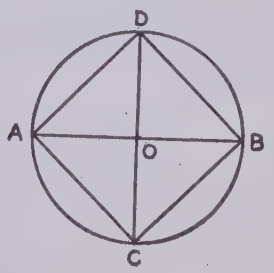


Given the two lines a and b.

Required to construct the mean proportional x between the lines a and b which is defined by the equation $x^2 = ab$.

Draw a straight line through any point A. On this line measure off AB equal to a and BC equal to b. On AC as diameter draw a semicircle. Let the perpendicular to AB at B meet the semicircle in D. BD is the required mean proportional. (194, Theorem 72. The perpendicular is the mean proportional between the segments of the hypotenuse.)

256. To inscribe a square in a given circle.—

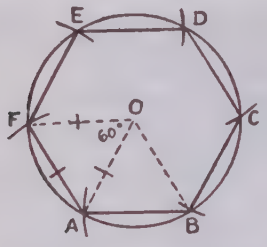


Give the circle O.

Required to inscribe a square in the given circle.

Draw any diameter as AB and draw the diameter CD, which is perpendicular to AB at O the center. Draw AC, CB, BD, DA, which are the sides of the required square. (§148, Theorem 40. If in the same circle, or in equal circles, two angles at the center are equal, the arcs which they intersect are equal.) (§150, Theorem 42. If in the same circle, or in equal circles, two arcs are equal, the chords subtending them are equal.)

257. To inscribe a regular hexagon in a circle.—

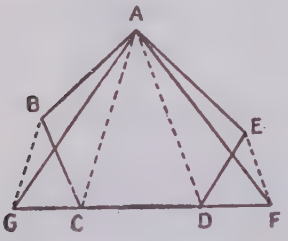


Given a circle.

Required to construct a regular hexagon.

Using any point of the given circle as A for center and with a radius equal to the radius of the given circle draw an arc cutting the circle in F. Draw from O, the center of the given circle, the radii OA and OF. Triangle AOF has all its sides equal, hence all of its angles are equal. Thus angle AOF is one-third of two right angles, or one-sixth of a circumference. Hence AF is the side of the required hexagon.

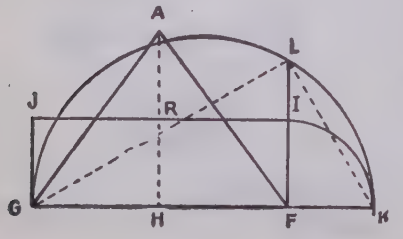
258. To transform any convex polygon into a triangle; a square.—



Given the convex polygon ABCDE.

Required to transform ABCDE (a) into a triangle, (b) into a square.

(a) Choose a vertex as A and draw the lines AC and AD. Prolong a convenient side as CD in both directions. Through B draw a line parallel to AC, to meet CD in G, and through E draw a line parallel to AD, meeting CD in F. Triangles ACB and AGC have a common base AC and equal altitudes, since parallel lines are everywhere equidistant. (§207, Theorem 79. The area of a triangle is equal to half of the product of its base and altitude.) In the same way triangles ADE and AFD are equal. Hence triangle AGF is the required triangle.



(b) Having transformed the polygon into a triangle, we will now transform it first into a rectangle and finally into a square.

Let AGF be the given triangle. Draw the perpendicular from A on GF, meeting it in H. Bisect AH. and let R be the point of bisection. Construct a rectangle which has GF for base and HR for altitude. Let GFIJ be this rectangle. The area of the rectangle equals the area of the triangle. The area of the rectangle is equal to the product (GF) (FI). If x is the side of a square of equal area then $x^2 = (GF)(FI)$. The construction of x leads back to §269. (To construct the mean proportional between two given straight lines.) Following the method of that section, we lay off FK on GF equal to FI, draw the semicircle on FK as diameter, and prolong FI until it intersects the semicircle in the point L. FL is the side of the required square whose area is equal to the area of the rectangle GFIJ, to the area of the triangle AGF, and to the area of the polygon ABCDE.

Note. If the polygon were not convex it would be necessary in the first part of the construction (a) to subtract the areas of certain of the triangles instead of adding them.

PROPOSITIONS AND EXERCISES

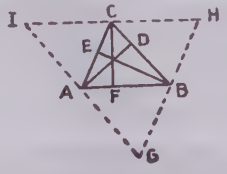
If when three coins are tossed they always all come heads, we know at once that the matter demands investigation. In a like manner in geometry, if three points are always on a straight line, we seek the reason. Again, if three lines are drawn at random in a plane there is small chance that they pass through a point, in general they will form a triangle.

259. Concurrent Lines.—Three or more lines meeting in a common point are called concurrent lines.

We will now consider a few important cases of concurrent lines.

260. Theorem.—The perpendicular bisectors of the sides of a triangle meet in a point equidistant from the three vertices. This point is called the center of the circumscribing circle and the method of proof is given in the construction problem of §248.

261. Theorem.—The perpendiculars from the vertices of a triangle to the opposite sides meet in a point.



Hyp. Given the triangle ABC, with the perpendiculars AD, BE, and CF drawn through the vertices to the opposite sides.

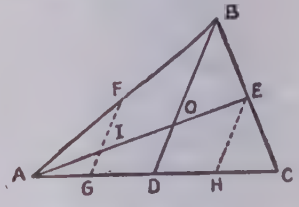
Con. The lines AD, BE, and CF are concurrent.

Hint. Through each vertex of the triangle draw a line parallel to the opposite sides and let these lines intersect to form the triangle GHI. For this triangle the lines AD, BE, CF are the perpendicular bisectors, hence the proof depends upon §260.

262. Theorem.—The bisectors of the angles of a triangle meet in a point equidistant from the three sides. This point is the center of the inscribed circle, and the method of proof is indicated in §249.

263. Median.—A median of a triangle is a line connecting a vertex to the midpoint of the opposite side.

264. Theorem.—The medians of a triangle meet in a point two-thirds of the distance from each vertex to the midpoint of the opposite side.



Hyp. Given the triangle ABC, with D, E, and F, the midpoints of the sides AC, CB, and BA respectively.

Con. The medians AE, BD, and CF are concurrent.

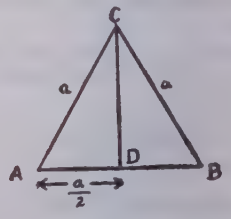
Hint. We will draw only two medians at first, AE and BD intersecting in O. We will show that AO = 2(OE) and BO = 2(OD). Draw FG and EH through F and E respectively parallel to BD to meet AC at G and H. Let FG and AE intersect in I. Then AG = GD = DH = HC. (§117, Theorem 37.) By the same theorem $AI = IO = OE$. Hence $AO = \frac{2}{3}(AE)$. In the same manner we can prove that AE and CF will intersect in a point O^1 such that $AO^1 = \frac{2}{3}(AE)$. Hence $AO = AO^1$, thus O and O^1 coincide, therefore all the medians pass through O.

265. Equilateral Triangle.—A triangle is equilateral when all its sides are equal.

266. Equiangular Triangle.—A triangle is equiangular when all its angles are equal.

267. Scalene Triangle. — A triangle is scalene when no two sides are equal.

268. Exercise.—Find the altitude and area of an equilaterial triangle of side a.



Given the equilateral triangle ABC with the side a.

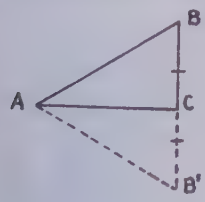
Required to find the altitude CD and the area of the triangle.

The point D is the midpoint of the base, hence AD = a/2. ADC is a right triangle, hence, $a^2 = \left(\frac{a}{2}\right)^2 + (CD)^2$, or $4(CD) = 3a^2$.

(§211, Theorem 83.) Hence $CD=\frac{a\sqrt{3}}{2}$.

The area $=\left(\frac{1}{2}\right)(a)\left(\frac{a\sqrt{3}}{2}\right)=\frac{a^2\sqrt{3}}{2}$. (§207, Theorem 79).

269. Theorem.—If one acute angle of a right triangle is double the other, the hypotenuse is double the shorter side.

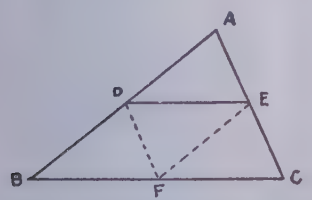


Hyp. Given the right triangle ABC with $\angle C$ the right angle and $\angle B=2\angle A$.

Con. AB is double BC.

Hint. Prolong BC through C to B^1 making CB^1 equal to BC. Draw AB^1. Triangles ABC and AB^1C are congruent. $\angle BAC+\angle B^1AC=\angle B=\angle B^1$, hence the triangle is equiangular and equilateral. Thus $AB=BB^1$, therefore $AB=2BC$.

270. Theorem.—The line which bisects two sides of a triangle is parallel to the third side and is equal to one-half of the third side.



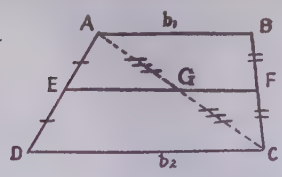
Hyp. D and E are the midpoints of the sides AB and AC respectively of the triangle ABC.

Con. DE is parallel to BC and equal to one-half of BC.

Hint. Take F, the midpoint of BC, and draw DF and EF. DE is parallel to BC, EF is parallel to AB, and DF is parallel to AC. (§182, Theorem 63. If a straight line divides two sides of a triangle proportionally, it is parallel to the third side.) Hence both DEFB and DECF are parallelograms. Thus $DE=BF=FC$. Therefore $DE=\frac{1}{2}BC$.

271. Theorem.—If a line is parallel to one side of a triangle and bisects a second side it bisects the third side. This is a special case of §181.

272. Theorem.—The line joining the midpoints of the non-parallel sides of a trapezoid is parallel to the two bases and is equal to one-half of the sum of the bases.



Hyp. Given the trapezoid ABCD, with E and F the midpoints of the non-parallel sides AD and BC respectively. Let $AB=b_1$ and $DC=b_2$.

Con. EF is parallel to AB and DC.

$EF=\frac{1}{2}(b_1+b_2)$.

Hint. Draw AC and let G be the midpoint of AC. Draw EG, EG is parallel to DC and equal to one-half of it. (§270.) Draw FG. In the same way, FG is parallel to AB and equal to one-half of AB. GF is also parallel to DC. (§95, Theorem 19.) Hence GE and GF are parts of the same straight line. (§15, Postulate.) $EG=\frac{1}{2}b_2$,

$GF=\frac{1}{2}b_1$, thus $EG+GF=EF=\frac{1}{2}(b_1+b_2)$.

273 Theorem.—Two triangles which have their sides respectively parallel or perpendicular are similar. Hint. Prove the angles of one triangle equal the angles of the other and apply §186.

274. Lemma.—A lemma is a preparatory proposition laid down to shorten the demonstration of the main proposition which follows it.

275. Corollary.—A corollary is a consequence drawn immediately from a proposition. In the text books on geometry many theorems are followed by the statement of a particular case as a corollary.

276. Concyclic Points.—Three or more points which lie on a circle are called concylic points. In general four points chosen at random will not lie on a circle. When we do have four points on a circle there are many relations existing among the lines and angles which are determined by the four points. The consideration of such relations is beyond an elementary discussion of geometry.

277. Conclusion.—The reader who is interested in geometry will never need to grieve for more worlds to conquer, as did Alexander the Great. After the study of plane geometry, naturally comes the study of solid, or three dimensional geometry. In the developments of modern physics it is also convenient, and also almost necessary, to study the geometry of four, five and of any number of dimensions. This is carried out with the assistance of the methods of algebra in what is known as analytical geometry. Geometry also becomes involved in still greater difficulties, for in order that the laws of physics may assume simple forms under all conditions it appears necessary that so called non-euclidean geometries should be developed. Every surface has a geometry of its own. If one is walking in a mountainous country, the shortest distance between two points for a person constrained to walk always on the ground will no longer be a straight line but will be a curve. Three points on the ground will determine three of these shortest distances, bounding an area which we may call a triangle. However two triangles may have their sides equal without being either congruent or equal in area. The curve corresponding to a circle becomes a complicated curve. The reader may investigate a geometry of this kind by stretching strings on the surface of any solid, a taut string in contact with a smooth surface giving the shortest distance between two points. The plane geometry we have studied becomes a special case of this geometry when the surface on which the strings are stretched is a plane.

FORMULAS

278. Symbols.—

a,b,c = sides of a triangle ABC.
p = perimeter.
r = radius.
c = circumference of a circle.
d = diameter of a circle.
h = altitude.
$s=\frac{1}{2}(a+b+c)$.
K = area.
b = base of a triangle, parallelogram.
π = 3.14159..., $\frac{22}{7}$ approximately.

279. Length of Lines.—

Right triangle $a^2+b^2=c^2$. §211, Theorem 83.

Circle $c=\pi d=2\pi r$. §231, Theorem 91.

Equilateral triangle $h=\frac{1}{2}a\sqrt{3}$. §268.

Diagonal of a square $d=b\sqrt{2}$. §211, Theorem 83.

Altitude on side c $=h_c=\frac{2}{c}\sqrt{s(s-a)(s-b)(s-c)}$.

Meridian on side $c=m_c=\frac{1}{2}\sqrt{2(a^2+b^2)-c^2}$.

Bisector of the angle opposite $c=t_c=\frac{2}{a+b}\sqrt{abs(s-c)}$.

An arc $=\frac{\text{central angle}}{180^\circ}(r\pi)$.

280. Areas of Plane Figures.—

Rectangle bh. §203, Theorem 75.

Square b^2. §203, Theorem 75.

Parallelogram bh. §206, Theorem 78.

Triangle $\frac{1}{2}bh$. §207, Theorem 79.

Triangle $\sqrt{s(s-a)(s-b)(s-c)}$. §212.

Equilateral triangle $\frac{1}{4}a^2\sqrt{3}$. §268.

Trapezoid $\frac{1}{2}h(b_1+b_2)$. §208, Theorem 80.

Regular polygon $\frac{1}{2}p$(apothem). §228, Theorem 89.

Circle $\frac{1}{2}rc=\pi r^2$. §223, Theorem 93.

Sector of a circle $\frac{1}{2}r$(arc).



NOTED MATHEMATICIANS, INVENTORS AND SCIENTISTS

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MARINE LIFE

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14 Mollusk.
15 Sponge.
16 Coral.
18, 19, 23 Sea Anemones.
20 Yellow Coral.
21, 22 Tube Worms.
26 Crab.
27 Gurnard.
28 Sea Urchin.
30 Sea Hare.
31 Scallop.
32 Nail Sea Rose.
34 Sea Cucumber
35 Skate.



BOOK XI

SCIENCE



PURE science is a product of research, questioning nature in order to understand. To explain any phenomenon is to state its relationships to other known phenomena. The relationships most commonly sought are those of quantity, order and cause, existing or acting in time and space. A cause is any determining factor. The cause of any given phenomenon is the sum of all antecedent conditions necessary to bring about the given condition. If this definition is accepted, it becomes evident that the cause of any experience can never be stated in full, for, in a sense, everything is the cause of anything. Explanations, therefore, seek the nearest causes, or those which have been noticeably potent in bringing about the condition observed.

Pure science discovers and explains. Applied science puts the discoveries and the theories of research into practical use, through mechanical inventions. The first production of radium, for example, was a triumph of pure research; but it was promptly followed by mechanical applications resulting in such a commercial demand for radium as seriously to hamper further research in the important field of radioactivity.

Science as such always proceeds by observation of the phenomena to be explained. Experiment is the process of observing phenomena under such control as to permit repetition and variation at the will of the observer. Scientific laws, or laws of nature, are the summaries of observation and experiment approved by competent authorities at any given time.

The order of procedure in formulating natural law through experiment is: (1) recognition of the problem; (2) control of the situation; (3) observation of all possible combinations of the variables involved; (4) comparison of the records thus secured; (5) rejection of the irrelevant; (6) synthesis of the relevant; (7) testing of the hypothesis thus formed, by applying it to new cases.

By sufficiently tested evidence, hypotheses may be confirmed into theories, and theories may become laws.

Classification of the Sciences. Science (from the Latin *scire*, to know) is human experience, tested and set in order. It differs from creed (that which one believes), resting on bases other than human experience; it differs from philosophy (our generalization as to that which transcends or lies beyond human experience); it differs from mere fact or record not set in order; it differs from history in dealing properly with causes and effects shown in proper relations. It differs also from art, which is essentially action based on human knowledge. In common language, however, the art and the science on which it rests may often receive the same name, as in the case of agriculture, which word implies a science, or group of sciences, relating to the rearing of crops, and also the use of this classified knowledge, or science, in actual practice.

In the language of modern Europe, the names of most of the sciences are derived from Greek roots, the second element in each being λόγος, *logos*, a discourse. Thus osteology (ὀστέον, *osteon*, bone) is a discourse on bones; ornithology (ὄρνις, *ornis*, bird) a discourse on birds. More exactly we may say that osteology is the science of bones. Again as each science is to the individual man an object of study, osteology becomes pedagogically the study of bones. By the addition of *logy* to a Greek root, an indefinite number of additional words can be framed, and will be framed in the future as the need for expression shall arise. For example, we may have rhodology, the science or the study of roses; orchidology, the science or the study of orchids; cynology, the science or study of dogs.

Other names applied to sciences conventionally end in the termination *ics*, which forms in many cases a euphonic ending. Thus optics, the science of vision (ὤψ, *op*, eye); ceramics (κέραμος, *keramos*, a pitcher), the science of pottery. Other words of this sort might be readily devised, as rhodics, the study of roses. Still other terms end in English in *graphy* (γράφω, *grapho*, write), indicating that the science is accompanied by writings or drawings; thus geography, description of the earth, as distinguished from geology, the study or science of the earth (γῆ, *ge*, earth). Still other recognized names of science spring from various roots, mainly from the Greek.

Beginning with inorganic nature, we may make the following classification of those branches of science which have recognized names in the English language.

OUTLINE OF THE SCIENCES

Concerning the Heavens.

Astronomy; science or study of the stars.
- Cosmology; science of the universe.
- Uranography; science (mapping) of the heavens.

Concerning the Earth.

Geology; science of the earth.
- Anemology; science of winds.
- Climatology; science of climates.
- Crystallography; science of crystals.
- Epigene Geology; science of forces molding earth from without.
- Geodesy; science of the earth's surface.
- Geognosy; science of the materials of the earth.
- Geography; science of the earth and its life.
- Hydrography; science of the waters of the earth.
- Hypogene Geology; (Plutonics) science of forces molding earth from within.
- Lithology; science of rocks.
- Metallography; science of metals and alloys.
- Metallurgy; science of preparing metals from their ores.
- Meteorology; science of weather phenomena.
- Mineralogy; science of minerals.
- Oceanography; science of the oceans and their phenomena.
- Orography; science of the study of mountains, particularly their structure.
- Petrography; science of rock classification.
- Physiography; science of the physical features on the earth's surface (also called physical geography).
- Seismography; science of recording earth tremors.
- Seismology; science of earthquakes.
- Stratigraphy; science of earth strata.

Concerning Mass and Force.

Physics; science of inanimate matter, not involving chemical changes.
- Acoustics; science of sound.
- Astrophysics; the science of physical constitution of the heavenly bodies.
- Calorifics; science of heat.
- Dynamics; science of motion of bodies, and action of forces.
- Electricity; the science of the phenomena and laws of electricity.
- Galvanism; the science of current electricity.
- Geophysics; science of agencies which modify the earth.
- Hydraulics, science of water in motion.
- Hydrodynamics; science of the relation of liquids and power.
- Hydromechanics; science of the mechanics of fluids.
- Hydrostatics; science of pressure and equilibrium of water.
- Magnetism; science of magnetic phenomena.
- Mechanics; science of action of forces on bodies.
- Optics; science of light and vision.
- Pneumatics; science of relations of gases to force or power.
- Thermodynamics; science of mechanical action or relations of heat.

Concerning the Molecules and Lesser Divisions of Matter.

Chemistry; science of the intimate composition and transformation of matter.
- Alchemy; science (and art) of the alleged transformation of baser metals into gold.
- Biochemistry; science of the chemistry of living organisms.
- Inorganic Chemistry; science of chemistry, excepting organic chemistry.
- Organic Chemistry; science of compounds produced in plants or animals and of various carbon compounds of artificial origin.
- Physical Chemistry; science of the relations between chemical and physical properties and phenomena.
- Physiological Chemistry; science of chemical processes within the bodies of animals.
- Spectroscopy; science of the spectra and the use of the spectroscope.

Concerning Living Organisms.

Biology; science of life and of living organisms (animals and plants).
- Analogy; science or study of resemblance in organs or parts of different structure or origin.
- Anatomy; science of the structure of living organisms.
- Bionomics; science of relationships of organisms to their environment.
- Comparative Anatomy; science of the relationships of forms of animals to each other and to man.
- Cytology; science of the structure and functions of the cells in living organisms.
- Dietetics; science of diet.
- Ecology; science of the adjustment or behavior toward environment of living organisms (used chiefly in reference to plants).
- Embryology; science of the development of the fertilized germ cell through different stages; the science of embryos.
- Environment; science of the effects of the results of external conditions in the development of individuals or species.*
- Heredity; science of continuity of type, from generation to generation (the name also applied to the law or fact of such continuity).*
- Histology; science of the minute structure of organic tissues.
- Homology; science of underlying resemblances in man or lower organisms, the supposed impress of common heredity.
- Hygiene; science of the methods of maintaining health (used chiefly in reference to man).
- Isolation; science of the results of the separation of individuals from the mass of the species.*
- Morphology; science of form and structure in living organisms.
- Ontogeny; science of the life history of the individual.
- Organic Evolution; science of orderly change in life forms from generation to generation (the name more often applied to the fact or process than to the science).
- Pathology; science of disease in organisms.

Phylogeny; science of the racial history or development of an organism.
Physiology; science of the functions of the living organs or organism.
Sanitation; science of the processes of maintaining healthful conditions for organisms (usually referring to man).
Selection; science of the results of the survival of one class of individuals as compared with others, from generation to generation.*
Taxonomy; science of the orderly arrangement of living beings according to their structure or according to their supposed origin or development. Classification is the general name for the processes of taxonomy.
Teleology; science of real or supposed purpose or adaptation in structures of men or lower organisms.
Teratology; science of monstrosities and their causes among men or other organisms.
Variation; science of individuality and the tendencies to divergence from generation to generation.*

Sciences Chiefly or Wholly Related to Plants.

Botany; science of plants.
Abiogensis; science of (alleged) spontaneous generation of organisms.
Agriculture; science (and art) of cultivation of the ground, including the harvesting of crops and animal husbandry.
Agrostology; science of grasses.
Algology; science of algæ or seaweeds.
Arboriculture; science (and art) of shrub and tree culture.
Bacteriology; science of bacteria.
Bryology; science of mosses.
Dendrology; science of shrubs and trees.
Diatomology; science of diatoms, minute one-celled plants.
Forestry; science (and art) or care and culture of forests.
Horticulture; science (and art) of garden and orchard culture.
Lichenology; science of lichens.
Limnology; science of or study of fresh waters, as ponds and lakes, especially their biologic conditions.
Mycology; science of fungi.
Paleobotany; science of extinct vegetation.
Phytogeography; science of the geographical distribution of plants.
Pteridology; science of ferns.
Xerophytology; science of desert vegetation.

Sciences Primarily Concerning the Lower Animals or Concerning Man as an Organism.

Zoölogy; science of animals.
Androgyny; science of hermaphroditism.†
Animal Psychology; science of comparative psychology applied to animals.
Carcinology; science of crustaceans (crabs, lobsters, etc.).
Conchology; science of shells or molluscs.
Craniology; science of skulls.
Dermatology; science of the skin, its functions and diseases.†
Entomology; science of insects.
Gastrology; science of the stomach.
Gynecology; science of female diseases.
Helminthology; science of worms.
Herpetology; science of reptiles.
Ichthyology; science of fishes.
Laryngology; science of the throat and its diseases.
Mammalogy; science of mammals.
Myology; science of muscles.
Neurology; science of nerves.
Obstetrics; science of the process of birth.†
Odontology; science of the teeth.
Oölogy; science of eggs.
Ophthalmology; science of the eye, its structure, functions and diseases.
Organology; science of the organs.†
Ornithology; science of birds.
Osteology; science of bones.
Otology; science of the ear and its diseases.
Paleontology; science or study of past geologic period as shown by fossils of organisms.
Paleozoölogy; science of fossil animals.
Parasitology; science of parasites.
Pisciculture; science (and art) of rearing fishes.
Protozoölogy; science of protozoans.
Rhinology; science of the nasal apparatus and its diseases.
Skeletology; science of skeletons.†
Somatology; science of comparative study of the body.
Telegony; science of (alleged) effects of the first father on the progeny of a second, by the same mother.
Therology; same as mammalogy.
Thremmatology; the science of selective breeding of domestic plants or animals.
Trichology; science of the hair.
Zoögeography; science of geographical distribution of animals.

Sciences Relating Chiefly or Exclusively to Man as a Member of Society.

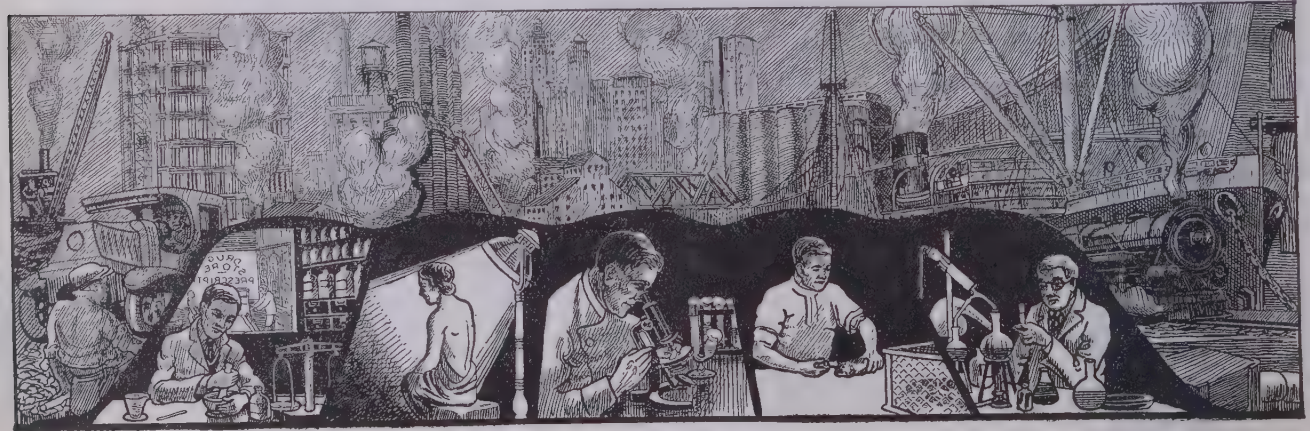
Anthropology; science of the human species.
Aeronautics; science (and art) of air flight.
Æsthetics; science of beauty and of appreciation of beauty.
Anthology; science of flowers—used chiefly for flowers of expression or choice lyric verse.
Apologetics; science of defense of the divine origin and authority of Christianity.
Archæology; science of ancient works of men.
Archæsthetics; science of the supposed pervading mind preceding the existence of conscious animal life.
Assyriology; science of ancient relics of Assyrian civilization.
Astrology; science of the imaginary influences of the stars on human affairs.
Athletics; science (and art) of bodily exercise.
Biography; science of individual life records.
Demonology; science of (supposed) spirits, mostly evil.
Dialectics; science of reasoning.
Didactics; science (and art) of instruction.
Dogmatics; science of asserted truths.
Ceramics; science (and art) of making pottery and other clay products.
Chronology; science of time.
Civics; science of civil relations of man.
Cookery; science (and art) of preparing food for man with the aid of heat.
Criminology; science of crime and criminals.
Economics; science of property relations of man.
Education; science (and art) of mental development in man.
Egyptology; science of ancient Egyptian civilization.
Epistemology; science of sources of human knowledge.
Eschatology; science of "doctrines of uttermost things," more especially speculations as to a future state.
Ethics; science (and art) of moral duty.
Ethnography; descriptive science of men, races and tribes of men.
Ethnology; science of the significances of races of men.
Ethology; science of human behavior.
Etymology; science of word-derivation.
Eugenics; science of the conditions of being well born, as regards possibilities of development in the individual life through heredity.
Euthenics; science of being well bred, or race improvement through environment.
Finance; science of the management of money.
Genealogy; science of tracing and recording pedigrees.
Genesis; science of origins.
Glyptology; science of engraving as on precious stones.
Graphics; science of drawing; especially in mathematics.
Gymnastics; science (and art) of bodily exercises.
Hagiology; science of saints and writings regarded as sacred.
Harmonics; science of music and of harmony in sound.
Hellenics; science of Greek culture.
Hermeneutics; science (or art) of expounding sacred writings.
Homiletics; science (and art) of preaching.
Hymnology; science of hymns.
Jurisprudence; science (and philosophy) of law.
Linguistics; science of languages.
Logic; science of exact reasoning.
Medicine; science (and art) of prevention, healing or alleviation of disease.
Metaphysics; study of matters that transcend physical knowledge.
Military Science; science of war and of methods of human destruction.
Mythology; science of myths and legends.
Papyrology; science of papyri.
Pedagogics; science (or art) of teaching.
Pediatrics; science of hygiene and diseases of childhood.
Pedology; same as pediatrics. (Also the science of the study of soils.)
Pharmaceutics; science of preparing, using or dispensing medicines.
Pharmacology; science of drugs, including materia medica and therapeutics.
Philology; science of words and word evolution.
Philosophy; a study of general conceptions which transcend human experience.
Phonetics; science of sounds, especially speech sounds.
Phonics; science of speech sounds.
Phonology; science of speech sounds, including history and theory of sound changes.
Politics; science of relations of men as citizens and as groups of citizens; the science of government.
Psychiatrics; science of mental disorders.
Psychology; science of the mind.
Psychotherapeutics; science of healing by action on the mind.
Pugilistics; science (and art) of fist-fighting.
Sociology; a group of sciences concerning human society.
Splanchnology; science of the internal organs or viscera.
Surgery; science (and art) of healing through cutting diseased or injured tissues or organs.
Telegraphy; science (and art) of "distance-writing" by the use of the telegraph.
Telepathy; science of (alleged) transmission of knowledge without the use of sense organs.
Telephony; science (and art) of "distance-speaking" by means of the telephone.
Theology; science of deity and of divine control of the universe; also of the opinions entertained by men in regard to these matters.
Therapeutics; science of healing agencies.
Toxicology; science of poisons and their antidotes.
Veterinary Medicine; science (and art) of healing disease in domestic animals.

Exact Sciences.

Mathematics; science of the exact relations between quantities or magnitudes and operations; the science of order.
Algebra; mathematical science treating of the relations and properties of quantities by means of symbols, letters, etc.
Arithmetic; science of numbers.
Calculus; science of calculation of problems involving motion or constant variation.
Geometry; science of measurements of space.
Horology; science of measuring time or of making timepieces.
Trigonometry; science of measurement of angles.

*The terms Environment, Heredity, Isolation, Selection and Variation are used more generally in the sense of factors in organic evolution of species or types.

†The terms Androgyny, Dermatology, Gynecology, Laryngology, Obstetrics, Opthalmology, Organology, and Somatology are applied chiefly to man, constituting branches of medical science.



Science in the Service of the World

ASTRONOMY

ASTRONOMY is the science of the heavenly bodies. The term is derived from two Greek words—*astron*, a star, and *nomos*, a law. The heavenly bodies are the Sun, planets, satellites, comets, meteors, stars and nebulae.

The Solar System comprises the Sun and the bodies which hold allegiance to it. They are the planets with their attendant satellites; the asteroids; and the comets and meteors, which also revolve about the Sun, but are bodies of a nature very different from that of the planets. The Earth on which we live is one of the eight planets revolving about the Sun, and the Moon is the Earth's only satellite.

The Sidereal System, of which the Solar System is a very small part, includes the stars, the clusters and many of the nebulae. The nebulae which do not belong to the region of the stars are in themselves other sidereal systems, probably similar to our own great star system.

The science of astronomy is a study of these bodies—their positions, distances, motions, dimensions, composition, physical condition, and the dynamical and physical laws which govern their motions and development. Astronomy utilizes information gathered in the fields of mathematics, physics, chemistry, geology, and biology; and in turn it unfolds to these sciences phenomena which prevail under conditions found in the Sun, stars and nebulae, and which cannot be duplicated on the Earth.

Astronomy is the oldest of sciences, and perhaps the noblest, for its scope is the entire visible universe. Other sciences restrict themselves, almost exclusively, to some one phase of nature on the Earth which, from the point of view of size, is an insignificant part of the whole universe. Astronomy, however, unravels secrets of nature not only upon the Earth but also throughout all space within reach of the most powerful instruments.

But to suppose that astronomy has no everyday uses is a mistake. Some of the most fundamental phases of our daily life and of modern commerce depend entirely on astronomy. Only by astronomical determinations are the latitudes and longitudes of places on the Earth established; and by the same means vessels at sea and caravans on the desert are guided in their courses. The determination of time, land surveys, the establishment of boundaries, map-making, prediction of tides, the knowledge of the shape and size of the Earth—all rest on observations of the heavenly bodies.

The fundamental time unit is the rotation of the Earth, and the position of any spot on the Earth at any time with reference to the heavens determines the time of day at that particular place. Today, with the radio to transmit time signals, fewer time determinations are necessary; but the clocks from which the signals are sent give accurate time only because they have been set by means of observations of the stars made with an astronomer's transit instrument. The official time of all civilized countries is obtained from the clocks in the astronomical observatories. The United States Naval Observatory, at Washington, D. C., maintains such a service, as do all the great national observatories, and many independent ones. The month and the year—larger units of time—depend not upon the rotation of the Earth, but upon the revolution of the Moon about the Earth and of the Earth about the Sun, respectively.

In the future, astronomy may also develop a great service to mankind by establishing a correlation between the amount of heat from the Sun and temperature on the Earth. This will make possible long-range weather forecasting. We may say that at present, this is little more than a hope, but a hope, nevertheless, which may be realized in the lives of some who read these pages.

ASTRONOMICAL INSTRUMENTS

Telescopes. Most astronomical information is obtained from the use of telescopes. They are of two general types—refractors and reflectors.

In a refractor the image is formed by a lens, the light actually passing through the glass and being bent, or refracted, to form the image in the focal plane. The lens requires optical glass of the highest quality, which must be of like density throughout and without mechanical strains. It is very difficult to produce large disks of optical glass of sufficient homogeneity for the demands of astronomical lenses. Inasmuch as it is impossible to unite all of the colors into one focal image with a single lens, the modern telescopic object glass consists of two or more lenses in combination. Such a lens system gives a well defined image of large field, free from spherical and chromatic aberration.

In a reflector, the light does not pass through the object glass. As the name implies, the light is reflected from a polished surface. With this idea in view, it is seen that it is unnecessary for the material to be optically homogeneous. It is, of course, desirable that it should be free from mechanical strains. Various materials have been used for the mirrors, but the largest ones have been made from speculum metal and from glass upon which has been deposited a silver surface. The silver surface, when burnished and free from tarnish, has a higher reflecting power than the speculum metal and is therefore to be preferred. Experiments are now being made with pyrex, quartz, stainless steel and stellite, in the hope of finding a material less susceptible to distortions due to rapid changes of temperature.

Regardless of whether it is a lens or a mirror which forms the image in a telescope, it may be mounted to permit pointing it to any region of the sky. In a fixed observatory the type of mounting universally adopted is known as the *equatorial*. Such a mounting has two axes, one parallel to the Earth's axis and known as the *polar axis*, the other perpendicular to it, known as the *declination axis*. Rotation about the declination axis produces motion in a north-and-south direction, and rotation about the polar axis produces motion in an east-and-west direction. The advantage of this form of mounting is that, once the telescope is directed toward a star, it may be made to follow it by driving the telescope with clockwork about the polar axis, thereby compensating for the rotation of the Earth.

Refractors and *reflectors* have their relative advantages and disadvantages. The refractor gives finer definition and a much larger field of fine definition. It is, however, more costly because of the necessity of using optical glass and because of the fact that four surfaces must be polished. Also, the tube must be longer (which necessitates a larger dome), because for a given aperture the *focal length* of reflectors can be made much shorter than for refractors. The refractor has these advantages, however; the surfaces, once ground and polished, are permanent; and the quality of the image is far less affected by changes of temperature. Perhaps in the 40-inch telescope of the Yerkes Observatory the limit of size for refractors has been nearly attained. Of course it is understood that the lens must be supported from the margin, and that in different positions, as it is pointed to different parts of the sky—standing on edge when pointed toward the horizon, and lying flat in its support when pointed toward the zenith—there may well be deformations which will affect the character of the image.

Reflectors have the advantage of perfect achromatism, that is, all colors are united into one focal image. Moreover, reflectors are cheaper, and they may be mounted so that there will be no sagging from changing position. They have the disadvantages of small field because of spherical aberration; distortion due to change of temperature; and non-permanence of the silver surface, necessitating frequent resilvering.

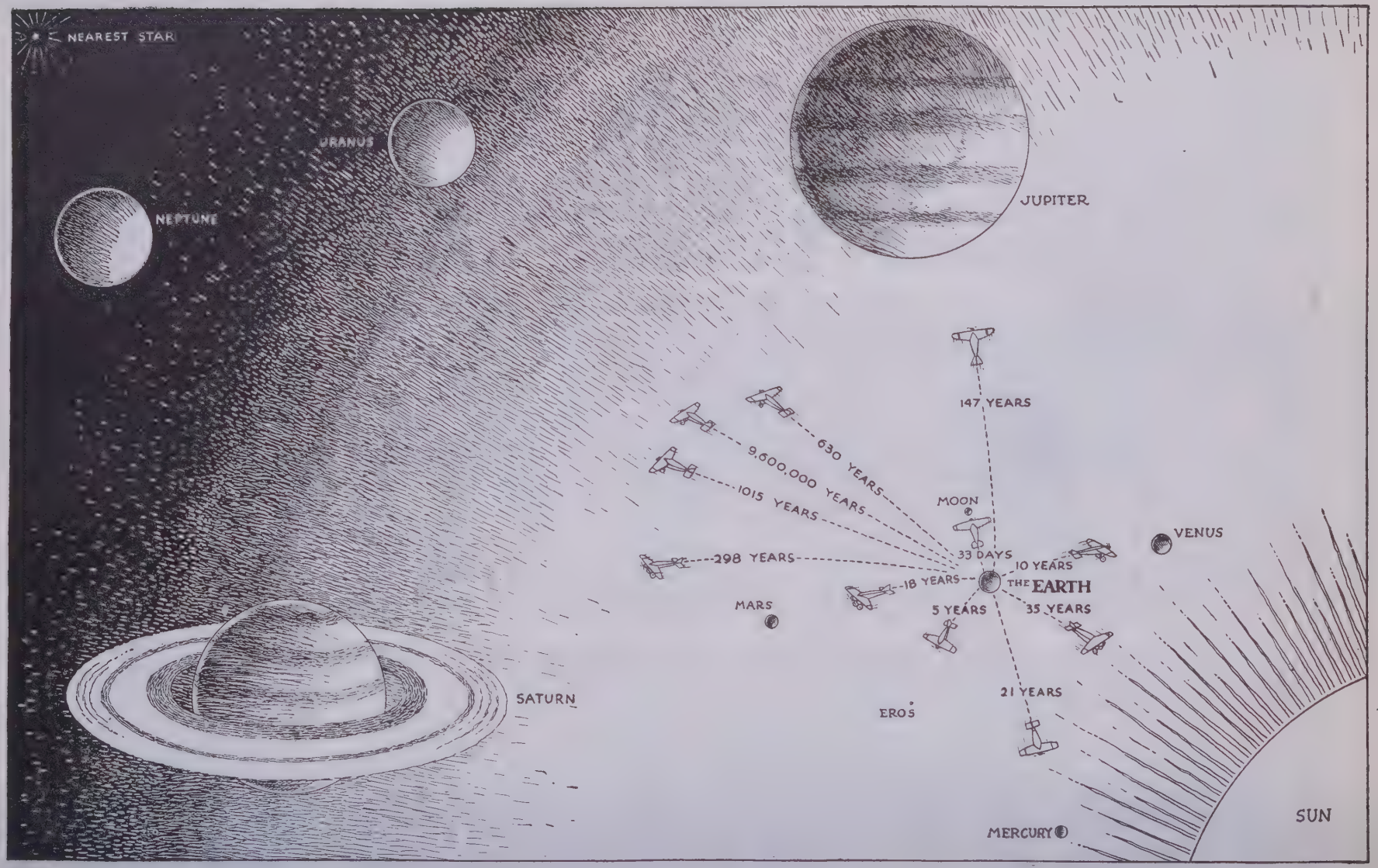
The Spectrograph. Another instrument which has wide application and is of great importance in astronomy is the spectrograph. It is generally used in connection with a telescope. The simple principles may be briefly stated:

If light from any source is passed through a prism it is spread out into a spectrum, with its constituent colors ranged in the order, red, orange, yellow, green, blue, violet, indigo. These colors represent the various wave-lengths of light, the waves of the red being about double the length of those in the violet. The location of any radiation within the spectrum defines its wave-length, and vice versa. For some luminous substances this band of color will not be continuous, but will present only isolated lines. In this phenomenon rests the possibility of spectrum analysis. The fundamental laws may be stated as follows:

(1) A gas under pressure, a liquid, or a solid when luminescent, gives a continuous spectrum, an unbroken sequence of colors from red to violet. For substances in these physical states there is no possibility of telling the spectrum of one from that of another.

(2) A gas under low pressure, when excited to luminescence, gives a discontinuous, or bright-line, spectrum; that is, only lines of certain wave-lengths appear in the spectrum, and these lines are characteristic of the gas under examination. Such a luminous source writes its own signature for its identification.

(3) If the light from the source giving the



Distances to Sun, Moon, Planets and Nearest Star

The artist has shown diagrammatically the distances to our Sun and Moon and to the planets (at nearest approach to Earth) and the nearest star. The airplanes are traveling at the rate of 300 miles an hour. The planets are shown in approximately relative sizes. Eros is the asteroid which approaches nearest to Earth.

continuous spectrum is observed through a layer of cooler gases under low pressure, this layer of gas will absorb from the spectrum just those lines which it would itself emit if it were isolated and luminescent. The result is a dark-line, or absorption spectrum.

Two additional principles of spectroscopy which have a wide application should be stated. The lines of the spectrum of the various elements occupy definite and fixed places in the spectrum under fixed conditions. But if the observer and light source are relatively approaching each other, the lines are shifted toward the violet; if receding, they are shifted toward the red. The amount of the shift is dependent upon the relative velocity. Application of this principle provides the possibility of determining the velocity of the stars toward or from the Earth and may also, as noted subsequently, be used to determine the velocity of the Earth in its orbit. A further principle states that the location of the most intense part of the spectrum is dependent upon the temperature of the light source. If the temperature is low, this maximum intensity of radiation will be in the red. As the temperature increases, the maximum intensity shifts toward the blue. This principle furnishes a direct means of determining the temperature of the Sun and stars.

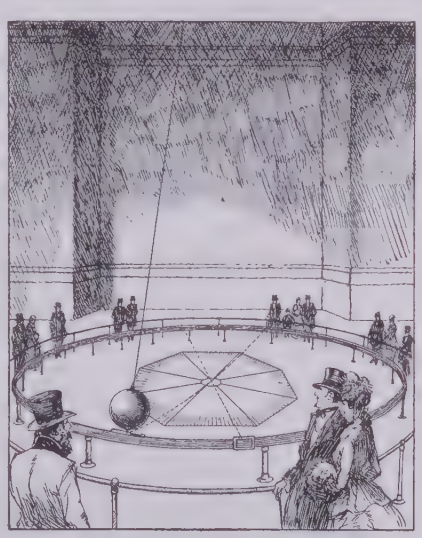
THE SOLAR SYSTEM

It is necessary first to learn something about the Earth since all we know about any of the heavenly bodies depends upon observations made at its surface.

The Earth is a great ball, approximately spherical, with an average diameter of 7,918 miles. It is flattened slightly at the poles, the polar diameter being 7,900 miles and the equatorial 7,927 miles. It is 5.53 times as heavy as the same volume of water would be, and weighs six thousand millions of millions of millions of tons: the figure is written six with twenty-one ciphers. This great globe spins on its axis once in twenty-four hours. It makes its journey eastward around the Sun in a year at a rate of eighteen and one-half miles a second, or nearly 100,000 feet per second—about twenty times as fast as the swiftest modern projectiles.

When Magellan's ships actually sailed around the Earth in 1519-'22, the fact was established that the Earth is spherical. Two or three other familiar proofs of approximate sphericity were known even before that time. If an observer, anywhere on the Earth, increases his elevation, the visible horizon becomes more and more depressed below the true horizon. Also, as a ship goes out to sea, the highest portions remain longest in view and the tops of the smoke stacks and masts disappear last, showing that the surface is convex. Another proof is observable at times of lunar eclipse. The Moon must come into the Earth's shadow in order to be eclipsed so if we note the shape of the edge of that shadow on the Moon, we will know the shape of the body casting the shadow. It is always seen to be the arc of a circle.

To determine the size and shape of the Earth it is necessary to measure the length, in miles, of one degree at different parts of the Earth's surface. Two stations are selected hundreds of miles apart. The latitudes have been determined independently, which gives the distance in degrees. Then, to find the equivalent distance in miles, measurement is necessary. This measurement can not be done directly by chaining; but a process called *triangulation* must be employed. A short base line is measured with very high precision, and a system of triangles is built up on this base line, angles being measured at the two ends of one base in each triangle. The chain of triangles finally connects the two stations whose separation in miles is desired. The accuracy is such that the error is not greater than one inch in twenty miles. From these determinations, one degree of latitude at the equator equals 68.71 miles; at forty-five degrees latitude it equals 69.06 miles; at the poles, 69.41 miles. Arcs of longitude at any particular latitude are found to be of uniform length in miles.



Proof of Rotation of Earth

Foucault's famous experiment in the Pantheon, Paris, in 1851. The plane of the free swinging pendulum appeared to deviate slowly to the right. A similar Foucault pendulum is exhibited in the National Academy of Sciences, Washington.

No scale has weighed, directly, the entire Earth. But its mass has been determined by very delicate and accurate experiments which are based upon the Law of Universal Gravitation: ANY TWO PARTICLES OF MATTER ATTRACT EACH OTHER WITH A FORCE PROPORTIONAL TO THEIR MASSES AND INVERSELY PROPORTIONAL TO THE SQUARE OF THE DISTANCE BETWEEN THEM. The attraction of the Earth for a small body of known mass is compared with the mutual attraction of two such bodies. The description of these experiments is beyond the scope of this book.

Knowing the volume and mass, the average density of the Earth is derived from the relation: density equals mass divided by volume. The density of the Earth's surface rocks is found directly to be 2.75 times that of water. Since the mean density is 5.53 times that of water, we deduce that the central core of the Earth has a density of 10, and must be made of very heavy elements, probably largely of iron.

If we watch the stars for only a few hours we see that, with relation one to another, they remain unchanged; but their places in the sky are changing, moving slowly westward. The ancients believed the stars to be attached to a material sphere which turned on pivots. Either this is the case, or the Earth itself rotates on an axis. After the invention of the telescope it was seen that many of the planets are rotating globes, and it was natural to assume that the Earth, also, rotates. But now we have physical proofs that the Earth rotates, and these proofs are not dependent upon observations of any other heavenly body.

We shall consider just one of them, the experiment first performed by the French physicist, Foucault, in 1851. He hung a heavy iron ball, about a foot in diameter, by a wire more than 200 feet long from the dome of the Pantheon, in Paris. With great care the pendulum was started, equally free to swing in any plane; and as it swung, a pin fastened in the bottom of the ball cut a path in a ridge of sand. The plane of the swing turned slowly to the right, in the direction of the hands of a watch, at such a rate that it would have been carried completely around in thirty-two hours if it had not first come to rest. The floor was turning under the pendulum; the Earth was rotating. It will be seen that at the poles, the Earth would turn around under such a pendulum once in twenty-four hours; with decreasing latitude the time of rotation of the plane would increase, up to infinity at the equator, where there would be no shift at all. At the South Pole, the rotation would appear to be reversed. At the pole, the pendulum would deviate fifteen degrees an hour. The Foucault pendulum, in the National Academy of Sciences in Washington, D.C., deviates a little less than nine and one-half degrees an hour.

As the heavens are seen to rotate daily, so the Sun is seen to have an annual motion north and south of the equator and eastward among the stars. In spring, certain constellations are left in the sky after sunset; in summer, certain others; and so on throughout the year, winter nine o'clock skies being entirely different from the summer ones at the same hour. As far as the apparent motion goes, it could as well be due to the Sun going around the Earth as the Earth about the Sun. When the Earth was considered to be fixed at the center of the universe, the Sun was supposed to do the moving. Ptolemy (100-170 A.D.) worked out a very complete explanation of the apparent motions of all the members of the solar system on this basis. The Copernican system, announced thirteen centuries later, showed that the apparent motions could be explained more reasonably and simply by assuming the Earth to be one of the planets going about the Sun. By using telescopes and other astronomical instruments, and by employing modern methods, exact measurements have been made possible which have led to the discovery of three independent phenomena which demonstrate that it is the Earth, and not the Sun, that moves in a great orbit.

The first definite proof that the Earth revolves about the Sun was discovered by the English astronomer, Bradley, in 1726. It depends upon the phenomenon, *aberration of light.* For a description of this proof the reader is referred to any college textbook on astronomy. It will be seen that the velocity of the Earth in its orbit is obtained directly

when the velocity of light is known. Then, knowing the time it takes to make one complete revolution, the distance around is determined; and from that, the radius of the orbit, or the mean distance of the Earth from the Sun—92,900,000 miles—is ascertained. This distance is called the *astronomical unit.*

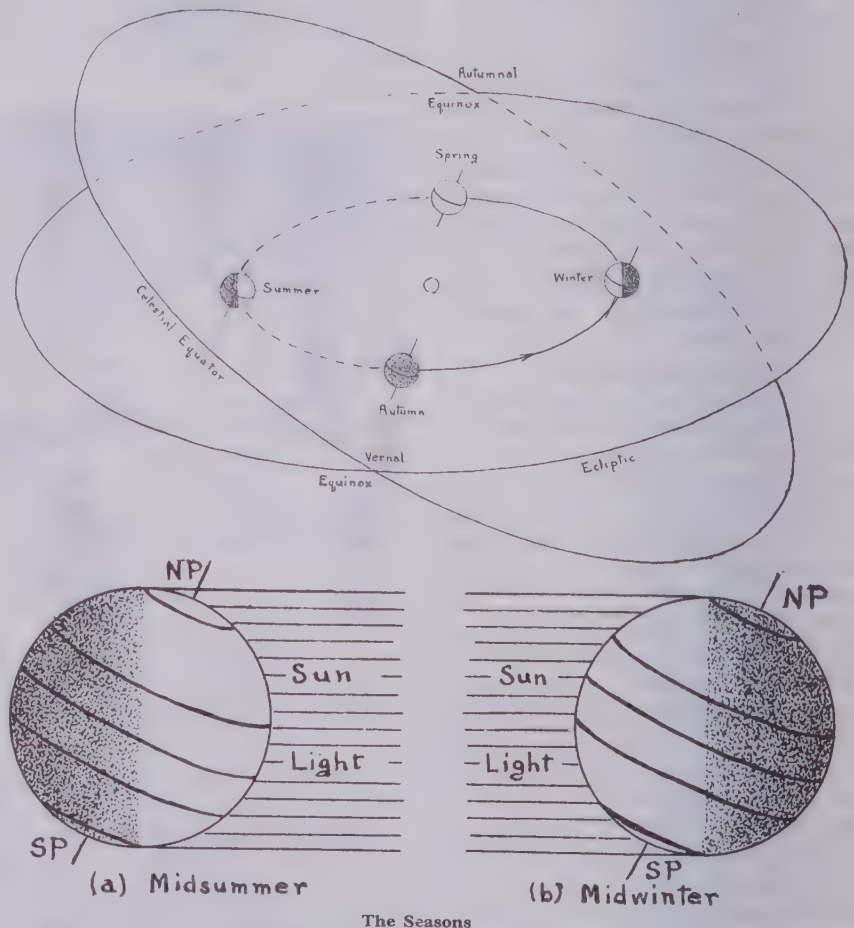
The two other phenomena which constitute direct proofs of the Earth's orbital motion are the regular annual *shift of the lines* in the spectra of stars, and the annual *parallactic displacement* of the stars. The basis for the first proof is indicated under spectrum analysis. Like the aberration of light, it also provides a means of determining the distance to the Sun if the velocity of light is known. The second proof is explained under the subject of methods for finding stellar distances.

Seasons. If it happened that the equator were in the plane of the great path of the Earth about the Sun, there could be no change of seasons such as we have now, and days and nights would always be equal in length. But since the equator makes an angle of twenty-three and one-half degrees with the *ecliptic*, which is the apparent path of the Sun among the stars, and since it faces (except for the slow precessional motion) always in the same direction, there are only two times in the year, March 21 and September 21, when the Sun shines perpendicularly on the equator. These are indicated as the spring and autumn positions of the Earth, respectively, in the accompanying diagram of the seasons. At the summer solstice, June 21, the Sun shines twenty-three and one-half degrees beyond the North Pole, and falls short of shining on the South Pole by the same amount. Six months later, the opposite circumstance prevails. It is then winter in the Northern Hemisphere; summer, in the Southern.

It will be clearly seen from the lower shaded diagrams that any point in the Northern Hemisphere has sunlight for a longer time than it is without sunlight on all the days between March 21 and September 21, the greatest difference coming on June 21, when the Sun is highest in the sky at noon. During the other half of the year the reverse condition is true, the duration of sunlight being the shortest on December 21, at which time it is only about seven and one-half hours in the latitude of Chicago and New York. In summer, more heat is received from the Sun every twenty-four hours than is radiated away; as a result, the temperature continues to rise until the amount of heat lost in twenty-four hours equals that received. In our latitude this occurs about August first and not on June twenty-first as one might suppose from the fact that the most heat is received in twenty-four hours on that date. For similar reasons the minimum temperature of winter occurs about February first, and not on December twenty-first, when the daylight is shortest. Of course, elevation, winds and ocean currents affect the local temperature at any one place. The other factor that enters into the higher temperature of summer is the elevation of the Sun above the horizon. A beam of sun rays of given cross-section falls on a smaller area when it strikes the Earth's surface perpendicularly than when it strikes obliquely. Therefore, under high elevation, it will deliver more heat to a unit surface. This is also apparent from Figures *a* and *b* of the diagram of the seasons. A high sun, however, may furnish less heat during a short day than would a low sun shining through a long day. And so, in midsummer a region at the North Pole actually receives twenty-five per cent more heat from the Sun in twenty-four hours than does the same area at the equator. Summers at the North Pole would be hot if the heat were not used up in melting the great accumulation of ice.

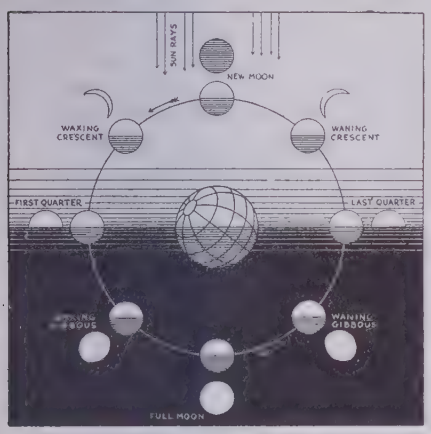
The Moon. The Earth has one satellite, the Moon, which goes with it around the Sun. The Moon appears to us as large as the Sun, and next to the Sun its influence on human affairs is greatest of all the heavenly bodies. If the Moon were destroyed, maritime interests would be seriously affected, because the tides would be far smaller. The high water which tides provide for entrance to ports, and the natural dredging effect of the flow of tides, would be lessened. The Moon is conspicuous and important only because it is near; it is really small when compared with the planets, and insignificant when compared with the stars. The planet Mercury is one-half again as big, and Mars has twice the diameter; yet in considering the planets, we shall see that these two are the smallest. However, the phases of the Moon (the apparent changes in shape shown in a month); its movement among the stars, change of position with relation to the Sun; and its surface markings—all have engaged the attention of man ever since he could think.

Hold a new golf ball between the thumb and forefinger at arm's length, in line between your eyes and a lighted lamp, in an otherwise darkened room. If you are seated in a revolving chair, turn once completely around; or if standing, turn on your heel slowly, all the while watching the golf ball. You will have reproduced the effect of the phases of the Moon and demonstrated that they are due to the fact that the Moon is spherical in shape, that it shines only by reflected sunlight, and that it travels around the Earth in an orbit. In the first position the golf ball showed only its unilluminated side to you, and therefore appeared completely dark. In the corresponding position—Earth, Moon, Sun—we have *new moon*, and the Moon is said to be in *conjunction*. The next day, a very thin crescent hangs in the western sky after sunset. Each day the crescent increases in size and in distance east of the Sun until it is seen as a *half moon* on the meridian at sunset. This is *first quarter*, and the Moon is said to be in *east quadrature*. The phase continues to grow as the Moon moves eastward, more and more gibbous, until the illuminated face is turned full toward the Earth and we have



The Seasons
These diagrams are for the Northern Hemisphere.

full moon, and the Moon is in *opposition*. Then we have a waning gibbous Moon until it appears as a semicircle again. This is *third quarter*, or *last quarter*, and the Moon is said to be in *west quadrature*. Then it becomes a crescent again, narrowing until it disappears as a new Moon. It is this waning crescent which the fewest people see, for it rises later and later each night, from midnight to dawn.



Phases of the Moon
The sunlit side of the moon is presented differently to earth dwellers in different portions of its orbit.

Half of the Moon's sphere is always illuminated by the Sun; it is the portion, varying from none to all, of this illuminated hemisphere turned toward the Earth that causes the Moon's phases. The line which separates the sunlit portion which we see from the dark portion is called the *terminator*. In the two configurations—conjunction and opposition—the Moon is said to be in *syzygy*.

To determine the distance to the Moon is not a difficult astronomical problem. Two observers at stations situated on the same meridian, but widely separated in latitude, observe the Moon and measure its distance from the zenith. Then it is but a matter of the solution of three triangles to determine the distance to the Moon, which is found to be sixty times the radius of the Earth, or 239,000 miles.

The Moon's diameter, 2,160 miles, is a little more than a quarter that of the Earth. These 2,000 miles across the Moon, at its distance of 239,000 miles, appears as great to us (that is, subtend approximately the same angle) as does the 866,000-mile diameter of the Sun at 92,900,000 miles.

The Moon's mass is 1/81.5 that of the Earth, and accordingly it is not as dense, being only 3.39 times the density of water. Objects would weigh only one-sixth as much on the Moon as they do on the Earth; a man could jump six times as high on the Moon.

The Moon rotates on its axis once in twenty-seven and one-third days, and in exactly the same period of time goes once around the Earth, so that we see the same face turned toward the Earth at all times, except for small variations in motion, known as *librations*. Forty-one per cent of the Moon's surface is never visible to the Earth. The Moon's period of revolution is called a *sidereal month*. The time from a given phase, to the recurrence of it is twenty-nine and one-half days, and is called the *synodic month*. This forms the approximate basis for the unit of time known as our *calendar month*. The Moon's orbit is not exactly circular and it is inclined to the ecliptic at an angle of five degrees, roughly. The points where the two orbits cross are called the *nodes—ascending* when going from south to north, and *descending* when going from north to south.

When we look at the Moon through a telescope and thus magnify its surface features, we see the areas which are dark to the naked eye as smooth plains. Early astronomers thought they were seas and so called them *maria*, a name which persists in spite of the fact that there is no water on the Moon. What we see as bright areas are, in general, the rough features—mountains, craters and rills. The Moon's surface has been carefully mapped and all the features named. The most prominent *mountain ranges* are the Alps, Apennines and Caucasus.

Heights of mountains on the Moon are determined from the length of their shadows and by knowing how high above the lunar horizon the Sun would appear at that point; or from the distance of mountain peaks from the terminator, when the sunlight first strikes their summits. The highest lunar mountains are 25,000 feet or more.

Many thousands of *craters* are visible on photographs of the Moon which have been made with modern telescopes. These craters range in size from a few hundred feet across, to dimensions greater than some of our smaller states. The curvature of the Moon is such that to a person standing in the center of the giant craters the rim, unless exceptionally high, would be quite invisible. In the large craters, numerous smaller ones, as well as mountains are seen.

Over a thousand *rills* have been mapped. These are narrow crevices (ditches or furrows) less than two miles wide, and inconspicuous because they are so narrow. In length they are from ten to a hundred or more miles.

When the mountains, craters or rills on the Moon's surface are near the terminator, they are in the best position for observing.

From some of the prominent craters, especially Tycho, Kepler and Copernicus, narrow streaks are seen to radiate outward; these are called *rays*. When the Moon is full, these ray systems can be seen best.

The Moon is known to be without air and water; neither animal nor vegetable life can exist on it.

The Sun. To most persons the Sun is just a large orb that appears to cross our sky from east to west, giving light when it is visible, and regarded as responsible for the varying temperatures at any one place on the Earth and for the difference in climate at various places on the Earth.

Actually, the Sun is a star, so near to us that its brightness obscures the other stars except when we are on the side of the Earth turned away from it, which condition we call "night." The Sun appears to cross our sky because the Earth turns on its axis, now presenting one-half of its spherical surface to the Sun's rays, and twelve hours later presenting the opposite half.

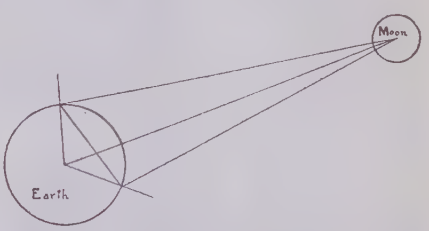
The Sun's attraction keeps the Earth, the seven other planets, and the comets and meteors in their orbits about it; it also influences the motions of the satellites. It is not impossible that other stars have systems of planets revolving about them, like our own, but we have nothing to prove this.

Our Sun is but an average star, medium in size and temperature. Yet, compared with the Earth and the other planets which circle about it, it is enormous and exceedingly hot. At the Sun's surface a shell of ice thirty-nine feet thick would melt in one minute. The Earth could not endure the Sun's great heat except for the distance which separates it from us—92,900,000 miles.

Knowing the distance to the Sun, we can readily determine how large it must be to appear the size it does. Its diameter is found to be 866,000 miles. If the Earth were placed at the center of the Sun, our Moon, at its present distance, would be only a little over half the distance to the surface of the Sun. And when we come to consider the volume of this huge ball, we find that more than a million Earths could be contained within its dimensions.

Its mass is 333,000 times the mass of the Earth, and from this we can see that a unit volume of it is only about one-fourth as heavy as the same volume of the Earth; or, it is only about one and one-half times as dense as water. But the entire mass is so great that an average man would weigh more than two tons at the surface of the Sun. Ninety-nine and six-sevenths per cent of all the mass in the solar system is contained in the Sun.

We cannot turn a telescope toward the Sun and proceed to examine its surface as we did in the case of the Moon, for the intense heat would destroy the observer's eye. An image of the Sun may be projected upon a white cardboard, and thus several persons can see it at one time and observe the rotation by the motion of the spots. They are seen to move faster at the equator than in higher latitudes, once around in twenty-five days at the Sun's equator, and in solar latitude forty-five degrees, once in twenty-seven and one-half days. So, because its parts move past one another, we know that the Sun cannot be solid; it is gaseous throughout, extremely hot at the center, with temperature about 10,000 degrees Fahrenheit at the surface.



Distance to the Moon
This diagram illustrates the method of determining the distance to the moon.

One can look at the Sun through a smoked glass or by putting a dark glass on a telescope. Also, a helioscope may be attached to the telescope for visual observations of the Sun. This latter device diverts most of the light to one side.

Photographs may be taken with a special camera and focal-plane shutter attached to a

telescope, and the details of the surface then studied at leisure. A very minute fraction of a second is required for a photograph, because the Sun is so bright.

A view of the Sun by any of the means above mentioned or a photograph of it, presents a brilliant circular disk, brighter at the center and darkening toward the edges, with a mottled, granular surface which we call the *photosphere*. On the photosphere are the dark sun spots. These vary greatly in size and shape, the larger ones stretching over more than 100,000 miles of the Sun's surface. Each spot has a dark center called the *umbra*, and a less dark region about it, called the *penumbra*. Sun spots start as small points, develop rapidly, last for a few hours, a few weeks, or a few months, and then break up and disappear. But the Sun seems not to become immune to spottedness: it passes through one cycle, lasting about eleven years, and even before that is over another begins. The spots of the new cycle are first seen in latitudes thirty to forty degrees north and south. As the period progresses, others break out at lesser and lesser latitudes until the solar equator is approached. The greatest number are present when the spot regions are at latitudes sixteen degrees. This is called a *sun spot maximum*. The most recent maximum was spread over the years 1927 and 1928. The time from a maximum to a minimum is longer than from a minimum to a maximum, 6.5 years and 4.6 years, respectively.

Besides the dark spots, there are bright areas visible on a direct photograph of the Sun. These are called *faculae* and are usually seen only near the limb because the background is darker there. When pictures of the Sun are taken in a single element, such as hydrogen or calcium, they are called *spectroheliograms*; and on such pictures the bright areas are called *flocculi*.

Above the Sun's surface, the photosphere, is a layer of permanent gases, called the *chromosphere*. The lower part of it is sometimes called the *reversing layer*. The origin of this name will be understood after the discussion of the solar spectrum below.

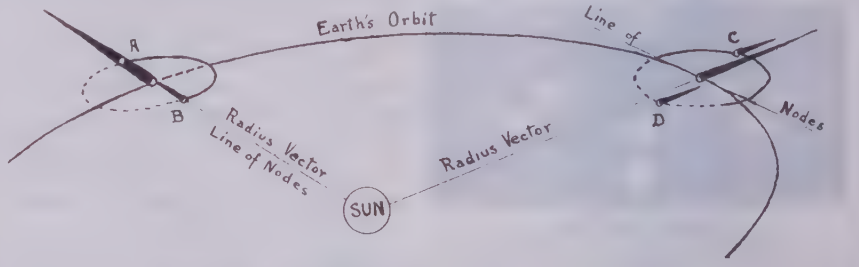
From the chromosphere rise vast, flame-like eruptions, called *prominences*. These vary in height, some having been known to rise 500,000 miles. They sometimes take on rapidly changing fantastic shapes, and at other times lie quiescent like clouds in the atmosphere.

The outermost layer of the Sun's atmosphere, the *corona*, can be seen only at times of total eclipse of the Sun, as a vast halo extending 300,000 miles all about it. Its shape varies with a period of approximately eleven years, corresponding to the sun spot cycle. It is controlled by the magnetic field of the Sun.

When the solar spectrum is observed with a suitable spectroscope, it is seen to have hundreds of dark lines. According to the third law of spectrum analysis, stated above, these are interpreted as being due to the absorption of an atmosphere of cooler gases overlying the photosphere. That this is the case has been amply demonstrated by observations made at time of solar eclipse. At the moment when the Moon has completely covered the photosphere and the atmosphere of permanent gases on the Sun alone are exposed to view, there suddenly appears a complex, bright-line spectrum and these bright lines are the exact counterparts of the dark lines of the ordinary solar spectrum. For obvious reasons it is called the *flash spectrum*.

Fifty-seven of the ninety terrestrial chemical elements have been detected in the Sun from a comparison of the lines of the solar spectrum with those of the various elements. It is reasonable to suppose that others may also be there but that we do not see their lines in the solar spectrum because of peculiar conditions of radiation due to temperature, pressure and so forth.

We have considered the dependence of our modern world upon astronomy for supplying it with time, directions, positions on the Earth and all resulting conditions; but when we come to consider the most important to us of all the heavenly bodies, our Sun, we readily recognize that except for it there would be no form of activity on our Earth. We depend upon the Sun for all power and warmth and life on the Earth. Our food, in all its forms, has had its origin in the same source. Our light and heat is one or another form of "canned sunlight." We have our very existence because of conditions for which the Sun is responsible. It is not difficult to understand why some races have worshiped the Sun.



Conditions for Eclipses
This diagram illustrates the conditions for lunar and solar eclipses.

Eclipses, both of the Sun and Moon, occur when certain geometrical conditions of relative position of Sun, Earth and Moon are fulfilled. In the eclipse diagram it will be seen that, on the side of the Earth opposite to the Sun, there is a cone of shadow. When the Moon, in its revolution about the Earth, comes into that shadow it is darkened, and we say it is eclipsed (Position A). When it is on the side of the Earth toward the Sun and comes into such a position as will cut off all or part of the Sun's light, we say the Sun is eclipsed (Position B).

It would appear at first glance that there would be an eclipse of the Moon at every full moon and an eclipse of the Sun at every new moon. But this is not the case because the Moon's orbit is inclined to the orbit of the Earth. If the full moon is not near the ascending or descending node of its orbit, it will be so far from the plane of the ecliptic that it will pass above or below the Earth's shadow and will not be eclipsed (Position C). If the new moon is not near one of the nodes, its shadow will pass above or below the Earth and the Sun will not be eclipsed (Position D).

If the shadow of the Earth and the full Moon are near enough to one of the nodes so that the Moon passes entirely into the shadow, a *total lunar eclipse* results. If only part of the Moon enters the shadow, a *partial eclipse* occurs. Most persons have witnessed a lunar eclipse, for the phenomenon can be seen by all the people on the night side of the Earth at the same instant. In fact, an eclipse of the Moon is visible to considerably more than a hemisphere because, in the four hours which may pass from the time the Moon first touches the shadow entering until it completely leaves it, the Earth has turned on its axis sixty degrees. There are between fifteen and sixteen lunar eclipses in ten years. The eastern side of the Moon becomes darker some time before it actually reaches the shadow; then a bite is taken out of the Moon's disk and this increases in size until the whole Moon is darkened. Presently, a small bright arc is seen to emerge on the opposite side, which grows until the whole lunar surface is again in sunlight. Very successful motion pictures of eclipses of the Moon have been secured.

If the new Moon's cone-shaped shadow does not pass above or below the Earth and is long enough to reach it, a *total eclipse of the Sun* occurs. The Sun is totally obscured for those parts of the Earth which the Moon's shadow touches. But if the new Moon's shadow is in line but falls short of reaching the Earth, as it often does, a ring of sunlight shows around the disk of the Moon, and this is called an *annular eclipse*. A solar eclipse is visible as total only within the narrow shadow path. For some hundreds of miles on either side of the shadow path, the Sun may be observed in partial eclipse. The shadow travels with high speed, and for any one place on the Earth the average duration is three minutes. At any one station a total eclipse of the Sun will be visible only once in three or four hundred years, on an average. And even if one travels far to the places where total solar eclipses are to be visible, he may be disappointed by clouds obscuring them. Many astronomers, even, have never witnessed the phenomenon.

In ancient times the sudden rush of darkness in a midday cloudless sky was attended by scenes of terror. It is surprising how early the ancient astronomers developed methods of prediction. Among the earliest records are found such predictions. In prehistoric times the Chaldeans had discovered that eclipses follow an orderly sequence with recurrence at intervals of eighteen years, eleven and one-third days. They named this period the *Saros*. Astronomers paid severe penalties for failure to fore-

tell, for it is recorded in ancient Chinese annals that the astronomers Ho and Hsi were beheaded upon the occurrence of the unannounced eclipse of 2137 B.C.

The Moon gradually encroaches on the solar disk and for a brief time—at most, seven minutes and forty seconds—completely covers it, then passes off to the other side. The phenomenon presents no especially interesting features until the stage of totality approaches. The exposed crescent of the Sun becomes narrower and narrower. At this time, because the light of the Sun's edge differs from that of the center of the disk, the landscape is seen in unusual hues. Images of the Sun formed through interstices in the foliage are crescent shaped. The unnatural light causes all animals to show uneasiness; fowls go to roost. Just before the beginning of totality, the crescent becomes broken and there appears along the edge of the Moon a series of bright points, called *Bailey's beads*, due to the Sun shining between the mountains on the edge of the Moon. If one stands on an elevation he may see the Moon's shadow rushing at a terrific speed over the landscape. On bright surfaces may be seen the rippling shadow bands, due to the uneven refraction of light from the narrow source through the Earth's atmosphere. Then comes totality, and with it the most beautiful phenomenon visible to human eyes—the solar corona—stretching out its tenuous filaments about the Sun. The degree of darkness depends upon the clearness of the atmosphere and the size of the shadow. In some cases, it is easily possible to read a watch; in others, lanterns are necessary if one would move about. There is generally a marked drop in temperature; dew is sometimes deposited. The end of totality comes with the same abruptness as does the beginning. The corona fades, and suddenly the edge of the Sun appears from behind the lunar disk, and the sequence of events at the beginning of eclipse is repeated in reverse. It is noticeable that human beings show the same release from tension that the animals have exhibited. In our day, the terror is gone; but the sense of awe remains. Foretold though it is, the very fulfillment of the prediction is tremendously impressive. The observer views the most beautiful of natural wonders, with the inexorable march of the shadow, the unnatural light, the strange actions of animals, the swift descent of darkness, the beauty of the prominences and corona, the view of the stars and the realization that they are always in the heavens, invisible only because of the brilliance of the sunlight flooded air.

The Planets. The eight principal planets in order of their distances from the Sun are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. To the naked eye they appear as stars; but they may be distinguished from stars because they do not twinkle, and because they are seen to move among the stars. When looked at through a telescope, the planets present disks, whereas the stars appear as points of light because of their much greater distances.

Mercury and Venus, having their orbits inside that of the Earth, are classed as *Inner Planets*, and the other five as *Outer Planets*. Mercury, Venus, the Earth and Mars are more often grouped as *minor* or *terrestrial* planets; and Jupiter, Saturn, Uranus and Neptune, as *major planets*, or *giant planets*, because they are very much larger.

All the planets move about the Sun continuously from west to east, the innermost travelling at the highest speed. As we watch their changing positions, however, we note that they appear to move eastward for a time and then, at regular intervals, loop backward for a short distance before they proceed in the direct motion. This is due to the combination of motions of the Earth and planets. The orbits are all nearly circular and lie in nearly the same plane. They are all contained within a narrow belt of the sky, sixteen degrees wide, known as the *Zodiac*, the ecliptic passing through the middle of it.

Early in the seventeenth century Kepler announced three fundamental laws of planetary motion, as follows:

(1) The orbit of every planet is an ellipse with the Sun at one focus.

(2) The radius vector (the line connecting the Sun and the planet) sweeps over equal areas in equal times.

(3) The cubes of the mean distances of the planets from the Sun are proportional to the squares of their sidereal periods.

Now we shall consider the planets individually and comparatively. *Mercury* is the smallest of the planets. It travels at the highest speed in its orbit, which is inclined at the greatest angle to the Earth's orbit. It goes about the Sun once in eighty-eight days. Because of its comparatively small orbit, it is never seen far from the Sun. When it is at greatest elongation from the Sun, twenty-eight degrees, it is never very high above the horizon at sunset. For this reason it is difficult to observe. Consequently few people, comparatively speaking, have ever seen Mercury. Some astronomers have observed markings on its surface, but the markings are hazy and ill-defined.

Because their orbits are inside that of the Earth, Mercury and Venus show phases such as that of our Moon, from new to crescent, through half, gibbous, to full. Also, they are the only ones that can be seen to transit, that is, to cross the face of the Sun.

Venus is the planet most like the Earth in size and mass. It goes around the Sun once in 225 days. It is the most brilliant of the planets, being the only one which can be seen at midday. The brightness of Venus surpasses that of the brightest star, Sirius, nearly ten times. It approaches nearest to the Earth of any of the planets, and the difference in distance at nearest approach and when farthest away causes a six-fold difference in apparent diameter. Venus has a very abundant atmosphere; Mercury has none. Owing to Venus' cloud covered surface, it has not been possible to determine the length of its day by observing surface markings. As far as we know, neither Mercury nor Venus has a satellite. It is probable that both Mercury and Venus keep the same face continuously toward the Sun, as the Moon keeps the same face toward the Earth.

Mars appears like a very red star, bright and conspicuous. It resembles the star Antares, which was so named because of its similarity to Mars, Antares meaning "Rival of Mars." In the telescope, Mars shows the gibbous phase when at quadrature. Much popular interest centers in Mars, due to speculation concerning the possibility of life thereon. Telescopes have certainly revealed that Mars has polar caps which increase and diminish with the seasons, and that certain fine markings and even extensive regions on the planet undergo seasonal changes in color and conspicuousness. This phenomenon favors the idea of advance and decline of vegetation. In other words, it seems quite certain from this evidence that there is plant life on Mars. The presence of water vapor in the atmosphere of Mars, and temperatures on the planet, recently determined, increase the possibility. Where plant life exists, there is likely to be some form of animal life. The principal argument for intelligent life rests on the artificial appearance of the so-called canals.

The day on Mars is about forty minutes longer than our day. The Martian year is 687 days; so the seasons are almost twice as long as ours. The diameter of Mars is 4,230 miles, and its distance from the Sun is one and one-half astronomical units. Although only a little more than half as large as the Earth, Mars has two moons—Deimos and Phobos. But they are tiny moons, probably less than twenty miles in diameter, whereas our Moon is 2,160 miles in diameter. They can be seen only in a large telescope.

Asteroids. Between the orbit of Mars and that of the next major planet, Jupiter, is a gap in space in which are found a thousand and more little planets, called asteroids. Most of them are tiny objects when seen in the telescope, and can be distinguished from faint stars only by their motions. The brightest one, Vesta, when nearest the Earth, is sometimes visible to the naked eye. Two are larger than Vesta, though not so bright—Ceres, 488 miles in diameter, and Pallas, 304 miles in diameter. The asteroid Eros approaches the Earth as near as 13,000,000 miles, nearer than any heavenly body except the Moon. Observations made on this little planet at such times of close approach furnish the basis for the most accurate determinations we have of the distance of the Sun from the Earth.

Jupiter is the greatest planet in dimensions and in mass. Its diameter is 88,700 miles, eleven times that of the Earth; and in volume it is greater than all the other planets combined. It weighs 317 times as much as the Earth. At a distance of 5.2 astronomical units, it revolves about the Sun once in a little less than twelve years. It travels slowly and majestically through about thirty degrees, or one sign of the Zodiac, each year. Jupiter's day, however, is short—only about ten hours. To the naked eye Jupiter appears as a star five or six times as bright as Sirius, though not so bright as Venus. Its light is yellowish, whereas that of Venus is white. In any telescope an equatorial bulge on Jupiter is noticeable; and light and dark belts, parallel to its equator, are conspicuous. The oblateness is caused by the planet's rapid spinning on its axis. With a large telescope and with good seeing, the bands reveal delicate, beautiful structure with colors in red and brown. The most prominent persistent marking is the great red spot. Jupiter has nine satellites, five of which are very small. The four large ones—Io, Europa,

Ganymede and Callisto—are known as the *Galilean satellites* (discovered by Galileo in 1610). They were the first heavenly bodies discovered by means of the telescope, and their discovery constituted the first evidence that the Earth was not the center of the solar system. They are so bright as to be visible in the smallest telescope. These four satellites of Jupiter present a beautiful sight, and afford interesting phenomena for astronomical observation as they revolve about the planet, when the moons themselves and their shadows can be seen to cross the disk of Jupiter, and when the moons are occulted by the planet or eclipsed by its shadow. Observations of the eclipses of the Galilean satellites led to the first determination of the velocity of light.

Saturn, to the unaided eye, is most nearly like Mars of any of the planets, though not so ruddy nor so brilliant. It resembles the star Spica. Viewed in a telescope, Saturn is probably the most beautiful sight in the heavens. It presents a picture different from all other bodies in the universe—a globe encircled by a shining ring. The ball is striped with delicate bands, much fainter than those on Jupiter, and at times polar caps blue as a robin's egg are seen. The ring system is composed of two bright rings separated by *Cassini's Division*, and of one dusky, semi-transparent ring within them, nearest the ball, called the *crepe ring*. Saturn makes its trip around the Sun in nearly thirty years. Twice during this period the rings are presented edgewise to the Sun. At those times, and also when the Earth is in the plane of the rings, or when the Sun and Earth are on opposite sides of the rings, they can be seen only with difficulty or else they entirely disappear. Seven and one-half years later, the Earth and Sun look down on the rings from an elevation of about twenty-six degrees, and then they appear as an ellipse nearly half as wide as it is long. At this time the rings cast a shadow on the ball, and the ball casts a shadow on the rings. The rings are made up of small bodies, giving the appearance of a solid ring. The demonstration of the meteoric constitution of the rings is one of the triumphs of the application of the spectroscope to astronomy. Saturn is next largest to Jupiter, having a diameter of 75,000 miles. The distance between the outer limits of the ring system is more than twice this distance. Saturn's day, too, is short—about twenty minutes longer than that of Jupiter. The ball being less dense than Jupiter, this rapid spinning makes for even greater flattening at its poles. The bulging at its equator is easily visible in a telescopic view of the planet and on photographs of it. Saturn's density is less than that of water. The planet has nine moons, as has Jupiter; but only one of them, Titan, is as large as the Galilean satellites.

Uranus was discovered in 1781 by Sir William Herschel. The first six planets had been known always, hence the discovery of a planet was a thing unheard of, and the occasion of great excitement. Uranus can be seen with the naked eye on a moonless night if one knows just where to look for it. In a telescope it presents a light greenish disk, too small and too faint to reveal surface markings clearly, if there are any. Consequently it has not been possible to determine its rotation period by the usual method. Other determinations, spectroscopic and radiometric, indicate a period of between ten and eleven hours. Uranus has four tiny moons with beautiful names—Ariel, Umbriel, Titania and Oberon. These encircle it in periods varying from two and one-half days to thirteen days. Their orbits, and the equator of Uranus as well, are nearly perpendicular to the ecliptic. The planet itself goes around the Sun at a distance of nineteen astronomical units once in eighty-four years.

Neptune was discovered because Uranus was seen to deviate from the orbit computed for it from observations of its position made in the years immediately following its discovery, even though allowance had been made for the disturbing effect of all known planets. It was thought that some unknown body, near enough and of great mass, must be perturbing Uranus. In 1846, therefore, search for such a disturbing body in a position indicated by computations by Leverrier and Adams, revealed a planet beyond Uranus. This was a magnificent triumph for mathematical astronomy. The planet was named Neptune. It is the eighth planet to be discovered. It is not visible to the naked eye. In the telescope its appearance is not unlike that of Uranus—a pale greenish disk with markings, vague at best. Although its one satellite has a diameter almost equal to that of our Moon, its great distance from us makes it difficult to see. Neptune's period of rotation is unknown. It goes about the Sun once in 165 years at a distance of thirty astronomical units. In size, it almost equals Uranus.

Early in 1930 a still more distant planet was discovered by the astronomers at the Lowell Observatory, Flagstaff, Arizona. The circumstances leading to this discovery are not unlike those which lead to the discovery of Neptune. A keen analysis (*Lowell Observatory Memoirs*, Vol. I, No. 1, "A Trans-Neptunian Planet" [1914]) by the late Professor Percival Lowell of the unaccounted for discrepancies in the motion of Uranus, pointed the way to an unknown planet at a distance about thirty-nine astronomical units, with mass 1/50,000 that of the Sun, in longitude which would put it, in July 1914, if it were near the ecliptic, in one of two alternative positions, either in the eastern edge of the constellation of Taurus, or about 180 degrees from this. The Flagstaff observers had begun the search for this planet before the publication mentioned above and have carried it on until the discovery in January, 1930. Great credit is due to Percival Lowell for his masterful mathematical treatment and to the staff of astronomers at the Lowell Observatory, principally C. O. Lampland, V. M. and E. C. Slipher for their persistent, ingenious, confident observing. C. W. Tombaugh, assistant on the staff, was the first person to note on the photographic plate the object which appears to be a new planet. It has been named Pluto.

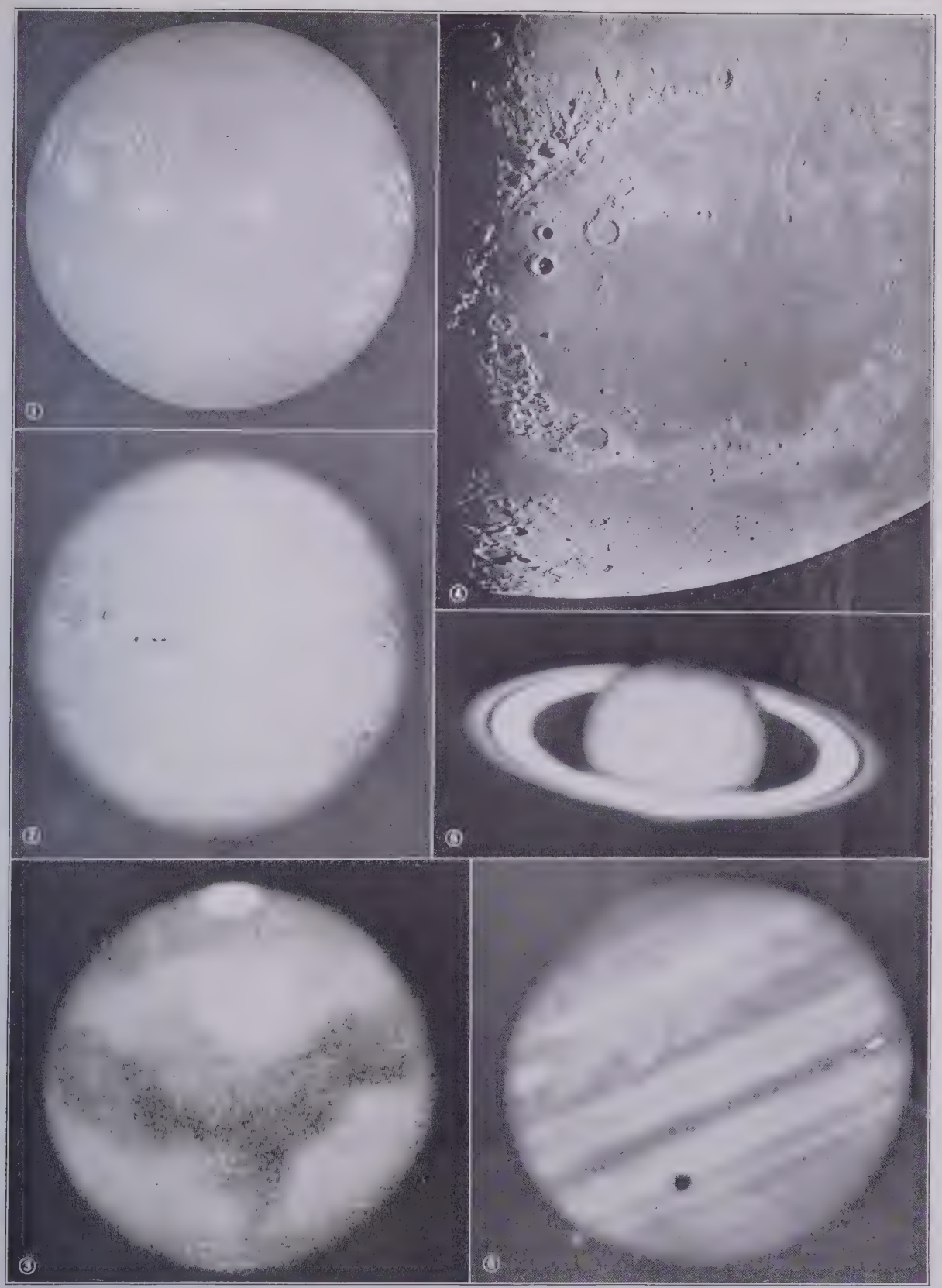
Comets and Meteors. Besides the planets with their satellites, and the asteroids, the Sun holds under its gravitational control great numbers of comets and meteors. *Comets* are bodies usually of great size but very small mass, which revolve about the Sun in elliptic or parabolic orbits and, as they move, change shape and dimensions. They shine partly by light reflected from the Sun, and partly by their own light. Most of them are faint objects, visible only with a telescope. When a comet is bright enough to be seen with the naked eye, it looks like a bright star surrounded by a hazy light which may or may not stretch out into a tail. Rare comets —of brightness equal to or surpassing Venus, and visible by day — have been known. Halley's comet, in its 1910 appearance, was a brilliant spectacle. This comet has a period of 75.5 years, and is due to return next in 1985 or 1986. It is the first comet for which an elliptic orbit was computed. Of the comets whose periods have thus far been determined, the intervals between successive returns range from 3.3 to over 1000 years.

The swiftly moving points or streaks of light which on any clear evening may be seen to shine for a second or two and then vanish, and which we call *shooting stars*, are really not stars at all. They are tiny bodies of stone or metal. They move through space with extremely high velocities, and when they strike our atmosphere the energy of their rapid motion is converted into heat and they shine until consumed. One can see several of these *meteors* in an hour on any clear night by merely watching some part of the sky. They are of different colors—white, bluish, green, yellow, and reddish—and sometimes are as bright as the full Moon. Most meteors are very small in size and mass, but occasionally one is large enough and massive enough to fall to the ground before it is consumed. Meteors which get through to the Earth's surface are called *meteorites*. Collections of them may be seen in museums. The largest one known, weighing thirty-six tons, was brought from Greenland by Captain Peary, and is now on exhibition in the Museum of Natural History in New York City. Meteors

The Essential Facts About the Planets

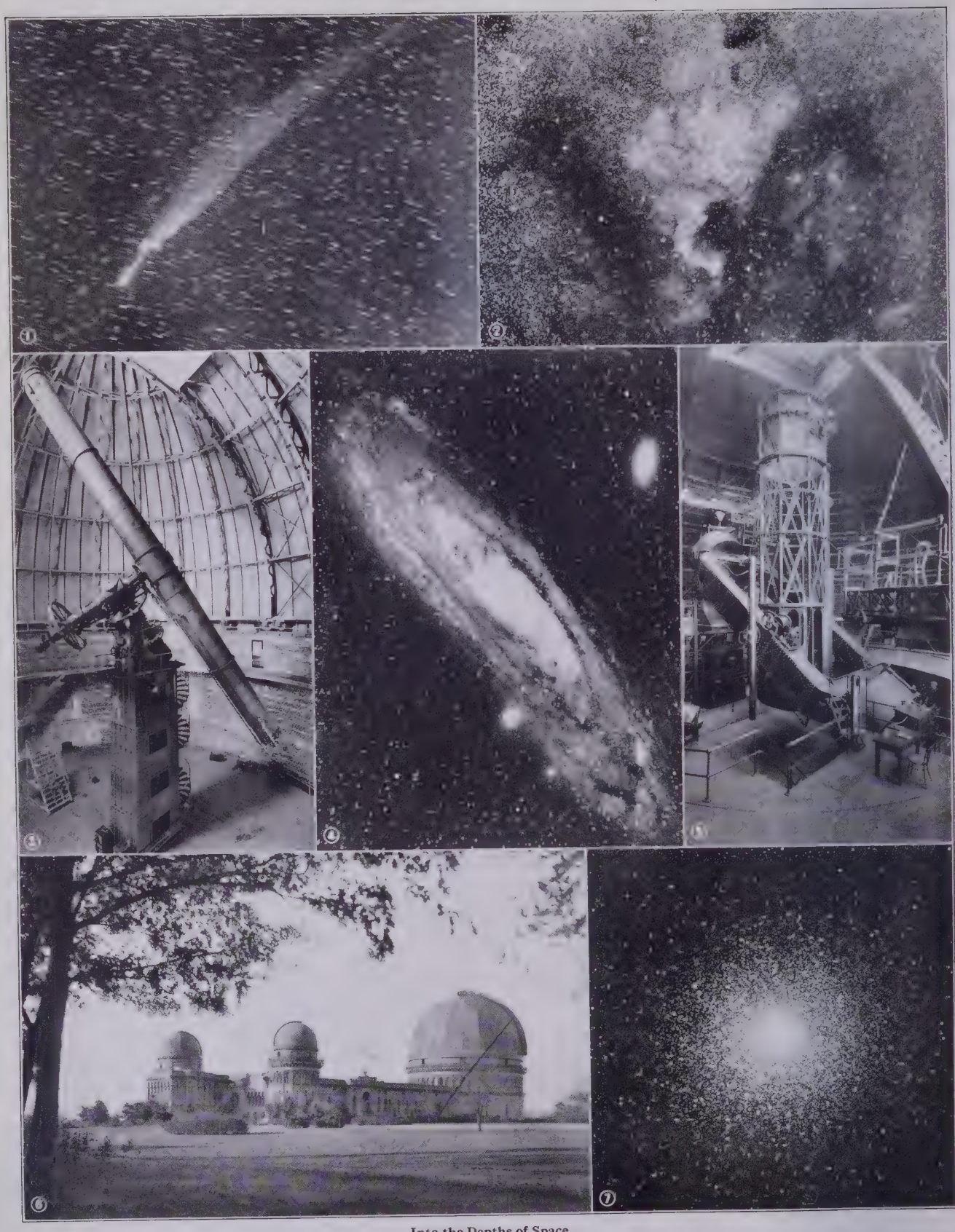
NAME	SYMBOL	DISTANCE FROM SUN (A.U.)	PERIOD OF REVOLUTION	DIAMETER IN MILES	MASS	ROTATION PERIOD	DENSITY	NUMBER OF SATELLITES
Mercury	☿	0.39	88 days	3,000	0.05	88 days*	4.5	None
Venus	♀	0.72	225 days	7,575	0.82	225 days*	4.8	None
Earth	⊕	1.0	365 days	7,918	1.0	23 hr. 56 min.	5.53	1
Mars	♂	1.52	687 days	4,230	0.11	24 hr. 37 min.	3.92	2
Jupiter	♃	5.2	11.9 years	88,700	317.	9 hr. 55 min.	1.32	9
Saturn	♄	9.5	29.5 years	75,060	95.	10 hr. 14 min.	0.72	9
Uranus	♅	19.2	84. years	32,000	15.	10 hr. 45 min.	1.22	4
Neptune	♆	30.0	165. years	31.000	17.	15 hr.*	1.6	1
Pluto	♇	39.5	248 years	4,000*	Unknown	Unknown	Unknown	None

*Uncertain



Sun, Moon and Planets

1. Sun, showing distribution of calcium in solar atmosphere. 2. Sun, showing hydrogen. Both 1 and 2 photographed at Mt. Wilson Observatory, July 22, 1906. 3. Mars, photographed at Yerkes Observatory. 4. The Moon, northern portion at last quarter, photographed at Mt. Wilson with one-hundred-inch reflector, September 15, 1919. 5. Saturn, photographed at Mt. Wilson with sixty-inch reflector. 6. Jupiter, photographed at Mt. Wilson with one-hundred-inch reflector; Ganymede, a satellite, is seen at lower left of planet, and its shadow is seen on the disk.



Into the Depths of Space

1. Morehouse Comet (photographed at Yerkes Observatory, October 15, 1909). During the long exposure the telescope is guided to follow the comet and the star images appear as "trails." 2. North American Nebula (Yerkes) in the Milky Way. 3. Yerkes forty-inch refracting telescope. 4. Andromeda Nebula (Yerkes), a great island universe. 5. Mt. Wilson Observatory, one-hundred-inch reflecting telescope. 6. Yerkes Observatory. 7. Great Star Cluster in Hercules, photographed at Mt. Wilson with sixty-inch reflector, exposure eleven hours.

are probably the remains of disintegrated comets; for many of them are known to travel about the Sun in orbits previously followed by a comet. If the meteors are well scattered along the orbit, we see a meteor shower each year when the Earth, in its orbit, crosses their orbit. Such swarms account for the fact that on certain dates of the year there are sure to be meteor showers from certain constellations. If, however, the meteors are bunched in the orbit, showers will occur only in such years as the Earth and clustered meteors arrive at the orbital intersections together.

Cosmogony. Various ideas have been advanced from age to age in the endeavor to account for the origin of the solar system. An acceptable theory must account for such facts as these: that the planets all revolve about the Sun in the same direction, in orbits that are nearly circular and in nearly the same plane; and that the Sun and the planets, so far as is definitely indicated, rotate on their axes in the same direction. The satellites, for the most part, revolve about their primaries in the same direction as the planets revolve about the Sun. In this explanation, the *nebular hypothesis* of Laplace held the field for a full century, but now it has been greatly modified or wholly abandoned. It assumed that at one time a large, slowly rotating, nebulous mass, in cooling, gradually contracted. A law of mechanics requires that if a rotating body contracts, it must spin faster. The process of contraction and more rapid spinning continued until the centrifugal force equalled the gravitational attraction, and a ring of material was left behind. This process was repeated until there were several revolving rings. The material comprising each ring somehow collected into a single body, a planet; and the central mass condensed to form the Sun. Modern theories assume the approach of another star to our Sun, with resulting partial disruption and the strewing of debris in the plane of the star's motion as it and the Sun swung about each other. Some of this material fell back into the parent body. The remainder took up orbital motion in the direction of the motion of the other star. Naturally, there would be condensations in this material and these formed the nuclei about which the aggregations took place which ultimately became the planets. A somewhat similar process, secondary in character, would account for the satellites. This explanation, first enunciated by Chamberlin and Moulton, and called the *planetesimal hypothesis*, accounts in a satisfactory way for the items of regularity which demand orderly development of the planetary system according to law.

THE SIDEREAL SYSTEM

Stars. If it were physically possible for an airplane to travel indefinitely into space, it would take one going at a speed of 100 miles per hour, 106 years to reach the Sun, our star. At the same speed, 29,000,000 years would be required to reach the next nearest star. Seen from that star, our Sun would look like one of the brighter stars; but no telescope yet constructed would be able to show the Earth, nor even the giant planet Jupiter. More than half the stars which we see are a hundred times as far away as this nearest one, and the farther ones which telescopes reveal are thousands of times as remote. Only comets and meteors occupy the vast space which surrounds our planetary system.

It is only when we consider the enormous distances of the stars that we can think of these glittering points of light as bodies of the same nature as our Sun. Many of them are larger and hotter than our Sun; some are smaller and cooler. Within the last one hundred years, by use of the spectroscope, a great deal has been learned about the constitution of the stars, their temperatures, and the speeds at which they are moving toward or from us. Indeed, as early as the seventeenth century, Newton had established this fact by another means. From the theory of gravitation he showed that the stars must be hundreds of times as far away as Saturn, for otherwise they would either fall into the Sun or describe orbits about it. At such great distances they could not shine by reflected sunlight, as do the planets.

The stars vary in color, according to their spectra. They are red, yellow, blue or white. The red stars are either young giants or old dwarfs. Yellow stars are either youthful or middle-aged. The blue and white stars are the hottest, and average twice the size of our Sun, which is a middle-aged yellow star, past its prime. It will be smaller when it becomes a dwarf red star, and after that it will perhaps cease to shine at all. But this will be countless ages hence. Giant red stars, like Betelgeuse, Antares and Aldebaran, are 200 to 300 times as large as our Sun. It will be seen that astronomers regard the stars as in a process of evolution, and place them in sequence according to their spectral characteristics. The various steps in the sequence correspond with stages of development. Of course the process is too slow to permit any view of the transitions; but, as one may judge of the development of human beings from studying the characteristics of children, young people and elderly ones, so from the detailed study of stellar spectra arises the idea of the evolution of stars.

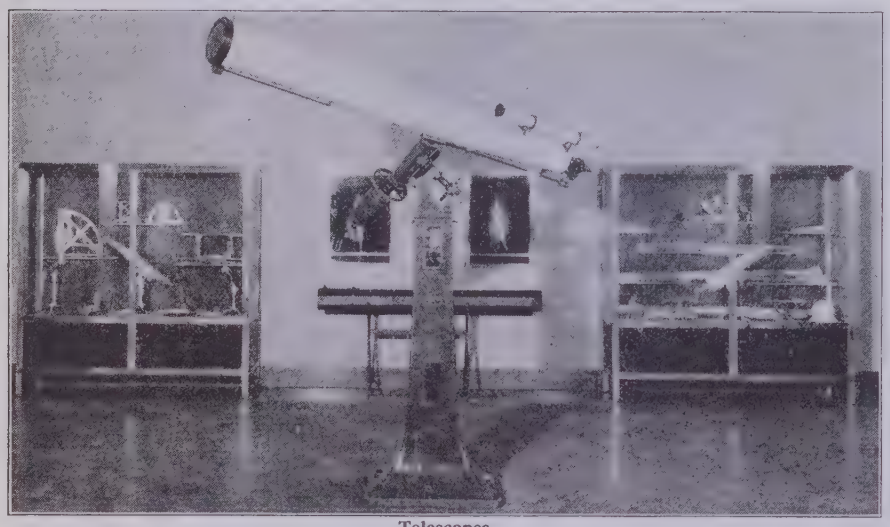
When we look up at the stars they seem to be fixed at random on the inside of a large hemisphere. Although their distances have very great range, yet in describing the position of one star with respect to another, we say they are near together if they appear in about the same direction, and far apart if their directions are quite divergent. Therefore, since their separation is only a matter of direction, it must be given in angle—degrees, minutes and seconds. A ten-cent piece held at arm's length is a rough measure for one degree. The Sun and the Moon are each about a half degree in angular diameter. It is well, also, to know angular distances between certain bright stars, to use as yardsticks in the sky; thus, the distance between Alpha and Beta Ursae Majoris, the Pointers, is five degrees.

If we give thought to the arrangement of the stars, the brighter ones naturally fall into outlines and groupings that make up star pictures. We do not all see the same pictures, just as we do not see the same pictures in cloud formations. In olden times the shepherds, while guarding their flocks at night, traced out star pictures of animals and monsters, giants and heroes. They gave names to them and made up tales about them. Most of these names are drawn from Greek or Roman mythology. Some go back even farther. Forty-eight such star groups, or *constellations*, were included in Ptolemy's *Almagest* of the second century. These include practically all that can be seen in north latitude about forty degrees. Since 1600 A.D., forty more constellations have been named; most of these are seen only in the southern skies or are made up of the less conspicuous stars. So now, eighty-eight constellations map out the entire sky that can be seen in any latitude at any time on any night. The boundaries between them are imaginary lines, just as are some of the boundaries of countries. The early constellation names, and the legends connected with them, have come down to us through the centuries. Realization of their antiquity adds to the interest in learning them. The naked-eye stars are designated by the letters of the Greek alphabet coupled with the constellation name, usually in order of brightness, though there are some exceptions. If there are more stars in a constellation than there are letters in the Greek alphabet, Roman letters are used; numbers afford an alternative method. About sixty of the brighter stars have proper names, too. For example, the brightest star in the constellation Taurus is Aldebaran, and it is Alpha of Taurus, written Alpha Tauri (the genitive case of the constellation name is always used).

To one living at the North Pole, the Pole Star (Polaris, or Alpha Ursae Minoris) would always be directly overhead. His horizon would coincide with the equator, and as the Earth rotates on its axis from west to east, the stars would appear to travel from east to west in paths parallel to the horizon. Half of the stars would always be above the horizon for him; half of them he would never see. At the South Pole the same conditions would prevail, except that the two hemispheres would be reversed. To one living on the equator the stars rise and set at right angles to the horizon, and all stars are visible in the evening at some time of the year. For those living in latitudes between zero degrees and ninety degrees north or south, some stars are never seen, others are always above the horizon, and the rest rise in the east and set in the west obliquely to the horizon. Since the Earth travels once around the Sun in a year, the Sun appears to us to have made the complete circuit of the heavens with relation to the stars. It moves eastward about a degree a day, or thirty degrees a month, that is, through one sign of the Zodiac. For this reason we do not see the same constellations in the same part of the sky at the same hour the whole year around. There is a gradual shifting, so that one set of constellations is left in the sky at sunset at one time of the year, and six months later those of the opposite part will have replaced them. It will be clear that by the Earth's rotation on its axis once in twenty-four hours, our position with relation to the stars is changed as much in two hours on any one night as it is changed for the same hour of night by a month's revolution about the Sun. So the star pictures that one sees depend upon the

latitude in which he is viewing the heavens, the time of year, and the time of night.

At a glance we will be able to pick out a dozen or more stars that are outstandingly brighter than the others, and we will note that there are fainter ones all the way down the scale to those which we can barely see.



Telescopes

In the foreground, mounted on a pedestal, is a modern eight-inch refractor. Behind it is an ancient telescope of Sir William Herschel. Above are two transparencies (photographs) of celestial objects. In the two cases are numerous early types of telescopes and other ancient astronomical apparatus. The view is in the Museum of the Adler Planetarium, Chicago.

The brightness of a star is called its *magnitude*, and depends upon three things—its size, distance and temperature. Stars just visible to the naked eye are of the sixth magnitude. Fifth magnitude stars are two and one-half times as bright; fourth magnitude stars, six times as bright; third magnitude, sixteen times; second magnitude, forty times; first magnitude, one hundred times. This magnitude scale is continued upward to zero and minus magnitudes, and downward to the faintest stars visible in the largest telescope, the greater magnitude numerically indicating the fainter star; and any two stars which differ by five magnitudes differ a hundredfold in brightness. There are only twelve first magnitude stars in the whole sky; there are twenty of magnitude 1.5 or brighter; forty of the second magnitude; 200 of the third magnitude; 500 of the fourth; 1,500 of the fifth; and 5,000 to 6,000 of the sixth or brighter.

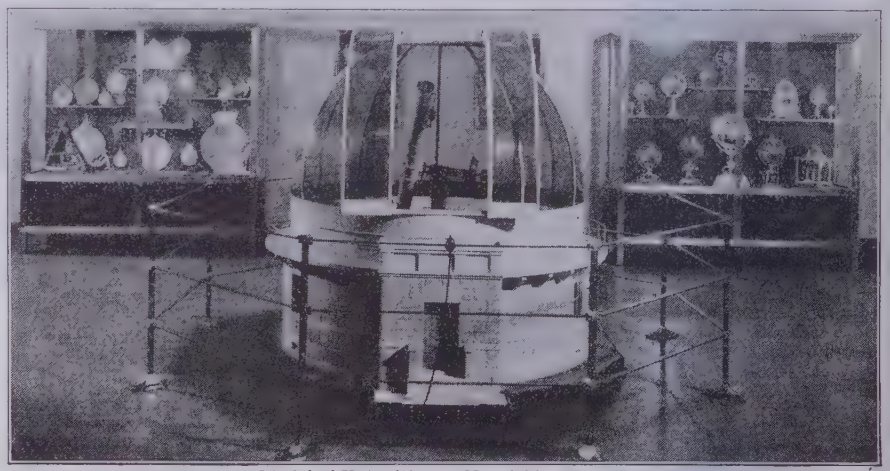
So the stars are by no means numberless, as we are likely to think. Subtracting from the 5,000 naked-eye stars those that are below the horizon and those that are invisible because of the haze near the horizon, only about 2,000 to 2,500 are visible at any one time. With a field glass, 50,000 can be seen; with a two-inch telescope, about 300,000; with the 18½-inch refractor of the Dearborn Observatory, 40,000,000; with the 40-inch of the Yerkes Observatory, 140,000,000; and with the 100-inch reflector of the Mt. Wilson Observatory, about 1,000,000,000. The total number of stars in our sidereal system is from 30,000,000,000 to 40,000,000,000. This limit is derived by determining the number of stars of successively fainter magnitudes visible on photographs of long exposure.

A casual view of the sky shows that the stars are not uniformly distributed, that there are regions with few stars, and others with many. More careful examination shows that the number of stars in any unit of area in the sky increases as approach is made to that broad hazy belt of misty light around the sky, known as the *Milky Way*.

If the Milky Way is examined with the telescope, or better, photographed with a portrait lens, it is shown to be made up of myriads of stars. We conceive our sidereal system to be roughly the shape of a grindstone or a thin watch, with the solar system somewhere near the center. If we look toward the edge of the system we see many stars and this produces in the sky the appearance which we call the Milky Way. If we look toward the faces we see comparatively few stars. Research indicates a diameter for our galaxy of between 200,000 and 300,000 light years, while the thickness is about one-tenth of this figure.

It is possible to gain an idea of the shape of our sidereal system, and of the distribution of the stars within it from counts of the stars in the different regions, without having any knowledge of the dimensions of the system. In order to know the scale of it, it is necessary that we be able to solve the fundamental problem of the determination of stellar distances. Only the direct, trigonometric method is explained here. There are other indirect, and perhaps less restricted, methods.

If one sways back and forth from right to left, looking at some nearby object the while, it will be seen that, as the body sways to the right, the nearby object will appear to move to the left when compared with distant objects in the background; and when the body sways to the left, the opposite will be the case. This apparent displacement of the nearby object is called *parallax*, and the principle is employed in determining the distances of the nearer stars. Instead of the body moving back and forth, we have the Earth moving about its yearly orbit. When the Earth is on one side of the orbit, a star will appear in a certain direction with respect to the more distant stars in the background. Six months later the nearer star will appear slightly displaced from the original position. The nearer the star the greater will be its parallax. For the nearest star, Alpha Centauri, the parallax is 0.″75. The angular value of this displacement, coupled with the known diameter of the Earth's orbit, furnishes the means for determining the distance to the star in much the same way that one determines the distance to an inaccessible object on the Earth by laying down a carefully measured base line and measuring the angular position of the distant object from the two ends of it. The presence of this parallactic displacement has been cited as a proof of the Earth's orbital motion. The problem of determination of stellar parallax (although simple enough in conception), on account of the minuteness of the displacement, is one of the most difficult problems of practical astronomy.



Model of United States Naval Observatory

This view in the Museum of the Adler Planetarium, Chicago, shows a model of the United States Naval Observatory in Washington. Like the original, the model has a movable dome, movable floor and movable telescope. In the case at the left are astrolabes, ancient astronomical instruments. In the case at the right is a collection of armillary spheres.

The remoteness of the stars makes it necessary to use a unit of distance larger

even than the astronomical unit, in order to avoid extremely large figures. The *light year* is the distance light travels in a year, at a speed of 186,000 miles a second. The star nearest to our solar system (Alpha Centauri) is 4.3 light years away. It should be noted that our Sun is eight light minutes distant. The average distance of a first magnitude star is 36.5 light years; of a second magnitude, 58 light years; of a third magnitude, 92 light years. Of the bright stars in the northern sky, it happens that the brightest, Sirius, is also the nearest; we see the light which left it a little less than nine years ago. Altair is sixteen light years away; Vega, twenty-seven. The giant star Antares is 250 light years away. To be as bright as it is, it must, of course, be very large: the orbit of Mars could be put inside of it.

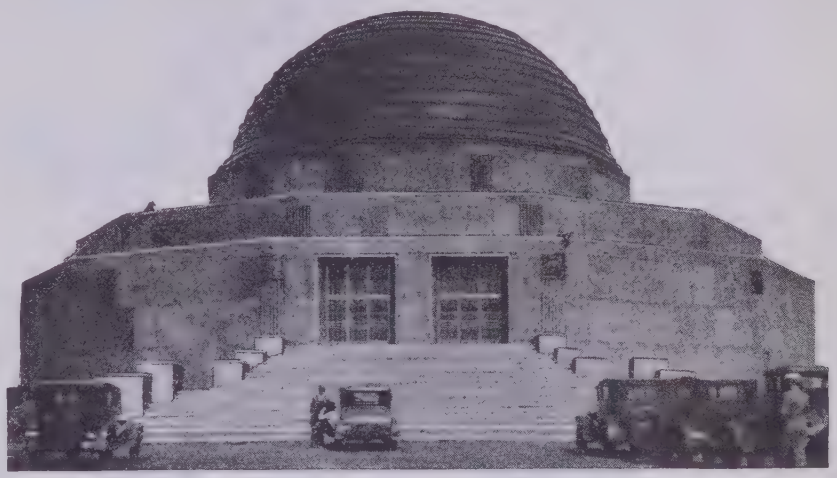
The stars appear to us to be fixed, but this is only because they are so far away. Through the centuries there has been slight change in the apparent arrangement, but actually they are moving through space in all directions at speeds much greater than cannon shot. From observations of the motions of the stars it is found that our star, the Sun, is moving through space toward a point in the constellation of Hercules at a speed of about twelve miles a second.

Some stars change in brightness from time to time. These are called *variable stars*. The outstanding naked-eye variables are Mira, or Omicron Ceti; Algol, or Beta Persei; Delta Cephei, and Betelgeuse, or Alpha Orionis. Over 5,000 variables are known at the present time, and more are being discovered each year. They are classified according to the cause or character of the variation in light, and according to the length of period. The observation of variable stars is one field in which amateur astronomers may profitably work, cooperating with the great observatories.

If one with a keen eye looks closely at some of the stars, he will see that there are two stars instead of one. Many thousands of close pairs may be seen in a telescope. Some of them appear double only because two stars are nearly in the same line, though they are really far apart in space, while others are actually close together and held by their mutual gravitation. Many of them show that they are moving along together or that they are in orbital motion about their center of mass. Stars which show orbital motion are known as *binary stars*. Only for binaries is it possible to find the mass.

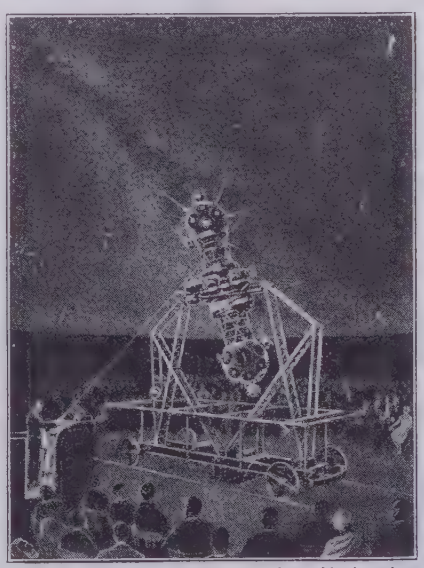
Star Clusters. Searching the sky with a field glass or telescope, one sees here and there hazy patches of light. Higher optical power in some cases resolves these hazy patches into thousands of stars grouped more or less compactly into a spherical shape. They are called *globular clusters*. About a hundred such are known, the diameters of which are all approximately the same, five hundred light years. They are at enormous distances, ranging from 20,000 to 200,000 light years, on the outskirts of our star system.

Nebulae. The hazy diffuse patches in the sky which can not be resolved into stars by large telescopes are called *nebulae*. Many of them are very beautiful objects when viewed with the telescope or as shown on photographs. Nebulae are classified according to form, constitution or distribution. Under the first heading, nebulae are either irregular or chaotic, planetary, ring form or spirals. According to distribution with reference to our sidereal system, or galaxy, they are either *galactic* or *extra-galactic*. These classifications are not mutually exclusive, for the terms *spiral nebulae* and *extra-galactic nebulae* are well nigh synonymous.



The Adler Planetarium and Astronomical Museum, Chicago

The non-galactic, or the spiral nebulae, are by far the most numerous, running into the tens of thousands. The region of the North American Nebula (illustrated) shows not only the star clouds of the Milky Way but also the diffuse galactic nebulous matter involved. The Andromeda Nebula, shown here, is the most remarkable of the extra-galactic spiral nebulae. Studies of this vast system, and of others like it, have led to a new conception of our cosmos. From a study of their spectra, they appear to be stellar in character; indeed, they may be partially resolved into stars, and their distances are found to be such that they are beyond the limit of our sidereal system and therefore must be regarded as distinct stellar systems, which have come to be called *Island Universes*. We must therefore think of our galaxy, enormous as it is, as but one—though perhaps the most magnificent—of a great supergalaxy.



Courtesy of Scientific American

Projecting the Stars

Showing the intricate projector in a planetarium throwing the stars in their motion on the dome which serves as a screen. The Sun and Moon and the planets likewise appear. The lecturer uses an arrow of light to point out the many celestial bodies.

Planetariums

In recent years there has been devised an instrument, known as a *planetarium*, which may accomplish much for popular instruction in astronomy. Several have been erected in Germany, where the instrument was devised, and outside of Germany they have now (1931) been erected in Vienna, Moscow, Rome, Milan, Chicago and Stockholm. By means of a complex projector, the representation of the entire heavens may be thrown on the interior of a large concave hemispherical dome. This artificially produced sky is startlingly real. The instrument may be set to depict the heavens of any terrestrial latitude and for any time; it may be driven to show the apparent celestial motions, such as the diurnal motion, and even the changes due to precession. The Moon, Sun and planets are shown by means of special projectors, and their apparently complex motions are faithfully reproduced. Various speeds may be used, so that the diurnal motions of the heavens, and even the annual motions, may be compressed into a few seconds. This acceleration gives a realization of the annual course of the Sun among the stars, the planetary orbits, and the intricate apparent motions of the planets in them. In no other manner can these phenomena be so interestingly seen and so easily understood.

In the building which houses the Chicago planetarium there is also an astronomical museum. In this are shown instruments and models to demonstrate the modern practice of observing; instruments to show laws of optics, spectroscopy, and dynamics; a series of astronomical photographs in the form of transparencies; and a superb collection of antique astronomical instruments.

BOTANY

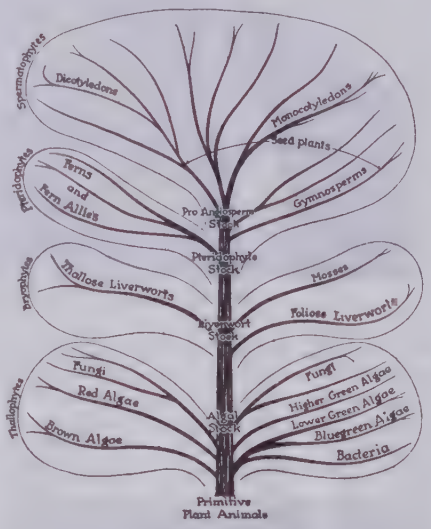
OUR shade trees, lawn grasses, the flowers and shrubs of our gardens, and the crops and vegetation of the fields are recognized as plants without the exercise of imagination. When it is pointed out, however, that a bottle of souring milk, a batch of yeast-risen bread, or even a handful of rich garden earth each represents a vast population of microscopic plants, the problems of knowing the plants about us either by name, form or activity begins to assume large proportions.

Plants are not all "flowers," not all visible to the unaided eye, not all green. Moreover, taking consideration of plants that grade from the huge to the microscopic, from the complex to the very simple, and being warned that diversity of form is perhaps no less marked than the variety exhibited in their structure and living processes or products, we may be better prepared to understand how vast is the field of science that includes all phases of knowledge respecting plants. With increasing knowledge of form and activity, it becomes more difficult to frame briefly a definition of a plant. Some of the lower plants are not readily distinguished from lower animals; some are claimed by the zoölogist as well as by the botanist. This, indeed, might be expected; for many facts point to certain generalized types as primitive organisms—not necessarily either plant or animal—yet *organisms*.

It is not possible to give a definition of a plant that is concise and at the same time inclusive of all kinds of plants, without having to make many exceptions. Consequently the following is merely a practical or proximate form of a definition: A plant is a living organism (a) either simple or complex in structure, (b) generally possessing green pigment (*chlorophyll*), (c) absorbing its nutrients in solution, and (d) commonly non-motile or permanently fixed in position. It will be seen that, in general, characters (b), (c) and (d) distinguish the plant from the animal, because the latter ordinarily contains no chlorophyll, ingests its food, and is characteristically motile. Other distinguishing features might be considered in a more detailed treatment of differences.

The Cell. The simpler or lower plants, such as the pond scums, differ very greatly in appearance and size from the higher or seed plants; but all plants are composed of units, called *cells*. The simplest green water plant (an *alga*) consists of a single cell; a maple tree is an enormous complex of cells. Every cell consists of a unit mass of living substance (*protoplasm*) surrounded by a box-like cell wall. This may seem very simple, but living protoplasm is almost inconceivably complex if we think of it in terms of what it can do; that is, in terms of its activities. Protoplasm is definitely organized into parts readily visible under the microscope. Most conspicuous and important are (a) the *cytoplasm*, constituting the major part of the viscid contents, and (b) the *nucleus*, the denser spherical mass of protoplasm, always surrounded by cytoplasm and commonly exhibiting a smaller refractive mass known as the *nucleole*. In mature plant cells, the cytoplasm occupies primarily a layer just within the cell wall and there is usually a large central *vacuole* of cell sap. However, strands of protoplasm may extend from one side of the cell to the other across the vacuole. In the green cell there are differentiated in the layer of cytoplasm special protoplasmic bodies called *plastids*, and these contain the green pigment, chlorophyll. Food materials are also frequently stored in the protoplasm or in the vacuoles. Very young cells are usually richer in protoplasm, and the vacuole is of less extent.

Throughout this discussion it will be necessary to refer to the work of cells, whether in dealing with one-celled organisms or with complex organisms, whether in thinking of them as acting individually (as in the solution-absorbing root-hair cells) or as components of a mass of cells (tissue) or of an organ (a root tip, for example, boring its way through the soil).



The Botany Tree

This diagram shows relationships and development in the plant kingdom. It will be helpful to study this diagram in connection with the accompanying text.

The Subdivisions of Botanical Science. In modern times when the vastness of the field of botany or plant sciences has come to be more generally, but often still rather vaguely, understood, one frequently hears this question asked: What does botany include? Departing from a formal definition as briefly outlined in a previous paragraph, the various recognized subdivisions of the science may be noted. As a matter of fact, these are provisional divisions of knowledge, and are clearly recognized as overlapping; yet each one is suggestive of a more or less distinctive point of view in the presentation of material for academic purposes or for general information.

The following divisions are generally emphasized: classification (*taxonomy*), the grouping of related forms of organisms for purposes of systematization; description of form (*morphology*); structure, especially in the development of relationship (*anatomy*); an intimate study of tissues (*histology*); special characteristics of cells (*cytology*); the study of plant remains and relationships as exemplified through fossils in the rocks and through preserved material in soil strata (*paleobotany*); functions, behavior and the physics and chemistry of life processes (*physiology*); relationship and behavior of vegetation in respect to habitat and environment (*ecology*); the basis and facts of heredity (*genetics*); relationships of plants as to origin, in point of time (*phylogeny*); the special forms and activities of bacteria (*bacteriology*), of algae (*algology*), of fungi (*mycology*), of lichens (*lichenology*), of moss-like plants (*bryology*); the treatment of microscopic life (*microbiology*); special fermentative processes (*zymology*); the relation of plants to disease (*pathology*); the study of plants and plant products as therapeutic agents (*pharmacognosy* and *pharmaceutical botany*); and further applications in respect to such phases of general agriculture as field crops (*agronomy*), garden and flower culture (*horticulture*), tree culture and wood uses (*forestry*).

It is practicable to give further and more detailed attention to only a few of the above subdivisions.

CLASSIFICATION OR TAXONOMY

The classification of plants and animals into groups of related organisms is the function of taxonomy (from the Greek words meaning "law" and "arrangement"). Plants of diverse sorts exist; those that seem to be related because of similarities in form and structure are assigned to a definite group, and smaller groups are associated into larger divisions, still with some common characteristics. Group names are given in the efforts of scientists to systematize our knowledge. Some organisms do not fit well into any group, or perhaps they fit indifferently into several groups. In nature, all types and degrees of diversity have developed. Nature is not concerned with the maintenance of groups. Classification, then, is not fixed; men's opinions may differ as to the value of the characters used in classification, or organisms may be shifted from one group to another as our knowledge of structure and life history increases. Nevertheless, the idea of classification is to present a natural system of relationship, and, to paraphrase an expression of Asa Gray, the great American botanist of the nineteenth century: The whole should form, as it were, a great map in which the larger divisions or classes might answer to countries, the families and orders to states or provinces, and the individual species to hamlets, villages and towns.

The Thallophytes. The thallophytes, or class *Thallophyta*, are plants possessing neither stems nor leaves. They may consist of a single cell of various forms, or they may be multicellular, and of most diverse appearance. The plant body is a *thallus*. Two divisions are recognized, algae and fungi. Algae are usually "independent," possessing chlorophyll (leaf green), and accordingly able to make the organic food material required. Fungi possess no chlorophyll and are dependent upon an outside source of carbon-furnishing food, such as the carbohydrates.

Algae. Algae are primarily water plants,



BOTANY—SELECTED TYPES OF FLORAL STRUCTURE, FLOWERING SHOOTS AND FERN PROTHALLUS

1. Composites: (a) head with rays, (b) ray flower, (c) disk flower, (d) head of tubular flowers.
2. Gagea: flower.
3. Maple: (a) pistillate, (b) staminate flower, (c) fruit.
4. Clove: shoot, flower section, fruit.
5. Lamium: two-lipped flower, side and front.
6. Orobanche: flower section.
7. Pepper: flower, fruit.
8. Oenothera: flower section.
9. Aralia: flower.
10. Cornus: flower.
11. Clover: habit, (a) flower, (b) fruit, (c) seed.
12. Beech: (2) staminate, (3) pistillate flowers.
13. Sage: flower and section.
14. Oak: (2) staminate, (3) pistillate flower, (4) acorn.
15. Peach: flower section.
16. Saxifrage: flowers.
17. Ash: apetalous flowers.
18. Grape: shoot, opening of flower.
19. Gentian: flower section.
20. Cinchona: flower, fruit.
21. Carrot: shoot, flower, fruit.
22. Fern prothallus.
23. Alfalfa: shoot, (a) flower, (c) seed.



BOTANY—HABIT SKETCHES AND FLORAL ARRANGEMENTS

Showing habit sketches and floral arrangements of selected seed plants, also habit sketch of the field horsetail.

1. Cotton: shoot, boll, seed.
2. Linden: flower section.
3. Tamarix: flower section.
4. Morning glory: habit, flower section, fruit, seed.
5. Willow: (4, 5, 6, 7, 8, 9, 10) flowers, seed.
6. Dammar-pine: leaves, cone, scale.
7. Magnolia: flower section.
8. Field horsetail: plant form.
9. Arnica: flowering shoot.
10. Thistle: (a, b, c, d) habit, flowers, pappus.
11. Flax: habit, fruit, seed.
12. Monotropa: flower section.
13. Poppy: flower section.
14. Birch: flowers in catkins.
15. Melon: flower section.
16. Buttercup: flower section, pistils, stamens, ovules.

many of the fresh water forms being known as pond scums, while among the marine population are red sea weeds, kelps and others. Some species grow attached, and others constitute much of the floating life of aquatic habitats. The smaller forms especially may constitute an important factor in the food of the animal life of waters, even of the fish. Reproduction may be effected by simple fission or by non-sexual spores which may be motile or non-motile. Various types of fusion cells, or *gametes*, may occur. Four main classes require consideration.

Green Algae. Algae in which the pigment chlorophyll is conspicuous are more numerous than all others combined; about 10,000 species are recognized. The pigment is contained in an organized cell structure known as the *chromatophore* or *chloroplast*. There are several families or major divisions of the green algae, differing one from another in the form and complexity of the thallus and in their sequence of development, or life history. The more primitive forms are unicellular, and certain of these (for example, *Chlamydomonas*) possess whip-like motile organs (*cilia*) when in the active vegetative state. Gametes occur, but reproduction is primarily by simple fission—a parent cell becoming quiescent and dividing into two. In this organism, therefore, as also in such non-motile algae as *Protococcus*, death of the parent cell does not occur, so that any cell may be immortal. *Protococcus* may occur in temperate climates, on shaded sides of trees and in other moist situations. Colony forms of ciliated algae are particularly interesting, as in the free-floating *Volvox*.

Diatoms, peculiar unicellular algae with their cell walls impregnated with silica, may grow in such quantity that upon the decay of the cells a diatomaceous deposit occurs. Geologically such deposits are of practical value, constituting the well-known abrasive material, diatomaceous earth, also known by various trade names.

Filamentous forms of the green algae are numerous; these are the typical pond scums. Among these the methods of reproduction are diverse. Green algae of various types also occur in the sea. Of special interest as to form is *Ulva*, the sea lettuce, consisting of colonies of cells forming broad ribbons or leaf-like structures.

Blue Green Algae. These algae, the *Myxophyceae*, owe their common name to the occurrence of a blue pigment along with the chlorophyll of the cell. They may occur as single cells, but colony-forming species are more commonly observed. Colonial characteristics are diverse—filaments, chains and other forms. A gelatinous sheath or extensive jelly may inclose the colony. In stagnant water the decay of blue greens may give disagreeable odors. These are simple algae apparently with less organization of the cell than in any other algal group. Reproduction is by simple fission of the cell.

Brown Algae. A high degree of complexity and differentiation of structure is exhibited by many of the brown algae. They are almost exclusively marine. The rockweed is a common type. This alga grows upon rocks between high and low tide. Species of *Laminaria*, or kelp (also called "devil's apron"), occur in deeper, colder waters; and on the Pacific coast a giant kelp, *Nereocystis*, often grows to exceed one hundred feet in a season. The sea palm (*Postelsia*), properly named from its growth habit, is a proud occupant of the rocks within the tidal levels. Chlorophyll is present in these algae, but is masked by the occurrence of another pigment, golden brown in color, as seen in the plastid or chromatophore. Reproduction in the brown algae is characterized by gamete production. In *Fucus*, the gametes are strongly differentiated; relatively large egg cells are liberated from one sex organ (*oögonium*) and minute *antherozoids* from the *antherids* are set free in large numbers.

Red Algae. Members of the group *Rhodophyceae* are generally red in color and typically marine. While not the largest in size, they are the most attractive algae in color and in variety of form. They may be filamentous, more massive and highly differentiated; or they may be membranous. Here, also, the chlorophyll is masked by a plastid pigment. The reds often frequent deep waters, and in regions of extended sunshine they have been found at depths exceeding 300 feet. The red algae are not closely related to the preceding groups. Although characterized by the production of gametes, their cells are non-motile, and the mechanism effecting fusion as well as the development of spores, is peculiar to this group.

Fungi. The second great division of the thallophytes, the fungi, are commonly filamentous in the vegetative condition, and are distinguishable from the algae primarily by the absence of chlorophyll. Practically speaking, they occur wherever organic matter exists, since some one or more species may inhabit any dead or non-living material, and many species attack living tissues, especially those of seed plants. The chief classes of fungi are the *Phycomycetes*, *Ascomycetes* and *Basidiomycetes;* but broadly limited they may be said to include also the bacteria and the slime molds.

Phycomycetes. These are the algal-like fungi, in the sense that they resemble certain algae, of which they were once supposed to be degenerate forms. Other common names applied to certain groups are water molds, black molds, downy mildews. The typical filament or thread-like growth of a fungus is a *hypha*, and a greatly branched mass or colony of hyphae constitutes a *mycelium*. The filaments of these fungi are ordinarily without cross walls (*siphonaceous*), and there are many nuclei in a hypha (*coenocytic*). Some species of water molds are parasitic, one form causing a disease of fish. The black mold of bread is a common form. The downy mildews are parasitic on seed plants; thus there is a destructive disease-inducing species known as the downy mildew of grape. In general, there are non-sexual spore forms as well as gametic, or sexual, reproduction. Lower *phycomycetes*, possessing no distinct hyphae and no well differentiated cell wall, are sometimes constituted a distinct class.

Ascomycetes. The chief character distinguishing this class is the production, during reproduction, of a spore-sac, or *ascus*, typically containing eight spores. The ascus stage is called the "perfect" stage. It is commonly a sequel to a fusion process. There may be various types of subsidiary, or non-sexual, spore forms. In the major divisions of this group the asci are produced within a fruit body, the *ascocarp* (*apothecium*, *perithecium*). The mycelium possesses cross walls, and the cells have usually but one nucleus. More than 10,000 species are known. They occur in the most diverse situations. The *saprophytic* species, or those inhabiting dead material, are found abundantly upon decaying vegetation and in or on the soil. The blue and green molds of food products belong to this group, as do also a few families of fungi with large and fleshy fruit bodies, such as the edible morels, or sponge mushrooms. Parasitic species are likewise numerous. Such well-known plant diseases as apple scab and rose mildew are examples of the effects produced. The *Ascomycetes* include upward of twenty-five families.

Basidiomycetes. This class of fungi comprises orders and families very diverse both in structure and in habitat, but the different subclasses are supposed to be related through the possession of a *basidium* (a club-shaped cell or cells) which typically bears four spores. Rusts and smuts constitute the main parasitic groups, while other divisions include the vast majority of the fleshy or woody fungi such as the mushrooms of field and forest. Smut fungi are known to the casual observer chiefly through the spore stage. Thus the smut of corn is little more than a mass of spores, yet a mycelium within the tissues produced those spores. Rust fungi exhibit an exceedingly interesting and complicated life history. On the host plant they are characterized ordinarily by the occurrence of rusty spots; actually these are *sori*, or beds of the spores of the fungus. The woods and fields of almost any forested locality will yield hundreds of fungi variously known as mushrooms, fairy wands, brackets, punks, puff balls and so forth. They grow on the soil or on decaying logs and vegetation, and a considerable number cause heartwood or sapwood decays of trees and decay of timber. Among fleshy forms there are edible species and poisonous species (a few of these only); there are those soft in texture and those hard and woody; they vary in size from those that are microscopic to brackets two feet across.

Bacteria. Among the fungi there are usually included the smallest plants known, the *bacteria*. These are sometimes designated "fission fungi" because of their method of division. They seem, however, to constitute an independent group, perhaps related to some of the lower algae. They are so small that they are visible to the unaided eye only when growing in colonies of many hundreds or thousands together. If arranged end to end it would require about 500 of these bacteria of average size to reach across the head of a pin. A study of the bacteria requires a special technique, since for careful examination they must be grown in pure cultures. They are universal in occurrence and are popularly called *germs*. In human and animal diseases they play a chief rôle; likewise they make up much of the life of soil and of open waters. They are the agents of many useful fermentation processes, as in the dairy industry, in vinegar production, and in the retting of flax.

Lichens. These plants constitute another group which does not fit closely into the

scheme of classification given. A lichen consists of a fungus and an alga growing together, probably mutually helpful, to form a dual colony so closely associated that the colonial composite acts as an individual. To a degree the fungus is parasitic upon the alga and holds it captive, but the alga is thus enabled to grow in many places where it could not otherwise exist. Within the lichen the alga multiplies vegetatively, whereas the fungus, in addition, has its characteristic spore reproduction. Lichens grow commonly upon trunks and branches of trees, rocks and soil. Some are thallus-like or flattened, some are moss-like in appearance. The reindeer "moss," a lichen, is typical of the latter group. They are often gray-green in color, very resistant to extreme conditions, and some species form a considerable element in most northern or arctic climates.

The Bryophytes — Moss-like Plants. The mosses and moss-like plants (class *Bryophyta*) constitute a considerable group of green plants higher in the scale of development than the algae. As a class, however, they are much smaller and less complex than seed plants. In general, they are most familiar to us as miniature velvety or feathery growths occupying all sorts of situations—carpeting the ground in many moist or dry places, growing upon rocks, the trunks of trees, and some even in ponds or running water. The parts of the mosses usually visible have an appearance analogous to higher plants; that is, a stem-like axis having numerous leaves. There is, however, no true stem and root such as characterize seed plants. The bryophytes include the true mosses and liverworts, the latter being often flattened or thallus-like (see "Thallophytes"). Mosses propagate by buds or by continued growth (both spoken of as "vegetative" reproduction), but they are typically reproduced by means of simple (one-celled) spores produced in capsules (*sporangia*) that are ultimately raised above the leaves on simple stems called *setae*. The structure of a moss sporangium is so interesting that it will repay close examination.

The conspicuous moss plant originally grows from a bud that forms on another stage of the moss plant; this stage is filamentous and is known as the *protonema* (meaning "first thread"). This protonema develops directly from the germination of the spore, mentioned above. There is a very definite sexual generation and a non-sexual generation in mosses, the proper characterization of which would require more space and study than is practicable in this treatment.

The Pteridophytes—Ferns and Fern Allies. Among the better known groups of the class *Pteridophyta* are the true ferns, quillworts, horsetails or scouring rushes and the club mosses. Ferns are usually unrestricted as to habitat, but we think of them more particularly as growing in moist woods and along shaded streams; yet the bracken, for example, is a common fern of more exposed slopes and roadsides as well as of the borders of the woods. Several species of ferns occur on the sides of rocky cliffs. Scouring rushes are equally diverse in their home requirements—some occurring on dry railroad embankments, others on moist banks and in the shade; but the American club mosses are chiefly shade-loving plants of the forest floor. Those familiar with the decorative ferns of the home and with the ground pine (a club moss) of many northern evergreen forests will regard this class as a rather diverse one. That is true from the standpoint of grosser form (morphology), yet all these groups have much in common.

Ferns are characterized by the possession of stems, roots and leaves, those of temperate climates having stems restricted to underground growth, known as *rhizomes*. The leaves arise from this stem, and growth of the leaf (*frond*) is primarily from the tip. The mature leaf is usually large and complex. The unfolding of this incurved (circinate) tip is engagingly clear and rapid. Moreover, the fern has much in common with the seed plants in the differentiation of special supporting and woody or conducting (vascular) tissues.

While moss-like in general appearance, the club mosses are also comparable with ferns in that they possess stems, leaves and roots; but the stems are largely above ground, and the leaves are small and scale-like. Vascular tissue occurs in this group also.

All groups in this class exhibit what is known as a "sexual generation" (*gametophyte*) in which the vegetative structure is very simple and thallus-like (also called *prothallus*). It is seldom found except in the case of the fern. Here it is more conspicuous and may be found on pots or soil in the greenhouse where ferns are grown, each prothallus consisting of a membranous, heart-shaped green structure, seldom much larger than a baby's finger nail. These structures originate the sexual organs—the eggs and sperms (both gametes). These, after gametic union, produce the larger generation which is the fern or club moss proper. Such fern plants, whatever their forms, have in common the function, ultimately, of spore production; and they constitute the *sporophyte*, or *sporophytic generation*. In the ferns, the spores are borne in small cases, or sporangia, often distributed in sori as dots, rows, or larger masses on the under surfaces of the fronds. Usually these spores are all of the same size, and each consists of a single cell. These spores germinate and give rise to the prothalli.

In the quillworts the spores are of two sizes, and they are produced in sporangia at the bases of the leaves. In the ground pines and club mosses the sporangia occur on leaves (sporophylls) towards the tips of branches, often forming a loose cone. In the ground pine (*Lycopodium*) these spores are alike in appearance (homosporous), whereas in the small club mosses (*Selaginella*) the spores in the two kinds of sporangia are again different in size (heterosporous). These two spore sizes are significant, for the larger one (megaspore) produces the female prothallus (gametophyte), whereas the small spore gives rise to the male gametophyte.

Seed Plants. The complexities of the great groups of seed plants, the highest division in the plant kingdon, are too many to lend themselves readily to brief treatment. Consequently it will be necessary to consider only a few generalized characteristics of this climax group. Spores such as occur in the club mosses are no longer so conspicuous to the casual student; but they occur none the less, and the generation which bears them (sporophyte) is practically the entire plant. Another structure has arisen. This is the *seed*, and it contains an embryo plant. The production of this embryo plant is preceded, of course, by gametic union, or fertilization; but details of the gametophytes must be omitted here.

Seed plants embrace two major divisions, the gymnosperms (with seeds not enclosed) and the angiosperms (with enclosed seeds).

Gymnosperms. Familiar examples of gymnosperms are the pines, spruces and other evergreen trees or shrubs with cone-like fruits, known as the *Coniferae*. In these, the spore-bearing leaves or scales (sporophylls) do not constitute a flower. As the scales of the seed-bearing cones separate, the winged seeds may be seen, a pair under each scale.

The vast forests of the northern United States were formerly largely conifers; but so valuable were they as lumber that the more accessible ones have been cut down, and the larger part of the present lumber supply comes from the Pacific states and from the South. Vascular or woody tissues reach a high state of development in the stems and roots of conifers. To the foliage leaves of mature pines the name "needles" is applied. These needles are highly specialized in structure and are adapted to resist extremes of conditions. Morphologically they are grouped in fascicles of two, three or five needles, depending upon the species.

It has been indicated that the seed contains an embryo plant. In the pine, this embryo plant is surrounded by a considerable food storage layer called the *endosperm*, and the whole is enclosed by the seed coat, or *integument*. Maturity of the seed is accompanied by a certain amount of drying out and by a period of inactivity or dormancy. A renewal of growth is shown by the embryo when, under favorable conditions, the seed absorbs water, and thus germination or sprouting ensues. The young seedling, free of the seed coat, will be found to consist of root portion, bud or *plumule*, and a whorl of long, green seed leaves or *cotyledons*.

Angiosperms. The angiosperms, or true flowering plants, include the great majority of the familiar flowers and weeds of field and garden, as well as all the trees and shrubs except the gymnosperms, referred to above. Besides the possession of seeds and of a complex tissue system (see special discussion later) in which vascular or woody elements attain a further advanced state of differentiation, the angiosperms also exhibit the highest evolutionary development through the production of flowers. A *flower* may be regarded as a shortened branch with highly modified sporophylls, and commonly with other floral leaves often conspicuously colored. Our esthetic interest is awakened by the beauty of many flowers, but the importance of the flower to the life of the species of plant lies primarily in the possession of sporophylls, for these are concerned with the reproduction and perpetuation of the species. Color and fragrance are likewise useful, and both are factors in attracting insect visitors, so necessary for the pollination of certain species.

Parts of the Flower. It is important to know all parts of the flower, and as a representative type the apple or the wild rose may

serve. In such flowers as these there are at least four sets of structures that attract particular interest. The outer set of parts (green in these plants) constitute the *calyx*, the individual leaves of which are the *sepals*. Next there is a set of showy leaves known as the *corolla*, the individual parts of which are *petals*. Within the petals are a group of relatively small sporophylls (microsporophylls) and these are the *stamens*. The central and last structure constitutes a united set, termed a *pistil*, made up, however, of several parts or *carpels*. More immediately concerned with reproduction are the stamens and pistils. In the case of the flower under consideration, each group of carpels has an enlarged basal *ovule sac*, a terminal *stigma* and a connecting shank known as a *style*.

The terminal enlarged part of the stamen is an *anther*, and in this the dust-like *pollen* is produced. In the ovule sac there are differentiated the ovules within which the egg gametes are produced. Pollen grains distributed by insects, wind or other agencies lodge on the stigma, germinate (this is then the male gametophyte), and the germ tubes grow down the style and into the ovules, where gametic union occurs. Following this, embryonic development and seed formation proceed until the seed ripens, or matures.

The Significance of Scientific Plant Names. In speaking of the lower classes of plants, including the algae, mosses and ferns, there have been used as scientific names only the class names (for example, *Bryophyta*) and certain common or popular names. But in discussing the higher plants it is extremely useful to become better acquainted with scientific names and to learn how these are employed. It is not difficult to do so when we make the effort, and it is never necessary to make the use of scientific names a burden. It is more particularly necessary if an effort is made to get more intimate knowledge of plant relationships, or if one attempts to use the manuals or floras prepared for the identification of either wild or cultivated plants. All those interested in knowing plants will want to use these manuals sooner or later, for they can add greatly to our out-of-doors enjoyment.

There are various subdivisions of the classes of organisms that have been referred to, but for the sake of simplicity we need consider only three categories—families, genera and species. As an example of a plant family we may consider the rose family. There are perhaps 2,500 different kinds (species) of plants in this family. It includes, among many others, such groups as roses and brambles, plums and cherries, the pear and the apple, spirea and mountain ash. All such plants are included in the family *Rosaceae*. Why are these grouped into one family? The answer is that all possess a wild "rose" type of flower. It is, then, the type of flower, and not always the showy parts of the flower either, that determines relationship. The strawberry and the apple are plants of different extremes in size, but this is of little significance.

All kinds of brambles, including many sorts of blackberries, dewberries and raspberries, are placed together in a smaller group, a *genus;* in this case it is the genus *Rubus*. Members of this genus are more closely related one to another than are members of different genera. They may be related through more detailed floral characters or through other characters. Each kind of bramble, such as the high bush blackberry or the trailing blackberry, constitutes a distinct *species*, and the former is *Rubus frondosus*, the latter *Rubus trivialis*. Each of these is the true scientific name of a kind of plant. This name does not vary with locality or with language, as common names often do. The name is a binomial (two names), and generally the specific name suggests some characteristic of the particular kind of plant; thus *Rubus rosaefolius* is the rose-leaved blackberry.

In the next few paragraphs it will be helpful to mention, under the greater divisions of the flowering plants, a number of the important families. And at the close of this article, in a list of common food plants, the generic and specific names (the scientific name of each) will be included for reference. (See also the extensive "Dictionary of Plants.")

Major Divisions of Angiosperms. The angiosperms are subdivided into two groups. In one of these the venation of the leaves is parallel, as in the corn, and on germination of the seed the young plantlet exhibits a single seed leaf (cotyledon); such plants are *monocotyledons*. The second group is characterized by netted, or reticulate, venation of the leaves, as in the bean plant or in the rose. In all these there are two seed leaves in the young seedling, and it will be recalled that in the bean these are thickened, representing reserves of organic food. Plants with two seed leaves are called *dicotyledons*. There are other characters—both of floral parts and of inner structure—that are generally distinctive of the two groups, as further study will reveal.

Among the several hundred families of flowering plants known, 167 have been listed as furnishing our cultivated crops, together with other useful and ornamental trees, shrubs and annuals actually planted and cared for by man.

The Monocotyledons. From the monocotyledons there come such families as those of the grasses (*Gramineae*), furnishing cereal grains, pasture and ornamental grasses; tropical palms (*Palmaceae*), including the date and coconut palms, besides many that are cultivated in greenhouses; lilies and related plants (*Liliaceae*), affording many attractive flowers; bananas and plantains (*Musaceae*); and the highly prized orchids (*Orchidaceae*), famous alike for the delicacy and variety of the wax-like flowers and for the remarkable modifications in floral parts, the latter having come about in adjustment to insect pollination. Beginning with the grasses and closing with orchids, we see extreme differences in floral anatomy. The grass "flower" may be largely a scaly leaf or bract (chaff, husk) with long or feathery styles. The silk of an ear of corn is made up of hundreds of long, flexible styles which grow out beyond the husks and catch the pollen distributed by the wind. On the other hand, the beauty of form and color in the petals of floral leaves of lilies, irises and orchids enlist the admiration of all.

The Dicotyledons. The dicotyledons are nearly five times as numerous as are the monocotyledons, and at the same time the former group is regarded as geologically the older; it has attained far greater diversity in form, and has advanced to higher types of development. Among families exhibiting the less complex types of floral structure there are the willows and the poplars (*Salicaceae*), with simple flowers in spike-like branches called "catkins." Related to the willows are other families without showy floral parts such as the walnut-hickory nut family (*Juglandaceae*), the birch-alder (*Betulaceae*), the beech-oak family (*Fagaceae*), and the elms (*Ulmaceae*). These families of trees and shrubs are often classified as "primitive" because of the simple floral parts, but there is much to suggest that this simplicity is merely one line of development, made prominent by the emphasis on floral features.

In a varied group of families, including the pinks, sweet Williams, carnation (*Caryophyllaceae*), water lilies (*Nympheaceae*), buttercups, columbines, peonies and clematis (*Ranunculaceae*), there are included many attractive wild and garden plants of much interest. In all these the petals are distinct (polypetalous) and the carpels either separate or united. The various kinds of magnolia, as well as the sweet bay and the tulip tree (*Magnoliaceae*), constitute an impressive though small family considered by some to qualify as a present-day representative of a primitive flower. The petals of magnolia are often very showy and they vary in number, while the carpels are usually aggregated into a cone-like structure.

In the manuals, the rose family (*Rosaceae*) and the pulse family (*Leguminosae*) are neighbors, and together they constitute a very considerable part of the separate-petal series of families. As a whole the rose family is rather heterogeneous (as indicated in a previous paragraph); but we cannot fail to note among the wild and cultivated blackberries, roses, cherries and the like several common features. Thus (a) the corolla and stamens are inserted on the calyx tube, the latter being often united with the wall of the ovule case, so that the calyx tube forms a part of the developing fruit; and (b) the stamens are rather numerous and in cycles. In the pulse family there are several thousand species, among which are the lupines, clovers, beans, peas and acacias. Generally the corolla is papilionaceous, or butterfly-like, with petals more or less like those of the sweet pea, and the fruit is characteristically a pod or legume.

Among the families of dicotyledons in which the petals are united (*gamopetalous*), a few only may be mentioned here. The mints (*Labiatae*), typified by the garden salvia, are fragrant herbs and shrubs with flowers commonly two-lipped. The nightshade family (*Solanaceae*) includes the potato, tomato, egg plant, tobacco and petunia, with prevailingly rotate flowers and fruit—a "berry" (as in tomato) or capsule (as in Jimson weed). Our table melons of various sorts are the fruit of certain members of the gourd family (*Cucurbitaceae*).

Botanists generally agree in placing at the pinnacle of development in the plant kingdom the composite family (*Compositae*). This is the family of sunflowers and goldenrods, asters and thistles, chrysanthemums

and dahlias. It has also given us lettuce, bur artichoke and salsify. It is a huge family with perhaps 12,000 species; with few exceptions they are annuals or perennial herbs, and the woody ones are not trees. The outstanding characteristic is the compact head of many flowers—some with ray flowers (as in sunflowers) and some without (as in thistles). The fruits are hard and one-seeded (*akenes*), and these are often provided with a feathery appendage, or pappus (as in dandelion), the pappus serving as an efficient adjustment to wind distribution of the seeds.

HISTOLOGY

Histology, sometimes regarded as a division of microscopical anatomy, deals with *tissues;* that is, cells more or less similar in form, constituting a specialized area of the cell body. Accordingly, tissues may be of as many kinds as there are kinds of cells. A convenient classification of tissues is as follows:

Meristematic, or young, tissue (*meristem*) consists of thin-walled cells rich in protoplasm, or living substance. They are able to divide and thus continue the growth of the organ. All other tissues are derived from meristem by differentiation or modification. *Cambium*, the layer of active growth and cell formation in stems and roots of dicotyledons, is a form of meristem.

Parenchyma, or soft tissue, consists of mature, thin-walled, usually short cells which have attained their growth, as the tissue of ripened fruits and the green tissue of leaves. The cells contain less protoplasm than the meristem.

Collenchyma, or thick-angled tissue, consists of long prismatic cells with thin walls, but with the longitudinal angles much thickened. In many stems it occurs as a strengthening tissue just beneath the epidermis.

Sclerenchyma, or stone tissue, consists of thick-walled, usually short cells, so tightly packed together that they form a hard mass, as in the shells of nuts, for example, in hickory nuts, walnuts, filberts, and in the "stones" of many fruits, as in plums and cherries.

Fibrous and *bast* tissue consists of thick-walled, elongated cells so tightly packed together that they make up the fibrous part of the wood (wood fibers) and of bark (bark or bast fibers) of the stems of most higher plants. Bast fibers are the basis of rope making and of linen manufacture.

Sieve tissue consists of elongated, usually large cells, more or less united into tubes, and having only slightly thickened walls. The name is given on account of the fact that the transverse partitions between the cells are perforated in a sieve-like pattern, and through these perforations the protoplasm connects from cell to cell. Sieve tissue occurs primarily in the young bark. It is important in conveying organic food material.

Tracheary tissue, like the preceding, is a tubular tissue, but here the continuity of the cavity is usually more complete. The walls are somewhat thickened—in rings, spirals or in more complicated ridge systems. When young, these tubes contain protoplasm; but eventually they contain water or air. Tracheary tissue occurs in the woody parts of stems and leaves. It is a greatly differentiated tissue, losing protoplasm and dying with complete development. Its true function, that of water conduction, then begins.

Milk cells and tubes (*laticiferous tissue*) occur singly or in masses in many plants, and are easily recognized by their milky contents, as in the many kinds of milkweeds. The milk (*latex*) is often very poisonous; rarely is it wholesome. In some cases it contains caoutchouc, from which India rubber is manufactured.

Epidermal tissue is usually a single layer of cubical cells, constituting the outer layer of leaves, young stems and roots.

PROCESSES GENERALLY CHARACTERISTIC OF LIVING ORGANISMS

Ordinarily it is easy to ascertain in a general way that an organism is living, because it exhibits some of those activities that are associated with life. At the same time, it is well to enumerate and analyze these characteristics. Conspicuous indications or criteria of life are: (1) the absorption of water and food materials in solution; (2) the use of food materials in building up new substance; that is, in building protoplasm or storing food products—both phases of metabolism; (3) the breaking down, or physiological combustion, of food products, with the liberation of energy required in various activities, a process called respiration; (4) growth, which may be partially defined as usually an increase in size or a differentiation in structure; (5) reproduction, involving the formation of new organisms, whether by division of the existing organism, or by the development of special cells or structures ultimately participating in the formation of a new individual; and (6) irritability, the power to respond to the influences and changes in the various factors that constitute the environment of the organism. The green plant is characterized by another process; to it has fallen the responsibility of making all organic food material required by living things (see later discussion of photosynthesis).

The characteristics enumerated are some of the important physiological processes, and some further consideration of several of these should be illuminating in respect to plant activities.

Growth. Growth is a familiar and obvious characteristic of the living organism. Favorably situated, the bean seed germinates and grows into a bean plant; a potato tuber sprouts, and as the new shoots grow the old tuber is gradually exhausted of food, as a result of which it decays or shrinks as the tissues disintegrate. Rapid growth usually presupposes a reserve of stored food material.

Several types of growth may be noted as the leaf bud of the elm, for example, unfolds in the spring. The bud swells, and with the increasing size the bud scales drop away, revealing an elongating shoot axis having miniature leaves. As shoot elongation continues, the leaves expand and differentiate, and soon a full-fledged elm shoot is the perfected product. In making such an observation we have witnessed development and differentiation. These are valuable ideas, and they are always associated with extensive growth in a complex plant.

Growth of a tissue or organ may consist of an increase in the number of cells, or in the size of cells, or both, and generally there is considerable differentiation or change in the nature of the cells. Growth rate of any plant is a function of the specific inheritance of the plant and of the favorableness of the environment. The bamboo grows with great rapidity, the oak with extreme slowness; the maximum relative growth rate of each is highest with adequate sunlight and warmth, moisture and soil nutrients. Every structure, organ or individual has not only growth characteristics peculiar to itself, but also different requirements as to growth conditions. Hence, we have plants which grow primarily in the spring, or primarily in midsummer, as well as those which grow in all seasons.

As the root of the sprouting bean emerges, cell formation is active in the region of the tip. Back of the tip, cells rapidly elongate, continually increasing the length of the root. As soon as the cells in any zone cease elongating root hair development occurs, and since these hairs greatly increase the root surface, they are efficient agents of water absorption.

Absorption and Water Relations. Active living plants contain a high percentage of water, and every growing plant must, in some way, be in contact with a water supply. The familiar plant of the garden has its roots fixed in the moist soil, while the water weeds and the immersed or floating algae are obviously more or less surrounded by free water. In a complex plant the cell walls are in close contact, and even though cells of the leaves may be many feet from the absorbing roots, the distribution of water is so perfect that we must think of indirect water contact with the soil through long chains of tissue cells, each cell in turn taking its water from some other cell or conducting vessel nearer the constant supply. Unless a plant contains a quantity of dead tissue, as in trees or shrubs, the water content is usually four-fifths or more of the fresh weight.

No living thing can grow and develop without an adequate supply of water. The water plant is in direct contact with water through much or all of its surface. The roots of the soil plant are well distributed and thus a large surface of contact with soil moisture is established. A few plants, like the Florida "moss" (which hangs from the limbs of trees), obtain their moisture by condensing the water vapor (humidity factor) of the air.

Water is constantly being absorbed by the active root, that is, the plant is exerting a pull on the soil for water. This pull could be adequately described only after such a consideration of the nature of diffusion and of the movements of water and of substances in solution through membranes (a process called *osmosis*) as would not be practicable in this connection.

The plant is provided with certain pores (*stomata*), primarily in the leaves, through which gases diffuse into and out of the tissues. Through these pores, which are quite consistently open during daylight, water vapor is given off. This water loss is called *transpiration*. Water loss is greatest when the air is driest. Under conditions of high temperature, low humidity and some wind action, any plant has, so to speak, a fight for life, since excessive wilting may mean death. To withstand desert conditions plants must be able either to conserve water or they must be

adjusted to withstand a severe water loss. Some of the water relations of plants constitute an important part of ecology.

Photosynthesis. We ourselves, and all other animals large and small, as well as fungi and bacteria, owe our existence directly or indirectly to green plants, since these alone can manufacture appreciable amounts of the necessary organic foods from the crude materials, that is from carbon dioxide of the air and from water, largely absorbed from the soil. Next to the elements of water, carbon constitutes the largest part of all living things. The source of this carbon is the extremely small percentage of carbon dioxide of the air, which is (with water) transformed into sugar (or starch) by the green leaf. Besides the food materials referred to, and the living cells, the factors important in this process are (a) the pigment chlorophyll and (b) sunlight, the source of energy for the changes involved. The process is a photosynthesis, hence the name. It is a process not yet finally understood as to chemical nature, and accordingly it cannot be imitated in the laboratory. We can say this much, at least, that the first and last steps are understood, and the chief product (sugar) and by-product (oxygen) are readily identified. Besides many valuable facts concerning the process in general and concerning the absorption of light of different wave lengths, facts also as to the chemistry of chlorophyll and theories as to the course of chemical action have been developed, and these promise future possibilities of great interest. Practically, the relation of the plant to intensity and duration of light have proved to be profitable fields of study and full of applications. For one thing, in very recent years it has been made clear that growth and fruiting of plants may be differently related to lengths of day. There are species that may be brought into flower very quickly by reducing the length of day, and there are others thus encouraged by increasing the length of day. As ordinarily grown, with the full effect of the long days of summer, the cosmos grows tall and does not flower until the shorter days of late summer or early fall. If, however, the plant is shaded for a few hours each day when it has reached no more than a foot in height, it will promptly be thrown into flower. With respect to flowering, therefore, the cosmos is a short-day plant. Considering the relations of plants in general to sunlight, it is perhaps not strange that these are characterized by such an harmonious development of the whole organism, and by so marked an adjustment of the leaves that all receive a maximum of the light that may fall upon them.

COMMON FOOD PLANTS

	Probable Early Home	Time of First Cultivation
Almond (*Prunus communis*, Fritsch),	Mediterranean countries; Western Asia	Prehistoric
Apple (*Pyrus malus*, L.),	Europe, Southwestern Asia	Prehistoric
Apricot (*Prunus armeniaca*, L.),	China	Prehistoric
Artichoke (*Cynara scolymus*, L.),	Mediterranean	Ancient
Artichoke, Jerusalem (*Helianthus tuberosus*, L.),	North America	Modern
Asparagus (*Asparagus officinalis*, L. var. *altilis*, L.),	Europe, Western Asia	Ancient
Avocado (*Persea americana*, Mill.),	Tropical America	Modern varieties
Banana (*Musa paradisiaca*, L. var. *sapientum*, Kuntze),	Southern Asia	Prehistoric
Barley (*Hordeum vulgare*, L.),	Western Asia	Prehistoric
Bean, Kidney (*Phaseolus vulgaris*, L.),	South America	Prehistoric
Bean, Lima (*Phaseolus limensis*, Macf.),	Brazil	Ancient
Beet (*Beta vulgaris*, L.),	Asia, Mediterranean countries	Ancient
Brazil Nut (*Bertholletia excelsa*, H. & B.),	Amazon Valley	Still wild
Buckwheat (*Fagopyrum esculentum*, Gaertn.),	Northern Asia	Modern
Butternut (*Juglans cinerea*, L.),	Eastern United States	Modern
Cabbage, Kale, etc. (*Brassica oleracea*, L. [vars.]),	Europe	Prehistoric
Cacao (Source of "Chocolate") (*Theobroma cacao*, L.),	Tropical America	Prehistoric
Carrot (*Daucus carota*, L. var. *sativa* D. C.),	Europe	Ancient
Cauliflower (*Brassica oleracea*, L. var. *botrytis*, L.),	Europe	Ancient
Celery (*Apium graveolens*, L. var. *dulce*, D. C.),	Mediterranean countries	Ancient
Cherry (*Prunus* spp.),	Asia, primarily	Ancient
Chestnut (*Castanea sativa*, Mill.),	Southern Europe, North Africa	Ancient
Coconut (*Cocos nucifera*, L.),	South America	Prehistoric
Coffee (*Coffea arabica*, L.),	Africa	Ancient
Corn, Maize (*Zea mays*, L.),	Tropical America	Ancient
Crab Apple (*Pyrus baccata*, L. [and spp.]),	Asia, America	Ancient; modern varieties
Cranberry (*Vaccinium macrocarpon*, Ait.),	North America	Modern
Cucumber (*Cucumis sativus*, L.),	India	Prehistoric
Currant, Common (*Ribes* spp.),	America, Asia, Europe	Modern
Date (*Phoenix dactylifera*, L.),	Southwestern Asia, N. Africa	Prehistoric
Dewberry (*Rubus flagellaris*, Bailey),	North America	Modern
Egg Plant, Common (*Solanum melongena*, L.),	India	Prehistoric
Fig (*Ficus carica*, L.),	Mediterranean countries	Prehistoric
Filbert (*Corylus avellana*, L.),	Europe, Asia, Northern Africa	Ancient
Fox grape (*Vitis labrusca*, L.),	Northeastern United States	Recent
Gooseberry (*Ribes grossularia*, L.),	Europe, Asia, Africa	Ancient
Grape (*Vitis vinifera*, L. [and spp.]),	Western Asia, Mediterranean countries	Prehistoric
	North America	Modern
Guava (*Psidium guajava*, L.),	Tropical America	Ancient
Hickorynut (*Carya* spp.),	Mississippi Valley, Eastern United States	Recent
Kohlrabi (*Brassica caulorapa*, Pasq.),	Europe	Ancient
Kumquat (*Fortunella* spp.),	Eastern Asia	Ancient
Lemon (*Citrus limonia*, Osbeck),	India	Ancient
Lentil (*Lens esculenta*, Moench.),	Southern Europe	Ancient
Lettuce (*Lactuca sativa*, L.),	Mediterranean countries	Ancient
Lime (*Citrus aurantifolia*, Swing.),	Asia	Ancient
Loganberry (*Rubus loganobaccus*, Bailey),	North America	Modern
Loquat (*Photinia japonica*, Gray),	China, Japan	Ancient
Mulberry (*Morus nigra*, L.),	Asia	Ancient
Muskmelon (*Cucumis melo*, L. [and vars.]),	Southern Asia, Africa	Ancient
Mushroom (*Agaricus campestris*, L.),	North Temperate Zone	Modern
Nutmeg (*Myristica fragrans*, Houtt.),	Pacific Islands	Ancient
Oats (*Avena sativa*, L.),	Western Asia	Ancient
Okra (*Hibiscis esculentus*, L.),	Asia	Ancient
Olive (*Olea europaea*, L.),	Asia Minor	Prehistoric
Onion (*Allium cepa*, L.),	Asia	Prehistoric
Orange (*Citrus sinensis*, Osbeck.),	Eastern and Southern Asia	Ancient
Parsnip (*Pastinaca sativa*, L.),	Europe	Ancient
Pea (*Pisum sativum*, L.),	Asia	Ancient
Peach (*Prunus persica*, Sieb. & Zucc.),	China	Prehistoric
Peanut (*Arachis hypogaea*, L.),	Brazil	Ancient
Pear (*Pyrus communis*, L.),	Europe, Southwestern Asia	Prehistoric
Pecan (*Carya pecan*, A. & G.),	Western Mississippi Valley	Recent
Pineapple (*Ananas comosus*, Merr.),	Central America, West Indies	Ancient
Plum (*Prunus* spp.),	Persia, Asia Minor, America	Ancient
Potato, Sweet (*Ipomoea batatas*, Lam.),	Central America	Prehistoric
Potato, White (*Solanum tuberosum*, L.),	South American Andes region	Prehistoric
Pumpkin, Gourd, Squash (*Cucurbita* spp.),	Northern South America and Southern North America	Ancient
Quince (*Cydonia oblonga*, Mill.),	Persia, Asia Minor	Prehistoric
Radish (*Raphanus sativus*, L.),	Asia	Ancient
Raspberry (*Rubus* spp.),	North Temperate Zone	Modern
Rhubarb (*Rheum rhaponticum*, L.),	Asia	Ancient
Rice (*Oryza sativa*, L.),	Southern Asia	Prehistoric
Rye (*Secale cereale*, L.),	Central Asia, Europe	Ancient
Sago (*Cycas revoluta*, Thunb.),	Pacific Islands	Modern
Salsify (*Tragopogon porrifolius*, L.),	Europe	Ancient
Sorghum (*Holcus sorghum*, L. [vars.]),	Asia or Africa	Ancient
Spinach (*Spinacia oleracea*, L.),	Asia	Ancient
Strawberry (*Fragaria* spp.),	modern improved varieties largely American	Recent
Sugar Cane (*Saccharum officinarum*, L.),	South China	Ancient
Tea (*Thea Sinensis*, L.),	China, Japan	Prehistoric
Tobacco (*Nicotiana tabacum*, L.),	America	Ancient
Tomato (*Lycopersicon esculentum*, Mill.),	America	Ancient, modern varieties
Turnip (*Brassica rapa*, L.),	Europe	Prehistoric
Vanilla (*Vanilla planifolia*, Andr.),	Central America, Mexico	Ancient
Walnut, English (*Juglans regia*, L.),	Eastern Europe, Temperate Asia	Ancient
Walnut, Black (*Juglans nigra*, L.),	North America	Modern
Watermelon (*Citrullus vulgaris*, Schrad.),	Tropical Africa	Prehistoric
Wheat (*Triticum sativum*, L. [vars.]),	Euphrates Valley	Prehistoric
Yam (*Dioscoreaceae*),	China	Prehistoric

DICTIONARY OF PLANTS

Abaca (*Musa textilis*). This important fiber plant is native to the Philippine Islands. It belongs to the banana family but its fruit is not good to eat. The fiber, called Manila hemp, is used in the best grades of ropes and cables, where it wears well and does not easily kink or jam in pulleys. The abaca plant requires a damp, warm climate and a deep rich soil. Many attempts to introduce its culture into America have always been failures.

Acacia (*Acacia* spp.). Trees properly of the genus *Acacia* and a name sometimes given to trees of the pea family. The majority of acacias are found in warm, dry places. They usually have thorns or spines. An African species yields gum arabic. Hard lumber is obtained from the trees. In North America the acacias seldom attain any considerable size.

Agave (*Agave* spp.). A desert plant of which the best known representative is the century plant (which see).

Ageratum (*Ageratum Houstonianum*). An easily grown garden flower used for edges and borders. Though commonly blue, the blossom is sometimes white or rose-colored. Because of the general effect of a fuzz over the flower heads, the plant is also called "floss flower."

Ailanthus (*Ailanthus glandulosa*). A large-leaved tree, native to China and naturalized in America and now often found wild in our forests. The staminate flowers have a disagreeable odor. The fruits resemble twisted sheets of paper about two inches long and bear a seed in the center. A common name for the ailanthus is "tree of heaven."

Alder (*Alnus* spp.). The alders are close relatives of the birches and the hornbeams. They are small water-loving trees of rapid growth. The many species include the black, the seaside and the Oregon alders. The wood is soft and not valuable for lumber but is used in making charcoal. The bark is sometimes used in tanning.

Alfalfa (*Medicago sativa*). A valuable legume of the pea family, probably native to southwestern Asia or southeastern Europe. The name is from the Arabic which means "best fodder" and indicates the use of the plant. In some parts of our country alfalfa is called "lucerne." It has a small purple flower and seeds are produced in a twisted pod resembling a snail shell. Properly cured alfalfa hay is relished more than any forage plant by farm animals. It is an excellent pasture crop and has high feeding value when the dry hay is ground to make alfalfa meal.

Algae. A plant subkingdom including most of the pond scums and all the seaweeds and ranking lowest in the scale of plant life. The four general classes of the algae are the blue-green, green, brown and red. Most of the green forms are found in fresh water and include *Protococcus*, *Spirogyra* and *Cladophora*. The vast masses of the Sargasso Sea are brown algae. The kelps of our ocean waters are the most important species of brown-algae. Most red algae are found in very deep salt water. Irish moss is a red alga. Desmids and diatoms are interesting forms of algae.

Alligator Pear. See Avocado.

Allspice (*Pimenta officinalis*). The berry of the pimento, an evergreen tree of the myrtle family of the West Indies. The name is derived from the fact that the pungent, aromatic flavor of the berry seems to unite those of the cinnamon, clove and nutmeg. The fruits are picked unripe and cured by artificial heat. Jamaica is the principal source of supply and the spice is sometimes called "Jamaica pepper."

Almond (*Prunus communis*). A small tree of the genus *Prunus* of the rose family, grown for its nut. The almond requires a warm climate such as southern Asia, the Mediterranean region and southern California, where it is grown commercially for its fruit.

There are bitter and sweet almonds. The bitter varieties are used for flavoring extract and for their prussic acid. The sweet almonds are used in candy and desserts; they are of three classifications—hard-shelled, soft-shelled and paper-shelled. A related ornamental shrub is the flowering almond.

Aloe (*Aloe* spp.). Plants of the lily family and natives of warm countries. The juices of these plants are used for medicinal purposes. Aloes vary in height from small plants to trees of thirty feet.

Alyssum (*Alyssum* spp.). A genus of herbs originating in the Old World. Best known is the sweet alyssum, a common garden flower used for edges and borders. It produces fragrant, white clusters of bloom. The golden alyssum is a prolific small golden-yellow flower of early spring.

Amaranth (*Amarantus* spp.). The amaranth is often a troublesome weed. One species is a tumble-weed and behaves in a manner similar to the Russian thistle. The common amaranth occurs in gardens and is known as "redroot" or "pigweed." Some of the amaranths, as the species called "love-lies-bleeding," are grown as garden flowers.

Amaryllis. Bulbous plants, more properly called hippeastrums. The only true amaryllis commonly grown is the belladonna lily of California. The hippeastrums are usually grown in pots. The flowers are typically produced before the leaves and often are large and of great beauty.

Anemone (*Anemone* spp.). There are many kinds of anemones in our forests. Best known is the wood anemone with its delicate little starlike flowers of early spring. Many varieties, notably the Japanese anemone, are grown as garden flowers. The pasque flower, chosen by South Dakota as the state flower, is an anemone.

Anise (*Pimpinella anisum*). An aromatic herb grown in gardens for its seed and leaves and for the oil from the seeds. Anise is a member of the parsley family and a native of the Mediterranean shores. The seeds are used for seasoning and flavoring condiments, cheese and candy. The oil is used in medicine as a flavor. The oil and seeds are also used in soaps and perfumes. The leaves are used for garnishing and seasoning.

Apple (*Pyrus malus*). The apple tree has been cultivated for many centuries. It goes back to the wild apple of southwestern Asia. Today the common apple and the crab apple are important. There are varieties of every description from sweet to sour and ripening from early June to late fall. Japan has produced apple trees with fruit the size of cherries, cultivated entirely for their flowers. Apples are popular as an edible fruit, fresh, canned and evaporated.

Apricot (*Prunus* spp.). A garden fruit of the rose family, native to the Orient and now grown in mild temperate climates throughout the world. The fruit appears to be intermediate between the peach and the plum. Apricots require careful handling as they are easily bruised. They are used fresh, canned and evaporated.

Arbor Vitae (*Thuja* spp.). The name means "tree of life," although we commonly see this group of evergreen trees growing in cemeteries. The arbor vitae is distinguished by its small leaves pressed flat and close to the stem. The leaves are supplied with an oil which gives a pleasant fragrance to the plant.

Arbutus or **Trailing Arbutus** (*Epigaea repens*). A very early spring wild flower with fragrant, waxy-white to pink blossoms found in light sandy loam in forest areas. It has been extremely difficult to coax this dainty woodland flower to live in civilization, but recently government botanists have successfully propagated it.

Artichoke (*Cynara scolymus*). The true artichoke is a thistle-like plant with long prickly leaves and heads of white or violet-colored flowers. The base of the unopened flower bud and the thick scales around it are eaten as a food. The Jerusalem artichoke (*Helianthus tuberosus*) is a species of sunflower bearing tubers which are used for food.

Ash (*Fraxinus* spp.). The ash tree is tall and stately with smooth bark checked into small plates. It belongs to the olive family. The wood is very useful for tool handles, oars, baseball bats and other articles requiring lightness and strength. Among the species of the ash are the white, black, red, green, blue and Oregon ash.

Asparagus (*Asparagus officinalis*). This hardy member of the lily family produces tender young shoots in the spring. These shoots are eaten as a green vegetable. They were used by the Greeks and Romans in ancient times. Besides the common garden form there are other species, grown for ornamental uses.

Aster (*Aster* spp.). There are more than 200 species of asters known, most of which are found in America. In England the wild aster has been improved and is called "Michaelmas daisy." These hardy perennials bear attractive flowers ranging from white to dark purple and including pink, rose and violet shadings. Although in meadows asters may become troublesome weeds, they deserve a place in the flower garden. The China aster, a highly developed garden flower, is a member of another genus (*Callistephus*) of the same family.

Avocado (*Persea americana*). Also called "alligator pear," a tropical laurel whose fruit attains the size of a large pear. The fruit has a green or purple skin and a soft, oily pulp surrounding a large seed in the center. The fruit is cut open and eaten like a melon or used in salad. The tree grows to a height of fifty feet and with its thick green leaves is attractive for shade. (See also Laurel.)

Azalea. A genus of deciduous-leaved plants of the heath family separated by practical growers from evergreens which are put in the genus *Rhododendron*. The azaleas are natives to America, found in swamps and forests, but they do not respond readily to cultivation. The pink azalea is a beautiful shrub whose flowers resemble those of the honeysuckle. This handsome flower needs protection to prevent its extinction at the hands of thoughtless collectors.

Bacteria. Microscopic plants which live as parasites or saprophytes. Some are harmful and others are beneficial to man. Some bacteria produce fermentation, as of milk or cider. Others stimulate decay. Among the useful bacteria are those which inhabit the roots of legumes and utilize the nitrogen of the air. Pathogenic bacteria cause diseases in plants and animals. Tuberculosis, typhoid fever and lockjaw are examples of diseases of man caused by bacteria. The black rot of cabbage and the wilt of the tomato and potato are examples of plant diseases caused by bacteria.

Balm of Gilead. See Poplar.

Balsam (*Impatiens balsamina*). The garden balsam is called *Impatiens* because the seed pod irritably bursts open when touched. The double-flowered sorts are seen now most commonly. The color of the flowers shades from white to deep crimson.

Balsam Fir. See Fir.

Bamboo (*Bambusa* spp.). Plants of the grass family, sometimes attaining heights of more than 100 feet. About 200 kinds of bamboo are known. Some bloom regularly and others have never been known to bloom. Bamboos are mainly tropical plants. Only two kinds are found which are native to the United States and they grow along streams and swamps in the South and form "cane-brakes." Bamboo is very useful. It is made into furniture, floats, buckets and even houses. Paper is made from bamboo. The seeds are used to eat as are also the tender young shoots.

Banana (*Musa paradisiaca* var.) Largest of treelike, herbaceous plants. The stem attains a height of from ten to thirty feet and the leaves are from five to twenty feet in length. It is a native of tropical countries and has been raised to some extent in the southern United States. The banana is used for its fruit and also for its fiber and for ornament. The plant produces but one bunch of bananas and dies down. The stem is then replaced by suckers which spring up from around the base. The red banana is thicker and sweeter than the more commonly grown yellow variety.

Banyan Tree. See Fig.

Barberry (*Berberis* spp.). A group of shrubs with handsome foliage and fruits which persist through the winter. The three best known species are the Japanese, the purple-leaved and the common barberry. All are valuable for landscape effects. However, the common barberry should not be used in wheat-growing districts as it harbors a destructive fungus, the black stem rust of wheat. The Japanese barberry may be distinguished from the common species by the leaf edges which are smooth and by the spines which occur singly in the Japanese.

Barley (*Hordeum vulgare*). A cereal grain of which wild types are still common in Asia. Of the grains, barley most nearly resembles wheat. In the United States most of the barley is grown north and west of the regions devoted to corn. Barley is chiefly used as feed for animals. The grain has no gluten and cannot be made into a raised loaf of bread. It is used as a breakfast cereal.

Basswood or **Linden** (*Tilia* spp.). A popular rapid-growing shade tree with fragrant cream-white flowers, whose nectar bees make into excellent honey. The wood is used for furniture, woodenware, cooperage, paper pulp and charcoal.

Bean. A name applied to a large number of the legumes. The common bean consists of field and garden types and these are divided into tall climbing or pole varieties and smaller, dwarf or bush varieties. Beans are used for food green, as snap or shell, and dried shelled. Beans require a fairly warm soil and should not be planted until danger of frost is gone. In addition to the ordinary garden snap bean, the Lima is another favorite. The Limas are less hardy than the common bean.

Beech, American (*Fagus grandifolia*). A tree widely distributed throughout the eastern United States and the only species found in our country. This symmetrical tree with its silvery-gray bark marked with blotches of paler hue is beautiful and useful. Beech lumber is excellent for furniture, flooring and handles of tools. Since it is hard and resistant to water, beech is well adapted to the making of bowls and for construction work under water. Beechnuts have a rich delicate flavor that well makes up for their small size. Due to its ability to propagate rapidly from sapling growths around the trunk, beeches often take possession of areas, resulting in pure forests of the tree.

Beet (*Beta vulgaris*). The beet is a descendant of a perennial herb of southern Europe. Our beet is a biennial, producing a bulbous root one year and seed the second, although as a garden crop we purchase seed and raise the beet as an annual. Beets are grown for their edible foliage, as in Swiss chard. They are also grown for their roots, as in garden beets, sugar beets and mangel-wurzel. The beet "seed" is really a group of seeds, and when the plants come through the ground they soon need thinning.

Begonia. A large family of flowering plants divided into several groups including (1) the fibrous-rooted, (2) tuberous-rooted and (3) those with rhizomes which are cut into pieces and planted like seeds to raise new plants. The color of the flowers run from red through pink to white. Begonias are grown as house plants and outdoors in formal gardens.

Belladonna or **Deadly Nightshade** (*Atropa belladonna*). A plant grown for its leaves and roots which contain an alkaloid used in medicine. The purple berries are poisonous. Belladonna belongs to the *Solanaceae* family and is therefore a close relative of the common potato and the tomato.

Bindweed or **Morning-Glory** (*Convolvulus sepium* and *arvensis*). The bindweed is found all over the United States. It is a trailing vine growing along walls and hedges and in fields. The vines have deep-running rootstocks, spear-shaped leaves and pink to white bell-shaped flowers. As a weed it is one of the farmer's worst enemies and a close watch must be made of seed sown, especially wheat. The black bindweed, or wild buckwheat, belongs to the buckwheat family and is a lesser pest than the morning-glory. The morning-glory is a perennial, while the wild buckwheat is an annual and reproduces each year only from seed.

Birch (*Betula* spp.). Birches are widely distributed in North America, Europe and Asia. The early American Indian found the birch bark admirably adapted to the making of a light canoe and we know his favorite species today as the canoe or paper birch. The white birch of Europe is grown widely as an ornamental lawn and park tree in our country. Other species include the yellow, red and sweet or black birch.

Bittersweet, Climbing (*Celastrus scandens*). The only North American species of the staff-tree family. This is a good trellis-plant, especially desired for its berries which turn from green to yellow and then burst to expose their scarlet-coated seeds with their contrasting orange-yellow envelopes. These last all winter and make attractive clusters indoors throughout the winter.

Blackberry (*Rubus* spp.). A perennial plant grown for its edible berries. It is (with the raspberry and the dewberry) one of the group of thorny plants known as "brambles." The blackberry propagates rapidly from suckers which grow from the root, and cultivation and pruning are necessary in commercial growing of the plant. The plant is a native of our country and the largest cultivated varieties have been developed therefrom. Foreign varieties have been introduced to a certain extent also.

Bleeding Heart (*Dicentra spectabilis*). A garden flower with rosy red and pink heart-shaped flowers borne on tall, graceful light-green stems. The flowers are produced in sprays. The new shoots start each year from the roots in early spring and the flowers appear in May.

Bloodroot (*Sanguinaria canadensis*). An early-blooming woodland flower. The flower bud arises from out a papery sheath and unfolds into a white, fragile bloom. The plant has a thick rootstock which makes it easy to transplant to a rich shady corner of the garden. All parts of the plant and especially the rootstock give out a staining orange-red juice which won for the bloodroot the name of "Indian paint." Old-fashioned mothers used to drop the juice on lumps of sugar and use them for coughs and colds.

Bluebell or **Harebell** (*Campanula rotundifolia*). This bell-shaped blue flower grows drooping from hair-like stems. It prefers moist rocky uplands and is often found in lofty crevices in rocks. Its range includes the northern half of our country from New Jersey to California. In poetry the plant has been immortalized as the "bluebell of Scotland."

Blueberry. See Huckleberry.

Blue Grass (*Poa* spp.). A name applied to various species. The one commonly referred to is known as Kentucky blue grass or June grass. This was first described in the writings of the Swedish botanist, Kalin, in 1758. Blue grass grows best in humid regions and its range is quite general over the United States.

Bouncing-Bet or **Soapwort** (*Saponaria officinalis*). An attractive flower with showy white clusters of bloom found along roadsides. It becomes an undesirable weed in pasture lands. The name "soapwort" refers to the fact that the broken leaves agitated in water make a lather which was used by our Colonial ancestors for washing clothes.

Box Elder. See Maple.

Box Tree (*Buxus sempervirens*). An evergreen shrub of the box family used for hedges and borders. It is grown mainly along the eastern coast of our country. It requires considerable care to maintain the shrub in good health. The hardwood is sought for wood engraving and for use in wind instruments.

Brazil Nut (*Bertholletia excelsa*). The Brazil nut grows in Brazil on a tall tree, often exceeding 100 feet in height. The nuts are contained in a large spherical pod. The nuts have a creamy-white meat and are used for eating. Their oil is valuable for burning.

Breadfruit (*Artocarpus incisa*). A tropical tree native to the East Indies. It has long thick leaves and yields an edible fruit, globular in shape and from four to six inches in diameter. To a limited extent the breadfruit has been grown in Florida. In tropical countries the fruit is cooked and eaten as a vegetable.

Bridal Wreath. See Spirea.

Broomcorn (*Andropogon sorghum*). A sorghum,

grown since Colonial days in America for its loose, open head which is made into brooms. Two kinds are grown: the standard, which grows from ten to fourteen feet in height, and the dwarf, from four to six feet tall.

Brussels Sprouts. A variety of the cabbage species, requiring a long, cool growing season. On the stems, in the axils of the leaves, are produced buds or "sprouts" resembling miniature heads of cabbage. These are cooked and eaten as vegetables.

Buckeye (*Aesculus* spp.). A group of native American trees which together with the horse chestnut (*A. hippocastanum*) make up the genus *Aesculus*. The horse chestnut, however, comes from Europe and Asia. The brown nuts are marked with a light brown patch which suggests the partly-opened eye of a deer and is responsible for the name "buckeye." The great abundance of the Ohio buckeye has given Ohio the name "Buckeye State." Among other buckeyes are the sweet and the California species.

Buckthorn (*Rhamnus catharticus*). This relative of *Cascara sagrada* is a shrub of the buckthorn family used as a hedge. It bears small yellowish-green flowers and produces blue-black berries which are used as a pigment by painters.

Buckwheat (*Fagopyrum esculentum*). A native grain of Asia and cultivated for a thousand years by the Chinese. Buckwheat was introduced into our country from Europe. The plant has similar uses too, but is not one of the cereals. It is a close relative of the smartweed and dock as may be seen by examining the triangular fruit of this group of plants. Most of our buckwheat crop is grown in the northeastern part of our country. Buckwheat flour is used for griddle cakes. Buckwheat middlings are used for cattle food and the entire grain is fed to poultry.

Burdock (*Arctium* spp.). A biennial weed with pink flower clusters, belonging to the family *Compositae*. The sticky burrs are effective in spreading the seed. The roots are prized as food by the Japanese in California and both the roots and seeds have some medicinal value.

Buttercup or **Crowfoot** (*Ranunculus* spp.). A large group of wild flowers, usually with acrid, caustic juices. The yellow cup formed by the petals is held by children under the chin to test one's liking for butter. Included among the buttercups are the tall meadow, creeping bulbous and the swamp or marsh buttercup.

Butterfly Flower (*Schizanthus pinnatus*). Sometimes called "poor man's orchid," this delicately cut flower of many hues resembles butterflies. Although butterfly flowers are quite hardy and flourish outdoors, they respond well to greenhouse culture where they sometimes grow to a height of four or five feet.

Butterfly Weed (*Asclepias tuberosa*). With fragrant clusters of orange bloom this flower is the handsomest of all the milkweeds. When in full bloom the plant is usually surrounded by butterflies and other flying insects. Fortunately this wild flower can easily be transplanted to the home garden where it does well in full sunlight and in dry places. See Milkweed.

Buttonwood. See Sycamore.

Cabbage (*Brassica oleracea*). The wild cabbage was found growing long ago in what is now England, and from there it has spread all over the world. Today it is an important vegetable grown throughout our country. It contains three of the vitamins which are recognized as useful in foods. The leaves, which form into a compact head, are eaten. There are green, red and purple varieties, also a savoy or wrinkled leaf variety. Sauerkraut is made from shredded cabbage, salted, packed and allowed to ferment slightly. Sauerkraut juice is used as a mild tonic.

Cacao (*Theobroma cacao*). A small tropical tree grown for its seed kernels or "beans" which yield cocoa and chocolate. The flowers and seed pods grow on the trunks and larger branches instead of on the smaller branches and twigs. It is necessary to shield the trees from the hot sun. This is done by planting shade trees next the cacao trees. Trees begin to bear at five years. Although the fruits appear throughout the entire year, they are harvested at regular seasons.

Cactus. Many forms of plants found in dry and desert areas. Leaves are temporary or much reduced in size and the stems are green and fleshy with hollow interiors filled with water. Usually cacti have stiff spines, although Burbank developed spineless varieties which are excellent stock food. Cacti often bear beautiful flowers, as the night-blooming cereus.

Calendula or **Pot Marigold** (*Calendula officinalis*). An annual producing orange and yellow flowers. As an old-fashioned herb, our grandmothers used the dried flowers to flavor soup, hence the name "pot marigold." Both single and double varieties are grown.

Calla Lily (*Zantedeschia aethiopica*). A house plant and in warm climates grown outdoors. The foliage is a rich dark green and the showy spathes pure white. Similar to the calla lily except in color is the golden calla (*Z. elliottiana*) with bright yellow flowers and leaves with white spots.

Calliopsis. See Coreopsis.

Camellia (*Camellia japonica*). An old-fashioned shrub, hardy in the south and grown indoors in the north. In color the flowers range from red, through pink to white. The wild flower is red and single, although in cultivation double varieties prevail. The large, shiny, laurel-like leaves, show off the blooms to good advantage.

Camomile. Medicinal plants of two kinds—the German (*Matricaria chamomilla*) and the Roman (*Anthemis nobilis*). The dried flowers are used in making a tonic. The dog's camomile or mayweed (*A. Cotula*) is a wild plant naturalized from Europe and a prolific weed. Its flower resembles a small daisy with white florets around a conical yellow disk.

Camphor (*Cinnamomum camphora*). The camphor tree is a relative of the cinnamon plant. It is a native of the Orient and has been introduced successfully into Florida. The tree is grown as an ornamental and as a windbreak. Camphor cuttings are distilled and the oil and gum collected and refined for the use of commerce.

Canada Thistle (*Cirsium arvense*). A troublesome weed which spreads rapidly by underground rootstocks. The plant occurs in Canada and in the northern half of the United States, and typically in patches instead of singly as the bull thistle with which it is often confused.

Candytuft (*Iberis* spp.). A garden flower of the mustard family. The white species is most common, but there are also crimson, purple and lavender kinds. The evergreen candytuft, bearing snowy white blossoms, is a perennial hardy and of easy culture; the leaves are dark green.

Canna (*Canna* spp.). A tropical-looking plant with sheathing leaves and red, pink, pale yellow to white flowers. The modern improved varieties are vastly superior to the old plant which was called "Indian shot" (referring to the very hard seed which must be filed before planting). The canna was introduced into our country from South America and the West Indies.

Caraway (*Carum carvi*). This biennial herb belongs to the parsley family. It grows to a height of a foot and a half to two feet. The seeds are used to flavor breads, cakes, sauces, soups, cheese and candy. An oil distilled from the seeds is used in perfumes and soaps. The seeds do not appear until the second year.

Cardinal Flower (*Lobelia cardinalis*). Brilliant vermilion, rarely rose to white, flowers an inch long borne in spikes on long leafy stems. This striking native wild flower prefers the lowlands and is often found along a stream. Its striking appearance has caused its wanton picking and it is now hard to find. It responds to cultivation and is easily grown from seed.

Carnation (*Dianthus caryophyllus*). A florist's flower ranking next to the rose commercially, the carnation has been grown in our country for 200 years since it was imported from southern Europe. It is a perennial and with its attractive form and wide range of handsome colors is a universal favorite.

Carrot (*Daucus carota*). A market garden vegetable of the parsley family grown for its edible root which is used for the table and also as a stock food, especially for dairy cattle. The color of the root ranges from a light yellow to reddish orange. Carrots rank high in nutrition and are especially valued for their vitamins. The Germans cut and dry the root and use it as a coffee substitute.

Cascara Sagrada (*Rhamnus purshiana*). A shrub, native to the western sections of our country, useful for its bark which contains a substance known as "purshiana," a laxative. The shrub is sometimes grown as an ornamental. Buckthorn (*R. cathartica*) is a close relative and is also grown as an ornamental in our eastern districts.

Cassava (*Manihot* spp.). A tropical member of the spurge family, now grown to some extent in our southern states. Tapioca comes from the starchy roots of cassava. In the tropics cassava bread is a staple food. The roots are often used as stock feed. In our country a sweet cassava is eaten as a vegetable.

Castor Oil Plant (*Ricinus communis*). Another member of the spurge family, an annual with great tropical-looking leaves of seven or more lobes. The plants grow to a height of from four to ten feet and are of easy culture. The plant is often grown as a screen for unsightly places. A native of Asia and Africa, the plant is now grown in most of the warmer countries for its well-known oil which is used medicinally and as a lubricant for delicate machinery.

Catalpa (*Catalpa bignonioides*). A quick-growing ornamental tree preferring damp soils. In early summer with large leaves and showy sprays of bloom the tree is very attractive. When not in leaf the tree is not beautiful. Characteristic of the tree are the long fruit pods which adhere to the branches throughout the winter and then split and disperse their winged seeds in the wind.

Catnip (*Nepeta cataria*). This herb, belonging to the mint family, is also known as "catmint." Its names refer to the fact that cats like to frolic in and chew the leaves. In Colonial days the plant was imported from its native European home and was used as a tea or a tonic. Tiny heads of small white flowers develop late in the summer.

Cat-tail (*Typha latifolia*). A wet area plant with characteristic sword-like leaves and brown cylinders of pistillate flowers. Flour for bread is made from the pollen and especially from the thick rootstocks.

Cauliflower (*Brassica oleracea botrytis*). A delicately-flavored variety of the cabbage species raised for its edible head which is composed of misformed flower stems and buds. Cauliflower is rather difficult of cultivation. A perfect cauliflower head should be uniformly snowy white and solid.

Cedar. The true cedar belongs to the genus *Cedrus* and is strictly an Old World tree. The so-called "American cedars" include white cedar or arbor vitae, the red cedar, Port Orford cedar and incense cedar. These cedars are valuable for posts in the air or in water. So-called "cedar apples" are the fruiting bodies of the fungus cedar rust.

Celery (*Apium graveolens*). A valuable market garden vegetable of the parsley family. It occurs wild in southern Europe and has been grown in cultivation for many years. The plant has a fibrous root, very short stem, or crown, and a cluster of long leaves which typically are blanched and eaten as a relish or in salads or cooked.

Century Plant (*Agave americana*). This member of the aloe family is found growing in the desert but responds readily to cultivation provided the soil is not too rich and there is not too much water. One does not have to wait a century for the plant to bloom, but the time is usually twenty years or more. Flowers are borne in clusters on a high stem and are white or greenish-white in color. The plant generally dies after blooming and maturing seeds, but suckers arise from the base of the old plant.

Cherry. A tree of the genus *Prunus*, grown for its edible fruit. In the Far East the cherry is grown as an ornamental and in Japan the native species, *P. pseudo-cerasus*, has been cultivated for beauty for centuries. Cherries range in size from the diminutive sand cherry to the towering tree of the wild black cherry. Other wild species are the red cherry and the chokecherry. Two orchard cherries have been developed, the sweet and the sour.

Chess or **Cheat** (*Bromus secalinus*). A weed of the grass family, probably imported in early days from Europe. It is not a degenerate wheat or rye, but is a close relative of the brome grass. In some districts chess is grown as a hay crop under the name of "Arctic grass."

Chestnut and **Chinquapin** (*Castanea dentata* and *C. pumila*). Our native chestnut and its close relative, the chinquapin, have relatives in the sweet chestnut of Europe and the Japanese species. The American chestnut is a splendid shade tree and produces desirable nuts and valuable wood. The misfortune is that the chestnut-tree blight, caused by a fungus, has destroyed so many of these noble trees. Chinquapins are smaller trees and produce smaller, but good, nuts and wood that is used for posts and railroad ties.

Chickweed. All over the earth the common chickweed (*Stellaria media*) has made its way and the only use man has found for it is to feed caged birds. It is occasionally fed to chickens. This delicate-appearing weed is really one of the hardiest and its small star-like flowers and seeds are produced at almost any season of the year. Two other chickweeds, likewise members of the pink family, are the mouse ear chickweeds—the common and the field species (*Cerastium vulgatum* and *C. arvense*). These chickweeds are not as serious pests as the first described.

Chicory (*Cichorium intybus*). Imported from Europe, this relative of the endive and dandelion has become in our country a troublesome meadow weed. It has bright blue flowers, sometimes pinkish or white, and a long, heavy taproot. The root, dried and powdered is used as a substitute and as an adulterant for coffee. The blanched leaves are eaten, especially by the French, as a salad. French endive, or Witloof chicory, is a variety of chicory in which the leaves have been made into a solid head, which is used as a winter salad.

China Aster. See Aster.

Chrysanthemum (*Chrysanthemum hortorum*). Although the word Chrysanthemum means "golden flower," this most important of the late blooming garden flowers appears in other colors as well as yellow. The hardy garden varieties are from one-half inch to two inches in diameter, sometimes single and again semi-double or double. To raise the enormous blooms which the florist displays requires expert and special greenhouse attention. By pinching back the plants during the growing season bushy plants and many buds are produced. Among the larger greenhouse chrysanthemums are the double quilled, the double with expanded rays and the reflexed.

Cinchona (*Cinchona officinalis*). This shrub or tree is a native of the slopes of the Andes. Its so-called "Peruvian bark" yields quinine. Formerly the main source of quinine was these wild trees of South America, but today the plant is cultivated in India and other parts of the Far East and little quinine is made from wild barks. In harvesting the bark vertical strips are removed and the wounds heal allowing the taking of additional strips each year. Sometimes the plants are cut down and new bark secured from the development of sprouts at the base. The use of quinine in the treatment of fevers was made known to the early Spanish explorers in South America by the native Indians.

Cinnamon (*Cinnamomum zeylanicum*). A tree belonging to the laurel family. As the name *zeylanicum* suggests, the plant is a native of Ceylon where much of the best cinnamon is raised today. The most valuable product is the cinnamon bark, which is used as a spice in cookery and medicinally as a stimulant and cordial. In cultivation the plant is continually cut back to a stump and sprouts are allowed to develop. From these two-year-old shoots the bark is taken and dried to form the cinnamon bark of commerce. The entire plant is sometimes used for its oil.

Clematis (*Clematis* spp.). A genus of the crowfoot family, consisting of more than 150 species. Many species are climbers. The best known is the native Virgin's bower (*C. virginiana*) which bears white and greenish flowers in loose clusters. In the autumn the long, feathery plumes attached to balls of seeds reveal the reason for another name, "old man's beard." The imported Japanese white clematis (*C. paniculata*) is very popular for planting on porches. The purple *C. jackmanii* is also a popular planting species.

Clover (*Trifolium* spp.). The true clovers all belong to the genus *Trifolium*, a word meaning "three-leafed," although there are many other so-called clovers, as sweet clover, prairie clover and burr clover. There are more than 300 species of *Trifolium* known in various parts of the temperate zone. In our country four important clovers are cultivated—red, white, crimson and alsike. Clovers are used as a forage crop, especially for cattle. They are also used in rotation as a soil-improving crop. Clovers thrive in cool, moist climates and cannot withstand prolonged heat or drought.

Cloves (*Caryophyllus aromaticus*). An important spice consisting of the dried flower buds of a tropical tree belonging to the myrtle family. The name "cloves" comes from the French word *clou*, meaning "nail," and refers to the appearance of the dried bud. The clove tree attains a height of from thirty to forty feet. The buds are picked by hand, a tree yielding from five to seventy-five pounds of the spice. The cloves are rich in oil and unscrupulous growers sometimes remove the oil, thus lessening the aroma of the cloves. The oil is used in soaps, candies, perfumes and medicines.

Cockle (*Lychnis githago*). A weed which infests wheat and other grain fields, especially common in the Central and Western States. It has been called the "corn cockle," from the Old World name of wheat. The purple flowers appearing from July to September, present a striking sight in grain fields. The seeds are poisonous but modern milling methods have practically eliminated them from flours.

Cockscomb (*Celosia* spp.). A border plant grown for its showy flower heads of crimson and ranging to orange and creamy white. The flower heads grow in great clumps bearing some resemblance to a rooster's comb, hence the common name. The crested and the plumed or feathered are the two leading species grown in the flower-garden.

Coconut Palm. See Palm.

Coffee (*Coffea arabica*). Coffee growing wild is said to have been noted in Arabia in the thirteenth century. It was discovered in Abyssinia at an early date. The coffee plant is a small tree of the madder family. It produces fragrant white flowers which after about seven months, ripen into crimson cherry-like fruits which open and disclose two flat-faced coffee beans. After being properly cured these beans become the coffee of commerce, which has become one of the world's leading beverages. An alkaloid, caffeine, is the active stimulant in coffee.

Columbine (*Aquilegia* spp.). A genus of which more than twenty species occur in America. This flower bears five tubular petals ending in horn-like honey sacs which suggested to Linnaeus the talons of the eagle, hence the name *Aquilegia* from *aquila* the eagle. Bailey states that the name is derived from *aquilegus* ("water bearer") and refers to the shape of the flower. The common wild columbine is a red flower, yellow inside, blooming in rocky areas and rich woodland from April to July. The blue columbine is a native of our Western States and has been chosen as the state flower of Colorado. There are also yellow and white columbines.

Conifers. Trees or shrubs producing cones which contain seeds, hence the name which means "cone-bearers." These plants belong to the order *Coniferales* and are the main, living group of the gymnosperms and the only group native to North America. One great group of the conifers is the pine family, including besides the pines, the firs, spruces, hemlocks, cedars, larches, junipers, cypress and those oldest of all living things, the redwoods. Another group of conifers is the yew family.

Coreopsis or **Tickseed** (*Coreopsis lanceolata*). The name *Coreopsis* means "bud-like" and refers to the seed, and the name "tick-seed" is likewise fitting. The large daisy-like flowers are desired for picking and give a brilliant dash of yellow to the flower garden all through the summer. Calliopsis (*C. tinctoria*) is a showy annual with flowers ranging from red and maroon to brown and yellow.

Cork Oak (*Quercus suber*). An oak, native to the countries bordering on the Mediterranean Sea, grown for its spongy bark, the cork of commerce. The tree grows to a height of not over forty feet but attains a large diameter, sometimes of four feet. The outer bark is removed about every nine years without injury to the health of the tree. The life of the tree may be 150 years or more. Although introduced into our country, cork oaks have never been grown here on a commercial scale. The principal supply comes from Spain and Portugal.

Corn (*Zea mays*). A member of the grass family and the leading American farm product. Corn is a native of the New World, coming probably from the high tablelands of southern Mexico. Some scientists maintain that it was developed from the Mexican plant *teosinte*, which at least is a close relative. Corn was the chief source of food among the Indians. Several hundred varieties of corn are grown ranging from plants two feet tall to huge thirty-foot stalks, but there are six principal types—dent, flint, flour, sweet, pod and pop corn.

Cornflower (*Centaurea cyanus*). A garden flower with fringed trumpets of blue, pink or white. It is often called "bachelor's button," although this name is applied to various other flowers as well. This plant will seed itself and reappear year after year.

Cosmos (*Cosmos bipinnatus*). A late-blooming garden flower which grows five to ten feet high and completes most of its growth before blooming. This annual prefers not too rich ground and abundant sunshine. The flowers are red, pink or white. Both single and double varieties are grown.

Cotton (*Gossypium* spp.). Cotton includes all the plants of the genus *Gossypium*, of the mallow family, native to the tropics. The origin of cotton is unknown, but its use doubtless antedates history in China, Japan and India. Wild cotton grew to a height of fifteen feet or more, but in cultivation the plant is kept to a more convenient height for picking the fiber. The large handsome flowers are of various colors. The seeds occur in pods or bolls, which are filled with the fluffy white fiber from which the cotton of commerce is made. Oil is derived from the seeds. Many species of cotton are known but only a few are agriculturally important. There are two main groups—the American and the Asiatic. The former includes upland, sea-island and Peruvian cotton. Most of our cotton is upland. Among the Asiatic cottons are Bengal and Indian.

Cottonwood. See Poplar.

Cowpea (*Vigna sinensis*). This annual is one of the important legumes of the southern part of our country. It is a native of Asia and has been known and cultivated at least since Roman times. This close relative of the bean is extensively used as a forage plant and as a green-manure crop. For table use white-seeded and black-eyed varieties of the seed are used.

Crab Apple. See Apple.

Crab Grass (*Digitaria sanguinalis*). An annual usually classed as a weed, although it is sometimes used as a forage plant. The plant stems spread out and take frequent root, making the grass hard to eradicate. Atop the stem are from three to six spikes which bear flowers and seed which mature to a reddish or purplish color.

Cranberry (*Vaccinium macrocarpon* and *V. oxycoccus*). A water-loving trailing shrub of the heath family grown principally in northeastern sections of our country and in Canada. The small, red, acid fruit is esteemed for cooking uses. The flower and the curved stalk on which it hangs, resemble the head and neck of a crane and is said to have been responsible for the name which was altered from "crane-berry" to "cranberry." There are two leading species, the small-fruited and the large-fruited.

Cress. A group of salad plants of the mustard family. Water cress flourishes when both roots and stems are grown under water. Upland cress and garden cress, or peppergrass, are grown in gardens.

Crocus (*Crocus* spp.). Early-blooming spring flowers grown from corms planted in the autumn. The flowers are purple, lavender, white and yellow. The autumn crocus (*Colchicum autumnale*), although planted at the same time as the spring blooming flowers, does not bloom until September or October. The most common flowers are the lilac-colored.

Cucumber (*Cucumis sativus*). This trailing annual of the gourd family has a long history, extending back for at least 3,000 years to Asia where it was probably a native of India. The fleshy oblong fruit is sliced and eaten green and it is also used for pickling. The plant is tender and requires warmth and sunshine.

Currant (*Ribes* spp.). A shrub grown for its small acid fruits which occur in clusters. The most important species, the black and the red, are natives of northern Europe where they have been grown since the sixteenth century. Native American species which have been cultivated to a limited extent are the wild black, the wild swamp and the Buffalo or golden currant. On the Pacific coast an ornamental, the wild California flowering currant, is being raised for its handsome yellow flowers.

Cyclamen (*Cyclamen persicum*). A florists' plant with beautiful foliage and flowers ranging from pink to dark rose, often with a dash of another color, most frequently purple. Other forms of flowers are fringed or crested. The blossoms will last all winter. The cyclamen is a member of the primrose family.

Cypress (*Cupressus* spp.). A genus of conifers with graceful leaf-sprays and small, erect woody cones. All are ornamental and some are very valuable for their wood. The European cypress (*C. sempervirens*) is noted in literature and is often seen in cemeteries and in hedges. The Monterey, or cypress of Mexico, is native to a few miles of coast near Monterey Bay in California, where its form is gnarled and grotesque. In cultivation this species (*C. macrocarpa*) develops into a shapely tree. The bald cypress (*Taxodium distichum*) of the South is the one member of the cypress group that is deciduous. It grows in wet places and develops swellings at the base of the trunk known as "cypress knees." The wood is very valuable and under water is almost imperishable.

Daffodil. See Narcissus.

Dahlia (*Dahlia* spp.). A perennial, native to Mexico, and now grown widely as a garden flower for cutting. The wild plant has red flowers with yellow centers but the cultivated varieties are of every color except blue and scarlet. The plant is grown from tuberous roots which have eyes at the stem end. The plant grows two to six feet high.

Daisy. The common oxeye daisy (*Chrysanthemum leucanthemum*) is a native of Europe that has become so thoroughly at home in our country that it is now regarded as a weed. It is a perennial with short, thick underground stems. It is a handsome flower and has been chosen as the official floral emblem of the American Legion. There are many other daisies. In England there is the dwarf rose, pink or white garden daisy (*Bellis perennis*). The Shasta daisy is larger than the oxeye. The pink daisy (*Pyrethrum*) is red, pink or white and often doubled. Other daisies include the giant, the Paris and the Swan River. The Michaelmas daisy has already been mentioned under Asters.

Dandelion (*Taraxacum officinale*). A common lawn weed widely distributed over the northern United States and Canada. The name, meaning "tooth of the lion" is derived from the jagged edges of the leaves. Bright yellow flowers are borne on stalks which rise from a rosette of leaves. The tender young leaves are sometimes used as a salad or cooked as greens. Bees feast on the flowers in spring.

Date Palm. See Palms.

Dill (*Anethum graveolens*). A biennial herb of the parsley family, a native of southern Europe, growing from two to three feet high. It is cultivated for its seeds which are used in soups and sauces and for flavoring pickles. The seeds yield an oil which is used in soaps and medicinal preparations.

Dock (*Rumex crispus* and *R. obtusifolius*). Both of the two important docks, the narrow-leaf or yellow (*R. crispus*) and the broad-leaf (*R. obtusifolius*) are perennials common in meadows and pastures and sometimes in alfalfa fields. The narrow-leaf species may be eaten as greens. In Colombia the broad-leaf dock is used for grazing. Usually the docks are regarded as troublesome weeds and the seeds are often present as impurities in the seed of clovers, alfalfa and timothy.

Dodder (*Cuscuta gronovii*). One of its names, "strangle-weed," describes this strange plant which is a parasite without green leaves. This twining yellowish or reddish vine fastens itself to many agricultural plants, as clover or alfalfa, and by means of sharp suckers, or haustoria, penetrates the stems and extracts nourishment. Clusters of little pink flowers develop from July to September.

Dogtooth Violet or **Yellow Adder's Tongue** (*Erythronium americanum*). Not a violet at all but a member of the lily family, the young shoots of early spring do resemble a snake's tongue. This little plant with its russet yellow flowers is one of the earliest harbingers of spring in all the eastern United States, especially in moist woodlands or thickets.

Douglas Fir (*Pseudotsuga Douglasii*). Not a true fir but botanically between the firs and the hemlocks, this giant tree is also known as the Douglas spruce. The lumberman calls the lumber "Oregon pine," and it is one of the best known Western lumber trees. In the interior, where the tree grows smaller, it is called "red pine." This great conifer typically stands straight and without a limb almost 200 feet and has a top another hundred feet above the clear trunk. Such a tree has enough lumber to build a dozen houses.

Dutchman's Breeches (*Dicentra cucullaria*). A member of the fumitory family, a wild flower with delicate green foliage and dainty heart-shaped flowers of white tipped with yellow hanging tremblingly on slender stems. The plant is found in rich leafy mold in woodland areas south to Carolina and west to Nebraska.

Easter Lily. See Lily.

Ebony. Commercially, ebony is the name applied to the black heartwood of various trees native to the tropics. The trees producing ebony are frequently two or more feet in diameter. Ebony wood is hard and heavy and takes a high polish. It is used for boxes, ornaments and veneers in cabinetwork. The native American persimmon yields a fair grade of ebony wood.

Edelweiss (*Leontopodium alpinum*). A small Alpine of the aster family. In Switzerland, where it is becoming rare on account of the zealous collectors who seek the beautiful silvery-white flowers, it is now protected by law. Edelweiss is now being cultivated in our country in gardens.

Eggplant (*Solanum melongena*). A tropical annual of the nightshade family, grown extensively as a garden vegetable for its egg-shaped fruits. The plant is a native of India but is now grown in America, especially in the warmer areas. The fruits are light-colored to dark purple and black. In America the dark varieties are preferred.

Elder (*Sambuous* spp.). An ornamental shrub of the honeysuckle family, becoming in some species, as in the Mexican elder (*S. mexicana*), a tree. The common elder (*S. canadensis*) is a native of America particularly successful in wet soils. It bears clusters of white flowers and purple berries. Elderberry wine is made from the berries. The elders will grow in poor soil and offer an attractive covering for thin land. The red-berried elder (*S. racemosa*) is a native of America and with its good foliage and fine red fruits makes a favored ornamental. Elderberries are also used in medicine and in making perfumes.

Elecampane or **Horseheal** (*Inula helenium*). A tall roadside plant bearing large yellow flowers in late summer. It is a native of Europe and was brought to America for the supposed medicinal value of its

fleshy roots, which were formerly much used as a tonic and expectorant. It was also used as a medicine for horses, hence its name "horseheal."

Elm (*Ulmus* spp.). A valuable shade and lumber tree represented by a number of native species. Others are native to the Old World. The English elm (*U. campestris*) has been extensively introduced in the eastern United States. The white or American elm (*U. americana*) is a tall, graceful native species, common east of the Rocky Mountains. The slippery or red elm (*U. fulva*) has red wood and beneath the bark of the young shoots is a sweet, delectable substance that boys like to chew. The rock or cork elm (*U. Thomasi*) is a large northern species with very hard wood much sought by wheelwrights. The name "cork" refers to the corky bark of this species. The wahoo or winged elm is a southern species, small and dainty.

Endive (*Cichorium endivia*). A salad plant related to chicory, native to Europe but now grown in America. The curly, fringed or cut leaves are often tied together and blanched in the head to remove the bitter taste.

Eucalyptus (*Eucalyptus* spp.). A genus of the myrtle family including more than 300 species. The trees are native to Australia but have been planted around the world in warm areas. In southern California the blue gum (*E. globulus*), a very rapid grower, has been planted extensively as a windbreak for citrus groves. The eucalyptus grows tall and usually with a single stem. The bright leathery foliage combines to make a very graceful tree and one desirable for street planting. Eucalyptus oil is used in medicine.

Euphorbia (*Euphorbia* spp.). Any of the spurges, constituting a large genus of plants bearing attractive flower-like leaves and unusual tiny flowers and containing a milky juice. The flowering spurge (*E. corollata*) is a native of sandy areas in the eastern United States. It bears white flowers. Another species is commonly known as "snow-on-the-mountain" (*E. marginata*). It has attractive flower-like light green leaves and very small flowers.

Evening Primrose (*Oenothera biennis*). A field and roadside weed bearing fragrant, yellow flowers which open at evening. In late summer the flower stays open during the day. It is common throughout North America. The root and the tender crown leaves are edible.

Everlasting Flowers. Strawy annual flowers which are kept as decorations through the winter. Blooms should be cut before fully opened and dried by hanging upside down. Among those useful as everlastings may be included *Acroclinium*, *Helichrysum* (strawflower), *Rhodanthe* and *Xeranthemum* (immortelle).

Fennel (*Foeniculum vulgare*). A garden herb, native to southern Europe and now cultivated or found wild in many parts of the world. It is a member of the parsley family. In cultivation it is used, especially by the Italians and the French, as a seasoning and a salad, while the oil of the plant is used in soaps and perfumes. Fennel often becomes a troublesome pasture weed.

Ferns. In plant life the ferns are a group a step higher than the mosses. Ferns are the highest type of flowerless or seedless plants. There are over 6,000 ferns known, ranging from small climbing plants to tree-like plants fifty feet high. Reproduction is by means of spores instead of seeds. The leaves are properly called "fronds"; the stalks, "stipes," and the underground stems are known as "rhizomes." Ferns occur in the greatest variety and profusion in the moist soil of the tropics. Among the wild ferns are the maidenhair, Christmas, cinnamon, ostrich, royal and walking ferns. House ferns of importance are the Boston, dagger, maidenhair and holly ferns.

Fig (*Ficus* spp.). A large genus including the rubber plant (*F. elasticus*). The fig of commerce, which is grown for its edible fruit is *F. carica*, a native of Asia and now successfully imported and cultivated in southern California. The pear-shaped fruit ranges from green to blue-black and is eaten raw or dried. The banyan tree of India is another member of this genus. One of these remarkable trees with its aerial roots sometimes covers an acre or more of ground.

Fir (*Abies* spp.). This genus of evergreen trees contains pyramidal forms and needle leaves as do the spruces but differs in holding the ripe cones, which are borne near the top of the trees, erect. The firs have bark blisters which contain a resinous substance used in medicine and in the arts. The balsam fir (*A. balsamea*) is the typical Christmas tree and yields the Canada balsam of medicine. The fragrant leaves are often used to stuff pillows. Another balsam fir is *A. Fraseri*, a favored ornamental. The red fir (*A. magnifica*) of the West is a magnificent tree, often reaching a height of over 200 feet and a trunk diameter of as much as seven feet.

Flax (*Linum* spp.). A plant grown for its fiber and seed since ancient times, its origin being probably in Egypt or China. The common species (*L. usitatissimum*) is an annual which grows from one to over three feet in height, with narrow leaves and handsome flowers, usually blue, but white in some varieties. Fiber flax and seed flax are different cultivated developments of the same species. The same plant does not produce both good fiber and good seed. Linen cloth, thread and rope are manufactured from the fiber. The flat, brown seeds are commercially known as "linseed" and yield linseed oil, which is used in paint and varnish and in the manufacture of linoleum and printer's ink.

Fleur-de-lis. See Iris.

Forget-me-not (*Myosotis* spp.). A garden and wild flower of the borage family. The flowers are blue, pinkish or white with yellow eyes. A native of Europe and Asia, the forget-me-not is now found wild in the eastern United States where it prefers brooksides and low meadows. The flower has long been held as an emblem of friendship. The best known species is *M. scorpioides*.

Forsythia or **Golden Bell** (*Forsythia* spp.). A spring garden shrub which derives its name from its graceful bell-shaped flowers which appear before the leaves. The drooping forsythia (*F. suspensa*) is desirable for growing on steep terraces.

Four-o'Clock (*Mirabilis jalapa*). A garden flower imported from South America, also known as "marvel of Peru." The flowers open about four o'clock in the afternoon and stay open all night. It is a tender perennial with roots which may be stored indoors over winter. It is usually grown as an annual. The flowers are trumpet-shaped and in gay shades of red, yellow and white and striped.

Foxglove (*Digitalis* spp.). A stately garden flower three to five feet tall and bearing large, tubular ma y-colored flowers in spikes. The foxglove which grows along roadsides in England is famed in poetry.

Foxtail grass. A name applied to various northern grasses, mostly of wet soils. A cultivated species, the meadow foxtail (*Alopecurus pratensis*), is important in Europe but not in America. Two common species of weedy foxtails are found in our country, the yellow (*Setaria glauca*) and the green (*S. viridis*). These are injurious in grain fields.

Freesia (*Freesia refracta*). A winter-blooming house plant propagated from a bulb. The colors of the flowers include white, yellow, lavender and pink.

Fuchsia (*Fuchsia speciosa*). A house plant now grown principally in greenhouses. This native of South America is easily cultivated and is unexcelled for decoration. The plant has shiny leaves and brilliantly colored flowers in purples, reds, white and combinations.

Fungi. A thallophytic group of plants including the molds, rusts, smuts and mushrooms. They contain no chlorophyll and reproduce by spores. Since fungi cannot manufacture their own food, they are parasitic (living on, in or with another living organism, the "host") or saprophytic (living on dead or decaying organic matter). The fungi comprise a large number of classes, orders and families. Many of the mushrooms are edible, while others are poisonous. Many of the molds, rusts and smuts are highly injurious to their host plants. Many saprophytic fungi are beneficial.

Gaillardia or **Blanket Flower** (*Gaillardia aristata*). This native wild flower of the Western states is grown throughout the country as a garden flower. Some are annuals; others are perennials. The rather scant foliage is atoned for by the showy, daisy-like flowers of reds, yellows and browns.

Gardenia (*Gardenia* spp.). An attractive flower resembling the camillia, but more fragrant. The yellow bloom is a popular florist's flower. The cape jasmine, a hardy outdoor flower in the South and a greenhouse plant in the North, is a gardenia.

Garlic (*Allium sativum*). Native to southern Europe, garlic has been grown since ancient times and is mentioned in the Bible. The odorous bulbs are used, especially by the people of southern Europe, as a flavoring in cooking and the oil is used medicinally. In America the plant must be ranked as a troublesome weed, especially in wheatfields.

Gentian (*Gentiana* spp.). A large genus of blue, sometimes yellow-flowered wild flowers. The beautiful fringed gentian (*G. crinita*) responds to careful cultivation in the garden. It is now almost extinct wild. The yellow gentian (*G. lutea*) and the soapwort gentian (*G. saponaria*) are used medicinally for their roots. The closed or bottle gentian (*G. andrewsii*) is also cultivated in gardens. It has a peculiar mass of flowers shaped like a bottle.

Geranium. The cultivated house and garden flowering plants commonly known as geraniums, really are members of the genus *Pelargonium*. The true geranium is a wild flower. The common species (*Geranium maculatum*), also known as cranebill, is found in woods and shady roadsides and produces rose-purple flowers from April to July. The root is used medicinally. *Pelargonium* is a popular house plant, as it will grow in a warm, dry room with a minimum of attention. It should receive sunshine. The soil should not be too rich or the plant will go to foliage and produce few if any blooms. The cultivated geraniums are derived from species originally brought from South Africa.

Ginger (*Zingiber officinale*). A herbaceous plant which has been cultivated in its native land, Asia, for many hundreds of years. It is now grown extensively in the West Indies, especially in Porto Rico and Jamaica. The plant grows from an underground stem. The leaves and flowers are on different stalks. After flowering, the stalks wither and the pungent, aromatic rootstocks are dug and used, after grinding, as the ginger of commerce. Preserved ginger is made of the rhizomes while they are young and tender. The so-called "wild-ginger" (*Asarum canadense*) is an altogether different plant.

Ginkgo (*Ginkgo biloba*). A compact, erect tree, native to Japan, much used as a shade tree in cities where space is limited. The peculiar, fan-shaped deciduous leaves of the ginkgo, or maidenhair tree, are signs of identification. The fleshy fruits have an unpleasant odor. The Chinese roast and eat the kernels.

Ginseng (*Panax* spp.). A perennial plant native to China, esteemed very highly by the Chinese who use the roots as a medicine. The Chinese species (*P. ginseng*) is grown to a limited extent, but it is difficult to cultivate. The American species (*P. quinquefolium*), which grows wild in the eastern half of the United States and in Ontario and Quebec, is now being sold extensively to the Chinese. Although the root probably has some medicinal value, the Chinese mix much superstition with its use and pay fabulous prices for roots which bear resemblance to the shape of the human body.

Gladiolus (*Gladiolus* spp.). A genus of handsome garden plants of the iris family. They are propagated from corms, which are planted in the spring. The flowers vary from red to yellow to white through a range of delicate pastel shades.

Gloxinia (*Sinningia speciosa*). A handsome greenhouse plant with large, bell-shaped flowers in a variety of colors with dotted and blotched effects. Plants are propagated both from seed and tubers.

Godetia (*Godetia* spp.). A garden flower, a close relative of the evening primrose. The flowers are beautiful with large satiny petals and range in color from deep red to white. A popular godetia (*G. amoena*) is called the "farewell to spring."

Goldenrod (*Solidago* spp.). A perennial American wild flower embracing sixty species belonging to the composite family. The small heads of yellow flowers appear in autumn and brighten with a profusion of color, forests, fields and roadsides. The plant responds to cultivation and makes a good garden border. The goldenrod is often falsely accused of causing hay fever (see Ragweed).

Goldenseal (*Hydrastis canadensis*). A small herb, native to the eastern half of the United States, south of New England. It belongs to the crowfoot family and is a close relative of the larkspur. It is important for the medicinal value of its rootstocks which are used extensively both in the domestic drug trade and for export. The name is derived from the scars or "seals" on the root caused by the dying off of the stem at the end of autumn. A single greenish white flower appears in April but soon drops off. The bright red fruit resembles a raspberry. The rootstocks are yellow. The Indians formerly used the yellow juice as a war paint.

Gooseberry (*Ribes* spp.). A bush fruit of the saxifrage family and a close relative of the currant. The plant flourishes in the cooler temperate areas of our country. The gooseberry fruit is green, oval and sour until thoroughly ripe, when it turns to a light purple and becomes sweet. Both American and European varieties are cultivated in our country.

Gourd. Any of a number of plants related to pumpkins and melons, cultivated for their vines and for their fruits. The fruits often have hard shells and when dried and emptied of their pulp are sometimes used for dishes or drinking utensils.

Grape (*Vitis* spp.). An ancient vine fruit, mentioned in the Bible and cultivated as early as the Bronze Period. Grapes have been used most extensively for their juice and secondarily as fresh fruit and raisins. Grape culture in the United States embraces three types. On the Pacific slope the Old World, or vinifera varieties, rich in sugar and with easily detached seeds, are grown. This region produces half the grape crop of our country. The northern part of the country, east of the Rockies, produces the Labrusca or "slip-skin" varieties. The seeds are not easily removed from this type of grape. In the South Atlantic and Gulf states, Muscadine varieties, with large fruits and large seeds, are grown. Small seedless varieties of Old World grapes are preserved under the name "currants."

Grapefruit (*Citrus grandis*). A large fruit of a small tree of the citrus family, native of the Far East where it has been cultivated for 2,000 years. Horticulturally, the fruit is correctly known as the "pomelo." The name "grapefruit" is derived from the fact that the fruits are borne in clusters resembling bunches of grapes. In recent years the tree has been introduced and extensively grown in Florida and California, and the fruit is in high demand as a breakfast fruit and in salads. The shaddock is a tree and its fruit botanically identical with the grapefruit but horticulturally different. The fruit is coarse and practically inedible.

Grasses. A name used botanically to include the members of the *Gramineae* family, usually with hollow stems, alternate leaves and bearing fruit known as "grain." True grasses include timothy, millet, sugarcane, wheat, rye, oats, corn and barley. Inaccurately, the grasses are said to include all forage plants.

Guava (*Psidium guajava*). A tropical shrub or small tree of the myrtle family with fragrant white flowers and a yellow, mildly acid fruit about the size of a hen's egg. The color of the flesh is white to deep pink. A jelly made from the fruit is important in commerce. The fruit is also eaten fresh and in jam. The guava is native to Mexico and the country south to Peru. It has been introduced into California and Florida.

Gum. Any of various tasteless, shapeless substances exuded by plants and which are soluble or soften in water. Gum arabic is a red to straw-colored gum obtained from either of two acacias. Cherry trees and plum trees often exude a gum that is used in stiffening straw goods.

Gypsophila or **Baby's Breath** (*Gypsophila* spp.). A garden and florist's plant with numerous tiny white to light pink flowers borne on feathery stalks. Although usually grown as a perennial, there is an

annual species (*G. elegans*) which blooms within six weeks of sowing seed. The flowering sprays are principally used in bouquets.

Hackberry (*Celtis* spp.). A tropical and temperate zone tree related to the elm. Species native to North America are found east of the Rocky Mountains. They attain the greatest size in the Mississippi Valley where they often reach a height of 125 feet. The bark carries thick ridges set with little elevations or "hacks." The berries often hang on during the winter and are much sought by birds. The common hackberry (*C. occidentalis*) is an ornamental shade tree and easily transplanted. The sugarberry (*C. mississippiensis*) is a favorite street tree of the Southern States. The European nettle tree (*C. australis*) bears a sweet fruit and is said to have been the "lotus" of classical literature.

Hawkweed (*Hieracium* spp.). This wild flower which has become a troublesome weed is named after *hierax*, the hawk, because people used to think hawks swooped down to sharpen their eyesight with leaves of the plant. The orange hawkweed, or devil's paintbrush (*H. aurantiacum*), is a weed in pastures of the northeastern United States. The yellow hawkweed (*H. pratense*) is a pest in the states of Virginia, West Virginia and western North Carolina.

Hawthorn (*Crataegus* spp.). Shrubs and trees of the rose family and relatives of the apples and plums. The genus is large and most American species occur east of the Rocky Mountains. The hawthorns are usually spiny and bear clusters of white to pink flowers. The small, applelike fruits are most frequently red, sometimes yellow, blue or black. The English hawthorn (*C. oxyacantha*) has long formed hedgerows in England. The scarlet, black, and red hawthorns are prominent American species.

Hazelnut (*Corylus* spp.). A small genus of shrubs and small trees of the birch family. The hazelnut is a toothsome, rich, oily seed, commonly sold around Christmas time. The common hazelnut (*C. americana*) is found from Kansas eastward. The beaked hazelnut is found in the northern part of our country, west to Kansas. A California species, *C. californica*, is native to the Pacific coast. The filbert is the nut of the European species, *C. avellana*.

Heliotrope (*Heliotropium* spp.). Herbaceous shrubs of the borage family, used mainly as a bedding and window plant. Originally the flowers were purple but now there are shades ranging from purple to white. The more the plant is cut back, the more it blooms.

Hellebore, American (*Veratrum viride*). A poisonous plant of the lily family, widely distributed over North America. It sometimes grows to a height of seven feet and is noticeable with its large, shining plaited leaves and yellowish or whitish-green flowers in spike-like panicles. All of the plant is more or less poisonous and the roots especially so. The roots are used in medicine. Other hellebores (*Helleborus* spp.) are early blooming perennials of the buttercup family.

Hemlock (*Tsuga* spp.). A genus of evergreen trees represented in North America by four species. This graceful pyramidal conifer is often grown in damp places as an ornamental. The common hemlock (*T. canadensis*) occurs from Nova Scotia to Alabama and west to Minnesota. The wood is used for lumber, but it is splintery; the bark is valuable for its tannic acid, used in tanning leather. The western hemlock (*T. heterophylla*) of the Western States is a large tree. Its lumber is valuable and the bark is used for tanning.

Hemp (*Cannabis sativa*). A cultivated fiber plant of the mulberry family, native to Asia, dating back to the twenty-eighth century B.C. The greenish-yellow flowers are small and inconspicuous. The staminate and the pistillate flowers are borne on different plants. Hemp grows to a height of from four to twenty feet. Hemp is extensively grown in Asia and Europe. It was introduced into America by the early colonists, but in recent years its production has declined, due to the increase in competitive fibers. In the United States hemp is used for twines, cordage and coarse threads.

Henequen (*Agave fourcroydes*). A fiber plant of the amaryllis family, used in making binder twine. It is cultivated in Mexico and the West Indies. The fiber is obtained from the long gray-green leaves.

Hepatica (*Hepatica triloba*). A forest and hillside wild flower of the crowfoot family. It blooms even under the snow of late winter and is an early announcer of spring. The flowers range from pale blue to pinkish or white. Because of the resemblance of the leaves to the human liver, the hepatica is commonly known as "liverleaf."

Hibiscus. A genus of large-flowered plants of the mallow family. The swamp rose mallow (*H. moscheutos*) is found in brackish marshes, but it will grow in the garden. Its large rose pink to white flowers are sometimes ten inches in diameter. This species is a hardy perennial grown chiefly along the Atlantic seaboard. The Rose of China (*H. rosasinensis*) has a showy scarlet flower which stains black. It is used by Chinese married women to stain their teeth, and in the West Indies for blacking shoes.

Hickory (*Carya* spp.). All the hickories are native to the eastern half of North America and have been propagated in other sections. The tough, close-grained wood is valuable in making implements and tools and provides excellent fuel. The nuts of many of the species are prized as food rich in protein. The shagbark or shellbark hickory (*C. ovata*) is so named from its ragged looking trunk. The nuts of this species are the familiar hickory nuts of commerce. A larger shell but not materially larger kernel is produced by the big shellbark (*C. laciniosa*). The pecan (*C. pecan*) is a hickory which sometimes attains a height of 170 feet. It produces the best nut of any of the genus, and, by breeding, a number of desirable thin-shelled varieties have been developed. The home of the pecan is the Mississippi Valley. Among the hickories with undesirable nuts are the mockernut (*C. alba*), the pignut (*C. glabra*) and the bitternut (*C. cordiformis*). These latter trees are important for their lumber, however.

Holly (*Ilex* spp.). A large genus of trees and shrubs scattered over the world. The European holly (*I. aquifolium*) and the American holly (*I. opaca*) are popular as Christmas decorations. The red berries and the glossy green leaves are very attractive. The European holly is used for hedges and borders. The American species with its beautiful white wood is sought by the wood engraver. Two interesting species of Paraguay holly are known as "maté." The leaves are brewed into a tea known as "yerba maté," widely used by South Americans.

Hollyhock (*Althaea rosea*). A tall unbranching garden plant of the mallow family with flowers ranging from rose and purple to white and yellow, both single and double. Although usually perennial, annual varieties have been developed. In Egypt the leaves are used in cookery.

Honey Locust. See Locust.

Honeysuckle (*Lonicera* spp.). A large genus of shrubs and climbing plants of the honeysuckle family, noted especially for the fragrance of blossoms. The Tartarian honeysuckle (*L. tatarica*) of Asia, is cultivated extensively. It is a large shrub and bears pink flowers and bright red berries. A good bush honeysuckle is Morrow's (*L. Morrowii*). It is a large hardy shrub. The fragrant honeysuckle (*L. fragrantissima*) is an early species and bears creamy white flowers. The climbing trumpet honeysuckle (*L. sempervirens*) is a favorite, with bright scarlet and yellow flowers. Hall's honeysuckle (*L. Halliana*) is a rampant grower and often escapes from cultivation and runs wild.

Hop (*Humulus lupulus*). A perennial vine of the nettle family which grows conelike fruiting catkins composed of leafy bracts surrounding the female flower cluster and known as "hops." The hops contain a resinous substance used in brewing. Staminate and pistillate flowers are produced on separate plants. Most of the hops of the United States are produced in California, Oregon and Washington. The Japanese hop is grown as a decorative garden plant. It does not produce hops.

Horehound (*Marrubium* spp.). A genus of perennial herbs of the mint family, native to the Mediterranean region but now found wild all over the world. An extract of the plant is used in candies and sirups for its medicinal value especially as a cough remedy. The name is derived from the "hoary" appearance of the down-covered leaves. Small white flowers occur in clusters on the leaf axils.

Horse Nettle (*Solanum carolinense*). An American weed, closely related to the potato. It spreads rapidly by underground stems. The plant bears thorns on the stem and leaves. The flowers are bluish and they are followed by orange berries.

Horse Radish (*Rorippa armoracia*). A perennial of the mustard family, grown for its pungent root which is used grated as a condiment. It is a native of Europe but has become naturalized in America. Propagation is easily accomplished by planting root cuttings.

Horsetail (*Equisetum* spp.). A genus of plants related to the ferns. They are flowerless and bear spores. There are two growths—a summer vegetative one and in the spring a fruiting growth which bears the spores. The common horsetail (*E. arvense*) is poisonous to horses but not to cattle or sheep. The plant is laden with silica and was used in earlier days for polishing and cleaning metal and wood, hence the name "scouring rush."

Horseweed (*Erigeron canadensis*). An annual of the composite family, which is often troublesome as a weed, especially in mint fields in Michigan. The plant ranges in height from a few inches to huge stalks higher than a man.

Huckleberry (*Gaylussacia* spp.). Although properly confined to species of *Gaylussacia*, the term huckleberry is often made to include the blueberry (*Vaccinium* spp.), especially in the Southern and Middle Western States. Huckleberries contain ten noticeable seeds. Blueberry seeds are numerous but so small as not to be important. Both berries belong to the heath family. The huckleberry bears reddish flowers and glossy, black berries. Its range is from Newfoundland to Georgia and west to Wisconsin and Kentucky.

Hyacinth (*Hyacinthus orientalis*). A fragrant house and garden flower of the lily family. Propagation is from bulbs. Two well-known groups are the Dutch and Roman types. The Dutch hyacinths are more stiff and formal; the Roman are smaller flowered and with several spikes of bloom from each bulb. Colors of flowers cover a wide range, including red, white, blue, mauve and yellow.

Hydrangea (*Hydrangea* spp.). A genus of ornamental flowering shrubs of the saxifrage family bearing great heads of bloom. The hardy hydrangea (*H. paniculata grandiflora*) is very common. Its flowers are white. The tender hydrangea (*H. opuloides*) is a dwarf and flowers early in greenhouses. Flowers range from white to pink and light blue.

Iceland Moss (*Cetraria islandica*). An edible lichen resembling moss in appearance. It is found in abundance in northern countries where it is used for food. It is dried and made into a bread. It is also used in making paper and cloth.

Indian Pipe (*Monotropa uniflora*). A colorless plant, either parasitic or saprophytic, found in rich, moist forests. The nature of the plant has led to its being called "corpse plant" and "ghost flower." The flower is borne on a stalk four to ten inches high. When the fruit is formed the hanging flower head straightens to an upright position.

Indigo (*Indigofera* spp.). A plant of the pea family, native to Asia and grown in tropical countries for the blue dye which is extracted from the cut plants by steeping in water. After the water treatment indigo crystals are secured by evaporation. The use of indigo as a dye has declined due to the increased use of aniline dyes. The distinctive color of indigo has led to many uses of the name, for example, as the name of one of the colors of the spectrum; also there may be noted the indigo bird and the indigo weed.

Ipecac (*Uragoga ipecacuanha*). A creeping plant of tropical South America. It is used medicinally for the drug which is extracted from the root of the plant. Combined with opium ipecac forms Dover's powder, an anodyne diaphoretic (a soothing agent causing perspiration).

Iris (*Iris* spp.). A garden plant with beautiful lily-like flowers of various colors. The name means "rainbow" and refers to the range of colors of the flowers. The iris is also known as the fleur-de-lis, or "flower of the lily." Some irises have bulbs and others have thick underground stems. Some flowers are bearded, while others are plain. Among the important irises are the common blue flag (*I. versicolor*), the Western blue flag (*I. missouriensis*), English iris (*I. xiphioides*), Japanese iris (*I. laevigata*), tall bearded iris (a group of hybrids) and the dwarf bearded iris (*I. pumila*).

Ironweed (*Vernonia* spp.). A wild flower of the composite family, common throughout the United States from the Dakotas and Texas eastward. With its reddish-purple flowers it is sometimes mistaken for an aster. The ironweed is a troublesome pasture weed and with its prodigious seed-producing ability rapidly takes possession of the land if not controlled.

Ivy. In America the name is commonly used for the woodbine (Virginia creeper) or the Boston or Japanese ivy, species of *Psedera*. The English ivy (*Hedera helix*) does not thrive in America except along the southern Atlantic slope. Poison ivy (which see) belongs to the sumac family. Ground ivy belongs to the mint family.

Jack-in-the-Pulpit (*Arisaema triphyllum*). A wild flower of the arum family, found in woodlands in eastern North America. The stem rises from a corm or turnip which was eaten by the Indians. Small greenish-yellow flowers are borne at the base of a club-like spadix or "jack." A hooded spathe surrounds the spadix and curves over at the top, making the sounding board over the "pulpit." The Indians also cooked the red berries and ate them.

Jasmine or **Jessamine** (*Jasminum* spp.). Erect or climbing shrubs of the olive family, grown as hardy plants in the Southern States and in greenhouses in the North. *J. nudiflorum* is an early bloomer with bright yellow flowers. *J. officinale* has fragrant white flowers. The common yellow jasmine, a favorite climbing evergreen of the South belongs to another genus and is scientifically recorded as *Gelsemium sempervirens*. As already mentioned, the cape jasmine is a gardenia.

Jewelweed or **Touch-me-not** (*Impatiens biflora*). A wild flower found in moist places throughout our country, except in the Southwest. The orange flowers marked with brown hang like jewels. The seedpods pop open at the touch and eject their contents over a radius of several feet.

Jimson Weed (*Datura stramonium*). A poisonous plant of the nightshade family found throughout North America. In Asia and Europe the plant has long been esteemed for medicinal uses, the seeds yielding an alkaloid. Large white trumpet-shaped flowers are followed by a prickly egg-shaped seed pod, which has led to the name of "thorn apple."

Joe-Pye Weed (*Eupatorium purpureum*). A wild flower which is found in moist meadows and woodlands throughout eastern North America. It belongs to the composite family and is a relative of the ironweed. The purple flowers are sought by insects for their nectar. Joe-Pye was a New England medicine man who claimed to cure typhus fever with a remedy made from this plant.

Jonquil. See Narcissus.

Judas Tree. See Redbud.

Jujube (*Zizyphus* spp.). Shrubs or trees of the buckthorn family, native to the area east of the Mediterranean Sea. The jujube is cultivated for its edible fruit which is about the shape and size, or larger, than that of the olive. The fruit is eaten raw or dried. The trees are ornamental. The jujube has been introduced to a limited extent in our Southern States.

Juniper (*Juniperus* spp.). A large genus of evergreen trees with berry-like cones, belonging to the pine family. The junipers include certain trees that are commonly called cedars, for example the red cedar (*J. virginiana*) of the eastern United States. This

tree is valuable for its wood which is used in making lead pencils and for posts and railroad ties. Juniper wood is used in making so-called "cedar chests." The dwarf or common juniper (*J. communis*) varies from a shrub to a tree of thirty feet. The Western juniper (*J. occidentalis*) is found growing at elevations of from 7,000 to 10,000 feet. It attains a trunk diameter of ten feet and specimens are known which are over 2,000 years old. The red juniper (*J. barbadensis*) is a handsome tree with a drooping leaf-spray resembling ferns and with silvery white berries.

Jute (*Corchorus capsularis*). An annual of the linden family. *C. capsularis* and *C. olitorius* are commonly called jute and together produce a vast amount of bast fiber, second in use only to cotton fiber. The commercial supply is grown in northeastern India where about 3,000,000 acres are given over to its cultivation. Jute is made into twine, cordage, burlap and bagging. Damaged and worn-out jute product is used for oakum and in paper making.

Kafir. A South African grain sorghum now grown extensively in the United States as "Kafir corn." The seeds are used like shelled corn, especially as poultry feed. The stalks make good forage and ensilage. See Sorghum.

Kale. A headless, curly-leaved variety of the cabbage species grown for winter greens and as food for stock. Another name for the plant is borecole, meaning "husbandman's cabbage."

Kalmia. See Laurel.

Kapok tree (*Ceiba casearia*). The kapok silk-cotton tree is a native of tropical America now grown principally in Java. The seed pods yield an elastic fluffy silky fiber which is buoyant in water. It is not good for spinning. The principal uses of the fiber are for stuffing life preservers and for filling mattresses and comfortables.

Kelp. See Algae.

Kohlrabi. (*Brassica caulorapa*). A vegetable grown for the edible enlarged swelling of the stem which appears just above the ground. This enlarged part of the stem bears a number of leaf stalks.

Kudzu (*Pueraria Thunbergiana*). A leguminous vine, imported from Japan and grown in the United States as a forage plant. Purple flower clusters are occasionally produced, though the plant rarely blooms.

Kumquat (*Fortunella* spp.). A small ornamental citrus tree, native to the Orient and now grown in Florida and California. The flowers are small, white and fragrant. The fruit is about the size of an olive but like an orange in color and structure. The entire fruit is eaten raw, or it may be preserved or candied.

Lady's Slipper (*Cypripedium* spp.). Wild flowers of the orchid family. Several species are natives of North America. The pouch-like lip of the corolla, resembling a shoe, has given the name "lady's slipper" or "moccasin flower" to this plant. The stemless lady's slipper or moccasin flower (*C. acaule*) is a well-known white or pink species which has been chosen as the state flower by Minnesota. The showy lady's slipper (*C. spectabile*) has hairy leaves and large white flowers marked with red. The large yellow lady's slipper or yellow moccasin flower (*C. pubescens*) can easily be naturalized in the home garden.

Larch (*Larix* spp.). Conifers of the pine family. The larches are not evergreen, and shed their leaves in the autumn. These trees prefer cool, moist regions and are found throughout the North Temperate Zone. Small cones are borne erect and leaves are in clusters on short spurs on the twigs. The trees are ornamental and the wood is good for telegraph poles, railroad ties and fuel. The tamarack, or American larch (*L. laricina*), is a useful tree for its wood. The Western larch (*L. occidentalis*) is perhaps the finest of the larches. It attains a height of 200 feet and a trunk diameter of six feet.

Larkspur (*Delphinium* spp.). Wild and garden flowers of the crowfoot family, noted for their handsome flowers. The spurred calyx has given the flower its common name. Wild larkspurs in our Western states have proved poisonous to livestock. As a garden plant there are annuals and perennials. Commonly, the name "larkspur" is reserved for the annuals and the perennials are called *Delphiniums*. The name *Delphinium* is derived from "dolphin" because the buds were said to resemble this animal.

Laurel. A name applied not only to shrubs and trees of the laurel family, but also to some of the heath family. The laurel of history or the sweet bay (*Laurus nobilis*) is a famous Old World species. The California laurel (*Umbellaria californica*) is a handsome tall tree with lustrous, evergreen leaves and is valuable as a cabinet wood. The red bay (*Persea Borbonia*) is a native tree of our Southern states and a worthy cousin of *L. nobilis* of Europe. The avocado, or alligator pear, (*P. gratissima*) is a wild laurel of Mexico and South America which has been developed into an important fruit tree. The fruit is a favorite as a salad. The sassafras is the only remnant of an old genus of the laurel family. The mountain laurel (*Kalmia latifolia*) of our Eastern states belongs to the heath family. This beautiful evergreen bears handsome flowers in great clusters of rosy pink. It is the state emblem of Connecticut. *K. angustifolia* is sheep laurel, or lambkill.

Lavender (*Lavandula* spp.). A genus of shrubs of the mint family. The common species (*L. vera*) is grown commercially in Europe for its oil which is used medicinally and as a perfume. The plant is grown to a limited extent in American gardens. The flower is small and pale blue; it will remain fragrant if dried.

Leek (*Allium porrum*). A biennial of the lily family, resembling the onion but milder to the taste. It has a smaller bulb than the onion and a thickened stem. In cookery, the leek is more popular in Europe than in America. It has for a long time been the floral emblem of Wales.

Lemon (*Citrus limonia*). An evergreen tree and its light-yellow acid fruit, related to the orange. The lemon is a native of Asia and was cultivated in India thousands of years ago. Lemons are grown today in the subtropical portions of Asia and Europe and in America, especially in California. Besides the fruit, which is widely used for its juice, valuable by-products include citric acid and lemon oil.

Lentil (*Lens esculenta*). A member of the pea family, grown in Europe, Asia and Egypt for its lens-shaped seeds, which are used for food. It is said that the red pottage mentioned in the Bible story of Esau was a dish of red lentil seeds. The lentil has never become popular in America, though some varieties have been cultivated in the Southwest. The lens derives its name from the lentil whose seed is flat and convex on both sides like the typical double lens.

Lettuce (*Lactuca sativa*). The most important salad plant and extensively used also for garnishing. It is a member of the composite family and is a native of the regions around the Mediterranean Sea, where it has been grown for hundreds of years. Lettuce is grown all over the world in warm and temperate climates in gardens. It constitutes the most important greenhouse vegetable in autumn and winter. Although not high in nutritive qualities, lettuce is valuable for its vitamin content. Many varieties are cultivated. Three types are known—leaf, head and Cos, or Romaine.

Lichens. Lichens consist of two plants, one a fungus and the other an alga, living together in a relationship known as "symbiosis." The work of the alga is to provide food, while the fungus absorbs water and offers protection to the alga. Lichens occur on boulders, on bark, and in the polar regions such forms as Iceland moss (which see) and reindeer moss form important articles of food to man or beast. Litmus dye is obtained from lichens.

Licorice (*Glycyrrhiza glabra*). A European plant of the pea family, with blue flowers, cultivated for its roots which yield the licorice used in candies, for flavoring medicines, in making certain soft drinks and in flavoring plug tobacco. Licorice culture has never flourished in this country and our supply is imported. The wild licorice (*G. lepidota*) found in the United States is a related species. It is sought by children who chew its roots. It lacks, however, the characteristic sweetness of the European species.

Lignum-vitae (*Guaiacum* spp.). Any of a genus of tropical trees of the bean caper family, important for their heavy, hard, oily wood which sinks in water. Gum guaiacum, used in medicine, is extracted from the wood. A species (*G. sanctum*) is found in Florida.

Lilac (*Syringa* spp.). An old-fashioned shrub of the olive family, found widely in all climates. The plant is a native of Asia and Europe, but is found growing half wild throughout the northeastern United States. The common lilac (*S. vulgaris*) bears purple flowers. The white lilac (*S. vulgaris alba*) has very fragrant flowers and is a favorite for planting. The Japanese lilac grows to the size of a small tree, but the flowers are not fragrant.

Lily (*Lilium* spp.). A genus of bulbous plants with scattered leaves and showy flowers. A number of species are native to the United States. The white Madonna lily (*L. candidum*) has fragrant, pure white, trumpet-shaped flowers. The Eastern lily (*L. longiflorum*) is less successful outdoors, but is used almost entirely for forcing in pots. Other species include the gold-banded (*L. auratum*), the regal (*L. regale*), the scarlet Turk's-cap (*L. chalcedonicum*) and the well-known tiger lily (*L. tigrinum*).

Lily-of-the-Valley (*Convallaria majalis*). A low perennial bearing small, white, globular flowers on long graceful flower stalks. It is commonly grown on the north side of the house, though it will flourish in the sunshine. A poisonous alkaloid, convallarin, is extracted from the juice of the plant.

Lime (*Citrus aurantifolia*). An evergreen tree related to the lemon, grown for its small, greenish-yellow acid fruit which is used for its juice in drinks and as a flavoring. Limes grow wild in the tropics and cultivated varieties are grown for commerce. Our supply comes principally from the West Indies and Mexico, though some are produced in the Florida Keys. Citric acid is obtained as a by-product.

Linden. See Basswood.

Litchi (*Litchi chinensis*). A long-lived tree of China bearing a fruit which is sold in this country as the "litchi nut." The dried fruit has a rough, brittle outer coating. The inside fruit is shrunken and resembles a raisin in appearance and has a pleasing subacid taste.

Live-forever (*Sedum purpureum*). A member of the stonecrop family, naturalized in the Alps region and brought to America later. Originally a garden plant, it has become a troublesome field plant. The name is derived from the fact that shoots or cuttings preserve their vitality a long time and will easily take root and grow. Small purple flowers are borne on the ends of shoots. There are many other Old World species.

Liverworts. Spore-bearing plants resembling mosses. They grow in wet places.

Loco Weed (*Oxytropis Lamberti* and *Astralagus* spp.). Various plants, all members of the pulse family, which produce a nervous affection of livestock, especially horses, often causing death. The white loco, or rattleweed (*O. Lamberti*), is the most widely distributed. The purple loco, or woolly loco (*A. mollissimus*) is especially prevalent in Texas. The blue loco (*A. diphysus*) is found throughout the Southwest. Animals, after eating loco weed, lose weight, stop eating and drinking and die of starvation.

Locust (*Robinia* spp.). Forest trees of the pea family, with showy pea-like flowers and leaves that droop and close at nightfall or upon the approach of rain. The fruits are thin pods. Thorns grow on the trunks and twigs. The common locust consists of two forms not different botanically (*R. pseudacacia*); one is the yellow and the other the black, so called from their yellowish and brown woods. The clammy locust (*R. viscosa*) with pink flowers is a favorite ornamental.

The honey locust (*Gleditschia triacanthos*) is not properly a locust, but it is a member of the pea family. Its pods, in addition to the seeds, contain a sweet, gummy pulp which small boys like to eat. The tree is also very thorny.

Loganberry. A bramble fruit, now considered a variety of climbing blackberry. It bears a long purplish berry, acid until fully ripe. The plant grows in the Pacific Northwest. It is used fresh, dried and canned.

Loquat (*Photinia japonica*). An evergreen tree of the rose family, a native of China and Japan and now grown in our country in the Gulf states and in California. The tree grows to a height of about twelve feet. Fragrant white flowers are produced in the autumn and in the spring pearlike or round fruits yellowish in color. The large seeds are sometimes used in cookery. The fruit is used for pies, jams and jellies, and may be eaten raw.

Lotus. A name given by the ancients to various plants, especially jujube trees, whose fruits were eaten as food. The name was also given to several nymphaeaceous plants, including the blue water lily and the Nile water lily. In America, the yellow water lily (*Nelumbo lutea*) is called the lotus.

Lupine (*Lupinus* spp.). Plants of the pea family named after *lupus*, the wolf, because they were said to prey on the soil. Although found in the eastern sections, they occur principally in the western United States. The ancients grew lupines and ate their seeds. In America, the lupines produce poisonous seeds, resulting often in the death of livestock. The flowers are usually blue or purple, but sometimes white or yellow. Lupines are also grown as garden flowers. The blue bonnet, state flower of Texas, is a lupine.

Madder (*Rubia tinctorum*). A European herb with small yellowish flowers. Its root is used in making a red dye.

Madroña (*Arbutus menziesii*). A small evergreen tree or shrub of the heath family, native to the Pacific coast region of North America. It bears edible orange-red fruits called "madrona apples." The wood is used to make a charcoal used in the manufacture of gunpowder.

Magnolia (*Magnolia* spp.). A genus of trees and shrubs with aromatic bark and large white, pink or purple flowers. Magnolias have the largest flowers of any cultivated trees. The blossoms often measure a foot across. The petals are thick and waxy. The foliage helps also to make the magnolias preferred ornamentals. The large-leaved umbrella tree (*M. macrophylla*) is one of the best known of the umbrella trees. The flowers resemble those of the water lily. The sweet bay (*M. glauca*) of the southeastern United States is less ornamental, but its wood is valuable. *M. grandifolia* is the state flower of Louisiana and Mississippi.

Mahogany (*Swietenia mahagoni*). A tree of tropical and subtropical countries, found to a limited extent in Florida Everglades. The principal producing countries are Mexico, Central America, West Indies and Africa. The timber is valuable for furniture. It is reddish brown, of uniform grain and color and takes a high polish. It is used extensively for cabinet work and for veneers.

Mandrake or **May Apple** (*Podophyllum peltatum*). A herb of the barberry family, found in rich, moist woodland in the eastern United States and in Japan. All parts are poisonous, except the yellowish, lemon-shaped fruit, which is often eaten by children. This practice should not be encouraged as illness may result.

Mangel-wurzel (*Beta vulgaris macrorhiza*). A plant of the beet family grown for its long root which is used as a succulent food for livestock. It grows best in cool climates and is produced in the northern United States and Canada.

Mango (*Mangifera indica*). An evergreen tree, native of southern Asia where it has been cultivated since ancient times for its fruit. The tree belongs to the sumac family and is related to the pistachio nut. The flowers are yellow or reddish and the fruit is yellowish and variable in shape and weighs, in the better varieties, up to four pounds. The fruit is eaten raw and, when partly green, is used for pickles and sauces. The seeds are roasted and eaten by the people of the tropics.

Mangrove (*Rhizophora* spp.). A tropical and sub-

tropical tree with characteristic aerial prop roots. It grows in low, muddy flats. The seeds sprout before leaving the parent plant and thus are able to take up their peculiar separate existence. The trees attain a height of seventy-five feet and often reach a diameter of three feet or more. The red mangrove is best known. Other species are the white and the black.

Manila Hemp. See Abaca.

Manzanita (*Arctostaphylos* spp.). Shrubs or small trees of the heath family, with white or pink flowers and fruits somewhat resembling little apples, hence the Spanish name *manzanita*, or "little apple." A number of species are found in the mountains of California.

Maple (*Acer* spp.). A genus of trees widely distributed over the Northern Hemisphere with one species growing in Java. The maple yields a pale, fairly hard wood and a clear sap which is often made into maple sugar. The maples bear opposite, simple leaves, palmately veined and lobed. The fruits are two samaras, compressed and drawn out into large thin wings, each containing a single seed. The original home of the maple is in the Far East.

The Norway maple (*A. platanoides*) and the sugar maple (*A. saccharum*) resemble each other, and the black maple (*A. nigrum*) is much like the sugar maple. The two latter are common species of eastern America. The red (*A. rubrum*) and silver (*A. saccharinum*) maples are known as soft maples; they grow in low moist lands. The box elder, or ash-leaved maple (*A. negundo*), is marked by its compound leaves; it grows from Vermont to Manitoba south.

Marigold (*Tagetes* spp.). Old-fashioned garden flowers with yellow blossoms, varying in some to brownish. The African marigold (*T. erecta*) is a tall type. The French marigold (*T. patula*) is a dwarf with flowers of a velvety cast. *T. signata pumila* is another dwarf with an abundance of small golden flowers.

Marjoram, Sweet (*Origanum majorana*). A European herb of the mint family grown in our country. It is cultivated for its flowers and stems, which have a pleasant flavor when used as a seasoning in cookery. The oil is used in soaps and perfumes.

Marsh Marigold (*Caltha palustris*). A lowland plant of the crowfoot or buttercup family. It is not a marigold and bears no resemblance to the true marigolds. It is a native wild flower of the eastern United States. The flowers are bright, shining yellow. The edible leaves are often used as greens.

Mayweed (*Anthemis cotula*). A weed of the composite family occurring throughout North America along roadsides and in dry or sandy areas. The flowers are small and resemble daisies. Another species, the garden camomile (*A. nobilis*), is made into an aromatic tea, said to be a blood purifier.

Medlar (*Mespilus germanica*). A small European tree cultivated for its fruit which is related to the apple and pear. It has not been cultivated to any degree in the United States. The fruit is mainly used in making preserves, as it is acid, hard and somewhat gritty.

Mesquite (*Prosopis* spp.). Trees and shrubs of the pea family, native to the Southwest and especially abundant in Texas. The hard, close-grained, reddish wood is prized for fence posts, railroad ties and fuel. The beans are eaten by man and beast, and the green shoots serve as excellent cattle food. The common mesquite (*P. juliflora*) has long pods and the screw-bean or screw-pod has spirally twisted pods. The very long woody roots are often pulled out by teams or machines and used for fuel.

Mignonette (*Roseda odorata*). Mignonette, or "little darling" is a garden flower grown for its fragrance. Normally a small plant, it has been improved and the size of the plant and the dense spikes of flowers much enlarged, but at the expense of loss of fragrance. The Romans used the flower to treat bruises.

Milkweed. Any of various plants which yield a milky fluid when injured. More than 1,900 species of the milkweed family (*Asclepiadaceae*) have been determined. The common milkweed, or silkweed (*Asclepias syriaca*), is common in the United States and Canada. The flowers are greenish purple pink or brownish pink. The pods contain a downy silk. The orange milkweed, or butterfly weed (*Asclepias tuberosa*), is distinguished by its brilliant clusters of bright reddish orange flowers. As the name suggests, this flower is a prime favorite of the butterflies. The group of whorled milkweeds differ from the common milkweeds in having narrow, whorled leaves. Many of the milkweeds are poisonous and, wherever abundant, they are among the troublesome weeds. See Butterfly Weed.

Millet. Any of various annual grasses used in our country principally as forage plants or for poultry feed. In the Old World millets are grown extensively for their seed which is used for human food. The leading groups include foxtail millet, pearl millet, broomcorn millet, barnyard millet and ragi millet. In the United States, foxtail millet (*Chaetochloa italica*), an immigrant from Asia originally, is the most common, although production has declined in recent years. Broomcorn millet has a brushy head and is cultivated mostly for the grain, which is fed to poultry. Ragi millet is an important crop in India, where it forms an important item of food among the lower classes.

Mints (*Labiatae* or *Menthaceae*). A large family of aromatic herbs, the members of which easily mix, making classification difficult. Included are such familiar species as peppermint (*Mentha piperita*) and spearmint (*Mentha spicata*), both of which yield important commercial oils. True pennyroyal is a European plant (*Mentha pulgeium*) of similar fragrance to the American pennyroyal (*Hedeoma pulegioides*). Both are used in salads and for seasoning and tea. Other mints include lavender, sage, marjoram, thyme, basil, rosemary and horehound.

Mistletoe (*Phoradendron* spp. and *Razoumofskya* spp.). Parasitic plants which grow on trees. The mistletoe sends suckers into the tree for water and mineral food, and makes its own sugars and starch with its chlorophyll equipment. The plant has fleshy, evergreen leaves and white berries. The southern, or leafy, mistletoes belong to the genus *Phoradendron* and occur on deciduous trees and occasionally on evergreens. The dwarf mistletoes are of the *Razoumofskya* genus and are found on various evergreen trees. Mistletoe is principally used as a decoration for Christmas festivities.

Moneywort (*Lysimachia nummularia*). A handsome trailing, perennial wild flower which is often a troublesome weed in lawns and pastures. It belongs to the primrose family. The flowers are golden-yellow.

Moonflower (*Calonyction pandurata*). A climbing plant of the convolvulus family and related to the morning glory. It is a night bloomer; the flowers are flatter than those of the morning glory, white with purple throats. It is commonly grown as a shading vine for porches. In fields it often becomes a troublesome weed.

Morning Glory. Various plants of the convolvulus family, of which the chief members belong to the genus *Ipomoea*. The common morning glory (*I. purpurea*) is grown as a garden flower. Both single and double varieties are cultivated. A Japanese variety has unusually large leaves and blossoms. A worth-while garden flower is the blue-flowered *Coerulea superba*.

Mosses (*Musci*). A class of the Bryophytes, having small leafy or tufted stems which bear sex organs, just below the ferns in the plant kingdom. Mosses occur all over the world, but are especially numerous in cold regions. There are three principal divisions of the mosses. The *Sphagnum* forms, including peat mosses, occur in wet areas. The *Byrales*, or true mosses, and the *Andreaea*, or rock mosses are the other divisions.

Mountain Ash (*Pyrus* spp.). A group of small trees of the rose family and closely related to the apple. They are called ashes because of the resemblance of their leaves to those of the true ashes. The foliage is almost fern-like in delicacy. The fruits are brilliant orange-scarlet berries, which are borne in great clusters. The American mountain ash (*P. americana*) is not grown as extensively in our country as the European species, *P. aucuparia*. The mountain ashes are used as ornamentals, especially for borders.

Mulberry (*Morus*). A genus of trees of the large mulberry family native to the temperate zone in America and the Old World. The white mulberry (*M. alba*), a native of the Orient, is the original silkworm mulberry. It grows partly wild in the eastern United States. The red mulberry (*M. rubra*) is native to America and is valuable for its wood. The black mulberry (*M. nigra*) produces the best fruit for eating and is cultivated for that purpose.

Mullein (*Verbascum thapsus*). A wild flower and a weed of the figwort family, of dry fields and waste land, native to eastern America and Europe. It has coarse woolly leaves and terminal spikes of yellow, purple or white flowers.

Mushroom. The term, mushroom, was formerly applied to the edible fungi (which see), while the poisonous forms were known as toadstools. The tendency today is to apply the word, mushroom, to all fungi, distinguishing between the edible and the poisonous. The edible mushrooms cultivated for the market are largely *Agaricus campestris*.

Muskmelon (*Cucumis melo*). An annual vine belonging to the gourd family. It grows in warm climates or weather. It is a native of Asia and has become important in our country, where it is esteemed for its delicious, fleshy fruit. The term "cantaloupe" is properly applied to the hard rind European varieties, but is used in reference to the American varieties which are small, round and heavily netted. Recently, the winter muskmelon, or casaba, has gained popularity.

Mustard. Any of a large number of annuals of different genera of the mustard family, marked by their production of large quantities of small, pungent, oily seeds. Mustard is cultivated in California for the seeds which are made into a table condiment. In the south of our country mustard greens are used. The principal production of mustard is in Europe and our country imports millions of pounds annually. The leading species under cultivation belong to the genus *Brassica* and include black, white, brown and Japanese mustard. As weeds in America, the above mentioned species and others grow wild. Other mustards which are found wild include the tumbling mustard (*Sisymbrium altissimum*), hedge mustard (*S. officinale*) and garlic mustard (*Alliaria officinalis*).

Narcissus (*Narcissus* spp.). A genus of bulbous plants of the Old World of the amaryllis family, deriving its name from an ancient Greek myth concerning the youth Narcissus. In the center of the yellow or white flower is a conspicuous trumpet. Species with long trumpets are called daffodils. Those with medium trumpets are known as narcissi, though sometimes referred to as jonquils. The short-trumpet species include the true jonquils.

Nasturtium (*Tropaeolum* spp.). A popular garden plant cultivated for its showy flowers of yellow, scarlet and maroon. The leaves are large and umbrella shaped. The tall species (*T. majus*) reaches a height of twenty feet or more. The dwarf (*T. minus*) is also known as the Tom Thumb.

Nettle (*Urtica* spp.). A genus of coarse herbs with small greenish flowers and equipped with stinging hairs on the leaves. The stinging nettle (*U. gracilis*) is found in the northern two-thirds of the United States east of Colorado and in Canada. It is a roadside and barnyard weed. Another nettle (*U. dioica*) was cultivated in Europe during the World War for its fiber which was made into a coarse cloth. A yellow dye is obtained from the roots, and certain nettles when young and tender are boiled and eaten as greens.

Nightshade (*Solanum* spp.). Annual and perennial plants related to the potato. Included among the nightshades are the black nightshade (*S. nigrum*) and the bittersweet nightshade (*S. dulcamara*). The poisonous qualities of the black or red fruits of the nightshade have been debated. They are probably mildly poisonous and should be avoided. Instances of eating the cooked berries in pies have been reported. The deadly nightshade has already been described under Belladonna (which see).

Nutmeg (*Myristica fragrans*). An evergreen tree of the East Indies, now also grown in the West Indies. The fruit splits to release the nut and around the nut is a scarlet membrane from which mace is made. The nutmeg was formerly eaten as a food, pickled or in a sirup. Today it is ground and used as a spice.

Oak (*Quercus* spp.). A large genus of hardwood trees, often referred to as the cup-bearers. The fruit, the acorn, is borne in a cup and by this the oak is known everywhere. Some oaks fruit annually, others biennially. The leaves are simple, five-ranked and usually oval. Leaves hang on until spring, and in the live oak for three or four years. The oaks make good shade trees and are valuable for their lumber.

One group is the white oaks. These include the white oak (*Q. alba*), burr oak (*Q. macrocarpa*), post oak (*Q. stellata*), chestnut oak (*Q. prinus*) and the live oak (*Q. Virginiana*). The white oak is perhaps the most valuable of all. Its wood is in demand, its bark is used for tannin and the tree is important for shade.

The other group is known as the black and red oaks. Included here are the black oak (*Q. velutina*), scarlet oak (*Q. coccinea*), pin oak (*Q. palustris*) and willow oak (*Q. Phellos*).

Oat (*Avena sativa*). An annual grass derived from wild species, chiefly *A. fatua* and *A. sterilis*. Cultivated oats have been grown for thousands of years and probably originated in southeastern Europe, where they were long used as food for animals. Only with the introduction of modern milling methods have oats become an important article of human food. Today oats rank as the third most important cereal crop in North America. The grain is eaten in the form of rolled oats or oatmeal. Wild oats (*A. fatua*) are sometimes sowed as a forage crop, but this is usually a bad practice; wheat and other fields may thus be infested for years with an undesirable plant that is hard to eradicate.

Okra (*Hibiscus esculentus*). Okra, or gumbo, is an annual of the mallow family, cultivated especially in the Southern States for its edible seed pods. The plant is a native of tropical Africa but is now grown in America as far north as New England. Okra is used in soups, or cooked as a vegetable, especially with tomatoes.

Olive (*Olea europea*). An evergreen tree of the olive family, probably a native of the Near East, though cultivated from time immemorial. The Franciscan Fathers introduced the plant into southern California over 150 years ago and there and in Arizona the olive is an important crop. The fruits are gathered and pickled, both ripe and green, for food. The oil is also an important article of commerce. The olive branch has long been regarded as a symbol of peace.

Onion (*Allium cepa*). A biennial member of the lily family with hollow leaves, grown for its bulbous edible root, which is used as a vegetable. The onion is a native of southwestern Asia, but has been grown in cultivation for thousands of years. It is an important crop throughout the United States, where also many imported varieties, including the Bermudas and the Spanish are grown. Wild onions are often troublesome pasture weeds.

Orange (*Citrus sinensis* and *C. aurantium*). The typical orange of commerce is the *C. sinensis*, the sweet orange. The sour orange, *C. aurantium*, is practically unfit to eat, though it is used in by-products and as orange stock. The sweet orange is widely grown in warm regions all over the world. In the United States, California and Florida are the principal producing states. Alabama, Louisiana, Arizona, Mississippi, Texas and Georgia also produce considerable amounts. The Washington Naval and the Valencia are the most important American varieties. Oranges are eaten fresh and the juice is a refreshing drink. The peel is dried and candied. Orange paste and orange oil are other products.

A group of oranges known as "kid-glove oranges" (*C. nobilis*) have skin which separates easily from the pulp. This group includes the Mandarins, the

Satsumas and the tangerines. Tangerines are grown extensively in the Gulf States.

Orchard Grass (*Dactylis glomerata*). A tenacious perennial forage grass. Its distinctive crowded flower clusters easily mark this plant. It is a native of England where it is known as "cocksfoot." It is produced in practically all of the sections of our country.

Orchid (*Orchidaceae*). A family of over 5,000 species of peculiar plants found all over the world except in very cold or very dry regions. They are most abundant in the tropics, where they commonly grow on trees. They are not parasites, but send out long roots into the air and thus obtain food. At the leaf base water is often stored and used in times of drought. The flowers assume fantastic shapes and are often delicately colored. Orchids are prized as greenhouse flowers. Since they are raised slowly from seed, they are expensive. Native American species include the lady's slipper, grass pink and various species of *Orchis*. Our native orchids all grow in the soil and not in trees.

Osage Orange (*Toxylon pomiferum*). A thorny tree of the mulberry family, native to the region between Missouri and Texas. The juice is milky. Pollen is produced on the flowers of one tree, while fruits are borne on another tree. The fruits are round and from four to five inches in diameter. They are hard, yellow and unfit to eat. The wood of the tree is strong and heavy and useful for woodenware, ties, posts and tool handles. The Osage orange is often grown as a hedge.

Palm (*Palmaceae*). The palms are tropical plants related to the lilies and to the grasses. They include about 1,200 species. The leaves are fan-shaped or feather-like. The flowers are in great clusters and the fruits are clustered berries. Palms supply many valuable products, including sago, dates and coconuts. Much of the "nut margarine" comes from palms. Sugar, starch, wax and resin come from palms. The outer wood is often hard and is useful. The leaves are used for cloth and for thatching roofs.

The royal palm is a popular shade tree along the streets in tropical and semi-tropical cities. It may reach a height of 100 feet. The Canary Island palm is a favorite avenue tree in California. It is of the feather-leaved type and wears a crown of plumes and bears huge clusters of bright yellow berries. The date palm demands very warm temperatures far above the hundred degree mark. It has been successfully introduced into such American locations as the Coachella Valley, in California. The coco palm is a tall pinnate-leaved tree which bears the familiar coconut. The palmetto is a palm-like plant found from North Carolina to Florida. Since the new end buds are gathered and cooked like cabbage, this plant is often called the "cabbage palmetto." The raffia palm of Madagascar yields the useful pliable raffia fiber of commerce. The rattan palm is found in the Far East. Among the small palms grown indoors, the Kentia is one of the most popular and easily grown.

Pansy (*Viola tricolor*). A cultivated perennial flower, related to the violet. It is known under many names, including "Johnny Jump-up," "heartsease" and "love-in-idleness." Its name is from the French *pensee*, meaning "thought." Pansies have wonderful velvety textures and exhibit a wide range of colors, including purple, yellow and blue with countless variations.

Papaw (*Asimina triloba*). The papaw, or pawpaw, bears the family name, custard-apple, from its unique fruit which looks like a banana and is soft and yellow like custard. It is native to the Southern States and is found as far north as Michigan and New York. Negroes especially prize the fruit which is sold in Southern markets.

Another fruit, called the "papaw," should properly be known as the papaya. It is *Carica papaya*, a herbaceous plant with large melon-like fruits weighing from ten to twenty pounds, yellow to orange in color. It is native to Mexico and Central America. The papaya yields an enzyme, papain similar to pepsin.

Parsley (*Petroselinum hortense*). A biennial vegetable of the parsley family used for seasoning and as a garnish. It is a native of the Old World and has long been a garden vegetable in all civilized countries. The oil of parsley is made from the seed and is used medicinally.

Parsnip (*Pastinaca sativa*). This biennial vegetable of the parsley family, cultivated since the Middle Ages in Europe for its edible root, was reported by Pliny to have been brought to Rome annually from beyond the Rhine to please the exacting palate of the emperor. Parsnips are grown for use as a winter vegetable, both for man and as food for cattle. The wild parsnip, from which the cultivated form has been developed, is often a troublesome weed. It is not, however, poisonous as has been claimed. It harbors a fungus that is injurious to celery and should not be allowed near celery plants.

Passion Flower (*Passiflora* spp.). A large genus of climbing vines, native to tropical regions but represented by several species in our country. The flowers in various species are pink, red or white. The name was given by early Spanish missionaries in America and refers to the crucifixion of Christ. The parts of the flower are said to resemble the nails of the cross, the marks of the wounds, the crown of thorns, and the five sepals and five petals symbolize the ten apostles, omitting Peter and Judas. *P. caerulea* is a good species for cultivation and produces large and beautiful flowers.

Pea (*Pisum* spp.). A hardy annual of the legume family including the garden pea (*P. sativum*) and the field pea (*P. arvense*). The pea was cultivated in very early times in western Asia and later in southern Europe. The plant bears white or pink flowers followed by pods containing rounded seeds.

The garden pea is grown in home gardens and commercially as a canning crop. There are two chief varieties, the wrinkled and the smooth seeded. The field pea is used in the Old World and in Canada for food, but it has not been used extensively for this purpose in the United States. In our country the field pea is chiefly raised as a forage crop and for green manure to enrich the soil.

Peach (*Prunus persica*). A tree and its fruit, a member of the rose family and a near relative of the plum. The varieties commonly grown in our country are all derived from *P. persica*. The peach is said to have been cultivated in China 2000 B.C., and spread from there to India, Persia and other places. The early Spanish explorers introduced it to America. Today it is our second largest fruit crop, ranking next after the apple. The peach is closely related to the almond. The smooth-skinned varieties are known as "nectarines." Peaches are classified as freestones and clingstones, though they cannot be thus strictly classified. Double-flowered varieties are grown as ornamentals.

Peanut (*Arachis hypogaea*). An annual of the pea family but differing from peas and beans in that the fruit is produced beneath the ground surface. The peanut is a native of South America where it has been grown since prehistoric times. It was introduced into Africa about 1500. During the past fifty years it has become of large importance in the United States where it is cultivated commercially as far north as Virginia. The peanut is known also as groundnut, earthnut, ground pea and goober. There are bunch and runner varieties of the peanut. The flowers are yellow and are followed by pods containing seeds. The pods bend downward and enter and ripen beneath the surface of the ground. Peanuts are eaten as food. Much of the crop is made into peanut butter, oil and peanut flour. The hay is used as food for stock.

Pear (*Pyrus communis*). A tree and its fruit, a member of the rose family and related to the apple. The fruit differs from that of the apple in general shape and in having characteristic grit cells, also in being sweeter and juicier. The pear originated in eastern Europe and western Asia and is mentioned in the writings of Homer and Pliny. It is usually the fourth largest fruit crop in the United States. The common American species is *P. communis*. The Oriental pear (*P. serotina*) is cultivated in China and Japan and has been introduced to some extent in our country. Dwarf pears are grown by grafting *P. communis* on quince stock.

Pecan. See Hickory.

Pelargonium. See Geranium.

Peony (*Paeonia* spp.). A perennial garden flower of the buttercup family. It is an excellent flower for cutting and thrives year after year in the same place. The Chinese peony (*P. albiflora*) is a native of Siberia. It produces large white to rose and magenta flowers, single or double. The common peony (*P. officinalis*) comes from south Europe and with its large red, pink or white flowers is perhaps most widely grown in our country. The tree peony (*P. moutan*) of the Far East is known as the moutan in the Orient. The stems grow from three to six feet in length and the flowers of rose, magenta and white often measure a foot across and are of a gorgeous satiny texture. The wild peony (*P. brownii*) is a native of our western mountains. It has reddish brown flowers.

Pepper (*Piper nigrum*). A vine of the pepper family cultivated for its berries. When dried the red berries become the peppercorns or ground pepper of commerce. The ripened berries peeled are known as white pepper. Pepper has been grown since ancient times in the East and the chief supply still comes from the Orient, Singapore being the leading pepper port. The pepper vines require support and are customarily planted around trees. Vines grow to a height of twenty or thirty feet but are easier to harvest when kept cut back to about eight feet. Vines produce for from seven or eight years to as much as thirty years. The berry is first green, then red, and finally yellow.

Pepper, Red (*Capsicum annuum*). Red pepper is an annual of the nightshade family, grown much like the tomato. The plant is grown for its pods, which are eaten green or used when ripe and red. Sweet peppers, or mangoes, are mild and are eaten stuffed and in salads. The pimento, or Spanish sweet pepper, is used in salads and to stuff olives. Small red peppers are used for pickling and flavoring and in catsups, chili con carne, chowchow and so forth. Mild red peppers yield the paprika of commerce. In making paprika the peppers are ground either with or without the seeds which make it stronger.

Peppergrass (*Lepidium* spp.). An annual or winter-annual of the mustard family. This branching bush-like plant is often a troublesome weed in pastures and meadows. The plant is from one to two feet high and bears small white flowers.

Peppermint (*Mentha piperita*). An important pungent mint, grown for its leaves from which is distilled an essential oil much used in flavoring candy and in medicine. The oil is used also in making soaps and perfumes. The peppermint grows wild in damp places, but is now extensively cultivated. The flowers are small and reddish-blue in color. The propagation is by rootstocks. Peppermint was introduced to America from Europe. Michigan, Indiana and Oregon produce large amounts commercially.

Pepper Tree (*Schinus molle*). An evergreen tree of the sumac family. It is a native of South America where the fruits are sometimes used for pepper. It has been introduced into California as an ornamental and shade tree. Since it acts as a host for certain injurious scale insects, its use has been discouraged.

Persimmon (*Diospyros* spp.). Trees and shrubs of the ebony family known for their fruit and for their hard elastic wood. The common persimmon (*D. virginiana*) occurs in many parts of the eastern United States, but thrives best in the South. The fruit is about the size of a plum and until after frosts is very puckery to the taste. Well into winter it becomes sweet and good to eat.

The Japanese species (*D. kaki*) has a much larger fruit. When thoroughly ripe it is delicious. Some varieties are seedless. On the fruit stands the persimmon is often mistaken at first sight for a tomato.

Pe-Tsai or **Chinese Cabbage.** A hardy member of the cabbage family, introduced to the United States from China. Its tightly wrapped leaves are self-blanching and may be eaten raw as a salad or cooked.

Petunia (*Petunia hybrida*). A garden annual of the potato family grown for its gaudy, frilled flowers which exhibit a wide range of colors. The plant is native to South America but has been largely naturalized in the eastern United States.

Phlox (*Phlox* spp.). A genus of annual and perennial flowers found wild and grown in gardens. The wild sweet William (*P. divaricata*) is found along the edges of woods and beside streams. It thrives in the garden. The perennial *P. paniculata* has won a well-deserved recognition. *P. Drummondii* or Drummond's phlox is an annual, native to Texas. The blooms range from white to various shades of red and purple.

Pine (*Pinus* spp.). A large genus of cone-bearing evergreen trees having typical needles arranged in bundles and enclosed at their base in a papery sheath. Soft pines have a soft wood, and shed their papery sheath before the leaves begin to fall. Hard pines have a heavy, dark-colored, resinous wood, and retain the leaf sheath until the leaves are shed.

The most important is the white pine (*P. strobus*) of the northeastern United States; the state flower of Maine is the cone and tassel. White pine is also abundant in the Lake states. The yellow pine (*P. palustris*), also known as the longleaf pine, is important as a lumber tree and in the production of pitch, turpentine, resin and oil. The western yellow pine (*P. ponderosa*) forms the most extensive pine forests in America. Other valuable pines of the West are the sugar pine (*P. Lambertiana*), the giant pine of the Oregon and California mountains, and the western white pine or mountain pine (*P. monticola*) of the Pacific Northwest. The scrub pine (*P. contorta*) is a lowly parent of one of the gigantic western lumber pines. A variety, *P. contorta latifolia*, is the lodge-pole pine, so called because it grows in a dense formation, straight and slender like wheat on the prairie. No wonder the Indians appropriated it for their lodges. Some pines of the Southwest are valued for their edible seeds. These are known as *Piñons*. They are much sought by the Indians, and are sold in markets in the West.

Pineapple (*Ananas comosus*). A tropical plant of the bromelia family, grown extensively for its fruit which emerges on a stalk rising from a cluster of spiny leaves. The fruit weighs from three to twenty pounds and resembles a great pine cone, from which it takes its name. Large acreages in the Hawaiian Islands and in Porto Rico are devoted to pineapples. The delectable fruit is either shipped to be eaten raw, or it is canned.

Pistachio (*Pistacia vera*). An Old World tree, a native of Asia Minor, known and grown since ancient times. It yields a small nut highly prized for its delicate flavor. It is used in flavoring ice cream and confections. Although grown to a limited extent in the Southwest, most of the American supply is imported from Sicily.

Pitcher Plant. Several genera of insect-catching plants. The best known pitcher plant is *Sarracenia purpurea*, found in northern bogs. These strange plants have specially developed pitcher-like leaves which are lined with downward-pointing hairs. Insects are beguiled and after crawling into the pitcher cannot retrace their way. At the bottom is a fluid which drowns the insect and decomposes its body which is probably used in the nutrition of the plant.

Plane Tree. See Sycamore.

Plantain (*Plantago* spp.). A genus of weedy plants including the narrow-leaf plantain or buckhorn (*P. lanceolata*) and the broad-leaf plantain (*P. major*). The narrow-leaf species is the more troublesome, since it invades meadows and pastures and kills off valuable grasses. The common broad-leaf plantain is a familiar lawn weed which grows close to the ground, choking out grass.

A totally different plant called "plantain" is *Musa paradisiaca*, a tropical tree-like plant said to be one variety of the common banana. The fruit is coarser than the ordinary banana and is always cooked before eating.

Plum (*Prunus* spp.). Trees and shrubs of the rose family, related to the cherry, peach, almond and apricot. The fruit of the plum differs from that of the peach in having smooth skin and an unwrinkled stone. Plums which are of small sugar content and are usually eaten raw are called plums, while those of large sugar content and which dry well are commonly known as prunes. The wood of the plum tree is close-grained and sometimes is important as timber. The sap is very bitter due to its content of hydrocyanic acid.

The wild plum (*P. americana*) is native to North America east of the Rockies. The common European species (*P. domestica*) is most important commercially. It is native to Asia and eastern Europe, and is now grown extensively in America. Japanese plums (*P. salicina*) are more recent importations into our country. The Canada plum (*P. nigra*) is a hardy species that dips down into the northern United States.

Poinsettia (*Euphorbia pulcherrima*). This showy member of the spurge family is grown for its brilliant scarlet bracts which are often more than a foot long and occur beneath the true flowers. Presenting a vivid contrast of red against all the rest of the plant which is green, the poinsettia is much in demand at the Christmas season. The cut stems give off a milky juice, and when used as cut flowers the stems are dipped into boiling water or burned to stop the flow of juice.

Poison Ivy (*Rhus* spp.). A shrub or vine of the cashew family and of the sumac genus, native to America and widely distributed. Its leaves are distinguished by having three leaflets. It bears tiny greenish-yellow flowers and these mature into whitish berries and hang on during much of the winter. Certain persons upon contact with the plant suffer poisoning which manifests itself in inflammation and blisters.

Pokeweed (*Phytolacca decandra*). A native American perennial of the pokeweed family. It grows rankly and from four to ten or more feet in height along roadsides and in waste places. The flowers are small and in bracted racemes two to eight inches long. In autumn purplish berries hang in clusters. Birds eat the berries, and they are probably harmless to man, though the seeds are commonly held to be poisonous. The root, however, is very poisonous.

Pomegranate (*Punica granatum*). A small tree of the myrtle family grown since early times especially in Asia, which is often regarded as the land of its origin. The fruit is about the size of an orange and has a thick reddish-yellow rind and contains an abundance of large seeds, embedded in a juicy subacid pulp. The pomegranate is grown to a limited extent in the southern United States. A drink, grenadine, is made from the pulp.

Poplar (*Populus* spp.). Hardy, quick-growing trees, closely related to the willows as is shown by the blossoms borne in catkins. The leaves are broad and leathery and set on long petioles. The wood is soft and weak and easily split. It is used for woodenware, crates and pulpwood. Poplars are among the first to grow after a fire, but they usually disappear before the longer-lived trees attain maturity.

The Lombardy poplar (*P. nigra italica*) is an imported tree used as an ornamental in America. The white poplar (*P. alba*), or silver-leaved poplar, is used more than it deserves as a shade tree. The cottonwood (*P. deltoides*), or "necklace-bearing poplar," is appreciated by Western settlers where it is often their only tree. Pollen-bearing cottonwoods are better as they do not yield the unpleasant "cotton." The trembling aspen (*P. tremuloides*) is a handsome tree ranging all over America. It is often called the American aspen. The balsam poplar (*P. balsamifera*) is abundant in western North America. A variety was known to the early Eastern settlers as the balm of Gilead. It is a tree of good habits and easily propagated.

Poppy (*Papaver* spp.). Annuals and perennials grown in our country as garden flowers and in Asia and Egypt as the source of opium. The Oriental poppy (*P. orientale*) bears large brilliant flowers of orange or scarlet. The Iceland poppy (*P. niducaule*) is a dwarf perennial with delicate crepey flowers. Corn or Shirley poppies (*P. Rhoeas*) are beautiful annuals always bearing single flowers. The opium poppy (*P. somniferum*) is a handsome annual whose flowers are often double and marked by thick petals.

Portulaca (*Portulaca grandiflora*). An annual garden flower related to purslane. It grows in hot, dry places and bears red, orange and white blossoms which may be either single or double.

Potato (*Solanum tuberosum*). A member of the nightshade family related to the tomato, tobacco and eggplant. It is a native of America, having been found from Colorado to Chile. It was introduced into Ireland in 1586 and later into other parts of Europe where it is now a staple crop. The potato plant bears white or purple flowers, and seed balls. Under cultivation the seed balls occur but rarely. The valuable tubers are borne on underground shoots. In the tubers are stored large quantities of starch and other matter. Under cultivation these edible tubers are much increased in size. The number of varieties of potatoes in the United States is said to exceed 600.

Primrose (*Primula* spp.). Garden and greenhouse plants with attractive foliage and beautiful flowers well adapted for growing in pots. Primroses also occur wild. *P. obconica* is one of the best of the cultivated primroses.

Privet (*Ligustrum* spp.). Ornamental shrubs of the olive family. They bear small white flowers and are attractive in any place. Landscape gardeners use privet widely for hedges and borders. The Amoor River is particularly good for a hedge. The common privet (*L. vulgare*) succeeds in the smoke and dust of cities and is much used in the eastern United States. The Japanese species (*L. japonicum*) is attractive for border plantings.

Pumpkin (*Cucurbita pepo*). A vine and its fruit of the gourd family, bearing large yellow blossoms and heavy yellow fruit weighing from a few pounds to fifty pounds. The fruit is fed to stock and is used by man as a vegetable and in making pies. The small boy enjoys making jack-o'-lanterns from ripe pumpkins. The plant is a native of America and was cultivated by the Indians.

Purslane (*Portulaca oleracea*). A troublesome garden weed and one often found in corn fields. The succulent stems are liked by pigs. In Europe it is cooked and eaten as greens. The flowers are small and yellow. The plant is related to the garden flower, portulaca.

Pussy Willow. See Willow.

Quack Grass (*Agropyron repens*). A troublesome weed in the northern United States and Canada. The fruiting spikes resemble those of wheat, although thinner. The grass was imported from Europe. It propagates from tough, matted underground stems, and new plants spring from the joints of these so-called "roots."

Quince (*Cydonia oblonga*). A small tree of the rose family, related to the apple and the pear. It is a native of Asia and was introduced into America in Colonial times. The flowers are white or pink and the fruit is hard and yellow when ripe. It is very acid and cannot be eaten raw. It is esteemed for making into marmalades and jellies.

Radish (*Raphanus sativus*). A garden vegetable of the mustard family, grown for its pungent edible enlarged root, which is usually eaten raw. The radish has been cultivated for 3,000 years in China. There are spring, summer and winter radishes, but the spring kinds are most popular. The wild radish (*R. raphanistrum*) is a weed of the northeastern United States and Canada. It resembles the cultivated radish, but lacks the enlarged root. The flowers are yellow while those of the garden radish are pink.

Ragweed (*Ambrosia* spp.). Annual and perennial weeds of the composite family. The ragweeds are unsightly weeds often abundant in grain fields and also in cultivated areas and in pasture lands. They are prolific producers of seed. The ragweed is also undesirable because it is a cause of hay fever.

Ramie (*Boehmeria nivea*). A fiber plant of the nettle family grown principally in the warmer parts of China and Japan. Although it can be produced in the southern sections of the United States, its cultivation has never been important. The flowers are small and greenish-white. The fiber taken from the shoots, which arise each year from the underground rootstocks, is soft and strong and nearly equal to silk in fineness. In our country ramie yarn is used chiefly for making gas mantles. In the Orient it is made into "grass cloth."

Rape (*Brassica napus*). An annual or biennial forage plant belonging to the cabbage family. It is a native of Europe and is now extensively grown in America. In the South it is a winter crop and in the North a summer crop.

Raspberry (*Rubus* spp.). A popular bush fruit found wild and cultivated in many parts of the temperate zone. Wild raspberries are commonly called "thimble-berries." Among the important species are the black raspberry, or black-cap (*R. occidentalis*) a native of America, large-seeded but of excellent flavor; the European red (*R. idaeus*); the American red (*R. strigosus*), widely cultivated and used for jams; the purple-cane raspberries, which are crosses between red and black berries.

Redbud (*Cercis* spp.). Small trees or shrubs of the pea family noted for their red flowers which are borne in clusters. Redbuds make good ornamentals but are not of much value otherwise. Three species are native to America: the Texas redbud, the California redbud and the common redbud or Judas tree which occurs from Ontario to Arkansas.

Redtop (*Agrostis palustris*). An important perennial grass grown in America but a native of Europe. It thrives in wet lands and in places lacking in lime. It is used in New England as a hay grass and elsewhere as a pasture crop.

Redwood (*Sequoia sempervirens*). A large evergreen tree found on the Pacific Coast of the United States. Trees older than the Christian era have been felled. The wood is light and durable and reddish in color. It is valuable for building purposes, especially in contact with the soil. The Government has purchased certain areas to perpetuate these noble tree giants.

Rhododendron (*Rhododendron* spp.). A genus of ornamental shrubs and trees of the heath family, grouped by botanists with the azaleas (deciduous), but by practical growers separated as evergreens into the genus *Rhododendron*. The great rhododendron, or great laurel (*R. maximum*) is popular with its broad leaves and many-colored flowers ranging from white to pinks and purples. It is the state flower of West Virginia. The western rhododendron (*R. californicum*) is resplendent with shining leathery leaves and rose-colored flowers. It is the state flower of Washington.

Rhubarb (*Rheum rhaponticum*). A perennial of the buckwheat family, native to Asia and grown widely in America for its edible leaf-stalks which are cooked and eaten as sauce or for pies. The plant is also known as "pieplant." The dried roots and rhizomes have medicinal properties.

Rice (*Oryza sativa*). An annual of the grass family grown for its seed which is one of the world's important cereals. Rice requires a wet place to grow, and fields are typically flooded with water. Rice has been grown since ancient times in the Orient where it today feeds about one-third of the entire human race. In the United States rice has been cultivated in the southern sections for over 200 years, and it is an important crop in Hawaii and in the Philippines. The plant grows from two to six feet high and bears panicles at the tops of the stems. In these the seed are contained. In our country, the fields are drained before harvesting and the rice is cut by a harvesting machine. Threshing is done after the kernels and straw are thoroughly dry.

Wild rice (*Zizania aquatica*) grows in swamps in North America and furnishes food for water birds. Formerly the Indians gathered it and beat out the kernels in their canoes as they paddled through the swamps.

Rose (*Rosa* spp.). Perhaps the most important of flowers, found wild and cultivated since ancient times. The rose is referred to in literature and history very often and rose culture has been written of for centuries. The rose is usually an erect or climbing shrub with thorny stems and single or double flowers which range in color from white to yellow and many shades of pink and red. The rose is principally used for decorative purposes, although attar of roses is an important perfume. Preserves are made of the fruits of certain species.

Some roses bloom more or less continuously while others blossom but once a year. Such roses as the Damask, Yellow Brier and climbers bloom in June. The hybrid tea, the hybrid perpetual, the baby rambler, the China and others produce blooms through the summer. One of the best-known wild species is the prairie rose (*R. setigera*) which produces pink flowers late in the season. Wild roses can be transplanted to the garden. Most of our common fruit trees and berries belong to the rose family (*Rosaceae*). New York, Iowa, Georgia and North Dakota have adopted roses as their state flowers.

Rubber Tree (*Hevea brasiliensis*). This tree supplies most of the rubber of commerce. Among other rubber trees are species of the genera *Manihot, Castilloa, Ficus* and *Landolphia*; but these are unimportant economically. It was originally found in the Amazon region of South America, but it has been taken to the East Indies and that part of the world with its well regulated rubber plantations now produces the bulk of the world's supply. The tree belongs to the same family as the castor bean and the poinsettia. The milky juice, or latex, dried, furnishes the rubber of commerce. The rubber plant is also grown as a small ornamental tree in houses.

Rutabaga (*Brassica campestris*). A winter turnip resembling the ordinary turnip but with denser flesh and a longer, more slender root. The root is used as a food for the table and for feeding to livestock.

Rye (*Secale cereale*). A hardy annual of the grass family, closely related to wheat.

Rye did not appear as early as other cereals, but was first known in southeastern Europe. As a grain, rye is made into the black bread of Europe. In America rye bread is made of a mixture of rye and wheat. The plant is often used as a cover crop and plowed under as green manure. The straw is useful for making hats, paper, mattresses and for packing purposes.

Wild rye, or lyme grass (*Elymus* spp.), occurs in the United States and makes pasturage. It is also cut as a meadow grass.

Sage (*Salvia officinalis*). A perennial herb whose leaves are used for flavoring sausages, cheeses and dressings. It is a native of Europe and most of our sage is still imported, although it is often grown on a small scale in kitchen gardens.

Sagebrush (*Artemisia* spp.). Shrubby wormwoods of the composite family which cover thousands of acres of arid land in the western part of the United States. The plants have a pungent odor somewhat resembling that of sage, hence the name. It is eaten to a limited extent by cattle and sheep and often furnishes the only fuel available. Nevada has chosen the sagebrush as a State flower.

Salpiglossis (*Salpiglossis sinuata*). An attractive annual garden flower resembling the petunia but with the blossoms tinged with a glint of gold. It is often called the "orchid of hardy annuals."

Salsify (*Tragopogon porrifolius*). A garden biennial related to chicory and grown for its tapering edible root. It has an oyster-like flavor when cooked. The plant is hardy and may be left in the ground over winter.

Sandalwood (*Santalum* spp.). Certain Oriental trees much used in ornamental carving and cabinet work. The best known is *S. album*. The wood is close-grained and fragrant and articles made from it are highly prized.

Sapodilla (*Achras sapota*). A tree of the family *Sapotaceae*, native to tropical America. It bears a juicy edible fruit about the size of a small orange with a reddish-brown skin and dark yellow flesh. The milky latex of the tree is important as the source of chicle from which chewing gum is made. The trees are tapped as are rubber trees. Sapodillas have been grown to a limited extent in Florida.

Sapote (*Lucuma mammosa*). A tropical tree cultivated for its large sweet-flavored fruit which makes an excellent jam. The fruit is also known as the marmalade plum. It is somewhat like a ripe pear in taste. The single large seed yields a rich oil used in the tropics for confectionery purposes. The closely related white sapote is *Casimiroa edulis*.

Sassafras (*Sassafras* spp.). A tree of the laurel family noted for its aromatic roots and bark which are made into tea and medicinal preparations. In forests the trees reach a height of over one hundred feet and are valuable for their lumber. The sassafras occurs throughout the eastern part of the United States and in Ontario. Sassafras wood is good for posts and for other places in contact with the soil.

Sensitive Plants. Many plants are sensitive to the touch, but the plant commonly referred to as the sensitive plant is the *Mimosa*. This native of Brazil is cultivated in gardens and the leaves droop upon the touch of the finger or upon jarring the plant. Mimosas have small pink flowers.

Sequoia. A genus of mammoth evergreen trees of the Pacific slope of the United States, including the redwood (which see) and the "big trees" (*S. gigantea*) of California. Mature trees attain a height of about 275 feet. One standing is 325 feet, and another fallen tree is more than 400 feet. The lumber is very valuable.

Service-berry (*Amelanchier* spp.). A genus of trees of the rose family, closely related to the apple. The genus is represented in many parts of the Northern Hemisphere and in northern Africa. The best known species is the American or Eastern service berry (*A. canadensis*) known also as the June-berry and the shad-bush. The white flowers and the red berries which follow are very attractive. Birds feast on the berries. The western service-berry (*A. alnifolia*) of the western United States and Canada is esteemed for its large berries which grow to a diameter of an inch.

Shamrock. The floral emblem of Ireland, the shamrock, is the name given to various plants including clovers, wood sorrel, water cress and nonesuch. St. Patrick's shamrock is said to have had three leaves which were said to represent the Trinity. The plants commonly sold on St. Patrick's Day are white clover, a species of hop clover and wood sorrel.

Shepherd's Purse (*Capsella bursa-pastoris*). A weed of the mustard family, growing from six to twenty inches high and bearing white flowers and seed pods which look like tiny purses.

Sisal (*Agave sisalana*). A perennial tropical plant closely related to the century plant and grown in many parts of the tropics for its hard fiber. It is not to be confused with henequen, sometimes wrongly called sisal. The fiber is made into ropes and twines. Some is used as binder twine.

Skunk Cabbage (*Symplocarpus foetidus*). One of the earliest flowers found in wet areas. It belongs to the arum family. The spathe-covered flowers appear before the leaves. The plant has a disagreeable odor which gives it its name.

Snapdragon (*Antirrhinum* spp.). An annual or perennial garden flower of the figwort family. The flowers are interesting because upon pressure on the sides they open like a mouth. A wide range of colors is displayed in the flowers.

Sorghum (*Holcus sorghum*). A grass cultivated since ancient times in the Old World and introduced into America by the early colonists. It is valuable both for its stalk and for its grain. The principal groups of sorghum include the sweet sorghums, those like Kafir and milo and grown for their grain, the fine-stemmed sorghums and the coarse-stalked varieties which are used as broom material.

Sorrel (*Rumex acetosella*). A weed deriving its name from the German word for "sour," referring to the taste of the leaves.

Southern Moss (*Tillandsia usneoides*). A plant of the pineapple family, not a moss. It is sometimes called Spanish moss, but it does not grow in Spain. It occurs in the eastern Southern States where it grows on dead or living trees, hanging from the limbs. The plant is used as stuffing in upholstery.

Spicebush (*Benzoin aestivale*). A shrub, known also as feverbush and wild allspice, of the laurel family. It grows from four or five feet to as high as fifteen feet in cultivation. It has bright green leaves which turn yellow in autumn. The flowers are small and yellow. The berries are crimson and very spicy and much sought by the birds. The benzoin of druggists is derived from the leaves and berries of a plant of this group.

Spinach (*Spinacia oleracea*). The most important garden plant grown for greens. It is a hardy annual of the goosefoot family. It was first grown in western Asia in ancient times and was first known in Europe in the fifteenth century. It is now grown extensively all over the civilized world. Spinach furnishes valuable vitamins and minerals including iron.

Spirea (*Spirea* spp.). A genus of shrubs much used for planting. Among the best known is the bridal wreath (*S. prunifolia*) with its long slender branches and profusion of white flowers. Van Houtt's spirea (*S. Vanhouttei*) is very showy and its foliage is attractive all summer. Thunberg's spirea (*S. Thunbergii*) is a popular early species with delicate foliage and flowers.

Spring Beauty (*Claytonia virginica*). An early spring wild flower of the purslane family found in moist woods and low meadows. The flowers are white tinged with pink to all pink. The plant springs from an underground tuber.

Spruce (*Picea* spp.). A genus of cone-bearing evergreen trees of the temperate and subarctic regions of which about a dozen are native to North America. The Sitka spruce (*P. sitchensis*) grows from California to Alaska. It attains a height of more than 200 feet. During the World War tall straight Sitka spruce was much in demand for airplane construction and this lumber was known as "airplane stock." Its principal use is for paper pulp. Some is made into lumber, but it will not resist moisture. An immigrant, the Norway spruce (*P. excelsa*) is popular in the eastern United States as an ornamental. Other spruces of the eastern section include the white spruce (*P. canadensis*), the red spruce (*P. rubra*) and the black spruce (*P. mariana*), all of which are useful for paper making and to some extent for lumber.

Squash (*Cucurbita* spp.). Bushy to trailing vine-like plants of the cucumber family, grown for their fruits which vary in size. There are two general classes, the summer and the winter squashes. The former are bushy plants with short stems. The winter squashes produce long trailing vines. The large rough leaves of the squash are borne on long hollow stems. The flowers are large and yellow.

Strawberry (*Fragaria* spp.). The most important small fruit crop in America, grown in Europe for about 500 years. Most of our present strawberries are the development of two native species, the Chilean (*F. chilensis*) and the Virginian (*F. virginiana*). The important improvement of the fruit started with the Hovey strawberry raised by Charles Hovey of Boston in 1834. The plants are low-growing and propagate from runners. The flowers are white and the seeds are borne on enlarged fleshy receptacles which form the so-called "berry." Most strawberries bear during a short season, but the so-called "everbearing" varieties produce fruits from early summer until autumn.

Sugar Beet. See Beet.

Sugar Cane (*Saccharum officinarum*). A tropical grass with many-jointed stems. It is probably a native of southern Asia or of islands near there. The plant grows from six to sixteen feet high. The stalks are juicy and furnish one of the world's principal sources of sugar. Seeds are infrequent and propagation is by cuttings. Sugar cane is today grown throughout the world in warm regions.

Sumac (*Rhus* spp.). Trees or shrubs of the sumac family, some of which are used for ornamentals. One undesirable member of the genus, the poison ivy, has already been described. The staghorn sumac (*R. hirta*) with its hairy branchlets and its dark red fruit heads is an attractive ornamental. The aromatic sumac (*R. aromatica*) is another desired ornamental, hardy and with handsome foliage. Poison sumac (*R. vernix*) with its drooping grayish white berries is a deadly poison. It grows only in swamps. The common smooth sumac (*R. glabra*) is common on roadsides and is desirable for planting.

Sundew (*Drosera* spp.). A genus of insectivorous plants of the sundew family, so named from the exuding drops on the leaves which glisten in the sun like dew. Sticky hairs on the small plants entrap insects which are digested by secretions of the plant.

Sunflower (*Helianthus* spp.). Annuals or perennials of the composite family, of which the best known is the larger annual sunflower (*H. annuus*). They are natives of America. In Canada a mammoth sunflower has been grown as a silage crop. The Jerusalem artichoke (see Artichoke) (*H. tuberosus*) is grown for its edible tubers, which are fed largely to swine.

Sweet Gum (*Liquidambar styraciflua*). A tree of the witch-hazel family known variously as red gum, sweet gum, liquidambar, star-leaved gum and alligator tree. The star-shaped leaves pass from the green of summer to crimson, lilac and scarlet in autumn. The flowers are knotty little bunches and the swinging burrlike balls contain winged seeds. These seed balls are noticeable in winter after the foliage has fallen. An aromatic gum exudes from wounds. The sweet gum is a favorite shade tree.

Sweet Pea (*Lathyrus odoratus*). A garden annual imported from Europe and grown for its handsome fragrant flowers which exhibit a wide range of colors and sizes. It belongs to the pea family.

Sweet Potato (*Ipomœa batatas*). A perennial garden vegetable grown for its edible root, of the morning glory family, native to South America and now extensively grown in the United States, especially in the southern sections. As a vegetable it ranks next to the Irish potato in value.

Swiss Chard. See Beet.

Sycamore (*Platanus occidentalis*). This tree is called also the buttonwood. It has its relative in Europe in the plane tree (*P. orientalis*), which has been introduced and has become common as a street tree all over America. The sycamore bark is thin and brittle and scales off to reveal chalky white branches. When the leaves are gone the seed balls, or "button-balls," hang on. The wood is tough and is preferred for butchers' blocks.

Syringa (*Philadelphus* spp.). A genus of ornamental shrubs of the saxifrage family, known also as mock orange. The lilac (which see) has the generic name Syringa, but this is another usage. The syringa is a hardy plant bearing numerous white sweet-scented flowers in late spring.

Tamarind (*Tamarindus indica*). An Old World fruit tree, evergreen, of the pea family and resembling the common locust in appearance. It grows in tropical areas. The seeds are embedded in a soft brown pulp in a pod. From this a refreshing cooling drink is made. The tree has been introduced to a limited extent in Florida.

Tangerine. See Orange.

Tapioca. See Cassava.

Taro (*Caladium colocasia*). A perennial of the arum family which has been cultivated since ancient times in the Orient. From the root the Hawaiians make a sticky fermented paste known as "poi." The young shoots and leaves are also cooked and eaten. The familiar elephant's-ear is the same plant. A variety has been grown in our Southern States under the name "dasheen."

Tea (*Thea sinensis*). An evergreen tree or shrub cultivated for its leaves which are brewed to make a beverage. Wild tea trees grow to a height of thirty feet, but in cultivation it is desirable to prune the plants to a convenient height for picking the leaves. The flowers are ivory to rose colored and seed pods contain three round seeds. Tea was known in China as early as 2700 B.C. It was introduced later into Japan and more recently in India and the East Indies. All tea comes from the same plant, but black tea undergoes an oxidation or "fermenting" process before firing. Attempts have been made to grow tea in South Carolina. The world's supply comes from the Orient.

Teak (*Tectona grandis*). A tall timber tree of southeastern Asia. It belongs to the verbena family. Its yellowish brown lumber is valuable for shipbuilding and for wood carving and furniture. Teak ranks next to mahogany in value among the hardwoods.

Teosinte (*Euchlaena mexicana*). An annual grass found wild in Central America and Mexico and grown to a limited extent for fodder in the southern United States. By some, teosinte is maintained to be the ancestor of Indian corn (see Corn), and it will cross with corn.

Thyme (*Thymus* spp.). A genus of perennial shrubs of the mint family grown for their aromatic leaves which are used in cookery and for an essential oil which is secured by distillation. It is a native of the Mediterranean shores whence it has been introduced to various parts of the world.

Timothy (*Phleum pratense*). A perennial grass, native to Europe and introduced into America in Colonial days by Timothy Hansen who gave it its present name. Timothy has become the leading hay grass of North America. Its growth is bushy and the flowers are borne on the erect stems in the form of a spike of closely packed tiny blooms, resembling the cat-tail.

Tobacco (*Nicotiana tabacum*). A broad-leaved annual of the nightshade family, a relative of the potato and the tomato. It is native to Peru and was widely used by the Indians of both South and North America when the New World was discovered by Europeans. The name *Nicotiana* is in honor of the Frenchman Jean Nicot who introduced tobacco into France in 1559. In 1585 Sir Francis Drake brought tobacco to England and Sir Walter Raleigh took up smoking and made the practice popular. Tobacco is also used for chewing and as snuff. The tobacco industry is large and the United States leads. Usually tobacco is harvested by taking the entire plant, although sometimes the leaves are stripped from the stalk. Curing, stripping and grading are the customary processes in preparing tobacco for the market.

Tomato (*Lycopersicon esculentum*). An annual plant of the nightshade family, widely cultivated for its fruit which is the most recent important vegetable to be used as food. It was only in 1835 that the tomato was first sold for food. It is native to South America and for hundreds of years was known only as a curiosity. Even our grandparents regarded it as a garden ornamental and called the fruit the "love apple." Tomatoes are extensively used as a salad, for cooking and as a flavor and part of such condiments as catsup and chili sauce.

Trillium (*Trillium* spp.). Woodland wild flowers with all parts of the flower in threes, hence the name. The blossoms are usually white, but some species are purple or purplish red. It is one of the earliest of the spring flowers.

Tulip (*Tulipa* spp.). A native of the Near East and one of the most popular garden flowers. Tulips were grown in Holland as early as 1590 by Clusius, and a rage for the flower ensued which brought fabulous prices for the bulbs from which the plant is grown. Tulips are classed as those which bloom in April and those which flower in May and June. Darwin tulips are a tall, graceful, large-flowered race, exhibiting a great range of colors. *T. gesneriana*, often called the "cottage tulip" is a popular species introduced by way of Germany from the west of Asia. The tulip belongs to the large lily family.

Tulip Tree (*Liriodendron tulipifera*). A large, beautiful tree native to the eastern United States. It belongs to the magnolia family. It derives its name from its large greenish yellow flowers which resemble tulips. It is sometimes called "tulip poplar" but this is a misnomer (see Poplar). The wood is easily worked and is used for house and boat building. The blossom is the state flower of Indiana.

Tupelo (*Nyassa* spp.). A water-loving genus of trees of the dogwood family, known also as pepperidge, gum and by other names. Tupelo is the Indian name and the New England name is pepperidge. Woodsmen commonly refer to these trees as gums.

N. sylvatica occurs in the eastern United States and in Ontario and is often grown as an ornamental.

Turnip (*Brassica rapa*). A biennial vegetable of the mustard family of the same genus as the rutabaga (which see) grown for its edible root which is used as food for humans and for livestock. The flowers are yellow and resemble those of mustard.

Vanilla (*Vanilla* spp.). Certain tropical orchids from whose dried seed pods is extracted the vanilla of commerce used extensively to flavor cakes, perfumes, ice cream, tobacco and sauces. A native species of flat-leaved vanilla (*V. planifolia*) of Mexico and Central America is most widely used commercially. It is also cultivated in the West Indies and in Ceylon and Java. (See Orchid.)

Velvet Bean (*Stizolobium* spp.). An annual legume native of the Old World and grown extensively in the United States as a forage crop and for the beans which are made into meal and used as a stock food.

Venus' Flytrap (*Dionea muscipula*). An insect-catching plant of the sundew family occurring in North Carolina. Hairy, traplike leaves ensnare insects which are then slowly digested by secretions of the plant.

Verbena (*Verbena* spp.). Old-fashioned garden flowers of the vervain family. The sweet-scented *V. hybrida* is a favorite with bold, gayly-colored heads of bloom. The moss verbena (*V. erinoides*) is used for hanging baskets.

Vetch (*Vicia* spp.). With the exception of hairy vetch (*V. villosa*), the vetches are annuals grown as forage plants and for green manure. The common vetch (*V. sativa*) comes from Great Britain and the hairy vetch from Germany and Russia.

Viburnum (*Viburnum* spp.). A genus of useful hardy shrubs of the honeysuckle family widely used as ornamentals. The genus is well represented by native American species. The snowball (*V. Opulus sterile*) is a common species. The Japanese snowball (*V. tomentosum plicatum*) is a better plant, since the common snowball is very susceptible to the aphis. The high-bush cranberry (*V. Opulus*) is a popular border plant. Its red edible berry resembles the ordinary cranberry.

Violet (*Viola* spp.). Small wild flowers of the violet family ranging in color from white to pink and yellow and shades of blue. The violet does not possess fragrance but otherwise is almost a perfect flower. Violets occur wild in moist places but may easily be transplanted to the garden. Illinois, Wisconsin and Rhode Island have adopted the violet as their state flowers.

Virginia Creeper (*Psedera quinquefolia*). A trailing vine of the grape family with handsome dark blue berries. It is sometimes mistaken for the poison ivy but may readily be distinguished by its five-parted leaf, whereas the poison ivy has a three-parted leaf. It grows wild in the eastern part of North America and is planted as an ornamental.

Wahoo. See Elm.

Walnut (*Juglans* spp.). Valuable trees for their lumber, edible nuts and for shade. The black walnut (*J. nigra*) grows east of the Rocky Mountains and is prized for its wood which is used in furniture, in shipbuilding and in gunstocks. The round nuts are rich in oil. The butternut (*J. cinerea*), or white walnut, is a valuable lumber tree. In earlier days a stain from the husks was used in dyeing clothing known as "butternut jeans." The butternut is not as high a tree as the black walnut. The southwestern (*J. rupestris*), or Mexican walnut, grows in the Southwest and in Mexico. It has a smaller nut than the eastern species. The California walnut (*J. californica*) finds its chief value as a stock on which to graft the English walnut (*J. regia*). The name of the English walnut, *regia*, means "royal." It gave the genus name, *Juglans*, to the walnuts, from the Latin meaning "Jove's nut." Originating in Persia and northwestern India, this tree found its way to England. There the season does not allow the nuts to ripen, but they are taken green and pickled and eaten whole as a relish. From England the English walnut came to America where it is now an important crop in California.

Watermelon (*Citrullus vulgaris*). An annual vine of the gourd family, native to Africa and grown now most extensively in the United States. The fruit is a large berry in structure, often weighing fifty pounds or more. The outside is green or variegated and the inside is a sweet red pulp. Demanding warm growing conditions, the culture is restricted principally to the southern half of the United States. The fruit is eaten raw or made into pickles or preserves. In the Orient the seeds are eaten.

Wheat (*Triticum sativum*). An annual grass, probably originated in Asia, cultivated since prehistoric times. It bears starchy seeds in spikelets and these are prized all over the world as food, and it is today the chief bread food of the world. Winter wheat is sown in milder climates in autumn and is harvested in early summer. In severe climates the seed is sown in early spring and is harvested in late summer. This is known as spring wheat. Wheats are classified as hard and soft wheats for bread making. Durum wheat is very hard and is the best source of semolina, from which macaroni products are made. One-grained wheat, einkorn, is an interesting botanical form but is not grown extensively. Other kinds of wheat include Polish wheat, spelt, emmer, poulard wheat and club wheat. More than 200 distinct varieties of wheat are grown in North America. Wheat is the world's most valuable cereal crop.

Wild Carrot (*Daucus carota*). This wild flower and weed is known also as Queen Anne's lace and bird's-nest weed. It is usually considered to be the same species as the common cultivated carrot (which see).

Willow (*Salix* spp.). A genus of shrubs and trees of the willow family found over a wide range from the arctic regions southward. In the coldest regions the plants are often only two or three inches in height but with the typical catkins and narrow leaves of the willow. In warmer places the willow becomes a tree as high as 120 feet and three feet in diameter. The wood is soft and not useful for lumber. The willows are valuable for holding the soil along the banks of streams, their favorite habitat. The bark and the young shoots, or osiers, are used widely for basket making and wickerwork. The imported white willow (*S. alba*) and the native black willow (*S. nigra*) are common species. The shrub pussy willow (*S. discolor*) with its furry catkins in spring is often used for decoration. The almond-leaved willow (*S. amygdaloides*) is distinguished by its broader leaves resembling those of the peach or almond tree.

Winterberry (*Ilex verticillata*). A shrub of the holly (which see) genus found in low areas in the eastern United States. The flowers are small and white and are followed by bright red berries which hang on after the leaves fall, and with care may be used for Christmas decorations. The plant is wrongly called "black alder."

Another species, the smooth winterberry (*I. laevigata*) has earlier ripening orange-yellow berries.

Wintergreen (*Gaultheria procumbens*). A creeping evergreen plant of the heath family and a relative of the mountain laurel. It has waxy white flowers and glossy foliage. The fragrant red berries are a favorite food for birds. From the leaves is extracted the oil of wintergreen which is used as a flavoring and in medicine.

Wistaria (*Wistaria* spp.). The wistaria, named after Caspar Wistar, is also spelled "wisteria." It is a climbing shrub of the pea family and is prized for its handsome clusters of lilac-purple pea-shaped flowers. The Chinese wistaria (*W. chinensis*) is a popular species though the flowers are without scent. The Japanese species (*W. floribundia*) is a much grown scented flower, earlier blooming than the Chinese. An American species (*W. frutescens*) is seldom grown in cultivation.

Witch-hazel (*Hamamelis virginiana*). A many-stemmed shrub or small tree of the eastern United States. The flowers appear late in the season just before the leaves fall and resemble golden streamers. They curl up and remain through winter. Among the flowers are the seed pods which have the ability to shoot out their seeds for considerable distances. The witch-hazel is often used as an ornamental. From the leaves and twigs an extract is obtained which is used as a tonic and as a lotion.

Witloof Chicory. See Endive.

Woodbine (*Lonicera periclymenum*). The common name for the European honeysuckle. (See Honeysuckle.)

Yam (*Dioscoreaceae*). The term is sometimes wrongly applied to sweet potatoes. The yam belongs to another family and is a climbing plant of the tropics, grown for its edible root which may reach a weight of 100 pounds, although the larger varieties are not as valuable for food.

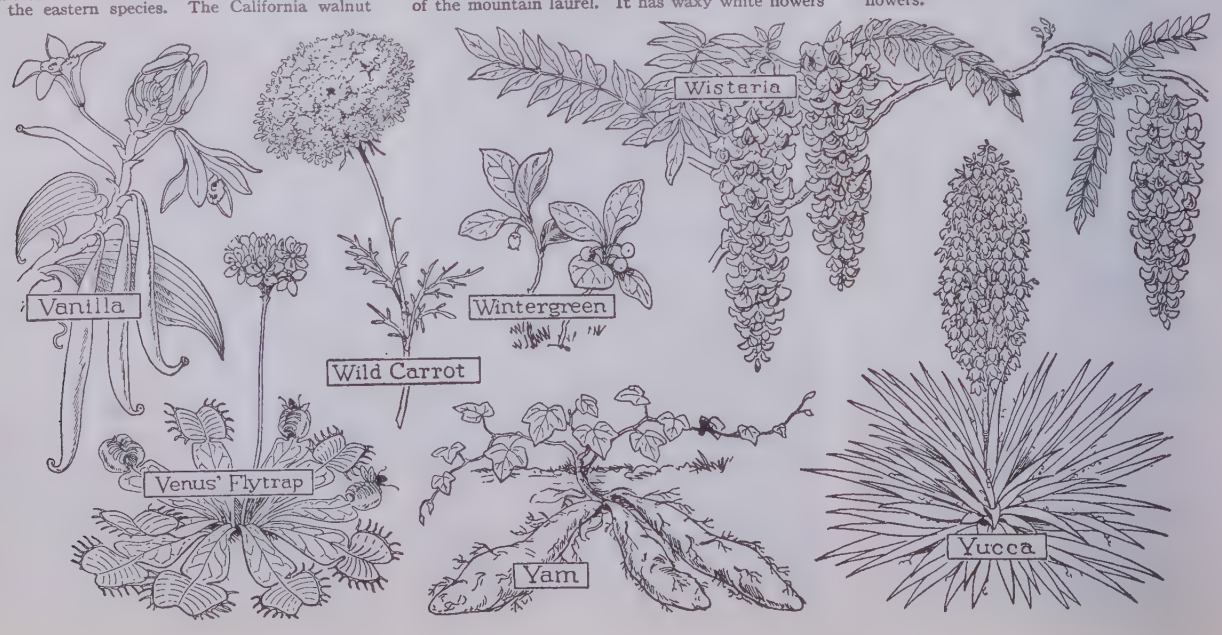
Yarrow (*Achillea millefolium*). A common perennial weed of the northern hemisphere, named for Achilles who is said to have discovered it. It is sometimes cut as a hay crop and often occurs as an impurity in timothy and clover seed. A tonic is made from the plant leaves and flowers.

Yeast (*Saccharomycetes*). Microscopic single-celled fungi which reproduce rapidly with food, moisture and proper temperature conditions. They secrete enzymes which break up sugar into alcohol and carbon dioxide in alcoholic fermentation. Yeasts are used in bread making to make the bread rise. Commercially yeast is sold as dry, compressed and liquid.

Yew (*Taxus* spp.). Evergreen trees or shrubs of the yew family with flat leaves or needles, darker green above and paler green below. The fruit is cup-shaped enclosing a bony seed. The fleshy covering is red. The western, or Pacific yew (*T. brevifolia*) furnishes wood used in making canoe paddles and in cabinet work. The American yew (*T. canadensis*) is a low shrub known also as ground hemlock. It is used for decorative wreaths.

Yucca (*Yucca* spp.). A genus of plants of the lily family with long, pointed leaves on a woody stem and bearing white flowers in terminal clusters. The yucca is native to the southern United States. Adam's needle (*Y. filamentosa*) is said to have been used by Adam in the Garden of Eden to sew the first garments. It bears an edible fruit known as the "datile." The Joshua tree (*Y. brevifolia*) is a branching species found in the Mohave Desert. It was named by the Mormons. The Mission Bells (*Y. Whipplei*) of California is an attractive plant with beautiful drooping, bell-shaped blossoms.

Zinnia (*Zinnia* spp.). A showy annual garden flower, member of the composite family. A common species which has been highly developed for flowers is *Z. elegans*. The Mexican zinnia (*Z. haageana*) is a dwarf form which bears hundreds of small orange flowers.



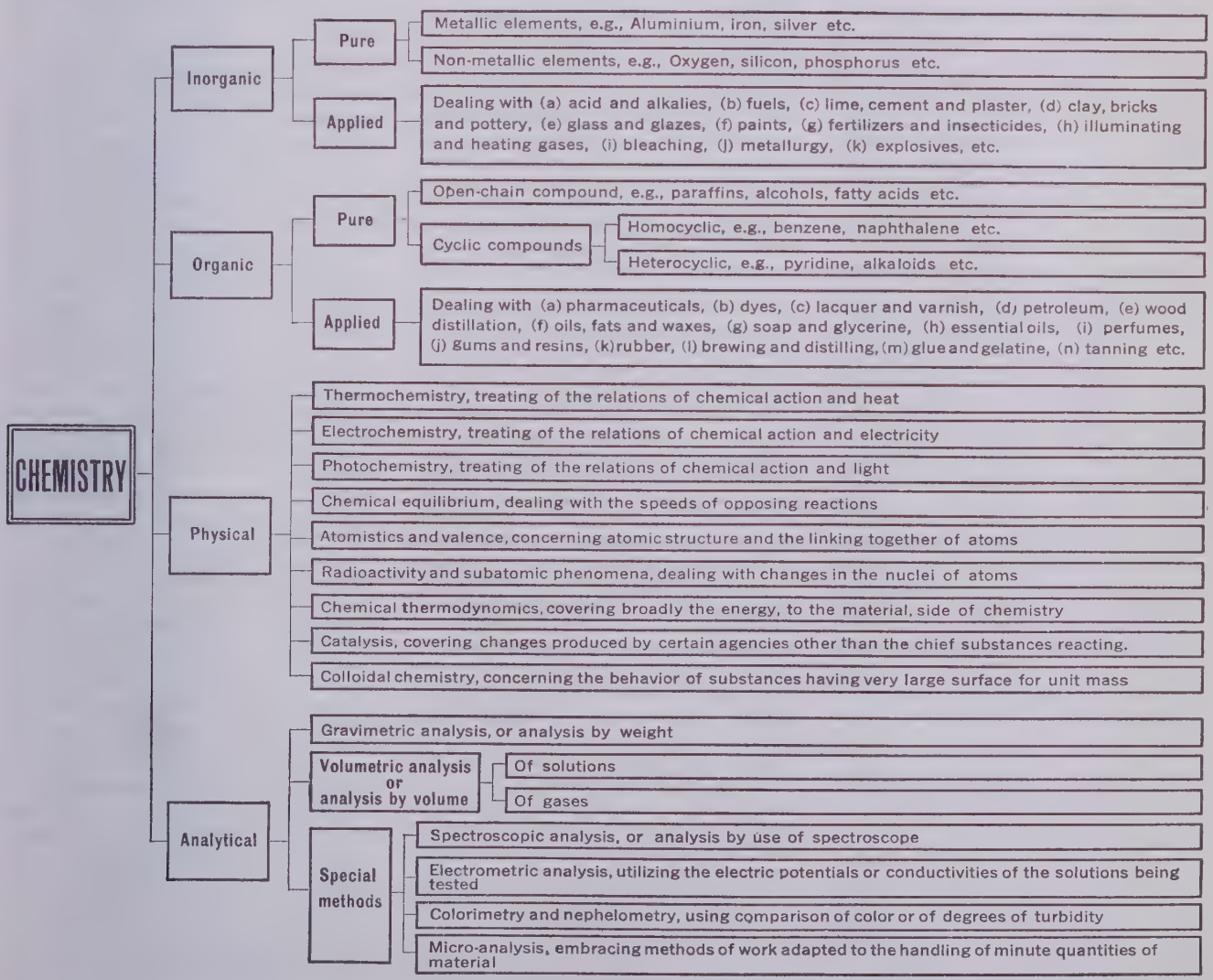
CHEMISTRY

WE SPEAK of inanimate nature, or the mineral world, and of animate nature, the world of plants and animals. The materials and substances that make up these two worlds, and the changes that the substances may undergo, were long ago assigned for treatment to *inorganic chemistry* and *organic chemistry* respectively; and this old classification is, broadly speaking, still a true one today. This time-honored separation is based upon the kind of matter that is being studied.

Many theories about matter and chemical change have been developed, and later improved or else discarded in favor of better theories. In such theoretical studies, the physical as well as the chemical characteristics of matter must be considered, and so has grown up the great division of chemistry called today *theoretical* and *physical* chemistry. Here belong subdivisions dealing with *atomic theory*, *atomic structure* and *radioactivity*, which will be mentioned later. One far-reaching theory discusses matter in the *colloid* condition, in which the forces at such interfaces as that between a solid and a liquid play an important rôle (*colloid* and *capillary* chemistry). *Chemical equilibrium*, including as in physics, both statics and kinetics, and the rules, such as the *phase rule*, which govern equilibrium, form another branch of physical chemistry. When matter changes, not only does its substance change, but its energy changes also. Very often the energy change is the more important of the two. As further divisions of physical chemistry we therefore have *thermochemistry*, *electrochemistry* and *photochemistry*, dealing respectively with the relations of chemistry to heat, electricity and light. As Sir J. J. Thomson has said, there is no longer any clear borderline dividing chemistry and physics. The fact that physics has made more progress in the last three decades than any science ever has in any like period of time, is now enabling chemists and physicists to find out the reasons for those fundamental changes of chemistry which have to do with the binding of atom to atom and which are studied under the name of *valency*.

Analytical chemistry is a division based not on the materials concerned, nor on the theories about them, but primarily on the processes used. Broad subdivisions of this are *qualitative analysis*, which finds out what substances are present; and *quantitative analysis*, which finds out exactly how much. This latter may be done either by measuring weights (gravimetric analysis), or measuring volumes (volumetric analysis). Other subdivisions include: (according to materials) gas analysis, organic analysis, analysis of food and drugs; and (according to method) microanalysis, colorimetric analysis, electrometric analysis, spectroscopic analysis.

In many schools in this country, chemistry is divided for convenience of study into inorganic, organic, physical and analytical chemistry, as above outlined; but these divisions overlap. Laboratory work is some-



The Divisions of Chemistry

This diagram made from an outline by the author gives an example of a possible way of dividing chemistry. As is always the case with classifications, the classes overlap. It will be found useful in giving a general view of the field of chemistry including some of the principal connections of the science with the work of the world.

times called "practical chemistry." Progress of the greatest "practical" value in industry is nowadays quite often the result of armchair theorizing. We are at present lacking more in guiding principles than in experimental facts.

Chemistry and the Work of the World. As civilization progresses, chemistry is applied to more and more of the activities with which mankind is busy. The branches of *applied chemistry* grow more and more numerous every day. Chemistry of drugs is *pharmaceutical chemistry*; of healing, *chemotherapy*; of life processes, *biochemistry* or *physiological chemistry*; of industrial processes, *industrial and engineering chemistry*; and so forth.

It is of interest to enumerate a few of the industries in which chemistry is a vital factor, and which, therefore, have a "chemistry" of their own: the chemical industry itself (acids, alkalies and other chemicals); bleaching; fuels; electrochemical industries; metallurgy; lime, cement and plaster; clay, bricks and pottery; glass; paint; lacquer and varnish; fertilizers and insecticides; dyes; drugs; illuminating and heating gas; petroleum; wood distillation; oils, fats and waxes; soap; glycerine; essential oils, perfumes and flavoring materials; turpentine and rosin; gums and resins; rubber; sugar; papermaking; explosives: tanning; glue and gelatine manufacture. All of these branches of applied chemistry have several textbooks of their own; but all are based on such fundamental material as that presented in the diagram.

THE FIELD OF CHEMISTRY

Chemistry is that science which is largely concerned with a study of the different species of matter and of the changes from one species to another. When iron rusts, or when charcoal burns, the products of these chemical changes are species of matter that are different from the original iron or charcoal. The different species or kinds of matter are called *substances*. Granite, and also gunpowder, are mixtures of at least three different substances.

Substances are recognized and identified often by their *physical properties*, such as color, density, boiling point, melting point and solubility. They can also be recognized by their *chemical properties*, such as combustibility, ease of rusting, or, generally, their *chemical reactions* or behavior toward other substances chosen to test them with.

Pure Substances. In studying the different kinds of matter (different substances), such as iron, charcoal, salt, sugar or niter, it is necessary first to prepare them in a pure state. To do this the chemist uses various processes. In *filtration* the insoluble solid matter is retained by a piece of unsized filter-paper, while the liquid passes through the paper and is collected as the *filtrate*. Instead of filter paper, unglazed earthenware may be used to filter drinking water. The pores in this are so small (in Pasteur filters) that even the minute microbes, some of which cause disease, cannot pass through.

In *distillation* a liquid, by raising its temperature, is converted into gas and is so separated from any substances that accompany it which are less *volatile*, that is, less easily gasified. In this way, for example, pure drinking water may be obtained on board ship from sea water, which contains difficultly volatile salts, including common salt, dissolved in it. The gaseous water (steam) is *condensed* to water again by passage through a cooled tube. It should be noticed that the changes from water into steam and vice versa are classed as *physical changes*, because analysis shows that steam and water consist of the same substance differing only in state, steam being in the gaseous state, water in the liquid, and ice in the solid state.

Sublimation refers to the distillation of solids. For example, sal-ammoniac and benzoic acid are purified by sublimation. *Lixiviation* and *leaching* refer to the dissolving out of a soluble substance from its admixture with an insoluble substance.

Physical Properties. The substance having been obtained in a pure state, a study may be made of its properties. Purity is extremely important; and chemists and physicists alike have in the past often wasted years of their lives in studying substances that were seriously impure and that could not, therefore, be expected to yield constant results.

Solubility. Among physical properties, *solubility* is one of the most important to the chemist. Liquids dissolve solids, other liquids, and also gases. If common salt be added to water, it dissolves, and, after stirring, the solution is said to be homogeneous because all samples, wherever taken, prove to be identical. Water is here the *solvent* and salt the *solute*. If more and more salt be added by degrees, the temperature remaining constant, a stage is finally reached at which the solution will take up no more salt. The solution is then said to be *saturated*, at that temperature, with common salt.

Concentration may be stated in any one of three ways: (1) Weight of salt contained in such a weight of the solvent; (2) weight of salt contained in such a weight of the solution; (3) weight of salt contained in such a volume of the solution. When the temperature is raised it is usually found that the solution can take up more salt. Tables of solubilities state the concentration of the saturated solution at a series of different temperatures. It is by making use of their differences in solubility that intimate mixtures of different solids can be separated into their components; for instance, radium bromide is separated from barium bromide by repeated *fractional crystallization*.

Most, but not all, solids are more soluble at higher temperatures than at lower. All substances seem to be slightly soluble in water, although in some cases the saturated solution is an exceedingly dilute one.

That gases dissolve in water is known to every one who has examined *soda water*, which contains the gas carbon dioxide in solution. If the gas is under pressure, the weight of it that the solvent will dissolve is proportional to the pressure (Henry's Law). Since soda water is *aerated* at several atmospheres' pressure, a portion of the gas tends to escape when the pressure is released. Gases are less soluble the higher the temperature, and can often, though not always, be completely removed by boiling the solvent. By ten minutes' boiling, for example, the gases dissolved from the air by ordinary water may be removed and the water thus rendered flat or insipid to the taste.

Molecular Hypothesis. In studying the physical properties of substances there is a hypothesis as to the structure of matter—the kinetic-molecular hypothesis—that has proved particularly illuminative. On this hypothesis, each substance is supposed to be built up of minute particles of its own material called *molecules*, all alike and each incapable of finer subdivision if the substance is to remain the same. In the solid, or crystalline, state of a pure substance, the molecules are arranged in rank and file in all three of the dimensions of space, and this gives rise to a regular external form, the crystal form, demonstrating the orderly internal arrangement. The molecules are vibrating, but they are not wandering about among their neighbors, except very occasionally. If the end of a bar of lead is coated by electroplating with gold, the gold *diffuses* into the lead only very slowly. In the case of liquids, the molecules are closely crowded together but they are able to wander freely among their neighbors, like people in a crowd. Consequently, diffusion in liquids is much faster than in solids. If a particle, for example, of charcoal, just large enough to be visible under the microscope is suspended in a liquid, such as water, and viewed under the microscope, the charcoal particle is seen to be moving about in an erratic manner. This movement is the *Brownian movement*, and it is caused by the unequal bombardment of the water molecules on opposite sides of the particle of charcoal. Study of the Brownian movement in recent years, using a "movie" camera with the microscope, has convinced the most skeptical chemists of the reality of molecules and of the truth of the molecular hypothesis. In the gaseous state of the substance, the molecules are at distances apart that are great in comparison with their own diameters, and are moving about in straight lines with great speed, each occasionally colliding with some other molecule or with the walls of the vessel. The miniature bombardment of the walls of the vessel by myriads of molecules is the cause of the pressure of the gas on the walls.

The Gas Laws. In agreement with this conception is the well-known fact that if a gas be compressed to one n-th part of its original volume, then its pressure is increased n-fold (Boyle's Law). For, plainly, the molecules, and therefore their impacts, will now be *n*-times as many as before. It is also a well-known fact of experiment that the pressure of an inclosed volume of gas varies directly as its absolute temperature, that is, its temperature measured from the absolute zero, which is $-273°$ C. (Charles' Law). This is accounted for by considering that the speed of motion of the molecules is increased as the temperature rises, and that the impacts of the molecules are therefore stronger. It is indeed strange that gases should all be precisely alike in conforming to these two laws, for in the case of solids and of liquids the behavior toward pressure and toward change of temperature is different for each substance. Gases, therefore, must have something in common which solids and liquids have not. What all gases have in common is this: that they contain, at like temperature and pressure, the same number of

molecules in equal volumes (Avogadro's Law). Since this is so, by weighing, under like conditions, equal volumes of different gases the relative weights of their molecules can at once be found. The *molecular weights*, compared with the weight of a molecule of oxygen gas taken as 32, of gases or of vaporizable substances are determined in this way.

Vapor Pressure. In the case of liquids, the crowding together of the molecules is much closer than in gases. If a gas be at a temperature lower than its *critical temperature*, however, it may always be compressed into a liquid. From the surface of a liquid, supposed to be placed, for example, in an empty closed vessel, some of the molecules are constantly escaping into the upper part of the vessel, where they behave like gas molecules, giving rise to a (gaseous) pressure there, known as the *vapor pressure* of the liquid. Some of these are constantly returning to the liquid, in the course of their wanderings, but their places are taken by newcomers from the liquid. As Lord Kelvin put it, the emigration is precisely equaled by the immigration. The vapor pressure, therefore, remains constant at any temperature. If the temperature is raised, this vapor pressure increases. For this reason, water in such a vessel, if raised sufficiently in temperature, might finally "burst its boiler."

Chemical Analysis. The chemical properties of pure substances may be studied by testing by experiments their behavior, under different conditions, both alone and toward other substances. In particular it may be discovered, for example, that red lead can be made to furnish the metal lead and the gas oxygen. The processes of finding out what substances or mixtures of substances are made up of are chemical analyses.

Qualitative Analysis concerns itself with the kinds of matter present, and *quantitative analysis* with the proportions by weight or by volume in which they are present. It has been found that all substances are made up from only about ninety different kinds of matter, called *elements*, combined in different ways. Thus sugar, alcohol, acetic acid, cotton and starch, although apparently so different, each contains only the three elements, carbon, hydrogen and oxygen in different proportions. All compounds containing only oxygen in combination with one other element are called oxides, as calcium oxide (quicklime), lead oxide (litharge). Those compounds containing chlorine in combination with one other element are chlorides, as sodium chloride (common salt) and so forth. In general, compounds with the termination *ide* contain only the elements whose language roots are in the names. Those whose names end in *ite* contain, besides, oxygen, as sodium chlorite; those ending in *ate*, more oxygen still, as sodium chlorate, while sodium *per*chlorate contains still more oxygen than sodium chlorate. The majority of the elements are metallic elements (metals), while only about fourteen are non-metallic elements (carbon, hydrogen, oxygen, nitrogen, sulphur, phosphorus, chlorine, silicon and so forth.

Quantitative Analysis has brought out many of the most remarkable facts of chemistry that were entirely missed by the chemists of antiquity and of the Middle Ages. It is found, by weighing, that no matter can be destroyed, although one compound may be changed into another. This principle is called the *conservation of matter*. It will be discussed later, under "Combustion."

Quantitative analysis of different samples of the same pure substance brings out the fact that the composition of every pure substance is invariably the same, or, in other words, that the chemical elements combine in definite proportions by weight to form each particular compound. This observed regularity is known as the *law of definite proportions*. By analysis of different compounds made of the same elements, A and B, it is found, further, that the weights of B which, in the different compounds, are united with the same weight of A are related to each other in the ratio of small integers. This could not have been anticipated, and, because found, calls for explanation. The accepted explanation is furnished by the *atomic theory*.

The Atomic Theory. The atomic theory, in the form in which it was stated throughout the nineteenth and part of the twentieth century, said that the molecules of every compound are built up of units, called *atoms*, of the elements that are present, and that all the atoms of any one element are identical in material and weight. For simplicity, we may, for the present, take this older statement as correct; but we shall see below that not all chlorine atoms, nor all lead atoms, and so on, are identical in mass. Since it is true that there are but ninety different elements hitherto discovered by analysis of any kind, there are also but ninety species of atoms. The atom of each element is represented by a *symbol*, which represents both its name and also its weight; thus, Fe iron, 55.8; Cu copper, 63.6; O oxygen, 16.0; H hydrogen, 1.008. These symbols, and the atomic weights they represent, may be found in the table of chemical elements (p. 921). The atomic weight of the oxygen atom is taken, for certain reasons of convenience, arbitrarily as 16.0; and the weights of all the other atoms are compared with this. The hydrogen atom is the lightest, and the uranium atom, 238.2, the heaviest atom. The compound called cupric oxide is represented by the *formula* of its molecule CuO; and the compound called water by the formula H_2O, signifying that, in the water molecule, two atoms of hydrogen are bound up with one atom of oxygen, and so on. The chemical formulas and the names of some familiar chemical substances are: CO_2, carbon dioxide; CO, carbon monoxide; NaCl, sodium chloride (common salt); CaO, calcium oxide (quicklime); $CaCO_3$, calcium carbonate (makes up the greater part of marble, limestone and other products); H_2SO_4, sulphuric acid; K_2SO_4, potassium sulphate; $MgSO_4$, $7H_2O$, magnesium sulphate (Epsom salts); O_2, oxygen gas. The last formula tells us that a molecule of oxygen gas consists of two atoms. Since the weight of one oxygen atom is taken as 16, the weight of a molecule of oxygen gas is 32, and this explains the use of 32, mentioned above, as the standard in comparing molecular weights of gaseous substances. There are matters of greater importance to discuss here than the perfectly good question of how chemists know that a molecule of oxygen is O_2 rather than simply O, or O_3, or O_4. None of these suggested alternative formulas is absurd in itself, and the active, peculiarly smelling, *allotropic modification* of oxygen known as ozone has indeed the molecule O_3. The molecular weight, or formula weight, of cupric oxide is 63.6 plus 16.0, or 79.6; and of carbon dioxide 12 plus two times 16, or 44.

It will be seen upon reflection that this atomic hypothesis accounts perfectly for the experimentally found law of multiple proportions referred to above, as well as for the observed fact (law of combining weights) that the proportions by weight in which elements combine to form compounds can always be expressed perfectly by (usually) small integral multiples of particular numbers, one number belonging to each element. Furthermore, chemical formulas furnish us with an exceedingly useful shorthand. It has taken much thought and much work on the part of many chemists in the past to give us the formula of calcium carbonate, for example. Now that we have the formula clearly established, most of us can afford to forget the tedious historical steps which led to the adoption of the formula; and thus a very young man today can be put in command of more chemical knowledge than was within the ken of all the wisest of the ancients.

Reactions in Chemistry. *Reactions* are chemical changes. Hot iron filings will react with sulphur. If the supply of sulphur be very plentiful, the iron will not use it all. The *excess* of sulphur may be driven off by distillation. The two elements have combined to form ferrous sulphide, FeS, a black substance which has properties different from either iron or sulphur. The *equation* for this reaction, which is called a *direct combination*, is written $Fe+S \rightarrow FeS$, and it tells us that 56 parts by weight of iron unite with 32 parts by weight of sulphur to form 88 parts of ferrous sulphide. The reaction produces not only a new material substance, but also something else which is not material, namely a precise amount of heat, which is a form of energy, and must not by any means be neglected merely because it has no weight. The division of chemistry termed *thermochemistry* specializes in the study of heat of reaction.

A more complex reaction, which takes place in aqueous solution, is shown by the equation: $AgNO_3+NaCl \rightarrow AgCl+NaNO_3$ where we find the four "radicals," Ag, NO_3, Na and Cl, exchanging partners. Such a change is called a *double decomposition*. A group of atoms such as NO_3 that remain together throughout a series of reactions is called a *compound radical*. Such groups differ from molecules in that they cannot usually exist alone in the free state.

Radicals are classified into *positive* and *negative* radicals. In the above example, Ag and Na are each positive, while Cl and NO_3 are negative radicals. A compound containing both kinds of radicals is a *salt*—for example, silver nitrate, silver chloride, sodium nitrate, sodium chloride.

Those salts that have hydrogen for their positive radical are called acids, and their solutions have a sour taste and turn the blue coloring matter in litmus red. Those salts that have the group OH for their negative radical are bases, and their solutions have a soapy taste and feel, and turn red litmus blue;

example, sodium hydroxide. When an acid is mixed with a base in solution, the radicals H and OH combine to form water HOH, and the remaining positive and negative radicals, on uniting, constitute a salt. If the resulting solution has no action on litmus, the acid and base have "neutralized" each other.

Salts may also be formed in the dry way by the union of an "acidic oxide" such as carbonic anhydride with a "basic oxide" such as calcium oxide, $CO_2+CaO\rightarrow CaCO_3$. The oxides of the nonmetals are acidic, while the lower oxides of the metals are basic. The higher oxides of the metals, that is, those with more oxygen, are frequently acidic. An acidic oxide yields an acid when it combines with water, while a basic oxide yields a base.

The number of different chemical compounds known today is perhaps half a million; and the number of different chemical reactions is still larger. Many large volumes would be required barely to state the facts that are known. Some of the simpler facts about a kind of reaction called *combustion* may here be outlined, to show its importance in the study of chemistry.

Combustion. Combustion is a process in which elements unite with production of heat. Most familiar combustions involve oxygen as one of the elements concerned; but sodium will burn in chlorine gas to produce sodium chloride, and here no oxygen takes part. When pure charcoal, which is composed of nothing but carbon atoms, is burned in a plentiful supply of air, the charcoal disappears from view, and the only product is an invisible gas, carbon dioxide. Air itself is really a mixture of several invisible gases, mainly nitrogen (about four-fifths by volume) and oxygen (about one-fifth by volume). The carbon atoms that formed the original charcoal have not been destroyed; but each has united with two oxygen atoms, $C+O_2\rightarrow CO_2$. The accident that the product, carbon dioxide, is an invisible gas makes the experiment appear more mysterious than it really is. If we took the trouble to catch and collect all the carbon dioxide gas, we could, by taking sufficient pains, recover all the original carbon atoms. A candle, or kerosene, consists of compounds of carbon and hydrogen. When such compounds are completely burned, carbon dioxide, CO_2, and water, H_2O, are produced. Heat also is produced. When a candle is ignited and placed in a large glass vessel of air which is then closed, the vessel with its contents does not change in weight even though part of the candle disappears. This is because no atoms present in the candle or in the air are allowed to escape either in the form of water or carbon dioxide. The condensed water can be seen as a dew on the inner walls of the vessel. The candle soon goes out, however, because, as it progressively depletes the oxygen supply in the vessel, the rate of burning grows slower and slower until the heat furnished by the combustion is not supplied fast enough to make good the heat lost around the wick, and so the temperature falls below the kindling point. The vessel still contains unused or unburned oxygen to the extent of perhaps fifteen percent. It is just as rational to speak of burning the oxygen as of burning the candle.

Extinguishing Fires. The experiment described gives us a clue to the common sense of extinguishing fires. We can either, by water, reduce the temperature of the burning object below the kindling temperature; or else we can cut off, in part, the oxygen supply until oxygen forms less than fifteen percent of the gases which should feed the fire. This last can be done by diluting the oxygen of the air with a gas, such as steam, carbon dioxide or carbon tetrachloride, which does not support combustion. Water from the fire hose is converted to steam when it falls on very hot objects, and thus a stream of water is doubly valuable, for it reduces temperature and also furnishes an inert vapor. A fire in a ship's hold may be extinguished by releasing much carbon dioxide gas which, in ocean liners, is kept in steel tanks ready for the purpose. Instead of diluting the air with steam (vapor of water), one can less destructively spray such a liquid as carbon tetrachloride (from a portable brass pump) upon small conflagrations. This liquid is much more easily vaporized than water, and the vapor does not support combustion.

Rusting and Rotting. These chemical processes are to be regarded as slow combustions, but both require also the presence of moisture. Rotting leaves and stable manure produce heat fast enough to make them valuable for horticultural hotbeds; and rotting damp hay, through which heat does not escape rapidly, may finally kindle itself "spontaneously" into fast combustion.

Respiration of animals is a process enabling them to supply oxygen to their blood. This oxygen, by a process of slow combustion, furnishes heat and muscular energy to the body by oxidizing substances produced by digestion and assimilation from the food. The food is not burned directly, and the stomach is not a central heating plant, as is sometimes supposed. In this combustion of animal life for which the blood carries the oxygen, it should be noted that it is not the material products, chiefly carbon dioxide and water, which the animal desires, but the energy that arises from the chemical changes. The carbon dioxide must be eliminated in the exhaled breath.

A man can still keep alive in air in which a candle will not burn because of the dilution of the oxygen; and carbon dioxide gas is no longer regarded as especially toxic to animals. The commonest form of gas poisoning is by carbon monoxide gas, which arises in the combustion of carbon-containing compounds in an insufficiency of oxygen, and is, therefore, found in the exhaust gases of gasoline engines.

Volumes have been written on the subjects of combustion and respiration alone. In chemistry today we are embarrassed by the enormous number of facts. After obtaining its facts, every science endeavors to reduce chaos to order by classifying the facts. It is already comforting to know that there are only about ninety kinds of atoms. Chemists have classified and catalogued enormous numbers of compounds of these atoms and their reactions, and this vast multiplicity of facts tends to become unmanageable and indigestible. If we knew more about the structure of atoms themselves, perhaps we might secure the key to why these compounds are formed by the atoms and why the compounds react as they do.

Atomic Structure. For the reason just stated, the progress that has been made in recent years in the knowledge of atomic structure is very welcome, and of great importance because it tends toward simplification. By a more complete knowledge of atomic structure the young man of tomorrow may have once again placed in his hands more chemical knowledge than had all the wizards of yesterday; from a more complete understanding of the atoms themselves he may hope to be able to predict innumerable chemical facts as being just what were to be expected.

Electron and Proton. From the present day viewpoint, atoms are composed or built of two kinds of units or building stones, namely electrons and protons. Electrons may most conveniently be regarded as units of negative electricity, and protons as units of positive electricity; but these simplest units are not yet by any means fully understood. The charge of an electron is the same as the charge of a proton, but of opposite sign. The mass of the proton is 1,847 times greater than that of the electron, and the mass in both cases is entirely electromagnetic in origin. This means that matter is composed of electricity, and that electricity comes in unit packages of opposite electric signs. Further experimental study of electrons shows that each electron is accompanied and directed by a wave train of its own, and our future knowledge will doubtless grow out of a development of this finding with the aid of the new *wave mechanics*.

The Nucleus Atom. All the positive charge of any atom is concentrated in a very minute nucleus, which consists, in every case save that of the simplest atom, hydrogen, of a certain number of protons with not fewer than half as many electrons. The hydrogen nucleus consists of a single proton. The aluminium nucleus, for example, consists of 27 protons and 14 electrons. The net positive charge on this nucleus is therefore +13. Around this nucleus are 13 extranuclear or planetary electrons, revolving in orbits as do the planets round the sun, and held in their orbits not by gravity but by electrostatic attraction. The aluminium atom as a whole is therefore electrically neutral. Its mass resides almost entirely in its nucleus, since protons so greatly exceed electrons in mass. Aluminium is said to have the *atomic number* 13. Its nuclear charge is 13, and the number of its planetary electrons is 13. The atomic numbers of the chemical elements run from 1 for hydrogen, 2 for helium, 3 for lithium and so on, up to 92 for uranium. If all the elements are arranged in order of ascending atomic number, aluminium is the thirteenth element. Only two of the 92 elements up to uranium have not yet been discovered, namely, numbers 85 and 87.

Knowledge of the kinds of orbits in which the planetary electrons travel helps us to understand why atoms combine.

Certain groupings of the outermost electrons, especially groups of two and of eight, are particularly stable. We may say that two atoms will have an excellent motive or a good reason to combine if, by doing so, each can attain a group of eight for its outermost covering of electrons.

Helium is the only atom with but two electrons, each very firmly bound, in its outermost portion. Neon, argon, krypton, xenon

and niton have each exactly eight. All six of these atoms resemble each other very closely, despite their enormous differences in weight, because each is an inert gas and fails to combine with any other element. Since they already have such stable arrangements of electrons in their outmost portions as two or eight, they have nothing to gain, as it were, by combining. In the periodic system of the elements (see the table), we find them all in the same family, called Group O. In Group 1, we have a family of elements each of which has precisely one electron more, only loosely attached, than some very stable configuration of electrons. For this reason, all the elements of this family show chemical similarities due to this single oddly placed electron. Similar things may be said of the other groups or families of elements. The periodic classification was first set down as representing the experimental facts about 1868, long before the reasons for it were known. The Russian Mendélejeff, and the German, Meyer, working independently, discovered and announced what has come to be known as the "periodic table" in 1871. The atomic structure which explains the periodic classification has become clear only in the last few years.

PERIODIC CLASSIFICATION OF THE CHEMICAL ELEMENTS

Group	I A	I B	II A	II B	III A	III B	IV A	IV B	V A	V B	VI A	VI B	VII A	VII B	VIII			O
Period 1	H1																	He2
2	Li3		Be4		B5		C6		N7		O8		F9					Ne10
3	Na11		Mg12		Al13		Si14		P15		S16		Cl17					A18
4	K19	Cu29	Ca20	Zn30	Sc21	Ga31	Ti22	Ge32	V23	As33	Cr24	Se34	Mn25	Br35	Fe26	Co27	Ni28	Kr36
5	Rb37	Ag47	Sr38	Cd48	Y39	In49	Zr40	Sn50	Cb41	Sb51	Mo42	Te52	Ma43	I53	Ru44	Rh45	Pd46	Xe54
6	Cs55	Au79	Ba56	Hg80	La57 to Lu71	Tl81	Hf72	Pb82	Ta73	Bi83	W74	Po84	Re75	—85	Os76	Ir77	Pt78	Nt86
7	—87		Ra88		Ac89		Th90		Pa91		U92							

Valence. Atoms are bound into stable groups of atoms, or molecules, by the forces of *valence*. A carbon atom can bind to itself four hydrogen atoms to form a molecule of methane (marsh gas). Using the word valence in a metaphorical sense, we say that carbon has a valence of four, and hydrogen a valence of one. Valence is of two kinds, *covalence* and *electrovalence*. In explaining the existence of methane on the *electronic theory of valence*, we first note that hydrogen (atomic No. 1) has but one planetary electron, and that carbon (atomic No. 6) has six. Of these six, two are in orbits close to the nucleus, and therefore very firmly bound to it by electric attraction, while the remaining four are in outer orbits, and are called *valence electrons* because they are available to help in binding atoms together. Each of the four hydrogen atoms lends its electron to the carbon and itself gets a half share of one of the four valence electrons of the carbon. The carbon is thus successful in attaining a stable group of eight electrons, which it shares in four *shared pairs* with the four hydrogen atoms, each of which in turn has thus succeeded in securing a stable pair. To state the situation humanly, we might say that each atom has succeeded in attaining its ideal. The binding of atoms together by the sharing of pairs of electrons is called binding by covalence.

SOME COMMON VALENCES

I (univalent)	II (bivalent)	III (trivalent)	IV (quadrivalent)
H	Mg	Al	C
Na	Ca	Cr	
K	Sr	Bi	
Ag	Ba	Sb	
(NH_4)	Mn(ous)	As	
	Pb		
Cu(ous	Cu(ic)		
Hg(ous)	Hg(ic)		
	Fe(ous)	Fe(ic)	
	Sn(ous)		Sn(ic)
	Zn		
	Pt(ous)		Pt(ic)

This short table gives a few common valences. Metals with two valences typically exhibit the lower in the -ous compounds and the higher in the -ic compounds, for example in mercurous and mercuric salts. Some elements have other valences, for instance, antimony (Sb) has also a valence of V. Vanadium (not given here) has valences of II, III, IV, and V. A study of the Tables beginning on page 921 will reveal all the known valences.

In binding by electrovalence, lending, borrowing and sharing of electrons does not take place. Instead, one atom gives up one or more of its own electrons, and another atom takes full possession of what is given. Thus sodium (atomic No. 11) has eleven planetary electrons, arranged in stable groups of two and eight, with only one valence electron. Chlorine (atomic No. 17) has 17 planetary electrons, arranged in the atom in stable groups of two and eight, with seven in the outermost or valence group When a sodium atom combines with a chlorine atom, it gives to the chlorine atom its valence electron. The sodium atom, formerly neutral, therefore becomes singly charged positively, and is now called sodium ion, and written Na^+. The chlorine atom, formerly neutral, becomes singly charged negatively because it has acquired a gift of an electron; and it is now called chloride ion, and written Cl^-. In a crystal of solid sodium chloride there are an equal number of these ions, built together in such a way that around each sodium ion are six chloride ions each at the same distance from the sodium; and, around each chloride ion, six sodium ions each at the same distance from the chloride ion. The arrangement of atoms in such a simple crystal as sodium chloride can be found by studying the scattering by the crystal of a beam of light of very short wave length, or, in other words, by the *X-ray reflection method.*

The Ionic Theory of Solution. In view of the fact that sodium chloride is built up of ions, it does not appear very unreasonable that these ions should persist when sodium chloride is dissolved in water. The thought that aqueous solutions of acids, bases and salts contained the individual radicals of these substances, electrically charged and swimming free in the form of ions, was first put forward in 1887. This is today the accepted theory, and the reactions used in qualitative analysis of aqueous solutions are regarded as the reactions of the individual ions of the salts studied. In many non-aqueous solutions, the ions of salts remain bound to their partners, and such solutions do not contain free ions.

The Atomic Nucleus. Up to the year 1896, all the known reactions of chemistry were those which were due to changes of the valence electrons of atoms, which are the outermost of all. In the years since 1896 it has been found that all atoms above No. 81, and also a few others, may have unstable nuclei. When an atomic nucleus spontaneously goes to pieces we have the phenomena of *radioactivity*, as exhibited by radium, thorium, uranium and so forth. Such a nucleus usually breaks into only two pieces, namely a residue; and either (a) an alpha particle or (b) an electron. An alpha particle is nothing else than the nucleus of a helium atom or, in other words, a helium atom (atomic No. 2) carrying two positive charges because it has lost its two planetary electrons. These alpha particles are expelled with very high speed from the radioactive nucleus out of which they come, and are called *alpha rays*. In cases where the radioactive nucleus ejects an electron, we have *beta rays*, which consist of a stream of very swiftly moving electrons. Some of the planetary electrons of the atom are always jerked out by the radioactive cataclysm, and therefore beta rays are not exclusively of nuclear origin.

The Radioactive Disintegration Law. Because, in an alpha-ray change, the nucleus loses two positive charges, the atomic number of the radioactive atom goes down by two; and the resulting new atom has an atomic number two less. In a beta-ray change, the original nucleus loses one electron, and so gains one unit of positive charge; and the new atom brought into being has an atomic number one higher.

Artificial Disintegration of Nuclei. Because of the enormous energy with which alpha particles are expelled from the radioactive nucleus, they are the most energetic entities available in the laboratory. Rutherford has used them as missiles to shoot at the nuclei of other atoms to see if he could break them. In this way he has succeeded in knocking protons out of a dozen different sorts of atoms, all of low atomic number. What remains after the target nucleus has lost a proton is certainly not the original nucleus, but that of a new atom. Changing at will one atom into another is *transmutation*, and Rutherford has succeeded where the alchemists failed.

Isotopes. The chlorine atom has the atomic number 17. Its nucleus has a positive charge of +17. This could be made up of 35 protons and 18 electrons; or of 37 protons and 20 electrons, or in other ways. As a matter of fact, it is found by the experiments of *positive ray analysis* that some chlorine atoms weigh 35 and others 37. When we weigh chlorine atoms by the older methods of analysis we find 35.46. But this is merely an average value, and it tells us, by arithmetic, the proportions of the two chlorines, Cl^{35} and Cl^{37}, that are mixed together. Isotopic forms of an element have the same nuclear charge, but different masses, in typical cases. Since the charge governs the number and arrangement of the planetary electrons of the atom, on which depend all the ordinary chemical properties, it follows that isotopic forms are identical chemically. The isotopes of lead were found by the entirely different methods of radioactivity, and are among those known best and longest.

SUBDIVISIONS OF CHEMISTRY

In its treatment of the various forms of matter, chemistry divides itself into the two great branches of inorganic and organic chemistry.

Organic Chemistry. The latter is so called because it originally dealt with the substances that are found in the organic vegetable and animal kingdoms. Practically most of these substances contain carbon, so that organic chemistry is nowadays the chemistry of the carbon compounds. As the number of known organic compounds is well over 200,000, the subject is a large one, with a very voluminous literature, increasing year by year in yearly as well as in total volume.

Carbon. The valence of carbon in most of its compounds is uniformly 4, a regularity which simplifies matters considerably at the outset. Carbon atoms are found to have the faculty of linking themselves together to form chains and rings. In this faculty carbon is exceptional among the elements, and for this reason no other element approaches carbon in the multitude of its compounds so as to merit the treatment of its compounds as a separate branch of chemistry. The attaching of carbon atoms to each other does not utilize all four of the available valences, and the unoccupied valences are therefore able to attach to the molecule such other elements as hydrogen, oxygen, nitrogen and so forth.

It is found that the same grouping of elements recurs as part of a complex molecule; and all substances that possess the same group somewhere in their molecule are fortunately found to show the same reactions in virtue of the presence of that group. Thus, all the compounds containing the group CH_2OH are classed as primary alcohols; those with the group CHO are aldehydes; those with COOH are acids; those with the group

O
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—C—attached to carbon atoms on both sides, are ketones; and so on. The fact that all primary alcohols, all aldehydes, acids and so forth, behave chemically more or less alike makes it possible to bring order out of the chaos of organic compounds, since the typical groupings of atoms are comparatively few in number.

Hydrocarbons. Many important organic compounds contain only the elements carbon and hydrogen. These are called the *hydrocarbons*, and include marsh gas (CH_4), acetylene (C_2H_2), benzene (C_6H_6) and the components of rock oil, which is a mixture of many hydrocarbons.

Carbohydrates. Another set of organic compounds contains only the three elements carbon, hydrogen and oxygen, the latter two in the same proportion as in water, namely, two atoms of hydrogen to one of oxygen. These are the *carbohydrates*, and include grape and fruit sugars ($C_6H_{12}O_6$), cane, malt and milk sugars ($C_{12}H_{22}O_{11}$), the starches and cellulose [$(C_6H_{10}O_5)_n$], which last is the structural material of the vegetable world. The fats and oils, common alcohol, glycerine, and acetic, citric and tartaric acids contain only carbon, hydrogen and oxygen.

When to these elements is added nitrogen as a possible constituent of organic substances, the list becomes a very varied one, including nitroglycerine, nitrocellulose or guncotton, aniline and a horde of dyes, and most of the alkaloids—substances of very powerful physiological action that occur in plants. Adding also sulphur, the vastly important proteins are included, some of which (the nucleo-proteins) may contain also phosphorus. Other than water, fats and mineral constituents, proteins constitute the building material of the animal body, and are necessary in the diet of animals.

Inorganic Chemistry, deals with ninety different elements and their compounds, including those of the mineral world. Its extent is in part indicated in the subjoined table of "Chemical Elements."

Physical Chemistry, or theoretical chemistry, deals with the reasons for the facts of organic and inorganic chemistry, and studies the energy side as well as the material side of chemical phenomena. It includes such branches as thermochemistry, electrochemistry, photochemistry, colloid chemistry and catalysis.

The selection and grouping together of the facts and principles of chemistry that bear on some particular topic give rise to such divisions as *physiological chemistry, agricultural chemistry, biochemistry* and *immunochemistry*. Such titles are, for the most part, self-explanatory.



Food

As defined by an act of Congress, food includes "all articles used for food, drink, confectionery or condiment."

THE CHEMISTRY OF FOODS

FOOD is anything which, taken into the alimentary canal, furnishes heat and energy to the system, repairs waste and builds tissue.

The common idea of food is confined to solid or semisolid foods having the above properties. Liquid foods are usually spoken of as drinks or beverages. Condimental substances, such as salt, pepper and spices, are generally segregated from the ordinary classification of foods. There is a legal definition of foods found in the act passed by Congress June 30, 1906, which is as follows:

"The term 'food,' as used herein, shall include all articles used for food, drink, confectionery, or condiment by man or other animals, whether simple, mixed, or compound." This comprehensive definition will be followed in this article.

Kinds of Foods. According to their predominant characteristics for nutritive purposes, foods are recognized as of the following kinds:

Nitrogenous. Food material containing nitrogen as a distinctive element. The common name *protein* is applied to this class of foods. Most of the true protein foods also contain sulphur as an essential ingredient. Examples of characteristic protein foods are found in lean meat, white of egg, gliadin of wheat, hordein of barley, zein of maize, and so forth. Among the liquid foods, milk contains casein, which is a most important ingredient, and albumin, a protein food soluble in cold water. Other forms of protein are insoluble in cold water but are soluble in salt solutions, alcohol and other solvents. By means of these various solvents proteins can be separated into different classes. Protein food is often described as a tissue builder, but this is not a strictly correct classification. Only certain tissues of the body, such as the muscle, the nerve and the brain, are composed largely of proteid.

Starch and Sugar. Carbohydrates form by far the largest bulk of human foods. They are typically represented by starch and sugar. There are many carbohydrates in foods, however, which are more or less useful but not important as regards quantity or digestibility. The so-called "woody" tissues and fiber in foods are composed of carbohydrates, but these are of more importance for the

nourishment of domesticated animals than for man. For practical purposes the term *carbohydrates* applied to human foods embraces only starch and sugar. These substances in a pure state are characterized by being free of both nitrogen and sulphur, which are, as above stated, the most distinctive constituents of protein. They consist solely of carbon, oxygen and hydrogen, the oxygen and hydrogen existing in the proportions to form water.

Kinds of Sugars. Sugars are of various kinds, the most important for human nourishment being cane sugar, which has the composition of $C_{12}H_{22}O_{11}$. Sugar is an abundant product of almost every plant. It is stored especially, however, in certain plants in such a manner as to become available for extraction. The principal sugar producing plants are the sugar cane, sugar beet, the maple and the sugar palm. Practically all the sugar of commerce comes from the sugar cane and the sugar beet. The amounts made from other sources are insignificant.

In addition to cane sugar and beet sugar there are other varieties of sugar derived from starch. Among these perhaps the most important for dietetic purposes is maltose. Maltose is a sugar derived from starch in the process of the sprouting of the grains containing starch, or by acting upon starch by sprouted barley (malt). The starch of cereal grains is largely converted into maltose by the ferments of the malt. Starch is also converted into sugar by the ferments of the digestive organism. The saliva begins this conversion and it is completed in the intestinal tract, especially in the small intestine. Starch is also converted into sugar by the action of a dilute acid at a high temperature, and the sugar thus formed is known as dextrose.

Glucose or dextrose, cane sugar and maltose are all valuable foods, furnishing particularly heat and energy. Starch, as such, is not available for nutritive purposes, being insoluble and incapable of assimilation. There are many other forms of sugar or sugar-forming substances found in plants, among them levulose, the companion of dextrose, found as levulon particularly in the dahlia, artichoke and certain cacti. When cane sugar is eaten or when it is treated with a dilute acid it is converted into a mixture of equal parts of dextrose and levulose.

Honey is sugar exuded by the blossoms of plants and collected and stored by bees, and consists chiefly of cane sugar which has been converted as described above by nature or the bees and hence is a mixture of approximately equal parts of dextrose and levulose.

Glycerides. Fats are also important foods, furnishing weight for weight a larger quantity of heat and energy than any other food product. Fats exist in various forms. When they are solid or semisolid at ordinary temperatures they are called "fats"; when they are liquid at ordinary temperatures they are called "oils." Among the fats some of the most important for food purposes are butter, lard and tallow; among the oils, olive, cottonseed, peanut and sesame. The fats are chemically known as *glycerides*, being a compound produced by the union of a fat acid and glycerine. In the fresh, pure state they contain but little free acid, but on standing for a long time larger quantities of free acid are found. The rancidity of the fat, however, does not depend solely upon its quantity of free acid, but upon other conditions due probably to bacterial or enzymic action. Warmth and light tend to render fats and oils rancid, while keeping them cool and in the dark tends to preserve them from rancidity.

Minerals. The fourth class of foods are those of a mineral character, namely, foods which are essentially composed of mineral substances. Among the most important of the mineral foods in the nutrition of man are phosphorus and calcium; these go to make up the greater part of bone tissue and are found as essential ingredients in many parts of the body. Phosphorus and calcium are not usually found in any concentrated form in food products, but are distributed in small quantities in nearly all foods. The phosphorus which nourishes the body is ingested usually in an organic combination and not as phosphoric acid. Certain food products, as, for instance, cereals and eggs, are particularly rich in organic phosphorus. Calcium is found in nearly all food products especially in milk and certain green vegetables.

Mineral substances other than phosphorus and lime are also useful to some extent in nutrition, as, for instance, iron, potash and soda, the latter being valuable more for their incidental properties than because of their occurrence in the tissues of the body. In other words, it may be said that the blood in order to perform its functions must have a certain saline content, without which its circulation and the carrying of food to all parts of the body would be impossible. These saline materials, must be regarded as essential parts of our food and should not be removed too rashly in the refinement of foods.

Vitamins. The discovery of vitamins, a comparatively few years ago, opened an entirely new field of investigation to the food chemist. Vitamins are compounds which act catalytically to make it possible for metabolic processes to take place which in their absence would be prohibited.

There is much to be learned still in regard to vitamins. Four, and possibly five, may be regarded as definitely established. The method of naming vitamins may be changed in the future but, at present, the common method is to use the letters of the alphabet.

Vitamin A is found abundantly in butter fat, milk, egg yolk, cod-liver oil and other fish oils, cabbage, lettuce, spinach and other leafy vegetables. It is found more generously in yellow-colored vegetables, as carrots, sweet potatoes and yellow corn, than in white corn and turnips.

Vitamin B is the anti-neuritic vitamin. It prevents the development of the disease known in Japan as beri beri, and here as polyneuritis. It is of tremendous importance in preserving health. It has lately been considered as a double vitamin, not only containing antineuritic principles, but also as protecting against pellagra. (The anti-pellagra factor in the United States is generally referred to as vitamin G). This gives it additional importance. It is found in the wheat bran and germ, the rice bran and germ, yeast, liver and milk, and in leafy vegetables generally.

Vitamin C protects against scurvy and thus has an importance which has long demanded the attention of investigators and dietitians. Especially is it important that foods that are carried on long voyages should be rich in this antiscorbutic vitamin. This vitamin is found in fruits of all kinds, especially in citrous products, milk, cabbage and green beans. If pasteurized milk is used, orange or tomato juice should be given daily. Vitamin C is easily injured by pasteurization due to heat and oxygen.

Vitamin D, the antirachitic vitamin, is the active principle which protects against rickets. This is an interesting vitamin because its effects are duplicated in the action of the ultra violet rays of the sun, carbon light and mercury vapor lamps. Patients suffering from rickets are benefited by being exposed to those radiations. Foods such as dried milk which are subjected to the rays of the sun, or of the lamps above mentioned, become charged with additional quantities of this vitamin. Such foods are called "irradiated," and are now coming into use in the treatment of rickets. This vitamin is found in fresh foods, milk, cod-liver oil and liver diets, fruits and vegetables. It regulates the assimilation of calcium and phosphorus.

Vitamin E, the separate existence of which has not yet been fully established, seems to be concerned with reproduction and tends to stimulate the reproductive organs. This vitamin exists in great abundance in the germ of wheat.

Nearly all wholesome foods, especially of vegetable origin, are rich in vitamins. If we select natural, wholesome foods which are not refined nor manipulated in any way, we shall secure a reasonable amount of vitamins for all necessary metabolic processes. Vital organs are also rich in vitamins. The liver, pancreas, ductless glands and gonads have valuable properties of this kind. They are also powerful healing agents for diabetes, anemia and goiter.

Condimentals. Condiments are useful more for their effect on palatability than for purposes of pure nutrition. Palatability, however, has important relations to digestion, and hence condiments are properly classed as foods. Most condimental substances have some nutritive properties, containing as they do more or less starch, sugar, protein and fats. Vinegar, of which the most important ingredient is acetic acid, furnishes a certain degree of heat and energy, inasmuch as all the acetic acid is burned in the body, the products being water and carbon dioxide. Salt enters not into the tissues of the body but affords hydrochloric acid, which is essential to digestion. On the other hand, wood smoke, a valuable condiment, does not have any food value.

Manner in Which Food Performs Its Functions. All food products ingested in the alimentary canal, if not already in a condition suitable for digestion, are prepared by previous mastication. The importance of the mastication of the food is shown by two facts: (1) the food in order to be digested must be properly subdivided; (2) the mixing of saliva with starchy foods is an important adjunct to digestion. In so far as meat foods are concerned, the admixture of saliva is perhaps of no importance in digestion, and the need of complete mastication is not so evident.

The chief functions of food have been noted in the original definition. All foods taken into the body, with the possible exception of water and wood smoke, undergo profound modifications. The process of digestion is essentially a chemical one, and consists in the thorough destruction of the ingested forms of matter and the building up of entirely new combinations. Attention may be called, for instance, to the fact that the fat of the human body does not consist of any particles of the fat ingested in the food, but is a substance which is generated by combinations of particles of matter in the processes of digestion and assimilation. The tissues of the body, under a selective influence which is not fully understood, cull out from the current of circulating blood those particular particles of matter which go to build them up and reject those which are of no use.

Metabolism. The building of tissue, especially in the growing animal, is one of the chief functions of foods. When an animal has reached maturity it remains in practically the same condition for a number of years. In this condition the building of new tissues ceases and nature is satisfied with restoring those which are destroyed and excreted. This process of repairing waste keeps the adult body in a state of equilibrium for a given time, but as old age comes on the repair does not keep pace with the waste and the natural decadence of age ensues. The sum of changes which food undergoes from its entry into the body until excreta are voided is *metabolism.*

Basal Metabolism. In recent years since the great advance in the knowledge of nutrition has been made, increased importance has been given to bromato therapy. It is important to know what the normal metabolism of a person is when he is resting at perfect ease, in order to know how much nutrient he requires. Numerous apparatus intended particularly for use at the bedside have been devised for this purpose. The food materials used in the human system in the normal movements and processes of the body are called basal metabolism.

Foods as Fuel. The most important function of the food is to furnish heat and energy. The human body is a pure machine and its functions depend upon a supply of heat and energy just as much as a boiler or an engine. Foods furnish heat in varying quantities as already indicated. Starch and sugar furnish about 4,000 units of heat per unit of weight; protein matter, if completely burned, furnishes about 5,500 units of heat per unit of weight; fats, when completely burned, furnish about 9,300 units of heat per unit of weight. In point of fact, however, protein matter is not completely burned in the body, and a considerable amount of nitrogen is excreted without being reduced to the last state of oxidation. Hence, protein matter does not furnish any more heat during the process of digestion and assimilation than an equal amount of carbohydrates, so that the heat value of a protein, in so far as the human machine is concerned, is practically the same as that of a sugar or a starch, while the value of a particle of fat is two and a quarter times greater than that of either a protein or a carbohydrate.

The Calorimeter. A simple method of calculation is pursued in measuring heat value. A particle of food is inclosed in a strong steel vessel, called a *bomb,* and into this vessel oxygen is pumped under high pressure. The apparatus is so arranged that by means of platinum wire, or other appropriate device, the food substance may be ignited in the atmosphere of oxygen and burned completely into final forms of oxidation, producing water, carbon dioxide, nitric, phosphoric and sulphuric acids, according to the relative quantities of the various constituents present. Before igniting the particle of food, the whole apparatus is set in a measured quantity of water at a known temperature and the rise of temperature attained is carefully noted by a standard thermometer. This apparatus is called a *calorimeter.* In this manner the accurate data which are used have been obtained.

The Body a Furnace. An exactly similar process goes on in the human organism, though slowly, and experiments have shown that the data obtained by the calorimeter are entirely comparable with those obtained in the organism. This has been proved by inclosing a human being in a tight compartment by means of which all the heat and all the products of combustion which are produced in his organism are measured. This experiment shows how complete a machine the human organism is.

Average Distribution of the Dry Food. Assuming that the average man eats one and a half pounds of dry food per day, experience has shown that this is distributed in about the following proportions:

Protein	0.25 lb.
Fat	0.20 lb.
Carbohydrates	1.00 lb.
Mineral matter, etc.	0.05 lb.

The above data are to be considered only as approximate expressions of the general distribution of the diet of an ordinary person.

Adulteration of Food. Adulteration of food has been largely practiced for the purpose of commercial gain. In so far as nutrition and palatability are concerned, and from the common point of view of the consumer, there is no possible excuse for adulteration of any kind. The sole purpose of the practice of adulteration is to secure unearned profit for the manufacturer and dealer. Adulteration of food is practiced in various ways, the most common of which are as follows:

(a) *The abstraction of some valuable ingredient.* This is illustrated in the skimming of milk and the sale of the product as whole milk.

(b) *The addition of some agent which dilutes or weakens the product.* This is shown in the addition of water to milk; of chicory to coffee; of ground shells to pepper and other spices, and in many other ways.

(c) *The concealing of inferiority of a product.* This is done chiefly by coloring or bleaching, as for instance, the use of color in a distilled vinegar to make it appear like cider vinegar; the addition of an artificial flavor to an extract to make it resemble the genuine article; the bleaching of flour to make it look like high-grade patent flour.

(d) *The addition of a substance to a food product which may render it injurious to health.* This is practiced chiefly for the purpose of preserving foods, though some of the coloring matters employed are undoubtedly injurious to health, such as sulphate of copper and many coal tar dyes. Many authorities on hygiene are of the opinion that any kind of a preservative drug added to a food product is injurious. The reason for this belief is that a preservative only acts by destroying or paralyzing germ life and a preservative is only effective when enough of it is added to secure this effect. It is a very common opinion among experts, especially those charged with the protection of the public health, that all such practices are objectionable. On the other hand, there are experts, also eminent in their professions, who maintain that the use of preservatives is not deleterious. All nations that have food laws have either forbidden or restricted the use of these preservative materials, and this shows that the feeling of the community is decidedly opposed to them. When it is further considered that every kind of food which is suitable for human consumption may be perfectly preserved in some unobjectionable way without the use of preservatives, it is evident that their employment is wholly unnecessary and, therefore, always objectionable.

Misbranding Food Products. Almost as objectionable as adulteration is the practice of misbranding. As in the case of adulteration, this is done solely to secure undeserved profits on the part of the manufacturer or dealer. From the consumer's point of view there can be no excuse offered for the misbranding of foods. This misbranding takes various forms of which the following are some examples:

(a) *Misbranding* as to the state or country in which the food is produced, as, for instance, representing a domestic oil as of foreign manufacture, either by name or other device.

(b) *The giving of a false or fictitious name of the manufacturer.* This is a very common practice among those who make different grades of products. Their own names are placed on the high grades and the names of fictitious firms on the low grades.

(c) *The calling of adulterated food by the name of the real article.* This is probably the most common form of misbranding, and is illustrated in the sale of milk which has been skimmed and watered as milk; a buckwheat flour which has been mixed with other materials as buckwheat flour, and maple sirup mixed with other sweets as maple sirup.

(d) *The misrepresentation of the qualities of a food product is another form of misbranding.* It is not uncommon to see advertisements calling attention to "superior qualities" which the article does not possess, such as "the most wholesome," "best made," "entire substitute for," and similar terms. A most dangerous practice, and one which threatens health and often life, is found in the claims made for certain varieties of infants' and invalids' food. Another very common form of misbranding is where long stored foods are advertised as fresh—a form of misbranding which is now receiving attention in all the countries of the world, and regulations are being made looking to the minimizing of this evil. Infants' and invalids' foods of all others, should be pure, wholesome and free from misbranding and adulteration.

CHEMICAL ELEMENTS

Tabulation of facts concerning all the known elements.

At. wt., atomic weight; At. no., atomic number; S. G., specific gravity; M. P., melting point; B. P., boiling point; C. T., critical temperature; ca., about.

Name, With Certain Data	Occurrence and Preparation	Properties	Chief Compounds and Uses
Actinium Symbol Ac. At. wt. undetermined. At. no., 89.	Occ. In all uranium minerals, and nowhere else, associated mainly with lanthanum. Prep. The metal has not been isolated.	A radioactive element, with a half-period of 20 years.	In chemical properties, it is intermediate between calcium and lanthanum.
Aluminium Symbol Al. At. wt. 26.97. At. no. 13. Valence III. S. G. 2.6. M. P. 658°.	Occ. Cryolite AlF_3, 3NaF; bauxite, impure $Al(OH)_3$; in feldspars, micas and clay; emery, ruby, sapphire (Al_2O_3). Prep. Com'l, by electrolysis of Al_2O_3, from bauxite, dissolved in cryolite, water-power usually furnishing the electrical energy.	Silver-white, ductile, malleable at 120°, tensile strength (wrought) 16 tons per sq. in. A better conductor of electricity, weight for weight, than copper. Molten metal not mobile enough to make castings. It turns badly in the lathe. Acted upon by dil. hydrochloric acid, slowly by sulphuric, but not by nitric or the acids occurring in foods. Soluble in alkaline hydroxides. The tarnishing action of moist air soon comes to an end as the tarnish acts as an adherent protective coating.	Used for cooking utensils, boat-building, military accouterments and small articles requiring lightness and strength; for electric leads. The powdered metal is used as a body for paint; and its mixture with ferric oxide, called thermite, is used for producing very high temperatures (up to 3700°C.) for welding rails, etc. Many metals are reduced from their oxides by means of Al, hence its use in casting steel. Aluminum bronze (10% Al), rolled, has tensile strength of 40 tons per sq. in. Its sulphate forms alums, *e.g.*, $KAl(SO_4)_2$, $12H_2O$, common alum.
Antimony Symbol Sb. At. wt. 121.77. At. no. 51. Valence III and V. S. G. 6.7. M. P. 630.7°. B. P. red heat.	Occ. Free, and as stibnite (Sb_2S_3). Prep. Roasting stibnite gives Sb_2O_4, which is then reduced by heating with carbon.	White, brittle, crystalline metal. Its alloys expand on solidification, and therefore give very sharp castings, *e.g.*, for type. It does not tarnish, but may be burned in air, and unites directly with the halogens.	The metal is a constituent of the alloys type metal, Britannia metal and Babbitt metal (used for bearings). Its oxide (Sb_2O_3) is both basic and acidic. The trichloride, butter of antimony ($SbCl_3$), is easily hydrolyzed. Tartar emetic ($SbOKC_4H_4O_6$) is used in medicine and in dyeing.
Argon Symbol A. At. wt. 39.91. At. no. 18. Valence nil. Density 39.9 (oxygen =32). B. P. −186°. M P. −190°.	Present in the air 0.94% by volume. To isolate, air is freed from CO_2 by soda-lime, water by P_2O_5, oxygen by red-hot copper, nitrogen by magnesium and calcium. From the residual mixture argon is obtained by fractional distillation.	Is a monatomic gas and is identified by its characteristic spectrum seen by examining the light emitted when the gas is placed in a vacuum tube at low pressure and sparked. More soluble in water than nitrogen, 100 vols. water dissolving 4 vols. argon under ordinary conditions.	Forms no compounds, hence its name—meaning "inactive."
Arsenic Symbol As. At. wt. 74.96. At. no. 33. Valence III and V. S. G. 5.7. B. P. 450° (sublimes). M. P. 480° (under pressure).	Occ. Free, as arsenical pyrites (FeSAs), as orpiment (As_2S_3) and as realgar (As_2S_2). Prep. By heating arsenical pyrites, $FeSAs \longrightarrow FeS + As$.	A steel-gray, dully-metallic and crystalline element classed as a metalloid because intermediate between metals and nonmetals. Its vapor has a density corresponding to As_4 at 644°, and to As_2 at 1700°. It burns in air and unites directly with the halogens, sulphur and with many metals.	Used for hardening lead for shot. All its compounds are poisonous. White arsenic (As_2O_3) is partly basic, forming a chloride and partly acidic, forming arsenites. Scheele's green ($CuHAsO_3$) is a pigment dangerous in wallpapers. Traces of arsenic are detected by Marsh's test, in which the intensely poisonous arsine (AsH_3) is formed.
Barium Symbol Ba. At. wt. 137.37. At. no. 56. Valence II. S. G. 3.6. M. P. red heat.	Occ. As barytes or heavy-spar ($BaSO_4$), and as witherite ($BaCO_3$). Prep. By electrolysis of the fused chloride.	A silver-white, lustrous, malleable metal harder than lead. Like calcium, it acts slowly on water to give barium hydroxide and hydrogen. The vapors of its compounds impart a green color to the Bunsen flame.	The peroxide (BaO_2) was used in the manufacture of oxygen and of hydrogen peroxide. The nitrate and chlorate in pyrotechny to give green fires. The sulphate as the body for a permanent white paint and for filling glazed paper. All soluble compounds are poisonous.
Bismuth Symbol Bi. At. wt. 209. At. no. 83. Valence III (and V). S. G. 9.9. M. P. 266.5°. B. P. ca. 1200°.	Occ. Free and as trioxide (Bi_2O_3) and trisulphide (Bi_2S_3). Prep. The ore is roasted and then heated with charcoal and metallic iron (to remove traces of sulphur).	An exceedingly brittle, crystalline shining metal, white with a tinge of pink. Bismuth expands on solidification. It does not tarnish, but can be burnt in air. Dissolves in oxygen acids.	Used for making fusible alloys, *e.g.*, Wood's metal, M.P. 60.5°, which are used in plugs of fire sprinklers and boiler safety valves, and for taking casts. The oxynitrate is used in medicine and as a cosmetic.
Boron Symbol B. At. wt. 10.82. At. no. 5. Valence III. S. G. (amorph.) 2.4; (cryst.) 2.5. B. P. 3500° (sublimes).	Occ. As boric acid (H_3BO_3), borax ($Na_2B_4O_7,10H_2O$), colemanite ($Ca_2B_6O_{11},5H_2O$). Prep. Amorphous boron by reducing B_2O_3 with Mg. Impure cryst. boron by reducing B_2O_3 with excess of Al.	Amorphous boron is a greenish black powder that burns in air at 700°, forming B_2O_3 and also BN. It is oxidized, by hot conc. sulphuric or nitric acids, to boric acid.	The compounds are analogous to those of silicon. Borax is used as a flux, and, in solution, as a mild alkali on account of its hydrolysis. Boric acid is used as a weak antiseptic and preservative.
Bromine Symbol Br. At. wt. 79.916. At. no. 35. Valence I. S. G. 3.2. B. P. 59°. M. P. −7.3°.	Occ. In seawater as alkali bromide, and in the upper layers of salt deposits as sodium and magnesium bromide. Prep. By treatment of the brines with sulphuric acid and manganese dioxide, or else with chlorine.	A dark red liquid, smelling like chlorine, whose vapor irritates eyes, throat and nose. Dissolves in thirty parts of water (bromine water). Combines directly with most other elements, but less vigorously than chlorine.	Potassium bromide is used in medicine; silver bromide in photography. Bromine is used in course of the preparation of organic dyes.
Cadmium Symbol Cd. At. wt. 112.41. At. no. 48. Valence II. S. G. 8.6. M. P. 321.7. B. P. 770°.	Occ. In association with the zinc ores, as carbonate and sulphide. Prep. In the distillation of impure zinc, the cadmium comes over in the first portions.	A silver-white metal, more ductile and malleable than zinc. It burns in air, and is attacked by dilute acids.	All the compounds are poisonous, and little ionized. The suphide (CdS) is the basis of "cadmium yellow." The iodide is used in medicine. The metal is used as a protective plating.
Caesium Symbol Cs. At. wt. 132.81. At. no. 55. Valence I. S. G. 2.4. M. P. 26.3°. B. P. 670°.	Occ. In certain micas, and in the ashes of certain plants. Prep. By heating the hydroxide (CsOH) with magnesium.	A white silvery metal resembling potassium. It is one of the most active of metals, and decomposes water violently.	The compounds are characterized by giving, especially, two bright lines in the blue of the spectrum (*caesius*, sky-blue).
Calcium Symbol Ca. At. wt. 40.07. At. no. 20. Valence II. S. G. 1.54. M. P. 760°.	Occ. As carbonate (Iceland spar, calcite, aragonite, marble, chalk, limestone), sulphate (gypsum), phosphate (apatite), fluoride (fluor spar), and as complex silicates in great variety (feldspars, pyroxenes, amphiboles, etc.). Prep. By electrolysis of the fused chloride.	A white crystalline metal, harder than lead, that can be cut, drawn, rolled and turned. It attacks water, and burns in the air at a red heat, forming the oxide (CaO) and the nitride (Ca_3N_2). It unites with hydrogen to CaH_2, whose action on water is a source of hydrogen for balloons.	Calcium oxide (quicklime) is used for mortar and to remove hair from hides. The hydroxide [$Ca(OH)_2$] mixed with sand forms mortar; its solution is limewater. Plaster of Paris, a less hydrated sulphate, takes up water on setting to form $CaSO_4,2H_2O$. The phosphates are fertilizers. Bleaching powder is CaClOCl and calcium carbide is CaC_2. Common glass contains silicates of calcium and sodium.

CHEMICAL ELEMENTS—Continued

Name, With Certain Data	Occurrence and Preparation	Properties	Chief Compounds and Uses
Carbon Symbol C. At. wt. 12.00. At. no. 12. Valence IV. S. G. diamond 3.5; graphite 2.3; amorphous 1.9. M. P.—not realized.	Occ. As diamond and graphite, in the free state; in combination with hydrogen as petroleum, with oxygen as carbon dioxide in the air, with these and other elements as coal, and in plant and animal tissues; and as many carbonates. Prep. By dry distillation of wood or coal, yielding charcoal and coke respectively.	Diamond is crystalline and the hardest of minerals, the dark-colored "bort" being used for cutting and grinding. Graphite has a black metallic luster, is crystalline and may be scratched by the finger-nail. Charcoal is amorphous, and possesses the power of absorbing gases and also coloring matters. All three forms burn in oxygen to produce carbon dioxide.	The carbon compounds form the subject of "organic chemistry." Carbon dioxide results from the burning of coal, coke, wood, oil or illuminating gas, from fermentation and decay, which are slow burnings, and is exhaled in the breath. Carbon monoxide, arising from recently-stoked fires, is an exceedingly poisonous gas.
Celtium (Hafnium) Symbol Ct. (Hf.). At. wt. 178.6. At. no. 72. S. G. 12.1.	Occ. Associated with zirconium. Prep. By decomposing the tetraiodide.	Analogous to zirconium.	Similar to zirconium compounds, from which it is separated by fractional crystallization of double fluorides.
Cerium Symbol Ce. At. wt. 140.25. At. no. 58. Valence III, IV (and VI). S. G. 7.0. M. P. 623°.	Occ. As silicate in cerite, along with Nd, Pr and La; also in monazite sand. Prep. By electrolysis of the fused chloride.	A metal with the color and luster of iron, like tin in hardness, and very ductile and malleable. Burns in air more easily and brightly than magnesium.	Welsbach incandescent gas mantles contain one per cent of cerium dioxide CeO_2.
Chlorine Symbol Cl. At. wt. 35.57. At. no. 17. Valence I (and VII). S. G. (liquid) 1.3. M. P. −102°. B. P. −33.6°. C. T. +146°.	Occ. In seawater as chlorides of the alkalis and alkaline earths, and as like compounds in salt deposits. Prep. By electrolysis of alkali chloride, fused or in solution; or by the action of manganese dioxide on hydrochloric acid.	A greenish-yellow gas of characteristic odor, with a violent action on the respiratory tract. Unites directly with all elements save oxygen, nitrogen and the argon family. Displaces bromine and iodine from bromides and iodides, and substitutes hydrogen in organic compounds.	The gas is used in extracting gold and in preparing bleaching and disinfecting agents. In presence of water it bleaches many coloring matters. Forms chlorides (as NaCl, HCl, $CaCl_2$), hypochlorites [as solution of $Ca(OCl)_2$], chlorates (as $KClO_3$, used for matches and in pyrotechny) and perchlorates (as $KClO_4$).
Chromium Symbol Cr. At. wt. 52.01. At. no. 24. Valence II, III and VI. S. G. 6.9. M. P. 1515°.	Occ. As chromite [$Fe(CrO_2)_2$]. Prep. By reducing Cr_2O_3 with aluminum filings.	A steel-gray, lustrous, brittle and very hard metal. At high temperatures it burns in air to green Cr_2O_3. It is attacked by dilute sulphuric or hydrochloric acid, but not by nitric acid.	The alloy ferrochromium is used in steel-making. Chrome green, the pigment, is Cr_2O_3. Chrome yellow is $PbCrO_4$. Bichromates (as $K_2Cr_2O_7$) are used in photo-processes, tanning and dyeing and as oxidixing agents, *e.g.*, in batteries. The metal is used as a protective plating.
Cobalt Symbol Co. At. wt. 58.94. At. no. 27. Valence II and III. S. G. 8.5. M. P. 1500°.	Occ. As smaltite ($CoAs_2$) and cobaltite (CoAsS). Prep. By igniting the oxide in hydrogen.	A white magnetic malleable metal, less tenacious than iron. By exposure it turns pinkish. It is less active chemically than iron.	Its intensely blue silicates are used in coloring porcelain and constitute the pigment smalt.
Columbium (Niobium) Symbol Cb. At wt. 93.1. At. no. 41. Valence I, II, IV and V. S. G. 12.7. M. P. 1950°.	Occ. In the mineral columbite. Prep. By reduction of CbO_2 by paraffin.	A light-gray malleable and ductile metal, as hard as wrought iron, which is not affected by acids, even by aqua regia.	The hydfide (CbH) burns in air. The compounds occur with those of tantalum, which they closely resemble.
Copper Symbol Cu. At. wt. 63.57. At. no. 29. Valence I and II. S. G. 8.9. M. P. 1084.1. B. P. 2100°.	Occ. Free, as cuprite (Cu_2O), copper glance (Cu_2S), chalcopyrite (Cu_2S, Fe_2S_3), malachite [$CuCO_3,Cu(OH)_2$]. Prep. After removal of iron and sulphur, the oxide is reduced by heating with carbon. It is refined electrolytically.	A red, lustrous, very ductile and malleable metal of tensile strength 14 tons per sq. in., second only to silver in electrical conductivity. In ordinary air it gradually becomes coated with basic carbonate. In absence of air, nitric acid alone among the dilute acids attacks it, but in presence of air even the acids found in foodstuffs can dissolve it.	The metal is used for coins, electroplating, electric leads, roofing, cooking vessels and for making alloys, such as brass, bell and gun metals, German silver and the bronzes. The soluble compounds are poisonous, and are therefore used as germicides in agriculture. Blue vitriol is $CuSO_4,5H_2O$; the basic acetate is verdigris.
Dysprosium Symbol Dy. At. wt. 162.52. At. no. 66. Valence III.	Occ. In monazite, gadolinite, etc. Prep. Not yet isolated.	The oxide dysprosia, along with three other rare earths, constitutes crude erbia.	The salts are green or yellow in color and show characteristic absorption bands.
Erbium Symbol Er. At. wt. 167.7. At. no. 68. Valence III.	Occ. Same as for dysprosium. Prep. Not yet isolated pure.	Crude erbia has been separated into erbia (oxide of erbium), holmia, thulia and dysprosia.	The salts are rose-colored, and show characteristic absorption spectra.
Europium Symbol Eu. At. wt. 152.0. At. no. 63. Valence III.	Occ. In monazite and other rare minerals. Prep. Not yet isolated.	This element so closely resembled samarium that the analytical separation of the two is difficult.	The salts are pinkish and show a faint absorption spectrum.
Fluorine Symbol F. At. wt. 19.0. At. no. 9. Valence I. S. G. (liquid) 1.14 at −187°. M. P. −223°. B. P. −187°.	Occ. As cryolite ($AlF_3,3NaF$), fluor spar (CaF_2) and very widely elsewhere in small quantities. Prep. By electrolysis of dry hydrogen fluoride at −23°.	A pale yellowish-green gas that unites with every element excepting oxygen and the argon family. It rapidly displaces oxygen from water or chlorine from hydrogen chloride.	Hydrogen fluoride is used for etching glass and in silicate analysis. Silver fluoride is soluble and calcium fluoride insoluble, in contrast with the other halides of these metals.
Gadolinium Symbol Gd. At. wt. 157.26. At. no. 64. Valence III.	Occ. In gadolinite and samarskite. Prep. Not yet isolated.	This element closely resembles terbium in its compounds.	The salts are colorless and show no absorption bands.
Gallium Symbol Ga. At. wt. 69.72. At. no. 31. Valence III. S. G. 5.9. M. P. 30.1°.	Occ. In zinc blende and in bauxite. Prep. By electrolysis of a suitable solution of its salts.	A bluish-white tough metal that may be cut with a knife. Like aluminium, it is soluble in hydrochloric acid and in caustic alkali, but not in nitric acid.	It forms two chlorides ($GaCl_3$ and $GaCl_2$) which yield spark spectra very characteristic of gallium.
Germanium Symbol Ge. At. wt. 72.60. At. no. 32. Valence II and IV. S. G. 5.5. M. P. 900°.	Occ. In the rare mineral argyrodite. Prep. By the reduction of the dioxide (GeO_2) by carbon.	A grayish-white brittle, lustrous metal, insoluble in hydrochloric acid. It combines directly with the halogens.	The close relation of this element to carbon and silicon is shown in the compound germanium chloroform ($GeHCl_3$).

CHEMICAL ELEMENTS—Continued

Name, With Certain Data	Occurrence and Preparation	Properties	Chief Compounds and Uses
Glucinum (or Beryllium) Symbol Gl. At. wt. 9.02.—At. no. 4. Valence II.—S. G. 1.8. M. P. below 960°.	Occ. In beryl [$Al_2Gl_2(SiO_3)_6$]. Prep. By electrolysis of the fused double fluoride $GlF_2,2KF$.	A hard white metal that tarnishes when heated in air, and is soluble in dilute acids when powdered.	Its hydroxide [$Gl(OH)_2$] is feebly acidic as well as basic, thus resembling the hydroxide of zinc. Emerald is beryl colored green by chromium.
Gold Symbol Au. At. wt. 197.2. At. no. 79. Valence I and III. S. G. 19.32. M. P. 1062.4°.	Occ. Chiefly free, but also as telluride; many specimens of iron pyrites are auriferous. Prep. From gold-bearing sands by washing away the lighter material, and dissolving the gold from the residue by mercury, which is subsequently separated from the gold by distillation. Quartz ores are pulverized in stamping mills, and the powder is then carried by water over amalgamated copper plates on which the gold collects.	A soft bright-yellow metal, easily scratched by the knife, an excellent conductor of heat and of electricity. The most ductile and the most malleable of all the metals. Chemically, gold is rather inert, and is not attacked by the oxygen of the air, by hydrogen sulphide, nor, indeed, by any single one of the common acids. It is attacked by fused alkalis, yielding aurates, and by aqua regia, yielding chlorauric acid ($HAuCl_4$).	Pure gold is called 24-carat gold. American, French and German gold coins are 21.6 carat, while British sovereigns are 22 carat, the balance in all these cases being copper. Jewelry is made in 18, 14, 9, etc., carat gold, the addition of copper increasing the hardness and rigidity. Sodium chloraurate ($NaAuCl_4$) is used for "toning" in photography, while potassium auricyanide [$KAu(CN)_4$] is used in electrogilding.
Helium Symbol He. At. wt. 4.00. At. no. 2. Valence 0. S. G. (liquid) 0.15. B. P. −268.7°.	Occ. In air to the extent of 1 to 2 volumes per million; also occluded in certain minerals. Prep. Neon and helium are boiled off crude argon, and the neon solidified by cooling.	The lightest gas after hydrogen, transparent, odorless and colorless, very inert, forming no compounds with other elements.	It is one of the decomposition products of certain other (radio-active) elements.
Holmium Symbol Ho. At. wt. 163.5. At. no. 67.	A rare earth metal, which occurs with and is separated from the erbium subgroup of the rare earths.	The metal has not been isolated.	The salts are yellow, and are similar to those of dysprosium.
Hydrogen Symbol H. At. wt. 1.008. At. no. 1. Valence I. S. G. (liquid) 0.07. M. P. −259°. B. P. −252.5°.	Occ. In air to the extent of 1 vol. per 20,000 vols. air; combined, in water (11.19% by wt.) natural gas, petroleum and all animal and vegetable bodies. Prep. By treating zinc with hydrochloric or sulphuric acid; by electrolysis of water.	The lightest gas, transparent, odorless and colorless, soluble in water (2 vols. in 100 vols. water under everyday conditions), in platinum, in palladium (502 vols. in 1 of Pd). Burns in air and in chlorine and unites with many of the other elements.	Its two oxides are water (H_2O) and hydrogen peroxide (H_2O_2), the latter of which is used in solution as a bleaching agent. Every acid contains hydrogen as an essential constituent. Its compounds with carbon and other elements number over 100,000. Hydrogen gas is used for the oxyhydrogen flame and for filling balloons.
Illinium Symbol Il. At. wt. undetermined. At. no. 61.	Occ. With the cerium earths, from which its salts are separated.	The metal has not been isolated, but is recognized by its X-ray spectrum, and by its optical absorption spectrum.	The compounds are similar to those of neodymium and samarium.
Indium Symbol In. At. wt. 114.8. At. no. 49. Valence III and I. S. G. 7.4. M. P. 176°.	Occ. In zinc blende (ZnS). Prep. Electrolytically from solutions of its salts.	A white metal, malleable and softer than lead.	Its compounds color the nonluminous gas flame blue and show a characteristic blue line in the spectrum.
Iodine Symbol I. At. wt. 126.932. At. no. 53. Valence I, V and VII. S. G. 4.95. M. P. 114°. B. P. 184°.	Occ. In the ocean, in certain seaweeds, and in Chili saltpeter, always in the combined state. Prep. From iodides by displacement of their iodine by chlorine.	A dark gray brittle solid with a metallic luster. Its vapor is violet, as are its solutions in chloroform and in carbon bisulphide. It requires over 5,000 parts of water for its solution. Combines directly with many elements, but is much less active than chlorine and bromine.	Its tincture is used in medicine as a counter-irritant. Potassium iodide (KI) and iodoform (CHI_3) likewise find application in medicine. The alkyl iodides (*e. g.* C_2H_5I) are much used in synthetic organic chemistry.
Iridium Symbol Ir. At. wt. 193.1. At. no. 77. Valence III and IV. S. G. 22.42. M. P. 1950°.	Occ. Along with platinum. Prep. By a complex series of operations from platinum ores.	A white metal, brittle when cold, and very hard. It is attacked by fused alkalis, but not by aqua regia.	It is used for pointing gold pens. Its alloy with 9 parts of platinum is used for standard meter bars on account of its inalterability.
Iron Symbol Fe. At. wt. 55.84. At. no. 26. Valence II and III. S. G. 7.86; pig, 7.03 to 7.73. M. P. 1804°. wrought 1600°. steel 1375°. gray pig 1275°. white pig 1075°.	Occ. As magnetic oxide (Fe_3O_4), hematite (Fe_2O_3), limonite ($2Fe_2O_3,3H_2O$), siderite ($FeCO_3$), which are important ores; iron pyrites (FeS_2); in rocks as complex silicates, and in plants and animals. Prep. Pig iron is prepared in the blast furnace by reduction of the ore by means of carbon monoxide in presence of a suitable flux. From pig iron, wrought iron is obtained by puddling, and steel by the Bessemer, open-hearth or other process.	A white, malleable, ductile, magnetic metal, unchanged in dry air or air-free water, but rusting in moist air. Easily attacked by dilute acids, but not by fused alkalis. Cast iron contains 2 to 5% of carbon and other impurities, and is hard and brittle. Wrought iron contains less than 0.2% of carbon, and is softer and tougher, with a tensile strength of 22 to 25 tons per sq. in. Steel contains from 0.2 to 1.5% of carbon, is permanently magnetic, may be tempered, and possesses tensile strength up to 100 tons per sq. in.	The metal is used as a structural material, for rails, machinery, tools, etc. Jeweler's rouge and Venetian red consist of the oxide (Fe_2O_3). Rust is chiefly the hydrated oxide (FeO,OH). Hammer scale and lodestone have the composition Fe_3O_4. Ferric chloride ($FeCl_3$), ferrous iodide (FeI_2) and other iron compounds are used in medicine. Green vitriol ($FeSO_4,7H_2O$) is used in making ink, and in dyeing. Potassium ferrocyanide [$K_4Fe(CN)_6$] is used for making Prussian blue, potassium cyanide, etc.
Krypton Symbol Kr. At. wt. 82.9. At. no. 36. Valence 0. M. P. −169°. B. P. −152°.	Occ. In minute quantity in the air. Prep. From crude argon by fractional distillation.	An inert, colorless, odorless gas, resembling, but denser than, argon.	It forms no compounds, and is identified by its characteristic spectrum.
Lanthanum Symbol La. At. wt. 138.9. At. no. 57. Valence II and V. S. G. 6.15.	Occ. As lanthanite [$La_2(CO_3)_3,8H_2O$]. Prep. By electrolysis of fused $LaCl_3$.	An iron-gray metal tarnishing in air to steel-blue; malleable and ductile. Attacked slowly even by cold water.	When heated in air it forms oxide (La_2O_3) and nitride (LaN).
Lead Symbol Pb. At. wt. 207.20. At. no. 82. Valence II, IV. S. G. 11.4. M. P. 326°.	Occ. As galena (PbS), and in silver ores. Prep. By calcination of partially roasted galena. Purification is effected by Parkes process.	A soft gray metal, malleable, but of low tensile strength. In presence of air, water acts on lead to produce the hydroxide, which, being slightly soluble, may cause lead poisoning if present in water supplies. When heated in air it is oxidized to litharge (PbO), and, under suitable conditions, to minium (Pb_3O_4).	The metal is used for water pipes, roofs and gutters and storage batteries. For shot it is alloyed with 0.4% of arsenic. Typemetal contains 20% of antimony. Babbitt metal, for bearings, contains over 70% of lead. Solder and pewter are alloys of lead and tin. The basic carbonate [$Pb(OH)_2,2PbCO_3$], "white lead," is the basis of most oil paints.
Lithium Symbol Li. At. wt. 6.94. At. no. 3. Valence I. S. G. 0.53. M. P. 186°. B. P. above 1400°.	Occ. As a mixed fluoride with aluminium in amblygonite. Prep. By electrolysis of the fused chloride.	A silver-white metal, softer than lead, that tarnishes quickly in air, and is easily acted upon by water. When heated, it unites vigorously with nitrogen.	The carbonate [$Li_2(CO_3)$] is used in medicine as a solvent for uric acid, lithium urate being soluble. The lithium salts give a carmine flame coloration.
Lutecium Symbol Lu. At. wt. 175.0. At. no. 71.	Occ. In euxenite. Prep. It has not been isolated.		Its compounds resemble those of ytterbium.

CHEMICAL ELEMENTS—Continued

Name, With Certain Data	Occurrence and Preparation	Properties	Chief Compounds and Uses
Magnesium Symbol Mg. At. wt. 24.32. At. no. 12. Valence II. S. G. 1.75. M. P. 633°. B. P. 1100°.	Occ. As magnesite ($MgCO_3$), dolomite ($MgCO_3$,$CaCO_3$), carnallite ($MgCl_2$,KCl, $6H_2O$) and in very many complex silicates. Prep. By electrolysis of dried, fused carnallite.	A silver-white metal, ductile when hot. It tarnishes in air, and acts slowly upon water, rapidly on steam. Burns in air to the oxide MgO, emitting a very bright light used in photography. It units directly with nitrogen.	The sulphate ($MgSO_4$,$7H_2O$) is known as epsom salts and is used in medicine, as are the oxide (magnesia), the carbonates and citrate. Magnalium is a light, hard alloy with aluminium.
Manganese Symbol Mn. At. wt. 54.93. At. no. 25. Valence II, III, IV, VI, VII. S. G. 8.0. M. P. ca. 1300°.	Occ. As pyrolusite (MnO_2), beaunite (Mn_2O_3), hausmannite (Mn_3O_4) and manganese spar ($MnCO_3$). Prep. By heating Mn_3O_4 with aluminium filings.	A steel-gray, hard, brittle metal with a pinkish tinge. It rusts in moist air and is attacked by dilute acids.	Ferromanganese and spiegeleisen are alloys with iron, used in steel making. With copper it forms the hard, tough manganese bronzes, with tensile strength up to 30 tons per sq. in. Impure sodium permanganate ($NaMnO_4$) is used in disinfecting as Condy's fluid.
Masurium Symbol Ma. At. wt. undetermined. At. no. 43.	Occ. In platinum ores and in columbite.	The metal has not been isolated, but is recognized by its X-ray spectrum.	The compounds have not been studied.
Mercury Symbol Hg. At. wt. 200.61. At. no. 80. Valence I and II. S. G. 13.6. M. P. −39.5°. B. P. 356.95°.	Occ. Free and as cinnibar (HgS). Prep. By roasting cinnibar $HgS+O_2$——$Hg+SO_2$.	A silver-white mobile liquid with a vapor pressure at 0° of 0.0002 mm. It tarnishes but slowly in air and is attacked only by dilute nitric among the dilute acids. The vapor is monatomic.	It is used for filling thermometers and barometers. Its alloys are called amalgams, some of which are used in dentistry. Calomel (HgCl) is administered internally in medicine; corrosive sublimate ($HgCl_2$) forms a solution with very powerful germicidal properties.
Molybdenum Symbol Mo. At. wt. 96.0. At. no. 42. Valence III, IV, V, VI. S. G. 9.0. M. P. 2110°.	Occ. As molybdenite (MoS_2) and wulfenite ($PbMoO_4$). Prep. By reducing the oxides with aluminium powder.	A white metal, as malleable as iron, that will not scratch glass. Insoluble in hydrochloric or dilute sulphuric acid.	The ferromolybdenum alloys are used in the manufacture of special steels.
Neodymium Symbol Nd. At. wt. 144.27. At. no. 60. Valence III and IV. S. G. 6.9. M. P. 840°.	Occ. With cerium and lanthanum. Prep. By electrolysis of the fused chloride.	A yellowish metal, tarnishing in air.	The salts are rose-violet in color, and their solutions show characteristic absorption spectra.
Neon Symbol Ne. At. wt. 20.2. At. no. 10. Valence 0. B. P. ca. −243°.	Occ. In minute quantity in the atmosphere. Prep. Neon and helium are boiled out of crude argon, and the neon separated from helium by cooling with liquid hydrogen.	A colorless, transparent, odorless, inert gas, resembling argon.	It forms no compounds, and is recognized by its characteristic spectrum.
Nickel Symbol Ni. At. wt. 58.69. At. no. 28. Valence II and III. S. G. 8.9. M. P. ca. 1485°.	Occ. As nicollite (NiAs) and nickel glance (NiAsS). Prep. By igniting the oxalate in hydrogen.	A white, very hard, lustrous metal, malleable, ductile and tenacious. It rusts but slowly in air, and is attacked easily by only nitric acid.	The metal furnishes a protective coating when plated on iron. German silver is an alloy of nickel, copper and zinc. Nickel steel is used for armor plates. Manganin, containing nickel, copper and manganese, is used for electrical resistances.
Niton Symbol Nt. At. wt. (see under properties) At. no. 86. Valence 0.	Occ. As a gaseous product of the disintegration of atoms of Ra, ThX or AcX, all of which are isotopic forms of element 88. Prep. In the form of radon, admixed with air, by passing air through solutions of radium salts.	Element 86 is represented by three isotopes, radon (Rn, at. wt. 222), thoron (Tn, at. wt. 220) and actinon (An, at. wt. ?) all of which are inert gases of the helium family and indistinguishable by purely chemical methods. Each is radioactive, emitting alpha rays, and the half-periods are 3.85 days, 54 seconds and 3.9 seconds respectively.	They form no compounds. Radon is used in the treatment of cancer, enclosed in minute glass vessels of the size of a small matchhead, which is inserted into the tumor.
Nitrogen Symbol N. At. wt. 14.008. At. no. 7. Valence III and V. M. P. −214°. B. P. −194°.	Occ. Free nitrogen forms about four-fifths of air by volume. As Bengal saltpeter (KNO_3), Chili saltpeter ($NaNO_3$); and as an essential constituent of vegetable and animal protoplasm. Prep. By heating ammonium nitrite, by oxidation of ammonia, etc.	A colorless, odorless, transparent gas, rather inactive chemically. At ordinary temperature and pressure, 100 volumes of water dissolve 1.5 volumes of nitrogen. It unites directly with strongly heated boron, lithium, calcium and magnesium.	Nitrous oxide (N_2O), or laughing gas, is used by dentists. Nitric acid (HNO_3) has many applications in technical chemistry. Ammonia (NH_3) is a very soluble gas. Ammonium sulphate [$(NH_4)_2SO_4$] and Chili saltpeter are used as nitrogenous manures. Nitrogen is a constituent of the aniline dyes, the proteins and many other important classes of organic substances.
Osmium Symbol Os. At. wt. 190.8. At. no. 76. Valence II, III, IV, VI, VIII. S. G. 22.477. M. P. ca. 2400°.	Occ. Along with platinum. Prep. By reducing OsO_4.	A gray metal, harder than glass, the heaviest of known bodies.	Its alloy with iridium is used in tipping gold pens. Osmium tetroxide (OsO_4) is used as a microscopic stain for fat.
Oxygen Symbol O. At. wt. 16.00. At. no. 8. Valence II. S. G. (liquid at b.p.) 1.13. M. P. −227°. B. P. −182.5°.	Occ. Free oxygen forms about one-fifth of air by volume. Water contains 88.88% of oxygen. The rocks of the earth's crust contain about 45% in combination, chiefly as silicates. Prep. In the laboratory, by heating potassium chlorate ($KClO_3$). Commercially from the air.	A colorless, odorless, tasteless, transparent gas, slightly heavier than air. At ordinary temperature and pressure, 100 volumes of water dissolve 3 volumes of oxygen. It is very active chemically, combining directly with all but a few of the other elements to form oxides. Sulphur, phosphorus, etc., burn much more vigorously in oxygen than in air. Liquid oxygen is magnetic.	The gas is sold compressed in mild steel cylinders, and is used for the oxyhydrogen blowpipe and in medicine, besides for chemical purposes. It is necessary to support animal respiration and to sustain ordinary combustion. It enters as a constituent into all oxides, most salts and many organic compounds.
Palladium Symbol Pd. At. wt. 106.7. At. no. 46. Valence II and IV. S. G. 11.9. M. P. ca. 1535°.	Occ. Along with platinum, and with gold in Brazil. Prep. By a complex series of processes from platinum ores.	A silvery, malleable and ductile metal, related to platinum, unlike which, however, it is attacked by nitric acid. Under suitable conditions it can take up over 900 volumes of hydrogen.	Since it does not tarnish, it is used for coating silver goods, and by dentists as a substitute for gold.
Phosphorus Symbol P. At. wt. 31.027. At. no. 15. Valence III and V. S. G. white, 1.82. red, 2.25. M. P. white, 44°. B. P. 269°.	Occ. As phosphates, such as apatite [$Ca_5F(PO_4)_3$]; in bones, teeth, brain and seeds of plants. Prep. By reduction of calcium phosphate by carbon in the electric furnace in presence of a suitable flux.	Phosphorus exists in two allotropic modifications: white phosphorus is waxy in consistency, soluble in carbon bisulphide, evil smelling and poisonous; red phosphorus is a solid, insoluble in carbon bisulphide, odorless and not poisonous. White phosphorus has a low ignition temperature, hence its former use in matches.	Red phosphorus is used in the manufacture of matches, as also is the compound P_4S_3. In the form of superphosphate of lime [$CaH_4(PO_4)_2$] phosphorus is an important artificial manure. The chlorides (PCl_3 and PCl_5) are much used in organic chemistry.

CHEMICAL ELEMENTS—Continued

Name, With Certain Data	Occurrence and Preparation	Properties	Chief Compounds and Uses
Platinum Symbol Pt. At. wt. 195.23. At. no. 78. Vaience II and IV. S. G. 21.48. M. P. 1753°.	Occ. Free, alloyed with the platinum metals, as nuggets in alluvial sands in the Urals, California, etc. Prep. It is freed from the metals with which it is alloyed by a complex series of processes.	A silvery, tenacious, ductile and malleable metal, unaltered in moist air and unattacked by any single common acid. Aqua regia, fused alkalis, alkali nitrates and cyanides attack it, however. Platinum "sponge" and "black" are finely divided forms.	On account of its resistance to acids, platinum is much used for chemical vessels. Since platinum has a coefficient of expansion very close to that of glass, platinum wires can be fused through glass without danger of breakage on cooling. The salts are used in photography.
Polonium (Radium F) Symbol Po (Ra-F). At. wt. 210. At. no. 84.	Occ. Along with bismuth in uranium minerals. The metal has been isolated only in minute quantity.	A radioactive element, with a half-period 136 days.	The compounds resemble those of tellurium.
Potassium Symbol K. At. wt. 39.096. At. no. 19. Valence I. S. G. 0.86. M. P. 62.5°. B. P. 667°.	Occ. As sylvite (KCl), carnallite (KCl, $MgCl_2,6H_2O$); in plant and animal ashes, and in many complex silicates. Prep. By reduction or by electrolysis of fused potassium hydroxide (KOH).	A silver-white lustrous metal, as soft as wax, tarnishing instantly in moist air. Chemically it is a very active metal, decomposing water in the cold and uniting violently with the halogens, sulphur and oxygen.	An alloy with sodium is used in filling high-temperature thermometers. Bengal saltpeter is the nitrate and is used in pyrotechny, for gunpowder and as a preservative. The iodide (KI) is used in medicine. The chlorate, like the nitrate, is used as a source of oxygen in pyrotechny and for match heads. Caustic potash (KOH) has many chemical applications. The cyanide (KCN) is used in gold extraction.
Praseodymium Symbol Pr. At. wt. 140.92. At. no. 59. Valence III and IV. S. G. 6.47. M. P. 940°.	Occ. With cerium and lanthanum. Prep. By electrolysis of the fused chloride.	A yellowish metal, remaining untarnished in air.	The salts are leek-green in color, and their solutions have characteristic absorption spectra.
Protoactinium Symbol Pa. At. wt. 230? At. no. 91.	Occ. In uranium minerals. The metal has not yet been isolated.	A radioactive element, emitting alpha rays. Its half-period is $1.2x10^4$ years.	The compounds resemble those of tantalum.
Radium Symbol Ra. At. wt. 225.95. At. no. 88. Valence II.	Occ. in minute quantity in pitchblende and other uranium minerals. Prep. The metal has been isolated; the bromide is separated from the barium bromide prepared from pitchblende by fractional crystallization.	In all of its compounds, the metal has the power of emitting certain radiations. These can pass through matter that is opaque to light, render air a conductor, affect a photographic plate and cause a zinc-sulphide screen to fluoresce visibly.	The rays from radium compounds (such as $RaBr_2$, $RaCl_2$, $RaCO_3$) act destructively on living tissues and on bacteria. One gram of radium in any of its compounds, gives off about 100 calories of heat per hour.
Rhenium Symbol Re. At. wt. undetermined. At. no. 75.	Occ. In platinum ores and in columbite.	Its existence is recognized by its X-ray spectrum.	
Rhodium Symbol Rh. At. wt. 102.91. At. no. 45. Valence II, III and IV. S. G. 12.1. M. P. above 2000°.	Occ. In the ores of platinum. Prep. By a complex series of processes from platinum ores.	A silvery, malleable and ductile metal, not tarnishing in air and not attacked by aqua regia.	The red chloride ($RhCl_3$) is formed by the action of chlorine upon the metal.
Rubidium Symbol Rb. At. wt. 85.44. At. no. 37. Valence I, III and V. S. G. 1.52. M. P. 38.5°.—B. P. 696°.	Occ. The salts are associated with salts of potassium. Prep. Similar to that of potassium.	A silver-white metal resembling potassium, like which it attacks water vigorously.	The compounds show characteristic flame-spectra, and were recognized as those of a new element spectroscopically by Bunsen
Ruthenium Symbol Ru. At. wt. 101.7. At. no. 44. Valence III, IV, VI, VII and VIII. S. G. 12.1. M. P. above 2000°.	Occ. In the ores of platinum. Prep. By a complex series of processes from platinum ores.	A hard, white, brittle metal, oxidized when heated in air, scarcely attacked by aqua regia.	The following oxides are known: Ru_2O_3, RuO_2, RuO_4, as well as salts corresponding to RuO_3 and Ru_2O_7.
Samarium Symbol Sa. At. wt. 150.43. At. no. 62. Valence II and III. S. G. ca. 7.7. M. P. 1300 to 1400°.	Occ. In the mineral samarskite. Prep. By electrolysis of the chloride.	A whitish-gray metal, tarnishing in air.	The salts are topaz-yellow in color, and are similar to those of lanthanum.
Scandium Symbol Sc. At. wt. 45.1. At. no. 21. Valence III.	Occ. In the minerals euxenite and gadolinite. Prep. The metal has not been isolated.	The existence of this element, whose oxide was discovered in 1879, was predicted by Mendeléeff in 1869.	The chloride ($ScCl_3$) shows a characteristic spark spectrum.
Selenium Symbol Se. At. wt. 79.2. At. no. 34. Valence II, IV and VI. S. G. amorphous 4.27. monoclinic 4.47. hexagonal 4.8. M. P. amorphous 50°. monoclinic 170 to 180°. hexagonal 217°. B. P. 690°.	Occ. Free in some specimens of sulphur, and in combination with lead, iron and other metals, as in pyrites. Prep. (Amorphous) by reducing selenious acid (H_2SiO_3) by sulphur dioxide.	Three varieties are known: (1) red amorphous, soluble in carbon bisulphide, from which it is deposited as (2) red translucent monoclinic crystals, soluble in carbon bisulphide, (3) blue-gray metallic selenium, insoluble in carbon bisulphide. This last form conducts electricity many times better when exposed to light, and the better the brighter the light.	Selenium cells are used as indicators of intensity of illumination. The compounds strongly resemble those of sulphur. Hydrogen selenide is an evil-smelling inflammable gas. Selenic acid (H_2SeO_4) is a more powerful oxidizer than sulphuric acid, and dissolves gold.
Silicon Symbol Si. At. wt. 28.06. At. no. 14. Valence IV. S. G. amorphous 2.0. crystalline 24.9. M. P. 1200°. B. P. ca. 3500°.	Occ. Silicon dioxide (SiO_2) occurs as flint, quartz, quartz sand, etc. The igneous rocks are composed largely of silicates, and this element constitutes over 25% of the earth's crust. Prep. By reducing sand with coke in the electric furnace.	Amorphous silicon is a brown powder that burns when heated in air. Crystalline silicon forms black needles. It is less active than the amorphous variety and is attacked only slowly by a mixture of hydrofluoric and nitric acids. It unites with fluorine, however, at ordinary temperatures.	The "pigs" of silicon made at Niagara are used in steel-making. The ornamental varieties of quartz find uses as gemstones, as do several natural silicates. Silicon carbide, "carborundum" (SiC), is used as an abrasive. Sodium silicate solution is "waterglass," used to protect sandstone and to preserve eggs. Common glass is a mixture of sodium and calcium silicates.
Silver Symbol Ag. At. wt. 107.88. At. no. 47. Valence I. S. G. 10.53. M. P. 960°. B. P. 2050°.	Occ. Native, as sulphide (Ag_2S) often associated with galena; chloride (AgCl), etc. Prep. From lead by the Pattinson or the Parkes process; from the ores by the Mexican and other processes.	A white, highly lustrous, tough, very ductile and malleable metal, the best conductor of heat and electricity known. Liquid silver dissolves oxygen. It is unaffected by the oxygen of moist air, and its tarnishing is due to the action of hydrogen sulphide. It dissolves in dilute nitric and in concentrated hot sulphuric acid.	It is employed for articles of use and of ornament and for coinage. U. S. sterling silver contains 90% silver with 10% copper. Lunar caustic is silver nitrate. This salt and the halides of silver are extensively used in photography. For electroplating a bath of potassium argenticyanide [$KAg(CN)_2$] is used.

CHEMICAL ELEMENTS—Continued

Name, With Certain Data	Occurrence and Preparation	Properties	Chief Compounds and Uses
Sodium Symbol Na. At. wt. 22.997. At. no. 11. Valence I. S. G. 0.97. M. P. 95.6°. B. P. 742°.	Occ. In the sea as chloride (NaCl); in salt deposits as chloride, borate, nitrate; in many complex silicates in rocks. Prep. By electrolysis of fused sodium hydroxide (NaOH).	A silver-white metal, as soft as wax, that may be welded at ordinary temperature. Like potassium it is very active, uniting directly with many other elements, and attacking water vigorously in the cold.	The metal is used in the manufacture of several chemicals. Sodium chloride (NaCl) is a necessity of life to most animals; and is used in the manufacture of hydrochloric acid, chlorine and sodium compounds. Sodium carbonate ($NaCO_3$, $10H_2O$) or washing soda, and sodium hydroxide (NaOH) are used for cleaning and in the manufacture of soap and chemicals. Baking soda is sodium bicarbonate ($NaHCO_3$). The sulphate (Na_2SO_4, $10H_2O$) is known as Glauber's salt; the thiosulphate, by photographers, as "hypo."
Strontium Symbol Sr. At. wt. 87.63. At. no. 38. Valence II. S. G. 2.55. M. P. ca. 800°.	Occ. As strontianite ($SrCO_3$) and celestine ($SrSO_4$). Prep. By electrolysis of the fused chloride.	A white metal, softer than calcium and harder than sodium, tarnishing to a yellow tint. Like calcium, it is active enough to attack water vigorously in the cold.	The nitrate and chlorate are used in pyrotechny for red fire. All volatile compounds color the Bunsen flame red.
Sulphur Symbol S. At. wt. 32.64. At. no. 16. Valence II, IV and VI. S. G. rhombic 2.06. monoclinic 1.96. M. P. rhombic 112.4°. monoclinic 119°. B. P. 444.9°.	Occ. Native, in combination with most metals as sulphides, and with some metals as sulphates. Prep. By melting the free sulphur away from the rocky matrix, and subsequent purification by distillation.	Natural sulphur is rhombic in crystalline form, yellow, brittle, of vitreous luster, and a poor conductor of heat and electricity. This and the monoclinic variety are soluble in carbon bisulphide, while amorphous sulphur is not. When heated, sulphur unites directly with most of the other elements.	Sulphur is used to prepare sulphur dioxide (SO_2), which is used in making sulphuric acid and sulphites, and for bleaching; also for vulcanizing rubber and in the manufacture of black gunpowder, fireworks and matches. Sulphuric acid (H_2SO_4) is to chemical industry what iron is to engineering.
Tantalum Symbol Ta. At. wt. 181.5. At. no. 73. Valence II, IV and V. S. G. 16.6. M. P. bet. 2250° and 2300°.	Occ. In tantalite and many other rare minerals. Prep. By the action of sodium on sodium tantalofluoride (Na_2TaF_7).	A hard silver-white metal, ductile and malleable when hot, of very high tensile strength. The hot metal can absorb 740 volumes of hydrogen. It is not attacked by aqua regia.	The metal was used for filaments for electric lamps, which possessed twice the efficiency of the carbon filament lamp.
Tellurium. Symbol Te. At. wt. 127.5. At. no. 52. Valence II, IV and VI. S. G. cryst. 6.3. M. P. cryst. 455°. B. P. 1400°.	Occ. Free and as tellurides. Prep. By reducing tellurious acid (H_2TeO_3) by means of sulphur dioxide.	The crystalline variety is white, has metallic luster, and conducts heat and electricity. The precipitated variety is black and of lower density. The element is related to sulphur but is more metallic in character.	The compounds find few applications. Telluric acid (H_6TeO_6) has basic as well as acid characters, in keeping with the position of the element between metals and nonmetals.
Terbium Symbol Tb. At. wt. 159.2. At. no. 65. Valence III.	Occ. In gadolinite, samarskite, and other rare minerals. Prep. The metal has not been prepared.		The salts show no absorption spectrum in the visible.
Thallium Symbol Tl. At. wt. 204.39. At. no. 81. Valence I and II. S. G. 11.8. M. P. 303°.	Occ. In crookesite, and in small quantities in many samples of iron pyrites. Prep. It is precipitated by zinc from a solution obtained by suitable treatment of the flue dust from sulphuric acid works.	A bluish-white lead-like metal, rather soft, malleable, but of low tensile strength. It decomposes water rapidly at red heat, and dissolves in dilute acids.	It forms two sets of salts, the thallous (*e.g.*, TlCl) and the thallic (*e.g.*, $TlCl_3$). All the compounds show a characteristic green line in the spectrum.
Thorium Symbol Th. At. wt. 232.15. At. no. 90. Valence IV. S. G. 11.0.	Occ. In monazite sand. Prep. By reducing potassium thorium chloride with sodium, or by electrolysis of the chloride in a mixture of fused potassium and sodium chlorides.	A metal with the color of nickel, that can be burnt in air. Hydrochloric acid attacks it but slowly.	The nitrate [$Th(NO_3)_4,6H_2O$] is used in making Welsbach incandescent mantles, which consist of 99% of ThO_2. All the compounds are radioactive.
Thulium Symbol Tm. At. wt. 169.4. At. no. 69. Valence III. M. P. 1700°.	Occ. In gadolinite and other yttrium minerals.		The salts are of a pale bluish color which is destroyed very easily by minute quantities of erbium.
Tin Symbol Sn. At. wt. 118.7. At. no. 50. Valence II and IV. S. G. 7.3. M. P. 232°. B. P. ca. 1600°.	Occ. As cassiterite (SnO_2). Prep. After roasting, the ore is reduced by heating with carbon.	A silver-white, rather soft, very malleable and ductile metal, practically unchanged in air. When heated, it may be burned in air. Dilute nitric acid is the only dilute acid that attacks it rapidly. When kept long at temperatures below zero C., ordinary tin changes to a brittle gray powdery modification. This form is the stable one below 20°.	Large quantities of tin are used in the tinning of iron for tinplate. It is a constituent of the alloys Britannia metal, pewter, solder, bronze, etc. Tin forms two sets of salts, stannous (*e.g.*, $SnCl_2$) and stannic (*e.g.*, $SnCl_4$). "Pink salt" [$(NH_4)_2SnCl_6$] is used in dyeing. "Mosaic gold" is SnS_2.
Titanium Symbol Ti. At. wt. 48.1. At. no. 22. Valence II, III and IV. S. G. 4.5. M. P. below 1850°.	Occ. As rutile (TiO_2) and in titanic iron ore ($FeTiO_3$). Prep. By reducing the chloride ($TiCl_4$) by means of sodium.	A hard, brittle metal, resembling polished steel in appearance, that may be forged at a low red heat. It dissolves in dilute sulphuric acid, and decomposes steam at 800°. It unites easily with nitrogen.	The element is very widely disseminated, though in small quantity. It is contained in the ashes of all plants.
Tungsten Symbol W. At. wt. 184.0. At. no. 74. Valence II, IV, V and VI. S. G. 19.3. M. P. ca. 2800°.	Occ. As wolfram ($FeWO_4$) and as scheelite ($CaWO_4$). Prep. By reducing tungstic acid (H_2WO_4) by carbon at a high temperature.	A hard, brittle, gray metal, attacked by chlorine only at 250°, although it can be caused to burn in air. It is slowly acted upon by dilute acids and even by water.	The metal is used for the filaments of incandescent electric lamps, giving an efficiency of 1.3 watts per candle power. Tungsten steel has 5% W. Sodium tungstates are used as mordants in dyeing.
Uranium Symbol U. At. wt. 238.17. At. no. 92. Valence III, IV, V and VIII. S. G. 18.7. M. P. ca. 1500°.	Occ. As pitchblende, which contains U_3O_8. Prep. By reducing the oxides with aluminium.	A white lustrous metal, tarnishing in air and attacking water slowly in the cold. It combines directly with many of the other elements.	All the compounds of uranium are radioactive in proportion to their uranium content. Glass to which uranium compounds have been added shows a greenish-yellow fluorescence.
Vanadium Symbol V. At. wt. 50.96. At. no. 23. Valence II, III, IV and V. S. G. 5.5.	Occ. In a few rather rare minerals. Prep. By reduction of the dichloride (VCl_2) in hydrogen.	A silver-white lustrous metal harder than quartz. It does not tarnish nor attack water at ordinary temperatures, but can be burnt in oxygen.	Vanadium added to steel even in small quantity (0.2%) increases the tenacity and elastic limit without reducing the ductility.

CHEMICAL ELEMENTS—Continued

Name, With Certain Data	Occurrence and Preparation	Properties	Chief Compounds and Uses
Xenon Symbol Xe. At. wt. 130.2. At. no. 54. Valence 0 B. P. 109°.	Occ. In minute quantity in the air, less than one volume in 100 million. Prep. By fractionation of liquid argon.	A transparent, colorless and odorless gas, very inert like its congener argon. It is the densest of the argon family.	It forms no compounds.
Ytterbium (Neoytterbium) Symbol Yb. At. wt. 173.6. At. no. 70. Valence III.	Occ. In gadolinite, euxenite and other rare minerals. Prep. The metal has not been isolated.		The compounds show a characteristic spark spectrum.
Yttrium Symbol Y. At. wt. 88.9. At. no. 39. Valence III.	Occ. In gadolinite, euxenite and other rare minerals. Prep. By electrolysis of sodium yttrium chloride.	A gray lustrous metal.	The chloride yields a characteristic, though complex, spectrum.
Zinc Symbol Zn. At. wt. 65.38. At. no. 30. Valence II. S. G. 6.9 to 7.2. M. P. 418.2°. B. P. 920°.	Occ. As zinc blende (ZnS), calamine ($ZnCO_3$), zincite (ZnO), etc. Prep. After roasting, the ore is reduced by coal, the metal distilling off.	A bluish-white, lustrous, brittle metal, that is malleable and ductile at 120°. It tarnishes in moist air, attacking water slowly in the cold and rapidly when heated in steam. It dissolves in dilute acids and in sodium hydroxide solution.	Sheet zinc is used for roofs and gutters. Iron is galvanized by dipping it in molten zinc, and so protected from rusting. Zinc is used for galvanic batteries and, alloyed with copper, to make brass. The salts are used in medicine; the chloride and sulphate yield antiseptic solutions.
Zirconium Symbol Zr. At. wt. 91. At. no. 40. Valence IV. S. G. 4.1.	Occ. As zircon ($ZrSiO_4$). Prep. By reducing the oxide (ZrO_2) with carbon in the electric furnace.	A hard gray metal, remaining bright in air and only slowly oxidized at a white heat. It is dissolved by aqua regia and by caustic potash solution.	The oxide is contained in some incandescent gas mantles.

SOME COMMON CHEMICAL SUBSTANCES

Common Name	Chemical Name	Chemical Formula	Remarks
Alabaster	Calcium sulphate	$CaSO_4 . 2H_2O$	A form of gypsum, fine in texture, varying in color, usually white. Used for ornaments.
Alum	Sulphate of potassium and aluminium	$KAl(SO_4)_2 . 12H_2O$	Colorless, crystalline. Used as a styptic or astringent.
Ammonia water or Aqua ammonia	Ammonium hydroxide solution	NH_4OH	Aqueous solution of the gas, ammonia (NH_3). Used in medicine and in the arts.
Aqua fortis	Nitric acid	HNO_3	Literally "strong water." Especially applied to ordinary commercial nitric acid.
Aqua regia	Nitric acid and hydrochloric acid	HNO_3 and HCl	Literally "royal water." A mixture of the two acids. It dissolves gold and platinum.
Arsenic, White	Arsenious oxide	As_2O_3	Also called "white arsenic," a poisonous oxide of arsenic. Used in medicine and in the arts.
Baking soda	Sodium bicarbonate	$NaHCO_3$	White, crystalline. Used in cookery and in medicine.
Bleaching powder	Calcium chloride-hypochlorite	CaCl(OCl)	Used for bleaching and as a disinfectant.
Boracic acid	Boric acid	H_3BO_3	Used in solution as a mild antiseptic.
Borax	Sodium tetraborate	$Na_2B_4O_7$	White crystalline. Used as an antiseptic and cleanser, and as a flux, in soldering and enameling.
Brimstone	Sulphur	S	Yellow substance. Used extensively in industry and in medicine.
Calcite	Calcium carbonate	$CaCO_3$	Native, crystalline. Known under various names, as calc-spar, etc.
Carbolic acid	Phenol	C_6H_5OH	Powerful caustic, poison, antiseptic.
Chalk	Calcium carbonate	$CaCO_3$	Soft limestone of marine origin. Much commercial chalk is calcium sulphate ($CaSO_4$).
Chrome yellow	Lead chromate	$PbCrO_4$	Brilliant yellow pigment.
Cinnabar	Mercuric sulphide	HgS	Brilliant red pigment.
Copperas	Ferrous sulphate	$FeSO_4 . 7H_2O$	Green, crystalline. Used in medicine and in dyes and inks.
Corrosive sublimate	Mercuric chloride	$HgCl_2$	Heavy, crystalline. Violent poison. Used in medicine and in the arts.
Cream of tartar	Potassium acid tartrate	$KHC_4H_4O_6$	White, crystalline. Found in grape juice. Used in baking powders and in medicine.
Epsom salt	Magnesium sulphate heptahydrate	$MgSO_4 . 7H_2O$	White, crystalline. Used as a cathartic, and in the arts. Originally made by boiling down the mineral waters at Epsom, England.
Glauber's salt	Sodium sulphate decahydrate	$Na_2SO_4 . 10H_2O$	Colorless, crystalline. Used as a cathartic and in soda and glass making.
Laughing gas	Nitrous oxide	N_2O	Colorless gas. Used as an anaesthetic in dentistry.
Limewater	Calcium hydroxide solution	$Ca(OH)_2$	Used as antacid in medicine and industrially.
Marsh gas	Methane	CH_4	Colorless gas, inflammable, found in natural gas and coal gas.
Muriatic acid	Hydrochloric acid	HCl	Usually applied to the commercial acid. Formerly thought to be derived from the oxide of an unknown element, "murium."
Niter	Potassium nitrate or Sodium nitrate	KNO_3 or $NaNO_3$	Potassium nitrate is known as saltpeter or Indian saltpeter. Chile saltpeter is sodium nitrate. Both nitrates are used as fertilizer, in explosives and in medicine.
Ocher	Ferric oxide	Fe_2O_3	An ore of iron, usually mixed with clay. With heat it becomes "burnt ocher." Used as a pigment.
Plaster of Paris	Calcium sulphate	$CaSO_4 . \frac{1}{2}H_2O$	White powder. With addition of water sets to form plaster casts, etc. Originally brought from a suburb of Paris.
Rochelle salt	Potassium sodium tartrate	$KNaC_4H_4O_6$	Colorless, crystalline, saline. Mild purgative. Discovered by Seignette, a druggist of Rochelle, France.
Rock salt	Sodium chloride	NaCl	Impure mineral, identical with halite.
Saccharin	Benzolsulfimide	$C_6H_4 . CO . NH . SO_2$	White, crystalline. Used as sugar substitute. From 300 to 500 times as sweet as sugar.
Sal ammoniac	Ammonium chloride	NH_4Cl	White, crystalline. Used in the arts and as an expectorant.
Sal Soda	Sodium carbonate	$Na_2CO_3 . 10H_2O$	White, crystalline. Also called "washing soda." Used in washing and in glass making.
Salteratus	Sodium bicarbonate or Potassium bicarbonate	$NaHCO_3$ or $KHCO_3$	Literally "aerated salt." Used as cooking soda.
Verdigris	Basic cupric acetate	$Cu(C_2H_3O_2) . HO$	The common acetate, dark green in color. Used in glazing.
Vitriol, oil of	Sulphuric acid	H_2SO_4	Applied to the concentrated acid. Formerly made by distilling green vitriol.

ETHNOLOGY

ANTHROPOLOGY is that science which studies man. Taken in its largest significance it includes so much and such diversified material that it is necessary to subdivide it. Four main divisions are usually recognized—somatology, ethnology, ethnography, culture history. Somatology, sometimes called physical anthropology, considers man as a living organism, in himself and in his relations to other animal forms. It includes anatomy, physiology and psychology. Ethnology and ethnography deal with races; the former is a philosophical, the latter a descriptive, science. The difference between them is the same as that between geology and geography.

Ethnology's Place Among Sciences. Ethnology is based on somatology; it defines the different races of mankind; it studies the great questions of origin, variation and distribution. Ethnography describes the different populations of mankind; it attempts to give a definite picture of the life and culture of each and every division of the human race; it deals little in theories, much in facts. Culture history studies the development of culture from lowest savagery to highest civilization; it is constructed from the facts supplied by ethnography.

The Scope and Field of Ethnology may be briefly indicated. The philosophical study of the human race involves investigation of the origin of mankind; it attempts to reconstruct the primitive type of man; it aims to locate man's first home; it defines the types and varieties of the human species; it seeks to follow the movements of mankind from its first home, and to present the facts of the present distribution of human varieties.

Origin of Man. The theory of evolution is as follows: Man is commonly recognized as no exception to the general rule. He is a part of animate creation, and is related by genuine ties of blood with other animals. His closest relatives are the various species of anthropoid apes living today in Africa, in southeastern Asia and in the adjacent islands.

There are four types which so much resemble man as to deserve the name of anthropoid apes—the gorilla, chimpanzee, orang-utan and gibbon. The gorilla and chimpanzee live in tropical Africa; the orang-utan and the gibbon live in the islands southeast from Asia, and in the neighboring portions of the continent. The gorilla is the largest of the four types, the different gibbons the smallest; all resemble man, but perhaps the nearest approach is in the chimpanzee and the orang-utan. Neither Darwin nor his followers have claimed that man is descended from any of the living types of anthropoids: that they and he alike have descended from a common ancestor; that they are collateral relatives.

Unity of Mankind. The old question of *monogenism* is no longer one of serious importance. Monogenism is the doctrine that all men have descended from a single stock; that all are of one blood. The counter-proposition that the different races of man have absolutely different origins, that they are different in blood, that all men are not brothers, is called *polygenism.*

In the early days of ethnology the battle between these two views was bitter. Naturalists held to the theory of the fixity of plant and animal species. It was recognized that within the range of a single species there might be variation, and varieties of species were recognized and clearly defined. But the idea that a species itself was temporary, and that one might go over to another through modification and by selection, was not recognized.

The question, then, was whether man formed a single species with several varieties or whether there were several human species. Certain tests of species had been determined. The two of most significance were these:

(1) BETWEEN THE DIFFERENT INDIVIDUALS OF A SPECIES THE RESEMBLANCE MUST BE GREAT AND THE VARIATION LIMITED.

(2) THERE MUST BE FERTILITY BETWEEN VARIETIES.

The scientific consideration as to whether man is of one or of several species clearly belongs to the biologist. As regards degree of resemblance it is certain that the different human races present less striking differences than those within the range of pigeons and domestic dogs. Whether the different races of mankind really breed well together and give rise to fertile offspring was much discussed, but, on the whole, may be assumed. Most of the old students, then, decided that mankind formed a single species with a number of varieties.

Today, however, the old question has little meaning. Biology no longer holds to fixity of species. All existing forms of life are believed to have been derived from previously existing forms through variation and selection. Under evolutionistic teaching, all types of man will eventually trace back to some single form, however different may be the present types of race. The question whether we shall speak of one or several species depends only at what point we choose to pass the plane which cuts across the twigs diverging from the parent branch. On the whole, the evolutionist of today chooses to assume a single species of mankind; but if he does so, he believes that variation early took place within the species and recognizes that the fundamental race types are old and have undergone comparatively little change in recent times.

Among recent forms of polygenetic (meaning "having many sources") theory the extreme is that of Sergi, which not only admits many species of man, but even several genera. Another recent phase of polygenetic thought is represented by Klaatsch, who believed there was a closer relation between local human races and the anthropoids of their district than between the races themselves. Thus he considered the Mongolic type of man and the orang-utan as offshoots from a common ancestor; the gorilla and Ethiopic type were similarly related; the chimpanzee and the Caucasic. Certain recent studies of blood reaction in human races and anthropoid apes have given support not only to polygenistic claims but also to the ideas of Klaatsch just stated. These are still open to question.

Original Type of Man. Various attempts have been made to reconstruct the primitive type of man. Years ago, de Quatrefages, on the basis of individual peculiarities occurring within the limits of all human races—peculiarities which he believed might be considered reversive—suggested that the first men were probably yellow of skin, red-haired and green eyed. While his view has been rarely accepted it has perhaps some elements of truth. It is possible to make a guess as to the structure of the earliest human occupants of western Europe, where various remains have been found in ancient deposits. Each fragment of human skeleton that has been found in glacial gravels or in cave-earth has given rise to bitter controversy. The number of pieces which have stood the test of critical examination and are unquestionably old is small. Among the most interesting of these remains are the skull-cap of Neanderthal and the skulls of Spy. Within a few years past, several discoveries of extraordinary importance have been made, and the list of authentic ancient pieces is double what it was a few years since. Rutot and others have recently summarized the whole discussion and we present a table based upon their evidence.

It is still too early to attempt a complete restoration of early man from these fragments. We may, however, say that even at that early time there were already variations. The type of Neanderthal presents many interesting points of resemblance to the anthropoid apes and suggests a being of low intelligence. At the same time, however, there existed forms with a far higher development.

The most interesting suggestion from the Table is that several markedly different types go far back in time and that the type considered by Osborn and English writers as the oldest had a remarkable skull capacity.

Man's First Home. It is possible that the discussion as to man's first home has been tinged by a survival of religious bias. The Garden of Eden of the Jewish scriptures was located in southwestern Asia. Most writers have, when they discussed the matter from the point of view of science, looked for man's home in the Asiatic continent. De Quatrefages claimed that it was natural to locate the place of man's appearance where his three great races—yellow, black and white—came into contact; where the different types of language also met. For him, the first home of man was in southern Asia, and from there migration started. Later writers looked farther south. Keane, for instance, believes that man originated on a land mass now disappeared, the old Indo-African continent, the existence of which has been proved by recent geological studies.

A hint as to the place of man's appearance comes from studying the range, past and present, of the anthropoid apes. We have already stated that the living species of anthropoids are confined to Africa and the Asiatic islands. It is probable that no forms strikingly resembling man have existed very far outside of the extreme range of living species. The much discussed and interesting "missing link" of Dubois, *Pithecanthropus erectus*, lived in Java. It may be fairly assumed that the place of man's origin was somewhere within the anthropoid range thus

suggested. It may also be quite safely claimed that a species like man, little adapted by nature to withstand a rigorous climate, originated in a region of mild temperature.

There is a tendency at present to move the first home farther north. The expeditions from the American Museum of Natural History, under Andrews, are seeking evidence for man's first home in Mongolia, an idea suggested by the geological history of the mammals.

Occasional suggestions that human evolution took place in America fail to meet support. Ameghino, in Argentina, believed he found ancestral forms in the palaeontological record of that region. Hrdlicka has decisively broken down his claim. The single tooth, found in Nebraska and at first championed by Osborn, has been abandoned.

Migrations. From the center of his original appearance man early started on migrations, which have been continued until, today, it may practically be said that he has penetrated every land area upon the globe. This is a fact without parallel. No other mammal can compare with man in its travels. The only approximation is the dog, which, as his friend and companion, has accompanied man upon his wanderings. It is legitimate study for the ethnologist to investigate the lines of migration, but a most difficult task. The present distribution of mankind, however, is a far more simple matter. The ethnological map of the world has been constructed with a fair degree of accuracy.

TABLE OF ANCIENT HUMAN REMAINS FROM QUATERNARY AND TERTIARY
(Based on Rutot and Osborn)

	Geological Divisions	Nature of Pieces and Locality	Types
Quaternary	Post-glacial	Skeletons, skulls or other fragments: from Duruthy, Cro-Magnon, Laugerie, Chancelade, Placard, Solutre, etc.	Cro-Magnon
		Mentone	Grimaldi Neanderthal
		Moustier, Neanderthal, Spy, La Naulette, Chapelle aux Saintes, etc.	
	Third Interglacial	Crapina	Neanderthaloid
	Second Interglacial	Trinil, Java	Pithecanthropus
	First Interglacial	Mauer, Germany	Heidelberg
Tertiary	Pre-glacial	Piltdown, England	Eoanthropus (Dawn-man)

RACES OF MAN

How many and what are the races of mankind? Authors differ greatly in their answers. At first sight this wide divergence of opinion between authors seems a serious matter; one feels as if the whole subject were in uncertainty and doubt; he is inclined to ask whether ethnology is actually a science. Huxley recognized two races; some other writers carried the number up to nearly forty. Cuvier, and French ethnologists generally, recognized three great races.

Blumenbach, who has profoundly influenced the general public and whose classification is that usually found in geographies and school textbooks, defined five—Ethiopian, Mongolian, Malay, American and Caucasian. His terminology has largely affected subsequent workers, even when they differed from him in their schemes.

The present tendency, as exemplified in three or four recent writers of repute, is toward the recognition of four main races. Thus Keane recognizes *Homo ethiopicus*, *Homo mongolicus*, *Homo americanus* and *Homo caucasicus*.

While this diversity between authors is to some degree a matter of regret, it need cause no serious distrust. The object of classification is convenience in study and the bringing together of things which are alike. When we compare the different ethnological schemes with one another, we usually find that they meet both these ends with fair success. All bring together groups which are alike, and but rarely do natural relationships of peoples seem to be disjointed.

We shall recognize the same types that Keane does, but shall apply to them the terms Ethiopic, Mongolic, American and Caucasic races.

Characters of Race. Topinard attempted to define the race types of the world. His study was the most careful and precise undertaken to that time. He based his types of races absolutely upon physical characters and made five features fundamental. These were the stature, head form, nose, hair and color.

Stature. In stature, man ranges from the tall Patagonian, with an average of six feet or more, to the pygmies of central Africa and the Negrito of the Asiatic archipelago. Among all races there is a sex difference in stature, and, in general, it may be said that the female will average one-sixteenth less than the male. In stating that any race or people is of a given stature it is meant that the average of stature in adult males is to be understood. The average stature of mankind is perhaps 1.65 meters.

The term "pygmy" is applied to the populations of smallest stature and the French writers have agreed to call all populations "pygmy" where the average stature of adult males does not exceed 1,500 millimeters. Sir William Flower set the limit for pygmy stature in English measure at five feet, which is practically the same thing. The ethnologist divides people on the basis of stature into tall tribes (1,700 mm. and up), medium (1,600 to 1,699 mm.) and short (below 1,600 mm.).

The Head Form is difficult to define in words. To convey it to the mind, certain measures are taken and a numerical statement made. The two most important head measures are the length and breadth. Actual length and actual breadth, however, have but little value, and it is common to compare the two, expressing the ratio between them in what is known as an "index."

Two head indices are commonly employed, one of which expresses the relation between the length and breadth of the skull and the other the relation of length and breadth upon the living subject. To the former the name "cranial" index is given; to the latter that of "cephalic" index. These indices are found by the same method, which is to divide the breadth by the length and drop the decimal point. Thus, if a skull measured eight inches in length and six inches in breadth, the cranial index would be 75. If, on a living head, the length were seven and one-half inches and the breadth five inches, the cephalic index would be 66⅔. There are no normal skulls with an index so low as 50 or so high as 100; that is, there are no normal skulls which are twice as long as they are broad, or which are as broad as they are long.

The indices are constantly employed in the defining of human races. The actual range as found in the averages of races is 69.4 to 88.7. Special terms are used to indicate the head form. Thus, brachycephalic (85.3 and up), mesocephalic (85.2 to 77), dolichocephalic (below 77). The Armenians are for most part brachycephalic with an index of 85.6; the Eskimo are dolichocephalic (76.8).

Nose. The form of nose is one of the best distinguishing characters of race. Here again, an index is calculated from two measurements—height and breadth. The nasal index is found by dividing the breadth of the nose by the height and dropping the decimal point. The range is from 60.4 to 107.9. A nose as wide as it was high would have a nasal index of 100; one which was half as broad as high an index of 50. Individuals with an index of 100 or more are not uncommon among negroes.

On the whole, the white peoples of Caucasic race have the narrowest and most prominent of noses. Three terms are used in connection with the nasal index—leptorrhinian (below 70), mesorrhinian (70 to 84.9), platyrrhinian (85 and up). The northern type of European is leptorrhinian, the Negrito of the Philippines is platyrrhinian.

Hair is one of the most distinctive marks of race. Huxley made it fundamental in his classification, and recognized two main divisions of mankind—the straight haired and the woolly haired. Various points should be observed regarding it. As regards its general form, hair may be straight, wavy, curly, crinkly or woolly. In cross section, it may be circular, oval or elliptical or flattened. White peoples, generally, have hair oval or elliptical in cross section; yellow peoples have hair with circular cross section; and blacks have distinctly flattened hair.

Hair differs racially in diameter, texture, abundance, distribution and angle of emergence. There are marked differences between races in the matter of calvity (baldness) and canity (graying). There are notable differences also in distribution and in the quantity and development of face hair. In color, race

differences of hair are black, brown, medium, light and blond. Red hair is found exceptionally among all races, but is typical of some sub-types. There are actually two types of red hair, one of which is blond, the other a variety of black.

Skin Color. The color of the skin varies with race. Its differences are so striking that they have attracted universal attention and in many attempts at classification the color basis is fundamental. It is difficult to suggest a serviceable series of color terms. There are no actual black populations and no truly white ones. For a careful discrimination, color scales are necessary, and ethnologists quite generally use a series of fixed color samples which they match with the skin of the subjects studied. The best known chromatic scale for use in race study is that of Broca, where some thirty-four shades are discriminated. In ordinary practice a list of half a dozen terms is employed.

Four Great Races. The four great races may be characterized as follows:

Ethiopic. Color, from brown to almost black; generally dolichocephalic; forehead, frequently retreating with heavy arches over the orbits; prognathic, that is, the lower part of the face notably projecting; the cheek bones do not project notably forward and anteriorly; the nose is broad and flattened, platyrrhinian; the eyes are large and prominent and lustrous, dark brown or black in color; the hair is black, frizzly or woolly, and presents a flattened cross section; the stature is above the average of mankind at 5 feet 10 inches. The pygmy populations differ from the normal Ethiopic type in stature, in head form, tending toward brachycephaly, and in hair color, frequently a reddish brown.

Mongolic. Color, a lighter or darker yellow; brachycephalic; the forehead fairly developed and without conspicuous orbital arches; the general impression given by the face is flatness and broadness with prominent forward development of the cheek bones; the nose is generally small and mesorrhine; the eyes black, with narrow almond-shaped opening, which appears to be oblique on account of a fold of skin at the inner edge; hair black, lank, coarse, circular in cross section; stature below the average at 5 feet 4 inches.

American. Color, brown with a reddish or yellowish tinge; mesaticephalic; large coarse features; forehead well developed and usually slight prognathism; cheek bones are prominent; nose mesorrhine, prominent, large, often aquiline; eyes small, round, straight, sunken, black; hair, black, lank, coarse, long, round; the face is usually beardless and there is little body hair; stature above the average at 5 feet 8 inches.

Caucasic. Color, ranging from white to almost black and presenting in white peoples distinctly fair and dark varieties; both types of head form occur, combined with both fair and dark colors; the face usually harmonizes in its form with the head form; prognathism rare; cheek bones not projecting; leptorrhine; eyes straight, rather large, and varying in color from light gray or blue to dark brown or black; hair, wavy, oval or elliptical in cross section, varying from flaxen to black; beard usually developed and body hair abundant; stature variable from tall to average.

The Ethiopic Race may be divided into continental and island divisions. The continental blacks occupy Africa from the Sahara Desert southward. The insular group is found in Melanesia and it is customary to add the native population of Australia to this race. Both on the continent and in the islands, two sharply contrasted types are found—the large Negroes and the small, or pygmy, populations.

Pygmies. The pygmies present the typical hair, features and general characters of the race, but in the average of adult males fall below 5 feet in stature. In central Africa they occur in little groups scattered over a wide area in the midst of large black peoples. They have practically no agriculture and depend on the chase for food, representing the culture stage of savagery. Their hair is frequently of a reddish or grayish brown. They are not to be considered a dwarfed or degenerate population, but a well-developed and active people of a type among the oldest known.

A curious condition of commensalism (meaning "to eat at the same table") usually exists between these little people and their large neighbors. The populations among whom they live are settled agricultural peoples, living in large and well-built villages. The pygmy settlements are usually at the edges of these towns, and a constant trade exists between the two groups. The little people bring fresh meat, ivory, honey and other natural products and receive in trade field products, cloth and iron.

To the little blacks of the island world, of whom those living in the Philippines are typical, the name "Negrito" is usually applied. They present the same physical peculiarities, stage of culture and mode of living. They live in practically the same relations with the neighboring Malays that the pygmies do with their large neighbors.

Bushmen. It is customary to group the Bushmen of southern Africa with the pygmies. They present some interesting points of difference. Their skin has a distinct yellowish tinge; they live in little wandering groups, taking refuge in caves and rock-shelters; they are hunters, but there is no distinct commensalism between them and their Bantu neighbors; they delight to mark their cavern walls with crude but lively representations of the animals they pursue. These peculiarities, to a less degree, mark the pygmies of central Africa. They are also found in the Hottentots, neighbors of the Bushmen, usually considered to be the result of intermarriage between them and the Bantu of the region.

Negroes. The large continental blacks live in good towns, depend upon the product of the fields (cultivated by women), or, especially toward the south, upon herds of cattle. Two great divisions are recognized—the true Negro of the Soudan district and the Bantu populations farther south.

In the true Negro the characteristics of the race already mentioned are carried to their fullest development; blackness, coarseness of features, flatness of nose, prognathism with accompanying thickness of lips, and dolichocephaly are emphasized in them. The Bantu present a fine, chocolate brown tint, more regular and, to the eye, pleasing features; prognathism is rarely pronounced and the head is by no means markedly dolichocephalic.

Melanesians. In the islands, the large blacks include the Papuans of New Guinea and the Melanesians of Fiji, New Caledonia, the Solomons and other island groups. Their life is interesting and has been the subject of much study. Dark colored, woolly haired, dolichocephalic, platyrrhine and of good stature, they are actually comparable with the big blacks of Africa.

The Mongolic Race is the most populous of the divisions of mankind. There is reason to believe that of the great races it perhaps nearest approaches the primitive stock of humanity. It is vigorous, hardy and expansive. Its primitive home is the great continent of Asia, which is still chiefly occupied by it. The race presents two chief divisions to which Keane gives the names Mongolo-Tatar and Tibeto-Indo-Chinese.

The Mongolo-Tatar is the northern in position. It has spread from Asia across northern Europe and occupies today the north of Russia and a considerable area of Scandinavia. To it belong the great wandering hordes of Siberia—Mongols, Kalmucks, Buriats, Tungus, Yakuts and the like; to it also belongs the great Finno-Tatar group—with Tatars, Turki and Ugrians. To this belong the Finns, Magyars and Bulgarians. In the far north are the Samoyeds and Lapps, the latter a people of small stature, who raise reindeer in the north of Sweden and Norway. To the great Mongolo-Tatar mass also belong the Koreans and the Japanese, relatives in blood and language. The Koreans are relatively pure Mongols, the Japanese much mixed with other elements, as we shall later see.

The Tibeto-Indo-Chinese division includes the Tibetans, the Chinese proper and the great mass of people in Indo-China and southeastern Asia, such as the Siamese, Burmese and the people of Annam. They are sedentary peoples, depending upon agriculture, with towns and cities, a dense population with distinctive culture, a true civilization. Linguistically, the southern group differs profoundly from the Mongolo-Tatar. Chinese and Japanese represent totally different types of language.

Eskimo. Besides the two great divisions mentioned, the Mongolic race includes two interesting extra-continental groups—the Eskimo and the Oceanic Mongols, or Malays. Taxonomically, the Eskimo present a difficult problem. In color, face, features, stature—in fact, in the whole general impression—they are clearly Mongolic. But they are at the same time dolichocephalic; the Eskimo skull is one of the most sharply marked; it is long and narrow, has square jaws and ridged vault to the degree that, viewed directly from in front, it gives a distinct pentagonal outline.

The Eskimo occupy the whole arctic coast of North America from south and western Greenland to the western end of Alaska and overlap into eastern Asia. Throughout this enormous range of thousands of miles they present remarkable uniformity in type, language and mode of life. The area occupied is chiefly American, not Asian; and the bulk of Eskimo population is found in the new world.

Malays. The Oceanic Mongols, or Malays, occupy the islands of Malaysia, the Malay peninsular and a part of the great island of Madagascar off the east coast of Africa.

Blumenbach considered the Malay one of the fundamental populations of mankind. It presents a fairly well-marked type, which, however, may be included in the Mongolic. The Malays and the Malayan peoples (for the word "Malay" proper is used chiefly in ethnology for those in the peninsula) are good seamen.

The American Race. Keane refuses to recognize the Malays as distinct, but insists upon separating the American type from the Mongolic. For him they are an off-shoot, but one of ancient date, which has had ample chance to develop peculiar characters in the American area. Contrasted with the other great races it presents a notable degree of physical uniformity. Writers have often said: "When you have seen one American Indian you have seen all; the American Indian presents the same type from the cold waters of the Arctic to the cold waters of Cape Horn."

This uniformity is striking but not absolute. Careful study shows tall and short tribes of American Indians, from the Patagonians, who are perhaps the giants of mankind, to Otomi, who almost touch the limit of pygmy height. There are long headed and short headed tribes, light and dark—from almost black to almost white; there are tribes with large faces and coarse features, like the Sioux, and tribes with soft and mild faces and delicate features, like the Chinantecs.

The American Indians present a notable uniformity in culture. While writers usually have claimed a single origin for the American peoples, it seems more reasonable to assume that immigrants have come by many routes from many regions. Within the new environment the fragments of old populations have approximated to each other until we have the present condition of relative uniformity.

The Caucasic Race. The continent of Europe is chiefly occupied by people of Caucasic race. Light whites and dark whites are readily distinguished. No section of the world has presented more serious problems to the ethnologist and no race is more difficult of satisfactory discussion than the Caucasic.

So far as Europe is concerned, Ripley recognizes three races: the northern, which is fair, tall, dolichocephalic; the Alpine, which is short, dark and broad headed; the southern or Mediterranean, which is short, dark and long headed. This classification is attractive for its simplicity. It seems indeed to be too simple, and with its acceptance, points of importance are lost from sight and real distinctions fail to be recognized.

Aryan Whites. Deniker recognizes ten types of European whites speaking Aryan tongues, which he groups under six races and four sub-races. His characterization of these types is as follows:

(1) *Northern.* Very lofty stature (1.73 m.); dolichocephalic (76-79); fair; wavy hair, sometimes reddish; light eyes, usually blue; ruddy white skin; long face; prominent, straight nose; *e.g.*, Swedes.
  (a) *Subnorthern.* Tall; mesocephalic; fair; straight hair; angular face; turned-up nose; *e.g.*, Letto-Lithuanians.
(2) *Eastern.* Short (1.63 m.); moderately round-headed (82-83); fair; straight light-yellow or flaxen hair; square-cut face; eyes blue or gray; nose frequently turned up; *e.g.*, Russians.
  (a) *Vistulian.* Very short; mesocephalic; fair; *e.g.*, some Poles.
(3) *Ibero-Insular.* Short (1.61–1.62 m.); dolichocephalic (73-76); dark; hair black, often curly; very dark eyes; tawny skin; straight or turned-up nose; *e.g.*, Spaniards.
(4) *Western*, or *Cevenole.* Short (1.63–1.64 m.); very rounded skull (85-87); dark; brown or black hair; light or dark brown eyes; rounded face; thick-set figure; *e.g.*, central French.
(5) *Littoral*, or *Atlanto-Mediterranean.* Tall (1.66 m.); moderately dolichocephalic or mesocephalic (79-80); dark; hair and eyes very dark colored. Always near the Mediterranean coast.
  (a) *Northwestern.* Tall; sub-dolichocephalic; chestnut hair, often brown; *e.g.*, Welsh.
(6) *Adriatic*, or *Dinaric.* Tall (1.68-1.72 m.); brachycephalic (85-86); dark; brown or black wavy hair; dark eyes; straight eyebrows; elongated face; delicate, straight or aquiline nose; slightly tawny skin; *e.g.*, Montenegrins.
  (a) *Sub-Adriatic.* Less tall (1.66 m.); less brachycephalic (82-85); lighter hair and eyes; *e.g.*, Luxemburgers.

These are all truly European types, speaking related languages.

Non-Aryan Whites. There are, however, other Caucasic peoples; thus, in the region of the Caucasus itself, a district of extraordinary mixture and ethnic confusion, are many interesting peoples. It is from this district of Georgians and Circassians that the name applied to the whole great race was drawn. The Basques of the Pyrennean district, divided politically into French and Spanish Basques, are white men, Caucasian, European, but not included in Deniker's types, being unrelated in language to the races of Aryan Europeans.

The whole of north Africa is occupied by peoples who are neither Ethiopic nor Mongolic, and who, though dark in skin for the most part, are regularly classed in the Caucasic race. Although, in their entirety, the general name Hamitic is given to them, some of them have been profoundly influenced by Semitic peoples and languages.

Many fine types occur within this area, which, of course, includes the Egyptians, past and present, the Libyans and the Berbers. While these peoples are for the most part dark, some remarkable groups of notably blond types occur among them. That these blond types are ancient is clearly shown by the wall-paintings of old Egypt, where the Libyan is regularly represented as blond. To the Caucasic race belong also the brunette populations, ancient and modern, who speak the pure and typical Semitic languages—Hebrews, the modern Arabs and their neighbors. With them, we enter Asia.

Asiatic Caucasians. In Asia, also, are Caucasic peoples, some of them speaking Aryan languages, in Persia, Afghanistan and parts of India. Caucasic elements in Asia date far back, and there is good evidence of their existence and influence even in that section of the great continent which is occupied by Mongolo-Tatar populations.

The Ainu of Yeso and Saghalien are a Caucasic people. They are the remnant of the aboriginal population of Japan. Perhaps they occupied the entire archipelago before the coming of the Japanese from the continent by way of Korea. They are dirty white in color; have abundant wavy hair, elliptical in cross section; horizontal, large expressive eyes; almost European features; abundant body hair and heavy beards. They are mild in disposition and in culture are almost in savagery. Their language differs notably from Japanese in structure and words.

In India are the Todas, whom Keane considers Caucasic. In face, features, hair and heavy beards, in yielding character, they present considerable analogy to the Ainu. They are, however, cattle raisers, and their whole life is wrapped up in the care of their animals. There are in other parts of Asia scattered fragments of populations which one and another writer have suggested as Caucasic and it is not impossible that continuous populations of inoffensive and weak Caucasic type once occupied the whole of eastern Asia and that they have been broken and separated by the flood of Mongolics coming from the west. The present tendency is to recognize the existence of Caucasic people in the island world.

Indonesians. The term "Indonesian" is much used for certain people of Malaysia who do not present the true ("Malay") Mongolic type. It is assumed by those who use the term that these Indonesians are in large part Caucasic, modified by Malay or other island blood. The Polynesians, too, are largely claimed at present as Caucasic. These peoples present a handsome, attractive type; of good stature, well built, with faces of regular features, they are beautiful, by our standards.

GEOGRAPHICAL DISTRIBUTION

In general, each continent has a distinct type of mankind. Asia has its Mongolic type; Europe and northern Africa its Caucasic type; south Africa its Ethiopic type, and the double continent of America its American type. Even Australia has a definite race type. While this is true, there has been so much of movement, interpenetration and admixture that the population of no great land area is now uniform.

European Peoples. Europe, with northern Africa, is the true home of the Caucasic race, but contains Mongolic peoples as well. In the accompanying table of European peoples by countries the main or fundamental population is given in one column, the more important secondary elements in another.

Asiatic Peoples. Asia is the continental home of the Mongolic race, which still forms the greater part of its population, but a large Caucasic element has been present since ancient times and there is local mixture of Ethiopic blood. Deniker recognizes eleven physical types, which have intermingled to produce the Asiatic peoples of today. Five of them are peculiar to Asia—Dravidian, Assyroid, Indo-Afghan, Ainu, Mongolian; six occur elsewhere—Negrito, Indonesian, Arab, Ugrian, Turkish and Eskimo. Six of these are Caucasic—Dravidian, Assyroid, Indo-Afghan, Ainu, Indonesian, Arab; four are Mongolic—Mongolian (Tibeto-Indo-Chinese) Ugrian (Mongolo-Tatar), Turkish (Mongolo-Tatar), Eskimo; one is Ethiopic—Negrito.

Dravidian applies to the brown aboriginals of southern India, who are short of stature, dolichocephalic and with curly or wavy hair. Peschel made of them a great race type. Their position among races has been disputed, but in our four-race classification they must be called Caucasic.

Assyroid is so called because the type is common in the wall sculptures of old Assyria. It is well characterized, with tawny-white skin, narrow hooked nose with thick lips, brachycephalic, hair wavy or curly. It is the Armenian type and the oft-mentioned "Jewish" type is fundamentally Assyroid. In our scheme it is Asiatic Caucasic. So, too, is Indo-Afghan, the type of the invading conquerors of part of India. It has clear brown skin, black wavy hair, narrow straight or convex nose, dolichocephaly, tall stature.

The Arab, typical Semite—though the word Semitic is properly linguistic, not ethnic—is dark, with black wavy hair, dark eyes, long elliptical face, dolichocephalic head, aquiline nose, prominent occiput.

Jew. This term should be used in only a religious sense; in so far as it has ethnic application it is fundamentally Assyroid or Arab or both; but it is everywhere mixed and approximates the people of the surrounding populations. Jews, of course, exist the world over. Gypsies, also world-wanderers, probably began in India and are Indo-Afghan, at least in part.

African Peoples. To draw up similar tables of the population of other continents would be more difficult and less satisfactory. The population of Africa falls into two well-marked divisions. Northern Africa to the Sudan must be ethnically joined to Europe. Brinton emphasized this fact by making one continent of the two land masses, to which he gave the name Eurafrica. Its population is Caucasic, though many of its peoples are dark of skin. In features, head-shape, hair, nose, they are clearly related to European peoples. Among them are Berbers, Libyans, Egyptians, Nubians, Abyssinians. Collectively these north-African peoples are called Hamitic but they have been strongly influenced by Arab (Semitic) hordes which have swept over the area.

On the southern border there is much mixture with Negro blood. To the rest of Africa, Brinton applies the name Aust-Africa. It is divided between true Negroes in the north and the Bantu peoples of central and south Africa. Bantu is a linguistic term, and the division between the two masses of population is primarily linguistic. But there are physical differences also. Scattered amid the big blacks of central Africa are the pygmy groups, and in the Kalihari Desert region of the south live Bushmen.

American Peoples. The great double continent, America, was occupied solely by the American race, except along the northern coast, where Eskimo live. American Indians have never been seriously classified upon the basis of physical types, due to the uniformity already mentioned.

Language is the basis generally employed in dividing the race into study groups. There are hundreds of languages spoken among them, and even language families, or independent stocks, number scores. Powell recognized fifty-eight linguistic families in North America north of Mexico. Brinton divides the double continent into five geographical regions—North Pacific, North Atlantic, Isthmian, South Pacific, South Atlantic. North Pacific, North Atlantic and Isthmian make up North America; the other two regions constitute South America.

While this division is geographical, Brinton emphasizes the fact that these regions are really culture areas as well. In such an article as this, further detail would but confuse by introducing a multitude of tribal names.

Oceanic Peoples. The Island World is not a unit ethnologically. It includes four well-marked, clearly characterized, areas—Malaysia, Melanesia, Australasia and Polynesia.

Australasia. These may be separated into the Australian and the Tasmanian types. The latter seems more primitive and approaches, perhaps, the Melanesian. The Australians are fundamentally blacks, Ethiopic, but have been influenced by Dravidian or other elements until they have lost the woolly hair. With chocolate brown skin, broad nose, dolichocephaly, and medium stature they present a fairly uniform type, which some authors class among the great races.

Melanesia includes New Guinea or Papua and a number of groups of smaller islands. The true Papuan shows a fairly distinct type, but he is usually included with the rest under the general term Melanesian, which includes all the large Oceanic Negroes, Ethiopic in race.

Malaysia extends from Madagascar to Melanesia, thus lying west of the two areas just considered. It includes the great islands of Sumatra, Java and Borneo; also Celebes, the Philippines, and many smaller islands; Formosa, ethnically, is Malayan. Malays form the chief population, but Melanesians have had local influence, and Negritos, little blacks, occur at many points.

The most interesting portion of Malaysia is the Philippine archipelago. Its ethnology is complicated. After making the first serious study of it, Blumentritt suggested the following theoretical explanation: Four populations occur—(1) the aboriginal Negritos; (2) a great list of tribes representing an early Malayan immigration, tribes like the Igorot, Ifugao and others; (3) a second Malayan immigration of people much further advanced in culture, represented by the civilized "Cristiano" populations, which form the bulk of the Philippine peoples today, including the Tagals, Visayans and Ilocano; (4) a third Malayan immigration, Mohammedans, the "Moros" of Mindanao and the Sulu islands. This immigration was just well under way when the Spaniards appeared in the sixteenth century and checked it. There seems to have been a northward streaming of Malayans from the Philippines and Formosa that carried Malay blood and influence into Japan. The Japanese are not pure Mongols, but owe much to Malays.

Most writers today would consider Blumentritt's (2) Indonesian rather than Malayan.

Polynesia is singularly uniform in population. There are local mixtures, of course, where the area touches Melanesia.

The recent streaming out of white men into all parts of the world has had a remarkable influence on race vitality and characteristics. Today in America and Australia, in Polynesia, and even in Africa, the original populations are disappearing or subordinated.

Table of Peoples of European Countries

Country	Chief or Foundation Peoples	Subordinate or Local
Austria.	Northern.	Western. In south, Adriatic.
Belgium.	Northern (Flemish). Western (Walloon).	Northwestern.
British Isles.	Northern, Subnorthern.	Northwestern; in Wales and Ireland.
Bulgaria.	Bulgars. (Mong.-Turko-Finn.)	Mixed with Slav elements.
Denmark.	Northern.	Along coast. Western.
France.	Western or Cevenole, in highlands.	Northwestern, in northern lowlands. Littoral in south. Adriatic. Ibero-Insular.
Germany.	Northern, in lowlands.	Sub-Adriatic. Western.
Greece.	Diversified and uncertain.	
Italy.	Adriatic in north. Ibero-Insular in south.	Littoral. Western.
Montenegro.	Adriatic.	
Netherlands.	Northern. Subnorthern.	
Norway.	Northern. Lapps, etc., (Mong.) in north.	Subnorthern and Northwestern, along coasts.
Portugal.	Ibero-Insular.	Northwestern.
Rumania.	Turki (Mong.). Western elements.	
Russia.	(Cauc.) Northern. Subnorthern. Eastern. (Mong.) Lapps. Finns, Samoyeds.	Vistulian (Poles). Adriatic.
Servia.	Adriatic.	
Spain.	Ibero-Insular.	Western, north coast; Littoral, south coast.
Sweden.	Northern. Lapps and Finns (Mong.)	Subnorthern and Northwestern along coasts.
Switzerland.	Cevenole, or Western.	Adriatic. Sub-Adriatic.
Turkey.	Turki (Mong.).	

Table of Peoples of Asiatic Countries

Country	Chief or Subordinate Peoples	Subordinate or Local
Afghanistan.	Indo-Afghan (Cauc. of Aryan speech).	Assyroid (Cauc.).
Arabia.	Arabs. Syrians (Cauc.—Semites).	
Baluchistan.	Baluchi (Cauc.—Indo-Afghan).	Arab. (Cauc.—Semitic). Negroid.
Burma.	Burmese.	(See Indo-China).
China.	Chinese. (Mong.—T.-I.-C.).	Lolos, Miautse (perhaps Cauc.). Other fragments of aboriginal peoples.
India.	In north, Mongolic.	In Punjab-Deccan; brachycephal Cauc.?
	Ganges and Indus valleys, Aryo-Dravidians.	Ceylon; Veddahs, aborigines (Cauc.?).
	In south; Dravidians.	
Indo-China.	Cambodians. Annamese. Burmese. Thai. (Shans. Laotians. Siamese.)	(Aboriginal "Indonesians" mixed with incoming Mongolic peoples.) Negrito.
Japan.	Japanese (Mong.—K.-J.).	Ainu (Cauc.). Much Malay influence.
Korea.	Koreans (Mong.—K.-J.).	Trace of Caucasic elements.
Persia.	Persians (Cauc. of Aryan speech).	Semites (Cauc.). Turki (Mong.—M.-T.).
Siam.	Siamese (Mong.—T.-I.-C.).	(See Indo-China).
Siberia.	Mongols, Tungus, Tatars, Yakuts, etc.	
Tibet.	Tibetans (Mong.—T.-I.-C.).	
Turkey.	Turki (Mong.—M.-T.).	Assyroid (Cauc.).

GEOLOGY

GEOLOGY is the history of the earth and its life. It is, moreover, ancient history rather than modern; and the record of its events are written in the rocks of the earth's surface rather than in ancient volumes. Geology therefore is one of the most comprehensive of the sciences, and it utilizes as its tools many of its companion studies such as physics, chemistry, astronomy, zoölogy and botany. So broad a science of necessity must have many subdivisions. *Cosmic geology* deals with the earth's relations with other astronomic bodies; *petrology* is the study of rocks; *structural geology* deals with the arrangement of the rocks; *dynamic geology* is concerned with the forces involved in geologic processes; and *physiography* treats of the earth's surface features. *Paleontology* is the study of fossils and faunas that have lived in the past; and *historical geology* is that phase of the science which deals with the succession of events both physical and organic throughout the earth's long history. Of the other branches of the subject which might be mentioned, *economic geology*, or the industrial application of geologic knowledge, is the most important to man. *Geography* may be regarded as a phase of modern geology.

PHYSICAL GEOLOGY

Earth Relations. Although the earth is supremely important to us, it is but a third-rate planet revolving about a second-rate sun. A number of the most important geologic processes, however, and indeed life itself are dependent on the earth's astronomical relations, which are discussed in detail under the chapter on "Astronomy."

Major Divisions of the Earth. The materials of the earth may be separated naturally into three major divisions: (1) the atmosphere, (2) the hydrosphere and (3) the lithosphere.

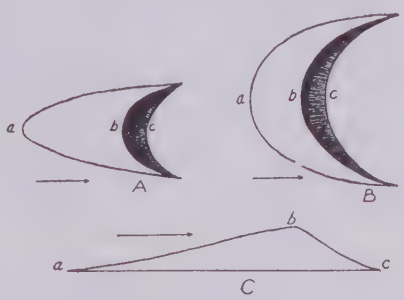
Atmosphere. Although extending far above the earth, the atmosphere nevertheless revolves and rotates as a fundamental part of it. Except when the wind is strong, we are unconscious of its weight, yet the atmosphere is estimated to comprise $\frac{1}{1000000}$ of the earth's great mass; and it exerts a pressure of about fifteen pounds per square inch at sea level. The density of the air diminishes rapidly upward, but from theoretical lines of reasoning it seems likely that the rarest parts of the earth's atmosphere extend out beyond the orbit of the moon.

The atmosphere is the most active of the major divisions of the earth, and its effects upon the other divisions are so great that it may be regarded as one of the most important agents of change in the geologic history of the earth. Its function in sustaining life is obvious.

Hydrosphere. The hydrosphere comprises all of the waters of the earth's surface, and it makes up about $\frac{1}{3000}$ of the earth's mass. Compared with the ocean, all of the other bodies of water are small, yet of all the geologic agencies shaping the earth's surface, running water is the most obvious and apparently the most efficient. In the form of rainfall, surface streams, underground waters, currents and waves, the hydrosphere is continually altering the earth's facial expression. It is eternally carrying sediment from the higher land to the basins where it is deposited.

Lithosphere. The lithosphere (rock sphere) is the only one of the three major divisions of the earth which is truly a sphere, for both the atmosphere and the hydrosphere are shells which penetrate the solid earth only to shallow depths. The greater part of the lithosphere is composed of solid rock, but at most places it is covered by a surface veneer of loose material such as soil, clay, gravel, sand and fragmentary rock, which is collectively known as *mantle rock.*

The solid rock is nowhere very far beneath this mantle, and at many places it appears directly at the surface. This solid rock is made up of many diverse varieties, all of



Dunes

A. and B. Sand dune shapes known as *barchanes*. C. Section through dune. Arrows show direction of wind.

which may be grouped into three main classes. The *stratified* rocks are layered, and they are similar in composition and in bedding to those sediments which are forming on the sea bottom today. The *igneous* rocks are hardened lavas, or other products of volcanic processes. *Metamorphic*, or altered rocks, have undergone physical and chemical alteration since their formation. These rocks have been derived from either the igneous or the sedimentary type chiefly through the agencies of heat, pressure and underground water.

Work of the Atmosphere. *Mechanical Work.* The mechanical work of the wind depends upon its movements. The transportation of dust by the wind is essentially universal, the particles finding their way to the interior of tightly closed drawers and even falling upon the decks of steamers in mid-ocean. During the eruption of Krakatoa, in Malaysia, in 1883 large quantities of dust were shot up to great heights by the force of the explosion. This dust, carried by upper air currents, completely encircled the earth and made red sunsets for several months. In some parts of China there are very thick deposits of a fine-grained, wind-blown dust known as *loess*, out of which the Chinese have carved walls, homes, and even entire villages.

Winds do not commonly lift sand far above the surface, and therefore surface obstacles interfere with the movement and cause it to drift. It thus is aggregated into mounds and ridges known as *dunes*. The dunes may attain heights of several hundred feet, but more commonly they are from ten to thirty feet in height. The shape of the dune depends on many factors such as the strength and duration of the wind, the source of the sand, and the shape of the obstacle which started the dune. With fairly constant winds and abundant sand, dunes in cross section are seen to be relatively steep on the lee side and gently sloping on the windward side. The angle of slope on the lee of the dune is rarely as great as 30°, and on the windward side it is generally less than 15°. The continual transference of material from the windward to the leeward side causes dunes to march steadily in the direction of the prevailing winds. Thus entire forests are overwhelmed, covered, killed and finally again exposed by the shifting sands. The church at the village of Kungen, on the east shore of the Baltic Sea, was covered by a dune in 1809 and revealed again sixty years later by the migration of the sands.

The abrasive effect of the wind depends on the materials that it can carry. In semiarid regions the solid rock may be carved into fantastic spires and pinnacles by the sand constantly being blown against its surface.

Chemical Work. The atmosphere is an efficient chemical agent only in connection with water, for dry air has little effect on rocks or soil. The important atmospheric processes of a chemical nature are *oxidation*, *carbonation* and *hydration*. Oxidation is the union of oxygen with some constituent of the rock to form an oxide. Carbonation is the union of carbon dioxide with rock constituents to form carbonates, and hydration is the union of water with constituents of the rock. These processes operate most efficiently in hot, damp regions, but they are of importance in all climates.

Work as a Conditioning Agency. In addition to its chemical and mechanical work, the atmosphere is also a conditioning agent. Changes of temperature tend to break up rock. The alternation of heating and cooling of rock by day and night causes its disintegration. Atmospheric temperature is the chief factor governing evaporation, it is important in the circulation of the water vapor and it controls its precipitation in the form of rain or snow. In addition the water vapor of the air, together with its carbon dioxide, acts as a thermal blanket which permits the passage of the sun's radiant energy through it, but does not readily permit the heat generated at the earth's surface to spread out into space.

Work of Running Water. *Destructive Work.* It has been estimated that 30,000 cubic miles of water in the form of rain or snow fall upon the surface of the earth every year; and more than one-fifth of this great total is carried to the sea by rivers. Since many of these streams descend from great heights, their total energy is tremendous and the amount of sediment which they carry during a year is almost incalculable. The destructive work of some sluggish streams is not readily apparent, but swift-flowing rivers may be seen to wear away their banks from year to year, and streams in flood may excavate new channels in the course of a few hours.

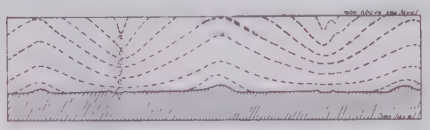
Streams which flow the year round are called *permanent streams*, whereas those which flow only after rains or seasonally are known as *temporary* or *intermittent*. All permanent streams and most temporary ones flow in depressions known as *valleys*. Very small depressions in which water runs only after showers are called *gullies*, and somewhat larger temporary stream courses usually are referred to as *ravines*. The smallest gullies unite to form larger ones, which in turn join others to form ravines which lead finally into valleys.

After heavy rainfall the run-off becomes concentrated in natural depressions which are enlarged into gullies by the erosive effect of running water. The lengthening of these drainage depressions takes place chiefly at their upper ends and is known as *headward erosion*. While the depression is being lengthened by this process, it is also being widened by *lateral erosion*. It appears, therefore, that many valleys are developed by the run-off of a series of showers, but if the source of the water were run-off only, all surface streams would cease to flow shortly after rainfall. As the valley of an intermittent stream is cut deeper, however, the periods when it is dry are shorter; and when it is at last sunk below the *permanent ground water table* it becomes a permanent stream, no longer dependent directly upon rainfall. Since a valley ordinarily works headward, its lower and older course is likely to have a permanent stream, while the younger and upper parts are occupied by a temporary stream.

Other types of valleys are those which develop from the outflow of lakes; still others, which are formed as a result of the downfolding of rocks into structural depressions, are known as *structural valleys*. No matter how the valley has been formed, its size is somewhat limited by that of adjacent valleys. Some streams, however, are able to grow more rapidly than others, and thus they enlarge their drainage system by *capturing* parts of other rivers. Such streams are known as *pirates*.

The topography of an area being eroded is constantly changing. At first the running water roughens the surface by cutting out valleys, leaving ridges and hills between; but later the hills and ridges are reduced to the level of the valley bottoms. The plain which is approached before the hills are completely eroded is called a *peneplain*, and the elevations which rise above its general surface are known as *monadnocks*. When the latter have been completely subdued the resulting plain is called a *base level*. The time necessary to produce this condition is a *cycle of erosion*.

Just as the face of a man shows different and characteristic expressions in youth, maturity and old age, so do river valleys have diverse but easily recognizable physiographic expressions at different stages of their development. The cycle has its inception at the beginning of valley development, when drainage is in its *infancy*, and the infant valley is a ravine or gully. The valley becomes deeper, longer and somewhat widened, and passes into the *youthful* stage. In this stage of development the valleys are relatively deep, the divides between them relatively broad, and the streams are swift; they erode their bottoms rather than their sides, and their courses are marked by rapids and falls. As the valleys are deepened toward base level their power to cut vertically is greatly diminished; and they begin to widen their valleys and increase their number of tributaries. The country is reduced largely to slopes and only a little of the original upland surface remains. In this condition both the drainage and the topography are said to be *mature*. As the erosion processes are continued the gradient of all the valleys becomes less, the valleys grow wider, the hills and ridges are lowered, the divides become low and indistinct and the streams *meander* back and forth across swampy flood plains. Such valleys are described as *old*, and the country adjacent to their courses is also in topographic old age.



How the River Valley is Made

This diagram illustrates various stages in the development of river valleys. Valleys developed to stage *a* on the plain 1,000 feet above sea level are young; they are in late youth at stage *b*; early maturity at *c*; maturity at stage *d*; late maturity at *e*; early old age at stage *f*, and old age at stage *g*. They cannot cut much lower than *g* because the grade from *g* to sea level is needed to keep them flowing seaward.

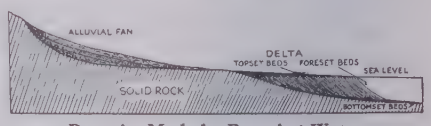
Erosion is a group term applied to all processes by which soil or rock are loosened or carried from one place to another. The important subprocesses are weathering, transportation, corrasion and corrosion. *Weathering* is the term applied to all processes which loosen or change the exposed surface of rocks. *Transportation* is that process by which the products of weathering are moved. *Corrasion* is the mechanical wear effected by running water. *Corrosion* is the chemical effect of streams in dissolving soluble materials. These various processes are affected by the climate, by the gradient of the streams, by the physical and chemical character of the rocks over which the streams flow, and by the structure or attitude of the rocks.

Because of the various conditions affecting erosion many diverse surface forms result from stream action. Bad-land topography is developed in the early stages of maturity in high lands where the rocks are slightly and unequally resistant, and where the rainfall is limited to a few heavy showers during the year. Deep, narrow valleys most commonly result during the youthful stages of erosion of high, arid lands, and are called *canyons*. Small, narrow canyons, or their straight-walled, deeper portions are sometimes called *gorges*. Inequalities of hardness in the rocks of a stream valley result in *rapids* where the water flows very swiftly, or in *falls* where the water actually plunges over rock ledges. Similarly *rock terraces* occur along the side of a valley where hard layers of rock alternate with softer ones. In such cases the valley walls are steep at and below the hard rocks, and gently sloping where the softer beds occur. *Narrows*, or *water-gaps*, are notable constrictions of a stream's valley wall which occur where the stream crosses highly inclined beds of unequal hardness.

Many other topographic features result from the erosion of rocks of unequal hardness some distance from the stream course itself. *Plateaus* are relatively high-standing regions of considerable summit area. *Buttes* and *mesas* are smaller features of the same type, and *hogbacks* are linear ridges which result from the weathering of tilted layers of unequal hardness.

As stream courses develop from gullies to valleys they tend to become *adjusted* to the underlying rock structure. The processes of adjustment continue until the streams flow as much as possible on the weaker rocks, and consequently the more resistant strata tend to become *divides*. At base level, however, even the divides have been reduced. The old age streams meandering across base-leveled plains may be *rejuvenated* by the general uplift of the land. Because of the uplift, the stream's gradient is increased, it again assumes youthful features, and a new cycle of erosion is begun. If the stream is able to maintain its course in spite of the uplift the meanders become *incised* and the stream is said to be *antecedent*. New streams originating as a consequence of the uplift are defined as *consequent*. In some instances the river system may be depressed in relation to sea level and the lower course become *drowned*, as in the case of the Chesapeake Bay area. A stream may also be checked by an upwarping of strata across its course, in which case the river is said to be *ponded* above the point of uplift.

Constructive Work. Rivers, in carrying mud, sand and gravel to the sea in their constant attempt to degrade the land surface to base level, are often forced to drop their sediment upon the land, perhaps to carry it on again when conditions are more favorable to transportation. Water drops its load generally because its current has lost velocity. The deposition is sudden when the stream passes from a steep slope to a gentle one, or



Deposits Made by Running Water

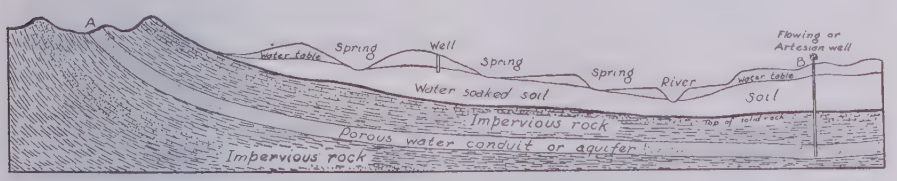
Diagram showing deposits made by running water upon the land and in the water. Note that the material of the fan is coarsest toward the source of supply. Note also that as the delta is built out to sea the landward portion becomes elevated.

when it flows into a body of standing water; it is slow when a stream gradient decreases gradually.

Deposition by running water takes place chiefly at bases of steep slopes, in valley bottoms and at river mouths. At the bases of steep slopes temporary streams are suddenly checked and deposit their heavy loads of debris in the form of partial cones, known as *alluvial cones*. *Alluvial fans* are similar deposits with lower angles of slope. The fans built by adjacent streams may spread laterally until they merge to form a *compound* alluvial fan, or *piedmont* alluvial plain. Such plains parallel the bases of most great mountain ranges.

As a stream descends its valley its gradient gradually is reduced, so that with diminished velocity it abandons part of its load. The sediment so deposited is left in the channel

of the stream at low water, but it is spread over the flood plains at high water, building them into alluvial plains. As streams grow older they tend to develop larger and larger alluvial plains. In times of flood the water, overflowing the normal channel, has its current checked as it moves out on the flood plain. For this reason sediment is deposited along the banks of the stream in the form of raised banks or *natural levees*. A stream in flood builds up its alluvial plain while eroding its channel, but when the water is low it again fills in its bed. This alternation of erosion and deposition in the stream bed is known as *scour-and-fill*. A stream with an alluvial plain generally meanders, that is, it has a very crooked, winding course. This is the result of low velocity, which permits the stream to be turned aside easily. The stream tends to cut its banks where they are least resistant, and once a curve of the bank is started it is increased by the current directed into it. As the current issues from this curve it is deflected so that it impinges against the opposite bank a little farther downstream. In this fashion a series of sinuous curves are developed so that the stream wriggles in snake-like fashion across its alluvial plain. In many cases the meanders become so pronounced that *moccasin bends* are formed. During flood stage the stream may cut off a meander and temporarily straighten its course. In such cases the abandoned channel becomes a crescent-like lake known as an *oxbow lake*. Lakes of this type are common along old streams such as the Mississippi and its larger tributaries.



Conditions Necessary for an Artesian Well

A cross section to show conditions required for artesian wells. Water enters the porous sandstone stratum at A and develops hydrostatic pressure which is released by the well drilled at B. The water table is shown in the soil above the bed rock.

At the point of debouchure of a stream into a lake or sea the velocity is promptly checked and its load is dropped. At such places, if strong waves or currents do not sweep the sediment away, *deltas* are formed. A delta has many features in common with an alluvial fan, but in the case of delta formation the current is checked more completely than in the building of a fan, and the initial deposition is beneath water rather than on the land. As the delta grows, however, it is built up to or even above the water level. Many large streams have built deltas of great size, of which those of the Mississippi, the Nile and the Hoang-Ho rivers are perhaps the best known. The united delta of the Ganges and the Brahmaputra has an area of 50,000 square miles above water, that of the relatively small river Po has been extended fourteen miles from Adria, which was formerly a seaport, and the Rhone River is adding about fifty feet a year to its delta front.

Work of Underground Water. Of the water which falls as rain or snow, one portion is carried to the sea by rivers, another portion is evaporated and goes back into the air, but a third portion sinks into the soil and the fractured bedrock beneath, and is known as *ground water*. This water fills the fissures in the rock and the pores of the soil up to a certain level whose surface is described as the *ground water table*. This table is lowered in dry weather and raised during the rainy season; it is near the surface in humid areas, and far beneath it in deserts. The surface of the ground water table in general conforms to the topographic irregularities of the land, but does not rise so high under hills nor fall so low under the valleys. Where the water table and the land surface intersect, springs, swamps, lakes or rivers occur. Wells also yield water because they have been dug deep enough to penetrate the water table. When they go dry the water table has been lowered below the bottom of the well.

Where water enters an inclined porous layer of rock which is enclosed between impervious layers, it may move down the slope, as in a conduit, until a considerable column of water is behind it, and great hydrostatic pressure is generated. Consequently wells drilled in such a position as to tap the porous layer give release to the pressure; and the water so obtained may be forced high in the air. Such flowing wells are called *artesian wells*.

Ground water takes substances into solution, transports them, and frequently deposits them; and thus it is an important geologic agent. Chemical denudation or the wearing away of land by solution is most effective in limestone areas, but is important in all humid regions. It is estimated that as a result of this type of erosion, or corrosion, North America supplies to the sea yearly 474,000,000 tons of material in solution.

In limestone areas the ground water enlarges natural fissures by solution until they become distinct underground channels. The latter further enlarge to form *caves* or *caverns*. The openings leading downward into these caves are termed *sink holes*. The underground waters may deposit some of the materials carried in solution on the roofs or floors of caves. Those icicle-like pendants which hang from the roof are known as *stalactites*, whereas those which grow upward from the floor are termed *stalagmites*. Deposition in caves commonly results in formations of grotesque form and bizarre beauty.

Work of Ice and Snow. *Non-Glacial ice.* The freezing of water in crevices of rock tends to disrupt the rock by ice wedge work, and the expansion of water in soil as it freezes also produces a variety of effects. On slopes it causes a slow downward *creep* of rocks and soil, and, together with the work of ground water, it is instrumental in moving masses of broken rocks in *landslides* and *rock glaciers*. In streams which freeze, the ice becomes cemented together with gravel and soil which are transported when the ice breaks up in the spring. The ice of lakes modifies their shores by the thrust which it exerts upon expansion. The ice which fits the lake perfectly when first frozen contracts under very low temperatures and cracks form. Water welling upward into the cracks is frozen and the ice again fits the lake. With return of warmer weather, however, the ice expands and exerts an enormous pressure. By this means loose material along the shore is pushed up into walls known as *ice ramparts*.

There are places on all continents except Australia where the annual fall of snow is not completely dispersed each year by evaporation and melting. These perpetual snow fields occur only on the tops of lofty mountains in the tropical zone; they occur on much lower mountains in the temperate zone, and in the arctic they approach sea level. Thus, from equator to poles there is a descending line above which snow lies all the year, and consequently this line is called the *snow line*. In the snow fields the snow becomes compacted by the weight of the various annual layers, and changes character. The snow is altered from its original loose, feathery condition to a coarse granular material known as *nevé*, which is partly the result of alternate freezing and thawing at the surface. The nevé passes downward into porous ice which becomes progressively denser with depth. If the nevé is followed down slope a point is reached where movement begins, and the ice in a sense slowly flows down the valley. At the place where this forward motion of the glacier is balanced by its melting there issues a river which carries off the water. The point where movement begins is commonly regarded as the beginning of the *glacier*.

Glacial Ice. The ice fields of the world are divided into three great classes: (1) valley, or Alpine, glaciers; (2) piedmont glaciers; and (3) continental glaciers, or ice caps. Valley glaciers are typical of all mountain regions which rise above the snowline. Like rivers they may have tributaries; all have catchment basins for gathering of the snow; all are confined to valleys, and all move down slope; and usually they are replaced by rivers at their lower ends. Valley glaciers are so common in the Alps that they sometimes are termed the "Alpine type."

When a number of valley glaciers descend out of the mountains on to nearly flat land they may give rise to a large body of nearly stagnant ice. Such ice fields, or piedmont glaciers, are confined to high latitudes, and are uncommon. Continental glaciers are ice sheets of vast extent. They may be regarded as "oceans" of ice when compared to the "rivers" and "lakes" of ice seen in the valley and piedmont glaciers. The present Greenland ice cap covers an area of about 700,000 square miles, and the Antarctic ice cap is nearly 5,000,000 square miles in extent. That other similar, but even greater, ice sheets existed in the geologic past is indicated by the record of the geologic work which they performed over much of northern North America and Europe.

A number of theories have been advanced to account for glacial motion, but the most probable explanation seems to be that by melting and refreezing under pressure, and

by movement along gliding planes in the ice itself, the granules change position, and thus the ice undergoes a slow flowage which imitates, but is not, a viscous motion. The surface of a glacier is traversed by wide, deep cracks known as *marginal*, *longitudinal* and *transverse crevasses*. It is also covered in places by heaps of earth and stone called *moraines*, which, according to the position they occupy, are known as *lateral*, *medial*, *ground* and *terminal*.

The glacier in its movement acts as a monstrous rasp, for frozen into its base are many boulders and sharp angular fragments of rock. These are its cutting tools, and they constantly grind away the bed rock on which it moves. This bed rock soon becomes smoothed and polished but marked also by grooves called *glacial striae*, which run in the direction of glacial movement. These and



At the Glacier's Edge

A diagram to show the deposition of material at the melting edge of a glacier. The ice front remains stationary when melting just balances the rate at which ice particles advance. Thus as the ice moves toward the right in the diagram, material frozen into the ice is brought to the melting edge and dropped there to form a terminal moraine. The water flowing away from the ice builds up an outwash plain.

other characteristic erosional features may remain after the glacier has melted away, and they attest to the fact that the area in which they are found has been *glaciated*.

Glaciers erode in their upper courses, whereas the material incorporated into the ice there is finally deposited at the point of their melting. Unlike water-laid sediments these deposits are unstratified. They are composed of a heterogeneous mixture of smoothed, striated and faceted boulders which have taken part in the erosion work of the glacier, and of those, which having ridden on the surface of the glacier, are still rough and angular. This morainic material, which is not only heterogeneous as to size of material, and degree of rounding or of faceting, but as to type of rock as well, is called *glacial till*, or *boulder clay*. Great blocks of rock, differing markedly in composition from the bedrock on which they rest, clearly have been transported by ice and are known as *glacial boulders*, or *erratics*. In many cases they are as large as a small house.

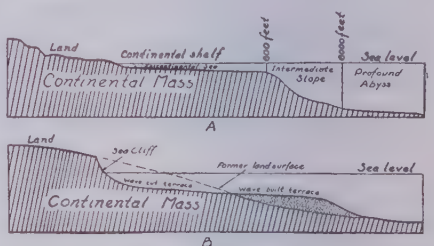
The deposits of a continental glacier are more extended than those of valley glaciers. They form well defined terminal and ground moraines, but no well marked lateral or medial deposits. The materials left behind after the melting of continental sheets are grouped under the term *glacial drift*. The drift may be characterized by narrow, rounded, elongate hills of unstratified material whose longer axes point in the direction of ice movement, known as *drumlins*; by *kames*, which are hills, knobs or short ridges made of stratified material lying athwart the direction of ice movement; by *eskers*, which are long sinuous ridges of stratified sands and gravels trending in the general direction of the ice flow; or by *valley trains* which represent the materials carried away from the ice front by streams generated by the melting ice.

Oceans. The oceans cover nearly three-fourths of the globe, and their average depth is about two and one-half miles. In spite of their great depth and tremendous extent, however, they are in reality a mere film on the face of the earth. If a sphere three feet in diameter representing the earth were dipped in water and withdrawn, the wet film adhering to its surface would correctly depict the oceanic depth. The oceans have overflowed the oceanic basins and have inundated the *continental shelves*. The parts of the ocean resting on these continental platforms are called *epicontinental seas*, and they have a total extent of about 10,000,000 square miles.

The ocean is not only an important regulator of climate, but it is also a geologic agent of the first rank. Its geologic work depends upon its movements which may be divided into three classes: *ocean currents*, *tides* and *waves*. The unequal heating of the ocean by the sun in tropical and polar regions establishes a slow general circulation of water by convection currents. This circulation is increased and modified by prevailing winds, and by the configuration of land and sea. The best known current is the Gulf Stream. The tide is a huge uplift, or wave, of the ocean caused by the attraction of the moon, and, to a lesser degree, of the sun. Were there no continents it should pass around the earth in about twenty-four hours, but the interval between tides is actually twelve hours and twenty-six minutes. This is the reason why the time of high and low tide progressively changes from day to day. The tide rises highest in narrow bays and estuaries where the difference between high and low tides may be as much as fifty feet. On exposed headlands the difference is commonly only a few feet, and the tides are not noticed on the open ocean. Waves are due to the force of the wind. The water particles move in circles and thus generate the wave form which advances, though the water itself ordinarily does not. On shores, however, there is insufficient water to complete the wave form and as a result the tops of waves collapse with a strong forward motion. This results in *breakers* or *surf*.

The surface of the ocean is an ever-moving, horizontal saw which is eternally cutting all shores. Sea water has a solvent action on most rocks, thus aiding the more important work of currents, tides and waves, which is largely mechanical. The chief eroding action results from grinding effected by dislodged sand, gravel and boulders which act as the tools of the moving water. In the erosive process the tools themselves are rounded and reduced in size. The resulting material is carried away from the shore line by *undertow*, and by tidal and shore currents; and thus it is prevented from serving as a buffer of loose material which would protect the shore. The effective erosion by waves is confined to a narrow zone. Where the sea is cutting its shore back into higher land, the seashore is marked by a cliff. Beneath the cliff is an area of shallow water which marks the lower limit of wave action, and is known as the "shore platform" or "wave-cut terrace." The terrace is slowly lowered seaward to a point where the depth prevents further erosion. Here the materials eroded from the shoreward edge of the platform accumulate and form deposits known as "wave-built terraces."

Shallow water deposits are confined to the continental shelfs. The *beach* is the familiar edge zone of seas which consists of material being worked over and ground up by the waves. The sediments of a beach commonly are coarsest at the landward edge and become finer toward the sea. If the continental shelf slopes very gradually breakers may form relatively far out to sea, and the waves in such cases pick up sediment from the bottom and move it shoreward. The undertow, however, tends to move the material back again, and hence there is built up a long, narrow bar parallel to the general trend of the coast. Such bars may grow until they are above sea level, and are known as *barriers*. Between the barrier and the mainland lies a body of water which is called a *lagoon* if small, or a *sound* if large. Shore currents commonly sweep materials across the mouths of indentations of the coast and build the sediment up in the form of an embankment which may eventually become land. Such embankments with free ends are called *spits*, whereas those which close or nearly close the indentation are known as *bars*. Tidal currents sweeping in and out of the *bay* behind the bar generally prevent complete closure by maintaining an *inlet*.



Shore Processes

A. Diagram showing relation of continental mass to oceanic basin and epicontinental sea. B. Diagram representing the cliff resulting from the sea advancing on a greatly sloping coast. The material eroded from the cliff base is moved seaward and deposited on the outer edge of the wave-built terrace.

The rivers, bringing sediment to the sea, deposit it near their mouths where part of it is reworked and mixed with the material obtained by the erosion of the shore. It thus happens that the continental shelf is continually receiving sediments which are deposited in definite layers, or *stratified*. These sediments may have mixed with them the remains of plants and animals which lived in the shallow waters or were swept out to sea by the rivers. In general, the coarse-grained sediments are found near the coast, and finer and finer deposits farther out to sea. Thus sands and gravels commonly are being deposited near the shore, fine-grained muds farther out in quieter waters, and still farther seaward limy oozes are being laid down.

The ocean bottom beyond the edge of the continental shelf and down to a depth of 6,000 feet is called the *intermediate slope*. It may be considered as the side or wall of the true ocean basin. The deposits are chiefly the very finest of the land sediments or *blue* and *green* muds. The *profound abyss* comprises all the ocean bottom below the 6,000

feet line. Over most of this floor land derived sediments are wanting, but deep sea sounding has determined that it is covered with peculiar fine, soft deposits called *oozes*. These oozes are volcanic, organic or cosmic in origin.

Lakes and Interior Drainage. Lakes are enclosed bodies of water with little or no current. They are generally fresh but a few are salt. They have their origin in structural depressions, in rock basins which have been formed by glacial or volcanic action, or behind natural dams which have been formed across drainage channels. Glaciers are perhaps responsible for most lakes, as is indicated by the fact that lakes are far more numerous in glaciated than in unglaciated areas. From the geologic standpoint all lakes are only temporary. This is true because all rivers which feed lakes tend to fill them up with sediment, whereas all streams flowing out of lakes tend to deepen their channels upstream and thus in time completely drain the lakes.

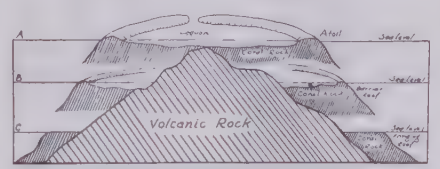
Rivers which end not in the sea, but, through evaporation, in interior basins are called *interior drainages*. In such drainages the salts carried by the streams constantly accumulate at the point where drainage ends. This place may be called a *salina*, or salt marsh, if it is swampy, or a *salt lake* if it is a permanent body of water. Salinas are common in desert areas, and many examples of salt lakes such as the Dead Sea and Great Salt Lake, are known. Salinas and salt lakes are commonly important economically, for many valuable alkaline salts may be concentrated in them.

The erosive and depositional work of lakes is essentially similar to that of the ocean, previously described.

Geologic Work of Organisms. Animal and vegetable life is present over much of the surface of the land and throughout much of the sea. In many cases these organisms tend to destroy existing structures; in others they build new ones, and in still others they protect existing structures from the action of other agencies. The most important protective effect is that of vegetation in hindering erosion of the soil either by wind or running water.

Destructive Work. Vegetation acts in a mechanical way to destroy existing structures, as is seen in the splitting and disintegration of rocks by the roots of trees and other plants. The plants also play an important rôle in chemical weathering for they aid in the formation of the carbonic and humic acids which tend to reduce rocks to soil. Animals are less destructive than plants, but even such insignificant creatures as earthworms and ants aid the process of weathering by constructing holes and burrows and by bringing fresh material to the surface. The most destructive animal, however, probably is man, who by cutting down forests has greatly increased the rate of erosion over large areas, and who has by his great engineering projects even reversed entire drainage systems.

The constructive work of plants is best exemplified in the formation of peat bogs. *Peat* is brown to black carbonaceous material formed by the partial decay of vegetable material under a protective covering of water. In the growth of a plant the carbon dioxide of the air is decomposed, the carbon is utilized by the plant, and the oxygen largely returned to the atmosphere. In addition plants use the oxygen and hydrogen of water, and certain mineral compounds of the soil. Their framework, however, is largely cellulose, $C_6H_{10}O_5$, which for simplicity we may regard as forming the organic matter of plants. If cellulose is burned in air complete oxidation takes place with the formation of carbon dioxide and water vapor. If the air supply is limited, as it is in burning wood in kilns, the oxidation is incomplete, and a greater part of the carbon remains behind as *charcoal*. Similar though much slower processes take place in nature. The woody material of dead plants slowly oxidizes or decays and the component parts are returned to the air and soil. If the decay takes place under water, however, as it does when plants grow in water, or fall into it after death, the oxidation is incomplete. In this case the partly decayed material is rich in carbon, and forms the carbonaceous substance described above as peat.



Formation of Reefs and Atolls

Sections showing the successive formation of a fringing reef, a barrier reef and an atoll during the relative elevation of sea level from C through B to A.

Peat is forming today, just as it has through the long geologic past, in small lakes, ponds, lagoons and marine marshes. Peat is the first stage in the formation of coal, which results from the slow compacting of the peat, not only as a result of the weight of sediment put down over the organic material, but also as a result of slow chemical processes. These *dynamo-chemical* processes result from deep burial and great pressures operating over long periods. They cause the further oxidization or escape of gases from the organic material and leave the residue richer and richer in carbon.

The constructive work of animals has resulted in enormous deposits. Most of these have been built by marine organisms which extract calcium carbonate from the water in which they live, and build their skeletons of it.

Of all these animals the corals are perhaps the most interesting. The corals are lowly marine animals which secrete a stony base of calcium carbonate to support their filmy bodies. Although very small, they live together in colonies made up of countless individuals. The most important of the corals, geologically speaking, are the *reef-builders*. This type is common today in warm, clear, shallow seas, and they were abundant in the past apparently in a similar habitat.

Corals grow upward and spread laterally as one generation builds upon the bases of their dead ancestors. Many other animals living among the corals also have their skeletons incorporated into the constantly accumulating material. Calcium carbonate, deposited out of the warm sea water, cements the fragments together and eventually the deposit becomes a solid white limestone upon whose upper surface the corals flourish. This surface rises until it is just below the level of low tide, and forms the *coral reef*. These reefs include the fringing reefs, barrier reefs and atolls.

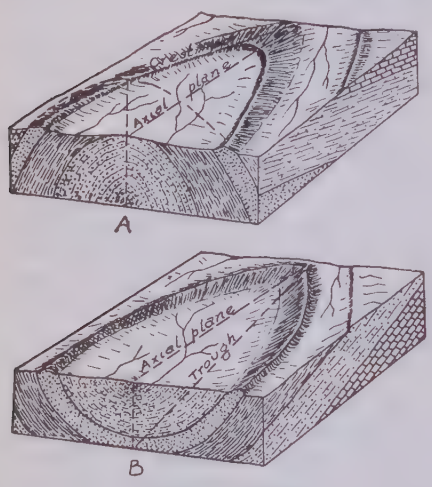
Corals growing in shallow water at the edge of existing land gradually build up a platform to sea level, which, since it fringes the older land, is called a *fringing reef*. *Barrier reefs* are similar to the fringing type but are located some distance from the land, and are separated from it by a lagoon of varying width. These lagoons commonly serve as good harbors, though in many cases they are too shallow for large ships. *Atolls*, like many barriers, are more or less circular, ring-like reefs, but they are without any central land mass, and they inclose a shallow lagoon. Many reefs of the latter type apparently have been formed by the subsidence of the volcanic island around whose shore they originated. Chalk, limestone, coquina and phosphate rock also are in large part of organic origin.

Materials of the Earth's Crust. When carried by any transporting agent rock waste becomes *sediment*. Most of the transporting agents, except ice, have the power of *sorting* this sediment because changes in the velocity of the agent are directly reflected in its ability to move various types of material. It thus happens that two layers of material may be separated by a distinct juncture plane, known as the *bedding plane*, on either side of which they differ in texture or composition. Such bedding is called *stratification;* the rocks so bedded are said to be *stratified*, and they generally are of the *sedimentary* type.

The most common sediments are gravel, sand and mud. These may be deposited upon the land, in which case they are *continental;* they may be deposited on the beach and are then called *littoral;* or they may fall to the ocean floor beyond the strand line, in which case they are said to be *marine*. After the sediment is laid down it generally is cemented into solid rock by the deposition of mineral matter held in solution in water. The cemented gravel is called *conglomerate* if the fragments are rounded, *breccia* if they are angular; the cemented sand is called *sandstone;* and cemented mud is known as *shale*. These are common sedimentary rocks, and they are said to be *clastic* (fragmentary) since they are made of particles derived from other rocks. Some limestone, which is broken up, redeposited and recemented, is also clastic. Many sedimentary rocks are not clastic. Some, including most limestones, are formed either by chemical precipitation, or more commonly by the cementation of organic remains. Some, such as salt and gypsum, are entirely the result of precipitation from saturated solutions. The principal classes of sedimentary rocks are given below:

Clastic	Mechanically formed....	Conglomerates — gravel, conglomerates, breccia
		Arenaceous rocks—sand, sandstone, arkose
		Argillaceous rocks—clay, shale
		Some limestones
Non-clastic		Some carbonate rocks—some limestones, travertine, siderite
	Chemically formed....	Chlorite rocks—rock salt
		Sulphate rocks—gypsum
		Some siliceous rocks—some flint, some chert
	Organically formed....	Calcareous rock—many limestones
		Carbonaceous rocks—coal, peat
		Siliceous rocks—siliceous oozes

Most sedimentary rocks are stratified, but some, such as glacial till and some conglomerates, are not. If bedded, the term *stratum* is commonly applied to a single layer, and *formation* to a set of layers, or strata, of similar nature and considerable extent. Sedimentary rocks, especially shales, are in many cases very thinly bedded and are said to be *laminated.* Many of these sedimentary rocks are marked by *cross bedding, mud cracks, ripple marks* and *raindrop impressions,* just as sediments deposited today are so marked. Many of the rocks of the earth have had their original positions altered by crustal movements, but these alterations are recorded best in sedimentary rocks since they are definitely layered. The *dip* of a rock stratum is its inclination when referred to a horizontal plane, whereas its *strike* is the trend or direction of its horizontal edge. Where beds dip



Results of Erosion

A. Block diagram to show features resulting from erosion of a symmetrical anticline. B. Block diagram to show features resulting from the erosion of a symmetrical syncline.

in a single direction they form a *monocline.* Where they are arched upward into a fold, they form an *anticline,* and where downfolded they form a *syncline.* Where found in nature many folds are rather completely eroded, but their character may still be determined by a study of their dips and strikes.

Sedimentary rocks are spread over a large part of the earth's surface, but their thickness, though locally measurable in thousands of feet, is relatively slight; and they may be thought of as constituting a veneer over the igneous or metamorphic rocks on which they rest.

Igneous rocks are the products of vulcanism. Because of the tendency of various types to intergrade they are difficult to classify, but on the basis of chemical composition they may be divided into *acid* and *basic* rocks. The acid rocks are rich in silica, and poor in iron, lime and magnesia. They are generally light in color, fuse only at high temperatures, and have a relatively low specific gravity. The basic rocks are relatively poor in silica, and rich in lime, iron and magnesia. They are dark in color, fuse at relatively low temperatures, and are heavier than the acid types.

The rate of cooling also influences the character of igneous rocks. Those that cool slowly so that crystals have a chance to form are coarse-grained; those that cool more rapidly are fine-grained, or in extreme cases, glassy; and some are fragmental. The coarse-grained rocks are all intrusive in character, that is, they cooled deep within the earth; where they are now exposed erosion has removed the rocks into which they were intruded. *Granite* is one of the most abundant rocks of this type. It is made up of the minerals *quartz* and *feldspar,* usually with minor amounts of *mica* and *hornblende.* (See section on "Mineralogy.") *Syenite* is a rock similar in every respect to granite except that it contains no quartz. *Diorite* is a coarse-grained rock composed largely of hornblende and feldspar. *Gabbro* is superficially similar to diorite, but in it the hornblende is replaced by *augite. Peridotite* is composed entirely of ferro-magnesian minerals, such as hornblende, augite and *olivine,* and it lacks feldspar. Peridotites are of special interest as they are the only rocks in which diamonds are formed.

The fine-grained igneous rocks were extruded onto the surface so that they congealed before any considerable crystal growth. *Felsites* are the light-colored, fine-grained chemical equivalents of the coarse-grained granites and syenites. *Andesites* are rocks transitional in character between the felsites and the *basalts.* Basalts, or *traps,* are dark-colored, fine-grained, basic, extrusive rocks similar in mineral composition to the diorities and gabbros. The glassy rocks are *obsidian* and *pitchstone.* Obsidian is a natural glass which breaks with the same shelly fracture as artificial glass. It has a high luster, and is usually jet black, but it may be brown, red, green or gray. Pitchstone is similar to obsidian, but has a duller, more pitch-like luster.

The fragmental rocks are products of eruptions of explosives violence. *Tuff* is a light colored, highly porous rock made up of volcanic dust and ash. Volcanic *breccia* is a coarser igneous rock composed of angular fragments cemented together in a tuff-like matrix of ash and dust. Fragmental and fine-grained igneous rocks may have a rude to fairly perfect stratification, but in the main igneous rocks are homogeneous in character. For this reason their deformation is not so readily deciphered as that of the sedimentary rocks.

Metamorphic rocks are the products formed when igneous or sedimentary rocks are subjected to great heat and pressure. Metamorphic rocks which are massive, and homogeneous in size and arrangement of parts are said to be *nonfoliate;* those which have the mineral particles arranged so that the rocks readily split along definite cleavage planes are said to be *foliate. Marble* and *quartzite* are the chief nonfoliate metamorphic rocks. Marble is metamorphosed limestone. It is more coarsely crystalline than limestone and takes a high polish. For this reason it is widely used as an ornamental stone. Quartzite is metamorphosed sandstone in which the individual sand grains are so thoroughly cemented by silica that the rock breaks through the grains rather than around them.

Slate is one of the most common of the foliate rocks; it is metamorphosed shale. *Gneiss* is a coarsely foliated or laminated rock which resembles granite in composition, and which is usually marked by bands of segregated light and dark minerals. *Schists* grade into gneisses, but are typically more finely foliated. The results of the metamorphism of various rocks is shown in the following tables:

METAMORPHISM OF SEDIMENTARY ROCKS

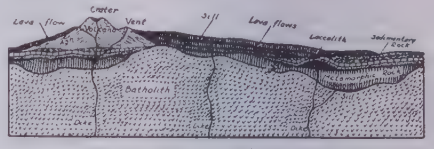
Original Rock	*Metamorphic Equivalents*
Conglomerate	Gneiss and schist
Sandstone	Quartzite and schist
Shale	Slate and schist
Limestone	Marble

METAMORPHISM OF IGNEOUS ROCKS

Original Rock	*Metamorphic Equivalents*
Coarse-grained acid rocks (Granite and syenite)	Gneiss and (rarely) schist
Fine-grained acid rocks (Felsite, tuff and others)	Gneiss, schist and slate
Basic rocks (Diorite, gabbro, basalt and others)	Schist

Vulcanism. Vulcanism is the term applied to all movements of molten rock toward the surface of the earth, as well as to certain related phenomena. The molten rock which reaches the surface is known as *volcanic,* and is said to be *extrusive;* that which congeals before reaching the surface is known as *plutonic,* and is said to be *intrusive.*

Molten rock which solidifies in fissures forms *dikes;* in chimney-like openings it forms *pipes* or *plugs;* inserted between layers of rock it forms *sills,* and where it arches the strata above it forms *laccoliths.* Still more massive instrusions are known as *batholiths.* All of these intrusive bodies bake or *metamorphose* the rock into which they are intruded, but thin dikes and sills produce no great effect.



Types of Igneous Formations

This diagram shows various types of extrusive and intrusive igneous bodies.

The extrusive processes are the most impressive of geologic phenomena. Volcanoes are elevations built of the igneous material thrown out of a central vent. In its most typical form a volcano is a steep, conical mountain with a pit-like depression, or *crater,* at its top, from which there issues at times of *eruption* gases, ashes, steam, bombs and flows of molten rock called lava. Many volcanoes, however, are low, some are irregular in shape, and in others the crater may be located far from the center; some are not over 100 feet in height, and yet others attain an elevation of more than 20,000 feet. We may classify volcanic eruptions as those which are *explosive* in character, those which are *quiet,* and those which are of the *intermediate* type.

Volcanoes of the explosive type give rise to sudden, violent explosions during which great quantities of gas, dust and ashes are shot high in the air. During the eruption of Krakatoa, more than four cubic miles of material were blown into the air; the vast cloud so formed completely hid the sun over many thousands of square miles; the terrific

detonation was heard for more than 150 miles, and more than 40,000 natives of Java and Sumatra were drowned by the great waves generated by the explosion. The volcanoes of Mont Pelée and Soufrière in the West Indies, and Mt. Katmai in Alaska are of the same type. Many explosive eruptions apparently are so violent that they destroy the volcanic cone, and leave in its place gigantic basins called *caldera*. Crater Lake, Oregon, occupies such a depression, but in this particular case the former volcano seems to have collapsed rather than exploded.

Quiet volcanoes give rise to outflows of liquid lava without the issuance of ashes, or the violent expulsion of gases. The Hawaiian volcanoes are the best examples of this type, and the Hawaiian Islands have been built up 30,000 feet above the sea floor as a result of the long continued eruptions of this type.

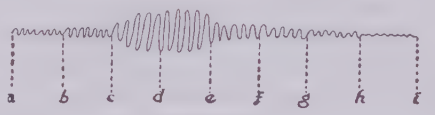
In the intermediate type of volcano the eruption begins with explosive violence, but in its later stages it produces great lava flows of a more or less quiet nature. Vesuvius, the recently extinct cones of the Pacific northwest, such as Mt. Rainier and Mt. Shasta, those of the Aleutian Islands, and, in fact, most volcanoes are of this character.

Long after an eruption has taken place, vapor and gas may escape from minor vents in the crater or on flanks of the volcano in emanations known as *fumaroles*. Where these vapors move through layers of sediment they may form small cones of mud with miniature craters termed *mud volcanoes*. *Hot springs* are also common phenomena which are caused by ground water coming in contact with hot rocks deep beneath the surface. *Geysers* are gushing hot springs whose eruptions are due to the accumulation of water under pressure which is heated above the boiling point. Steam forming at the bottom of the ground water conduit forces water out at the top, or crater, of the geyser. This relieves the pressure throughout the conduit with a result that a great deal of the water immediately turns to steam and is ejected violently.

For the causes of vulcanism the reader is referred to one of the standard reference works listed on page 976.

Diastrophism. The outer shell of the earth is not fixed and rigid, but it is constantly oscillating, as can be shown by comparing the land elevation with that of the sea. Along certain coasts it is common to see features made by the work of the waves now elevated far above their reach. Along other shores the physiographic features, such as drowned valleys, submerged forests and the seaward extension of river channels, indicate clearly that the land has been depressed in relation to sea level. All such movements of the outer shell, whether of continental masses, or of mountain making type, whether of folding or fracturing or of thrusting or stretching, are included under the group term, *diastrophism*. The immediate cause of the movements of the earth's crust is the unequal contraction or shrinkage of the earth as a whole. A discussion of the ultimate causes of diastrophism does not lie within the scope of this volume.

The earth's shell is constantly undergoing movements, some of which act through long periods of time, others of which take place rather suddenly. Those of the latter type sometimes occur as recognizable tremors which are called *earthquakes*. The study of earthquakes is known as *seismology*, the instrument which records them is called a *seismograph*, and the record written by the stylus of such a machine is a *seismogram*. The principle upon which a seismograph is constructed is that a heavy pendulum, owing to its inertia, will remain at rest when an earthquake shock vibrates the earth beneath it. A stylus is attached to the suspended weight or pendulum, and a strip of paper revolving on a drum operated by clockwork is fixed to a pile driven to the solid rock. The stylus draws a straight line on the paper while it is at rest, but a vibration of the pile causes the line to oscillate sinuously from one side to another. The study of seismograms has shown that the main shock of distant earthquakes is preceded by smaller quick vi-



Seismogram

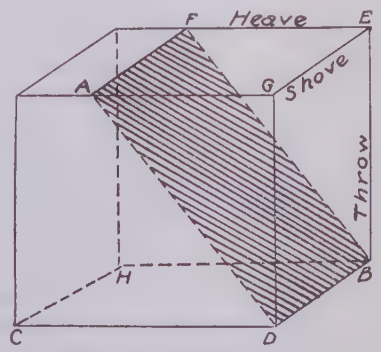
A distant earthquake seismogram: *ab*, first preliminary tremors; *bc*, second tremors; *ce*, main tremors; *eh*, later phases; *hi*, tail.

brations. These tremors represent the shock which has come through the earth, that is, along a chord; whereas the large vibrations represent the waves which have traveled the longer route along the surface of the earth. As the time between the arrival of the preliminary tremors and the main shock is proportional to the distance to the earthquake center, the distance to that place may be calculated at any seismograph station as soon as the record is received. If the distances from three recording stations are known the exact place of disturbance also can be calculated geometrically.

The rocks of the outer shell of the earth are traversed in all directions by fractures which vary from minute crevices to large fissures. Those fractures which develop in single rock masses are commonly known as *joints*, whereas those which traverse many adjoining rock masses are termed *rifts*. There are many kinds of joints and fractures and they occur in all types of rock. Movements along rifts either at the time of their formation or later may displace rocks with reference to their former position. Such displacements are called *faults*, and earthquakes commonly result from their formation. The fracture along which movement takes place is called the *fault plane*, or better, the *fault surface*, for it is rarely a plane surface. The movement in faulting may involve a series of blocks in which case a fault *zone* is formed, and the process is called *step faulting*. The rock masses involved in faulting exert great pressure on the faulting surface, and the rock faces, therefore, commonly exhibit polishings and groovings known as *slickensides*. The line of intersection of the fault with the horizon is known as its *strike* (trend), whereas the angle of the fault surface with the plane of the horizon is known as its *dip*, and the angle formed with the vertical plane is termed the *hade*. In the case of an inclined fault the upper side is known as the *hanging wall*, the lower as the *foot wall*.

Faults in which the movement has been such that the hanging wall has moved down with respect to the foot wall are known as *normal;* those in which the hanging wall has been shoved up over the foot wall are described as *reverse*. With reference to their supposed mode of origin, reverse faults are sometimes termed *compression* faults, and normal ones *tension* faults. Faults are among the most common of geologic phenomena, and in many cases they are of great economic importance for they serve as the place of deposition of many great ore bodies. As a result of their formation many topographic features such as *fault scarps* and *block mountains* arise. Many normal faults have *displacements*, or movements along the fault surface, which are to be measured in thousands of feet, and in some reverse, or thrust, faults the hanging wall has ridden over the foot wall for distances of several miles.

A *mountain* is a conspicuous elevation with a limited summit area. There is great local variation in the usage of the term mountain, for many small hills are given the distinction of that name, whereas the Black Hills of South Dakota are truly great mountains, though not designated as such. Mountains may be irregularly disposed in *groups* such as the Catskills, or aligned as *ranges* such as is the case of the Sierra Nevadas. Ranges may consist of a single ridge, but in most



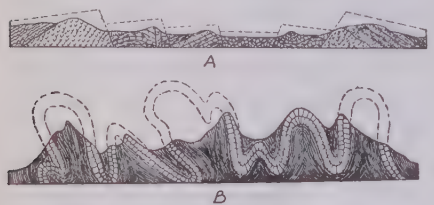
Fault Diagram

Diagram illustrating the various components of normal faults. The fault surface is shaded, the bars indicating the direction of movement. AB is the displacement if a point formerly at A has moved to B.

cases they are compound, that is, composed of many ridges whose general direction is parallel. A range is regarded as a *geologic unit* since it was formed at a definite time by a definite set of processes. A group of ranges having a common general trend, and formed at about the same time, is known as a *mountain system*, whereas a complex combination of systems, such as those of the Andes, constitutes a *cordillera*.

Many mountains are formed by igneous agencies. These are mountains produced by the extrusion of igneous materials to form volcanic peaks, and elevations formed by the intrusion of igneous material into sedimentary rocks, which are domed and elevated by the process. Some mountains are formed by the erosion of elevated tracts of land leaving isolated remnants of the former plateau surface. Many of the western buttes are

mountains of this type, as are the Catskills of New York. The above mountain types, however, are of small importance when compared with those which have been formed by movements of the earth's crust. Such mountains may be made chiefly, or entirely, by faulting, or they may be produced by wrinkling or folding. In the former case, the ranges are the exposed edges of great tilted blocks of the earth's crust, consequently they are called *block mountains*. The Great Basin ranges of Nevada are of this type. In the second case the ranges result from the wrinkling of the crust into anticlines and synclines, and are called *folded* ranges. Most great mountain ranges are of the latter type,



Mountain Structures

A. Faulted mountain structure, Great Basin type. Dotted lines indicate the position of the blocks unmodified by erosion.

B. Folded mountain structure, Alpine type. Dotted lines represent the shape of the uneroded folds.

although most of them are also rather complexly faulted as well as folded.

Detailed examination of folded mountain ranges has shown that they are invariably composed of masses of very thick sedimentary beds. These were deposited in a long basin of deposition or trough known as a *geosyncline*. As sediments were added to the basin it slowly sank, so that great thicknesses of sedimentary rocks resulted. After this long quiet pre-mountain forming period, the sediments of the geosyncline were thrown into complex folds by lateral pressures generated by the contraction of the earth's shell. Since the rocks are complexly folded, the areas in which they are located has suffered crustal shortening. In the Appalachians this crustal contraction amounts to at least fifty miles. That mountains have been formed after the manner described above is clearly indicated not only by field evidence, but by experimentations in which perfect replicas of existing mountain ranges have been made experimentally.

Some folded mountain ranges are particularly complex because igneous episodes occured in the late stages of their folding; and the study of all ranges is complicated by the effect of erosion on the folds.

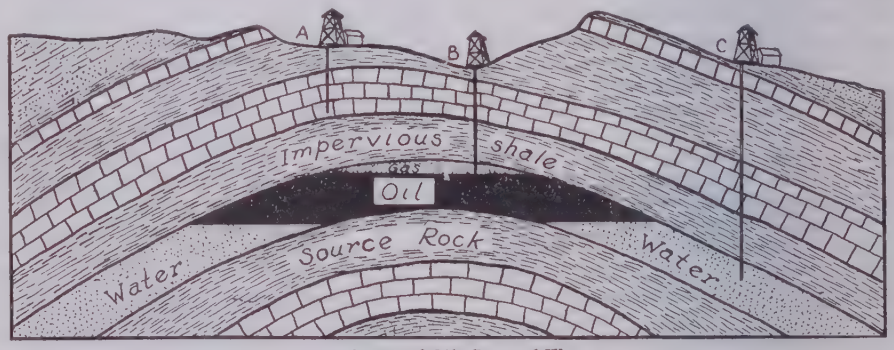
Economic Geology. Compared with the great bulk of rock in the earth's crust, deposits of economic value are extremely rare, and where they occur they have been concentrated under unusual geologic conditions. It is the business of the economic geologist to search out such deposits and to aid in their exploitation. The materials of the earth which man utilizes may be divided conveniently into *non-metallic* and *metallic* substances.

The most important non-metallic mineral deposits are coal and petroleum. *Coal* is a sedimentary rock which is not difficult to locate, but whose profitable mining in many places is impossible. The geologist, by his knowledge of sedimentary processes, is able to increase the efficiency of mining in areas of normally profitable mines, and to introduce mining methods which make possible the recovery of coal in areas where ordinarily it would not be exploited.

Petroleum is quite as valuable as coal to our present industrial development, and its discovery falls particularly within the sphere of the geologist. Petroleum is a liquid hydrocarbon which is found in porous rocks such as sandstones. It apparently is entrapped during the deposition of marine shales, migrates from them into porous reservoir rocks, and finally is concentrated on or near the crests of anticlines. It is the business of the petroleum geologist to locate such structures, for although not all anticlines produce oil, nearly all oil is produced from anticlinal or similar upfolded structures.

Other valuable non-metallic products are *salt, gypsum, graphite, barite, mica* and *phosphates*. In addition to these, building stones, clays, limestones for the manufacture of cement, slate for roofing, and other similar products of the earth's more common constituents are, in the aggregate, of great economic importance.

Most of the valuable minerals are metallic; where they occur in quantities great enough to be mined profitably they are called *ores*. The study of these ores and their occurrence is one of the largest divisions of the subject of geology, but it can only be mentioned here. *Iron* is the most widely used of our metals. Together with petroleum and coal it forms the very basis of modern industrialism. Most of the great iron ore deposits are of sedimentary origin, and in most places they are mined by steam shovels. Most of the other ores are thought to have been deposited from hot solutions ascending through fissures of the earth's crust from some deep seated igneous source. In this category are most of the ores of *copper, gold, silver, lead, zinc, cobalt, nickel, antimony, arsenic, tin, aluminum* and *mercury*, though some of these also have had a sedimentary origin.



Accumulation of Oil, Gas and Water

Diagram showing the accumulation of oil, gas and water on the crest of an anticline. Well A has not been drilled deep enough to strike oil; Well B obtained both oil and gas, and Well C has encountered only water. The water moves upward in the porous sandstone and the gas is placed under great pressure, which, when released, causes flowing wells or "gushers."

HISTORICAL GEOLOGY

The Origin of the Earth. The stratified rocks of the earth's crust record its relatively recent geologic history with great fidelity, but the older events are in some cases indistinct, and the geologist has been unable to decipher all of the very earliest records. The complexly altered igneous and metamorphic rocks below the sedimentary veneer, and the inaccessible interior of the earth itself undoubtedly hold the secret of the earth's origin, but their study is difficult and has so far yielded only hints as to the final solution of the question. For this reason the relationship of the earth to other heavenly bodies has also been carefully studied in this connection, and as a result other suggestions as to the earliest stages of earth history have been obtained. Consequently a number of theories for the origin of the earth have been proposed, of which the planetesimal theory of Chamberlin and Moulton, of the University of Chicago, perhaps is the most widely accepted.

The planetesimal theory states that the sun, while in an early gaseous condition, was approached by another and probably greater star. The mutual gravitational attraction resulting partially disrupted the sun. The matter ejected from it took on the shape of long spiral arms connected with the central sun, whose mass was many times that of all the material in the arms. In this stage of the development of the *nebula*, our ancestral solar system resembled closely the *spiral nebulae* which may be seen in the heavens at present. The ejected material was mainly dust-like, small particles which have been called *planetesimals;* hence the name of the theory. Included in the cold dust-like material were a number of relatively large, possibly hot, masses called *knots*. These *knots*, in revolving in their orbits, were able because of their superior size, to gather the planetesimals to them to build up at last the nine planets, their satellites and the asteroids.

Changes of the Earth's Facial Expression. Whatever the origin of the earth, the keynote of all of its physical and organic history is change. The lands have altered slowly but continually. Mountains have been elevated to alpine grandeur only to be eroded to sea-level. The ocean has flooded the land, not once, but scores of times; and each inundation has left the record of its existence in the sedimentary deposits which it left behind.

"There rolls the deep where grew the tree,
O earth, what changes hast thou seen!
There where the long street roars hath been
The stillness of the central sea."

This is not only poetry, but sound geology. The area of Riverside Drive in New York, Michigan Avenue in Chicago, the Strand in London, and the Champs Elysees in Paris have all been beneath "the central sea" at repeated intervals. Even the continents themselves have changed remarkably in outline during the geologic past. Old Mother Earth has indeed suffered many vicissitudes; her facial expression changes daily, and though the changes are ordinarily too slight to be noted by the casual observer, the geologist knows that during the long geologic past her face has been wrinkled where now it is smooth, and unmarked where now it is deeply furrowed.

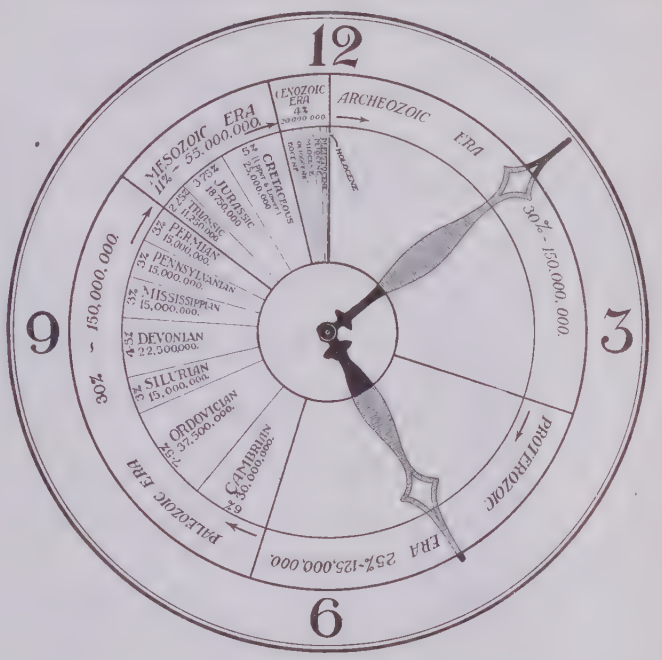
Fossils and Their Significance. A *fossil* is any record of prehistoric life. The rocks which contain them are the graveyards of the animals and plants which link the past with the present. Fossils vary greatly in their perfection. Insects are so perfectly preserved in amber that their soft parts may be dissected, and the extinct mammoths of the frozen Siberian tundras are so well preserved that even the contents of their stomachs ordinarily may be examined. Most fossils, however, are only parts of once living things.

Most dead organisms are at once attacked by microscopic fungi and bacteria, and by scavenging animals, so that they leave no trace of their former existence. If, however, the organism is covered by sediment immediately after death, a complete or partial record of its presence may be preserved. Organisms with hard parts have the best chance of writing their record into the rocks, but even most of these are not preserved. Fossils are of many different types. The soft parts in rare cases are preserved, but generally only the hard structures such as bones or shells remain. The latter may be preserved as the original material, but much more commonly these hard parts have been altered, or *mineralized*. In still other types of fossils the original substance is entirely missing, but the former presence of the organism is indicated by *molds*, *imprints* or *natural casts*.

Fossils are not freaks of nature, nor chance records of extinct organisms, but they are the very important documents upon which the time-table of the geologic past has been established. They also indicate the path of organic evolution, the ancient distributions and migrations of plants and animals, the habitats of these organisms, and they even give important information as to the changes of climate throughout geologic time.

The Geological Time-Table and the Age of the Earth. Geologic history, like human history, falls into certain major divisions, and these in turn into minor ones. The sequence of events is determined by the actual order of superposed sequence of stratified rocks, by the degree of evolution attained by the fossils found in the rocks, by the breaks, or *unconformities*, in the sequence of rock formations, and through the order in which igneous rocks intersect one another and sedimentary beds. The *era* is the longest division of geologic time; it is one volume of historical geology. The eras are divided into *periods*, which are chapters in the geologic volumes. Periods are sometimes further divided into *epochs*.

Man has long been interested in determining the age of the earth. Hutton, in 1795, after studying the geology of Scotland, said that he could find "no vestige of a beginning —no prospect of an end." Since that time the age of the earth has been variously estimated as from 20,000,000 to 1,600,000,000 years. The great differences in these estimates result from the different bases used in making them. The physicist's study of radioactivity results in the larger figure given above, whereas geologic evidence obtained through calculations of the time involved in the accumulation of salt in the sea, or in the deposition of the combined column of sedimentary rocks, gives a figure nearer 500,000,000 years. If the latter figure is taken as representing approximately the age of the earth since the beginning of the *Archeozoic*, or first era, and if all subsequent geologic time be shown as taking place during the course of an hour, the proper time relationships of the various eras and periods may be shown on the face of a clock, as is done in the accompanying figure.



Geologic Time Clock

If all geologic time since the beginning of the Archeozoic era is taken as 500,000,000 years and is represented on the clock as one hour, then thirty-three minutes of that hour elapse before the rocks begin to yield abundant evidence of life. The beginning of the Mesozoic era and the dominance of reptiles occur only nine minutes before the end of the hour. The Cenozoic era, or the age of mammals, lasted only two minutes and twenty-four seconds. And man, commonly stated to have been present for about 1,000,000 years, has occupied the center of the stage in the pageantry of changing life for only seven seconds of that hour.

Man makes iron implements 1350 to 900 B.C.
Man makes bronze implements 3500 to 2000 B.C.
Man makes polished (Neolithic) implements 18000 to 7500 B.C.

SYNOPSIS OF MAJOR EVENTS OF HISTORICAL GEOLOGY

Era	Period	Important Physical Events	Important Organic Events
Cenozoic	*Holocene (Recent)*	Completion of oceanic depression to present level. Climate as today. Gradual rise of depressed lands and depression of marginal bulge. Ocean waters flooding depressed lands.	
	Pleistocene	Ice front retreated to southern Sweden. Würm (Wisconsin) glacial advance. Interglacial period. Riss (Illinoian) glacial advance. Interglacial period. Mindel (Kansan) glacial advance. Interglacial period. Günz (Nebraskan) glacial advance.	Cro-Magnon Man—first of present species. Neanderthal man—Paleolithic culture. Heidelberg man—Paleolithic culture.
	Pliocene	Continued world-wide elevation. Epicontinental seas restricted.	Intermigration of North and South American mammals. Horses and elephants become essentially modern in appearance.

SYNOPSIS OF MAJOR EVENTS OF HISTORICAL GEOLOGY—Continued

Era	Period	Important Physical Events	Important Organic Events
Cenozoic	*Miocene*	World-wide uplift and mountain-building. Birth of Alps, Himalayas and other systems. Vulcanism in western North America. Marginal seas and cool climate.	Notable advances in the horse and elephant families. Apes appear in the Old World.
	Oligocene	Extensive erosion. Marginal seas. Warm climate.	Carnivores and ungulates become well established. First ancestral elephants.
	Eocene	Uplift in western North America. Marginal seas. Enlargement of Mediterranean basin.	Dawn of mammalian dominance. Reptiles in subordinate position. Coming of modern types of marine invertebrates.
Mesozoic	*Upper Cretaceous*	World-wide continental uplift. Birth of Rockies and Andes. Widespread interior seas. Formation of chalk and coal deposits.	Extinction of all Mesozoic types of reptiles and birds. Climax of cephalopods. Armored and horned dinosaurs reach climax just before extinction.
	Lower Cretaceous (Comanchean)	Great swamp deposits in North America. Some marine flooding in form of interior seas.	Introduction of modern flowering plants. Toothed birds and flying reptiles known. Marine pelecypods very abundant.
	Jurassic	Widespread emergence and erosion of North America. Small interior seas in northwestern North America. Birth of Sierra Nevadas.	First birds appear. Crustaceans take on modern aspect. Cephalopods very numerous. Gigantic reptiles common. Marine and flying reptiles abundant.
	Triassic	Continental and marine deposits in Europe. Mostly continental in North America. Widespread deserts with salt, gypsum and red beds.	Appearance of mammals. Reptiles dominate. Cycads prominent. Marine invertebrates reduced in number.
Paleozoic	*Permian*	World-wide uplift and mountain building, glacial episodes and aridity. Birth of the Appalachian system.	Extinction of most Paleozoic types of invertebrates and many Paleozoic plants. Reduction in all types of life. Primitive reptiles fairly numerous locally.
	Pennsylvanian	Crustal instability. Much land oscillating near sea level. Formation of world's greatest coal deposits.	Great coal forming forests. Earliest known reptiles. Trilobites become rare. Brachiopods, pelecypods and gastropods common.
	Mississippian	Coal swamps in Europe. Low lands and warm, mostly clear interior seas in North America.	Great abundance of crinoids. Sharks numerous. Amphibians become well established.
	Devonian	Progressive widespread submergence of continents. Terrestrial deposits in Europe and North America. Local diastrophism and vulcanism at close.	First amphibian record. Armored fish numerous. Brachiopods reach climax. First forests known. Coral reefs important.
	Silurian	Important marine transgression. Salt and gypsum deposits and aridity. Crustal disturbances in many parts of the world at close.	First air breathers in the form of scorpions. First great abundance of corals and coral reefs. Eurypterids reach climax. Trilobites diversified. Land floras appear.
	Ordovician	Three cycles of marine inundation in North America. Greatest known submergence. Vulcanism in British Isles. Local diastrophism in North America.	First vertebrate record in ostrocoderins. Climax of invertebrate dominance. Brachiopods, trilobites and cephalopods most numerous and characteristic.
	Cambrian	First abundantly fossiliferous rocks. Low lands, mild climate and crustal stability.	Most invertebrates present. Trilobites most abundant and characteristic. Brachiopods and gastropods fairly numerous.
Proterozoic	*Lipalian Interval*	Widespread erosion. Records mostly lost.	Great development in the inyertebrates.
	Upper Proterozoic	Great vulcanism in central and eastern North America with formation of great copper, silver, gold and nickel deposits.	Sponges and foraminifera probably present. Some higher invertebrates possibly present.
	Middle Proterozoic	Sedimentary processes dominant. Formation of great iron deposits.	Bacteria and seaweeds present. Sponges and protozoa probably present.
	Lower Proterozoic	Normal sedimentary processes dominant. Earliest known glacial episode.	Bacteria and seaweeds present. Sponges and protozoa possibly present.
Archeozoic	*Unconformity*	Widespread erosion. Records mostly lost.	Development of primitive plants and animals.
	Laurentian	World-wide igneous instrusive activity.	Blue-green algae present.
	Keewatin	World-wide igneous extrusion and some sedimentation.	Primitive one-celled plants and animals possibly present.

GEOLOGIC DEVELOPMENT OF THE ANIMAL KINGDOM

(Simple forms below—complex types above)

Phylum		Class	Known Geologic Range	Common Name or Living Example
Chordata	Vertebrata	Mammalia	Triassic to present	Mammals
		Aves	Jurassic to present	Birds
		Reptilia	Pennsylvanian to present	Reptiles
		Amphibia	Devonian to present	Amphibians
		Pisces	Silurian to present	Fish
		Ostracodermi	Ordovician through Devonian	Bony-plated fish
		Cyclostomata	Devonian to present	Lamprey eels
		Acrania	No fossil record	Amphioxus
		Urochorda	No fossil record	Ascidians
		Adelochorda	No fossil record	Balanoglossus
Arthropoda	Invertebrata	Insecta	Mississippian to present	Insects
		Arachnida	Cambrian to present	Spiders
		Myriopoda	Devonian to present	Centipedes
		Onychophora	Cambrian to present	Peripatus
		Crustacea	Cambrian to present	Crayfish
Mollusca		Cephalopoda	Cambrian to present	Squid
		Scaphopoda	Ordovician to present	Tooth shells
		Gastropoda	Cambrian to present	Snails
		Pelecypoda	Ordovician to present	Clams and oysters
		Amphineura	Ordovician to present	Chitons
Molluscoidea		Brachiopoda	Cambrian to present	Lamp shells
		Bryozoa	Ordovician to present	Moss animals
Echinodermata		Holothurioidea	Cambrian to present	Sea cucumbers
		Echinodea	Ordovician to present	Sea urchins
		Ophiuroidea	Ordovician to present	Brittle stars
		Asteroidea	Ordovician to present	Starfish
		Crinoidea	Cambrian to present	Sea lilies
		Blastoidea	Ordovician through Pennsylvanian	Sea buds
		Cystoidea	Ordovician through Mississippian	Sea bladders

GEOLOGIC DEVELOPMENT OF THE ANIMAL KINGDOM—Continued

(Simple forms below—complex types above)

Phylum	Class	Known Geologic Range	Common Name or Living Example
Vermes: *Annulata*	Classes omitted	Cambrian to present	Segmented worms
Vermes: *Trochelminthes*	Classes omitted	No fossil record	Wheel worms
Vermes: *Nemathelminthes*	Classes omitted	Cambrian to present	Threadworms
Vermes: *Platyhelminthes*	Classes omitted	Pennsylvanian to present	Flatworms
Coelenterata	Ctenophora	No fossil record	Comb jellies
	Anthozoa	Cambrian to present	Corals
	Scyphozoa	Cambrian to present	Jellyfish
	Hydrozoa	Cambrian to present	Hydrozoans
Porifera	Porifera	Proterozoic to present	Sponges
Protozoa	Infusoria	No fossil record	Infusorians
	Sporozoa	No fossil record	Gregarina
	Mastigophora	Cretaceous to present	Euglena
	Sarcodina	Cambrian to present	Amoeba

(Invertebrata)

GEOLOGIC DEVELOPMENT OF THE PLANT KINGDOM

(Simple forms below—complex types above)

Phylum	Class		Known Geologic Range	Common Name or Living Example
Spermatophyta (Seed Plants)	Angiospermae (Covered seeds)	Dicotyledones	Early Cretaceous to present	Oaks, maples, elms
	Angiospermae (Covered seeds)	Monocotyledones	Early Cretaceous to present	Grasses
	Gymnosperms (Naked seeds)	Gnetales	No fossil record	Ephedra
	Gymnosperms (Naked seeds)	Coniferales	Permian to present	Pines
	Gymnosperms (Naked seeds)	Ginkgoales	Permian to present	Ginkgo
	Gymnosperms (Naked seeds)	Cycadales	Triassic to present	Cycads
	Gymnosperms (Naked seeds)	Cycadeoidea	Permian to Cretaceous	Cycadeoids
	Gymnosperms (Naked seeds)	Cordaitales	Devonian to Permian	Cordaites
	Gymnosperms (Naked seeds)	Cycadofilicales	Devonian to Jurassic	Neuropteris
Pteridophyta (Fern Plants)		Lycopodiales	Devonian to present	Club mosses
		Sphenophyllales	Devonian to Permian	Sphenophyllum
		Equisitales	Devonian to present	Horsetails
		Filicales	Devonian to present	Ferns
Bryophyta (Moss Plants)		Musci	Mississippian to present	Mosses
		Hepaticae	Silurian to present	Liverworts
Thallophyta (Thallus Plants)		Fungi	Silurian to present	Fungi
		Diatomeae	Jurassic to present	Diatoms
		Algae	Proterozoic to present	Seaweeds
		Myxomycetae	No fossil record	Slime molds
		Schizophyta		
		Blue-green algae	Archeozoic to present	Blue-green algae
		Bacteria	Proterozoic to present	Bacteria

MINERALOGY

MINERALOGY is the science that treats of the properties of minerals and teaches us to characterize, distinguish and classify them according to their properties. Prior to 1750, geology was included in the science of mineralogy, but this term has more recently become restricted to the study of the individual minerals and their relations to each other, forming an important section of the present science of geology. The science of mineralogy, however, is not confined to the study of the external characters of mineral substances, their chemical composition being equally important.

Classification. Minerals may be described and classified either in accordance with their chemical composition, their crystallographic forms, or their physical properties of hardness, fracture, color, luster and so forth, or a combination of all; and thus various systems of classification have been adopted. Most minerals crystallize in definite forms. There are not a few, however, which are not distinctly crystalline, but are earthy or occur in masses, the latter exhibiting important varieties of structure, as *laminated, fibrous, granular, reniform, botryoidal* and others. Other distinctive characteristics are *color*, which, however, varies even in the same mineral; *luster*, the character of the light reflected from the surface, and described as *adamantine, vitreous, nacreous, greasy, silky* and so forth; *fracture*, or the character of the freshly broken surface; *streak*, or the color of the powder; and *hardness*, now determined by Moh's scale. In this scale type minerals are used in an arbitrary scale, in which the hardnesses are given as from 1 to 10. Diamonds, however, are known to be from 90 to 150 times as hard as corundum, ordinarily regarded as the next hardest substance. The type minerals of Moh's scale are:

1. *Talc*, common laminated light-green variety.
2. *Gypsum*, a crystallized variety.
2.5 *Mica.*
3. *Calcite*, transparent variety.
4. *Fluor spar*, crystalline variety.
5. *Apatite*, transparent variety.
5.5 *Wernerite*, crystalline variety.
6. *Potash feldspar*, white cleavable variety.
7. *Quartz*, transparent.
8. *Topaz*, transparent.
9. *Corundum.*
10. *Diamond.*

To determine the hardness of a mineral, ascertain, by experiment, which of the minerals it will scratch and which will scratch it; thus, if a mineral will scratch fluor spar but not apatite, while the latter will scratch it, its hardness is between 4 and 5. Diaphaneity, refraction, polarization and electric properties are all distinguishing marks.

Precious and Semiprecious Stones. Minerals which, because of their beauty, hardness and rarity, are prized for use in ornamentation, especially in jewelry, are classified as "precious stones." The diamond, ruby, sapphire and emerald are the only stones which are, strictly speaking, entitled to be called "precious" in this sense. But the opal, on account of its beauty, is often included with the precious stones, as is also the pearl, which is not really a stone, but a secretion of a shellfish. The following dictionary presents distinguishing points on the better known stones:

Agate. A semitransparent, uncrystallized variety of quartz, presenting various tints in the same specimen. Its colors are delicately arranged in stripes or bands, or blended in clouds.

Alexandrite. A variety of chrysoberyl found in the mica slate of the Ural Mountains. It is of a rich garnet color by artificial light, by daylight of a dark moss green. It is the only stone that so changes. The finest specimens of alexandrite are nearly as valuable as diamonds.

Almandine. A common maroon-red variety of garnet.

Amethyst. A variety of crystallized quartz, of a purple or bluish-violet color, of different shades. It is much used as a jeweler's stone. The lighter colored amethysts come from Brazil, the deep purple ones from Siberia. In value the amethyst is about equal to garnet.

Aquamarine. A transparent, light-blue variety of beryl, used as a gem.

Aventurine. A variety of translucent, reddish quartz, spangled throughout with scales of yellow mica or hematite.

Beryl. A very hard mineral, of much beauty when transparent. It occurs in hexagonal prisms, commonly of a green or bluish-green color, but also blue, light-blue, yellow, pink and white. It is a silicate of aluminum and beryllium. Beryls are usually very delicate in color. Their value is about four dollars per carat, except for emeralds (which see).

Bloodstone. A dark green, uncrystallized quartz sprinkled with red jasper, from which it takes its name. Also called Heliotrope.

Cameo. A figure cut in relief in stone or shell which often is composed of different colored layers. The value depends upon the artistic merit of the engraved figure.

Carbuncle. A term used by the ancients to designate any deep red, transparent stone, but expecially applied to garnets. Today the carbuncle is a deep red garnet cut *en cabochon* (not faceted).

Carnelian. A variety of chalcedony, of a brownish-red color. It is moderately hard and capable of taking a good polish. It is sometimes used for seals. Its entire use is not extensive today.

Cat's-eye. A variety of quartz or chalcedony exhibiting shifting reflections from within, like the eye of a cat. The name is given to other gems affording similar effects, especially to the chrysoberyl. A fine specimen of the latter about three-eighths of an inch across might be worth one hundred dollars or more.

Chalcedony. An indistinctly crystalline, translucent variety of quartz, of a whitish or grayish color and with a luster nearly like wax.

Chrysolite. A transparent gem, composed of silica, magnesia and iron, of a yellow to green color. It is also known as *peridot*. It is little used.

Chrysoprase. An apple-green variety of chalcedony. Its color is due to nickel.

Dendrite. A stone in which are branching figures, resembling shrubs of trees, produced by a foreign mineral, usually by an oxide of manganese, as in moss agate.

Diamond. A precious stone or gem excelling in brilliancy and beautiful play of prismatic colors, and remarkable for extreme hardness. It occurs in many hues—green, rose, straw, yellow and others—but the straw-colored diamonds are the most common. The diamond is a native carbon occurring in isometric crystals, often octahedrons, with rounded edges. It is the hardest substance known. Diamonds are said to be of the *first* water when very transparent, and of the *second* and *third* water as the transparency decreases.

Diopside. A crystallized variety of pyroxene (a silicate of lime and magnesia), of a clear light-green color; also called *mussite*.

Emerald. A precious stone of a rich green color; it is the most valuable variety of beryl (which see).

Epidote. A mineral, commonly of a yellowish-green to greenish-brown color, occurring granular, massive, columnar and in crystals. It is a silicate of alumina, lime and oxide of iron, or manganese.

Essonite. Cinnamon stone. A variety of garnet, yellow to brown in color. It is not much used.

Fire Opal. See Opal.

Fluorite. Calcium fluoride, a mineral of many different colors—white, yellow, purple, red, green and others—often very beautiful. When crystallized it is commonly in cubes with perfect octahedral cleavage. Some varieties are used for ornamental vessels. Also called *fluor spar* or *fluor*. The colored varieties are known as *false ruby, false emerald, false topaz, false sapphire* and *false amethyst*. It is too soft for use in jewelry.

Flint. A massive, somewhat impure variety of quartz, in color usually gray to brown or nearly black, breaking with a conchoidal fracture and a sharp edge. See Quartz.

Fluor spar. See Fluorite.

Garnet. A mineral having many varieties, differing in color and in their constituents, but with the same general chemical formula. The commonest color is red; the luster is vitreous, or glassy; the hardness is greater than that of quartz. The common crystal forms are the dodecahedron and trapezohedron. Besides the red varieties there are also white, green, yellow, brown and black garnets.

The garnet is a silicate with various bases, such as alumina-lime (grossularite, essonite), alumina-magnesia (pyrope), alumina-manganese (spessartite) and chromium-lime (ouvarovite—color emerald green). The transparent red varieties are used as gems. The garnet was the carbuncle of the ancients. Garnet is a very common mineral in gneiss and mica schist.

The finest specimens of red garnets come from Arizona, and a single stone is worth about two dollars. A green variety that comes from Russia is worth about half as much as the diamond.

Golden Beryl. See Beryl.

Heliotrope. See Bloodstone.

Hematite. An important ore of iron, the sesquioxide, so called because of its red color when in the form of powder. It occurs in splendid rhombohedral crystals and in massive and earthy forms, the last being called *red ocher*. It is now seldom used in jewelry.

Hyacinth. A reddish-brown variety of zircon, sometimes used as a gem. It resembles closely a dark Spanish topaz, and is worth a trifle more than a garnet.

Idocrase or **Vesuvianite.** A mineral occurring in tetragonal crystals, also massive; brown to green in color, rarely sulphur yellow or blue. It is a silicate of alumina and lime, with some iron and magnesia. It is found at Mt. Vesuvius. It is little used.

Indicolite. A variety of tourmaline of an indigo-blue color.

Intaglio. A figure cut in a stone or shell so as to be depressed below the general surface, which may be the same as or a different color from the material exposed by the cutting. The value depends upon the artistic merit of the work.

Iolite. A silicate of alumina, iron and magnesia showing bright blue and yellow colors when viewed from different directions, and with a vitreous or glassy luster. It is remarkable for its dichroism. Also called *dichroite*.

Jacinth. Same as hyacinth.

Jade. A stone commonly of a pale to a dark green color, but sometimes whitish or showing light tints of other colors. It is moderately hard and very tough, capable of a high polish. It is used for ornamental purposes and for implements, especially in the Orient and among many primitive peoples.

Jasper. An opaque, impure variety of quartz, of red, yellow and other dull colors, breaking with a smooth surface. See Quartz.

Kyanite or **Cyanite.** A mineral occurring in thin-bladed crystals and crystalline aggregates, of a sky-blue color. It is a silicate of aluminum. It is remarkable for differing greatly in hardness when scratched in different directions. It is slightly used in jewelry.

Labradorite. A kind of feldspar, commonly showing a beautiful play of green, blue, yellow and copper colors, and, hence, used for ornamental purposes. The best specimens come from Labrador.

Lapis Lazuli. A mineral of fine dark blue color, usually occurring in small rounded masses. It is usually a silicate of alumina, lime and soda, with some sodium sulphide. It is often marked by golden yellow metallic spots or veins of sulphide of iron. It is much valued for ornamental work.

Moonstone. A nearly pellucid variety of feldspar, showing bluish pearly or opaline reflections from within. The best specimens come from Ceylon. Moonstone is worth a few dollars a carat.

Nephrite. A hard, compact mineral, of dark green color, formerly worn as a remedy for diseases of the kidneys, whence its name, *kidney stone*.

Obsidian. A kind of glass produced by volcanoes. It is usually black in color and opaque, except in thin splinters.

Olivine. A common name of the yellowish-green mineral chrysolite, especially of the variety occurring in eruptive rocks. See Chrysolite.

Onyx. Chalcedony in parallel layers of different shades of color. It is used for making cameos, the figure being cut in one layer with the next layer as a background (see Cameo). It is stained black and used to make mourning jewelry.

Opal. A mineral consisting, like quartz, of silica, but inferior to quartz in hardness and specific gravity. The precious opal shows a peculiar play of colors of delicate brilliant tints, and it is highly esteemed as a gem. One kind, with a varied play of colors in a reddish ground, is called *harlequin opal*. The *fire opal* (of Mexico) has colors like the red and yellow of flame. This is not the cheap so-called "Mexican opal." A spherical opal about three-eighths of an inch in diameter, or an oval flat opal about half an inch long, if of finest quality, might be worth about sixty dollars. A Mexican opal of the same size might be worth only fifty cents unless old, uncracked and very attractive.

Pearl. A shelly concretion, usually rounded, having a brilliant luster, with varying tints, formed in the mantle, or between the mantle and shell, of certain bivalve mollusks (especially in pearl oysters and river mussels) and sometimes in certain univalves. Its substance is the same as nacre or mother-of-pearl. Pearls which are round or nearly round and of fine luster are highly prized as jewels. They are sold by grain (quarter carats) instead of by carats.

Pyrope. A red variety of garnet, used as a gem.

Rhodonite. Manganese spar, or silicate of manganese, a mineral occurring crystallized and in rose-red masses. It is used almost entirely for ornamental purposes as in slabs and blocks. It is often veined with black.

Rock Crystal or **Mountain Crystal.** Any transparent crystal of quartz, particularly of limpid or colorless quartz. A sphere of rock crystal of absolutely perfect clearness, about five inches in diameter, is worth at least $20,000.

Rose Quartz. A pinkish or red, usually badly flawed, variety of quartz.

Rubellite. A variety of tourmaline varying in color from a pale rose to a deep ruby, and containing lithium. It is a little more valuable than garnet.

Ruby. A precious stone of a carmine-red color, sometimes verging to violet, or intermediate between carmine and hyacinth red. It is a crystallized variety of corundum. The ruby from Siam is of a dark color and is called *oxblood ruby*. It has about the same value as the diamond. The ruby from Burma, called the *pigeon-blood ruby*, is of a lighter color and several times more valuable than the oxblood. A fine pigeon-blood ruby, weighing two carats, may be worth more than $6,000.

Rutile. A mineral, usually of a reddish-brown color and of billiant, adamantine luster, occurring in tetragonal crystals.

Sapphire. Gem corundum or aluminum sesquioxide. Gem miners and dealers use the term for material of any color, as pink, white and other sapphires. The name sapphire, alone, is applied by jewelers only to the blue stone. The best specimens of the blue variety are nearly as valuable as the diamond.

Sard. Same as Carnelian.

Sardonyx. A variety of onyx consisting of sard and white chalcedony in alternate layers. See Onyx.

Spinel. A mineral occurring in octahedrons of great hardness and various colors, as red, green, blue, brown and black. The red variety is the gem *spinel ruby*. It consists essentially of alumina and magnesia, but commonly contains iron and sometimes also chromium. Fine specimens of spinel ruby are worth rather more than one-fourth as much as diamond.

Sunstone. Aventurine feldspar; aventurine.

Topaz. A mineral occurring in rhombic prisms, generally yellow and pellucid, also colorless, and of greenish, bluish or brownish shades. It sometimes occurs massive and opaque. It is aluminum fluo-silicate, and is occasionally used as a gem. It is but little more valuable than garnet, except in the case of unusually fine specimens. Yellow varieties when heated sometimes turn pink.

Tourmaline. A mineral occurring in three-sided prisms. Black tourmaline is the most common, but there are other varieties, as the blue (*indicolite*), red (*rubellite*), green, brown and white. The red and green varieties, when transparent, are valued as jewels. The finest ones come from California and Brazil, and are worth from four to five times as much as garnets.

Turquoise. A hydrous phosphate of aluminum containing a little copper. It is blue or bluish-green in color, is nearly opaque, and usually occurs in kidney-shaped masses with a nodular surface like that of a bunch of grapes.

Unio-pearl. A pearl secreted by a fresh-water mollusk, in distinction to those secreted by the ordinary marine pearl oyster.

Verd Antique. A mottled-green, serpentine marble. Also a green porphyry which is called *oriental verd antique*.

Zircon. A mineral occurring in tetragonal crystals, usually of a brown or gray color. It consists of silicon and zirconium. It is harder than garnet. The transparent varieties are used as gems. The reddish brown variety is called *hyacinth*. The *jargon* is a colorless, pale yellow or smoky-brown variety from Ceylon.

THE WEATHER

WHAT is the weather going to be? Is it going to rain or snow? Is the sun going to shine? Will there be a frost? These and a thousand other questions of like import are asked daily by people all over the world, whether they be young or old, rich or poor, living in the most palatial city house or in the simplest rural cottage. All are interested in what the weather will be. No other subject is such a general topic of conversation, simply because no other subject commands so much interest. Yet in spite of all this interest, relatively few people know even the scientific fundamentals in a study of the weather, and probably more untruths are told about the weather than about any other single subject.

Meteorology a Science. There are certain simple fundamental facts of science, readily available in textbooks, that can be used as a measuring stick in deciding what and what not to believe about the weather. These facts have been collected and arranged in orderly fashion, and the study of them is the field of *meteorology*. These are the facts that the observer uses in forecasting the weather for the next twelve, twenty-four or thirty-six hours. Unfortunately, the laws which govern weather are not sufficiently well known to forecast for periods of much greater length.

Clouds. Many of our weather changes are foretold in *clouds*. Many kinds of weather have their own kinds of cloud forms, which are indicative of impending weather. Thus there has grown up a cloud lore that incorporates many scientific facts. Although clouds are merely a collection of minute but visible water particles condensed from the water vapor of the air by cooling, the form occupied is determined very definitely by the existing atmospheric conditions. There is no real distinction between the formation of a fog and a cloud; in fact, "a fog is a cloud on the earth; a cloud is a fog in the sky." Yet the interpretative values of a "cloud on the earth" and a "fog in the sky" are very different. Both, however, are caused by

sufficient cooling to condense the water vapor in the air into minute droplets.

Cloud Forms. Clouds are classified according to their appearance. There are four general types: *cirrus*, *stratus*, *cumulus* and *nimbus*. Aside from these standard types there are innumerable variations and combinations. Many words are compounded to express these forms, as fracto-cumulus, fracto-stratus, alto-cirrus, alto-stratus, cirro-cumulus and cumulo-nimbus. Besides these, there are others such as scarf, riffle and billow. Although these major groups received their names over one hundred years ago, many cloud problems still remain unsolved.

Cirrus Clouds. The cirrus are detached clouds of delicate appearance, threadlike or hairlike in structure, and feathery or plumelike in form. They may resemble isolated tufts or curls of hair, or may be in long straight or curved filaments ending in tufts, not uncommonly arranged in bands converging more or less at a point on the horizon. "Cat's whiskers" and "mares' tails" are cirrus clouds. They are usually in the upper regions and are our highest clouds, five to ten miles high and in regions of extreme cold. Naturally, at this height they must be made up of snow or ice particles.

The altitude, however, is not vital provided conditions for their formation are favorable. The extreme cold in which they are found necessitates a limited amount of moisture; consequently they are never heavy and do not obscure the form of sun or moon. When these bands thicken and become solid sheets they are the forerunners of storm and the sailor prepares for high seas. If, however, they become thinner and die out, clear weather for several days may be expected.

Stratus Clouds. The stratus are our lowest lying clouds, generally less than one-half mile above the earth's surface. "A uniform layer of cloudlike fog not lying on the ground" is the international definition given to this form. The lack of observable structure differentiates it from all other forms. It is the cloud that produces our drab, chilly, cheerless days for it shuts off the sun completely. The so-called "high fogs" of California where a deep sea fog drifts over a relatively warm land, evaporating the lower part, is one of this type. At times such a cloud sheet becomes broken by winds and then the term "fracto-stratus" is applied to it. There are many other variants.

Cumulus Clouds. A third general type is the cumulus cloud. This is a "thick cloud of which the upper surface is dome-shaped and exhibits protuberances, while the base is generally horizontal." They are the great billowy heaps, or "wool packs," that one is likely to see in mid-latitudes (the intermediate area between the tropics and the polar regions) on a summer afternoon. They are formed by the warmed air in the lower regions being pushed up into colder regions. They increase with the heat of the afternoon, usually growing smaller as evening approaches. Because they indicate rising air currents, they are more commonly seen over bodies of water at night. Forest fires often produce cumulus clouds which, when high and well broken up, give the sky a flaky appearance and are known as "cirro-cumulus" or "mackerel sky."

Nimbus Clouds. The fourth general type, the nimbus, is the dense, dark, shapeless rain cloud. The average altitude of its under surface is little more than one-half mile. These clouds are usually too heavy for the sun to penetrate, consequently their under parts are dark, gray or even black. When they are broken up by strong winds they are known as "fracto-nimbus."

Relationships Between Clouds and Weather. Clouds bear a definite relationship to a wide range of weather phenomena. Their movement and velocity is generally the same as that of the stratum of air in which they float. They are generally lower in winter than in summer; and lower in high than in low latitudes, due to the differences in temperature and relative humidity. In mid-latitudes, the cumulus is more common in summer and the stratus in winter. Also the sky is markedly different in the trade wind belt from that of the belt of the westerlies, in desert from that of humid regions, in morning from afternoon or night. Each cloud form has its significance and each change its corresponding weather change. Because clouds are so sensitive to changing atmospheric conditions, they are, to those who can read their story, excellent forecasters.

The Air. Different kinds of weather result, of course, when different kinds of atmospheric conditions prevail. The atmosphere, or air, is a real substance, although we are hardly aware of its existence. We know that it is a substance, for it has been liquified. We know not only that air can be compressed into a liquid, but also that it is elastic. An automobile tire filled with a liquid would be less resilient than if made of solid rubber, because a liquid, for all practical purposes, is neither compressible nor elastic. We know also that the air has weight, for if we balance an electric light bulb on a scale and then melt a spot on the bulb with a blowpipe and permit the air to rush in without losing any glass, we find that the bulb with the hole will be heavier than it was with the air pumped out. From experiments we learn that a cubic foot of air at sea level weighs approximately one and one-fifth ounces.

Compressibility of Air. From the fact that the air has weight and is compressible, many interesting phenomena may be explained. Thus a cubic foot of air is heavier in the lower than in the upper air. If it were not for this principle, the upper layers of air would be as dense as the lower, and balloons would rise and float on the outer surface of the air as a ship does on water. Moreover, it is largely due to the rarity of the upper air that airplanes are limited in their altitude records, and that high mountain peaks, as Mount Everest, have never been climbed.

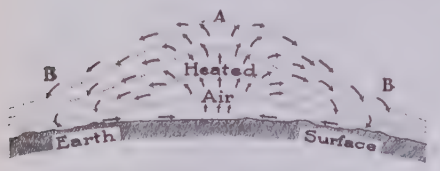
Air Pressure. Since air has weight, the lower layers of air are weighted down by all the air mass above it; and this total weight, or "pressure," as it is called, is equal at sea level to approximately fourteen and seven-tenths pounds per square inch. The column of air resting upon a square foot of surface at sea level will therefore weigh over one ton. The weight of this air column, spoken of as "air pressure," is equal to a column of mercury thirty inches high. The total weight of the air is equal approximately to a layer of water covering the whole earth to a depth of thirty-three feet. Although the atmosphere extends out into space indefinitely, the higher the altitude the rarer the air becomes because it is less compressed by the lesser weight of the air above it. Thus it is estimated that, although the atmosphere extends out into space hundreds of miles, half of the atmosphere, by weight, lies below an altitude of three and six-tenths miles above sea level, and that approximately three-fourths of it lies below our highest mountain peaks.

This air pressure is measured by a *barometer*. The instrument most commonly in use is made of a glass tube, sealed at one end, and filled with mercury. It is then inverted into a dish and the mercury flows out, leaving a vacuum above, until the air pressure on the mercury in the dish is equal to the height of the mercury column. If there is an increase in air pressure, the mercury column will rise in the tube and we speak of it as a "high barometer." If, on the other hand, the air pressure decreases, the mercury column falls and we speak of it as a "low barometer." This, in a measure, is the meaning of the words "high" and "low" on a weather map; pressures less than thirty inches are considered as making up a low, and above thirty inches as a part of a high. As the atmospheric pressure decreases with altitude the height of mountains may be measured with a barometer. Barometers made especially for this purpose are known as "aneroid" barometers or simply as *aneroids*, or *altimeters*.

Air Density. The density of the air, and consequently the pressure that is exerted, may be changed with a variation in temperature. As is the case with most materials with which we are acquainted, an increase of temperature causes an increase in space occupied (if the space is not restricted) and consequently becomes less dense; in other words, it becomes lighter per unit amount. If, under normal conditions, a cubic foot of air weighs one and one-fifth ounces, then a cubic foot of colder air will weigh more, and a cubic foot of warmer air less, than one and one-fifth ounces. This principle accounts for practically all air movements or winds. Near the earth's surface cooler and heavier air flows to a warmer area and pushes the warmer and lighter air up. Thus, it is as safe to say that winds are currents of air always flowing down slope, as it is to say that water always flows down hill. Water in a stream may be forced over a boulder, but its general trend is downward. So with air; it may be forced over a house or even over a mountain, but its general trend is downward. As swift waters are caused by steep topographic slopes, so strong winds are caused by steep barometric slopes.

Cause of Winds. If winds always flow down barometric slopes one may well ask why all the air does not get to the bottom. Similarly one might ask, why, since all streams flow to the sea, do they not after a time stop running. The answer, of course, is simple: the water evaporates, due to the sun's heat, and is carried back by the winds to the lands, there to start its ceaseless flow to the sea again. The same holds true with air movements. Some parts of the earth get warmer than others, thus expanding the lower layers of air and lifting the whole mass above. This will cause a movement in the

upper regions away from this domed area into areas where the air has not expanded in this manner. This flow in the upper regions toward areas not thus expanded will make the column of air in the colder area heavier. The air from this area will move at the earth's surface to the warmer region, to make the same ceaseless round. Thus, in general, winds flow from colder to warmer areas at the earth's surface, from places of descending currents to places of ascending ones, from areas of high pressures to areas of low pressures. Unequal heating of air, therefore,



Unequal Heating and Air Currents
The diagram illustrates air movements when certain areas (A) are heated more than other areas (B). The areas show the probable currents of air and the dotted lines suggest in general the barometric slopes.

causes currents to rise in one region and to come down in another. The accompanying diagram makes this principle clearer.

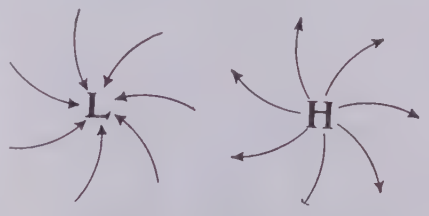
Winds and Weather. Winds are very important factors for weather conditions in a host of ways, chiefly perhaps, in the distribution of moisture. Of course if there were no winds there could be no clouds, no rains and no snows. We could hardly have what we call weather. Winds may take moisture from a region or bring moisture to it. Thus there are deserts where, in a sense, it never rains or snows, and there is tremendous evaporation if any water is available. Such areas are found not only on the land but also over the ocean where, because of this tremendous evaporation, the ocean waters are much saltier than in the rainy regions. Then there are regions where the precipitation vastly exceeds the evaporation.

Precipitation. Evaporation is a process familiar to all. Its rapidity may be increased by raising the temperature and also by increasing the movement of the air so as to replace the moisture laden air with dryer air. Heat, however, is the vital principle. In order to dry the air we heat it—not to drive out the moisture but to increase the holding capacity. Then, by reversing the process (and this is the only way) we can get the moisture out by cooling the air sufficiently. Thus, to get the moisture out of the air—be it in the form of dew, frost, clouds, rain, snow, hail or in any other form—that air must be cooled; the cooler the air, the less moisture it can hold. Perhaps we have had the experience, on a winter's day, of opening the door of a laundry and forthwith finding the air suddenly turned to steam; or of having our eyeglasses coated over on entering a warm room, or of seeing a cold water pitcher "sweat" on a warm summer afternoon. The explanation for all these occurrences is that the air has been cooled to a point where it can not hold the moisture which it easily held at higher temperatures. This cooling must happen if there is to be precipitation in any form.

A decrease in temperature always precedes any form of precipitation of moisture from the air. Thus the reason why dew does not fall but rather condenses on the solid object is because that object is cooler than the air. For the same reason moisture condenses on a pitcher containing ice water. If the temperature at the point of condensation, the so-called "dew point," be below freezing, then instead of dew there will be frost. When, in the upper regions of the moisture laden air, the temperature is lowered sufficiently to reach the dew point, clouds will result. If the temperature is above freezing and the condensation heavy enough, rain will result; if below freezing, snow will form. Sometimes the upper air is so cold that snow is formed, but the lower air is warm enough to melt the snow, and it therefore comes down as rain. In an ice storm the objects on which the rain falls, such as trees, telephone wires and the like, are colder than the air above.

Thus some regions have much more rain than others. The simple explanation is that in regions of heavier rainfall there is a greater tendency for the air to rise and cool. This cooling is brought about principally by the rising air. The greater rainfall, therefore, is on the windward slope of mountains, and the lesser on the leeward side. Areas with rising air will have rain; areas with falling air currents will have little or no rain; air blowing from a colder to a warmer region will be a drying wind and the sky will be cloudless; air blowing from a warmer to a colder region will be a moisture-bearing wind and the skies will be overcast.

There are a number of areas which have more or less permanent low (ascending air) or permanent high pressures (descending air). In some cases they are seasonal. Thus over Asia in summer, because the land gets warmer than the bordering waters, a low pressure develops, pulling in the air from all sides to take the place of the rising air. In winter the reverse process takes place because the land becomes colder than the water and a high pressure is developed. During the high pressure period there are descending currents of air becoming somewhat warmer as they approach the earth, and therefore this is the dry



High and Low Pressure Areas
This diagram shows in a general way the chief surface directions in related high and low pressure areas, provided there were no modifying factors at the earth's surface. It will be noted that the wind in the high, as it comes down from higher regions, blows in broad currents toward the center of the low where it must rise to repeat the same round.

season of the year. On the other hand, in the south Pacific, west of central Chile, there is a permanent high continuing throughout the entire year. As a result, in that part of South America is one of the great desert regions of the world.

Fundamentals. The principles discussed —(1) the effect of heat on the density of the air and (2) the effect of heat on the relative humidity of the air—are the great foundation stones in a study of the weather. Whatever will bring about changes in these two conditions will also bring about changes in the weather. One of the dominant reasons for mid-latitude weather like that in the United States and Europe is the constant migration and succession of lows and highs from west to east. Each of these has its own specific characteristics, but, in general, in these low pressure areas the wind blows in great curves inward, counterclockwise and upward. In the high pressure areas the winds come down, go clockwise and outward. Within the influence of the lows the air rises and consequently cools, thus reducing the moisture-holding capacity; as a result, clouds are formed and rains may fall. Within the influence of the highs the colder air from the upper regions moves toward the earth. Although the air is cold as it starts on its downward path, it is getting warmer and warmer the nearer it comes to the earth, and consequently is a drying wind bringing clear and cool weather. It is quite evident that, could we know all about these lows and highs, we could tell all about the weather.

The weather map published by the United States Weather Bureau is a record of the weather conditions that dominate the whole country. All weather predictions are made from the data gathered by the weather bureau and much of the data may be read from the map. The weather map, therefore, is a storehouse of information, and every intelligent person should be able to read it.

All forecasts given on the weather map are based on the general assumption that the lows and highs carry with them the same weather conditions that prevail at the time of the forecast with certain modifications which, in the past, have been generally true. Thus the direction of winds may be foretold if the position of the low or high can be foretold, and the strength of the wind by the barometric gradient. A strong low over northern Texas will probably be over the Great Lakes region in twenty-four hours, and over New England in another twenty-four. If rain accompanied in Texas, quite surely it will rain in the Great Lakes region the next day, and in New England the next. Changing temperatures are shown on the weather map by dotted isothermal lines and migrate in a general way with the highs and lows.

However, the weather observer does not always succeed, for the simple reason that the weather does not turn out as it might well be expected to do, judging from what happened under similar conditions in the past. These centers may not follow the exact course that others before them generally have done; or for some unknown reason they may increase or decrease the speed of travel; they may grow stronger or weaker; they may disappear, or new ones may form. Besides this there are a host of other possibilities away from the ordinary conditions. Thus there has arisen the saying: "There is nothing certain about the weather except that it changes." Yet, in spite of this uncertainty, the science of meteorology has definitely established a host of scientific laws and principles.

PHYSICS

WE LIVE in a world of matter and energy. Everywhere we see nature constantly changing, heavenly bodies in motion, and we are told that the earth is traveling more than a million and a half miles a day. We are familiar with two kinds of objects: one we classify as living, such as grass, eagles, fish and man; the other we denote as non-living, and includes such objects as stone, glass, air and the moon. For convenience in grouping scientific knowledge, it is customary to make two great divisions of science: biological science, which deals with living matter, and physical science, which deals with inanimate matter.

Under this classification, chemistry is a branch of physical science and geology largely belongs in this grouping. It is impossible to carry on a study of biological science without the use of many facts obtained from the physical realm. In nature there are no limiting fields of science. In studying about the growth of a plant we are lead into all general branches of systematized knowledge. Not only in the natural world but in an artificial world as well do we find that we are surrounded by countless devices made by man. To be of service, these objects, made of matter, require energy. The inventor who devises new machines must have at his command many important facts and principles from the domain of physics. The engineer is merely a physicist trained in a special practical field. Indeed, a broader knowledge of physics will give one an enrichment of life, a deeper appreciation of the many creations of skillful workers, and a better understanding of the natural wonders of the world.

THE MAJOR DIVISION OF PHYSICS

To systematize the study of physics it is customary to group the subject matter around the major topics of heat, mechanics, light, sound, electricity and magnetism.

Heat deals with energy changes, temperatures, changes in size through expansion, and with changes in state and transmission of heat. Some knowledge of heat is essential in the use of most mechanical contrivances and is required for the planning of the various heat engines, heating devices, refrigerators and refrigerating plants.

Mechanics includes the effect of force on matter, questions of motion, power, machines, pressure, flow and buoyancy of fluids. The effect of force on liquids is known as hydraulics, and that upon gases, as pneumatics. Mechanics is at the foundation of such engineering as bridge and tunnel building, boat making, transportation on earth and in the air, power plant and dam construction and hydroelectric development.

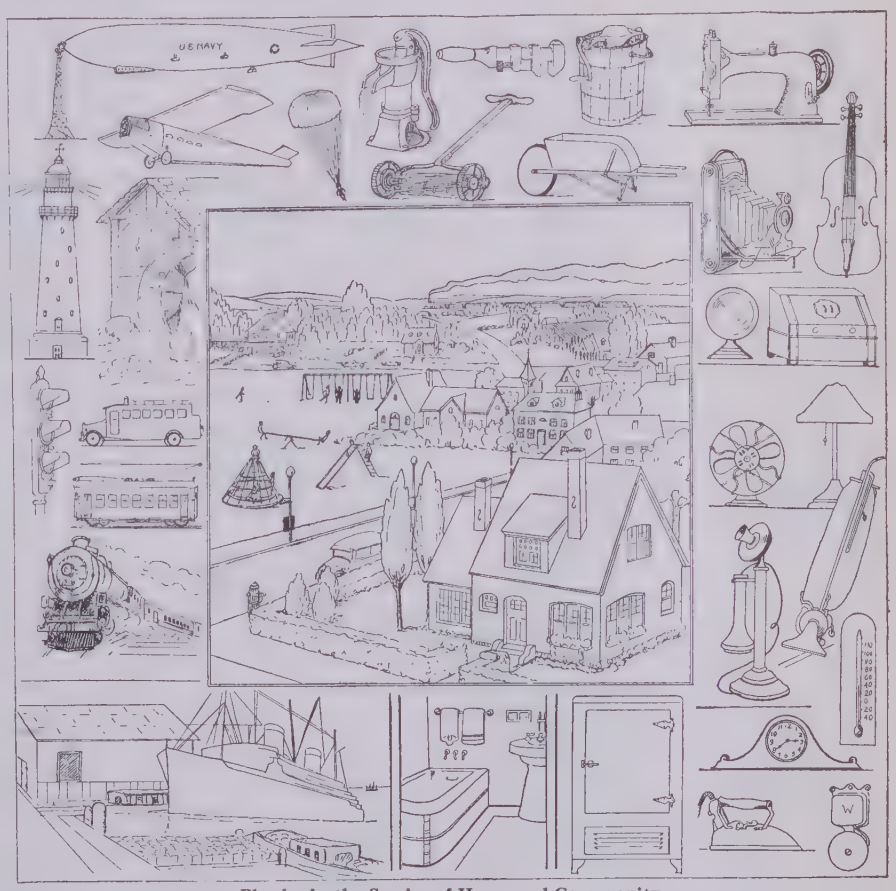
Light and sound have to do with two of our most prized senses, for we learn more through sight and sound than through all other means together. Without light we could not read nor could we see objects. Without sound we would hear nothing. Sound covers the principles of mechanical vibration by which music is produced. Light explains the relations of ether vibrations by which harmonious colors result.

Electricity and magnetism make possible electric transportation, much of our communication with people at a distance, electric heating and lighting, magnetic cranes, X-rays, violet rays and infra red rays used by physicians in treatment of disease.

Altogether, physics provides the foundation for utilizing the forces of nature for man's comfort and enjoyment, and for the enrichment of his life. And now that we have briefly outlined the field that physics covers in the practical affairs of the world, let us consider the science from a more technical standpoint.

Physics is the science which deals with the phenomena of the material world. The material world consists of matter, energy and ether. Matter is anything that has weight, as iron, water and air. There are numberless kinds of matter. Energy is the capacity to do work. There are five kinds of energy, namely: heat, light, mechanical energy, chemical energy and electricity. Ether is a weightless medium which many scientists believe fills all space, and which makes possible the passage of energy by radiation. Thus heat and light are brought from the sun to the earth as ether waves, and ether waves carry electrical energy from the broadcasting stations to radio receiving sets. Matter and energy are employed in harmonious relationships for all manifestations in the physical world about us. Neither is of any value except by association with the other.

Molecules. All matter is composed of tiny particles called molecules. We would need microscopes far more powerful than any that exist to see one of these molecules. The smallest molecule is that of hydrogen. To make the molecules that are required to fill a single glass with water requires about eight million millions of millions of millions of molecules of hydrogen and half as many molecules of oxygen. In a solid, as a piece of iron, the molecules are separated by spaces greater than the diameter of the molecules. In gases, the molecules are much farther apart than in solids and liquids. One cubic inch of water makes about 1,700 cubic inches of gas (steam), but there are the same number of molecules in the cubic inch of water as in the 1,700 cubic inches of steam. In gases and liquids, each molecule has freedom of motion and may circulate so that it has a new set of neighboring molecules from time to time. In a solid, a molecule keeps in one place. The same molecules as neighbors always surround it.



Physics in the Service of Home and Community
Physics plays an important part in the activities and equipment of the home and community.

HEAT

Heat is a form of energy resulting from the vibrating motion of molecules in matter. All molecules vibrate. Increase in the vibrating

PHYSICS COVERS A BROAD FIELD OF PRACTICAL THINGS

PHYSICS

MATTER

STATES OF MATTER	IMPORTANT PROPERTIES	PRACTICAL USES
Solids	Hard Brittle Tenacious Ductile Malleable Conductors Insulators Transparent Opaque	Building materials Foodstuffs Clothing Furniture Machinery Fuels
Liquids	Mobile Resist compression Seek own level	Water for all living things Hydraulic elevators Hydraulic brakes Oils–Lubrication Oils and gasoline–Fuels
Gases	Infinite expansion Compression to small volume	Air for all living things Air for combustion Compressed air devices: Tires Air brakes Blast furnaces Tunnel building

ETHER

Without weight
Continuous
Capable of carrying wave motion

Transmits radiant energy

- Heat
- Electricity (Radio)
- Light

ENERGY

KINDS OF ENERGY	IMPORTANT SOURCES	IMPORTANT PROPERTIES	PRACTICAL USES
Heat	Natural The sun Artificial Friction Combustion	Radiated by matter Radiated as ether waves Absorbed by matter Conducted through matter Causes convection Changes temperature Causes expansion Changes state of matter Melts solids Vaporizes liquids Its removal produces cold	House heating Cooking Washing Ironing Running machinery Preparation of chemicals Reduction of ores Working metals Making castings Glass making Produce illuminating gas To run steam engine To run gas engine
Light	Natural The sun Artificial Oil lamps Candles Gas Electricity	Radiated by incandescent matter Radiated as ether waves Transmitted by transparent bodies Absorbed by opaque bodies Reflected by surfaces Refracted Produces colors Causes chemical action Photographic chemicals In leaves of plants Kills germs	House and factory lighting Street lighting Lighthouses Searchlights Headlights Aerial beacons Plant growth Photography Motion Pictures Photoelectric cell Television Disinfecting Medical application
Mechanical	Gravitational action Water power Man and Animals Steam engines Gas engines Oil engines Electric motors		Sound–wave motion of molecules Produce electricity–water falls Produce electricity–engines Operate factory machines Operate locomotives Steam Gas Electric Operate automobiles Operate steamships Operate canal locks Operate machine for engineering construction
Chemical	Fuels Foods Many chemicals	Produces Heat Light Electricity	Heat from combustion Body heat from oxidation of food Gas, oil and candle light Food produced in plants Electric cells Storage battery
Electrical	Static charges Friction Contact Induction Electric current Chemical cells Storage cells Generators	Electrostatic attraction and repulsion Electrodynamic attraction and repulsion Current electricity produces: Heat Light Motion Chemical action	High pressure discharges Lightning X-ray Violet rays Gas ignition spark Electric heating Furnaces Ranges Flatirons Toasters Electric Lighting Arc Incandescent Discharge in vacuum Electromagnets Bells Telegraph Telephone Motors Transformers Chemical action Electroplating Refining of metals Storage battery Production of chemicals

energy produces a rise in temperature. Vibrating molecules act upon the ether which surrounds them and set up ether waves. It may be in this way that the intensely hot sun sets up ether waves, some of which are radiated to the earth. When ether waves are received by matter, some of them are absorbed, thus causing an increase in molecular vibration and consequently a rise in temperature. In conduction, heat is carried along from molecule to molecule. Metals are good conductors of heat. Asbestos, glass and air are poor conductors of heat. Our wool and fur clothing keep the heat of the body in largely because of air enclosed and held by the fibers of the material.

Absorption and Radiation. Dull, rough, black surfaces absorb heat better than bright, smooth, white surfaces. Surfaces which absorb heat best also radiate heat best. If it is desired to have a device give out radiant heat quickly, its surface should be dull and rough. This is the practice in making radiators. If it is desired to hold the heat in, have a polished, bright surface as is found on the teakettle and teapot. Hot coals in a furnace or a stove radiate intense heat to the walls about. Radiated heat from the walls of the oven supplies most of the heat for baking.

Effects of Heat. The importance of heat lies in the different effects produced by it. The most significant of these are as follows: Heat may cause (1) change in size, (2) change in temperature, (3) change in state, (4) change in composition.

Expansion. Most bodies increase in size, or *expand*, when heated, and *contract* when cooled. A long iron bridge has one end fastened and the other end on rollers, with a space for it to move outward in summer and back in winter. A cold thick glass will sometimes crack when boiling water is poured into it because glass conducts heat slowly, and the inside, which is heated first by the water, expands more than the outside and so puts the glass under such strain that it breaks. A thin glass is much less liable to crack. Quartz glass expands so little that when heated red hot it can be plunged into cold water without cracking, whereas ordinary glass, under the same conditions, will be shattered into hundreds of fragments. The swelling of wood in the house in summer is due more to the absorption of moisture than to expansion by heat, because when the artificial heat used in the winter comes on, the wood dries out and shrinks.

Temperature. The conditions of matter which we designate as hot, warm and cold are due to the intensity of vibration of the molecules. When we add heat to a body and its molecules take on additional vibrating energy, the body acquires a higher temperature. The loss of this vibrating energy results in a lowering of temperature. Temperature is often confused with the amount of heat. Temperature is measured in degrees—Fahrenheit degrees in the English system and Centigrade degrees in the metric system. Heat is measured in British Thermal Units (B.T.U.). One B.T.U. is the amount of heat required to warm one pound of water 1°F. In metric units, heat is measured in calories. One calorie (small calorie) equals the amount of heat required to warm one gram of water 1°C. A large calorie equals 1,000 small calories; the large calorie is used in measuring the heating value of foods. Changes in temperature are usually measured by means of a thermometer. Very high temperatures are measured by means of pyrometers. We use mercury or colored alcohol in our common thermometers. The expansion of a liquid when heated makes it possible, when a suitable scale is provided, to use this change in size in measuring temperature.

Mercury can be used for measuring temperature as high as its boiling point, 670°F. And in a nitrogen filled thermometer, with a strong, glass tube to stand the pressure, it is possible to measure temperature above 700°F. Mercury can register —39°F. before it freezes. Alcohol can register temperature down to —200°F. before it freezes. It is therefore useful in cold latitudes.



Water in Three States
The solid (ice), liquid (water) and gaseous (steam) states of water are all shown here.

When healthy, the human body has a temperature of 98.6°F. Temperatures below this are subnormal, and those above indicate fever; 100° is slight fever, 102° moderate fever, 104° high fever. Above 104° is very high fever and indicates an extremely dangerous condition. It is always best to call a physician if the body temperature gets to 101° or over.

We keep our living rooms at about 70°F. If the relative humidity (percent of saturation) is 60 to 70, we may be comfortable at 68°F.; but when the air gets very dry, that is, when the relative humidity is low, the rapid evaporation of moisture from the body cools us, so that we must have the room at a higher temperature. The heat in our body is produced by the oxidation of the foods we eat. This oxidation goes on in all the cells of the body.

States of Matter. The state of matter—solid, liquid or gas—is, in most cases, determined by its temperature. Under normal conditions water below 32°F. is *solid* (ice); between 32° and 212°F. it is *liquid* (water); and above 212°F. it is *gas* (steam). Water changes into a gas at all temperatures. When this change takes place at the surface, it is called *evaporation*. When water at sea level is heated to 212°F., bubbles of gas (steam) form in the bottom of the container where heat is applied. These bubbles rise through the liquid and escape. This process is called boiling. *Vaporization* is a term that includes both evaporation and boiling. Steam is at the same temperature as the boiling water from which it comes, but it has stored in it a large amount of heat absorbed during the change in state. It is this stored, or latent, heat which is liberated when steam condenses in the radiators which warm our rooms in steam-heated buildings.

When one pound of steam condenses it gives up 965 B.T.U. and the resulting water is at the same temperature that the steam was. It is because of this heat that a burn from steam is much severer than a burn from boiling water which has just as high a temperature.

Solids like wax, lead, ice and lard can be changed to liquids by means of heat. The process is called *melting*, or *fusion*. Each substance has a definite temperature at which the change occurs. This temperature is the melting point of the substance. Ice melts at 32°F. and water freezes at the same temperature. When 144 B.T.U. are added to one pound of ice at 32°F. it becomes one pound of water at 32°F., and when one pound of water at 32°F. freezes it gives out 144 B.T.U.

Artificial Cold. Every pound of ice which melts takes 144 B.T.U. from surrounding bodies. When ice and foods are enclosed in a box with heat insulating walls, as in a refrigerator, the foods supply the heat which melts the ice; they are cooled by this loss of heat. If the hand is wet with a volatile liquid, as ether or gasoline, and moved in the air, the liquid quickly evaporates and gives a sensation of cold. This principle of cooling is employed in home electric refrigerators. When compressed, some gases as sulphur dioxide and methyl chloride, for example, become liquid and give out heat. This heat is liberated in a *condenser* outside the refrigerator. The liquid then passes from the condenser to the *expansion coils* in the refrigerator; here the liquid *changes to a* gas and *expands*. Both processes absorb heat. In this way the refrigerator is cooled. The expansion coil is connected with a pump which draws the gas out and compresses it again. The pump is driven by means of an electric motor.

Artificial cold is produced on a much larger scale for cold storage warehouses, ice making and indoor skating rinks. The principle of cooling is the same as in the home electric refrigerator, but ammonia is used inside the circulating pipes. The gas is compressed to a liquid in the condenser and the heat removed, often by running water. The expansion pipe is sometimes surrounded by brine in which cans of water are frozen for the purpose of producing ice. The cold brine itself may be pumped through pipes which pass around the walls of rooms or show cases which are kept cool. Thermostats automatically control the degree of cold so that a room may be kept at any desired low temperature.

MECHANICS

Mechanics is the science that treats of force and its effects. A *force* is a push or a pull. Whenever force is applied there are two actions equal and opposite in direction. All kinds of matter have four important general properties: *inertia, gravitation, capacity for carrying energy* and *elasticity*.

Inertia. Bodies at rest remain at rest until acted upon by some force great enough to move them. Bodies in motion continue to move with uniform motion unless acted upon by some outside force. The tendency of a body at rest to remain at rest is called *inertia*, and the tendency of a moving body to continue in a state of motion is *inertia of motion*.

A ball rolled over the floor soon stops. A spinning top soon stops. Why? Frictional force stops them. The friction between any two bodies moving in contact opposes the motion. The wheel of an inverted bicycle once set into motion rotates a long time. The friction has been reduced at the axle by the use of greased ball bearings. Roller bearings in the automobile wheel axle accomplish the same purpose. If the friction at the axis and the friction of the air against the wheel could be entirely removed, the wheel once set into motion would never stop. The earth rotates on an imaginary axis, and moves through space without frictional force. We, therefore, see no reason as far as opposition by friction is concerned, why it will ever stop rotating on its axis once in twenty-four hours, thus giving us day and night, or why it should ever stop revolving around the sun once a year, thereby giving us our four seasons.

Gravitation. Every particle of matter in the universe attracts every other particle with a force equal to the product of their masses and inversely as the square of the distance between them. We are particularly interested in the application of this law to the earth. The attraction of the earth for bodies at or near its surface is called *gravity*. The measure of gravity is *weight*. It is the weight of water that gives it its buoyant force on boats, and the weight of air that gives it its buoyant force to support balloons and airships. There is a point in a body called its *center of gravity*. The body acts just as it would if all the weight of the body were concentrated at that one point. A line from the center of gravity of a body to the center of the earth must always pass within the base of support of the body, or it will tip over.

Capacity for Carrying Energy. Mechanical energy is of two kinds, *kinetic* and *potential*. Kinetic energy is the energy of motion. Potential energy is the energy stored in matter by its advantageous position. When doing work may be one of three types, (1) gravity—lifting a body to a higher elevation; (2) friction—moving a body in contact with another so that surfaces of the two rub together; (3) inertia—starting a body from rest, or stopping a moving body. The English unit of work is the foot pound which is equal to the work done when a resistance of one pound is overcome through a distance of one foot. One horse power equals 33,000 foot pounds a minute.

Elasticity. Elasticity is the ability of matter to recover its original size and shape when the force which distorts or compresses it has been removed. The elastic limit is the point beyond which the body which has been distorted will not return to its original shape and size.

Engineers must plan their bridges so that no loads will distort the steel beams beyond the elastic limit. The elastic power of compressed steam must be understood by the man who designs a new steam engine. Liquids can be compressed very little, and because of this fact, water, glycerine and other liquids are used in machines to produce tremendous pressures. They are used also in hydraulic elevators and in hydraulic brakes of some automobiles. Gases are easily compressed. Each time the pressure is doubled, the volume is halved. One thousand cubic feet of air compressed to 100 cubic feet will exert a pressure of 147 pounds per square inch. Because of its elasticity, compressed air expands when pressure on it is removed. It is used to do work in many ways, as in air brakes, air blasting and road drills.

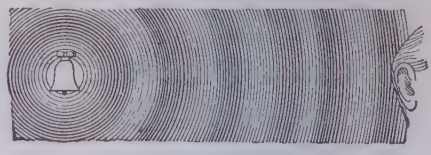
	C do	*D* re	*E* mi	*F* fa	*G* sol	*A* la	*B* ti	*c* do	*d* re
Major Triads	4	.....	5	.....	6	.....	.....	(8)	.....
	...	...	...	4	...	5	...	6	.....
	.....	(3)	.....	.....	4	.....	5	.....	6
International Pitch	261	293⅝	326¼	348	391½	435	489⅜	522	587¼
Orchestral Pitch	264	297	330	352	396	440	495	528	594
Scientific Pitch	256	288	320	341	384	427	480	512	576

desired, this potential energy can be released, and an equivalent amount of kinetic energy will result. A moving cannon ball strikes a building; the waves of the ocean beat against the shore, and falling water drives a waterwheel. In all of these examples a moving body does work, and they illustrate the utilization of kinetic energy. Water held at a high elevation, a wound spring in a watch or clock, and compressed air illustrate matter in a position of advantage. They have stored energy which can be released at will to do work. The resistance which is overcome in

Two upper diagrams on this page, upper diagram on p. 951, illustrations on p. 952 and diagram on p. 956 from Whitman's *Household Physics* [Wiley].

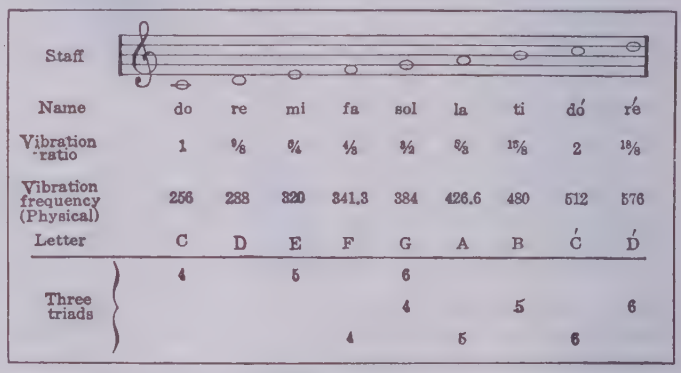
SOUND

A body vibrating between 16 and 40,000 times a second in an elastic medium such as air causes audible waves of the same frequency as those of the vibrating body. These waves are spherical and rapidly diminish in intensity. When these waves come to a person's eardrum, they cause it to vibrate.



Sound Waves in Air

Sound waves are spherical in form and consist of alternate bands of condensed and rarefied air.



The Musical Scale

The vibration rates given above are the standard ones of the physicist. Those used by the musician are slightly different.

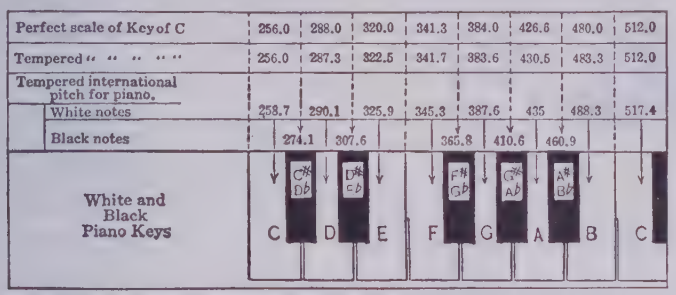
The bones in the middle ear carry the impulses on to the inner ear where the nerves take up the message and carry it to the brain. The person then receives the sensation of sound. Three important characteristics of sound are *intensity*, *pitch* and *quality*.

Intensity or Loudness of Sound. By striking the piano key harder, the wire is made to vibrate through a wider space. This increases the loudness. A sounding tuning fork held with the tip of the handle upon a piano cover or a table, forces a large surface into vibration and this makes the sound louder. A sounding body held at the mouth of a hollow cylinder will be reënforced when the length of the air column is right. The cavity of the mouth acts as a resonant chamber to increase the loudness of a Jew's-harp.

Pitch. Perhaps you have a pitch pipe which gives you a certain musical note. Every musical note is due to a definite number of vibrations per second. High, shrill notes have many vibrations and low, bass notes have few vibrations per second. The frequency of vibration determines the pitch of a sound.

Quality. You easily distinguish between a sound coming from a piano, a violin and the human voice even though they all have the same number of vibrations per second and are of the same loudness. This is possible because they differ in quality. The mingling of overtones with the fundamental tone changes the wave form, and makes it complex without altering its frequency. The overtones may be produced in stringed instruments by a wire vibrating in segments at the same time that it vibrates as a whole. In the voice, the resonant air chambers may be changed and thus change the wave form.

Stringed Instruments. The natural rate of vibration of a wire depends upon length, thickness and tension. Just as a short pendulum swings faster than a long one, so a short wire vibrates more times a second than a long one of the same diameter and material. Halving the length doubles the number of vibrations and raises the pitch one octave. The thicker vocal cords of a man give lower tones than the more delicate vocal cords of a woman. By virtue of this she can produce the higher and shriller tones. The piano tuner makes a string give a higher note when he increases its tension. In order to lower its pitch, he loosens it or gives it less tension.



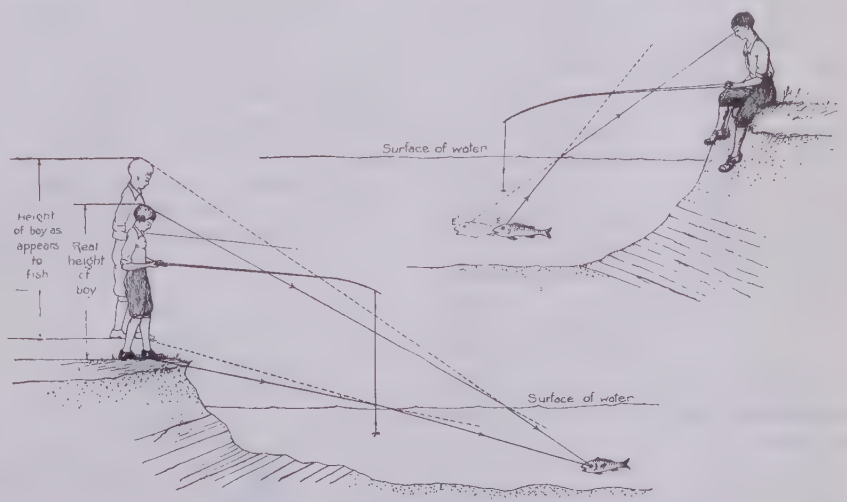
The Tempered Scale

This is probably what you have in your piano. By equalizing the vibration interval between adjacent notes, music in different keys will be played.

The C on the line above the bass clef is the same as the C on the line below the treble clef. It is therefore called "middle C." In the international pitch used in music, middle A has 435 vibrations per second, and middle C has 261 vibrations per second. The ear recognizes sounds as harmonious if their frequencies are in the ratio of 4:5:6 (major triad). There are three major triads C-E-G, F-A-c, and G-B-d. These give the basis for building the tones of the musical scale called the *diatonic* scale. The physicist uses a tuning fork of 256 vibrations per second as his standard for middle C. A piano, tuned with middle C having 256 vibrations per second and other notes in proper ratio, will produce harmonious music; but it will be of lower pitch than that commonly used by musicians.

To obtain a succession of notes of equal intervals on the piano, five black notes are added in proper places in each octave between the white keys, thus giving twelve steps between C and c. This is called the *chromatic* scale. In tuning a piano, the interval between any two notes is made the same. This varies a little from the values given in the diatonic scale, but not enough to make a noticeable discord with a person who sings or plays a violin in the true diatonic scale. The piano tuned to equal intervals is using the *equal temperament* scale. The piano and harp have a wire for each note. Other instruments, such as the violin, banjo, cello and mandolin, have few strings; but by fingering, each string may be made to produce many notes of different pitch.

Wind Instruments. The organ pipe and tin whistle are two of the simplest wind instruments. Air is set into vibration as it moves across the sharp edge of the opening, and the tube increases the sound by the principle of resonance. If the outer end of the pipe is closed, the pitch is an octave lower than when it is open. In the trombone, a sliding tube changes the length of the air column. Lip vibrations produce the sound in the bugle and cornet. In the cornet there are three extra loops of pipe which can be added by pressing a key, but the cornetist depends largely upon changing the shape of his lips and the wind pressure to make overtone vibrations in producing additional notes. In the bugle it is the air pressure and lip action which cause overtones that make different notes possible, since there is no way of changing the length of the vibrating air column. The clarinet and saxophone have a vibrating reed in the mouthpiece; but in them, as in the flute, different notes are produced by varying the length of the air column. By opening holes in different places along the tube, the effective length of the air column is changed.



Refraction of Light

Refraction causes an apparent displacement of the fish as seen by the boy (E, the actual fish; E′, as the fish appears to the boy). Refraction causes the boy as seen by the fish to appear taller than he really is.

LIGHT

Luminous bodies like the sun, stars, electric lights and burning candles give out light of their own. *Non-luminous* bodies like the earth, stones, trees and chairs are visible only when they receive light and reflect it to our eyes. It is a generally accepted theory that light is carried as waves in the ether. Light travels 186,000 miles a second. Light, just leaving the sun now, will reach the earth in eight minutes.

Three things may happen to light when it comes to a body of matter. It may be *reflected*, *transmitted* or *absorbed*. Usually two of these occur and, in the case of transparent bodies, all three are involved.

Reflection. When light goes from your face to a mirror and comes back to your eyes, you see an image of your face. This cannot happen in a dark room. There must be light which your face can reflect. Then the mirror reflects some of the light it receives from your face.

A smooth surface reflects a beam of light in another beam, but a rough surface scatters or diffuses it. Surfaces which diffuse light are better in our homes and books. A smooth page often makes a glare which is harmful to the eyes. Fewer rays of light are reflected from the surface of glass when they are perpendicular to it than when they are very oblique.

Transmission. Bodies are called transparent (as clear glass), translucent (as frosted glass) or opaque (as wood), depending upon their action in transmitting light. When a transparent body transmits light, the light may pass straight through or it may bend according to the laws of refraction. A body may be transparent to certain rays and opaque to others, as in the case of colored glass.

Refraction. Refraction is the bending of rays of light upon passing from one transparent medium to another of different density. Rays perpendicular to the surface between the media are not bent, but all others are. The bending is caused by the fact that matter slows up the light beam. Owing to refraction, a stream looks shallower than it really is, and objects partly in and partly out of water may appear bent, while in reality they are straight. The illustration shows how bending of rays of light, in passing from water to air and from air to water, causes deception. To the boy fishing, the ray of light from E seems nearer the surface of the water and to start from E′. To the fish the boy looks taller than he really is.

Lenses. When glass is made with rounded surfaces, thicker in the middle than at the

edges, it is called a *convex lens*. It has the power, through refraction, to bring rays of light to a point as in a burning glass, to make images of objects on screens as in the camera, to aid vision as in our spectacles, and to magnify bodies as in the reading glass and in the microscope. A *concave lens* is thinner in the middle than at the edge. It will not make a real image; but an unreal image, smaller than the object, can be seen by looking through the glass at the object.



Early Development of Artificial Lighting
The evolution of artificial lighting from the pitch knot to the kerosene lamp covered a period of 6,000 years.

Absorption. When light energy is absorbed by matter it makes the molecules vibrate with greater energy, thus increasing the temperature of the body. White reflects the greater part of light it receives, while black absorbs the greater part. Selective absorption results in color.

Color. When a beam of sunlight enters a triangular glass prism at a large angle of incidence, a band of *spectrum colors* can be produced upon a white screen. These spectrum colors—red, orange, yellow, green, blue, violet—were all present in the white light from the sun, but were separated by refraction in the prism. Color is a property of light determined by wave length. The wave length of red light is 0.000068 cm., and of violet, 0.000042 cm. The wave lengths of other colors lie between these extremes. When the material in a body absorbs all the light rays except those which have the wave length of red, we say the body is red. Red glass in our windows allows only the red rays to enter. A dress which is blue in daylight will appear black in a room in which light enters only through red glass.

Color Nomenclature. Any two colors which, when mixed, produce a neutral gray, are *complementary colors*. The following pairs are complementary: violet and yellow, blue and orange, green and red. The dominating spectrum color in any mixture is called its *hue*. The *intensity* of any color is softened by mixing a little of its complement with it. The *value* of a color is modified by mixing it with white or black. With black, a *shade* results; but with white, a *tint* is produced. Yellow, green and blue and their tints are called *cool colors*, while violet, red and orange and shades of them are *warm colors*. Any hue may be mixed to indicate both the predominant and the modifying color as well. For example, a little green added to blue gives a green-blue, but a little blue added to green gives a blue-green. Any color appears brighter against a black background and darker against a white background. Complementary colors all harmonize. They also give the strongest contrast.

Mixing Light and Mixing Pigments. Red, green and bluish-violet light can be mixed in proportions to produce white light. By varying the amount of them, any other color can be produced. Since the other colors can be produced from these, they are called the three *primary colors*. Pigments of paints show the color, due to the wave length of rays they reflect from white light, all other colors being absorbed.

The three primary pigments—peacock blue, yellow and crimson (orange red)—seen in white light are complements of the three primary colors. Since the color of the pigments is due to subtracting colors, the mixture of the three will absorb all light and produce black. But the mixture of two of them will produce another color; for example, the blue pigments reflect some green with the blue, but they absorb all yellow. The yellow pigments reflect some green with the yellow, but absorb all blue; hence, when yellow and blue pigments are mixed, all green which is reflected by both is the result. By this principle different colors are produced by various combinations of the primary pigments.

Color Printing. Three photographs are taken of a colored object through three gelatin filters, each stained with one of the three primary colors. Three plates for printing are made from these photographs. The prints are carefully placed so that they will all register on exactly the same spot on a piece of white paper where the print is to be made. Each plate prints a different color; the inks used have the colors of the three primary pigments. In the process of printing, the three plates superimpose one color on another in such amounts that the original colors of the object are reproduced.

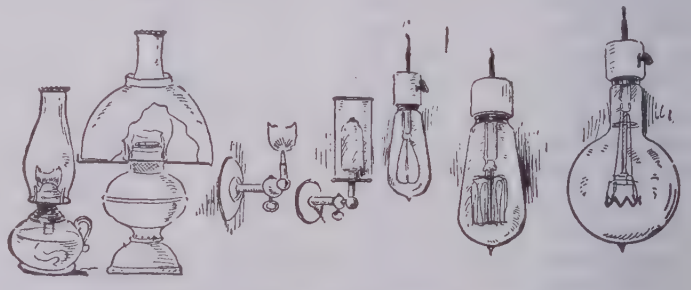
Ultra-violet Rays. Just as the sun sends out waves (heat waves) longer than those which are visible, so it also sends out invisible waves at the end of the spectrum. These rays, just a little shorter than those which produce violet light, are called the *ultra-violet rays*. These are abundant in sunlight and are responsible for tanning our skin, for sunburns, for chemical activity in plants and in photography. They have a curative power when properly used. Quartz glass and some special trade glasses transmit much more of the ultra-violet rays than ordinary glass does. The ultra-violet rays can be produced artificially.

ELECTRICITY

Electricity is a form of energy which can be passed over wires to light our lamps, heat our ranges and turn machinery. Or, electricity may charge bodies so that they will attract or repel other bodies. Franklin showed that electricity is the same identical form of energy that accumulates at times in the clouds and produces lightning.

For many years scientists have said, "We know what electricity can do, but we do not know what it is." Recent advances in scientific knowledge have dispelled much of the mystery that has surrounded electricity for so long a time. The central nucleus of all atoms consists of *protons*, and about these are other bodies, called *electrons*. The electrons revolve in orbits about the central nucleus much as planets revolve around the sun. Electrons are negative electricity, and protons are positive electricity. (See article on "Chemistry" for more details of electrons and protons in the atom.)

The name "electricity" is derived from the Greek word *electron*, meaning "amber." When the ancient Greeks rubbed amber with wool, some of the electrons moved from the wool to the amber, giving it an excess of electrons. The amber thus became *negatively electrified* and would attract light bodies. The wool, having lost electrons, had an excess of protons and became *positively electrified*. Friction was the only artificial source of electricity employed until Galvani, near the end of the eighteenth century, accidentally obtained it by the contact of two metals with the moist leg of a frog. Volta developed Galvani's discovery, and in 1800 invented the first *galvanic* or *voltaic* battery by which a *current of electricity* was produced.



Recent Development in Artificial Lighting
Within a period of fifty years the kerosene lamp has been followed by gas, the gas mantle and the various types of incandescent electric lamps.

There are two types of electrical action: attraction and repulsion of electric charges *at rest*, called *electrostatic*, and attraction and repulsion resulting from the magnetic effect of electricity *in motion* or current electricity, called *electro-dynamic action*.

Conductors and Nonconductors. When a metal rod is held in the hand and rubbed with wool, no electric charge is detected on the metal. If the metal rod is held in the hand which is covered with a heavy rubber glove and then rubbed with wool, it will have an electric charge. In the first case electricity was produced, but was conducted away into the hand and body. In the second case the electricity remained on the metal, because rubber does not conduct electricity.

Depending upon their ability to conduct electricity, materials are classified as conductors, poor conductors and nonconductors. Nonconductors are also called insulators. The following table shows the relative conducting power of common substances:

Good Conductors	*Poor Conductors*	*Insulators*
metals	moist air	dry air
"lead" in pencil (graphite)	pure water	rubber
carbon in battery	kerosene	mica
water solution of acid, base and salt	wood	bakelite
	paper	paraffin
	cotton	porcelain
	wool	

Examine the crossbars on poles along the streets which support electric wires. Can you find insulators? Heavy insulators must be used in high tension circuits. In your home, you find insulators as the base of switches, light sockets and fuse blocks. Wire for the powerful electric light current is insulated by covering with rubber, several layers of cotton, and waterproof material outside of all. For an electric bell, a double cotton cover is sufficient insulation. The production and transmission of the electric current would not be possible were it not for the fact that some materials are conductors and others are insulators.

Electrostatics. All neutral bodies have equal numbers of electrons and protons. When this balance is disturbed as, for example, by friction between two unlike bodies, an excess of electrons on one gives it a negative charge, and an excess of protons on the other gives it a positive charge. If these charged bodies are conductors or are conducting materials which are insulated, the charges remain at rest and are called *static charges*. Glass rubbed with silk becomes positively charged, but rubber rubbed with silk, wool or fur becomes negatively charged. Oppositely charged bodies attract each other, but bodies with like charges repel. The force of attraction or repulsion varies directly as the product of the charges, but inversely as the square of the distance between them.

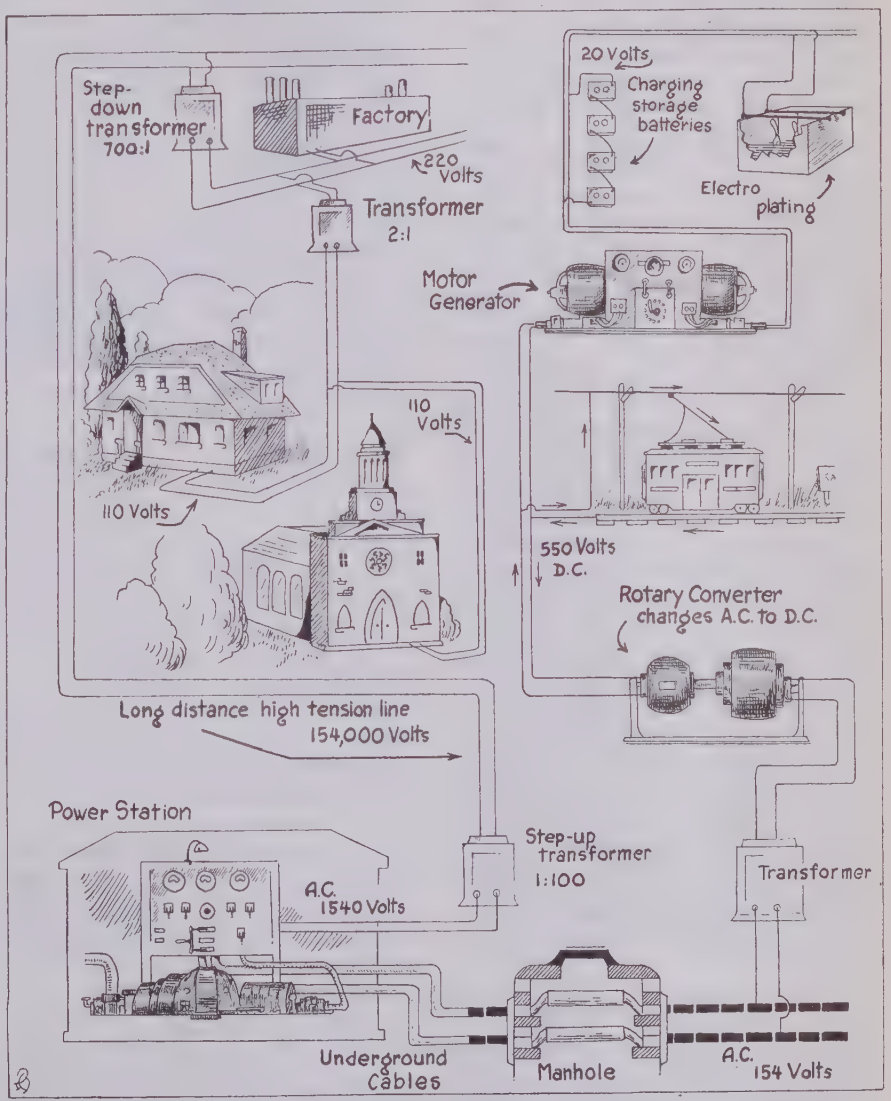
$$F \propto \frac{\text{charge 1} \times \text{charge 2}}{\text{distance}^2}$$

When a charged body is brought near a neutral body it causes a separation of electrons. If the charging body is positive it attracts electrons to the side near it; but if the charging body is negative it repels them to the distant side. On removal of the charging body the electrons go back and make the body neutral again. By grounding a body which is under the influence of a negative charge, the earth receives electrons; and by breaking the earth connection before removing the negative body, the return of electrons is prevented. The body thus becomes permanently electrified. This process is called *induction*.

Lightning. Two insulated conductors may be so heavily charged respectively with positive and negative electricity that when they are brought near each other they overcome the high resistance of the air and an electric spark passes between them. Since induction may produce an opposite charge in the side of a body near a charged body, a discharge may also occur between a charged body and a neutral body. This action, which is shown on a small scale in the laboratory, occurs on a huge scale in nature.

Under certain conditions, raindrops falling through a strong ascending current of air are broken into a spray. The fine particles receive a negative charge, and the larger particles a positive charge, of electricity. The positively charged raindrops, being heavier than the finer, separate and fall to the earth, thus removing the positive electricity from the atmosphere. The negatively charged spray may gather in a cloud. The continued accumulation of electricity produces such heavy charges that the resistance of the air between cloud and earth breaks down, and a lightning flash results. It is possible for the positively charged particles also to form a positively charged cloud, and lightning may then pass from one cloud to another, but this is rare. Most of our lightning is between negatively charged clouds and the earth.

Lightning heats and expands the air. Upon cooling, a partial vacuum results, and the meeting of molecules of air pushed into the vacuum by atmospheric pressure produces the sound we call thunder. Light travels practically instantaneously, while sound



Electricity at Work

Showing some of the uses of electricity for light and power, and illustrating some of the changes incident to the transmission and varied uses of electricity.

travels about one-fifth of a mile a second. If we count the seconds between the flash and the thunder coming from it, we can tell how far away the lightning is; allow five seconds to the mile. Bodies extending above the earth shorten the distance for lightning to travel through the air to reach the earth, and so are common targets for the lightning. Lightning rods, extending above our buildings and reaching down deep enough into the earth to be always in moist earth, allow a discharge between clouds and earth without using the buildings as part of the discharge path. Man-made lightning, produced by discharging electricity at over a million volts, is used in laboratory studies of the nature and control of lightning.

Electricity and Magnetism. In 1819, Oersted discovered that a wire carrying a current of electricity was surrounded by a magnetic field. Two parallel wires carrying currents will be attracted if they carry current in the same direction, but will repel each other if the current flows in opposite directions. In 1831, Joseph Henry wound insulated wire around a soft iron core and produced the first electro-magnet made in America. By control of the electric current, it is possible through the magnetic force to ring bells, operate telegraph and telephone instruments, drive motors, and lift tons of iron or steel by means of powerful lifting magnets. In 1831, Faraday, in England, discovered that a closed coil of wire, if moved so that it cut lines of magnetic force, would have a current of electricity generated in it. The use of this principle in generators in our power stations is responsible for the great development of electricity today.

Electric Units. The *ampere* is the amount of current which is required to deposit silver at the rate of 0.001118 gram per second. The resistance offered by any conductor to the flow of an electric current is measured in ohms. An *ohm* is equal to the resistance offered by 1,000 feet of No. 10 copper wire. In order to drive electricity along a conductor, there must be electromotive force or electric pressure. A *volt* is that electromotive force required to drive a current of one ampere through a resistance of one ohm. The relation of these three units is expressed in Ohm's Law, as follows:

$$\text{I (amperes)} = \frac{\text{E (volts)}}{\text{R (ohms)}}$$

If you find by test with an ammeter that one dry cell (voltage is 1.5) sends .5 amperes through an electric bell, you find the resistance of the wire in the bell is three ohms as follows:

$$.5 = \frac{1.5}{x}, \text{ hence } x = 3 \text{ ohms.}$$

The unit of electric power is the *watt*. It is the amount of power developed by a current of one ampere and electromotive force of one volt.

volts x amperes = watts.

One horsepower equals 746 watts. A kilowatt-hour equals 1,000 watts for one hour. If you pay 10c a kilowatt-hour for electricity and burn five 100-watt lamps for four hours the cost of lighting will be:

$$\frac{5 \times 100}{1000} \times 4 \times .10 = .20 \text{ or } 20\text{c.}$$

The Generator. By far the most important electrical machine is the generator (dynamo). In one type of commercial generator a rotor is rotated inside a stator. The rotor, or armature, has a number of electro-magnetic poles alternating north and south. A direct current carried through brushes to rings connecting with the ends of the wire of the rotor produces the magnetic fields which are moved so that the coils of wire on the iron ring of the stator cut the lines of force. Since each coil receives lines of force alternately from north and south poles, the current generated will be an alternate current.

Transformers. When two coils of wire have one iron core in common, and an alternate current is sent into one coil, called the *primary* coil, the lines of force coming to and going from the other, or *secondary* coil, produce a series of currents in it by the principles of induction. The device is called a *transformer*. The voltage in the two coils varies directly as the number of turns of wire in the two coils; thus the voltage will be raised if the secondary has more turns of wire than the primary, but will be lowered if the secondary has less turns than the primary.

The number of amperes will change inversely as the volts, so that the watts in the primary always equal the watts in the secondary. Electricity can be transmitted at high voltage and low amperage with less loss of energy than at low voltage and high amperage. The heat effect of an electrical current varies as the square of the current. There is some heating in all conductors; but if the current is doubled, the heat developed is four times as much. To prevent this loss in heat, long distance transmission is at a high voltage. This can be stepped down to low voltage where it is to be used.

Sources of Electricity. There are two important sources of electricity; namely, chemical energy and mechanical energy. A chemical cell requires two plates of unlike material and an electrolyte. In one type of wet cell, ammonium chloride in water solution is the electrolyte, and the two plates are carbon and zinc. Mechanical energy is used to rotate coils of wire in a dynamo in such a way that the coils cut lines of magnetic force. The mechanical energy is derived from falling water, from steam engines and, to a limited extent, from gas and oil engines.

Chemical Cells. The dry cell used for ringing door bells, in flash lamps, and as the B-battery for the battery operated radio, have two plates, zinc and carbon, separated by a paste which contains ammonium chloride. The carbon pole is positive and the zinc, negative. Each cell has a pressure of 1.5 volts and, when new, should give 27 or more amperes of current on short circuit.

Each cell of the storage battery contains positive lead plates having perforations filled with lead peroxide, and negative plates filled with gray spongy lead. The electrolyte is a solution of sulphuric acid in distilled water. When the battery is used, chemical action causes some of the oxygen to be transferred to the spongy lead. When both plates contain about the same amount of oxygen, no more current will flow. It is recharged by passing a current into it in the opposite direction from that produced by the cell. This removes the oxygen from the spongy lead, and adds it to the positive plate. The storage cell does not really "store" electricity. The electricity put into it causes chemical action which will reverse itself and produce electricity. The ordinary lead cell gives two volts. The capacity is indicated as *100 ampere hours*, which means that a battery of this rating will give one ampere of current for 100 hours, 4 amperes for 25 hours, or 25 amperes for 4 hours. The battery should not fall below 1,200, hydrometer test, before recharging it. It reads, 1,280 to 1,300 when fully charged and 1,140 when "empty."

Hydroelectric Development. Recent years have seen much activity in developing great water power projects. At Niagara, at Muscle Shoals and at Conowingo, electric plants are already using hundreds of thousands of horse power of mechanical energy derived from falling water. This is changed into electric energy, some of which is carried hundreds of miles away for use. The most efficient type of water wheel is the water turbine. Water flows through a penstock, at the bottom of which the turbine is placed. The turbine is on a vertical shaft which extends to the power house above, where the rotor of a generator is turned by this same shaft.

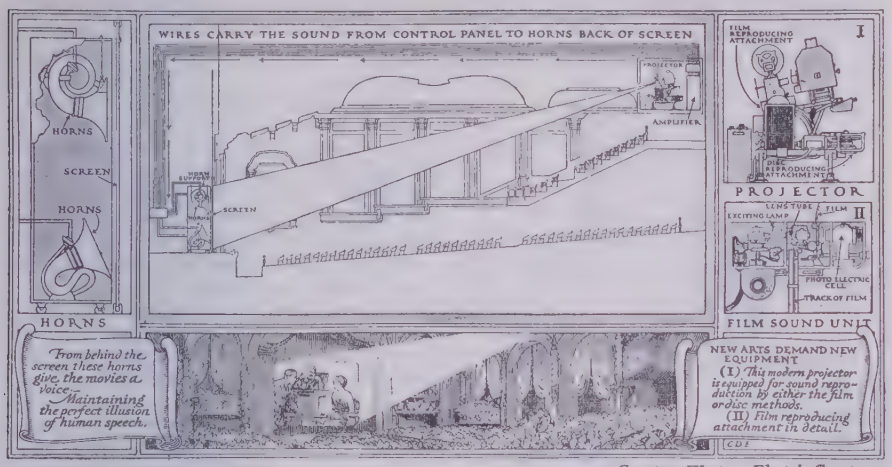
The Conowingo power house is twelve miles above the mouth of the Susquehanna River. The seven 54,000 horse power water turbines already installed deliver on an average about 1,250,000,000 kilowatt-hours of energy annually to Philadelphia. During low water and for "peak" loads at other times, steam-produced electricity will be used. The installed capacity at Conowingo is exceeded only by that at Niagara. About 13,000,000 horse power have been developed in the United States. This is one-third of the total amount which is available ninety per cent of the time.

Radio. Radio includes what has sometimes been called "wireless" telegraphy, radio broadcasting and receiving, and the radio telephone. Marconi developed the first practical system of radio telegraphy. In 1907 Lee de Forest added a grid to the two-element vacuum tube and thereby laid the foundation for radio broadcasting and the radio telephone. (See special article on "Radio.")

The Photoelectric Cell. The photoelectric cell, popularly called the "electric eye," is the life of many new electrical devices. The bulb of the cell has an opaque covering, except for a small window for light to enter. On the inside, and opposite the opening, is a small piece of bright potassium metal very sensitive to light. One wire is connected to this metal; the other terminal is joined to a ring of wire in the center of the bulb. When a beam of light passes through the opening and strikes upon the light-sensitive potassium, the potassium emits electrons, and a current thus set up may be used in many ways. It may operate a traffic signal when it receives light from an automobile headlight. It may automatically turn the lights on in a room when it is too dark. It may serve as a counter, making a record of each interruption in the beam of light; it will sort out materials according to color or imperfection, or give

an alarm if smoke from fire is produced in its neighborhood. It is also an essential part of devices used in radio television.

The Telephone. In a telephone, the transmitter, which is a sound-sensitive instrument (an electric ear), receives the sound through them, and the current varies according to the sound produced in front of the transmitting microphones. The sound record may be made on the edge of the same film which has the picture, or it may be made upon a separate film. The sound film, when



Courtesy Western Electric Company

Making the Moving Pictures Talk

waves and converts them through changes in resistance into electric impulses which may travel long distances to the other end of the telephone circuit. When these electric impulses enter the receiver, they produce (by electro-mechanic means) sound waves, which are duplicates of those at the other end of the line.

Television. The steps employed in television are very similar to those used in the telephone. At the sending end there is a photoelectric cell (a light-sensitive instrument, or electric eye), which receives light from the object whose image is to be transmitted. The photoelectric cell converts the energy of the light received into electric impulses which vary in intensity in proportion to the intensity of light. At the receiving end, an instrument is employed which is capable of converting these electric impulses back into light in such a way that an image is produced which duplicates the object at the sending end.

Sound Pictures. Sound pictures, popularly called "talking movies," combine two of our modern miracles of science—the reproduction of sound that may effect the sense of hearing, and the reproduction of an image that may effect the sense of sight. A scene—words and action—may be produced, and both the picture and the sound recorded on a moving picture film. Duplicates of this film can be made so that people in a thousand different towns and cities are able to witness the scene and hear the conversation, music or other sounds which exactly duplicate those at the place of original production.

In one method of recording sound upon the moving picture film, a beam of light of constant intensity but of varying width plays upon a narrow strip of the film. The light comes to the film through a narrow opening between two parallel wires which are between two magnets. The wires move to open or close the slit according to the current passing developed, has a series of dark lines alternating with light lines of varying width. The light which can pass through the sound film will vary according to the width of these lines. In projecting from a sound film, use is made of the photoelectric cell. Light which passes through the film is received by the photoelectric cell which passes an electric current proportional to the light which it receives. This fluctuating current is amplified and taken to the loud speakers which reproduce the original sound. When the sound film is separate from the picture film, the motion of the two must be carefully synchronized. For use in the theaters, four or more loud speakers are commonly used.

RADIO

THE last few years of the nineteenth century brought with them a new means of communication—radio. Guglielmo Marconi, an Italian, had demonstrated that signals could be sent over short distances without wires connecting the two points, as in the case of ordinary telegraph systems. His invention was immediately termed "wireless," though in the past few years it has come to be called "radio," a term which applies both to radiotelegraphy and radiotelephony.

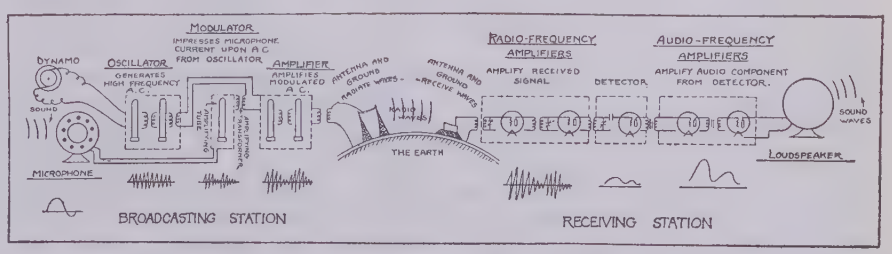
Marconi's success led other experimenters to enter the field, with the result that greater and greater distances were covered. The new system gradually emerged from the experimental stage and became practical. By 1912 it had proved its value as a means of communication between ships and from ship to shore. Vessels of several nations were equipped with radio apparatus which, in many cases, was a big factor in bringing assistance in case of disaster at sea.

Transatlantic wireless was established about this time and became a competitor with the undersea cable telegraph. Scientists were also working on the problem of transmitting the voice by wireless and were achieving some success.

Wireless and the World War. With the coming of the World War, all the nations involved were quick to see the great importance of radio. During the years of the conflict, its development was remarkable and many new applications were found. Naval vessels and fleets depended upon this means of communication with their bases. It was found that submarines could be reached by radio while running submerged. Aircraft also were enabled to maintain contact with the ground, thus permitting their use in locating objects and forces to be attacked by artillery fire and effectively directing that fire. One important wartime development that has come into importance in peace times is the "radio beacon," or "radio compass," which permits a ship or airplane to determine its position by means of radio signals.

Development of Radiotelephony. During the war great strides were made in transmitting speech by wireless and further development in the following years soon found a new application in broadcasting which, as we know it today, began in 1920. The transmission of programs to the public met with increasing favor and now represents a service which has become so valuable that many would find it hard to do without.

Physics teaches that sound is transmitted through the air by waves at a velocity of approximately 1,000 feet per second. The wave that makes one particular sound is of a definite size or length. Thus if we strike "Middle C" on a piano, 256 waves are sent out in one second, the first of which would be heard by an observer 1,000 feet away one second after the note was struck. If we



How the Radio Program is Sent and Received

struck "C" one octave higher, 512 waves would start traveling outward from the piano string with the same speed as those from the "Middle C," and the first one would reach the observer stationed 1,000 feet away in exactly the same time—one second. In one case we have sent out 256 waves in one second and in the other, 512. Since they both travel the same distance in the same time, the

"Middle C" waves must be twice as long as those of the higher "C." We can express this mathematically as follows:

$V = N \times L$

where V = velocity of the waves
N = the number of waves or "cycles" per second
L = the length of one wave

This expression may be arranged in two other ways:

$$(a)\ N = \frac{V}{L}$$

$$(b)\ L = \frac{V}{N}$$

(a) shows that, since the velocity of sound is constant for certain conditions, if we know the length of any sound wave we can tell the number of waves per second or the frequency of that particular sound. (b) shows that if we know the frequency of any sound we can tell the length of one of its waves.

The human ear recognizes, as sounds, waves of frequencies of from approximately 16 to 40,000 cycles per second. Frequencies within this range are called the "audio frequencies."

Radio waves are much the same as sound waves with the important difference that they travel through any space whether there is air in that space or not. They also travel at a speed of 186,000 miles or 300,000,000 meters per second—much faster than sound waves. If we know either the wave length or frequency of one particular radio wave we can find the other just as we do in the case of a sound wave.

Thus, if a radio station has a wave length of 200 meters, its frequency, or the number of waves it sends out in one second, is

$$N = \frac{300,000,000}{200} = 1,500,000 \text{ waves or cycles}$$

per second.

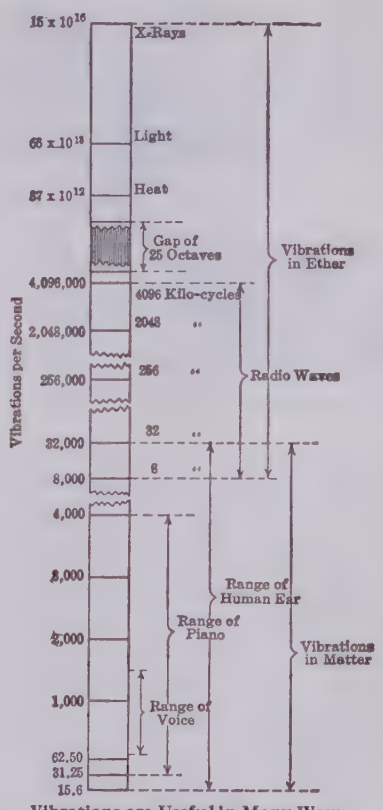
This is usually expressed as 1,500 kilocycles since the prefix "kilo" means "one thousand."

Similarly, if a station has a frequency of 500 kilocycles or 500,000 cycles, its wave length would be

$$L = \frac{300,000,000}{500,000} = 600 \text{ meters.}$$

"Radio frequencies" are those of from about 20,000 to over 300,000,000 cycles per second.

Broadcasting. Let us now examine what happens in sending a program from a broadcasting studio to those who are receiving the program. The artist stands before a microphone which is similar to that used on a telephone. This instrument changes the sound waves into electric waves which represent the singer's voice. These waves are amplified (made stronger) by sending them through audio frequency amplifiers which make use of vacuum tubes of the type found in every radio receiver. The amplified voice waves are then sent along telephone lines to the transmitting station which is usually outside the city in which the studio is located. The transmitter generates waves at some frequency or wave length which has been assigned to it by the government of the country in which it is situated. It generates these waves by means of vacuum tubes which, though often larger and more powerful than those used in radio receivers, operate in much the same manner. These radio frequency waves are often called "carriers," that is, they serve as a means of carrying the audio waves from the transmitter to the receiver. The audio frequency waves from the studio are combined with the carrier, the electrical combination of the two being



Vibrations are Useful in Many Ways

Vibrations in matter give us sound. Vibrations in the ether give us heat, light, ultra-violet rays, the x-rays and radio.

called "modulation"; or the carrier is said to be "modulated." The modulated waves are then sent out into space from an antenna, which is usually a network of wires suspended above the surface of the earth by towers.

When such waves pass a receiving antenna they "induce" in it very small voltage waves—usually no more than a few millionths of a volt—which represent exactly the modulated waves sent out by the transmitter. If the receiver is "tuned" to the wave length of the transmitting station, that is, if its electrical circuits are adjusted so that it responds to waves from that station only—just as, when a given piano key is struck, a corresponding string in another piano in the same room will start to vibrate—these feeble voltages will be accepted by the receiver while waves at any other frequencies will have no effect. The receiver amplifies them, using vacuum tubes for this purpose.

Now it was seen that the transmitter sent out a combination of the radio frequency carrier and the audio frequency wave which represented the singer's voice. Before the signal can be heard the two must be separated in some way. This is done by the "rectifier" or "detector" tube in the receiver which, after separating the two "components," allows the radio frequency—which is above the range of audibility—to be eliminated while the audio frequency wave is sent through an amplifier which makes it sufficiently strong to operate a loud speaker. The loud speaker is nothing more than a very powerful telephone receiver which changes the audio waves into sound waves and sends them around the room. Thus the singer's voice, after a very roundabout trip in which it undergoes many changes, comes from the loud speaker in the same form in which it entered the microphone. In some cases programs sent out from one station have been received and sent out from another station thousands of miles away with very satisfactory results.

Present Day Use of Radiotelegraphy. Although radiotelephony, as used in broadcasting and the transatlantic telephone and a few other services, has reached an advanced stage, it has by no means supplemented radiotelegraphy. Code transmission is still used in the majority of cases where messages are sent and received. "Automatic printers" are frequently used, in which the messages are sent and received on paper tapes at a high rate of speed.

Amateurs and Short Waves. Many boys and men in almost all countries of the world operate private stations which they have constructed themselves at little expense. These are called "amateur stations" and are licensed as such. Their owners have very interesting experiences in communicating—usually by code though occasionally by voice—with similar stations often many thousands of miles away.

During the past few years it has been found that wave lengths below 100 meters offer tremendous possibilities in long distance transmission. These are known as "short waves" and many branches of radio service make use of them. For a given amount of power at the transmitter much greater distances can be covered than by using higher wave lengths, and communication is now (1931) being carried on over wave lengths as low as five meters. It is probable that the next few years will see wave lengths of less than one meter in active use.

Regulation of Radio. Since radio has come into such common use, some means of regulation is necessary to allow it to be used to greatest advantage. The governments of almost all civilized nations have jointly agreed to adhere to certain rules. Thus a given station is licensed by the government of its country to use a certain power and wave length depending on its type of service—that is, whether it is a broadcasting station, a ship station, a radio beacon and so forth—and in this way stations of one type are assigned to certain specified bands of wave lengths. All broadcasting is done on frequencies between 550 and 1,500 kilocycles; ship to shore transmissions on 500 kilocycles and certain other specified frequencies. This eliminates much confusion and allows the maximum number of stations to operate on the available frequencies.

ZOÖLOGY

ZOÖLOGY is the science that treats of animal life. It has a framework of philosophy, but is founded on physics and chemistry. Students of zoölogy have as their aim the analysis and explanation of life, particularly of animal life.

An understanding of the general foundations of zoölogy is necessary for the study of medicine, sanitation, agriculture, sociology, psychology and eugenics.

Characteristics and Tests of Living Objects. Any one can tell, merely by looking at them, which of two given objects is a dog and which is a clod of earth; but it is not always so easy to find the exact differences which distinguish living from non-living objects. The usual tests applied to discover these differences are the following: chemical composition, metabolism, reproduction, irritability and organization. These will be briefly discussed in the order given.

We know that the bodies of animals are made up of relatively few and relatively simple chemical substances, of which the most generally found are: carbon, hydrogen, oxygen, phosphorus, potassium, iodine, nitrogen, sulphur, calcium, iron, magnesium, sodium and chlorine. The most important of these are carbon, hydrogen, oxygen, nitrogen and sulphur, which together make up ninety-nine per cent of the weight of the average animal. When these substances combine to form living matter, the result is called *protoplasm*.

Protoplasm is not a definite chemical compound. Further, it is constantly changing; yet it has a degree of constancy like that of a village from which people are always coming and going, but in spite of this shifting the village keeps the same name and, to a large measure, the same general characteristics.

Frequently the combinations making up protoplasm are very complex, even though they are composed of relatively simple and common chemical elements. Thus, muscle tissue is characterized by a very complex chemical structure; but in muscle structure, as well as in the bulk of all other animal tissue, the larger part is nothing but ordinary water. It is astonishing to know that animals with all their wonderful possibilities of growth, movement, memory, intelligence, devotion, suffering and happiness, should have seventy to ninety per cent of their weight composed of nothing more complex than water. Even this brief survey is sufficient to show that we cannot in any certain way, distinguish living from non-living matter by mere chemical analyses.

Metabolism, our next point under consideration, is also found in non-living as well as in living substances. Both types undergo growth and repair—a non-living salt crystal as well as a living animal; and both suffer partial or complete destruction, as when iron rusts or living tissues waste away.

Irritability, too, is a characteristic of both kinds of substances: it is found in dynamite as well as in animals.

Reproduction, which always occurs in living substances, also occurs in many non-living substances. They reproduce by dividing when they become too large, as do clouds under pressure of the wind.

Moreover, though we commonly call living things organisms (because of their organized structure), organization is also definitely seen in the non-living crystals and their like.

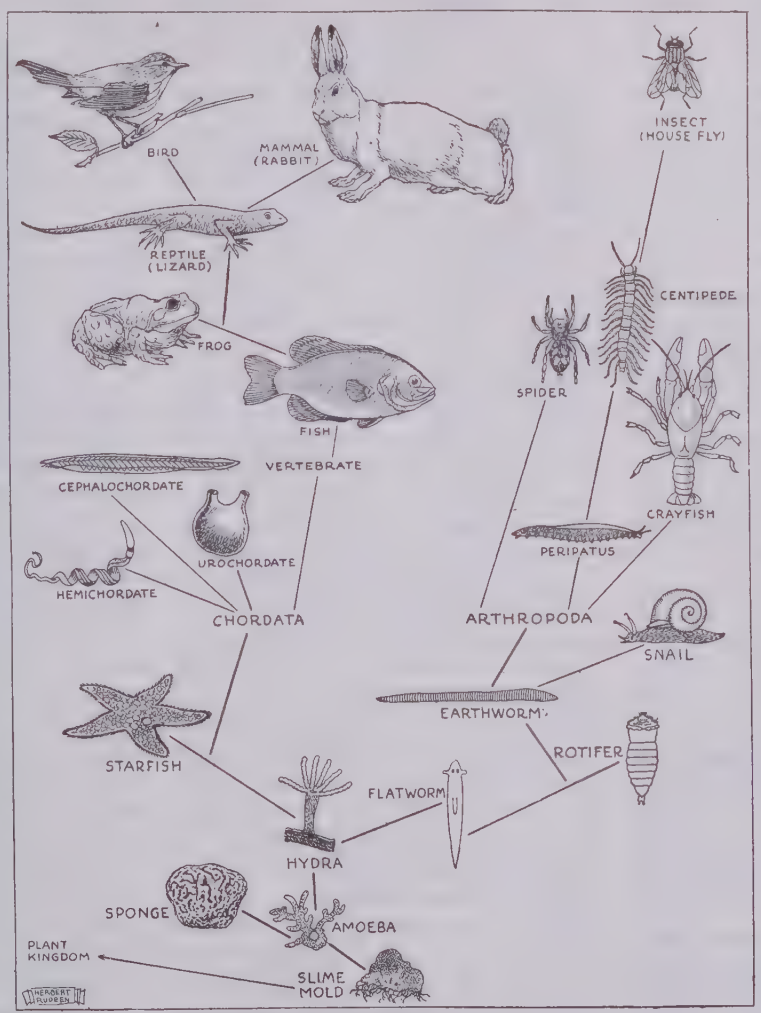
We must therefore conclude that there is no one test which will distinguish living substances from all non-living substances. The touchstone which comes nearest to success in doing this is the automatic (self-moving) nature of these several processes which, once begun in living things, may continue to operate automatically for years in the individual animal, or in many races of animals for centuries or geologic ages.

If it is difficult to draw up precise distinctions between living and non-living matter, it is still less possible always to distinguish between plants and animals. Any one can tell a cow from an oak tree; but there are some very simple organisms that are claimed by both botanists and zoölogists, because they show characteristics of both plants and animals. Such organisms are called, by way of compromise, "primitive plant-animals." Some of them the zoölogists call *Mycetozoa* (slime molds), but the botanists speak of the same organisms as *Myxomycetes*. In our chart, which shows the relationships of the animal kingdom, they are placed at the bottom, as an indication of their relatively simple organization.

When one makes even a hasty survey of all animal life, he finds that there are different degrees of complexity that can be readily recognized. It is convenient for our study to arrange animals according to the degree of complexity shown in their organization. At the same time we shall summarize what is at present known concerning the relationships of the different groups.

The evidence for these relationships comes from the study of fossil remains of the animal races; from the study of embryology, which considers the development of the individual animal; and the study of the origin, nature and relations of different body structures. Many facts discovered by these studies have been further confirmed by delicate chemical blood tests of the different animals.

The results of all these studies are sum-



Animal Relationships

Beginning at the bottom, the Slime Mold is a representative of the primitive plant-animals. The Amoeba represents the *Protozoa* which are animals without tissues. The Hydra is a type of the *Coelenterata*; the Flatworm (*Platyhelminthes*), Rotifer (*Trochelminthes*) and Earthworm (*Annelidae*) are representatives of the *Vermes*. The Snail is a type of the *Mollusca*. The *Chordata* and the *Arthropoda* are the other two phyla represented in this chart. Important classes of the present day *Arthropoda* are indicated: the Crayfish (*Crustacea*), Peripatus (*Onychophora*), Centipede (*Myriopoda*), Spider (*Arachnoida*) and House Fly (*Insecta*). In the *Chordata*, the subphyla, *Hemichordata*, *Urochordata*, *Cephalochordata* and *Vertebrata* are shown, the latter by the classes Fish (*Pisces*), Frog (*Amphibia*), Lizard (*Reptilia*), Bird (*Aves*) and Rabbit (*Mammalia*). In more technical accounts many of the lower groups are similarly divided into subphyla and all are subdivided into class, order, family, genus and species.

marized in the chart, "Animal Relationships." The simplest animals are placed at the bottom. Distance from the bottom shows the relative degree of complexity of any group.

This chart represents a somewhat simplified picture of modern opinion concerning the animal kingdom. For example, there are facts which seem to indicate that the *Chordata* are directly related to the worms (represented by the earthworm), but the arrangement of this chart disregards those facts. Moreover, there are certain small groups that have been entirely omitted. One group, the lampshells, or *Brachiopoda*, has characteristics which seem to link it to both main branches; and it may in fact represent another stalk arising from the coelenterates (represented by the hydra), independently of the other and more important branches. Again, the great group of worms, *Vermes*, are nowadays frequently split into several smaller subdivisions. These are noted in the text of this article.

The two main branches of the animal kingdom are distinguished from each other (1) by differences in body development, and (2) in the type of larvae, as the young stages are called. Some of these differences will appear later in the discussion.

CLASSIFICATION AND NATURAL HISTORY

The following brief review of the different sorts of animals, together with the chart, will give a general idea of the diversity or variety of animal life.

Phylum **Protozoa** (primitive animals). There are 8,500 known species of protozoans. These are usually single-celled animals, always lacking tissues. Most of them are microscopic in size, though some are visible to the unaided eye. Four distinct types are recognized.

Subphylum 1—**Rhizopoda** (root-footed) move by means of pseudopodia, or false feet, which are projections from the body that can be extended or retracted as needed. *Amoeba*, one of the simplest and most studied animals, belongs here. Some amoebae are parasitic in man, and one variety produces amoebic dysentery.

Subphylum 2—**Mastigophora** (whip-bearers), or flagellates, move by the vibration of long whip-like flagella. Some have chlorophyll, which is the green coloring matter in plants. Others are colorless. Many are disease-producing parasites causing, among others, African sleeping sickness and syphilis.

Subphylum 3—**Infusoria** (found in infusions) swim by short bristle-like projections called cilia. Some, such as the *Paramecium*, are large enough to be seen with the unaided eye. They are found abundantly in infusions made by steeping common hay in water. After cooling, such an infusion should be seeded with a small amount of pond water containing plant debris, covered and allowed to stand for some days.

Subphylum 4—**Sporozoa** (spore animals) are exclusively parasitic. When adult they lack all organs of locomotion. They produce many diseases. The most widely known human parasite of this group causes malaria. It lives for a part of its lifetime in a certain mosquito, called *Anopheles*, and is transferred to its human host when he is bitten by this mosquito. The best method of control of the parasite is to destroy the breeding places of the mosquito by draining off all standing water or treating it with oil.

The Protozoa have been in existence for an unknown length of time, probably over twice the length of known fossil history. During all this time some have never developed beyond the protozoan stage. Certain Protozoa are highly specialized with little nerve fibrils and small contractile fibrils, like tiny nerves and muscles. Other Protozoa have only generalized protoplasm. They are found everywhere; in the air, in soil, and in both salt and fresh waters.

Phylum **Porifera** (pore bearers). These are the sponges. In the 2,500 species, only one family is found in fresh water; the others all live in the sea. They are classified according to their skeletons, some of which are made of glass, others of limestone, and still others of a silk-like substance. The well-cleaned skeletons of the last-named are the commercial sponges, which grow along tropical coasts. They can be grown from cuttings, like plants.

Phylum **Coelenterata** (body cavity and digestive tract combined). Of these there are 4,200 species, mainly marine, although *Hydra* is widespread in fresh waters. These animals are radially symmetrical, arranged on a cylindrical plan. The alimentary canal has only one opening, which is surrounded by one or more rows of food-gathering tentacles. The body wall is composed of two layers, an outer ectoderm and an inner endoderm. In all the remaining phyla there is a third layer, lying between these two, which is called the mesoderm. Hydroids, jelly fishes, corals, and sea anemones belong in the group of coelenterates. They are of little economic importance, with the exception of the corals, which have added thousands of square miles to the earth's surface. It is generally known that the coral islands of the tropical seas were built up from the skeletons of these little animals; in the United States, the southernmost part of Florida is coral-built.

Phylum **Ctenophora** (comb bearers). This is a marine group of about one hundred species, which resemble jelly fishes and are closely related to them. They possess two openings to the alimentary canal. They are of no economic importance and of little general interest.

Phylum **Vermes** (worms). This is a mixed assemblage of worm-like animals in which we may recognize the following clearly defined groups that many zoölogists regard as separate phyla.

1—*Platyhelminthes* (flatworms) are a group of 4,600 known species that typically have but one opening to the digestive canal. This is located on the lower side and near the center of their flat, ribbon-like bodies. There are marine, freshwater and parasitic forms, divided into three classes, two of which are exclusively parasitic. The parasites include the flukes and the tapeworms. The latter are degenerate parasites that have lost their entire digestive system and, attached to the digestive tract of their host, float there, absorbing the host's food. They may be found parasitic in man, but are much more common in the other vertebrate animals.

2—*Nemertinea* (unerring aim) are a small group of only 400 species. They are flat, like the flatworms, but have two openings to the digestive tract—a mouth and a posterior opening, called the anus. They also have a proboscis which can be thrown out from an opening just above the mouth, and which snaps back into place just as a ball on a rubber cord returns to the hand of the thrower. This aids in collecting the animal's food.

3—*Nemathelminthes* (round worms) are known mainly from their parasitic species. Only 1,500 species are known, including such forms as *Ascaris*, the common round worm found in swine and in man; the hookworm, parasitic in man; and *Trichina*, which is most common in rats, but which may also reach man through underdone pork infested with the *Trichina*. It is estimated that there are 80,000 species parasitic in vertebrates alone, while the number parasitic in invertebrate animals, together with the free-living forms, greatly exceed those found in vertebrates. They seem to be everywhere. Nathan Cobb, the U. S. Department of Agriculture specialist in nematodes, writes: "If all the matter in the universe, except the nematodes, were swept away, our world would still be dimly recognizable, and if, as disembodied spirits, we could then investigate it, we would find its mountains, hills, vales, rivers, lakes and oceans represented by a film of nematodes. The location of towns would be decipherable, since for every massing of human beings there would be a corresponding massing of certain nematodes. Trees would stand out in ghostly rows, representing our streets and highways."

4—*Trochelminthes* (wheel worms) are also called *rotifers* from their most important class. There are 900 species known, limited to fresh water. They are microscopic in size but have many cells. Their name comes from the wheel-like appearance of a crown of cilia which encircles the mouth. The current made by the motion of these cilia brings them food and, if the animals are free-swimming rather than attached to something stationary, carries them also from place to place. They closely resemble the larvae, or young stages, of most worms and many molluscs, and are thought to resemble roughly the ancestral form of these animals. They may be frozen or thoroughly dried and still become active again when conditions become favorable.

5—*Bryozoa* (moss animals) are a relatively unimportant group of some 1,750 species of marine and freshwater animals. *Plumatella* is a common freshwater representative. Fossil species of the *Bryozoa* are found in the rocks of the early Paleozoic era.

6—*Annelida* (segmented worms) include the earthworm. There are about 4,500 known species of annelid worms, divided into four classes which include the marine clam-worm and its relatives, the earthworms that burrow in the soil, and the leeches, which are chiefly limited to fresh water. All of these are separated from the other worms by having bodies divided into numerous segments. Typically there is a well-developed body cavity surrounding the digesting tract. The blood flows through well-developed blood vessels, a system not found in any of the simpler animals. Earthworms are of marked economic importance in opening up the subsoil by their burrowing.

Phylum **Mollusca** (soft body). In their embryology and early larval life the annelid worms and the *Mollusca* are very closely similar. This phylum contains the snails, clams, oysters, mussels, squids and the octopi, arranged in five classes and containing 60,000 known species living on land as well as in both fresh and salt water. Usually these animals have a soft body surrounded by a membranous mantle which secretes a shell. One of the most characteristic structures of this highly varied group is the presence of a flexible file-like device called the radula, which is used in obtaining food and in burrowing into wood and even into stone or the shells of other animals. This structure is absent in the great group of bi-valved molluscs, which includes the clams and mussels. Eyes are commonly developed which are remarkably like our own in general principle.

The adult structure varies greatly. Snails are fairly representative, except for their large coiled body. The mussels and their relatives, the clams and oysters, have lost almost all of their heads; the octopi and the squids have lost almost all of their shells, but have a well developed head from which spring eight or ten arms, bearing strong sucking discs, which are used to catch the animals they eat. Some mussels can move only about six feet a day, others are permanently attached to one spot; but squids swim rapidly enough to catch fish for their food. Many representatives of this phylum, like the clams and oysters, are used for food. The shells of others furnish buttons, mother-of-pearl and pearls. One group, the shipworm *Teredo*, is so destructive that in 1920-21, $20,000,000 had to be spent in replacing the wharf pilings of San Francisco Bay, which had been weakened by *Teredo* burrows.

Phylum **Arthropoda** (joint-footed). This phylum includes the crayfishes, crabs, lobsters, spiders, the "hundred-" and "thousand-legged" worms and the insects. These are divided into five classes of living animals. This assemblage includes also the trilobites, a commonly found fossil which somewhat resembles some modern crustaceans, or the young stages of the horseshoe crab, but which became extinct near the close of the Paleozoic era. The modern classes are all important enough for separate consideration.

Class 1—*Crustacea* (crust-like shell), including crayfish, lobsters, crabs and similar animals, are mainly marine and freshwater animals; 16,000 species are known. They breathe by means of gills and have two pairs of antennae or "feelers" on the head. Many of the *Crustacea* are used for food by man, and myriads more make food for aquatic animals, ranging from tiny minnows to whales.

Class 2—*Arachnida* (Arachne, the spinner) is a class containing the scorpions, ticks, mites and spiders. Almost all the known species live on land. They lack antennae, and they breathe by special devices known as lung-books and by piping the air directly to the tissues as the insects do. The young stages of the king crab, a marine member of this group, resemble the old fossil trilobites. Ticks and mites do great damage by sucking the blood of man and of domestic animals, and by carrying disease-producing parasites. Texas fever is scattered by one tick, and Rocky mountain spotted fever by another.

Class 3—*Peripatidea* (Peripatus) is a reduced class of about seventy-five species now found only in moist tropical countries. They are of great interest, because the group forms an almost perfect connecting link between the annelid worms and the insects.

Class 4—*Myriopoda* (many-footed) are frequently further subdivided into separate classes for the centipedes, or "hundred-legged" worms, and the diplopods, or "thousand-legged" worms. There are only about a thousand species, all living on land, and none of great importance.

Class 5—*Insecta* (cut into segments) are also called *Hexapoda* (six-legged). These are the insects; the study of them is the science of entomology. The insects may be described as six-legged arthropods which frequently have wings, which have one pair of antennae on their heads, and which breathe by means of trachea which carry the air directly to their tissues. The half million or more species are commonly divided into two subclasses and twenty-five orders.

Something of the importance of this one class of animals can be seen if we remember that the insects include three-fourths of all the known species of animals. The importance of insects to man is indicated by the fact that they annually destroy more than $2,000,000,000 worth of property in the United States alone. In other words, it takes the work of over a million men each year to offset the damage done by insects in this country. This property damage occurs in a region relatively unfavorable to insects. In tropical countries, insects and insect-borne diseases keep men from living in and using the most fertile districts. When this is carefully considered it becomes apparent that by ordinary objective standards the insects, rather than men, are the dominant or controlling animals on the earth today, in everything but the size of individuals. Only in rare tropical regions, as in the Panama Canal Zone, has man been able to hold them in check sufficiently to go about his work unharmed. In time this may become the age of man—the most highly developed mentally of the vertebrates—but at present man is only beginning to dispute the ascendancy of the highly specialized insects.

Important orders of insects are:

Orthoptera (straight-winged). Grasshoppers and locusts, which destroy grasses and growing plants.

Isoptera (similar-winged). Termites, called "white ants," tunnel in solid wood, which they destroy. They are particularly abundant in the tropics, but do damage as far north as Chicago.

Ephemerida (ephemeral). The May flies are an important natural food for fishes.

Odonata (toothed.) The dragon-flies destroy other insects.

Hemiptera (half-winged). True bugs. They suck plant juices.

Homoptera (wings alike). Aphids (plant lice) and scale insects suck plant juices. These are garden and orchard pests.

Coleoptera (sheathed wings). These are beetles. Some, like potato beetles, destroy vegetation. Others, like lady-bird beetles, destroy other insects.

Lepidoptera (sealed wings). The butterflies and moths. The gipsy moth, the brown-tail moth and others destroy vegetation. The larvae of some, like the silk-worm, produce silk.

Diptera (two wings). Flies and mosquitoes are in this group. They suck blood, carry disease germs and parasites and sometimes act as scavengers.

Hymenoptera (marriage wings). This includes the bees, wasps and ants. The name comes from the fact that the queen ants shed their wings after their mating flight. The Hymenoptera are especially remarkable for their high development of social life. In the ants may be recognized types of social organization corresponding to the hunting, the pastoral and the agricultural stages of human society. Ants join in common hunts for their prey; they keep and carefully attend aphids (plant-lice), and obtain honeydew from them; in the winter they carry the aphids into protected underground burrows to spend the cold weather, and in the spring transfer them to appropriate food plants. Certain species of ants, called the leaf-cutting ants, prepare suitable beds on which to grow a mushroom-like fungus which they use for food. When the queen ant starts a new colony, she carries some of this fungus with her for a new mushroom bed.

William M. Wheeler of Harvard has found that the social habit has arisen at least twenty-four times in as many different groups of insects that were at first of solitary habit. He says that social organization reaches its highest development among the wasps, bees and ants of the highly specialized *Hymenoptera*, and among the termites, *Isoptera*, which for insects have a relatively simple body structure.

Having followed the right hand branch of the animal kingdom as shown in the chart to its apex in the highly specialized insects, we must now return and take up the left hand line of development, which leads to the equally highly specialized groups of birds and mammals, with which we are more generally familiar.

Phylum **Echinodermata** (spiny skin). The starfishes, sea urchins and sea cucumbers are a marine group with about 4,000 living species divided into five living classes. There are two other classes that have become extinct and now are known only in fossil form. The echinoderms appear to belong to an entirely distinct series from that which we have been discussing. Their eggs are relatively smaller, and develop according to a less fixed pattern. Their larvae, which are free-swimming, are built upon an entirely different system from the free-swimming marine larvae of the worms and molluscs; and, as will be explained later, the mesoderm, the layer arising between the outer ectoderm and the inner endoderm of the developing larvae, arises in a different fashion, as does the body cavity. The echinoderms are built with a radial or wheel-like symmetry, like the coelenterates. Their nervous system is very poorly organized. They have developed a water vascular system which is characteristic of them. This water vascular system consists of a series of connected tubes or canals, containing slightly modified sea water. Projections from these canals extend outside of the animal as tube feet; among their many uses may be mentioned locomotion, collection of food, res-

piration and perception of light, contacts and chemicals.

Phylum **Brachiopoda** (arm-footed). The lamp-shells are members of a greatly reduced sea-living phylum, having only 120 living species, although about 2,500 fossil species are known. These fossil shells are common at various points in the Mississippi Valley where they stand as relics of the time when this whole central valley of North America was a vast shallow sea. The brachiopods have a larva like that of the worms, but the body cavity develops in the same way as in the young forms of the starfishes and sea urchins.

Phylum **Chordata** (having a notochord). This is the last of these great divisions of the animal kingdom to be considered. It is divided into 37,000 species, and includes the vertebrates. The chordates are characterized by the possession, either as adults or in some of their larval stages, of three body structures which all other animals lack. These are:

(1) A notochord, which is a rather stiff rod-like structure, lying between the digestive tract and the nervous system. It is replaced, in the vertebrate animals, by the vertebral column, or backbone.

(2) Gill slits, which are openings in the neck region from the digestive tract to the exterior, and are used for breathing by the lower chordates, fishes and tadpoles.

(3) A dorsal hollow nervous system. All the members of the entire worm and arthropod system have most of their nervous system to the side of or below the alimentary canal, with only the first nerve mass, or "brain," lying above or dorsal to it. In the chordates, on the other hand, the entire central nervous system lies dorsal to both the alimentary canal and the notochord. Unlike all other animals, the chordates possess a central nervous system that is hollow. We may note that the Echinoderms have three nervous systems, two on the lower or ventral side, and one in the upper or dorsal region.

The connection between the chordates and the echinoderms is made by the simplest of the three subphyla grouped in the chart as forming the lower chordates. This subphylum is known as *Hemichordata*, which means that the animals are half-chordates. The adults are marine, worm-like animals, (*Balanoglossus* is one) which burrow in the sandy mud of shallow ocean bays along with annelid worms. They have an outgrowth from the digestive tract which appears to be a start towards a notochord; therefore the name *Hemichordata*. They have distinct gill slits and possess both a dorsal and a ventral nervous system. Thus they appear to satisfy the chordate requirements fairly well, but they have a larva so much like that of the starfishes and sea urchins that for a long time it was thought to represent an unknown group of echinoderms, until finally it was proved to develop as an adult into this worm-like hemichordate.

The other subphyla, making up the lower chordate group, include the ascidians, or sea-squirts, and the lancet-like animal called *Amphioxus*. All these lower chordates are marine.

Subphylum *Vertebrata* (having vertebrae or backbones). Fishes, frogs, reptiles, birds and mammals make a group of only about 36,000 known species, as compared with the half million known species of insects; but the average individual is much larger in size. Representatives of this group may be found in fresh or salt water, or on land.

The least specialized vertebrate animals are the fishes, *Pisces*; and the most primitive of these lack both jaws and paired fins, which were apparently the forerunners of the legs of higher vertebrates. The brook lamprey of our streams is an example of such primitive fish. The lampreys belong to a group called *Cyclostoma*, which means "circle-mouths," and are usually regarded as belonging to a distinct class of vertebrates.

The true fishes had developed jaws and paired fins back in the Devonian period of the Paleozoic era, in what is now known as the "Age of Fishes." The early fishes had skeletons of cartilage, as the modern group of sharks have today, but they early developed bony structures, both as an internal skeleton and also as an external covering.

It is interesting to note that if we were to take only one animal to be an example of the whole animal kingdom, a median representative of the whole lot, we should have to choose an annelid worm, perhaps an earthworm; and if we were to choose similarly a median representative of the chordate phylum we should have to take a shark-like fish. This is a low type of vertebrate, but it is about half way up the chordate scale and thus is a median representative.

Some of the fishes developed lungs, but apparently the amphibians, Class *Amphibia*, (double lives) which were the first land vertebrates, are more closely related to the ancestors of the lung-fishes than to the lung-fishes themselves. Amphibians began to live on land about the time coal beds were being laid down, in the carboniferous period of the Paleozoic era, just before the first insect fossils are found.

The amphibia have not been remarkably successful as a class. Modern frogs and toads are common, but relatively unimportant, animals. The amphibians gave rise to the great class of reptiles; this is shown in the fossil beds of the Permian rocks of Texas, where very close gradations are found between the two types, so that it is hard to distinguish them. The reptiles introduced among vertebrates eggs that have power to develop out of water. The Mesozoic era became the age of reptiles. They were at that time the most successful vertebrates of water, air or land. The majority of these old reptiles, of which the dinosaurs are the most widely known, have been extinct for a long time, and the group is now represented by a relatively sparse collection of crocodiles, turtles, lizards and snakes. Not all of these ancient beasts were large, but some reached the gigantic length of eighty feet, much of which was neck and tail, while others probably weighed as much as fifty tons. They left two distinct types of successors: the birds, Class *Aves*, and the mammals, Class *Mammalia*.

These two classes rose independently of each other, and independently arrived at a warm-blooded condition, which makes surrounding temperatures less important to them than to any other animals. Fossil records connect the birds, which may be accurately called "feathered vertebrates," with the reptiles. Their close connections to the reptiles is also shown in their method of development in embryo, and in many details of adult body structures.

The oldest bird known is the fossil *Archeopteryx*, which was found in the Jurassic rocks of Germany. It was about the size of a crow. It had toothed jaws, as do modern bird embryos, though modern adult birds never have teeth. *Archeopteryx* also had a long, dinosaur-like tail, with fringing feathers. The "wings" were also feathered, but otherwise they were like dinosaur "arms" with fingers that ended in claws. Bird feathers are believed to have been developed from reptilian scales. So close is the relationship between birds and reptiles that birds are often spoken of as glorified warm-blooded reptiles, close relatives of the old dinosaurs.

Modern birds are divided into two main groups, the running birds, *Ratitae*, which are represented by the ostrich and the flying birds, *Carinatae*, which include all our common birds. The structure of flying birds can best be understood when we think of them as living flying-machines. The essentials of a successful heavier-than-air, all-the-year round flying machine are: (1) supporting planes, (2) great power adequate for long flights, (3) light weight, (4) rigidity, (5) stability, (6) steering and balancing devices and (7) protection from cold.

These essential characteristics the bird possesses as follows: (1) planes—wings and tail with their strong flight feathers; (2) power—high body temperature of 104°F. as compared with 98°F. for many mammals, allowing more rapid digestion and greater activity of muscles; powerful breast muscles well supplied with blood by a relatively large heart, and with oxygen by a system of breathing which is more efficient than that of mammals; (3) light weight—made possible by hollow bones, since hollow structures are stronger, weight for weight, than are solids, and by extensive air sacs distributed through the body, which not only aid breathing but give added boyancy; (4) rigidity—obtained by the fusion of the bones of the back; (5) stability in flight—obtained by the location of all the heavy muscles below the wings, so that even the muscles that lift the wings are located below them and are attached to the wing-bones by a long cord-like tendon which operates through a ring of bone, acting on the principle of a pulley; (6) steering—accomplished by the use of tail and wings; (7) balancing—by means of a flexible neck and the proper adjustment between load and point of support in the air, and (8) protection from cold — by feathers with their enclosed air spaces.

Mammals (Class *Mammalia*) solved the problem of the conservation of body heat by the development of hair. They can be adequately defined as "hairy vertebrates," just as birds can be distinguished as feathered vertebrates. Mammals are further characterized by their possession of mammary glands (from which the name, mammals, is derived) by which they suckle their young. They, too, arose from the reptiles, but from small, lightly built, running types of reptiles. They appear to have arisen in the geological period just before the birds, and near the beginning of the great age of reptiles.

Three subclasses of mammals are recog-

nized. The first is the *Prototheria* (primitive mammals) which retain the reptilian habit of egg-laying, along with certain reptile-like structures. The duckbill (*Platypus*) of Australia and Tasmania and the spiny ant-eater of the same region are examples. Both have primitive milk-glands; the young, after hatching from the egg, lick off the milk as it drips from the hairs covering the glands.

Marsupalia (pouched animals) are represented by the American opossum and by kangaroos and many related forms of the Australian region. The young are born in a very immature condition. The young of a large kangaroo that would reach to man's shoulder is, at birth, about the size of a man's little finger. These tiny animals travel along the abdomen of their mother to a pouch where the mammary glands open; within this pouch they attach themselves, and there complete their development. In Australia, where they have had no competition from higher mammals, marsupials have become adapted to most of the different environments where mammals can live. They burrow and climb trees, as well as run over the earth's surface. Both carnivorous (flesh-eating) and herbivorous (plant-eating) forms occur.

The third mammalian subclass is that of the *Eutheria*. The name means "true animals" and is given because these are the common hairy animals with which we are most familiar. These animals are characterized by a placenta, which is the organ of attachment of the developing embryo to its mother. Here the young animal develops as a parasite within the mother, and birth takes place at a relatively late stage in development. In many mammals of this class as, for example, the deer, the young can run about, following their mother, within a few hours after birth. Other vertebrates, as well as some invertebrates, bring forth their young alive, but only among the *Eutheria* is there a true placental attachment between the mother and the young. Usually, among other animals, the eggs are merely kept within the mother's body and hatched out there, instead of the ordinary laying and incubating of the eggs outside the body.

There are four main types of these highest mammals. The first is that of the clawed mammals, which are the least specialized of all. They include the shrews, moles, hedgehogs, the bats and the carnivores. The last is a large flesh-eating order with two suborders: the land carnivores, which include the cats, dogs, hyenas and bears; and the marine carnivores, which are the seals, the sea lions and the walruses. The great order of rodents, or gnawing mammals, including rats, mice, rabbits and squirrels; the so-called *Edentates*, or toothless sloths and armadillos (though these actually do have teeth), and the ant-eaters, also belong to the division of clawed animals, making seven orders in all.

The second type, the next most generalized group of mammals, includes those with flattened horny growths, called nails, at the end of their fingers and toes. This group contains only one order, the *Primates*, which include lemurs, monkeys, apes and man. In mental power, man far outdistances any other animal; but in structure and even in many aspects of behavior, he is similar to the great apes. Some generalized features of this group are: the possession of five fingers or toes on each limb, a clavicle or collar bone, and relatively normal proportions of the bones of the arm and leg as contrasted with the great specialization to be found in the next group.

The third type, the hoofed mammals, includes the even-toed animals, like swine, hippopotamuses, camels, deer, elk, giraffes, cattle, buffaloes, antelopes, gazelles, sheep and goats; and the odd-toed animals, such as horses, zebras, tapirs and rhinoceroses. The elephants and coneys are also placed here; and manatees, or sea cows, are aquatic forms related to this general assemblage. Here the greater specialization is shown by the great elongation of the finger bones. The knee of the horse is the equivalent of the human wrist or ankle joint, while the joint corresponding to the human elbow or knee occurs up next the body. There is a loss of one or more of the fingers or toes, culminating in the horses that walk on the tips of their middle toes, having lost two toes of each foot completely, and almost all of two more. Many of this group have lost the collar bone entirely, and have more highly specialized teeth than the preceding groups.

The fourth type, that of the most highly specialized mammals, includes the whales and dolphins. This estimate of the cetaceans specialization is supported by the following facts: (1) They have lost almost all hair, which is a most distinctive mammalian character. Some have no teeth as adults; and the hind limbs and almost the entire pelvic girdle are lacking. (2) The skeleton of the fore limbs (flippers) is specialized by the addition of several digits or "fingers." (3) They have reached a bulk unrivaled in animal history, far surpassing the great reptiles of the past. A whale accurately measured on the Gulf coast of Texas was found to be sixty-three and one-half feet long with a circumference in front of the flippers of thirty-seven feet and a height of twelve feet. This great diameter was maintained from the end of the snout to within about fifteen feet of the tail. It was estimated to weigh well over eighty tons. (4) The stomach is the most complex among mammals, more complex even than that of the camel or cow. (5) The skull is also the most specialized to be found among mammals.

EMBRYOLOGY

There are two main types of reproduction among animals, the sexual and the non-sexual. Sexual production involves the union of two germ cells or their equivalents, which usually arise from two separate animals. Non-sexual reproduction is the simpler process. In the simplest form of non-sexual reproduction, as in the protozoans, it consists of a nearly even division of the entire animal body, which here consists of one cell, into two daughter cells, each of which then grows to adult size.

Variations of this process occur, such as budding, which resembles budding in plants, and in which an offshoot grows from the main animal, finally breaking off from the parent to form a separate individual. When these budded individuals do not separate entirely from the original animal, colonies of connected individuals occur, as in the hydroids. Some animals reproduce non-sexually by forming spores or gemmules, which are small bits of protoplasm surrounded by protective material, and thereby are enabled to withstand severe conditions, such as extreme cold, heat or drought. Some protozoans and some sponges reproduce in this manner.

Many of the simpler animals, including even tadpoles and lizards, can regrow lost parts of their bodies. Others can regenerate a whole animal from a fragment. Sponges, hydroids, flatworms and echinoderms have this power to a marked degree. Breaking off of parts of the body often occurs in nature, either because of accident or as a result of the activity of the animal itself, and these pieces may develop new whole animals. The loss of such power of regeneration is one of the penalties of specialization.

Sexual reproduction is the usual method of reproduction in animals. In the simplest form the sperm and the eggs are shed into the water as, for example, in fishes. A sperm fuses with an egg and thus starts the development of a new animal. The fertilized egg consists of one cell, whether this be microscopic, as it usually is, or the entire large yolk of a hen's egg.

Shortly after fertilization the egg divides into two cells, then successively into four cells, eight, sixteen, thirty-two and so on, forming gradually and typically into the shape of a hollow ball, whose surface is made up of a single layer of cells. This ball of cells is called a *blastula*. Among water-living animals it is supplied with cilia and swims actively through the water, much as *Volvox*, an adult colonial fresh-water protozoan, does, except that the latter has flagella rather than cilia. All sexually produced animals, except protozoans and sponges, go through a blastula stage in their development, although in animals like chickens, the blastula is represented by a flat sheet of cells rather than by a hollow ball.

After the blastula is fully formed the cells in the different parts begin to behave differently. At the so-called *animal pole* the cells divide rapidly, and are relatively small. At the opposite or *vegetative pole* they are slower to divide, and contain more yolk or food material. Eventually the more rapidly growing cells tend to enclose the others, forming a structure like a hollow rubber ball, one end of which has been pushed in until it forms a sort of lining for the other half. The inside cells are called the *endoderm;* the enclosed cavity, which opens to the outside at the posterior end, is called the *primitive gut*, and develops into the alimentary canal; the outside cells are called the *ectoderm*. These are the first two layers of the developing embryo. This level of development is called the *gastrula* stage, and all animals that reproduce sexually, protozoans and sponges excepted, pass through a recognizable gastrula stage. Some animals never develop farther. The whole group of hydroids, jelly fishes and sea anemones are built upon this plan.

In the higher animals, the ectoderm gives rise to the skin and the lining of the ends of the alimentary canal, as well as to the nervous system and the sensory part of the sense organs. The endoderm forms the lining of the alimentary canal and the lining of the organs that arise from it—the lungs, liver and pancreas, for example.

Between the ectoderm and the endoderm, after the gastrula stage, a new germ layer develops. It is called the *mesoderm*, and gives rise to the rest of the body, including such parts as the bones, muscles, blood, connective tissues, cartilage and reproductive organs.

The mesoderm arises differently in the two main branches of the animal kingdom shown in the chart "Animal Relationships" (p. 957). In the right hand branch, among the worms and molluscs, it grows from two cells which lie at the connecting point between the ectoderm and endoderm, and are called *pole cells*. In the echinoderms and lower chordates, it arises as an outpocketing of the primitive gut wall, and, therefore, from the endoderm. The hollow ball of mesoderm thus formed develops into the body cavity of the adult echinoderms and *Amphioxus;* while on the other branch of the animal kingdom, in the worms, the body cavity develops as a result of a splitting of the developing mesoderm bands.

The development of the definite organs of the body of any given animal should be studied from this point in detail, for all differ. Long courses in colleges and universities are given to describe these different developments. It is interesting and valuable to trace here the further history of a few organs in the common frog.

In the frog, the first opening of the primitive gut of the gastrula does not form the mouth. This organ arises, rather, from an ingrowth of the ectoderm and forms the mouth opening by fusing with the gut ectoderm. Gill pouches grow out from the endoderm in the neck region and form contacts with the ectoderm. Openings break through, forming gill slits. An outgrowth at the base of the second gill slit becomes the thyroid, an important gland of internal secretion. The first gill pouch is transformed into the middle ear and the tube which connects it with the back of the mouth, even in adult life. The sensitive part of the ear, the inner ear, develops as a pouch of ectoderm which cuts loose from the surface and comes to lie deeper than the middle ear.

The lungs develop as an outgrowth from the lower side of the alimentary canal behind the gill slits. Farther back the canal enlarges to form the stomach, and behind this arise outgrowths which will form the liver and the pancreas.

Above the developing alimentary canal, a cylindrical rod of cells is pinched off which forms the notochord, or forerunner of the backbone. The bones themselves, however, come from the mesoderm. Above this, on the dorsal or upper side of the growing animal, a parallel pair of ridges appeared very early. These grew until they finally formed a hollow tube, broad at the front end, from which the brain develops, and narrower behind, where the spinal cord arises. The eye begins as an outgrowth from the side of the brain. This first outgrowth folds on itself to form the retina, or sensitive part of the eye. The lens and outer surface of the eye develops from the surface ectoderm. The other structures of the eye are formed from the surrounding mesoderm.

The olfactory, or smelling organs, arise as a patch of thickened surface ectoderm. This lies just above the future mouth. It deepens to form a pocket which never closes but remains open as a nostril. It gradually deepens and finally opens into the back part of the mouth. The ear arises similarly but farther from the front end of the animal. Unlike the nostrils, the auditory sac becomes entirely closed off from direct connection with the surface or with other internal cavities.

The heart develops from a pair of blood tubes which arise in the mesoderm and which fuse to form a simple tubular heart, such as the fishes possess. Later this develops the more complex structures characteristic of the frog's heart.

There are some animals widely scattered through the animal kingdom that have eggs which develop without fertilization. This is called *parthenogenesis*. Parthenogenesis occurs in rotifers, plant lice, bees and other animals. Some animals whose eggs normally require fertilization by a sperm can be started in their development by special treatment, such as shaking the egg, treating it with chemicals or by mechanical injury. Echinoderm eggs are particularly easy to start toward artificial development. Even the egg of a frog can be artificially stimulated to develop without the presence of a sperm, and an adult frog can be reared from an egg whose development was started by pricking it with a hot needle.

HISTOLOGY

Histology is the study of the structure of animal tissues seen under the microscope. A tissue may be defined as a group of cells, or of cells plus their products, grouped together to form a definite structure and to perform common functions. The same sorts of tissues are widespread in the animal kingdom. We can recognize the following kinds:

Epithelial Tissues. Epithelial cells are usually flattened, but may be of various shapes. They are united to form a membrane which protects exposed surfaces just as the skin covers the surface of the body, or the epithelium lines the mouth. It also makes up the lining membranes of glands and of the body cavity. Epithelial tissue, then, is a layer of closely compacted cells covering an internal or external surface of the body, one surface being free and the other resting on underlying tissue. It serves to protect the more sensitive tissues, and allows the passage of waste or food substances to or from the blood. It also serves as an organ of secretion or excretion. The sensitive parts of sense organs are the epithelial layers. Epithelial cells of the reproductive organs may retain the power of individual growth and thus become germ cells. Outgrowths from epithelial cells become hair, nails, hoofs, cilia, flagella, and so on. In structure the epithelium may be thick or thin; and it may arise from either ectoderm, endoderm or mesoderm.

Connective Tissue. In the different sorts of connective tissue the intercellular substance determines the character of the tissue. The cells are not conspicuous. All connective tissues arise from the mesoderm. The following kinds are recognized:

Fibrous. Fibrous connective tissue has fibers so well developed that the cells are hard to discover among them. This tissue is used as sheathes over muscles or bones, and as tendons to connect muscles with bones and as ligaments to fasten bones together. It also serves as mesenteries in supporting internal organs, and forms the main part of the walls of blood vessels. The fibers are not cells, but are the product of cells. There are two sorts of fibers: those of the white inelastic and the yellow elastic connective tissue.

Adipose or Fatty Tissue. This is composed of connective tissue cells that have the power to store fat. The fat is usually laid down within the cells until the cell protoplasm is crowded off to one side. Fat cells, if many are present, are gathered into groups or clusters, which may form layers. Fat is a chemical compound of glycerine and fatty acids, and is used within the animal body as a reserve supply of food, for protection of underlying organs, and to conserve body heat. In starvation, the fatty cells are the first to become shrunken.

Cartilage. This is formed by the cells which surround themselves with a clear heavy substance in which they become embedded. The cells occupy spaces called *lacunae*. Cartilage may be either elastic or inelastic. It covers the joints of bones, and fills in places as a substitute for bone. Some animals have the entire skeleton of cartilage; and embryos of higher vertebrates usually pass through a cartilaginous stage. Cartilage frequently hardens with age.

Bone. Bone may develop either from a cartilage or from a fibrous connective tissue basis. As in cartilage, the bone cells are much separated by intercellular bony material, the main part of which is phosphate of lime. Each cell lies in a space, or lacuna, which communicates with the other lacunae by means of tiny canals running through the bony substance. These, in turn, connect with a large canal which contains blood vessels that carry food and oxygen to the bone-locked cells. The bone cells are arranged in concentric circles around the large canals. The surface of a living bone is covered by a layer of fibrous connective tissue. Bones serve for support, as levers, and for protection. Bone is most common in vertebrates, but is also present in the king crab, which is a sea-animal related to the spiders.

Muscles or Contractile Tissues. There are two types of muscle cells, the smooth and the striated, or striped, cells. Each smooth muscle cell has a nucleus. The *cytoplasm*, as the protoplasm around the nucleus is called, contains longitudinal fibrils. In higher animals these smooth muscle cells occur in organs where rapid contraction is unnecessary, such as the digestive tract, the gall bladder, the walls of arteries and veins, and in some glands. They are not subject to direct mental control, and are usually called the involuntary muscles on that account. They arise from primitive mesoderm cells or from embryonic connective tissue cells.

Striated muscle differs from smooth muscle in having the fibrils striated or striped. Ordinarily they have long, straight, unbranched fibers, although the fibers of vertebrate heart muscle are branched. Muscle fibers arose from cells in the embryo, each of which had a single nucleus; but after a time the division of the nucleus was not followed by a division of the cell, so the cells became very large and possessed many nuclei. The contractile fibrils

are not present in young cells, but develop as secretions within the cell. There is good reason for thinking that they are non-living cell products which are made and kept working by the surrounding living protoplasm. The fibrils are merely contracting machines.

Exactly how muscles work is not known. The best theory is that, on stimulation, the material in the dark stripes of the fibrils absorbs material from the light stripes. Since each dark stripe was originally long and narrow, it tends to become spherical with the material taken in. This thickening of the dark stripes causes the thickening of the muscle which accompanies contraction. By absorption from the light stripes, the dark stripes are brought close together. This constitutes contraction, and accounts for the shortening.

According to this theory, stimulation to contraction results first in stimulation of the protoplasm, and only indirectly acts on the fibrils. During contraction the protoplasm produces a lactic acid called here sarcolactic acid. Oxygen is not used by the fibrils in the contraction process, but is used by the protoplasm to restore the fibrils to a condition of high potential energy. The sarcolactic acid is consumed during this process, and carbon dioxide is given off.

In addition to contracting, striped muscles give contour to the body and protect underlying organs.

Blood, the Circulating Tissue. The blood is a liquid tissue occupying a set of tubes in the higher animals, but circulating in spaces between the other tissues in less specialized forms. The tubes are not a part of the blood tissue, although their lining membrane must be so considered, because one cannot be changed without affecting the other very directly. Blood is composed of two main parts, the liquid plasma and the solid corpuscles. Of these the plasma is commonly regarded as the intercellular, lifeless part of the blood corresponding to the lifeless part of bone. It acts as passive carrier of food and waste products. The corpuscles in the vertebrates are the red and the white. The red blood corpuscles of fishes, amphibians, reptiles and birds have nuclei like other cells. Those of mammals do also in embryonic stages, and pass successively through stages, resembling those found in fishes, amphibians and reptiles, and then entirely lose their nuclei, becoming degenerate cells.

The red blood corpuscles have an unusually large surface for their bulk. Thus a man weighing 150 pounds would have about four quarts of blood, which would contain approximately 16,000,000,000,000 red blood corpuscles with a surface of almost 17,000 square feet. This vast surface expanse is related to the oxygen carrying power of the blood.

The red blood corpuscles of vertebrates contain a pigment called *haemoglobin*, which is related chemically to the green chlorophyll of plants. This is the material that combines with oxygen at the gills or lungs and conveys it to the tissues. It also occurs in other animals, as in certain molluscs and in the earthworm. In these cases, it is found in the blood plasma rather than in the corpuscles. Haemoglobin contains iron. Many invertebrates have a compound called *haemocyanin* in their blood, in place of haemoglobin. This contains copper rather than iron, and is far less efficient as an oxygen carrier than is haemoglobin. It turns distinctly blue when well aerated, whereas haemoglobin becomes scarlet under this condition.

The white blood corpuscles occur widely in the animal kingdom. They are amoeba-like cells that have the power to leave the regular blood tubes and wander freely through the tissues where they destroy old tissues or bacterial invaders. They thus act to check disease invasions and to destroy the old structures including those of larvae at the time the latter metamorphose into adults.

Nervous Tissue, the master tissue, is composed of cells which possess from one to many outgrowths, some of which may be several feet in length in a large animal. Those of the cells in the lower part of the spinal cord reach to the feet. The principal properties of these cells are their irritability and conductibility. In the hydroids, the simplest animals to have separate nerve cells, these are scattered about singly, connected with each other by a network of nerve fibers. Even here they tend to be more numerous about the mouth region. In most other animals they are collected into smaller or larger masses, which are usually called *ganglia*. Great collections of nerve cells occur in the gray matter of the brain and of the spinal cord of the vertebrates; but ganglia are found even in this group, lying outside the central nervous system.

The nerve fibers of the invertebrates are naked, while those of the vertebrates are surrounded with an insulating sheath called a *medulla*. In the former the different nerve cells may be directly joined with each other. In the latter, however, the nerve processes end in a brush-like arrangement which interlocks with another similar end-brush of another nerve cell without coming into direct contact with it. These individual nerve cells, with all their connecting outgrowths, are called *neurons*. The interlocking arrangement between the different neurons is called a *synapse*. The brush-like synapse allows a nerve impulse to jump from one neurone to another.

The simplest nerve mechanism in the higher animals consists of a reflex arc. If we examine a sense organ in the skin, for example, we would find a sensory brush of fibrils which connects with a main nerve process, called a *sensory process*. This, then, connects with a nerve cell in the dorsal part of the spinal cord. By a synapse or a series of synapses, this sensory cell is in connection with a motor cell in the ventral part of the cord which, in turn, is connected by one of its processes with a muscle or gland. If the sensory element (receptor) is stimulated, an impulse is sent along to the nerve cells in the spinal cord, which act as adjustors and which, in turn, relay a stimulus to some appropriate effector. If the sensation is of sufficient importance—which may mean merely if it is of sufficient strength—it may be sent along another system of neurones to the brain, and may eventually come to the conscious attention of the individual.

In the hydroids, the nervous system arises both in the ectoderm and the endoderm; but in the higher animals it is restricted to the ectoderm in its origin.

PHYSIOLOGY

Physiology deals with the functions of plants and animals, either as a whole, in general physiology, or of their different parts, in special physiology. Physiologists try to find what the living processes are, and to determine their exact causes. Physiology is sometimes divided into plant physiology and animal physiology, but there is no real difference between the general physiology of the two. Plant physiology is much concerned with the manufacture of sugar by the green plants under the influence of light, commonly called *photosynthesis;* and with the loss of water from exposed plant surfaces, both of which are subjects of indirect or minor importance to animals. On the other hand, general physiology of animals must consider the problem of locomotion, and problems centering about the well developed organ systems, such as the nervous system. These are the chief differences, but the similarities are many.

The study of physiology has brought out the importance of certain laws of physics and chemistry as applied also to living matter, and has led many persons to think that living and non-living processes are probably parts of the same general system.

From these laws we may select the following: (1) The law of continuity, which states that there is no break in nature or in natural processes. (2) The law of the conservation of energy. Careful tests on the total energy intake and outgo in men placed in specially constructed rooms, which allow the measurement of the energy value of all food consumed and all heat, work and wastes produced, have shown that even in man the energy outgo can be no greater than the energy intake. Living things can transform, but cannot manufacture, energy. (3) The law of the conservation of matter, which states that matter cannot be created or destroyed, by living or non-living substances, no matter how its form is changed. (4) Laws dealing with chemical proportions worked out for inorganic chemical compounds hold also for chemical compounds found in living things. (5) The laws of thermodynamics. The first of these laws states that in any change involving heat and work, a definite amount of heat is expended or goes out of existence for every unit of mechanical work done. The opposite also holds. The second law of thermodynamics states that it is impossible for a self-acting machine, working independently of any assisting set of forces, to convey heat from one body to another which is already at a higher temperature. (6) The common gas laws of physics apply particularly to breathing, including the laws growing out of the process of diffusion.

It is generally well known that gas, enclosed in a vessel, distributes itself equally through the container regardless of other gases present. When two containers holding different gases as, for example, oxygen and hydrogen, are connected with each other, each gas diffuses into the other container, moving from the region of highest to that of lowest concentration of each gas. Diffusion applies also to the mutual distribution of gases and liquids, as air into water; liquids with other liquids; gases and solids; liquids and solids and the slow diffusion of one solid into

another. At least a part of the process of dissolving or going into solution represents the process of the diffusion of a solid into a liquid, as of sugar into water.

In physiology the diffusion of gases or liquids through membranes is of the greatest importance. A membrane in this sense means any thin, soft, pliable sheet of animal or vegetable tissue, which may be a cell wall, or a tissue composed of many cells, or even a membrane inside a given cell. Epithelial tissues are specially concerned with this sort of diffusion. As the amount of water present in such a membrane becomes less, diffusion takes place less rapidly and the membrane is said to be less permeable. If the permeability is lessened to a point where the solvent, usually water, and not the dissolved salt or other dissolved substance can pass through, the membrane is said to be truly semi-permeable. Most membranes are only partly semi-permeable; some, the outer layer of the skin, for example, are nearly or quite impermeable to watery solutions.

Diffusion through a membrane is called *osmosis*. Even the physics and chemistry of this process are not clearly understood; but in general we can say that here, as elsewhere, a substance tends to move from the region of greater to that of lesser concentration, even if in so doing it must pass through one or more membranes.

Semi-permeable membranes that allow water to pass, but which hold back materials like sugar or salt dissolved in the water, allow what is called *osmotic pressure* to develop. Osmotic pressure may be defined as the amount of pressure necessary to keep the solvent (water in the above case) from diffusing through a semi-permeable membrane. Among the physiological effects of osmotic pressure, we may mention the fact that cells are usually under an internal pressure which causes their contents to flow out if the limiting membrane is broken. This pressure is called *turgor*, and makes the outstanding difference between an active and a dried plant or animal. Osmotic pressure is easily shown in the laboratory by putting a membrane, as from the bladder of a hog, over the end of a tube which contains sugar or salt, and then immersing the covered end in water. The water will rise within the tube much above the level outside.

Osmosis is also concerned with such necessary processes as the movement of food or waste material or oxygen into and out of the blood. Some physiological processes, such as secretion and excretion, may be carried on in direct opposition to the laws of osmosis as now understood. In other words, it appears that in such processes the living cells are able to exert some sort of force which overcomes the normal working of osmosis. The nature of this force is not yet understood. The fact that it exists is one of the reasons that keeps us from being certain that physiological processes can be fully explained in terms of physics and chemistry.

Physiology of Systems. The physiology of different organ systems has been, in part, suggested in dealing with tissues. Additional facts will be sketched here. This subject is discussed at length in any text on human physiology.

The Transport System. This system consists of the heart, lymph and blood, blood and lymph vessels or their equivalent on the one hand, and the respiratory passages on the other. The general function of the blood has been suggested in the section on histology. The uses of the blood as a transport system are: (1) to carry food and oxygen to every part of the body; (2) to carry away waste products; (3) to carry internal secretions which serve as chemical regulators of the body; (4) to protect the body from the invasion of protozoans and bacteria and (5) to furnish the tissues a balanced salt solution of the composition and strength most favorable for their best work.

The degree of development of the blood transport system depends on: (1) The size of the animal; some small crustaceans lack hearts, although their larger relatives, such as crayfish, have them and many blood vessels as well. In the small animals, the blood moves about as a result of the movement of the entire animal. (2) The relative degree of specialization of tissues. Nervous tissue requires a better blood supply than does fatty or bony tissue. (3) The general activity of the animal, though there are exceptions, as seen below. (4) The method of respiration.

It is one of the inconsistencies of animal physiology that those animals capable of the greatest activity in proportion to their size—the insects—should have a poorly developed circulatory system. The reason is that here air tubes, or trachea, carry air directly to the tissues that use it, so that the blood need carry only food and remove wastes.

The Digestive System. The work of the digestive system is to dissolve food so that it will pass through the semi-permeable membrane of the wall of the digestive tract. This is accomplished rapidly and at ordinary temperatures, without harming the delicate lining walls of the digestive tract. In the chemical laboratory great heat and strong chemicals are required to do such work at a similar speed. This is accomplished in animals and plants by the aid of digestive ferments called *enzymes*.

There are three main classes of animal food: (1) the proteins, of which lean meat is chiefly composed; (2) the fats, and (3) the carbohydrates, such as starch and sugar.

The food of the majority of lower animals consists largely of protein, and their digestive systems contain mainly protein-splitting enzymes. In more complex animals, when fats and carbohydrates form important foods, there is an increasing number of fat- and carbohydrate-splitting enzymes.

Pepsin is a protein-splitting enzyme found in the stomach of higher animals. It works in an acid medium to split insoluble protein with a molecular weight of about 5,000, into peptones with a molecular weight of from 250 to 400. Peptones are soluble and can pass through the walls of the stomach, into the blood. But it appears that only about half of the protein present undergoes even this splitting.

Trypsin continues the splitting of protein. It acts in an alkaline medium, breaking the protein molecules into their constituent building stones called *animoacids*, with a molecular weight as low as seventy-five. These can pass through the intestine walls. Trypsin can attack complex proteins. It is found in the intestines of the higher animals and is widely distributed among animals, occurring in all the important phyla. It is supplemented by *erepsin*, which acts upon simpler proteins. Erepsin is mainly limited to the vertebrates.

Lipase is the enzyme that attacks fats, converting them into fatty acids and glycerine. If there is a great deal of fatty acid and glycerine, and only a small amount of fat present, it acts in the reverse fashion—to build up fats—and thus serves to store fat in the body as well as to digest it in the alimentary canal. Lipase has not been found in *Protozoa*, but does occur in the other important phyla.

Carbohydrates are acted upon by a large number of enzymes, none of which has been found with certainty in the protozoans. Thus *cellulase* changes the pithy part of plants, cellulose, into a sugar called *maltose*. *Amylase* changes starch into maltose. *Invertase* splits cane sugar into the simpler sugars, *dextrose* and *levulose*. *Lactase* splits milk sugar into dextrose and *galactose*. In man, starch-splitting enzymes are found in the saliva of the mouth and in the intestines.

The Integrating System is composed of two parts, the glands of internal secretion and the nervous system.

The Glands of Internal Secretion. These are also called the *endocrine* organs. Each secretes some substance of distinct value to the animal directly into the blood stream, rather than into a well-recognized duct, as for example, the salivary glands do. We do not know how many structures in the body may be organs of internal secretion.

Among those known to have such a function are: the pineal body and the pituitary body of the brain; the thyroid and parathyroids of the neck, and the thymus of the upper chest; the pancreas of the digestive system and, possibly, the inner wall of the stomach, the lining of the small intestine and of the vermiform appendix; the ovary, placenta and testes of the reproductive system; and the adrenal glands near the kidneys. Muscles also give off such regulatory substances. The materials given off by these glands of internal secretion are called *hormones*, which are chemical regulators of growth and activity of the body.

The *pineal gland* is a small extension of the roof of the brain, just back of the cerebral hemispheres. It is most active in young animals, and its secretion acts somewhat like that of the thymus, which is discussed below. No definite hormone has been isolated from it.

The *pituitary gland* is located at the base of the brain, back of the nose. It is about the size of a pea. Two kinds of hormones from this gland are known. One, together with thyroid secretion, influences growth and development. Too little of these secretions causes dwarfs; too much produces giants. It also markedly influences brain activity. The other hormone from the pituitary body helps control the tension of the blood vessels and affects emotional control.

The *thyroid gland* of the neck puts a definite hormone, called *thyroxin*, into the blood. This substance controls the rate of metabolism within the body; affects the development of organs; neutralizes bacterial poisons; affects the condition of the skin and other

body membranes, as well as the general tone of sense organs and nerves.

The *parathyroid glands* are closely associated with the thyroid. Their hormone has not been isolated, but their removal is usually fatal within a few days and is accompanied with nervous disturbances. The gland appears to control the use of calcium by the body, which in turn is known to affect the irritability of the different cells.

The *thymus gland* of the upper chest region is active in young animals. Its secretion, together with that of the pineal body, acts as a check upon the other glands of internal secretion. During its period of activity the individual remains sexually immature and keeps its juvenile characteristics. Its hormone has not been isolated.

The *pancreas* is an important gland in the digestive system, producing protein-, fat- and carbohydrate-splitting enzymes, which are delivered by the pancreatic duct into the small intestine near the stomach. In addition, it pours into the blood stream an internal secretion called *insulin*, which serves, in coöperation with adrenalin, (see below) to control the ability of the body to use sugar. Too little insulin in the body leads to the disturbance known as diabetes.

The *adrenal glands* lie near the kidneys. Their secretion, *adrenalin*, is well known and can be made in the chemical laboratory. Adrenalin acts to regulate blood pressure and the distribution of the blood to different parts of the body. A slight increase in adrenalin causes the blood to flow to muscles and brain, and away from the digestive organs. The reverse occurs when the supply is decreased.

The action of these hormones, and of the nervous system, the activities of which were suggested above, tends to bring the tissues, organs and systems of any animal into a unified whole, which behaves as an individual, rather than as a collection of independent parts.

The whole story of the relationship between the work of these glands and the structure and behavior of the vertebrates, including man, is an interesting chapter in physiology. But it is so complex that it is best to seek a further explanation of it in books devoted to the effects produced by these glands of internal secretion.

ANIMAL BEHAVIOR

Study of the activities of animals is called *animal behavior*. Four grades of behavior are recognized: (1) the simple reflexes, such as winking or swallowing. (2) Reflex actions of the entire animal, commonly called *tropisms*, which may be direct and machine-like, as when a moth orients and moves directly toward a light; or which may be more at random, as when an earthworm moves about uneasily until it finds, apparently by accident, the most comfortable soil in which to come to rest. (3) When tropisms are complex they are called *instincts*. All of these are the expression of inherited, unlearned behavior. (4) Finally there is the conditioned or learned behavior, which has been modified by the experience of the individual animal. This is sometimes called *intelligent* behavior and is best developed in man, while the tropisms and instincts find their highest development among the insects.

ECOLOGY

Ecology is the part of biology which deals with the relation between living organisms and their environment. There are two parts to the environment: the non-living or *physical*, and the living, or *biotic*. The life of plants and animals is most affected by the following elements in the physical environment: heat, light and water (as ice, liquid or vapor); chemicals, including oxygen, carbon dioxide, concentration of acid or alkali; general soil effects; air pressure; and wind, wave or current action. The action of winds, waves and currents are more important to distributing or in limiting the distribution of animals and plants than in limiting their growth.

Among the biotic or living elements we must mention:

(1) Food chains; that is, groups of animals, no one of which can be disturbed without upsetting the food relationships of the whole series. These are based principally on plants, but are organized about key-industry animals which make plant food available to a large number of other animals. Plant aphids are an example of key-industry animals, converting plant foods into such a form that they can be used by many animals. The aphids change plant juices into a secretion called honeydew, which is much used by ants and bees. They themselves are fed upon by many insects and by birds. Food chains include the whole range of food relations among animals—from the parasites that live upon the food or tissues of their hosts, to the hawks or foxes that prey upon defenseless mice, which in turn feed upon defenseless plants.

(2) Competition for space among animals is another biotic element in the environment.

(3) Coöperation among animals, as between the different members of an ant colony.

(4) The "web of life" is an expression covering all the biotic relations. Its far-reaching effects are illustrated by the well-known example used by Darwin to show that, in the country districts of England, the more old maids, the more clover seed. The relationships are: the more old maids, the more cats; the more cats the fewer mice; the fewer mice the more bumble bees; the more bumble bees, the more clover. Therefore the more old maids, the more clover seed.

Biotic factors, acting together, tend to bind the animals and plants in any place into a more or less organized community, which contains certain important plants or animals and which may also contain many more or less incidental forms. These communities undergo changes with increasing age of the environment, and these changes are called *succession*. Ecological succession may be illustrated in streams where certain fish, usually minnows, are found only in brooks at head waters; others are limited to the medium-sized creeks or rivers, while still others live only in large rivers. As the brook becomes deeper the larger fish move up in it, while the smaller fish move on to new headwaters.

In nature, animals and plants are usually in a rough balance. When for any reason one kind of animal becomes unduly abundant, its enemies also tend to increase in numbers until the over-abundant animal is killed off sufficiently to restore a new balance. Man greatly disturbs this natural balance by clearing off forests and planting large holdings of food plants which attract insects and other enemies. The problems arising from the depredations of these animals form the basis of economic zoölogy, which is one aspect of ecology.

Ecology emphasizes the following generalizations:

(1) The law of toleration: an animal or plant will tend to occupy all situations where it can tolerate the physical and biotic conditions, unless kept out by such impassable barriers as deserts, high mountain ranges or broad expanses of water.

(2) Toleration is lowest at the time of the breeding season and when animals are young; so that the range at breeding time is more restricted and becomes the most important part of the entire range of the animal. Thus, gulls retire to secluded islands to lay their eggs. Destruction of these nesting sites, or of the eggs or of young birds, will rapidly reduce the total number of gulls. This is one of the most important causes of the reduced numbers of wild animals in closely settled regions, and acts more rapidly than the killing off of the adults by hunting, fishing or trapping.

(3) In order to live in a given environment, animals must fit the conditions there in at least fifty-one per cent of their possible relations. In other words, animals must be at least fifty-one per cent adapted to their environment during each stage of their existence. If they are not so adapted, they either migrate or die.

There are many other important aspects of zoölogy, among which are *parasitology*, which deals with animal parasites; *genetics*, which treats of heredity and in which great progress has been made, particularly since the re-discovery of Mendelian heredity in 1900; *animal geography*, which is concerned with the distribution of animal life over the face of the earth; and *philosophical zoölogy*, which deals with the explanation of the zoölogical facts that have been accumulated.

ZOÖLOGICAL THEORIES

Organic Evolution. Modern zoölogy is organized around three great theories. The oldest of these is that of organic evolution, which dates back to Aristotle and the other Greek philosophers who flourished as early as the fourth century B. C. It holds that all species of animals and plants living today are descended from other species. According to Professor Lull of Yale, "Evolution is the gradual development from the simple unorganized condition of primal matter to the complex structure of the physical universe; and in like manner, from the beginning of organic life on the habitable planet, a gradual unfolding and branching out into all the varied forms of beings which constitute the animal and plant kingdoms. The first is called inorganic, the last organic evolution." There are numerous theories as to how organic evolution came about, the most famous of which is the Darwinian theory of evolution by natural selection, which implies that the fit-

test animals and plants survive. This was first clearly stated in 1859.

All Life from Previous Life. The next great theory of zoölogy was first proposed by William Harvey near the beginning of the seventeenth century. It holds that, for higher animals, all life comes from the egg. This has been broadened by three centuries of study to state that, so far as we know, all life now comes from previous life.

Cell Theory. The third is the cell theory. This was first fully stated in 1839 by two German workers, Schleiden and Schwann. It holds that all animals and plants are composed of cells. At present this generalization is regarded as fundamental both for structure and for physiology of living matter.

DICTIONARY OF ANIMALS

Adder (*Peliasbe rus*). A viper, widely distributed throughout Europe, the only British venomous snake. It attains a length of over two feet, is brown, with a black zigzag line down the back, feeds chiefly upon mice, and is viviparous (bears young alive—not from eggs). Its bite rarely proves fatal, except to very weak persons and children. In the United States the term is applied to some poisonous snakes without rattles, as the moccasin, or "water adder"; the copperhead, or "red adder," and also to the harmless hognose, which resembles in appearance and assumes the defensive attitude of a viper when it is disturbed.

Agouti (*Dasyprocta* spp.). A rodent, native of the West Indies, of South and Central America, and found as far north as Mexico. The agoutis live for the most part upon the surface of the ground, not climbing or digging to any great depth. They commonly sit upon their haunches when at rest, holding their food between their forepaws in the manner of squirrels. By eating the roots of the sugar cane, they are often the cause of great injury.

Albatross (*Diomedea* spp.). The albatross is the largest of all aquatic birds, the wings, when extended, measuring sometimes fifteen feet. Specimens often exceed twenty pounds in weight. Its plumage is white, with some black bands on the wings and back. It has a strong, hard, long beak, of a pale-yellow color; the feet, flesh-colored, are short and webbed, and the wings are long, strong and narrow. It secures its prey on the wing, and is very voracious. Many are continually met with in the Southern Ocean, and are also seen in immense flocks about Bering Strait in the early part of summer, attracted thither by the vast schools of fish whose migrations they follow. Their powers of flight are prodigious.

Alligator (*Alligator* spp.). A genus of reptiles closely resembling the crocodiles. Alligators are found only in the southeastern portions of the United States and China. They differ from the crocodiles in having a shorter and flatter head and in having cavities or pits in the upper jaw, into which the long canine teeth of the lower jaw fit. The feet are much less webbed. Although living for the most part in the water, the alligator is much less restricted to it than is the crocodile. The eggs are laid in small groups in the sand and hatched by the heat of the sun. Alligators occasionally reach a length of from seventeen to twenty feet.

Alpaca (*Lama huanacos*). The alpaca, one of the representatives of the camel group in the New World, is closely related to the llama. Its range is wholly in South America and is restricted to the higher portions of the Andes Mountains. The Peruvians keep vast flocks of alpacas, and esteem the silky luster and fineness of their wool, which furnishes material for the best of fabrics. See Llama.

Amoeba (*Amoeba* spp.). Microscopic animals consisting of a single cell and belonging to the lowest group of the animal kingdom. Their mode of locomotion is by flowing, which they do slowly and in any direction, the animal having no head or front end. A related species (*Entamoeba histolytica*) causes severe inflammations of the intestine, where it is sometimes found living parasitically.

Amphibians. A group of vertebrates containing such forms as the frog, toad, salamander and newt. The name means "double life" and was given because of the fact that these animals spend part of their life in the water and part on land. Breathing is done largely through the skin, although lungs or gills are usually present. The amphibians, although air breathers, are very rarely found away from the water where their eggs are laid and hatched. The young, after swimming around for some time, change their habits and become terrestrial for the rest of their lives. The amphibians have been called "batrachians" by some authorities. .

Anaconda (*Eunectes murinus*). The common name of one of the largest species of the serpent tribe. It is a native of tropical America and is allied to the boa constrictor. The anaconda, like the boa, kills its prey by wrapping its body around the victim and constricting. It lives in swamps and rivers, or in trees along river banks.

Anchovy (*Engraulis encrasicholus*). A well-known small fish of the herring family, abounding in many parts of the Mediterranean, particularly on the coasts of Italy, Greece, Spain and France. It is about four inches long, of a bluish-brown color on the back, and silvery-white on the belly. It was known to the ancients, and was used by both the Greeks and Romans as a pickle or sauce under the name of *garum*.

Ant. The common name of hymenopterous (or membranous-winged) insects of various genera, of the family *Formicidae*, found in most temperate and tropical regions. They are small but powerful insects, and have long been noted for their remarkable activities and interesting habits. They live in communities regulated by definite laws, each caste of the society bearing a well-defined and separate part in the work of the colony. Each community consists of males; of females much larger than the males; and of sterile females, otherwise called neuters, workers or nurses. The workers are wingless, and the males and females acquire wings only for their "nuptial flight," after which the males perish, and the few females divest themselves of their wings, and either return to established nests or become the founders of new colonies. The workers perform all the labors of the ant hill or abode of the community: they excavate the galleries, procure food, and feed the larvae or young ants, which are without organs of locomotion. In fine weather they carefully convey them to the surface for the benefit of the sun's heat, and as attentively carry them to a place of safety either when bad weather is threatened or the ant hill is disturbed. In like manner they watch over the safety of the nymphs, or pupae, about to acquire their perfect growth. Some communities possess a special type of workers, known as "soldiers," because of the duties that fall upon them. There is a very considerable variety in the materials, size and form of ant hills, or nests, according to the peculiar nature or instinct of the species. Some ants live on animal food, very quickly picking quite clean the skeleton of any dead animal they may find. Others live on saccharine matter, being very fond of the sweet substance, called "honey-dew," which exudes from the bodies of aphids or plant lice. These they sometimes keep in their nests, and sometimes tend on the plants where they feed; sometimes they even superintend their breeding. By stroking the aphids with their antennae they cause them to emit the sweet fluid, which the ants then greedily imbibe. Various other insects are found living with ants in different types of association. It has been observed that some species, like the red ant (*Formica sanguinea*), resort to violence to obtain working ants of other species for their own use, plundering the nests of suitable kinds of their larvae and pupae, which they carry off to their own nests to be carefully reared and kept as slaves. In temperate countries most of the male and female ants survive until cold weather. The next brood of ants appears in the spring from eggs laid the preceding summer. The workers, in the colder climates, pass the winter in a state of torpor, and of course require no food. The only time when they require food is during the season of activity, when they have a vast number of young to feed. Some species have stings as weapons, others only their powerful mandibles or an acrid and pungent fluid (formic acid) which they can emit.

Anteater (*Edentata*). Animals with long hair and very slender heads, which walk on the sides of their feet with the claws incurved. They have no grinding teeth, their food being captured by a long tongue which the animal is able to extend for considerable distances.

The great anteater, *Myrmecophaga jubata*, is a native of Brazil and Guiana, and is much the largest of all the anteaters. It is covered with long, coarse, shaggy hair, and has a remarkably large tail with which, when at repose, it can wrap itself up as so to be effectually protected from heat or rain. It is a powerful animal, and specimens often occur which measure more than eight feet in length from the extremity of the nose to the end of the tail. It lives exclusively on ants, and procures these insects in abundance by tearing open their hills with its hooked claws, and then drawing its long tongue, which is covered with glutinous saliva, over the swarms which flock from all quarters to defend their dwelling.

Antelope (*Antilopinae*). The common term for a number of species of graceful deer-like animals. They have a timid and restless disposition. Antelopes are among the swiftest runners in the animal kingdom. Externally, they very much resemble deer, from which, however, they are to be distinguished by various points of structure, such as the horns, which in the deer are solid and branched, and by the absence of front teeth in the upper jaw. Generally speaking, antelopes are gregarious, and unite in large flocks or herds. Africa may be considered the headquarters of the antelope. The species are numerous, and include the springbok, hartebeest, gnu, eland and gazelle. There are two European antelopes, the chamois, which inhabits the Alps, and the saiga, from eastern Russia.

Ant Lion (*Myrmeleonidae*). The larva of a neuropterous insect, the adult of which resembles a dragon fly. Ants form most of the prey, hence the name, ant lion. The larva is interesting because of the curious way in which it catches its food. It digs a funnel-shaped hole in the driest and finest sand it can find, and when the pit is deep enough, and the sides are quite smooth and sloping, it buries itself at the bottom with only its formidable mandibles projecting. Then it waits until some luckless insect stumbles over the edge, when it is immediately seized, its juices sucked, and the dead body thrown out.

Ape (*Simiidae*). A name given to the most highly developed monkeys. They are all inhabitants of the Old World. The nostrils are divided by a narrow septum; they possess opposite thumbs on their fore and hind feet; the callosities on the rumps are generally naked. Some of the species only are furnished with cheek pouches. The family is divided into two groups, (1) the tailless, or true apes, comprising the chimpanzee, the gorilla and the orang-utang and (2) the tailed monkeys, including all he true monkeys of the Old World.

Aphids (*Aphidoidea*). Small insects known as plant lice which feed on the juices of plants. Many species excrete a substance called "honeydew," which is food for bees and ants. Some ants keep aphids in their nests and care for them in order that they can use the honeydew. These aphids in ant nests are known as "cows." See Ant.

Armadillo (*Dasypus* spp.). A mammal, found in South America and in North America as far north as Texas, belonging to a family intermediate between the sloths and anteaters. They are covered with a hard bony shell, divided into belts, composed of small separate plates like a coat of mail, flexible everywhere except on the forehead, shoulders and haunches, where it is not movable. The belts are connected by a membrane, which enables the animal to roll itself up like a hedgehog. These animals burrow in the earth, where they lie during the daytime, seldom going abroad except at night. They are of different sizes; the largest, *Dasypus gigas*, being three feet in length without the tail, and the smallest only ten inches. They subsist chiefly on fruits and roots, sometimes on insects and flesh. They are inoffensive, and their flesh is considered good food.

Arthropods. An enormous group of the animal kingdom, including the crayfishes, crabs, spiders, insects, centipedes, and many other animals with jointed legs and segmented bodies. There are more species of arthropods than of all the other groups combined. Many are of great economic importance.

Ass (*Equus asinus*). A species of the horse genusl supposed by Darwin to have sprung from a wild variety found in Abyssinia. Some writers consider it to be a descendant of the onager, or wild ass, inhabiting the mountainous desert of Tartary. Others believe that it descended from the kiang of southwestern Asia.

Both in color and size the ass is exceedingly variable, ranging from dark gray and reddish brown to white, and from the size of a Newfoundland dog as in northern India, to that of a good-sized horse. In the southwestern countries of Asia and in Egypt, in some districts of southern Europe, as in Spain, and in Kentucky and Peru, great attention has been paid to selection and interbreeding, with a result no less remarkable than in the case of the horse. Thus in Syria there appear to be four distinct breeds—a light and graceful saddle animal used by ladies, an Arab breed reserved for the saddle, an ass of heavier build in use for plowing and draft purposes, and the large Damascus breed.

Auk (*Alcidae*). The common name of several swimming birds, including the great auk, the little auk and the puffin. The great auk, a bird about three feet in length, is now extinct, the last survivors having been killed about 1845. Auks are almost wholly water birds, coming to land only in times of great danger, and in the breeding season. The food seems to be mainly fishes, crustaceans and worms. Auks are northern birds, ranging from Newfoundland to Iceland in the Atlantic, and from California to the Bering Straits in the Pacific.

Axolotl (*Amblystoma maculatum*). A curious Mexican amphibian, not unlike a newt, from eight to ten inches in length, with gills formed of three long ramified or branchlike processes floating on each side of the neck. It reproduces by laying eggs, and was for some time regarded as a perfect animal with permanent gills. It is said, however, that it frequently loses its gills like the other members of the genus. The axolotl is esteemed a luxury by the Mexicans. There are a number of species in North America.

Babiroussa (*Babirusa* spp.). A hog-like animal inhabiting some of the islands of the East Indies. The body is almost without hair and the animal is equipped with long tusks which extend from the jaws.

Baboon (*Cynocephalus*). A common name applied to a genus of the monkey group. They have elongated, abrupt muzzles like a dog, strong tusks or canine teeth, usually short tails, cheek pouches, small deep eyes with large eyebrows, and naked callosities on the buttock. Their hind and fore feet are well proportioned, so that they run easily on all fours, but they do not maintain themselves in an upright posture with ease. They are generally of the size of a moderately large dog; but the largest, the mandrill, is, when erect, nearly of the height of a man. They are almost all African, ugly, sullen, fierce and gregarious, defending themselves by throwing stones and dirt. They live on fruits, roots, eggs and insects.

They include the chacma, drill, common baboon, and mandrill. The chacma, or pigtailed baboon, (*C. porcarius*) is found in considerable numbers in parts of South Africa. The common baboon (*C. babouin*) inhabits a large part of Africa farther to

the north. It is of a brownish-yellow color, while the chacma is grayish black, or in parts black. The hamadryas (*C. hamadryas*) of Abyssinia is characterized by long hair, which forms a sort of shoulder cape. The black baboon (*C. niger*) is found in Celebes.

Badger (*Mustelidae*). The American badger (*Taxidea* spp.), is generally regarded as a solitary, stupid animal. Its length averages about two and one-half feet. The forepaws are provided with immense claws, indicating a burrowing habit. The badger is unique in having the hind limbs the same length as the fore limbs. It lives chiefly on roots, fruits, insects, squirrels and frogs. Some consider the flesh of the badger a delicacy, and cure it into bacons and hams.

Banteng (*Bos sondaicus*). A species of wild cattle inhabiting the Malay region of Asia. The head is noticeably elongated.

Barbet (*Capitoninae*). Sub-family of climbing birds with thick, conical beaks, having tufts of bristles at their base. Their wings are short and their flight somewhat heavy. They have been divided into three subgenera—the barbicans, inhabiting India and Africa, and feeding chiefly on fruit; the barbets proper, found in Africa and America, and nearly related to the woodpeckers; and the puffbirds, inhabiting America, and feeding on insects.

Barnacle (*Cirripedia*). A group of marine Crustacea, commonly found in great numbers on rocks, timber, ships' bottoms and in similar places in all parts of the world. The body is enclosed in a shell of five valves, which may be closed when the animal is out of the water. Some barnacles are provided with a long stalk, or peduncle, by which they attach themselves to the rocks. When the shell is open, long arms or tentacles stick up and pick food out of the water. Barnacles begin their lives by swimming freely in the water, but soon degenerate and settle down in one place for life.

Bat (*Chiroptera*). A group of wing-handed, flying mammals having the forelimb peculiarly modified to serve for flight. Bats are animals of the twilight and darkness, and are common in temperate and warm regions, but are most numerous and largest in the tropics. All European bats are small, and have a mouse-like skin. The body of the largest British species (*Vespertilio noctuula*) is smaller than that of a mouse, but its wings stretch about fifteen inches. During the day it remains in caverns, in the crevices of ruins, hollow trees and similar lurking places; at evening it flits out in search of food, which consists of insects. Several species of the same genus are common in North America. Many bats are remarkable for having a singular nasal cutaneous appendage, bearing in some cases a fancied resemblance to a horseshoe. Two of these horseshoe bats are found in Britain.

Bats may conveniently be divided into two sections—the insectivorous or carnivorous, comprising all European and most African and American species, the fruit-eating, belonging to tropical Asia and Australia, and several African forms. An Australian fruit-eating bat, the kalong or flying fox, is the largest of all the bats; it does much mischief in orchards. At least two species of South American bats are known to suck the blood of other mammals, and hence are called "vampire bats." The best known is the *Desmodus rufus* of Brazil.

As winter approaches, in cold climates bats seek shelter in caverns, vaults, ruined and deserted buildings, and similar retreats, where they cling together in large clusters, hang head downward by the feet, and remain in a torpid condition until the returning spring recalls them to active exertions.

Batrachians. See Amphibians.

Bear (*Ursus* spp.). The name of several large carnivorous animals. The true bears are about ten in number, natives chiefly of Europe, Asia and North America. They generally lie dormant in their dens during the winter months.

The brown or black bear of Europe is the *Ursus arctos*. It is a native of almost all the northern parts of Europe and Asia, and was at one time common in the British islands. It feeds on fruits, roots, honey, ants and, in case of need, on mammals. It sometimes reaches the length of seven feet, the largest specimens being found farthest to the north. It lives solitarily.

The American brown or black bear is *Ursus americanus*, with black shining hair, and rarely above five feet long. It is a great climber, is less dangerous than the grizzly bear, and is hunted for its fur and flesh. It is very amusing in captivity. The grizzly bear (*U. ferox* or *U. horribilis*) is an inhabitant of the Rocky Mountains; it is a ferocious animal, sometimes nine feet in length, and has a bulky and unwieldy form, but is nevertheless capable of great rapidity of motion.

The extinct cave bear (*U. spelaeus*) seems to have been closely akin to the grizzly. The Siberian bear (*U. collaris*) is perhaps a variety of the brown bear. The polar or white bear (*U. maritimus*) is characterized by its flat head and comparatively long neck.

Beaver (*Castor* spp.). A member of the gnawing mammals, or rodents. It has a broad, flat, naked tail, and webbed hind feet, fitting it for life in the water. It is very widely distributed, being found in the northern parts of Europe, Asia and America, most abundantly in the northern and thinly peopled parts of North America, dwelling in communities on the banks of rivers and lakes. The beaver dam is one of the most famous of all animal enterprises. At one time immense numbers of these animals were killed for their fur, which was largely used in making hats. Within recent years, beaver fur has had wide use in the making and trimming of women's coats.

Bee (*Hymenoptera*). A well-known group of insects, relatives of the ants, wasps and gallflies.

Man appears from the very earliest ages to have known the value of bees, and to have taken advantage of their products. The Bible makes mention of honey-bees, and the Latin poet, Virgil, has celebrated them in the fourth book of his *Georgics*, where he has summed up all that the ancients knew about them.

During the greater part of the year the population of bee hives is composed exclusively of two sorts of individuals, the female or mother bee, the queen bee, and the working bees, or neuters, which are, properly speaking, females imperfectly developed. A third kind of individuals, the males or drones, are generally not met with except from May to July.

The working bees constitute essentially the bee community; they are recognized by their small size, reddish-brown color and, above all, by the palettes and brushes with which the hind legs are furnished. The three pairs of legs, which are inserted in the thorax, or chest, of the bee, are its tools. The two hind legs are longer than the other pairs, and present on the exterior a triangular depression, resembling and called a "palette," which is surrounded by stiff hairs, forming the borders of a sort of basket in which the insect deposits the pollen of flowers. To each of these hind legs is jointed a square expanded piece, which might be termed the ankle, smooth on the exterior, but having hairs on its interior surface which has caused it to be named the "brush," and which is employed in collecting the pollen. The other tools of the working bee consists of a pair of movable mandibles, which close the mouth on its two sides, and of a trunk, or proboscis, which may be considered as a sort of tongue. This latter organ has a hairy surface, to which the honey of flowers adheres, whence it is conveyed to the mouth, and from it to the stomach, to be subsequently disgorged.

The males, or drones, are larger and more hairy than the working bees; they emit a buzzing sound, have no palettes, and do not sting. The female, or queen, has a longer body than the workers, and the wings are shorter in proportion. The only part she has to play is that of laying eggs, and so she has no palettes or brushes. Only one queen lives in each hive, of which she is perfect sovereign, all the workers submissively obeying her.

The number of males is scarcely one-tenth that of the working bees, and they live only about three months.

The wax of which the cells of the honeycomb are constructed is supposed to be secreted by an organ situated in the abdomen, or belly, of the bee; but, in addition to wax, another substance, much resembling it, but not identical, called "propolis," is made from the juices of certain plants, and used to line the inner surface of the hive. The cells are six sided in shape, and are of two kinds, namely, store cells, which are filled with honey, as a reserve store of food, and cradle cells, in which the eggs are laid.

At a certain time of the year the queen leaves the hive, accompanied by the drones, and takes what is called her "nuptial flight" through the air. About forty-eight hours after her return to the hive she begins laying her eggs, at the rate of about 200 a day. The eggs which are destined to develop into workers are first laid, then those which are to produce males, and lastly those which give birth to females. The eggs hatch early and the larvae, or caterpillars, which emerge from them are tended by the workers, and fed by them on a peculiar paste, which is apparently a preparation of pollen. In five or six days the larvae pass into the condition of pupa, or chrysalis, and seven or eight days later the adult insect is hatched.

Beetle (*Coleoptera*). Insects, commonly but wrongly called "bugs," in which the wings are covered by hard, tough covers which fit tightly together along the back and protect the wings when the animal is not flying. Beetles are found in all types of places from forests to deserts. Many bore in wood and live in tunnels under the bark of trees, while others are found only on flowers. Still other species are restricted to the remains of dead animals. Many pests, such as the weevils, belong to this group.

Bighorn (*Ovis montana*). A species of wild sheep which inhabits the western mountain ranges of North America from New Mexico and California northward to British Columbia. The horns are curved and measure about thirty-two to forty inches in length. See Sheep.

Bird of Paradise (*Paradiseidae*). This group contains some of the most beautifully colored birds that are known. In addition to the great splendor of color, many are provided with plumes and feathers of most unusual shape.

Bison (*Bison* spp.). A genus of ungulates (hoofed animals), one species of which (*B. europaeus*) is found only in the forests of Lithuania and in the Caucasus. The other species, the American bison (*B. americanus*), was formerly found in great numbers on the western plains of North America, but is now present only in a few herds that are protected by law.

The two species closely resemble each other, the American bison, however, being for the most part smaller, and having shorter and weaker hind quarters. The bison is remarkable for the great hump or projection over its fore shoulders, at which point the adult male is almost six feet in height, and for the long, shaggy rust-colored hair over the head, neck and forepart of the body. In summer, from the shoulders backward, the surface is covered with a very short, fine hair, smooth and soft as velvet. The tail is short and tufted at the end.

The American bison used to be much hunted for the sake of mere sport as well as for its flesh and skin. Its flesh is rather coarser grained than that of the domestic ox, but was considered by hunters and travelers as superior in tenderness and flavor. The hump is highly celebrated for its richness and delicacy. Bison skins, especially that of the cow, dressed in the Indian fashion, with the hair on, make admirable defenses against the cold, and are known as "buffalo robes"; the wool has been manufactured into hats, and a coarse cloth has also been made from it. The American bison has been found to breed readily with the common ox, the issue being fertile among themselves.

Bittern (*Botaurinae*). Water birds which inhabit marshy places. There are two British species, both of which are becoming rare because of the reclamation of the marshy grounds that form their favorite haunt. The common bittern is about twenty-eight inches in length, and about forty-four in extent of wing; its general color is a dull yellowish-brown, with spots and bars of black or dark brown; it has long and loose feathers on the breast; a short tail and a bill about four inches long. It is remarkable for its curious booming or bellowing cry, from which come the provincial names of "miredrum" and "butterbump." The eggs are four or five in number. The little bittern is not more than fifteen inches in length. The American bittern (*Botaurus lentiginosus*) has some resemblance to the common European bittern, but is smaller.

Blackbird (*Merula merula*). A well-known species of thrush, common in England and throughout Europe. It is larger than the common thrush, its length being about eleven inches. The color of the male is a uniform deep black, the bill being an orange-yellow; the female is of a brown color, with blackish-brown bill. The nest is usually in a thick bush, and is built of grass, roots and twigs, strengthened with clay. The eggs, generally four or five in number, are of a greenish-blue, spotted with various shades of brown. The song is rich, mellow and flute-like, but of no great variety or compass. Its food is insects, worms, snails and fruits. The blackbirds, or crow blackbirds, of America are quite different from the European blackbird, and are more nearly allied to the starlings and crows. The red-winged blackbird (*Argelaius phoeniceus*), belonging to the starling family, is a familiar American bird that congregates in great flocks.

Bluebird (*Sialis sialis*). A small bird, very common in the United States. The upper part of the body is blue, and the throat and breast is an earthy red. It makes its nest in the hole of a tree or in the box that is so commonly provided for its use by the friendly farmer. The bluebird is the harbinger of spring; its song is cheerful, continuing with little interruption from March to October, but is most frequently heard in the serene days of the spring.

Boa (*Boidae*). South American snakes with jaws so constructed that they can dilate the mouth sufficiently to swallow bodies thicker than themselves. They are also distinguished by having a hook on each side of the vent; the tail prehensile; the body compressed and largest in the middle, and with small scales, at least on the posterior part of the head. The genus includes some of the largest species of serpents—reptiles endowed with immense muscular power. They seize sheep and deer and crush them in their folds, after which they swallow the animal whole. The boas are peculiar to the hot parts of South America. The boa constrictor is not one of the largest members of the genus; it rarely exceeds twenty feet in length; but the name boa or boa constrictor is often given popularly to any of the large serpents of similar habits, so as to include the pythons of the Old World and the anaconda and other large serpents of America.

Boll Weevil (*Anthonomus grandis*). A beetle which lays its eggs in cotton bolls. The larva, when hatched, destroys the boll and causes great damage wherever cotton is grown. This pest was formerly restricted to Central America, but it has greatly extended its range. It entered Texas about 1890, from which it spread over the cotton-growing states of the United States.

Bony Pike (*Lepidosteus* spp.). A remarkable genus of fishes inhabiting the rivers and lakes of North America, and one of the few living forms that now represent the order of Ganoid fishes so largely developed in past geological ages. The body is covered with thick, smooth, rhomboid scales, so hard that it is almost impossible to penetrate them with a spear. The common garfish (*L. osseus*), whose distribution is rather general over the inland waters of eastern North America, sometimes attains a length of five feet, and is easily distinguished by the long extension of the mouth region to form a beak-like structure.

Buffalo (*Bos* spp.). A name of certain wild cattle of the warmer parts of the Old World, living in marshy places. Some of them have been domesticated and are used as beasts of burden. The name was transferred by the early explorers to the bison of North America, a very different kind of animal. When first discovered America had the bison as far east as Ohio, while farther west they occurred in enormous herds. With the opening of the transcon-

tinental railroads these herds were quickly killed off, so that now there are only a few protected herds. The attempt has been made, with some success, of crossing them with domestic cattle. See Bison.

Bug. A name loosely applied to any insect, but rightly belonging to insects of the order *Hemiptera*, which have sucking mouthparts and the wings partly hardened, partly membranous. Most of them feed on the juices of plants which they suck by means of the beak, but a few prey upon other animals, the bedbug attacking man. Most of the group are pests, like the squash bug, the plant lice and the scale insects; but a few are of value, like the lac insects and the cochineal, the former furnishing the shellac, the latter the carmine.

Bullhead. A common name for several species of fish. In the United States the name is given to some species of catfish or horned pout; in England to a smaller fish, allied to our miller's thumb, but belonging to a different group from the catfish.

Butterfly (*Lepidoptera*). A group of insects with broad wings, easily distinguished from the moths by their habit of flying in the daytime and by having the antennae or feelers at the end of the head ending in a club, and never tapering or feathered. Like many other insects, butterflies hatch from the egg with a shape like a worm, the larva or caterpillar. The larva eats mostly vegetable matter, grows rapidly, molts its skin several times, and at last changes into a resting stage, the pupa or chrysalis, which usually passes the winter. Then the pupa case splits down the back and from the opening the butterfly comes out to lead a short life, during which it lays the eggs which are to go through the same history. There are several thousand species of butterflies known, the majority being inhabitants of the tropics.

Buzzard (*Falconidae*). A name applied to several daytime birds of prey closely resembling the hawks, our common hen hawk being a buzzard. These birds feed on mice, moles, small birds and insects and on the whole are therefore a benefit to the agriculturist. The common buzzard is spread over the whole of Europe and America. The carrion buzzards feed on decaying animal matter; the bee buzzards or honey buzzards of the Old World feed on honey and on the larvae of bees and wasps.

Caddisfly (*Trichoptera*). Small insects with rather delicate wings, found in great numbers near lakes and streams. They are easily attracted to artificial light. The larvae enclose themselves in nets or cases. These cases are usually placed in swift streams and turned so that food can be washed into an opening in the case. The larvae are important as food for fish.

Camel (*Camelus* spp.). Well-known animals which are found in Africa and Asia. The Asiatic camel (*C. bactrianus*) has two humps, while the African camel (*C. dromedarius*) has only one. Camels are valuable animals, as they can go for a long time without water. For this reason they are much used in transportation across the deserts. The alpaca and llama of South America are closely related to the camels of the Old World.

Canary (*Serinus canarius*). Small finches, native to the Azores, Canary and Madeira Islands, but domesticated in many countries for 300 years. Because of their power of song, canaries are sold as household pets, the best singers bringing high prices. While the usual color in cage birds is yellow, the wild birds are a dull green.

Cardinal (*Cardinalis cardinalis*). The cardinal, or redbird, is one of the most beautiful of all the American song birds. The color is brilliant red, and a sharp crest of vermilion gives the bird a striking contrast to the green foliage of the trees. The cardinal nests in bushes and thickets, and constructs its nest of bark and twigs.

Caribou. See Reindeer.

Carnivores. A group of mammals in which the canine teeth are well developed. The carnivores feed mostly on other animals. Such forms as dogs, cats, lions, seals, bears, hyenas, coyotes and badgers are members of this group, which is natively one of the most ferocious in the animal kingdom.

Carrier Pigeon (*Columbae*). A race of pigeons in which the homing instinct is well developed. These pigeons may be taken miles from home, but manage to fly back, even under the most trying conditions. For this reason they were formerly used by travelers to send messages home.

Cassowary (*Casuariidae*). A peculiar bird of Australia, having very rudimentary wings and a long neck. It is closely related to the rhea and emu.

Cat (*Felidae*). A large family of animals, including the lion, tiger, panther, leopard, lynx, puma, and a number of other forms, among them our domestic cat. All have retractile claws, cutting molar teeth and elongate pupils to the eyes. The common cat is probably a native of Egypt. It is certain that it was domesticated there and that it was an object of worship and was frequently mummied. It was not known to the ancient Greeks and Romans, its place as a destroyer of rats and mice having been taken by domesticated martens.

Domestic cats are cleanly animals, more attached to places than to persons, and, like many domesticated animals, are variable in color. Besides the ordinary kinds, there are common the tailless Manx cats (coming from the Crimea as well as from the Isle of Man) and the Angora or Persian cats, with long silky fur. The original of the domestic cat was probably marked with black bars on a ground of tawny and white, these colors rendering them inconspicuous among the grasses and shrubbery where they ranged.

Catbird (*Turdidae*). A well-known species of American thrush, which, during the summer, is found throughout the Middle and New England States. The plumage is a deep slate color above, and lighter below. The catbird is about nine inches long. In habit it is lively, familiar and unsuspicious; the song is largely imitative of those of other birds, but it also has the cat-like note which gives it its common name. During the winter it inhabits the extreme south of the United States, and is found also in Mexico and Central America.

Caterpillar. The worm-like larva of moths and butterflies. They are often mistaken for true worms, which have the same general shape and mode of locomotion. Caterpillars often do great damage to crops and other vegetation by eating leaves. The silkworm is an economically valuable caterpillar which spins a cocoon from which silk is made.

Cattle (*Bos* spp.). Well-known animals of world-wide distribution, whose appearance and habits are familiar. There are many breeds of domestic cattle. In India and other southern Asiatic countries, the zebu is used in much the same way as our domestic cattle are used in this country. Zebus are humped cattle, and are not of the same quality as American or European breeds. The European cattle, which have been introduced into America, are of two general types, the beef type and the dairy type. Of the beef cattle, the English Shorthorns are a very sturdy breed. These vary from red to almost pure white. Shorthorns originated in England, but later spread to North and South America and to Australia. Another valuable beef variety is the Hereford. This has a red body and white head. Herefords are not so widely distributed as Shorthorns. Among the dairy cattle, the Holstein breed is perhaps the most important. Holstein cattle are great milk producers, but the percentage of butter fat is somewhat less than in other cattle. This variety originated in Holland, but has been imported to a considerable extent to this country and now forms an important part of the milk industry. Jersey cattle are also good dairy animals. These are of various shades of yellow and red. Jersey milk is rich in butter fat. This breed originated on the Isle of Jersey, off the coast of France. Guernsey cattle are reddish, with white markings. They also originated on an island near France. Their milk is probably the richest in fat, but the quantity is not so great as in other breeds. Among the wild cattle, the American bison (see Bison) is native to this country. For wild cattle of other countries, see Yak and Banteng.

Cavy. See Guinea Pig.

Centipede (*Myriopoda*). A group of segmented animals, closely related to the insects, but having legs on every segment. They are further distinguished by the fact that, except for the first and last few segments, all are essentially alike. Most of the North American species are small and inconspicuous, living under stones and in and under decaying logs. In the tropical regions, however, they attain greater sizes, sometimes reaching ten inches in length. Some centipedes are provided with poison glands, the contents of which causes considerable pain to a person bitten, although known cases of death are rare.

Chameleon (*Rhiptog ossi*). A reptile, living in various parts of Asia, Africa and Europe. The best-known species has a naked body six or seven inches long, with a prehensile tail of about five inches, and feet suitable for grasping branches. The skin contains small grains of a bluish-gray color in the shade, but in the light of the sun all parts of the body become of a grayish-brown or tawny color. It possesses the curious faculty of changing its color either in accordance with its environment, or with its temper when disturbed, the change being due to the presence of clear or pigment-bearing contractile cells placed at various depths in the skin, their contractions and dilations being under the influence of the nervous system.

Some lizards have the same power of changing color and the name has also been applied to them. Their power of fasting and habit of inflating themselves gave rise to the fable that they lived on air, but they are in reality insectivorous, taking their prey by rapid movements of a long, viscid tongue. In general habit they are dull and torpid.

Chamois (*Rupricapra* spp.). Goat-like antelopes inhabiting high, inaccessible mountains in Europe and western Asia. The horns, which are about six or seven inches long, are round, almost smooth, perpendicular and straight until near the tip, where they suddenly terminate in a hook directed backward and downward. The hair is brown in winter, brown fawn color in summer, and grayish in spring. The head is pale yellow with a black band from the nose to the ears and surrounding the eyes; the tail is black. Its agility, the nature of its haunts, and its powers of smell render the pursuit of the chamois an exceedingly difficult and hazardous occupation.

Chimpanzee (*Anthropopithecus* spp.). The native name, in Guinea, of a large ape of west and central Africa belonging to the anthropoid or man-like monkeys, and a close relative of the gorilla. When full grown it is sometimes about five feet high, with black hair, and is not so large and powerful as the gorilla. It walks erect better than most of the apes. It feeds on fruits, often robs the gardens of the natives, and constructs a sort of nest among the branches. It is common in menageries, where it shows much intelligence and docility.

Chinch Bug (*Lygaeidae*). An insect pest which feeds on the roots of plants, especially grain. In the wheat fields this pest destroys annually thousands of dollars worth of grain. The adults spend the winter by burrowing under the soil and seeking protection near the roots. They emerge in the spring and lay eggs, which hatch in about two weeks. When the young hatch they immediately start to feed. After about three months the adult stage is reached, and the animals lay eggs for a second brood. One of the best methods of control is by means of a fungus (*Sporotrichum globuliferum*) which causes a disease of the chinch bugs.

Clam (*Pelecypoda*). Bivalve molluscs which inhabit both fresh and salt waters, but which occur in far greater numbers in the ocean. Most clams live under the surface of the ground and send two long tubes to the surface, through which fresh water is taken in, and used water is eliminated. Others attach themselves to wharf piles or other places by means of tough threads which they secrete. The clams, as a group, are of considerable importance. The shipworm, which is really a clam, causes a great amount of damage by boring into ships and docks. The oyster, which is also a clam, is an important article of food. Many clams form pearls, of which those from Persia are probably the most valuable. In the United States, an important industry has grown up around the fresh-water clams, from whose shells are manufactured such articles as knife handles and buttons.

Cobra (*Naja tripudians*). An Asiatic snake, much used by snake charmers, who remove the teeth so that the animal is harmless. When irritated, the cobra has a habit of raising its head above the ground, puffing the region about the neck and swaying back and forth.

Cochineal Bug (*Coccus cacti*). An insect which feeds on cactus, and from whose dried bodies the cochineal dye was formerly made. In recent years the same dye has been obtained from coal tar. A related species, the lac bug (*Tachardia lacca*), secretes a substance from which shellac and several dyes are prepared. The chief industry is in India.

Cockroach (*Blattidae*). Insects which feed upon decaying vegetable matter. Several species have taken up their abode with man, and prove most unwelcome boarders. Many methods have been advocated for their extermination, but none is very satisfactory except the killing of every individual.

Cod (*Gadus callarias*). A valuable food fish of the North Atlantic, a near relative of the haddock. See Haddock.

Coelenterates. A large group of water animals containing such forms as the jellyfish and sea anemone. They are mostly sea animals, but a few are found in fresh water. The group is characterized by the presence of stinging cells, small structures that explode when the animal is irritated and cause severe irritation to the region of the body of an animal that they strike.

Colugo (*Galeopithecus volans*). A flying mammal of the Orient, related to the moles and shrews. Its head is dog-like, and a flap of skin extends from the neck to the tail, extending between the legs, much like the skin flaps of the flying squirrel. Colugos are about eighteen inches in length. They feed on seeds, fruits and leaves. They are quite helpless on the ground, but are active in the trees where they leap from branch to branch with remarkable agility.

Condor (*Sarcorhamphus gryphus*). A South American bird, one of the largest of the vultures. It resembles the common vultures, differing from them mainly in the large cartilaginous outgrowth which surmounts its beak, and in the large size of its oval and longitudinal nostrils. Despite stories of its gigantic proportions, Humboldt met with no specimens whose wings exceeded nine feet in expanse, though they have been known to expand to fourteen feet. Condors are found in the Andes Mountains, frequenting regions from 10,000 to 15,000 feet above the level of the sea. They descend to the plains only under stress of hunger, when they attack sheep, goats, deer and bullocks. They prefer dead animals.

Cony. A hare, especially the European *Lepus cuniculus* (see Hare). The hyrax (which see).

Coot (*Rallidae*). Water birds of wide distribution. The nest is built in the water by piling up masses of vegetation. Coots, although good flyers, do not leave the water unless disturbed. They have some difficulty in rising from the surface, due to the small size of their wings, and would rather dive than fly.

Coral (*Anthozoa*). Small marine animals which secrete limy skeletons, the commercial name for which is also coral. This skeleton is secreted by the outer surface of the animal and may show a number of little cups in which the animals live. When the animals die, the skeletons are left behind, and so abundant are they in the tropics that coral reefs and islands are formed by them. The precious coral of the Mediterranean and of Japan is very solid and takes a high polish. The price is dependent upon the color and size of the pieces, the pale pink commanding the highest price. Purchasers should beware of counterfeits made of marble, and of dyed coral.

Cormorant (*Phalacrocorax* spp.) Birds of eastern North America and western Europe, common along the seashore and sometimes found on inland lakes. They dive and swim easily. These birds usually nest in cliffs. Their food consists mostly of fish.

Corn-Borer, European (*Pyrausta nubilalis*). A

caterpillar, native to Europe and now a pest in America, which prefers the corn plant in which to bore and spend the winter. Great damage is done each year by this insect, and many efforts are being made to check its spread. It is important to destroy all infected material. Fermentation in silos kills the insect. Communication with the government or an agricultural college is advised to determine the best control measures.

Cowbird (*Molothrus* spp.). Birds so named because they are often seen around cows, on whose backs they frequently perch. The eggs are laid in the nests of other birds and left there to be hatched by the other birds.

Coyote (*Canis latrans*). A wolf-like animal of nocturnal habits found on the western plains of North America. It is smaller than the wolf and more cowardly. Its food consists mostly of rabbits, ground squirrels and other small mammals.

Crab (*Crustacea*). Marine animals in which the abdomen is small and folded under the anterior part of the body—the cephalothorax. Over two thousand species are known, differing greatly in size, shape and in other respects. The great majority are marine, but there are a few which spend their entire life on land, only going to the water once a year to lay their eggs. The largest is the great spider crab of Japan, whose legs may stretch out a dozen feet. Like all crustaceans, the crabs molt their shell at intervals, and after the molt, their skin is soft. One species on the Atlantic coast is taken at this time in great numbers and forms the favorite soft-shell crab of the table. The hermit crabs have the abdomens soft, and to protect this part, they carry it in the shell of a dead snail.

Crane (*Grallae*). A group of long-legged birds, remarkable for their long migrations, in which they usually fly in large flocks led by a single leader, the whole assemblage assuming a V form. The leadership is continually changed. The common crane breeds in the north of Europe and in Siberia, and migrates southward at the approach of winter. It attains nearly five feet in height; with the exception of the neck, which is black, the body is of a uniform ashy-gray; it has a graceful carriage. It frequents large plains and marshes, and feeds on fish, reptiles, frogs, molluscs, worms, insects, and even on small mammals. At the breeding season the birds pair for reproduction and rearing the young. Two species occur in America, the whooping crane being noticeable for the convolutions of the trachea within the breast bone.

Crocodile (*Crocodilia*). A group containing the largest living reptiles. The characters of the order *Crocodilia* are as follows: The skin is covered with square, bony plates; the tail is long and compressed; the feet are short, and there are five toes on each forefoot, and four on each hindfoot, the latter more or less webbed; the jaws are long and their gape enormous; the nostrils are at the extremity of the snout, and capable of being closed to prevent ingress of water; the heart is four-chambered.

The families now existing are the alligators, crocodiles and gavials. The alligators are confined to the southeastern parts of the United States and of China. The gavial proper is confined to the East Indies. The crocodile of the Nile is the best-known member of the order; another species is met with in southern Asia, and a third in tropical America. The crocodile is formidable from its great size and strength. It is exclusively carnivorous, and always prefers its food in a state of putrefaction. In Egypt it is no longer found except in the upper or more southern parts. It grows sometimes to a length of thirty feet, and apparently lives to a very old age.

Crow (*Corvidae*). The family, widely distributed over the world, includes the common crow, the raven, the fish crow, the rook, the jay and the magpie. The common crow of North America is remarkable for its gregarious and predatory habits, as well as for its intelligence and cunning. They pair in March; the old repair their nests, the young frame new ones; but they are such thieves that while the one is fetching materials the other must keep watch to prevent the rising fabric from being plundered by crow neighbors. As soon as the nest is finished and the eggs produced (five, bluish-green, with dark blotches), the male takes upon himself the care of providing for his mate, which he continues during the whole period of incubation. They frequent the same rookeries for years, but allow no intruders in to their community. They feed chiefly on worms and the larvae of insects, consequently during outbreaks of certain insects the crows are beneficial. They also eat grain and seeds, and are thus injurious to the farmer. Chiefly because they destroy beneficial wild birds and their eggs, crows must be classed as enemies.

Crustaceans. One of the great groups of animals with external skeletons and jointed feet, including the lobster, crab, barnacle and shrimp. They are characterized by having two pairs of feelers (antennae) in front of the mouth, by breathing by gills attached to some of the legs, and by a ladder-like nervous system. As they have a hard, unyielding external skeleton, they can increase in size only by shedding the external skin at irregular intervals. Several thousand species are known.

Cuttlefish (*Cephalopoda*). A mollusc in which there are ten arms around the mouth. The internal shell is calcified and is used as a supply of lime for cage birds. They have also an ink bag, the secretion of which furnishes the pigment sepia. Cuttlefish are an important article of food in southern Europe.

Deer (*Cervidae*). Animals of graceful form, combining much compactness and strength with slenderness of limb and fleetness. They use their horns as weapons of defense and offense; but in general they trust to flight for their safety. They have a long neck, a small head, which they carry high, large ears and large, full eyes. Many have scent glands, usually beneath the eyes, which serve as sexual attractions. Deer are distinguished from all other ruminants by their branching horns (antlers), which in most species exist in the male only; they are solid, fall off annually, and are renewed with increase of size and number of branches, according to the kind, until the animal has reached old age.

Deer are found in almost all parts of the globe except Australia and the south of Africa, their place in the latter region being supplied by antelopes. The greater number inhabit the warmer temperate countries, and they are chiefly found in wide plains and hills of moderate height. The flesh (venison) of most kinds of deer is highly esteemed for the table, and they have long been regarded as among the noblest objects of the chase. Only one species, the reindeer, can be said to have been fully domesticated.

Dodo (*Didídae*). Extinct pigeons of large size. These birds were formerly quite abundant on the island of Mauritius, but after 1681 there are no records of them. The size, judging from skeletal remains and a few records, was larger than that of our turkeys. The dodo had white underparts and tail and a darker back. The bill was large and ended in a curved hook.

Dog (*Canis* spp.). An animal well known for its attachment to mankind, and remarkable for the almost infinite varieties, as to size, form, color and quality of the hair, which domestication has brought about. It belongs to the order of carnivorous mammals. The genus *Canis* includes, besides the dog, the jackal and the wolf. It is a question of considerable interest as to what was the parent stock of the dog. Some are of the opinion that the breed is derived from the wolf; others that it is a domesticated jackal; all agree that no trace of it is to be found in a primitive state of nature. That there are wild dogs, we know. The dhole of India and the dingo of Australia are examples which exist in a state of complete independence, and throw no light upon the question. The dog will live on cooked vegetable matter, but prefers animal food. In drinking, it laps with the tongue. It never perspires, but the nose is naked and moist; when hot, the tongue hangs out of the mouth. The female goes with young sixty-three days, and usually has about six or eight at a litter. The young are blind at birth, and do not acquire their sight until the tenth day. The dog attains its full growth at the expiration of the second year, is old at fifteen, and seldom lives beyond twenty years.

Dolphin (*Delphinidae*). Whale-like animals which inhabit all seas. Dolphins swim in schools and have the habit of leaping far out of the water.

Dragon Fly (*Odonata*). An insect with a very long body, and long, slender, lace-like wings. It is a ferocious looking creature, but can do no harm. The eggs are laid in the water, where the young hatch and live. After a long period of time the larva crawls up the stem of some aquatic plant and transforms into the adult dragon fly. The adults are of value in destroying mosquitos.

Duck (*Anatidae*). A group of swimming birds. Most of the species are migratory and some, like the mallard and the shoveler duck, are found in both the Old and the New World. Among the interesting forms are the eiders, well-known from their soft down. They are found in cold regions. The Labrador duck was formerly very abundant, but is now probably extinct. Specimens of it in museums are far rarer than those of the great auk. The wood duck is possibly the most beautiful species.

Duckbill (*Ornithorhynchus anatinus*). An Australian mammal living in streams and feeding, like a duck, on the organic matter contained in the ooze at the bottom. In accordance with these habits, the toothless jaws are lengthened into a duck-like beak, and the feet are webbed. The duckbill does not bring forth its young alive as do the other mammals, but lays eggs. It averages about a foot in length.

Eagle (*Accipitres*). A bird belonging to the same family as the falcons and the hawks. They are found in all parts of the globe. The size varies according to the species, but all attain imposing dimensions. The bald eagle, the emblem of our country, is so called from the white head feathers. The golden eagle measures about three feet nine inches in height, and the spread of its wings is nearly ten feet. The eagle soars at great heights, and its sense of vision is very acute. It builds its nests in the clefts of inaccessible rocks, and lays generally two or three eggs; the period of incubation is thirty days. Besides the bald eagle and the golden eagle, there are other species, such as the whitetailed eagle, the tawny eagle, the booted eagle and numerous smaller species in tropical regions.

Earthworm (*Lumbricidae*). A group of burrowing worms, found in the earth in almost all parts of the world. They are without eyes or appendages. They live on the organic matter in the soil, and to obtain this they swallow the earth through which they mine, and cast the refuse on the surface. This makes them of great value to the agriculturist, as they work over and loosen the soil. In the winter they burrow down beneath the frost, and the large numbers frequently seen after a storm is not due to their having descended with the rain, but to their having been drowned out of their holes.

Echinoderms. Sea animals in which the body is usually arranged in parts of five around a central disk. The group is world wide in distribution, and contains the starfishes, sea urchins, sea cucumbers, sand dollars and sea lilies. The group as a whole is characterized by having small structures known as "tube feet," by which they move and obtain food. The feet are controlled by water pressure, and act by suction. There are hundreds of these feet extending around the animals. Sea urchins are almost spherical, having spines extending from almost all parts of the body. Movement is due to these spines and the tube feet. Sea cucumbers are found buried among the ooze at the bottom of the sea. They are soft bodied, with very rudimentary skeletal parts. When violently irritated they have the curious habit of throwing out the intestine and growing a new one. Sea lilies are among the most beautiful sea animals. They remain attached, throughout their adult life, by a stalk.

Edentates. A group of mammals in which the teeth are not always lacking, as the name would imply, but in which they are imperfectly developed. The group is largely American and includes the armadillos, sloths and anteaters.

Eel (*Anguilla* spp.). Fishes of very elongate snake-like form, living in the sea. There are several species belonging in very different groups. They should not be confused with the lamprey eels (see Lamprey), which are not true fish. The lamprey eels ascend the rivers in spring to deposit their eggs, while the true eels descend from the rivers in the fall to the sea for the purposes of reproduction. The breeding place is near the West Indies. The eels from Europe as well as from America collect here and sink to the bottom, where the spawning takes place. The young eels, when they are large enough, start back to fresh water; and it is reported that they find the same river from which their parents came.

Eider (*Somateria* spp.). Ducks of both the European and American continents. They are northern birds, going south only in winter. Most species live wholly in the water, and go to land only at the breeding season.

Elephant (*Elephas* spp.). A group of mammals, the only living representatives of the animals with a trunk or proboscis (*Proboscidea*). They are confined to the tropical regions of the Old World, in the forests of which they live in herds. Only two existing species are known, the Asiatic elephant and the African elephant. In both species the two upper incisors, or front teeth, are enormously developed, constituting long tusks. The lower incisors are absent, and there are no other teeth in the jaws except the large molars, or grinders, of which two are usually in use at one time on each side of each jaw. The molars are very large and are composed of a number of transverse plates of enamel, united by dentine. The nose is prolonged into a cylindrical trunk, movable in every direction, highly sensitive, and ending in a finger-like lobe. The nostrils are placed at the extremity of this trunk. The feet are furnished with five toes, but these are only indicated externally by the divisions of the hoof; and the sole of the foot is formed of a thick pad of skin.

The Indian elephant is the only species which is domesticated; and, as it will scarcely ever breed in captivity, the demand for it is supplied entirely by the capture of adult wild individuals. The Indian elephant has a concave forehead and small ears, while the African elephant has a convex forehead, and large ears. The African elephant is chiefly hunted for the sake of its ivory, and there is reason to believe that the pursuit will ultimately end in its extinction.

Elephants are vegetable feeders, living almost entirely on the foliage of shrubs and trees, which they strip off by means of the prehensile trunk. As the tusks prevent the animal from drinking in the ordinary manner, the water is sucked up by the trunk, which is then inserted in the mouth, into which it empties its contents. Many species of fossil elephants are known, the most familiar of which are the mammoth and the mastodons.

Elk. See Moose.

Emu (*Dromaeus* spp.). Peculiar Australian birds, similar in habits and appearance to the cassowaries and rheas. They are strong runners and depend upon their legs to escape danger. They are native to the level plains of Australia where they collect in small groups, although they are often seen alone.

Ermine (*Putorius erminea*). A member of the weasel group, native to Asia and America. The belly is white, and the back is dark brown. Some of the northern varieties have the power of changing color, becoming white in winter.

Falcon (*Falconidae*). The falcons proper, for strength, symmetry and powers of flight, are the most perfectly developed of the feathered race. They are distinguished by having the beak curved from the base, hooked at the point, the upper mandible with a notch or tooth on its cutting edge on either side, wings long and powerful, the second feather rather the longest, legs short and strong. Most prominent of the falcons are the peregrine falcon and the gyrfalcon. These were the principal birds used in falconry during the Middle Ages, not only in Europe but through the East. At one time the sport was allowed only to the nobility. Falcons were carefully trained, and at a hawking party the birds were

loosed and they immediately set upon any other game that might be in sight. The sport was in watching the falcon getting the better of other birds, sometimes many times the size of the falcon.

Finch (*Fringillidae*). Small birds with stout bills. The sexes may or may not be diffcrently colored. The finches include such forms as the linnets, sparrows, yellow-hammer and many others of like habits and structure. They are to be found in all types of places, especially in forests and open meadows. Seeds, insects and fruits form the greater part of their food.

Firefly (*Lampyridae*). Nocturnal beetles with light-producing organs on the lower side of the abdomen. It is thought by some that this lighting power is used by fireflies to attract mates. The nature of the light is interesting, as apparently little or no heat is produced. It is probably due to an excretion.

Fishes (*Pisces*). One of the lowest classes of vertebrate or backboned animals. They are adapted for an aquatic life, their shape being such as to permit easy and rapid progress through the water. They breathe by gills placed on the walls of slits in the sides of the neck, and their appendages (fins) are such as to make efficient paddles. There are usually one or more fins in the middle line of the back and one or two in a corresponding position beneath the tail (anal fins); while the tip of the tail is terminated by a caudal fin, the chief organ of swimming. The caudal fin presents three different types. In the diphycercal fin the backbone is straight at the tip, and the lobes of the caudal fin are equally disposed on its two sides. In the heterocercal tail the backbone is turned upward at the tip, this making one lobe, while a smaller second lobe is developed on its under side. This is the type of tail in the sharks. The homocercal tail has the same bent backbone as the last, but the two lobes are equal. Most fishes have the latter type. All of the fins are supported by a skeleton of rays, either horny or spinous in character.

There are several great groups of fishes, distinguished by the presence of a cartilage or a bony skeleton, by having the gill slits free or under a gill cover, by characters of the skull, presence or absence or air bladder, and by peculiarities of the digestive tract and nervous system.

Flatfish (*Pleuronectidae*). A group of fishes, including the halibut and the sole, in which the much flattened body represents an extreme modification. Both of the eyes are found on the same side of the head, and in the fish living on the bottom of the ocean, the eyes are uppermost. The belly of the flat fish is usually white, while the back often possesses remarkable powers of color change enabling the fish to conform to the color of its surroundings.

Flea (*Siphonaptera*). A group of wingless insects, mostly parasites on other animals. They have a hard skin, covered with spines so arranged that they can easily work themselves through the hair, legs admirably adapted for jumping, and the mouth-parts fitted for piercing and sucking. The fleas breed in the cracks in a floor or in some similar place where there is dirt, and when they are mature they attack animals. The irritation and annoyance of their bites are sufficient to make them a nuisance, and now it is known that they are an important agency in the transmission of certain diseases. Bubonic plague is communicated to man by flea bites.

Fly (*Diptera*). A term applied to various insects of different groups, but strictly belonging to the two-winged insects. Besides the number of wings, the group is distinguished by having a metamorphosis, and by its sucking mouthparts. There are from 30,000 to 40,000 species of flies known. Some species are closely connected with man, and of these the common house fly is especially noticeable. This lays its eggs in manure or other refuse, these hatching out, passing through all their stages and emerging as perfect insects in a few days. Their uncleanly habits make the house flies most efficient agents in the carriage of different diseases, especially typhoid fever and others which attack the digestive tract. House flies are thus not merely a nuisance to be deplored but are a positive danger to mankind. Among other flies are the carrion flies, black flies, the gnats and the mosquitos, all troublesome to man. Some species attack various plants.

Flycatcher (*Muscicapidae*). Small birds with short, broad bills and long tails. They are commonly found in Africa, India and Australia, but occasionally migrate to Europe. Flycatchers are so called because of their food, which consists mainly of insects caught on the wing. The group as a whole is found in forested regions.

Flying Fish. A name common to various fishes which have the power of sustaining themselves for some time in the air by means of their long front fins, which act as wings. While not restricted to any one group of fishes, the name usually refers to the genus *Exocoetus*, which are perhaps the best known examples, and which can maintain their flight for as much as 200 yards. The reason why flying fishes leave the water probably is their desire to escape from larger sea animals which feed on them.

Fox (*Canis* spp.). Carnivorous animals, of which there are several species, belonging to the same family as the dog. The fox is characterized by its sharp muzzle, by its long bushy tail and by its cunning, which has passed into a proverb. The pupil of the eye is elongated and not circular as in the dog, and the ears are triangular and pointed. A very powerful scent is emitted from glands near the root of the tail; this odor is so fetid that even other animals avoid its locality.

The common fox is an inhabitant of most parts of Europe and America, and extends also into northern Asia. Its senses are extremely acute. It usually remains concealed during the day in a burrow, and ventures abroad chiefly at night, in search of food. Birds, rabbits or hares constitute its usual prey, but, when pressed by necessity, it will have recourse to other food, and it likes certain kinds of fruit, such as grapes. It is destructive to poultry. Though slightly made, the fox has great muscular vigor, and bites with much severity. Even when taken at a very early age, it is never properly domesticated. Adults, when placed in confinement, show great ferocity and soon die.

Numerous other species of foxes exist of which the most important are the arctic, or blue fox, and the American, or red fox. The arctic fox is remarkable for changing its color with the season, being brown or bluish in summer, and white in winter; the soles of its feet are hairy. The red fox, found throughout North America, is very variable in color and marking, and varieties of it are known by different names. The skins of all the species are valuable.

Frog (*Rana* spp.). The common name for many genera of amphibians. All are characterized by smooth skin and webbed hind feet. Frogs are quite widely distributed over the world. The adults lay their eggs in long strings in the water, and from them are hatched out larvae (the tadpoles). These are fish-like in having a broad, swimming tail and gills on the sides of the neck. The tadpoles feed upon small aquatic plants which they scrape from sticks and stones with their horny jaws. As they increase in size, the legs grow out and the tail is absorbed. In the growth of the legs, the anterior pair is first formed, but as this pair is at first under the skin, it is usually thought that the hind pair is first formed. With the growth of legs and the loss of tail the gills disappear and the lungs come into use, but most species always remain in close proximity to water throughout their lives. The adults live on animal food—such as insects, molluscs and small fishes—and do not hesitate to eat their own species. They do much good in keeping down certain species of insects; moreover, their hind legs furnish an article of diet. Frogs are also an important animal for physiological investigations, because of the great vitality of their tissues.

Fruit Fly (*Drosophilidae*). Very small insects commonly found around bananas and other fruit in which their larvae develop. Much of what we know today concerning heredity has been learned from a study of fruit flies. The Mediterranean fruit fly is a destructive pest, especially on citrus fruits.

Garfish. See Bony Pike.

Gavial. See Crocodile.

Gazelle (*Gazella* spp.). An animal belonging to the antelope family, of very graceful shape, and rather smaller than the chamois. The color is fawn or dun on the back, separated from the white belly by a brown or blackish band. The horns, stronger in the male than in the female, are in the shape of a lyre. It inhabits the large plains and the Saharan region of northern Africa, as well as Arabia and Syria, living in herds. Gazelles are among the swiftest animals known.

Giraffe (*Giraffidae*). The tallest mammal, often called the "camelopard," because the neck resembles that of a camel, while the skin is spotted like a leopard. It inhabits various parts of Africa. The height ranges from fifteen to twenty feet, the greater part of which is the enormous length of the neck. Nevertheless, the giraffe has only the usual number of seven neck bones as in the whole class of mammals. It has an unusually long cylindrical tongue, which is prehensile, and which is used for stripping the leaves off the trees on which it feeds.

Goat (*Bovidae*). A group of animals closely allied to the sheep, although the common domestic goat and sheep are of widely different appearance.

The uses of the goat are numerous. The flesh, especially that of the kid, or young goat, is much used as food, though rather poor in quality. The milk is very rich and nutritious, more easy of digestion than that of the cow, and is often useful to consumptive patients. Some goats yield as much as four quarts of milk daily, although the average quantity is more nearly two. The skin is dressed as leather for many uses, particularly for gloves and the finer kinds of shoes. The horns are used for making knife-handles, and the fat is used in making candles.

Goats are found in wild mountainous countries where they scramble among the high rocks. The Rocky Mountain goat is an animal of the antelope family. Its size is about that of an ordinary sheep, and its general appearance is about that of a sheep of the merino breed with long straight hair. See Sheep.

Goose (*Anatidae*). Web-footed birds, having the bill not longer than the head, the upper mandible slightly hooked at the tip; the legs farther forward than in ducks, and so better adapted for walking; the neck of moderate length, and having sixteen vertebrae, a character which distinguishes them from swans. In general, geese spend much of their time on land, and feed on grass and other herbage, berries, seeds and various kinds of vegetable food. Although large birds and of bulky form, they have great powers of flight. They strike with their wings in fighting, and there is a hard callous knob or tubercle at the bend of the wing, which in some species becomes a spur. The domestic goose is regarded as deriving its origin from the common wild goose, but all the species seem capable of domestication. The graylag goose is almost three feet in length from the tip of the bill to the extremity of the short tail. Its extent of wing is about five feet. The weight of the largest birds is about ten pounds.

Gopher (*Sciuridae*). Squirrel-like animals which live in burrows on the open plains. Their principal diet is seeds and grain. Gophers burrow, and their onslaught on seeds and roots make them a trouble-some pest in some localities.

Gorilla (*Gorilla gorilla*). The largest of the manlike apes from tropical west Africa. They reach a height of four feet eight inches and the arms are shorter in relation to the body than in any other ape. Gorillas are very strong, but usually they retreat before man. They can climb, but are far less arboreal than their relatives, the chimpanzee.

Grackle. The common name for certain birds of the family *Icteridae*, common in the United States. The most familiar representative is the rusty grackle, sometimes called "blackbird." The purple grackle is noted for the lustrous nature of its plumage.

Grebe (*Podicipedidae*). Water birds found on all continents, inhabitants of slow streams and ponds. When disturbed, grebes usually dive below the surface, where they can stay for some time. They are good flyers, however, but have some difficulty in leaving the surface of the water because of the small size of their wings. Their food consists mainly of small fish, frogs and insects.

Guinea Fowl (*Numidinae*). Game birds native to Africa and Asia. Most of the species of guinea fowls inhabit grassy areas, through which they can run easily. They are also raised as domesticated fowls. They are mainly vegetarian, digging and scratching for seeds and roots.

Guinea Pig or Cavy (*Cavia* spp.). A small rodent native to South America. It has been introduced into Europe and America, where it is domesticated as a pet. It possesses a very low degree of intelligence. In its natural home it is gregarious, and is usually found living on dry lands covered with low brushwood. The color is variegated. The tail is rudimentary. It is extremely prolific, and begins to breed at the age of ten months, producing several broods in a year; each litter usually consists of about eight. The popular name is very inappropriate; the animal does not come from Guinea, nor is it a pig.

Gull (*Larinae*). Large web-footed birds, common about large bodies of water in the Northern Hemisphere. Their colors are usually white below, with the upper parts varying from a light gray to a black. All are much alike in their habits, noisy and quarrelsome, searching the water for any possible scrap of food, and often following ships for days. They breed on uninhabited islands. The closely allied terns are usually smaller, and have a forked instead of a square or even a pointed tail. Both are strong fliers but the terns are the more graceful.

Haddock (*Gadus aeglefinus*). One of the most important of the food fishes, closely related to the cod, but distinguished by the notched tail and a white line along the side. In habits the two are much alike, both being greedy and both eating anything edible, especially clams; this habit is so noticeable that the Germans have given the haddock the name "shell-fish."

Halibut (*Hippoglossus vulgaris*). A member of the group of flatfishes, remarkable in having the eyes on the same side of the head and in swimming, not in a vertical position, like other fishes, but on the side, with the eyes uppermost. The very young flatfishes are normal, but when less than half an inch long they turn on the side. At the same time the eye begins its migration, which ends by both eyes being on the same side, the twisting even distorting the bones of the skull. The average weight of the halibut is about 120 pounds; the largest known weighed 720 pounds. The flesh is white and most excellent.

Hare (*Lepus* spp.). Rodent animals which are very common in most parts of the world. They feed mostly on herbage, although grain, roots and bark are sometimes eaten. The common American cottontail (*L. sylvaticus*) is a familiar animal all over the country. In the North, the varying hare (*L. americanus*) is found. This is a brownish color in summer, the color turning to a snow white in the winter. In the West and Southwest, the jack rabbits (*L. texianus*) are found. These hide in the bushes by day and feed on herbage by night. Hares breed very rapidly. They were imported into Australia recently where, on account of their vast numbers, they have become a real menace.

Harvest Man (*Phalangiidae*). A curious group, closely related to the spiders, and very commonly called "daddy-long-legs." They differ from the spiders in having very long legs and small, often hard, bodies. Unlike many of the spiders, harvest men cannot spin webs. A pair of eyes are present on an elevated turret on the back of the animal. Harvest men are abundant in fields and forests in all parts of the world from May to October. Eggs are laid in the fall and hatch the following spring. A few species sleep through the winter, but the majority of the adults die each fall after the breeding season. Their food consists mainly of small insects and other animals.

Hawk (*Falconidae*). All daytime birds of prey which are not eagles or vultures. Hawks are common in all parts of the world. They are almost wholly



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ANIMALS

1 Gorilla.
2 Ruffled Lemur.
3 Vampire.
4 Walrus.
5 Colugo.
6 Reindeer.
7 Stoat.
8 Pea Weevil.
9 Polar Bear.
10 Squirrel.
11 Hare.
12 Anteater.
13 Badger.
14 Beetle.
15 Indian Elephant.
16 Agouti.
17 Lemming.
18 Wildcat.
19 Dormouse.
20 Tiger.
21 Hedgehog.
22 Mandrill.
23 Armadillo.
24 Lizard.
25 Apple Weevil.
26 Peccary.
27 Hyrax or Daman.
28 Snake.
29 Lion.

carnivorous, and rarely take food that has not been recently killed. The plumage is usually brown or white, although gray is not uncommon. The nests are built in trees and on rocky cliffs; occasional ground nests are found. Hawks are both beneficial and injurious. The common chicken hawk (*Accipiter velox*) is a menace to poultry keepers. It is small, measuring only eleven to thirteen inches in length. The back is of a grayish color with bars of brown. The under parts are whitish, while the feet are yellow. The marsh hawk (*Circus cyaneus*), on the other hand, is a highly beneficial animal, as it kills such pests as rats, mice and grasshoppers. It never feeds on birds.

Hedgehog (*Erinaceus* spp.). These spiny animals, native to the Old World, can roll themselves up into a ball and extend the spines outward. Hedgehogs measure from ten to twelve inches in length. The legs are short, and the snout is long. The spines are usually about an inch in length. The food of hedgehogs consists mainly of small reptiles, birds and mammals. They are nocturnal in habits, hiding during the day in logs and stumps. During the winter, hedgehogs hibernate in protected places. The meat is sometimes eaten in Europe, but the practice is uncommon.

Heron (*Ardeidae*). A group of long-legged birds which are usually found near bodies of water. They are commonly seen standing on one leg in shallow water, although they fly when disturbed. Herons nest high in trees in structures built of grass and twigs.

Herring (*Clupea* spp.). Small soft-finned fishes, spread over the whole North Atlantic, of great economic importance. They occur in large schools, swimming through the sea with open mouths, scooping up the minute life for food. Immense numbers are taken both here and abroad, the annual catch for Europe and America being estimated at 1,500,000,000 pounds. The young are also taken in vast quantities and are preserved as American sardines. In America, most of the adults are smoked and dried.

Hippopotamus (*Hippopotamus* spp.). An animal related to the pigs, hogs and peccaries, and belonging to the order *Ungulata*. There is only one living species, *Hippopotamus amphibius* of Africa. It is enormously bulky and unwieldly, attaining a height of five feet and a length of twelve feet. The feet are massive, and are terminated by four-hoofed toes; the skin is very thick. The hippopotamus feeds upon vegetable substances, such as grasses and shrubs; it dives and swims with great facility.

Hookworm (*Necator americanus*). A small worm found commonly in the soil of warm countries. As a parasite it bores through the human skin, and makes its way finally into the intestine. There it causes severe bleeding which results in marked weakness. The lungs are also subject to attack, and the victims often contract tuberculosis. It is estimated that 2,000,000 people are affected by this parasite.

Horse (*Equus* spp.). An ungulate, or hoofed mammal. The horse proper is characterized by the tail with long hairs from its base; the long and flowing mane; a bare callosity on the inner surface of the hind, as well as of the fore legs; and by the head and ears being smaller and the limbs longer than in the ass and other related species. The native country of the horse seems to have been central Asia. It became domesticated in Egypt at an early date. It is mentioned throughout the Bible. The Greeks and the Romans had some covering to insure their horses' hoofs against injury. In the ninth century, horses were shod only in time of frost. Shoeing was introduced into England by William I, 1066.

It is believed that the original breed of horses is extinct, and that the half-wild herds existing in many places have descended from animals once in captivity. Thus, when the horse was first introduced by the Spaniards in 1537, at Buenos Aires, there were no wild horses in America. But individuals escaping ran wild, and, by 1580, their descendants had spread over the continent as far as the Straits of Magellan. More fossil horses have been found in the New than in the Old World. The horse may have descended from a striped ancestor, stripes sometimes still remaining, especially in duns and mouseduns. Its age is ascertained by examining: first, which teeth are developed, and second, to what extent they have been worn away by use.

Like other domestic animals the horse has run into various breeds. The most celebrated is the Arab horse. Great attention is given in America to the breeding of race horses.

Humming Bird (*Trochilidae*). One of the smallest of birds, of great delicacy of body and wonderfully brilliant plumage, wholly restricted to the American continents. Only three or four species are found in the United States. The common name is due to the humming noise made by the wings when the bird flies. The beak is long and curved, allowing the animal to reach into flowers and get small insects, upon which it lives. Aside from their beauty there is little else attractive about them. They have little intellect and are very quarrelsome.

Hyena (*Hyaenidae*). Carnivorous, dog-like animals which inhabit the semiarid portions of Africa and Asia. These animals are covered with coarse, bristly hair, short over the greater portion of the body, but forming a mane along the ridge of the neck. The hind legs are shorter than the fore, giving the body a slope from the withers to the haunches. In size they are somewhat larger than a shepherd's dog. The cheek muscles are greatly developed, and the large grinding teeth have great conical crowns, giving to them the power of smashing the thigh-bones of animals the size of a horse. As carrion feeders they are useful scavengers. All the species are nocturnal in their habits.

Hyrax (*Hyrax* spp.). The hyrax, or cony, is a small African ungulate which resembles a guinea pig. It has been long known as a wise animal from the fact that it is difficult to trap.

Ichneumon (*Ichneumonidae*). Parasitic insects, allied to the wasps and bees. They lay their eggs in the caterpillars of moths and butterflies. The abdomen is long and slender, and has at the end a long extension by which holes are bored and eggs deposited.

Iguana (*Iguanidae*). Tropical lizards in which the body and tail are laterally compressed. A number of soft spines extend from the head to the tip of the tail, and give a crested appearance. They live mainly in trees.

Insects (*Hexapoda*). The largest group in the animal kingdom, found in all types of places. Although they are largely terrestrial, some have taken to the water. Some insects have become parasitic on other animals. The body of an insect is divided into three general regions: (1) head, (2) thorax and (3) abdomen. The head contains the mouthparts which are differently constructed in different insects. Some insects, as the beetles, have the mouthparts constructed for biting; others, as the mosquitos, possess a sucking apparatus. Insects have three pairs of thoracic legs, and one or two pairs of outgrowths from the top of the back to form wings. The fly group (*Diptera*) has only one pair of wings, but most of the other groups of insects are provided with two pairs, although some of the simpler forms (*Thysanura*) are without wings. Insects breathe by means of small tubes which extend throughout the body and take air to all parts of the insect. The sense organs of insects are usually in the head. The large eyes are composed of hundreds of parts, each part complete in itself. There is usually a pair of feelers, or antennae, which act as tactile organs.

Most of the insects have several stages in their development. After hatching from the egg the animal is known as a larva. This is the period when insects are most destructive, as much of the eating is done at this time. After a time the larva transforms into a pupa, which is a quiet stage in which reorganization of the body takes place. The pupa transforms into the adult insect, or imago. Insects show a great variety of forms. The fish moths (*Thysanura*), often seen in damp cellars, have an almost white body and no wings. The locusts, grasshoppers, crickets and cockroaches (*Orthoptera*) have typically two pairs of wings, but may be wingless. The beetles (*Coleoptera*) have the first pair of wings modified into hard covers which protect the second pair. The bees, ants and wasps (*Hymenoptera*) are famous for the social life which exists in their colonies. The true bugs (*Hemiptera*) may be recognized by the fact that the wings are folded across the backs and by the sucking mouthparts. The dragon flies (*Odonata*) are ferocious looking creatures with two pairs of long membranous wings which are held outright, even when not flying. Butterflies and moths (*Lepidoptera*) are familiar everywhere. The fleas (*Siphonaptera*) are parasitic, wingless insects which are often present among the hairs on various mammals. The flies and mosquitos (*Diptera*) have only one pair of wings.

Jaguar (*Felis onca*). Carnivorous mammal of the cat family, somewhat larger than a leopard, and with black streaks and spots. The jaguar is one of the most formidable beasts of prey found on the American continent. It is typically South American, but is native as far north as Mexico. The banks of rivers are its favorite haunts. Here it preys on such animals as the water hog; it is also said to catch fish. The jaguar is a noisy animal, roaming abroad at night, especially before the approach of bad weather.

Jay (*Garrulinae*). Several kinds of jays are found in America. The common blue jay, which ranges over much of our country, utters a very harsh note and goes through many contortions. Most of the jays are crested, the coloration indicating the species.

Jellyfish (*Scyphozoa*). A common name for numbers of marine animals belonging to the group called by naturalists *Coelenterates* (which see). All are alike in having a more or less bell or umbrella shaped body, with a proboscis hanging down in the place of the handle of the umbrella or the tongue of the bell. The mouth is at the end of the handle and leads into a stomach which divides and sends out branches, like the ribs of the umbrella, to the margin. The common name is given it because of its gelatinous consistency. Most of the species start in life as buds from attached animals, which later separate and henceforth lead a free existence, swimming by opening and closing the bell. The jellyfish are the sexual animals, producing the eggs from which the fixed stages arise. None of the jellyfish has any economic value. They have nettling organs which are used for defense and to kill their prey. In some they are strong enough to cause severe irritation to man. A general name for the group is *Medusae*, while the fixed stages are called "polyps."

Kangaroo (*Macropus* spp.). A pouch-bearing (marsupial) mammal. Kangaroos are the most highly developed members of the order, *Marsupialia*, and are found in Australia, taking the place of deer and cattle. The family comprises over fifty species, and of these the great kangaroo may be taken as a type. This species was formerly plentiful over the plains, but it is now retiring before the colonists.

The forelimbs of the kangaroo are small; the hind limbs very large and thick; the head small, with rather long ears, and a long, dusky-brown muzzle; the body long, with the fur shortish but thick, and of a gray-brown tint. In height it is as tall as, or taller than, a man. The female carries her young in a pouch on the underside of the belly. When moving quickly, the hind limbs alone are brought into action, and by means of these the animal bounds along in great leaps of from ten to fifteen feet, the body being carried in a nearly horizontal position, and the tail extended to balance it. The fore-limbs are chiefly used in handling, and with these the females lift their young, and place them in the pouch. The kangaroos are vegetable feeders.

Killdeer (*Aegialitis vocifera*). A common bird in the fields, plains and pastures of central North America. The neck is marked by two black bands, which are in striking contrast to the white body. The killdeer has the interesting habit of pretending to have a broken wing when one comes near its nest, which is built on the ground. If the bird is followed, it leads the intruder away from the nest and takes to the air.

Kingbird (*Tyranus pipiri*). The kingbird is dark gray with white underparts. It ranges over the greater portion of temperate North America. It is commonly found in trees, from which it ventures to catch its prey. Its note is rather harsh and shrill.

Kingfisher (*Alcedinidae*). Birds of various species and colors, generally found near quiet streams. The shape of the kingfisher is somewhat awkward, the head appearing large, due partly to a crest. Its food is mainly small fish which the bird gets by diving. Insects are sometimes eaten. The nests are usually built in tree trunks or in the banks of streams, after the fashion of the cliff swallow.

Lac Insect. See Cochineal Bug.

Ladybird (*Coccinellidae*). Ladybirds, or ladybird beetles, are well-known insects frequently seen on flowers. The body is often yellow with black spots. These beetles are almost all predacious (feeding on other animals), although some are known to eat plants.

Lamprey (*Cyclostomata*). Eel-shaped animals, mostly living in the sea, but going to fresh water to lay their eggs. The large sea lamprey is nearly three feet long. It has no lower jaw, but its mouth is permanently open and is lined with horny teeth by which the animal fastens itself to other fishes, on the blood and mucus of which it lives. There is a single nostril and seven gill openings on the side of the neck.

Allied to the lampreys are the hagfishes, which become true parasites, entering the body of a fish through the gills and completely devouring the flesh in a single night. The hagfishes are not common on our East coast; they are more abundant in Europe and in California.

Lark (*Alaudidae*). The common name for birds of the genera *Alauda* and *Sturnella*. The skylark of Europe, the most harmonious of this musical group, begins its song early in the spring, continues it during the whole summer, and is one of the few birds which sings on the wing. When it first rises from the earth, its notes are feeble and interrupted; as it ascends, however, the song gradually swells to a full tone, and long after the bird is lost to the sight, the notes continue to charm the ear with their melody. The lark mounts almost straight up, but descends in a glide. If there is danger, however, it falls suddenly. The meadow lark of North America, about ten inches long, somewhat resembles the skylark in its habits, but the song is not so sweet.

Leech (*Hirudinia*). Leeches are a group of flattened worms found almost entirely in fresh water, though in Asia there are species which live on the land or in trees. At the anterior end is a sucker, and there is a second at the hinder end. The anterior sucker surrounds the mouth and this, in some species has radiating from it three jaws, each like half of a buzz saw. With these they cut the skin of higher animals, sucking their blood through the wound. Half a century ago leeches were extensively used by physicians in the attempt to relieve certain diseases, but it has since been found out that the human system needs strengthening, not weakening, and the use of leeches has ceased.

Lemming (*Myodes* spp.). Rat-like animals found in northern Europe and Asia. They are famous for their great migrations which occur periodically every eight to ten years. During these times the number of individuals is enormous, and the lemmings start for the coast, being stopped only by the waters of the ocean. In their migrations they destroy much in the way of grain and other crops.

Lemur (*Lemurinae*). Monkey-like animals which are native to the island of Madagascar. Little is known of the habits of these animals. They are mostly arboreal and nocturnal. The tail is long in proportion to the body. The eyes are very large and present a staring appearance. Lemurs are both vegetable and animal feeders.

Leopard (*Felis pardus*). A cat-like animal which differs from the panther in having small spots thickly set, while the panther's spots are large and open. The species is a native both of Africa and Asia. The body of this fierce and rapacious animal is about four feet long. It can take surprising leaps, can swim and can ascend trees.

Lion (*Felis leo*). The largest and most majestic of

carnivorous quadrupeds. It is, when mature, of a nearly uniform tawny or yellowish color, paler on the under parts, the young alone exhibiting markings like those common in the *Felidae*; the male has, usually, a great shaggy and flowing mane, and the tail, which is long, terminates in a tuft of hair. The whole frame is extremely muscular, and the foreparts, in particular, are remarkably powerful. They give, together with the large head, bright eye and copious mane, a noble appearance to the animal, which, with its strength, has led to its being called "the king of beasts."

A lion of the largest size measures about eight feet from the nose to the tail, and the tail measures about four feet more. The lioness is smaller, has no mane, and is of a lighter color on the under parts. The strength of the lion is such that it can carry off a heifer as a cat carries a rat.

The lion is chiefly an inhabitant of Africa, although it is found also in Asia, particularly in certain parts of Arabia, Persia and India. It was anciently much more common in Asia, and was found in some parts of Europe (Macedonia and Thrace), according to Herodotus and other authors. The lion is an inhabitant of open plains in which the shelter of occasional bushes and thickets may be found. It is easily tamed, at least if taken young and if abundantly supplied with food.

Lizard (*Lacertilia*). A group of four-footed reptiles found in warmer climates, and especially abundant in the tropics. The body is covered with scales on both back and belly, while the head is covered with larger plates, called "scutes." This is important when the question arises regarding a few legless forms, which look like snakes, the presence of scales beneath, instead of broad scutes, showing at a glance their proper classification as lizards. Most of the lizards are insect eaters and thus do much good.

Only a single one, the Gila monster, is poisonous. Some of the larger tropical species are used as food. Some of the species have a great capacity for changing the color to correspond to the surroundings. This is most marked in the chameleons of Africa, and exists to a less extent in some of our American species which are popularly called by the same name. The change of color is due to the enlargement or contraction of small colored bodies in the skin. Among the interesting lizards are the horned toads of our Southwest; the glass snakes, footless lizards whose tails are very brittle and break off at slight provocation, and then grow again; the frilled lizard of the East, which has a wondrous collar which it raises when alarmed; and the geckoes of southern Europe, which crawl about on the ceilings of the rooms, uttering the cry which gives them their name.

Llama (*Camelidae*). An animal of Peru, allied to the camels in structure, and serving as the native beasts of burden, as does the camel in the Old World. It is about the size of the common deer, with a longer neck. It is capable of carrying a burden of 150 pounds.

Allied to the llama is the alpaca (which see), which is kept for the hair, used as a textile material and greatly in vogue in earlier days. When the hair was first sent to England, no one would touch it on account of the difficulty of working it satisfactorily. Titus Salt solved the problem, winning a fortune and the knighthood for his efforts.

Llamas and alpacas defend themselves by spitting and biting, and many a visitor to zoölogical gardens has received a missile from the mouth of one of these beasts. Llamas and alpacas are known only in a state of domestication; wild relatives are the vicuna and the guanaco of Peru. Possibly the domesticated forms have descended from these.

Lobster (*Homarus* spp.). The most important crustacean, one species occurring on our New England coast, another on the coast of northern Europe. The body is divided into two regions, the anterior bearing, besides the parts used in taking food, a pair of large pincers and four pairs of walking feet. At the front of the head are two pairs of feelers, which are sensory, and a pair of eyes on the ends of short stalks. Lobsters are fond of decaying fish, and are among the scavengers of the sea. They are caught in large traps, called "lobster pots," made of lath and baited with decaying fish. The number taken is enormous, but over-fishing has greatly reduced the numbers in the sea, so that almost everywhere laws have been passed to protect them. The annual catch on the New England coast is estimated at about thirty million pounds, the average weight of a lobster being between two and three pounds. In the Mediterranean the sea-crawfish (*Palinurus vulgaris*) is called a "lobster," and is greatly esteemed for table use.

Lungfish. Fish of several species which can withstand considerable drought. All are tropical in range. They live in rivers and ponds which dry up for part of the year. When the dry period comes the fish burrow into the damp earth and breathe by means of an air bladder which is similar to our lungs. When water again appears in the river, the fish leave the burrow, and the gills function as in other fish.

Lyre Bird (*Menuridae*). These birds get their name from the shape of the tail in the males, which looks very like a lyre, the outer tail feathers being curved outward at the ends. Most of the lyre birds are found in Australia and adjacent islands. They are forest dwellers and live on the ground. They dig their food, which consists of insects, centipedes and other burrowing forms.

Macaw. See Parrot.

Mackerel (*Scomber* spp.). An important food fish found in the North Atlantic and characterized by the slender shape, the series of little finlets on the tail and the deeply notched caudal or tail fin. It is taken both by hooks and by seines. Some are eaten in the fresh condition and some are salted. Formerly this fish was very abundant on the eastern coasts of the North Atlantic states, but recently it has been comparatively scarce, possibly the result of over-fishing. It goes in large schools.

Allied is the Spanish mackerel of our southern waters and the large horse mackerel, which is not very abundant with us, but which is more common in the Mediterranean, where it is called the "tunny." Large individuals may weigh over half a ton. Mackerel is used extensively as food, the chief fisheries being around Sicily.

Magpie (*Pica rustica*). A bird belonging to the crow family. There are several species, two of which belong to America. The common European magpie is about eighteen inches in length; the plumage is black and white, the black glossed with green and purple; the bill is stout, and the tail is very long. The magpies continue in pairs throughout the year and prey on a variety of food, chiefly animal. They are determined robbers of other birds' nests, destroying the eggs and young birds. In captivity they are celebrated for their crafty instincts and for their power of imitating words.

Mammals (*Mammalia*). One of the great groups of vertebrates, readily recognized by the hair (which occurs nowhere else), the warm blood, by the bringing forth of the young alive and the nourishing of them with milk secreted by the mother.

To the statement that they have living young and do not lay eggs it can reliably be said that the only exceptions are three small forms found in Australian regions. These form a group called "monotremes."

Next above them are the marsupials, in which the young are very immature when born. Therefore they are taken into a pouch on the ventral side of the mother, where they remain until able to shift for themselves. To this group belong our opossum; all of the others, including the kangaroos, wombat, sugar squirrel, and others belong to Australia and the adjacent islands.

Next are the insect eaters, or insectivores, including our moles and shrews; then come the rodents or gnawers (squirrels, rats, mice, porcupines, rabbits, beavers and others) in which the front teeth are fitted for gnawing.

The ungulates are the hoofed animals and are subdivided according as the number of toes are odd (horse, ass, tapir, rhinoceros) or even (cattle, sheep, deer, antelope, camel).

The elephants come next, at present restricted to Asia and Africa, but formerly spread over Europe and America in the species known as the mammoth and the allied mastodon.

Another group is the bats, the only flying mammals, which have a wing of skin supported on the extremely elongated fingers. All of our species feed on insects, but in South America there is one which sucks blood (vampire) and in Asia there are bats which eat fruit.

Whales form an additional group, wonderfully adapted for aquatic life, as are also the sirenians (manatee and dugong).

The carnivores are the flesh eaters, with teeth adapted to cutting flesh and cracking bones. Here are the bears, weasels, otters, mongooses, dogs, foxes, wolves, and the long line of cats. The seals and sea lions form an aberrant aquatic side branch.

Lastly come the primates, the group including the monkeys, apes and man.

Mammoth (*Elephas primigenius*). An extinct elephant-like animal, formerly having a range over much of Europe and Siberia. Unlike elephants of today, the mammoth had long, thick wool. The tusks grew to about fifteen feet in length and are known to have weighed 250 pounds.

Manatee (*Manatus latirostris*). A water mammal, known as the "sea cow," found on the coasts of Florida and tropical America. Manatees generally frequent the mouths of rivers and estuaries, and feed on algae and such seashore vegetation as they can reach at high tide. Their anterior limbs, or swimming paws are furnished with nails by means of which they drag themselves along the shore. They are large, awkward, whale-like animals, attaining a length of eight to ten feet as a rule, but sometimes growing to twenty feet. The skin is grayish-brown, sparsely covered with hairs. Their flesh is excellent, and they furnish a soft, clear oil which does not become rancid.

An ally, with similar habits, is the dugong of Australia.

Mandrill (*Cynocephalus mormon*). An African baboon, distinguished by a short tail. The cheeks are striped with red and blue, and the bridge of the nose is bright red. Mandrills associate in herds. They are ferocious animals, eating any kind of food.

Marsupials (*Marsupialia*). Primitive mammals in which the young are born in an imperfect condition and are carried in a pouch, or marsupium, on the body of the mother. The group as a whole is largely restricted to Australia and nearby islands, although the American opossum is a marsupial. The group includes the wallaby, kangaroo, opossum, phalanger and wombat.

Marten (*Mustela* spp.). Small carnivorous animals, widely distributed throughout North America and Europe. There are a number of species which are essentially alike, differing only in minor details. Most of the forms are dark brown with small ears. The most familiar American species is the pekan (*M. pennanti*), which may attain a length of over a yard. This genus also contains the sables and polecats, which are much alike in structure and appearance.

Mastodon (*Mastodon* spp.). An extinct elephant which formerly was native to both North and South America. It was the only elephant that extended its range into South America. Unlike most elephants it had tusks in both jaws.

Meadow Lark. See Lark.

Millipede (*Myriopoda*). Arthropod animals with an elongated body and two pairs of legs on each segment. They are sluggish animals and spend most of their time in protected spots, such as under stones and in other dark places. They feed on decaying organic matter and on the roots of plants. The body has many segments, the first of which bears two feelers. Stink glands are present on some species and provide a gas which is offensive.

Mocking Bird (*Mimidae*). A genus of the family of thrushes, exclusively American but ranging widely over North America. These birds are remarkable for their power of song.

The best known species is *Mimus polyglottus*, which has an unusually marvelous power of voice, and is able to imitate almost any species of animals, as well as noises produced artificially. Its own song is loud, full and exceedingly varied. In plumage it is decidedly somber, being of a general ashy-gray hue, paler beneath; its sweet and varied notes, and its faculty of imitation, render it a prime favorite.

Monkey (*Primates*). A common name for certain members of the mammalian group of primates, but no scientific definition is possible, for the term is used with very different meanings.

All of the American monkeys are true monkeys, but in the Old World there is no line between ape, baboon, gibbon, macaque and monkey. Most of the American species (the marmosets excepted) have one more molar tooth on each side of each jaw than does man, but the forms of the eastern continent are like man in that respect, just as they are in having nails, rather than claws, on at least some of the fingers and toes. Many of the New World species have prehensile tails, but this never occurs in the others, the tail exhibiting a tendency to be reduced, and at last disappears in the man-like apes. The American apes, moreover, have the nostrils widely separated and opening sidewise, while in the others they open in front and downward, as in man. Monkeys are extremely interesting because of their caricature of man. Some make most entertaining pets, while others are disagreeable in looks, temper and habits. The majority of them are vegetarians for most of their diet, but they are fond of eggs and young birds, as well as of insects. None stray far out of the tropics, and only one enters Europe, at Gibraltar.

Monotreme (*Monotremata*). The most primitive mammals known. They are found only in Australia, and are becoming extinct there. Unlike other mammals, the monotremes lay eggs as do birds, and hatch their young outside the body. After birth the young are transferred to a temporary pouch on the mother, into which milk ducts open. The most common representative of the group is the Australian duckbill, whose habits and appearance are suggestive of a duck. The feet are webbed, and a peculiar beak gives the appearance of a bird. In addition to this, it inhabits the water, scooping up fish with its beak in the fashion of a duck. See Duckbill.

Moose (*Alces machlis*). The largest member of the deer family. It is found in the North, where it roams through the forests. The antlers are massive structures, and are used by the animal in defending itself against enemies. The legs are longer and heavier than are those of the deer. See Deer.

Mosquito (*Culicidae*). A group of two-winged insects, related to the flies. The animals usually lay their eggs in water, and from them hatch out the larvae which, because of their motion in the water, are commonly called "wrigglers." When fully grown, the wrigglers come to the surface, the skin splits down the back, and the perfect insect emerges. As adults they live on blood, which they suck from punctures which they make by the proboscis. In order to stimulate the flow of blood they inject a little of their poisonous saliva into the wound. This causes the itching which was formerly thought to be the worst effect of their bite.

Within the past few years it has been found that mosquitos are the means of inoculating man with malaria, yellow fever and possibly other diseases. They get the germs from some one affected with the disease and, after a few days, are able to pass them along with the saliva. Thus, mosquitos of the genus *Anopheles*, which raise the hind end of the body when they bite, convey the germs of malaria. In the same way yellow fever is carried by mosquitos of the genus *Aedes*. This discovery has led to warfare against the mosquito and to preventing the attacks by means of screens. The best way of eradicating these pests is the emptying of all possible breeding places, and when that is not possible, covering the top of the water with kerosene.

Fortunately, not all species are able to spread these diseases. The commonest mosquitos, species of *Culex*, are not known to convey any disease.

Moth (*Lepidoptera*). The common name of certain insects belonging to the *Lepidoptera*. Like all

Lepidoptera they have scaly wings, the fore wings larger than the hind, and a sucking tube on the lower side of the head. They differ from the others of the group, the butterflies, in that the antennae or feelers on the front of the head never end in a club but, whether feathered or not, they taper to a point. When at rest they carry the wings horizontally instead of folded over the back, and with few exceptions they fly at night. Only a very few feed on anything except vegetable matter. The larvae of the clothes moth eat woolens, silk and other animal matter. In the larval or caterpillar state, many of the moths feed on and do great damage to plants. Among the worst pests in America are such recently imported species as the gypsy moth, the brown tail moth and the leopard moth. Our older forms, like the codling moth and the army worm, and the various measuring worms, are of far less importance. On the other hand, only a few are of any actual value; chief among them is the silkworm, which more than repays its depredations on the mulberry trees with the silk which it spins from glands near the mouth.

Mouse (*Mus* spp.). Mice are small mammals of the group of rodents, belonging to the same genus as the rats. Our common house mouse is an immigrant from Europe. Its habits are well known. There are some interesting varieties, among them the white or albino mice, which are kept as pets, since they are less apt to bite than are the wild stock. The Japanese dancing mice have the queer habit of turning around every few seconds. The field mice are a different species.

Mule. A hybrid between the horse and the ass, differing in size, strength and beauty, according to the predominance of its parental species, those between a male ass and a mare being far superior to the progeny of a she-ass with a horse. In mountainous countries mules are highly serviceable, no beast of burden being either so sure-footed, or so capable of enduring fatigue. In beauty of form they fall far short of that noble quadruped, the horse. The mule has a large, clumsy head, long erect ears, a short mane and a thin tail.

Musk Ox (*Ovibos* spp.). An animal closely related to the sheep but only remotely to the ox. Its body is covered with tufted hair, brownish in color and of great length. The hair about the neck and shoulders is so thick as to give the animal a humped appearance. The musk ox is active and agile. The horns, broad at the base and covering the forehead and crown, curve downward between the eye and the ear, and then upward and slightly backward. The horns of the female are smaller than those of the male. The ears are short, the head large and broad, the muzzle blunt. The average male will weigh about 400 pounds. The food consists of grass and lichens. The musk ox inhabits the arctic regions of America north of the sixtieth degree of latitude. The flesh is pleasant to the taste, though it smells strongly of musk, the odor of which is also diffused from the living animal.

Newt. See Amphibian.

Nightingale (*Passeres*). A genus of birds in which there are two species of similar plumage, inhabiting Europe and North America. One of these is a summer resident of the southern and eastern counties of England, arriving about the middle of April. The plumage of this delightful songster is of a dull hue, reddish brown on the upper surface and grayish white on the lower side. It is commonly found on hedgerows, from which it picks insects. The nest is composed of dry leaves, lined with grass, roots and hair. The eggs are four or five in number, and of a uniform olive-brown color, tinged with grayish-blue.

Octopus (*Cephalopoda*). Molluscs with a rounded body and a small head bearing a pair of well-developed eyes, the mouth surrounded by eight long arms, each arm bearing numbers of suckers by which the animals hold their prey. Inside the mouth is a pair of jaws, shaped much like those of a parrot. Most of the species are small, possibly averaging a weight of five pounds, but along the coast of Alaska some can spread nearly twenty-eight feet. The octopus is eaten extensively in the Mediterranean countries. The stories of large octopuses attacking man are very doubtful.

Opossum (*Didelphyidae*). A family of mammals, belonging to the order of pouch-bearers (*Marsupialia*) found in the Americas from the tropics to the middle temperate zones. One species is found from Florida north to the Hudson River, and west to the Missouri River.

They are rat-like in form, the largest species about the size of the common cat; they have a long tail, which is almost destitute of hair, and is very useful from its prehensile nature, enabling the animal not only to hang by it, but also to climb and descend trees. They are sly, and live chiefly in trees, lying up in the daytime, and at night roaming in search of their food. This consists of insects, small reptiles, birds' eggs and the like.

Orang-Utan (*Simia satyrus*). The Malay name (meaning "man-of-the-woods") for a large man-like ape found in Borneo and Sumatra. It never reaches a height much over four feet, but the arms of one specimen, four feet two inches tall, spread seven feet nine inches, and when erect the hands nearly touched the ground. The orang lives almost entirely in trees. It never jumps, but progresses through the forest by swinging itself from limb to limb. The skin is dark brown and the scanty hair is black. The young are more like the human being than is the adult. As the age increases the jaws protrude more and more and the disproportionate length of the arms increases.

Oriole (*Oriolidae*). A family of birds which inhabits the Old World. One species, the golden oriole, is a summer visitor in central Europe. The male of this species has a brilliant yellow body and black wings and tail. The female is of a greenish hue, streaked with dusky lines. It is about the size of the common thrush. The name oriole is also applied to several American birds, of which the Baltimore oriole (*Icterus galbula*), a bird ranging from Canada to Mexico, is a well-known example. It has the head, throat and wings of black; the lower back and all the under parts are orange, deepening into vermilion on the breast. The orchard oriole (*I. spurius*) resembles the Baltimore oriole in habits, but is found mostly around orchards. The male is black and reddish, while the female is olive and yellow.

Ostrich (*Struthio camelus*). A flightless bird inhabiting the southern parts of Africa. The ostrich is related to the emus and rheas. The wing muscles are reduced, and there is no keel on the breastbone as there is on most other birds. The African ostriches formerly furnished most of the well-known plumes which were used in decorating hats, but the use of them has been reduced in recent years. Ostrich farms have been started in South America and in California. The eggs, which are the largest of any living bird, are laid in the sand and are incubated by the heat of the sun.

Otter (*Lutrinae*). Carnivorous mammals related to the bear. They furnish valuable furs, the skins of the sea otters of the Pacific coast being the most valuable. All are fond of the water, the sea otter spending most of its time in the sea.

Owl (*Strigidae*). The popular name of a group of nocturnal birds of prey. The order *Strigidae* is a sharply defined one.

The head is extremely large; the eyes huge and directed forward; the bill short and stout; the apertures of the ears very large; the legs feathered; the toes four in number, the outer one capable of being directed backward. The plumage is remarkably soft, the feathers of the face forming disks around the eyes. The owls are cosmopolitan, ranging over the whole globe. They feed on small mammals, birds, fishes and insects, swallowing the hair, bones, feathers and scales. This they afterward disgorge in the shape of pellets. They nest on the ground, among rocks, in hollow trees and in buildings, while some resort to the old nests of other birds. They lay from two to five roundish, white eggs.

Oyster (*Ostrea* spp.). A familiar shellfish, possibly the most valuable of all of the molluscs. There are various species in all parts of the world, but the best is the American species, which now is found from Cape Cod to the Gulf of Mexico. Formerly it extended to the coast of Maine, and even now there are scattered beds in the Gulf of St. Lawrence. The oyster grows in shallow water, fastening its shell to some rock or shell, and in this way large beds are formed. They are also planted; that is, the young are taken and placed in favorable situations for rapid growth. The great enemies of the beds are the "drill," a small snail that bores holes through the shell in order to obtain the flesh, and the star-fish, which destroys large numbers. The oyster yields comparatively little nourishment, yet it is eaten extensively. The European oyster is smaller than ours and has a coppery taste. Our species have the sexes separate; in the European species they are united in the same individual.

Allied to the true oysters are the pearl oysters, especially abundant around Ceylon. These have the interior of the shell lined with mother-of-pearl, and when foreign particles get between body and shell they are covered with the same substance, thus forming the pearls used for adornment. These oysters are obtained by diving. The animal matter is allowed to rot, leaving the pearls behind. The shell is also of value, furnishing material for knife handles and buttons, though most of our pearl buttons are now made from the shells of fresh-water mussels from the Mississippi Valley.

Parrot (*Psittaci*). A group which includes the parrots proper, the cockatoos, paroquets, macaws, lories and nestors. In true parrots the upper mandible, which is toothed, is longer than it is high. They have a short, rounded tail. These birds combine, with the beauty of their plumage, a nature of great docility. Parrots have the faculty of imitating the human voice in a degree not possessed by other birds. They are found chiefly in Africa, from whence we get the gray parrot, the best talker. South America, which is particularly rich in species, furnishes the well-known green parrot; and North America is the home of a single species, the Carolina parrot. The parrots are forest birds and are adepts at climbing, using for that purpose both the feet and the bill. Their food consists of seeds and fruits.

Partridge (*Phasianinae*). A European member of the grouse family, from which the name has been transferred to the quail in the Southern States, and to the ruffed grouse farther north.

Peccary (*Dicotyles* spp.). Hog-like animals found in the tropical regions of the New World. They have short tusks which are used in hunting. They frequent forests, and are usually seen in groups. At night they feed on corn, inflicting considerable damage on the crop. They are also fond of reptiles and other small animals. Jaguars and pumas are their enemies.

Pelican (*Pelecanidae*). Fish-eating swimming birds of the warmer regions, with a large pouch of skin between the halves of the lower jaw. In fishing they swim, striking the surface of the water with the wings, scooping the fish into the pouch, and later retiring to the shore to devour them. There are two species in the Gulf States—one white, the other brown, in color.

Penguin (*Impennes*). A group of antarctic birds, with wings very small and hard and covered with small stiff feathers of a bristly nature, absolutely useless for flight. The birds swim well, using both their webbed feet and their wings. There are about eighteen species, entirely confined to the Southern Ocean and the antarctic regions, where they correspond to the auks and divers of the northern seas. During the breeding season they resort to rocky islands in immense numbers, and stand erect with their eggs under them. Their food consists chiefly of fish.

Perch (*Percidae*). The common name for several species of fish in both fresh and salt water, all of which are characterized by spines in the fins and by hard scales. The name properly belongs to the fresh-water species, which are of some value as food.

Petrel (*Procellariidae*). A species of birds related to the albatrosses and varying in size from six inches to three feet in length. All of them live on the high seas, and many of them will follow a ship for days for the scraps thrown overboard. At night they follow close behind the stern of the vessel.

Pheasant (*Phasianidae*). Bright-colored birds with long tails. They were originally native to the Old World, but have been introduced into the United States. Here they have become pests in some localities. They cross readily with the domestic fowls, the hybrids being known as "peros." Pheasants are tasty as an article of food and are valued as game birds.

Pigeon (*Columbae*). A group of birds, including about 300 species, distributed in nearly all parts of the world. All of them are so much alike that no one is in any doubt about the membership of any form in the group. Most of the domesticated varieties, with their great differences in form—differences which in other groups would be considered as distinct species or even genera—are derived from the rock dove. Among the interesting species are the passenger pigeon, which eighty years ago formed immense flocks over the whole of the eastern part of our country, but which are now extinct. The mountain witch of Jamaica is one of the most beautiful of birds. The largest member of the group was the dodo of islands in the Indian Ocean, which became extinct before 1681, partly because it lacked the power of flight. It was somewhat larger than a turkey, with the same external appearance, but with head and legs different. See Dodo.

Platypus. Same as duckbill (which see).

Polecat (*Putorius* spp.). A name common to several species of the weasel family. The common polecat is found in Europe. It is about seventeen inches long, the tail six inches. The color is dark brown. It is nocturnal, sleeping during the day and searching for its prey at night. It is destructive to poultry, rabbits and game. It has glands secreting a fetid fluid, somewhat like that of the American skunk, which it ejects when irritated or alarmed. Its fur, which is imported in large quantities, is known as "fitch." Its hairs form superior artists' brushes.

Porcupine (*Hystricidae* and *Erethizontidae*). Large rodents characterized by having some of the hairs in the form of large spines or quills. Usually the hairs are flat on the animal's back, but when disturbed the porcupine rolls itself into a ball and all the quills stand outward, forming a very good defense. The quills come out very easily, but there is no truth in the statement that the animal has the power to shoot them. Our American species (*Erethizon dorsatum*) has quills about three inches long. It feeds upon the bark of trees, doing much damage to the vegetation. Some of the European and African forms have quills reported to be a foot long.

Porpoise (*Delphinidae*). A very small whale belonging to the group of dolphins, usually about four or five feet in length. It is dark gray above and almost white below. The greater part of its diet is composed of small fish, and the porpoises are commonly seen following large schools of fish. Like all whales, porpoises must come to the surface of the water to breathe.

Prairie Dog (*Cynomys* spp.). Small rodents of the squirrel family, found on the plains east of the Rocky Mountains. They resemble their allies, the marmots, in appearance, having well-developed claws on all the toes of the forefeet and shallow cheek pouches. The best known species is about one foot in length, and has a tail of about four inches. On the upper surface it is reddish-brown variegated with gray. These animals live together in great societies on those portions of the prairies where the buffalo grass grows luxuriantly. Here they excavate burrows in the ground near to each other and when the little creatures are out, quite a busy scene is presented. The name is given them on account of a resemblance between their cry and the bark of a small dog.

Primates. The highest order of mammals, containing the apes, lemurs and man. The forefeet are usually grasping organs, while the hind feet are walking (as well as grasping, in some cases) organs.

The development of the brain in this group is the greatest of any in the animal kingdom.

Ptarmigan (*Lagopus* spp.). Grouse-like birds found in the arctic regions and on high mountains. They are desirable game birds and are hunted. They nest in thickets on the ground. Their food is buds, insects, berries and roots. The ptarmigan has two color phases. It is reddish-brown in the summer, but turns to an almost snow white in winter.

Quail (*Colinus virginianus*). A game bird, also called "bobwhite" from the sharp whistle of the male. It inhabits the greater part of central North America, preferring the open fields. Its nest is usually placed on the ground and is made of grasses and other vegetation. The eggs number about twelve, and two broods are produced each season.

Rabbit. See Hare.

Raccoon (*Procyon* spp.). Nocturnal carnivorous animals of both North and South America. The fingers and toes are exceptionally long, a fact which greatly aids the raccoon to catch its favorite food—fish. During the day the raccoon curls up in a tree to sleep.

Raven (*Corvus corax*). Large birds resembling crows. They were formerly found over most of the United States, but have been driven out of all but the western regions. They are destructive birds, eating almost anything. They are remarkable for their long life, some ravens having been known to exist for over seventy years. They are among the few birds that can imitate human speech.

Reptiles (*Reptilia*). A large group of vertebrates, including lizards, snakes, turtles and crocodiles, and a large number of extinct forms, such as the dinosaur. Reptiles have a scaly skin, breathe by lungs and have blood which maintains the same temperature as their surroundings. All reptiles produce eggs, but some of the snakes retain them in the body until they are hatched. Reptiles and birds resemble each other in several points, so that they are united in a group of *Sauropsida* (reptile-like). Snakes and lizards are closely related, both having the scales as horny plates on the outside of the skin; they have a movable bone inserted between the lower jaw and the skull. In the crocodiles and turtles, this quadrate bone is present but immovable. The turtles have the body inclosed in a bony case, the upper half being formed of the ribs united to the skin, the lower of plates developed in the skin. In the crocodiles the scales are strengthened by the formation of bone beneath the horny portions. Most reptiles have teeth, but all of the turtles lack them, the jaws being covered with horny sheaths. Some of the snakes and a single lizard (the Gila monster) are poisonous, the poison glands being developed in the mouth.

Rhinoceros (*Rhinocerotidae*). The name of a family of mammals, represented by nine living species, characteristic of Africa south of the Sahara, India, Borneo and Java. They have large, unwieldy bodies; short, thick legs, terminating in large pads, with hoof-bearing toes; large, elongated heads, with a long horn or horns springing from the snout in existing forms; small eyes and ears, and short tails. Their hide is extremely thick. Five species, all possessing two horns, belong to Africa. Of these, the white rhinoceros is the largest, attaining a length of over twelve feet and a height of nearly six feet; but the black rhinoceros is best known. The Asiatic species are four. Their hide has much the appearance of armor plates. They are smaller, and two of the species possess double horns, and two a single one. The Indian rhinoceros, a one-horned species, is the one usually seen in menageries in this country. It leads a tranquil, indolent life, wallowing on the marshy borders of lakes and rivers. Owing to the keenness of its smell and hearing, the rhinoceros cannot be easily attacked; but, when brought to bay, it charges with great fury and impetuosity.

Robin (*Turdus migratorius*). The American robin is a familiar bird in all parts of the country. It is about ten inches in length, is of a dull brownish-gray above and has a breast of rusty red. It is one of the birds which appears earliest in the spring. John Burroughs called it, of all our birds, "the most native and democratic." Although it is usually thought that the robin winters in the South, probably very few migrate to any great distance, most of the species spending the winter within a few miles of their nesting site.

Rodents (*Rodentia*). A large group of mammals containing such forms as the rats, mice, squirrels, rabbits, marmots and beavers. The most characteristic thing about the group is the nature of the teeth. There are no canine teeth, and the incisors are used in their well-known gnawing acts. The incisor teeth continue to grow throughout life, being kept down only by gnawing. Although the rodents are mostly burrowers, some forms, as the vole and muskrat, have become partly aquatic; others, such as squirrels, are tree dwellers. Rodents have caused much economic damage in Europe and America.

Sable (*Mustela* spp.). A carnivorous mammal allied to the common marten and pine marten, found chiefly in Siberia and Kamchatka, and hunted for its fur. Its length, exclusive of the tail, is about eighteen inches. Its fur, which is extremely lustrous, and hence of the very highest value, is generally brown, grayish-yellow on the throat, and with small grayish-yellow spots scattered on the sides of the neck. It is densest during winter, and owing to the mode of attachment of the hairs to the skin, it may be pressed or smoothed in any direction. A North American species, the pekan (*M. pennanti*), is sometimes known as the "fisher." The skins of all these varieties are frequently dyed and otherwise manipulated to imitate the true Russian sable. Sable hair is also used in the manufacture of artist's pencils. Sable fur has been of great value since early times.

Salmon (*Salmonidae*). Well-known fishes, forming a large part of the food supply of the world. The salmon inhabits both fresh and salt water. It generally reaches a length of from three to four feet, and an average of from twelve to thirty pounds, but these limits are frequently exceeded. The adult is bluish-white on the back and head, and lighter on the sides and belly.

The eggs hatch in the headwaters of some fresh-water stream, and the young usually remain in the shallow portions of this stream for a year or more, at which time they migrate to the sea. When the season of its migration arrives, the fins have become darker and the fish has assumed a silvery hue. It is now known as a "smolt" or "sálmon fry." The smolts now congregate into shoals and proceed seaward. On reaching the estuary they remain in its brackish water for a short time, and then make for the open sea. The smolt, leaving its native river as a fish weighing perhaps not more than two ounces, after three months' absence may return to fresh water as a "grilse," weighing four or five pounds. In the grilse stage, the fish is capable of depositing eggs. After spawning in the fresh water the grilse again seeks the sea in the autumn, and when its second stay in the ocean is over it returns, after a few months' absence as an adult salmon, weighing from eight to ten pounds. For the purpose of breeding, the salmon returns to the same river in which it passed its early life. The salmon industry is one of the great food industries. There are large fisheries both in Europe and in western America between the latitudes of 45° and 75°.

Sardine. See Herring.

Sea Anemone (*Anthozoa*). Flower-like animals belonging to the group *Coelenterata*. All are sea forms and are found attached to piles and floating timber. From their attached positions they extend arms or tentacles in all directions in search of food, which consists of microscopic organisms. The power of contraction is great; when irritated, the sea anemone contracts violently and at the same time sends out long threads from small holes in the body. These threads bear stinging cells, capable of killing small animals.

Sea Cucumber. See Echinoderms.

Sea Lion (*Otariidae*). Aquatic mammals, relatives of the seals and walruses. The sea lion differs from the seal in having the hind limbs less modified into a tail-like structure, and in having an external ear. Although the group *Otariidae* has a wide distribution, sea lions are mainly antarctic. Many of the "seal skins" of commerce come from sea lions.

Seal (*Phocidae*). A family of aquatic carnivorous mammals in which the legs have become modified into flippers, which are of little use in progressing on land, but which are well adapted for life in the water. All species of seals are flesh eaters, and make great havoc in schools of fishes, although they eat such forms as sea birds, molluscs and crustaceans as well. They are, in turn, prized as food by the Eskimos.

The fur seals are of most importance in the Pacific Ocean where they are found from southern California to the Aleutian Islands. At one time the population of Commander and Pribilof Islands was estimated at 3,500,000 seals, but at present this number is much smaller, due to exploitation by the sealing industries.

Seaurchins. See Echinoderms.

Shad (*Clupea* spp.). A migratory fish of considerable food value. In the spring it ascends all the rivers of our eastern coast to lay its eggs. It is closely related to the herring, but is much larger. This fish has an unusually extensive development of certain bones which keeps it from being a good food fish.

Shark (*Selachii*). A group of very simple fishes in which the skeleton is entirely of cartilage, no bone being developed. The gill openings have no covering (operculum) as in other fish, and open separately by five slits on each side of the neck. The mouth is on the bottom of the head and not at the extreme front. This is possibly correlated with the mode of eating. The tail has two lobes, of which the top is much longer. The skin of most species is composed of a number of small plates, each of which bears a small spine. Formerly this was used commercially in place of sandpaper. The skins of certain sharks are used in the manufacture of pocket books. The size of sharks varies from the small dogfish forms, which average perhaps two feet, to the great basking shark, which is some forty feet in length. Most of the species are voracious, but the tales of man-eating sharks are exaggerated and overdrawn. The flesh of some of the smaller sharks is edible and is sold under the name of "grayfish"; but the use of it in this country is limited.

Sheep (*Bovidae*). Animals belonging to the hollow horned ruminant family. Wild sheep are common in Asia, where they are often found in large herds in the mountainous regions. In America the bighorn sheep (*Ovis canadensis*) is found in the Rocky Mountains from Mexico to northern Canada. Marco Polo's sheep (*Ovis poli*) is one of the finest species of wild sheep known. This large race is present in Turkestan and has been known to exist since the thirteenth century. It reaches a length of over six feet and the horns often attain a length of five feet.

Domesticated sheep have always been known. They were probably tamed in Asia and introduced into other parts of the Old World before history was written. The American breeds of domesticated sheep come chiefly from British and Spanish races. The Shropshire is a popular breed in the Middle States and is a good mutton sheep. The most important wool sheep is the Merino breed. Although this is of Spanish origin, it is found today largely in America and Australia, where its fine wool is a product of great importance. In addition to wool and meat products sheep are of considerable importance to farming because of the manure which they produce.

Shrew (*Soricidae*). The smallest of mammals. They are mouse-like in appearance, but belong to a different order. Shrews are found in fields, meadows, gardens and woods, and even in semi-aquatic places where they feed on worms and insects. They are usually found under logs and stumps. The most common shrew in the United States is the mole-shrew (*Blarina brevicauda*) whose mole-like habits are responsible for its name.

Shrimp (*Decapoda*). The common name for a large number of small crustaceans allied to the lobster and crab, mostly sea dwellers. In many countries they are an important article of food and in this country they are widely used. One or two southern species form the basis of shrimp salad. Shrimps are abundant off the American coasts and are becoming an important fishery.

Silkworm (*Bombycidae*). A term applied to the larvae or caterpillars, of several species of moths. The common silkworm moth, the most important, is a native of China, where it has been cultivated from a remote period. The caterpillar (silkworm) is yellowish-gray, and when full-grown is about three inches in length, with a horn-like projection on the last joint of the body. It feeds upon the white mulberry. The silk is produced in a pair of glands on the floor of the body which contain a gelatinous substance, and become much enlarged at the time when the animal is about to spin. These silk-glands unite at the mouth to form a common duct termed the "spinneret." Through this tube the semi-fluid substance is ejected and, on coming in contact with the air, hardens into the fiber so largely used in commerce. The caterpillar employs the silk in constructing a cocoon in which it assumes the pupa state. The pupa is usually killed by plunging the cocoon into hot water, because the natural exit of the moth is injurious to the silk. After the pupa is killed the silk is reeled from the cocoon and sent to the market as raw silk. The color of the silk varies from a bright orange to almost white. In Europe, some moths produce one generation, others two generations, annually. A valued variety is the novi race of Italy, which spins a large, white, oval cocoon. The Japanese have several varieties, including an oak-feeding silk moth, producing a green cocoon, the silk of which is much used for embroidery. There are also different kinds in China and India.

Skate (*Selachii*). A fish, closely related to the shark, which it resembles, except that the body of the skate is flattened from top to bottom. The mouth and gill slits are all on the bottom. The skates are mainly bottom feeders, eating principally clams and other animals which bury themselves in the mud. In Europe some of the smaller species are used as articles of food, but the practice is not common in America. The sawfish is a skate having the head armed with a long snout which is provided with teeth on the sides. Another species, the torpedo, is provided with sets of muscles capable of giving a powerful electric shock.

Skunk (*Mephitis* spp.). A carnivorous mammal, usually marked with black and white in a striking manner. It is nocturnal, feeding on whatever it may find, and is especially fond of poultry. It is defended by the secretion of a gland near the vent, and can eject the offensive secreted fluid at will.

Sloth (*Bradypodidae*). A large mammal belonging to the edentates, or animals with imperfect teeth. It is a tree dweller which lives, back downward, hanging by its strong claws from the limbs of trees. It feeds upon the leaves, and its slow motions are said to give it its common name. It occurs in the forests of tropical America.

Snail (*Gasteropoda*). A common name for molluscs which have the body enclosed in a coiled shell. The land-dwelling forms have a slight shell, into which the whole body can be retracted. They feed exclusively on vegetation, which they rasp by means of a long ribbon, just inside the mouth, the surface of which is covered with thousands of minute teeth, so that the whole is a flexible file. The animal creeps about on a broad sole, and has four tentacles on the head, one pair of them bearing the simple eyes at the tip. Snails do considerable damage where they are numerous. One species is eaten by many people in Europe, especially in France and Italy. Over ten thousand species are known.

Snake (*Serpentes*). A group of limbless reptiles, found in almost all parts of the world except the polar regions. They have a rounded body, scaled above but with broader plates or scutes on the lower surface. The mouth can be opened very wide, and the jaws are armed with teeth pointing backward, which are of great assistance in forcing large animals down the throat. Most of the species are so colored that they are inconspicuous in their natural surroundings, but most of the poisonous species have no such protection. The largest of the snakes are the pythons of India and Africa. The most poisonous species are the fer de lance of the West Indies

and the karet of India. One group is entirely aquatic, living in the middle of the Indian and the tropical Pacific Oceans, and bringing forth its young alive. These are also poisonous, and have a flattened tail for swimming.

Sole. See Flatfish.

Sparrow (*Fringillidae*). This term was originally applied to the common English, or house, sparrow, but has been extended to include many small birds of different kinds. Most of the sparrows are small, inconspicuous birds with a coloration of dark brown. The English sparrow (*Passer domesticus*) is a common resident of northern Europe and Asia, and has been introduced into North America. Since 1850, when the first English sparrows were brought to this country to protect the trees against insect pests, these birds have spread to all parts of the United States and have themselves become pests, eating grain and other food crops. They are very destructive in gardens. The lark sparrow, or lark finch (*Chondestes grammacus*), is not really a sparrow, but is called so because of the thick bill. The head is marked with black and white stripes. Its song is very pleasant, and can be recognized by the low purr. The fox sparrow (*Passerella iliaca*) is a larger bird, and has red plumage. Its song, which is quite pleasant, is heard only in the spring and fall, as the bird is only a migrant in this country. The vesper sparrow (*Passerculus* spp.), often called the grass finch, is recognized by the outer tail feathers, which are exceptionally white. It receives its name because it is found singing late in the afternoon. The song sparrow (*Melospiza melodia*) is a moderately large bird of six or seven inches in length. The white underparts have black or brown markings which fuse in the center to form a large blotch. Its song is very sweet and melodious. The crown sparrows (*Zonotrichia* spp.) often have conspicuous head markings colored with yellow or white.

Native sparrows do little damage to grain crops as compared with the English sparrow. They do eat many seeds and fruits, but these are usually the seeds and fruits of weeds.

Spiders (*Arachnida*). A group of animals with jointed bodies and legs, the bodies divided into two regions, the anterior of these bearing four pairs of legs and two smaller pairs of appendages. The most anterior of these are the poison claws. They have a poison gland in the base, while the end of the claw tapers to a point, serving as a hypodermic syringe. The front of the head has from six to eight simple eyes. The hinder half of the body, the abdomen, is without appendages, save for two or three pairs of very small projections, the spinnerets. Each of these has numbers of openings at the tip through which a fluid is forced at will. This hardens immediately it comes in contact with the air, and furnishes the silk of which the web is woven. Fine as it is, this silk is really a cable, being made of numbers of finer threads, one for each opening in the spinnerets. Spiders breathe by means of sacks—so-called "lungs"—on the lower side of the abdomen. They use the silk for making webs, for cocoons for the eggs, nests, and in some cases for parachutes for flying. Each species makes its own type of web. Our common house spider is the same as that of Europe. The largest species we see is the one found occasionally in banana bunches. The tarantula has the greatest reputation because of the unfounded belief that its bite causes madness which can be cured only by music. So far as is known there is only one species which can cause serious effects by biting man, and even these cases are not sufficiently authenticated.

Sponge (*Porifera*). Lowly organisms which live attached to stones and other submerged objects, and depend on the currents of water to bring them food. Although most of the sponges are found in the ocean, there are a few fresh water forms. The body is perforated with many holes through which the water flows, bringing food. A large opening at one end allows the water to leave the body. Thus there is a continuous stream of water flowing through the body at all times. Sponges have skeletons of lime and of a horny substance called "spongin." The spongin skeletons are used commercially as bath sponges.

Squid (*Tenthoidea*). A marine mollusk, closely related to the cuttlefish. The body is barrel, or cigar-shaped, and has ten long arms equipped with suckers projecting in front. The head has two well-developed eyes which are quite similar to the eyes of the higher animals. When disturbed, squids give off a quantity of an inky substance which acts as a screen and aids them in their escape. The Japanese formerly made use of squid's ink in the manufacture of a famous ink used in reproducing their drawings. The size of squids varies; most of them are less than two feet, but giants have been reported from time to time with bodies twenty feet long. These giants were common about 1875, but of late years have not been seen. Squids are nervous animals and will not live long in captivity.

Squirrel (*Sciuridae*). A group of rodents, too well known to need description. They are abundant in all of the Northern Hemisphere, living in trees and feeding largely on nuts. There are several species in the United States, the fur of the larger kinds having considerable value. Closely related are the ground squirrels, or chipmunks, and the flying squirrels, which really do not fly but glide by means of a parachute of skin extending between the legs of each side

Starfish. See Echinoderm.

Stoat. See Weasel.

Stork (*Ciconiidae*). A family of birds, chiefly confined to the Old World. The true storks number six species, ranging over Europe, Asia and Africa, and found also in South America. They resemble the herons, but are more robust, and have larger bills, shorter toes, with a nonserrated claw on the middle toe. They inhabit the vicinity of marshes and rivers, where they find food consisting of frogs, lizards, fishes and even young birds. They are migratory, arriving at their breeding haunts in the early spring and departing again in the autumn. The white stork is common in Europe, constructing a large nest, most frequently on the chimney of a cottage.

Swallow (*Hirundinidae*). Birds characterized by the very wide gape of the mouth, to which the common name may allude. All are noted for their graceful flight. They feed almost exclusively on insects, hence are very valuable. Among our common swallows are the purple martin, the cliff swallow, the barn swallow and the sand martin. The so-called "chimney swallow" is, strictly, not a swallow but a swift.

Swan (*Anatidae*). Swimming birds, closely related to the ducks and geese, with long and slender neck, bill about as long as the head, and with a soft cere. Nine species are known, one coming from Chile, the black swan from Australia, and the others from the Northern Hemisphere. We have two white species, the whistling and the trumpeter swans, but the tame species are all of European origin. Once swans were bred for the table, but now they are bred solely as ornamental birds for lakes and pools.

Swift (*Cypselidae*). Aerial birds which seldom come to the ground, except at night. They are tireless flyers, usually seen in pursuit of insects which they continually hunt. The coloration is almost always dull, either black or brown. The swifts are usually seen in groups. Nests are placed in inaccesible places, such as the sides of rocks, chimneys and caves. See Swallow.

Swine (*Suidae*). Animals closely resembling the common domestic pig, which is a good example of the group. Swine are rather commonly distributed over the world. The domesticated variety is too well known to require description here. Of the wild type, the wild boar (*Sus scrofa*) is the most commonly known. It was formerly present over Europe in large numbers, but has been scarce since the seventeenth century. In this species the tusks are well developed. The young are marked with brown stripes which remain for several months after birth. The African wart hog (*Phacochoerus aethiopicus*) receives its name because of the large facial growths which resemble warts. In this species there is a growth of long hair down the middle of the back, and the tusks are well developed in both jaws. Closely related to the *Suidae* are the *Hippopotamidae* (see Hippopotamus) and the American peccaries. See Peccary.

Tapir (*Tapirus* spp.). A genus of hoofed animals with an odd number of toes on the hind feet. All are tropical, some living in Asia, others in America. All are bulky beasts, somewhat resembling swine in appearance. They have the snout prolonged into a flexible proboscis with the nostrils at the tip. Their flesh is said to be good to eat.

Tarantula (*Theraphosidae*). Hairy spiders of tropical and sub-tropical countries. They are often brought into the United States on fruit. The tarantula eats insects and other small animals. The seriousness of the bite of the tarantula is overestimated; it is painful, but seldom proves fatal. This spider is nocturnal in habits. During the day it remains in a silken tube in the ground.

Tern (*Sterninae*). Terns, or sea swallows, are familiar birds on the seashore. They inhabit the entire Northern Hemisphere and breed in sandy, isolated regions. Terns usually are gray above and white below, with black markings on the head. See Gull.

Thrush (*Turdidae*). Attractive birds of moderate size, found all over the country. The true thrushes are represented in America by the American robin, bluebird, nightingale and others. The group contains many of the best songsters. The wood thrush (*Turdus mustelinus*) of the eastern United States is olive green above and almost white, with brown spots on the belly. This is the best singer of the American forms. The brown thrush, or thrasher, receives its name from the fact that it is noisy. The hermit thrush (*Hylocichla pallasii*) is a visitor. It breeds in the far north and winters in the south. See Robin; Bluebird; Nightingale.

Tiger (*Felis tigris*). The largest and most dangerous of the cats, slightly exceeding the lion in size, and far surpassing him in destructiveness. It is purely Asiatic in its habitat, but is not by any means confined to the hot plains of India, though there it reaches its highest development, both of size and coloration. The full-grown male Indian tiger measures from nine to twelve feet, and the tigress from eight to ten feet, from the nose to the tip of the tail. The ground color is rufous or tawny yellow, white on the ventral surface, with vertical black stripes or elongated ovals and brindlings. Though possessed of immense strength and ferocity, the tiger rarely attacks armed men, unless provoked, but often carries off women and children. When pressed by hunger or enfeebled by age and incapable of dealing with larger prey, like buffaloes, the tiger prowls around villages and, having once tasted human flesh, becomes a confirmed man-eater. In a government report it is stated that "one tigress caused the desertion of thirteen villages, and 250 square miles of country were thrown out of cultivation."

The jaguar is sometimes called the "American tiger."

Toad (*Anura*). The common name of any amphibian without a tail or teeth, and with a warty skin. They are common in most parts of the world, there being few in the Australian region, however. They are mostly nocturnal and, as they feed on insects, they are among the best friends of man. The warts are caused by glands in the skin which secrete an acrid fluid. Warts constitute the chief means of defense as few animals will touch them. It is scarcely necessary to say that toads are perfectly harmless to man, and that they cannot cause warts.

Tortoise (*Testudinidae*). Slow moving reptiles with a heavy armor of horny plates. The chief distinction between turtles and tortoises seems to be one of habitat, the turtles usually being considered aquatic animals, while the tortoises are thought of as terrestrial forms; this distinction, however, does not always hold. One of the most common and familiar members of this group is the American box tortoise (*Cistudo carolina*). The name was given because of the drawing of the body completely within the hard covering and closing the ends by hinged portions of the "shell." Tortoises sometimes attain great sizes. Among the largest are the giant tortoises (*Testudo*) of the Galapagos Islands. Specimens attain a length of four feet and a weight of over 500 pounds.

Trogon (*Pharomacrus mocinno*). A long-tailed bird found in the mountainous regions of South America. The back and wings are of a greenish tinge; the underparts are brilliant crimson. A full crest lends an appearance of splendor to the bird. In former times the native chiefs used the long tail feathers for decorations.

Trout (*Salmonidae*). A common name for several fishes with soft, rayed fins and a small fin without rays on the back, behind the large fin. They have very small scales. All are excellent eating, and all are regarded as game fish. Our brook trout is typical. This thrives in the coldest and clearest streams, laying its eggs in December or January. Other species in North America are the lake trout and the salmon trout in the East and the rainbow and the Dolly Varden trout in the West. Europe has its own trout. All of the species belong to the Northern Hemisphere, but they have been introduced into Australia and New Zealand.

Turkey (*Meleagrinae*). A large scratching bird, a native of America from Canada to Central America. It is known now chiefly in domestication, but is still found wild in some parts of the United States. The tame birds differ some in appearance from the birds in a wild state. The name was given under the misapprehension that they came from Turkey.

Turtle (*Chelonia*). The common name for one of the reptiles. They are remarkable for having the body inclosed in a hard case, composed above of the enlarged ribs, and below of several large, bony plates. In some the head and legs can be retracted inside this shell. Over the outside of the case are horny plates which, in the hawkbill turtle, are of value, as they afford the tortoise shell used for combs. Turtles never have teeth, the edges of the jaws being covered with horny material. Most of the species are carnivorous. Some are terrestrial, some occur in fresh water, and some in the sea. The largest species are the marine leatherbacks of the tropics, which occasionally drift north to New England, and the giant species occurring on the Galapagos Islands, off the west coast of South America, and on some islands in the Indian Ocean. The marine green turtles are favorites with epicures, as are the terrapins of our eastern coast. Most species are inoffensive, but our soft-shelled turtles and snapping turtles are savage animals.

Vampire (*Phyllostomidae*). Blood-sucking bats of the tropical parts of North and South America. The front incisor teeth are much elongated into a sharp structure which can easily penetrate the skin of other animals. Vampire bats attack mammals such as horses, cattle and even man. The victims are usually attacked while asleep. The teeth are so sharp that often the danger is not sensed until considerable blood has been lost and the bat has departed.

Vertebrates. One of the great groups of the animal kingdom. The vertebrates have a backbone, or vertebral column, which protects the spinal cord, and terminates in front in the skull containing the brain. The alimentary canal lies entirely below this central skeleton, and the organs of respiration are always connected with this, being either gills in openings passing from the throat to the exterior, or lungs connected with the throat by a windpipe. The heart is always below the digestive tract, usually beneath the throat, but in the higher forms it is carried back into the chest. Some lack legs or their equivalent fins, but most have two pairs of these structures, and the aquatic species have also fins in the middle line of the back and belly. All reproduce exclusively by eggs, there being no cases of division or budding, so common in the lower divisions of the animal kingdom.

Wallaby (*Macropodinae*). A primitive mammal, similar to the kangaroo. Wallabies are found only in Australia and a few adjacent islands. The rock wallaby (*Petrogale* spp.) is able to leap with considerable skill in very rocky and dangerous places, using its tail as a balancing organ.

Walrus (*Trichechidae*). A marine carnivorous mammal, closely related to seals and sea lions, with enormous down-turned tusks, or canine teeth, projecting from the upper jaw, which sometimes reach a length

of sixteen inches beyond the sockets. Walruses have a thick, clumsy body, deepest at the shoulders, and feet that are adapted for swimming. They reach a length of twelve feet or more, and a weight of 2,200 pounds. There are two species, one in the Atlantic and one in the Pacific. The Atlantic form is found on the coast of Labrador and Hudson Bay, but formerly extended farther south. They feed largely on clams and other molluscs which they dig from the sea bottom with their tusks. They are hunted for their hides and oil.

Wasps (*Hymenoptera*). A group of insects with two pairs of wings, the hinder part the smaller, and a well-developed sting, with a poison gland connected, at the hinder end of the body. It is not easy to frame a definition in common words that will separate them from the ants and the bees. Some are solitary, some form colonies in which the individuals work together for the common good. Among the first are the digger wasps, which excavate holes in the soil, or in wood, which they store with insects that they have paralyzed with the sting; then they lay their eggs in the mass, so that the young, on hatching out, will have abundant food. Other solitary forms are the mud daubers, which build nests for the eggs by sticking mud to beams in barns and in other similar places. The social wasps make a nest in common, sometimes in the earth, but the well-known yellow jackets, or hornets, make paper nests from bits of decaying wood which they chew into a real paper pulp. In the colonies the males die at the approach of winter, but the females live to form a new colony in the spring.

Weasel (*Putoris* spp.). Small flesh eaters found in Europe and in America. In Europe they are called "polecats" and "stoats," depending upon the species. In our Eastern States the common weasel (*P. noveboracensis*) is of a brownish hue above, and white below. In the winter the color changes to pure white. It is noted for its ferociousness, eating voles, mice, rats, poultry and other small animals. In turn it is preyed upon by hawks and other birds of prey. It is most active at night.

Whale (*Cetacea*). The popular name of the larger cetaceans, particularly of all those belonging to the families *Balaenoideae* and *Physeteridae* or *Catodontidae*. In the *Balaenoideae* the head is of enormous size, but is entirely destitute of teeth, instead of which the palate is furnished with an apparatus of baleen, or whalebone, for the purpose of straining out of the water the small crustaceans, which form the food of these whales. The elasticity and heaviness of whalebone are well known. The plates of it in the mouth of a whale are very numerous, several hundreds on each side of the mouth, and they are very closely placed together, so that the mouth is filled with them. The head of whales usually occupies from a third to a fourth of the whole length. The lower surface of the true skin extends into a thick layer of blubber, an open network of fibers, in which fat is held. The blubber is from one foot to two feet in thickness, the whole mass in a large whale sometimes weighing more than thirty tons.

The most important species is that known as the right, or Greenland whale. It inhabits the seas of the northern parts of the world, and abounds chiefly in the arctic regions. It attains a size of sixty or seventy feet in length. It was formerly supposed that the Greenland whale was an inhabitant of the southern as well as the northern parts of the world; but the southern, or cape whale, is now regarded as a distinct species, the head being smaller in proportion than that of its northern relative, and the color a uniform black. The main physical characteristics of the whale are its distorted jaws, with upward directed nostrils, its great bulk and rudimentary limbs. The huge bulk of the creature is driven forward by the flexible caudal fin, and while the body is rigid in front, it exhibits great mobility behind. The blowholes are placed on the top of the head, and the animal can respire only when these are above water. The larger whales travel at the rate of about four miles an hour, but when pursuing their prey or goaded by pain, they rush through the water at a much greater pace. They are aided in this by the broad and powerful tail, which is their chief organ of locomotion. Instead of being vertical, as in the fishes, this is horizontal, and the larger species can command immense driving power. The tail is also used as an offensive and defensive weapon. The smooth, shining skin is immediately underlaid by a thick coating of blubber, the great object of the whalers. This is at once dense and elastic, and while it preserves the animal heat it also serves to reduce the mighty bulk of the whale and to bring it nearer to the specific gravity of the element in which it spends its existence. It might be thought that the whale, with its vast bulk, would need sea creatures of a high organization to nourish it; but this is not so. Its chief food consists of minute molluscs, and with these its immense pasture grounds in the northern seas abound.

Whippoorwill (*Antrostomus vociferus*). A bird widely known on account of its oft-repeated cry of "whip-poor-will." It is not often seen, although abundant in damp woods of the eastern United States. It usually rests on the ground during the day and is active at early nightfall, sending forth its cry, and also coursing low over the grass in search of insects. It is about ten inches long and of plain colors, being grayish, much variegated with black and buff. Its bill is very broad, its mouth large and provided with a tuft of long bristles. It builds no nest, but deposits its eggs on leaves or in a slight depression in the ground. To the same family belong the chuck-will's-widow and the night-hawk.

Wildcat (*Felidae*). The true wildcat (*Felis catus*) is found only in northern Europe and Asia. It is a striped animal, quite similar to other members of the cat family. In America the name wildcat is applied to almost any cat other than the domestic house cat, the lynx and puma being the most common.

Wolf (*Canis* spp.). Several species of carnivorous animals belonging to the dog family. The common wolf is about five feet in length, including the tail, and about thirty-two inches in height at the shoulders. The muzzle resembles that of a sheep dog; the ears are upright and pointed, and the eyes are set obliquely. The color of the hair is variable, depending upon the country the animal inhabits; the usual color is light gray. In America the wolf is becoming extinct, but in Europe it is still found in considerable numbers in many parts of Sweden, Russia and Poland. The wolf of India is considered a distinct species. It has a reddish color.

Woodpecker (*Picidae*). A forest bird adapted to clinging to trees and making holes in the wood with its beak. The tongue is elongated backward, to enable the bird to remove insects from the holes bored. The woodpecker generally has contrasted colors: green and yellow, or black and white. Its head is usually tinted red. The woodpecker is found in almost every part of the globe.

Wren (*Troglodytidae*). A group of small dull-colored birds having slender, slightly curved, pointed bills. The wings are short and rounded, and the tail is short and carried erect. Most of the wrens live on or near the ground, feeding on insects and worms which they find among the low brushes. The European wren (*Nannus troglodytes*) is abundant in northern Europe where it frequents gardens, hedges and thickets. The North American species are numerous. The common house wren (*Troglodytes aëdon*) is abundant over the eastern part of our country, often living in houses built for them. The song of the wren is very melodious. The male is a bold creature, often attacking birds much larger than itself, such as the bluebird and swallow.

Yak (*Bos grunniens*). An ox-like animal native to the high regions of Tibet. Its neck is longer in proportion to the body than in any other ox-like animals; its body, especially on the lower parts, is covered with long hair.

Zebra (*Equidae*). A name often given to all striped members of the family *Equidae*, but properly restricted to mean but a single species, *Equus zebra*. All resemble the ass more than the horse. Zebras are light and graceful, with slender limbs. The ground color is creamy, with the head, neck, body and legs striped with black. They are almost untamable, although they have been driven in harness.

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· *Book* · *XII* ·

HYGIENE

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COMPARING FOOD VALUES AT A GLANCE

The graph at top left shows the percentage of protein (red), fat (yellow), carbohydrate (blue), water (green) and mineral (purple). Milk is an almost perfectly balanced food. Compare the band representing milk with those of the other foods.

The amount of heat necessary to raise the temperature of 1 liter of water from 0° to 100° Centigrade (from freezing to boiling) is 100 calories. Each portion around the vessel is the equivalent of 100 calories.

At bottom left are twin chicks; the sturdy one had a vitamin diet, while the other had no vitamins. The three squares indicate diet requirements: in iron (red), in calcium (blue); in phosphorus (yellow). The three rectangles show how cooking breaks down the indigestible capsules which enclose the starch granules in our starchy foods: the first rectangle shows with no cooking; the next, with a little cooking; the third, when thoroughly cooked. At lower right is depicted the balanced meal amid pleasant surroundings.

BOOK XII

HYGIENE



The Wonderful One-hoss Shay

MAN is mortal and the years of his life are numbered. In Biblical times David set threescore years and ten as the span of man's life. It is true that only a very few live this allotted period. Many die in infancy and in the years of early youth; others live on through the decades. Of these, some are healthy and strong. They drink from the cup of life in good spirit, with zest for the day's labor and joy for the thrill of living. Others are tired and ailing; the weeks and months are marked off one from another by illnesses that steal the strength and weaken the spirit and the body.

Through the centuries men have labored to understand the mysteries of the living organism. They have come to understand its structure, how the parts are related and how they function. *Anatomy* (the study of structure) and *physiology* (the study of function) have become great sciences. It has not seemed sufficient, however, to understand only this much. Other curious men have questioned Nature about disease, learned how it is caused and, in many instances, how it may be cured. They have not ceased their labors. In modern times they have begun to understand how disease may be prevented. It has come to pass that *hygiene* (the study of health) has risen to the position of a medical science. As hygienic knowledge has increased, hygienic teachings have been more and more effectively practiced. The consequence, especially in the last fifty years, has been the control of many insanitary practices and conditions, the prevention of a considerable fraction of premature death and the elimination of some of the illness that saps the strength of the people.

The Span of Life. Not many years ago, a newborn babe had an even chance of living about thirty years. So great have been the improvements in the ways of living that today in the United States the chances are even that the newborn may live between fifty and sixty years. Twoscore years and ten have already been attained and there is hope for further increases. Perhaps it is true, as has been claimed, that David spoke in a moment of pessimism and that the true span of life is that recorded in the sixth chapter of Genesis:

> And the Lord said, my spirit shall not always strive with man, for that he also is flesh; yet his days shall be an hundred and twenty years.

It is not sufficient that we shall live long. It is far more important that we should be healthy while we live. The physician's ideal of healthy living can be read into the charming poem of Oliver Wendell Holmes, *The Deacon's Masterpiece* or *The Wonderful One-hoss Shay*. You may remember how the deacon built his masterpiece,

> . . . the wonderful one-hoss shay
> That was built in such a logical way
> It ran a hundred years to a day.

He had reasoned that chaises break down, but never wear out; he had built his with each part as strong as the rest. And on the hundredth anniversary, when a later owner was out for a drive, something happened:

> . . . What do you think the parson found,
> When he got up and stared around?
> The poor old chaise in a heap or mound,
> As if it had been to the mill and ground!
> You see, of course, if you're not a dunce,
> How it went to pieces all at once—
> All at once, and nothing first—
> Just as bubbles do when they burst.

The deacon's chaise, whose every part was as strong as every other and which went to pieces all at once, nothing first, may be symbolic of the perfect human body. The end should come not through sickness, not through accident, not through breakdown, but through normal wearing out and decay. And as bubbles before they burst, our bodies should be perfect, whole and hearty until the final breath is drawn. How far the realization of this ideal is from the actual fact we know only too well.

In the pages that follow is set forth the story of the human body, how it is constructed, how it operates and how it should be cared for so that it may grow correctly and function efficiently. It is not necessary to learn all the details that are described. It is sufficient to understand the main facts. The laws of personal and community hygiene can then be utilized, not as rules of thumb, but as guiding principles for the routine of living.

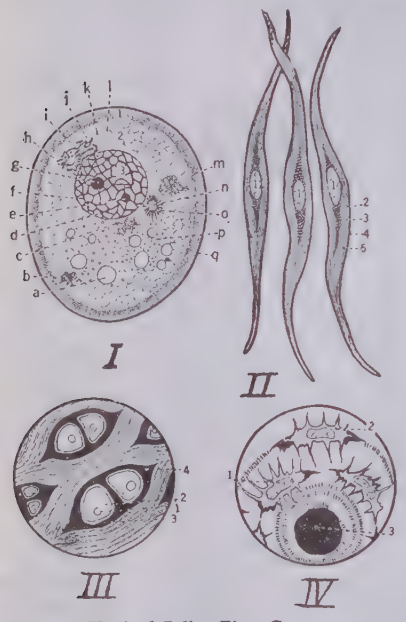
THE STRUCTURE OF THE BODY

To understand the relatively simple rules of healthy living, it is essential to know the fundamental facts about the structure of the human body and how it works. In the following discussions the elements of anatomy and physiology are presented only in sufficient detail to indicate the reasons for the rules of hygiene. We are fortunate in being privileged to have our descriptions illustrated by diagrams prepared by the Denoyer-Geppert Company of Chicago after the splendid, colored drawings of the Winslow *Health and Hygiene Charts* which they prepare and publish for the teaching of hygiene. Unless otherwise specified, the figures have been taken from their *Teacher's Manual*, prepared for use in connection with these charts.

Cells, Tissues, Organs, Systems. It is well known to most persons that the body is made of smaller parts just as a house is made of bricks, boards, beams, nails and other essential things. The smallest living unit in any living body is the *cell*. There are many kinds of cells, differing in form as they do in function. Cells of the same kind usually occur combined in masses which are called *tissues*; two or more kinds of tissues in functional combinations make up an *organ*; and organs in functional organizations comprise *systems*. For this reason we may speak of the body as a complex organization of systems whose operations are coördinated for the growth, maintenance and reproduction of

the individual. The plan to be followed in this book in considering the hygiene of the body depends upon understanding first, the units of structure (cells, tissues and organs), later the organization and operation of the several systems, and finally the work of the body as a whole.

Types of Cells. In order to illustrate the characteristics common to all cells, a drawing is introduced to represent a generalized cell. It is drawn like no particular cell and, although it does not contain all details, it illustrates how complex the simplest unit of living matter is when its finer details are considered. Muscle cells of the "smooth" kind occur in those muscles that are not under voluntary



Typical Cells—First Group

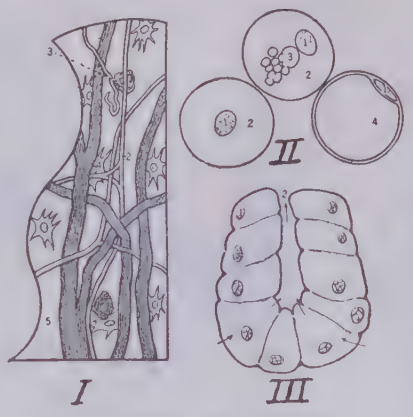
I. Generalized cell, showing parts common to most cells, 1. Exoplasm, (m) Microsomes, (q) Cell membrane; 2. Endoplasm, (a) Fluid vacuole or oil drop, (b) Foreign inclusions [metaplasm, pigment etc.], (c) Chromidia, (i) Mitochondria or plastosomes, (k) Spongioplasm, (l) Hyaloplasm.

II. Smooth muscle cells; 1. Nucleus; 2. Protoplasm, finely granular interfibrillar sarcoplasm; 3. Sarcoplasm, coarsely granular; 4. Sarcolemma; 5. Myofibrils.

III. Fibrocartilage (with groups of two daughter cartilage cells); 1. Nucleus of daughter cell; 2. Cytoplasm of daughter cell; 3. Capsule of daughter cell; 4. Cartilage matrix.

IV. Bone cell; 1. Nucleus; 2. Bone corpuscle; 3. Haversian canal.

control and those of the "striated" kind occur in muscles that are under control of the will. The body is built upon a framework of bony structures (the skeleton), the living parts of which are the bone cells. They secrete the material which becomes impregnated with mineral matter that is chiefly calcium phosphate and which makes up about two-thirds of the weight of the bone. Nourishment reaches the bone cell through blood that flows in capillaries located in special pores in the bones (the Haversian canals). Bone is not made in the body as such but is formed by mineralization of the softer cartilage tissues of which the cartilage cells are the essential parts. Many groups of tissues are held together by a special kind called "connective" tissue. When an excess of fat is stored in this tissue, it becomes transformed into "fat" (adipose) tissue which is characterized by fat cells. Body fluids and secretions, such as the lachrymal fluid that bathes the eyes, the gastric juice of the stomach, the saliva, and the sweat on the skin are all prod-



Typical Cells—Second Group

I. Connective Tissue; 1. Collagenous fibers; 2. Elastic fiber; 3. Mast cells; 4. Lamellar cell, fibroblast; 5. Intercellular substance.

II. Adipose or fat cells; 1. Nucleus; 2. Cytoplasm; 3. Fat globules; 4. Fused globules displacing cytoplasm.

III. Gland (simple tubular) cells arranged to line a duct. Substances reach the cells from the blood and the specific secretions of the cells are excreted into the duct. 1. Nucleus of gland cell; 2. Duct.

ucts of variously specialized "gland" cells. Commonly these are arranged in such a way that the fluids that come to the cells from the blood are changed by them and the characteristic secretion of the gland cells is passed out through a canal or duct of which the cells themselves form the lining. The control of the several parts of the body so that they function in an harmonious manner is accomplished through the chemical composition of the blood and by the nervous system. Of the latter the nerve cell is the basic unit. The central part of such a cell is the neuron. This may be as small as most tissue cells or may

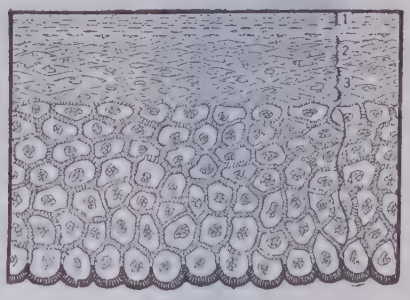


Nerve Cell

1. Nucleus; 2. Dendron or dendrite; 3. Neurofibrils; 4. Chromatophile granules; 5. Nucleolus; 6. Axon; 7. Gemmules; 8. Axon hillock (by which the axon rises from cell body). The dendrons and axons may be very long.

be large enough to be seen with the naked eye. The fine fibers which run out from the neuron (the axons) may extend for several feet to remote parts of the body, to a muscle or other tissue to which the neuron sends or relays stimulations. The dendrons (dendrites) are fine processes or outgrowths from the neuron by means of which it is linked with other neurons.

A Tissue (The Skin). To illustrate how cells are aggregated into tissues the skin may be taken as an example. The lowest layer (*stratum mucosum*) is made up of active, living cells that are nearly cylindrical in shape. These grow and divide, the growth occurring outwards to the (upper) surface, the cells becoming flat and less active until the outermost layer (*stratum corneum*) is reached. At this level the cells are flat, horny and dead, and no nuclei are seen in the cells. These are more or less continually scaling off the surface and being replaced by cells from below.



Skin Tissue

An example of cells aggregated into a tissue; 1. Stratum corneum; 2. Stratum lucidum; 3. Stratum granulosum; 4. Stratum mucosum.

Such color as the skin has is principally due to the pigment that is produced by the cells of the lowest layer of the epidermis.

THE SYSTEMS OF THE BODY AND THEIR HYGIENE

The Skeletal System. The body is an aggregation of systems, organs and cavities built around a bony framework or *skeleton*. This consists of 206 bones, some of which are fused or joined firmly together; others are attached by joints which permit free or limited motions. The general scheme of the skeletal system is a main, upright, supporting series of bones—the spinal column—on top of which is fastened the skull and its appendages; a little below is the shoulder girdle, and at the bottom the pelvic girdle. From the front of the shoulder girdle there extends a series of three bones that make up the sternum; and between the back of the spinal column and the front of the sternum run the first ten ribs (costae). The eleventh and twelfth ("floating") ribs do not reach the sternum. This last group of bones (spinal column, ribs and sternum) makes a basket-like structure which contains and protects from injury many of the most delicate and vital organs of the body. The arms are joined to the shoulder girdle and the legs to the pelvic girdle.

Joints. The spinal column has an *S* shape which gives it a spring-like, shock-absorbing power that is particularly valuable in the protection of the head and its contents when the body is in motion. The vertebrae (unit bones of the spine) are separated by soft inter-vertebral pads. With the help of the vertebral muscles, the spine may be tilted to one side or the other by the contraction and relaxation of the opposing muscles between the transverse processes.

Among the other kinds of bone joints, the "pivot" joint is illustrated in the atlas (first

THE HUMAN FACTORY

BREATHING

The breathing system is shown as a bucket chain picking up oxygen from the air at the nasal openings and emptying it into the blood within the lungs. On leaving the lungs the buckets carry away carbonic acid gas from the blood pumped there by the heart. Thus, the blood is purified

FOOD

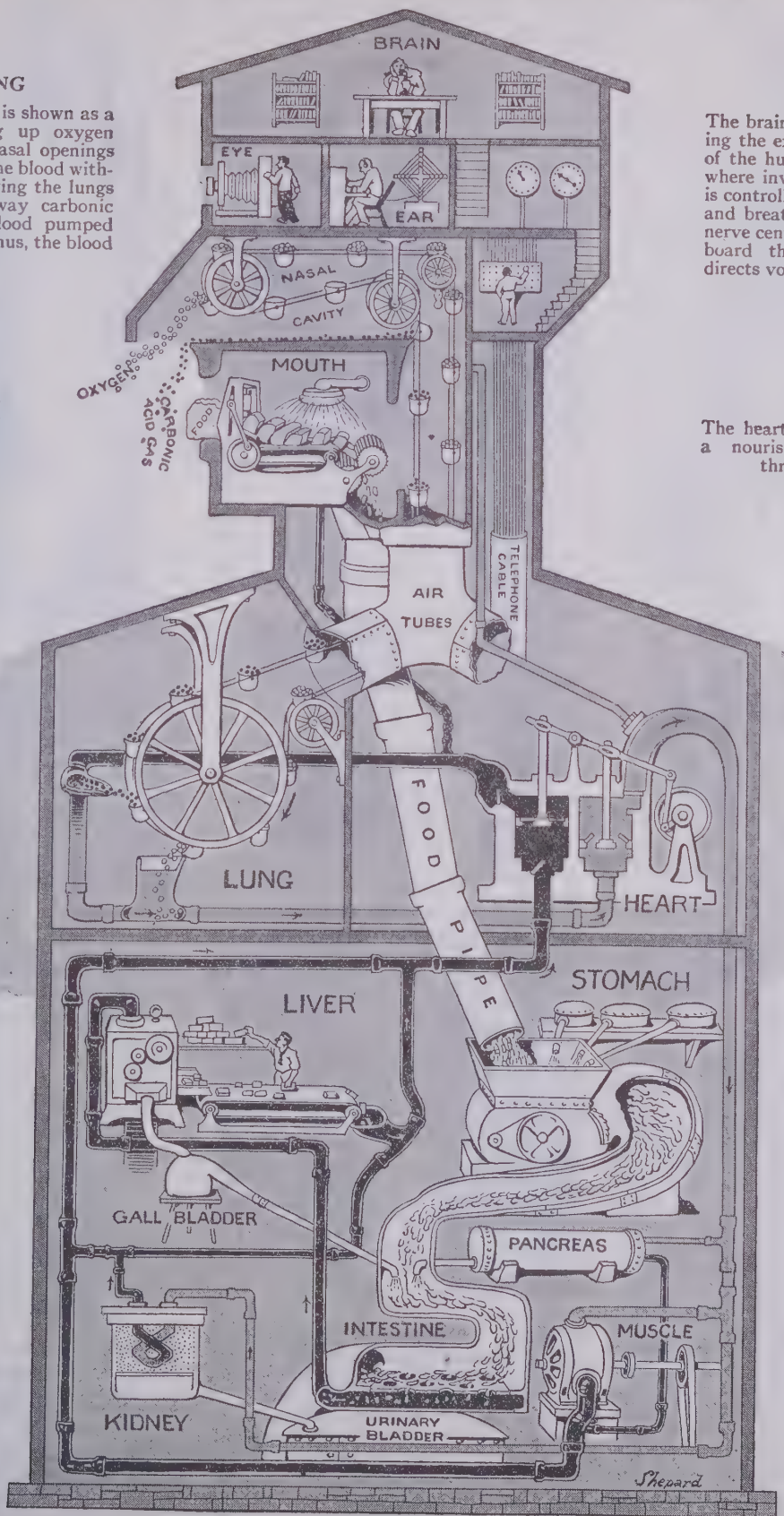
Food entering the mouth is shown being cut by a slicer (the front teeth) and then carried on a conveyor (the tongue) to the crusher (the back teeth). During this process of cutting and mashing, the salivary secretions from the mouth are mixed with the food.

LIVER

In the liver, sugar is stored in the form of animal starch (glycogen); wastes and poisons are removed from the blood, and bile is manufactured. The bile is stored in the gall bladder until it is needed in the intestines.

KIDNEYS

The kidneys are filters for the blood; they filter water and many waste products out of the blood, thus producing the urine.



BRAIN

The brain is represented by picturing the executive or directing head of the human factory; a dial room where involuntary muscular action is controlled, such as the heart beat and breathing. The motor (action) nerve center is pictured as a switchboard through which the brain directs voluntary movements of the body.

HEART

The heart is a pump which forces a nourishing stream of blood throughout the body.

STOMACH

The stomach is a mixer and kneader It is here that pepsin and other ferments are mixed with the food.

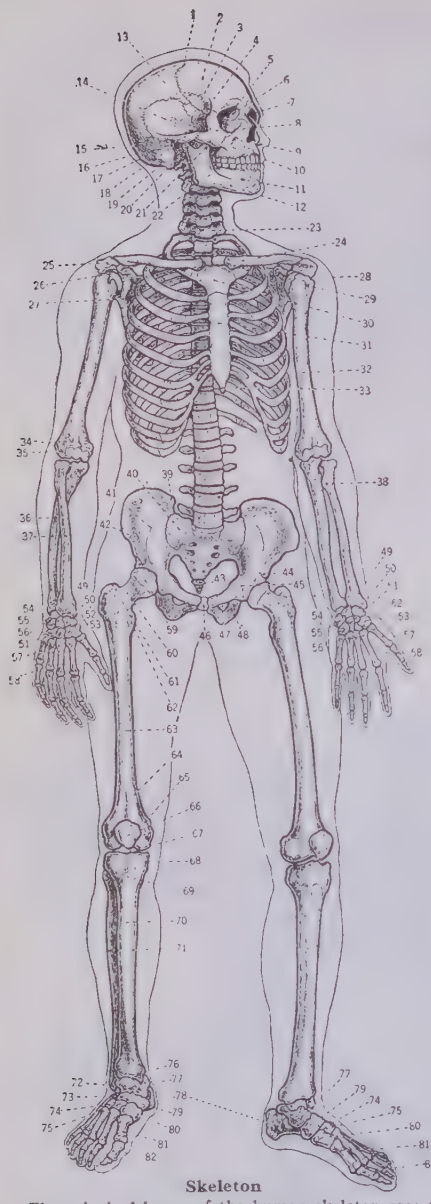
INTESTINES

From the intestines the blood takes sugar and other digested foods.

MUSCLES

A picture of a motor is shown to indicate the muscles — energy and power. The blood brings to the muscles the fuel and removes the wastes.

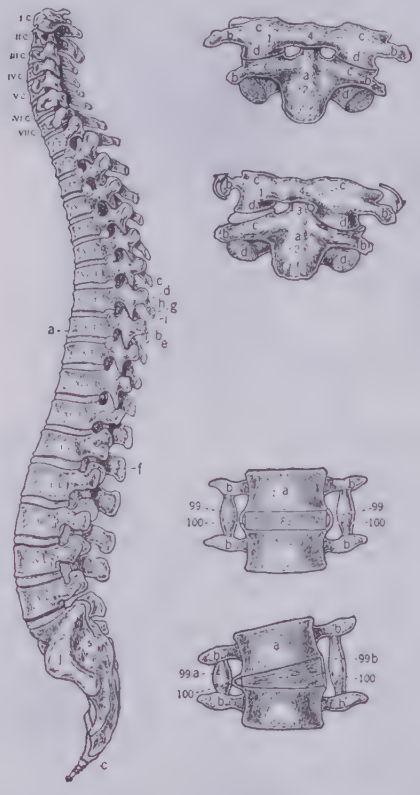
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Skeleton

The principal bones of the human skeleton are: 1 Coronal suture; 2. Frontal bone; 3. Squamosal suture; 4. Great wing of sphenoid bone; 5. Supraorbital notch; 6. Ethmoid bone; 7. Nasal bone; 8. Malar bone; 9. Infraorbital foramen; 10. Maxilla; 11. Mental foramen; 12. Mandible (body); 13. Parietal bone; 14. Temporal bone; 15. Occipital bone; 16. Lambdoidal suture; 17. Zygomatic process of temporal bone; 18. External auditory meatus; 19. Mastoid process; 20. Condyle of mandible; 21. Coronoid process of mandible; 22. Ascending ramus of mandible; 23. Seventh cervical vertebra; 24. Clavicle; 25. Acromion process of scapula; 26. Coracoid process of scapula; 27. Scapula; 28. Head of humerus; 29. Bicipital groove; 30. Manubrium of sternum; 31. Body of sternum; 32. Body of humerus; 33. Xiphoid process of sternum; 34. Medial epicondyle of humerus; 35. Lateral epicondyle of humerus; 36. Ulna; 37. Radius; 38. Radial tuberosity; 39. Posterior superior spine of ilium; 40. Sacrum; 41. Ilium; 42. Anterior superior crest of ilium; 43. Coccyx; 44. Anterior inferior spine of ilium; 45. Pubis; 46. Symphysis pubis; 47. Obturator foramen; 48. Ischium; 49. Lunate bone; 50. Navicular bone; 51. Capitate bone; 52. Greater multangular bone; 53. Lesser multangular bone; 54. Pisiform bone; 55. Triangular bone; 56. Hamate bone; 57. Metacarpal bones; 58. Phalanges; 59. Head of femur; 60. Neck of femur; 61. Great trochanter; 62. Lesser trochanter; 63. Body of femur; 64. Lateral epicondyle of femur; 65. Medial epicondyle of femur; 66 Patella 67. Lateral condyle of tibia; 68. Medial condyle of tibia; 69. Greater tuberosity of tibia; 70. Tibia; 71. Fibula; 72. External malleolus; 73. Cuboid bone; 74. Third cuneiform bone; 75. Second cuneiform bone; 76. Internal malleolus; 77. Talus; 78. Calcaneus; 79. Navicular; 80. First cuneiform bone; 81. Metatarsal bones; 82. Phalanges; I to XII Ribs, costae.

vertebra) which rotates on a projection (odontoid process) of the second vertebra (the axis). The "hinge" joint is well known in the elbow and the "ball-and-socket" joint in the hip. In the last it is interesting to note in the drawing how the ball-like projection from the femur fits into a socket in the pelvis so that the leg is capable of a free, swinging motion. It is also shown how bones are bound together at joints by the tough but elastic



The Spinal Column

Note the curvatures that give the spinal column shock absorbing properties. These figures illustrate how the body is tilted to one side or the other. Each pair of vertebrae is separated by a soft intervertebral pad. The bony processes (b) are connected by muscles (99). When one muscle contracts (99a) and the opposite one relaxes (99b) the body may be bent. 83. Intervertebral fibrocartilage.

IC—VIIC Cervical vertebrae.

IT—XIIT Thoracic vertebrae.

IL—VL Lumbar vertebrae; (a) Body of vertebrae; (b) Transverse process; (c) Superior articular process; (d) Inferior articular process; (e) Spinous process; (f) Mammillary process; (g) Pedicle or root of vertebral arch; (h) Fovea for head of rib; (i) Fovea for tubercle of rib; (j) Articular surface of sacrum.

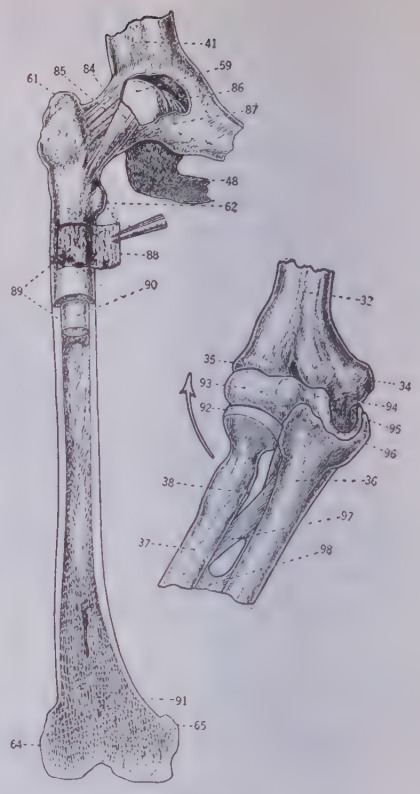
S Sacrum

C Coccyx; 99. Intertransversarii muscle, (a) Contracted, (b) Relaxed; 100 Annulus fibrosus of the intervertebral fibrocartilages.

Pivot joint of atlas and axis (first and second vertebrae) when head is facing forward (first upper right diagram). Pivot joint when head is rotated to the right (second upper right diagram). 1. Atlas; 2. Axis; 3. Odontoid process of axis, (b) Transverse process, (c) Superior articular process, (d) Inferior articular process; 4. Anterior arch of atlas.

ligaments. A dislocated joint requires prompt attention by a physician or surgeon.

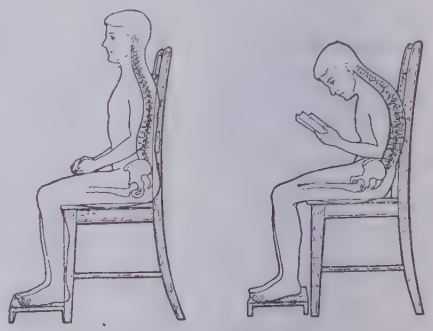
Structure of Bone. The periosteum is a thin layer of tissue which covers the bone. It is the living part of the bone and from it the bone is made. The shafts of the long bones are hollow, so that they are light in weight and yet strong; they are filled with soft marrow. Blood cells are manufactured in the marrow.



Joints

At the left, the ball and socket joint, right hip; at the right, hinge joint, right elbow. Note how the bones are bound together by the ligaments (84-87). To illustrate the structure of a long bone, a flap of periosteum is cut away at 88 and the bone has been split open to show the marrow that fills the hollow shaft. 34. Medial epicondyle of humerus; 35. Lateral epicondyle of humerus; 36. Ulna; 37. Radius; 38. Radial tuberosity; 84. Iliofemoral ligament; 85. Ischiocapsular ligament; 86. Ligamentum teres femoris; 87. Pubocapsular ligament; 88. Periosteum; 89. Compact bone; 90. Marrow; 91. Cancellous tissue with marrow removed; 92. Head of radius; 93. Capitulum of humerus; 94. Trochlea of humerus; 95. Olecranon process of ulna; 96. Coronoid process of ulna; 97. Oblique ligament; 98. Antibrachial interosseous ligament.

Posture. It is plain that the functions of the skeleton are to serve as a framework for the body, to protect many of the soft parts from injury, to provide the necessary cavities for the lungs and other organs, to pro-

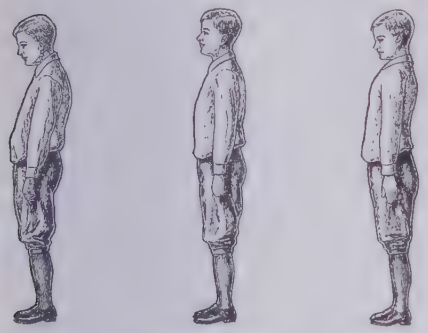


Sitting Posture

At the left is illustrated correct posture. The boy reading shows incorrect posture.

vide strength and opportunities for motion, and to maintain the necessary shock-absorbing systems. It must be clear that good posture, which means the proper management

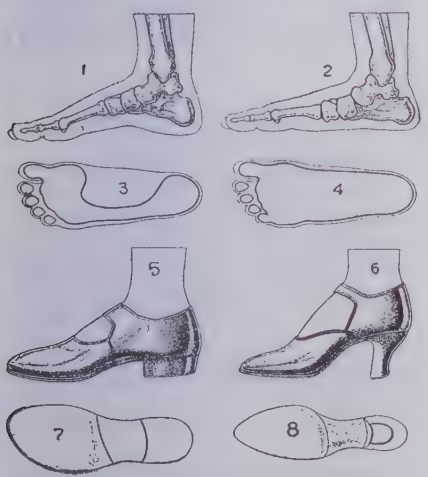
and arrangement of the skeleton, is essential for the proper functioning of the body. "Slumped, twisted or strained posture is not only ungraceful and ugly but may do serious harm to the health by interfering with circulation and cramping the inner organs."(Winslow.) Good sitting and standing postures are very important, particularly for children.



Standing Posture

At the left is shown careless posture; next, correct posture; at the right, exaggerated posture.

The bones of the foot are arranged in a strong, shock-absorbing, springy arch. A broken arch (flat foot) is a serious handicap. Wearing sensible, correct shoes is a good safeguard for the feet. A shoe with a narrow, pointed toe and high heel can do no good and much damage to the foot within it. Flat-foot and other conditions can often be cured by toe and foot exercises and by wearing correct shoes that do not cramp the toes

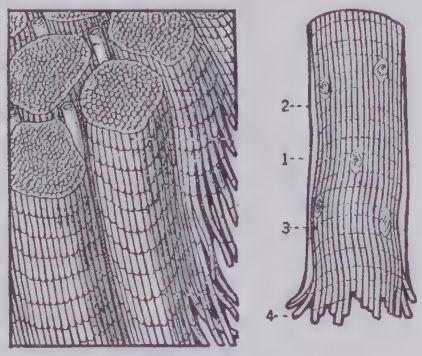


Good and Bad Footwear

1. Bones of normal arch; 2. Bones of fallen arch; 3. Footprint from normal foot; 4. Footprint from flat foot; 5. Healthful type of shoe; 6. Harmful type of shoe; 7. Sole of healthful type of shoe; 8. Sole of harmful type of shoe.

or throw the bones of the foot off their true arch. The exercises recommended for partly or completely correcting fallen arches and strengthening the muscles of the feet are these: repeatedly rise on the toes when standing; place the soles of the feet together when sitting. Another good exercise is to stand on a towel with bare feet and tuck the towel under the feet by gripping it with the toes.

The Muscular System. Approximately one-half of the body weight is in the more than 500 *muscles*, large and small. Some are under control of the will (*voluntary*) and others are not (*involuntary*). Of the former, those which control the movements of the various parts of the body are examples familiar to everyone. Of the latter, the muscles



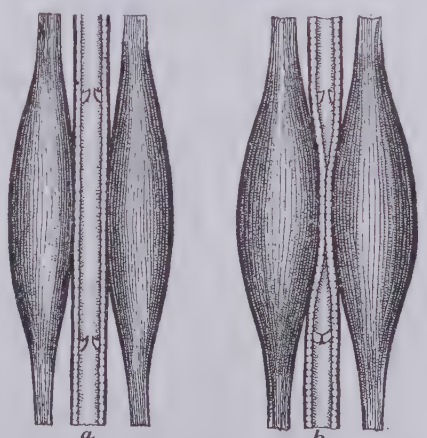
Muscle Cells

At the left, magnified muscle bundles of the kind that are "voluntary" (under control of the will). Note the cross-striations.

At the right, a single muscle cell, much more enlarged. Note that this type of cell has many nuclei (1), a definite wall (2) and many rods (3, 4) which are marked by cross-striations.

of the walls of the intestines and blood vessels, the heart wall and others may be cited. The involuntary as well as the voluntary muscles are always in a state of greater or lesser *tonus* or contraction, complete relaxation being apparently incompatible with the living state. The tonus of the involuntary muscle is controlled by nervous and by chemical stimuli; the tonus of the voluntary muscles is, in addition, controlled by the will.

It has already been seen that smooth (involuntary) muscle cells are simple cells with single nuclei (p. 978). In contrast, the cells



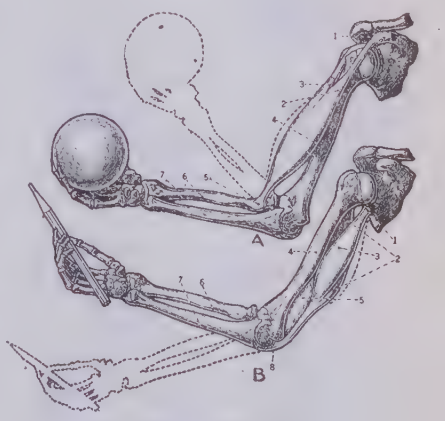
How Contracting Muscles Increase the Flow of Blood Through Veins

Showing, (a) Muscles relaxed, (b) Muscles contracted. The valves in the veins permit the blood to flow only one way—towards the heart.

of voluntary muscles appear to be bundles of rods or fibrils with cross striations and many nuclei. These cells are known as "striated" muscle cells because of the striations or cross markings. Bundles of muscle cells comprise a "muscle bundle." A large muscle, like the biceps, consists of many thousands of cells.

The most obvious function of voluntary muscles is for the purpose of motion of parts of the body. For example, by contracting the biceps, the forearm is raised. To restore the arm to its original position it may be sufficient merely to relax the muscle and permit the arm to fall. More often the result is accomplished by causing another muscle, the triceps, to contract on the other side of the arm. Raising the arm by contraction of the biceps is also accompanied by the simultaneous relaxation of the triceps. Muscles cannot push; they can only pull. For this reason practically all muscles are in pairs or groups that act more or less oppositely. A quiet, resting position of a limb or organ is often the result of the balanced pulls of opposing muscles. It is the balanced action of opposing muscles that makes an upright posture possible.

The heart is really little more than a mass of involuntary muscles that keep contracting and relaxing in a rhythmical fashion. The involuntary muscles in the walls of the stom-



How Muscles Effect Motion

In the upper figure, contraction of the biceps raises the forearm. Muscles can pull, but cannot push. In the lower figure, to lower the arm, the opposing muscles contract and the biceps relaxes.

A. 1. Coracoid process; 2. Biceps (short head); 3. biceps (long head); 4. humerus; 5. radial tuberosity; 6. Radius; 7. Ulna

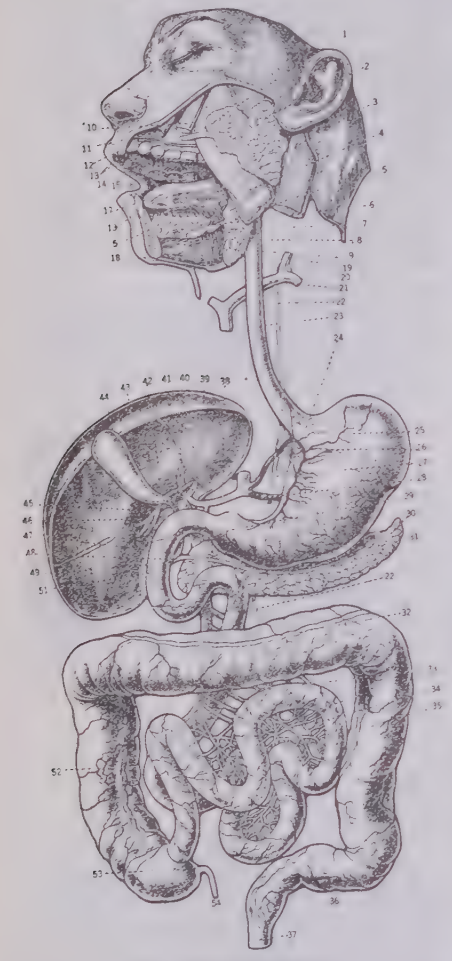
B. 1. Origin of triceps (long head); 2. Triceps; 3. Triceps; 4. Humerus; 5. Medial head of triceps; 6. Radius; 7. Ulna; 8. Elbow.

ach and intestines contract and relax alternately to churn the contents and, at suitable times, cause the food to move on through the gastro-intestinal tract. Many muscles combine to cause the motions that result in inspiration and expiration. Expiration is normally a passive process. Corsets and tight clothes interfere with breathing and tend to make for shallow respiration.

It is hardly necessary to remark that most muscles are strengthened and enlarged (hypertrophied) by use, and are weakened and reduced (atrophied) by lack of use. Exercise, in moderation, serves to keep the muscles in a healthy state and commonly also aids directly in the state of other organs and tissues. The flow of blood in the veins is considerably accelerated by the contraction of muscles, so that muscular exercise aids the blood supply of many tissues. On the other

hand, it is not ordinarily advantageous to exercise vigorously directly after a meal, probably because blood which is needed in the digestive organs is thereby diverted to other parts.

Regular, moderate exercise every day will help keep the body in a healthy state. Vigorous exercise should not be prolonged and should be followed by rest.



The Digestive System

The principal parts of the digestive system. The small intestine (33) is drawn considerably shortened so that it will not obscure other parts in the drawing. 1. Parotid duct; 2. Parotid gland; 3. Sternocleidomastoid muscle; 4. Masseter; 5. Mandible; 6. Sublingual gland; 7. Submaxillary gland; 8. Hyoglossus muscle; 9. Genioglossus muscle; 10. Zygomatic muscle; 11. Caninus muscle; 12. Orbicularis oris; 13. Incisors; 14. Canine (cuspid); 15. Premolars (bicuspid); 16. Molars; 17. Tongue; 18. Geniohyoid muscle; 19. Left jugular vein; 20. Left subclavian vein; 21. Left innominate vein; 22. Thoracic duct; 23. Esophagus; 24. Cardiac orifice of stomach; 25. Fundus of stomach; 26. Right gastric artery; 27. Celiac artery; 28. Lienal artery; 29. Pyloric orifice of stomach; 30. Pancreas; 31. Portal vein; 32. Transverse colon; 33. Small intestine; 34. Lacteals; 35. Descending colon; 36. Sigmoid flexure of colon; 37. Rectum; 38. Hepatic artery; 39. Liver, left lobe; 40. Hepatic duct; 41. Round ligament; 42. Cystic duct; 43. Quadrate lobe; 44. Gall bladder; 45. Portal vein, left branch; 46. Portal vein, right branch; 47. Coronary ligament; 48. Common bile duct; 49. Pancreatic duct; 51. Duodenum; 52. Ascending colon; 53. Caecum; 54. Vermiform appendix.

The Digestive System. Every living cell is continually using up energy in order merely to remain live. It must, therefore, have a continuous food supply. In addition, the living cell is breaking down and repairing itself, growing and reproducing itself. All of the constituents that it needs to make its own substance are supplied in food that is ingested by the organism of which the cells are the ultimate living units. But the foods that are eaten cannot be utilized directly by the cells: solids must be converted to liquid form, and even liquids must generally be changed chemically so that they can be absorbed through the membranes that line the stomach and intestines in order that they shall reach the circulating blood and lymph that will carry them to the tissue cells. The organs of digestion are those which accomplish the marvelous transformations of foods so that they are prepared for the blood and lymph.

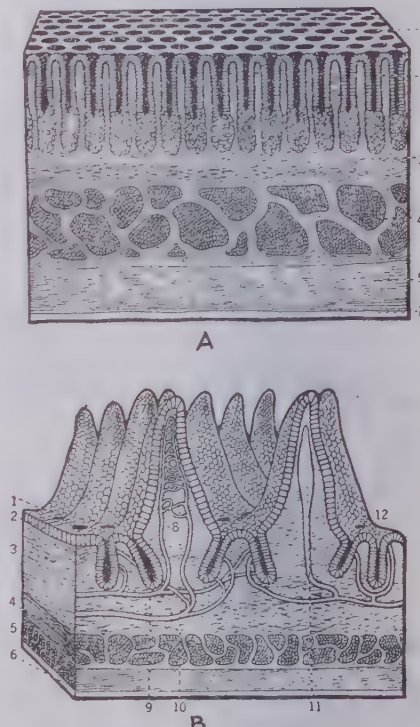
The *alimentary tract* is essentially a long and complicated tube into which food enters (at the mouth), in which it is acted upon in various ways, and from which the digested parts are absorbed and the undigested fractions excreted at the end of the tube (the rectum). The principal parts of the alimentary tract and the functions performed in each are indicated in the following sequence:

Mouth. Food is broken up by the teeth and the tongue in chewing and by the enzymes or ferments (substances secreted by glands and which break up food molecules) contained in the saliva secreted into the mouth by the salivary glands. These enzymes act particularly upon starches and starchy foods.

Esophagus. When food is swallowed it passes from the mouth into the esophagus (which is a long, muscular tube) and thence into the stomach.

Stomach. In the stomach the food is further broken up mechanically by the churning action brought about in this organ by the contractions of the muscle layers in its walls, and chemically by the digestive (gastric) juice secreted by many glands in the walls of the stomach. The gastric juice contains hydrochloric acid and two important enzymes, pepsin and rennin, both of which act on proteins. Rennin clots milk and is especially important in the baby's digestion. After digestion in the stomach the partly changed food, now in a liquid state (chyme), is passed on by waves of muscular contractions (called "peristaltic waves") into the small intestine by passage through the pylorus, the opening of the stomach. The pylorus is circled by strong muscles which, when contracted, keep food in the stomach in spite of strong contractions of that organ.

Small Intestine. This is a coiled tube, about twenty feet long, which is called the "small" intestine because of its narrow diameter as contrasted with the broader but shorter "large" intestine. In the first part of the small intestine (the duodenum) the partly digested, liquid chyme is mixed with three very powerful digestive juices which are secreted from the pancreas (pancreatic juice) from the liver (bile) and from glands in the walls of the intestine (*succus entericus*). The pancreatic juice, admitted to the duodenum through the pancreatic duct, contains enzymes that attack proteins, starches and fats. The bile, which is manufactured by the liver and stored in the gall bladder until needed and which enters through the bile duct, probably acts in the preparation of fats for digestion by the lipase (fat-digesting enzyme) of the pancreatic juice. It probably also aids the absorption of the products of digestion. The secretion of the intestinal glands is especially powerful in aiding protein and starch digestion. While digestion is going on the food is being passed along by successive peristaltic waves into the next part of the small intestine, the jejunum, and finally into the last section, the ileum. As it goes, the final products of digestion, now soluble and absorbable, pass through the walls of the intestine. The products of protein and starch digestion are absorbed through the veins and carried by the blood to the liver. The products of fat digestion are taken into the small lymph vessels (*lacteals*), thence in the lymph they are carried through the thoracic duct into the blood by way of the left subclavian vein. In the liver, much of the digested sugar and starch that is not needed by the body at once is stored as *glycogen*. Fat may be stored in the liver or in fat cells in many connective tissues of the body. By the time the intestinal contents have reached the end of the ileum, most of the products of digestion have been absorbed. The unabsorbed and undigested residue is then pushed by peristalsis into the large intestine.



Stomach and Small Intestine in Section

Drawings of sections through (A) the stomach and (B) the small intestine. The glands are very numerous in both. In B their occurrence as finger-like projections enormously increases the surface available for the absorption of the products of digestion. 1. Surface of mucous membrane showing gland openings; 2. Gland layer; 3. Areolar layer; 4. Transverse muscle layer; 5. Longitudinal muscle layer; 6. Peritoneal coat; 7. Surface of villus; 8. Section of villus; 9. Vein; 10. Artery; 11. Lacteal; 12. Gland.

Large Intestine. As the intestinal contents enter the first part of the large intestine (the ascending colon) through the ileo-cecal valve, they pass a small pouch-like appendage (the appendix) which is of no particular interest

except that when it becomes infected and inflamed (appendicitis) it must usually be removed surgically. Digestion has been practically completed in the small intestine. In the colon (large intestine) the water must be absorbed and the semi-dry residue stored. These functions are accomplished as the material is pushed along the ascending, transverse and descending colons. From the rectum the masses of waste (feces) are discharged through the anus.

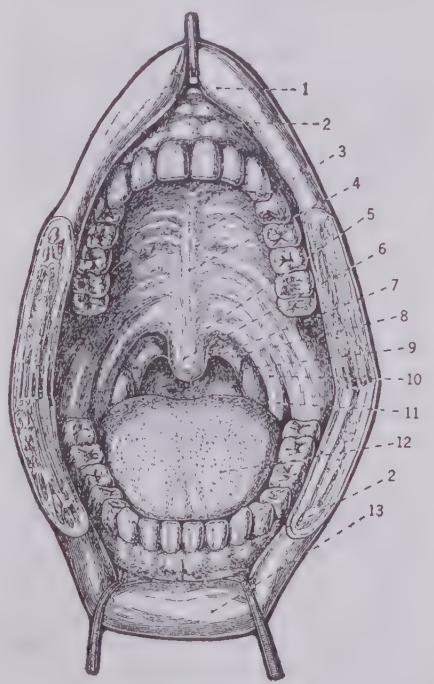
Bacteria in the Digestive Tract. It must be kept in mind that food for man is also quite commonly food for bacteria. Also, there are bacteria in and upon practically everything (see p. 996). Bacterial growth will go on in the foods that are ingested, especially because mixing with water and the warmth of the body stimulate the activities of the microorganisms. There is no significant bacterial action on foods in the upper parts of the alimentary tract because the ingested food material is in the mouth and esophagus for moments only. In the stomach, many bacteria are killed and others are inhibited by the hydrochloric acid of the gastric juice. In the small and large intestines, particularly the latter, the restraints on bacteria are lost, and extensive multiplication occurs so that the contents of the colon come to contain many thousands of millions of bacteria. These are primarily harmless; but if the contents of the colon are not evacuated regularly (that is, if constipation occurs) the products of microbic action may be absorbed and give rise to *auto-intoxication* (self poisoning), due to the injurious effects of these products upon the tissues of the body. Some of the effects of constipation are probably due to the "lazy" and "full" condition of the intestines. It must be emphasized that individuals vary with respect to the frequency of bowel movements. One-a-day is normal for most people; two-a-day or one-in-two-days may be normal for others. Cathartics should not be used except on rare occasions unless prescribed by a physician. The chief aim of drinking *acidophilus* (milk) is to implant in the colon types of bacteria that are themselves *aciduric* and that will hold in check *putrefactive* kinds. Overeating, lack of exercise, and insufficient roughage in the diet are the commonest causes of simple constipation.

Special Problems of the Mouth and Its Hygiene. Digestion may be said to begin in the mouth with the process of chewing food, because chewing prepares food so that the digestive juices may act upon a pulp instead of upon large, solid or semi-solid masses.

Teeth and Dental Hygiene. The newborn baby does not have visible teeth although they have already been partly formed and are in the gums preparing to complete their development and erupt. For the proper formation of a baby's teeth, good, fresh milk is necessary, mother's milk in preference to cows' milk. About six months after birth the teeth begin to come through the gums. These first teeth will last between six and twelve years and then fall out. They are the "milk" or "temporary" or "deciduous" teeth. They are replaced by the permanent teeth which form beneath them and force them out. When the milk teeth become loose they should be pulled out to permit the permanent teeth to erupt straight.

Many of the lower animals (carnivores) subsist on meat and have sharp, pointed teeth that are effective for tearing; others (graminivores, herbivores) live on grains and have flat teeth that are effective for grinding. Man lives on a mixed diet and possesses both types of teeth. A typical set of permanent teeth consists of four of each of the following (two in each jaw): (1) Central incisors, (2) Lateral incisors, (3) Canines or cuspids, (4) First premolars or bicuspids, (5) Second premolars or bicuspids, (6) First molars, (7) Second molars, (8) Third molars or wisdom teeth. These grade from the first, which are sharp and chisel-edged, to the last, which are flat.

The first of the permanent teeth to appear are the first molars, usually in the sixth year.

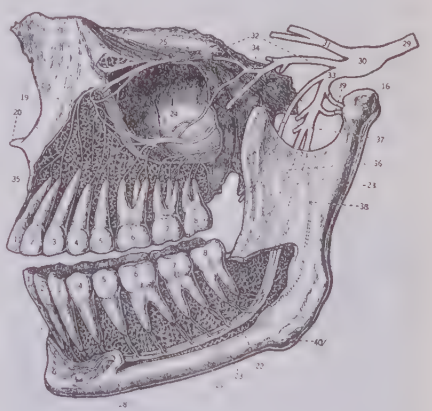


The Mouth

1. Upper lip; 2. Gums; 3. Hard palate; 4. Raphe; 5. Soft palate; 6. Uvula; 7. Pharynx; 8. Pharyngopalatine arch; 9. Palatine tonsil; 10. Glossopalatine arch; 11. Vallate papillae; 12. Fungiform papillae; 13. Lower lip.

These are the largest of the teeth and are doubly important because they must serve as the chief teeth while the temporary teeth are being replaced. Their health and position therefore largely determine the position of the permanent teeth which follow them. Soon after the seventh year the central incisors appear, and at approximately yearly intervals the lateral incisors, the first and second premolars, the canines and the second molars (after the twelfth year) and finally the third molars (after the seventeenth year).

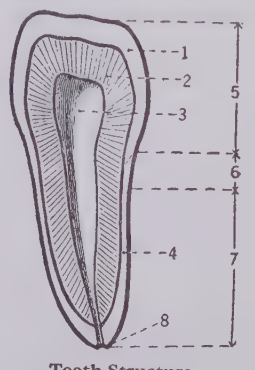
The Structure of a Tooth. Each tooth may be considered to have three parts: (1) the "crown" which is visible above the gums, (2) the "neck" between the crown and (3) the "root" which is lodged in the bone of the jaw. The outer layer of the crown is an extremely hard substance (*enamel*). On the neck and root the equivalent of this is a moderately hard layer (*cementum*). Beneath the hard outer layer is a thicker layer of softer material (*dentine*) around the central or pulp cavity in which the nerve and blood vessels are contained.



The Teeth

Showing the teeth and their nerve supply. 1. Central incisor; 2. Lateral incisor; 3. Canine or cuspid; 4. First premolar or bicuspid; 5. Second premolar or bicuspid; 6. First molar; 7. Second molar; 8. Third molar or wisdom tooth; 16. Condyle of mandible; 19. Maxilla; 20. Anterior nasal spine; 21. Inferior dental vein; 22. Inferior dental artery; 23. Inferior dental nerve; 24. Antrum of Highmore (maxillary sinus); 25. Floor of orbit; 26. External pterygoid lamina; 27. Tuberosity of maxilla; 28. Mental foramen; 29. Fifth cranial or trigeminal nerve; 30. Gasserian ganglion; 31. Ophthalmic division of the fifth nerve; 32. Maxillary division of the fifth nerve; 33. Mandibular division of the fifth nerve; 34. Posterior superior dental branches; 35. Aveolar plexus; 36. Lingula nerve; 37. Buccal nerve; 38. Mylohyoid nerve; 39. Auriculotemporal nerve; 40. Angle of mandible.

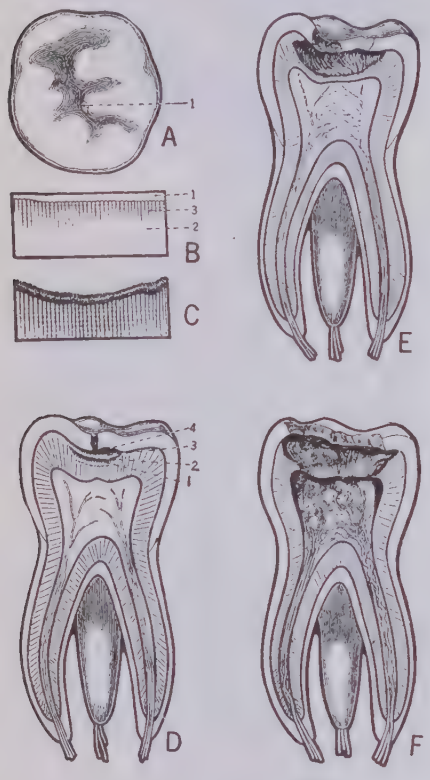
Decay of the Teeth. Dental caries, or tooth decay, is the most important danger to teeth. This usually starts in some tiny flaw or area of injury in the enamel. A little food and some bacteria collect, the bacteria develop and form acids which attack the enamel. The injured area becomes more extensive, reaches the dentine and eventually the pulp cavity. Here the bacteria and the products of decay may reach the nerve and set up excruciating pain. They may reach the blood vessels, enter them and be carried in the blood to other parts of the body. A decayed tooth is frequently the "focus" of infection for many parts of the body, often resulting in serious disease.



Tooth Structure

Section of an incisor to show the structure of a tooth. 1. Enamel composed of enamel prisms; 2. Dentine; 3. Pulp cavity; 4. Cementum; 5. Crown; 6. Neck; 7. Root; 8. Apex.

Although it is sometimes said that "A clean tooth never decays," this is not entirely true. It is true that brushing the teeth once, twice or three times a day may help to control infection of the teeth, but this alone will not insure their health. The mechanical action of brushing is of more importance than the kind of dentifrice used. The evidence available at this time (1931) indicates that diet is, if anything, more important than cleanliness in the care of the teeth. An adequate diet, in which plentiful use of milk, and orange juice is most important, is the best insurance for sound teeth. A well balanced diet of the mother before the baby is born, good diet for the baby and for the growing child provide the basis for good dentition. In addition, cleanliness of the teeth and periodic examination by the dentist, at least once and preferably more often each year, should insure healthy teeth. With frequent and regular examinations the dentist can detect early flaws in the teeth. These can be repaired by simple and often painless treatment so that more serious damage is not likely to occur. Decayed and abscessed teeth if beyond repair should be removed without delay.



The Story of a Tooth's Decay

A. The free surface of a molar showing a lustreless white spot (1) and roughening of the enamel.

B. A section of the dental enamel; 1. Film; 2. Enamel prisms; 3. Film invading interprismatic spaces.

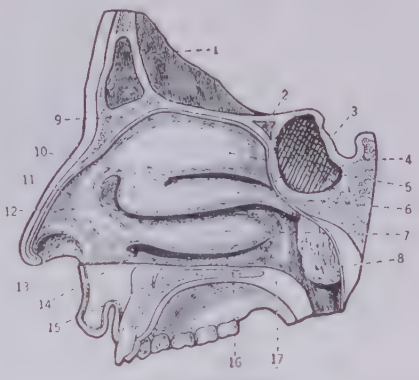
C. Further decay of the enamel and formation of a furry layer.

D. Decay (caries) progresses and then advances more rapidly after reaching the dentine. 1. Transparent layer; 2. Opaque layer; 3. Layer of softening; 4. Layer of disintegration.

E. More extensive advance of caries undercutting enamel approaching dental pulp.

F. The enamel crown has collapsed. The pulp is exposed, inflamed and painful. The nerve must be extracted and the tooth repaired.

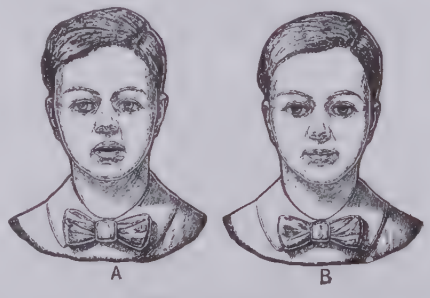
The Tonsils. On each side of the back of the throat is a structure of lymphoid tissue called the *tonsil* or *palatine tonsil.* It is a complex structure with deep crypts which open into the throat. Bacteria frequently gain entrance into these crypts and infect them. Tonsils which have become infected may serve as a reservoir of bacteria which may repeatedly infect the adjacent tissues or may gain entrance to the blood vessels, be carried by the blood to other parts of the body and set up secondary infections. Diseased tonsils can and should be removed by a simple, surgical operation (*tonsillectomy*).



The Nasal Cavity

A view of the nasal cavity, showing particularly the position of enlarged adenoid tisse (8). 1. Frontal sinus; 2. Posterior ethmoidal cells; 3. Sphenoidal sinus; 4. Sphenoid bone; 5. Superior concha; 6. Middle concha; 7. Inferior concha; 8. Enlarged adenoid tissue; 9. Frontal bone; 10. Superior nasal meatus; 11. Middle nasal meatus; 12. Atrium; 13. Vestibule; 14. Inferior nasal meatus; 15. Incisive canal; 16. Hard palate; 17. Soft palate.

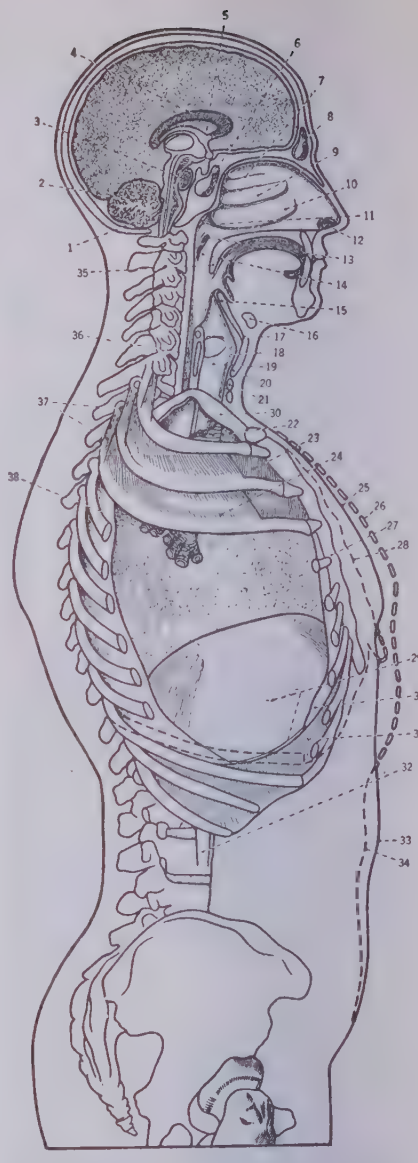
Adenoids. Above and behind the soft palate is a pair of small structures called the *pharyngeal tonsils.* In young children there is frequently a growth on each called the *adenoid.* Adenoid growths obstruct the air passages between the nasal cavities and the mouth so that the child is compelled to breathe through the mouth instead of the nose. This condition is unhygenic, because in cold weather the air taken into the lungs has not been warmed, moistened and filtered as it should be by passage through the nose and over the surfaces of the turbinates and other bony structures which are covered by mucous membranes. Repeated and chronic colds and other ailments frequently result. Another serious damage is the consequence of adenoids. Continued mouth breathing places an unusual strain on the muscles of the face and jaws and tends to cause the young bones to grow in somewhat abnormal ways. The roof of the mouth tends to develop in a high arch so that the teeth occupy irregular positions and are crowded out of their natural sites. The face shows a stupid and strained expression. The adenoids may obstruct the



Effect of Adenoids

A. Typical adenoid facial expression.

B. Facial expression of same boy after removal of adenoids.



The Respiratory System (lungs omitted)

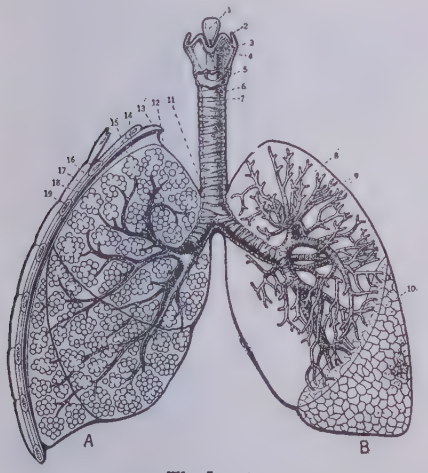
The principal parts of the respiratory system except the lungs which have been omitted.

Note changes in position of parts at inspiration and expiration. 1. Medulla oblongata, center of respiratory control; 2. Cerebellum; 3. Pons; 4. Corpus callosum; 5. Septum pellucidum; 6. Sphenoidal sinus; 7. Superior nasal concha; 8. Frontal sinus; 9. Middle concha; 10. Inferior concha; 11. Choana, posterior opening of nasal cavity; 12. Vestibule of nose; 13. Orifice of auditory (Eustachian) tube; 14. Pharynx; 15. Epiglottis; 16. Hyoid bone; 17. False vocal cord; 18. True vocal cord; 19. Larynx; 20. Thyroid cartilage; 21. Cricoid cartilage; 22. Trachea; 23. Internal intercostal muscles; 24. External intercostal muscles; 25. Outline of thorax at exhalation; 26. Outline of thorax at inhalation; 27. Sternum at exhalation; 28. Sternum at inhalation; 29. Pleura reflected over diaphragm; 30. Pleura; 31. Diaphragm; 32. Tendon of origin of diaphragm; 33. Abdominal wall at exhalation; 34. Abdominal wall at inhalation; 35. Uvula; 36. Esophagus; 37. Levatores costarum muscles; 38. Bronchi.

openings of the Eustachian canal and seriously affect hearing. Adenoid tissue, like all lymphoid tissue in the body, tends to become smaller with age. Unfortunately, the adenoids may do such considerable damage in the years during which they are large that it is far wiser to have them removed by a simple, surgical operation than to wait for the effects of time.

Respiratory System. The essential processes by which living things obtain energy are chemical changes of food substances and reactions with oxygen. The element oxygen is just as important for life as food itself. To supply oxygen regularly and in sufficient quantities to all the tissues, the body utilizes an exquisitively adjusted, complex mechanism in which the organs of the muscular, respiratory, circulatory, nervous and excretory systems all play interrelated rôles. The end effect is that a supply of fresh air is drawn into the lungs on the average about twenty times a minute. When resting quietly or sleeping, the respiratory rate may be as low as sixteen per minute; when exercising, it becomes considerably increased. In each condition the amount of oxygen supplied is adjusted to the needs of the body.

Respiration. Air (which is one-fifth oxygen) enters through the nose or mouth, passes through the *pharynx* and *larynx* into the *trachea* and thence into the *bronchi* and *lungs*. The motions of the air, when it is drawn in



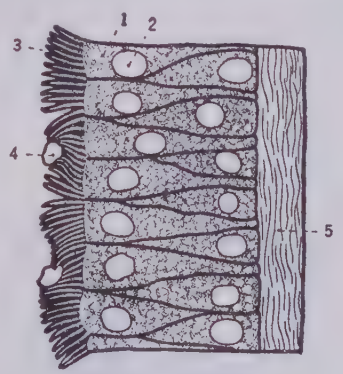
The Lungs

The larynx (which houses the vocal cords), trachea and lungs. At A the right lung is shown in full section; at B, part has been removed from the left lung to show how the bronchi subdivide in tree-like fashion into finer and finer branches (bronchioles, 9). 1. Epiglottis; 2. Superior horn of thyroid cartilage; 3. Thyroid cartilage; 4. Thyroid notch; 5. Cricoid cartilage; 6. Cartilaginous rings of trachea; 7. Membranous tube of trachea; 8. Left bronchus; 9. Bronchioles; 10. Section of lung tissue; 11. Bifurcation of trachea; 12. Section of right bronchus; 13. Pleura; 14. Infundibulum; 15. Alveolus; 16. Serratus anterior muscle; 17. External intercostal muscle; 18. Internal intercostal muscle; 19. Rib.

(*inspiration*) or out (*expiration*), are due to enlargement or reduction in the volume of the chest. In producing these changes the lungs are normally passive. In inspiration the chest is raised and lowered, and its internal capacity is altered by movements of the ribs and the diaphragm (the muscle sheet that makes the floor of the chest cavity). As the chest (thoracic) cavity changes in size, the lungs change similarly. As the thoracic cavity is enlarged, the lungs tend to follow the chest wall, they bellow out and air is drawn into them; as the cavity is reduced, the lungs are compressed and air is expired.

Lungs. The lung itself is merely an extremely convoluted and pouched membranous sac, so that in its minutest parts it is made up of many sacs in which the surfaces are in intimate contact with the air they enclose. In the membranous walls of the lung, down to the finest pouches and sacs (*infundibula* and *alveoli*), there is a rich supply of blood vessels. The consequence is that oxygen from the air in the sacs has only a short path to follow in diffusing through the lining membranes in order to reach the blood; and carbon dioxide, a waste product in the blood, can diffuse out and be expelled with each expiration of air.

Rate of Respiration. The rate of respiration is, in part, under voluntary control. It is also under involuntary control. When there is need for respiration, to supply oxygen and remove carbon dioxide, the accumulated carbon dioxide causes a slightly



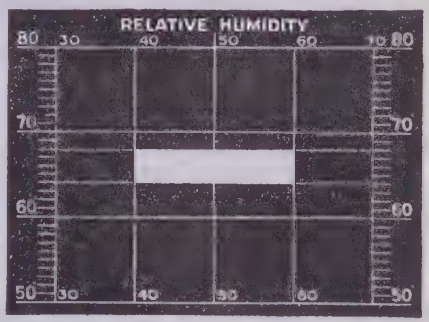
Epithelial Cells of Air Passages

A diagram of epithelial cells lining the air passages of the lungs. The cilia (3) carry on a to and fro motion and move particles of mucus (4), dust, bacteria, etc., outwards. 1. Cytoplasm; 2. Nucleus; 3. Cilia; 4. Mucus; 5. Basilar Membrane.

acid condition of the blood. This seems to activate a region of the brain (the respiratory center in the *medulla oblongata*) which causes nervous stimulation to the lungs and intercostal muscles and, finally, acceleration of the respiratory rate. The nervous control of respiration is also observed in the effects of a sudden dash of cold water on the skin, of emotions and of certain drugs.

The Products of Respiration. The essential changes resulting from respiration are the consumption of oxygen and the excretion of carbon dioxide. In addition, the air that is drawn into the lungs, whether it is dry or moderately damp, comes into intimate contact with the moist surfaces of the membranes of the nose, mouth, larynx, trachea, bronchi and lungs. The consequence is that the expired air becomes saturated with moisture and warmed to body heat. Water is also being continuously given off by the skin. The end result is that the body loses to the atmosphere around it about three pints of water a day and about as much heat as is given off by a candle burning continuously. In addition, the body is also excreting (via the lungs and skin) volatile, ill-smelling substances of uncertain composition.

Ventilation. The net effect upon the atmosphere of the presence of an individual is the consumption of oxygen and the excretion of carbon dioxide, water vapor, heat and ill-smelling products. It is evident that if one or more human beings remain in a more or less enclosed space, the air is subjected to chemical and physical changes and it frequently becomes necessary to provide for the maintenance of proper air conditions. Except under very extreme circumstances, the consumption of oxygen by humans in a room is inconsiderable, and actual oxygen deficiency rarely ever occurs. Extensive experiments



Zone of Comfort

The zone of most healthful and most comfortable combination of temperature and humidity (shown in white).

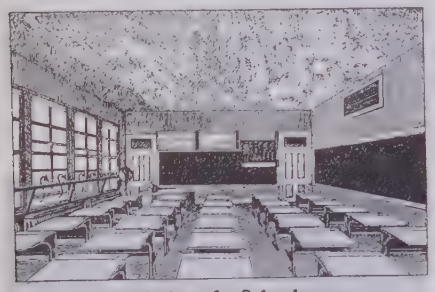
have demonstrated that the depressing effects of "bad air" are due to excessive heat and moisture rather than to increased carbon dioxide or reduced oxygen content. In addition, the smelly substances given off by human bodies and which may become perceptible in a close, crowded room or auditorium may have unfavorable effects upon the appetite.

The aim of ventilation is to provide proper air conditions. For most human beings the best temperature is between 64° and 68° Fahrenheit. The humidity of air is expressed in terms of "relative humidity" (the percentage of moisture contained in the air by comparison to the maximum which air can hold at the same temperature). The optimum relative humidity at favorable temperatures and with moderate air movement is about fifty per cent.

As the body loses heat it tends to warm the air about it. If there is little or no motion of the air, a "blanket" of warm air tends to form about the body and give a sensation of warmth. If the air is in motion, the warmth from the body is dissipated. Air in motion, therefore, tends to have greater cooling and evaporating power than quiet air.

The aim of ventilation is to provide clean air at proper temperature and humidity, in moderate motion and free from odors and noxious impurities. In a house or office where there are few people there may be sufficient ventilation through cracks around windows and doors. A window open a few inches will ordinarily suffice for air change if there is appreciable difference between the indoor and outdoor temperatures, or if there is a wind blowing. In very cold weather windows may be closed. In a schoolroom the same ends may be attained by window ventilation, with or without ducts by which

the warmed air in the room may escape as it rises. In cold climates or at wintry seasons of the year it is wise to arrange the heating system so that the cool air that enters is tempered as it comes in. Under many conditions, as in a large auditorium or theater, it may be necessary to use more elaborate systems

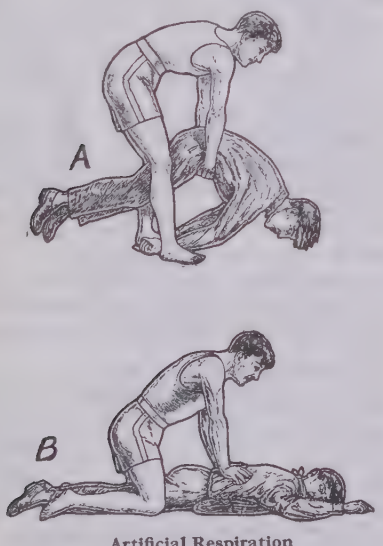


Ventilation of a Schoolroom

Fresh air enters through the window. Draft is broken by the glass plates. The air is warmed as it passes over the radiators and when warm and stale escapes through the openings of the ducts near the ceiling.

of fans and ducts to bring fresh air in and to remove vitiated air through many openings judiciously distributed to avoid drafts.

Artificial Respiration. Death ensues if respiration is stopped as by drowning, electrical shock, gas poisoning or choking. It is often possible to save the life of the individual by inducing and, for a time, maintaining artificial respiration. The important thing is to start the artificial motions as soon as possible, because seconds are valuable. Even



Artificial Respiration

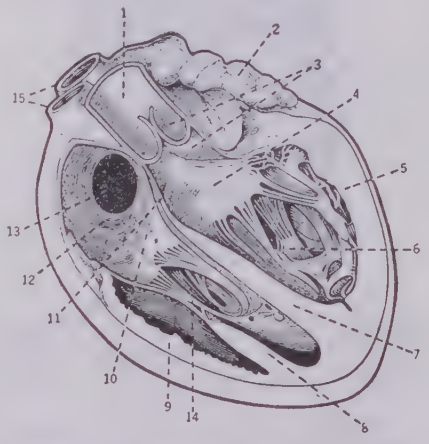
In (A) water is being dislodged. In (B) is shown the Schaefer method of artificial respiration. The method in (A) should always be used first and sometimes is all that is necessary.

In the Schaefer method, the victim is placed in the prone position and the tongue tied out. The operator takes the position illustrated and alternately throws his weight on and off the victim. This is repeated about fifteen times per minute (once every four seconds).

if the patient does not appear to respond, the artificial motion should be continued until a physician has been called and has definitely decided that the individual is dead. A simple method of inducing artificial respiration is illustrated in the drawing.

The Circulatory System. In a complex multicellular body it is necessary that there be some device by which food is constantly supplied to, and waste products as constantly removed from, each individual cell. The organs that constitute the circulatory system accomplish these ends by circulating the blood through the body. The blood reaches all the parts, bringing foods and removing wastes.

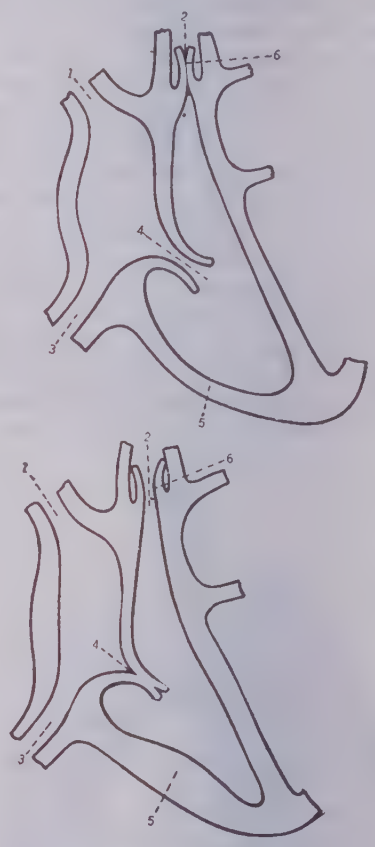
The structure of the circulatory system can be visualized as a central pump (the *heart*) with a series of pipes or tubes (*arteries*) running out to the several organs (including the lungs, liver, spleen, stomach, pancreas, intestines and kidneys), and a series of tubes (*veins*) running back again to the pump, the whole system being filled by a complex fluid (*blood*). There are really two circulatory systems away from and back to the heart: one through the lungs where the blood brings food, takes up oxygen from the air and gives off carbon dioxide and water and carries off wastes; the other through the brain, limbs and visceral organs where the blood brings food and removes wastes. In the alimentary tract the blood obtains most of the food for the body.



Section of Heart

A section of the human heart, showing—1. Aorta; 2. Left auricular appendage; 3. Aortic valve; 4. Bicuspid (mitral) valve; 5. Wall of left ventricle; 6. Papillary muscle; 7. Ventricular septum; 8. Anterior papillary muscle; 9. Wall of right ventricle; 10. Tricuspid valve; 11. Membranous septum; 12. Pectinate muscles; 13. Ostium of inferior vena cava; 14. Chordae tendinae; 15. Right pulmonary veins.

The Heart. This is essentially a hollow mass of muscle which is divided up by partitions into four compartments. The upper ones are called the *auricles* or *atria*, the lower ones the *ventricles*. The former are little more than storage places into which the blood empties upon returning to the heart. By the contraction of the auricles and expansion (relaxation) of the ventricles, the blood is driven into the latter. Then as the thick-walled and powerful ventricles contract, blood is pumped out into the main arteries. The sequence of changes in the heart is: (1) contraction of the auricles; (2) contraction of the ventricles; (3) relaxation of the heart; (4) rest. This sequence is repeated over and over again throughout the life of the individual. The two auricles and the two ventricles contract simultaneously. The period of contraction is called *systole*, the period of relaxation, *diastole*. During diastole, blood is flowing from the veins into the auricles and from the auricles through the open auricular-ventricular valves into the ventricles. When the auricles contract there is actually little pumping of blood. When the powerful ventricles contract, the valves between them and the auricles are shut and the blood is driven out into the arteries (the pulmonary artery from the right ventricle and the aorta from the left ventricle). The blood cannot flow back into the heart from



Diastole and Systole

The upper diagram shows diastole and the low systole. 1. Superior vena cava; 2. Pulmonary arter 3. Inferior vena cava; 4. Tricuspid valve; 5. Righ ventricular wall; 6. Pulmonary valve.

the pulmonary artery or aorta because of the one-way valves (semilunar valves).

The bulk of the heart is in the ventricles. Under unusual circumstances, such as leaky or defective valves, the heart wall enlarges (hypertrophies) in order to compensate by doing more powerful work. Normally the heart beats about seventy or seventy-five times each minute in adults, somewhat faster in children and slower in older persons. The beat of the heart can be felt as the *pulse* by placing a finger over the artery in the wrist or over the apex of the heart, and can be heard by listening to a person's chest. The heart ordinarily pumps about four quarts of blood each minute. During a day the work done by the heart in an average adult is equivalent to raising a mass of 200 tons through a distance of one foot. In a lifetime the work done by the heart is equal to th

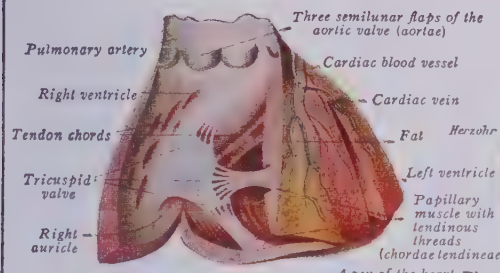


Fig. 1. Heart



Fig. 2. Auricles of the heart

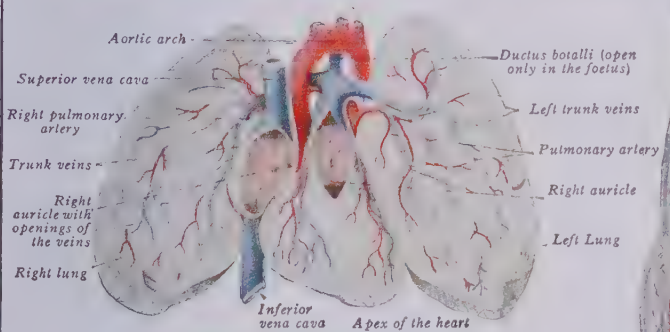


Fig. 3. Pulmonary circulation

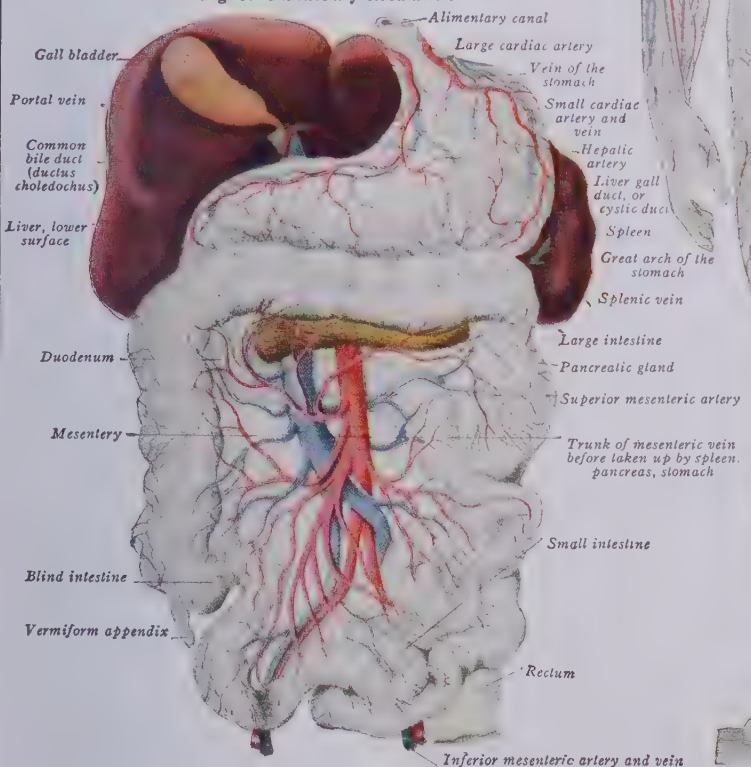


Fig. 4. Portal vein circulation

(The union of veins of the stomach, intestine, spleen and pancreas into trunk of portal vein is hidden by the stomach)

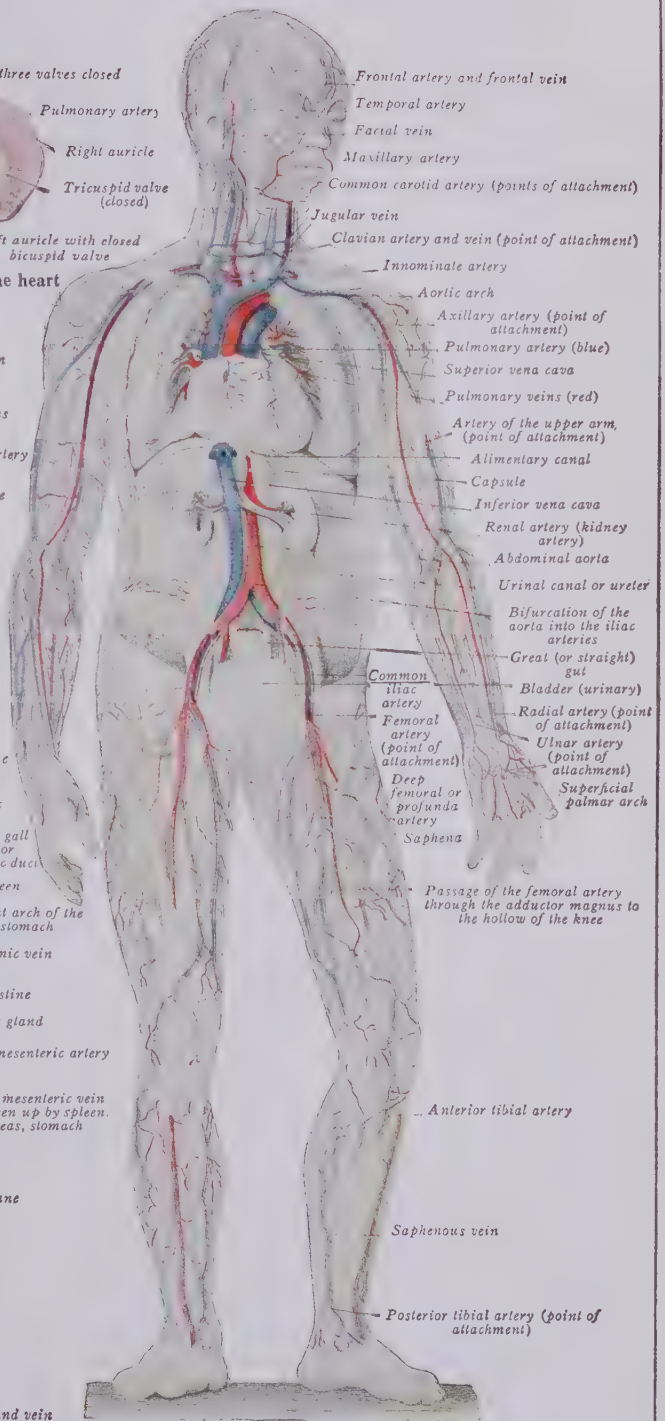


Fig. 5. Circulation of the blood in the body

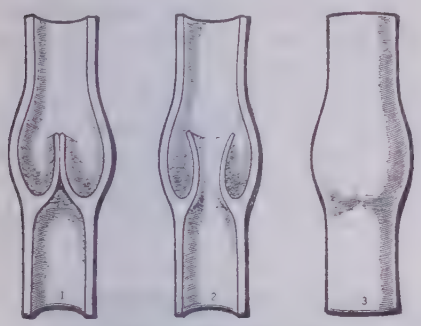
In fig. 5 the intestines of the portal vein circulation have been removed from the abdominal cavity

The red lines indicate the arteries, the blue lines the veins

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energy that would be required to lift it to the moon.

Arteries and Veins. The blood vessels are called arteries and veins according as they carry blood from or to the heart. The main arteries, large, thick-walled tubes with muscular walls, branch into smaller and smaller tubes as they proceed, until the thin-walled capillaries are reached in the tissues. The blood proceeds from the capillaries to the very



Valves in the Veins

1. Section of vein with valve closed; 2. Same, valve open; 3. External view.

small veins, and thence to larger and larger veins and finally back to the heart. The veins are far less muscular than the arteries, but are equipped with one-way valves which permit the blood to flow only towards the heart. The sequence of vessels is: arteries, arterioles, capillaries, venules and veins.

Blood. The blood is a fluid (the *plasma*) in which are dissolved food substances, waste products and many other constituents, and in which are suspended two types of cells,



Red Corpuscles at Work

Showing interchange of food and waste materials between the red corpuscles and the tissue cells. At the bottom is shown the migration of white corpuscles from the blood stream.

the red (*erythrocytes*) and the white (*leukocytes*) and certain minute particles called *blood-platelets* which are concerned with the clotting of blood when it is shed or injured. The red cells are so called because they are rich in red coloring matter (hemoglobin) that contains iron. The hemoglobin has the remarkable property of entering into loose combination with oxygen and carrying it from regions where the oxygen supply is abundant (the lungs) to regions where the oxygen con-

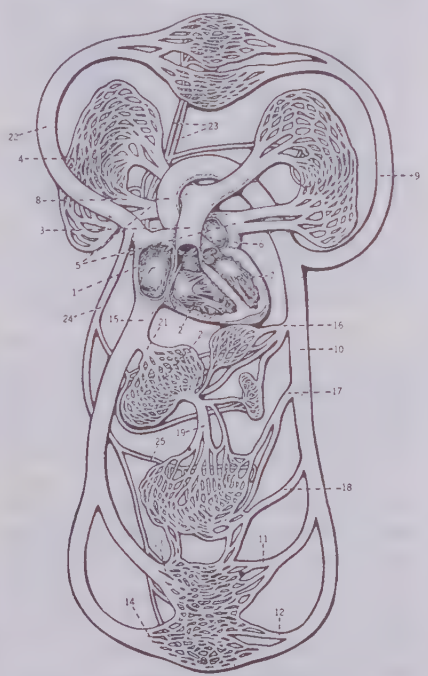


Leukocyte at Work

Leukocyte (phagocyte) taking up and digesting a pair of bacilli.

tent has been depleted (the other tissues). The white cells are not really white: they are colorless. They serve principally to engulf and destroy foreign particles like bacteria. When blood is shed it clots and later separates into two parts—solid *fibrin clot* and fluid *serum*.

The blood is contained in vessels and does not actually come in contact with the tissue cells. The fluid which oozes out of the blood vessels and which is much like the blood plasma actually bathes the cells. This fluid is called *lymph*. The transfer of food substances and oxygen from the blood to the



Scheme of Circulation

1. Right atrium; 2. Right ventricle; 3. Pulmonary artery; 4. Pulmonary circulation; 5. Pulmonary veins; 6. Left atrium; 7. Left ventricle; 8. Arch of aorta; 9. Arteries of head and upper extremities; 10. Descending aorta; 11. Hypogastric artery; 12. Arteries of lower extremities; 13. Hypogastric vein; 14. Veins of lower extremities; 15. Inferior vena cava; 16. Coeliac artery; 17. Superior mesenteric artery; 18. Inferior mesenteric artery; 19. Portal system; 20. Capillary circulation of liver; 21. Hepatic vein; 22. Superior vena cava; 23. Right lymphatic duct; 24. Thoracic duct; 25. Lacteals.

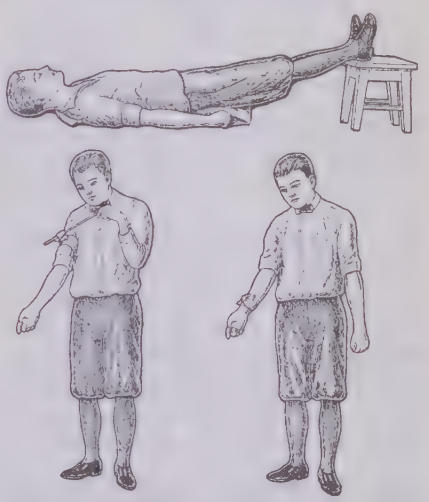
cells and of waste products and carbon dioxide from the cells to the blood is actually accomplished by diffusion through the lymph. The lymph is being continually formed from the blood. It is also collecting into vessels called *lymph channels* or *lymphatics*, and eventually it returns to the blood through the main lymph vessel called the *thoracic duct*.

Circulation in the Body. The main paths of the actual circulation of blood can be followed in the diagram.

Much of the energy used in circulating the blood comes from the action of muscles which, as they contract, press upon veins and push the blood along (in the proper direction because of the one-way valves in the veins), and by suction produced in the thoracic cavity by the respiratory movements of the chest and diaphragm.

Fainting. This is commonly the result of defective circulation in the brain (*cerebral anemia*), and not to disease of the heart. The proper treatment for fainting is to lay the person on his back with the feet higher than the head.

First Aid for Bleeding. In case of injury to an artery, recognized by the intermittent spurting of the bright red blood, a bandage of clean linen should be placed around and above the injured part and turned tight with



First Aid

At the top is illustrated first aid for fainting; at the left, for arterial bleeding; at the right, for venous bleeding.

a stick or other suitable object. It should be released as soon as bleeding stops or a physician arrives. Bleeding from a vein, recognized by the fact that it is slower and more regular and that the blood is of darker color, can usually be controlled by mild compression with a bandage. Pressure at the points indicated in the picture will usually control bleeding from the related blood vessels.

Heart Disease. Diseases of the heart and blood vessels cause more deaths than any other single cause, though they usually come late in adult life. Proper hygienic living is the main rule in avoiding premature disease of these parts. It is also important to avoid poisoning from alcohol, infected teeth, tonsils, adenoids and from infectious diseases in general. Work, rest, sleep and diet in moderation and balance are the best known rules for the care of the heart and blood vessels.

The Glands of Defense, Secretion, Excretion and Regulation. Under the designation of "glands" are included many organs in the body which serve a variety of functions. For some, one or more of their functions have long been known; for others, precise infor-

mation is still largely lacking. In the study of this field physiology still has some of its most significant opportunities for discovery. Indeed, there is probably not a single glandular activity in the body whose mechanism is clearly understood at the present time (1931). For such a large and prominent gland as the

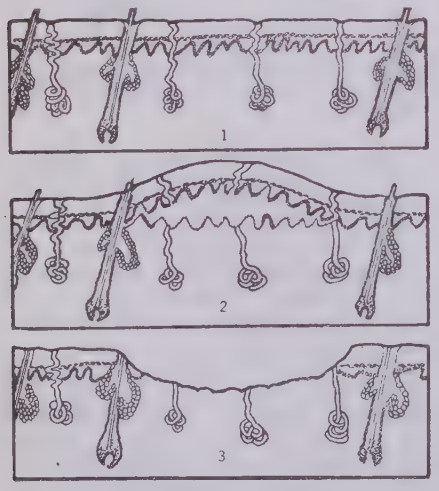


The Protective Skin

The skin is a protection against infection. A pin is shown penetrating through the skin. The cells of the skin, the pin and the bacteria on the point are drawn in correct proportions. A fairly deep prick is necessary to introduce bacteria into the tissues beneath the skin.

spleen it is even uncertain whether it has any specific functions, and if it has whether they are primarily concerned with circulatory, digestive or other systems. It appears at this time that the spleen serves as a reservoir for blood in the internal parts of the body.

Glands as Defense Organs. I. Lymph Glands. Chief among those which provide defenses of the body against injurious agencies are the *lymph glands.* They are distributed every-



Normal and Injured Skin

This diagram shows the reaction of the skin to external injury; 1. Normal; 2. Blister; 3. Charred or severe burn.

where in the body. Some are quite large; others are of microscopical dimensions. They serve principally to filter out of the blood and lymph foreign bodies like bacteria, dead cells and dust particles, and to hold them for digestion by white blood cells or other phagocytes (see p. 987).

II. The Liver. This organ has been described in the discussion of digestion because it manufactures the bile which is secreted into the duodenum to aid in the digestion of fats. It is also a gland of defense because the blood which collects the products of digestion from the alimentary tract first passes the liver in the portal circulation and is there purified. There is reason to believe that many products of digestion are poisonous (toxic) and that they are de-toxified or rendered harmless in the liver. Bacteria and other foreign bodies are also filtered out of the blood and destroyed in the liver.

The skin and many other tissues also provide defense mechanisms; but they are described elsewhere, because their principal glandular functions are of a different kind.

Glands of Secretion. Among the glands of secretion, those which are primarily concerned with the manufacture of secretions that aid in the digestion of foods have already been described (salivary, gastric and intestinal glands, liver, pancreas). In addition, mention may be made of the *mammary glands,* the glands in the breast, which are present in both the male and female but which function to secrete milk only in the recently pregnant female.

Glands of Excretion. The principal excretory glands are the lungs, kidneys and those of the skin. Of these, the first has already been described in relation to its respiratory functions, because the excretion of carbon dioxide is intimately related to the absorption and consumption of oxygen.

The Kidneys. The *kidneys* are the chief organs of excretion in the body. They are paired organs, lying in the back of the abdominal cavity at either side of the spinal column. As the blood circulates through them, waste products which have been collected from the tissues throughout the body are removed. This is accomplished by a flow of water and of urea and many other substances dissolved in the water from the blood through the walls of the tubules and capsules of the kidneys. This watery material (urine) that is collected from the blood in the cortex of the kidneys accumulates in the cavities in the pelvis of each of these organs, passes down the ureters to the urinary bladder and is stored there until expelled from the body. The ordinary, healthy person should drink each day about six glasses of water in addition to the water that occurs in solid foods in order to provide sufficient fluid for the proper excretion of body wastes.

The Skin. This organ or group of organs serves three important functions: protection of delicate tissues, excretion of waste products and regulation of body temperature. Each of these is important. As a protective organ, the skin is remarkably efficient though it is, in general, only from one one-hundredth to one-tenth of an inch thick. It guards the sensitive tissues against mechanical injury, evaporation, heat, cold, excessive sunlight,



Skin and Hair

In this detailed study we have, in A, the hairy skin; in B, normal skin with contracted blood vessels, retaining heat and moisture; in C, skin with excessive circulation, flushed and losing considerable quantities of heat. 1. Epidermis; 2. Dermis or corium; 3. Subcutaneous tissue; 4. Scaly layer; 5. Clear layer, stratum lucidum; 6. Granular layer; 7. Prickle cell layer; 8. Cylindrical cell layer; 9. Tactile corpuscle (Meissner); 10. Ruffinian corpuscle; 11. Paccinian corpuscle; 12. Arrector pili; 13. Hair falling out; 14. Sweat gland (cross-section); 15. Sebaceous gland; 16. Hair follicle; 17. Cortex of hair; 18. Papilla of hair; 19. Dermic coat of hair; 20. Vein; 21. Artery; 22. Nerve; 23. Sweat gland; 24. Body pore of sweat gland; 25. Duct of sweat gland; 26. Adipose tissue; 27. Vein.

effects of water or other fluids. It is unusually thickened over certain parts of the body where it is exposed to frequent pressure or friction (callouses, corns). Ordinary bacteria cannot penetrate through the unbroken skin. The sebaceous glands in the skin secrete an oily substance to keep the hair in good condition so that it may serve protective functions. The same protective function may be mentioned for the nerve endings in the skin that give the sense of touch and also heat and cold.

The excretory function of the skin is primarily associated with the numerous sweat glands which it contains. They draw waste products and water from the blood vessels to make the sweat. This is passed on through their ducts to the pores. The sweat is then discharged upon the surface of the skin.

The third function of the skin is concerned with the maintenance of the body temperature within a narrow range of fluctuation (average 98.6° Fahrenheit or 37° Centigrade).

"When it is desirable that the body should conserve heat, the blood vessels of the skin contract; but when an excess of heat is pro-

duced in the body by muscular exercise or when the outside temperature is high, these blood vessels dilate as shown, allowing an abundant supply of blood to come to the surface and cool off. At the same time the nerve supply of the sweat glands is stimulated, causing them to secrete actively. The evaporation of the secretion of sweat cools the body mechanically. Normally, about two quarts of perspiration are passed off daily. This amount may be greatly exceeded in hot weather or in violent exercise.

"Excessive clothing and overheated atmospheres interfere with the normal function of the skin in controlling temperature, and weaken the reactions outlined above. Tight clothing also interferes with circulation of the skin, as well as with the function of other structures.

"Frequent washing and bathing is necessary to remove not only dirt that accumulates but also the products of the sebaceous and perspiratory glands. Cold bathing is very valuable as a stimulus to the heat regulating machinery of the skin." (Winslow.)

Ductless (Endocrine) Glands. These are glands which have no true ducts and discharge their products (*hormones*) directly into the lymph or blood stream. The functions of many of these are not yet clearly understood and only the principal ones will be mentioned here because they seem to serve as regulators of the body.

Pituitary Gland (*Hypophysis*). This is a small gland at the base of the brain whose

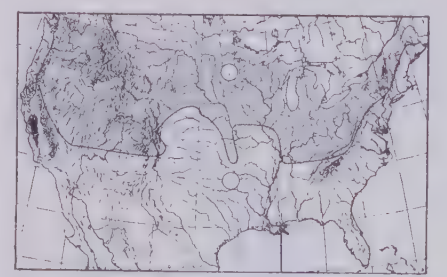


What Happened to the Tadpoles

An experiment illustrating the effect of the thyroid gland upon growth and development of the frog. Upper row—Normal growth and development. Middle row—Thyroid gland has been removed. Growth without development. Lower row—Thyroid fed in excess. Premature development and insufficient growth.

hormone influences growth. Disease of this gland may lead to the production of too much or too little of this substance and may be associated with excessive size (giantism) or diminutive size (dwarfism) of the body. Disorders of the gland may also lead to other types of abnormalities. The *pituitary* is known to control the activity of the sex glands.

Thyroid Gland. The *thyroid* consists of two lobes connected by a narrow band of tissue (the isthmus) lying in front of the trachea. Its hormone is important in the regulation of the rate at which the tissues of the body live, the activity of the nervous system and the growth of the body. Perhaps it has other functions not yet clearly understood. Its effect on growth is indicated in the illustrations. The normal development of a tadpole and frog is shown in the first row in illustrations. In the second row the tadpole whose thyroid has been removed continues to grow without metamorphosis into the adult form, the frog. In the third row is shown a tadpole of the same age as the former two, but which has been fed an excess of thyroid extract. It has developed prematurely into a frog which is normal except that it does not attain normal size. In human beings who live in parts of the world where iodine is scarce in water and foods,



Iodine Map

①The part of the United States in which the iodine content is inadequate in the food and water is termed the goitre region (over five cases of goitre per thousand persons in the U. S. Army draft). ②Where the iodine supply is adequate and goitre is relatively rare.

a disease of the thyroid is relatively common because the hormone of this gland contains iodine. If iodine is lacking, the gland undergoes enlargement (hypertrophy) as though to compensate by mass action for the lack of material for the manufacture of the hormone. When the gland becomes enlarged there is a swelling in the front of the neck. This condition is called *goitre*. The thyroid may become enlarged from other causes so that it is important to consult a physician as soon as even a slight enlargement or swelling is noticed. Goitre is far more common in girls than in boys and in women than in men. If the physician finds that enlarged thyroid is of the kind due to a shortage of iodine and too little thyroid secretion (hypothyroidism) and he discovers it in the early stages he can prescribe iodine in the diet and quickly effect a cure. Delay makes his problem far more difficult. Iodine should not be taken except upon a physician's recommendation.

Suprarenal (*Adrenal*) *Glands.* These are small, glandular bodies which lie on top of the kidneys, which are the renal glands. The suprarenal hormone resembles the thyroid hormone in many respects, but has additional properties.

"It also has a special function in emergencies. Its hormones affect the nervous system and the circulatory system, so that the blood vessels in the skeletal muscles, in the brain and in the lungs dilate. This makes available an unusually large supply of oxygen and of nourishment for the parts of the body that are called on in emergencies. At the same time, glycogen is given out by the liver in larger quantities, and there is contraction of the spleen and of blood vessels for the alimentary tracts and other structures that are not so essential to functions under these conditions." (Winslow.)



Why He Ran

The stout and elderly man, under the influence of fear, is outrunning the athlete on the other side of the fence. This imaginative picture illustrates the principle that certain body functions are affected by emotions. Fear is supposed to stimulate the adrenal glands and the strength and activity of many parts of the body are modified by the increased gland secretion (hormone).

In times of fear, anger or other emotional stress, the body is capable of unusual physical efforts because of increased secretion from the suprarenal and other glands.

Pancreas. The bulk of this gland consists of lobules whose cells manufacture the pancreatic juice which is secreted into the duodenum and which is active in the digestion of food. In addition, scattered throughout the gland, there are groups of cells called the "islands of Langerhans" which secrete a hormone into the blood. Disease or injury of the pancreas which involves extensive or complete interference with the functioning of these cells leads to an imperfect utilization of sugar in the body and to a disease called *diabetes mellitus*.

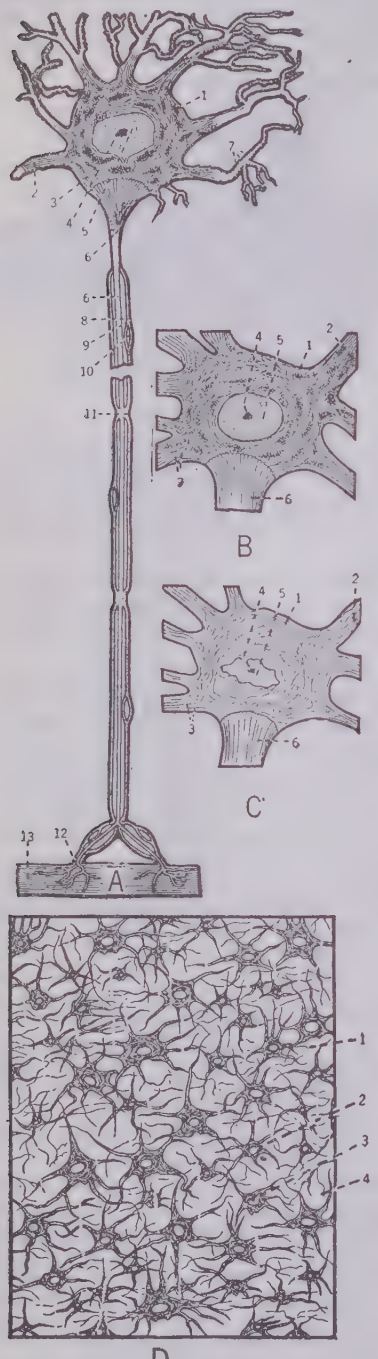
Reproductive Glands. There are some reasons to believe that the testes in the male and the ovaries in the female produce hormones. A number of other glands of the reproductive system are alleged to have endocrine functions. The facts are not well established at this time (1931).

The Nervous System. It has already been explained that in part the activities and coördination of parts of the body are controlled by the hormones of the endocrine glands. The principal control, direction and harmony of action in the body is, however, due to the integrating (coördinating) action of the nervous system. The chief parts are the *brain*, *spinal cord*, the *ganglia* (groups of nerve cells) and the *nerves*.

The Brain. The principal parts of the brain are the *cerebrum*, the *cerebellum*, the *pons* and the *medulla oblongata*. Twelve pairs of nerves (the cranial nerves) are offshoots from the brain. These nerves are associated with special senses such as seeing, smelling and hearing.

The Spinal Cord. Continuous with the medulla is the long spinal cord which runs down from the head along the length of the back and which is enclosed within the spinal

column. From the cord thirty-one pairs of nerves (the spinal nerves) are given off. There are also two rows of ganglia (the spinal ganglia) in front of and on either side of the cord and connected with it by nerve fibers.



Nerve Cells

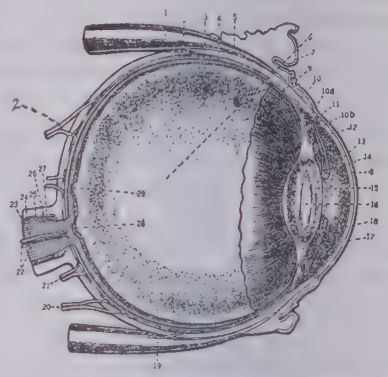
A. Nerve cell connected by axon to a muscle fiber. B. Normal nerve cell with large nucleus and many chromatophile bodies. C. A nerve cell exhausted by fatigue, or stimulants like alcohol. Note shrunken state of nucleus and absence of chromatophile bodies. D. Diagram illustrating how nerve cells are interrelated in he brain. In A, B and C, 1. Chromatophile bodies (Nissl's granules); 2. Dendron or dendrite; 3. Neurofibrils; 4. Nucleolus; 5. Nucleus; 6. Axon; 7. Gemmules; 8. Medullary sheath; 9. Neurolemma; 10. Nucleus of neurolemma; 11. Node of Ranvier; 12. End arborization of teledendrion; 13. Striate muscle fiber. In D, 1. Axon; 2. Dendrite; 3. Nucleus; 4. Hyaloplasm.

The Nerves. The neuron, or nerve cell, has already been described (see p. 978). From a functional point of view, the nerves may be divided into two classes according to whether they carry sensations to the central system (brain and cord) where the nerve cell is located, or carry impulses from the central system or nerve cell to the muscle, organ, blood vessel, and so forth, with which the nerve is related and whose activity it affects or controls. The former are called *afferent* and the latter *efferent* nerves.

The Reflex Arc. The simplest kind of nervous control of organs or tissues is exhibited in what is called the *reflex*. A stimulus is given the nerve ending as by a prick of the skin, a burn or shock. This passes along an afferent nerve to a ganglion in the cord. There this "sensory" stimulus becomes transformed into a "motor" stimulus which passes along an efferent nerve and causes muscles to contract and draw away the part of the body that was being stimulated. This cycle is called the *reflex arc* because it may happen without any consciousness or voluntary interference. Indeed, many such reflexes, even if a message is relayed from the spinal ganglion up the spinal cord to the brain, may be completed before the brain has been made aware of the primary stimulation. In behavior of this kind the nervous system is often likened to a telephone system, with its extensive wires and cross connections, switchboards, automatic controls, and so forth. The brain is then analogous to the "central" which controls the switchboard. In complexity, however, the nervous system so far exceeds any known mechanical system that man has only scratched the surface of the problem of understanding the workings of the nervous system.

Nervous Fatigue and Rest. Like any other living tissue, the neurons carry on active metabolism (chemical changes of life processes) in which repair must keep pace with use and injury. Rest is just as essential to nerve as to muscle tissue. The chief occasion for rest of the parts of the nervous system is when the individual is asleep. It is also important that the organs of this system be protected from drugs or poisons that speed it up or injure its parts. Chief among the common substances that are injurious to the nervous system is alcohol. Even small doses of this substance reduce the efficiency with which the system operates, and larger doses may be actually poisonous. Other substances like coffee, tea or tobacco smoke are harmful to the nervous system when used in excessive quantities.

The Special Senses. All normal persons are equipped with organs for the so-called "special senses"—*seeing, hearing, smelling, tasting* and *touching*. These senses are made possible by highly specialized types of organs (as eye, ear, nose) at the ends of special sensory nerves. These organs provide us with the means of relating ourselves to the environment. With their aid we recognize what is going on about us.

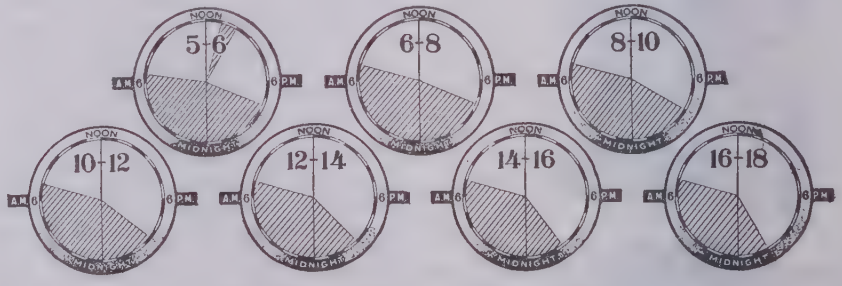


Side View of Eye

1. Lateral rectus muscle; 2. Vortex vein; 3. Sclerotic coat; 4. Choroid coat; 5. Retina; 6. Vitreous humor; 7. Conjuctiva palpebrarum; 8. Epithelium of cornea; 9. Ora serrata; 10. Ciliary body; 10a. Ciliary muscle; 10b. Circular fibers of ciliary muscle; 11. Canal of Schlemm; 12. Iris (with radial fibers); 13. Iris (sphincter muscle of pupil); 14. Cornea; 15. Aqueous humor; 16. Crystalline lens; 17. Zonule of Zinn, ciliary zonule; 18. Posterior chamber of eye; 19. Medial rectus muscle; 20. Long posterior ciliary artery; 21. Short posterior ciliary artery; 22. Central blood vessels of optic nerve; 23. Optic nerve; 24. Dura mater; 25. Subdural space; 26. Arachnoid coat; 27. Subarachnoid space; 28. Blind spot; 29. Yellow spot.

The Eyes. Perhaps most important among the organs of special sense are the eyes. These are very delicate and very complex structures which lie in protecting cavities of bone. The eye is often likened to a camera with a lens in front to focus an image upon a sensitive screen behind. To understand the proper care of the eye it is essential to know something about how it is constructed and how it functions.

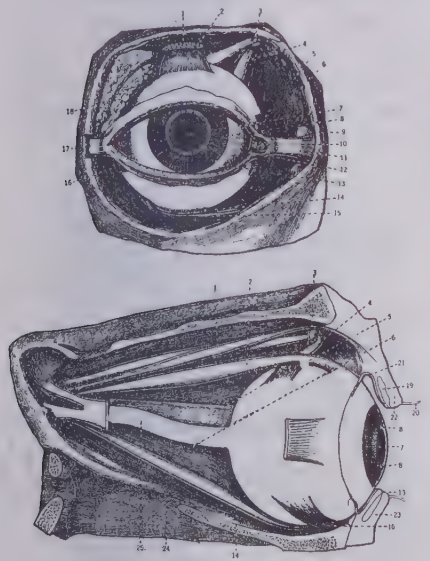
The eye is a ball-like structure with three coats, the outer one being the sclerotic, the middle one the choroid and the inner one the retina. The ball is divided into two chambers. The anterior, filled with the aqueous humor, has the jelly-like crystalline



Required Hours of Sleep for Different Ages

The large numbers indicate the ages. The shaded areas show the required hours of sleep to give the body adequate rest.

lens at its back; the posterior, filled with vitreous humor, is lined by the retina which is made up of blood vessels and the extremely complex, specialized endings of the optic nerve which runs to the brain. The sclerotic coat, seen as the white of the eye, has a round area in front (the cornea) which is transparent to light. The choroid coat below it has a round opening in front (the pupil) and around it a region which is pigmented (the iris) and from which the eye gets its color (black, brown, blue, gray or hazel). The iris is under the control of muscles which can expand or contract it so that more or less light enters the eye. The iris can be seen to change rapidly when emerging into a bright place from a dark room or by flashing a light upon the eye that has been covered for a few moments. As an excess of light strikes the eye, the iris contracts. The crystalline lens is attached to the choroid coat by special ligaments, termed *zonula of Zinn*. The ciliary muscle which is circular around the eye controls the tension of the ligaments. When the tension on the lens is increased, it is flattened;



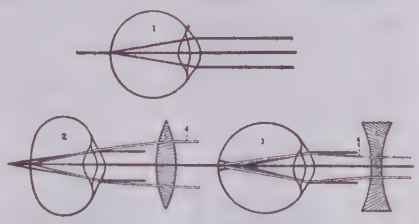
A Study of the Eye

Showing front (above) and side (below) views of the eye in its orbit. Note especially the muscles and ligaments. 1. Levator palpebrae superioris; 2. Superior rectus muscle; 3. Trochlea; 4. Superior oblique muscle; 5. Rectus medius; 6. Orbital wall; 7. Pupil; 8. Iris; 9. Lacrimal sac; 10. Caruncula lacrimalis; 11. Medial palpebral ligament; 12. Puncta lacrimalia; 13. Meibomian ducts, tarsal ducts; 14. Inferior rectus muscle; 15. Inferior oblique muscle; 16. Lateral rectus muscle; 17. Lateral palpebral ligament; 18. Lacrimal gland; 19. Tarsal gland, Meibomian gland; 20. Eyelash; 21. Conjunctiva; 22. Upper eyelid; 23. Lower eyelid; 24. Infraorbital fissure; 25. Optic nerve.

and when the tension is decreased, the lens becomes thicker and its surfaces more highly curved. By these means light from more or less distant sources is brought to a focus on the retina. With advancing age the lens tends to become hard and less easily variable in shape, and the choroid and the muscles become less responsive to stimuli and less accurate in functioning.

The retina is an extremely complex structure in which light produces chemical and physical changes of varieties which send suitable stimuli along the fibers of the optic nerve to the brain. There the stimuli are interpreted to give the impressions of light, color and so forth. The two eyes act together so that vision is single and stereoscopic, giving effects of distance and depth.

The eye is bathed continually by the secretion of the lachrymal gland. This



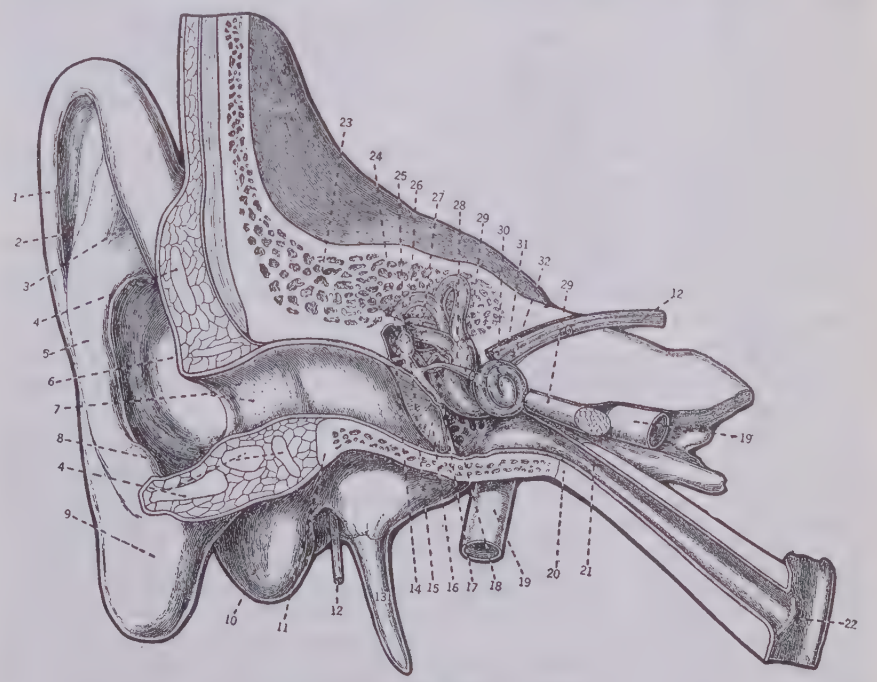
Normal and Abnormal Vision

1. Normal eye, with rays of light converging at focal point on retina; 2. Hypermetropic eye, with rays converging behind retina; 3. Myopic eye, with rays converging in front of retina; 4. Rays of light corrected by proper lens; 5. Biconvex glass; 6. Biconcave glass.

fluid normally flows over the eye and is drained off through the lachrymal duct at the nasal corner of the eye. When, under the influence of nervous or emotional stress or some local irritant this gland is unusually active, the excessive quantity of fluid which it secretes may overflow the eyelids as tears. The eye is also protected against injury or foreign bodies by the eyelids and eyelashes. The lids are controlled by muscles which are under voluntary control but which also operate under involuntary control.

Defects of Vision. The eyes are very frequently handicapped by abnormalities of structure and function. In the drawing, in (1) it is seen how a beam of light is brought to a focus on the retina in a normal eye. In (2), the eyeball is too short from front to back and the focus is "behind" the retina. To correct this, the lens of the eye must be made thicker (more convex) and the ciliary muscles that effect this change are called into use so often that serious strain results. The situation (*hyperopia* or long-sightedness) is corrected by means of a suitable convex lens or eye glass. In (3), the eyeball is too long (from front to back), the focus is in front of the retina and the correction of this condition (*myopia* or near-sightedness) is made with a suitable biconcave lens. When the surface of the cornea becomes irregular the image is indistinct on the retina (*astigmatism*). This can be corrected by suitably prepared eyeglasses. Everyone should have his eyes tested at least every year or two in order to detect the need for corrections when defective conditions are in their early states. Parents can often discover that a child's eyes need attention by the fact that he holds a book too close or too far away when reading. Some common eye defects can be corrected if given prompt attention. If the child's eyes tend to be "crossed" they should be examined by an eye specialist without delay.

Color Blindness. This condition is more common than is sometimes supposed, many persons being unaware for years that their eyes are defective in discriminating colors. And yet complete color blindness is rare. Failure to distinguish red and green is not uncommon. Color blindness occurs far more often in men than in women.



The Ear and Associated Structures

1. Helix; 2. Scapha; 3. Fossa triangularis; 4. Cartilaginous portion; 5. Antihelix; 6. Concha; 7. Ceruminous glands; 8. Antitragus; 9. Lobule; 10. Mastoid process; 11. External auditory meatus, bony part; 12. Facial nerve; 13. Styloid process; 14. Anvil; 15. Hammer; 16. Tympanic membrane; 17. Stirrup; 18. Tympanic cells; 19. Carotid artery; 20. Eustachian tube, cartilaginous part; 21. Eustachian tube, membranous part; 22. Orifice of Eustachian tube in nasal pharynx; 23. Mastoid cells; 24. Lateral ligament of hammer; 25. Superior ligament of hammer; 26. Semicircular canal; 27. Tympanic antrum; 28. Vestibulum; 29. Tensor tympani muscle; 30. Cochlea; 31. Auditory nerve, vestibular branch; 32. Auditory nerve, cochlear branch.

Eye Strain. The commonest cause of eye strain is reading or otherwise using the eyes under conditions of too strong or too weak illumination. Particularly when reading the light should be shaded so that the eyes are not exposed to glare, and the light in moderate intensity should fall upon the object, not upon the eyes. For reading purposes a flickering light should be especially avoided. The correct distance for reading is from twelve to fourteen inches for the normal adult eye and somewhat less for children. When the eyes are being used continuously, for whatever purpose, they should be rested frequently by closing the eyelids or by looking off at the sky or some distant object. When the eyes have been irritated by dust, wind, excessive sunshine or glare they can be quickly soothed by being bathed with a saturated solution of boric acid.

Foreign Bodies in the Eye. When a foreign body such as dust particle gets into the eye, the eye should never be rubbed. If the body is not removed by gently drawing one lid over the other, it should be removed as soon as possible by a physician or other competent person who knows how to turn the lids back and remove the irritating object with the corner of a clean handkerchief or other suitable object.

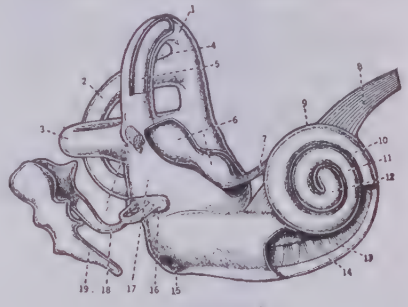
The Ear. The ear is probably next to the eye in complexity and importance as an organ of special sense. It consists of three parts—the outer, middle and inner.

The Outer (External) Ear. This consists of the horn or trumpet-like part of flesh and cartilage that is ordinarily called "the ear." Its function is to catch sound waves and reflect them through the opening (external auditory meatus) into the auditory canal. The auditory canal is guarded by cartilage and at its beginning is lined with glands (ceruminous) which secrete a sticky material called "ear wax" that catches dust and dirt particles. Beyond this region is a bony canal which is terminated by a thin membrane (eardrum, tympanic membrane) stretched across it.

The Middle Ear. Just beyond the eardrum is another cavity (tympanic cavity) which connects with the upper part of the throat (naso-pharynx) by the Eustachian tube or canal. In the tympanic cavity lie three bones called the "hammer" (malleus), "anvil" (incus) and "stirrup" (stapes), according to their shapes and functions. The hammer is fastened to the eardrum so that it is made to vibrate when sound waves entering the ear make the drum vibrate. The vibrating hammer strikes upon the anvil and the vibrations of the anvil are in turn transmitted to the stirrup which in turn transmits them to the inner ear. The net effect of this ingenious arrangement of three bones is that the vibrations of the eardrum are transmitted to the inner ear after they have been magnified about thirty times. The Eustachian canal, being normally open to the throat and mouth, permits equalization of the pressure on the inside of the eardrum with that on the outside. When blowing the nose, especially when one is suffering with a cold, it is extremely important to keep the mouth open. Otherwise, in the act of blowing, mucus (and bacteria) may be driven into the Eustachian canal and into the sinuses (cavities in the bony structures in the nose) and lead to painful and serious disease.

The Inner (Internal) Ear. This consists of two functional and structural parts, one concerned with hearing and the other with balancing and sense of position and direction.

Hearing is accomplished by the transmission of vibrations from the stirrup bone to the fluid in a part of the middle ear which is called the "cochlea" because it is spiral-shaped like a conch or snail shell. The motion of the fluid in the cochlea causes vibration of



The Labyrinth

This includes the cochlea (9), which is the organ of hearing; the semicircular canals (1, 2, 3), which are the balancing organs, and the bones of the middle ear (16, 18, 19), which transmit the vibrations of the ear drum. 1. Superior semicircular canal; 2. Posterior semicircular canal; 3. Lateral semicircular canal; 4. Bony labyrinth; 5. Membranous labyrinth; 6. Ampullae; 7. Branches of vestibular nerve to ampullae of semicircular canals; 8. Acoustic or auditory nerve; 9. Cochlea; 10. Basilar coil of cochlea; 11. Middle coil of cochlea; 12. Apical coil of cochlea; 13. Nerve of cochlea within spiral lamina; 14. Basilar membrane; 15. Fenestra rotunda or cochlear fenestra; 16. Stirrup (stapes), fitting into fenestra ovalis or vestibular fenestra; 17. Vestibule; 18. Anvil (incus); 19. Hammer (malleus).

hairlike endings of the auditory nerves. Stimuli pass along the nerve to the temporal region of the brain and set up sensations there which are interpreted as sound.

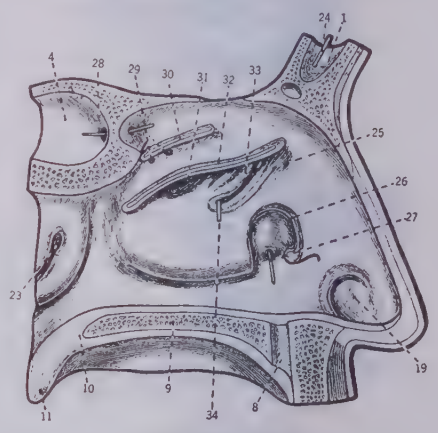
The other function of the inner ear is accomplished by the semicircular canals. There are three of these structures at right angles to each other. They contain a fluid (endolymph) and nerve endings. Any motion or change in position of the head results in motion of the fluid and this in turn results in stimulation of the nerve endings. The stimuli which pass along a branch of the auditory nerve to the brain set up sensations there. Early in life the individual learns how to interpret these sensations so that they enable him to balance the body or walk in a straight line even when blindfolded.

Care of the Ears. In cleaning the ears and removing wax use a damp cloth. Under no circumstances should the ears be cleaned, probed or poked with any hard or pointed object. Serious injury may be done to the ear drum in this way. When blowing the nose—normally, and especially when one has a cold—be sure to keep the mouth open. Otherwise there is danger of blowing mucus and bacteria into the Eustachian canal from the nasal cavity and starting infection of the middle ear. When water has entered the external ear, as when swimming, it should be removed by inclining the head.

If earache occurs, consult a physician at once. Do not delay even a single day because serious complications may develop rapidly.

The Nose. This organ serves a number of purposes, such as respiration, in addition to being the site of the special sense of smell. The nasal cavity lies behind the nose and nostrils and above the roof of the mouth. Opening from it by minute pores are a number of pocket-like cavities (sinuses) in the adjacent bony structures, the mouth of the Eustachian canal and the end of the lachrymal (tear) duct. The olfactory nerves have endings on the bones in the nose which are called "the turbinates." These nerve endings are stimulated by particles in the air brought to them by inhalation, and the stimulations, transmitted to the brain by the olfactory nerve, set up in the brain reactions that are interpreted by the individual as sensations of smell. In time of "cold" or other disease of the nose, inflammation may render the olfactory nerve endings incapable of detecting many odors. Many agencies other than bacteria can irritate the nose and cause an increased secretion of mucus by the nasal mucus glands. This condition, which is called "catarrh," can be brought about by dust, fumes, dry hot air, pollens of plants (hay fever) or some similar cause.

Matter suspended in the air that is breathed tends to adhere to the moist mucous membranes. This material may be of no consequence—except as it requires removal—or may be injurious if it contains irritating particles or disease-producing microbes. Dust, fumes, and the spray from coughing or sneezing persons should be avoided.



The Nasal Cavity

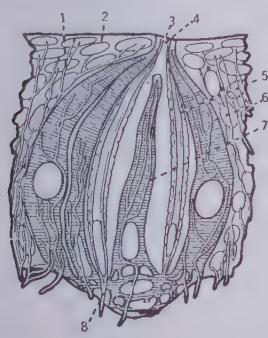
Showing the openings to the sinuses, to the ear and to the exterior. 1. Frontal sinus; 4. Sphenoidal sinus; 8. Incisive foramen; 9. Hard palate; 10. Soft palate; 11. Uvula; 19. Vestibule of nose; 23. Ostium of Eustachian tube; 24. Bristle in opening of frontal sinus; 25. Semilunar hiatus; 26. Cut edge of inferior turbinate; 27. Bristle in opening of nasolacrimal duct; 28. Bristle in opening of sphenoidal sinus; 29. Opening of posterior ethmoidal cells; 30. Cut edge of superior turbinate; 31. Opening of middle ethmoidal cells; 32. Cut edge of middle turbinate; 33. Bulla ethmoidalis; 34. Bristle in opening of maxillary sinus.

The Tongue. Most of the so-called "tastes" which we detect in eating and drinking are really smells of aromatic or volatile particles which reach the nose from the mouth. Sweetness, sourness, saltiness and a few others are true "tastes" which are detected by certain special sense organs (taste buds) located in the tongue. The buds that are especially capable of detecting sweetness are located at the top of the tongue. Those that detect sourness are along the sides of the tongue, and those concerned with bitterness are on the back of the tongue. The taste

buds have nerve endings that receive special taste stimuli and transmit them to the brain.

Organs of Touch. The sense of touch is associated with special types of nerve endings which are widely distributed in the skin. They occur particularly in the form of the tactile corpuscles (corpuscles of Meissner, end bulbs of Krause, Ruffinian and Paccinian corpuscles) and are particularly numerous in the skin of the finger tips and palms of the hands.

Mental Hygiene. The nervous system is the seat of the mind and the energy of mental processes is derived from the energy of the body. Variations in the operation of the organs and the distribution of the blood supply are quickly reflected in mental moods and humors. This is easily noted in inability to do mental work, in irritability and other characteristics when the body is tired; or in laziness, sleepiness directly after a meal; or in mental vigor and normal cheerfulness when the body is refreshed by rest or sleep. The mind becomes extremely inactive or even ceases to exist (unconsciousness) when physical or chemical disturbances in the body



Taste Bud

1. Nerve fiber; 2. Epithelium of mouth; 3. Hairlet (gustatory hair); 4. Gustatory pore; 5. Gustatory (neuroepithelial) cell; 6. Sustentacular cell; 7. Rod cell; 8. Gustatory nerve fibril.

exceed certain specific limits. It is therefore not surprising that mental hygiene and physical hygiene are intimately interrelated. Of course, there are many exceptions and many of the world's greatest minds have been housed in ailing bodies.

It is unfortunately true that there are many persons who are afflicted with mental disorders. As many persons are cared for in hospitals and institutions for the mentally delinquent or insane as there are in institutions for the physically sick or crippled. Part of mental deficiency is due to inheritance, part to injury or disease of the brain, skull or other parts of the body, and part to the fact that individuals do not adjust themselves adequately to the problems of social relations.

There is not yet a full or specific understanding of mental disease nor is the treatment of many mental disorders highly satisfactory. For those abnormalities that are definitely inherited it is proposed that persons who suffer from them be segregated or be sterilized by a simple surgical operation so that they cannot have children and perpetuate their kind. Segregation is too expensive to be practiced by the community. Sterilization is now being practiced in some places in a very cautious and limited way because the inheritance of mental disease is not yet fully understood.

Mental disease is frequently eliminated by treatment of physical abnormalities or defects. Alcoholism, syphilis and drug addiction represent the three most specific causes of non-inherited mental disease.

The mental delinquencies or abnormalities which are expressed in criminality, immorality, excessive irritability, inability to "get on" with people in one or more ways, despondency and other manifestations are sometimes preventable. Prevention is primarily concerned with education, particularly in the formation



Train the Child

The child, like the twig, may be inclined. With the adult, as with the tree, the task is often impossible. (From *The Growing Child*, by Dr. Hermann N. Bundesen, Chicago, 1927.)

of proper mental habits in the years of childhood and early as well as late adult life. In modern medicine certain physicians (psychiatrists) are being especially trained to help parents in the mental guidance as well as the physical care of children. Furthermore, such physicians are often useful in helping adults solve mental problems.

NUTRITION AND THE HYGIENE OF DIET

Food and Nutrition. Proper *diet* is one of the essentials of personal hygiene. The diet must be chosen with care and discretion, be adapted to the age and sex of the individual, to the season of the year and be varied from day to day or on occasion to meet the vigor and activity of the day's routine. There are a few fundamental facts which apply under all circumstances. These may be enumerated first. The starting point is an appreciation that the body is a machine whose parts are continually working. Food is the body's fuel and, as in most machines, the utilization of the fuel is accomplished by burning it in a flame of oxygen. The utilization of food depends first upon digestion (see p. 982) and then upon the oxidation of the relatively simple substances into which the food has been decomposed. The purpose of oxidation is the evolution of heat. The heat that is liberated is converted into work.

The body differs from man-made machines on two scores: (1) the combustion (oxidation) in the body is carried on at a relatively low temperature (98.6°F.) and done the less efficiently, whereas in manufactured machines the combustion occurs at high temperatures (300—2000°F.); (2) the rate at which the utilization of the food (fuel) occurs is regulated automatically by the body itself, whereas the artificial machine must be regulated by man. On the latter point the difference is more fundamental than may appear because the parts of the body repair themselves from the food. It is as though an automobile engine could replace its worn out parts by manufacturing new ones from air, oil and gasoline.

The Calorie. The operation of the body is primarily that of a "heat" machine. It uses fuel to supply heat for warmth and for energy that is to be converted into work or used in rebuilding the parts of the machine. It is therefore not surprising that the unit in which food value is measured is the same unit of heat that is used by the engineer. This unit is the *calorie*: the amount of heat that will just suffice to raise the temperature of a liter (about a quart) of water one degree Centigrade (1°C. = 1.8°F.). Thus, when it is said that one large potato or two slices of bread or three lumps of sugar contain or are equivalent to 100 calories, what is meant is that if the portion of food is completely burnt in a suitable apparatus (called a calorimeter) or is utilized in the body the heat liberated is equivalent to the amount that would raise the temperature of a liter of water from freezing to boiling temperature (from 0°C. to 100°C. or from 32°F. to 212°F.). (See color plate opposite p. 977.)

Proteins, Fats and Carbohydrates. When foods are considered in terms of their chemical composition, they are analyzed into six components. Of these the first three are proteins, fats and carbohydrates. Proteins are products of animal and plant activities and do not occur in the non-living world. They are found chiefly in meat, milk or milk products and eggs. They are very complex, chemical combinations of carbon (C), hydrogen (H), oxygen (O) and nitrogen (N). Some proteins also contain phosphorus (P) or sulphur (S). When used in the body they are first broken down by the processes of digestion to simpler substances and then rebuilt to make the structural parts of the body cells and tissues. Proteins are not conveniently used by the body as sources of energy (heat). Fats and carbohydrates (sugars, starches) are chemically compounded from carbon, hydrogen and oxygen. They are primarily energy or fuel foods but also serve in part for the preparation of the body's own tissues. Carbohydrates are especially easily burnt in the body and are therefore "quick" foods when fuel is needed, as in cold weather or during a period of severe physical exhaustion. The caloric content of these food units is approximately as follows: one gram of protein or carbohydrate will yield four calories; one gram of fat will yield nine calories. A gram is approximately one twenty-eighth of an ounce. Weight for weight, fats have more than twice the fuel value of proteins or carbohydrates. Thus, if a glass of milk contains seven grams of protein, nine grams of fat and eleven grams of sugar (carbohydrate), the fuel value can be quickly calculated:

Grams		Calories
7 (of protein)	x 4 (calories per gram) =	28
9 (of fat)	x 9 (calories per gram) =	81
11 (of sugar)	x 4 (calories per gram) =	44
	Total.....	153

We arrive at the answer that an ordinary glass of milk is equivalent to about 150

calories and two-thirds of a glass of milk represents a 100-calorie portion. Such calculations assume that foods are completely digested in the body. Experiments have demonstrated that the total food of an average mixed diet is digested with an efficiency of approximately ninety-five per cent.

Minerals (Salts). The fourth constituent of food includes a variety of mineral salts. The principal mineral elements in the body are calcium, phosphorus, sulphur, sodium, chlorine, magnesium and iron. Most of these are generally supplied in adequate quantities when food that is otherwise sufficient is eaten because practically all natural foods contain some salts. Mineral elements like calcium and phosphorus which are needed in appreciable quantities are effectively supplied by milk. Iron is also present in small concentrations in practically all foods. When selecting items in the diet it is wise to choose foods occasionally that are rich in iron. (See table on p. 1014 for iron content of common foods.) Iodine is a mineral that must be supplied to the body for the special needs of the thyroid gland. Extremely minute quantities are sufficient. Yet in some places in the world it is lacking in the water and soil and unless added to the drinking water, to the table salt or fed in suitable tablets or other form, goitre (enlarged thyroid) may be a very common disease.

Water. The fifth constituent of food is not really a food because it undergoes no chemical changes in the body and no energy can be derived from it; yet no living thing can exist without water and none of the activities of the cells can proceed without it. The largest part of the body is water, the solvent in which all of the chemical processes of life occur. The bulk of food is water. In addition to the water ingested in solid or semi-solid food the average individual needs at least six glasses of water each day.

Vitamins. In addition to the five constituents that have been mentioned the body requires in its food a sixth: minute quantites of certain substances called "vitamins." Their chemical nature has not yet been ascertained. The following table (from Winslow) lists essential facts about the principal vitamins:

VITAMINS AND THEIR OCCURRENCE

Vitamin	*Soluble in*	*Lack in Food Results in*	*Found in*
A	Fat	Lack of growth Disease of eyelids	Alfalfa, butter, cod liver oil, egg yolk, spinach
B	Water	Lack of growth Disease of nerves Beri-beri	Asparagus, beans, spinach, tomato, wheat grain, yeast
C	Water	Scurvy	Green cabbage, lemon, lettuce, orange, pineapple, raspberries, spinach, tomato
D	Fat	Rickets	Cod liver oil, fresh raw milk
E or X		Sterility	Wheat (oil of germ), hemp seed, legumes, germinated wheat germ

In recent years there has been extensive education of the public on the subject of vitamins. It is well recognized that most of the vitamins will be adequately supplied in any reasonably well chosen mixed diet that is otherwise adequate (in total calories and in the proteins, fats and carbohydrates). This is not necessarily true for Vitamin D because it occurs in significant concentration in only one common food (milk) and is destroyed by pasteurization. This vitamin is especially important for the health of growing children because it affects or regulates the formation of bones. Children must therefore be regularly given cod liver oil. The effects of Vitamin D can be duplicated by mild doses of ultra-violet rays. Summer sunlight is ordinarily sufficiently rich in these rays to meet all ordinary requirements. In the late autumn, winter and early spring sunlight may not contain sufficient ultra-violet rays to prevent rickets. In these seasons of the year the regular use of cod liver oil or some artificial source of ultra-violet rays is doubly important for children. When using sunlight as a source of ultra-violet it must be constantly kept in mind that these rays do not pass through ordinary window glass. The child that is to be protected against rickets by treatment with sunlight must therefore be placed in the direct path of the rays in the open or, if in the house, near an open window.

It appears at this time (1931) that the power of ultra-violet rays to prevent rickets can be more or less permanently stored in certain substances. There is a particular substance, *ergosterol* or *viosterol* which can be treated with these rays (irradiated) and which when taken by mouth in very small doses is effective in preventing rickets.

Total Food Needs of the Body. It is evident from what was said above that the amount of energy which must be supplied the body in the form of food must balance the amount of energy that is being used each day. The food must supply the energy for body work and the constituents from which new tissues are made. The body of a young baby is not burning many calories for energy but it is utilizing food that is equivalent to many calories for the building of new bone, muscle, blood and so forth. The body of a full grown adult needs no food for tissue growth: it requires food only to replace tissues that are breaking down and to supply energy for work. In the body of the growing child food is being stored and the intake of foods exceeds the output of wastes. In an old person the converse occurs, tissue is being destroyed in the body more rapidly than it is being repaired and the output exceeds the intake. The following table of figures compiled by Gillett and taken from *Chemistry of Food and Nutrition* by Professor Henry C. Sherman indicates the total food requirements of young persons each day:

FOOD ALLOWANCES FOR HEALTHY CHILDREN

Age Years	*Calories per Day*	
	Boys	*Girls*
Under 2	900-1,200	900-1,200
2-3	1,000-1,300	980-1,280
3-4	1,100-1,400	1,060-1,360
4-5	1,200-1,500	1,140-1,440
5-6	1,300-1,600	1,220-1,520
6-7	1,400-1,700	1,300-1,600
7-8	1,500-1,800	1,380-1,680
8-9	1,600-1,900	1,460-1,760
9-10	1,700-2,000	1,550-1,850
10-11	1,900-2,200	1,650-1,950
11-12	2,100-2,400	1,750-2,050
12-13	2,300-2,700	1,850-2,150
13-14	2,500-2,900	1,950-2,250
14-15	2,600-3,100	2,050-2,350
15-16	2,700-3,300	2,150-2,450
16-17	2,800-4,000	2,250-2,600

It will be noted that boys require more food than girls and that the requirements increase from 900-1,200 calories for the infant to 2,250-4,000 calories for sixteen to seventeen year old girls and boys. The average adult requires about 2,700-3,500 calories each day, more or less, depending upon the activity of the individual. The following quotations from Professor Graham Lusk (*The Science of Nutrition*, Third Edition) illustrates how much the food requirement of the adult varies with occupation:

> A seamstress sewing with a needle required 1,800 calories.
>
> Two seamstresses, using a sewing machine, required 1,900 and 2,100 calories, respectively.
>
> Two bookbinders required 1,900 and 2,100 calories.
>
> Two household servants, employed in such occupations as cleaning windows and floors, scouring knives, forks and spoons, scouring copper and iron pots, required 2,300 to 2,900 calories.
>
> Two washerwomen, the same servants as the last named, required 2,600 and 3,400 calories in the fulfilment of their daily work.
>
> Concerning the fuel requirement for the occupations of men:
>
> Two tailors required 2,400 to 2,500 calories.
>
> A bookbinder required 2,700 and a shoemaker 2,800.
>
> Two metal workers, filing and hammering metals, required 3,100 and 3,200.
>
> Two painters, occupied in painting furniture, required 3,200 and 3,300 calories, and two carpenters engaged in making tables required the same amount of energy.
>
> Two stonemasons chiseling a tombstone needed 4,300 and 4,700 calories.
>
> Two men sawing wood required 5,000 and 5,400 calories.
>
> The proverbial reputation of sawing wood as a strenuous occupation has here its scientific verification and explains the disinclination of the hungry to engage in this useful occupation, as well as the unpopularity of charitable wood yards.

Kinds of Food Needed: It is not sufficient that the diet should include the requisite

number of calories. It is necessary that they be provided in suitable proportions among the proteins, carbohydrates and fats. It has become the fashion for most people to eat too much sugar in concentrated form. Most persons may be better off for less sugar with or between meals. It is generally admitted that hunger and appetite are reasonably safe guides to the amount of food consumed. If in addition the adult individual recognizes that when he is increasing in weight and getting fat his food contains more energy than he needs and if he is losing weight and is getting thin it contains too little. After reaching maturity the weight remains approximately constant. The results of many studies indicate that the average adult uses each day from 2,700 to 3,500 calories of which approximately 400 are derived from protein. It appears from recent investigations that it matters relatively little what proportion of the total calories are derived from fats. If for any considerable period too little fat is eaten the individual soon feels a little hungry after a meal even though the food eaten is sufficient in total nutritional value. If it were necessary to make a single estimate of the proportions, it might be said that ninety to 115 grams of protein, fifty to sixty grams of fat and 500 grams of carbohydrate (the total equal to about 3,000 calories) is not far from the needs of an average adult man doing moderately vigorous muscular work. A woman would need about three-quarters as much of each item. Changes in body weight should provide the index to needs for increase or decrease in the total caloric intake. In general, the protein intake should not be reduced below ninety grams per day and may be increased to 125 to 150 grams for persons doing very vigorous exercise or work.

Roughage. In addition to an adequate number of calories and proper proportions among the several kinds of essential foods, the diet should have bulk and should contain some indigestible matter. The purpose is to supply "roughage" because the presence in the digestive tract of food that has "body" or bulk stimulates the intestines to active peristalsis (see p. 982). The food is then moved along more rapidly and more effectively, elimination of wastes is hastened and the bowel movements are more regular. The cellulose in vegetables and fruits is indigestible and is the most valuable, regular source of roughage in the diet. It is desirable to include at least one green, leafy vegetable in each day's food to supply roughage (as well as vitamins and minerals). Many fruits such as apples, figs and dates are slightly laxative for most persons and may be used liberally in the diet by those who have sluggish bowels.

A physician should be consulted if constipation recurs frequently or persists when sufficient water, milk or other fluid is consumed, the diet contains ample bulk and roughage and regular exercise is taken. Self-medication is dangerous because it may result in the establishment of a "lazy" intestine or because some abnormal condition that requires attention may be seriously neglected.

Preparation of Foods. An important part of the hygiene of diet is that food be properly prepared and attractively served. The sight and smell of good food stimulates the saliva to flow. Experiments have shown that other digestive juices are also secreted under the influence of such stimuli. The time and energy that go into the careful preparation of food are contributions towards good digestion. Warmth of food is another factor that aids digestion so that it is advisable to have at least one warm dish in each meal, except in very warm weather when cold foods are more pleasurable to eat.

Fruits and vegetables which are eaten raw should be thoroughly washed before they are served. In addition to destroying microbes, cooking makes many foods more tender because heat breaks down such things as the cellulose walls and fibers in vegetables and softens the muscle fibers in meats. The food is then more easily chewed and more effectively penetrated by digestive juices. Foods that are sautéd, fried or cooked in deep fat are often difficult to digest and should not make up more than a small fraction of the diet.

It is important to remember that vegetables should be cooked with a minimum of water. The less water used, the less loss there is of vitamins and minerals in the water that is often discarded. It is good practice to use the cooking water from vegetables in soups, gravies and sauces.

A word of caution may be said about the choice of cooking utensils. Earthenware and glass are most desirable because they are highly insoluble. Of metalwares, copper and brass are most objectionable unless lined with tin. Iron, nickel, tin and aluminum vessels are least objectionable. Enameled pots and pans may be used provided the glaze does not contain lead.

TYPES OF DISEASE AND THEIR CAUSES

Health and Disease. It will be recalled that the body of a living thing passes through many changes during its span of life. This is true of all living things, whether plant, animal or human. Each goes through a cycle: conception, growth, differentiation of various parts and specialization of their functions, maturity, reproduction, old age and decline, and finally death. All of these are normal processes through which complex organisms pass. Health, we have said, is the normal working of the living body. Therefore it follows that death, as well as life, is normal, and is part of "health" itself. The term "disease" must be restricted to the failure of one or more parts of the body to function, or to their abnormal functioning. The breakdown of a part may remain local and restricted, or it may lead to the failure of other parts. This, in turn, may go further and further until the maintenance of balance, work and repair of the whole body become impossible.

Origin of Disease. The beginning of disease may be due to *internal* or to *external* causes. An example of an internal injury is the rupture of the appendix, the bursting of a blood vessel which has lost its elasticity, or the failure of some part to function because it is not receiving its necessary fuel (food) or is not disposing of its wastes. Diseases which follow injuries of the last-named kind are commonly called *nutritional*. Of the diseases of external origin, the simplest to consider are those which follow upon *mechanical* injury, as by crushing, cutting, tearing, burning, shooting; or upon *chemical* injury, as from corrosive acids, alkalies, drugs, or other substances. The injury done by a mechanical or chemical cause is usually called *trauma*, and is spoken of as *traumatic disease*. Among the diseases of external origin, the commonest, most widespread and most important are those due, not to mechanical or chemical, but to *biological*, causes. They are due to the direct or indirect action of living things, large or small, living on or in the body of the plant, animal or human as the case may be. Disease is also divided into: (1) *intrinsic*, or constitutional causes, and (2) *extrinsic*, or environmental causes.

MICROBES AND VECTORS OF DISEASE

Parasitism. Many will recall the famous lines of Swift:

> So, naturalists observe, a flea
> Has smaller fleas that on him prey;
> And these have smaller still to bite 'em.
> And so proceed *ad infinitum*.

Of this passage, the following is a more popular version:

> Big bugs have little bugs
> Upon their backs to bite 'em;
> And little bugs have lesser bugs,
> And so *ad infinitum*.

The condition of one living thing living on another is extremely common and prevalent throughout the organic world. In an indirect way, the dependency of one group of organisms living upon other groups is part of the whole scheme of the living world, as will be described later ("The Cycle of Foods in Nature," p. 998). Many living things have become adapted to obtaining part or all of their food, warmth or other requirements from other living things. The mistletoe that lives as a sucking vine on a larger tree, the mold on a leaf, the insect piercing the skin of an animal for a meal of blood—each attests how widespread is the occurrence of parasitism. The word "parasite" has an interesting origin which is descriptive of the process to which it is applied. It was first applied to the person who sat at the table of another and ate at his expense (from the Greek words, *para* and *sitos*, meaning "to eat beside"), and only recently came to be applied to plants and animals. The comparison may be carried further: Even as the human parasite—minstrel, jester or other—came to be dependent upon his host, in many instances, so also has the plant or animal parasite become incapable of supporting itself without a living host. The fact that we still speak not only of a "parasite" but also of its "host," is reminiscent of the origin of the term parasite.

A parasite may live upon its host and do comparatively little damage, so that the two may live together without serious abbreviation of the host's span of life. In the case of microbes which live in the nodules that may be seen on the root-hairs of a pea, bean or clover plant, not only is the parasite harmless to the host, it is even beneficial because the microbes change certain substances in the soil so that the plant is enabled to use them as foods. One might with equal force say that the leguminous plant is the parasite on

the microbes which it harbors in its root-hair nodules. But not all parasites are so harmless. More generally, they deprive the host of food needed for its own purposes or interfere with its own nutrition. If they are in, and not merely on, the host, they may injure or interfere with the function of tissues or even organs so that the death of the host may ensue. Injury which is caused by the presence, growth and multiplication of parasites, and by the action of poisonous substances which they produce, is said to be *infectious* disease. The parasitic causes of most, but not all, infectious diseases may be transferred from one host to another. Infectious disease may be *communicable*. If the communication from one host to another is usually accomplished by more or less direct contact between the infected and the non-infected, potential host, the communicable disease is said to be *contagious*.

Communicable diseases are responsible for a large proportion of all sickness, and they are the cause of at least two-thirds of all premature deaths. For this reason it is especially easy to understand of what tremendous importance have been the discoveries concerning parasitism. From these discoveries have flowed humanitarian accomplishments which are exceeded by those of no other branch of natural science; and in their effects upon the health and well-being of man, they are without peer. What some of these discoveries are, how they came about and how they are applied, will appear clearly later. They have enabled man to control disease to such an extent that human beings can congregate in cities safely without being wiped out by epidemics of communicable disease.

Important Kinds of Parasites of Man. There are so many different kinds of living things which live as parasites upon other living things, that we cannot undertake to discuss them all. We must restrict our attention to those which are parasites on human beings—and to only the most important of these.

It is an interesting fact that practically all of the important communicable diseases of man are caused by parasites which are so small that, as individuals, they cannot be seen by the unaided, human eye. For this reason they are called "microbes" (from the Greek words: *mikro*, "small" and *bios*, "life"). All but a few of them can be seen when examined through a microscope which is capable of magnifying an object as much as a thousand or two thousand times its natural size.

The most important microbic parasites of man are not only very small, but they are single living cells. When one grows to mature size, it divides into two or more cells which usually separate from one another, and each new cell lives an independent life. Certain of the unicellular microbes have chemical composition, food requirements, methods of growing and dividing which place them in the plant kingdom. These are called *bacteria*. Others are more closely allied to the animal kingdom, and are known as the *protozoa*. There are many multicellular microbic parasites, some plant, like the *molds*, others animal, like the *worms*. Some of these parasites may be spread from person to person by contact. Others gain access to the human body in dirt, dust, saliva or sputum, through the skin in cuts, abrasions or wounds, or by way of the mouth or nose. We can consider these matters more specifically later when discussing particular parasites and the diseases they cause. Let us first consider the *Protozoa* briefly, and the *Bacteria* in more detail, so that we can understand what they are, how they behave and how man has learned to conquer them. The general principles learned from the study of bacteria will apply to the other forms, with such exceptions as will be specifically noted.

The Protozoa. The Protozoa are single-celled microörganisms which, because of their composition, structure, methods of reproduction, food requirements, and other characteristics, are placed at the foot of the animal kingdom, as the bacteria are placed at the foot of the plant kingdom. Because there are a number of important diseases of man caused by protozoan parasites, they deserve mention here.



A Protozoan Parasite
The protozoan parasite (trypanosome) of sleeping sickness.

Those of us who live in the temperate climates of the world are fortunately spared from many of these plagues, because they are more or less definitely restricted to tropical areas. Malaria and amebic dysentery are the only protozoan diseases that need to be discussed in this chapter, for they are world-wide in their occurrence, and are widespread in the United States. The parasites of these two diseases are described elsewhere.

The Size and Growth of Bacteria. There are more bacteria in the world than all other living things combined. Yet because they are so small, only a few of the earth's billions of people who have contact with them every day have ever seen them. An average sized bacterium is so small that it would take some fifty million to make a lump the size of a grain of sugar, and a drop of water no larger than a raindrop could hold about a thousand million. Bacteria are so small that, for the sake of convenience, a special unit of length is used to describe their size. This is the "micron," commonly expressed by the Greek letter *mu* (μ), which is $\frac{1}{1000}$ of a centimeter, or $\frac{1}{25000}$ of an inch. Average sized bacteria may be from one to ten μ long, or wide, or thick.

The following is a brief table of bacterial dimensions:

	micra
Bacterium coli	0.5 by 1.0-2.0
Bacterium typhosum	0.6-0.8 by 1.0-1.5
Bacillus tetani	0.4-0 6 by 4.0-8.0
Staphylococcus aureus	0.8-1.0
Streptococcus lacticus	0.6-1.0
Vibrio cholerae	0.4 by 2.0

Each bacterium, despite its small dimensions, and although it is a single cell, is an extremely complex living thing. What bacteria lack in size, they make up in activity. The reason for this is that the speed at which organisms live, other things being equal, depends upon the ratio of their surface to their volume or bulk. All things of simple shape have larger surfaces for their volume the smaller they are. For example, a sphere with a radius of one inch has a surface (in square inches) which is only three times its volume (in cubic inches); but for a sphere with a radius of one-tenth of an inch, the surface is thirty times its volume, and for still smaller spheres the ratio of surface to volume is proportionately greater. A man of average size may have a half of a square inch of body surface for every cubic inch of volume. A bacterium of average size may have 50,000 times as large a surface for its own volume. Each living cell, whether bacterium or tissue cell, must obtain its food from the fluid in which it is bathed and must excrete its waste products into this fluid. The more surface it has the more rapidly and the more efficiently it can take in foods and give off its wastes. Under proper conditions of temperature and food supply, each bacterium may grow into two, every twenty minutes. It may be calculated that from a single bacterium, a billion could be produced in ten hours; and enough to fill the ocean, in a few days. But such rapid multiplication never actually occurs except for a brief period of time because their food gives out, because products of the digestion of food stop their activities and because they have enemies which eat and destroy them. Nevertheless, it is very important to remember how rapidly bacteria can (and do) live and multiply; otherwise it may be difficult to understand how they do so much damage in a short time when they get into the body.

Bacteria Everywhere in Nature. It is almost accurate to say that bacteria are present everywhere. There are a few in every breath of air we draw. They are in the water we drink and in the food we eat. There may be thousands in a speck of dust or dirt. They are in the soil and on the leaves, stems, fruits, flowers and seeds of plants. There are millions of them on the skin and in the mouth and intestines.

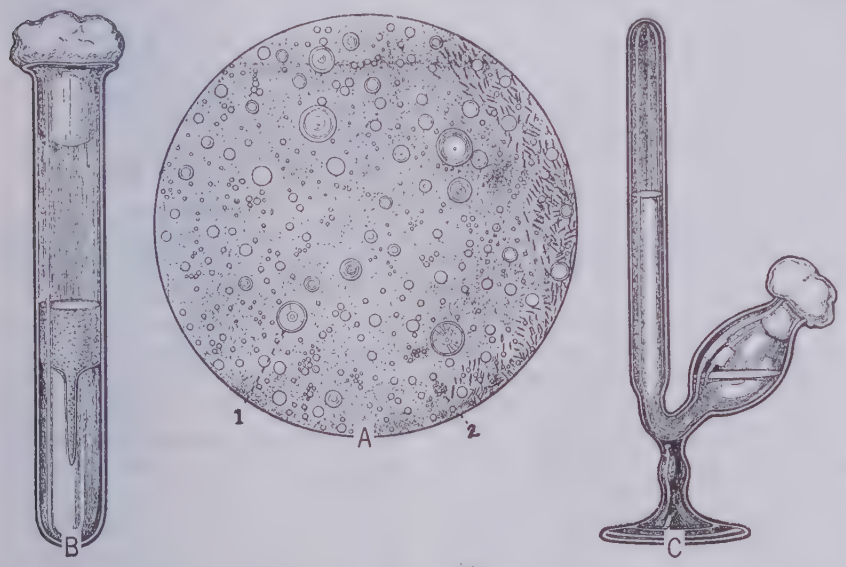
Good and Bad Bacteria. It is fortunate for man that not all bacteria are parasites. Indeed, most kinds are entirely unable to live in or on man, animals or plants. Not only are they harmless, but many are actually very useful to man. There are several thousand kinds of bacteria known, but only forty or fifty kinds are parasites that cause disease. If some are good and others bad, it is obviously important to know how to tell one kind from another.

Kinds of Bacteria. Biologists ordinarily develop their systems of identifying living things by considering the shapes, forms and sizes. They set those which are similar together, and those which are different, apart.

That is, the first principle of classification is *morphology* (the study of form). Bacteria are all very small, they differ little in size and they show only limited structural differentiation. Hence, morphology provides only a beginning for a system of classification.

When bacteria are examined with a suitable microscope, three general shapes are seen: sphere, rod and spiral. These are called *coccus*, *bacillus* and *spirillum* (plurals: *cocci*, *bacilli* and *spirilla*), respectively. Each is a single cell with no particular differentiation of parts within it. It is still uncertain whether the bacterial cell has a true cell wall or a separate nucleus. There is no doubt, however, that the surface has the properties that are usually associated with a cell wall, and that there is nuclear material scattered more or less throughout the cell. Special kinds of pigment particles, food and other kinds of granules and vacuoles are usually present. In many bacteria the presence of pigment or granules occurs regularly and is useful in identifying them as belonging to only for bacilli and spirilla. Not all—only about half—the members of the two latter groups have flagella, and some species have one, some two or more. Some have them at one end, some at both ends and some all around the cell, as may be noted in the illustration.

Spores. Some species of bacilli have the ability to change their normal rod-like shape (termed the "vegetative" state) to a more condensed, spherical body called a *spore*. This change usually occurs when conditions are not favorable, as when the temperature is too high or too low, when food gives out, or when acids, alkalies or other products of digestion accumulate. In the spore stage, the cell is not easily penetrated by injurious substances and is very resistant to heat. Thus it is generally true that bacteria in the vegetative state are killed in a few seconds at the temperature of boiling water, and in a few minutes in hot water. But spores may survive boiling for half an hour, and some have been known to survive as long as



Growth of Bacteria

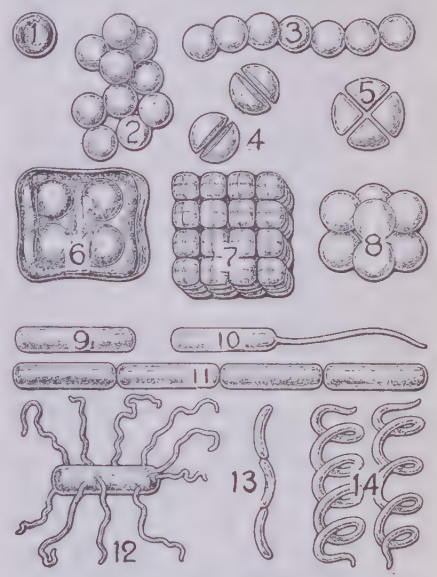
Many methods are used to cultivate bacteria and other microbes. A plate culture is a shallow dish containing a culture medium—a jelly which includes foods for the microbes. Each microbe which grows in or upon the jelly may multiply into so many that a visible colony of microbes develops. The plate culture (A) contains many such colonies of molds, yeasts and bacteria. In the tube (B) there was jellied culture medium into which was stabbed a platinum needle that had first been sterilized and then touched to a colony of bacteria. Where the needle passed, bacteria were left in the medium. They have grown and liquefied the jelly, especially near the surface where air is plentiful. The tube (C) is a fermentation tube. The closed arm had been filled with a sugar medium and then inoculated with microbes. They have fermented the sugar and produced gas. As the gas bubbles rise through the fluid they are trapped in the closed arm and provide direct evidence that the sugar has been fermented.

some particular genus or species. Bacteria may be further divided according to the kinds of groups in which they tend to stay.

Motion of Bacteria. Some bacteria have whip-like appendages called *flagella*. By lashing these to and fro in water or some other fluid, the cell may be given a motion which may reach quite a considerable speed. An actively motile bacterium may move twenty-five times its own length in a second. This speed is five times greater than that of a champion human runner. Flagella cannot be seen on the ordinary bacterium but are made visible by staining with a dye. Up to this time (1931), there have been no authentic discoveries of cocci with flagella, these organs of motility having been demonstrated

sixteen hours. It is a fortunate fact that there are extremely few disease bacteria that can form spores. Otherwise it would be extremely difficult for man to protect himself against these microbes. Botulism, which is one kind of food poisoning, tetanus, which is lockjaw from infection of a wound, and anthrax are the only important diseases caused by spore-forming bacteria.

Chemical Tests for Bacteria. Although bacteria are of three different shapes and vary in size and certain details of form, they can be easily divided into general classes. There are many which, though they look very similar when seen through the microscope, are different. Many simple and complicated chemical tests must be used to tell one from another. For example, the harmless *Bacillus coli*, which is present in large numbers in the intestines of man and other animals, looks just like the dangerous microbe of typhoid fever, *Bacillus typhosus*. They can be distinguished by placing them in separate tubes of broth (a special kind of soup in which bacteria grow and multiply) to which glucose or grape sugar has been added. In glucose



Common Bacteria

The structure of the common kinds of bacteria as seen under the microscope: 1. Coccus; 2. Staphylococcus; 3. Streptococcus; 4. Diplococcus; 5. Tetracoccus; 6. Tetragenous form; 7. Sacrina lutea; 8. Eight cell group of cocci; 9. Bacillus; 10. Bacillus with flagellum (monotrichous type); 11. Streptobacillus; 12. Peritrichous arrangement of the flagella; 13. Vibrio; 14. Spirilla.

broth, both species use the sugar as a food and will produce acid, but *B. coli* will also produce gas, whereas *B. typhosus* will not. If they are placed in separate tubes of broth containing lactose or milk sugar instead of glucose, *B. coli* will use this sugar, too, and will produce acid and gas; but *B. typhosus* will not use the sugar at all, and neither acid nor gas will be formed. By using many kinds of sugars and other substances, chemical differences are detected among bacteria which are alike or similar in shape, form, size and motility. When it is necessary to identify bacteria, as in the diagnosis of infectious disease, material taken from the patient is examined directly, or the bacteria in it are first grown on broth or other food and then studied with the microscope or by various chemical tests according to the disease which is suspected. The invention of methods for making these tests quickly is one of the great contributions of bacteriology. For many diseases the diagnosis can be made speedily and accurately, and the steps necessary to treat the patient and to prevent the spread of the disease to other persons can be taken promptly.

Bacteria in Air. The air near the surface of the earth usually contains bacteria, yeasts, molds and other microbes. These are usually present on dust particles, so that in general the more dust, the more microbes in the air. Country air usually contains fewer microbes

than city air, and the air on a mountain or up high where a balloon or an airplane may go, may be practically free from dust and microbes.

The air in an ordinary city street or in a schoolroom may contain a thousand microbes per cubic foot. There may be many more where dust is being raised or in the air near a person who is sneezing or coughing. The important thing is not how many bacteria there are in the air, but what kinds there are. Those ordinarily present in the air we breathe are harmless and unimportant. But when the air is being contaminated by a careless person who sneezes or coughs, in the droplets which are sprayed from his nose or mouth there may be dangerous disease germs. When air containing these droplets is breathed, disease may follow. It is well known that colds, pneumonia, scarlet fever, measles, tuberculosis of the lungs (consumption) and many other diseases are spread in this way. HUMAN BEINGS, NOT THINGS AROUND THEM, ARE THE USUAL AND COMMON SOURCE OF INFECTIOUS DISEASE.

Bacteria in Water. The water in brooks, streams, rivers, wells, ponds and lakes may contain the same kinds of bacteria which occur in air, soil, or dust. When the rain falls, it washes bacteria with it wherever it drains. These bacteria are not ordinarily dangerous or harmful. They are called the normal bacteria of water.

The importance of pure water for drinking and cooking purposes was known to man in ancient times, and he knew that filthy, dirty or smelly water is not safe to drink. It was not until about a hundred years ago, however, that it was clearly understood that even water which may look pure and wholesome may contain disease-causing substances. Even long before bacteria were known to be the specific causes of certain infections, it had been proven that typhoid fever, cholera and dysentery were usually contracted from water which contained excreta of persons sick with these diseases. The protection and safeguarding of a private or public water supply require that every precaution be taken to avoid the entrance of sewage or other human wastes; because the germs of dangerous intestinal diseases are commonly present in large numbers in excreta.

Bacteria in Soil. The surface of the earth is rich in bacteria and other microörganisms. This is particularly true of fertilized soil. There may be many millions in an ounce of soil within an inch or two of the surface. The deeper one goes the fewer there are, and two or three feet below the surface the soil may be sterile, particularly if it has not been recently turned or disturbed.

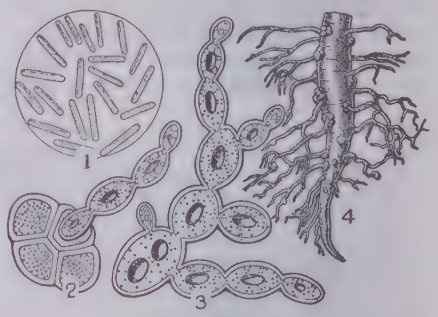
Soil, like air and water, contains its own normal kinds of molds, yeasts, protozoa and other microbes. These are usually non-parasitic kinds which are not concerned with questions of human health and disease. In many places, however, the soil contains certain bacilli which are capable of causing infections. There are two important dangerous kinds which may occur in the soil. The first, *Bacillus tetani*, is a spore-forming, rod-shaped bacterium which grows only where there is no air or oxygen. It is an *anaërobic* organism, this name meaning that it is an organism which lives without air. When dirt containing this organism or its spore gains entrance to a deep cut, scratch or wound, it grows and produces a substance (a toxin) which is extremely poisonous to nerve tissues and causes the disease called *tetanus* or *lockjaw*. To prevent this disease, wounds into which soil or dirt has entered must be thoroughly cleaned and disinfected. If the injury is a serious one, and dirt has surely got in, the wound must be treated by a physician and the patient must, in addition, be injected with tetanus antitoxin. In the early days of the World War, because the fighting was so largely in trenches which had been dug in highly fertilized soil, many lives were lost from tetanus because shrapnel and shells usually carried bits of soil into the wound. Later the practice was established of giving each seriously wounded person a suitable dose of tetanus antitoxin to prevent the occurrence of the disease.

The second dangerous bacterium which may be present in soil is *Bacillus botulinus*. This is also a spore-forming, anaërobic organism. It is not known to be infectious in wounds or if swallowed. If it gains entrance to food and this is left in a warm place, the bacillus may grow and produce a toxin which is extremely deadly to anyone who eats the food. The spore of this organism is quite resistant to heat and may survive all but the most thorough cooking. It is particularly dangerous in food that has been improperly canned. The fact that *B. botulinus* is an anaërobe provides the first factor of safety to man, because the bacillus cannot grow or produce toxin if it is in anything that is exposed to air. The second factor of safety is that the toxin which is produced is easily destroyed by boiling the food. Any food which might have been contaminated with soil from the garden, and which has been kept for some time in a closed container in a warm place, should be thoroughly cooked before being eaten. So far as it is now known, cooking must be sufficient to destroy the toxin. It is apparently less important whether the organism or its spores have been killed.

Cycle of Foods in Nature. Very little more needs to be said about the non-parasitic bacteria in soil, or about the specific disease germs that might be there. But there are other groups of bacteria, and other microbes, whose regular presence in soil has a significance so great that it must be mentioned here. These are the bacteria which act on organic matter—like the dead bodies of animals and plants—and bring about their rotting and decay. The stuff of which bodies, leaves and twigs are made are thereby converted into simpler and more soluble substances which dissolve into the earth and can be used again by plants as food-stuffs for growth. Plants, in turn, are eaten by animals and man; animals are eaten by man; and plants, animals and man (when they are dead) are, in turn, decayed by microbes and returned to the soil. In this never-ending cycle of the elements in nature, bacteria play an essential rôle. Without their aid, the earth's surface would soon become cluttered with the unchanging material of dead plant and animal life. Growing plants would soon exhaust the soil of food materials, and both plants and animal life would come to an end. Man cannot live without certain kinds of microbes, and he must beware of how he lives with others.

Dirt and Bacteria. A word more might be said about "dirt," because of the widespread fear of it. Dirt, in itself, holds no danger to man. It is not the rust which makes the wound from a rusty nail dangerous; a rusty nail usually has dirt on it, and when there is dirt there usually are microbes. It is the microbes, not the dirt or the rust, that counts. Similarly, the mere presence of dirt in food introduces no special danger. It is of more concern how many and what kinds of microbes go with the dirt.

Bacteria in Milk. Milk is a fluid which is manufactured by the mammary glands of the female of all mammals. It is intended for the



Helpful Microbes

A few kinds of beneficial germs (1, 2 and 3 as seen through the microscope): 1. Lactic acid bacilli; 2. Yeast growing out of an ascospore; 3. Yeast budding; 4. Nitrogen fixing bacteria in nodules on roots of legumes.

feeding of the baby animal from birth until the young can digest other foods. Milk is the sole food of the young animal, and contains all the substances necessary for a complete diet. It is therefore not surprising that milk, which is sometimes called "Nature's perfect food," will serve as food for bacteria. After centuries of experimentation, man has learned how to domesticate the cow and breed it for beef and milk. Cow's milk has become an important item in the human diet. Practically all common species of bacteria will thrive in the milk of cows or other animals. The rate at which they grow and multiply in milk depends almost entirely on the temperature. They grow slowly or not at all in very cold milk; more rapidly the higher the temperature up to body heat (98.6° Fahrenheit or 37.5° Centigrade), and at higher temperatures they are killed more rapidly than they can multiply. No matter how carefully obtained, milk always contains some bacteria. The large majority of the bacteria present in fresh milk come from dust and dirt on the cow in the dairy barn, on the hands of the milker, in the utensils or from other sources. The number that are present in a given sample of milk depends upon the number that were present when it was freshly drawn, upon its age and the temperature at which it has been kept. Milk that is carefully collected into clean vessels and with due precaution to keep dirt out may contain a few hundred to a few thousand bacteria in a cubic centimeter. If it is promptly chilled and kept cold, the number may remain for many hours or days under 10,000 or 50,000

in a cubic centimeter. If the milk is not cooled, after from twelve to twenty-four hours there may be millions, hundreds of millions or even billions in a cubic centimeter.

When bacteria grow in milk they use the proteins, fats and sugars of the milk as foods, and they produce waste products. From the lactose (milk sugar), the common milk bacteria produce lactic acid and other substances which result in an acid or sour taste, and which clot or curdle the milk. This is the common "souring," or fermentation, of milk. So long as the kinds of bacteria in milk are those which tend merely to sour it, no serious danger occurs. Sour milk with its many millions of bacteria is a safe food, for the bacteria are harmless or even beneficial. If the bacteria present in the milk happen



Harmful Bacteria

A few disease-producing (pathogenic) types of bacteria: 1. Typhoid fever; 2. Tuberculosis; 3. Boils, etc.; 4. Diphtheria; 5. Asiatic cholera; 6. Tetanus (bacilli with and without spores).

to be of certain other kinds then, instead of souring it, they may rot or putrefy it. The milk then has a foul taste and smell, and is unfit for consumption. Furthermore, if disease germs find their way into milk from the udder of a sick cow, from the milker, or from persons associated with milk production and distribution, and if these microbes have an opportunity to increase in numbers, serious consequences usually follow to the consumer. Milk may contain many millions of harmless or harmful bacteria, in spite of the fact that it may look fresh and clean. (The methods which are used to protect the milk supply are described on page 1009).

Bacteria and Disease. The ways in which bacteria act to cause disease have already been touched upon. Briefly, we may say they produce injury in two ways: (1) As the bacteria live in tissues, they destroy them by using them as foods and by the injury that is done by the acids and other substances produced as waste products of bacterial digestion; (2) They produce substances called *toxins* which are extremely poisonous to the tissues and organs of the host. Injury of the first type is usually local in character, although it may become generalized in the body as the bacteria are carried from part to part by the blood or lymph. Injury of the second type is also usually local, not because the bacteria are localized, but because each particular toxin has its own special damaging powers: for example, the toxin of the bacillus of botulism acts chiefly on certain nerves; that of the tetanus bacillus, on other nerves; the toxin of the dysentery bacillus, on the intestines; the toxin of the diphtheria bacillus, on the heart and other organs. So far as is now known, only a few species of bacteria that are *pathogenic* (disease producing) for man produce true toxins. In most cases, injury is of the first type described above, although it is being discovered, for an increasing number of disease bacteria that they can produce toxins. Many disease bacteria are like the diphtheria bacillus in that they may not have great powers to penetrate tissues, but may do their damage locally or at a distance through the action of the soluble poisons (toxins) which they secrete. It is not yet understood why germs and their poisons have specific affinities for particular tissues, but these affinities are very high. Indeed, it is this type of property which results in the special characteristics of each disease, the signs and symptoms depending upon which tissue is injured and upon the particular way in which the injury is produced.

INFECTION AND RESISTANCE

Natural Defense Against Bacteria. Considering the widespread occurrence of bacteria and other microbes in the environment, it may seem surprising to many that man and other complex living things survive at all in a world which harbors so many potential and actual enemies. Nor would man survive if it were not for the effective, natural defenses with which he is equipped, and for the artificial bulwarks which he has learned to utilize.

We shall now mention some of the natural defenses against the invasion of the body by microscopical or other enemies. (1) There is the skin and the mechanisms by which it maintains its integrity. The unbroken skin is, in effect, a protective layer or shell around the outer parts of the body; and, being a living tissue, it regenerates itself continuously unless it is too extensively injured. Although there are a few unusual exceptions, the general rule is that bacteria do not ordinarily penetrate the unbroken skin. (2) Another defense is the effective protection provided by the intact and healthy mucous membranes of the mouth, throat, nose, lungs, stomach, intestines, bladder and other organs. (3) The strongly acid nature of the secretion of the stomach glands is undoubtedly responsible for the destruction of enormous numbers of microbes that are ingested with food and drink. (4) Many fluids in the body have mild or strong antiseptic or germicidal properties. This is notably true of the blood, and inasmuch as the blood reaches all parts of the body, a considerable degree of protection is afforded all tissues. The flowing lymph, the fluids between cells and the secretions of mucus glands have mild antiseptic or germicidal properties. Such a fluid as the lachrymal gland secretion which bathes the eye has a distinct antiseptic property. This is one of the reasons why injuries of the eye only infrequently lead to infection, and why operations on the eye can commonly be performed without an antiseptic or disinfectant. (5) The white cells, or leukocytes, in the circulating blood have the power to engulf bacteria and many other kinds of foreign particles; and in many cases they can destroy the engulfed material. When cells take up foreign particles the process is called *phagocytosis*, and the cell which performs it is a *phagocyte*. In addition to the wandering phagocytes, such as are exemplified in the leukocytes of the blood, there are fixed tissue phagocytes in the spleen, liver, lymph glands and numerous other organs. In general it may be said that in the diseases in which injury is done by the microbe rather than by a toxin, the phagocytes provide the principal internal defense mechanism of the body. Anything which increases the powers of the phagocytes makes for increased immunity, and anything which weakens their powers makes for increased susceptibility to disease. (6) The body frequently utilizes its power to wall off a parasite by laying down an impermeable layer around the affected area. This is one of the most important methods of defense against the germ of tuberculosis.

The natural defenses that have been mentioned vary in efficiency in animals of different kinds, among animals of a particular kind and among humans. Furthermore, some are more important against one parasite and others against another. The effectiveness of all combined goes to make up what is known as the *natural immunity* of the living thing against parasites. This is determined by inheritance. It may increase or decrease with age.

Acquired Immunity. In addition to the natural immunity, each individual may acquire an increased immunity as a result of one or more of a variety of processes. The commonest form is the increased resistance against infectious disease which results from an attack of the disease itself. This is called *naturally acquired immunity*. Even primitive man knew that an individual usually never has this or that disease again after having once recovered from an attack of it. Today most people know that it is rare or unusual for an individual to have measles, scarlet fever, diphtheria or smallpox a second time. One attack of the disease has left the body with a new and increased capacity to resist the infecting agent, so that the individual may go unharmed even though highly exposed to infection by contact with persons who have the disease.

Antitoxins. How does a first attack of infection render the body protected against a second, and why is the protection specific for the particular disease? From the results of many brilliant investigations the answer is partly known. It will be recalled that diphtheria is due to the toxin secreted by the diphtheria bacillus. It is now established that the toxin stimulates the tissues of the body to produce a new property in the blood,

a property of neutralizing the poisonous qualities of the toxin. This new property is said to be *antitoxic* and is supposedly due to the presence of an *antitoxin* in the blood, although scientists have not yet succeeded in discovering just what antitoxin is. Furthermore, this antitoxin will neutralize only diphtheria toxin and no other. ANTITOXIN IS SPECIFIC FOR THE TOXIN WHICH CAUSED ITS PRODUCTION IN THE BODY. Just as the toxin of the diphtheria bacillus stimulates the body to produce diphtheria antitoxin, the toxin of the tetanus bacillus arouses the production of tetanus antitoxin, and so on down the list of the toxin diseases. By many experiments we have come to understand the mechanism of naturally acquired immunity against toxin-producing parasites. Such a substance as antitoxin is called an *antibody*.

Antibodies. There is reason to believe at this time that most infectious diseases are not due to toxins. If there are no toxins, there can be no antitoxins. How, then, does the body become immune after an attack of such disease? The answer is that the microbe and its products arouse the body to produce in the blood and tissues certain new properties of defense against the microbe itself. These are said to be due to various kinds of antibodies, each being named according to the way in which it acts. Thus, a person who has had an attack of typhoid fever is usually immune against this disease during the remainder of his life. There is no sound evidence that the typhoid bacillus produces a toxin, nor that the immunity acquired naturally by an attack of the disease is due to the appearance of an antitoxin in the blood. It is not difficult to show, however, that the blood of the immune person will cause the clumping, or *agglutination*, of typhoid bacilli much more effectively than will the blood of a person who has not had the disease and who is not immune against it. The blood of the immune person is said to contain specific *agglutinin* for the typhoid bacillus. There is reason to believe that the clumping of the bacilli leads to their more effective removal from the blood and more rapid destruction in various tissues of the body. That is the reason why agglutinin is considered to be an antibody or immune body. Similarly, it is known that the blood of the immune person has an increased property of causing the precipitation of products of the typhoid bacillus. This property is ascribed to another antibody, the *precipitin*. Furthermore, the blood of the immune person may have powerful action in preparing the typhoid bacillus for ingestion by phagocytes. This property is called *opsonic* and is supposedly due to another antibody, the *opsonin*. In addition to the agglutinins, precipitins and opsonins, there are other antibodies that need not be discussed here. It is not certain whether these antibodies are distinct or whether they are really identical, the differences being due to what they act upon rather than to what they are and how they act. Suffice it to say that they provide an understanding of the nature of the acquired immunity against certain microbes. The example cited was the case in typhoid fever. The statements would be equally true if the name of that disease were replaced by the name of any one of a long list of infections. In each case, the antibodies are specific against the microbe (or its products) by which the body was aroused to produce them. That is why we speak of typhoid agglutinins, dysentery agglutinins and so forth. In the rôles played by antitoxins and by antibacterial antibodies, we have the modern understanding of acquired immunity.

Artificially Acquired Immunity. The immunity discussed above is called "naturally acquired" because it depends upon the fact that the individual contracts a disease in the natural course of events. One of the most beneficial discoveries ever made is due principally to Edward Jenner (1749-1823). He showed that when a human being has an infection with the germ of cowpox, which is an extremely mild disease in man, the body becomes immune against smallpox, which is an extremely dangerous disease. Jenner then showed that if an individual is given a mild, local cowpox infection (on the arm or leg), the body has acquired a general immunity against smallpox. This is the process of arousing *artificially acquired immunity*, so called because the infection that brings it about is produced artificially instead of naturally. It is now understood that the germs of cowpox and smallpox are probably the same, and differ only in the fact that life in the cow has made the cowpox germ less capable of producing a severe infection in man. The germ of cowpox is said to be less "virulent" for man than the germ of smallpox.

About seventy-five years after Jenner's discovery, Louis Pasteur (1822-1895) discovered the same principle. In addition, he actually invented methods of making pathogenic bacteria less virulent so that when they are introduced into an animal body they cause only a very mild infection but arouse immunity against highly virulent bacteria of the same kind.

It might now be asked: If acquired immunity can be aroused in the body following a mild as well as a virulent infection, can it also be aroused by dead bacteria or by the products of the living or dead bacteria? The demonstration that this can be done was first made by a great American scientist who is still living (1931), Doctor Theobald Smith. This discovery opened the way to the most important method of preventing disease: IMMUNITY MAY BE ACQUIRED WITHOUT DISEASE BY INTRODUCING INTO THE BODY THE PRODUCTS OF BACTERIA OR THE KILLED BACTERIA. In the case of diseases due to a toxin produced by the bacteria, artificially acquired immunity may be produced by injecting an extremely small quantity of the toxin. More often a mixture of toxin and antitoxin, called "t.-a.," is used. Thus the poisonous power of the toxin is neutralized and counteracted by the antitoxin. This treatment results in the appearance of antitoxin in the blood. For diseases caused by bacteria themselves, a suspension of dead bacteria, called a *vaccine*, is injected. This treatment results in the appearance of antibacterial antibodies in the blood.

The production of immunity by the injection of a toxin-antitoxin mixture or a vaccine, when properly carried out by a physician, is a safe, harmless and reliable way of producing immunity against the particular disease concerned.

Active and Passive Immunity. When an individual contracts a disease, recovers and becomes immune, he has manufactured substances upon which his immunity depends. This is an active immunity. The immunity following the injection of a toxin-antitoxin mixture or of a vaccine is similarly an active immunity. If the blood of an actively immunized person is injected into a non-immune individual, the latter is made immune. The latter did not manufacture his own immunity; he received it passively from the former. For this reason, his immunity is said to be a "passive" one.

The antitoxins or other antibodies which occur in the blood are found to be present in the blood serum—the fluid which separates after blood is shed and is permitted to clot. About fifty years ago, when antitoxins were first being discovered by Doctors von Behring and Kitasato in Germany, and Doctors Roux and Yersin in France, the following facts were proven by experiments on guinea pigs. (1) The animal which recovers from infection with diphtheria bacilli can later survive a still stronger infection. (2) The animal which is injected with small doses of diphtheria toxin, in a few weeks can survive the injection of doses of toxin which kill normal, untreated guinea pigs. (3) If a little blood or blood serum from such an immunized guinea pig is mixed with a large dose of toxin before the toxin is injected into a normal guinea pig, the animal will survive. (4) If a little of this blood or serum is injected into a normal animal it will survive the injection of large doses of toxin. These facts can be summarized by saying that the antitoxin produced actively in the body of one animal, when it is mixed with toxin or when it is injected into another animal, will protect a guinea pig, horse, rabbit or human being against the toxin of the diphtheria bacillus. It does not matter in what species of animal the antitoxin is made; the serum that contains it is effective. Hence, when a child has diphtheria or needs to be protected because it has been exposed to infection, the physician injects a suitable dose of diphtheria antitoxin. Because this must be continuously kept on hand in large quantities, antitoxin is made in horses by injecting them with small doses of toxin, taking small quantities of blood from them at various intervals, separating the serum from the clot, and carefully purifying the serum so that it contains a maximum of antitoxin and a minimum of everything else.

Serum containing antibacterial antibodies is also usually prepared in horses by injecting them with suitable vaccines and preparing the serum as described for antitoxin.

There is one fundamental, practical difference between active and passive immunity that must not be overlooked. In an actively immunized animal, whether by natural or artificial means, the body has made its own immunity and keeps it. The individual tends to remain immune for years or tens of years or an entire lifetime. In the passively immunized animal, the antitoxin or other antibodies were made in another animal. They are excreted fairly rapidly from the body into which they were injected. For example, the child that becomes actively immune against diphtheria because of an attack of the disease or from treatment with

toxin-antitoxin mixture usually remains immune for life; but the child that is made immune by an injection of horse serum containing diphtheria antitoxin usually loses his immunity in a few weeks or months and again becomes susceptible to the infection.

The facts described in these paragraphs have been illustrated principally by examples from diphtheria and typhoid fever. They apply in general to all diseases such as scarlet fever, tetanus, dysentery and meningitis, in which immunity depends upon antibodies in the blood. There are a few diseases in which immunity appears to depend chiefly upon the activity of the fixed tissue phagocytes (p. 987). In these cases, the passive transfer of immunity cannot yet be accomplished by any well established methods.

ANTISEPTICS AND DISINFECTANTS

If an object contains pathogenic (disease producing) microörganisms it is said to be *infected*. If by one means or another these microörganisms are destroyed, the object is said to be *disinfected*. It will appear shortly that there are many agencies that may be used to disinfect objects, but it will be plain that such agencies, known as *germicides* or *disinfectants*, are effective only under specified conditions. Let us suppose that the disinfectant being used for a particular purpose is heat. If an object is raised to a sufficiently high temperature, all the microbes, including the pathogenic ones, will be destroyed. At such a temperature heat is a disinfectant. Suppose we use a lower temperature. It may be too low to destroy all pathogens, but it may be high enough to keep them from growing or increasing in numbers. At such a temperature, heat is not a disinfectant, but is an antiseptic. At a still lower temperature, heat may have no restricting effects whatever. Similarly, a chemical substance may be destructive (disinfectant) when used in a suitably high strength or concentration, only inhibitive (*antiseptic*) in lower concentration, and without significant effect in still lower concentration.

Sunlight. Many kinds of microbes are destroyed by sunlight, provided it has not passed through glass. The reason for this is that it is the ultra-violet rays in sunlight that are chiefly effective, and these rays cannot pass through ordinary glass. Microörganisms in or upon anything that is not in the direct path of sunlight are not easily killed by it. Furthermore, many microbes are not very sensitive even to direct light. For these reasons, sunlight is not generally a reliable disinfectant. Its principal value in connection with disinfection is that people are likely to use soap and water or other more effective substances when sunlight reveals dust, dirt or filth.

Heat. Heat is in many ways the surest and cheapest disinfectant. For many purposes it is the best to use. It is important to remember that the speed of action of heat or any disinfectant usually depends on water or moisture. If the food or other substance that is to be disinfected is in water or is moist, boiling temperature (212° Fahrenheit) will kill practically all germs in a few minutes. If the substance is dry, a much higher temperature is required to sterilize or disinfect it. It is usually necessary to bake a dry object in a hot-air oven at a temperature of about 340° Fahrenheit for an hour or two hours to kill all germs. If the temperature is higher than 340° Fahrenheit, a shorter time will be effective. If an oven is available, but no thermometer with which to measure the temperature, place a piece of common wrapping or writing paper in the oven with the things that are to be sterilized. Increase the temperature until the paper begins to turn brown, and keep the temperature at that point for the required time. Paper is a safe index because it turns brown at a temperature of about 350° Fahrenheit. Such things as used surgical dressings, food from the tray of a person with infectious disease, nose wipes, old clothing or linens, should be burned in an open fire, stove or furnace. After handling materials in need of disinfection, the hands should be carefully cleansed with denatured alcohol or by a thorough scrubbing with liquid green soap or a similar skin disinfectant.

In general, it is safe to say that if it is intended to sterilize something, heat should be used unless there is a definite advantage or preference for another means. If heat can be utilized, boiling for ten to thirty minutes is the safest and cheapest procedure. But if it is desired to sterilize such things as clothing or bandages or other things that need to be kept dry, place them in a hot-air oven and use a high temperature (about 350° Fahrenheit) for about one or two hours.

Chemical Disinfectants. For most common purposes, chemicals (solids, liquids and gases) serve as the most useful disinfectants. Chemists are continually discovering and inventing new ones—some that are effective for one purpose, and others, for another. On many occasions it matters little which one of many common disinfectants is used. At other times it is important to choose the disinfectant with discrimination—one, for example, which will destroy microörganisms but not tissues or such things as clothing, furniture, books or bed linen. Some disinfectants are more effective than others in penetrating dirt; some act better than others in the presence or absence of water; and some are so much cheaper than others that cost will often determine the choice.

Scientists are always searching for the ideal disinfectant: a substance that would be deadly to germs and yet harmless and non-poisonous to man; something that could be made cheaply; would be active even though dirt or other things were present; would not change by being kept for long periods of time, and would act quickly. The ideal disinfectant has not yet been found, but there are substances which have some of the properties of the ideal. Such a drug as quinine is used in the treatment of malaria because, if taken in suitable doses, it is very deadly to the malaria germ and is harmless to the patient. There are other drugs that are injected into patients who have certain diseases because these substances have the marvelous properties of being deadly to the particular microbes that are to be destroyed and rather harmless to the human body. In the future there will probably come the invention and manufacture of such drugs to the point where they will work almost unbelievable wonders in the specific treatment of disease.

For the present it must be remembered that, if a substance is deadly to the protoplasm of microbes, it may also be deadly to the protoplasm of man. Therefore, unless the contrary is specifically known, it is always safer to assume that a disinfectant is a poison, especially if taken internally. All poisonous substances that are kept in the house should be carefully labeled and marked "POISON."

Among the thousands of chemical disinfectants used, under various trade names and in a variety of combinations, only a few may be specifically mentioned.

Alcohol. Wood (methyl) alcohol and grain (ethyl) alcohol are good disinfectants. They are specially useful for the skin or other external parts of the body. Wood alcohol is more dangerous than grain alcohol because the former is very poisonous to the nerves of the eyes. Denatured alcohol is just as good a disinfectant as pure alcohol. Denatured grain alcohol (in fifty or seventy-five per cent solution), specially prepared for external use, is a safe disinfectant. If kept around the house it should be labeled "POISON," because the substances used in denaturing it are poisonous if taken internally.

Common Salt. Common table salt is more of an antiseptic than a disinfectant. Any food to which it is added in large quantities will usually be preserved from spoiling because the salt interferes with the growth of bacteria, yeasts and molds.

Hydrogen Peroxide. Hydrogen peroxide, in the form in which it is commonly kept in the household, is useless because it decomposes rapidly. In the three per cent solution in which it is usually sold it is a mild antiseptic; but it is usually too weak to kill bacteria that may have gained entrance into a cut or wound. If kept in strong solution and tightly stoppered, it is one of the most powerful of the nonpoisonous disinfectants.

Copper Sulphate. Copper sulphate is not very valuable for household uses. It is a very important disinfectant in certain water supplies because it has very strong action against certain small plants, the algae, which give bad tastes and odors to drinking water.

Bichloride of Mercury or Corrosive Sublimate. Bichloride of mercury or mercuric chloride, also known as "corrosive sublimate," is one of the most powerful and most useful disinfectants known to man. It is so powerful that even when there is only one part of the substance in 1,000, 5,000 or 10,000 parts of water, it will kill all microbes. (One ounce dissolved in eight gallons of water is one part to 1,000 parts of water.) When used properly in sufficient concentration and permitted to act for at least ten to thirty minutes, it can be relied on to kill all microörganisms.

Bichloride of mercury can be purchased in tablets ready to add to water. The pure substance has no color, but a coloring substance, blue or red, is usually added to the tablets so that the solution will not be mistaken for pure water. The reason for this is that bichloride of mercury, if swallowed, is very poisonous to human beings. If it is kept about the house, it should always be in bottles labeled "POISON." It is safe to use externally. When used to disinfect excreta or other things, the solution should be allowed to act for an hour and should be thoroughly stirred up with the material to be disinfected.

Silver Nitrate. Silver nitrate is a very powerful disinfectant; it is nearly as powerful as bichloride of mercury. It is especially useful to prevent blindness in babies. A few drops of a one per cent solution should be placed in each eye of every baby directly after birth to prevent infections.

Argyrol and protargol are two among many chemicals that contain silver and are very good disinfectants. Argyrol is specially useful because it is not so injurious to tissues as silver nitrate. It can be used even in twenty-five per cent solution in disinfecting such delicate tissue as the eye. It is used in the throat, nose and other parts of the body to combat local infections.

Tincture of Iodine. Tincture of iodine is a solution of iodine in alcohol. It is very useful as a disinfectant because it has the germicidal power of alcohol and of iodine combined. As long as it is not taken internally it is a safe, as well as a reliable, disinfectant. It is probably the most useful disinfectant for household first aid. Although it is poisonous, its color and odor make it difficult to mistake for anything else. It can be applied safely to cuts, wounds, bruises or injuries for the purpose of killing microörganisms that may be introduced into the tissues.

Lime. Lime is one of the cheapest reliable disinfectants. It is useful in two forms: (1) Quicklime and slaked lime are strong disinfectants. Whitewash is slaked lime and water. It is specially useful on walls of barns, cellars, stables, and out-buildings. Lime is very valuable in the disinfection of excreta if thoroughly stirred up with the material that is to be disinfected. (2) Chlorinated lime or chloride of lime, also known as "calcium hypochlorite," is particularly powerful because it gives off the powerful disinfectant chlorine. Formerly it was used even in disinfecting drinking water. In modern days it is cheaper and more convenient to use compressed chlorine gas or "liquid chlorine" for the disinfection of large quantities of water, as in the case of a city water supply. For small water supplies, as for a village or farm, chlorinated lime is still very convenient and useful.

Coal Tar Disinfectants. There are a great many good disinfectants that are made from coal tar. Perhaps the best known of these is carbolic acid, or phenol. Cresol, tri-cresol and many other similar preparations are good disinfectants which are only moderately expensive. There are hundreds of similar disinfectants, sold under trade names, most of which are efficient, but expensive.

Soap. Soaps have been used for many thousands of years as cleansing agents. By cleansing things, soap helps to get rid of germs. Some soaps are disinfectants as well as cleansers. Soap is most effective when used with hot water.

Gas Disinfectants. There are some occasions when it is desirable to fumigate a room or house. Formaldehyde (formalin) is one of the most effective fumigants when properly used. Because it is a somewhat dangerous substance, it should be used only by an expert. Burning sulphur or exposing a room to chlorine or cyanide gas, although still used for disinfection, are much more useful for killing insects, bugs and rats than for killing microbes. In general, fumigation is no longer widely practiced because it is not usually efficient. Furthermore, we know now that most disease germs die quickly when they leave the body, and it is no longer considered so important to fumigate. It is far more important to avoid close contact with the sick or infected person and to disinfect the patient's excreta and the clothes, linens, dishes and other things which he has used than to attempt to disinfect the room in which he has been confined. Modern medical practice relies upon "concurrent" rather than "terminal" disinfection of the sickroom.

Carbolic Acid (Phenol) Coefficient. The standard test for the strength of a disinfectant is the so-called "carbolic acid or phenol coefficient." This consists in comparing the efficiency of a substance with that of a five per cent solution of carbolic acid, both acting under the same conditions on suspensions of typhoid bacilli. The "coefficient" is the number which expresses how many times weaker or stronger the solution of the substance tested can be, and yet be as effective as carbolic acid. A phenol coefficient of ten means that the substance was as effective as phenol when used in one-tenth as strong a solution; a coefficient of one-tenth means that the substance tested had to be in ten times as strong a solution in order to be as efficient as the phenol.

Although the phenol coefficient is one of the most useful indexes to the strength of a disinfectant, it is not altogether reliable because it does not predict with certainty what will happen in the presence of interfering substances like sputum, dirt or excreta.

COMMUNICABLE DISEASES AND THEIR PREVENTION

In the following paragraphs are presented the essential facts about the principal communicable diseases and the most important methods that are available for their control. It is plain, of course, that the diagnosis and treatment of the disease must be left to the physician. However, the intelligent citizen should know enough about these infections to know when to call the doctor and how important it is to follow his directions. The essential duty of every citizen, old or young, is to coöperate in the attempt to prevent the spread of disease from person to person.

It is difficult to arrange diseases in a logical way. Classification is made according to various characteristics: (1) the type of microbe that is responsible; (2) the parts of the body principally affected; (3) the type of body discharges by means of which the disease is commonly spread; (4) the methods of prevention or treatment, and so forth. For the purposes of this book, however, the diseases that are discussed are listed alphabetically. They are discussed largely after the plan and the form used by the Committee on Standard Regulations (U. S. Public Health Reports, Dec. 17, 1926), from whose report we have borrowed freely.

Anthrax. This is primarily a disease of herbivorous animals, especially cattle, hogs, sheep and goats, and one which may be spread to man. This disease is also known as "malignant pustule," because the infection in man commonly starts as a pustule or carbuncle on the skin of the face or neck. It is caused by a bacterium, *Bacillus anthracis*, which has gained entrance into an accidental scratch or wound. An infected individual is capable of transmitting the bacillus to other persons as long as he is actively sick or the wound discharges pus. The hair and hides of infected animals may carry the microbe or its spore for many months after the animal was slaughtered or after the hide was cured, unless it was carefully disinfected. The control of the disease requires its early diagnosis and the disinfection of discharges from the lesions and of all articles soiled by blood or pus. Furthermore, the prevention of anthrax demands that all infected animals should be placed under the care of a veterinary surgeon and, if they die or are killed, their carcasses should be burned. Healthy animals should be segregated from the infected ones, and no milk should be used from any animal that is suffering from anthrax. All persons employed in occupations requiring the handling of rawhides, hair or bristles should promptly see a physician if an abrasion of the skin occurs, or if a persisting boil or carbuncle appears.

Chickenpox. This is a mild disease which attacks a large percentage of children. Those who escape it in childhood may contract it in adult life. It occurs with an eruption on the body, face and scalp, and is usually accompanied by mild, general symptoms of illness. The infectious agent, which is still not known, is present in the eruptions and on the mucous membranes. The disease is usually spread from person to person by contact; or indirectly through articles that have been freshly soiled by discharges from the infected individual. The infected person may be able to infect others until the primary scabs have disappeared from the mucous membranes and skin. Chickenpox is not very dangerous in itself. When a case occurs which is thought to be chickenpox, particularly in persons over fifteen years of age or in persons of any age during an epidemic of smallpox, the patient should be carefully examined by a physician to eliminate the possibility of confusion with the more dangerous disease of smallpox. The child suffering with chickenpox should be kept away from others who have not had the disease. One attack of the disease usually confers upon the individual a permanent immunity. The disease is not known to occur in any of the lower animals.

Colds. The "common cold" ("acute coryza") is a catarrhal inflammation of the upper respiratory tract. It is not certain whether it is a simple disease or a group of diseases. Although there is good reason to believe that it is caused by microörganisms and is infectious and contagious, it is not yet certain whether a particular species or a variety of species of microbes is responsible. The disease is sometimes known by other names such as "acute rhinitis," "acute laryngitis," "acute pharyngitis," according to whether the inflammation occurs principally in the nose, larynx or pharynx. It is well known that such factors as fatigue, chilling, wet feet, wet clothing, drafts and irritants in the air sometimes appear to "bring on" colds. How these factors operate is not clear.

The "cold" is in itself not a dangerous disease, but it frequently leads to more serious

affections of the respiratory organs, particularly to pneumonia. For this reason it must be treated seriously.

The prevention of the spread of colds depends upon avoiding contact with the infected individual and with all objects which he has recently touched or which he has contaminated with discharges from the mouth or nose. The affected person should be extremely careful to avoid close contact with others, should stay away from crowds and from public places, should cover mouth and nose when sneezing or coughing and use soap and hot water or a disinfectant for hands and handkerchiefs.

Diphtheria. This is the most important and most deadly disease of childhood. Although enormous strides have been made in its prevention, it still is very common. It may be safely said that enough is known about diphtheria to control and wipe it out altogether. Its persistence in a community is due to the failure of people to utilize available scientific knowledge and facilities. The disease is caused by *Bacillus diphtheriae* which is present in the discharges from lesions in the nose, throat, eyes and other organs, and may be present in the nose and throat of a healthy person. It is well established that many persons who are themselves in apparently good health may be "carriers" of the microbe and may be spreading them to other persons who can contract the disease. Inasmuch as there is no convenient way of detecting all carriers, and no reliable method of freeing the carrier of the microbes after he has been detected, the sources of the infection cannot be entirely controlled. The principal symptoms of the disease are due to the toxin produced by the bacilli. In addition to contact from person to person, diphtheria bacilli may be spread in a community through infected milk or milk products.

The control of diphtheria depends upon the following:

(1) Early diagnosis of the disease by the doctor. If antitoxin is injected on the first day of the disease the patient is almost certain to get well; the longer the delay in injecting the antitoxin, the greater the danger. It is extremely important that the physician be called promptly when, because of general illness or sore throat, diphtheria is suspected.

(2) Isolation and quarantine of all persons until they have recovered and until suitable bacteriological tests show that they are free of virulent diphtheria bacilli.

(3) Making all susceptible persons who have been exposed to infection immune against the disease by injection of antitoxin. Whether or not an individual is susceptible is easily determined by the Schick test. This test consists in injecting a very small quantity of toxin into the skin. If the individual is immune, he has antitoxin in his blood, the injected toxin is neutralized and no reaction follows. He is then said to be "Schick negative." If the individual is not immune, he lacks antitoxin, and a slight reddening develops in the skin at the site of the injection. Such a person is said to be "Schick positive." The Schick test is so called after Doctor Bela Schick who first developed it into a practical method of discovering which persons have, and which ones lack, antitoxin in the blood.

(4) Disinfection of all articles which have been in contact with the patient, and all articles soiled by discharges from the patient.

(5) Pasteurization of the milk supply (see pp. 1009-10).

(6) The active immunization of all children in the community, is the most important procedure of all. This should be done preferably between the sixth or seventh month and the end of the first year of life. In any community in which this is not being done, active immunization, with or without the prior use of the Schick test, should be done for all school children and so far as possible with all children of pre-school ages. Active immunization, it will be recalled (p. 1000), consists in injecting under the skin a small quantity of toxin-antitoxin to stimulate the body to manufacture its own antitoxin.

From experience with hundreds of thousands of children it has been well established that practically all children can be made immune against diphtheria with from one to four injections of toxin-antitoxin. It is the duty and obligation of every parent to arrange to have a physician give this treatment to every child after the sixth to ninth month of life. If this were done, there would be no diphtheria in the family or community. There are now many cities in the United States with populations over 50,000 which have gone from one to three years without a single case of diphtheria. This gratifying condition exists because all children have been made immune, and all new babies were being made immune near the end of the first year of life as soon as they became susceptible by the gradual loss of the antitoxin which they had obtained from their mothers before birth. Diphtheria is an easily preventable disease and should not occur among intelligent people. It cannot occur in a child that has been made immune.

Dysentery. Dysentery is a diarrheal disease which usually occurs only in warm or tropical parts of the world. There are two important kinds of dysentery.

One variety of dysentery, "amebic," is caused by a protozoan organism belonging to the class of ameba; the particular parasite is *Endameba histolytica*. The source of the infection is commonly the bowel discharges of infected persons. The disease is transmitted by drinking water which has been contaminated with the sewage of infected persons, by eating infected foods and by hand-to-mouth transfer of infected material; from objects soiled with the discharges of an infected individual or of a carrier; and by flies from infected excreta to foods. The control of amebic dysentery depends upon the early diagnosis of the disease, including the recognition of the ameba in the stool, the disinfection of all bowel discharges, and by supervision of the water and food supplies to insure that they are free from contamination with excreta.

The other kind is "bacillary" dysentery, caused by *Bacillus dysenteriae*. This form of dysentery is spread in the same way as the amebic form. Its prevention depends upon the same procedures and, in addition, upon making individuals exposed to infection immune by means of a vaccine, and in very rigid observance of the rules to avoid contamination of food. No person who has bacillary dysentery, or who is a carrier of the bacillus, or who is in contact with a patient, should have any relations with milk production or food preparation. When dysentery is prevalent in a community, all water, milk and foods should be cooked, and all milk and foods should be protected against contamination by flies and human handling.

German Measles. This disease, also known as "rubella," is an acute, highly contagious disease of childhood, and is very much like measles and scarlet fever. The infectious agent is unknown but is probably present in the secretions of the mouth and perhaps in the nose. The disease is almost always mild. One attack usually confers immunity for life. Control depends entirely upon separating the patient from non-immune children, and upon excluding the patient from school and public places for about eight days after the onset of the disease.

Gonorrhea. This is an acute, infectious disease of the sex organs, and is usually spread by sexual contact. It is a very common disease in all parts of the world, recent figures indicating that in many civilized countries as many as from twenty to thirty persons in every thousand contract the disease each year. It may be spread by personal contact (other than sexual) with infected persons, and indirectly by contact with articles freshly soiled with the discharge of such persons. In the newborn baby of an infected mother, gonorrheal infection is likely to occur in the eyes. The disease is sometimes looked upon as of little consequence. This is not the correct point of view, because it is very frequently a serious and dangerous disease which may lead to bad affections of the joints, heart and other parts of the body.

The prevention and control of gonorrhea depends chiefly upon: (1) recognition of the disease; (2) isolation of infected persons and exclusion from sexual contact; (3) exclusion from school or contact with children of persons who have contracted gonorrheal infection of the eyes; (4) disinfection of discharges from lesions; (5) elimination of common towels and common toilet articles from public places; (6) exclusion of persons in the active stages of the disease from participating in the preparation of food; (7) education of the public in matters of sex hygiene, in understanding that continence is not dangerous to health, and that a case of gonorrhea or other venereal disease is commonly the consequence of association with persons who are sexually delinquent or promiscuous.

Hookworm Disease. This disease is due to the presence of certain parasitic worms in the intestines. It is a disease of warm countries and is widely prevalent in tropical and subtropical climates. In many countries (India, China, Malay States, northern and central Africa, Porto Rico, southern United States, Central America, South America, the West Indies, and other places), from sixty to a hundred per cent of the people are afflicted with chronic hookworm disease. There are two specific parasites, called *Ankylostoma duodenale* and *Uncinaria americana* (or *Necator americanus*). Hookworms are round worms (nematodes) and are classified in the family *Strongyloidea*. The adult

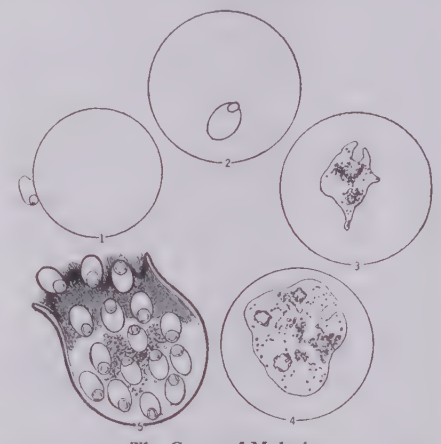
worm is about one-half to three-quarters of an inch long and about as thick as an ordinary hairpin. The disease is characterized chiefly by anemia, "laziness," weakness, lack of energy. It is easily understood that countries whose people are infected with hookworms, and are therefore weakened and anemic, cannot be very progressive.

The usual source of infection is the feces of infected persons. The infection usually occurs through the skin, though frequently by way of the mouth. To understand how to prevent and control hookworm disease it is essential to understand the peculiar life history of the parasite. The adult worms in the intestine gain their nourishment by biting into the intestinal wall and sucking blood. There may be hundreds or thousands in a single person, so that it is not surprising that the individual is anemic, weak and "lazy." There is also some evidence that the worms produce a toxin. The mature female worm produces eggs (ova) which are excreted in the stools of the infected individual. When the excreta are deposited on the ground, the eggs grow into larvae which hatch out in from twenty-four to seventy-two hours. After about five days they become encysted and are then capable of infecting man. The commonest form of infection occurs through the skin of the feet. Hookworm infection is a disease of poor people (who go about without shoes) living in warm climates, where proper facilities for sewage disposal are lacking. (The ova develop more rapidly where it is warm.) The larvae penetrate through the skin, between the toes or elsewhere on the feet, giving rise to a condition called "ground itch." After they have once gained entrance to the body, they pass by a roundabout path to the intestines. Six to eight weeks after the infection they are laying eggs, and the cycle is repeated. Infection may also occur by drinking water containing larvae, by eating contaminated food and by hand-to-mouth transfer of ova or larvae from contaminated objects. Contaminated soil is the principal source of infection.

As long as an individual is discharging ova he is infective. Soil may be infective for as long as from four to six months if it has not frozen over in the interim. The control of hookworm disease depends upon the following: (1) diagnosis of the disease by general symptoms and by finding the ova in the excreta; (2) proper disposal of sewage to prevent contamination of the soil, of water and foods; (3) suitable treatment of infected persons to free them of worms and ova; (4) education of the public concerning the nature of the disease and the dangers of soil pollution; (5) economic improvements or philanthropic action in the form of distribution of shoes in places where the poor and the ignorant can be persuaded to wear them.

Influenza. This is an acute infectious disease of the upper respiratory tract, usually occurring in epidemics in the cold season of the year.

"During epidemics efforts should be made to reduce opportunities for direct contact infection, as in crowded halls, stores and street cars. Kissing, the use of common towels, glasses, eating utensils or toilet articles should be avoided. The hands should be washed carefully before eating. In isolated towns and institutions infection has been delayed and sometimes avoided by strict exclusion of visitors from already infected communities. The closing of schools has not been effective in checking the spread of infection. The use of masks by nurses and other attendants has proved of value in preventing infection in hospitals. Scrupulous cleanliness of dishes and utensils used in preparing and serving food in public eating places should be required, including the subjection of all such articles to disinfection in hot soapsuds. In groups which can be brought under daily professional inspection, the isolation of early and suspicious cases of respiratory tract inflammation, particularly when accompanied with a rise in temperature, may be relied upon to delay the spread of the disease. To minimize the severity of the disease and to reduce



The Cause of Malaria

The life cycle of the protozoan parasite that causes malaria: 1. Malarial germ attacking a red blood corpuscle; 2. A malarial germ within corpuscle; 3. Malarial germ commencing to develop within corpuscle; 4. Further development of germ; 5. Fully developed germs bursting from corpuscle, each ready to attack another corpuscle.

mortality, patients should go to bed at the beginning of an attack and not return to work without the approval of their physician." (United States Public Health Service, Reprint No. 1129 from the Public Health Reports.)

The disease itself is almost never fatal, but it is extremely dangerous because it so commonly leads to pneumonia. In the last worldwide influenza epidemic in 1918-1919, it is estimated that from twenty-five to seventy-five per cent of all persons contracted the disease, and that tens of millions of persons died from pneumonia and other diseases which followed influenza.

Malaria. "It is difficult to draw comparisons in pathology, but I think, if a census were taken among the world's workers on mortality, the votes would be given to malaria as the greatest single destroyer of the human race. Cholera kills its thousands; plague, in bad years, its hundreds of thousands; yellow fever, hookworm disease, pneumonia, tuberculosis, are all terribly destructive, some only in the tropics, others in more temperate regions; but malaria is today, as it ever was, a disease to which the word pandemic is specially applicable. In this country and in Europe, its ravages have lessened enormously during the past century, but in the tropics it is everywhere and always present, the greatest single foe of the white man, and at times and places it assumes the proportions of a terrible epidemic. In one district of India alone, during the last four months of 1908, one quarter of the total population suffered from the disease and there were 400,000 deaths—practically all from malaria. Today, the control of this terrible scourge is in our hands..." (Osler, Sir William: *The Evolution of Modern Medicine*).

Malaria is due to three species of a protozoan microbe, *Plasmodium vivax*, *P. malariae* and *P. falciparum*. It is spread by the bite of an *Anopheles* mosquito. The mosquito becomes infected by biting (sucking blood from) an infected individual whose blood contains the parasites. These develop in the body of the mosquito for from ten to fourteen days. After that period, numerous mature parasites are present in the salivary glands of the insect, and may be injected into the person whom the mosquito bites. The individual who is actually sick with malaria and is having repeated chills and fevers is the most important source of infection. Many persons may appear to be well or cured and yet may harbor the parasites in their bodies for many years. The disease is communicable as long as the parasites are present in the blood.

This disease cannot be spread by the common *Culex* mosquitoes. Malaria is transmitted only by mosquitoes and usually occurs in warm and tropical climates where there is moisture, marshes and swamps, and where mosquitoes breed in large numbers and for many months of the year or all the year round. There can be no spread of malaria without mosquitoes.

The control of malaria is a problem of education, of medical practice, and, in part, a financial and economic problem for the whole population. The attack on the disease revolves around the control of the sources of infection (infected persons), (1) by making it difficult or impossible for mosquitoes to reach those who harbor the parasites and thus becoming infected; (2) by keeping houses screened so that normal persons are not easily reached by infected mosquitoes; (3) by the destruction of mosquitoes everywhere, and by eliminating all swampy places and large or small collections of water where mosquitoes may breed, and (4) by the use of quinine (which is a specific drug against the malaria parasite) to kill the parasite in sick persons, and the use of quinine to prevent infection in healthy individuals who are exposed to mosquitoes in communities where malaria prevails, is important in the combat with this disease.

It is not always possible to find all the infected individuals in a population, particularly in a community in which a very large proportion of the total are infected; it is often very difficult to persuade all persons to take quinine regularly to cure or prevent malaria; and it is often a matter of enormous cost and engineering difficulty to eliminate all mosquito breeding grounds. All of these methods must be used in combination. In some places one method is more effective, in other places, another.

Measles. This is an acute, highly contagious disease which occurs most commonly in the cold months of the year, but which

may occur in all seasons. It usually starts with catarrhal inflammation, fever and a rash which is followed by an eruption. If no complications occur it is usually a very mild disease. Pneumonia is the most serious complication that frequently follows measles. It is primarily a disease of childhood, but may attack adults of any age who have not had the disease before. Exposure of susceptible persons by contact with one who has measles almost invariably leads to infection. One attack usually confers immunity for life.

The specific infectious agent that causes measles is not yet certainly known. It is well established by infection experiments that the agent is present in the secretions from the eyes, nose and respiratory tract. The patient is most infective before the eruption has appeared. It is usually considered that the patient is infective from four days before, to five days after, the appearance of the rash.

The control of measles depends upon the following: (1) early recognition of the disease; (2) isolation of the patient during the time in which he is infective; (3) protection of persons who have been exposed to infection by an injection of "convalescent" serum. After an individual becomes infected, usually ten days elapse before the onset of symptoms. If the blood (or serum) from some one who is recovering from measles or of a healthy adult who has had the disease is injected within five days after infection, the disease may be prevented. The serum from a convalescent or an immune adult appears to contain protective antibodies; (4) exclusion from school and other public places of all susceptible persons (children or teachers) who have been exposed to infection, for fourteen days from the last exposure; (5) disinfection of all articles soiled with discharges from the nose and throat.

Mumps. This is an acute, infectious and contagious disease which is especially characterized by the fact that those salivary glands located just in front of, and below, the ears (the parotid glands) become swollen and enlarged. Other salivary glands and the genito-urinary and other organs may also be affected. Mumps occurs most commonly between the ages of five and fifteen years, but is not uncommon among young adults under thirty or thirty-five. It usually prevails in the cold months of the year.

The infectious agent of mumps is unknown. The secretions of the mouth and possibly of the nose are infective. The disease is spread from person to person by direct contact, or by articles freshly soiled with saliva, mucus or other discharges from the throat or nose of the infected person. The chief methods of preventing the spread of the disease are: (1) early recognition of the disease, particularly by the fever and the swelling or pain in the region of the affected glands; (2) separation of the patient from all children who have not already had the disease and exclusion of the patient from school and public places until the glands have healed; (3) disinfection of all articles soiled with the discharges from the nose and throat of the patient.

Meningitis. This is a general name for an inflammation of the meninges, the membranes which surround the brain and spinal cord. Many kinds of bacteria may cause meningitis, and all such infections are serious. They are not generally communicable because the microbes that have invaded the central nervous system do not easily escape from it to infect other hosts. There is one kind of meningitis which, though it is not a common disease, does occasionally break out in epidemics. This is meningitis caused by a coccus called "meningococcus" or *Micrococcus meningitidis*.

Meningococcus meningitis is also known as "cerebro-spinal fever." It is primarily a disease of children and soldiers, the latter being apparently affected in epidemics because overcrowding permits easy spread of the infection. Healthy carriers of the microbes of this disease are probably common and widespread. The infection is transferred from person to person principally through the discharges from the mouth and nose of infected persons. More or less direct contact and hand to hand or droplet infection appear to be essential; hence the significance of overcrowding. Control and prevention of the disease depend upon: (1) early diagnosis of the disease; (2) isolation of infected individuals for at least fourteen days; (3) disinfection of discharges from the mouth and nose; (4) discovery of carriers by bacteriological examination and, if possible, their isolation; (5) education of the public in the importance of personal cleanliness and the avoidance of contact and droplet infection; (6) prevention of overcrowding in private and public places.

Pneumonia. The term pneumonia is applied to various diseases which result from a number of causes. The common characteristic is that each is an inflammation of the lung. Various pathogenic bacteria, many of them commonly found in the nose, throat or mouth may cause the inflammation when the conditions are suitable. Just what these conditions are is not clearly known at this time (1931). If the disease involves whole lobes of the lung it is called "lobar" pneumonia; if it is lobular in distribution it is called "lobular" or "broncho-pneumonia." The pneumococcus (*Diplococcus pneumoniae*) is the commonest cause of all pneumonias.

Although accurate figures cannot yet be obtained, it is quite certain that pneumonia is one of the leading causes of death and should perhaps stand at the head as "the captain of the hosts of death." In recent years at least ten per cent of all deaths in the United States have been due to pneumonia, and the disease is approximately of equal importance in all countries of the world and in all climates. It is more prevalent in the cold than in the warm seasons of the year. It is well known that colds, catarrhs, chilling, exposure, fatigue and many mild diseases (influenza, measles, sore throat and so forth) predispose to pneumonia. Diet also appears to play an important rôle as is evidenced by the fact that persons suffering from scurvy or rickets are prone to attacks of pneumonia. All ages of life are susceptible, especially the young and the old.

It is a matter of strong controversy (1930) among students of pneumonia whether or not it is a contagious disease. There is no doubt about its infectious nature and about the identity of the microbes that are commonly responsible. There is also no doubt that close and intimate contact with infected individuals frequently results in the transmission of infection. There are, however, many who doubt that most cases of pneumonia are contracted by contagion from an actual case of the disease. They believe that the pneumococcus and other microbes which are potentially capable of causing pneumonia frequently inhabit the nose or throat of normal, healthy persons and cause disease when the resistance of the tissues is lowered by some predisposing cause.

It may be said that the control of pneumonia depends upon avoiding contact with persons suffering with an acute attack of the disease, and with articles freshly soiled with discharges from the nose and throat of a patient. It is also commonly recommended that people should avoid congestion in public places in the cold seasons of the year. Furthermore, it is of the highest importance to avoid fatigue, chilling and exposure, not to neglect colds and catarrhs, and by proper regard to diet, exercise, fresh air and temperance in the use of alcoholic beverages to maintain the body's resistance at the highest level.

Poliomyelitis (Infant Paralysis). This is an acute, infectious disease which occurs most commonly in children and which may result in extensive paralysis. The disease ordinarily begins abruptly with fever, nausea, vomiting, pain and perhaps stiffness of the neck. These may be followed by paralysis and death. The disease may occur in the form of occasional and isolated cases or in a sharp epidemic. It is a warm weather disease and occurs in all countries. Its prevalence usually increases during the warm months of the year and then declines with the coming of cold weather.

The causative organism of the disease is not certainly known. There is reason to believe that the infection is probably spread through the agency of healthy carriers and through the nose and throat discharges of infected persons or objects contaminated by them. Some investigators are of the opinion that bowel discharges or objects contaminated with their excreta may also contain the infectious agent in a virulent form. There is little doubt that persons in the active stages of the disease have, at times, contaminated milk supplies and that consumption of the milk has led to epidemics of infant paralysis.

The control of the disease is extremely difficult because there may be many healthy carriers in a community and because infected persons may be capable of spreading the infection for several days before the symptoms of disease have appeared in them. Nevertheless, there is reason to believe that in a measure the spread of the disease may be controlled by: (1) early recognition of the disease; (2) isolation of all recognized cases for three weeks from the beginning of fever; (3) quarantine for two weeks of children who have been exposed to infection and of adults of the household who may have contacts with children or who are food-handlers; (4) disinfection of discharges from the nose, throat and bowel of all patients; (5) during an epidemic, isolation of all children who have fever, until the diagnosis is made.

Enormous advances have been made in

the treatment of infant paralysis to prevent the development of permanent paralysis of arms, legs or other parts of the body, and to treat the paralyzed child by skillful "physiotherapy" to recover the use of parts that have been affected.

Rabies (Hydrophobia). There are few diseases that are more generally feared than rabies, and justly, because no human being who contracts it ordinarily ever recovers. Yet it is a disease against which a community can protect itself if it will only take the necessary steps. Rabies is a wound infection. It is due to an unknown virus which causes disease in lower animals as well as in man. All mammals are susceptible; dogs, wolves, jackals and foxes are most commonly infected. Rabies exists in all parts of the world, except in countries where rigid enforcement is practiced to control and exclude it. To understand the methods of control it is essential to know that the microbes of this disease attack the central nervous system and that they may be present in high concentration in the saliva of the affected animal. The microbe probably cannot penetrate the unbroken skin or uninjured mucous membranes. Hence, contact and ingestion are harmless. The infectious agent is capable of setting up disease when it gains entrance to the tissues as through a bite, scratch or abrasion.

Not every animal that is angry or "mad" is rabid; nor does the bite of every rabid animal necessarily lead to rabies. It is necessary, however, to consider the possibility of rabies in every case of bite by a dog or other animal that may be "mad."

The control and prevention of rabies depends upon a variety of procedures:

(1) Treatment of the wound. Every bite, scratch or abrasion caused by a dog or other animal that acts "mad," or "queer," or gives any other signs of being rabid should be treated promptly (preferably by a physician) with strong nitric acid. Disinfectants or germicides like carbolic acid, silver nitrate, alcohol, bichloride of mercury and so forth, which may be used for other purposes can not be relied upon to kill the virus of rabies. It is important that the treatment of the local wound be thorough and be done as promptly as possible.

(2) Kill the "mad" animal, if possible without injuring or destroying the head, because the diagnosis of the disease in the dog depends upon examination of the brain. If the animal is not certainly "mad," it should be tied up where it cannot bite humans or other animals and be kept under observation by a physician or veterinarian.

(3) Prevention of disease in the person who has been bitten by vaccination. It is one of the most fortunate things about rabies that the disease ordinarily has a long incubation period. In man there is usually a lapse of thirty days to several months after infection before the symptoms appear. This period may be shorter if the bites were very severe or were on the face, head or near large nerves. Commonly the incubation period is sufficiently long so that it is possible to keep under observation the animal that has done the biting to determine whether or not it will develop the disease, if it was not certainly "mad" at the time of the biting. Furthermore, the length of the incubation period makes it possible actively to immunize the patient before the disease develops. One of the greatest inventions of Louis Pasteur was the method of vaccinating human beings against this terrible disease. Hence, the vaccination is called the "Pasteur treatment." It consists in injecting into the patient a carefully prepared vaccine to stimulate immunity against the microbes that may have been introduced by the bite of a rabid animal. Persons properly given the Pasteur treatment practically never develop rabies. If they are bitten again, months later, the treatment should be repeated.

(4) Muzzling of all dogs on public streets or in public places.

(5) Detention and examination of all dogs suspected of having rabies or of being "mad."

(6) Immunization of all dogs each year in communities where rabies occur.

(7) Effective quarantine of all dogs coming into a community or the entire country, to ascertain whether or not they may be rabid.

That the recommendation of these regulations is sound is evidenced by the fact that such a country as England, which actually practices most of them, is nearly entirely free of rabies.

Scarlet Fever. This is an acute, infectious disease caused by bacteria (*Streptococcus scarlatinae*). It usually begins with sore throat, nausea, vomiting, fever and headache. A rash on the skin and roof of the mouth usually develops a day or two later, and this is followed by "peeling." Although the disease may occur in persons of any age, it is uncommon in children in the first year of life and occurs most commonly between the second and the twelfth years. The disease is most deadly to children in the second, third and fourth years of life. Hence, it is especially important to guard the very young against this infection.

Scarlet fever may be spread by healthy carriers of the streptococci or by diseased persons. The common sources of infection are discharges from the nose, throat, ears, abscesses—or from articles contaminated with the discharges — from scarlet fever patients. Transmission of the infecting organisms is usually associated with more or less direct, personal contact; but it may be accomplished indirectly, as through contaminated objects or milk or milk products. Epidemics of the disease have been definitely traced to infected milk. The affected person is usually infective for two to three weeks after the onset of the disease and until abnormal discharges have ceased and open sores and wounds have healed.

The control of scarlet fever depends upon: (1) early recognition of the disease; (2) isolation of the patient in the home or in a hospital until the end of the infective period; (3) testing for immunity to the disease of such persons as have been exposed to infection. The "Dick test" which is used for this purpose is similar to the "Schick test" for immunity against diphtheria (see page 1003). Those who give a positive Dick test should be actively immunized by the physician with a suitable preparation of scarlet fever toxin; (4) exclusion from school of children, teachers and others who have been exposed to infection, and of food-handlers from their work until seven days have elapsed since the last exposure to a recognized case; (5) disinfection of all articles which have been in contact with a patient or soiled by his discharges; (6) daily examination by a physician, when possible, of all persons who have been exposed to infection; (7) pasteurization of the milk supply.

Smallpox. This is a widespread disease which starts with general symptoms of infection—chills, fever, nausea, vomiting and so forth—and is definitely recognized by the more or less characteristic eruption which develops about the third, fourth or fifth day. It was once one of the most prevalent diseases in the world, killing or pockmarking old and young, sometimes in great epidemic waves that would sweep through a people, sometimes as it made its way more slowly but certainly through a population. Professor Rosenau of Harvard University says of it (*Preventive Medicine and Hygiene*, [1927], p. 27):

> It is very difficult for us now to realize that smallpox was once much more common than measles and much more fatal. Many of those who recovered were disfigured for life, left blind, or with some other serious consequence of the disease. For centuries smallpox was one of the greatest scourges. It depopulated cities and exterminated nations. In Europe alone, where its ravages were comparatively slight, it killed hundreds of thousands yearly. In the eighteenth century, of which we have the best records, almost everybody had it before he grew up. Parents often exposed their children to the disease in order to be through with it, just as they now sometimes do with the minor contagious diseases. In China a mother does not number among her children those who have not yet had smallpox, because she well knows how uncertain will be their stay in the family.
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> The distinguished mathematician, Bernouilli, estimated that 15,000,000 people died of smallpox in 25 years in the eighteenth century. It has been estimated that 60,000,000 people died of smallpox during that century. Haygarth gives an account of a smallpox epidemic in Chester, England, population 14,713. At the termination of the epidemic there were but 1,060 persons, or 7 per cent of the population, who had never had smallpox. Many similar instances are cited in the literature. The French physician, De la Condamine (1754), said that 'every tenth death was due to smallpox and that one-fourth of mankind was either killed by it or crippled or disfigured for life.' Sarcone (1758) estimated the number of persons in Italy who suffered from smallpox as 90 per cent of the population.
>
> Smallpox was introduced into the Western Hemisphere by the Spaniards about fifteen years after the discovery of America. In Mexico within a short period 3,500,000 persons are said to have died of the disease (Chapman). Catlin (1841) states that of 12,000,000 American Indians 6,000,000 fell victims to smallpox. In Iceland in 1707, 18,000 perished out of a population of 50,000; that is, smallpox killed 36 per cent of the total population in one year.
>
> A good example is that of Boston in 1752, population at that time 15,684. Of this number 5,998 had previously had smallpox. During the epidemic 5,545 persons contracted the disease in the

usual manner, and 2,124 took it by inoculation. One thousand eight hundred and forty-three persons escaped from the town to avoid infection. There were, therefore, left in the city but 174 persons who had never had smallpox.

Although smallpox is no longer such a terrible scourge, it is still widely prevalent. In 1923 there were reported about 50,000 cases in Europe and about 30,000 cases in the United States. There is no doubt that these are only fractions of the numbers that actually occurred. Being intensely contagious, smallpox is not controlled by sanitation. Active immunization by vaccination is the only reliable, preventive measure. (The discovery of vaccination by Jenner is described on page 1000).

The microbe which causes smallpox is unknown at this time (1931). It is known to be present in the lesions of the mucous membranes and skin of infected persons. It is usually transferred from person to person by contact, but transfer may be accomplished through objects soiled with discharges from lesions or with feces or urine of the patient.

The control of smallpox depends upon: (1) accurate diagnosis of the disease; (2) hospital isolation of the patient in screened wards, free from vermin, until the disappearance of all scabs and crusts on the skin and membranes of the patient; (3) prompt vaccination of all persons who have been exposed to infection; (4) disinfection of all discharges from the patient. No article should leave the surroundings of the patient until it has been thoroughly boiled or subjected to equally effective treatment; (5) vaccination of all persons in infancy, revaccination of children on entering school (fifth to seventh year) and revaccination of everybody, old and young, when the disease appears in a severe form in a community. The reasons for these recommendations are that the immunity against smallpox, which follows an attack of the disease or vaccination, is neither absolute nor is its persistence certain. It is usually reliable that persons who have been successfully vaccinated within three to seven years are probably immune; but complete reliance should never be placed upon a former vaccination in the face of exposure to infection or existence of the disease in the community.

Syphilis. This is the most dangerous and most deadly of the diseases that are commonly spread by sexual contacts. It affects from six to ten per cent of all persons; it occurs among old and young and in all classes of society. It is the principal cause of insanity, childlessness, abortions and miscarriages. It is caused by a spirillum-like microbe, called *Spirocheta pallida* (or *Treponema pallidum*). The sources of infection are discharges from the lesions of the skin and mucous membranes, and the blood of infected persons, and articles freshly soiled with such discharges or blood in which the spirochetes are present. The spread of the disease occurs most commonly by sexual contact, but it may be occasioned by kissing, by more casual contact or indirectly through infected objects.

It must be emphasized that syphilis is an extremely dangerous disease, but it is both preventable and curable. Control of the disease depends upon:

(1) Early recognition and diagnosis of the disease by clinical symptoms, examination of the discharges and of the blood. The effectiveness of treatment depends upon how early and also for how long it is instituted. It is therefore very important that all persons who have been exposed to infection should promptly seek the advice of a reputable physician. It is worse than foolish to delay or avoid receiving sound professional attention because a false sense of shame has been permitted to surround the very names of the venereal diseases. Early preventive or curative treatment may make the difference between a lifetime of healthy living or one of broken health, disease and insanity,

(2) Exclusion of infected persons from sexual contacts and from preparation of foods during the early active stages of disease, and intelligent avoidance of kissing and other close contacts.

(3) Avoidance of common towels, drinking cups, toilet articles and eating utensils.

(4) Proper personal prophylaxis, advised by a reputable physician, to those who expose themselves to infection, especially in illicit sexual intercourse.

(5) Education of all persons to understand that sexual continence in both sexes and of all ages is compatible with health and normal development.

Tetanus. This is a "wound infection" disease caused by *Bacillus tetani*. This microbe is apparently harmless when swallowed, and becomes dangerous only when it gains entrance to injured tissue. (The probable reason for this is that *B. tetani* is an anaërobic microbe, requiring the absence of oxygen in order to be able to grow and produce its poison.) It is frequently present in animal manure, soil and in street dust. Infection ordinarily occurs through wound infection with dirt which contains the bacillus. The patient affected with the disease is not ordinarily infectious to others. Prevention of tetanus depends upon: (1) removal of all foreign matter as early as possible from all wounds; (2) thorough disinfection of wounds; (3) use of tetanus antitoxin in all persons who have been seriously wounded or injured in regions where tetanus bacilli are known to occur in the soil and in all cases where wounds are ragged or penetrating. Tetanus was an unfortunately common cause of death among wounded soldiers in the early days of the World War. Then the practice was instituted in all the armies of giving every seriously wounded soldier a suitable dose of tetanus antitoxin as a preventive measure. Thus the disease was brought under control.

Other than occasional cases which occur the year round, tetanus is most prevalent in the United States directly after the Fourth of July; at this time many cases occur, following injuries due to celebration accidents. Tetanus is sometimes the terrible price paid by those who do not observe the "safe and sane Fourth."

Tuberculosis. There are many kinds of disease which are called "tuberculosis" and are caused by the *Bacillus tuberculosis*. The parasite has for years been one of the deadliest enemies of man. Lung infection is the commonest form of disease which it produces. This is "pulmonary tuberculosis" or "consumption," justly called the "Great White Plague." Until very recently the disease was responsible for from ten to twenty per cent of all deaths. Its control has only recently been made effective and there has already been a remarkable decline in its occurrence. Man's conquest over tuberculosis—as we see it occurring today—marks one of the greatest triumphs of hygiene and preventive medicine. There have been many serums and vaccines for tuberculosis advertised at one time or other. None is yet established. A new type of vaccine, devised by Dr. Calmette of Paris, is now (1931) in the experimental stage and holds some promise for the future.

The control of tuberculosis is extremely difficult because the microbe is widespread. Thus, in civilized communities nearly everyone becomes infected at some time or other in the first ten, fifteen or twenty years of life. Ordinarily the infection is conquered by the infected tissues and the individual is totally unaware of the battle that was waged between the microbe and the body defenses. Avoidance of repeated or massive infection is half the problem. The other half is concerned with keeping the body in good condition so that it is prepared to defend itself against microbic invasion.

The bacillus of tuberculosis may attack almost any part of the body, giving rise to lesions of the skin, glands, bones, intestines, kidneys and other organs.

Pulmonary Tuberculosis (*Consumption*). This is caused by the tubercle bacillus of the so-called "human" variety. It is present in the discharges of any open tuberculous lesions, the most important being the sputum. Infection is usually spread by direct or indirect contact by coughing, sneezing, or other droplet infection, kissing, common use of unsterilized food utensils, pipes, toys, drinking cups and other articles, and possibly by contaminated flies and dust. The danger of infection exists as long as the infected person is discharging the microbes.

The methods of control are: (1) recognition of the disease through examination by a physician using X-ray, skin tests and bacteriological examinations when necessary; (2) education of the affected person in how to avoid spreading infection; (3) careful disinfection of sputum or articles soiled with it (handkerchiefs, cloths, papers, eating utensils and so forth; (4) education of the public in the hygiene of the body to avoid and control infection; (5) provision of dispensaries and other facilities for the recognition of early cases and of facilities for their care, open-air schools for pre-tuberculous children; (6) ventilation and elimination of dust in factories and workshops and in places of public assembly; (7) separation of babies from tuberculous mothers at birth.

Other Forms of Tuberculosis (*Nonpulmonary*). The human or the bovine variety of the tubercle bacillus may cause affections of the skin, glands, bones and internal organs. The sources of infection are discharges from the mouth, nose, bowels, genito-urinary tract of infected humans; articles freshly soiled with such discharges; milk from tuberculous cattle. Infection may be transmitted by direct contact with infected persons, by contact with objects contaminated with their discharges, and by eating or drinking contaminated meat, milk or

other foods. Control of these infections revolves around: (1) early recognition of the disease; (2) disinfection of discharges and articles soiled with them; (3) pasteurization of all milk and inspection of meats; (4) elimination of tuberculous cattle from milch herds; (5) prohibiting all persons who have open tuberculous lesions from handling foods that are consumed raw.

Typhoid Fever. There is a group of infections of the intestinal tract caused by bacteria. Of these typhoid fever is the best example. This particular disease is caused by *Bacillus typhosus*. There are a number of bacterial species or varieties which are different but closely related, and which are capable of causing infections which are clinically similar to or identical with typhoid fever. The paratyphoid bacilli cause paratyphoid fever; others cause milder or more severe diarrheal infections. In all of these diseases there is fever, malaise, headache, acute gastro-intestinal upset with mucous or bloody diarrhea, complications in the liver or gall bladder function and so forth. In each of the diseases in this group the sources of the infection are the bowel discharges and urine of infected individuals or of healthy carriers of the microbes. The microörganisms are ordinarily spread by direct contact or indirectly through contaminated water, milk and shellfish. Contaminated flies have been common means of transmission in epidemics.

The control of typhoid fever and related diseases depends upon: (1) recognition of the disease from the clinical symptoms and confirmation by the agglutination test (see p. 1000) and by bacteriological examination of blood, bowel discharges or urine; (2) isolation of the patient in a fly-proof room, preferably under hospital conditions; (3) immunization by vaccination of all persons, so far as is practicable, in communities where the disease is prevalent, and especially of all susceptible persons in the family or household of the patient who have been or may be exposed during the course of the disease; (4) adequate protection and purification of public and private water supplies (see p. 1009); (5) pasteurization of public milk supplies; (6) supervision of other food supplies and of food handlers; (7) prevention of fly breeding; (8) sanitary disposal of human excreta.

So recently as two or three decades ago, epidemics of typhoid fever were common—one of the regular prices man paid for the privilege of living in cities. The disease was significantly reduced as soon as people in urban communities learned how to dispose of their sewage and keep it out of their water supplies, and how to disinfect the water they drank. When pasteurization of milk became more general, the incidence of typhoid fell still further. Now, as communities are learning how to discover carriers, eliminate them from food-handling occupations and educate them in hygienic living, typhoid fever is tending to become a rare disease. Occasionally one or the other of these defenses breaks down and an epidemic sweeps through the community. Typhoid fever is controllable; but eternal vigilance is the price.

Whooping Cough. This disease, also called "pertussis," is acute and contagious, and is caused by a small bacillus (*B. pertussis*). In its first stage it usually appears as a mild catarrhal infection of the upper respiratory tract. In the second stage the principal sign is the frequent coughing spells which usually end in a characteristic inspiratory "whoop." The disease is unlike most respiratory infections in that in the United States it is most common in spring and summer rather than in the winter months. It is principally an affection of early childhood, about one-fifth of all cases occurring in babies in the first year of life and another fifth in the second year. It is relatively uncommon in persons past the fifteenth year of life.

It is not generally known that whooping cough is one of the most dangerous of the common infectious diseases, not because it is itself mortal but because it may lead to pneumonia or other serious complications. Nearly every one suffers an attack of the disease at some time or other. The old-fashioned doctrine that children should be permitted to have it and be over with it, and



How Infection Travels
A reminder of the ways in which the microbes of disease may be spread.

"the sooner, the better," is dangerous, because the disease is far more deadly to young than to older children. One attack of the disease usually confers a lasting immunity, so that a second attack is rare.

The pertussis bacilli are usually present in very large numbers in the discharges from the lungs. These provide the common means of spread of the disease. It is known that cats and dogs are susceptible to pertussis, and it is thought by some that these animals may occasionally become infected and serve to spread the bacilli. The usual mode of transmission is contact with an infected person or with articles freshly soiled with discharges from a patient. The disease is especially communicable in the first seven to fourteen days when only the catarrhal signs usually exist, before the coughing and whooping spells have begun. After the whoop has appeared the patient may still be infective for three or more weeks.

The control of whooping cough depends upon: (1) recognition of the disease; (2) separation of the patient from susceptible children and exclusion of the patient from all public places for a period of from one week after exposure to infection until three weeks after the appearance of the whoop; (3) disinfection (by boiling) of all articles soiled by nose or throat discharges of the infected child.

Summary

This brief discussion of the principal communicable diseases of man may be summarized in a few phrases that are widely used by the sanitarian:

(1) These diseases are caused by the activities or poisons of microbes—bacteria, protozoa and so forth.

(2) Humans—not lower animals or the environment—are most commonly the reservoirs of infection, principally because most disease germs die out quite rapidly after they leave the body.

(3) The transmission of disease is most commonly accomplished by more or less direct transfer of the infecting agent from person to person (contact); less often through the intermediate infection of foods and fomites (inanimate objects in the immediate surroundings of man); and in occasional diseases (malaria, plague, yellow fever and others) through the intermediate agency of insects.

The phrase, "Fingers, Foods, Fomites and Flies" is often used to summarize it all and to remind people of the principles in the control of communicable disease.

CANCER

This is a diseased state of a tissue or organ due to the fact that the cells are undergoing excessive growth and multiplication. The cancerous tissues may remain localized and more or less harmless or may crowd upon and destroy normal tissues where it is growing. Small portions of it may be carried in the blood or lymph to other parts of the body and set up new growths in remote places. Cancer of the rapidly growing and spreading kind is extremely fatal. Enormous advances have been made in the diagnosis of cancer and in its treatment by surgical operation and by X-rays, radium and other means. Treatment is ordinarily most successful when applied in the early stages of disease. It is therefore of tremendous importance not to delay but to seek the diagnosis of a physician as soon as a suspicious lump or nodule appears in or upon the body. This applies especially to persons who have passed their fortieth birthday, because cancer is commonly a disease of the adult and late adult years of life.

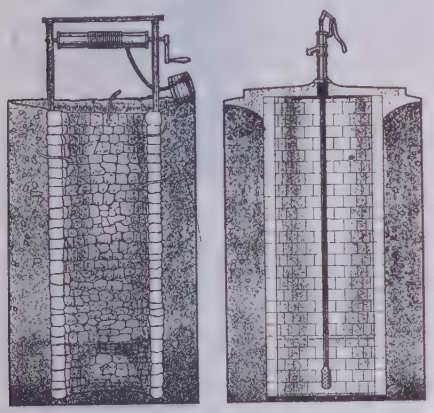
The cause of cancer is not known at this time (1931). There is no substantial evidence that it is an infectious disease and no evidence that it is communicable.

COMMUNITY HYGIENE AND SANITATION

In the beginning of the nineteenth century, the invention of machines and the application of power started the Industrial Revolution. One of the necessities of the factory system that soon came into existence was the congregation of large numbers of persons in the vicinity of the place of work. Cities of the modern type grew where before there had been only villages and small towns. Urban life began to replace rural life for an increasing fraction of the population. With urbanization came problems of community hygiene and sanitation which had to be solved in order to avoid epidemics of contagious disease, water famines, unspeakable nuisances created by accumulation of sewage and wastes from large numbers of people herded into a small area. For most of these problems there are now adequate solutions.

Water Supply. Chief among the articles of food whose sanitary qualities must be guarded is water. This is particularly true because the conditions under which it is available in nature render its contamination and even infection relatively frequent. Because water is generally consumed raw, its pollution is unusually dangerous.

Protecting the Well. On the farm and in small communities, where water for drinking, cooking, washing and other purposes is usually drawn from a well, especial care must be taken. The well is usually in proximity to the house. Precautions must therefore be observed in locating and constructing the well so that pollution will not readily be flushed or drained into it. The most dangerous types of pollution are the intestinal



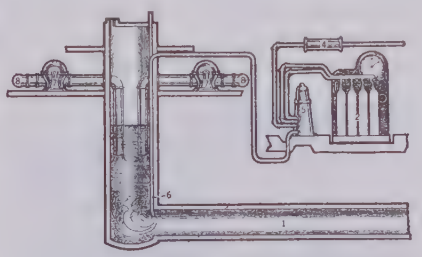
Two Wells
At the left a poorly built well; at the right a properly constructed well.

excreta of human beings, because they may contain the microbes of disease even though they come from apparently healthy persons. The well should be located as far as is convenient from the privy or cesspool and so that the natural drainage, if it can be determined, is away from and not towards the well. Furthermore, the sides of the well should be of tight construction so that no water can enter it except from the inlet at the bottom. The top should be water-tight so that no surface wash or drainage can seep in. If the soil is sandy and free from cracks or fissures, surface or ground water will be effectively filtered and rendered safe before it reaches the water level at the bottom of the well.

Protecting Large Water Supplies. The existence of large communities is impossible without a sufficient supply of water of good quality. It is therefore essential that artificial reservoirs be built for towns and cities if a natural supply such as a river or lake is not available. Man is always careless about the disposal of his wastes. No large body of water can be considered safe for consumption in its natural state even though the population near or upon the area from which it drains is small. Sewage pollution may enter it, regularly or occasionally, and large epidemics may follow. There are three general methods of safeguarding a water supply: (1) storage, (2) filtration and (3) disinfection.

Purification of Water by Storage. If water is stored for a considerable period of time (two, three or more weeks) such disease bacteria as gain entrance to it will usually die out for lack of food. This is one of the reasons for the building of large storage reservoirs, built by impounding a natural drainage or by pumping water into a specially constructed, large tank. The water need not be actually stored for a long time. It is frequently sufficient that the dimensions of the reservoir be ample so that the regular draughts made upon it result in such a slow flow through it that each portion of water is several weeks in passing through from the inlet to the outlet.

Purification by Filtration. Sanitary engineers have found that storage is frequently impractical because the locale does not make the building and protecting of a reservoir convenient or economical. Unusual draughts may be made upon a reservoir, particularly in times of low water, and water may be consumed that has not been stored sufficiently to have been completely purified. Filtration through sand is then the common resort for the more certain purification of water. This is usually accomplished by building large underdrained beds of carefully chosen sand. In passing through such beds ("slow sand filters") practically all of the bacteria adhere to the surfaces of the sand grains. The water flowing off through the drains below may be nearly sterile. Where the appropriate

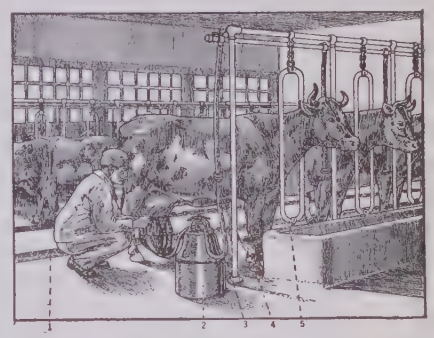


Water Purification
Diagram illustrating how liquid chlorine is added to drinking water to destroy microbes. The chlorine mixes with the water and disinfects it as it passes up to the pumps (8): 1. Intake tunnel; 2. Chlorine gas in tanks; 3. Weigh scales on which loss of weight shows amount of chlorine being used; 4. Jacket heater warming water for chlorine machine; 5. Chlorine mixing machine; 6. Chlorine injected into well of pumping station before water reaches pumps; 7. Pumps; 8. Main supply pipes (chlorinated water).

kind of sand is not available, where the water contains finely suspended clay, or for large cities where an ample area of sand beds cannot be built, engineers frequently add a "coagulant" to the water and then remove this and adherent bacteria from the water by rapid filtration through mechanically washed filters ("rapid" or "mechanical" filters.)

Purification by Disinfection. As a final protection of the water supply, practically all progressive communities use disinfection whether or not storage or filtration or both are also used. The cheapest and most reliable methods depend upon the use of chlorine or a chlorine yielding substance like calcium hypochlorite. Added in quantities of a few tenths of a part per million parts of water, chlorine will destroy all of the important disease germs of the kinds that may gain access to water. Among others, the bacteria of tuberculosis, typhoid fever, dysentery and cholera are destroyed by chlorine. It will not destroy the spores of certain pathogenic bacteria (see p. 997), but these are not commonly present in water and are not ordinarily dangerous when ingested.

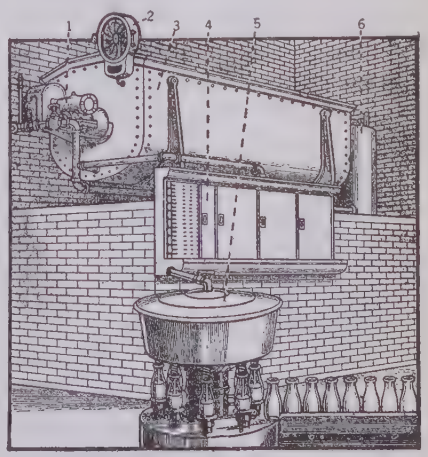
Milk Supply. Second to water in importance, milk is an item of diet that requires special sanitary precautions in its production and distribution. Milk is a nearly perfect food for microbes as well as for man. Disease



Model Dairy Barn
Healthy cattle and a sanitary dairy barn are the starting points in the production of clean milk: 1. Cleaning trough; 2. Milking machine; 3. Compressed air-pipe; 4. Individual drinking cup for cows; 5. Movable stanchion.

germs as well as harmless varieties can use it as a food and may multiply in it so that the individual ingesting it without its having been heated or cooked may receive a large infecting dose. Epidemics of typhoid fever, scarlet fever, diphtheria, septic sore throat, Malta fever (also known as undulant fever) and other diseases have frequently been caused by infected milk. To safeguard the milk supply, sanitary precautions are essential at many stages in its marketing.

The first requisite in producing a safe milk is that it should come from cattle that are



Pasteurizing Milk
Showing a unit of a pasteurizing plant: 1. Mechanism for turning coils; 2. Recording thermometer; 3. Tank for heating; 4. Cooling coils; 5. Automatic bottler and capper; 6. Storage tank.

free from disease. In progressive communities, inspectors examine the cattle at frequent intervals to detect those which have tuberculosis or disease of the udders. The farmer and milker must also watch the cattle closely for infections that may develop between inspections. Diseased cattle must be separated from the healthy ones and eliminated from the dairy herd. In addition to inspection of

the animals, strict ordinances must be observed concerning the health of the milker, the cleanliness of the dairy barn, the thorough cleansing and disinfection of all the milking and storage utensils. In a modern dairy, milking is done by sterilized milking machines and the milk is promptly cooled to prevent the development of such bacteria as may be present in the milk. The milk is then conveyed by rapid transit to the dairy or to the pasteurizing plant where it is tested for its content of butter fat, water and so forth.

Pasteurization of Milk. No matter how carefully precautions are observed to obtain milk from healthy cattle and to reduce the opportunities for contamination and the development of bacteria, raw milk cannot be considered safe for consumption. Infection will occasionally get in and may cause disease.



Sewage Disposal
A "sprinkling filter" for sewage disposal.

Pasteurization, named after Louis Pasteur, is the only effective safeguard (see page 1009). It consists in heating the milk at a temperature of 140° to 145° Fahrenheit for from twenty to thirty minutes. All disease germs of the kinds that may be present in milk are destroyed. The milk should then be cooled promptly to approximately 40° F. and kept cold until consumed. Pasteurization does not destroy all bacteria and if pasteurized milk is not kept cold it will turn sour and spoil. Properly pasteurized milk is pasteurized in the bottle or is bottled by automatic machinery as it flows from the pasteurizing chamber through the cooler to the bottler.

Sewage Disposal. It is not sufficient that a community protect its water and milk supplies. It should make adequate provision for the proper disposal of its sewage and garbage. In getting rid of its sewage it is important to avoid offensive sights and smells and to avoid the contamination of the community's water and food supplies and those of its neighbors.

Disposal by Dilution. The simplest method of disposing of sewage is by dilution into the nearest large body of water. The natural processes of oxidation and bacterial action convert the putrescible and offensive matters into stable products. It is essential, however, that the discharge be into an adequately large body of water and be sufficiently distant from water supply intakes, bathing beaches and oyster beds.

Disposal by Filtration. It is frequently impractical to dump sewage into a nearby body of water. For a rural household or a small community it is sometimes sufficient to treat the sewage in a septic tank and permit the out-flowing fluid (*effluent*) to drain away through the soil. Bacterial action in the tank stabilizes the offensive and unstable organic matter. For large communities there are many devices available for sewage treatment. If the community wishes to, or if it must, it can convert its sewage into a clear, sparkling water, but the process is usually very expensive. Each community must adapt its sewage treatment program to its own problem. In some places treatment in large septic tanks of suitable design (Imhoff tanks) with or without preliminary screening to remove coarse detritus and suspended matter is sufficient. In others it is necessary to filter sewage through properly constructed filter beds. These are usually beds of stone and gravel, several feet thick and rather large (from one-quarter up to several acres in area), over which the sewage is sprayed. The spray absorbs the oxygen, and on the surfaces of the gravel and stones oxidizing bacteria grow, form jelly-like coatings, and work upon the organic matter in the sewage so that a highly purified effluent is all that flows from the bed. This may be emptied into a stream or other body of water without causing serious harm or nuisance.

Garbage and Waste Disposal. Towns and cities must also make adequate provision for the proper disposal of their solid wastes, garbage, ashes and rubbish. In up-to-date communities closed or carefully covered, water-tight wagons or carts are used to haul the material away at frequent intervals.

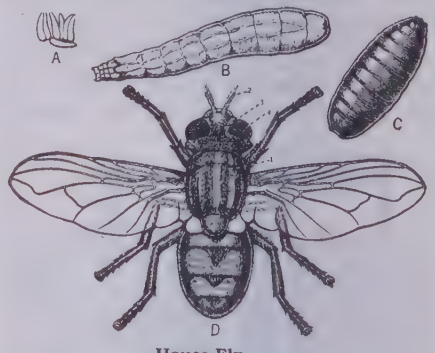


Garbage Removal
The garbage is being removed by means of a properly constructed wagon which is of steel and water-tight.

This is done so that breeding places for insects do not accumulate and offensive sight, smells and drippings in the streets and roads are not produced. At the place of disposal, the modern cart can be dumped and washed automatically. Dumping in open places frequently leads to the establishment of serious nuisances. Garbage can be safely and profitably fed to hogs. Large cities must commonly use other methods. In some places incineration is used, and the ash and clinker that is left is used to fill in vacant land or water-fronts. In others, devices are used by which the water, grease and solids are disposed of separately. The grease is often valuable for commercial purposes. This process is called "reduction."

Insects and Other Carriers of Disease. The rôles which insects play in the transmission of disease has been mentioned elsewhere (p. 1004). The control of insects is as largely one of municipal as of domestic sanitation. It is important that each household play its part in combating these winged enemies of man, but concerted action of the community is also essential. Some insects are only accidental, adventitious or mechanical carriers of disease germs, such as the housefly, which may carry typhoid; others are specific carriers of particular diseases, the spread of the disease being unusual or impossible without them, an example of which is the mosquito and malaria.

Flies. The part played by the common fly (the house fly), *Musca domestica*, is dependent upon its breeding and feeding habits.



House Fly
The life cycle of the house fly, *Musca domestica*. A, eggs; B, larva; C, pupa; D, adult: 1. Broad longitudinal stripes; 2. Arista; 3. Simple eye; 4. Compound eye.

The mother fly lays her tiny white eggs on manure, garbage or other refuse or filth. From each egg hatches out a small, white maggot (larva). This grows for four or five days and then burrows down into the ground where it changes into a brown, motionless, resting body (pupa). After four or five days, the adult fly hatches out and takes to the air. The fly breeds in filth and feeds on filth. It also comes to the kitchen and the table; it alights on food or on the body. From filth to food or the body, it carries germs and leaves them where it alights and rests. It frequently carries typhoid bacilli and other disease germs from excreta to food and drink.

An understanding of these facts is essential in attempting to control flies. First, their

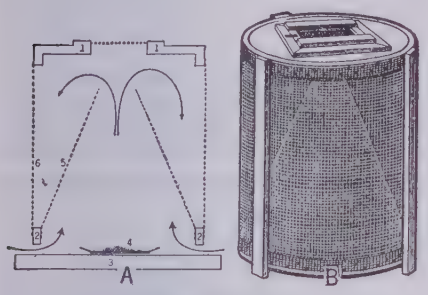


Fly Prevention
Covered manure bins are necessary to prevent flies from breeding.

breeding must be prevented by keeping manure, garbage, refuse and all kinds of decaying matter in tight covered containers so that flies cannot gain access to deposit their eggs. Second, flies must be trapped where they are present in large numbers, particularly if near the home. Suitable and effective flytraps can be built easily and cheaply.

Third, it is essential to keep the house and privy carefully screened so that the flies that are about cannot enter the house.

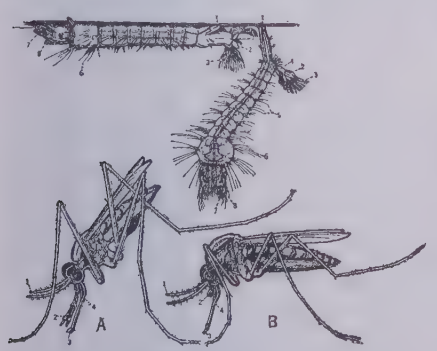
Mosquitoes. These insects are the most dangerous of all to men, especially in warm places, because they are the specific carriers of malaria (see page 1004). Like other insects, the mosquito goes through four phases in its life history: egg, larva, pupa and adult. The



A Simple Fly Trap

At left is a section of a fly trap to show construction. At right is an external view of the fly trap: 1. Wooden top; 2. Wooden hoop to which screenwire is attached; 3. Table top; 4. Saucer of sugar or other bait; 5. Inverted cone with apex left open; 6. Cylinder of screenwire.

eggs are laid in stagnant or slow-moving water, small pools or ponds, ditches, sluggish streams clogged by plant growth, marshes, tin cans, roof gutters and almost any collection of exposed water. The larva or wriggler, so-called because it moves about by jerks, hatches out from the egg. It obtains its air by frequently coming to the surface to breathe. To accomplish this it sticks the breathing tube in its tail up through the surface. A few days later the larva changes to the pupa and from this the winged adult hatches out. The common mosquito (*Culex*), which is a nuisance but which is not ordinarily capable of carrying malaria, can be distinguished from the more dangerous malaria mosquito (*Anopheles*) particularly in the larval and adult stages. When the larva



Mosquitoes

The larval (upper) and adult (lower) stages of Anopheles (A) and Culex (B) mosquitoes. The larvae: 1. Breathing spiracle; 2. Anal gills; 3. Ventral brush; 4. Anal segment; 5. Abdominal lateral tufts; 6. Thoracic hair tufts; 7. Mouth brushes; 8. Antennae. The adults: 1. Antennae; 2. Palpi; 3. Labellae; 4. Labium.

comes to the surface to breathe, it hangs down from the surface if it is *Culex* and lies flat against the surface if it is *Anopheles*. (The former has a longer breathing tube than the latter.) The adult *Culex* has shorter legs than the adult *Anopheles*, so that when standing quietly the *Culex* is in a hunchbacked position (head, thorax and abdomen not in a straight line) whereas the *Anopheles* is at an angle to the surface on which it is resting and the body is straight (head, abdomen and thorax in a straight line).

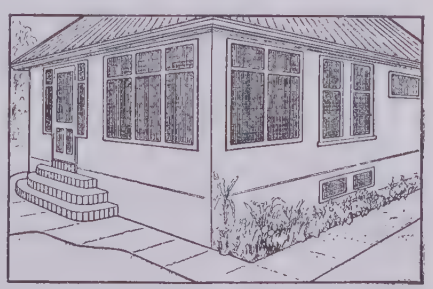
The control of mosquitoes is based upon the same principles that apply to the control of flies. First in importance is elimination of breeding places, wherever this is feasible and practical. This necessitates draining swamps, pools and other collections of stagnant water in the vicinity of habitation. Second is the destruction of the larvae by covering with a thin film of kerosene or other oily material



Mosquito Prevention

The drainage of swamps for the prevention of mosquito breeding.

the surface of all stagnant water that may serve as a breeding place. As the material spreads over the surface of the water it forms a film through which the larva cannot thrust its breathing tube when it comes up to breathe air. Third is the careful and thorough screening of all windows, doors and vents of the house with a fine-mesh wire or cloth net. In addition, in the control of malaria there is a fourth method which applies to the microbe of disease rather than to the insect; this method is the use of quinine taken by



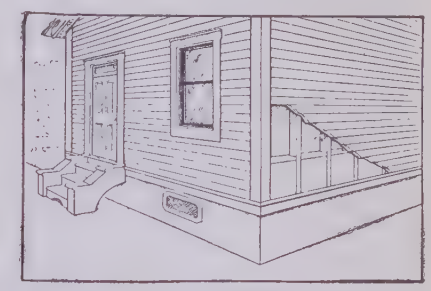
Insect Exclusion

Screening of doors and windows for mosquito and fly exclusion.

mouth to prevent or cure malaria. Quinine is a medicine which is a specific poison for the protozoan which causes malaria. In warm countries where malaria is prevalent, quinine should be taken regularly by all persons who are infected or exposed to infection.

Rats, Fleas and Plague. Among the many other diseases of man that are spread by insects, brief mention may be made of plague (bubonic plague). This is the Black Death which, in earlier centuries, used to sweep through countries like a terrific scourge. In one epidemic it killed between a quarter and a half of the entire population of Europe.

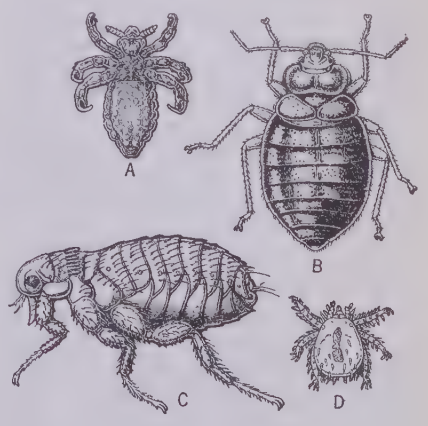
It is known that plague is primarily a disease of rats and other rodents. It is spread from rat to rat and from rat to man by the rat flea which, as it bites and sucks the blood of a diseased animal, receives a supply of the germs (*Bacillus pestis*) and then passes them on to the healthy animal or man that it bites



Rat Proofing

The filling of wall spaces with cement to exclude rats.

later. The effective control of this disease depends upon destroying and eradicating rats, and upon preventing them from breeding in and about the living-quarters of man. To accomplish these ends, houses and barns should be built or made rat-proof by the screening of all openings near the ground, by building tight foundations and by pouring cement between the joists to sufficient depth so that the rats cannot gnaw their way through. Collections of garbage and refuse should be kept in closed containers. It is especially important that granaries be kept in rat-proof condition. To prevent the importation of infected rats and their fleas from other countries of the world, especially from countries where plague is prevalent, incoming ships are fumigated to destroy rats, and the mooring lines are protected with large, metal collars so that escaping rats which attempt to come ashore on the lines cannot pass.



Some Insect Parasites

A. Body louse, *Pediculus vestimenti*; B. Bed bug, *Cimex lectularius*; C. Rat flea, *Ceratophyllus fasciatus*; D. Jigger, *Chigger*.

Other Diseases Spread by Insects. There are many other diseases which are regularly or occasionally spread by insects. Typhus fever (ship, jail, camp fever) is spread by the bite of the body louse. Improvements in personal cleanliness have resulted in the

practical control of this disease by the elimination of lice. When the practice of cleanliness breaks down, as in time of war, typhus fever usually takes its toll of health and life.

Certain kinds of mosquitoes are responsible for the spread of yellow fever, filariasis and dengue fever in parts of the world where these diseases occur. Tsetse flies are chiefly responsible for the spread of sleeping sickness in Africa. A particular kind of blood-sucking fly (*Chrysops*) spreads the germs of tularemia, a disease which occurs in the United States in wild rabbits and other animals, and which is occasionally contracted by hunters and by persons who handle infected rabbits. Some kinds of ticks carry the germs of Texas fever of cattle and Rocky Mountain spotted fever in the United States and of relapsing fever of Africa. It is not entirely certain, but it is suspected, that various bedbugs are partly responsible for the spread of tularemia in the United States, European relapsing fever, Indian kala-azar and South American trypanosome disease. In addition to typhus fever, lice are known to spread trench fever, and Asiatic, European and Algerian relapsing fevers.

Health Departments and Public Hygiene. Sufficient evidences have been given that personal and public hygiene are intimately interrelated. There can be no healthy community without healthy individuals. The practice of personal hygiene devolves essentially upon the individual, but the individual cannot entirely safeguard his personal health except by concerted and coöperative action with other individuals. Many problems of sanitation, like those associated with water supplies, sewage disposal and the control of insects, are clearly community problems. In addition, there are many others with which the individual cannot cope single-handed. The proper care, treatment and prevention of disease requires the availability of hospitals, clinics, sanatoriums and other types of organizations, the provision of laboratories to aid in the diagnosis of disease, the supervision of food supplies and of food-handling establishments, the provision of statutes concerning disease prevention and of means for their enforcement, the maintenance of staffs of experts on sanitary building design, ventilation, industrial hygiene, school hygiene, the provision of physicians and nurses in the examination of school children, and many other community organizations. Finally, experience has demonstrated that common welfare requires that there be available experts in the public teaching of hygiene so that the fruits of discovery and invention in medical and related subjects shall be carried to the public and made available for effective utilization. To these ends modern urban and rural communities arm and equip themselves with health departments.

The organization of a health department depends upon the size and nature of the community. In American cities, the department is usually under the direction of a commissioner of health who is appointed by the mayor or other chief executive officer. The commissioner of health usually operates with the advice and approval of a board of health.

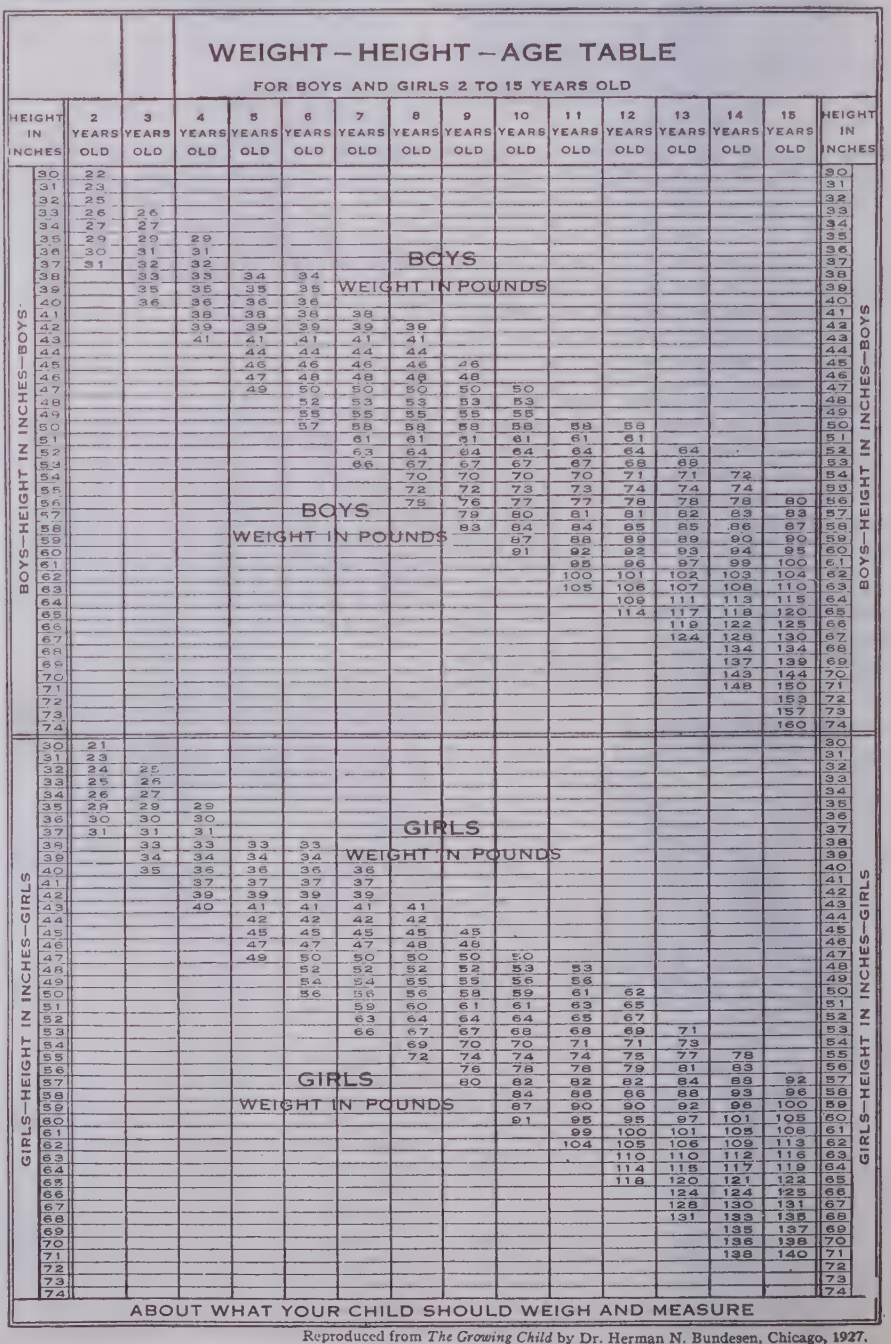
Under a commissioner of health most commonly the bureaus are those concerned with:

(1) Communicable diseases,
(2) Sanitation (water supply, sewage disposal),
(3) Laboratories (diagnosis of disease, distribution of antitoxins, vaccines),
(4) Child, maternity and school welfare,
(5) Food and drug inspection,
(6) Public health nursing,
(7) Public health education,
(8) Vital statistics.

In some places these functions are divided among more, and in other places they are combined in fewer, bureaus.

City departments of health are in a measure supervised and their activities are coördinated by state departments of health. The health problems that concern the mutual relations of the state and inter-state traffics are supervised by the various departments of the federal government, chiefly the United States Public Health Service of the Treasury Department, although the Departments of Agriculture, Commerce, Labor, Interior and other Departments each performs important public health functions.

The Trend of the Public Health. There is no doubt that the general trend of public health has been decidedly towards improvement. To be sure, there are still great epidemics of disease that sweep through the population, as witness the epidemic of influenza of 1918-1919; but many diseases have been so effectively controlled that some which were common a century ago are now rare,



Reproduced from *The Growing Child* by Dr. Herman N. Bundesen, Chicago, 1927.

and a few are rapidly approaching extinction. More than one-third of the illness that disabled man and a third of the deaths of persons who went to their graves prematurely, have been prevented in half a century. It cannot be said that the ultimate span of life has been changed: man still does not often exceed a hundred years of life. But the average length of life has been increased from something like thirty-five to approximately fifty-five years in communities which are progressive in the practice of sanitation and hygiene. These accomplishments have been due particularly to the revolution effected in medical science by the germ theory of disease, improvements in standards of living and by mechanical and industrial applications of chemical and physical science. One of America's greatest leaders in public health (the late Dr. Herman M. Biggs) said: "Public health is purchasable. Within natural limitations a community can determine its own death rate." And the Department of Health of the State of New York adopted these as its watchwords.

In the following tables and paragraphs appear some vital statistics for the United States to indicate more precisely some facts about births, infant and adult mortality.

Table of Heights and Weights Based Upon the Report of the Medico-Actuarial Investigation Covering an Analysis of 221,819 Men and 136,504 Women

TABLE OF AVERAGE HEIGHTS AND WEIGHTS—MEN

Age	5 ft. 0 in.	5 ft. 1 in.	5 ft. 2 in.	5 ft. 3 in.	5 ft. 4 in.	5 ft. 5 in.	5 ft. 6 in.	5 ft. 7 in.	5 ft. 8 in.	5 ft. 9 in.	5 ft. 10 in.	5 ft. 11 in.	6 ft. 0 in.	6 ft. 1 in.	6 ft. 2 in.	6 ft. 3 in.	6 ft. 4 in.	6 ft. 5 in.
15	107	109	112	115	118	122	126	130	134	138	142	147	152	157	162	167	172	177
20	117	119	122	125	128	132	136	140	144	148	152	156	161	166	171	176	181	186
25	122	124	126	129	133	137	141	145	149	153	157	162	167	173	179	184	189	194
30	126	128	130	133	136	140	144	148	152	156	161	166	172	178	184	190	196	201
35	128	130	132	135	138	142	146	150	155	160	165	170	176	182	189	195	201	207
40	131	133	135	138	141	145	149	153	158	163	168	174	180	186	193	200	206	212
45	133	135	137	140	143	147	151	155	160	165	170	176	182	188	195	202	209	215
50	134	136	138	141	144	148	152	156	161	166	171	177	183	190	197	204	211	217
55	135	137	139	142	145	149	153	158	163	168	173	178	184	191	198	205	212	219

TABLE OF AVERAGE HEIGHTS AND WEIGHTS—WOMEN

Age	4 ft. 8 in.	4 ft. 9 in.	4 ft. 10 in.	4 ft. 11 in.	5 ft. 0 in.	5 ft. 1 in.	5 ft. 2 in.	5 ft. 3 in.	5 ft. 4 in.	5 ft. 5 in.	5 ft. 6 in.	5 ft. 7 in.	5 ft. 8 in.	5 ft. 9 in.	5 ft. 10 in.	5 ft. 11 in.	6 ft. 0 in.
15	101	103	105	106	107	109	112	115	118	122	126	130	134	138	142	147	152
20	106	108	110	112	114	116	119	122	125	128	132	136	140	143	147	151	156
25	109	111	113	115	117	119	121	124	128	131	135	139	143	147	151	154	158
30	112	114	116	118	120	122	124	127	131	134	138	142	146	150	154	157	161
35	115	117	119	121	123	125	127	130	134	138	142	146	150	154	157	160	163
40	119	121	123	125	127	129	132	135	138	142	146	150	154	158	161	164	167
45	122	124	126	128	130	132	135	138	141	145	149	153	157	161	164	168	171
50	125	127	129	131	133	135	138	141	144	148	152	156	161	165	169	173	176
55	125	127	129	131	133	135	138	141	144	148	153	158	163	167	171	174	177

Copied from *The Chemistry of Food and Nutrition* by H. C. Sherman, Macmillan, 1927.

VITAL STATISTICS

It will be observed from the table of figures that in 1926 (the last year for which full official figures are available) there were something over 1,200 deaths in each 100,000 persons in that portion of the United States for which records are available (the Registration Area for Deaths—including 90 per cent of the country's population). Of this total mortality, more than 960 deaths in each 100,000 persons (approximately 80 per cent of the total) were due to fifteen causes of death.

Death Rates per 100,000 Estimated Population in the United States: 1926

(Arranged in order of importance)

	All Causes	1222.7
1.	Diseases of the heart	199.1
2.	Influenza and pneumonia	99.3
3.	Acute and chronic diseases of the kidneys	98.3
4.	Cancer, etc.	94.9
5.	Diseases of the brain, etc.	89.0
6.	Tuberculosis (all forms)	87.1
7.	Diseases of early infancy	71.5
8.	External causes (other than suicide, homicide and automobile accidents)	60.7
9.	Bronchitis and broncho-pneumonia	50.5
10.	Intestinal diseases (diarrhea, etc.)	33.6
11.	Diabetes	18.0
12.	Automobile accidents	17.9
13.	Unknown or ill-defined diseases	17.8
14.	Appendicitis, etc.	15.0
15.	Suicide	12.8
	Total for fifteen named causes	965.5

These figures have been compiled from the report of the U. S. Bureau of the Census, *Mortality Statistics* (1926, Part II, p. 39).

It is illuminating to study the data in this brief compilation. The striking facts are that diseases of the heart are, by a considerable margin, the principal cause of death; influenza and pneumonia come second; diseases of the kidneys, third; cancer, fourth; and so on. Figures of this sort are sometimes analyzed by considering groups of causes of death. Thus, items 1, 3, 4, 5 and 11—representing causes of death that are called the "degenerative" diseases, principally because they usually occur late in life and are concerned with the break-down of tissues or organs—were responsible for a combined death rate of approximately 500 deaths per 100,000 persons (over 40 per cent of the total mortality); items 2, 6, 9 and 14—fatal infectious diseases—accounted for 250 deaths in each 100,000 (about 20 per cent of the total); and items 7, 8, 10, 12, 13 and 15—the remaining principal causes in this list of 15—caused over 200 deaths per 100,000 persons (something over 17 per cent of the total).

This type of analysis is somewhat fallacious because it presumes that the degenerative diseases can be set apart from the infectious diseases. It may be that cancer is not caused by parasites and is not infectious. It is not inconceivable that certain diseases of the brain, heart, arteries, kidneys and so forth, are not infectious. But there is not the slightest doubt that a large fraction, perhaps most, of the fatalities caused by these "Hosts of Death" are definitely bacterial infections.

It is of interest to comment on the fact that many of the diseases which were listed earlier among the principal communicable diseases are not among the fifteen principal causes of death. This is in part a reflection of the fact that many of the commonest diseases are mild and non-fatal; that when they are severe they are most dangerous not because they themselves kill, but because they lead to secondary diseases (like broncho-pneumonia and nephritis) which are deadly; and that many of them (like typhoid fever and diphtheria) have been extensively controlled and reduced.

In thirty-five States, the District of Columbia and the Virgin Islands, the recording of births was sufficiently accurate in 1927 so that these communities were included in the Birth Registration Area of the United States Bureau of the Census. In that year (the last for which official statistics are available in final form) the area included 104,000,000 persons (87 per cent) of the 119 millions in continental United States. In the area there were recorded in 1927, 2,137,836 live births or 20.6 per 1,000 population. In the same period there were 1,176,805 deaths in the same population (11.4 per 1,000 population). The birth rate exceeded the death rate by 81 per cent of the latter, indicative of an extremely high state of national vitality. There were 82,931 stillbirths (3.9 per 100 live births) and 138,017 infant deaths (64.6 per 1,000 live births). The infant mortality rate (64.6) has been declining very rapidly in recent years and is the most certain sign of the application of medical, educational and public health knowledge to the conservation of human life. Not more than fifteen years ago rates of infant mortality of from 125 to 175 (infant deaths per 1,000 births) were not uncommon. Infant mortality has been cut in half and improvements are still occurring.

The principal causes of infant deaths are (1) infectious diseases of the respiratory tract, (2) disorders of the intestinal tract (largely infectious) and (3) conditions concerned with defects in the development of the child's body, accidents and injuries of birth and so forth. A decade ago approximately one-third of all infant mortality was caused by each of these groups of causes. The reductions in infant mortality that have been effected have, however, been almost entirely in the first and second groups. Consequently, group (3) is now responsible for a relatively increased proportion of infant deaths. Thus in 1926 diseases of group (1) (respiratory) were responsible for 25 per cent, group (2) (intestinal) for 18 per cent, and group (3) (congenital) for 57 per cent of all infant deaths.

TABLES OF FOOD VALUES

At least one food from each of the three groups should be in each meal every day.

Name of Food	Measure	Wt. Oz.	Total Calories	Group I—Protective Foods: Vitamin A — Gives Strength, Aids Growth, Prevents Some Eye Diseases And Builds Resistance	Vitamin B — Builds Appetite, Helps Growth, Prevents Beri-Beri	Vitamin C — Builds Health, Prevents Scurvy	Vitamin D — Makes Strong Bones, Prevents Rickets
Meat, Fish, Poultry							
Bacon	Average Helping	½	100				
Beef, Lean	Average Helping	4	200				
Fish, Fresh	Average Helping	4	133				
Fish, Dried	Average Helping	4	133				
Ham, Boiled	Average Helping	2	150				
Heart, Beef	Average Helping	2	100	XX			
Lamb	Average Helping	1 3/5	100				
Kidney	Average Helping	2	100	XX	XX		
Liver, Calves	Average Helping	2 4/5	100	XX	XX		
Mutton, Roast	Average Helping	1 1/5	100				
Oysters	Average Helping	5 2/5	75				
Pork Chop	Average Helping	2 2/5	200				
Suet	Average Helping	½	100	X			
Sweet Breads	Average Helping	4	133	XX			
Fruits, Fresh							
Apples	½ Large	3 3/4	50		XX	XX	
Bananas	1	4 1/8	75			XX	
Cherries	Average Helping	1 1/8	25			XX	
Grapefruit	½ Large	7 1/2	100		XX	XX	
Grapes	Average Helping	3 2/3	100		X		
Lemons, Limes	Average Helping	½	6		XX	XXX	
Oranges	1 Medium	7 1/8	75	X	XX	XXX	
Peaches	3 Medium	10½	100	XX		X	
Pears	2 Medium	6 1/3	100		X		
Pineapple	Average Helping	8 1/5	100	XX	XX	XXX	
Plums	Average Helping	4 2/5	100			X	
Raspberries	Average Helping	1 3/4	53			XXX	
Rhubarb	Average Helping	3 4/5	25			XXX	
Strawberries	Average Helping	4 1/2	50			XXX	
Fruits, Dried							
Dates, Whole	Average Helping	1	100				
Figs	Average Helping	2 1/5	200				
Prunes	Average Helping	1 2/5	100				
Raisins	Average Helping	1	100				
Nuts	Average Helping	½	100	X	XX		X
Sugar and Sweets							
Sugar	Average Helping	2/5	50				
Honey	Average Helping	1	100				
Molasses	Average Helping	1 3/5	133				
Syrup	Average Helping	1 1/2	100				
Tapioca	Average Helping	1	100				
Cake	Average Helping	1 1/2	150				
Miscellaneous							
Cocoa	Average Helping	½	75				
Yeast	Average Helping	⅓	20				

"X" means contains some of the substance.
"XX" means has enough of the substance.
"XXX" means is very rich in the substance.

Name of Food	Group II—Body-Building and Regulating Foods: Protein — Builds Muscle and Tissue	Iron — Builds Teeth and Bone	Lime or Calcium — Builds Teeth and Bone	Phosphorus — Builds Nervous System	Cellulose or Roughage — Regulates Digestion	Group III—Heat and Energy-Giving Foods: Fats	Carbohydrates: Starches	Carbohydrates: Sugars
Meat, Fish, Poultry								
Bacon	X					XXX		
Beef, Lean	XXX	XXX		XXX		X		
Fish, Fresh	XX	XX		XXX				
Fish, Dried	XXX	X		XX				
Ham, Boiled	XXX	X		X		XXX		
Heart, Beef	XX							
Lamb	XX	X		X		XX		
Kidney	XX							
Liver, Calves	XX	XXX		XX				
Mutton, Roast	XX	X		X		XX		
Oysters	XX	XXX		XXX				
Pork Chop	XXX	X		XX		XXX		
Suet						XXX		
Sweet Breads	X							
Fruits, Fresh								XX
Apples								XX
Bananas								XX
Cherries								XX
Grapefruit								XX
Grapes								XX
Lemons, Limes								XX
Oranges		X	XX					XX
Peaches								XX
Pears								XX
Pineapple								XX
Plums								XX
Raspberries								XX
Rhubarb		XX						XX
Strawberries								
Fruits, Dried		X			X	X		XXX
Dates, Whole			XX		X			XXX
Figs		X			X			XXX
Prunes		X			X			XXX
Raisins						XXX		XX
Nuts	XXX							
Sugar and Sweets								XXX
Sugar								XXX
Honey								XXX
Molasses								XXX
Syrup							XXX	
Tapioca						XX		XX
Cake	X							
Miscellaneous						XX		XX
Cocoa	XX							
Yeast		XX						

A whole grain cereal or whole grain bread should be served every day.
Drink from four to eight glasses of water daily, some between meals

Name of Food	Measure	Wt. Oz.	Total Calories	Group I—Protective Foods: Vitamin A — Gives Strength, Aids Growth, Prevents Some Eye Diseases And Builds Resistance	Vitamin B — Builds Appetite, Helps Growth, Prevents Beri-Beri	Vitamin C — Builds Health, Prevents Scurvy	Vitamin D — Makes Strong Bones, Prevents Rickets
Milk & Milk Products							
Buttermilk	1 Glass	8	85	X	XX	X	
Milk, Whole	1 Glass	8	170	XXX	XX	X	
Cheese, American	Average Helping	2/3	89	XX	XX		
Cheese, Cottage	Average Helping	2	62				
Cream	Average Helping	1	50	XXX	XX	X	
Butter	Average Helping	½	100	XXX			
Ice-Cream	Average Helping	5	320	XXX			
Fat and Oils							
Animal Fat	Average Helping	2/5	100				
Vegetable Oils	Average Helping	2/5	100				
Cod Liver Oil	Average Helping	2/5	100	XXX		XXX	XXX
Bread and Cereals							
Bread, White	Average Helping	2/3	50				
Bran, Wheat	Average Helping	3/5	54		XXX		
Cornmeal	Average Helping	6	100				
Hominy	Average Helping	4 3/4	70				
Macaroni	Average Helping	2 3/5	50				
Oatmeal	Average Helping	5 1/4	67		XX		
Rice	Average Helping	4	100		XX		
Wheat, Kernel	Average Helping	2/3	75	XX	XXX		
Eggs							
Eggs, Whole	1	2 1/2	70	XXX	X		
Eggs, White	1	1	14				
Eggs, Yolk	1	3/5	56				X
Vegetables							
Asparagus	Average Helping	1 1/2	10		XXX		
Beans, Navy	Average Helping	1 3/4	171		XXX		
Beans, String	Average Helping	1 1/3	15	XX	XX		
Beets	Average Helping	2	25	X	X	X	
Brussels Sprouts	Average Helping	2	20	XX	XX	XX	
Cabbage	Average Helping	1 1/8	10	XX	XXX	XXX	
Carrots	Average Helping	4	40	XX	XX	X	
Cauliflower	Average Helping	2 1/3	20	XX	XX	XX	
Celery	Average Helping	1 1/5	6		XX	X	
Greens, Dandelion, Turnip	Average Helping	4 1/3	75	XX	XX	XXX	
Lentils, Dried	Average Helping	1 1/5	150		XX		
Lettuce, Cress, Chard, Endive	Average Helping	2 1/3	12	XX	XX	XXX	X
Okra	Average Helping	2	20		XX		
Onions	Average Helping	7 1/5	100		XX	XX	
Peas, Dried	Average Helping	2 4/5	253				
Peas, Green	Average Helping	1 3/4	50	XX	XX	XXX	
Potatoes, White	Average Helping	3 3/5	100	X	XX	XX	
Potatoes, Sweet	Average Helping	6	200	XX	X		
Radishes	Average Helping	1 1/5	10	XX		X	
Spinach	Average Helping	5 1/4	25	XXX	XXX	XXX	
Squash	Average Helping	3 7/6	55	XX			
Tomatoes	Average Helping	3 4/5	25	XX	XXX	XXX	
Turnips, White	Average Helping	2 1/4	25		XX		
Turnips, Yellow	Average Helping	2	17	XX		X	

Use at least one-half pint of milk daily for each adult, and a pint for each growing child.
In addition to potatoes, serve daily one green vegetable, a salad and fruit in some form.

Name of Food	Group II—Body-Building and Regulating Foods: Protein — Builds Muscle and Tissue	Iron — Builds Teeth and Bone	Lime or Calcium — Builds Teeth and Bone	Phosphorus — Builds Nervous System	Cellulose or Roughage — Regulates Digestion	Group III—Heat and Energy-Giving Food: Fats	Carbohydrates: Starches	Carbohydrates: Sugars
Milk & Milk Products								
Buttermilk	X		XXX					
Milk, Whole	X		XXX	X		XX		
Cheese, American	XXX		XX	X		XXX		
Cheese, Cottage			XXX					
Cream				X		XXX		
Butter						XXX		
Ice-Cream						XXX		XXX
Fat and Oils								
Animal Fat						XXX		
Vegetable Oils						XXX		
Cod Liver Oil						XXX		
Bread and Cereals								
Bread, White	X						XXX	
Bran, Wheat	XX	XX		XX	XXX			
Cornmeal							XXX	
Hominy							XX	
Macaroni							XXX	
Oatmeal	XX						XXX	
Rice	XX						XXX	
Wheat, Kernel	X		X			X	XXX	
Eggs								
Eggs, Whole	XXX		XX			XX		
Eggs, White	XX							
Eggs, Yolk	X	X	X			XX		
Vegetables								
Asparagus					XX			
Beans, Navy	XX	XX	XX	XX		X	XX	
Beans, String	X	X	X					
Beets						XX		
Brussels Sprouts			X		X			
Cabbage			X		XX			
Carrots			X		XX		X	
Cauliflower			XX					
Celery			X		XX			
Greens, Dandelion, Turnip		XXX	XX	X	XX	X		
Lentils, Dried	XX			XX				
Lettuce, Cress, Chard, Endive		X			XX			
Okra			X		X		X	
Onions			X	X	XX			
Peas, Dried	XX	XX		XX				
Peas, Green	X	X	X			X		
Potatoes, White		XX		X			XX	
Potatoes, Sweet		X		X				XX
Radishes					X			
Spinach		XXX		X		X		
Squash					X			
Tomatoes		X	X					
Turnips, White					X			
Turnips, Yellow			X					

Use the chart in selecting those foods which will supply all the needed elements, giving preference to those marked "XX" or "XXX"

Reproduced from *The Growing Child* by Dr. Herman N. Bundesen, Chicago, 1927.

THE meaning and scope of physical education have changed greatly in recent years. When gymnastics and calisthenics were introduced into this country they formed a large part of our programs of physical education. However, these forms of exercise failed to meet the needs and interests of our American youth, and as a consequence attention gradually turned to games and sports to satisfy the desire for team play and the spirit of competition. During the World War, participation in sports events received a great impetus. The government placed major emphasis on games and sports and minor emphasis upon calisthenics and setting up exercises. Boxing, wrestling, football, baseball and other athletic activities were promoted in all the military training quarters. After the war, schools and colleges took up athletic games with a new interest. In recent years much has been done through the building of gymnasiums and stadiums as well as through the adding of more recreational activities to the physical education programs.

Physical education, as it is carried on in our schools, consists of baseball, basket ball, football, hockey, winter sports, water sports, camping and hiking, track and field events. These various activities are later described in detail (pp. 1019-42).

Much emphasis is being placed upon the educational values of physical education, and chief among these is sportsmanship. There is no better place to inculcate the ideals of being a true sport than on the athletic field. Almost every school or college now has its code of sportsmanship, and coaches and teachers of physical education are constantly keeping before boys and girls the ideals of this virtue.

The Sportsmanship Brotherhood, which devotes its work to the promotion of better sportsmanship, is aiding many schools and colleges in carrying out its code through chapters formed among student bodies.

THE CODE OF SPORTSMANSHIP

KEEP THE RULES.
KEEP FAITH WITH YOUR COMRADE.
KEEP YOUR TEMPER.
KEEP YOURSELF FIT.
KEEP A STOUT HEART IN DEFEAT.
KEEP YOUR PRIDE UNDER IN VICTORY.
KEEP A SOUND SOUL, A CLEAN MIND AND A HEALTHY BODY.

PLAY THE GAME.

Playing according to the code of sportsmanship will aid in building character, and this, in turn, is an important part of citizenship.

The program of intramural sports has developed in recent years in most of our grammar schools, secondary schools and colleges. It calls for the participation of all students in various athletic activities. It is typified by such slogans as "sports for all," "every student on a team," "everyone in a game" and "year round activity for all." Intramural activities in the various games and sports are carried out through interclass games. This system gives all, not only the few who are more skilled, a chance to learn and to play the various games.

It is the aim of physical education to urge everyone to participate in a game for the pleasure of the activity alone and its social benefits. This aids in the fostering of the spirit of amateurism. An amateur sport, according to the Intercollegiate Association of Amateur Athletics of America, is one "who engages in sports solely for the pleasure and physical, mental or social benefits he derives therefrom and to whom sport is nothing more than an avocation."



Courtesy Life's *Summer Camps*

Swimming in Camp

The director is instructing the boys in swimming and in the principles of life-saving.

An important phase of the physical education program is that of tests. A few of the common tests are described here and can be used as a part of the physical education program of our schools.

ATHLETIC BADGE TESTS FOR BOYS AND GIRLS

It is always a challenge to one's "desire to win" and "spirit to conquer," to endeavor to meet the mark set by somebody else or to make a new record of one's own. Realizing this tendency the Playground and Recreation Association of America has for a long time promoted athletic tests which serve as a measure of skill in various athletic events. These tests are divided into three groups. Boys and girls of twelve years should be able to pass the first group of tests, those of thirteen years of age should be able to pass the second, and boys and girls in high school should be able to pass the third group of tests. There is no age limit. Any boy or girl may enter them alone or in a group. They are based upon fundamental skills in the physical education activities of climbing, running, jumping and throwing and have been built on these fundamental activities. In order to pass one group of tests it is necessary to meet the set requirements in four of the events, one from each of the four classes, such as climbing, running, jumping and throwing. Spiked or plaited shoes are not to be used, but ordinary tennis or gymnasium shoes are permitted. The tests are slightly different for boys than for girls. They have been carefully worked out so as to meet physiological differences of boys and girls as well as to satisfy their varied interests in certain activities. Attractive badges for boys and for girls are prepared for those who pass the three tests. These badges may be secured from the Playground and Recreation Association of America when the tests are taken according to regulations.

Athletic Badge Tests for Boys. *First Test.* The tests for boys are based upon the fundamental physical activities of running, jumping, climbing and throwing. They take into account the physical ability of the boys at the respective age levels. The first of this group of tests has two options. It consists of either the pull up (chinning) four times or of climbing a rope, using both hands and legs, to a height of twelve feet. A portable chinning bar may be erected in an ordinary doorway or the horizontal bar in the gymnasium or even the rungs of a ladder set at an angle against a building may be used. The rope, in the rope climbing event, is to be one and one-fourth inches in diameter, with points marked on it with white or colored string or cloth, at the twelve-foot height and the sixteen-foot height. The start should be made from a standing position without jumping up a part of the way.

The second test of this group is the standing broad jump. The required distance is five feet nine inches. It is advisable to have a jumping pit to land in. This can easily be made by digging up the ground with a spade and raking it down until it is soft and smooth. There should be a wooden or metal

strip two inches by five inches imbedded in the ground to use as a "take-off." In the standing and running broad jump the toes must not project over the front of the take-off or touch the ground in front of it. This is called a "foul" and counts as a trial.

In the third test of this first group there is the choice of running the sixty-yard dash in nine seconds, or running the fifty-yard dash in eight seconds. In all of the running events it is desirable to have a stop watch in order to be accurate in keeping records. Judges are necessary in order to make the tests accurate.

In the fourth test of this series there is the choice of throwing a baseball for accuracy or for distance. To throw for accuracy it is necessary to throw three strikes out of six throws. The target is to be at a distance of forty feet and should be fifteen inches by twenty-four inches; it may be of wood or of canvas. This area represents the space of the plate which is called a "strike." The target should be suspended a few feet away from the backstop or the fence against which the balls are thrown. The lower edge of the target should be twenty-four inches from the floor. Correct pitching position should be maintained in throwing for the target. The playground ball may be used instead of the official league ball if the standard distance is maintained. Instead of throwing for accuracy the contestant may throw the same ball for distance, the requirement being one hundred thirty feet.

Second Test. In the first of this group of four tests the contestant may either do the pull up (chinning) six times or climb the rope, using both hands and legs, to a height of sixteen feet.

In the second of this group there is the choice of the standing broad jump for a distance of six feet six inches, or the running broad jump for a distance of twelve feet.

The third test of this series gives the contestant the choice of running the sixty-yard dash in eight seconds, or the one-hundred-yard dash in thirteen and two-fifths seconds.

In the fourth test of this group there is the baseball throw for accuracy, three trials out of five throws at a distance of forty-five feet, or the baseball throw for a distance of one hundred ninety-five feet.

Third Test. The contestant, in the first of this group of tests, may choose between the pull up (chinning) nine times, or climb the rope to a height of sixteen feet, using hands only.

In the second test he is given the choice of the running high jump of four feet four inches or the running broad jump of fourteen feet. In the high jump a thin stick (commonly a fishing pole) is used as the bar over which to jump. When the bar is knocked off it counts as a trial. The height is to be measured from the middle of the bar to the ground which, of course, should be level. Three trials are permitted at each height.

In the third test of this group the contestant may run two hundred twenty yards in twenty-eight seconds or the one-hundred-yard dash in twelve and three-fifths seconds.

In the fourth test there are three choices: the baseball throw for accuracy, throwing three strikes out of five throws at a distance of fifty feet, the baseball throw a distance of two hundred twenty feet, or the eight-pound shot put a distance of twenty-eight feet. A lead or iron shot, if the weight is correct, may be used. A seven-foot circle is used from which the shot is put. If the foot touches outside of the circle during the act of putting, it is a foul and the trial is lost. The farthest distance in three trials should be recorded.

Athletic Badge Tests for Girls. The tests for girls have been carefully worked out by those trained in physical education. These tests are made for general use and can be carried on under almost all circumstances. They include balancing for poise, muscular coördination and running for short distances. The elements of skill and speed are used wherever possible. Throwing events and special skills are also used in some games. There are three groups of tests as in the program for the boys, and four tests in each group.

First Test. The first of the first group is a balancing test, or the deep knee bend. In this test, instructions are given as follows: walk a distance of twenty-four feet on a balancing beam which is twelve feet long and two inches wide. (Two trials are permitted. An ordinary two-by-four-inch plank set on the two-inch side may be used.) Beginning at the center of the beam, walk toward one end without turning around; walk backward to the center, making a quarter turn either to the right or left; here make a deep knee bend, come to a full squatting position, resting on the heels; then rise to an erect position, make another quarter turn in the same direction as before and walk forward to the other end of the beam; turn around, walk back to the center at the starting point. This may sound easy, but it really takes a good deal of practice to perform this feat.

In the second test of this series there is the choice of the potato race in twenty-two seconds, the "all up" Indian club race in thirty seconds or the fifty-yard dash in eight seconds.

In the potato race, wooden cubes, bean bags or actual potatoes (if they are uniform in size) may be used. Five yards in front of the starting line a twelve-inch square should be made; five yards beyond this, a six-inch circle, five yards farther a second circle and five yards beyond this one a third circle. A "potato" should be placed in each of the circles. When the runner starts she picks up the nearest potato and places it in the square, runs to the farthest circle and picks up the potato, touches the square with it and replaces it in the farther circle. She then runs back, picks up the other potato and places it in the nearer circle and returns to the starting line. She may not drop or throw the potato but must place it carefully each time. The total running distance in this event is seventy yards.

For the "all up" Indian club race, the rules are as follows: draw two circles side by side, each circle measuring three feet in diameter. Place three Indian clubs in one of the circles. Thirty feet from the center of these circles make a starting line. The contestant runs up to the circle from the starting line, takes the three clubs from the one circle and puts them in any other. The contestant then runs back to the starting point. She makes three such trips, finishing at the starting line. In moving the clubs from one circle to the other, only one hand may be used. The total distance of this event is sixty yards.

The contestant, in the third test of this group, may either throw the basket ball a distance of thirty-five feet or throw the twelve-inch indoor baseball for accuracy, making two out of five throws at a distance of twenty-five feet. The same sort of a target is used for the basket ball throw for accuracy as is described in the boys' baseball throw tests.

In the fourth test of this group there are four options: volley ball serve, making two completed serves out of five trials; tennis serve, making three out of six trials; basket ball throw from a ten-foot line, making two goals in five trials, or throw and catch a twelve-inch baseball, allowing only three errors. The volley ball net shall be eight feet in height. The serving line shall be twenty-four feet away from the net. The ball is to fall within a square ten feet by ten feet on the opposite side, ten feet away from the net.

In the tennis serve, mark off a space on some wall thirteen and one-half feet long and thirty inches high. The lower line should be thirty-six inches from the floor or ground. The server stands a distance of thirty-eight feet from the wall. The serving area is on a line which is thirteen and one-half feet, corresponding with the length of the area marked on the wall. This test may be done on a standard tennis court, but a second net must be stretched above the regular net providing for a thirty-inch space between the two nets. The served balls are to go through the space.

In the basket-ball throw, either a regular basket-ball goal or a ring eighteen inches in diameter may be used. This goal should be placed ten feet above the ground. Circles, drawn on the floor with a radius of ten, twelve and fifteen feet, are used for throwing lines. The center of the circles is taken from a point on the floor directly beneath the center of the goal ring. A goal may be made by bouncing against the back board or by a clean throw into the basket.

For the indoor baseball throw and catch, a thirty-six-foot base line and a thirty-foot pitcher's box are used. A pit and three basemen are required. The contestant stands at home plate. She catches the ball from the pitcher, throws to first, catches the return throw from first, throws to second, catches the return throw from second, throws to third and catches the return throw from third base. In this way she catches four throws and in turn throws to each of the three bases. It is possible to make seven errors. Only three are allowed.

Second Test. The first of this group of tests is the balancing test with a book on the head. It includes the deep knee bend and covers a distance of twenty-four feet in two trials.

There are four choices in the second test of this group: the potato race in twenty seconds, the "all up" Indian club race in twenty-eight seconds, the run and catch in nineteen seconds or the fifty-yard dash in seven and three-fifths seconds.

In the run and catch a starting line is drawn, and thirty feet distant a cord is stretched ten feet from the ground and parallel to the starting line. At the word "Go" the contestant starts from the starting line, tosses a basket ball or volley ball over the cord, catches it and runs back to the starting line. This is repeated three times, ending at the starting point. Time is taken at the touch of the finish line on a third catch. If the ball is not caught it must be secured and tossed over the cord but may be tossed in either direction. The total distance of this event is sixty yards.

The third test of this series is the basket ball throw for distance of forty-five feet, or the twelve-inch indoor baseball throw for accuracy, throwing three trials out of six throws and a distance of thirty feet.

In the fourth test of this group there are four options: volley ball serve, completing three in six trials; tennis serve, completing three in five trials; basket ball goal throw from a twelve-inch line three in six trials, or the twelve-inch indoor baseball throw and catch, with only two errors allowed.

Third Test. The first in this group of tests is the balancing test with a book on the head, doing three deep knee bends, walking a twenty-four foot distance on the beam, and allowing only two trials.

In the second test there is the choice of the potato race in eighteen seconds, or the run and catch in seventeen seconds, or the fifty-yard dash in seven and one-half seconds.

The third test allows the contestant to choose the basket ball throw for a distance of fifty-five feet or the twelve-inch indoor baseball throw for accuracy, three strikes out of five throws at thirty-six feet.

In the fourth test of this series there are four options: the volley ball serve, three in five trials; the tennis serve, three in four trials; the basket ball goal throw from a fifteen-foot line, three in five trials, or the twelve-inch indoor baseball throw and catch, allowing only one error.

SWIMMING AND LIFE-SAVING TESTS

Safety in swimming is a watchword to all people taking part in games and sports at the water front, and the training of each and every person to take proper steps in an emergency is an important task.

In an endeavor to cope with the situation, the American National Red Cross has promoted, through its Life Saving Corps, a standard for requirements of tests in life-saving. Everyone should learn to pass these tests if possible, for it would be an added step to his own safety and a preparation for service to others in case of need.

It is said that by studying and practicing the methods and tests outlined by the American Red Cross, swimmers of even ordinary ability can train themselves to render service to a drowning person.

An important point for everyone to remember is that the best training in life-saving is to be able to care for oneself and to be thoroughly skilled in swimming. Swimmers should learn the approved methods of life-saving so that they may help in saving a drowning person with the least possible risk to themselves. They should know, for example, that it is always best to use a boat or life buoy or some such means of saving a life before getting into the water themselves. Should the latter be necessary, the person should be in good physical condition and skilled in all the technical points of life saving.

The tests outlined and described in these pages include those for beginners, for swimmers, for Junior life-savers and for Senior life-savers. The rules and regulations, based on and following closely those of the American Red Cross, may be stated as follows:

Beginners.

1. Jump into water over own depth, level off, swim 25 feet, make a sharp turn, and return 25 feet.

Swimmers.

1. Swim 100 yards, using two or more kinds of strokes.
2. Swim 50 feet on back, using legs only, and float.
3. Recover object in 6 to 8 feet of water, by means of surface dive.
4. Perform straight front or racing dive, in good form.
5. Witness demonstration of artificial respiration.

Junior Life-saving Test. To pass this test the swimmer must (1) be twelve years old or over, (2) have passed the swimmer's test and (3) have had at least six hours' preparation and practice.

1. In deep water, disrobe and swim 100 yards.
2. Surface dive in 6 to 8 feet, recovering various objects 3 times, and a 10-pound weight once.
3. Correct approach, 30 feet, and Head Carry, 30 feet.
4. Correct approach, 30 feet, and Cross Chest Carry, 30 feet.
5. Correct approach, 30 feet, and Hair or Arm-lock Carry, 30 feet.
6. Tired Swimmer's Carry, 30 feet, preceded by 30-foot approach.
7. Release double grip on one wrist. Left and right.
8. Release front strangle hold. Left and right.
9. Release back strangle hold. Left and right.
10. Resuscitation, 1½ minutes' demonstration, Prone Pressure method.

Senior Life-saving Test. To pass this test the swimmer must (1) be seventeen years old or over, (2) have had six hours' or more instruction and (3) be a member of the American Red Cross.

1. In deep water, disrobe and swim 100 yards.
2. Surface dive, recovering objects 3 times and a 10-pound weight once in 6 to 10 feet of water.
3. Front, rear, and under-water approaches, each with proper turn and carry.
4. Head Carry, 60 feet, preceded by 60-foot swim, proper approach and turn.
5. Cross Chest Carry, 60 feet, preceded by 60-foot swim, proper approach and turn.
6. Arm-lock or Hair Carry, 60 feet, preceded by 60-foot swim, proper approach and turn.
7. Tired Swimmer's Carry, 60 feet, preceded by 60-foot swim.
8. Front strangle hold, 4 times, 2 different positions.
9. Back strangle hold, 4 times, 2 different positions.
10. Double grip on one wrist, 4 times, using alternate wrists.
11. Two people locked in front strangle, and repeat, rescuing alternate subjects.
12. Demonstration, the Prone Pressure (Schaefer) method of resuscitation, 1½ minutes.
13. Essay on "Prone Pressure Method of Resuscitation" (200 to 500 words).
14. Float motionless, 1 minute.
15. Tread water, 30 seconds.
16. One minute Carry, subject fully dressed.
17. Fireman's or Saddle-back Carry from shallow water.
18. Explain method of lifting Subject from tank or on to float unassisted.
19. Oral quiz on life-saving, 5 questions.

Awards are available for completing each of these groups of tests. The beginners' award is the Red Cross Beginners' Button. The Junior Life-saving award is a membership card in the Red Cross and an emblem to be worn on the swimming suit. The award for the Senior Life-saving reward is a membership card in the Red Cross and an emblem for the bathing suit.

SWIMMING TEAM TESTS

Team-test Program for Swimming in Schools and Clubs. It is often difficult to work out a series of tests which may be used for schools, recreational clubs and summer camps. Often the tests are too difficult for younger boys and girls. The tests described here provide for a wide range of ability; they require no special facilities, and are suitable to neighborhood centers and school groups. The tests are organized on the basis of teams. All novice swimmers would belong to the third team and as soon as they are able to pass all the tests of the third team they will advance to the second team. After passing the second team tests they then belong to the first team (advanced swimmers). To add to the interest of the tests, emblems may be designed for each of these teams. Much interest can be developed by an individual or by groups in keeping records as to the date of passing the tests, or by keeping a record of the time made in some of the events. It is possible for a non-swimmer to work on these tests by himself and thereby learn to swim with little instruction.

Novice Swimmers or Third Team Tests.

1. Face float, 5 to 10 seconds, come to standing position.
2. Pick up puck, eyes open.
3. Ankle float (grasping ankles with hands), 5 seconds.
4. Tread water, 10 to 30 seconds.
5. Back float or scull, 5 to 10 seconds, come to standing position.
6. Push off, crawl, kick or scull, 20 feet.
7. Jump or dive in, swim 30 feet on face or side.
8. Deep water, vertical float and tread, 1 minute.

9. Bobbing, deep water (go down—come up), 3 times.
10. Coil, throw life line, tow a swimmer.

Swimmers or Second Team Tests.

1. Float, or scull, 2 minutes.
2. Tread water, 2 minutes.
3. Swim elementary back stroke or sculling stroke, 20 yards.
4. Dive in, swim side stroke or dog paddle, 40 yards.
5. Sink, save self, swim a few strokes, repeat 3 times.
6. Swim, collide, grasp partner (front and rear) free self, continue swimming.
7. Plain or racing dive.
8. Swim and stroke 3 lengths of the pool.
9. Swimmer's safety test, dive in, swim at least 50 yards, float and tread without touching support (5 to 10 minutes).
10. Surface dive, recover weight.

Advanced Swimmers or First Team Tests.

1. Swimmer's safety test, dive in, swim at least 100 yards, float and tread without touching support, 10 to 15 minutes.
2. Swim the side stroke, 100 yards.
3. Swim the crawl, 100 yards.
4. Swim crawl or side stroke at least 220 yards.
5. Approach, break back strangle hold against opposition 3 times.
6. Approach, break front strangle hold against opposition 3 times.
7. Any life-saving carry, 20 yards.
8. Resuscitation, 2 minutes.
9. Back crawl or breast stroke, 20 yards.
10. Racing starts, turns, plain dive.

PHYSICAL EFFICIENCY TESTS

The National Collegiate Athletic Association in 1922 worked out, on the basis of points, efficiency tests for freshmen. These valuable tests may easily be adapted to the use of third and fourth year high school students. Standards are set up in each event in order that each contestant may determine his own score, hence it is possible for any individual or a group to check up on physical ability by using these standard tests. There are four events in this series, the one-hundred-yard dash, the running high jump, the running broad jump and the bar vault. In these events three standards or scores are listed for each. For meeting the best test in each, three points are allowed; for the second best, two points, and for the third best, one point. In the hundred-yard dash one point is allowed for running the distance in thirteen seconds, two points in twelve and two-fifths seconds, three for eleven and three-fifths seconds. In the running high jump one point is allowed for three feet six inches, two points for three feet eleven inches and three points for four feet three inches. In the running broad jump one point is allowed for twelve feet one inch, two points for thirteen feet four inches and three points for fourteen feet four inches. In the bar vault one point is allowed for four feet, two points for four feet six inches and three points for four feet nine inches.

Pentathlon and Decathlon Tests. Many schools have as a part of their physical education programs Pentathlon and Decathlon tests. The names of these tests have come down to us from the days of the Ancient Greek Olympics. The Pentathlon consists of five events selected from the various athletic activities. The events selected are those which test skills in the various fundamental activities of running, jumping, throwing and climbing. Tests made up of these activities call for an all round development and skill. The Decathlon consists of ten events giving a wider range of activity for the contestant. Grouping physical education activities in the Pentathlon and Decathlon adds interest to the program.

In the elementary school the Decathlon and Pentathlon events are made up of stunts, potato races, rope climbing, running, broad jump, standing broad jump, fifty-yard dash, seventy-five-yard dash, basket ball goal throw, baseball throw for strikes, soccer distance kick, tennis serve, basket ball throw for distance, traveling rings, volley ball serve, push up, one-hundred-yard dash, eight-pound shot, tennis serve, soccer distance kick, basket ball goal kick, twenty-yard swim, basket ball pass, and other events selected for a special group. In the high school similar events may be chosen but all require a higher degree of skill and ability.

MOTOR ABILITY TESTS

Everyone likes to try himself out on stunts and is always ready to challenge somebody else to "try this one." Little does one realize that his ability to do certain stunts may be an index of his general motor ability. Present day programs in physical education are more and more taking into account the native ability of young people in organizing and carrying on physical education activities. Motor ability does play a very important part in this part of the physical education program. There are a number of achievement tests in physical education, but very few motor ability tests, which have been worked out scientifically. The Brace Motor Ability tests are highly authoritative. They consist of twenty stunts all of which anyone will enjoy and which at the same time serve as an index of his motor ability. See how many of them you can do.

Test 1. Walk in a straight line, placing the heel of one foot in front of and against the toe of the other foot. Start with the left foot. Take 10 steps in all, 5 with each foot. Eyes open. Failures consist of: (1) losing the balance and stepping out of line; (2) not walking in a straight line and (3) not placing heel to toe.

Test 2. Stand, jump into the air and clap both feet together once, and land with the feet apart (any distance). Failures consist of: (1) landing with the feet touching each other; (2) not clapping the feet in the air once.

Test 3. Lie flat on the back on the floor. Fold the arms across the chest. Raise the trunk to a sitting position. Do not raise the feet above the floor or unfold the arms. Failures consist of: (1) raising the feet above the floor (this does not include sliding the feet, which is permissible); (2) unfolding the arms; (3) not sitting up.

Test 4. Stand. Fold the arms behind the back. Kneel onto both knees. Get up without losing the balance or moving the feet about. Failures consist of: (1) losing the balance either going down or getting up; (2) moving the feet after standing up; (3) unfolding the arms.

Test 5. Take a front leaning rest position, that is, place hands on the floor, arms straight; extend the feet back along the floor until the body is straight (in an inclined position to the floor). Bend the arms, touching the chest to the floor, and push up again to straighten arms. Do this 3 times in succession. Do not touch the floor with the legs or waist. Failures consist of: (1) not pushing up 3 times; (2) not touching the chest to the floor each time; (3) resting the knees, thighs or waist on the floor at any time.

Test 6. Squat on the heels with feet together and knees out, and hands between the knees with fingers touching the floor. Spring up onto both heels, with legs straight and toes up, and swinging both arms out at the side, level with the floor. The feet should then be about 18 inches apart. Head up. Repeat this exercise 3 times (in all) rhythmically. Failures consist of: (1) not getting the arms and legs in position; (2) not doing it 3 times in succession without stopping.

Test 7. Stand with feet together. Jump into the air and make a full turn to the left, landing on the same spot. Do not lose the balance or move the feet after they strike the floor. Failures consist of: (1) not getting all the way around; (2) moving the feet after they strike the floor.

Test 8. Jump into the air and clap the feet together twice and land with the feet apart (any distance). Failures consist of: (1) not clapping the feet together twice; (2) landing with the feet touching each other.

Test 9. Stand on the right foot. Grasp the left foot behind the right knee. Bend and touch the left knee to the floor, and stand up without touching any other part of the body to the floor, or losing the balance. Failures consist of: (1) touching the floor with any part of the body except the left knee; (2) not touching properly and not standing with right leg straight, and losing the balance.

Test 10. Hold the toes of either foot in the opposite hand. Jump up and jump the free foot over the foot that is held, without letting go. Failures consist of: (1) letting go of the foot that is held; (2) not jumping through the loop made by holding the foot.

Test 11. Jump into the air and slap both heels with the hands behind the back. Failure consists of: not touching both heels.

Test 12. Stand, kick the right foot up so that the toes come at least level with the shoulders. Do not fall down on the floor. Failures consist of: (1) not kicking as high as the shoulders; (2) falling down and touching the floor with any part of the body other than the feet.

Test 13. Stand on the left foot. Bend forward and place both hands on the floor. Raise the right leg and stretch it back. Touch the head to the floor, and regain the standing position without losing the balance. Failures consist of: (1) inability to touch the head to the floor; (2) losing the balance and

having to touch the right foot down or step about.

Test 14. Stand with both feet tight together. Bend down, extend both arms down between the knees, around behind the ankles, and hold the fingers together in front of the ankles without losing the balance. Hold this position for 5 seconds (counted by scorer). Failures consist of: (1) falling over; (2) not touching and not holding the fingers of both hands together; (3) not holding the position for 5 seconds.

Test 15. Stand with both feet together. Swing the arms and jump up in the air, making a full turn to the right. Land on the same spot and do not lose the balance; that is, do not move the feet after they first strike the floor. Failures consist of: (1) not making a full turn and not landing facing in the same direction as at the start; (2) losing the balance and having to step about to keep from falling.

Test 16. Kneel onto both knees. Extend the toes of both feet out flat behind. Swing the arms and jump to the feet without rocking back on the toes, or losing the balance. Failures consist of: (1) having the toes curled under and rocking back on them; (2) not executing the jump, and not standing still on both feet.

Test 17. Fold the arms across the chest. Cross the feet and sit down cross-legged. Get up without unfolding the arms or having to move the feet about to regain the balance. Failures consist of: (1) unfolding the arms; (2) losing the balance; (3) not getting up.

Test 18. Stand on the left foot. Hold the bottom of the right foot against the inside of the left knee. Place hands on hips. Shut both eyes, and hold the position for 10 seconds, without shifting the left foot about on the floor. Failures consist of: (1) losing the balance; (2) taking the right foot down; (3) opening the eyes or removing the hands.

Test 19. Take a squat rest position. That is, place the hands on the floor between the knees and close to the feet. Bend the elbows slightly and place both knees well over the elbows. Rock forward onto the hands, raising the feet from the floor. Support the body on the hands. Hold the position for 5 seconds (as counted by the scorer). Failure consists of: (1) not keeping the body off the floor for 5 seconds.

Test 20. Stand on the left foot with the right foot extended forward off of the floor. Sit down on the heel of the left foot, without touching the right foot or hands to the floor. Stand full up without losing the balance. Failures consist of: (1) not sitting all the way down on the left heel; (2) touching the right foot or hands to the floor; (3) not standing up with left leg straight before touching the right foot.

How to Score. If you wish to know how you have scored on these tests the following tables will enable you to determine it. Keep a record of the number of tests that you were able to pass. Your score is the figure opposite the number of tests passed in Table I.

TABLE I—Ages eight to eighteen. The following table is used to convert the number of tests passed into a score.

Number of Tests Passed	Score
0	19
1	22
2	23
3	26
4	29
5	33
6	35
7	38
8	40
9	43
10	45
11	48
12	52
13	55
14	58
15	61
16	64
17	68
18	72
19	76
20	80

NOTE: It will be observed that even though no tests are passed, there is a minimum score. This is because no one is considered totally lacking in motor ability because the tests given do not cover every possible test.

TABLE II—Meaning of the Scores—In Table II locate your score in the proper place. You can then determine your percentage rating.

Scale Scores	Approximate Percentage Rating	Approximate Meaning
Above 50	50	Above average
Below 50	50	Below average
Between 40 and 60	66	The middle two-thirds
Above 60	16	The highest one-sixth
Below 40	16	The lowest one-sixth

GAMES, SPORTS AND RECREATIONS

INTEREST in all forms of games and recreations is increasing rapidly in America. Physical education in our schools and colleges is placing more emphasis upon all forms of recreational sports. The municipalities through their parks and playgrounds provide facilities for many different kinds of recreation and people are urged to participate. Enjoyment of sports and recreations is a most healthful and beneficial way to spend our leisure time. There are many games and sports which can be taken up by the individual or a small group. There are described here most of the popular games and sports. Included also are accounts of national clubs of boys and girls.

ARCHERY

Archery long ago ceased to be of life and death importance. The last notable use of bows in war was made by the Chinese, about 1860. But in the days of the early Edwards and Richard III in England, the long bow was England's chief defense against her enemies. The king commonly required the entire male population to practice with the bow every Sunday, and forbade all other sports. In Scotland, surreptitious golf gave the department of state a good deal of trouble.

Queer as all this is, archery as a pastime has kept much of its old fascination, as every boy knows; and the details of this modern game are sure to interest many.

The best bows are still made of yew, as they were six hundred years ago, and the best yew comes from Italy and Spain. But when yew was hard to get, the English armed their less skillful marksmen with witch hazel, ash and elm. If they had been able to get at the American hickory, the chances are it would have been used. The American Boy Scout handbook names mulberry, Osage orange, sassafras, Southern cedar, black locust, apple, black walnut, slippery elm, ironwood,



mountain ash, hickory, California yew and hemlock as suitable woods for bows.

The English long bow was usually five feet long. The practice now is to have it about as long as the bowman is. The stiffness of a bow is spoken of as its "weight," in the number of pounds pull required to draw a full-sized arrow to the head. A woman's bow now weighs twenty-four to thirty-two pounds, a man's bow forty to sixty pounds, and a Boy Scout's bow fifteen.

Like fishing rods, bows are made either solid or spliced, and are glued. The one piece, "self" bow has the pleasanter action, but costs more, and is more apt to warp or spring out of shape. All very long bows are likely to be spliced in the middle. The wood is rounded on the inside, toward the string, and flattened on the other side.

Experts say that it takes more skill to make a good arrow than to make a good bow. A perfect target arrow is quite a complicated affair. The main shaft is of pine, with a piece of hard wood to carry the metallic head. A square notch is cut for the string, and just forward of the notch three feather guides are attached, either by glue or by silk winding, fore and aft. If these feathers curve, it is important that they all curve the same way.

The string is best made of flax or linen, silk wound for the arrow head, and carefully waxed or glued.

Targets for the modern sport of archery are four feet in diameter, with a series of concentric rings four and four-fifths inches broad. The score is: inner circle, gold; nine points; inner ring, red, seven points; next ring, blue, five points; next ring, black, three points; outer ring, white, one point.

Popular distances now are forty, fifty and sixty yards—quite unlike in the days of Robin Hood. Of course the secret of this change lies

in the fact that the modern rifle begins where the best bowmen of Robin's day left off.

BADMINTON

Badminton is comparatively a recent game in America although it has been played in other countries for many years. It is becoming a most popular game because of its close relationship to tennis. It is an especially desirable game for younger children who like tennis; tennis rackets are too heavy for them while the badminton racket is very light.

Badminton can be played upon a tennis court using the same net. The doubles court is twenty feet by forty-four feet. On each side of the net there is a six-foot service line and back of that two thirteen-feet courts, one on either side, and the back boundary line is two and one-half feet wide. The singles court is practically the same but does not have a separate back boundary line; and the singles court is only seventeen feet wide. The rackets are similar to those used in tennis but much lighter and the handle is longer, resembling a squash racket. Instead of balls, shuttles are used. They weigh from seventy-three to eighty-five grains, and are made of cork one to one and one-half inches in diameter, and slightly weighted. Around the cork there is a row of fourteen to sixteen feathers from two and one-half to two and three-fourths inches in length. The "serve" is made the same as in tennis. The returns of the shuttle have to be made while it is in the air as it will not bounce from the ground. This makes the game interesting and very fast. As the shuttle is struck with a racket it goes swiftly for a short distance and then slows down suddenly. It requires accurate judgment to account for this change of pace in the travel of the shuttle. Scoring is similar to that of tennis and is easy to follow for a beginner.

Badminton is an especially desirable game because it does not require expensive courts and high fence protection. The shuttle never goes far and time is not lost in retrieving it.

BASEBALL

Baseball is played by two opposing teams of nine men each, on a field containing a diamond. A baseball diamond is a square, ninety feet on each side, with a base at each corner.

When a player makes a complete circuit of the four bases without being put out under the rules of the game, he has scored, or made a "run" for his team. The side making the larger number of runs during a game wins.

A standard game of baseball consists of nine innings. For the first half of the first inning, the captain of the home team chooses whether his men shall bat or take the field. After three men of the side first at bat have been put out, the teams exchange places, and so alternate throughout the game, each half inning continuing until three men have been put out.

A man at bat becomes a base runner (a) if he makes a fair hit (not a foul); (b) if the umpire calls four balls on the pitcher; (c) if under certain conditions a third strike called by the umpire is not caught and held by the catcher; (d) if the person or clothing of the batter is hit by a ball at which he does not strike, and which he makes a reasonable effort to avoid; (e) if the catcher interferes with his attempt to bat; (f) if a fair hit ball touches the person or clothing of an umpire or base runner before touching a fielder.

A player is declared "out" in any one of some thirty cases, the commonest being these:

(1) If he bats either a foul or a fair hit which is caught by an opponent before the ball touches the ground.

(2) If, while a batter, three strikes are called on him.

(3) If, while a base runner, he is touched by a ball in the hands of an opponent, unless some part of the runner's person is in contact with a base to which he is entitled.

(4) If he interferes with a player attempting to field a batted ball.

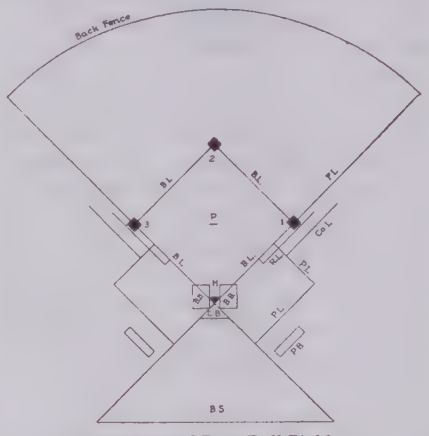


Diagram of Base Ball Field

B. B. Batter's Box; H. Home Plate; 1, 2, 3. Bases; P. Pitcher's Plate; C. B. Catcher's Box; P. L. Player's Lines; B. L. Base Lines; R. L. Runner's Lines; Co. L. Coacher's Lines; F. L. Foul Line; B. S. Backstop; P. B. Players' Bench.

(5) If, in running bases, he runs more than three feet from the base line, except to avoid an opponent who is fielding a batted ball.

Batsmen are passed to first base without liability to be put out (a) when four balls are called; (b) when hit by a pitched ball; (c) when the catcher interferes with batting; (d) when a fair hit ball strikes the person or clothing of an umpire or base runner before reaching a fielder; (e) if the umpire declares a "balk."

Base runners advance one base without liability to be put out:

(1) Whenever, by reason of any player receiving free advancement under the rules, two men would otherwise claim the same base. If, for example, all bases were full when a batsman is passed to first by four balls, the situation will bring in a score and still leave the bases full.

(2) If the umpire calls a balk.

(3) If the catcher allows a passed ball.

(4) If the base runner is blocked from a base by a fielder who has not the ball in his possession.

(5) If the catcher moves out of his position pending a throw by the pitcher.

An illegal catch of a batted ball gives all runners three bases; of a thrown ball, two bases; and in either case the runner may advance further at his own risk.

Materials. *Official Ball.* Reach or Spalding, cork center, yarn wound, horsehide cover, 9 to 9¼ in. circumference, 5 to 5¼ oz.

Bat. Hardwood, round, diameter not over 2¾ in., length not over 42 in.

Catcher's or First Baseman's Mit. Any size, shape or weight.

All Other Gloves. Weight not over 10 oz., size not over 14 in. around palm.

Protector. A padded or air-filled shield for the body of umpire and catcher.

Mask. A wire head gear for men working behind the bat, especially to protect against foul tips.

Leg Guard. A lower defensive armor for umpire and catcher.

Base. Stuffed canvas bag, 15 in. square, attached by its center at intersection of base lines, for first, second and third bases.

Home Plate. Five sided white rubber plate. Front 17 in., sides 8½ in., running along base lines 12 inches each.

Pitcher's Plate. White rubber, 24x6 in., located 60 ft. 6 in. from home plate.

Toe Plate, Heel Plate. Spiked to prevent slipping.

Grounds. *Diamond or Infield.* A square, 90 ft. on a side, within or near which the pitcher, catcher, basemen, and shortstop play their defensive game against the batsmen and base runners of the opposing team.

Outfield. The clear space beyond first, second and third bases, in which the three fielders work. The outfield should extend at least 235 ft. from the home plate.

Pitcher's Box. A position of the pitcher, in which one or both the pitcher's feet are touching the pitcher's plate.

Catcher's Box. A triangular space 10 ft. deep, behind the home plate. (See diagram.)

Batter's Box. A rectangle 4x6 ft., at right and left of home plate, 6 in. from the plate.

Player's Lines. Enclosed rectangles 50x74 ft. along base lines each side of home plate, to be kept clear of all players not actually engaged in the game.

Coacher's Lines. Outside the diamond, 15 ft. from the foul line and parallel to it, near first and third, beyond the players' lines. One coacher may work along this line at first and one at third, but never within the line.

Runner's Line. Begins 45 ft. from home plate, runs parallel to base line, 3 ft. outside the diamond, to first base.

Backstop. A large upright frame covered with wire netting, at least 90 ft. behind home plate.

Grand Stand, Bleachers. No seats for spectators within 90 ft. of home plate or of foul lines. In outfield, no spectators or obstructions within 235 ft. of home.

Foul Lines. The base lines from home plate to first and third, and their continuation into the outfield.

Players' Bench. A bench at least 25 ft. outside player's lines, on which must be seated all players of the team at bat, unless actually batting, coaching or running bases.

Terms of Play. *Assist.* Any handling of the ball which directly aids in putting an opponent out is called an "assist" and is so recorded by the scorer.

Balk. One of the numerous motions forbidden chiefly to the pitcher. For example, the pitcher may not begin to throw to the batter or to first base without completing the throw; he may not throw to put out a base runner without stepping directly toward

the base he aims at. (See Reach or Spalding guides.)

Base on Balls. When a pitcher has made four throws to a given batsman, at which the batsman does not strike, and which do not pass over any part of the home plate, the batsman is entitled to become a base runner at first base. Certain other throws by the pitcher are also called balls. (See guides.)

Base Runner. A player who has ceased to be a batsman, and is on his way around the diamond, in an attempt to score.

Batting Order. A regular arrangement of player's names, for succession in batting. Batting order cannot be changed during a game, except by the use of substitutes.

Block Ball. A ball which, while in play, touches any person not in the game. In case of block ball, the players running bases may advance until the ball is again in pitcher's hands.

Bunt, Bunt Hit. A form of batting in which the ball strikes the bat, instead of the bat striking the ball. A bunted ball is commonly a sacrifice, though a swift runner with a quick get-away may sometimes beat out a well-placed bunt, especially if there is indecision among the fielders as to who shall field the bunted ball. A bunted foul counts as a strike, even a third strike.

Called Game. A game terminated by the umpire because of rain, panic, fire, darkness or any other cause endangering players or spectators. Games called before the fifth inning is completed are commonly called no game.

Caught Stealing. The putting out of a base runner who is trying to make a base on the sly.

Chance. The opportunity of a fielder so to field a ball as to assist in retiring a base runner.

Double Play, Triple Play. A play in which two runners, or three, are put out in quick succession, by clever fielding.

Drawn Game. A game with a tie score, called by the umpire after five or more innings.

Earned Run. Scored when a player reaches home base by reason of safe hits, sacrifice hits, stolen bases, bases on balls, hit batsmen, wild pitches and balks, but not by reason of fielding errors or penalties other than those implied in this list.

Error. In general, any misplay in fielding which prolongs the life of an opposing batter or base runner.

Extra Innings. Play which runs beyond the regular nine innings, by reason of a tied score.

Fair Hit. A hit which settles on the foul line or inside the diamond, short of first or third base; a hit which, passing first or third base, bounds on fair territory or first strikes on fair territory.

Fly. A ball batted high in fair territory.

Forfeited Game. A game awarded by the umpire against an offending team, by reason of broken rules of play.

Foul, Foul Hit. (1) Short of first or third base, a batted ball which settles outside the diamond, or would so settle if not interfered with. (2) A batted ball which bounds past first or third in foul territory. (3) A batted ball which first lands on foul territory beyond first or third base.

Foul Strike. Fouls count toward the first two of a batter's three possible strikes. Foul bunts may count for all three strikes.

Foul Tip. A foul hit in which the bat merely glazes the ball.

Hit Batsman. A batsman whose person or clothing has been hit by a pitched ball which he made reasonable effort to avoid.

Homer, Home Run. A fair hit which goes so far that the batter is able to make a circuit of the bases before the ball can be fielded.

Infield Fly. Before two men are out, with runners on first and second bases, the umpire will declare "out" any man who bats a fair fly which can be handled by the infield, bunts excepted.

Passed Ball. A pitched ball which goes to the backstop 90 ft. behind home plate. In such case all runners advance one base.

Run. A complete circuit of the bases, resulting in a score.

Runs Batted In. Runs scored by reason of hits made by other players.

Sacrifice. A hit made for the purpose of advancing a base runner, though the batter expects to be put out.

Safe Hit. A hit which cannot be fielded in time to prevent the batter reaching first base.

Shut Out. When a team is prevented from scoring during an entire game.

Strike. In general, one of three batting opportunities, the loss of which will put a batsman out, or the act of losing one of these three opportunities. See opening discussion.

Time. Temporary suspension of play by the umpire.

Time at Bat. A lawful occupation of the batters' box which does not terminate in four balls, a hit batsman, a sacrifice hit or interference by the catcher.

Wild Pitch. A pitched ball so high or wide that it cannot be effectively fielded by the catcher.

Abbreviations in Baseball

AB. At Bat; BR. Bats Right-handed; BL. Bats Left-handed; R. Runs; H. Safe Hits; TB. Total Bases Batted; 2B. Two Base Hits; 3B. Three Base Hits; HR. Home Runs; SH. Sacrifice Hits; SB. Stolen Bases; BB. Bases on Balls; RBI. Runs Batted In; RRF. Runs Responsible For; CS. Caught Stealing; SO. Struck Out; PT. Percentage; DP. Double Play; TP. Triple Play; PB. Passed Ball; PO. Put Outs; A. Assists; E. Errors; TC. Total Chances; PR. Pitches Right-handed; PL. Pitches Left-handed; IP. Innings Pitched; ER. Earned Runs off a Given Pitcher; PTER. Percentage of Earned Runs; HB. Hit Batsman; HP. Hit by Pitcher; WP. Wild Pitch; B. BK. Balk; W. Won; L. Lost.

BASKET BALL

Basket ball is one of the best of games for both player and spectator. There is opportunity for personal prowess and for team work; quick thinking and quick action are at a premium; accuracy of motion and of judgment are necessary. The individual star has frequent opportunities to shine, but he will often be eclipsed if he does not use the good passwork of his team to support his personal brilliance. Attack and defense are so varied, so quickly shifting from one team to the other, that a moment's inattention may be very costly.

The side which has the ball attempts to advance it for a try at goal; the defending team meanwhile uses every legal effort to break the attack by getting possession of the ball.

Like all good games, basket ball is what it is largely because of its rules. These rules vary slightly from year to year, and vary with the quality of the players, there being separate sets of rules for women, for professionals and for male amateurs. Rules for women eliminate roughness, reduce the danger of falling, shorten the distances covered in running and in general adapt the game to the feminine physique. Amateur rules for men are in a number of respects intermediate between the vigorously combative game of the professionals and the non-interfering game played under women's rules. The following summary of play is founded on the amateur rules for men.

A basket ball court is a rectangle sixty to ninety-four feet long and thirty-five to fifty feet wide, with clearly marked sides and end lines. At the middle of each end, a "basket" is suspended ten feet above the floor, from a wire ring eighteen inches in diameter, carried by a back board four feet by six.

Free-throw lines are twenty-four inches long, directly in front of the baskets, seventeen feet from the end lines. Free-throw lanes are so marked that no player of either side may come within three feet of the ball during its progress from the free-throw line to the basket.

At the center of the court is a circle four feet in diameter, within which the ball is put in play by the referee at the beginning of the game and at various other times as provided by rule.

The object of the game is to score baskets or goals—each team attempts to throw or toss the ball through its own basket. A goal scored from the field in the ordinary course of the game counts two points; a goal secured from the free-throw line as the penalty for a foul committed by opponents counts one point.

Two classes of fouls are distinguished: Personal fouls are declared for forbidden roughness in personal contact, for holding a player or blocking his progress. For personal fouls, the penalties range from one free throw to the disqualification of the player for the remainder of the game. Four personal fouls of any sort during a game disqualify the player for the remainder of that game.

Technical fouls are called for other violations of the rules. For example, it is forbidden to carry the ball more than one step in any direction, to make a second dribble without first passing the ball to another player, to delay the game, to talk to officials during the game, and so on.

To "dribble" is to keep the ball moving, in one player's possession, by throwing, batting, rolling or bounding it with one hand. A dribble ceases if the ball comes to rest in one or both hands, if it touches both hands at once or if it touches a second player. The ball may be batted in the air only once during a dribble. A player may throw for goal after dribbling.

The ball is "dead," and is put in play at center by the referee after a goal is made, after the two free throws following a double foul, when the ball lodges in the supports of the basket or after a free-throw following a technical foul.

A ball becomes dead when it goes out of bounds. The last player who touches it

before it leaves the court is held to be the cause of its going out of bounds. The referee commonly designates the nearest opposing player to put the ball in play, by throwing, rolling or bounding it to another player in the court.

A ball is "held" when two opposing players have one or both hands on it, or when a closely guarded player is held by the referee to be withholding the ball from play. A held ball is dead until put in play by the referee at the spot where held, in the same manner as at the beginning of the game, except that a ball held in either end zone must be thrown out by a member of the defending team.

If the referee is unable to decide who is responsible for a ball going out of bounds, he declares a "jump ball" near the boundary line, between two players of his own choosing.

Team work, accuracy in handling the ball, speed, quickness and accuracy of judgment, cleverness in deceiving opponents all go to make the good player and the good team in basket ball. A good coach will invent a variety of snappy exercises to test and develop all these general qualities. He will also train for the actual situations of play. For example, several players must be able to throw baskets from the foul line, scoring at least three shorts in four; several players should specialize in the dribble; everybody should practice receiving a hotly-thrown ball while running toward the basket, instantly checking himself for the try-at-goal; baskets should be thrown from the field at long and short range, from all angles; a number of systems should be perfected for getting the ball down the field by passing, and so on.

BOWLING

A bowling alley must be sixty feet long from foul line to head pin; the rolling surface must be forty-one to forty-two inches wide—smooth, and perfectly level. Balls may not weigh more than sixteen and one-half pounds nor be more than twenty-seven inches in circumference, though any smaller size may be used. The ten "pins" are each fifteen inches high, turned from hard maple, with carefully standardized dimensions. Back of the foul line, which a bowler may not cross, is a runway of at least fifteen feet long. At the far end of the alley is the pit, for receiving balls and pins. Three inches from the pit a row of four circles mark the base of the pin pyramid. The next row contains three, the next two, making the total ten, with the head-pin. Pins are exactly twelve inches apart from center to center.

Any number of players may compete, each rolling one "frame" of two balls, in turn, until ten frames have been rolled. If the first ball rolled by any player knocks down all the pins, a "strike" is recorded, by marking an X in the upper right hand corner of the player's score for that frame. The final score for a frame in which a strike occurs cannot be recorded until two more balls have been rolled by this player, for the score in such a case consists of the sum of all pins knocked down in three shots by him. If all three shots should be strikes, the score for the first frame would be 30, and a game entirely made up of strikes would bring a score of 300. If all the pins are knocked down in two shots, a "spare" is noted by making a diagonal line in the upper right hand corner of the frame. The point score for that frame will count ten pins from these two shots, and whatever pins may fall from the first shot in the next frame. If this third shot is a strike, the score will be 20 for the frame in which the spare was made.

BOXING

Boxing, when conducted on a proper basis, is accepted as a desirable activity in the modern program of physical education. It is a contest of pluck, skill and endurance, and under competent instruction develops in the participants a sense of honor, integrity and fair play.

As a sport, boxing was in vogue among the early Greek and Roman athletes. In those early days the contestants armed their fists with strips of rawhide (the *cestus*), which were often loaded with iron or lead. In England, where boxing became immensely popular, rules were laid down which made its practice less brutal and laid the foundation for the dominance of intelligence over sheer strength.

Modern boxing is a contest of skill in which the contestants strike at each other with the closed fist which is covered with soft leather gloves stuffed with horsehair. With the use of boxing gloves came the adoption of new rules—the Marquis of Queensbury—so named after the title of their framer. Under newer and better rules boxing has forged ahead as a leading sport and exercise. The ancient spirit of fighting, often coupled with the emotion of anger, has given place to the modern spirit of clean sportsmanship.

General Suggestions. *Position.* Left arm, left foot advanced, right foot angled for a brace in starting, right heel slightly off ground, for quick action. Body quartering, left side forward, generally slightly crouched. Thumbs in the only safe position—the middle one.

Distance. Do not waste strength making or guarding blows which could not reach their mark. Work in, quickly, before you really attempt to land. Give as little warning as possible, make your blows snappy, with a quick get-away. In gauging distance by extending the arm, work around toward your left, away from the opponent's dangerous right arm, until you get your opportunity for leading in.

Muscles. Active, but not strongly contracted, except in the very act of striking or receiving a heavy blow.

Movements. Bend the body forward and back from hips; bend head, neck, shoulders and back quickly, freely, in all directions. These movements deceive the enemy as to distance, are useful in guarding and in covering and launching an attack.

It is exceedingly important to answer every blow you see coming, by a "counter blow," at the same time guarding against the one you have seen under way.

Follow up your successful blows with a "rush" and shower if you're sure it's safe—look out for opening yourself to a big blow of the knockout sort.

Seldom make big windmill swings. They are too obvious, and dangerous to the man who makes them. Save your big attacks for real openings. Don't put all your force in a blow that could be easily blocked, and probably will be.

Give first and most careful attention to defense. The chief means of guarding against attack are blocking, shoving aside a blow, stopping an opponent's blow by a quick counter blow, slipping, ducking and side stepping. Study the signs of a coming blow. The eye is the great tell-tale. Watch it!

To "block" is to receive on the fist or arm a blow meant for the body or head. In the instant of using one hand for blocking, watch for an opening for the other. Put only enough effort in the blocking motion to keep off the force of the blow. The right arm is the main guard. Don't send it too far out in blocking, or you will leave an opening.

Coming blows may be shoved aside either to right or left. It is occasionally possible to shove an opponent's right across to your right, or his left to your left, thus turning him partially around, making an opening and perhaps disturbing his balance. The open palm does well in blocking and shoving off blows.

"Stops" are quick counter blows with the left hand, shot out for the head or body in the instant you feel the enemy is going to strike. Stops are good when they beat the other fellow to it, and so surprise the force out of his blow or head it off altogether. While making stops with the left, change the guard of the right, to protect both body and face.

A "slip" is a sudden jerk of the head or body to right or left, letting a blow glance by. If the blow is from the opponent's right, slip to your right, and vice versa.

In boxing, a "duck" is a big slip, usually to avoid a big swing for the head. Guard the chin while ducking, and make a counter blow with the other hand.

A "side step" has three swift movements; retreat one step, spring to right one step, and turn to left, facing opponent.

A "feint" is a useful preparation for a lead. A short step forward with the left, a snappy blow which you know will not quite land, instant recovery, and instantly a longer step, with a real blow. Feinting is commonly done with the left hand. If with the right, feint for the head and lead for the body, or feint low and strike high. Feinting of course succeeds only when it causes the enemy to raise or lower his guard, leaving an opening. Feints are used also to draw leads from the enemy, which, being expected, can be blocked and countered, often to marked advantage. The feint and the real blow following are of course almost always by the same hand. A good feinter who is quick on his feet keeps his opponent guessing.

In general, hit with the palm down—a position which leaves the forearm ready to block or shove away a blow, as well as to attack. Practice all sorts of blows—straight out, hooks to right and left, uppercuts, jabs by the body twist and even the slugging windmill swings. To strike with weights in the hand is a practice that puts power in the blow of the empty hand later on.

John L. Sullivan changed the long-drawn brutality of old-time fist fights into a swift decisiveness, by the use of "knockout blows." Corbett and others perfected these blows and added variations. There are four main types

of knockout, and it is well to know all about them, possibly for offense, surely for defense. These four blows land (1) on the point of the chin or near it; (2) on the solar plexus, or pit of the stomach; (3) over the heart, and (4) on the neck close under the ear. The most painful of these is the stomach blow; the most temporary effect is from the blow under the ear.

Skill in boxing can come only through constant practice of a good many sorts. A punching bag is indispensable, as are chest weights, used in all possible positions.

Breathing exercises and long runs in the open are good for the "wind" and some quick-shifting game like squash is fine for speed on the feet. But most necessary of all are a wrestling mate for generally "mixing it up," and a sparring partner, preferably one more skillful than you.

BOYS' AND GIRLS' CLUBS

Boy Rangers. Up to 1913 there was no large organization which attempted to train boys between the pre-scout age of eight and twelve in habits of order, obedience and real growth. In order to supply this need, Mr. Emerson Brooks of Montclair, N. J., organized a local body called "Boy Pioneers." Later, after it became nationally known by being introduced into other states, the name was changed to "Boy Rangers of America."

The lore of the American Indian is the lure of the Boy Ranger idea. The boy "plays Indian" and builds character as he plays. A local organization is called a "lodge," and this is composed of "tribes," each tribe bearing an Indian name. Each boy is also given an Indian name.

Every applicant for membership must sign the following pledge, with full consent of his parent or guardian:

"I will do my best to live up to the Ranger Constitution and help my Brother Ranger do the same.

"I will make an honest effort, as a Ranger, to do at least one good turn each day, and pay my wampum each week."

Drafted in poetical form, the rather unique constitution of the Rangers is as follows:

"TRUSTY TOMMY is a Ranger,
LOYAL, true to every test,
HELPFUL to the needy stranger,
FRIENDLY, giving of his best,
COURTEOUS to the girls he knows,
KIND, a good turn every day,
OBEDIENT to his parents, too,
CHEERFUL both in work and play.
THRIFTY, saving for a need,
BRAVE, and not a faker,
CLEAN in thought, in speech and deed,
REVERENT to his Maker."

The Boy Ranger plays the Indian game naturally and is taught to put into his "medicine bag" the finest things of service and character. When he reaches the age of twelve he can enter the work of older boys' organizations with zest and spirit and understanding, because the Boy Ranger program in no way overlaps that of any other organization and because, as a Ranger, he has been given a valuable foundation for group activity.

Because church workers, teachers, parents and others interested in boy welfare have noted the splendid results achieved through Boy Ranger activities, many organizations throughout the country—such as parent-teacher associations, settlements, Boy Scout councils, public and private schools, foundations, and various recreational, fraternal, military, patriotic and educational groups—have sponsored the movement.

Such famous men as Charles Evans Hughes, Elihu Root, Ray Lyman Wilbur, John Grier Hibben and John W. Davis have linked their names with the organization, which is further proof of the worthy character of the Boy Rangers of America.

In 1930 the organization had already spread throughout forty-seven states and had been introduced into China, Hawaii, Japan, Mexico, Porto Rico and South America. There were 860 chartered lodges, with a membership of 20,000 rangers. The national headquarters are located at 186 Fifth Avenue, New York City.



Scouts Hiking

Boy Scouts with knapsacks and other equipment which help them to be capable and independent. A Scout believes in being prepared.

Boy Scouts. "Scout" is a word which used to refer to the one "on watch" for the rest. But the meaning has widened. It has been made to fit the town as well as the wilderness, and suited to peace time instead of war.

A Boy Scout is an expert in life-craft as well as in woodcraft, for he is trained in heart as well as in head and hand. Scouting is broad enough to cover riding, swimming, tramping, trailing, photography, first aid, camping and handicraft; it also includes loyalty, obedience, courtesy, thrift, courage, kindness and many other virtues.

A Scout enjoys a trip into the woods more than he does a walk over the smoky streets of the city. He can tie a knot that will hold, he can swim a river, he can pitch a tent, he can mend a tear in his trousers, he can tell you which fruits and seeds are poisonous and which are not; he can identify birds and animals and fish, and knows the ways and home of each. A Scout sees many things that others do not see, because his eyes are keen. He is mentally awake.

A Scout does not shout his wisdom from the housetops; he knows the real power that comes from knowledge. He speaks quietly and answers questions modestly.

A Scout holds his honor as his most precious possession. He knows what is his duty and all obligations imposed by duty he carries out of his own free will. He guards his honor as closely as did the knights of old. In this manner a Scout wins the confidence and good will of all people.

A Scout can make himself known to a brother Scout wherever he may be by a method which only Scouts use. He has brothers in every city in the land and in every country in the world. Wherever he goes he can give his sign and he will get a cordial welcome. He can talk with a brother Scout without making a sound or he can make known his message by imitating the sound of a telegraph key.

A Scout is kind to everything that lives. He knows that horses, cats and dogs have their rights and he respects them. A Scout does a Good Turn every day, and he does not consider the day complete until he has helped some other person.

A Scout knows that people expect more of him than they do of other boys, and he guards his behavior so that no reproach can truthfully be brought against the great brotherhood to which he has pledged his loyalty. He seeks always to make the word "Scout" worthy of the respect of people whose opinions have value.



The Boy Scout

The Boy Scout is a patriot. He seeks to emulate the great Americans who have had a high sense of duty.

A Scout is a patriot and is always ready to serve his country at a minute's notice. He loves "Old Glory" and knows the proper forms of respect to it. He never allows its folds to touch the ground. He develops a strong body, an alert mind and an unconquerable spirit so that he may serve his country in need. He patterns his life after

those of great Americans who have had a high sense of duty and who have served the nation well.

A Scout chooses as his motto, "Be Prepared," and he tries to prepare himself for anything—to rescue a companion, to ford a stream, to gather firewood, to help strangers, to distinguish right from wrong, to serve his fellowmen, his country and his God.

The Scout is a "friend to all and a brother to every other Scout."

To become a Scout, a boy must be at least twelve years of age. After meeting certain requirements he is first enrolled as a Tenderfoot. He must learn to do other worthwhile things before he can be promoted to Second Class Rank and still harder accomplishments before he can graduate into a First Class Scout.

When a Scout has passed through certain required stages of the program, the whole field of Merit Badges for personal achievement in special subjects is before him. Every Scout will find something to interest him in these subjects, for they give him a chance to develop his hobbies and to do specialized work under expert guidance, looking forward to a life work. Since there are ninety-two of these subjects, a boy has a wide range of choice. A First Class Scout who meets the requirements may qualify for Star, Life or Eagle rank.

National headquarters of the Boy Scouts of America are at 2 Park Avenue, New York City.

Camp Fire Girls. Camp Fire Girls are members of a nationwide club that offers them the opportunity to engage in creative activities such as designing and making objects of beauty, giving parties, camping, hiking along the woodland trails, planning service to others. Each meeting gives them new ideas, new enthusiasms, new inspiration, for they are vital members of a group of congenial girls of their own age. Every accomplishment that goes to make capable, charming, well-poised women may be theirs through Camp Fire.

Whatever their personal tastes and talents may be, Camp Fire Girls have an opportunity to develop them through the Camp Fire Honors and Ranks which measure the girls' progress in the Crafts they enjoy. An Honor symbolizes a definite achievement in one of the seven Crafts—Home, Health, Camp, Hand, Nature, Business, Citizenship or Patriotism. The three Ranks—Wood Gatherer, Fire Maker and Torch Bearer—are the milestones along the Camp Fire highway.

From the day they join, Camp Fire symbolism opens to each girl a new field for self-expression. Her first activity in Camp Fire is the creation of a name that embodies her most cherished dreams and aspirations. She then works out a design—her symbol—expressing in form and color the ideals that her name perpetuates. As she grows in Camp Fire, following the trail of the seven Crafts, she pictures in the decoration of her ceremonial gown the story of her search for the ideal that her Camp Fire name symbolizes.

She who has membership in the Camp Fire Girls is privileged to follow the Trail of the Seven Crafts, which leads through the Land of Happy Girlhood.

There are priceless treasures hidden along the Trail—treasures of joy and health and courage, joy in the companionship of her sister adventurers, joy in bringing to the humblest task the touch of loving craftsmanship, health that makes it possible to live each day richly and fully, courage to face life fearlessly. At the end of the Trail lie the broad acres of the Kingdom of Happy Womanhood—heritage of the Camp Fire Girl.

Any girl over ten years of age is eligible for membership in Camp Fire Girls. A group may be organized with as few as six girls, but each Camp Fire is limited to twenty members. A woman over eighteen years of age acts as the leader. She is known as the Guardian of the Fire. This leader writes to the Headquarters of the National Council, 41 Union Square, New York City, for an application blank, and the girls plan to earn their dues of one dollar each. When the application



Camp Fire Girls' Cabin

This cabin was planned and built by the Camp Fire Girls of Keota, Iowa. They use it for summer camping and for all-year-round week-end trips.

blank, properly filled out, is returned to the National Office with complete dues—one dollar for each girl and the Guardian, and one dollar charter fee—a Charter and a Guardian certificate are sent and the new Camp Fire is officially registered, each girl receiving from the National Council a personal Certificate of Membership.

For each Camp Fire Girl there begins a new chapter—the making of new friends, the broadening horizon of new interests, the fun of being at home out-of-doors—the joyous experience of good times shared with others in Work and Health and Love.

Girl Scouts. The underlying purpose of the Girl Scouts is to give girls a happy, healthful time in camps, troops and Little Houses, and, at the same time, to develop in them the habits and skills which will be useful to them in later life, whether they are mothers, home-makers or professional women.

The Girl Scout program is designed to increase health, practical skill, initiative and self-dependence, and to bring out talents and capacities by which the individual girl may earn her living and enrich her life.

Camping is a favorite activity of the Girl Scouts. There are approximately 440 Girl Scout camps. The Girl Scouts have been pioneers in the small unit system of camping which permits the girls in camp to live in small groups, each with an encampment to itself. The organization has also led the way in the training of camp leaders.

Girl Scouts in 150 communities have Little Houses; that is, small clubhouses built like real homes, with kitchen, dining and living-room, bedrooms, and sometimes gardens. Here the girls make home-making a delightful game and a real experience. Some of these Little Houses have been established in connection with the Better Homes movement. The Washington, D. C., house, for instance—a replica of the boyhood home of John Howard Payne, author of "Home, Sweet Home"—was built by the General Federation of Women's Clubs and presented to the Girl Scouts.

Educators and psychologists have arranged a program of over fifty activities, proficiency in which is rewarded by a merit badge to sew on the sleeve of the uniform. These pursuits fall into four general classes: home-making, health, craftsmanship and art, and community service. Home-making in all of its phases is generally the most popular Girl Scout activity.

The Girl Scouts is open to any girl who will subscribe to the Girl Scout laws. These set forth that a Girl Scout is honorable, loyal, useful, friendly, courteous, a friend to animals, obedient, cheerful, thrifty, and clean in word, thought and deed.

In 1930 there were approximately 200,000 Girl Scouts, mostly between the ages of ten and eighteen. It was estimated at that time that 1,000,000 American girls had had some measure of Girl Scout training.

The national headquarters are at 670 Lexington Avenue, New York City. There are state headquarters in every state, and local headquarters in hundreds of American communities.

Four-H Clubs. Of the 12,000,000 rural boys and girls in the United States, something less than 1,000,000 belong to an organization known as the 4-H Clubs. The four "H's" signify the four-fold development of the Head, Heart, Hands and Health. The Clubs are organized under the supervision of the Agricultural Colleges and the United States Department of Agriculture. In the extension of the movement they are assisted by the National Committee on Boys and Girls Club Work and many other organizations which contribute support to the movement in one way or another.

Each local club composed of from five to fifty or more members ten to twenty years of age, has its own officers consisting of president, vice-president, secretary-treasurer and reporter. The club is also under the supervision of a local leader. Meetings are held weekly or semi-monthly. In addition to discussing the project in agriculture or home economics in which that particular club is engaged, provision is made for recreation and a social good time at each 4-H Club meeting. Thus the 4-H Club group frequently becomes the center of social affairs in rural communities.

A growing activity of the 4-H Club Movement is that of camping. More than 300,000 4-H Club members participate in camping activities each year. In many states there are in addition to local camps, county camps, inter-county camps and state camps. At the camps club members come into close association with specialists from the Agricultural Colleges from whom they gather at first hand many practical and interesting facts from nature in addition to participating in the usual activities such as is afforded by camps, for example, swimming, group singing and games.

In most states a Short Course, Club Week or Round-Up is held each year at the Agricultural College which is attended by from 250 to 3,000 outstanding representatives of the 4-H Clubs. At these meetings a work-study-play program is carried out. It is a common practice to conduct competition for state honors in demonstrations; health scoring examinations; judging of articles of food and clothing or livestock and grains. It brings rural boys and girls in direct contact with the Agricultural College—its teaching staff, its experiment station and its extension force—and makes known to them the value of the state and federal supported institution and shows them how to make the proper contacts in order to make the most out of the college and its force.

"Going to the Fair" had a different meaning a generation or so ago than it does to the modern 4-H Club member of today. At one time the chief attractions at the fair for the average rural boy and girl consisted of a ride on the "ferris wheel" or "merry-go-round"; sufficient pop, peanuts and ice cream; and a chance to see the horse races and evening fire works. Scarcely any attention was given in endeavoring to attract rural youth by means of educational exhibits, contests or what not. Today the situation is entirely changed. Every fair—county, state, sectional and national—has its 4-H Club department. Rural youth looks forward eagerly to the opportunity of exhibiting livestock; to competing in judging contests; to demonstrating the various approved practices in agriculture and home making, and to joining in a parade before the grand stand to visualize the spirit and progress of their club. Many county fairs are devoting a large proportion of their prize money to attracting exhibits from 4-H Club members. In one state the appropriation for 4-H Club activities provided by the average county fair is said to be $500.00. Indeed, many local fairs which have failed under the old system of operation have been revived by 4-H Club members and largely if not entirely manned by the boys and girls themselves. The larger state fairs appropriate up to $25,000 annually for 4-H Club prizes.

At the larger fairs and expositions arrangements are usually made for sight-seeing tours. Thus 4-H Club members are given opportunity to see art galleries, museums, zoos, public buildings, private industries and points of historical interest in the various cities. In all their activities they naturally come in contact with public officials and leading citizens, thereby gaining inspiration.

The fourth "H" of the 4-H Club program stands for the development of health. This has come to the attention of the public and the boys and girls very markedly within recent years. In practically every state 4-H Club members are taught to "play the health game," that is, to eat properly balanced foods at regular intervals; to sleep with open windows; and the necessity for such habits as frequent bathing and cleaning of teeth is stressed. Club members are also shown how to use exercises to correct improper posture. To add to this interest a large number of counties conduct county health scorings. In such states county champions are eligible to compete in state health contests conducted by the Agricultural College officials. During the National 4-H Club Congress held annually at Chicago, these state champions are scored and the national blue ribbon winners determined. "Health" means "wealth" to rural boys and girls as it does to everyone.

But more than that, 4-H Club members are learning to evaluate themselves and to find their proper niche in life. They are discovering the mysteries of Nature—the miracles performed by growing plants. They are learning to observe beauties around them which previously their eyes could not see. In short, 4-H Club work is teaching rural youth how to live and to get the most enjoyment from life.

National headquarters are in the London Guarantee Building, Chicago.

The Woodcraft League. The Woodcraft League of America was founded in 1902 by the naturalist, Ernest Thompson Seton. It has three distinct divisions—the Little Lodge for children under twelve; the Big Lodge, for boys and girls up to eighteen, and the Adult Lodge for men and women over eighteen. It publishes the Birch Bark Roll, which is the official handbook and contains much valuable information and reference material on the organization of Woodcraft tribes, the conducting of council fires, town and camp activities, Indian lore and dancing, Nature songs and games. It is supplemented by the Scroll of the Little Lodge, which contains the coup standards for those under twelve years of age.

Woodcraft is aptly said to be a "man-making scheme with a blue sky background." Woodcraft is an all-year-round program of recreation, tending to develop the imagination. It involves both outdoor and indoor education. It emphasizes individuality as opposed to standardization.

The activities of Woodcraft are carried on through the Body Way, the Mind Way, the Spirit Way and the Service Way. The four-fold Law of Woodcraft is summed up under the Lamps of Beauty, Truth, Fortitude and Love.

National headquarters are at 1043 Grand Central Terminal Building, New York City.

CAMPING

One doesn't camp out in a cabin or bungalow with hired chefs and a community dining-room. He brings his house with him on the running board or under the wagon seat; he cooks his own food; if he wants furniture, he makes it with an ax. Real camping is a return to the primitive—the butcher, the baker, the candlestick-maker are barred. At its best, there isn't even a guide. The instinct for returning to simplicity is strong in most of us, but we have come so far in our way of civilization that few of us know how to get back. This article is for the folks who would like to join the big procession returning to their father's house in the woods.

Where to go doesn't so much matter. Little journeys will often do as well as long ones. The main thing is to cut loose from routine—to get an utterly new angle on life. This may sometimes be as well managed by a creek bank over the next hill as in the Canadian wilderness. But if one has a few weeks off and a little car, he may almost choose his own camping ground; let him try the mountains this year, the lakes and rivers next, and after that the sea itself. Which he will like best will depend on his temperament, but he will be the richer for all three.

Preparations for the Trip. *Outfit in General.* Long before your date for starting has arrived, begin a check list. You can have fun with it all winter, and it will assure you against omitting any important items which you would surely forget if you tried to make up the list at the last moment.

Broadly speaking, you will have to provide: shelter and bed, fire, cooking and eating implements, food and food-getting tools, a personal kit, and sundries for safety, comfort and pleasure. Every item that you admit to your list must prove its right to be there, and, since one car (quite likely a small one) will no doubt have to carry a party of four and all its duffel, every item should be checked in the light of these questions: Can I get along without it? Is it as light and compact as possible? Is it durable? Is its design right for camping?

Duffel Bags. The entire camp luggage for a party of four people who are planning to stay several weeks should be packed in no more than seven waterproof bags. There will be four bundles of bedding, clothing and personal effects; one bundle will contain tents, flies, jointed poles, stakes and extra canvas. One bundle will have the food, table ware and camp sundries, and the seventh bag will contain the stove and stove furniture. Clothing is best kept in light muslin sacks which serve for pillows in camp; incidentals of personal property are put in the pockets of the sleeping bags or enclosed in smaller sacks within the clothing bags. There should be no loose odds and ends whatever, for they are always very much in the way.

Loading the Car. A folding baby gate makes the best carrier for the running board. It is light in weight, high, long as you want it, strong enough for the purpose and inexpensive. Fasten it with angle irons at the bottom and with ropes or wire braces at the top. The tent bundle is long and flat, on the right running board under the doors. A few harness clips on the running board are useful and inconspicuous. If the front fenders are strongly braced, there will be a bundle on each, tied to the headlight irons. Four bundles will fit in the baby gate, one on the right running board, two in front. Of course if you have tonneau room, you can either bring in two bundles from the outside, or take along a few extra comforts.

Camps by the Way are one night stands, very simple, commonly set up at twilight. It is best to turn off the main highways a mile or so along a side road, where you can either set up your house by the side of the road, or get a farmer's permission to stay over night in his orchard or meadow. A courteous statement of who you are, where you are from, where you are going, and what you want will almost always be met halfway. To make sure that this condition lasts, always endeavor to return as many favors as you get.

On long trips, the storage battery may well be used for lighting your evening camp.

Of course the simplest roadside camp is a lean-to of some sort, fastened to the top of the car. Automobile tents may be had for

this purpose, though any sheet of waterproof duck or twill will do. An excellent scheme is to use the fly from the wall tent combination, fastening one end to the car top, the other end to the two wheels, and staking the middle out on the ground with a board or pole running through, so that the one canvas serves for both roof and ground cloth. This is a capital arrangement when the grass is wet. A rehearsal or two at home before you start will prove it practical to sew a few tapes along the ground line of this fly tent, for staking out. By this device, night camp may be set up in five or ten minutes, with dry beds and an excellent shelter. With this arrangement, you will study the direction of the wind before you stop your car in bad weather. A few extra pairs of tapes along the sides of the fly may help in shutting out a driving storm. It certainly pays to make up your beds in the waterproof rolls described later in this article. With such rolls, four beds can be made in four minutes—there's nothing to do but unbuckle and unroll—and a little rain more or less doesn't matter.

If the weather is fair, it is a waste of time to put up any shelter at all. No other sleeping room can compare with the unroofed open air.

The Headquarters Camp. *Shelter and Bed.* East of the Rocky Mountain states, there should certainly be a tent or two for each party. Two 9x9's or one 10x12 will make very comfortable quarters for four. The requirements of weight and bulk forbid the use of heavy duck. The use of shelter tent duck or the best grade of twill for all sizes up to and including 10x12 is recommended. Tents of these materials may now be bought ready-made from any of the better dealers in outing goods, or may be made up to order.

There are half a dozen or more standard shapes of tents, but of these, two are pretty clearly the all-round styles for general use. Women are quite sure to prefer wall tents, with 8 ft. poles and 3½ or 4 ft. walls. Men who know are about as unanimous in choosing the lumberman's style, lean-to roof, 8 or 9 ft. poles, low rear walls, and an upright front. This front may be staked out awning fashion, thrown back on the roof or tied down to close the tent. The lumberman's tent is thus convertible into three. It is a lean-to with warming fire in front; it is a living room with a front porch; it is a snugly closed house.

Whatever the style of tent, there should be an 8 or 9 in. sod cloth around the bottom, and some good drop screen in front, to keep out vermin, flies and mosquitos. A front of double mosquito net or single bobbinet is effective. It is well to have a broad band of cheesecloth at the top, bottom and sides of the curtain for wear and tear, and for surplus tucking in. A few minutes' attention to sod cloth and drop curtain will positively shut out the whole horde of flying and crawling night pests.

If carrying space permits, the headquarters camp will be greatly improved in hot or rainy weather by the use of a fly over each wall tent, extending well out in front for a porch.

In a country of wooded undergrowth, it is commonly unnecessary to carry poles or stakes; but if the journey is a long one and a tent is to be set up every night, it may be well to carry half a dozen stakes, and to put ferrule joints in light end poles cut to the length of your tent bundle. If your tents are made with a ridge of rope or tape, as they should be, you will not need a ridge pole on the way. Ridge poles should always be used in permanent camps, to gain head room and preserve the shape of the tent.

It is well to floor the ladies' tent with a waterproof ground cloth, of material like the tent. A ground cloth of some sort is particularly desirable for camps set up by the road in the evening. It makes a neat cover for the bundles in the baby gate.

Waterproof your tents, flies, ground-clothes and duffel bags in a paraffin solution. Melt a pound of Parawax for each six quarts of gasoline, pour the hot paraffin into the gas, and proceed. Dipping does the more thorough job, but brushing will do. Articles waterproofed in this way should be aired for several days before being used, in order to evaporate all the gasoline.

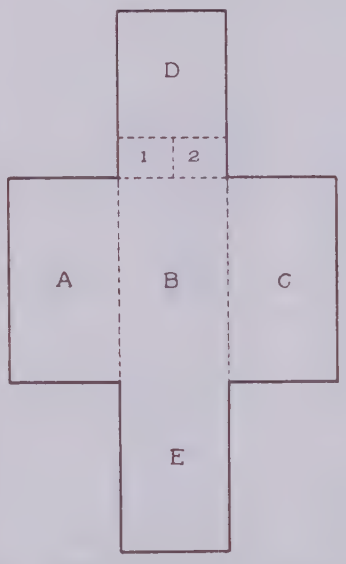


Diagram of Camp Bed
The story explains the use of the lettering and numbering of this diagram.

Beds and Bedding. Sleeping bags are bulky, heavy and expensive, but a home-made blanket roll will pay for itself in comfort, especially if the nights are cool, or if one likes to sleep in the open. The roll which is generally recommended is made up in a simple cross-shaped cover of waterproofed twill, with tapes for tying, or rings and a strong cord for lacing up. If the sleeper uses a cot, he must have as many thicknesses of blanket under him as over; if he sleeps on the ground, there may be a blanket or two less under than over. In any case, the proper way to make up blankets for a single bed out-of-doors is this:

Lay the twill cover out flat. Spread one blanket in position BC, another in position AB; Fold Blanket C over B; A over B; cover flap E over B; C over B; A over B. Lace and tie, leaving a little freedom, for comfort. If more than two blankets are needed, fold all but the top one alternately, as above; the top one may well be tucked in at both sides. Flap D is a head cover, with convenient pockets for odds and ends. This head flap for out-of-door sleeping is held up from the face by a cross-bar resting in forked sticks. The lower ends of D are of course tied down. It is impossible to kick out of a bed made up in this manner; wind and weather cannot get through it.

A few newspapers under the bottom blanket of any bed will do wonders for warmth.

Lacking a natural mattress for your ground bed, one may be improvised of almost any leafy material—ferns, juniper, branches from any of the evergreen trees, small brush, sweet clover—whatever comes handy. For real comfort, juniper is perhaps the best of the lot, though it is unpleasant to handle. If branches are used, they should not be thrown down haphazardly, but should be laid in courses like shingles, covering the butts. Ground beds in the permanent camp should be made in two layers, a lower one of coarse stuff, and a finishing coat of tips, ferns or leaves.

Occasionally one may find it necessary to sleep on bare ground. This will be better if hollows are dug for the hips. A form-fitting bed of sand is more comfortable than prodding branches badly covered.

The Camp Kitchen. It may be well enough to know how to make a fire without matches, but it is vastly more important never to forget the matches. Flint and steel, burning glass and fire fiddle will not be needed if there is a good reserve stock of matches in camp and in your pocket, and be sure always to keep them in waterproof containers.

Headquarters camp should have some means of baking. Kettle ovens and steel camp stoves are heavy, consequently many people always strap on the car somewhere a light four griddle, sheet iron stove, with an oven. This is admittedly a bulky package—its actual dimensions are 11x16x22 inches, and its weight 14 pounds—yet such a stove should be carried if at all practicable. It takes most of the hardship from your permanent camp; reduces the bulk of firewood required; raises the fire off the ground so that the cook can stand erect, and makes possible a comfortable tent on cold, rainy days, and in the evening.

If the stove cannot be carried, a folding reflector is the next best thing, though it is possible to improvise ovens of many sorts. For example, a meal of potatoes, muffins and corn pudding can be baked at the same time in one galvanized bucket. An overlapping cover makes an oven out of a frying pan. The regulation meat baker used at home will itself serve very well as the camp oven. Potatoes, corn and fish may be baked in hot embers under the fire. The corn is protected by its husks, potatoes are delicious in their charred shells, but the fish will need a protection of wet paper. Boy Scouts learn to bake a twist of dough on a stick held near the fire. Suit yourself. Half the fun of camping is in inventing new ways to do old things.

No breakable utensil should go to camp. Aluminum ware is preferable except for dishes which must be held in the hand. It gets hot quickly and stays hot long. On this account aluminum cups are quite out of the question, except for cold drinks. Aluminum fry pans

are excellent, if they have the right sort of handles. A light 12-inch fry pan with a smooth flat bottom gets our vote as the all-round best camp kitchen tool. It should have a socket for a long wooden handle, in case you need to fry over a big warming fire. Next to the fry pan in importance come three or four nested aluminum stew pans or pails. Of course all handles should be riveted, not soldered on. Don't forget the long handled spoon or the pancake turner. You *can* do without them. Guides enjoy the flourish of turning cakes by flipping the pan in the air, but what's the use, if the results are inferior?

Food. The question of food all depends on who you are, where you are going, how long you are going to stay, and what time of year it is. Camp is a bad place for finicky individuals. But most people will eat in camp things they refuse entirely at home. The two general tests for a food list are: (1) What items can we surely depend on from the country we camp in. It is well to discount this expectation pretty heavily. The fish do not always bite; a late frost may have killed the berries; we are hungrier than we expected to be. (2) Are our staples of the lightest possible weight for their food value? Rice will do more for us than potatoes, at a fraction of the weight and bulk. Bacon is easily the best camp meat brought from home. Sugar, oatmeal, cornmeal and flour are high in value for their bulk. Dried fruits must always be included for their medicinal qualities. Condensed milk is less bulky than the evaporated sort, and keeps better after opening. Butter is a luxury worth carrying. Pack it in the lightest tins you have. If one's camping is to be really strenuous and in far places, he must dispense with canned goods altogether. Dehydrated vegetables, eggs and even powdered milk are practical, and growing in favor.

Always carry a few hooks and lines. The rods do not so much matter. There is a peculiar exasperation in the sight of game fish, or any other pan fish, when one has no tackle. By the same token, carry an accurate .22 rifle, or a .22 pistol with six-inch barrel, the lighter the better. Red squirrels and woodchucks are usually in season, and you are not a shrewd camper if you scorn them.

In many states, one may fairly count on wild berries—strawberries, raspberries, blueberries, blackberries—in succession, from May until August. On the New England shore, wild cranberries are ready late in summer. There are spots along the Great Lakes, in the mountains—best of all on the coast—where the combination of wild riches, free for the taking, is true beyond dreaming, from snow to snow. To get the best you will of course steer wide and clear of all beach resorts, hotels and popular summer camping grounds. We are still a young enough and big enough land for this happy appropriation of a common treasure, off the beaten track.

Personal Kits. By this time it will be understood that conventional traveling bags and cases are out of order in camp. One change of clothing, in a light muslin sack, is useful for a pillow at night. Give particular attention to the comfort of your feet. Conventional notions about the dangers of getting wet will require a larger wardrobe than campers need who have exploded this fallacy. But a poncho is comfortable in a pouring rain, and wet clothes are a bit clammy to sleep in or to put on in the morning. There is of course no family wash in camp. Put into your kit all the things you must have for health and for a reasonable degree of comfort, but omit decorations for a while. It will make a noticeable difference in the load. Odds and ends of toilet articles are best kept in the pockets of the bed roll. Positively no personal property goes that cannot be packed in your one duffel bag, along with your blankets and clothing. Be sure to put in a pocket compass, a jackknife and a waterproof match box of some sort.

Camp Sundries. Candles or candle lanterns are better for camp than oil lamps of any sort. Camp axes are sheathed, and carried in the duffel bags. A bucksaw may be worth carrying, if you use a stove, or if you tinker much about camp. Remember soap, towels and an old rag or two. Nails are very useful—a pound of 10's, a pound of 20's, and a half pound of 6's. Take 50 feet of small cotton rope, braided if you can get it, and some stovepipe wire. A pair of white cotton gloves will be convenient in case there are fish to skin. There is a knack, for instance, of drawing the edible part of a bullhead away from the rest, with half a dozen simple motions, if you have a sharp jackknife and a pair of cotton gloves. Be sure of a whetstone, carborundum preferred.

Carry maps of the regions you are to visit. If the United States topographical survey has covered the regions, get the map of every quadrangle which may interest you.

Except in a hunting party, one or two light guns are enough, and more are a nuisance. Always carry one or two small cameras—the smaller the better—if the lenses and shutters are good. Small pictures are good mementos, and the occasional lucky composition can be enlarged. Mosquito bite preventives and remedies should be carried in spring and summer. Any aromatic oils are useful—cedar, pennyroyal, peppermint, camphor; oil of pine is effective, but not good to look at. Citronella is the stand-by. Use a little olive oil or melted vaseline for a base. Put up as many one-ounce bottles or boxes as there are members in your party, and keep one larger bottle in reserve.

Working Hints About Camp. In locating your camp, water, wood, shelter, bed, drainage and permission are the main things to consider. Sometimes it is necessary to beware of the dog, but that speaks ill for the location. The writer once found it necessary to make a funeral for twenty-five porcupines before camp duffel could be safe. Granted the necessities named above, one begins to be grateful for such bathing pools, bird songs, waterfalls, vistas, fruits, fish, game and sunshine as are available.

Fires. Big open fires are unpleasant for general cooking purposes, even in winter. If you must have a big fire for warmth, study the wind, and locate a small cooking fire so that you can work between the two. A fire built for cooking only should be small, directly under the cooking utensil and close to it. Makeshift fireplaces do very well for short stays. Narrow trenches, parallel lines of rocks, tripods of stones, sharpened green sticks driven down in threes, two logs a few inches apart at one end, and separating slowly for the larger utensils—these are a few of the simple devices. Forked sticks will support a pole above the fire, and from this horizontal pole, smaller forked sticks in various lengths will carry the cooking pots. Six foot saplings make good swinging cranes. Fire irons and patent grids are of course very convenient.

Lighting the fire is an easy task in dry weather, but it is quite another story when the ground is wet, and all the fallen sticks are soaked through with rain. A hot little fire is what you must plan for first. Get the materials for your fire before you strike a match. It is almost always best to lay your fire before you light it. It is well to recognize several kinds of fire materials: tinder, anything which readily takes fire from the flame of one match; small dry twigs or split up sticks which kindle from the tinder; middle-sized sticks, broken up; larger sticks, left unbroken, and thrust in as they burn. If coals are wanted for broiling, hardwood sticks several inches through are best. Always, the hot little fire first. Birch bark, white or yellow, will burn in any weather. But woodman, spare that tree! Cut it down if you must and if the law allows, but don't disfigure it with a knife. Pull off loose fringes with your hands, or find a dead tree and work your works on it. Standing dead stuff is of course drier than ground wood in wet weather. The lower branches of evergreens die first, and may always be counted on, if they are there. Break them off, split them and whittle, if you have no birch bark. Gauge and grade the size, the dryness and the kindling heat required for all the materials at hand. Any sound deadwood is likely to be dry at the heart, so the ax and pocket knife, with common sense, will solve the fire problem.

Safe fires are not built on dry peat or leaf mold. Rocks, bare soil, creek banks, or raised fireplaces are safest. Fire is of course particularly dangerous in a dry time of high winds. Let your fire run, if it will, several yards out in all directions from the starting point. The one rule for safe fires is, watch them while you're in camp. And put them out when you go away. Night fires should be used only under conditions of known safety. Tent stoves are best for that purpose.

Comfort in Camp. The convenient and comfortable camp is near water and wood, is waterproof and shaded by a fly, requires little stooping, has a place for every utensil, good beds, a table or two and portable seats. Camp without these is no place for old folks, for women, or families, beyond the first day or two. But with these things, and a fair division of labor, there is little hardship in camping. It is understood that all camp furniture is made in camp. Bucksaw, nails, and nail-pulling hand-ax make quick work of it. Tables, benches, and chairs can be sturdy and portable only when they stand on four good legs, each leg braced two directions at right angles. Wire 6's are best for fastening these braces. It is a simple matter to put backs on the benches and chairs. If you take along some extra canvas, hammocks, cots and reclining chairs are in your repertoire.

Hints on Camp Cooking. Fry fish slowly, in fat as deep as you can spare it. This means a small, steady fire and frequent turn-

ing. Roll your fish in a mixture of corn meal and flour before frying. If you turn a trout or flat fish a few times before leaving it in the pan, it will lie without curling.

Stews are easily possible. Red squirrels, woodchucks and cottontails are available when other things fail. Dehydrated vegetables in a stew will probably require longer cooking than your meats. If you have fresh vegetables, study their boiling periods and add each at the right time to bring all together at the finish. For instance, do not put in the potatoes until the meats begin to be tender, with twenty-five minutes to go. A slow simmering fire is the thing for stews. Add butter, salt and a thin, smooth batter of flour—not much of it–a few minutes before serving.

In baking, remember one rounded or heaping teaspoonful of baking powder to the cup of flour. Gems and muffins need a cup of milk (solution of powder or dilution from tin can); an egg or its equivalent in egg powder; tablespoonful melted butter; sugar and salt to taste, the whole stirred with flour of any sort to the consistency of well-cooked mush. The mixture should run, but slowly.

Pancakes are more tender made with water than with milk. It is well to take along some prepared pancake flour.

Too much baking powder is better than too little.

Johnny Cakes are better of half wheat, half corn.

For *puddings*, boil rice or corn mush; stir in milk to a thin batter; add beaten egg or egg powder, raisins, sugar and nutmeg; bake until brown.

Steaks, chops, fish can be *broiled* in camp as well as at home if you bring along a camp grid or a folding bread toaster. Use a bed of live coals. Wire the broiler handle to a stick, if you find the heat unpleasant.

Planked meats are more readily prepared in camp than at home.

There is no better way with small game than to boil it until tender, and brown it with butter in the frying pan.

Fish Chowder. A kettle or big stew pan, with layers, in turn, of pork, fish, sliced potatoes and crackers. Long, slow simmering. Keep covered with water.

Baked Beans. Layers, from the bottom upward, of onion, beans, onion, pork, beans, molasses, covered with water. Beans previously boiled until nearly tender. Both the chowder and the beans will be much better if they can be baked in a fire-hole. This requires a covered kettle, a rock-lined pit, and enough live coals to bury the pot completely. Layer of ashes on top. Get this pit in action at noon, and a delicious hot supper will be waiting for you at night. The pit itself is of course first heated by a fire built for that purpose.

Coffee. The good rule in making coffee is to use a tablespoonful to the cup, and one for the pot. Don't boil your coffee; let it come slowly to a boil, and then merely keep it hot till you are ready for it.

One of the very best things about camping is that there may be so complete a change of work that we call it play. We have a new set of cooks, for out-of-doors it is the men's turn to cook, at least until the kitchen is made easy to work in. Even at that, the ones who cook at home need a change much more than the men. In general, men's camp cooking is likely to be greasy. Better make an art of it. Digestion will approve, and there is fun in the game.

The Hiking Camp. For outfit, take only what each man can carry comfortably on his back, perhaps around thirty pounds, complete, packed either in a duffel bag with harness, or in a pack basket. The basket holds its shape, does not jam the contents, is cooler to carry, but is not waterproof. The basket wins by a big margin, if you can protect it from rain.

Small waterproof bags, stamped or tagged, are very useful for dry foods and sundries.

In midsummer, a shelter tent (pup tent) with a blanket or two and a liberal square of mosquito net will be advisable; but in cooler weather, a well made bedroll is rainproof, dampproof, windproof, coldproof—all the house you need.

For a hiking trip in the woods, one should plan each meal in advance, making them all very simple, of condensed nourishment, and carrying only such dishes as are positively necessary. There should be a change of gear for the feet, but a poncho will probably make further change unnecessary.

Real hikers find the improvised camp most interesting of all. But it is possible to overdo the impromptu feature of the game. When you set out for a long walk in the woods, it is always well to have along the half of a dog tent, a tin of meat or cheese, a compass, and a loaded waterproof matchbox. If you lose your sense of direction in the woods, and haven't a compass, stop traveling! Sit down, cool off, think it over, wait! Recall where your camp is placed; review the landmarks on your way; reflect that water runs down hill, that moss is heaviest on the shaded side of trees, and that the worst possible thing to do is to lose your head and rush around.

Perhaps the last word about wandering alone in the big woods is not to do it, until you have a sure and tested sense of direction, and a habit of really seeing and remembering the landmarks you pass, looking back at them as well as ahead.

CANOEING

Paddling one's own canoe over thousands of miles of inland waterways is an immensely popular sport. Here and there is a group of canoe sailing enthusiasts with their arguments, their races, their elaborate contrivances for carrying more and more sail, preserving balance, and resisting side thrust. Folding centerboard outriggers, seats sliding far over the side, and a big sail together make a craft which only an expert can handle without coming to grief. Obviously, all canoeists should be good swimmers, whether they get their thrills by shooting rapids or by coming about in squally winds under full sail.

Beginners in paddling might be glad of a suggestion or two. Let your canoe be light, but strong. Some of us prefer spruce, and like to shape our own, thin and broad. In any case, before a long journey is done, you are sure to appreciate lightness of outfit, canoes, paddles and all.

All popular canoe models are now made of canvas covered cedar.

Two paddlers make more than twice as good headway as one. They neutralize each other's side thrust. Every moment's use of rudder or paddle to change the course is a moment of lost energy. The through traveler makes no unnecessary zigzags.

Learn to steer with your stroke. No matter on which side you are paddling, turn the inner edge of your paddle back a bit, and strike parallel to the course, as usual. The angle at which you hold your paddle as it goes through the water will determine whether you turn to right, to left or go straight ahead.

CAPTAIN BALL

Eight small circles three feet across, two large circles five feet across, placed as in the diagram. Captains stand in the large circles, supported by teammates in small circles. Guards may not step across any circle line

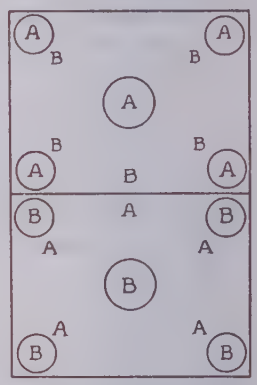


Diagram of Captain Ball Floor
Showing the positions of the members of the two teams, A and B.

and men in circles must not step out. Ten men in each team are placed, as shown by letters A and B. Balls which come into the captain's hands count a point for his team, but only his circle men may throw to him. The business of the guards is to block opponents' throws and secure possession of the ball for their own circle man and captain. The game starts like basket ball, with a jump between the captains' guards at center.

CRICKET

Cricket, a national favorite in England, has taken little more hold in America than baseball has with the Britons. Cricket is much like the "two old cat" of our country school days. In place of the two bases for the old cat game, stand two "wickets"; each wicket is a set of three posts twenty-seven inches high, carrying a loose block of wood called a "bail." The posts must be too close together to let a ball through between them, and must be sensitive enough to make the bail fall off if a pitched ball hits the wicket.

Four feet from each wicket, toward the other wicket, is a line marking the batter's position. Two batters are up at once, one by each wicket.

The game is played by two opposing teams of eleven men each. In each inning, all the players come to bat. While one team is at bat the other is in the field. A pitcher stands beside each wicket and each pitcher throws in turn at the opposite wicket. If he can hit his mark, the bail will fall, and the batter at

that wicket will be out. It is the batter's business to hit the ball before it strikes the wicket.

All batted balls are fair hits, and each hit requires the two runners to exchange places. Meantime, if the batted ball is caught on the fly, or if a bail can be knocked off by a ball in the hands of a wicket-keeper before the runner due at that base arrives, that runner is out. There are thus three methods of putting a batter out.

The batsmen may make several runs for each hit if they have time, and since the bats have a flat surface and the game is a long one, the score often runs into hundreds.

CROQUET

Croquet is a popular sport in this country. It had its origin in France and it is said to have been brought from there to Ireland and then to England. Public matches of croquet were played in England as far back as 1867. It was popularized especially through the "All England Croquet Club." In America it is a game that is commonly played on the lawns of farm and city homes. It is also a popular game for municipal parks and country clubs.

It is simple to set up and the upkeep is not expensive. It is a game of skill and requires keen coördination of eye and hand. It is played on a court thirty feet by sixty feet. Any level, smooth grass plot is excellent. The boundaries can be marked with a white cord. At each end of the court there is a colored stake. On each stake is a red, a white and a blue circle. Balls are made of wood and are painted in colors corresponding to those on the stakes. The more expensive balls are of hard rubber. These will outlast the wooden balls and are much better. There are ten wire wickets in a court. At the start the wickets are placed four inches apart and as skill and accuracy develop they can be placed farther apart to make the game more difficult. Four wickets are placed at each end of the court, two directly in front of the stake, and one on either side of those two near the boundary. There are two wickets in the center of the court. Wooden mallets are used to drive the balls over the court and through the wickets.

Two people may play or three teams of two each may play. The ball is started from one end of the court directly in front of the stake and the object of the game is to get the ball through all of the wickets to the other end of the court and back to home stake before other players reach home stake. Players take turn in playing their ball. When teams are playing, alternate turns are taken from opposing teams. As the ball goes through one wicket it entitles the player to one more stroke. Each player takes his turn and the game gets complicated and more interesting as the balls come close together. A player is permitted to play upon others' balls, giving him additional strokes to go through the wickets. When teams are playing the game is not won until both balls of a team have gone through all the wickets and returned to home stake. Each of the players on a team gives his partner every advantage and they try to keep both balls together over the course.

FISHING

There is much truth in the old saying:

When the wind's in the west
Fish bite the best;
Wind in the south
Drives the bait in the fish's mouth;
When the wind's in the east
Fish bite the least;
When the wind's in the north
The fisherman goes not forth.

But all such maxims are only general. The writer's guiltiest memory of an overcatch goes to a day of northeast wind; and he has found many a spot where the "wise natives" could tell, if they would, when the signs were right in the lakes and streams near by. If you come across somebody who has the reputation of always catching fish, get acquainted with him if you can. He has studied or stumbled his way to a revised version of proverbs. Perhaps he just knows where the fish are and what they are doing today.

This should make it plain that any statements about the sure way to make "big-heap-catch" of fish will be on the average six or eight parts bunkum in ten. So even this discussion is condemned to begin with. But try it.

If you need bait, try crickets and grasshoppers which are sleepy and stiff early in a cool morning. Bass like hoppers as trout like flies.

The unexpected wakes up the big slow fellows at the bottom of the pool. Give them a swimming frog, a mouse or a devil bug of some unearthly design.

If you can not catch frogs, cut a bit of fresh or salt pork rind to act like a frog when you draw it along in little jerks. Put a triple hook or two on the meat side of the rind.

Night crawlers do crawl at night, if there is dew or rain on the ground. Take a lantern, look sharply, step gently, and end with a forearm snap, a grip and a steady pull. They are game animals. Even small trout seem to prefer one bite of crawler to three whole garden worms.

There is nothing offensive about the larva of a fly, unless you happen to think so. In a very dry time you might do worse than to hang up some defunct creature in the sun, with a pan of corn meal directly below it. Bird-catching tomcats are suggested. Make your plans and arrange your works several days before you need the bait.

For flat fish in the lakes—perch, sunfish, bluegills—always leave an inch of worm to squirm around the point of the hook. The reluctant fellows can't quite resist that. Trout? Hook the worm two or three times through, across. Trout do not nibble.

Corks and bobbers—yes, if the water is shallow or if you are out for occasional biters. At the first sign of steady motion, strike! That is, make a short, sharp pull on your rod to sink the barb of your hook. After that, take your time—the bigger the fish, the more the time.

But if you can keep your bait where you want it, don't use a float. Answer every touch on your hook by a little flip of your rod. In that way you can catch three fish to the one of the fellow who "waits for him to swallow it," or for the bobber to go under.

Live minnows—big ones for big pike; two-inch or three-inch, for perch; middle size for bass. Tie or tack four feet of mosquito netting to two four-foot sticks. Get into the small stream below the big pool and have your partner drive them down to you. Slow troll with a long line for big fish.

Perch live near the bottom. Find the bottom with a sinker heavy enough to show by slack line the moment bottom is reached. Then lift a foot or so. Take the depth in this way whenever your boat has been moved. That is one of the advantages of having a reel on your rod.

The natural feeding grounds of fish are in or just over the edge of weed beds. But in summer midday they are out in the lake—not always deep in the water. Some kind of fish, bluegills for instance, keep during the middle of the day a fairly constant depth of from six to fifteen feet, however deep the lake may be; but there are hours when they fairly lie on top. At such times even bluegills may be taken with the fly.

Bait casting is accomplished in three ways—hand line, long reel pole and short rod with a reel. Each is good sport and has its advantages. The bait rod and reel get the vote for all-round efficiency. Rod and reel together cost from seven to seventy dollars as you will. Get your outfit some weeks before the season opens and practice over all distances, landing weights on a newspaper. An automatic winding reel makes back-lash infrequent, though "old-stagers" hardly approve of such foolproof devices. They are emptying the ponds. In using any artificial bait, plug, rubber or fly, it is important to strike the instant the fish touches the bait. He will promptly discover the fraud, and rid himself of it if he can. The use of live bait for large lake fish counsels a longer wait before striking.

Make your own flies, if you want all the fun there is in it. There is nothing mysterious about it. Dissect a few store flies, beginning at the head. In this dissecting, do not cut where you can untie. You will find that most knots are only half hitches. Your dissection should show the use of a binding thread, the reverse folding of wings, the winding of hackles, herl, silk and tinsel. If you shoot, keep a growing collection of feathers, with plenty of oil of cedar or moth balls in the box. Stand in well with some friends who raise chickens. Keep your eye especially on all game roosters. Feathers from the necks of those birds are the most useful ones in your box. One can do very well without any other hackles, if necessary. Note that binding thread goes round the hook in a direction opposite to all other materials.

Tools and Materials for fly tying. A small vise, from the ten cent store (lacking this, use a pair of pliers, with a string wound tightly round the handles; at a pinch, you can hold these pliers between your knees), hooks, silkworm gut or substitute, wing feathers, hackles, silk floss, silk thread, peacock herl, ostrich herl, shoemaker's wax, shellac, a mounted needle with square bent end.

Begin with the wing in reverse position; then go to the tail; fasten in each feather with a half hitch of the binding thread; carry the thread a few turns forward out of the way; wind on, and fasten in turn, the tail, body of floss or herl, ribs of tinsel or silk twist, hackles, and finally the wings, bent back to position. The fastening of the wings and a

touch of shellac or a tuft of ostrich herl make the head.

Dry fly fishing is the top notch of play in this line. Make the flies small. Balance your wings. Use dry fly oil (all your flies would be the better for it). Use a fine, or a finely tapered, leader.

Fly casting is not mysterious, not excessively difficult, and not very expensive, if you do most of the work on your outfit. Much of the cost of a good fly rod is in the winding. You can do that yourself, if you will study out the trick of burying both ends of your thread.

The back cast is the key to good fly casting. In general, keep it high and put a curve at the far, back end, rather than a whip-cracking snap. Make your wrist do the work. The job is daintier and easier so. Lift the tip a bit just before the flies are to light on the water. That makes them come down more gently. Side casts are useful acquisitions, later on. Be sure to varnish all used bamboo rods every fall. That holds the winding and keeps out water. Save the surface and you save the fish that gets away when your rod is soft. Use highest grade elastic rod varnish—not shellac.

Test every line, especially the first ten feet of it, before you leave home. Don't go out with a line that breaks under eight or ten pounds. Dry your lines every day—storage of wet lines rots them.

Keep the law. That is only fair to the other fisherman, and in the end it is best for you.

FOOTBALL

To a person unacquainted with the game, football seems at first an unintelligible series of falling down and getting up motions. But it is really a highly technical game, full of opportunities for both physical and mental prowess, and governed by very exacting rules.

Football is played on a field 160 ft. by 360 ft. A mid-line divides the field across, and on each side are ten cross lines, five yards apart. Counting from the center, the tenth cross line at each end of the field is a goal line. The area enclosed by the side lines and the goal lines is the field of play. The spaces back of the goal lines, measuring 30 ft. by 160 ft., are the end zones. At the middle of each end zone line stand two goal posts, 18 ft. 6 in. apart, with a crossbar 10 feet above the ground.

Two teams of eleven men each play the game. The general object of each team is to advance the ball toward and across the opponent's goal line. This advance is made by throwing the ball, carrying it or kicking it, subject to rules. The team not in possession of the ball attempts to block the advance, either by checking the progress of the player who carries the ball or by getting possession of the ball itself.

A football game is divided into two halves, and each half into two quarters. The quarters are commonly of fifteen minutes each. A fifteen minute intermission separates the halves; a one minute intermission occurs between the first and second quarters, and between the third and fourth.

At the beginning of the game the opposing captains toss up for choice of goal or kickoff. If the winner of the toss chooses goal, the other side must kick off. At the beginning of the third quarter, the team which lost the initial toss-up has its choice of goal or kick-off. For the second and fourth quarters, the teams exchange goals.

The team which has possession of the ball makes the attack, or offensive. For this attack the opening play of the first and third quarters is a kick-off. At kick-off, the ball is sent into the opponent's territory by a place kick from the holders' forty yard line—the line ten yards from the middle of the field on the attackers' side. Of course if the opponents secure possession of the ball after a kick they become the attacking party. At kick-off, the team possessing the ball may not advance beyond the cross-line on which the ball lies, nor may the opponents come within ten yards of that line, until the kick is made.

There are four general methods of putting the ball in play: punt, drop kick, place kick and scrimmage. As just explained, a place kick is used to open each half game. After a free catch, any one of the four methods may be used.

Until 1922, a touchdown was always followed by a place kick for a try at goal. In that year, the place kick after touchdown was abolished in American intercollegiate football. Instead of place kick after touchdown, the ball is now brought out five yards for one play of any practical sort from scrimmage line.

Definitions and Chief Rules of Play. *Down.* A down occurs when the referee blows his whistle or declares the ball "dead." When a player carrying the ball is so held that he cannot advance, the ball is "down" and either the player or the referee may call it so. If the man carrying the ball is so held by an opponent that any part of his body other than his hands or feet touches the ground while he is so held, the ball is down. Other chief instances of downs or dead balls are: after a touchdown, touchback, safety or goal has been made; in general, when the ball goes out of bounds at the side; after an incompleted forward pass; while the penalty for a foul is being enforced; after a fair catch.

If a team having continuous possession of the ball fails to make ten yards' advance during four consecutive downs, the ball goes to the opponents on the fifth down.

No play may be made while the ball is dead, except as provided by rules for re-opening play in the case.

To make a *drop kick*, a player lets the ball fall from his hands and kicks it just as it rebounds from the earth.

When a player has an opportunity to catch a ball which is in the air from an opponent's kick, he may signal for a *fair catch*, by raising his arm, in which case he must not be interfered with in his attempt at a catch. If he succeeds in catching the ball and takes no more than two steps after catching it, his team is entitled to put the ball back into play by any one of four methods already mentioned —scrimmage, drop kick, punt or place kick.

Forward Pass. Once during each scrimmage, from a point at least five yards back of the scrimmage line, the ball may be thrown forward any distance toward the opponents' goal. Suppose Team A makes the pass. Any member of Team B may attempt to catch the ball, and if he succeeds, may advance with it or call it down, in his possession. If Team A makes the pass, only the end men of the scrimmage line of players at least one yard back of the line in Team A may attempt to catch the ball before it is touched by an opponent. After a member of Team B has touched the ball any player of either side may seek to gain possession of it. If a ball passed forward is not caught, but strikes the ground, either before or after being touched by a player of either side, the pass is incomplete. An incomplete forward pass counts as a down, at the spot of the preceding down.

Foul. Any violation of rules (See *Penalties.*)

Free Kick. A punt, drop kick, or place kick following a fair catch. During this play the side in possession of the ball must not advance beyond the line of the fair catch, and the opponents must not come within ten yards of that line until the ball has been kicked or has touched the ground for a kick.

Goal from Field. A goal kicked from the field during the regular progress of play. Ball must go over the crossbar, or over one of the goal posts. Score, three points.

Hurdling with the ball is not permitted. A player carrying the ball may not hurdle in the scrimmage line by jumping over a player within five yards of the point from which the ball was snapped back. A man carrying the ball in the open more than five yards from the point of beginning the play may not attempt to jump over a player who is still on his feet. Stepping over a prostrate player is not hurdling. In the open, a player on his knee may be hurdled without penalty.

Kick-off. The play by which first and third halves are opened. A place kick from the forty yard line of the team possessing the ball.

Offside. A player is offside when the ball has last been touched by a member of his own team behind him. No offside man may touch the ball, except to recover a muff or a fumble or to recover a forward pass under the rules. All players of Team A are onside when the ball has last been touched by a member of Team B.

Out of Bounds. The ball is out of bounds when either the ball or the player carrying it touches the ground on or outside the side line or side line extended. If a ball kicked by a member of Team A goes out of bounds without touching a member of Team B, the ball goes to Team B; but if such a ball touches a member of Team B before going out it belongs to the team which first secures possession of it. A ball out of bounds must be brought back into the field five or fifteen yards, for scrimmage. No player may be out of bounds when the ball is put in play except the kicker and the holder of the ball in a place kick.

Penalties. Loss of five yards. For taking out time more than three times during either half, unless the player is removed for whose benefit time was taken out. For failure of a substitute to report to referee before entering play; for illegal position or offside play; for violating neutral zone at scrimmage; for playing out of bounds; for putting ball in play illegally; for guard or center carrying ball; for feint to snap the ball; for fake attempts to draw opponents offside; for player

taking more than two steps after fair catch; for delaying the game; for interfering with opponents before ball is in play; for holding by defense; for wilful collision with the full back; for crawling after the ball is down; for flying tackle or tackle below the knees; for unfair play not specifically mentioned in the rules.

Loss of fifteen yards. For intentional throwing of forward pass to the ground; for substitute communicating with a player before the ball is put in play; for any player leaving the field during the one-minute intermissions; for interfering with a signaled fair catch; for tackling a player who has made a fair catch; for unlawful assistance to a man carrying the ball, including interlocked interference; for holding, by side possessing the ball; for forward pass by the team which did not put the ball in play; for roughing a man who has kicked the ball; for hurdling; for piling up after the referee declares the ball dead; for any unnecessary roughness or unsportsmanlike action; for coaching from the side lines; for illegal presence on the field of play.

Loss of twenty-five yards. For being unready to play at the beginning of the second half.

Loss of half the distance to the goal. For a player illegally returning to the game; for striking, kneeing or kicking an opponent; for a foul by the defense within one yard of its goal line.

Loss of a down. For the first incomplete forward pass before first down on any series of plays; for more than one forward pass in a scrimmage; for two players of the passing side touching a forward pass; for forward pass going out of bounds on the fly; for ball snapped out of bounds by Team A and recovered by Team A.

Loss of ball to opponents. For the four cases last mentioned, if on fourth down; for an offside player touching the ball; for a kicker recovering the ball before it has been touched by a man entitled to get it; for kicking or kicking at a loose ball.

Suspension from game. For illegal return to the game; for illegal equipment.

Disqualification. For striking, kneeing, kicking; for roughing the kicker; for any flagrantly unsportsmanlike conduct.

Forfeiture of the game. For refusal to allow the game to proceed, or refusal to play within two minutes, when ordered by the referee.

Place kick. A ball kicked while it is resting on the ground, either free, as at kick-off, or supported by an assisting player.

Punt. A kick in which the ball is struck as it drops from the player's hands, and before it touches the ground.

Safety. A safety is made when the ball is declared dead, behind or on the goal line, in the hands of a player defending his own goal, provided that the impetus which sent the ball over the goal line was given by a member of the defending team. Certain other technical cases of fouls, incomplete passes, or kicks across the side lines also constitute safeties. A safety made by a plater of Team A counts two points for Team B.

Scrimmage. The action of putting the ball in play between closely opposing lines of players. At least seven men of each team must be in position on the scrimmage when the ball is put in play. There are really two scrimmage lines, separated by the length of the ball as it lies lengthwise on the field. To be in position on the scrimmage line a player must have two hands or two feet, or one hand and the opposite foot, within twelve inches of his team's line.

The seven men in the line-up for scrimmage are, each way from the middle, center, right and left guards, right and left tackles, right and left ends. Back of the line, one yard or more, are the quarter back, the right and left half backs, and the full back. The ball is put in play by being snapped back on signal from center to quarter back.

Touchback. Resembles safety. Occurs, for example, when Team A has sent the ball over B's goal line, but a member of B touches it down behind the line. After a touchback or a safety, the defenders who made the touchback or the safety put the ball in play on their own twenty yard line.

Touchdown. Made when a ball lawfully held by a member of either team is declared down, on, over or behind the opponents' goal line.

GOLF

Golf is a game which is known to have existed in very ancient times among the people of Holland and Belgium. In these countries, however, it was played, for the most part, on ice. Interest in the game spread to Scotland, and today most people believe that it is of Scotch origin because of the immense popularity which it attained there. In the history of games and sports we read that, as early as 1457, the local Scottish Parliament felt justified in declaiming against the abuse which the game was suffering. In 1592 the Edinburg town council forbade the playing of golf on the Sabbath day, and anyone who was found guilty of disobeying the order was severly punished. After James I ascended the throne in 1603, the game was introduced into England, but it was not until two centuries later that it was accepted with favor there. About the middle of the nineteenth century the people of Canada, India and the United States took an interest in golf, and in 1894 the United States Golf Association was organized with four clubs. The rapid spread of interest in this very health-giving and intriguing game is indicated by the fact that, in 1930, the Association had more than two hundred clubs affiliated with it, and that numerous subordinate leagues, associations and independent clubs had also been organized.

Golf is played on fields, or links, over courses of either nine or eighteen holes. A standard golf course consists of eighteen holes, at distances varying from a hundred yards to half a mile apart. Holes are four and one-half inches in diameter, and not less than four inches deep. They are located at approximately the center of carefully tended spots, called greens. If possible, courses are laid out so that the first and last holes are near each other. A flag, usually red in color, supported by an upright iron rod which rests in the hole except when temporarily removed by a player, indicates the location of each hole.

The clubs used in golf may well enough be classified in four general groups: drivers, for teeing off and long shots; driving irons, for intermediate shots; putters, for sinking the ball in the cup; clubs of special design or material, used in meeting emergencies. To the last group belong, for example, the niblick, cleek, brassie and lofting mashie. Inasmuch as a ball may not be touched by the hands from the time it is teed for the first shot until it drops into the four-inch hole, there are bound to be times when clubs useful in smooth, level going are of no service whatever in crises. If a ball has dropped into a rut or a heel-print, a niblick will get it out; if it is necessary to make a short, lifting shot in order to clear a hazard or reach a higher level, a lofting mashie will do the work.

Most people who make a beginning at golf become enthusiasts, whether they master the game or not. There are a good many reasons for this: Always there is a long walk in the open, in attractive country, on velvety turf. Always one matches his wits and skill against a combination hard to beat, so that every good stroke is a personal triumph and every bad shot is a challenge to do better next time. The conditions are so varied that two perfect shots can seldom be exactly alike. Distances vary, surfaces vary, there are traps, hazards, bunkers and obstacles; slopes up, down, right, left. At one time it may be desirable to make all possible distance—150 or 200 yards in the clear, with a long run of the ball after it strikes; again only a medium distance is to be covered, but the ball must perhaps rise high in the air to get over an obstacle, and stop almost without run, to avoid a trap or stay on the green. Even these shots are not the most difficult ones, for more games are lost on the putting green than anywhere else. It is the dainty little shots of a few inches or a few feet that make the severest test of judgment and control. Here a fraction of an inch to the right or left, a shade too much or too little force, leaves the ball high and dry, with a stroke as surely lost as though a long drive had failed. To accomplish just the result desired, the right club must be chosen, the stroke must be timed and directed, and the power controlled for the effects wanted.

Usually one has a live opponent and a very real contest, but it is possible to have a very good round of golf with only "Colonel Bogie" in sight. Colonel Bogie is that imaginary player on every course who never makes a hopelessly bad mistake; always manages to get from one hole to the next in a proper number of strokes, and leaves a record of his performance at each hole for other folks to measure themselves against.

Many players prefer to be attended by a caddie (usually a young boy) who carries the bag containing the clubs. Players start from the teeing ground, where one of them commences the match by placing his golf ball on the tee—a small heap of sand or an artificial rubber or wooden cone. The purpose of the tee-off is to drive the ball as near as possible to the first hole. The second player does the same with his ball, after which he whose ball is farthest from the hole plays again. This is continued until both players have holed their balls. The hole is won by whichever player has taken the fewest number of strokes. At each succeeding hole that player tees off

first who has won the last hole; it is said to be his "honor."

The game is called singles when played between two persons, and foursomes when two people (playing partners) compete against two others. In match play, two players go over the course together, each claiming for his own score the holes which he has made in a smaller number of strokes than his opponent. If both have taken the same number of strokes the hole is halved, and neither counts. In medal play only the total number of strokes used by each player in the entire round is counted in the final decision. A full contest of either sort plays seventy-two holes. In championship play the winner commonly makes an average of about four and one-sixth shots for each of the seventy-two holes.

Probably no game has ever been invented which has taken a stronger hold on its devotees than has golf. It is consequently to be hoped that there will be a continued extension of public courses so that those who cannot afford membership in a club will not be deprived of this pleasurable, out-of-door sport.

HANDBALL

Handball is a national game of Ireland, where it appears to have originated. It is played in England, under the name of "fives," with rules rather more elaborate than the Irish rules. Handball in the United States is of simpler form.

Handball strongly resembles squash, the chief differences being that in squash the ball is struck by a racket, the court is smaller, and five playing surfaces are necessary, rather than optional.

A handball floor is sixty feet by twenty-four and one-half feet. The front wall is thirty-five feet high. Other walls may slope down toward the back, which is considerably lower than the front. A line, called the ace line, is drawn on the floor parallel to the front wall and thirty feet from it. Two feet nearer the front wall is a second line, marking the limit beyond which the server must not take more than one step in the act of serving.

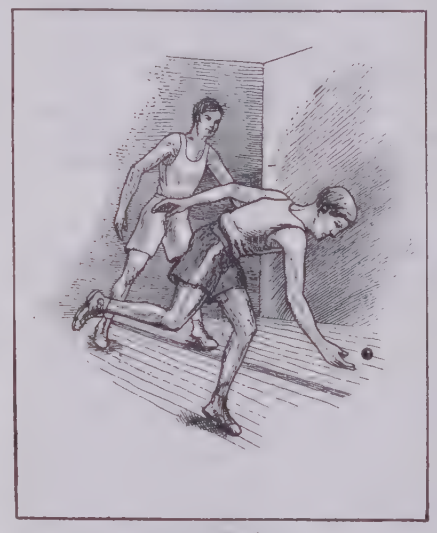
The game is played by two or four persons. The object is to secure points, by causing the opponent to fail in returning a ball to the front wall. In this country twenty-one points make game.

The ball may be hit by either hand. The hand is best held as a shallow cup, deepest at the second joint, where the ball strikes. Gloves may be worn.

Each effort to win a point begins by a service. For this play a ball is dropped to the floor and hit as it rebounds. A ball served must go to the front wall without striking any other object, must hit the wall above the six-inch baseboard, and in rebounding must first touch the floor beyond the ace line—though it may cleverly be made to strike side and back walls on its way to the floor. A served ball which strikes between the front wall and the ace line in its rebound from the front is a short ball. Three shorts in succession cause loss of service—the hand-in becomes hand-out. Each fair service cancels whatever shorts the server may have against him.

If a served ball strikes properly behind the ace line the receiver must return it on first bound, to the front wall above the baseboard. After this first service and return the players alternate in striking the ball until one fails to get it back to the front. Only the served ball must strike behind the ace line in rebounding from the front wall; all returned balls may fall on either side of the ace line. Again, it is only the served ball which must be returned on first bound; in all other cases balls coming from the front may either be volleyed before they strike the floor or hit on first bound.

In general, intentional interference, blocking the ball, is a foul; unintentional interference is only a hinder. Fouls are punished, but a hinder is merely followed by reservice from the same player. It is always a foul, however, to stop a ball on its way to the front wall.



Handball
This game is played by two or four persons. Gloves may be worn if desired.

It is a foul to strike a ball with both hands or to touch the ball twice in one attempt at batting.

Since only the server can score, fouls by the hand-in forfeit the ball, while fouls by the hand-out score for the server.

The officials of handball are a referee and a scorer.

HOCKEY

Hockey is played with a ball or some similar object by two opposing sides, each player using a hooked or bent stick with which he attempts to drive the ball into the opponent's goal. It is thought quite probable that the name "hockey" was derived from the "hooked" stick employed.

Hockey is a game of ancient origin. The Romans played a game very similar in nature, and one or more variations of it were known to most northern peoples of Asia and Europe. In Ireland it was called "shinty," and in Scotland, "hurley."

Modern hockey owes its recent popularity to the formation of "The Men's Hockey Association" in England in 1875. Since 1890 inter-university matches between Oxford and Cambridge have been held annually, and since 1895 yearly international matches have been held between England, Ireland, Scotland and Wales.

There are two major divisions of this sport—field hockey and ice hockey, both of which are here explained:

Field Hockey. *The playing field.* Field, 90 or 100 yds. by 50 or 60 yds. Five-yard strips along each side. Goal posts, 12 ft. apart at middle of each end. Cross bar, 7 ft. up. Net back of goal to catch ball. Striking circle. Front of this circle is a 12 ft. line parallel to goal line 15 yds. forward from goal posts. Ends of this forward line are connected with goal line by arcs from goal posts as centers. Boundary lines are called "side lines" and "goal lines," respectively. One "mid line" and two "quarter lines."

Team. 11 men—5 forwards, 3 half backs, 2 full backs, 1 goal-keeper, with general positions as shown in the diagram.

Object of the game. To drive a ball through the opponents' goal, by striking it with hockey sticks. All shots at goal must be made from within the striking circle.

The forwards are the chief attackers; the half backs assist the forwards; full backs break up attacks by the enemy; goal keepers block shots at goal. Every attacking man is guarded by a corresponding opponent.

Only players "onside" may strike a ball toward the opponents' goal. A player is "offside" when the ball has last been hit or rolled in by a member of his own team behind him, unless at the time player is in his own half of the field or unless there are three or more opponents between the player and the goal he is attacking. An offside player becomes onside when his teammate who last touched the ball passes him toward the opponents' goal, or when an opponent touches the ball.

It is permitted to stop the ball by using any part of the body, but only the goal-keeper may kick the ball. A ball caught in the hands must be dropped at once to fall perpendicularly.

Back strokes are not permitted. A player may not hook an opponents' stick to stop a blow, or hook an opponents' clothing or person.

The beginning of a hockey game is an operation known as the "bully." For this, two opposing players stand on the center line, each with the opponents' goal at his left hand and with the ball between them. Each must strike the ground and the opponents' stick three times in succession, after which both are free to strike the ball. During this operation all players of each side must be behind the ball.

A bully on the mid-line is also used at the beginning of the second half and after each scoring of a goal. If an attacker drives the ball across the opponents' goal line outside the posts a bully must be played on the twenty-five yard line nearer this goal. An intentional foul by the defenders within the striking circle calls for a penalty corner.

When any player causes the ball to go out of bounds at the side one of his opponents must put the ball back in play by rolling it into the field in any direction. For this purpose only one man may be outside the five yard line.

It is a foul (1) to hold, strike, push, trip

or kick an opponent; (2) to raise the stick above the shoulders; (3) to strike with the back of the stick; (4) to strike the ball while offside; (5) to cross between a player and the ball, in order to prevent his striking.

Penalty for each of these fouls, one free hit by the opponents, the defenders standing at least five yards from the man who makes the free hit.

Game, two halves of twenty-five, twenty, or fifteen minutes each, or shorter halves by agreement.

Score, one point for each goal.

The referee is head official, and has charge of the ball.

An umpire in each half of the field watches the conduct of players, and reports certain classes of fouls assigned to him.

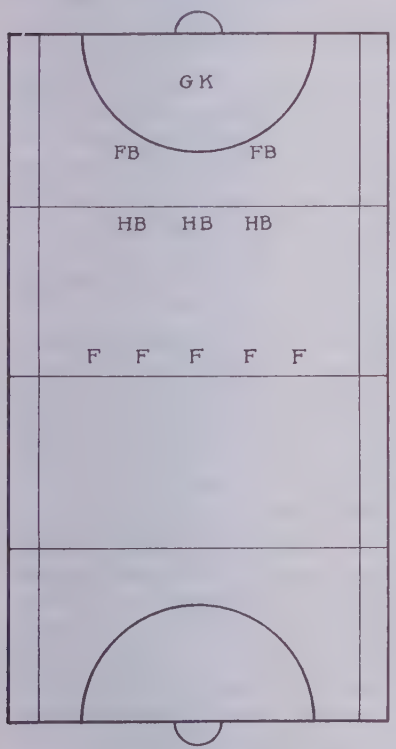


Diagram of Hockey Field
GK, Goal-keeper; FB, Full back; HB, Half back, F, Forward.

Ice Hockey. This game, originally called "bandy," is exceedingly more popular in countries where there is ice than is field hockey. In fact, in America, "hockey" means "ice hockey." In its simplest form of driving a ball across a given limit with a stick, ice hockey has been known for at least five centuries in northern Europe. So popular was it in the Low Countries that many sixteenth and seventeenth century paintings depict games of "bandy."

On the North American continent, the development of the modern game is due to the efforts of the Victoria Hockey Club and McGill University (Montreal). In 1881 the secretary of the Victoria club drew up a recognized code of rules which governed important matches. The first general tournament in Canada took place in 1884. It was not long before the exhibitions given by the big teams of the Ottawa, Quebec, Crystal and Montreal Hockey Clubs excited the interest of people in the larger cities throughout the United States. As a consequence, the game was eagerly accepted by athletic clubs, secondary schools and colleges, and became nearly as popular in the northern states as in Canada. There are now a number of hockey organizations in the United States, all under the jurisdiction of the American Hockey League. Interest in the game is spreading, and even now we can safely say that it can be considered as a major sport of the winter season.

Ice hockey resembles field hockey in essential details, the chief differences being that in ice hockey a team consists of seven players instead of eleven; caroms from side banks are important; a rubber disk called "puck" is used instead of a ball; and the goal is smaller. The posts for ice hockey are six feet apart, and the crossbar is four feet high. The playing rules are approximately the same in the two games.

HORSESHOES

The game of "pitching horseshoes" is a common and popular sport throughout America. Two iron pegs one inch in diameter are driven down forty feet apart, inclining one inch toward each other, with eight inches projecting above the ground. The pegs are in the center of the pitcher's box which is six feet square. A contestant may stand anywhere in the box. Each player has two shoes of the same weight and size. The players take turns in pitching. Shoes which encircle the peg when the count is taken are "ringers," and count three (leaners count merely as the closest shoe). One count goes to each shoe which lies nearer to the peg than any shoe of an opponent. If two or more shoes are equal distances from the peg or are all ringers, it is a tie and no points are given. Game consists of twenty-one points.

INDOOR BASEBALL OR PLAYGROUND BASEBALL

The floor space for indoor baseball should be at least forty feet by fifty feet. The standard size for a diamond in a gymnasium is 27 feet square. Where more space is available, the square is often thirty-five feet. The front of the pitcher's box is twenty-three feet from home plate—less than half the distance required for out-of-door baseball. The home plate is twelve by twelve inches and all others are eighteen inches square. Teams may consist of either seven or nine players.

The object of the game is to make runs—passages round the diamond, touching all four bases. Runners are liable to be put out in various ways, much as in outdoor baseball. Nine innings make a game.

The smallness of the field makes certain changes of baseball rules necessary:

The ball is larger than an out-of-door ball and much softer. The bat is shorter and smaller around than for the regular game out of doors. Pitchers may throw to the batter only underhand. A batted ball is fair or foul according as it first strikes, not as it rolls or bounds after striking. Stealing is minimized by the rule that base runners may not leave their bases while the pitcher holds the ball. Base runners may overrun at second and third as well as at first, provided that they take the sack with them as they go by and bring it back. The positions of all players but the pitcher are considerably varied, as need arises and the captain directs. Since hits are necessarily short, several fielders are likely to be found in positions which would belong to a shortstop out of doors.

In other respects, indoor baseball is about like the out-of-door game.

LACROSSE

Lacrosse, the national game of Canada, is of Indian origin. The British are mildly interested in lacrosse, the Americans hardly more than curious about it. But the game admits of wonderful skill. In general, it resembles hockey; the field is of about the same size; the object of the game is to pass a ball through a goal at the end of the field; goal posts are six feet high, with a crossbar six feet from the ground; nets are commonly placed behind the goals to stop the ball. But the differences are also notable:

The boundaries of the lacrosse field are agreed upon by the captains. The striking circle of hockey is replaced by a twelve-foot square, with the goal in its center. Twelve men constitute a team. The hockey stick is displaced by the "crosse," a shallow, racket-pouch with a handle of any convenient length, loosely strung in such a way that the ball can be retained in the pouch only by a skillful rocking of the crosse. Offside play is not recognized, and so of course not penalized. Rubber soles are permitted, but spikes are forbidden. The ball is of spongy rubber, weight, four and one-quarter ounces.

The play begins with "facing"—a maneuver corresponding to the "bully" of hockey and the center-jump of basketball. Two players face each other, left hands toward the goal they are to attack. On signal, each draws his crosse sharply toward him and is then free to try for the ball. He may bat the ball if he chooses, or scoop it up and run with it, but the best of tactics is to begin as promptly as possible a series of short quick passes toward the goal. The Canadians have developed amazing team play, with pass work more remarkable than that of the best basketball player, in view of the tools by which the passing must be done. It is possible to throw the ball 200 yards or more with the crosse, but short throws retaining control of the ball pay better in the long run.

Charging is not permitted, but a man may block the progress of a player who is advancing with the ball, by standing in his way. When the ball goes out of bounds the two nearest players must "face," not less than four yards from the boundary line.

It is a foul to strike, push, hold or trip an opponent; to throw the crosse; to interfere with a player who has not the ball; to interfere with the goal-keeper before the ball passes into the crease; to touch the ball with the hand. (A goal-keeper may stop the ball with his hands, as in hockey. The crease is the twelve-foot square surrounding the goal.) The score is one point for each goal.

The penalty for a foul is either disqualification, or a "free position." If the latter, the referee designates a player of the side against whom the foul was committed to make such play with the ball as he may choose, no opponent being permitted within five yards when his play is made. A free

position cannot be declared within ten yards of the goal which would be endangered by it.

MINOR GYMNASIUM AND PLAYGROUND GAMES

The games which are used in the gymnasium or on the playground vary according to the differences in skill and technique required for playing them. There are games which are very simple and have but few rules. Others are more complicated and require considerable instruction and practice in order to play them well and to get the full enjoyment from them. They are usually thought of as games of "high organization" and games of "low organization." Games of low organization are intended primarily for younger children or to build up the interest in an activity period leading to a game requiring higher organization. More commonly these games are classified into "major" and "minor" games. They are listed here, major games or those of higher organization separately, and minor games or those of lower organization in this group. It is sometimes difficult to classify games properly but the division here given will meet most of the conditions for gymnasium and playground use.

Bar Pull. Two players sit on the floor facing each other, legs extended, soles of feet touching and hands grasping a wand held crosswise between them. On signal, each attempts to pull the other to his feet.

Bombardment. A line is drawn across the middle of the field and two teams line up on opposite sides, a dozen feet or more from the line. Each party has several basket balls or medicine balls for ammunition, and each player has an Indian club standing beside him, which it is his business to guard. If a pin is knocked down either by an opponent or by the guard it counts for the opposition and must be set up before the guard can make another shot.

Bull in the Pen. Players join hands in a ring, facing in. One of the number is chosen "bull," and attempts to break out by charging through between two players. If he succeeds, he may take the place of either of the two who let him through, and the player so displaced becomes bull.

Cat and Mouse. Circle of players facing in, hands joined. A player chosen to be "cat" attempts to catch a player mouse, beginning with the mouse inside the circle, the cat outside. The players in the circle let the mouse through by raising their arms, but lock the cat. Two slow cats and one quick mouse make a good variation.

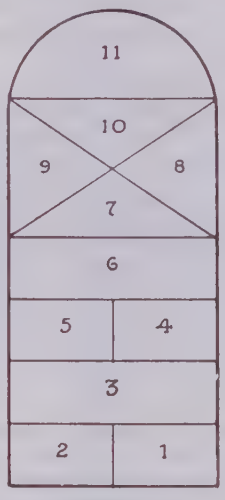
Chicken Fight. Two players stand in an eight-foot circle, each on one foot, with arms folded, or with one arm folded and the other clasping the unused foot. The players hop about the circle and try to bump each other into losing the fight. If either touches his second foot to the ground, or steps across the circle, or falls, or unfolds his arms, he is defeated.

Circle Ball. A circle of players several feet apart, with one player inside the ring. Players in the circle throw to each other a medicine ball or basket ball, and the player within tries to intercept it. If a catcher drops the ball he is "it," and if the player in the center blocks the ball or catches it, the thrower becomes "it."

Crowd Ball. A large ball twenty inches in diameter is tossed up between two lines of players near the center of the field, whereupon each party attempts to rush the ball down field to the opponents' goal line. Batting and throwing the ball are permitted. Goals count one point.

Curtain Ball. A curtain ten feet high is stretched across the middle of the playing space, with half the company on each side. Each party throws the ball over the curtain, and balls which touch the floor count for the throwers.

Dodge Ball. Half the players stand in a large circle, the other half inside the circle. Those in the circle try to hit players inside the circle with a basket ball. Players so hit drop out. When the last one is hit the sides exchange places.



Hopscotch
This is one of the oldest diagrams. Numbers 1, 2, 4 and 5 are "bedrooms"; 3 and 6 are "pickups"; 7, 8, 9 and 10 are "pie"; 11 is the "moon."

Duck on the Rock. A straight line is drawn on the ground, about twenty-five feet from a substantial rock. The player who is "it" stands near this rock, guarding his "duck," which sits on the rock. Other players begin the game by throwing their rocks, one by one, at the duck. If the duck is knocked off the rock, players who have thrown may recover their missiles and go safely back to the throwing line, so long as the duck is off. The tender hurries to put his duck back on the rock, for while the duck is on, the guard may tag anybody who so much as touches a missile in the attempt to recover it, and a person so caught becomes "it," placing his own missile as duck.

Fox and Geese or Fox Trail. Played on the spokes and rim of a large wheel tramped in the snow. The fox or the hunter—his name depends on the title of the game—stands near the hub of the wheel and attempts to catch any players who try to cross from side to side. Neither fox nor geese may leave the beaten paths. Geese are safe in the "dens," where spokes meet the rims of the wheel. The game is livelier when two circles are drawn, with dens on the outer rim and runways along the spokes and the inner rim. Any player caught becomes "it."

Hand Wrestling. Two standing players face each other and grasp right hands. Using this contact only, each player tries to make the other move one foot.

Hopscotch. Hopscotch is played in several forms, all alike in that an object is thrown into and brought back from successive areas in a diagram. The best place for the game is on bare ground or on goodsized squares of cement.

A player standing on the base-line tosses the hopscotch block into "bedroom" No. 1, lifts one foot, hops in, works the block around until he can kick it out at the base line, and hops out after it. Then he does the second bedroom in the same way, but must hop through Number 1 on the way in and out. Numbers 3 and 6, the "pick-ups," are like 1 and 2 except that the block is picked up and carried in the hand as the player hops back through the preceding spaces. Numbers 4 and 5 are like 1 and 2, and so are the "pies," 7, 8, 9 and 10. The "moon," (11) is the high climax in this game. The block is thrown in as before, worked toward the curved end of the moon and kicked out backward. Then the player hops out after it, picks it up, places it under his knee, and holds it in the angle of the raised leg while he hops back through all the spaces in reverse order. The player who first achieves all this wins. An error of any sort ends the player's turn, and he must begin at his next turn in the square for which he last threw the block.

A player must hop through each square in 1, 2, 3 order to the one where he is due, and must come back in reverse order. He must not step on a line. The block must not stop on a line nor be dropped except into the square where due. There must be no handling of the block in coming back from the moon.

Human Target. One player is chosen for target. All others, moving about and passing the ball, attempt to hit the target. Throwers cannot run with the ball in their possession. When the player is hit, a new target is chosen.

Indian Club Race. Forty or fifty feet from the starting line is a second line, along which are standing four Indian clubs for each contestant. The runner who brings one at a time and sets up all his clubs wins the race. The clubs may be arranged in various ways or the race may be a relay.

Indian Wrestle. Two players lie on the mat with feet in opposite directions, the right arms locked together. On count "One" they raise the right legs and touch toes. Same for count "Two." On count "Three" they raise and lock legs at knees and in that position attempt to roll each other over backwards. Vary with left arms and legs.

"I Spy." Any number of players from three to thirty. The player who is "it" stands at goal blindfolded, counting one hundred while all other players hide. At the last count he calls out "One hundred" or some other warning and starts out to find the hidden players. A familiar warning call is:

"One, two, three! Look out for me!
For I am coming, and I can see!"

As soon as a player knows that he has been seen he should race to the goal, for the first to count three there wins. If the spy comes first, he says "One, two, three for Billy Jones," (mentioning player's name,) and Billy, as first caught must stand for the next

game. Any players who reach the goal and there count "One, two, three for me!" before the spy can do so for them, are free.

Keep the Ball. Three or more players; if more than three, divide them into teams. Each team attempts to pass the ball by throwing to a teammate, while the other side attempts to block passes and capture the ball. A game may be won by counting passes to any agreed number.

Kicking Baseball. Home plate four feet wide, two feet deep. The batsman stands on the home plate and kicks at a pitched basket ball. Strikes are called for pitched balls which pass over the plate below the knee, for attempts to kick, and for the first two fouls. Bases are thirty or forty feet apart. Players are put out as in baseball, and also by the catching of the third strike on first bound or by being hit by a ball while running bases.

Line Football. Opposing teams line up behind goal lines at ends of gymnasium or playground. A basket ball lies in the center. At signal, the right end man of each line runs for the ball, attempting to kick a goal. Kickers must not use the hands, but guards may bat or kick the ball, provided they have only one foot across the line. Kickers take their places at the left end of the line. Goals count one point.

Old Sow. If there are five players, four shallow holes are dug at the four corners of a square about fifteen feet on a side, and a similar hole is dug in the middle. Each player has a hockey stick or other crooked club, with which he strikes the block. The player who is "it" tries to bring the block into the center hole, and the others try to prevent by batting it away. A hole may be stolen whenever a player is not holding it with his stick, and the player who is "it" may capture a hole by putting his stick in it while the owner's stick is out, in which case the dispossessed one must either find another hole or become "it." If the middle man succeeds in dropping the block into the center hole he may choose his successor.

One Hole Cat or One Old Cat. Three or four players, who rotate through the positions of fielder, pitcher, catcher and batter. One base is so located that the batter can run to it and back after a good hit. The batter continues to bat until he is put out. Then the catcher takes his place, everybody moves up one notch, and the ousted batter begins again as pitcher or fielder.

Pirates. The most violent of team contests. Two well-separated lines mark the two home grounds. Each player attempts by sheer strength to capture and drag home enemy players.

Plug Ball. Two lines about twenty feet apart, with same number of players, preferably a big group behind each line. Basket balls and medicine balls are thrown back and forth. A ball touching the floor before it reaches the team line counts against the thrower; balls touching the floor behind the line count against the receivers. A referee keeps score for each goal line. There should be one ball for six or eight players.

Prisoner's Base. A very old game. Two parallel base lines are drawn fifty or sixty feet apart, with a three-foot circle—the prison—just behind the middle of each line. The object of each party is to take and keep prisoners from the enemy and to set free its own members who have been captured. A player who left his home base after an opponent set out may capture that opponent and take him to prison in the three-foot circle, provided that a still later opponent does not appear and take captive the captor. Any player who returns to home base may immediately set out as the all-conquering hero, until a still fresher arrival sends him scurrying back for a new right of way. If a player successfully penetrates to his enemy's prison, he may release the prisoners and bring them home unhindered to continue the game. The game ends either by the exhaustion of the enemy's forces or by a count of heads when time is up.

Pull-Away. Two parallel lines at any convenient distance apart. The player who is "it" attempts to tag on the back the players who run across from side to side. If they do not cross, he warns—"Pom-pom—pull-away! Come away or I'll fetch you away!" Whereupon he counts ten, and on the tenth count, all must run across, on penalty of being tagged where they stand. Players caught join in catching others, until none remains. The first one caught is "it" for the next game.

Rope Tug of War. A long rope is provided, on which two opposing teams pull, endeavoring to draw the marked middle of the rope beyond a certain distance marker. In the more exciting forms of this sport, a ditch or stream lies between the contending parties and the losers pay the penalty of a ducking.

Scrimmage Ball. Two goal lines are drawn near opposite ends of the playing space. Each team lines up behind its own goal, with the ball lying on the floor at center. One half of each team are forwards, the other half guards. The forwards and guards exchange places after each goal. On the referee's signal, the forwards rush out and try to put the ball across the opponent's goal line, by pushing or batting it with one hand. Guards defending their goal may step across the line with one foot, but not with both. Fouls are declared for rough play, for blocking or propelling the ball except with one hand, for throwing the ball, or for the propelling of the ball by a player who is down. Penalty for fouls, a try at goal from the foul line, with defenders behind their goal line, and attackers on the foul line. The ball is tossed up by one of the forwards, and batted by another forward. If the defenders block the ball, it is still in play. A goal from the field counts two points; a goal from the foul line, one point.

Scrub. Scrub grows out of the game of one old cat by the addition of another base or two, a few fielders, and perhaps a waiting list of batters, everybody moving up in turn as a batter is put out.

Sparrow Fight. Two players sit on the floor near each other, each with a wand held in the bend of the elbows and passing under the knees, the hands clasped over the shins. Each player attempts to upset the other by getting a toe under the opponent's foot, and lifting.

Swat Ball. Two equal teams divide between them all available air-filled balls, and attempt to hit opponents with them. A player who is hit must drop out of the game. Balls may be recovered by anyone who can get them and used over and over. There are no space restrictions. The game ends by a count of teams after a given time or by the annihilation of either party.

Three Deep. Players in a circle, two deep, in pairs, one player behind another. A runner and a chaser are chosen. To avoid being caught, the runner may stop in front of any pair, making it "three deep." The outside or rear player is thus crowded off, and becomes the runner, in danger of being caught, until he saves himself. If the player who is "it" catches the runner, the runner becomes chaser, and the former chaser must save himself by stopping somewhere three deep.

Tug of War or Catch and Pull. A line is drawn on the floor or the ground. Players divide into two teams on opposite sides of this line. The game is to pull opponents across the line, catch as catch can. Several players may grapple one man if they can manage it, but any player who wholly crosses the scratch line becomes a member of the opponents' team and must work there.

Two Old Cat. Four or more players. Two bases, with a batter at each, and a catcher behind the bat. Each catcher becomes a pitcher for the return throw, so that the batters strike alternately. When either makes a hit both batters must run, exchanging bases, and either or both may be put out by getting the ball to the base before the runner reaches it. When a put out occurs at either base, the catcher at that base takes the bat, and his fielder, if any, becomes catcher.

POLO

Polo is the oldest and most widespread member of the hockey family, for, judging by the records and literary references, foot hockey has always been derived from the mounted sort. Authentic polo is more than 2000 years old.

Polo has naturally used a great variety of rules, implements, team numbers and styles of play. The English system of closely planned team-work and short passes down the field was defeated by an American team in 1909. British comment reported that when the Americans came to England, they were inferior in both mounts and pass work, but that they bought the ponies and learned the combinations, without sacrificing individual dash and long-range marksmanship.

Polo grounds are commonly about 175 by 300 yards in size, with broad margins. Two to eight players—usually four—make a team. The object of the game is to drive a wooden ball, from horseback, by strokes of a long-handled mallet, between goal posts eight yards apart.

Ponies for this game are especially bred and trained. They must be exactly fourteen hands and two inches high, "with the strength of a hunter, the courage of a racer, and the docility of a pony." The tendency to extravagant expense in the game has to be met by rules and close supervision.

The requirements of this game are severe, There must be perfect horsemanship, good.

quick, clear and cool headwork, and the ability to make controlled shots, forward or backhand, meeting a flying ball with a mallet head.

The conditions of this game make it less democratic than golf, but its magnificent challenge to daring and skill, and its value in training for open warfare have kept its hold on vigorous young men of means, and its place in regular armies.

Play is in periods of seven and one-half minutes each, the number of periods depending on the number of players. When four men play, there are eight periods, with short intermissions between.

The game begins by a "throw-in." On signal, the referee throws the ball between two opposing lines of three players each, facing opposite goals, with one man on guard behind each line. Instantly after the throw-in, the dash and struggle are on. The ball may be struck only with the mallet, must not be caught or held, though it may be blocked by the players person or by his pony. Dribbling with the mallet is permitted.

If a ball goes over the side lines, it is thrown in as in the beginning, but opposite the point where it went out. If the attackers drive the ball across their opponents' end line outside the goal posts, a defender shall knock the ball into the field, from a point along the end line at least ten feet outside the post. At the instant he strikes the ball no opponent may be within fifty feet of him. If the player delays in making his stroke the referee may put the ball in play by throwing it in.

Safety of players and ponies is furthered by certain rules. The player who last hit the ball has the right of way in following it for another shot. No opponent may block his right of way by stopping crosswise of his course between him and the ball, nor may there be any crossing of his path except at safe distances. But a man may cut into or across the right of way if the conditions make it safe to do so. The referee is, of course, the judge of safe play.

Hooking an opponent's mallet is forbidden, except to block an actual stroke, and then there must be no reaching across the opponent's pony. Two players approaching a ball from opposite directions must have the ball between them, at each man's right hand. Charging or striking a player or a pony with the mallet are forbidden. Fouls are declared for any of these offenses, and in general for all cases of careless, reckless, dangerous riding, for roughness in personal contact with an opponent, or for cruel treatment of ponies. It is a foul for a dismounted player to strike the ball or for any assistance to be given in the progress of the game by a person who comes on the field for that purpose.

Each foul subtracts one-quarter or one-half point from the score of the offending team. A goal made, directly or indirectly, by means of foul play does not count.

QUOITS

The formal game of quoits is seldom met with in America. It is played with flattened ring-shaped pieces of iron, called "quoits," and the rules are similar to those for the game of horseshoes (which see).

RIFLERY

Hints for Beginners. Clean and oil your gun every day you use it, every day in camp, and once a month on general principles. You can inspect the inside of a rifle barrel by putting a piece of paper in the breech for a reflector. Don't stop cleaning until the rags come through without any discoloring, and the barrel shines in every spot. A solvent oil is best for taking out the residue of powder. Be especially careful to clean the cartridge chamber in the barrel. The powder residue eats away the steel; the shells expand on firing, and then the extractor will not work.

Be careful not to jam your sights. A slight blow may spoil your marksmanship and bring famine in camp. If you give peep sights a three days' trial, you will probably not use other types afterward. For snap shooting get the largest aperture you can buy.

Practical rifle fire is both quick and accurate. In all contests, and in your daily practice, work against both time and the bull's eye. Invent a scoring system in which time counts perhaps two points, to three for accuracy. To gain speed, learn to shoot on the lift and on the swing from right and left. It is bad policy to try to freeze the sights in a long, hesitating refinement. Make your gun barrel draw a line which brings the tip of the front bead just below the spot you want to hit. Slow down the motion as the bead comes to place and squeeze the trigger. Never consciously pull on a trigger with the finger. Squeeze with the whole hand as though the gun stock were a lemon.

If your shots tend to group at one side, study the situation. If you are an amateur and the shots are at the right, you are probably flinching a bit, pulling your trigger and drawing the muzzle around with it. Try lying prone, shooting over a padded rest of some sort—a lump of sod, a folded coat, anything to support the barrel without solid reaction from below. Very slowly squeeze the trigger.

Learn to "call your shots," that is, notice exactly where the bead lies on the target when the bullet starts. That point is by no means sure to be where it was when you fired.

If your gun comes with a heavy trigger pull and is not automatic it is well to have the trigger pull reduced to four pounds.

After several hours of careful practice on different days, if your shots continue to go wrong in consistent groups, you should have an expert try your sights. Sight your own rifles as soon as you know you can trust your aim and your trigger pull from the prone position. Remember that the forward sight works by contraries—if you move it to the left, you have thrown your shots to the right, and so on. The final horizontal corrections of a peep sight are made with bits of paper under one edge of the sight base.

Some sort of rivalry gives the best impulse to speed, but the highest premium must always be on accuracy. When you can score ten bull's-eyes in ten seconds, at a two inch ring fifty yards away, you are becoming a fair shot at a standing mark. Refinement of the stationary game comes with the use of smaller targets, farther away, with allowance for sunlight, windage and distance.

The use of rifles with moving targets will at once show the value of these hints on speed. There are two general styles of shooting at running game. One may follow its movements with the gun, and so come up in a kind of pursuit, or he may anticipate the motions and have his sights lined up in waiting. Of the two, the brisk follower will get more shots, but the shrewd anticipator will often make a bigger percentage of kills for the number of shots fired. Of course, the ideal rifleman combines both systems and takes all the chances that offer.

ROWING

Rowing has been an officially recognized sport for only a little over a century. The adoption of outriggers—steel frames for placing the row-locks well out at the side of the boat—started in 1845 the rapid movement toward the long, narrow, light racing shells of our day. The sliding seat was first used in a race in 1870.

At present an eight oared shell is about sixty feet long, two feet wide, and weighs around two hundred seventy pounds; and a single shell is about twenty-six feet long, eleven inches wide, with a weight of twenty-eight pounds.

To row with an oar in each hand is called "sculling." Sculls are a little less than ten feet long. When each man pulls one oar in a team or crew, the oars are called "sweeps," and are about twelve feet, three inches long. Races in a full rowing regatta are likely to include single and double sculls, and sweeps in pairs, fours and eights.

A full crew of eight men is accompanied by a coxswain, who sits in the stern facing forward, steers the boat, keeps the captain posted and advises him about the pace. In spurts a racing crew is likely to finish a short race at about forty-one strokes to the minute. Longer courses of three miles or more take a steady pace of about thirty-three, and quicken at the finish to thirty-eight or better.

The first oarsman facing the coxswain is the captain or stroke oar, who receives the advice of the coxswain and himself sets the rowing pace. Other oarsmen must of course follow his lead accurately or there can be no hope of winning. Good generalship is required in placing the men, both to balance the boat and to match men in pairs according to strength. In general, of course, the less the rudder has to be used, the more energy can go toward the goal flag.

Much depends on form. The sliding seat makes it possible to use muscles from neck to toes, but it is no easy matter to bring these into smooth agreement. Practice commonly begins with rowing machines in a gymnasium long before the spring opens. Each new man on a crew adds to the problems of training.

Certain types of stroke have proved advantageous. Best results require that the oar blades should not be deeply plunged during the stroke, but should be only well covered by water. Feathering is universal, in order to cut the resistance of the air in the backward thrust of the oar. To feather is to give such a downward flip to the wrist and forearm as to make the oar blade skim along nearly parallel to the surface of the water in the recovery after each stroke.

If the oar is spoon-shaped, it is sometimes allowed to touch the water lightly as it swings back, thus sustaining a part of the weight of the oar on the water; but more than a very little of this saves the rower at the expense of the pace.

Rowing is a favorite intercollegiate contest wherever practicable, but it is by no means limited to that range. Boat clubs practice the world over, and annual regattas are of national and international interest.

SKATING

There are two general types of skating—one emphasizes speed, the other values grace and ingenuity. Each has its devotees, with national and international contests annually.

Speed records in skating do not differ greatly from sprinting records on foot, as may be inferred from the fact that the one hundred yard dash on skates is made in from eight to twelve seconds.

By official agreement, the title of champion in international speed contests goes to the winner of three out of four races, the distances being 500, 1,500, 5,000, and 10,000 meters.

Figure skating contests are conducted annually, but in America arouse less interest than speed racing. As a sporting proposition, Americans are chiefly interested in skating as a means of playing hockey. But the recreational popularity of skating is very great, and is pretty sure to remain so.

The modern ice skate differs radically from its antecedents of a generation back. In 1890 "club" skates were fastened by adjustable clamps; the skate was likely to come off at embarassing moments, often bringing a sole of shoe with it. No special shoe was required, except as to strength at the sides of the soles. The skates were all steel, with blades about three-sixteenths of an inch thick, resting on the ice at only one point of an arc, thus earning the name of rockers. Newer types came in with the popularity of hockey, and were designed for quick stops, speed, lightness and safety. A skating shoe is now a permanent part of the outfit, riveted fast to the plates of the skate. The blades are long, thin and straight and borne on three aluminum tubes, one horizontal, two vertical.

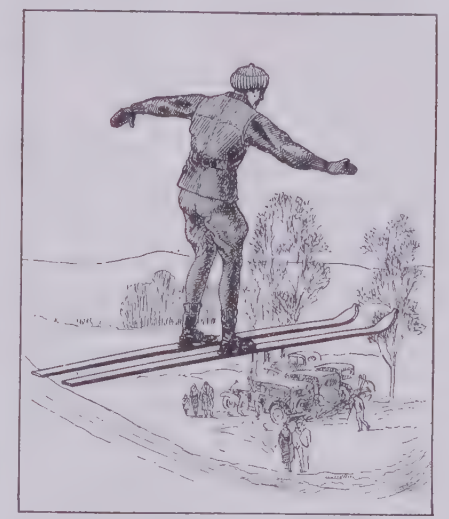
Much old-time grace has been sacrificed to speed in the change of blade design. Rockers tended to curves and to pleasing variations of balance; hockey skates tend to straight lines and a general firmness of movement, rather than to grace.

SKIING

Skis are the descendants of the long narrow, leather-covered snowshoes used in northern Europe since very ancient times, but popularized in our generation by the sports of Norway. Skis are now thin, flat strips of oak, ash or spruce, five or six inches wide, about eighteen inches longer than the user is tall, smooth or ribbed lengthwise on the bottom, thickest under the feet, and fastened with straps across the toes, like snowshoes.

There are two types of official contests with skis: the jump and the long distance across country trip. Of late years, the distance record in jumping has been held in America, clearing a distance of 214 feet, or better. When one remembers the terrific velocity necessary to gain this distance and the fact that a fall in landing cancels the jump, the feat seems to require incredible daring and skill. In the United States, Michigan, Wisconsin, Minnesota, and the Rocky Mountain country are chiefly interested in ski jumping. The sport is gaining in popularity wherever deep snows prevail in winter.

Skis have practical uses in the Scandinavian sections of Europe. They had a considerable place in the Alpine campaigns of the World War. Soldiers of continental Europe are giving increasing attention to them. Military ski runners have covered fifteen miles in an hour and a half, under favorable conditions.



The Ski Jumper
A popular sport in regions where deep snows prevail.

Skis require a depth of at least six inches of snow for best service. They do not work well in melting snow nor in thick underbrush. In such unfavorable conditions they yield to the snowshoes perfected by American Indians.

SNOWSHOEING

Unlike skiing, snowshoeing has little of the spectacular about it. One can get the knack of it in a few minutes; the rest is an affair of training the leg and foot muscles to an unaccustomed straddle, heels up, toes down. Assuming that there are bound to be occasional falls, one does well to practice for them at first, so that the general tangle of pack. snowshoes and snowshoer may be less hopeless when the time comes. After the novelty wears off, snowshoeing becomes a workaday affair of getting where one wants to go but could not go without this Indian legacy.

SOCCER

The rules of association football, known in the United States as "soccer," were first formulated at Cambridge University, England, about 1860. The game is steadily growing in popularity in this country, especially in grammar schools.

The field is rectangular, commonly about seventy-five yards by one hundred fifteen yards, with well-marked boundaries. At the middle of each end are goal posts eight yards apart, with a crossbar eight feet up. A mid-line divides the field across, and from the middle of this line a circle is drawn, with a ten yard radius. Flags mark each corner of the field. In front of each goal is a goal area, twenty yards by six yards, running twenty yards along the end line. Enclosing the goal area is a penalty area, eighteen yards by forty-four yards, running forty-four yards along the end line. A penalty kick mark is twelve yards in front of the mid-point of each goal line. A corner kick area is a quadrant drawn from each corner with a radius of one yard.

The ball used in soccer is round, unlike the Rugby ball.

Soccer rules resemble those for field hockey. The ball may be advanced only by kicking. A goal is made when the ball is kicked under the crossbar, not over it. Two teams of eleven men each are placed as in field hockey—a goal-keeper, two full backs, three half backs, and five forwards.

A player is offside when the ball was last touched by a member of his own team behind him; provided that the presence of three or more opponents ahead of player A, at the instant his teammate B kicks the ball, makes player A onside, and provided further that a player cannot be offside who was in his own half of the field when the ball was last played.

A player offside cannot put himself onside. This must be done for him in one of three ways: (1) An opponent may play the ball. (2) The offside man may be behind the ball when a teammate plays it. (3) Three opponents may be ahead of the offside man when a teammate behind him plays the ball. "Take care that when the ball is played by one of your own side you have three opponents between you and their goal line or that you are in line with or behind the ball."

No one but the goal-keeper may catch the ball, or bat it with his hands, arms or shoulders, and he only in actually guarding the goal.

The game is played in two halves of twenty to forty-five minutes each, according to the age of the players.

Toss-up awards choice of goal or kick-off at the beginning of the game; goals are exchanged at the beginning of the second half.

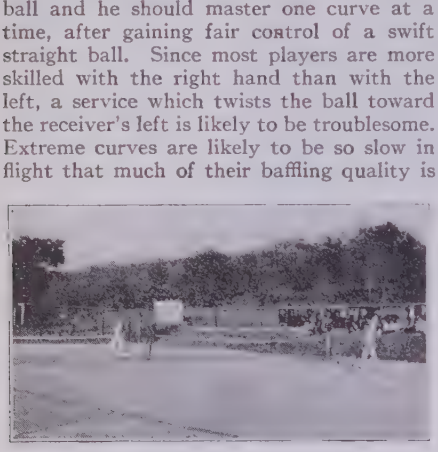
Play is started by a kick-off at the center of the field. At kick-off no member of either team may cross the mid-line until the ball is kicked, nor may any opponent approach within ten yards of the ball until that time. After the scoring of a goal by either team, their opponents kick-off at center.

If the attackers send the ball over the end line outside the goal posts, a member of the defending team has a goal kick from within the goal area, no opponent being permitted within ten yards. The ball is in play as soon as kicked.

If the defenders send the ball over their own goal line, the attackers have a free kick from the nearest corner circle, no opponent within ten yards.

If the ball crosses a side line, a member of the team which did not drive it out shall

speed and control in striking the ball, not only in service, but in return. A good player has at command not only swift, straight balls, but a variety of curves and "cuts." A beginner will do well to study both the flight and the rebound of a curved ball and he should master one curve at a time, after gaining fair control of a swift straight ball. Since most players are more skilled with the right hand than with the left, a service which twists the ball toward the receiver's left is likely to be troublesome. Extreme curves are likely to be so slow in flight that much of their baffling quality is



Tennis Players in Action

offset by the added time given for solving them. If an opponent is playing too far back, an under cut dropping the ball near the net will be pretty sure to win or lose the point. If the opponent is too close to the net, a bit of upper cut in the high lob sent over his head will help to bring the ball down within bounds. Batting the ball against the smooth side of a building is a very useful exercise in gaining control of the racket.

TRACK AND FIELD EVENTS

Track and field events show little team work, except of a mild sort in relay races. These contests are rather individual struggles against rivals all doing the same thing, in an attempt to win honors or trophies for themselves or for their organizations. When rival athletic organizations meet points are scored for the winning of each event under rules which vary with the age and sex of the contestants or the custom of the groups concerned.

The control of athletic events in this country is largely in the hands of a few associations: elementary and high school unions are local, intercollegiate associations are broader in range, and the Y. M. C. A. and Amateur Athletic Union are national.

The commonly recognized distinction between amateur and professional athletes is that a professional has received money for his services as a player or a coach. This definition is often unjust in various ways. Payment may be in forms other than cash, and the occasional acceptance of money for taking part in games does not in any way indicate a really professional attitude toward the game in question. The definition is likely to be revised in the near future.

The terms "track" and "field" are commonly used together to cover all sorts of contests in running, jumping and weight throwing. The names of these contests and a short statement of the rules and customs holding in each will be given in turn.

Officials. Each athletic meet is in the general charge of a referee, whose word is final in the matters he pronounces on, subject only to a later protest, in certain cases, before a governing committee of the association he represents.

The referee's assistants are:

Clerk of the Course, who records all entries, investigates records with a view to handicapping contestants, assigns numbers and otherwise busies himself.

Starter, the man behind the gun.

Inspectors, for relays and running races above 300 yards, to make sure that the rules are fairly observed in the distant parts of the course.

Judges at the finish, who pick the winners.

Timekeepers, with stop watches registering fifths of seconds.

Scorer, the secretary of official results.

Field judges of jumping, weight throwing and vaulting.

Marshal, to maintain order and clear the track.

All contestants report to the clerk of the course on arrival, register, enter for certain events, receive handicaps according to previous records and receive a number for the meet. They must learn in advance the exact time for each event in which they are to appear and be on hand unless officially excused.

Sprints, or dashes, cover any distance up to 300 yards. The course is divided into lanes, one for each contestant. These lanes are assigned by lot. Runners who are not handicapped start from scratch, a line drawn across the track. A runner's body may overhang this line at the start, but he may not in any way touch ground beyond the line before the starting signal is given. This starting signal is always in three stages, for which the words are: (1) "On your mark!" (2) "Get set!" (3) "Go!" For all races, except time handicaps and cross-country runs, a pistol shot is used instead of the word "Go!" A crouching start aids a quick getaway in all sprints and dashes.

Fouls in all Running Races are as follows: (1) Running without a number, unless permitted by the referee.

(2) False start—touching the ground beyond the starting mark before the signal is given. Penalty, a distance forfeit in yards for the first two offenses, disqualification for the third.

(3) Receiving coaching or other aid during a race.

(4) Hindering a competitor in any way during a race.

(5) Grasping the tape at the finish. Hands should be held high or thrown back.

(6) Unsportsmanlike conduct, or disputing the judgments of officials.

(7) Crossing in front of competitors after rounding the last turn toward the finish, or at any other time unless six feet or more in advance of the man whose trail is crossed.

When there are too many runners for a decision in one trial, the race is run in heats, the winners of each heat entering the finals.

In championship races up to 300 yards, under official rules, each runner must have a separate course, marked off with ropes or permanent lines.

Men are making good time in the dashes at the rate of nine and three-fifths seconds to ten and three-fifths seconds per 100 yards, or about ten yards each second. Women's colleges report the 100 yards in about twelve seconds.

Running. *Cross-Country Runs* are usually between teams of an equal number, over open country, to a total distance of six miles. Scoring may be individual, or may be based on time made either by the entire teams, or by the first five members to arrive at the finish.

Cross-country speed for six miles is about 32½ minutes.

Hurdle Races combine running and jumping. A hurdle is a gate-like obstacle which the runner must leap over as he comes to it. There are two standard hurdle races—one of 120 yards with ten high hurdles, (three feet six inches); the other 220 yards with ten low hurdles, (two feet 6 inches). In championship races, the location of each hurdle is exactly prescribed. A runner is permitted to knock down two hurdles, but not more, under penalty of disqualification.

Adult men do the short hurdle races in fifteen to seventeen seconds, the long one in twenty-five to twenty-seven seconds.

Middle Distance Runs. 300 yards to one mile.

Long distance runs—the cross-country and Marathon—depend more on endurance than on speed. Dashes require speed and quick nervous reactions. Middle distance runs are likely to begin vigorously, to use a moderate middle pace and to end with a dash. On this account, all distance runs should end in a straightaway course.

The 440 yard races commonly use the crouching start; longer races get away from the standing position.

Rules are as in dashes.

Good time for adults, including members of high schools and Y. M. C. A.'s, runs for for various distances about as follows:

440 yd.—47 to 54 sec.

880 yd.—1 min. 50 sec. to 2 min. 5. sec.

1 mile—4 min. 15 sec. to 4 min. 47 sec.

Relay Races. As used in adult athletic contest, a relay race is an affair between two or more teams, usually of four men each. When the teams are of four men, each man does one-fourth of the total distance. The first runners are started as in dashes; no other runner may start until he has been touched by the teammate next before him in the race. Commonly, each team passes through from man to man a token which is delivered at the goal, automatically proving the fairness of all the contacts. The touch-off, or delivery, of tokens must occur within a twenty-foot space marked off for the purpose. An inspector is stationed at each of these starting points to see that the rules are complied with.

Relay races are commonly run on regular tracks, with distances from 300 yards upward, usually such that each runner can go through his part of the distance at top speed. The speeds obtained in relay races are likely to be faster than the runners would make in single competition.

Walking Races are commonly for one-half mile, one mile or two miles. No walker may have both feet off the ground at once. A judge accompanies the walkers to enforce this rule.

Championship time will be about one mile in seven minutes.

Jumping. *Pole Vault.* The requirements for a pole vault are: A runway eight to ten feet wide and twenty yards or so long; uprights notched or pinned for half-inch lifts of the crossbar; a landingpit of soft earth or sawdust. Between the uprights a wide plank is sunk, edge up, cross-wise, with two inches projecting, to stop the bottom end of the pole. In front of this plank a hole is dug for the same purpose. Fifteen feet in front of the bar is a balk line, not to be crossed before the take-off. Poles are about sixteen feet long, of spruce or bamboo, wound for grip, and plugged or spiked at the lower end.

Good form is very important. The pace must be managed to bring the jumping foot to the balk line; one hand grasps the po e slightly below the height of the cross-bar, the other hand two feet higher up. The run is finished at top speed. As he comes to the balk line, the runner places his pole, lifts one foot, springs from the other, slides the lower hand up on the pole, lifts the body by the pull and thrust of both arms, turns to a horizontal position above the pole, feet forward, drops the pole back, and lands on his feet in the pit. Most jumpers land facing the bar. A good landing is important for safety.

The jump is fair and the height is recorded if the crossbar is not displaced by either the pole or the person of the jumper.

Field judges officiate.

Records for men run from twelve to thirteen feet.

Running Broad Jump. This event requires a 40 yd. running path of cinders or firm earth, leading to a take-off plank, beyond which the soil is dug up for safety in landing. The take-off plank varies in width, the standard being 5 inches., but is always sunk broad side up, flush with the ground level. At the edge of the plank next the landing pit, the soil is dug out several inches for leverage in springing from the plank.

Each contestant takes as much run as he pleases—the ordinary run is about six paces—so timing his steps as to bring his jumping foot on the take-off plank for the spring. If the running path is soft or the wind unfavorable, more is lost than gained by long runs. The runner approaches the board at full speed, lands solidly on his jumping leg, and without pause makes a crouching spring; flings his arms forward for the bit of boost that gives, and while still in the air thrusts his legs forward, in order to make his mark as far from the plank as possible.

Jumps are measured from the forward or unburied edge of the take-off board to the nearest mark made by the jumper in landing. On this account he must be careful not to fall backward or even throw a hand to support himself in landing, for the marks so made will lower his record.

Field judges are the officials for jumping.

When a large number of competitors are entered, each has three trial jumps, and a convenient number of winners from these trials enter the final competition. In the final competition each man again has three jumps and the best of the three jumps made by each man is his record for the event.

Running High Jump. General management as for all other jumps. Required, a landing pit of soft earth, dug up twelve feet square; a pair of uprights twelve feet apart, bored for pegs to support a light crossbar; a V-shaped running ground, such that contestants may get a twenty-yard approach from either side. It is not good form to approach the bar from the front. In intercollegiate practice, a balk line is drawn on the ground three feet from the uprights; the runner must not step beyond this line before he springs.

Displacing the bar or leaving the ground in any attempt shall count as a trial. An illegal jump shall be one in which the competitor dives or somersaults over the bar or jumps in such a manner that his head crosses the bar in advance of either foot. Since height, not broad distance, is required, the approach should not be too fast. The take-off is from right or left foot according to the direction of approach. The leg nearest the bar is first thrown over, then a twist to clear the hips, a flip of the second foot, and a landing on the foot that made the take-off.

Three trials are permitted at each height. A contestant may decline to try any particular height, and may come in at a greater height later on, but there may be no return to lower levels, except to break a tie.

Handicaps are added to the score of the opponents.

Good records for high schools are above five feet six inches, and for colleges, above six feet.

Running Hop, Step and Jump. The start is as for running broad jump. The foot that makes the take-off must make the first landing; the opposite foot at once takes the step; then without a pause both feet register the final jump. The distance is measured from the scratch line or bare edge of the take-off board to the nearest trace of feet, body or hands in the final landing.

Standing Broad Jump. This event uses a regular take-off board, with both feet on the board when the spring is made. Toes may overhang the edge of the board, for starting thrust. If, as sometimes happens, the jump is from a scratch line on the ground the toes may touch this line but must not overreach it.

Three trials are used, as in the running jumps.

Field judges are in charge.

Records for standing broad jumps go to eleven feet, four and seven-eighths inches.

Standing High Jump. This is made from any position, with one or both feet, but without preliminary hops or jumps.

Good scores for adults must be close to five feet. The record is a few inches above it.

Three Standing Broad Jumps. Managed as broad jump, above. The jumper must not stop, even for one extra set of motions, between jumps, but must spring to his second and third immediately on landing from first and second.

Adult records run above forty-five feet for three jumps.

Throwing. *Baseball Distance Throw.* From within a six-foot circle. The thrower steps from the rear half into the forward half of this circle, but must not cross the line.

Women's records go well above 200 ft.

Basket Ball Distance Throw. Managed like the baseball throw. The basket ball and baseball throws are not now commonly included in intercollegiate events.

Throwing the Javelin. This is a Swedish event, imported, like the discus throw, from the modern Olympic games.

The official javelin is eight and one-half feet long, weighs one and seven-tenths pounds or more.

The thrower runs about eighteen yards to a restraining line, and without touching or over-stepping that line, launches his javelin. The score may be taken for either hand, or for both added together. The best score for one hand runs over 200 feet, and for both added together, about 359 feet.

Throwing the Weights. (1) *The Shotput* is made from within a seven-foot circle, which the contestant must not cross in making the throw, or leave from the front before the throw is measured. A toe-board is fastened near the forward edge of the circle, for the thrower's convenience. The weight of the shot varies with the age of the contestants. The standard is sixteen pounds.

The shot must be "put," not thrown—that is, it must not be drawn back of the ear in line with the shoulder; at the beginning of the action, it rests usually *on* the shoulder, in the hand as near the end of the fingers as strength permits to give leverage. Form is important: (1) a half crouch at rear of the circle, the weighted shoulder drawn far back and low; (2) a sliding hop forward; (3) a twisting shift of the feet and an upward lunge of the whole body, while the putting arm straightens, and even the fingers add their flip at the end, like the kick of the toes in swimming.

Each contestant has three trials. The best of the three is his record for the event.

Field judges.

Good adult distance for the sixteen pound shotput is forty-five to fifty feet.

There are two styles of throwing the discus—one, the old Greek form, with prescribed motions from a fixed position; the other, a modern free style, managed much like the shotput, except that the discus is really thrown, with a full arm swing.

The discus is a double convex wooden contrivance, iron-bound and metal-faced, diameter about nine inches, weight about four and one-half pounds.

Scores of ninety-seven feet have been made in Greek style, and 135 to 150 feet, free style.

(2) *The Hammer Throw* is from within a seven-foot circle which must not be crossed in throwing, and which may be left only from the rear.

The standard hammer is of metal, with a wire handle; total weight, sixteen pounds, total length not over four feet.

Good form requires one, two or three complete turns of the thrower before he releases his hammer. If he can control himself, two turns are better than one, and three are better than two, since speed can be built up throughout. Intercollegiate and adult records with the hammer run from 160 to 190 feet.

(3) *Throwing the Fifty-six Pound Weight.* Same general conditions as for shotput and hammer throw. Throwing this weight is like throwing a very heavy hammer with a very short handle. The overall length of this weight must not be over sixteen inches.

The record is close to fifty feet, six inches.

TRAP SHOOTING

Shooting with the rifle at running or flying game is so difficult a sport that there is no disgrace in using a scatter gun for the purpose, and it does less harm to the landscape. The drift of practice with both rifles and shotguns has been toward smaller and smaller bore. In 1875, a ten gauge shotgun was the ordinary thing; in 1900, twelves were in order; now the sportsmanlike bird hunter uses sixteens and twenties. He has all the advantage of the argument. Whether the gun shall be a repeater or double-barreled, is entirely a matter of taste. There is a good deal of force in the notion that all of the guns taken to the woods should have the same type of action.

Trap shooting is in itself a sport with many thousands of adherents. Even unredeemed pothunters find that it pays to practice the leads at unknown angles on clay birds. One doesn't like to miss the few chances he gets in the autumn. A Dupont hand trap costs only a few dollars, and does first-class work. It is as hard to learn to shoot by the book as it is to learn to swim in that way. Practice is the big thing, but theory helps. For instance, a flock of teal in full flight goes about ninety miles an hour. If we assume that shot travel 1,000 feet per second, it is easy to figure that the lead for a cross-flight of these birds at ten rods distance will be about twenty-one feet. But the angle of flight makes a very great difference in the amount of the lead, and something is also to be allowed for the drop of the shot. So it appears that a man who can make a high score at flying marks in all directions, with speeds up to ninety miles an hour, is an artist worthy of respectful approval in his field.

VOLLEY BALL

Volley ball is a lively and interesting game between two teams of any convenient number of players.

Across the middle of a rectangular field, not larger than thirty feet by sixty feet, a net is stretched, the upper edge seven and one-half feet from the floor. The object of each team is to keep the ball beyond the net in the enemy's country, and to prevent its striking the ground in home territory.

No matter how many play, each player must take his turn at serving the ball and must continue to serve until his side is out, by reason of faulty service, foul or failure in returning the ball. To serve a ball, a player stands back of the end line in his own court —he may have one or both feet on the line— tosses up the ball, and bats it with his hand toward the opponents' court, as it comes down. He may use either or both open hands, but must not use doubled fists. The ball need not go over the net on the server's stroke, if other members of his team can keep it from touching the ground, and eventually get it over. But in any one such attempt, no one player may touch the ball a second time.

When a team makes a foul or fails in service or return the referee calls "side out"; service passes to the opposing team, and each of the losers moves on one stage in his rotation toward service.

Catching or holding the ball is illegal; dribbling (touching the ball twice in succession) is prohibited. Players must not delay the game by batting the ball about unnecessarily; they must seek legitimately to advance their score.

Served balls are dead if they touch the net, but returned balls may be recovered from the net.

The ball is dead when it touches the floor, when it touches any object outside the court, or when the referee blows his whistle. No player may touch the net or reach over the net to strike a ball. No player may be helped or supported while striking the ball. Players must remain in their own court. If the serving side make a foul the ball goes to the opponents, and there may be an additional penalty of a point added to the opponents' score if the foul is for unsportsmanlike conduct or for addressing officials. A foul by the receivers adds a point to the servers' score. Only the servers may score, except for fouls.

The officials are a referee and two linesmen. The referee is chief official, and works near the middle of the field, with a linesman at each end.

A standard volley ball is somewhat smaller than a basket ball, though a basket ball will do when the game is played for recreation only. For the net, any tennis net will serve.

WRESTLING

Wrestling is a sport consisting of the hand-to-hand encounter between two unarmed contestants who attempt to throw each other. It is no doubt as old as man, but the rules of the game have changed from age to age. In the old Greek wrestling matches, for instance, no hold below the waistline was permitted. In the Irish collar and elbow contests neither man may for an instant let go his hold on his opponent's collar.

In this country wrestling means catch-as-catch-can, and a fall is secured whenever both shoulders squarely touch the floor at once. Only strangle holds, shutting off an opponent's wind, are barred. At least twenty-five different holds are named and distinguished by professional wrestlers.

The arm and neck, foot hold, toe hold, quarter Nelson, and further Nelson are generally preliminary to other holds. A number of holds, for example the toe hold, are not productive of falls, but are so painful that the victim concedes a fall in order to escape.

There is not much value in a mere list of wrestling positions. The movements involved, the changes from one hold to another, the escapes and counters are often so fast and complicated that only a moving picture or a living instructor could tell the whole story. Wrestling is an art worth any young man's time. Champion wrestlers must have not only tremendous all-round muscular development, but mental alertness to match.

A fairly complete list of wrestling holds follows:

Arm and leg; arm and neck; arm drag; arm grapevine; arm roll; chancery; chancery and bar; cross buttock; crotch hold; double body hold; double Nelson; double thigh and crotch; double wrist; elbow and back heel; flying mare; foot hold; further Nelson; half Nelson; hip lock; knee hold; quarter Nelson; scissors; single wrist; sit back; strangle holds (barred); three quarter Nelson; toe hold.

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GOVERNMENT AND LAW

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VIEWS OF WASHINGTON, D. C.

1—U. S. Treasury Building. 2—New National Museum. 3—Lee Mansion at Arlington. 4—Washington Monument. 5—Interior Department. 6—Bureau of Engraving and Printing. 7—Soldiers' Home. 8—U. S. Patent Office. 9—State Army and Navy Building. 10—Aerial View Senate Office Building. 11—House of Representatives in Session. 12—Lafayette Monument. 13—Bureau of Standards Building.

BOOK XIII

GOVERNMENT AND LAW

IN ALL countries which are democratic, people are rapidly coming to regard their political organizations as servants of the people, and government as simply a certain number of citizens set aside in each political unit and in the nation, and empowered by the voters to undertake certain tasks for the people. Although this ideal is not fully carried out in practice, it is wonderful progress that we now regard government as an agency to care for the needs of the people rather than an agency of a ruling oligarchy.

Why We Need Government. Primitive man did not have much government, for his needs were so simple that he could satisfy most of them by his own individual efforts. As the number of the people and the complexity of their needs increased, government was instituted to control that which they could not well provide for themselves. At first the king undertook to care for these needs, but because of his failure to do his work well he has been overthrown and the rule of the people set up. It would be impossible for the individual family of today to produce its own food; provide its own shelter; protect itself from criminals and disease; educate its own members; carry its own products to the consumers, and bring its needs to the family fireside. Today we are very largely dependent upon one another for freedom, health and safety, as well as for the necessaries of life. In his relation to the government, the individual who lives in a modern democracy bears a twofold relationship; he has duties to perform, and in return for them he obtains protection and help in the performance of his regular activities.



The Capitol of the United States at Washington

Functions of Government. According to Woodrow Wilson, in his book, *The State*, there are eight essential functions of government:

(1) To keep order and provide for the protection of persons and property from violence and robbery.

(2) To fix the legal relations between man and wife and between parents and children.

(3) To regulate the holding, transmission and interchange of property, and the determination of its liabilities for debt or for crime.

(4) To fix the contract rights between individuals.

(5) To define crime and provide for the punishment of criminals.

(6) To provide for the administration of justice in civil causes.

(7) To determine the political duties, privileges and relations of citizens.

(8) To regulate the dealings of the State with foreign powers, to preserve the State from external danger and to advance its international interests.

There are very few people who object when government performs the above duties. However, there is much dispute when the government attempts to push its authority further. When the public authority begins to regulate commerce and labor, as it often does; to provide for internal improvements; regulate postal and telegraph systems; own or control public utilities such as telegraph and telephone systems, railroads, power and gas plants; to establish rules for the control and development of education; to care for the poor and incapable, and to set up sumptuary laws, such as "prohibition," we find the public divided into three rather distinct groups. One favors the policy of governmental interference with these activities; another opposes them, and the third is more or less indifferent to them until it has been won over to support them by one or the other of the more active groups.

The ever shifting control of the government in democratic countries from one political party to another is to be accounted for by the fact that either the advocates or opponents of further extending political authority have, for the time being, persuaded the "indifferent" that their policy is correct. Political activity of today operates somewhat as follows: An active minority believes that it would be advantageous for the government to exercise more control over commerce, labor, education or any of the optional functions of government. This aggressive group begins to win supporters for its course by public speeches, or by printing its convictions in the newspapers and magazines. In the course of time an election is held and this group scores a victory. In the meantime the opposition has set its forces to work. It started its work soon, after the advocates launched their campaign, but due to the fact that opposition is often slow to develop, the measure of the active advocates is carried. However, this defeated group (if there is much at stake) becomes the aggressor and continues its campaign, sometimes quietly and at other times loudly, fully expecting to win at the next election. The victors, fully confident that they have won, fail to continue the defense or do not defend well enough. Then, at the next election, the policies of the group that had won at the earlier election are fully or partially repudiated by the voters. Thus the struggle continues until, "in the course of human events," sufficient scientific knowledge is evolved to establish a new political principle or to show that what has been advocated is of no political value.

The Need for the Study of Government. Inasmuch as political policies and their administration in our republic fall in the last analysis upon the "will of the people," it greatly behooves all well meaning and earnest citizens to make a careful study of the science of government. Every citizen should make it his business to know as fully as possible what his government is, and how, by doing his civic duties, he may improve it.

In a long and costly struggle with kings and nobles our forefathers have won for us the right to control our own political affairs. That victory is now ours and we are enjoying its benefits. Some one has said that the big political battle of the last several centuries was the struggle for the right to vote, and that the biggest political problem of today is to learn how to vote intelligently.

GOVERNMENT OF THE UNITED STATES

IN its fundamental aspects, American government, originated in the actual experience of the English colonists, gained by generation after generation in managing their own political affairs. When the colonies were established, the English authorities had no thought of setting up new governments.

The Colonial Period. In origin, each of the English colonies was either a grant of privilege to an individual—like Pennsylvania to William Penn—or to a corporation, like Virginia or Massachusetts Bay. However, due to the fact that those who settled in the colonies were brave, venturesome individuals, not desirous of asking favors of royalty, and the fact that they were three thousand miles from the seat of the central government, which was more or less indifferent to their interests, self-government quickly found roots in the soil of America.

When the American Revolution occurred there was very little that was fundamentally new in the way of political institutions. The Revolutionists of Rhode Island and Connecticut, where the governors, councilors and judges were not appointed by the crown, but created solely by the colony, found their colonial systems of government, based on seventeenth-century charters, so well suited to their needs and ideals that they made no alterations in them other than casting off their allegiance to the King of Great Britain. The royal charter granted to Connecticut by Charles II in 1662 remained the constitution of that state until 1818, and the charter of Rhode Island, granted in 1663, remained in force until 1842. In all of the states after the Revolution, the distribution of representation, the suffrage, the qualifications for holding office and the legislative, executive and judicial institutions were continued without many radical alterations.

On the eve of the Revolution, the thirteen colonies had forms of government which presented striking similarity. Each had a governor, an assembly and a judicial system, and the common law of England, as far as it was applicable and had not been changed by legislation, was binding in all of them.

In eight of the colonies—Massachusetts, New Hampshire, New York, New Jersey, Virginia, North Carolina, South Carolina and Georgia, the governor was appointed by the king and recognized as the king's personal deputy. But, on the other hand, he was the highest executive official in the colony, and as such was charged with the preservation of peace and the advancement of the welfare of the colonists.

The governor, as the chief executive, supervised the enforcement of the laws and appointed, usually with the advice of his council, the important civil officers. He could, except in Massachusetts, remove any of the council and other officials for cause, and direct them in their work. By virtue of his position as chancellor, he was head of the highest court in the colony, which handled appeals from lower courts and exercised important original jurisdiction in many matters. He also granted pardons and reprieves. He was commander-in-chief of the colonial forces, appointed the military officers of high rank, levied troops for defense of the colony and enforced martial law when that was necessary owing to war, invasion or rebellion. Since he was the king's ecclesiastical representative, he exercised considerable ecclesiastical authority also.

The royal governor also enjoyed extensive powers in connection with the colonial legislature. In all of the eight colonies of this type, except Massachusetts, he nominated the council, which composed the upper house of the legislature. He summoned, adjourned and dissolved the assembly; he placed before it projects of law desired by the home government, and exercised the right to veto all laws which he considered objectionable.

It must be remembered, however, that the royal governor was by no means an unlimited sovereign in his province, for he was bound by his instructions from the British government and by restraints which the assembly imposed through its power of controlling grants of money. Furthermore, complaints against his actions often were taken to the board of trade or to the king in council across the sea.

In Massachusetts, the governors which were appointed by the king had their powers somewhat restricted by the colonial charter. The governor could adjourn, prorogue or even dissolve the assembly; but he could not appoint the members of the upper house; and all civil officers were appointed by him with the consent of the council. In other important respects the governor of Massachusetts enjoyed practically the same power as the other royal governors.

In Rhode Island and Connecticut the governor was elected annually by a general assembly composed of the governor, assistants and representatives chosen by the voters in each "city, town or place." In these colonies the governor did not stand out as a separate and distinct official. His duties were performed only in coöperation with the assembly and council.

The executive authority in the proprietary colonies of Maryland, Pennsylvania and Delaware differed vastly from that of the other colonies. The proprietary colony was a vast estate, carved out of the royal domain and granted by the crown to a proprietor. When the proprietor was in the colony he had the right to assume control of the executive authority there and when he was absent he vested it in a lieutenant-governor, who served in the capacity of agent for the real owner of the estate. The power of the governor in these colonies was less limited than in any of the others; but toward the end of the colonial era there was a gradual decline of his power, due to the rise of power of the assembly to control appropriations.

All of the colonies had two branches of the legislature except Pennsylvania, which had only one. In Massachusetts, Connecticut and Rhode Island the upper house was elected by the assembly; in the proprietary colonies the proprietor or his representative selected the councilors; in the other colonies the upper house, or council, was chosen by the king acting through the royal governor, who usually made the selection himself.

The council enjoyed the right to discuss and vote on all laws, and with the governor enjoyed executive and judicial functions. It advised the governor on many important matters, and in conjunction with him it formed the highest judicial tribunal in the colony.

In every colony there was an assembly of representatives chosen by popular vote; but, contrary to common impressions, there was nothing like universal manhood suffrage. In every colony there were restrictions on the suffrage, which were usually educational, property or religious qualifications.

The colonial assemblies from an early period of colonial history maintained that they possessed entire and exclusive authority to regulate their domestic concerns. In the matter of taxation they stoutly asserted their exclusive rights not only in formal declarations but also in actual resistance to the royal and proprietary governors. In addition to general legislative power, the assemblies usually exercised a large control over the executive department through their power to withhold the salaries of the officials.

The lowest colonial courts were those of justices of the peace, who were generally appointed by the governor, or in some instances elected by local freeholders. In civil cases these justices had jurisdiction over cases involving small amounts; in criminal matters they were allowed to try only the pettiest offenses against the law. In Massachusetts and a few other colonies the practice of uniting all of the justices of the country in a general court was followed; this court not only exercised criminal jurisdiction but supervised roads, bridges and similar affairs.

Above the justices of the peace there usually were the county courts whose judges were appointed by the governor, except in New Jersey where they were elected. In most colonies the county court had criminal jurisdiction over all except capital cases, but in Massachusetts, criminal matters were taken care of by the regular sessions of the justices of the peace. The county courts also had civil jurisdiction in cases involving certain amounts that were specified by law in each colony.

A high court was set up in each colony to decide weighty matters and appeals from the lower courts. In the royal colonies the governor, acting as chancellor, and his council generally composed this tribunal. In Massachusetts it consisted of a chief justice and four associates, appointed by the governor and council. In Pennsylvania the supreme court was composed of a chief justice and three associates, chosen by the governor.

Of course, appeals always lay from the highest court in the colony to the king in council, and this power was frequently exercised just as certain cases are appealed to the Supreme Court of the United States at the present time.

Important Steps Toward Union. (a) From 1643 to 1684 Massachusetts Bay, New Plymouth, Connecticut and New Haven colonies formed the New England Federation to strengthen their defense against the Indians, Dutch and French, representatives

being sent from each. After that, in time of need, intercolonial conferences were held from time to time.

(b) In 1754 a congress of twenty-five members from seven colonies met at Albany to arrange a treaty with the Iroquois Indians and to consider other common interests. The Congress adopted Franklin's plan for a permanent federation, but it was rejected by all the colonies.

(c) In 1765, in consequence of the passage of the Stamp Act in Great Britain, at the instance of the Massachusetts house of representatives nine colonies sent representatives to the Stamp Act Congress at New York, which issued a declaration that the rights of natural born English subjects belonged to the colonists, and framed petitions to the English government for relief.

(d) Further acts of England, especially the Townshend Act, imposing taxes, led to the formation of committees of correspondence among the colonists, who thus fostered unity of sentiment against England and for their common interests.

(e) The First Continental Congress was called by Massachusetts in 1774 when the English government passed the acts providing for the coercion of that colony. All the colonies except Georgia sent delegates to Philadelphia, who drafted the Declaration of Rights of the colonies, adopted articles of association, advised resistance, and provided in case of need for the meeting, May, 1775, of the Second Continental Congress.

(f) The Second Continental Congress met, delegates from all the colonies being present. In the meantime, England had passed other measures of coercion and in attempting to seize the war supplies of the colonists, had brought on the battle of Lexington. It therefore became necessary for the Congress to make provisions for continuing resistance. In fact, it became a governing body; and with adjournments from time to time, until May 1, 1781, it directed the War of the Revolution, and really organized and managed a new state. It issued the Declaration of Independence, recommended the colonies to provide for themselves state governments, instituted relations with foreign countries and did other needed work.

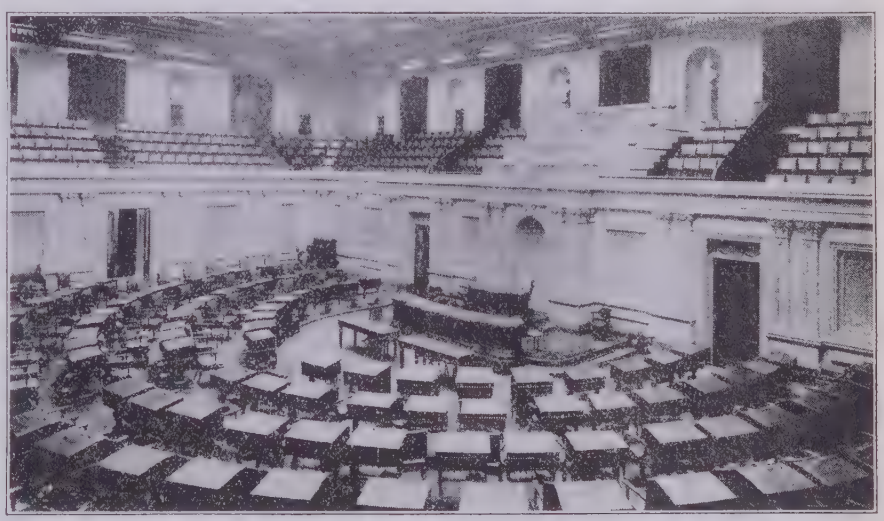
(g) When the American colonies declared their independence of Great Britain they also appointed a congressional committee, composed of one delegate from each state, to draw up a form of Union for all the new states. The Articles of Union, or Confederation, thus drawn up, were discussed for more than a year and were adopted by Congress in 1777. However, they were not ratified by all the states until 1781.

This confederation provided for a league of friendship among the several states, each of which claimed to retain "its sovereignty, freedom and independence." The new government consisted of a congress of from two to seven delegates from each state, but each state had just one vote.

Congress, under the Articles, had control of making war or treaties, creating an army and navy, regulating the value of coin, arranging treaties with the Indians and settling disputes of the states regarding land claims.

In practice, Congress was unable to set up a stable government because: (1) no important law could be passed without the consent of the nine states; (2) of the failure of Congress to provide revenue for expenses; (3) of the inability to regulate interstate and foreign commerce; (4) of the lack of effective authority to enforce laws; (5) of the impossibility of remedying these defects since no amendment could be passed except by unanimous action of the States; (6) it had no power to tax; (7) the government did not act upon individuals.

(h) A meeting of commissioners from Maryland and Virginia in 1785 to discuss a commercial dispute led Virginia to call a meeting of delegates of all the states at Annapolis in 1786 to consider commercial relations. Representatives of only five states came, but among them were several far-sighted statesmen, and before adjourning they adopted a resolution offered by Alexander Hamilton calling a convention to amend the Articles of Confederation.



Home of the United States Senate
Interior of the Senate Chamber, showing desks of the senators and the visitors' gallery.

(i) This Constitutional Convention met at Philadelphia, May 25, 1787. Representatives of all the states except Rhode Island were present, among them the most noted and ablest men of the time. Various plans were proposed, important compromises (especially to settle controversies between large and small states and those concerning slavery) were made, and at length the Constitution was adopted and signed, September 17, 1787.

(j) It was then submitted to Congress, and by it sent to the states to be ratified. On June 21, 1788, New Hampshire, the last of the nine states whose ratification was needed, adopted it. The last state, Rhode Island, ratified it May 29, 1790. Congress provided an act by which it went into operation in 1789. (Text of Constitution on p. 1091.)

(k) To satisfy the wishes of several of the states, a Declaration of Rights was provided in the first ten amendments, which were ratified by the state legislatures soon after the adoption of the Constitution. Amendments XI and XII were passed to settle practical difficulties in administration, while Amendments XIII, XIV and XV were passed to clinch the results of the Civil War on the question of slavery. Amendment XVI authorizes the imposition of income taxes. Amendment XVII provides for the election of United States Senators by popular vote instead of by the State Legislatures. Amendment XVIII forbids the manufacture, sale or transportation of intoxicating liquors within, the importation thereof into, or the exportation thereof from, the United States and all territory subject to the jurisdiction thereof, for beverage purposes. It provides further that Congress and the several States shall have concurrent power to enforce this article by appropriate legislation. Amendment XIX provides for nation-wide suffrage to women, by removing the limitation of sex from the right of citizens to vote.

The Federal Congress. The Congress, which has been created under the Constitution as the law-making body, consists of the Senate and the House of Representatives and has several general powers granted it: To pass laws, to judge the elections and qualifications of its own members, to determine its own rules of procedure, to lay and collect taxes, duties, imports and excises, to pay the debts and provide for the common defense and general welfare, to borrow money on the credit of the United States, to regulate commerce with foreign nations and among the several states and with the Indian tribes, to coin money and provide for certain substitutes for coin, and make provisions for controlling the value and purity of both, to fix standards of weights and measures, to establish uniform rules of naturalization, and uniform laws of bankruptcy, to establish and maintain a postal system with all needed equipment for efficient service, to make provision for the encouragement of inventors and authors by patent and copyright laws, to define and punish piracies and felonies committed on the high seas and offenses against the law of nations, to declare war and make full provision for carrying on war by land and sea by regular army and navy or by militia, and to exercise exclusive jurisdiction over all districts that are acquired for the use of the federal government in its civil or military

capacities. Besides these special powers, the right to make all regulations necessary to carry these into effect is granted and, by decisions of the Supreme Court, has been fully established.

Scarcely less important than the powers granted to Congress are the restrictions placed upon the government. It shall not suspend the writ of *habeas corpus* except in cases of rebellion or invasion if the public safety requires it; shall not pass bills of attainder or *ex post facto* laws. No money shall be drawn from the treasury, but in consequence of appropriations made by law, and regular accounts thereof shall be published; no titles of nobility shall be granted by the United States, and presents and titles from foreign governments or rulers are forbidden to office holders without the consent of the Congress.

These prohibitions are all in the interest of the people as against possible encroachments by the government.

To give needed unity of action in matters of national import the several states are forbidden to enter into any relations with foreign states and are restricted closely in their actions regarding money, the law of contracts and some other important matters. Especially rigid are the provisions forbidding state interference with interstate or international commerce and relations with foreign powers.

Sessions of Congress begin the first Monday in December. In the years following a congressional election, the term ends on March 3; in other years it extends until it decides to adjourn, usually early in the summer. The President may call special sessions.

Bills are introduced by private members, and are then referred to committees which consider and amend at will and report them with such recommendations as they see fit. These committees are nominated by caucuses of the respective parties, and are afterward formally elected without change by the members of the two houses. The committees often suppress bills, and their reports have great weight in determining the action of Congress.

The Senate (a) consists of two members from each state, elected by the people at large, each senator to have one vote, which he is to cast independently.

(b) The term is six years, the senators being divided into three classes so that one-third retire every two years, securing thus a continuing body. In case of a vacancy the place may be filled by appointment by the executive of the state until the state legislature meets, when it elects a senator.

(c) A senator must be thirty years of age, have been nine years a citizen of the United States and an inhabitant of the state from which he is chosen.

(d) Senators receive a salary of $10,000 a year, mileage of twenty cents a mile each way from their homes to attend sessions, stationery, the services of a secretary at $3,300, an assistant secretary at $1,940, and two other assistants at $1,830 and $1,520, and certain uses of rooms and secretaries of committees.

(e) The Senate, over which the Vice President is the regular presiding officer, chooses a President *pro tempore* to act in the absence of the Vice President, acts as a court for the trial of impeachment cases, a two-thirds vote of the members present being required for conviction. When the President of the United States is impeached, the Chief Justice of the United States Supreme Court presides.

(f) The Senate must approve the appointment of the higher officials made by the President, and must approve by a two-thirds vote treaties negotiated by him with foreign powers, if they are to go into effect.

The House of Representatives (a) consists of 435 members, chosen by the voters of districts in the several states, made up as nearly as practicable in proportion to the number of inhabitants.

(b) Representatives are elected for a period of two years.

(c) A representative must be twenty-five years of age, have been seven years a citizen of the United States and a resident of the state from which he is chosen. By custom the representative is usually a resident of his district, but this is not necessary; and sometimes, especially in the large cities, a representative resides outside his district.

SPEAKERS OF THE HOUSE OF REPRESENTATIVES

Congress	Years	Name	State	Born	Died
1	1789–91	F. A. Muhlenburg.	Pa....	1750	1801
2	1791–93	J. Trumbull.....	Conn..	1740	1809
3	1793–95	F. A. Muhlenburg.	Pa....	1750	1801
4–5	1795–99	J. Dayton.....	N. J...	1760	1824
6	1799–1801	Theo. Sedgwick...	Mass..	1746	1813
7–9	1801–07	Nathaniel Macon..	N. C..	1757	1837
10–11	1807–11	J. B. Varnum.....	Mass..	1750	1821
12–13	1811–14	Henry Clay.....	Ky....	1777	1852
13	1814–15	Langdon Cheves...	S. C...	1776	1857
14–16	1815–20	Henry Clay.....	Ky....	1777	1852
16	1820–21	John W. Taylor...	N. Y..	1784	1854
17	1821–23	P. P. Barbour.....	Va....	1783	1841
18	1823–25	Henry Clay.....	Ky....	1777	1852
19	1825–27	John W. Taylor...	N. Y..	1784	1854
20–23	1827–34	A. Stevenson.....	Va....	1784	1857
23	1834–35	John Bell.....	Tenn..	1797	1869
24–25	1835–39	James K. Polk....	Tenn..	1795	1849
26	1839–41	R. M. T. Hunter..	Va....	1809	1887
27	1841–43	John White.....	Ky....	1805	1845
28	1843–45	John W. Jones....	Va....	1805	1848
29	1845–47	John W. Davis....	Ind....	1799	1850
30	1847–49	R. C. Winthrop...	Mass..	1809	1894
31	1849–51	Howell Cobb.....	Ga....	1815	1868
32–33	1851–55	Linn Boyd.....	Ky....	1800	1859
34	1855–57	N. P. Banks.....	Mass..	1816	1894
35	1857–59	James L. Orr.....	S. C...	1822	1873
36	1859–61	Wm. Pennington..	N. J...	1796	1862
37	1861–63	Galusha A. Grow..	Pa....	1823	1907
38–40	1863–69	Schuyler Colfax...	Ind....	1823	1885
41–43	1869–75	James G. Blaine...	Me....	1830	1893
44	1875–76	Michael C. Kerr...	Ind....	1827	1876
44–46	1876–81	S. J. Randall.....	Pa....	1828	1890
47	1881–83	Joseph W. Keifer..	Ohio..	1836	1932
48–50	1883–89	John G. Carlisle...	Ky....	1835	1910
51	1889–91	Thomas B. Reed..	Me....	1839	1902
52–53	1891–95	Charles F. Crisp...	Ga....	1845	1896
54–55	1895–99	Thomas B. Reed..	Me....	1839	1902
56–57	1899–1903	D. B. Henderson..	Iowa..	1840	1906
58–61	1903–1911	J. G. Cannon.....	Ill....	1836	1926
62–65	1911–1919	Champ Clark.....	Mo....	1850	1921
66–68	1919–1925	F. H. Gillett.....	Mass..	1851	1935
69–71	1925–1931	N. Longworth.....	Ohio..	1869	1931
72	1931–1933	John N. Garner...	Tex...	1869	....
73	1933–1934	Henry T. Rainey..	Ill....	1860	....
74	1935-1936	Joseph W. Byrns.	Tenn..	1869	1936
75	1936-	Wm. B. Bankhead	Ala...	1874	....

(d) The salary, mileage and emoluments of representatives are the same as those of senators, except that senators from their smaller numbers have a more liberal use of rooms; the allowance for secretaries is only $4,000 to a representative, with a maximum of $3,300 for one person.

(e) The House of Representatives elects its Speaker, judges the elections and qualifications of its members, makes its own rules of procedure, and has the sole right of impeachment of executive and judicial officials before the senate sitting as a court of impeachment. Bills for raising revenue must originate in the House of Representatives; but, as the Senate has an unlimited right of amendment, the privilege is of little value. The Speaker's salary is $15,000.

Both representatives and senators are frequently consulted by the President and other executive officers in making appointments to office. Moreover, committees of either house, if duly authorized, may, during times when Congress is not in session, make investigations at home or abroad in connection with legislative measures. In such cases, while expenses are paid, no additional salary is given to members.

The Executive Department. *The President.* The chief executive is the President (a) chosen for a period of four years (b) by an electoral college, elected by the voters of the several states, usually on a general ticket, so that all electors from a state are generally from the same political party; the electors are in some states chosen by congressional districts. (c) The President must be thirty-five years of age and a natural born citizen of the United States. (d) His salary is $75,000 a year. In addition, Congress has for some years voted $25,000 for traveling expenses. He is also given secretaries; his residence (the White House), which is furnished at public expense; stables (discontinued by President Hoover); automobiles and other vehicles, and minor emoluments necessary for his position and work. (e) The President is commander-in-chief of the army and navy and of the militia when in actual military service of the United States; he grants reprieves and pardons; he makes treaties with the concurrence of two-thirds of the Senate; he nominates, and by and with the advice and consent of the Senate, appoints ambassadors and other foreign representatives, judges of the federal courts, and other high officials, some others being appointed by him alone or by heads of departments; he makes reports and recommendations to the Congress concerning the state of the nation and legislative action; he calls special sessions of Congress, receives ambassadors and public ministers of foreign powers; and takes care that the laws are faithfully executed. The President approves bills passed by the Congress, or, in the event of disapproval, returns them to the branch in which they originated. In case of such veto they must be repassed by a two-thirds vote of both houses to become effective. If he does not disapprove them within ten days (Sundays excepted) they become laws unless by adjournment in the meantime the Congress prevents their return. He may sign bills within ten days after adjournment, but those which he does not sign within this period, fail.

The Vice President has the same qualifications and is chosen for the same term and in like manner as the President. Unless the President dies or is removed or becomes incapacitated, his sole duty is to preside over the Senate. He may sit in the cabinet by invitation of the President. In case of the vacation of the President's office, he succeeds. If the Vice President dies, the members of the cabinet succeed in the order of the establishments, beginning with the Secretaries of State and the Treasury. The salary of the Vice President is $15,000.

The Cabinet consists of the Secretaries of State, Treasury, War, Attorney-General, Postmaster-General, Secretary of the Navy,

Secretary of the Interior, Secretary of Agriculture, Secretary of Commerce and Secretary of Labor. They are (a) appointed by the President, confirmed by the Senate and (b) serve really at the pleasure of the President, usually for his term unless their resignation is sooner brought about. (c) The salary of each member of the cabinet is $15,000 a year. In addition, an allowance is made for office expenses. (d) The members of the cabinet are the official advisers of the President in both administration work and political policy. In administrative matters each member exercises much discretion in the management of his department and usually really controls the selection of his subordinates who are not under civil service regulations. In matters of policy and when making important decisions, his personal judgment is of prime importance, although, of course, he must accept the decision of the President or be removed from office. Routine business is frequently managed by subordinates whose tenure of office is practically during good behavior and efficiency.

Commissions or Boards. Not all the administrative work of the national government is headed up into the ten regular cabinet departments. From time to time Congress has established several commissions or boards, the members of which are appointed by the President with the advice and consent of the Senate. The most widely known among these bodies are:

(1) The Interstate Commerce Commission, consisting of eleven members, was established in 1887 to supervise the execution of federal laws relating to foreign and interstate trade, particularly those laws relating to railroads.

(2) The Federal Trade Commission, consisting of five members, was established in 1914 to investigate and prevent all unfair competition in commerce and industry and to enforce the laws against trusts or any combinations which unreasonably restrain interstate trade.

(3) The Tariff Commission, consisting of six members, was established in 1916 to study the tariff needs of the country from every point of view and to report annually, with recommendations, to Congress. Its functions are of an advisory nature only.

(4) The Civil Service Commission, consisting of three members (not more than two from the same political party), was created in 1883, charged with the duty of examining all candidates for positions in what is known as "the classified service." It includes about ninety-five per cent of all the employees of the national government, or some 600,000 persons. Examinations are held regularly twice a year at various places throughout the country designated by the Commission. The appointees are apportioned among the states in proportion to population as far as possible, and the positions are permanent during efficiency. There are also many officials appointed without competitive examination—generally higher officers—whose services are personal or confidential in their nature, such as private secretaries, unskilled laborers or temporary employees. Employees of special commissions, for example, would fall in the last-named category.

(5) The Federal Reserve Board, consisting of the Secretary of the Treasury, the Comptroller of the Currency, and six other members appointed, like the other Commissions, by the President with the advice and consent of the Senate, was provided for by the Federal Reserve Bank Act passed by Congress in 1913. It controls the Federal Reserve System, which consists of twelve federal reserve districts with a federal reserve bank in each. These banks are reserve depositaries for the federal government and for "member banks," which must subscribe to the capital stock of the Federal Reserve Bank of their district an amount equal to six per cent of their own paid up capital stock and surplus. They also lend funds (by "rediscounting") to these member banks upon approved security; and they have the right to issue paper money.

Director of the Budget. Another important administrative official acting under the President's direction is the Director of the Budget, also appointed by the President, but in this case without confirmation by the Senate and without any fixed term of office. In 1921 Congress passed the Budget and Accounting Act, providing for the preparation, by the Director of the Budget, of an estimate of the income and expenditures of the federal government for the coming year. This budget is transmitted to Congress for adoption, amendment or rejection; but Congress may also make appropriations outside of this budget. It should be noted in this connection that the President cannot veto any particular items in an appropriation bill and leave the rest standing. He must either accept or veto it as a whole. The result is that the veto power, so far as the spending of public money goes, is reduced almost to a nullity.

Independent Establishments. The federal government also has various independent establishments, such as the Government Printing Office, the Library of Congress and the Smithsonian Institution—an educational organization.

The Judiciary consists of the Supreme Court of the United States and such inferior courts as Congress may establish. All United States judges are appointed by the President, to hold their office during good behavior. Their salaries shall not be reduced during their term of office.

(1) The Supreme Court consists of the chief justice, whose salary is $20,500, and of eight associate justices with a salary of $20,000 each.

(2) Nine circuit courts of appeal have been established which consist of three judges each. Eligible to sit in this court are the Supreme Court justice assigned to the circuit, the circuit judges (of which there are two to four in each circuit), and the district judges within the circuit. The salaries are $12,500.

(3) The territory of the United States has been divided into some eighty-one judicial districts, none of them crossing state lines. There is usually one judge in each district; at times a judge is assigned to two districts, or more than one judge to one district. There are now 129 district judges. The salaries are $10,000.

A judge who is seventy years of age and has served ten years may retire on full pay for life.

(4) The United States courts have (also appointed by the President) district attorneys and marshals to prepare and prosecute cases in behalf of the government and to execute processes and other orders of the courts.

(5) The jurisdiction of the federal courts pertains to matters concerning the federal government, such as the post office, coinage laws, and so forth, and to cases which might involve the states or foreign countries.

(6) Also there is (a) the court of claims, before which come various claims (excepting pensions) against the United States, and (b) the customs court, which settles controversies arising in connection with the collection of our customs duties.

JUSTICES OF THE U. S. SUPREME COURT

Name	Service		Born	Died
	Term	Years		
John Jay, N. Y.	1789–1795	6	1745	1829
John Rutledge, S. C.	1789–1791	2	1739	1800
William Cushing, Mass.	1789–1810	21	1733	1810
James Wilson, Pa.	1789–1798	9	1742	1798
John Blair, Va.	1789–1796	7	1732	1800
Robert H. Harrison, Md.	1789–1790	1	1745	1790
James Iredell, N. C.	1790–1799	9	1751	1799
Thomas Johnson, Md.	1791–1793	2	1732	1819
William Paterson, N. J.	1793–1806	13	1745	1806
John Rutledge, S. C.	1795–1795	..	1739	1800
Samuel Chase, Md.	1796–1811	15	1741	1811
Oliver Ellsworth, Conn.	1796–1800	4	1745	1807
Bushrod Washington, Va.	1798–1829	31	1762	1829
Alfred Moore, N. C.	1799–1804	5	1755	1810
John Marshall, Va.	1801–1835	34	1755	1835
William Johnson, S. C.	1804–1834	30	1771	1834
Brock Livingston, N. Y.	1806–1823	17	1757	1823
Thomas Todd, Ky.	1807–1826	19	1765	1826
Joseph Story, Mass.	1811–1845	34	1779	1845
Gabriel Duval, Md.	1811–1836	25	1752	1844
Smith Thompson, N. Y.	1823–1843	20	1767	1843
Robert Trimble, Ky.	1826–1828	2	1777	1828
John McLean, Ohio	1829–1861	32	1785	1861
Henry Baldwin, Pa.	1830–1844	14	1779	1844
James M. Wayne, Ga.	1835–1867	32	1790	1867
Roger B. Taney, Md.	1836–1864	28	1777	1864
Philip P. Barbour, Va.	1836–1841	5	1783	1841
John Catron, Tenn.	1837–1865	28	1786	1865
John McKinley, Ala.	1837–1852	15	1780	1852
Peter V. Daniel, Va.	1841–1860	19	1785	1860
Samuel Nelson, N. Y.	1845–1872	27	1792	1873
Levi Woodbury, N. H.	1845–1851	6	1789	1851
Robert C. Grier, Pa.	1846–1870	23	1794	1870
Benjamin R. Curtis, Mass.	1851–1857	6	1809	1874
John A. Campbell, Ala.	1853–1861	8	1811	1889
Nathan Clifford, Me.	1858–1881	23	1803	1881
Noah H. Swayne, Ohio	1861–1881	20	1804	1884
Samuel F. Miller, Iowa	1862–1890	28	1816	1890
David Davis, Ill.	1862–1877	15	1815	1896
Stephen J. Field, Cal.	1863–1897	34	1816	1899
Salmon P. Chase, Ohio	1864–1873	9	1808	1873
William Strong, Pa.	1870–1880	10	1808	1895
Joseph B. Bradley, N. J.	1870–1892	22	1813	1892
Ward Hunt, N. Y.	1872–1882	10	1811	1886
Morrison R. Waite, Ohio	1874–1888	14	1816	1888
John M. Harlan, Ky.	1877–1911	34	1833	1911
William B. Woods, Ga.	1880–1887	7	1824	1887
Stanley Matthews, Ohio	1881–1889	8	1824	1889
Horace Gray, Mass.	1881–1902	21	1828	1902
Samuel Blatchford, N. Y.	1882–1893	11	1820	1893
Lucius Q. C. Lamar, Miss.	1888–1893	5	1825	1893
Melville W. Fuller, Ill.	1888–1910	22	1833	1910
David J. Brewer, Kan.	1889–1910	21	1837	1910
Henry B. Brown, Mich.	1890–1906	20	1836	1913
George Shiras, Jr., Pa.	1892–1903	18	1832	1924
Howell E. Jackson, Tenn.	1893–1895	2	1832	1895
Edward D. White, La.	1910–1921	11	1845	1921
Rufus W. Peckham, N. Y.	1895–1909	14	1838	1909
Joseph McKenna, Cal.	1898–1925	27	1843	1926
Oliver W. Holmes, Mass.	1902–1935	33	1841	1935
William R. Day, Ohio	1903–1923	20	1849	1923
William H. Moody, Mass.	1906–1910	4	1853	1917
Horace H. Lurton, Tenn.	1909–1914	5	1844	1914
Charles E. Hughes, N. Y.	1910–1916	6	1862	....
Willis Van Devanter, Wyo.	1911–....	..	1859	....
Jos. R. Lamar, Ga.	1911–1916	6	1857	1916
Mahlon Pitney, N. J.	1912–1922	10	1858	1924
James C. McReynolds, Tenn.	1914–....	..	1862	....
Louis D. Brandeis, Mass.	1916–....	..	1856	....
John H. Clarke, Ohio	1916–1922	6	1857	....
William H. Taft, Conn.	1921–1930	9	1857	1930
George Sutherland, Utah	1922–....	..	1862	....
Pierce Butler, Minn.	1922–....	..	1866	....
Edward T. Sanford, Tenn.	1923–1930	7	1865	1930
Harlan F. Stone, N. Y.	1925–....	..	1872	....
Charles E. Hughes, N. Y.	1930–....	..	1862	....
Owen J. Roberts, Pa.	1930–....	..	1875	....
Benjamin N. Cardozo, N. Y.	1932–....	..	1870	....

Bold face type denotes Chief Justices.

THE GOVERNMENT OF THE STATES

The original thirteen states, at the suggestion of the Continental Congress, each in its own way and time adopted a state constitution. It is customary of late years for the Congress to pass an act admitting a state under prescribed conditions of boundaries, population and so forth, with provision that it frame and adopt a constitution satisfactory to the Congress. These are all modeled in part after the Constitution of the United States and of the older states. Of late years there is a tendency to make them longer and to include in the constitution subjects formerly usually left to the legislature.



The State Capitol of Utah at Salt Lake City

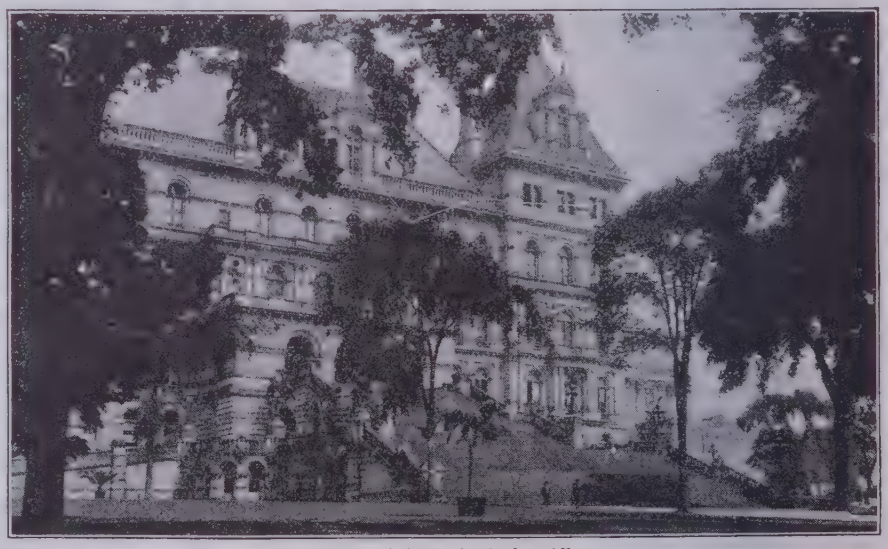
The county, town and city governments are all under the control of the state; but the forms vary widely, usually there being a tendency, as regards the rural districts especially, to follow models of some of the older states as indicated in the brief historical introduction. Each local subdivision has, of course, some body with minor legislative or ordinance powers, an executive and a judiciary.

Legislatures. All the states have legislatures consisting of two houses. The members of the larger, or lower, house are elected from districts and meet in six states annually; in the others the legislature meets only biennially. Members of the upper house are usually chosen for a period of two or more years.

Salaries are paid to all but vary from annual salaries to a per diem for days actually served. In several states the sessions are limited in time to sixty or ninety days.

In most of the states there are restrictions upon the powers of the legislatures, such as prohibitions of special legislation, and limiting the borrowing power of cities. Provisions against corrupt lobbying, blackmail and other abuses are common. In the main, the laws that touch most closely our daily life, those regarding contracts, crimes, marriage and divorce, inheritance and so forth, are left to the states.

In about half the states provision is made for the initiation of laws by petition of a certain rather large percentage of the people; and also, by similar petition, the laws may be voted upon directly by the people, providing thus for the use of initiative and referendum. A still further movement for the expression of the will of the people is found in the recall, by which, at any time, on the submission of a petition signed by a certain percentage of the voters, the term of office of certain important officials may be terminated. Ten states now have this recall provision, and in one instance a governor has been removed by the voters using it.



The New York State Capitol at Albany

The Executive Department of the state consists of a governor, lieutenant-governor, secretary of state, auditor or controller, treasurer, attorney-general and others needed to carry out the laws. The terms and compensation vary in the different states. The most important difference between the state and federal executive departments is that in the states the other officers in most cases are elected and not appointed by the governor, so that there is not the unity of action that comes from an appointive cabinet. The tendency seems to be toward concentration of responsibility in the executive, so that in a number of states (New York for instance) the administrative posts, or most of them, are now filled by persons whom the governor appoints.

The Judiciary Department consists of a supreme court, and sometimes a court of appeals, and of such subordinate courts as the size of the state and the nature of its business and customs have made suitable. There are great similarities throughout the country. The judges are usually elected, and for terms of from two to fourteen years.

THE GOVERNMENT OF TERRITORIES AND DEPENDENCIES

The territories and the insular dependencies of Hawaii, Porto Rico and the Philippine Islands are under governments established by Congress and approved by the President and subject to change by regular legislative procedure.

All have governors (appointed by the President with the approval of the Senate) and administrative and judicial officers (in part appointed by the President or by the Governor-General). Congress has granted these dependencies the powers to elect their legislative bodies for the making of new laws. In Hawaii, Porto Rico and the Philippine Islands there are two legislative houses, the Senate and House of Representatives, both of them elective excepting that in the Philippines the Governor-General appoints two Senators and nine Representatives to represent the non-Christian provinces. The Governor-General in these three territories may veto any act of the Legislature, but the latter may override this veto by a two-thirds vote. Under these circumstances, the question is referred to Washington, and the President of the United States decides it within six months in the case of the Philippines, and three months in the case of Porto Rico.

In event of a deadlock the revenue and appropriation laws of the preceding year continue in force. No new laws can be made without the assent of both houses. There seems to be an inclination to increase the powers of self-government of the territories and insular possessions as rapidly as the people, hitherto not accustomed to self-rule, shall show themselves fit to take it.

In the Philippine Islands, in 1928, there was established by former Governor-General Henry L. Stimson, a Council of State, which contains the members of his Cabinet, the President of the Senate and of the House of Representatives, and certain other leaders. This Council exists purely for discussion and advice. It takes no formal action that is binding upon anyone. It does, however, provide a means of close coöperation and mutual understanding between the Governor-General and the Filipino leaders. Also, in 1928, the Legislature of the Philippine Islands changed some of the restrictive laws regarding the investment of capital in the Islands, granted various franchises, and in this way began the improvement of the communication, light and power systems and other public utilities.

In all cases Congress retains under the constitution the right to modify to any extent the method of governing these territories and possessions. This applies also to the territory of Alaska and our other dependencies: Samoa, Guam, Panama Canal Zone and the Virgin Islands.

THE FEDERAL GOVERNMENT AND THE INDIANS

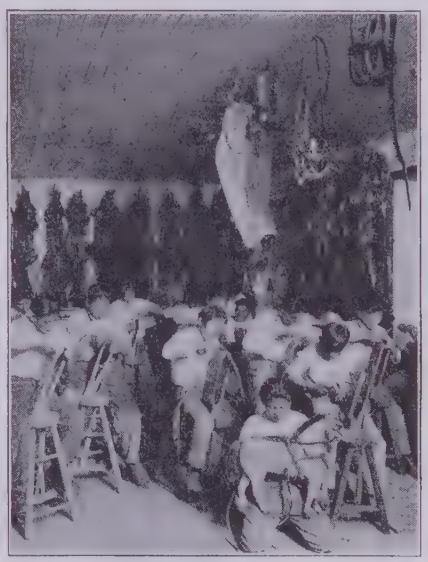
The relations of the Indians with the United States Government are controlled and directed by the Secretary of the Interior through the Commissioner of Indian Affairs. There are about 5,200 Government employees in the Indian Service, of whom about 2,000 are Indians. In twenty-six states 108 bonded superintendents discharge the duties of supervision and administration which formerly devolved upon Indian agents. Practically the entire Indian Service has been brought under Civil Service Regulations.

By the Act of June 2, 1924 (U. S. Code. Title 8, Chap. 1, Sec. 3), all Indians born within the territorial limits of the United States are declared to be citizens of the United States. The granting of citizenship to Indians does not in any manner affect the right of any Indian to tribal or other property.

Federal Agencies. In 1929 there were 337,652 Indians enrolled at eighty-two Federal agencies under the jurisdiction of the Indian Service. These agencies are located in twenty-five states. The definition of an Indian as employed by the Indian Service includes all persons enrolled with any tribe. In some cases, notably the Freedmen under the Five Civilized Tribes, Oklahoma, these persons are not of Indian blood. No information is available concerning the number of Indians not enumerated at Federal agencies. Therefore, no figures are available for the total Indian population of the United States.

There were reported during the fiscal year 1929, 83,262 Indian children eligible for school attendance. Of that number 34,288 were enrolled in public schools. In many districts financial assistance by the Government has been required, usually because of large areas of non-taxable Indian land located within the school district which make it impossible to raise by taxation amounts sufficient to conduct satisfactory schools. The rate paid for each day's attendance varies from about twenty cents to sixty cents, the average slightly above thirty-five cents. There was an attendance of 3,656 Indian children in mission, private and state schools and 24,969 children attended Government Indian schools.

Government Schools. There are three classes of Government schools maintained for Indian children: Day schools, of which there are about 130, located on or near the reservation close to the homes of the children, which are comparable to public schools maintained for white children; fifty-five reservation boarding schools on the reservations; and nineteen nonreservation boarding schools conveniently located near large centers of Indian population. The day schools carry grades one to four, or one to six, and usually furnish a noonday luncheon. The boarding schools generally carry the elementary grades only. Most of the nonreservation schools include elementary and junior high grades. Eight of these carry senior high school work. As to junior college work, arrangement is usually made whereby Indian students may remain at a Government boarding school in order that they may be entered and attend classes in a neighboring junior college. They are expected to perform a certain amount of labor to pay for their board, and must pay their own tuition and incidental expenses.



Making Harness

Indian boys making harness at the Sherman Institute, Riverside, California. The boy in front is working with a model.

Some provision is made for the education of the older Indians. Farm chapters are connected with many of the agencies and schools. In these the men and women of the community learn to work together and to carry on the work of home and community improvement. Groups of Indian women meet with the housekeepers of the various day schools and work at some handicraft. Sometimes this work affords some remuneration, in addition to its educational value. In many places state and school agricultural agents and home demonstration agents coöperate with farm chapters, boys' and girls' farm clubs and with schools. They help to better farming, gardening and home making.

At all Government Indian schools great stress is laid upon industrial education with a view to fitting boys and girls to become self-supporting citizens upon completion of their school days.

Several of the larger schools maintain an outing system under which boys and girls are placed in good white homes or on farms where they are under supervision of an outing matron or outing agent. Boys and girls are also placed under suitable supervision in homes where they have opportunity to attend public school, usually high school. Much benefit to the young people is reported from their stay as members of a good class of white homes while they attend school with the white children of the community.

Total appropriations for Indian education from public funds for the fiscal year 1930 amount to $8,002,000.

Area Reservations. The area of the Indian reservations in the United States and particularly in the western states has been considerably reduced during the past forty years. This has been brought about by various means.

The unallotted area within many of the reservations has been substantially reduced by the making of individual allotments to recognized members of the tribe occupying such reservations. In some cases, the Indians have ceded a part of their reservation to the Federal Government for a monetary consideration, and the land has been subsequently opened to settlement and entry under the public land laws. In other cases, the Indians have ceded and relinquished their lands to the Government for disposition under the public land laws and the net proceeds from the sale of such lands have been deposited in the United States Treasury and thus made available for the benefit of the Indians.

In 1909, the unallotted area of all Indian reservations in about twenty states was 48,477,796 acres (about 75,000 square miles). On June 30, 1929, the unallotted area in the same states was 31,837,316 acres (about 49,000 square miles).

The trust funds in the Treasury on July 1, 1929, to the credit of Indian tribes, amounted to $20,267,412 and the interest paid thereon by the Government for the fiscal year 1929 amounted to $673,649.07.

Contrary to the impression which is held by many people, not all Indians have land and a great many Indians take little interest in agriculture. On the other hand, most Indians display considerable mechanical ability and are successful artisans when well trained and placed in suitable industrial positions. An experience of more than one hundred years forces the conclusion that the civilization of the Indians will not be effected until changes are brought about in the isolation and customs of the remaining reservations and all Indians must live in close contact with the white communities. It is the policy, therefore, to seek employment for Indians away from the reservations and many have been placed in industrial employment.

PRESIDENTIAL ELECTIONS AND INAUGURATIONS

Year	Presidential Candidates	State	Party	Vote			Vice-Pres. Candidates		Facts Concerning Inauguration	Age at Inaug.
				Total	Electoral	Popular	Name	State		
1789	**George Washington**	Va.	.....	73	69	.....	*John Adams*	Mass.	I. **George Washington** was inaugurated President of the United States on a portico in front of the Senate chamber, Thursday, April 30, 1789, in the Federal building, facing Broad Street, in New York. The oath of office was administered by Robt. R. Livingston, chancellor of the state of New York, who exclaimed when the oath was taken, "Long live George Washington, President of the United States."	57
	John Adams	Mass.	.....	...	34	.....				
	John Jay	N. Y.	.....	...	9	.....				
	R. H. Harrison	Md.	.....	...	6	.....				
	John Rutledge	S. C.	.....	...	6	.....				
	John Hancock	Mass.	.....	...	4	.....				
	George Clinton	N. Y.	.....	...	3	.....				
	Samuel Huntington	Conn.	.....	...	2	.....				
	John Milton	Ga.	.....	...	2	.....				
	James Armstrong	Ga.	.....	...	1	.....				
	Benjamin Lincoln	Mass.	.....	...	1	.....				
	Edward Telfair	Ga.	.....	...	1	.....				
	§Vacancies	.....	.....	...	4	.....				
1792	**George Washington**	Va.	Fed.	135	132	.....	*John Adams*	Mass.	II. **George Washington,** for a second term, in the Senate chamber, Monday, March 4, 1793, in the Old Federal hall, in Philadelphia. Oath of office administered by William Cushing of Massachusetts.	
	John Adams	Mass.	Fed.	...	77	.....				
	George Clinton	N. Y.	Rep.‡	...	50	.....				
	Thomas Jefferson	Va.	.....	...	4	.....				
	Aaron Burr	N. Y.	.....	...	1	.....				
	§Vacancies	.....	.....	...	3	.....				
1796	**John Adams**	Mass.	Fed.	138	71	.....	*Thomas Jefferson*	Va.	III. **John Adams,** in the chamber of the House of Representatives, Congress hall, Saturday, March 4, 1797, in Philadelphia. Oath of office administered by Oliver Ellsworth, chief justice of the United States.	61
	Thomas Jefferson	Va.	Rep.	...	68	.....				
	Thomas Pinckney	S. C.	Fed.	...	59	.....				
	Aaron Burr	N. Y.	Rep.	...	30	.....				
	Samuel Adams	Mass.	Rep.	...	15	.....				
	Oliver Ellsworth	Conn.	Ind.	...	11	.....				
	George Clinton	N. Y.	Rep.	...	7	.....				
	John Jay	N. Y.	Fed.	...	5	.....				
	James Iredell	N. C.	Fed.	...	3	.....				
	George Washington	Va.	Fed.	...	2	.....				
	John Henry	Md.	Fed.	...	2	.....				
	S. Johnson	N. C.	Fed.	...	2	.....				
	C. C. Pinckney	S. C.	Fed.	...	1	.....				
1800	**Thomas Jefferson**	Va.	Rep.	138	73	.....	*Aaron Burr*	N. Y.	IV. **Thomas Jefferson,** in the Senate chamber of the Capitol, Wednesday, March 4, 1801, in the city of Washington. Oath of office administered by John Marshall, chief justice of the United States.	57
	Aaron Burr	N. Y.	Rep.	...	73	.....				
	John Adams	Mass.	Fed.	...	65	.....				
	C. C. Pinckney	S. C.	Fed.	...	64	.....				
	John Jay	N. Y.	Fed.	...	1	.....				
1804	**Thomas Jefferson**	Va.	Rep.	176	162	.....	*George Clinton*	N. Y.	V. **Thomas Jefferson,** for a second term, in Senate chamber, Washington, Monday, Mar. 4, 1805, by Chief Justice John Marshall.	
	C. C. Pinckney	S. C.	Fed.	...	14	.....	Rufus King	N. Y.		
	James Madison	Va.	Rep.	176	122	.....	*George Clinton*	N. Y.	VI. **James Madison,** in the chamber of the House of Representatives, Washington, Saturday, March 4, 1809. Oath of office administered by Chief Justice John Marshall.	58
1808	C. C. Pinckney	S. C.	Fed.	...	47	.....	Rufus King	N. Y.		
	George Clinton	N. Y.	Rep.	...	6	.....	John Langdon	N. H.		
							James Madison	Va.		
	§Vacancy	.....	.....	...	1	.....	James Monroe	Va.		
1812	**James Madison**	Va.	Rep.	218	128	.....	*Elbridge Gerry*	Mass.	VII. **James Madison,** for a second term, Thursday, March 4, 1813. Oath was administered by Chief Justice Marshall.	
	De Witt Clinton	N. Y.	Fed.	...	89	.....	Jared Ingersoll	Pa.		
1816	**James Monroe**	Va.	Rep.	221	183	.....	*D. D. Tompkins*	N. Y.	VIII. **James Monroe,** Tuesday, March 4, 1817. Oath administered by Chief Justice John Marshall, on a platform erected for the purpose, in front of the eastern portico of the Capitol at Washington.	59
	Rufus King	N. Y.	Fed.	...	34	.....	John E. Howard	Md.		
							James Ross	Pa.		
	§Vacancies	.....	.....	...	4	.....	John Marshall	Va.		
1820	**James Monroe**	Va.	Rep.	235	231	.....	Robert G. Harper	Md.	IX. **James Monroe,** for a second term, in the House of Representatives, Monday, March 5, 1821. Here the 4th of March came on Sunday, and he took the oath of office in the hall of the House of Representatives at 12 o'clock on Monday next, March 5, 1821. Oath administered by Chief Justice Marshall.	
	John Q. Adams	Mass.	Rep.	...	1	.....	*D. D. Tompkins*	N. Y.		
							Richard Stockton	N. J.		
							Daniel Rodney	Del.		
							Robert G. Harper	Md.		
							Richard Rush	Pa.		
1824	**John Q. Adams**	Mass.	Rep.	261	84†	108,740	*John C. Calhoun*	S. C.	X. **John Quincy Adams,** in the hall of the House of Representatives, Friday, March 4, 1825. Oath of office administered by Chief Justice Marshall.	58
	Andrew Jackson	Tenn.	Dem.	...	99†	153,544	Nathan Sanford	N. Y.		
	Henry Clay	Ky.	Rep.	...	37	47,136	Nathaniel Macon	N. C.		
	W. H. Crawford	Ga.	Rep.	...	46	46,618	Andrew Jackson	Tenn.		
							Martin Van Buren	N. Y.		
							Henry Clay	Ky.		
1828	**Andrew Jackson**	Tenn.	Dem.	261	178	647,286	*John C. Calhoun*	S. C.	XI. **Andrew Jackson,** on the eastern portico of the Capitol, Wednesday, March 4, 1829. Oath administered by Chief Justice Marshall.	62
	John Q. Adams	Mass.	Nat. Rep.	...	83	508,064	Richard Rush	Pa.		
							William Smith	S. C.		
1832	**Andrew Jackson**	Tenn.	Dem.	288	219	687,502	*Martin Van Buren*	N. Y.	XII. **Andrew Jackson,** for a second term, in the hall of the House of Representatives, Monday, March 4, 1833. Oath administered by Chief Justice Marshall.	
	Henry Clay	Ky.	Nat. Rep.	...	49	530,189	John Sergeant	Pa.		
	John Floyd	Ga.	Ind.	...	11	.....	Henry Lee	Mass.		
	William Wirt	Md.	Anti-M.	...	7	.....	Amos Ellmaker	Pa.		
	Vacancies	.....	.....	...	2	.....	William Wilkins	Pa.		
1836	**Martin Van Buren**	N. Y.	Dem.	294	170	762,678	*R. M. Johnson*	Ky.	XIII. **Martin Van Buren,** on the eastern portico of the Capitol, Saturday, March 4, 1837. Oath administered by Chief Justice Taney.	55
	Wm. H. Harrison	Ohio	Whig	...	73 }		Francis Granger	N. Y		
	Hugh L. White	Tenn.	Whig	...	26	735,651	John Tyler	Va.		
	Daniel Webster	Mass.	Whig	...	14 }		William Smith	Ala.		
	W. P. Mangum	N. C.	Whig	...	11	.....				
1840	**Wm. H. Harrison**	Ohio	Whig	294	234	1,275,016	*John Tyler*	Va.	XIV. **William Henry Harrison,** on the eastern portico of the Capitol, Thursday, March 4, 1841. Oath administered by Chief Justice Taney.	68
	Martin Van Buren	N. Y.	Dem	...	60	1,129,102	R. M. Johnson	Ky.		
	James G. Birney	N. Y.	Lib.	...	...	7,069	L. W. Tazewell	Va.		
							James K. Polk	Tenn.		
							Thomas Earle	Pa.	**John Tyler,** inaugurated 12 noon, Tues., April 6, 1841, at Brown's Indian Queen hotel, Washington. Oath administered by Judge Cranch.	51
1844	**James K. Polk**	Tenn.	Dem.	275	170	1,337,243	*George M. Dallas*	Pa.	XV. **James Knox Polk,** on the eastern portico of the Capitol, Tuesday, March 4, 1845. Oath administered by Chief Justice Taney.	50
	Henry Clay	Ky.	Whig	...	105	1,299,062	T. Frelinghuysen	N. J.		
	James G. Birney	N. Y.	Lib.	...	...	62,300	Thomas Morris	Ohio		
1848	**Zachary Taylor**	La.	Whig	290	163	1,360,099	*Millard Fillmore*	N. Y.	XVI. **Zachary Taylor,** on the eastern portico of the Capitol, Monday, March 5, 1849. Here for the second time March 4th came on Sunday. Oath administered by Chief Justice Taney.	65
	Lewis Cass	Mich.	Dem.	...	127	1,220,544	Wm. O. Butler	Ky.		
	Martin Van Buren	N. Y	F. S.	...	...	291,263	Chas. F. Adams	Mass.		
									Millard Fillmore, in the hall of the House of Representatives, 12 noon, Wednesday, July 10, 1850. Oath administered by Judge William Cranch.	
1852	**Franklin Pierce**	N. H.	Dem.	296	254	1,601,274	*William R. King*	Ala.	XVII. **Franklin Pierce,** on the eastern portico of the Capitol, Friday, March 4, 1853. Oath administered by Chief Justice Taney.	49
	Winfield Scott	N. J.	Whig	...	42	1,386,580	Wm. A. Graham	N. C.		
	John P. Hale	N. H.	Fed. D.	...	...	155,825	George W. Julian	Ind.		
	Daniel Webster	Mass.	Whig	...	...	1,670				

‡Prior to 1804 each elector was entitled to vote for two candidates for President. The candidate receiving the greatest number of votes was declared elected while the candidate receiving the next highest vote was declared Vice-President. †As there was no election the choice was decided by the House of Representatives. *It is claimed that the first Republican party was the progenitor of the present Democratic party. §Electoral votes not cast.

PRESIDENTIAL ELECTIONS AND INAUGURATIONS—Continued

Year	Presidential Candidates	State	Party	Vote			Vice-Pres. Candidates		Facts Concerning Inauguration	Age at Inaug
				Total	Electoral	Popular	Name	State		
1856	**James Buchanan**	Pa.	Dem.	296	174	1,838,169	*J. C. Breckenridge*	Ky.	XVIII. **James Buchanan,** on the eastern portico of the Capitol, Wednesday, March 4, 1857. Oath administered by Chief Justice Taney.	66
	John C. Fremont	Cal.	Rep.	...	114	1,341,264	Wm. L. Dayton	N. J.		
	Millard Fillmore	N. Y.	Amer.	...	8	874,534	A. J. Donelson	Tenn.		
1860	**Abraham Lincoln**	Ill.	Rep.	303	180	1,866,452	*Hannibal Hamlin*	Me.	XIX. **Abraham Lincoln,** on the eastern portico of the Capitol, Monday, March 4, 1861. Oath administered by Chief Justice Taney.	52
	J. C. Breckenridge	Ky.	Dem.	...	72	847,953	Joseph Lane	Ind.		
	Stephen A. Douglas	Ill.	Union D.	...	39	1,375,157	H. V. Johnson	Ga.		
	John Bell	Tenn.	Amer.	...	12	590,631	Edward Everett	Mass.		
1864	**Abraham Lincoln**	Ill.	Rep.	314	212	2,213,665	*Andrew Johnson*	Tenn.	XX. **Abraham Lincoln,** for a second term, on the eastern portico of the Capitol, Saturday, March 4, 1865. Oath administered by Chief Justice Chase.	
	Geo. B. McClellan	N. J.	Dem.	...	21	1,802,237	G. H. Pendleton	Ohio		
1868	**Ulysses S. Grant**	Ill.	Rep.	317	214	3,012,833	*Schuyler Colfax*	Ind.		
	Horatio Seymour	N. Y.	Dem.	...	80	2,703,249	F. P. Blair, Jr.	Mo.		
1872	**Ulysses S. Grant**	Ill.	Rep.	366	286	3,597,132	*Henry Wilson*	Mass.		
	Horace Greeley	N. Y.	D. & L.	...	†	2,834,125	B. Gratz Brown	Mo.	**Andrew Johnson,** in his rooms at the Kirkwood House, Washington, D. C., 10 a. m., Saturday, April 15, 1865. Oath administered by Chief Justice Chase.	57
	Charles O'Conor	N. Y.	Dem.	...	...	29,489	John Q. Adams	Mass.		
	James Black	Pa.	Temp.	...	...	5,608	John Russell	Mich.		
	Thos. A. Hendricks	Ind.	Dem.	...	42	.....	Geo. W. Julian	Ind.		
	B. Gratz Brown	Mo.	Dem.	...	18	.....	A. H. Colquitt	Ga.		
	Charles J. Jenkins	Ga.	Dem.	...	2	.....	J. M. Palmer	Ill.	XXI. **Ulysses Simpson Grant,** on the eastern portico of the Capitol, Thursday, March 4, 1869. Oath of office administered by Chief Justice Chase.	47
	David Davis	Ill.	Ind.	...	1	.....	T. E. Bramlette	Ky.		
	Not counted	.....	.....	...	17	.....	W. S. Grosbeck	Ohio		
							W. B. Machen	Ky.		
							N. P. Banks	Mass.		
1876	**Ruth'd B. Hayes**	Ohio	Rep.	369	185	4,036,298	*Wm. A. Wheeler*	N. Y.	XXII. **Ulysses Simpson Grant,** for a second term, on the eastern portico of the Capitol, Tuesday, March 4, 1873. Oath administered by Chief Justice Chase.	
	Samuel J. Tilden	N. Y.	Dem.	...	184	4,300,590	T. A. Hendricks	Ind.		
	Peter Cooper	N. Y.	Grb.	...	...	81,737	Samuel F. Cary	Ohio		
	Green Clay Smith	Ky.	Pro.	...	...	9,522	G. T. Stewart	Ohio		
	James B. Walker	Ill.	Amer.	...	...	2,636	D. Kirkpatrick	N. Y.		
1880	**James A. Garfield**	Ohio	Rep.	369	214	4,454,416	*Chester A. Arthur*	N. Y.	XXIII. **Rutherford Birchard Hayes,** privately in the White House, at 7:05 p. m., Saturday, March 3, 1877. Oath administered by Chief Justice Waite. Here again Sunday came March 4th, and the oath of office was publicly taken March 5, 1877.	54
	Win'd S. Hancock	Pa.	Dem.	...	155	4,444,952	Wm. H. English	Ind.		
	James B. Weaver	Iowa	Grb.	...	...	308,578	B. J. Chambers	Tex.		
	Neal Dow	Me.	Pro.	...	...	10,305	H. A. Thompson	Ohio		
	John W. Phelps	Vt.	Amer.	...	...	707	S. C. Pomeroy	Kan.		
1884	**Grover Cleveland**	N. Y.	Dem.	401	219	4,874,986	*T. A. Hendricks*	Ind.		
	James G. Blaine	Me.	Rep.	...	182	4,851,981	John A. Logan	Ill.	XXIV. **James Abram Garfield,** on eastern portico of the Capitol, Friday, March 4, 1881. Oath administered by Chief Justice Waite.	49
	John P. St. John	Kan.	Pro.	...	...	150,369	William Daniel	Md.		
	Benjamin F. Butler	Mass.	People's	...	...	175,370	A. M. West	Miss.		
	P. D. Wigginton	Cal.	Amer.	...	...	.....				
1888	**Benjamin Harrison**	Ind.	Rep.	401	233	5,439,853	*Levi P. Morton*	N. Y.	**Chester Alan Arthur,** at his residence, N. Y., 2 a. m., Tu., Sept. 20, 1881, oath administered by Jno. R. Brady, justice of the N. Y. supreme court. Oath repeated at the Capitol, September 22, 1881; administered by Chief Justice Waite.	51
	Grover Cleveland	N. Y.	Dem.	...	168	5,549,309	A. G. Thurman	Ohio		
	Clinton B. Fisk	N. J.	Pro.	...	...	249,506	John A. Brooks	Mo.		
	Alson J. Streeter	Ill.	U. L.	...	...	146,935	C. E. Cunningham	Ark.		
	R. H. Cowdry	Ill.	N'd L.	...	...	2,808	W. H. Wakefield	Kan.		
	James L. Curtis	N. Y.	Amer.	...	...	1,591	James B. Greer	Tenn.		
1892	**Grover Cleveland**	N. Y.	Dem.	444	277	5,554,437	*A. E. Stevenson*	Ill.	XXV. **Grover Cleveland,** on the eastern portico of the Capitol, Wednesday, March 4, 1885. Oath administered by Chief Justice Waite.	47
	Benjamin Harrison	Ind.	Rep.	...	145	5,175,287	Whitelaw Reid	N. Y.		
	James B. Weaver	Iowa	People's	...	22	1,041,028	James G. Field	Va.		
	John Bidwell	Cal.	Pro.	...	...	264,133	James R. Cranfill	Texas		
	Simon Wing	Mass.	S. L.	...	...	21,164	C. H. Matchett	N. Y.		
1896	**William McKinley**	Ohio	Rep.	447	271	7,102,272	*Garret A. Hobart*	N. J.	XXVI. **Benjamin Harrison,** on eastern portico of the Capitol, Monday, March 4, 1889. Oath administered by Chief Justice Fuller.	55
	William J. Bryan	Neb.	Dem.	...	176	6,273,624	Arthur Sewall	Me.		
	William J. Bryan	Neb.	People's				Th. E. Watson	Iowa		
	John M. Palmer	Ill.	Nat.Dem.	...	...	133,148	Sim. B. Buckner	Ky.		
	Joshua Levering	Md.	Pro.	...	...	132,007	Hale Johnson	Ill.	XXVII. **Grover Cleveland,** on eastern portico of the Capitol, Saturday, March 4, 1893. Oath administered by Chief Justice Fuller.	55
	Chas. H. Matchett	N. Y.	So. L.	...	...	36,274	Matthew McGuire	N. J.		
	Chas. E. Bentley	Neb.	Nat.	...	...	13,969	J. H. Southgate	N. C.		
1900	**William McKinley**	Ohio	Rep.	447	292	7,219,101	*Theo. Roosevelt*	N. Y.	XXVIII. **William McKinley,** on the eastern portico of the Capitol, Thursday, March 4, 1897. Oath administered by Chief Justice Fuller.	54
	William J. Bryan	Neb.	Dem. & P.	...	155	6,357,054	A. E. Stevenson	Ill.		
	James G. Woolley	Ill.	Pro.	...	...	208,187	Henry B. Metcalf	R. I.		
	Eugene V. Debs	Ind.	S. D.	...	...	.....	Job Harriman	Cal.		
	Wharton Barker	Pa.	M. R. P.	...	...	51,585	Ignatius Donnelly	Minn.		
	Jos. F. Malloney	Mass.	S. L.	...	...	99,613	Val. Remmel	Pa.		
	Seth H. Ellis	Ohio	U. R.	...	...	33,413	Sam. T. Nicholson	Pa.		
	J. F. R. Leonard	Iowa	U. C.	...	...	1,059	John G. Woolley	Ill.	XXIX. **William McKinley,** for a second term, on the eastern portico of the Capitol, Monday, March 4, 1901. Oath administered by Chief Justice Fuller.	
1904	**Theodore Roosevelt**	N. Y.	Rep.	476	336	7,623,486	*Chas. W. Fairbanks*	Ind.	**Theodore Roosevelt,** at residence of Ansley Wilcox, Buffalo, N. Y., September 14, 1901, at 3:32 p. m. Oath administered by Judge John R. Hazel, of the United States district court.	42
	Alton B. Parker	N. Y.	Dem.	...	140	5,077,971	Henry G. Davis	W. Va.		
	Eugene V. Debs	Ind.	Soc.	...	...	402,283	Benjamin Hanford	N. Y.		
	Silas C. Swallow	Pa.	Pro.	...	...	258,536	George W. Carroll	Texas		
	Thomas E. Watson	Ga.	People's	...	...	117,183	Thomas H. Tibbles	Neb.		
	Charles H. Corrigan	N. Y.	Soc. L.	...	...	31,249	William W. Cox	Ill.		
1908	**William H. Taft**	Ohio	Rep.	483	321	7,637,676	*James S. Sherman*	N. Y.	XXX. **Theodore Roosevelt,** on the eastern portico of the Capitol, Saturday, March 4, 1905. Oath administered by Chief Justice Melville W. Fuller.	
	William J. Bryan	Neb.	Dem.	...	162	6,393,182	John W. Kern	Ind.		
	Eugene V. Debs	Ind.	Soc.	...	...	420,393	Benjamin Hanford	N. Y.		
	Eugene W. Chafin	Ill.	Pro.	...	...	241,252	Aaron S. Watkins	.....		
	Thomas L. Hisgen	Mass.	Ind. L.	...	...	83,183	Jno. Tem. Graves	Ga.		
	Thomas E. Watson	Ga.	People's	...	...	33,871	Samuel Williams	Ind.		
	August Gilhaus	N. Y.	Soc. L.	...	...	15,421	Donald L. Munso	Va.		
1912	**Woodrow Wilson**	N. J.	Dem.	531	435	6,282,542	*Thos. R. Marshall*	Ind.	XXXI. **William Howard Taft,** in the chamber of the House of Representatives, Washington, March 4, 1909. Oath administered by Chief Justice Fuller.	51
	Theodore Roosevelt	N. Y.	Prog.	...	88	4,114,585	Hiram Johnson	Cal.		
	William H. Taft	Ohio	Rep.	...	8	3,480,479	*James S. Sherman	N. Y.		
							Nicholas M. Butler	N. Y.		
	Eugene V. Debs	Ind.	Soc.	...	...	820,606	Emil Seidel	Wis.		
	Eugene W. Chafin	Ill.	Pro.	...	...	181,762	Aaron S. Watkins	Ky.		
	Arthur E. Reimer	.....	Soc. L.	...	...	28,641	August Gillhaus	N. Y.		
1916	**Woodrow Wilson**	N. J.	Dem.	531	276	s8,577,613	*Thos. R. Marshall*	Ind.	XXXII. **Woodrow Wilson,** on eastern portico of the Capitol, March 4, 1913. Oath administered by Chief Justice Edward D. White.	56
	Chas. E. Hughes	N. Y.	Rep.	.....	255	s8,164,410	Chas. W. Fairbanks	Ind.		
	Allan L. Benson	N. Y.	Soc.	.....	.....	.....	Geo. R. Kirkpatrick	N. J.		
	J. Frank Hanley	Ind.	Pro.	.....	.....	.....	Dr. Ira Landrith	Tenn.		
	Arthur E. Reimer	Me.	Soc. L.	.....	.....	.....	Caleb Harrison	.....		
	Wm. Sulzer	N. Y.	Amer.	.....	.....	.....	I. G. Pallard	Ind.		
1920	**Warren G. Harding**	Ohio	Rep.	531	404	16,152,200	*Calvin Coolidge*	Mass.	XXXIII. **Woodrow Wilson,** on eastern portico of the Capitol, March 4, 1917. Oath administered by Chief Justice Edward D. White.	
	James M. Cox	Ohio	Dem.	.....	127	9,147,353	Franklin D. Roosevelt	N. Y.		
	P. P. Christensen	Ohio	F. L.	.....		265,411	Max S. Hayes	Ohio		
	Aaron B. Watkins	N. Y.	Pro.	.....		189,408	D. Leigh Calvin	N. Y.		
	Eugene V. Debs	Ind	Soc.	.....		919,799	Seymour Stedman	Ill.		
1924	**Calvin Coolidge**	Mass.	Rep.	531	382	15,718,789	*Chas. G. Dawes*	Ill.	XXXIV. **Warren Gamaliel Harding,** on the eastern portico of the Capitol, March 4, 1921. Oath administered by Chief Justice Edward D. White.	56
	John W. Davis	W. Va.	Dem.	.....	136	8,378,962	Chas. W. Bryan	Neb.	**Calvin Coolidge,** at home of his father, John C. Coolidge, Plymouth Vt., August 2, 1923. Oath administered by his father.	51
	Robt. M. LaFollette	Wis.	Prog.& F.L.	.....	13	4,822,319	Burton K. Wheeler	Mont.	XXXV. **Calvin Coolidge,** on Plaza of the Capitol, March 4, 1925. Oath administered by Chief Justice, Ex-President, Wm. H. Taft.	
1928	**Herbert C. Hoover**	Cal.	Rep.	531	444	21,943,328	*Chas. Curtis*	Kan.	XXXVI. **Herbert C. Hoover,** on eastern portico of the Capitol, March 4, 1929. Oath administered by Chief Justice Wm. H. Taft.	54
	Alfred E. Smith	N. Y.	Dem.	.....	87	15,430,718	Jos. T. Robinson	Ark.		
	Norman Thomas	N. Y.	Soc.	.....	.....	267,420	Jas. A. Maurer	Pa.		
1932	**Franklin D. Roosevelt**	N. Y.	Dem.	531	472	22,521,525	*John N. Garner*	Tex.	XXXVII. **Franklin D. Roosevelt,** on rostrum in front of Capitol, March 4, 1933. Broadcast over radio. Chief Justice Hughes administered oath.	52
	Herbert Hoover	Cal.	Rep.	.....	59	15,957,537	Chas. Curtis	Kan.		
	Norman Thomas	N. Y.	Soc.	.....	.....	728,860	Jas. A. Maurer	Pa.		

sEstimated. *Died Oct. 30, 1912, just prior to the election Nov. 5. †Owing to the death of Horace Greeley the Democratic electors scattered their vote.

TABLE I—FACTS RELATING TO

No.	President's Name and Number of Administration	Born		Parents		Paternal Ancestry	Father's Occupation
		Date	Birthplace	Father	Mother		
1	**George Washington, 1-2**	Fri., Feb. 22, 1732	Bridges Creek, Va.	Augustine	Mary Ball	English	Planter
2	**John Adams, 3**	Wed., Oct. 30, 1735	Quincy, Mass.	John	Susanna Boylston	English	Farmer
3	**Thomas Jefferson, 4-5**	Tues., April 2, 1743	Shadwell, Va	Peter	Jane Randolph	Welsh	Planter
4	**James Madison, 6-7**	Fri., Mar. 16, 1751	Port Conway, Va.	James	Nellie Conway	English	Planter
5	**James Monroe, 8-9**	Fri., April 28, 1758	Westmoreland Co., Va.	Spence	Eliza Jones	Scotch	Planter
6	**John Quincy Adams, 10**	Sat., July 11, 1767	Quincy, Mass.	John	Abigail Smith	English	Lawyer
7	**Andrew Jackson, 11-12**	Sun., Mar. 15, 1767	Near Monroe, N. C.	Andrew	Elizabeth Hutchinson	Scotch-Irish	Farmer
8	**Martin Van Buren, 13**	Thurs., Dec. 5, 1782	Kinderhook, N. Y.	Abraham	Mary Hoes (Goes)	Dutch	Farmer
9	**William Henry Harrison, 14**	Tues., Feb. 9, 1773	Berkeley, Va.	Benjamin	Elizabeth Bassett	English	Statesman
10	**John Tyler, 14**	Mon., Mar. 29, 1790	Greenway, Va.	John	Mary Armistead	English	Jurist
11	**James Knox Polk, 15**	Mon., Nov. 2, 1795	Mecklenburg Co., N. C.	Samuel	Jane Knox	Scotch-Irish	Farmer
12	**Zachary Taylor, 16**	Tues., Nov. 24, 1784	Orange Co., Va.	Richard	Sarah Strother	Scotch-Irish	Planter
13	**Millard Fillmore, 16**	Tues., Jan. 7, 1800	Summer Hill, N. Y.	Nathaniel	Phebe Millard	English	Farmer
14	**Franklin Pierce, 17**	Fri., Nov. 23, 1804	Hillsborough, N. H.	Benjamin	Anna Kendrick	English	Farmer
15	**James Buchanan, 18**	Sat., April 23, 1791	Near Mercersburg, Pa.	James	Elizabeth Speer	Scotch	Merchant
16	**Abraham Lincoln, 19-20**	Sun., Feb. 12, 1809	Hardin Co., Ky.	Thomas	Nancy Hanks	English	Farmer
17	**Andrew Johnson, 20**	Thurs., Dec. 29, 1808	Raleigh, N. C.	Jacob	Mary McDonough	English	Sexton
18	**Ulysses Simpson Grant, 21-22**	Sat., April 27, 1822	Point Pleasant, Ohio	Jesse Root	Harriet Simpson	Scotch	Tanner
19	**Rutherford Birchard Hayes, 23**	Fri., Oct. 4, 1822	Delaware, Ohio	Rutherford	Sophia Birchard	Scotch	Merchant
20	**James Abram Garfield, 24**	Sat., Nov. 19, 1831	Orange, Ohio	Abram	Eliza Ballou	English	Farmer
21	**Chester Allan Arthur, 24**	Tues., Oct. 5, 1830	Fairfield, Vt.	William	Malvina Stone	Scotch-Irish	Clergyman
22	**Grover Cleveland, 25**	Sat., Mar. 18, 1837	Caldwell, N. J.	Richard Falley	Anne Nealy	English	Clergyman
23	**Benjamin Harrison, 26**	Tues., Aug. 20, 1833	North Bend, Ohio	John Scott	Elizabeth F. Irwin	English	Farmer
24	**Grover Cleveland, 27**	Sat., Mar. 18, 1837	Caldwell, N. J.	Richard Falley	Anne Nealy	English	Clergyman
25	**William McKinley, 28-29**	Sun., Jan. 29, 1843	Niles, Ohio	William	Nancy Allison	Scotch-Irish	Iron Mnfr.
26	**Theodore Roosevelt, 29-30**	Wed., Oct. 27, 1858	New York City	Theodore	Martha Bullock	Dutch	Merchant
27	**William Howard Taft, 31**	Tues., Sept. 15, 1857	Cincinnati, Ohio	Alphonso	Louise M. Torrey	English	Lawyer
28	**Woodrow Wilson, 32-33**	Sun., Dec. 28, 1856	Staunton, Va.	Joseph Ruggles	Janet Woodrow	Scotch-Irish	Clergyman
29	**Warren Gamaliel Harding, 34**	Thurs., Nov. 2, 1865	Corsica, Ohio	George Tryon	Phoebe E. Dickerson	English	Doctor
30	**Calvin Coolidge, 34-35**	Thurs., July 4, 1872	Plymouth, Vt.	John Calvin	Victoria J. Moor	English	Farmer
31	**Herbert Clark Hoover, 36**	Mon., Aug. 10, 1874	West Branch, Iowa	Jesse Clark	Huldah R. Minthorn	Swiss	Blacksmith
32	**Franklin Delano Roosevelt, 37**	Mon., Jan. 30, 1882	Hyde Park, N. Y.	James	Sara Delano	Dutch	R.R. President

TABLE II—FACTS RELATING TO

Name	Residence when Elected	Term of Office		Subsequent Career	Died	Cause of Death
		From	To			
Washington	Mt. Vernon, Va.	Apr. 30, 1789	Mar. 4, 1797	Agricultural pursuits; appointed commander-in-chief (1798) because of threatened war with France.	1799	Acute laryngitis
Adams, J.	Quincy, Mass.	Mar. 4, 1797	Mar. 4, 1801	Member of Massachusetts Constitutional Convention of 1820.	1826	Natural decline
Jefferson	Monticello, Va	Mar. 4, 1801	Mar. 4, 1809	Retired to his plantation at Monticello, Va.; devoted much time to the University of Virginia.	1826	Chronic diarrhœa
Madison	Montpelier, Va.	Mar. 4, 1809	Mar. 4, 1817	Retired to Montpelier, Va.; maintained active interest in education and politics.	1836	Natural decline
Monroe	Oakhill, Va.	Mar. 4, 1817	Mar. 4, 1825	Retired to private life in Virginia; served in Virginia Constitutional Convention in 1830.	1831	Natural decline
Adams, J. Q.	Quincy, Mass.	Mar. 4, 1825	Mar. 4, 1829	Member House of Representatives from 1830 to his death.	1848	Paralysis
Jackson	Hermitage, near Nashville, Tenn.	Mar. 4, 1829	Mar. 4, 1837	Retired to the Hermitage; maintained great interest in politics.	1845	Dropsy
Van Buren	Kinderhook, N. Y.	Mar. 4, 1837	Mar. 4, 1841	Renominated twice, 1840 and 1848, for the presidency.	1862	Asthma
Harrison, W. H.	North Bend, Ohio	Mar. 4, 1841	Apr. 4, 1841	Died in office.	1841	Pneumonia
Tyler	Williamsburg, Va.	Apr. 6, 1841	Mar. 4, 1845	Retired to his estate in Virginia; presided at the peace convention held in Washington in 1861.	1862	Liver trouble
Polk	Nashville, Tenn.	Mar. 4, 1845	Mar. 4, 1849	Died within three months.	1849	Chronic diarrhœa
Taylor	Baton Rouge, La.	Mar. 4, 1849	July 10, 1850	Died in office.	1850	Indigestion
Fillmore	Buffalo, N. Y.	July 10, 1850	Mar. 4, 1853	Candidate for president, 1852 and 1856.	1874	Natural decline
Pierce	Concord, N. H.	Mar. 4, 1853	Mar. 4, 1857	Traveled in Europe; retired to Concord, N. H.	1869	Stomach trouble
Buchanan	Wheatland, Pa.	Mar. 4, 1857	Mar. 4, 1861	Wrote defense of his administration.	1868	Rheumatic gout
Lincoln	Springfield, Ill.	Mar. 4, 1861	Apr. 15, 1865	Died in office.	1865	Assassinated by Booth
Johnson	Greeneville, Tenn.	Apr. 15, 1865	Mar. 4, 1869	Chosen United States senator in 1875.	1875	Paralysis
Grant	Washington, D. C.	Mar. 4, 1869	Mar. 4, 1877	Made tour of the world and retired to private life.	1885	Cancer
Hayes	Fremont, Ohio	Mar. 4, 1877	Mar. 4, 1881	Devoted his time to education, reforms and charity.	1893	Heart disease
Garfield	Mentor, Ohio	Mar. 4, 1881	Sep. 20, 1881	Died in office.	1881	Assassinated by Guiteau
Arthur	New York City	Sep. 20, 1881	Mar. 4, 1885	Died the year following his retirement.	1886	Apoplexy
Cleveland	Buffalo, N. Y.	Mar. 4, 1885	Mar. 4, 1889	Retired to New York to practice law; at the end of second term, retired to Princeton, N. J.	1908	Debility
		Mar. 4, 1893	Mar. 4, 1897			
Harrison, B.	Indianapolis, Ind.	Mar. 4, 1889	Mar. 4, 1893	Professor of international law at Leland Stanford University; lawyer.	1901	Pneumonia
McKinley	Canton, Ohio	Mar. 4, 1897	Sep. 14, 1901	Died in office.	1901	Assassinated by Czolgosz
Roosevelt	Oyster Bay, N. Y.	Sep. 14, 1901	Mar. 4, 1909	Headed scientific expeditions; wrote; active in politics.	1919	Heart trouble
Taft	Cincinnati, Ohio	Mar. 4, 1909	Mar. 4, 1913	Chief justice of U. S. Supreme Court.	1930	General breakdown
Wilson	Princeton, N. J.	Mar. 4, 1913	Mar. 4, 1921	Lawyer and writer.	1924	Heart trouble
Harding	Marion, Ohio	Mar. 4, 1921	Aug. 2, 1923	Died in office.	1923	Apoplexy
Coolidge	Northampton, Mass.	Aug. 2, 1923	Mar. 4, 1929	Writer.	1933	Heart trouble
Hoover	Stanford Univ., Cal.	Mar. 4, 1929	Mar. 4, 1933			
Roosevelt	New York City Hyde Park, N. Y.	Mar. 4, 1933				

THE PRESIDENTS OF THE UNITED STATES

Educational Advantage	Early Vocation	Later Vocation	Religious Faith	Married	Wife's Name	Children: Boys	Children: Girls	Name
Common School	Surveyor	Planter	Episcopalian	1759	Mrs. Martha (Dandridge) Custis (1732-1802)	0	0	Washington
Harvard College, 1755*	Teacher	Lawyer	Unitarian	1764	Abigail Smith (1744-1818)	3	2	Adams, J.
William and Mary College, 1762	Lawyer	Lawyer	Liberal	1772	Mrs. Martha (Wayles) Skelton (1748-1782)	0	6	Jefferson
Princeton College, 1771	Lawyer	Lawyer	Episcopalian	1794	Mrs. Dolly (Payne) Todd (1772-1849)	0	0	Madison
William and Mary College	Lawyer	Lawyer	Episcopalian	1786	Eliza Kortwright (1768-1830)	0	2	Monroe
Harvard College, 1787	Lawyer	Lawyer	Unitarian	1797	Louisa Catherine Johnson (1775-1852)	3	1	Adams, J. Q.
Self Taught	Lawyer	Lawyer	Presbyterian	1791	Mrs. Rachel (Donelson) Robards (1767-1828)	0	0	Jackson
Kinderhook Academy	Lawyer	Lawyer	Reformed Dutch	1807	Hannah Hoes (1783-1819)	4	0	Van Buren
Hampden-Sidney College, 1790	Doctor	Soldier	Episcopalian	1795	Anna Symmes (1775-1864)	6	4	Harrison, W. H.
William and Mary College, 1806	Lawyer	Lawyer	Episcopalian	1813	First, Letitia Christian (1790-1842);	3	4	Tyler
				1844	second, Julia Gardiner (1820-1889)	4	2	
University of North Carolina, 1818	Lawyer	Lawyer	Methodist	1824	Sarah Childress (1803-1891)	0	0	Polk
Common School	Soldier	Planter	Episcopalian	1810	Margaret Smith (1788-1852)	1	5	Taylor
Common School	Wool carder	Lawyer	Unitarian	1826	First, Abigail Powers (1798-1853); second, Mrs.	1	1	Fillmore
				1858	Caroline (Carmichael) McIntosh (1813-1881)	0	0	
Bowdoin College, 1824	Lawyer	Lawyer	Episcopalian	1834	Jane Means Appleton (1806-1863)	3	0	Pierce
Dickinson College, 1809	Lawyer	Lawyer	Presbyterian	....	Unmarried	..	..	Buchanan
Self Taught	Farmer	Lawyer	Liberal	1842	Mary Todd (1818-1882)	4	0	Lincoln
Self Taught	Tailor	Politician	Liberal	1827	Eliza McCardle (1810-1876)	3	2	Johnson
West Point Military Academy, 1843	Tanner	Soldier	Methodist	1848	Julia Dent (1826-1902)	3	1	Grant
Kenyon College, 1842	Lawyer	Lawyer	Methodist	1852	Lucy Ware Webb (1831-1889)	7	1	Hayes
Williams College, 1856	Teacher	Lawyer	Disciples	1858	Lucretia Rudolph (1832-1918)	4	1	Garfield
Union College, 1848	Teacher	Lawyer	Episcopalian	1859	Ellen Lewis Herndon (1837-1880)	2	1	Arthur
Academy	Teacher	Lawyer	Presbyterian	1886	Frances Folsom (1864-—)	2	3	Cleveland
Miami University, 1852	Lawyer	Lawyer	Presbyterian	1853	First, Caroline Scott (1832-1892); second,	1	1	Harrison, B.
				1896	Mrs. Mary (Lord) Dimmick (1858-——)	0	1	
Academy	Teacher	Lawyer	Presbyterian	1886	Frances Folsom (1864-——)	2	3	Cleveland
Allegheny College	Teacher	Lawyer	Methodist	1871	Ida Saxton (1844-1907)	0	2	McKinley
Harvard University, 1880	Writer	In politics	Reformed Dutch	1881	First, Alice Lee (1861-1884); second,	0	1	Roosevelt
				1886	Edith Kermit Carow (1861-——)	4	1	
Yale University, 1878	Lawyer	Lawyer	Unitarian	1886	Helen Herron (1861-——)	2	1	Taft
Princeton University, 1879	Lawyer	Educator	Presbyterian	1885	First, Ellen Louise Axson (1860-1914); second,	0	3	Wilson
				1915	Mrs. Edith (Bolling) Galt	0	0	
Ohio Central College	Editor	Publisher	Baptist	1891	Mrs. Florence (Kling) de Wolfe (1860-1924)	0	0	Harding
Amherst College, 1895	Lawyer	Lawyer	Congregationalist	1905	Grace A. Goodhue (1879-——)	2	0	Coolidge
Stanford University, 1895	Engineer	Engineer	Quaker	1899	Lou Henry (1875-——)	2	0	Hoover
Harvard University, 1904								
Columbia University, 1907	Lawyer	Public Ser.	Episcopalian	1905	Anna Eleanor Roosevelt (1884-——)	4	1	Roosevelt

*Date indicates graduation.

THE PRESIDENTS OF THE UNITED STATES

Age at Death	Place of Death	Place of Burial	Writings of the Presidents	Presidential Sobriquets	Name
67	Mt. Vernon, Va.	Mt. Vernon, Va.	*Maxims; Transcripts of Revolutionary Correspondence.*	*Father of his Country; American Fabius.*	Washington
90	Quincy, Mass.	Quincy, Mass.	*Essay on Canon and Feudal Law; Defense of the American Constitution.*	*Colossus of Independence; Son of Liberty.*	Adams, J.
83	Monticello, Va.	Monticello, Va.	*A Summary View of the Rights of America; The Declaration of Independence; Act for Freedom of Religion.*	*Sage of Monticello; Long Tom.*	Jefferson
85	Montpelier, Va.	Montpelier, Va.	*Reports of Debates During the Congress of the Confederation and Federal Congress; Essays.*	*Father of the Constitution.*	Madison
73	New York City.	Hollywood, Richmond, Va.	*A View of the Conduct of the Executive; The People; The Sovereign.*	*Last Cocked Hat.*	Monroe
80	Washington, D. C.	Quincy, Mass.	*Poems of Religion and Society; Defense of Washington's Policy of Neutrality.*	*Old Man Eloquent.*	Adams, J. Q.
78	Hermitage, near Nashville, Tenn.	Hermitage, near Nashville, Tenn.		*Old Hickory; Cæsar of the White House.*	Jackson
79	Kinderhook, N. Y.	Kinderhook, N. Y.	*Inquiry Into the Origin and Causes of Political Parties in the United States.*	*Little Magician; Wizard of Kinderhook.*	Van Buren
68	Washington, D. C.	North Bend, Ohio	*A Discourse on the Aborigines of the Valley of the Ohio.*	*Tippecanoe.*	Harrison, W. H.
72	Richmond, Va.	Hollywood, Richmond, Va.		*Young Hickory.*	Tyler
53	Nashville, Tenn.	Nashville, Tenn.	*Diary of James K. Polk.*	*Young Hickory.*	Polk
65	Washington, D. C.	Near Louisville, Ky.		*Rough and Ready.*	Taylor
74	Buffalo, N. Y.	Buffalo, N. Y.		*American Louis Philippe.*	Fillmore
64	Concord, N. H.	Concord, N. H.	*Some Papers of Franklin Pierce.*	*Purse.*	Pierce
77	Lancaster, Pa.	Lancaster, Pa.	*Résumé of My Administration.*	*Bachelor President.*	Buchanan
56	Washington, D. C.	Springfield, Ill.	*Orations.*	*Honest Abe; Great Emancipator.*	Lincoln
66	Carter's Station, Tenn.	Greeneville, Tenn.	*Speeches.*	*Sir Veto.*	Johnson
63	Mount McGregor, N. Y.	New York City	*The Personal Memoirs of U. S. Grant.*	*Unconditional Surrender.*	Grant
71	Fremont, Ohio	Fremont, Ohio		*President de Facto.*	Hayes
49	Elberon, N. J.	Cleveland, Ohio	*Discovery and Ownership of the Northwestern Territory; Garfield's Words.*	*The Martyr President; The Dark Horse.*	Garfield
56	New York, N. Y.	Near Albany, N. Y.		*America's First Gentleman.*	Arthur
71	Princeton, N. J.	Princeton, N. J.	*Writings and Speeches.*	*Man of Destiny.*	Cleveland
67	Indianapolis, Ind.	Indianapolis, Ind.	*This Country of Ours; Views of an Ex-President.*	*Hoosier President; Son of His Grandfather.*	Harrison, B.
58	Buffalo, N. Y.	Canton, Ohio	*Speeches.*	*Prosperity's Advance Agent.*	McKinley
60	Oyster Bay, N. Y.	Oyster Bay, N. Y.	*The Winning of the West; The Rough Riders; The Strenuous Life; African Game Trails; The Great Adventure, etc.*	*Teddy; T. R.; The Rough Rider; Our Strenuous President.*	Roosevelt
72	Washington, D. C.	Arlington, Va.	*Four Aspects of Civic Duty; The United States and Peace; Ethics in Service, etc.*	*The Globe Trotter; The Judicial President.*	Taft
67	Washington, D. C.	Washington, D. C.	*Congressional Government; The State, A History of the American People; The New Freedom, etc.*	*The Scholar in Politics.*	Wilson
57	San Francisco, Cal.	Marion, Ohio			Harding
60	Northampton, Mass.	Plymouth, Vt.	*Have Faith in Massachusetts; The Price of Freedom. Principles of Mining; American Individualism.*	*Silent Cal.*	Coolidge
					Hoover
					Roosevelt

GOVERNMENT OF CANADA

THE Government of the Dominion of Canada (which comprises all of British North America except Newfoundland, Bermuda and the West Indies) is carried on by means of a *federal government* and a *federal parliament*, which deal with all affairs of the Dominion as distinguished from merely provincial affairs, the latter being dealt with by provincial or territorial governments in each of the nine provinces, the Yukon Territory and the North West Territories.

Source of Governmental Powers. All constitutional power and authority of the federal, provincial and territorial governments, legislatures and councils are derived from the Imperial Parliament of Great Britain; and the principal act by which the government of the Dominion and its various divisions is regulated, is known as the British North America Act of 1867. Canada, like the United States, has in effect a written constitution, but it is supplemented by certain unwritten conventions which are derived from the constitutional law and practice of the United Kingdom. Although the Imperial Parliament of Great Britain is the supreme legislative body for the whole empire, yet it has delegated the powers of self government to the Dominion and has ceased to legislate for it except insofar as it may be requested so to do.



Courtesy Canadian Pacific Railway Co.

Canadian Parliament Building

This view shows the imposing main building of the Canadian Parliament at Ottawa.

Limitations of Power. The statutes passed by the Canadian Parliament and legislatures must not exceed the legislative limits which the Imperial Parliament has laid down, or that may be judicially declared to be *ultra vires* (exceeding the authority) of the legislative body which has assumed to pass them.

EXECUTIVE DEPARTMENT

The Sovereign. The executive power of the entire empire is by law vested in a single person—the Sovereign. The crown is hereditary, and yet in the formal act of Recognition, still preserved in the coronation ceremony, the assent of the people is theoretically necessary. The right of inheritance may, and has been, changed by the Imperial Parliament, but subject to such change continues hereditary. The heir of the preceding Sovereign is the rightful successor. The preference of males to females and the right of primogeniture are strictly adhered to. Besides being heir to the preceding Sovereign, the successor must also be a Protestant.

How the Sovereign Acts. In the exercise of executive power the Sovereign acts upon the advice of the Ministers of the Crown, who are strictly accountable to Parliament for all public acts of the Sovereign. In Canada, as in all parts of the British Empire, all writs run in the Sovereign's name, and all crimes are charged to be "against the King's peace, his crown and dignity."

Term of Office. The Sovereign's term of office is during life, but in case of personal incapacity for the official duties of the office, by reason of infancy or other cause, a Regent may be appointed by Parliament.

Powers and Duties of the Sovereign. It is difficult within a short compass to specify all the powers and duties of the Sovereign, but among the more important are the following:

Commander-in-Chief of Army and Navy.
Communicates with Parliament verbally or by message.
Appoints Ministers of the Crown.
Approves or disapproves Acts of Parliament.
Makes treaties.
Has power to declare war and make peace.
Appoints public officers.
Grants reprieves and pardons for crimes.
Confers peerages and other honors.
Has supreme judicial authority in all causes and matters throughout the empire.

It is to be borne in mind, however, that in all these matters the Sovereign acts upon the advice of his responsible ministers. His judicial authority is exercised by what is known as the Judicial Committee of the Privy Council.

The Governor-General of Canada. *How Chosen.* The Governor-General is the Sovereign's representative in Canada, and is appointed by him upon the advice of the Canadian Government.

Term of Office. The term for which the Governor-General is appointed is usually five years, but may be extended or shortened by the Sovereign.

Eligibility. The person to be chosen must be a British subject, and is usually selected from the ranks of the statesmen of Great Britain.

Salary. The salary of the Governor-General is fixed by a Statute of the Dominion Parliament at £10,000, and is paid out of the Dominion exchequer.

Powers and Duties. The Governor-General is the representative of the Sovereign in Canada and acts for him in all governmental matters, upon the advice of the Canadian Ministry. The Governor-General also:

Communicates with Canadian Parliament verbally or by message.
Appoints Ministers of Canadian Government, who are able to command a majority vote of the House of Commons.
In the name of the Sovereign approves or disapproves of Acts of Parliament.
May reserve Acts of Parliament for consideration of the Sovereign.
May disallow Acts of Provincial Legislatures.
Appoints public officers of the Dominion.
Exercises Sovereign's prerogative of granting reprieves or pardons for crimes committed in Canada.

The Cabinet. This constitutes a kind of executive committee of Parliament. Its powers and duties are not defined by any statute or written law, but rest on conventions which have become part of the constitutional law of England, and of the various parts of the Empire to which powers of self-government have been delegated. It differs from the cabinet of the President of the United States in that it is considered essential that all its members shall be also members of one or other of the Houses of Parliament of Canada, where they shall be able to explain and defend all their acts and proceedings. The cabinet of the Dominion originates all legislation which it thinks to be necessary or expedient, and the defeat of any government measure of importance in the House of Commons generally necessitates the resignation of the Ministry, as no longer able to command the confidence of Parliament.

Salaries. The salary of the Prime Minister is fixed by Statute at $15,000 per annum. The salary of each of the other Ministers is $10,000 per annum. The Leader of the

Opposition also receives $10,000 per annum.

Privy Council of Canada. The statute law provides for the establishment of a Privy Council of the Sovereign in Canada, to aid and advise in the government of the Dominion. In practice the Privy Council as such does not govern, as it embraces men of different political parties who have been members of former cabinets.

The Executive Departments. The various executive departments of the Dominion Government are under the control of Ministers, who are members of the cabinet, who are appointed to office by the Governor-General, and who hold office during the pleasure of the Crown. The following are the Cabinet Portfolios, each corresponding to an executive Department. In some cases a Cabinet Minister has charge of several Departments.

The Prime Minister, usually fills the office of President of the Privy Council of Canada, and at the present time is also Secretary of State for External Affairs.

Minister of Justice and Attorney-General
Secretary of State
Minister of Finance and Receiver-General
Minister of Trade and Commerce
Minister of Marine
Postmaster-General
Minister of National Defence
Minister of Agriculture
Solicitor General
Minister of Public Works
Minister of Railways and Canals
Minister of the Interior
Minister of Mines
Minister of Customs and Excise
Minister of Labor
Minister of Fisheries
Minister of Immigration and Colonization and Superintendent-General of Indian Affairs
Minister of Health and Soldiers' Civil Re-establishment

LEGISLATIVE DEPARTMENTS

Parliament of Canada. The Parliament of Canada is composed of the Sovereign (represented by the Governor-General), the Senate and the House of Commons. It is the prerogative of the Sovereign to summon meetings of Parliament and to prorogue or dissolve it; also to approve or disapprove of all bills which have been agreed to by both houses. In each case he acts on the advice of his responsible ministers. The Governor-General takes no part in the debates. There must be a session of Parliament at least once in every year.

The Senate.

Number of Members, 96.

How Appointed. By the Governor-General on the advice of his Ministers.

Term of Office. Life, but office may be forfeited.

Eligibility. Thirty years of age or upward; British subject; owner of $4,000 realty; resident of the province he represents, and in the Province of Quebec his property qualification must be in the electoral district he represents.

Salary. Fixed by statute at $4,000 and traveling expenses; Speaker of Senate, $6,000.

Powers of Senate.

(a) Appoints its officers other than the Speaker, who is appointed and removed by the Governor-General in Council.

(b) Has power to approve, reject or amend bills passed by the House of Commons, except that it cannot originate, or alter bills passed by the House of Commons, for raising revenue.

House of Commons.

Number of Members, at present, 245.

How Elected. By popular vote for electoral districts, readjusted decennially.

Speaker. Elected by the House.

Salary. Fixed at $4,000 and traveling expenses, Speaker, $6,000.

Term of Office. Duration of Parliament, but may resign or be expelled for crime.

Duration. Until dissolved by the Governor-General, but not to exceed five years.

Powers.

(a) Originates all bills for raising revenue, and may originate bills of any other nature.

(b) Approves, rejects or amends bills passed by the Senate.

Legislation. All laws must receive the assent of the Governor-General, the Senate and the House of Commons.

Under the British North America Act certain legislative powers are assigned to the Provinces, and all other matters belong to the Federal Parliament. This principle, it will be observed, is the direct opposite of that of the American Constitution, under which all matters not specifically assigned to the Federal power, belong to the states.

JUDICIAL DEPARTMENT

Judges of Dominion Courts.

Supreme Court. Consists of a Chief Justice and six other justices.

How Appointed. By the Governor-General on advice of Canadian Cabinet.

Term of Office. Life and good behavior, but must retire on reaching the age of 75.

Jurisdiction. Appellate court to hear appeals from courts of last resort in the various provinces of the Dominion. Has original jurisdiction in certain constitutional matters. The only appeal from its decisions is to the Judicial Committee of the Imperial Privy Council.

Salary. Chief Justice, $15,000; other Judges, $12,000.

Exchequer Court. Consists of two Judges.

How Appointed. By the Governor-General upon the advice of the Canadian Cabinet.

Term of Office. Life and good behavior, but must retire on reaching the age of 75.

Jurisdiction. Claims against the Crown; federal railways; patents, trade-marks; copyright; admiralty cases.

Salary. President of Court, $10,000; other Judge, $9,000.

GOVERNORS-GENERAL OF CANADA

Governor-General	Lineage	Term of Office	Birth	Death
The Right Hon. Viscount Monck, G.C.M.G.	Charles Monck, British statesman, made a peer of the United Kingdom in 1866.	1867–1869	1819	1894
The Right Hon. Baron Lisgar, G.C.M.G.	Baron Lisgar, a British politician (Sir John Young)	1869–1872	1807	1876
The Right Hon. the Earl of Dufferin, K.P., K.C.B., G.C.M.G.	Was created Marquis of Dufferin in 1888 (Frederick Temple Hamilton Blackwood)	1872–1878	1826	1902
The Most Hon. the Marquis of Lorne, K.T., G.C.M.G., P.C.	Eldest son of the eighth Duke of Argyll (John George Henry Douglas Sutherland Campbell)	1878–1883	1845	1914
The Most Hon. the Marquis of Lansdowne, G.C.M.G.	Fifth Marquis of Landsdowne (Petty-Fitz Maurice Henry Charles Keith)	1883–1888	1845	
The Right Hon. Lord Stanley of Preston, G.C.B.	Sixteenth Earl of Derby (Frederick Arthur Stanley)	1888–1893	1841	1908
The Right Hon. the Earl of Aberdeen, K.T., G.C.M.G.	Seventh Earl of Aberdeen (John Campbell Hamilton Gordon)	1893–1898	1847	
The Right Hon. the Earl of Minto, G.C.M.G.	Fourth Earl of Minto (Gilbert John Elliot-Murray Kynynmound)	1898–1904	1845	1914
The Right Hon. the Earl Grey, G.C.M.G.	Fourth Earl Grey (Albert Henry George)	1904–1911	1851	1917
Field Marshal H.R.H. the Duke of Connaught, K.G.	Third son of Queen Victoria	1911–1916	1850	
The Duke of Devonshire, K.G., G.C.M.G.	Ninth Duke of Devonshire (Victor Christian William Cavendish)	1916–1921	1868	
Baron Byng of Vimy, G.C.B., G.C.M.G.	Seventh son of Earl of Stafford (Julian Hedworth George)	1921–1926	1862	
The Right Hon. Viscount Willingdon, G.C.S.I., G.C.M.G.	First Viscount Willingdon (Freeman Freeman-Thomas)	1926–1931	1866	
The Right Hon. the Earl of Bessborough.	Ninth Earl of Bessborough (Vere Brabazon Ponsonby)	1931–	1880	

PRIME MINISTERS OF CANADA

Name	Service		Born	Died
	Term	Years		
Right Hon. Sir John Alexander Macdonald, G.C.B., P.C.	1867–1873	6	1815	1891
Hon. Alexander Mackenzie	1873–1878	5	1822	1892
Right Hon. Sir John A. Macdonald, G.C.B., P.C.	1878–1891	13	1815	1891
Right Hon. Sir John Joseph Caldwell Abbott, K.C.M.G.	1891–1892	1	1821	1893
Right Hon. Sir John Sparrow David Thompson, K.C.M.G.	1892–1894	2	1844	1894
Hon. Sir Mackenzie Bowell, K.C.M.G.	1894–1896	2	1823	1917
Hon. Sir Charles Tupper, Bart.	1896–1896	6 mos.	1821	1915
Right Hon. Sir Wilfrid Laurier, G.C.M.G.	1896–1911	13	1841	1919
Right Hon. Sir Robert Laird Borden, G.C.M.G.	1911–1920	9	1854	
Right Hon. Arthur Meighen	1920–1921	1	1874	
Right Hon. William Lyon Mackenzie King	1921–1926	5	1874	
Right Hon. Arthur Meighen	1926–1926	2 mos.	1874	
Right Hon. William Lyon Mackenzie King	1926–1930	4	1874	
Right Hon. Richard B. Bennett	1930–		1870	

LAW

LAW may be defined as the system of rules established by organized society, performance of which it enforces, or breach of which it punishes. It is the coercive character of its rules that distinguishes law from custom.

THE HISTORY OF LAW

Law has a natural course of development among uncivilized people; and what are at first merely customary usages or arbitrary decrees of a despotic ruler, intended only for a single case, become fixed as rules of law. In early law, certain universal tendencies may be observed. Thus, such law is always formal. That is, the tests by which the validity of acts is judged are based on an arbitrary formality rather than upon the essential justice or reasonableness of the act. Procedure and proof are similarly formal. Such tests as ordeal or combat are held to determine the righteousness of a litigant's cause.

The Five Systems of Law. In the history of the modern world five great systems of law have grown up: The Chinese, the Hindu, the Mohammedan, the Roman and the English. Of these the two last named are peculiar in having spread far beyond the countries in which they had their origin, and these two systems at the present day mainly dominate the civilized world.

Roman Law was partially diffused over the countries which the Romans conquered, and later was either tacitly or expressly adopted by most of the European countries. It now prevails over all southeastern Europe as well as in Germany, Belgium and Holland, and to a large degree its principles have been adopted in the Scandinavian and the Slavonic countries. The settlers of Central and South America carried their law with them and the Roman law prevails throughout the countries there, as it also does in most of the East and West Indies.

A few portions of the British Empire and of the United States also have inherited the Roman law which, however, tends in such places with lapse of time to take on some admixture of the English common law. Scotland, parts of Africa, Ceylon, Quebec, Louisiana and the Philippine Islands come under this description.

The English Common Law has been spread by English colonists almost everywhere that the English language is spoken. Great Britain (with the exception of Scotland), Australia, New Zealand, British America (excepting the Province of Quebec), India, parts of Africa, numerous smaller British colonies, the United States, the Hawaiian Islands, all are dominated by the English system of jurisprudence, though in India native law as well as English law is enforced.

The English common law originated in local customary rules enforced in different communities in England. From these rules was gradually evolved a common law (that is, a universal or uniform law) for the whole kingdom. The earliest important influence in this direction was given by the establishment, in the reign of Henry II. of the Kings' Courts, which had jurisdiction over the whole kingdom and traveled on a circuit through the several shires. These courts gradually superseded petty local tribunals. In the reigns of Edward I and Edward III parliamentary enactments strengthened the tendency to uniformity already begun and the foundations of the modern law of real property were laid. Soon afterward the equity jurisdiction of the chancellor became recognized, by means of which extensive modifications have been evolved in modern English Law. The connection between the early lawyers and the church was very close, and by a body of canon law, based on portions of the Roman or civil law, the ecclesiastical courts controlled not a few legal questions, such as administering the estates of deceased persons. In other countries of Europe the canon law had been one of the means by which Roman law had been extended, and similar consequences might have followed in England were it not that in the reign of Henry VIII and shortly thereafter the destruction of the Papal power in England prevented the further development of civil law principles through the medium of the canon law and the church.

The great body of commercial law, which is so important today, has grown up, almost wholly since the beginning of the eighteenth century.

Foundations of American Law. When the English colonists settled in the United States they carried with them the system of law to which they had been accustomed and the Revolution, though it severed the political union between the United States and England, did not change the system of law; so that except as subsequent statutes or decisions of American courts may have led to a different result, English precedents still have weight in American courts.

The sources of both English and American law are two: (1) decisions of the courts and (2) statutes. It is an important rule of the English common law that a previous decision of a court on similar facts creates a precedent binding the same court, or other courts of equal or lower rank, to render the same decision on similar facts. It is due to this binding effect of precedent that definite rules of law gradually were evolved by the courts without the aid of legislative enactment. The rules thus established must be sought in the published decisions of the courts.

Statutes are another very important source of law. But even when legislatures pass statutes, courts have the power of deciding what they mean, and thus even in regard to statutory law the governing rules often cannot be clearly known until courts have decided cases involving the construction of the statutes.

CLASSIFICATION OF LAW

Law may be divided into public and private law. Public law involves rights and duties between the state, or one acting by its authority, and a private individual, while private law involves the relative rights and duties of private persons.

Public Law comprises (1) International law, (2) Constitutional law, (3) Administrative law and (4) Criminal law.

International Law consists of rules governing the conduct of states toward one another, and the conduct of citizens of one state toward those of another state. In disputes between nations there is no method by which parties can obtain a decree that will be forcibly carried out under the direction of a court; but the rules of international law are recognized by the courts of nations as binding when, as not infrequently happens, such rules affect the rights of individual persons.

Nations frequently agree to arbitrate their disputes, and there has been established an International Tribunal at the Hague to which subscribing nations agree to submit disputes; but awards under arbitration agreements or by the Hague Tribunal have only moral compulsion.

Constitutional Law defines the manner in which the government is carried on, and the limits of the powers of the state as against the individual. In the United States not only the general government has a written constitution, but each state likewise has such a constitution. Each of these constitutions establishes the method of government and also contains grants and limitations of power to the several departments of the state. The Federal Constitution gives certain powers to the national government and denies certain powers to the individual states. Except in so far as powers are granted expressly or by necessary implication to the national government, they are retained by the states. Both in federal and state constitutions the individual is protected in certain fundamental rights. Laws passed in violation of a constitution are void, and whenever they are involved will be so treated by courts having jurisdiction of the question.

Administrative Law relates to the rules by which government is administered by officers other than judges. Numerous rules affecting rights and duties are applied in this way: the collection of taxes and other revenue; the promotion of health by boards established for the purpose; the supervision of carriers, banks, insurance companies and other corporations; the management of public lands, are but a few of the activities which are carried on by administrative officers and in the exercise of these functions their rulings have a quasi-judicial character. This branch of law has greatly developed in recent years.

Criminal Law is the most familiar branch of public law. It consists of prohibitive rules to which penalties are attached. Criminal law, like other branches of law, grew up in England mainly by the decisions of courts creating a *common* law as distinguished from *statute* law. At the present time, however, criminal law has been more completely reduced to statutory form by legislative enactment than have the other branches. Within the limits of the Constitution the Congress of the United States has power to declare acts criminal and punish them as such, but there is no unwritten Federal criminal law and the determination of what are criminal offences and how they shall be punished are functions, for the most part, retained by the several states.

Private law controls the enforcement of

rights which may be divided into (1) rights *in rem*; (2) rights *in personam*. The former class of rights imposes correlative duties on everyone, while the latter class imposes correlative duties only on specified persons. The ownership of property affords an instance of a right *in rem*. The owner has a right to the property, and everyone else in the world is under a duty to refrain from interfering with it.

Certain fundamental personal rights also may be classed as rights *in rem*, since everyone is under a duty to each individual to refrain from interfering with these rights. Such interference constitutes what is called a *tort*, and, as such, gives a right of action for damages to the injured person and will frequently also constitute a crime and render the offender liable to prosecution by the state.

A more specific classification, convenient for the present treatment, divides rights under private law into those based on (1) status; (2) contract; (3) obligations imposed by law irrespective of agreement, which involve besides other rights a special consideration of (4) ownership of property.

STATUS

Certain rights and duties exist between parties who bear a certain relationship to one another. The most striking illustration is afforded by family relationship. Rights and duties of husband and wife, and of parent and child are created by the existence of those family relations, and are confined to persons bearing that relation to each other. The relation of master and servant involves at common law certain consequences, and other consequences are often added by statute.

CONTRACTS

Most of the ordinary transactions of business life involve applications of the law of contracts. The greater part of the law of agency, partnership, insurance, sales, negotiable paper and banking consists of specialized contractual law.

The simplest and also most accurate conception of a contract is a promise, or a number of promises, forming part of a single transaction, to which the law attaches legal obligation. Promises of competent parties may be binding because of their form or because of their essential character. Contracts of the first kind are called formal, of the second kind, informal or simple contracts.

Requisites of Contracts. Both formal and informal contracts may consist wholly of a promise or promises by one party only, or of mutual promises by the parties. In the former case the contract is called unilateral, in the latter case it is called bilateral. Both formal and informal contracts require that the parties undertaking to contract shall have capacity for that purpose. Both types also may be invalidated by being opposed to statute or public policy; or by being induced by fraud, duress, or essential mistake. These invalidating circumstances are considered later after the competency of parties and the essentials for the formation of informal or simple contracts are considered.

A contract is called a voidable contract when it may be avoided at the option of one of the parties. The term void contract, sometimes used for an agreement or promise having no legal effect, is a contradiction in terms. Being void, such an agreement is not a contract.

Incompetent Parties. Certain persons are more or less incompetent to make a valid contract. They may be divided into the following classes: (1) infants; (2) insane persons; (3) drunkards; (4) married women; (5) corporations.

Infants. At common law, all persons under twenty-one years of age are infants. In a few states, however, by statute, females are of age at eighteen.

An infant can bind himself for necessaries, but his other contracts are voidable by him. Necessaries consist of whatever, in view of his station in life, and his supplies from other sources, is essential for his welfare. An infant may avoid his contracts within a reasonable time after he comes of age, and if he has not received property which he still retains, his power of avoidance is generally not limited in time, but in some states an infant who has received property can never avoid obligations without returning what he has received. Even for necessaries an infant is liable only for their fair value. He is liable for his torts.

Insane Persons. Agreements of a person so insane as to be totally incapable of understanding what he is doing are generally void. If not insane to that degree, his contracts are generally voidable in the same way as the contracts of an infant. In some states, however, if an insane person not wholly devoid of reason has received fair consideration for his promise, and the person with whom he dealt had no knowledge of the insanity, the contract is held valid.

Drunkards are under no positive disability unless their intoxication is so great as to deprive them wholly of the use of their mental faculties. In that event they are dealt with like insane persons. The fact, however, that a person is slightly intoxicated may render him more easily a prey to fraudulent persons; thus drunkenness is often a relevant fact in determining whether a transaction was induced by fraud.

Married Women. At common law a married woman could not contract or acquire a contract right or other personal property or retain the ownership of such rights or personal property that she had at the time of her marriage. Courts of equity, however, from an early day, have protected her separate estate and recognized her contracts relative thereto. This estate included all property, both real and personal, which was settled upon her to her sole and separate use. The legal title to it had to be in some other person (who might be her husband), who held it in trust for her. The Married Women's Acts, which are in force in every state of the Union, have so far enlarged the rights and powers of married women, that they are generally either under no disability, or only given protection by being unable to contract with their husbands, or to become surety for them.

Corporations are created by the state, and have only the powers given them by their charters. They may make contracts, provided they act within the scope of their charters. Contracts attempted beyond that scope are *ultra vires* (exceeding legal power or authority).

Formal Contracts are of two kinds: (1) promises made as part of proceedings in court and (2) promises under seal. At common law the seal consisted of an impression on wax or a wafer attached to a written instrument. By statute, however, a mere scroll generally has the same effect as a common-law seal. By more comprehensive statutes, in some states seals are now wholly abolished, and in many other states if it is proved that there was not such consideration as is necessary for informal contracts, a promise under seal is not binding.

Informal or Simple Contracts depend for their validity upon a manifestation of mutual assent and sufficient consideration to support the promises of the parties. Informal contracts are at the present time of much the greatest importance everywhere, and in many states owing to the abolition of seals or a diminution of their legal effect, all contracts are informal.

Mutual Assent. Expression of assent to a contract, as a practical matter, can be secured only by an offer by one person and acceptance by the person to whom the offer is made. An offer to contract is a promise, in terms conditional on there being given in exchange for it another promise or some specified performance. Giving such other promise or performance is itself a manifestation of acceptance. Before such acceptance takes places, however, and making any subsequent acceptance ineffective, an offer may be terminated: (1) by revocation by the offeror; (2) by rejection by the offeree; (3) by death or insanity of either party; (4) by lapse of an unreasonable time for acceptance. An offer may be made not simply by spoken or written words, but by acts manifesting the offeree's intention, or by both words and acts. Thus an order given to a shopkeeper implies a promise to pay for the goods requested, if they are furnished.

An offer can be accepted only by the person to whom it is addressed. The method of accepting an offer for a unilateral contract is by doing the act requested in the offer. An offer for a bilateral contract is accepted by giving the promise that the offeror requested. The offeror may impose any conditions in his offer that he sees fit, and in order to form a contract the offeree must always comply with these conditions. When an offer is made by mail, an acceptance by mail, if properly addressed and stamped, takes effect, when posted. The fact that it is lost in the mail is immaterial. The offeror, however, may make actual receipt of the letter of acceptance a condition of his offer. The rule in regard to acceptance by telegraph is the same as in the case of acceptance by post. Use of the mail or telegraph must, however, have been expressly or impliedly authorized by the offeror, in order to make the mere despatch of a letter or telegram a valid acceptance. Use of that means in communicating the offer or general custom may give, by implication, the requisite authority.

Like an offer, acceptance may be indicated by acts as well as by words. A contract is called an express contract where the parties' assent is manifested by oral or written words. An implied contract is one where assent is

inferred from the acts of the parties. Obligations to pay for benefits received, though not created by any manifestation of assent, are also sometimes called implied contracts, but are better called quasi contracts.

Consideration. Consideration means an exchange given for a promise. In order to support a promise there must be something given in exchange for it, and the exchange must be such as the law requires. Therefore, a promise to make a gift is not enforceable, though an actual gift accompanied with delivery of chattel property is effectual, since the donee then relies on possession of the chattel, not on a promise. Consideration for a unilateral contract is legally sufficient if it is anything which the promisee was not previously under a legal obligation to do or give, and a *promise* of any such thing is sufficient consideration for a bilateral contract. Payment of all or part of an admitted debt, or a promise of such payment is, therefore, insufficient consideration for a promise by the creditor. A promise, though conditional on the happening of an event which may never occur (such as a promise to pay money if a house burns) is, however, sufficient consideration for another promise. It is also immaterial that consideration for a promise is of little or no pecuniary value so long as the offeror requested it, and the offeree was not bound to give it.

Promises Binding Without Assent or Consideration

There are very few promises which are binding without any acceptance by the promisee, and without any consideration. Such are promises to pay a debt of the promisor, recovery of which has been barred by the Statute of Limitations or by discharge in bankruptcy.

Necessity of Writing. An early English statute, called the Statute of Frauds, required certain contracts to be in writing, or a written memorandum to be made signed by the party to be charged, stating the terms of the contract, in order that such contracts should be enforceable. This statute has been substantially reënacted in all the United States. The contracts that are thus required to be in writing are the following: (1) contracts by an executor or an administrator to pay damages out of his own estate; (2) contracts to answer for the debt or default of another; (3) contracts in consideration of marriage, that is, contracts for marriage settlements; (4) contracts for the sale of any interest in land; (5) contracts which can not be performed within a year from their formation; certain other contracts also under the statutes of most American states, require a writing; (6) promises to pay an antecedent debt that otherwise would be barred by the Statute of Limitations; (7) promises to accept a bill of exchange.

In some states also a writing is necessary to make enforceable promises: (1) to revive a debt barred by a discharge in bankruptcy; (2) to make a will or leave a legacy; (3) to authorize an agent for some purposes; (4) to pay commissions to real estate brokers.

Under the English statute, a written memorandum signed by the party to be charged was also required to make enforceable sales and contracts to sell chattels exceeding £10 in value, if no part of the goods were accepted and actually received by the buyer, and no earnest money or part of the price paid by him. There were thus alternative methods besides a written memorandum for making such transactions enforceable. About three fourths of the United States have enacted a similar statute, but in these states the minimum amount necessary to bring the transaction within the statute varies greatly. In Ohio it is $2,500. In no other state is it higher than $500, the figure adopted in a number of States. In others it is $50.

Illegal Contracts. An agreement to do an act which is prohibited by positive law, or which is against public policy is illegal and cannot be enforced by a party who knew the facts making the agreement illegal. A party who has no reason to know such facts may, however, recover damages for breach of an illegal contract. Thus if a married man engages himself to an unmarried woman who does not know he is already married, she can maintain an action for breach of promise.

Wagering Contracts. In this country wagering contracts are not enforceable. They include not only ordinary bets but speculative transactions where the parties do not contemplate a delivery of goods or shares of stock bought or sold, but merely payment of the difference between the contract price and a subsequent market price.

Sunday Contracts. Sunday contracts, as a rule, are prohibited by statute. At common law, however, they were enforceable. The statutes of the various states vary considerably, but all exempt from their operation contracts founded upon works of charity or necessity. Under these statutes, contracts, not within this exemption, are illegal. Formal contracts and negotiable instruments take effect on delivery. Therefore, bills of exchange, promissory notes, bonds, deeds and mortgages delivered on Sunday are illegal although signed on a secular day. But those delivered on a secular day are enforceable although signed on Sunday. An informal contract takes effect on acceptance of an offer. Therefore if an offer is made on Saturday and the acceptance is given on Sunday, the transaction is invalid; but an acceptance on Monday of an offer made on Sunday creates a valid contract.

Usury Statutes. Usury statutes obtain in nearly all of the states. Usury is interest contracted for or paid in excess of the legal rate. The purpose of the usury statutes is to protect debtors from over-reaching creditors. They vary in the different states. A few make the entire contract void. Others make the interest void. Still others merely make the excess above the legal rate void. They apply to loans, but not to sales. Hence they are not applicable where bills or notes are discounted by a third party. Nor, by the law merchant, do they apply where a banker in loaning money, deducts in advance the highest rate of interest allowable. Devices to cover an intent to obtain usury by commissions, or bonuses are carefully scrutinized by the courts.

Contracts in Restraint of Marriage. Contracts which unduly restrain a person from marrying are against policy and void. Thus, a contract never to marry, or not to marry any one but a certain person to whom the promisor is not already engaged, is void. But a contract not to marry until of age, is valid. And, ordinarily, a contract not to marry without the consent of the promisor's parents is valid.

Contracts facilitating divorce or separation of married couples are illegal, though after actual separation a contract fixing the amount of settlement is valid.

Contracts in Restraint of Trade. From early times contracts unreasonably restraining employees whose employment had terminated, from exercising their skill, were held to be illegal. A restraint was unreasonable which exceeded what was necessary for the protection of the promisee, as where it would prohibit exercise of the promisor's occupation in territory beyond the scope of the promisee's business. This is still law both in England and in the United States; and a similar rule invalidates contracts prohibiting competitors in a business or profession from exercising that business or profession, beyond the extent necessary for the protection of the business purchased. The prohibition of contracts in restraint of trade has been extended, especially in the United States, to all contracts, the tendency of which is to obtain a substantial monopoly, and statutes have been passed both by the Federal Government (The Sherman Law) and by many states making any transaction, whether by contract or by actual combination, illegal, and in many cases criminal.

Contracts Obstructing Justice. Contracts by which a lawyer or other person undertakes to pay the expense of litigation and to receive in return a share of the proceeds of the litigation are generally, though not universally, held illegal. Contracts to refrain from prosecuting or disclosing a criminal offense are also illegal. An injured person may refrain from prosecuting, but he may not bargain for consideration for so doing.

Contracts Tending to Political or Business Corruption. Lobbying contracts are illegal though contracts to argue in favor of legislation before legislative committees are valid. Contracts for procuring public contracts or for the appointment or compensation of officials, or for procuring pardons, or for the location of public buildings are also illegal, as are contracts to secure the election to office in a private corporation, or contracts of agents or other fiduciaries for secret commissions or for any purpose which tends to impair fidelity.

Miscellaneous Illegal Contracts. Contracts with alien enemies are forbidden. Contracts already existing with them are suspended if involving merely unilateral obligations to pay money or transfer property; but existing contracts which would require continued exchange of performance during war are wholly avoided. Contracts to promote illegal acts or to indemnify one who performs them are prohibited. However, mere knowledge by a seller that the buyer intends to use goods purchased for an illegal purpose does not generally preclude recovery of the price. Revenue statutes and licensing statutes also may make contracts illegal.

Rules of Interpretation. The ultimate purpose of rules of interpretation of contracts is to ascertain their meaning, which often is not clearly expressed. To accom-

plish this the following rules are applied by the courts:

When the contract is in writing, its purport cannot be contradicted or varied by proof of oral agreements or conversations. This rule does not apply, however, where the writing is a mere memorandum of the contract, or where the purpose in introducing oral testimony is to show fraud, illegality, mistake of expression, usage or custom, or a condition precedent to the writing becoming effective. Nor does it apply to subsequent oral agreements. Nor to oral testimony whose purpose is to explain, not contradict, the meaning of terms.

When the instrument is partly written and partly printed and the written and the printed parts conflict, the writing controls.

In both oral and written contracts, words are given their plain, common meaning. If, however, the context or surrounding circumstances show that the parties intended to use them in a peculiar or technical sense they are given that special meaning.

When doubt exists as to the meaning of a word or clause it is construed most strongly against the party using it.

When words or clauses are repugnant, those which are opposed to the manifest intention of the parties are rejected.

Subsequent acts of the parties may have a controlling influence in determining the meaning of their agreement. In no case, however, will they be allowed to defeat the plain import of their words.

The various parts of the instrument must be construed together. When there are several contemporaneous agreements relating to the same transaction they must be construed in the light of one another. And when one or more other papers are directly referred to in the instrument as constituting an inducement to the contract, they are entitled to consideration.

Mistake. Where parties to a contract bargain on the assumption that an essential fact exists and it does not, the contract is voidable. The mistake must be mutual and relate to a vital fact, assumed as a basis of the bargain.

Misrepresentation, as distinguished from fraud, is an innocent misstatement or non-disclosure of a fact. Though formerly this had no effect on a contract, the prevailing tendency is now to treat it as ground for avoiding a contract. Mere non-disclosure, however, does not ordinarily have this consequence. There are, however, some exceptions to this rule. Where one party justifiably relies upon the other party for knowledge of certain facts that other party in consequence is bound to exercise the utmost good faith.

Such contracts are insurance contracts, and those made between parties occupying a fiduciary relation, such as guardian and ward, trustee and *cestui que trust*, attorney and client, principal and agent, etc.

Fraud is a misrepresentation of a material fact, present or past, made with knowledge of its falsity or in reckless disregard whether it is true or false, which deceives the other party, to his injury.

Ordinarily, to constitute fraud there must be a misrepresentation as distinguished from a mere non-disclosure. There are, however, some exceptions to this rule. Where the deceiving party is in duty bound to make a disclosure, or where he takes steps to prevent a disclosure, or where the concealment renders that which is stated false, the non-disclosure amounts to fraud. The effect of fraud upon a contract is to make it voidable at the option of the injured party.

Duress is actual or threatened violence or imprisonment which reasonably causes another to enter into a contract. It may be by one of the parties to the contract or by his agent. And it may be directed against either the other party to the contract, or his or her spouse or other near relative. It may consist of the threatened destruction of property, or, under oppressive circumstances, of the illegal detention of property. Its effect is to render the contract voidable.

Undue Influence. Undue influence is akin to duress. It consists in the taking by one of the parties to the contract of an unfair advantage over the other party, who either reposes confidence in him, or possesses a weak intellect, or is in distress. Like fraud, its effect upon a contract is to render it voidable.

Modes of Discharging a Contract. Contracts are discharged: (1) by agreement; (2) by performance; (3) by impossibility of performance; (4) by breach; (5) by operation of law in a few less common ways.

Discharge by Agreement. The parties may agree that their contract shall no longer bind them. Such an agreement is called a waiver, cancellation or rescission. Express words of rescission are not essential. Thus, where the parties make a new contract which is inconsistent with the old one, the latter is discharged. In such case if a third party is substituted for one of the original parties with the consent of all three, the new agreement is called a novation. A unilateral obligation, however, cannot be discharged by mere agreement. The same requirement of sufficient consideration for creating an unsealed contract exists for discharging contractual rights as for creating them. Where both parties are under an obligation the mere agreement of each to surrender his rights is enough.

Discharge by Performance. Strict and full performance of a contract discharges it.

Performance may consist in payment of money or negotiable paper. In the latter case the performance may be absolute or conditional. Ordinarily, a presumption arises that the payee is entitled to sue on the original contract if the paper is not paid when due.

Rejection of tender, or of an offer to perform, may constitute a release. Thus, when a party offers to render services, or deliver goods, or do some other act which he is bound to perform, and the tender is definitely refused, he is released if the contract is bilateral.

If, however, there is merely a unilateral obligation to pay money or render some other performance capable of subsequent fulfillment, a tender of what is due does not discharge the debt. Usually, however, it stops the accrual of interest, and also puts the burden of costs on the creditor in case he sues to recover the debt. Moreover, if any security for the debt exists, it discharges it.

Discharge by Impossibility of Performance. When impossibility of performance arises subsequently to the formation of the contract it does not discharge it in every case. It does, however, (1) when the contract is one for personal services, and death or incapacitating illness supervenes; (2) when the continued existence of some specific thing or means of performance is essential to the performance, and it ceases to exist through no fault of either party; (3) when the impossibility is created by domestic law; (4) in a few recent cases it has been held that a change in facts that were understood to be a basic assumption in the formation of the contract, entirely frustrating the object or value of performance of the contract, discharges it.

Discharge by Breach. Breach of the contract by one of the parties always gives the other party a right of action for damages, and if it is a material breach, and the injured party so elects, it discharges the contract.

Other Methods of Discharge by Operation of Law. Contracts are discharged by operation of law: (1) by merger; (2) by cancellation or destruction of a formal contract; (3) by alteration. Remedies under a contract may also be barred by a discharge in bankruptcy or by the statute of limitations.

Merger is where a higher security swallows up or extinguishes a lower one. This cannot occur unless the securities are of unequal grade, and the subject-matter and the parties the same. A contract under seal will merge a simple contract, and a judgment will merge a contract under seal. But a written contract not under seal will not merge an oral one because they are of equal grade. Each is merely a simple contract.

Cancellation or Destruction of a formal unilateral contract if done intentionally by the promisee discharges it.

Alteration of a written contract discharges it, provided the alteration is material and made fraudulently and intentionally by one of the parties to it, or his agent, without the consent of the other party.

NEGOTIABLE INSTRUMENTS

Assignment of an ordinary contract does not fully substitute for the original contract a new one with the assignor. Negotiability gives substantially this effect. Negotiable paper possesses the following characteristics: (1) it must be in writing and signed; (2) it must contain an unconditional order or promise to pay a certain sum of money; (3) it must be payable to order or bearer; (4) it must be payable at a determinable time; (5) if it is an order it must indicate the drawee.

Bills of Exchange. A bill of exchange is an unconditional written order by one person upon another, directing him to pay to a third party, or to his order or to bearer, a sum of money therein stated.

Bills of exchange are of two kinds: (1) foreign; (2) domestic. A foreign bill of exchange is a bill drawn in one state or country and payable in another state or country. A domestic or inland bill of exchange is a bill which is payable in the state or country in which it is drawn.

The necessary parties to a bill of exchange are the drawer, the drawee and the payee. There may be, in addition, indorsers and indorsees. After the drawer accepts the bill he is called the acceptor. In accepting the

bill he thereby becomes the party primarily liable.

Unless the drawer has directed that presentment be made for acceptance it is not essential in the case of bills payable on demand, or on a certain date, to present them for acceptance. It is customary to do so, however, with those payable at a specified time. Those payable a certain number of days after sight or demand must be presented for acceptance within a reasonable time.

The drawee is entitled to inspect the bill, and to refrain from acting for twenty-four hours. This is to enable him to investigate the drawer's account before deciding whether he will accept the bill or not.

An acceptance which differs from the tenor of the bill may be refused by the holder; but if he consents to receive it, he can have no greater right. .

Promissory Notes. A negotiable promissory note is an unconditional written promise by one person to pay to another person, or to his order or to bearer, at a determinable time, a sum in money. The liability of the maker, unlike that of the drawer of a bill of exchange, is primary and unconditional.

Negotiation. A bill or note payable to bearer, or payable to order and indorsed in blank, is transferable thereafter by mere delivery. The transferor in such case impliedly warrants the genuineness of the signatures and the body of the instrument. He also impliedly warrants the capacity of the parties to make a contract and his title to the instrument.

When the instrument is payable to order and has not been indorsed, or when it has been specially indorsed by naming the indorsee, any further transfer will require the indorsement of the indorsee. Without such indorsement the equitable title will pass, but not the legal title.

Indorser. An indorser of a bill or note not only impliedly warrants all that a transferor by mere delivery impliedly warrants, but also, in the case of an unaccepted bill payable at a certain future time, that it will be accepted unconditionally by the drawee when duly presented for acceptance; and in the case of a promissory note or an accepted bill payable at a certain future time, that it will be paid at maturity if duly presented for payment, or, if payable on demand, that it will be paid when demand of payment is made, if that demand is made within a reasonable time. And furthermore, that in case of dishonor, either by non-acceptance or non-payment after due demand, he will pay the obligation if due notice of the dishonor is sent to him.

Where there are two or more indorsers they are liable *prima facie* in the order in which their names appear on the instrument.

A drawer of a bill or indorser of a bill or note is not liable unless the instrument is on presentment to the drawee or maker at maturity dishonored by him and prompt notice of the dishonor sent. Notice of dishonor may be oral. Ordinarily, however, it is in writing. It should contain statements showing: (1) a sufficient description of the instrument dishonored; (2) that it was presented for acceptance or payment; (3) that acceptance or payment was refused; (4) that it has been protested, if protest is necessary; (5) that the holder looks for payment to the party notified.

Protesting a bill or note consists in taking the necessary formal steps by a notary public to establish and certify to its dishonor. It is essential that the same notary take all the steps required and that the certificate of protest be based upon his acts.

Protest is necessary only in case of bills or notes made in one state or country and payable in another. Presentment, notice, and protest may be waived. Sometimes the waiver is written with an indorsement. Even after failure of the holder to exercise the required diligence to charge a drawer, or indorser a promise by him to waive the deficiency is effective.

A restrictive indorsement is one which restrains further indorsement of the bill or note. Title is vested in the indorsee as a trustee or agent. Thus, "Pay to John Brown for my use," or "Pay to John Doe for my account," are restrictive indorsements.

Checks. A check is a bill of exchange, addressed to a bank or banker, payable on demand.

A checkholder, as a rule, may not sue the bank. The bank's duty is to the depositor, and it will be liable to him for failing to pay a properly drawn check when there are funds. If, however, the check has been previously certified by an authorized officer of the bank, it operates as an acceptance and the bank becomes liable to the holder. Moreover, where the holder of the check procures the certification, the drawer and the indorsers are released.

A check should be presented within a reasonable time. What constitutes a reasonable time depends upon the circumstances of the particular case. If because of neglect to present within a reasonable time, the drawer would suffer, as where the bank fails, the drawer is discharged to the extent of the injury suffered. One who takes an overdue check, like one who takes any overdue bill or note, is subject to equitable defenses of the maker.

When the fund of a depositor is attached, the bank, as a rule, may not pay his checks, unless they have been certified before the attachment.

When a bank pays to a holder in due course a check whose signature is forged it must bear the loss. And when it pays a raised check to such a holder, it also must bear the loss, unless the drawer's negligence in making out the check facilitated the forgery.

Certificates of Deposit are promissory notes issued by banks in return for deposits.

Holders in due course of negotiable paper are persons who take it in good faith, without notice of equities in the usual course of business, for a valuable consideration, before maturity.

As a rule, such a holder of negotiable paper takes it free from all equities. Negotiable paper is endowed with the capacity for transfer, and it is not the purpose of the law that, when passing from hand to hand, its origin shall be scrutinized at the peril of non-payment. Otherwise its valuable quality is impaired or lost. The requirement is that the transfer shall be made with honest intent and belief by the purchaser that the paper is the evidence of an honest indebtedness. To constitute notice of an infirmity in the instrument or defect in the title of the person negotiating the same, the person to whom it is negotiated must have had actual knowledge of the infirmity or defect or knowledge of such facts that his action in taking the instrument amounted to bad faith.

AGENCY

An agent is one who represents and acts for another who is called his principal. Agency is the relation which exists between such persons. The relation of agency may be created by agreement or by operation of law.

Creation by Agreement may be by appointment or by ratification. Ratification is the adoption of the act of an unauthorized agent. To create the agency relation by ratification, the following conditions must exist: (1) the doer of the act must profess to do it on behalf of an existing principal; (2) the approval of the act must be given with full knowledge of all the facts; (3) the act must be approved as a whole. It may not be approved in part and repudiated in part.

Creation by Operation of Law. As a rule, the agency relation is created by agreement of the parties. There are, however, two important exceptions to this rule: (1) agency by estoppel or apparent authority; (2) agency by necessity. In these cases there is no assent of the parties. The relation is created by operation of law.

In the case of agency by estoppel the principal, by his act, estops himself from disputing the agency. As said by an eminent judge, "Where one has so acted, as from his conduct to lead another to believe he has appointed some one to act on that belief, then, unless he interposes, he will, in general, be estopped from disputing the agency, though in fact no agency really existed."

A good example of agency by necessity is that which arises where a husband improperly fails to furnish his wife necessaries. In this case, as said by Chief Justice Holmes, "it (the law) creates a compulsory agency."

Agents. Agents are classified as to the scope of their authority and also as to the nature of their duties.

As to scope of authority, agents are either general or special. A general agent is one who is appointed to do acts of a class, and a special agent is one appointed to do an individual act.

As to the nature of their duties, agents are either professional or non-professional. The former include brokers, factors, or commission merchants, auctioneers and attorneys-at-law.

Capacity of the Parties. Any person who has legal capacity to act in his own right may act through an agent. And any person who has sufficient natural capacity to perform the act delegated to him may be an agent.

Appointment of Agents. Ordinarily, an agent may be appointed orally. In some cases, however, by statute, a writing is essential. At common law, to empower an agent to bind his principal by an instrument under seal, the agent's authority must be under seal. At present, however, as has been previously said, seals have been abolished in many states and even where they still have force the rule is subject to the following exceptions: (1) where the instrument is

sealed in the presence of the principal, by his authority; (2) where the instrument does not require a seal for its validity.

Duties and Liabilities of Agents. An agent must be loyal to his trust and obey instructions. He must not engage in enterprises antagonistic to the interest of his principal nor reap secret benefits at the expense of his principal. He must exercise due care and skill and keep regular accounts of his transactions connected with the agency. If he exceeds his authority as agent he is liable to a third party with whom he deals as well as to his principal. And in all cases he is liable to third parties injured by his torts, who are not themselves guilty of contributory negligence.

Rights of Agents. An agent is entitled to the compensation agreed upon, or to reasonable compensation where no sum is fixed by agreement. If the term is fixed, and he is wrongfully discharged, he has the option of treating the contract as rescinded and recovering the actual value of the services rendered, or of treating the contract as subsisting and recovering damages for the breach. If he should decide to do the latter, it is wiser to wait until the end of the term, since the damages are otherwise uncertain.

Liabilities of Principal. Besides the duties to the agent involved in the preceding statement of the agent's rights, it is the duty of the principal to give instructions to his agent as to the duties he is to perform, to furnish him with proper appliances, and so forth. The acts of the agent, within the scope of the agency, are the acts of the principal, and he is liable to third persons for them.

Termination of the Agency Relation. The agency relation may be terminated as follows: (1) by act of the parties; (2) by expiration of the term; (3) by operation of law.

(1) The parties may terminate the relation at any time, by mutual agreement. Moreover, as a rule, either party has the actual power to renounce the agency at any time. In doing so, however, he is liable in damages for breach of his contract. The only exception to this rule is where the agent's authority is coupled with a proprietary interest in the subject-matter of the agency. In such case the principal cannot renounce the agency.

(2) When the agency is created for a definite period it expires at the end of the term.

(3) The chief causes by which the agency relation may be terminated by operation of law are the following: death, insanity, bankruptcy, war and marriage. There are certain types of agency, such as a power coupled with an interest, which are not terminated even by the death of the agent so interested.

CORPORATIONS

A business corporation, from a strictly legal point of view, is an artificial person created by law, distinct from its members. Practically, however, it is an association of natural persons endowed with power by the legislature to carry on business enterprises in many respects as an individual.

How Corporations are Created. In this country they are created by the legislature, and as a rule under general statutes. Under these statutes the charter of the corporation consists of the certificate of incorporation, the articles of association, and the statutory provisions.

Corporate Attributes and Powers. As a legal entity, a business corporation has capacity, within the limits fixed by its charter, to exercise the legal functions of a natural person.

Corporate Management. The ultimate power in a corporation rests in its members. In a business corporation they are the stockholders. They choose a board of directors, and this board is entrusted with the direct management of the business. For carrying out this work usually, a president, secretary and treasurer, are chosen by the board. By-laws established by the corporation on its formation, with subsequent amendments, fix the duties of officers and other details.

Each stockholder is usually entitled to one vote for each share of stock owned, and he is permitted to cumulate them as he chooses. He may also vote by proxy. But voting power is often restricted in the charter to a special class or classes of stockholders.

The board of directors usually has a wide discretion in the management of the business. It has sole power to declare dividends and to fix the time and place of payment. As a rule, the majority of the directors constitute a quorum. The board has authority to select agents of the corporation, but not to decide upon important changes in the company's business, nor to determine whether the business shall be wound up or not.

Liability of Shareholders. As a rule, the shareholders whose subscriptions are fully paid are not liable to the creditors of the corporation. But by statute in various cases where they participate in the wrongful diversion of the capital of the corporation to the injury of its creditors they are liable to them. Shareholders in national banks are liable, on insolvency of the bank, to pay toward its indebtedness an amount equal to the par value of their stock.

Modes of Dissolving a Corporation. A corporation may be dissolved in any one of the following ways: (1) by expiration of its charter; (2) by surrender of its charter with the consent of the state; (3) by legislative enactment, provided it is constitutional; (4) by judicial proceedings for the purpose of forfeiture owing to misuser or nonuser of its franchises.

PARTNERSHIPS

A partnership is an unincorporated association of two or more competent persons who have agreed to unite their property, labor and skill, or some of them, in carrying on a lawful business as principals for their joint profit.

The requisites of a partnership are as follows: An agreement by two or more competent persons to carry on a lawful business as principals for pecuniary gain. The contract need not be in writing unless its terms bring it within the Statute of Frauds.

Classification of Partnerships. Partnerships are sometimes classified as ordinary partnerships, limited partnerships and joint-stock companies.

Ordinary partnerships are divided into general and special partnerships.

A general partnership is one for carrying on a general kind of business or several kinds of business. A special partnership is one created to accomplish a single adventure.

A limited partnership, allowed by statute in a few states, is one having one or more general partners whose liability for the firm debts is not limited, and one or more special partners whose liability is limited. In organizing this kind of partnership the provisions of the statute must be carefully followed.

Joint-stock Companies are partnerships with a capital stock divided into transferable shares. In the absence of statutory provisions they are governed by the articles of association, the by-laws, and the general principles of partnership.

Classification of Partners. Partners are designated according to the relation that exists between them and the firm, or between them and third persons. Thus, depending upon such relation, they are called ostensible, active, secret, dormant, nominal, general, special, incoming, retiring or liquidating.

Powers of Partners. As a general rule, each partner, for the purposes of the partnership business, is an agent of the firm and of his copartners. The extent of the agency depends upon the nature of the business. In a trading firm a partner has implied power to buy and sell goods, execute commercial paper, borrow money, pledge or mortgage firm personalty, collect debts due the firm, lease premises, hire property, appoint agents, etc. He has no implied power, however, to submit controverted partnership matters to arbitration, or make a general assignment for the benefit of creditors.

In the case of a non-trading firm the implied powers of a partner are more limited. Thus, he has no implied power to bind the firm by making, accepting or indorsing commercial paper. Such paper, therefore, is not enforceable even in the hands of a *bona fide* purchaser.

Rights and Duties of Partners to One Another. Each partner, in the absence of an agreement to the contrary, has an equal right to share in the management of the business of the firm. And each has the right to have firm property applied to the payment of firm debts.

The partnership relation is one of great confidence and trust. For this reason the law requires that partners exercise toward one another the highest integrity and good faith. In the absence of agreement, a partner must not engage in transactions antagonistic to the firm's business, or take secret profits at the expense of the firm. He must conform to the partnership agreement, keep accounts, exercise care and skill, and consult with his copartners upon all proper occasions.

Liability of Partners. Partnership obligations arising from contract are joint, while those arising from tort are joint and several. Each member of the firm is personally liable, however, for all the firm debts. But a partner who is compelled to pay firm debts out of his separate estate is entitled to credit for the payment in an accounting with his copartners.

Partnership Property. The property of the firm may be both real and personal. The legal title to the firm personalty may be held in the firm name. This is sometimes allowed by statute also as to the firm realty; but apart from statute it is not possible, and

even though permitted it is not wise. This is owing to the fact that the firm is not a separate legal entity. The deed should run to all of the partners in trust for the firm. It may be held by any one, however, for the use of the firm. The interest of a partner in the firm property is a peculiar one. It is simply his share in the surplus after the debts are paid. And this is all the buyer gets where a partner's interest is sold by a separate creditor under a writ of execution.

Actions in Law and Equity. Since the firm is not a separate legal entity, a partner cannot sue his firm at law. Nor can the firm sue him. Moreover, a partner cannot sue his copartner at law except as to transactions wholly distinct from the partnership business; and also as to matters arising prior or subsequent to the partnership, and which, though connected with it, are not partnership transactions. Thus, a partner may sue his copartner at law for breach of his agreement to enter into the partnership relation, to furnish capital, pay debts, indemnify him for expenses paid, or reimburse him for capital advanced.

Dissolution of the Firm. The partnership relation may be terminated either (1) by act of the parties, or (2) by operation of law.

By act of the parties it may be by original agreement or by subsequent act; and by original agreement it may be by lapse of time or by the accomplishment of the object of the partnership.

By operation of law it may be by death, insanity, marriage, bankruptcy, or war between the countries of the partners. The circumstances under which each of these causes will effect a dissolution of the partnership relation are similar to those under which each of them will terminate the agency relation.

A court of equity may decree the dissolution of a partnership for any of the following causes: (1) fraud in creating the partnership; (2) insanity of a partner; (3) gross misconduct of a partner; (4) hopelessness of success.

Notice of Dissolution Required. When the partnership is dissolved by act of parties, notice of the dissolution must be given, not only to those who have had dealings with the firm, but also to the public generally. The former must have actual notice transmitted to them, but as regards the latter a general notice in a newspaper of general circulation in the neighborhood, for a reasonable period, is sufficient.

Effect of Dissolution. When the partnership is dissolved by the death of a partner, the legal title to all the firm personalty and to all its realty the title to which was in all the partners jointly, vests at once in the surviving partners, who hold it in trust for the firm. Moreover, the right of disposing of all the partnership assets, real as well as personal, vests in them. Firm creditors may proceed at law against the surviving partners, or in case of their insolvency, or in any case if by statute the liability of partners is joint and several, the creditors may proceed in equity against the estate of the deceased partner.

After dissolution, the partners may perform acts essential for closing up the business, but not with the view of creating new ventures.

SALE OF PERSONAL PROPERTY

A sale of goods is the transfer of ownership therein for a price generally in money.

In the case of a barter or exchange one thing is transferred for another; and in the case of a bailment there is a transfer of the possession of a chattel but not of the title. What is frequently called an executory sale is better called a contract to sell.

Formalities of a Sale. A sale or contract to sell requires no formalities unless it is within the provisions of the Statute of Frauds (which see). It may be oral or in writing; the price may be paid at once or promised on a future day; possession of the goods may be given the buyer immediately or retained for a time by the seller.

When Title Passes. When the title passes is governed by the intention of the parties. Where they do not express their intention it is to be inferred from their acts and the surrounding circumstances. If the goods are ready for immediate delivery the law presumes that title passes at once. If they are not, the law presumes that title is not to pass until they are put in a deliverable condition. If the sale is on approval the law presumes that title does not pass until the buyer has tried and approved them. In the case of a "sale or return" it passes to the buyer at once with the right to pass it back to the seller within the time agreed, or within a reasonable time when no time is fixed, if he chooses to do so. Where the goods are shipped C.O.D. in accordance with an order or contract, the title passes to the buyer upon delivery to the carrier, but the buyer is not entitled to possession of them until he pays the price.

Duties of the Parties. The duties of the seller are three-fold. He must furnish the thing agreed upon, transfer title to the buyer, and give him possession of it. The duties of the buyer are to take delivery and pay the price.

Warranties. A warranty is an assurance of some fact coupled with an engagement, express or implied, to make the assurance good or pay for the deficiency. Ordinarily the seller impliedly warrants that he is the owner of the subject-matter of the sale and that it is free from incumbrance. When the goods are sold by sample, he impliedly warrants that they shall conform to the sample; and when sold by description, that they shall conform to the description. When sold by a manufacturer or dealer, he is generally held to impliedly warrant that they are free from latent defects. And when selected by the seller to fulfill a particular purpose, he impliedly warrants their fitness for that purpose.

Remedies of the Buyer. When the buyer has paid for the goods and the seller refuses to deliver them, the buyer is entitled to recover the market value of the goods at the time and place of delivery, together with interest. If he has not paid for the goods he is entitled to recover the difference between the contract price and the market price at the time and place of delivery, provided the latter price is greater than the former, together with interest.

Any breach of warranty gives the buyer a right of action for damages which are the difference between the value of the goods as they are and what it would have been had the goods been as warranted. As an alternative, in most states the buyer may rescind a sale if he can return the goods uninjured within a reasonable time.

Remedies of the Seller. If the buyer fails to fulfill his duty, the seller may sue for the breach. If title to the goods has passed, he recovers the price. Also, if the goods are specific and not readily salable, he is allowed to notify the buyer that the goods are held for him and can then, too, recover the full price. If title has not passed and the goods are readily salable, the seller recovers as damages the difference between the contract price and the market price. The seller is further protected by rights against the goods. Though title has passed, the seller, so long as the goods remain in his possession, has a lien on them unless he has agreed to give credit. A lien may be enforced by rescission of the transaction or by resale of the goods. Even if the goods have already been shipped to the buyer, the seller may, if the buyer proves to be insolvent, give notice to the carrier, to stop them in transit. The carrier must comply if the goods have not been delivered, unless they have been shipped under an order bill of lading. In that event the carrier need not deliver to any one without surrender of the document.

OBLIGATIONS IRRESPECTIVE OF AGREEMENT

Obligations of this sort are customarily classified either: (1) as quasi contracts, or (2) as duties to make compensation for torts.

Quasi Contracts are so called because the remedy for their enforcement in English and American law has been similar to that granted for contracts.

Quasi contractual obligations include: (1) judgments, taxes, official and statutory obligations of various sorts, and (2) obligations arising from unjust enrichment; that is, the receipt of property or services that the recipient ought to pay for, though he has not contracted to do so.

Torts are wrongs which give rise to a duty to make compensation to the injured person. They arise from injuries to the person or property of another. Assault, imprisonment, slander, libel and some kinds of fraudulent misrepresentation are illustrations of the first kind. Trespass on real estate, wrongful assertion of possession, or ownership of chattel property (conversion) are illustrations of the second. The commonest kind of tort at the present time is negligent though unintentional, injury either to the property or the person of another. Labor disputes give rise to torts by way of boycott, or interference with the property rights of an employer. The boundaries of what is permitted to striking laborers are still somewhat unsettled, and not identical in all States.

REAL PROPERTY

Land and whatever is permanently attached thereto, together with certain incorporeal rights relating to land, are called real property.

Classification of Estates. Estates in

real property are classified with respect to: (1) quantity of interest; (2) time of enjoyment; (3) number and connection of owners; (4) manner of enjoyment.

Quantity of Interest. With respect to quantity of interest, estates in real property are of two kinds: (1) freehold; (2) less than freehold. Freehold estates are of three kinds: (1) fee-simple; (2) fee-tail; (3) for life.

Life estates are either for the life of the tenant or for the life of another person. Those for the life of the tenant include: (1) dower estate; (2) estate by the curtesy; (3) homestead estate. Estates less than freehold are also of three kinds: (1) for years; (2) at will; (3) by sufferance.

Time of Enjoyment. With respect to time of enjoyment, estates in real property are of two kinds: (1) in possession; (2) in expectancy. Estates in expectancy are of two kinds: (1) remainders; (2) reversions. Remainders are subdivided into: (1) vested; (2) contingent.

Number and Connection of Owners. With respect to the number and connection of the owners' estates in real property are of four kinds: (1) in severalty; (2) in joint tenancy; (3) in common; (4) by entirety.

Manner of Enjoyment. With respect to manner of enjoyment estates are of two kinds: (1) absolute; (2) conditional.

An absolute estate is one which is free from restriction. An estate upon condition is one which is commenced, enlarged or defeated upon the happening or performance of some condition.

Definition of Estates. *In Fee-Simple.* This is the highest estate known to the law. It is an estate of inheritance, free from any condition and of indefinite duration.

In Fee-Tail. This is an estate of inheritance which is descendable only to particular heirs of the grantee and not to his heirs in general. It had its origin in the desire of owners of great estates to keep them intact to particular families by restricting the power of alienation. In this country it is looked upon with such disfavor that, where it is recognized at all, the restraint upon free alienation is limited by statute so that the immediate grantee gets a life estate and the second taker gets the remainder in fee.

For Life. An estate for life may be created by the parties themselves or, as in the case of dower, by operation of law.

For Years. An estate for years is a mere chattel interest, even if created for a thousand years. It may be limited to commence presently or at some future time. It does not descend to a deceased lessee's heir, but vests in his executor or administrator of the deceased in the same manner as other personal property.

At Will. This is an estate which the tenant holds at the pleasure of the lessor. Statutes almost invariably require a notice to quit, and the practical effect of these statutes is to convert estates at will into tenancies from year to year or from month to month.

By Sufferance. A tenant by sufferance is one who holds over after his term expires and is allowed by the owner to continue in possession. At common law he was not liable for rent beyond the term agreed unless the lease expressly so provided; but modern statutes frequently make him liable for double rent.

In Remainder. This is an estate which is limited to commence at a future time on the termination of a precedent estate created at the same time. It is either vested or contingent. A vested remainder is one in which there is an immediate fixed right of future enjoyment. A contingent remainder is one where no right of enjoyment accrues until the happening of some uncertain event which may never happen.

In Reversion. This is the residue of an estate left in the grantor, or his heirs commencing in possession upon the determination of a particular estate granted. It is subject to the same incidents as an estate in remainder. Practically the only difference between these two estates is that a remainder is always created by act of the parties and a reversion always by operation of law.

In Severalty. This is an estate held by one person in his own right. Most legal estates in real property belong to this class.

In Joint Tenancy. A joint tenancy is an estate in which the grantees have the same interest, created at the same time, by the same conveyance, and held by them by the same undivided possession. The most important incident of this estate is the right of survivorship, that is, on the death of one joint tenant, the survivors have the entire estate. This tenancy is chiefly used for partnership and trust property.

In Common. This estate is created when two or more persons acquire aliquot shares in land. They may acquire their title from different sources, at different times, and acquire different shares.

By Entirety. This estate is created when a conveyance is made to husband and wife and the conveyance either states that shall hold by entireties or is silent as to the manner in which they shall hold. They are not joint tenants, nor are they tenants in common. Neither party can dispose of his or her interest without the assent of the other; and upon the death of either, the estate survives to the other. This kind of estate is abolished by statute in some states.

Equitable Estate. An equitable estate is a right or interest in real property not recognized at common law, but recognized and made available by courts of chancery. In general, the holder of an equitable estate is entitled to the income, or, beneficial enjoyment of his equitable estate, which, like a legal estate, may be an estate in fee, for years or for life, joint or several, in remainder or reversion, while another person, typically a trustee, has the legal title.

Modes of Acquiring Title. Original title to property is acquired in the following four ways: (1) occupancy; (2) discovery; (3) conquest; (4) cession.

Derivative Title is acquired in the following two ways: (1) by descent through consanguinity, affinity or adoption. (2) by act of the parties or by operation of law. It is acquired by act of the parties either by public or private grant or by devise. Public grant is by patent or legislative grant. Private grant is by deed or by dedication.

Deed. In its widest signification, a deed is an instrument, under seal written or printed; but the word is commonly used in the narrower meaning of a deed of conveyance of realty.

The two parties to a deed are the grantor and the grantee. If the grantor is married, his wife also should sign the deed. This is essential to convey her dower interest. And where the land conveyed is a homestead, it is also essential in order to transfer her homestead right.

The premises should be accurately and minutely described. Reference should be made to prior deeds by which title was acquired by the grantor. If the land is described by metes and bounds, and also by specifying the number of acres, and the two descriptions differ, the former will govern.

A quit-claim deed merely transfers all the right, title and interest in the land that the grantor has. A warranty deed, in addition to this, contains some or all of the following covenants of warranty: that the grantor is lawfully seized of the premises in fee-simple; that the premises are free from all incumbrances; that the grantor has good right to sell the same to the grantee, and that he will; and that his heirs, executors and administrators shall warrant and defend the same to the grantee, his heirs, and assigns forever, against the lawful claims of all persons whatsoever.

A deed is executed by the grantor signing it and annexing thereto his seal. If the grantor is a corporation, the deed should be signed by its president or by some other officer authorized so to do. At common law the sealing of the deed was the most important act in its execution. In some states, by statute, sealing is not essential. In some states two witnesses are essential, in some, one, and in others none. In order that the deed may be recorded, it must also be acknowledged.

To pass the title to the property the deed must be delivered by the grantor or his agent to the grantee or to some one on his behalf.

A delivery of the deed by the grantor to a third party to hold until the grantee has performed certain conditions, or until a certain time has elapsed, does not pass the title until the condition has happened or the time elapsed. Such a delivery is called a delivery in escrow.

Recording a deed is not essential to pass title to the grantee, but if the grantor should make a second conveyance to an innocent purchaser, or in some states if the grantor's creditors without notice of the conveyance should attach the land, the later purchaser or the creditors could defeat the original conveyance. To protect himself, the grantee should have the deed recorded at once. To do so gives constructive notice to the world that the title to the land is in him.

Wills Concerning Real Property. Title to real estate as well as to personalty may be acquired by devise or will in all the states of the Union. To render a person competent to transfer title by this means he must be of full age and of sound mind. Moreover, he must act voluntarily.

In most of the states a will must be in writing, signed by the testator, or by some person in his presence and by his direction, and attested by witnesses, who must subscribe their names thereto in the presence of

the testator. The form of wording a will is immaterial as long as its intent is clear.

Witnesses. Most of the states require two witnesses, except in Connecticut (3), Maine (3), Massachusetts (3), New Hampshire (3), South Carolina (3), Vermont (3).

Males and females are competent to make wills at 18 years in the following states: California, Connecticut, Hawaiian Islands, Idaho, Montana, Nevada, North Dakota, Oklahoma, South Dakota, Utah; and in the following states only females at 18 years: Colorado, District of Columbia, Illinois, Maryland, Missouri, Washington, Wisconsin.

In the following states persons of 18 years may dispose of personal property only: Alabama, Arkansas, Missouri, Oregon, Rhode Island, Virginia, West Virginia. In Georgia any one over 14 years, and in Louisiana any one over 16 years, is competent to make a will. In Colorado, persons of 17 years, and in New York males of 18 and females of 16 years may dispose of personalty.

REMEDIAL RIGHTS

The law does not undertake to enforce specifically most of the legal duties created by status, contract, quasi-contract, ownership of property, or by the law of torts. Instead, a right to recover appropriate pecuniary damages is given. The right of action allowed by law for breach of any legal duty may be called a remedial right. When a right *in rem* is violated by a particular individual the owner of the right *in rem* then acquires, besides his original right against all the world, a special right *in personam* against the wrongdoer.

Thus, an owner of land acquires a right *in personam* against a trespasser for the recovery of damages suffered by the trespass. So a right *in personam* may change its character when the right has been violated. The right of a servant to employment under a contract becomes a right of action for damages if the employer wrongfully discharges the servant. Both rights against the master are rights *in personam*, but the right of action arising on breach of the contract is different from the right to employment which existed under the contract when unbroken.

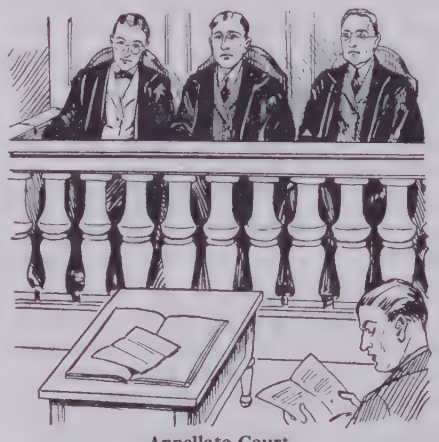
LEGAL REMEDIES

Closely connected with the subject of legal rights and duties is the subject of legal remedies for their enforcement. The rules defining the rights and duties of persons has been called the substantive law, that defining the remedies and the procedure and proof, the adjective law. Adjective Law may be divided into the law of procedure and of proof or evidence. Procedure in turn may be divided into civil procedure and criminal procedure; and civil procedure into procedure at law and in equity.

Civil Procedure. The fundamental steps of civil procedure at law are the beginning of the action by a writ or notice to the defendant, pleading, trial, judgment and execution.

Pleading consists first of a statement of the plaintiff's case variously styled a declaration or complaint. This is followed by a plea or answer of the defendant denying some or all of the facts alleged in the plaintiff's statement, or alleging further facts, or both. The answer is sometimes followed by other pleadings. The ultimate result of the pleading is that each party has set forth the facts on which he relies, and these facts have either been admitted or denied by the other party. If essential facts are denied it is necessary to try the disputed question by means of proof.

But not only questions of fact but also questions of law may be involved in a dispute. The parties may agree as to the facts and dispute only as to whether on those facts the paintiff has a right of action. Or the defendant may dispute both the truth of the facts alleged by the plaintiff and also assert that even though the facts are as the plaintiff alleges, still the plaintiff has no cause of action. Questions of law are decided by a judge, and, in accordance with his decision on questions of law and a jury's verdict on questions of facts, final judgment is given by the court for the plaintiff or defendant, whichever is entitled to it. In the United States at the present day many questions of fact are decided by judges without the aid of juries, but owing to the provisions of state constitutions, this is generally impossible unless the parties waive their right to trial by jury.



Appellate Court
In an appellate court there are from three to seven judges.

Procedure in Equity differs from procedure at law in various respects. The plaintiff's pleading is called a bill or petition and is fuller than is usual in a declaration at law. The defendant's answer also is fuller as to facts charged in the bill. There is no jury; questions of fact as well as of law being determined by the judge.

The most fundamental difference between *equity* and *law*, however, is in regard to the character of the final order of the court. When judgment is rendered at law in favor of the plaintiff an execution for the amount of the judgment is put in the hands of a sheriff, who endeavors to satisfy the execution by seizure of the defendant's goods. The decree of the court of equity, however, is directed to the person of the defendant, ordering him on pain of imprisonment, to do what the court directs. A court of law can give only a money judgment, a court of equity can effectively order a defendant to do many things besides the payment of money; and not only are affirmative orders possible, but negative orders or injunctions are possible, and constitute one of the most important branches of equity jurisdiction.

In many states of America the procedure at law and in equity is now made substantially identical, and even in states where this is not so, the same court generally has jurisdiction of both actions at law and suits in equity, but the general constitutional requirement of jury trial in an action at law, involves the persistence of a difference between matters originally within equitable jurisdiction and other matters. Moreover, the distinction between equitable relief and legal relief is still necessarily observed.

Criminal Procedure is, in the main, like civil procedure at law; the chief difference relating to the beginning of the proceedings. A person may be charged with crime by complaint made by any citizen to a magistrate who, if satisfied that there is reasonable cause for the complaint, and if he has jurisdiction to try cases of the sort, may proceed with the trial of the accused or otherwise may hold the accused for trial in the proper court.

Another method of beginning a criminal prosecution is by information filed by a prosecutiug officer, but the commonest method for serious crimes is by indictment found by grand jury on a case presented to it by the prosecuting officer. The accused may then be arrested and held for trial either by confining him or by admitting him to bail. Those who give bail are regarded as private keepers of a prisoner and are bound to produce him when called upon to do so.

Greater particularity is required in the criminal pleading of the indictment than is necessary in civil actions. The defendant makes no answer or plea other than either guilty or not guilty. The latter plea compels the government to prove everything essential to make out the guilt of the accused of the crime charged.

In civil cases it is sufficient for one alleging facts in his pleading to prove them by a mere preponderance of evidence; but in criminal trials the government must prove the prisoner's guilt beyond a reasonable doubt in order to convict him.

Appellate Procedure. Trials, both civil and criminal, are ordinarily conducted by a single judge, but appellate courts are established to revise the rulings of law made by trial judges if these rulings are questioned. When the trial judge makes a ruling of law the party aggrieved by his decision may reserve the right to question the correctness of the ruling in an appellate court, which generally consists of from three to seven judges sitting together. If the ruling at the trial is held to be incorrect by the appellate court, a new trial is ordered.

Evidence. A very important branch of the adjective law is that relating to evidence. It is an obvious rule of logic as well as of law that no testimony is admissible which is not relevant to the facts in dispute; but not all evidence which is relevant is admissible. Indeed the law of evidence has been defined as consisting of rules excluding various kinds of logically relevant testimony; the most important of these rules is that which excludes hearsay evidence.

Of vital importance also is that which excludes oral evidence of the contents of a written document when the written document is obtainable and which makes a

written contract between parties a conclusive statement of their agreement. The rules of evidence grew up as an accompaniment of the jury system and, to a large extent, are designed to avoid the misleading of a tribunal composed of twelve men unlearned in the law and perhaps of no great education. A very common kind of legal errors carried from trial courts to appellate courts consists of erroneous rulings admitting or excluding proffered testimony.

Days of Grace. The Negotiable Instruments Law, which has been enacted in all the states and territories, abolishes days of grace. In Massachusetts, New Hampshire, North Carolina and Rhode Island, however, this Act has been amended by providing that instruments payable at sight shall be allowed three days of grace. In these states instruments payable at sight are to this extent differentiated from instruments payable on demand. In the remaining states there is no distinction in legal effect between instruments payable at sight and on demand.

Exemptions. In all the states and territories, debtors are allowed certain property exempt from seizure for debt. These exemptions are in various forms. Homestead laws usually protect a homestead of stated moderate value. Other exemptions are usually allowed—fixed either by the value of the exempt property, or by the character of the property in question (such as necessary tools of a debtor's trade). In a number of states, life insurance to a limited amount for the benefit of wife and children which is taken out by a debtor, is exempt though he is insolvent.

Bankruptcy. The Federal Bankruptcy Law provides for both voluntary and involuntary bankruptcy. Any person except a municipal, railroad, insurance, or banking corporation, may become a voluntary bankrupt. Any natural person except one who works for wages or salary of not more than $1,500 or who is chiefly engaged in farming, and any business corporation, except a railroad, insurance, or banking association, may be adjudged an involuntary bankrupt on petition of three or more creditors having provable claims aggregating $500 or more. If there are only twelve creditors, one petitioning creditor is sufficient. In order to sustain an involuntary petition, creditors must prove that the debtor has committed an act of bankruptcy. Such acts generally consist of a fraudulent conveyance, which is a disposition by a debtor of property without adequate consideration when he is or thereby is rendered insolvent; or a preference, which is a payment by an insolvent debtor to one of his creditors, which leaves him with insufficient assets to pay his other creditors a similar proportion of their claims. In voluntary bankruptcy, the debtor is adjudicated a bankrupt as soon as he files his petition. In involuntary bankruptcy, adjudication follows proof by the creditor of the necessary facts. After adjudication, proceedings in voluntary and in involuntary bankruptcy are identical. The debtor's property except such as is exempt under the local state law, is put into the hands of a trustee in bankruptcy chosen by the creditors, and the proceeds distributed ratably under the supervision of the court to creditors who prove their claims. If the debtor complies with the requirements of the law in turning over his property and answering truthfully interrogations regarding it, etc., he is granted a discharge from all provable debts which were owed by him at the beginning of the bankruptcy proceedings. Property acquired after that time does not pass to his trustee, and debts incurred after that time are not provable or discharged.

COMMERCIAL LAW IN THE VARIOUS STATES

States and Territories	Interest Laws			Statutes of Limitation		
	Legal Rate Per Cent	Allowed by Contract Per Cent	Penalty for Usury	Judgments Years	Notes Years	Open Accounts Years
Alabama	8	8	Forfeit interest if not paid	20	6	3
Alaska	8	12	Double excess already paid recoverable; forfeit all interest not paid	10	6	6
Arizona	6	10	Forfeit excess if not paid	5	4	3
Arkansas	6	10	Forfeit principal and interest if not paid	10	5	3
California	7	12	Forfeit excess of interest if not paid	5	4	4
Colorado	8	24	Forfeit excess of interest if not paid	20	6	6
Connecticut	6	12	Fine or imprisonment or both, excess forfeited	20	6	3
Delaware	6	6	Forfeit excess whether or not paid	10	6	3
District of Columbia	6	8	Forfeit interest, whether or not paid	12	3	3
Florida	8	10	Forfeit interest if not paid; double excess recoverable if paid	20	5	3
Georgia	7	8	Forfeit excess, if not paid	7	6	4
Hawaii	8	12		20	6	6
Idaho	7	10	Forfeit interest whether or not paid	6	5	4
Illinois	5	7	Forfeit interest unless borrower is corporation	20	10	5
Indiana	6	8	Forfeit excess if not paid	20	10	6
Iowa	6	8	Forfeit interest if not paid	20	10	5
Kansas	6	10	Forfeit double excess whether or not paid	5	5	3
Kentucky	6	6	Forfeit excess if unpaid	15	15	5
Louisiana	5	8	Forfeit excess whether paid or unpaid	10	5	3
Maine	6	Any	No provision except for small loans	20	6	6
Maryland	6	6	*Forfeit excess if unpaid	12	3	3
Massachusetts	6	Any	No provision except for small loans	20	6	6
Michigan	5	7	Forfeit interest if unpaid	10	6	6
Minnesota	6	8	Forfeit interest if unpaid; forfeit excess if paid	10	6	6
Mississippi	6	8	Forfeit interest if unpaid; if more than 20%, both principal and interest	7	6	3
Missouri	6	8	Forfeit excess	10	10	5
Montana	8	10	Forfeit double amount of interest whether paid or unpaid	10	8	5
Nebraska	7	10	Forfeit interest	5	5	4
Nevada	7	12	Forfeit excess	6	6	4
New Hampshire	6	Any	No provision	20	6	6
New Jersey	6	6	*Forfeit interest	20	6	6
New Mexico	6	12	Forfeit double amount of interest whether paid or unpaid	7	6	4
New York	6		*Forfeit of principal and interest if unpaid, excess if paid; misdemeanor; any rate allowed on collateral call loans of over $5,000	20	6	6
North Carolina	6	6	Forfeit interest if unpaid, and double interest if paid	10	3	3
North Dakota	6	9	Forfeit interest if unpaid and double interest if paid	10	6	6
Ohio	6	8	Forfeit interest if unpaid	15	15	6
Oklahoma	6	10	Forfeit double interest whether paid or unpaid	5	5	3
Oregon	6	10	Forfeit principal and interest if unpaid	10	6	6
Pennsylvania	6	6	Forfeit excess whether paid or unpaid	20	6	6
Porto Rico	6	12		5	3	3
Rhode Island	6	30	Forfeit excess if unpaid	20	6	6
South Carolina	7	8	Forfeit interest if unpaid and double interest if paid	20	6	6
South Dakota	7	10	Forfeit all interest whether paid or unpaid; misdemeanor	20	6	6
Tennessee	6	6	Forfeit of excess whether paid or unpaid; misdemeanor	10	6	6
Texas	6	10	Forfeit all interest if unpaid; double interest if paid	10	4	4
Utah	8	12	Forfeit excess if unpaid	8	6	4
Vermont	6	6	Forfeit excess whether paid or unpaid	8	6	6
Virginia	6	6	Forfeit all interest whether paid or unpaid	20	5	3
Washington	6	12	Forfeit double interest if unpaid	6	6	3
West Virginia	6	6	Forfeit excess if unpaid	10	10	5
Wisconsin	6	10	Forfeit all interest if unpaid, and treble excess interest if paid	20	6	6
Wyoming	7	10	Forfeit interest if unpaid	10	10	8

*In Maryland, New Jersey and New York a corporation cannot set up usury as a defense.

LEGAL HOLIDAYS

In the United States.

January 1. *New Year's Day*: In all the states (including the District of Columbia).

January 8. *Anniversary of the Battle of New Orleans*: In Louisiana.

January 19. *Lee's Birthday*: In Alabama, Arkansas, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, Virginia.

February or early in March. *Mardi-Gras*: In Alabama, Florida (in counties where there are carnival associations), Louisiana (in five parishes).

February 12. *Lincoln's Birthday*: In California, Colorado, Connecticut, Delaware, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Montana, Nebraska, Nevada, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, Washington, West Virginia, Wyoming.

February 14. *Admission Day*: In Arizona.

February 22. *Washington's Birthday*: In all the states (including the District of Columbia).

March 2. *Anniversary of Texan Independence*: In Texas.

March 4. *Inauguration Day* (every four years): In District of Columbia only.

March 25. *Maryland Day*: In Maryland.

Good Friday: In Delaware, Florida, Louisiana, Maryland, Minnesota, New Jersey, Pennsylvania, Tennessee.

April 13. *Thomas Jefferson's Birthday*: In Alabama.

April 15. *Arbor Day*: In Utah.

April 19. *Patriots' Day*: In Maine and Massachusetts.

April 21. *Anniversary of the Battle of San Jacinto*: In Texas.

April 26. *Confederate Memorial Day*: In Alabama, Florida, Georgia and Mississippi.

May 10. *Confederate Memorial Day*: In North Carolina and South Carolina.

May 20. *Anniversary of the signing of the Mecklenburg Declaration of Independence*: In North Carolina.

May (last Friday). *Pioneer Day*: In Montana, observed in public schools.

May 30. *Decoration Day* or *Memorial Day*: In all the states and territories (and District of Columbia) except Alabama, Georgia, Louisiana, Mississippi, New Mexico, North Carolina, South Carolina, Tennessee, Texas, Wisconsin.

June 3. *Confederate Day*: In Tennessee.

June 3. *Jefferson Davis Birthday*: In Alabama, Florida, Georgia, Mississippi, Tennessee, Texas, South Carolina, and Virginia. In Louisiana, known as "Confederate Memorial Day."

June 15. *Pioneer Day*: In Idaho.

July 4. *Independence Day*: In all the states, District of Columbia, and territories.

July 13. *Forrest's Birthday*: In Tennessee.

July 24. *Pioneer Day*: In Utah.

August 1. *Admission Day*: In Colorado.

August 16. *Bennington Battle Day*: In Vermont.

September (first Monday). *Labor Day*: In all the states (and District of Columbia) except Nevada, New Mexico, Wyoming. In Louisiana, observed in Orleans parish. In Wyoming, by proclamation of the governor.

September 9. *Admission Day*: In California.

September 12. *"Old Defenders' Day"*: In Baltimore, Md.

September, first Saturday after the full moon. *Indian Day*: In Oklahoma.

October (second Tuesday). *Fraternal Day*: In Alabama.

October (second Friday). *Farmers' Day*: In Florida.

October 12. *Columbus Day*: Every state and territory except Alaska, Arkansas, District of Columbia, Florida, Georgia, Hawaii, Iowa, Kansas, Maine, Minnesota, Mississippi, Missouri, North Carolina, Oklahoma, Philippines, South Carolina, South Dakota, Tennessee, Utah, Virginia, Wisconsin, Wyoming.



Armistice Day
The first Armistice Day celebration in Chicago, November 11, 1918.

October 31. *Admission Day*: In Nevada.

November 1. *All Saints' Day*: In Louisiana.

November 11. *Armistice Day*: In Alabama, Arizona, California, Colorado, Connecticut, Delaware, Florida, Hawaii, Illinois, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wyoming.

November. *Thanksgiving Day* (last Thursday in November): Is observed in all the states, and in the District of Columbia, though in a few states it is not a statutory holiday and in a number is made dependent on proclamation by the Governor.

December 25. *Christmas Day*: In all the states, District of Columbia and territories.

Sundays and fast days appointed by the Governor are designated as legal holidays in many states. In South Carolina, Thursday of Fair week is a legal holiday.

Arbor Day is a legal holiday in Rhode Island (second Friday in May), in Utah (April 15), in Nebraska (April 22), and in Wyoming (a day in Spring designated by the Governor). But though many other states provide for its celebration in schools and otherwise, they do not make it a legal holiday.

General election day is in most states a holiday and in some states local election days are holidays in that locality.

Old English Holidays. These holidays, with their names, had their origin in medieval England when the state religion was that of the Church of Rome, and they are still observed generally or in some parts of England, Scotland and Ireland.

January 6. *Twelfth Day*, or *Twelfth-tide*, sometimes called Old Christmas Day, the same as Epiphany. The previous evening is *Twelfth Night*, with which many social rites have long been connected.

February 2. *Candlemas*: Festival of the Purification of the Virgin. Consecration of the lighted candles to be used in the church during the year.

February 14. *Old Candlemas*: St. Valentine's Day.

March 25. *Lady Day*: Annunciation of the Virgin. April 6 is old Lady Day.

June 24. *Midsummer Day*: Feast of the Nativity of John the Baptist. July 7 is old Midsummer Day.

July 15. *St. Swithin's Day*: There was an old superstition that if rain fell on this day it would continue forty days.

August 1. *Lammas Day*: Originally in England the festival of the wheat harvest. In the Church the festival of St. Peter's miraculous deliverance from prison. Old Lammas Day is August 13.

September 29. *Michaelmas*: Feast of St. Michael, the Archangel. Old Michaelmas is October 11.

November 1. *All hallowmas*: Allhallows or All Saints' Day. The previous evening is All hallowe'en, observed by home gatherings and old-time festive rites.

November 2. *All Souls' Day*: Day of prayer for the souls of the dead.

November 11. *Martinmas*: Feast of St. Martin. Old Martinmas is November 23.

December 28. *Childermas*: Holy Innocents' Day.

Lady Day, Midsummer Day, Michaelmas and Christmas are quarter (rent) days in England, and Whitsunday, Martinmas, Candlemas and Lammas Day, in Scotland.

Shrove Tuesday, the day before Ash Wednesday, and Maundy Thursday, the day before Good Friday, are observed by the Church. Mothering Sunday is Mid-Lent and the old rural custom obtains of visiting one's parents and making them presents.

Other Countries. Christmas and New Year's Day are quite universally observed over the world. In Roman Catholic nations, such church days as All Saints', Ascension, Assumption, Epiphany, Immaculate Conception and Corpus Christi are often holidays. In Lutheran countries, Epiphany, Annunciation, Good Friday, Easter Monday, Ascension, White Monday, Ash Wednesday and Corpus Christi are holidays.

LABOR LAW AND LEGISLATION

THE relation of employer and employee arises from contracts concerning labor, the right to make such contracts being a property right in which both parties are interested, and in which they are protected by constitutional guaranties.

The Labor Contract. Special rules of common law govern labor contracts, embodying the results of numerous decisions of the courts. An employer is presumed to employ his workmen lawfully, to compensate them fairly, and to have due regard for their health and safety. The workman is presumed to be reasonably competent, to be ready to obey reasonable orders, and to use ordinary care in the performance of his work.

As a result largely of modern industrial conditions, the inequality between employers and employees as regards the making of contracts has become so conspicuous that statutes have been enacted regulating, in various ways, the conditions of employment, and in so far taking the matter out of the hands of the immediate parties to the contract. These regulations, as well as the rules of common law, form a part of every labor contract to which they are applicable. Subject thereto, adults mentally capable may contract freely, and be held mutually to the standards indicated.

Enforcement. There is not, generally speaking, any specific performance of a labor contract enforceable at law, and either party may terminate such a contract at any time, for any reason or without reason, being liable only in damages for the breach of a contract for a fixed term. A statute of Colorado attempts an exception to this rule by forbidding the discharge of a workman between the ages of eighteen and sixty solely on account of age, but such a law is doubtless without value.

In a few states, chiefly a Southern agricultural group, laws have been enacted providing for punishment, as for a crime, where a workman entered into a contract for employment, receiving money or supplies in advance, and then failed or refused to render the service contracted for. It was insisted that it was the intent to defraud that was declared criminal, and not the mere breach of contract; but such laws have frequently been declared unconstitutional as tending to establish a system of peonage or involuntary servitude. Some have also penalized the procuring of transportation money and the subsequent refusal to carry out the contract to labor. But it seems difficult, if not impossible, for all such laws to escape the charge of unconstitutionality where the basal fact is a personal indebtedness by which it is sought to coerce the employee to render service or, in the alternative, to suffer imprisonment. For the same reason a man cannot be held to work out a fine and costs under private control where another has paid the same or become his surety, as has been attempted in a few states. However, laws of the above classes are still found on the statute books of some states.

Seamen were long an exception to the rule forbidding involuntary servitude, but they are not so since the enactment of the Seamen's Act by Congress in 1915.

A special class of employees is embraced in laws which provide a penalty for the abandonment of locomotives or trains at other than terminal or division points, while more general laws of Nevada, New York and Washington prohibit any abandonment of employment that would knowingly jeopardize life or limb, or expose valuable property to destruction.

Notice of Termination. If the employer contracts with his employees for a notice of their purpose to leave service, he may be required by statute to give corresponding notice, under like forfeiture, of his intention to discharge. Laws to this effect are found in Maine, Massachusetts, New Jersey, Pennsylvania, Rhode Island, South Carolina and Wisconsin.



Voting

A scene in the election commissioners' office when young voters are receiving instructions in how to vote. Note the officers of the election and the ballot box.

The giving of a recommendation or clearance card at the termination of employment is not obligatory on the employer, even though a new employer may demand such certificate before employing an applicant for service. A few states have enacted laws directing such cards, or a statement of cause of termination of employment, to be furnished on the request of the employee, but such laws are of at least doubtful validity. The states having them are California, Indiana, Missouri, Montana, Nebraska, Nevada, Ohio, Oklahoma and Oregon. The courts of Georgia, Kansas and Texas have declared such laws unconstitutional, while the Supreme Court of Oklahoma sustained the law of that state on the subject.

Interference with Contracts. Third parties interfering with a contract of employment, unjustifiably inducing the breach thereof by either employer or employee, are liable to the injured person in damages, even though the contract was terminable at will by either of the parties to it. There must be knowledge of the contract, and a mere attempt without damage will support no action. Knowingly interfering with a contract for service by hiring or enticing away an employee is made a penal offense in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee. The attempt entails the same penalty as the performance in Alabama and Georgia. A law of Louisiana makes it an offense to move the goods or property of an employee without the consent of the employer. There is a federal statute making it an offense to procure workmen in government arsenals or armories to leave their employment during the term of their contract, or to retain such a workman after notice of such contract. Other forms of interference will be noted under the heading of strikes.

The giving of discounts or bonuses to employees who make purchases for the employers, or the giving of gratuities to employees to influence them in regard to their employers' business, is against the law in some twenty states. It is restricted to designated groups (as chauffeurs) in a few states, but is usually of general scope. A few states undertook to prohibit any giving or receiving of tips, but most of these laws have been repealed.

CIVIL AND POLITICAL RIGHTS OF EMPLOYEES

Voting. Most states of the Union provide a penalty for employers interfering with, or seeking to coerce, employees in the exercise of their rights as voters, either by posting notices or printing them on pay envelopes,

or threatening dismissal, reduction of wages, or the closing of the plant in case of the success of any designated candidate or party. The law of Minnesota protects employees in the exercise of any natural right or any right or privilege of citizenship. The California and Wyoming statutes mention the candidacy of employees; while in Colorado no employer, foreman or manager of a railroad, or of mining or manufacturing work carried on in the precinct, may act as judge, clerk or watcher at the polls in any election. Many of these laws direct the allowance of time to vote without loss of wages, though the Supreme Court of Illinois held such a provision unconstitutional and void.

Freedom as Traders and Similar Privileges. Freedom of workmen in the selection of their places of trade is the object of laws of Arizona, Arkansas, California, Colorado, Florida, Idaho, Indiana, Iowa, Kentucky, Massachusetts, Nevada, New Jersey, New Mexico, Ohio, Oregon, Tennessee, Texas, Utah, Washington and West Virginia. Free choice of boarding or lodging houses is provided for in the laws of Idaho, Massachusetts, Montana, Nevada, Oregon and Utah, while in Michigan the same protection is extended to employees in the choice of life or accident insurance, and in Tennessee to the choice of the family physician, and the withholding of any part of an employee's wages to pay a company doctor without the full consent of such employee is forbidden.

WAGES

Fundamental Principles. The matter of wages is primarily one for determination by contract, as regards the rate, and the time, place and medium of payment. At common law the court will, in the absence of a specified rate, order the payment of such a sum as the services rendered are shown to be reasonably worth; if the contract is entire, payment can be demanded only on the completion of the work; if separable, at such times as are shown to be reasonable, or at times fixed by the custom of the community or the trade. No wages can be recovered for service rendered in violation of law; as for work on Sunday, when Sunday labor is prohibited; or for services as an engineer when the workman is without the license required by law; or for work in excess of eight hours when the statute restricts the time to eight hours.

Payee. The payee will usually be the workman or his personal representative, though statutes of Alabama, Arizona, Connecticut, Delaware, Florida, Georgia, Michigan, Mississippi, New Jersey, Pennsylvania and Virginia authorize the payment of wage debts not in excess of a specified sum directly to the heirs of a deceased employee. Payments to one demanding from the employer the wages of a workman on the claim that the latter is indebted to the claimant can be made only after all legal formalities are complied with, or the employer will be liable to the employee regardless of the payment made to the claimant. In every state there are statutes reserving to workmen (in many only to those having dependents) a certain amount or percentage of their wages which is not subject to garnishment while in the hands of the employer. In a number of states, assigning claims or taking or sending them outside the state in order to avoid the exemption laws in favor of wage earners is forbidden.

Recovery. Another law that is found in practically every jurisdiction, and in the federal statutes, is one that makes a debt for wages for labor a preferred claim in the settlement of the estate of a deceased or insolvent employer. Mechanics' liens are likewise universally granted by statute. Where the enforcement of such liens is not convenient, as in the case of public works or railroad construction work, contractors are in a number of states required to give bond for the payment of wages due their workmen; or failure to pay wages out of current receipts may be penalized.

Wage suitors are favored by the laws of some states, as by allowing a successful claimant of wages an attorney's fee (a law as to the constitutionality of which the courts differ); by prohibiting a stay of execution on a judgment for a wage debt; by declaring no property exempt from execution under such a judgment, or by placing wage suits at the head of the trial docket.

Assignments. Assignments of future earnings are restricted in the interests of the workman, and especially of his family. Such laws have been upheld, though they undoubtedly restrict the freedom of contract. The law may require that the assignment shall be recorded, or that the employer shall be notified of the assignment or shall accept or consent to the same, or that the wife or husband of a married person making an assignment shall join therein; discounts or interest rates may also be limited.

Except for the laws that merely require recording, these statutes are of recent enactment. States having laws embodying these provisions in whole or in part are Arkansas, California, Colorado, Connecticut, Delaware, Indiana, Iowa, Louisiana, Maine, Maryland, Massachusetts, Minnesota, New Jersey, New York, Pennsylvania, Rhode Island, Tennessee, Washington, Wisconsin and Wyoming. Assignments to secure loans or future advances are declared void in Georgia; and a law of Indiana declaring all assignments of future earnings void has been held valid.

Rates. Rates of wages on public works are fixed by statute in a few states, either at the current rate in use for work of the sort that is to be done, or at an amount named in the law. The states having such laws are Arizona, California, Maryland, Massachusetts, Nevada, New York and Oklahoma. A Virginia statute orders a reasonable amount to be paid as salvage in the case of wrecked goods, and provides for arbitrators where the laborer and the owner of the goods do not agree; but there is no nearer approach than this to the direct determination of wages in private undertakings. Indirectly the matter is regulated by forbidding deductions by way of fines for imperfect work (Massachusetts), or "on any pretext" (Indiana). The law of Louisiana forbids all fines or deductions except for the actual value of willful or negligent damage.

The same object is in view where, when coal mining is paid for by weight, the law forbids the screening of coal before weighing, or directs that all coal mined shall be weighed. Such laws are found in a majority of the coal mining states.

Deductions for lost time are limited by laws of California and Massachusetts to an amount proportionate to the day's wages, except that in California a minimum charge as for thirty minutes may be made, though for a less period. In Michigan no deductions may be made except by voluntary agreement; nor in Ohio for such items as tools damaged, without express contract. The law of Connecticut forbids any discount for the prepayment of wages, while Arkansas permits such discount not in excess of a rate of ten per cent per annum.

Time of Payment. Statutes regulating the time of the payment of wages have been held constitutional, though not uniformly. These laws may be of general application, or restricted to classes of employment, or to corporations, or they may apply only where the number of employees exceeds a given minimum. The law of Oregon requires employers to pay wages monthly; and that of Virginia requires it in excelsior mills and sawmills. In the following states, semimonthly or biweekly payments are prescribed: Arizona (companies and corporations), Arkansas (corporations), California, Colorado (corporations), Georgia (except sawmill and turpentine industries), Illinois (corporations), Iowa (coal mines and railroads), Kansas (corporations), Kentucky (corporations), Louisiana, Maryland (corporations), Michigan (corporations), Minnesota (public service corporations), Missouri (mining, manufacturing, public service corporations), Montana, Nebraska (railroads), Nevada, New Jersey, New Mexico (mining, manufacturing, railroads), New York (railroads), North Carolina (railroads), North Dakota (railroads), Ohio, Oklahoma (mining, manufacturing, transportation companies), Pennsylvania, South Carolina (railroad shops), South Dakota (railroads), Tennessee, Texas (corporations), Utah, Virginia (except excelsior mills and sawmills), West Virginia (mining, manufacturing, railroads), Wisconsin, Wyoming. The following have a weekly pay day: Connecticut (corporations), Indiana (if demanded), Maine (except lumbering), Massachusetts, New Hampshire, New York (except railroads), Rhode Island (corporations), Vermont.

A number of states direct that wages due discharged employees shall be paid them without waiting for the regular pay day. These are Arizona, Arkansas, California, Colorado, Illinois, Iowa (railroads), Kentucky, Maine, Massachusetts, Michigan, Minnesota, Oregon, South Carolina, Utah, Wisconsin and Wyoming. These laws, as a rule, apply to the same classes of employees as the provisions relating to regular pay days.

Medium of Payment. The medium of payment is the subject of a number of laws which either prohibit the use of scrip, tokens or store orders, as in Colorado, Louisiana, Maryland, Missouri, Montana, New Hampshire, New York and Utah; or require that, if issued, they shall be redeemable in money, as in Arizona, Arkansas, California, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Mississippi, Nevada, New Jersey, New Mexico, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Tennessee, Vermont, Virginia, Washington, West Virginia and Wisconsin. The North Carolina statute

on this subject directs that scrip or tokens shall be redeemable at face value and transferable, but this is held not to require orders for merchandise to be redeemed in money. A Pennsylvania statute levies a twenty-five per cent tax on all scrip not redeemed within thirty days after its issue. Courts rule diversely as to the validity of statutes forbidding the use of scrip, but the Supreme Court has upheld a law requiring its redemption in money at face value.

Company stores, or the "truck system" of wage payment, may also be prohibited, as in Colorado, Maryland (railroad and mining companies), New York (contractors on public works) and Pennsylvania (mining and manufacturing companies); or their operations may be regulated by forbidding the charging of a higher cost to employees than to others, or of a higher rate than is charged by other stores, as by the laws of Arkansas, Connecticut, Indiana, Ohio, Virginia and West Virginia.

HOURS OF LABOR

General Principles. The length of a day's work for adult males is, in general, a matter of contract with which the law can interfere only on the ground that the public welfare requires its statutory regulation. A number of states have laws declaring the number of hours that constitute a day's work generally, but as these laws do not interfere with contracts for longer service, they are of no practical effect.

Public Works. On public works it is competent for the state to declare the length of time workmen may labor, even though they are employed by contractors, since the state has the right to fix the terms on which work may be done for it, or on which persons may deal with it. A number of states and the federal government have laws or provisions in their constitutions fixing the hours of labor, mainly prescribing eight as the limit. These states are Arizona, California, Colorado, Connecticut, Delaware (city of Wilmington), District of Columbia, Idaho, Indiana, Kansas, Kentucky, Maryland (city of Baltimore), Massachusetts, Minnesota, Montana, Nevada, New Jersey, New Mexico, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Texas, Utah, Washington, West Virginia, Wisconsin and Wyoming. All these laws provide for the eight-hour day except Massachusetts, where nine hours is the limit unless municipalities, by special vote, adopt the eight-hour day. Other states have laws relating to highways only, but these apply less to the employment of labor than to the working out of taxes.

Railroads. Considerations of public safety validate laws limiting the hours of labor of employees on railroads. The federal statute makes sixteen hours out of any twenty-four the maximum work time of employees engaged in the movement of interstate trains or trains in the District of Columbia, and nine hours the maximum for train dispatchers and telegraph or telephone operators whose employment affects the movement of such trains. Employees who have been on duty sixteen hours continuously are to be allowed not less than eight consecutive hours off duty. A day of eight hours is fixed as the measure or standard of a day's work for the purpose of reckoning wages of railroad employees engaged in any capacity in the operation of trains. The periods fixed by state laws vary, but obviously where interstate traffic is affected no labor in excess of that allowed by the federal statute will be permitted. The difficulty of separating the two classes of operation tends to diminish the effect of state laws in this field, where Congress has acted; or as a state commission reports, "we feel that since the Federal Hours of Service Law has been passed, the state Hours of Service Law is obsolete, and there is no attempt to enforce the same."

Street Railways. The hours of labor on street railways are regulated by statute in several states, as follows: twelve in California, New Jersey, Pennsylvania and South Carolina; ten in Louisiana, New York, Rhode Island and Washington; nine in eleven consecutive hours in Massachusetts. In New Jersey and New York the service must be rendered during consecutive hours, including one-half hour for dinner; and in Louisiana and Rhode Island, within twelve consecutive hours. This law has also been said to provide for public safety and is supported on that ground.

Mines, Smelters and Similar Places. The hours of labor in underground mines, smelters and reduction works are restricted to eight per day in Arizona, California, Colorado, Idaho, Kansas (lead and zinc mines), Missouri, Montana, Nevada, North Dakota, Oklahoma, Oregon, Utah, Washington and Wyoming. The Nevada statute applies also to work in open cut mines and in plaster and cement mills. A New York law regulates the hours of labor of workmen in compressed air, the limit ranging from eight hours in twenty-four in two shifts of four hours each where the pressure does not exceed eighteen pounds to the square inch, to one hour out of twenty-four, equally divided by an interval of six hours where the pressure exceeds forty-eight pounds but does not exceed fifty pounds. No employment is permitted under a pressure in excess of fifty pounds except in emergency. Similar laws are found in New Jersey and Pennsylvania.

Sundry Employments. The hours of labor of drug clerks are limited to nine per day and 108 in any two consecutive weeks in California, and to seventy hours in one week and 132 hours in two weeks in New York.

A New Jersey statute also limits the hours of labor of employees in bakeries to sixty per week.

In Arizona, work in laundries is restricted to eight hours per day; while nine hours is a day's work for telephone operators in Montana.

Eight-Hour Day. The following statement summarizes the present (1931) result of the movement for the eight-hour day: It is adopted for employment on public works by twenty-four states, the District of Columbia and for the federal government; by Delaware and Maryland for their chief cities; and by Massachusetts for municipalities adopting it in accordance with state law; for work in mines by fourteen states, and in smelters and reduction works by nine states.

WOMEN AND CHILDREN

Age and Working Time of Children. A majority of the states have laws regulating the employment of children, fixing the minimum age of employment, the maximum hours of labor per day, restricting or forbidding employment in certain occupations, and providing particularly for the safety and sanitation of their working places. Some states include adult females in their laws governing some of these details, while in others the laws as to the two classes are separate. The power of the state to regulate the employment of children is unquestioned.

The table on page 1075 shows the age below which employment of children in industry is unlawful, the age to which the indicated protection in the matter of the length of the working day applies, the daily hours of labor permitted, and the restrictions as to night work, if any. The restrictions set forth in the table mentioned are relaxed in a number of states where the child has a widowed mother, invalid parents, or is dependent on its own efforts for support. Relaxation of the law on one or more of these grounds is found in the states of Arkansas, California, Colorado, Delaware, Florida, Georgia, Idaho, Louisiana, Michigan, Montana, Nebraska, Nevada, South Carolina, South Dakota, Texas, Vermont, Washington and West Virginia.

Hazardous or Injurious Employments. Danger to life, limb or health, and exposure to immoral or otherwise injurious influences are reasons for forbidding the employment of children in certain occupations. Thus employment in mines is the subject of special laws in some states, though it is more commonly included with other industrial employment. Work with or about designated forms or classes of dangerous machinery or in certain hazardous employments, or employments injurious or dangerous to health or morals, is forbidden by nearly every state, mostly by a standardized form of law fixing sixteen years as the age below which the designated forms of employment are forbidden. Such laws are found in all the states except Georgia, Mississippi, New Hampshire, New Mexico, North Carolina, Oregon and South Carolina. In Louisiana the age limit is fourteen years; in Texas, seventeen, and in Maryland, Michigan, Nevada, and Washington, eighteen years. Employments injurious to morals, including acrobatic and mendicant occupations, are forbidden by the laws of most states, with the same or slightly varying age limits. Twenty-three states regulate street trades, such as the sale of newspapers, shoe blacking and messenger service, by special laws fixing a minimum age limit, requiring registration, procuring badges, and limiting the time of employment so as not to interfere with school hours or permit late night work.

Hours of Labor of Women. Although women have equal rights with men as to the making of contracts and suffrage, their physical structure and a regard to the welfare of the race warrant limitations as to their employment which would not be valid as to that of adult males. Thus their hours of labor are limited by several states, and laws of this sort are constitutional. The limit of employment is eight hours per day in Arizona, California, Colorado, District of Columbia, Montana, Nevada, New Mexico, New York, Utah and Washington; eight and one-half in

North Dakota and Wyoming; nine in Arkansas, Idaho, Kansas, Maine, Massachusetts, Michigan, Missouri, Nebraska, Ohio, Oklahoma, Oregon, Texas and Wisconsin; ten in Connecticut, Delaware, Georgia, Illinois, Kentucky, Louisiana, Maryland, Minnesota, Mississippi, New Jersey, Pennsylvania, Rhode Island, South Carolina, South Dakota and Virginia; ten and one-fourth hours in New Hampshire; ten and one-half in Tennessee and Vermont; eleven in North Carolina; and no limit in Alabama, Florida, Indiana, Iowa and West Virginia. In some of these states the total number of hours per week allowed is less than six times the maximum per day. This results in the following limitations: forty-eight hours per week in Massachusetts and Oregon; forty-nine and one-half in Kansas; fifty in Ohio and Wisconsin; fifty-four in New Hampshire, New Jersey, Pennsylvania and South Dakota; fifty-five in Connecticut, Delaware, Rhode Island and South Carolina; fifty-six in Vermont; fifty-eight in Minnesota; and sixty in North Carolina. Seven times the daily maximum is permitted in Colorado, Idaho, Illinois, Montana, Nevada, New Mexico, Virginia, Washington and Wyoming. Night work (10 P.M. to 6 A.M.) is forbidden in Connecticut, Delaware, Indiana (manufacturing), Massachusetts (manufacturing), Nebraska, New Jersey, New York (manufacturing) and Pennsylvania (manufacturing); between 6 P.M. and 6 A.M. in Massachusetts in textile factories; between 10 P.M. and 7 A.M. in New York in mercantile establishments, and after 10 P.M. in South Carolina in mercantile establishments.

Female employees are to be supplied with seats and allowed such use of them as their employment will reasonably permit, according to laws of the District of Columbia, and of every state in the Union except Mississippi, New Mexico and North Dakota.

EMPLOYERS' LIABILITY FOR INJURIES TO EMPLOYEES

Common Law Rule. At common law the employer is charged with the exercise of a reasonable degree of care for the safety of his workmen, which failing, he becomes responsible for the injuries resulting from his neglect. What such degree of care is depends upon the nature of the undertaking, more hazardous ones involving a greater degree, and vice versa. The measure is generally said to be that degree of care that a reasonably prudent man would take to protect himself in like circumstances. Tools and appliances must be reasonably safe and suitably adapted to their intended use. The same test applies to the working place, though the employer is held to a stricter accountability for this than for the condition of appliances. At common law an employer may, in general, carry on his business in his own way provided the employee is capable of contracting and knows and appreciates the dangers of the situation. He must not use unreasonably dangerous methods or appliances, however, and it has been said that dangerous work should be undertaken only after the adoption of all known reasonable precautions.

Statutes Fixing Standard of Care. Factory inspection laws, railroad safety appliance laws, mine regulations and the like, address themselves to the standard of safety to be secured by the employer, and in so far restrict the freedom allowed him by the common law in this respect. When the law fixes such a standard, it is negligence to come short of it, and an employer doing so will generally be liable in damages for the resultant injury, if any. In some states the courts allow the plea of assumed risks in such cases, though the better rule is to the contrary. Maintenance and repair stand on the same footing as the original provision, and the Supreme Court has held that the duty of conforming to the provisions of the federal law as to drawheads and automatic couplers on railroad trains is an absolute one, and that the exercise of ordinary care is not sufficient to excuse a failure in this regard.

Defenses. An employer sued for damages for injuries to an employee may offer, in defense, that the workman assumed the risks of the undertaking; that the injury was the result of the negligence of a fellow-servant; or that, even if the employer was himself negligent, the employee by his own contributory negligence was in such measure responsible for the injury as to relieve the employer from liability therefor. The risks assumed are those arising from the ordinary incidents of employment, of which the workman was aware or which he could have known if he had exercised ordinary care, and existing after the employer has performed his duty as to the exercise of care in behalf of his employees. This includes the risk of injury from the negligent acts of fellow-servants who have been selected with ordinary care. An employee who represents the employer is not a fellow-servant to his subordinates. Where the employee's own negligence contributed to the injury, no attempt will ordinarily be made to apportion fault and make a partial award of damages, but any degree of contributory negligence will vitiate entirely the claim of the injured person.

Statutes Affecting Defenses. These defenses have been modified or abrogated by numerous statutes to such an extent that, as was recently said by a justice of the Supreme Court, there is hardly a jurisdiction in which they exist unmodified. Thus, the laws of Arizona, Colorado and Rhode Island (if more than five employees) abrogate entirely the defense of fellow-service; while a number of states have done away with it in its application to railroad employment, to mine labor, or to occupations in general. The British employers' liability law of 1880 is a pattern for laws enacted in several states, specifically charging liability for defects in the condition of ways, works or machinery; for the negligence of employees exercising superintendence or giving orders; and for the acts of certain employees on railroads. The principal effect of these laws is in changing the rule as to fellow-service. They exist in Alabama, Arkansas, California, Colorado, District of Columbia, Georgia, Indiana, Iowa, Kansas, Kentucky, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, South Carolina, South Dakota, Texas, Virginia, Wisconsin and Wyoming.

The modification or abrogation of the other defenses is sometimes general, but is more frequently connected with statutes prescribing safety appliances, the employer not being allowed to plead these defenses where he fails to conform to the provisions of the statute. Instead of allowing the contributory negligence of the injured employee to bar him entirely from recovery of damages, the federal liability law and a number of state laws embody a doctrine of comparative negligence, by virtue of which there is to be an admeasurement of the negligence of the employer and the contributory negligence of the employee, and where the former is gross in comparison with the latter, damages shall not be entirely withheld, but only reduced proportionally. Such laws are found in Arkansas, California, District of Columbia, Iowa, Kansas, Kentucky, Michigan, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Mexico, North Carolina, North Dakota, Ohio, Oregon, South Carolina, South Dakota, Texas, Virginia, Washington, Wisconsin and Wyoming, and in a modified form in Georgia. All these laws are of recent enactment, but the principle has been held to be constitutional.

Employees' Waivers. Employers frequently secure contracts from their employees waiving their rights to damages for injuries due to the former's negligence. Courts construe such contracts diversely, and a number of state statutes and the federal statute above mentioned prohibit them, either generally, or in connection with statutes charging a particular duty. The states having such laws are Alabama, Arizona, Arkansas, California, Colorado, District of Columbia, Florida, Georgia, Indiana, Iowa, Kansas, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, South Carolina, South Dakota, Texas, Virginia, Washington, Wisconsin and Wyoming. Such laws have been declared constitutional.

Relief Systems. Employers, either singly or in association, may organize systems of relief available for employees injured in the course of employment. These funds may be supplied entirely by the employer, the benefits being available to all employees, or they may be supplied by the employer and employee jointly, only those employees being entitled to benefits who become members of the association and contribute to its funds. The acceptance of benefits is usually made a bar to suits for damages, and the bringing of a suit likewise cuts off the benefits. Agreements that acceptance shall so operate, if made in advance of the receipt of the injury, are commonly construed as only putting the employee to his election whether to accept the benefits, or sue, and are valid only to that extent. Several statutes do not permit the receipt of benefits to go further than to effect a reduction of the amount of the judgment against the employer in proportion to the amount of his contribution to the benefit fund, or they may permit the employer to set off against a judgment any sum or indemnity paid from a fund to which he has contributed. Such provisions are found in connection with a number of the laws forbidding waivers, noted above, including the Federal statute.

Workmen's Compensation. As distinguished from the system of liability, in

which the employee must prove the employer to have been at fault, is the method of compensation covering not only accidents caused by the fault of the employer, but also those that are the result merely of the trade risk, frequently called inevitable, the burden of which is, under the liability system, assumed by the party least able to bear it, that is, the workman. Most industrial countries other than the United States had adopted compensation as the method of dealing with industrial accidents at a time when the liability system was still in use in this country.

Laborers and artisans employed by the United States were granted compensation in a limited degree by an act of August 1, 1908, superseded by a much more adequate statute enacted in 1916, covering civilian employees of the United States generally. Rudimentary beginnings of state legislation were made as early as 1902, but the year 1911 is the earliest date of enactment of any statute embodying the characteristic features of existing legislation of this type in this country. At the beginning of the year 1930 but four states of the Union, South Carolina, Florida, Mississippi and Arkansas, were without legislation of this type. The last-named state has a law covering employees of the state highway commission injured or killed in course of employment.

The fundamental distinction between compensation and liability statutes is that the former provide relief for industrial accidents (and diseases as well in many jurisdictions) on the basis of the employment relation, and without regard to questions of fault as primarily decisive, while in the latter the question of negligence on the part of the employer is basic. The injury for which compensation is claimed must have been received in the course of the employment and as an incident thereto; or as the customary phrase reads, must "arise out of and in the course of the employment." The laws of a few states do not require that both conditions shall exist, but the rule is very general.

Benefits are payable at a fixed rate, which is in most states a percentage of the wages of the injured employee, ranging from fifty per cent in about one-third of the states, to sixty-five or sixty-six and two-thirds per cent in more than one-third. There is a constant tendency toward the more liberal rates, so that what is true at a given period may be incorrect at a later date. Indeed, a striking feature of this legislation is the fact of frequent amendments, in some states hardly a session of the legislature having passed since the original enactment of a state compensation law without some modification of its provisions. Payments are in most cases made weekly, corresponding to the more prevalent mode of wage payment, though in Oregon, Washington, West Virginia and Wyoming, monthly payments not based on wages are allowed in some classes of cases, and in Wyoming fixed lump sums are payable except for temporary total disability. The payment of lump sums is as a rule discouraged on account of the danger of loss of investments by persons not accustomed to handling funds other than a regular sum of nearly uniform amount.

The most common injuries are those that cause a passing disability for service, known as temporary total disabilities; if a member is lost or destroyed, or the use of some part of the body permanently impaired, the result is classed as a permanent partial disability; or if the entire earning power is destroyed, the injury is classed as permanent total. Most states have schedules providing a fixed number of weekly payments for cases of permanent partial disability due to loss of a member or loss of use of a member, as leg, hand, eye or finger. A few recognize the greater economic burden resulting from permanent total disability than that resulting from death by providing compensation at a higher rate in such cases.

In death cases, payments are due only to dependents and not to estates or next of kin, as in cases of suits for damages. A common provision of law is that dependency is determinable as of the date of the injury resulting in death, but this does not exclude children born after the death of the father. Members of the family are quite generally provided for, but usually by naming the classes covered, as parents, grandparents, children and grandchildren. Benefits to widows terminate on death or remarriage, though in the latter case a lump sum is granted equal to one or two years' payments according to the laws of several states. It is also generally provided that children's benefits are increased in event of the death or remarriage of the surviving parent. On account of a provision of its constitution, the law of Oklahoma provides no compensation in case of death.

The amount payable weekly is limited, first by the amount of the worker's earnings, and secondly by a fixed maximum in nearly every state; a minimum is also fixed in all but one state. This maximum ranges from $12 to $25 weekly, but, like other features of this legislation, changes of amount are so frequent that no permanent list of states and rates can be attempted. The minimum is not allowed to exceed actual earnings.

Another limitation usually found is in the total amount or total period of payments. Death benefits run in some states for the lifetime of a widow, though in most both the term and total amount are limited. The lowest aggregate is $3,000, and the highest fixed amount is $7,500 for death; for permanent total disability $8,000 and $10,000 maximum totals are provided in two states. In a few states no limits of time or amount are fixed.

Every compensation statute provides for medical, surgical and other relief for injured workers, either according to the necessities of the case, or within fixed limits of time and amount. Such services are to be provided immediately, while payments of compensation, except in two states, are due only if disability continues beyond a fixed minimum period, commonly known as "waiting time." This waiting time ranges from three days to two weeks, one week being the most common period fixed.

Agriculture and domestic service are almost universally excluded from the terms of these laws, and in a minority of the states only designated "hazardous" employments are covered. Employers of small numbers of employees are exempt in several states, one state requiring sixteen, and six states requiring ten or more employees for inclusion at the date of this writing (1931). Public employees, state or municipal, are included in nearly all laws.

In a majority of the states acceptance of the compensation system is said to be elective, but the abrogation of the employers' customary defenses of fellow-service, contributory negligence and assumption of risks in case of failure to elect offers a strong inducement to accept the terms of the acts, which is usually presumed in the absence of positive action to the contrary. Employers accepting the compensation system can not be sued for damages. Employers under compensation laws must usually insure the payment of benefits as they become due by taking out policies in approved insurance companies, or by furnishing satisfactory evidence of financial responsibility. Nearly a score of laws provide for state insurance funds to carry these risks. A majority of them work in competition with private companies, while the others offer the state fund as the only recourse allowed the employer for this service.

In a few states the question of administering these laws and adjusting claims is left to the courts, but by far the most common method is for a special board or commission (a single commissioner in a few states) to be provided by the act establishing the system. Appeals to courts may usually be taken from the findings of these agencies, but often only on questions of law, decisions as to questions of fact being final. Reports of accidents are to be made to these bodies, and in some states they are also charged with the duty of accident prevention.

The history of labor legislation shows no other such rapid and general acceptance of a principle so decidedly divergent from that which it supplanted. Besides the four states named above as not yet having compensation laws, the conspicuous exception is transportation, railroad employees and seamen being the two great bodies of workers in so-called hazardous employments not now covered by such laws. One class of maritime employees —longshoremen and mechanics, laborers and artisans engaged in maritime employments— is the subject of a federal statute of 1927, giving them exclusive compensation benefits unless the injury is due to the negligence of a third party, when an option to sue is granted. An attempt to include all maritime workers under this statute was opposed by the International Seamen's Union. Similarly, certain influential unions of railroad workers have thus far been able to prevent the enactment of a law applicable to them, though other groups favor it, and it is hardly open to dispute that the liability system causes constant loss to the workers and continues in effect in this field an almost universally discredited system.

PHYSICAL CONDITIONS OF EMPLOYMENT

Factories. The rule of common law, that the employer is to use ordinary care for the safety of his workmen, is supplemented or superseded in many states by laws fixing a standard of safety, or prescribing the use of certain protective appliances. Thus fire escapes on factories and other places of employment are required in most jurisdictions

of the United States, and in a number the use of doors that open outwardly, or of sliding doors, is directed.

Every state makes provision in some degree for the safety of workers in such places as factories, workshops and mercantile establishments, as by requiring dangerous machinery to be guarded; belt shifters, switches and cut-offs for the prompt and safe starting and stopping of machinery to be provided; barriers or guards to be maintained about elevator shafts, well-holes and vats of hot liquid or molten metal; ventilation and sanitation to be adequate in establishments where offensive or injurious dusts, gases or odors are generated. Regulations relate to such items as heating, lighting, air space, the scrubbing of floors, washing, painting or whitewashing of walls, a supply of separate toilets and washrooms for the sexes, lockers for changes of clothing, the use and storage of inflammables and explosives, the age limit of passenger elevator operators. The states differ widely in respect to the completeness of such regulation, the more industrially developed being naturally those in which the fullest detail of legislation is found.

The taking of food into workrooms where poisonous dusts or gases may affect it is restricted or forbidden by laws of Delaware, Illinois, Minnesota, Missouri, New Jersey, New York, Ohio, Pennsylvania and West Virginia.

Sweat Shops. Sweat shops or tenement factories are regulated by special laws in Connecticut, Illinois, Indiana, Maryland, Massachusetts, Michigan, Missouri, New Jersey, New York, Ohio, Pennsylvania, Tennessee and Wisconsin. These laws may prescribe the amount of air space, light, ventilation, sanitation and safety, and in some states require licenses and registration of all workrooms used for such purposes, or lists of all persons to whom work is given out, with their place of residence.

Food Products Establishments. Bakeries, confectionaries and other places where food products are made or handled are subjects of specific regulations in some states, partly for the benefit of the workmen employed therein, and partly for the sake of the public health. The states having such laws are California, Colorado, Connecticut, Delaware, Georgia, Idaho, Illinois, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Tennessee, Texas, Washington, Wisconsin and Wyoming.

A number of these laws forbid the use of cellars or basements below a certain level, prohibit sleeping in shop or storage rooms, and forbid the employment of persons affected with tuberculous or other infectious or contagious diseases.



Courtesy B. F. Goodrich Rubber Co.

Man Power 18,000 Strong

This picture shows but a part of the army of employees of a great industrial plant. The men have just come from the buildings at closing time.

In most states which have these laws, their enforcement is intrusted to officers appointed or elected for the purpose; in a few, however, it is in the hands of the ordinary law-enforcement officers, in which case not much can usually be said as to the efficiency of enforcement. In a few states the inspection of bakeries, confectionaries and food products establishments is placed in the hands of health officers.

Mines. The operation of mines is regulated in thirty-five states—which practically constitutes all the states having mines—and by federal statute for the territories. These laws contain requirements that maps of all workings shall be prepared and filed with an officer of the state; that escape shafts shall be provided; that travel ways be timbered and lighted and safety holes or places of refuge from passing cars supplied; and that timbers for the use of men in their working places be provided in suitable lengths and amounts. Blasting, including drilling, tamping, and the firing of shots may be regulated, as well as the opening and storage of boxes of explosives, the storage of oil, hay and other inflammables, and the insulation of electric wires. Methods of working, ventilation, the construction and protection of hoisting shafts and cages, the use of safety lamps, the employment of qualified foremen, fire-bosses and shot-firers, the daily inspection of dangerous places, and other details are embraced in these laws with greater or less completeness. Except in California, Oregon and the territories (which are under the control of federal inspectors), the commonwealths having mining laws have state officials specially charged with their enforcement.

Railroads. The provision of train brakes subject to the control of the engineer, safety couplers, grab-irons, switch signals, the blocking of frogs, the placing of telltales or warning strings at the approach to bridges and tunnel roofs above the track and the distance of structures from the tracks are matters of regulation affecting the railroads of many states. A few states also require the block system of operating trains to be used. A number prescribe the candle power of the locomotive headlight. Under the terms of some state laws, certain classes of employees must be examined for color blindness, literacy and experience.

State laws must give way to federal enactment, so far as interstate traffic is concerned, in whatever detail Congress acts; furthermore, state laws may not undertake to supplement or perfect the provisions prescribed by the federal authorities in their field. The fact remains that practically every state in the Union has enacted laws addressed to some one or more of the points enumerated above, and many provide for special enforcement agencies to insure the observance of these laws.

The construction of caboose cars has been specially legislated on in Arkansas, Illinois, Indiana, Iowa, Kansas, Maine, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New York, North Dakota, Ohio, South Dakota, Vermont, Virginia, Washington and Wisconsin. The laws usually prescribe the length of the car, its equipment with double trucks, platforms with guard rails and steps, and other provisions for the safety and comfort of the train crew. A number of states designate the minimum train crew that may be employed; Arizona, Arkansas, California, Connecticut, Maine, Maryland, Massachusetts, Nebraska, Nevada, New York, North Dakota, Ohio, Oregon, South Carolina, Texas, Washington and Wisconsin have laws of this sort. Shelters over repair tracks are prescribed in Arkansas, California, Illinois, Kansas, Mississippi, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, Texas and Virginia.

Street railway employees are protected by laws requiring the platforms on which motormen stand to be inclosed, either all the year, or during the winter months. Such laws exist in Colorado, Connecticut, Delaware, District of Columbia, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, South Carolina, Tennessee, Utah, Virginia, Washington, West Virginia and Wisconsin. Power brakes or other adequate brakes are prescribed, either for all street cars or for those of designated types or weight, in California, Connecticut, Iowa, Montana, New Hampshire, Ohio, Vermont, Washington and

Wisconsin. In Connecticut, Louisiana, Missouri, New Jersey, Ohio, Oregon and Vermont seats are to be furnished drivers or motormen on street railways.

Building Operations. The erection, destruction and repair of buildings expose workmen to hazards against which employers are required by law to furnish protection in a number of states. These laws relate to the construction, strength, barricading and, in a few states, to the shielding of scaffolds; to the laying of permanent or temporary flooring or the placing of secondary scaffolds as the building progresses; to the guarding of hoistways or shafts; to the construction and operation of hoists and cranes, and to the protection of workmen from falling objects. These provisions are more or less fully embodied in laws of California, Connecticut, Delaware, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Minnesota, Missouri, Montana, Nebraska, Nevada, New York, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, Texas, Washington, West Virginia and Wisconsin.

Accidents. The reporting of accidents took on a new importance with the enactment of compensation laws, inasmuch as most states require the reporting of compensable accidents to a state commission or like agency for administrative purposes. Nearly every state, however, has accident reporting laws independent of compensation statutes, most numerous being those which apply to public utilities generally or to railroads in particular. It will be recalled that the federal railroad law calls for reports of accidents to the Interstate Commerce Commission, but the state laws still stand, twenty-five having laws specifically naming railroads, while thirteen others include them with other public utilities. A majority of the states with mining laws require reports of mine accidents, while eight specify injuries in factories, and fourteen industrial injuries generally, not including railroads. In many laws authority is given for investigation by a state official, usually at his discretion.

These laws lack much in the way of uniformity, some applying only to fatal or otherwise serious injuries, several to those which cause disability for two weeks or more, and one to only those establishments in which children, young persons or women are employed. It follows that the reports of the different states lack much in comparableness and in actual presentation of the losses due to injuries.

Accident prevention is a function of many compensation commissions and state labor bureaus, and is prescribed as a duty of mine inspectors in Alabama, Arizona, Colorado, Idaho, Illinois, Iowa, Kentucky, Maryland, Minnesota, Montana, Nevada, New Mexico, Oklahoma, Pennsylvania, South Dakota, Texas, Washington, West Virginia and Wyoming.

RESTRICTIONS ON EMPLOYMENT

General Restrictions. Either the public welfare or the safety of the workman and his co-employees may warrant a preliminary determination of his fitness to engage in certain kinds of labor. To this end examinations and registration of persons wishing to engage in such occupations may be required. Color blindness of men employed in certain capacities on railroads, and infectious or contagious diseases where personal contacts are involved, as well as lack of skill, are illustrations of disqualifications for service. Laws requiring evidence of qualification, and usually registration as well, are found in a number of states, as follows:

For employees on railroads, in Alabama, Arizona, California, Georgia, Idaho, Indiana, Massachusetts, Michigan, Missouri, Nebraska, New York, Ohio, Oregon, Washington and Wisconsin; for motormen on street railways, in Louisiana, New York and Washington; for steam engineers, either generally or in designated capacities, in District of Columbia, Florida, Georgia, Maryland, Massachusetts, Minnesota, Missouri, Montana, Nevada, New Jersey, New York, Ohio, Pennsylvania, Washington, and by federal statute; for stationary firemen, in Georgia, Massachusetts, Montana and New York; for elevator operators in Minnesota; for mine managers or foremen, fire bosses and others in mines, in Alabama, Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Missouri, Montana, North Dakota, Ohio, Oklahoma, Pennsylvania, Tennessee, Utah, Virginia, Washington, West Virginia and Wyoming; for all miners in Illinois, Indiana and Missouri, and for anthracite miners in Pennsylvania, while only experienced miners may work alone in Montana, North Dakota, Ohio and Virginia, and in bituminous mines in Pennsylvania; for plumbers in Arkansas, Colorado, Delaware, District of Columbia, Florida, Illinois, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Missouri, Montana, Nebraska, New Hampshire, New York, Oklahoma, Oregon, Pennsylvania, South Carolina, Tennessee, Texas and Wisconsin (such a law was declared unconstitutional in California and Washington); for electricians in Massachusetts, Minnesota, North Dakota, Tennessee and Washington (such a law has been declared unconstitutional in Louisiana); for horseshoers in Illinois, Maryland, Michigan and Minnesota (declared unconstitutional in Illinois, New York and Washington); for barbers in California, Colorado, Connecticut, Delaware, Georgia, Idaho, Illinois, Iowa, Kansas, Maryland, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oregon, Rhode Island, South Dakota, Utah, Washington and Wisconsin; for beauty parlor managers, operators and apprentices in Arkansas, California, Connecticut, Illinois, Iowa, Kansas, Louisiana, Minnesota, Missouri, New Mexico, North Dakota, Oregon, Rhode Island, South Dakota, Utah, Washington and Wisconsin; for moving picture machine operators in Maine, Maryland, Massachusetts, Michigan, New Jersey, New York, Rhode Island and South Dakota, and for chauffeurs in nearly all states.

Alien Labor. An argument in support of legislation of the kind above noted is that it limits competition, particularly of unskilled or unqualified labor. The federal Chinese Exclusion Acts and the acts forbidding the importation of immigrant laborers under contract are designed directly to limit competition of a sort especially likely to lower rates of wages and the standard of living. The employment of aliens on public works is prohibited, or a preference for citizens expressed, by statutes of Arizona, California, Idaho, Massachusetts, Nevada, New Jersey, New York, Oregon, Pennsylvania, Utah and Wyoming.

Convict Labor. The same reasons operate to restrict convict labor and to prevent or limit its output and the sale of convict labor products in the open market. Such laws are not directly labor laws, and the effort to regulate the sale of the goods after they once become the subject of commerce, and particularly of interstate commerce, has generally been found to be beyond the power of state legislatures. However, Congress, in 1929, enacted a law, in effect after five years, subjecting convict-made goods to the control of local laws on their arrival in any state or territory for consumption or sale.

MEDIUMS FOR SECURING EMPLOYMENT

Employment Offices conducted by the state, rendering free services to persons seeking employment and to employers wishing to hire employees, are provided for by statutes of Arizona, Arkansas, California, Colorado, Connecticut, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Utah, Virginia, West Virginia and Wisconsin. Central and branch offices are provided for in some of these states with weekly or otherwise periodical exchanges of lists of applications. A federal statute provides for similar service in coöperation with state agencies.

Private Employment Offices are now regulated by statute in nearly every state; these statutes may fix the rate of charges, require receipts to be given and open registers to be kept, prohibit the conduct of business in connection with boarding houses or places of improper character, require evidence of bona fide vacancies, provide penalties for fraud or for sending females to places of immoral resort, require a license, for which a fee is charged, and otherwise regulate the conduct of the business. Laws of this nature exist in the District of Columbia and in all states except Alabama, Delaware, New Mexico, South Carolina and Vermont. The provision limiting fees was declared unconstitutional in California, as unwarrantably interfering with the freedom of contract; and a law of New Jersey authorizing the state commissioner of labor to approve schedules of charges was held by the Supreme Court of the United States to be void because in conflict with the due process clause of the Constitution and not warranted by the public interest.

Bureaus of Labor. Bureaus or departments of the state government charged with the duty of administering the laws relative to labor, including the inspection of factories and other working places, the collection of labor statistics, the investigation and mediation of labor disputes, and of seeking to further the interest of industrial workers and industry generally, are provided for by statutes of most states, though with considerable variety in the matter of authority and scope of action. In some states an industrial commission is

charged with such duties, and may include powers distributed among two or more agencies in other jurisdictions. Laws of these types are found in all states except Alabama (has a child welfare department to enforce laws regulating the employment of children), Florida and New Mexico. There is also a federal office charged with such of these duties as are appropriate.

LABOR ORGANIZATIONS

Right of Labor to Organize. Labor organizations may incorporate under the general corporation laws of a state applicable to associations of like nature; in a number of states, however, and by federal statute, provision is made by special laws for their incorporation. The states are Iowa, Kansas, Louisiana, Massachusetts, Michigan, New York, Ohio, Pennsylvania, Texas and Wyoming. That labor agreements are not conspiracies is declared by statute in California, Colorado, Maryland, Minnesota, Nevada, New Hampshire, New Jersey, New York, North Dakota, Oklahoma, Pennsylvania, Texas, Utah and West Virginia. Statutes applicable to labor organizations, but not restricted to them, are found in most states, giving to unincorporated associations a right to sue or be sued with reference to their funds. Statutes also determine in general how actions affecting such associations may be brought.

The badges, cards or insignia of labor organizations are protected from unwarranted or fraudulent use by laws of California, Connecticut, Georgia, Massachusetts, Minnesota, New York, Oregon, Pennsylvania, Rhode Island, Texas, Virginia and Wisconsin. The union label is protected from imitation or fraudulent or unauthorized use in forty-three states. Montana and Nevada have laws directing that public printing shall bear the union label; such laws have generally been held unconstitutional.

Laws prohibiting discrimination against workmen on account of their membership in labor organizations, either by discharging them or requiring them to agree not to join, have been enacted by the legislatures of several states and by Congress, but wherever a test has been made of this law in the higher courts, it has been declared unconstitutional, and it has been so held by the Supreme Court. Laws of this sort still stand on the statute books of Connecticut, Idaho, Indiana, Louisiana, Massachusetts, Mississippi (for telegraph operators only), New Hampshire, New Jersey, New York, Oregon and South Carolina. A Wisconsin statute declares void any contract not to join a labor organization during the term of employment. Laws addressed to labor organizations and forbidding them to discriminate against members or applicants for membership on account of their belonging to or joining the National Guard are found in Arizona, California, Florida, Illinois, Kansas, Maine, Massachusetts, Michigan, Mississippi, New Jersey, New Mexico, New York, Ohio, Oklahoma, South Carolina, Washington and Wisconsin.

Labor organizations are specifically exempted from the operation of anti-trust laws in California, Colorado, Iowa, Louisiana, Michigan, Montana, New Hampshire, New Mexico, Virginia and Wisconsin; of insurance laws in Massachusetts, and of laws governing beneficial associations in Kansas. Laws of Maine and New Jersey authorize them to take out collective insurance in behalf of their members, for which insurance companies may also make special rates. The bribery of representatives of labor organizations is specially penalized by statutes of Nevada, New Jersey, New York and Virginia.

Rights of Labor to Strike. Though strikes are legal everywhere under the common law as construed in this country, the Congress of the United States has passed a law specifically declaring their legality; while state laws which declare labor agreements not conspiracy are of the same practical effect. In Minnesota it is declared that the fact of engaging in a strike more than one year prior to hiring shall not be made the subject of inquiry in employing workmen. Where employers advertise for workmen while there is a strike in their establishment, the fact must be stated in the advertisement, according to laws of California, Colorado, Illinois, Massachusetts, Montana, New Hampshire, North Dakota, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas and Wisconsin.

Several states have laws to direct the conduct of strikers where the operation of railroads is affected. These laws prohibit the obstruction of the operation of trains, the intimidation of employees on trains, and the abandonment of engines or trains at other than division points or the point of regular schedule destination. These provisions are found partly or in their entirety in laws of Connecticut, Delaware, Georgia, Illinois, Kansas, Kentucky, Maine, Mississippi, New Jersey, Ohio, Pennsylvania and Texas. The Maine statute covers other public service corporations as well as railroads.

Rights of Labor to Picket, Boycott and Blacklist. Five states—Alabama, Colorado, Kansas, Nebraska and Utah—prohibit picketing. The act of Congress which declares strikes legal also authorizes any person to attend "at any place where any such person or persons may lawfully be, for the purpose of peacefully obtaining or communicating information." Nor may an injunction issue against "peacefully persuading any person to work or to abstain from working." This is the so called Clayton Act, under which it has been held by the Supreme Court that "picketing was unlawful, and that it might be enjoined as such, and that peaceful picketing is a contradiction in terms which the statute sedulously avoided." Boycotts are declared unlawful by laws of Alabama, Colorado, Connecticut, Illinois, Indiana, Kansas and Texas. Blacklisting is prohibited by statutes of Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Florida, Illinois, Indiana, Iowa, Kansas, Minnesota, Mississippi (telegraph operators only), Missouri, Montana, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, Texas, Utah, Virginia, Washington and Wisconsin. Intimidation or other interference with employment is prohibited under penalty in Alabama, Arkansas, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Kansas, Kentucky, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New York, North Dakota, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Dakota, Texas, Utah, Vermont, Washington, West Virginia and Wisconsin. Conspiracy against employees is specifically forbidden in Alabama, Florida, Georgia, Kansas, Minnesota, Mississippi, Nevada, New York, North Dakota, Texas and Washington.

Arbitration of Labor Disputes. Provision for conciliation or arbitration in cases of disputes between employers and employees through the instrumentality of agencies, either existing as permanent state offices, boards or commissions, or appointed locally for the occasion, exists in most states of the Union, and by federal enactment. When special boards are to be appointed, it is frequently provided that one member shall be named by the employer, one by the labor union representing the employees, and the third by these two. State or local officials may offer their services as mediators, or may convey information to standing boards as to the existence or threatened occurrence of a strike, whereupon mediation may be attempted or arbitration proposed. Investigations may be made and the results published, but arbitration can not be enforced upon an unwilling party. Awards may be made a matter of record as of a finding of a court in some states. State boards or offices are provided for by laws of Alabama, Connecticut, Illinois, Indiana, Iowa (for the occasion only), Louisiana, Maine, Massachusetts, Michigan, Missouri, Montana, New Hampshire, Oklahoma, Oregon, South Carolina, Texas, Utah and Wisconsin. Other state agencies are charged with like duties in Arizona, Arkansas, Colorado, Georgia, Kansas, Maryland, Minnesota, Nebraska, Nevada, New York, Ohio, Pennsylvania, South Dakota, Vermont, Washington and West Virginia. Provision is made for local boards in Alabama, Colorado, Kansas, Maine, Maryland, Massachusetts, Michigan, Montana, Nevada, New Jersey, Ohio, Texas and Wyoming. It will be noted that in most of these states, state agencies also exist.

A federal statute creates a permanent Board of Mediation appointed by the President, whose office it is to promote the adjustment of disputes between common carriers engaged in interstate commerce and their employees, as to rate of pay, rules, working conditions and so forth. Boards of adjustment may be created by agreement of the parties to a dispute to act for designated groups in the circumstances provided for in the agreement entered upon. Boards of arbitration may also be formed, if agreed to by the parties after efforts to mediate have not arrived at a settlement. Still another agency provided for is that of emergency boards, to be appointed by the President in event that the Board of Mediation finds an unadjusted controversy likely to deprive any section of the country of essential transportation service.

It is significant that there are many portents of a better relation between organized labor and employing capital. Threats of business depression are not always being met by attempts at wage cutting, indicating a growing realization that prosperity requires a suitable wage scale.

COMPULSORY EDUCATION AND CHILD LABOR LAWS

Statutory provisions relating to compulsory attendance and child labor, prepared by the United States Bureau of Education.

	Compulsory Education			Child Labor
State	Age	Annual Period	Penalty on Parents for Neglect	Age Under Which Specified Employments Are Forbidden
Alabama	8–16	Full term.	Amount not stated; collection enforced by imprisonment.	14 years, in any gainful occupation.
Arizona	8–16	Eight months.	$5 to $50 or imprisonment 1 to 25 days or both.	14 years, in factories, stores, etc.; any business during school hours.
Arkansas	7–15	Three-fourths of term.	$10 maximum.	14 years, in any remunerative occupation.
California	8–16	Full term.	First, not over $10 or 5 days' imprisonment; subsequent, $10 to $50 or 5 to 25 days or both.	15 years, in any place of employment.
Colorado	8–16	Full term.	$5 to $25 or imprisonment, 10 to 30 days.	14 years, in any gainful occupation.
Connecticut	7–16	Full term.	Not exceeding $5.	14 years, in any mechanical, mercantile, or manufacturing establishment.
Delaware	7–17	Full term.	First, $5 to $25; subsequent, not over $50. On default, imprisonment.	14 years, in any establishment or occupation.
District of Columbia	7–16	Full term.	$10 or 5 days in jail or both.	14 years, in any gainful occupation.
Florida	7–16	"Substantially" full term.	Not over $5 or imprisonment not over 5 days.	14 years, in factories; 12 in stores.
Georgia	8–14	Six months.	$10 first offense; $20 subsequent offenses.	14 years, in or about any manufacturing establishment.
Idaho	8–18	Full term.	As fixed by court.	14 years, in factories, mercantile establishments, etc.
Illinois	7–16	Full term.	$5 to $20.	14 years, in any gainful occupation.
Indiana	7–16	Full term.	$10 to $200 or imprisonment not exceeding 60 days or both.	14 years, in any gainful occupation.
Iowa	7–16	Twenty-four consecutive weeks; first and second class city boards may require full term.	$5 to $20.	14 years, in any factory, mill, shop, laundry, etc., or in stores where more than 8 persons are employed.
Kansas	7–16	Full term.	$5 to $25.	14 years, in any factory, workshop or packing house.
Kentucky	7–16	Full term.	Not less than $5.	14 years, in any factory, store, office, hotel, as messenger, etc.
Louisiana	7–14	140 days or full session.	Not over $10 or 10 days in prison or both.	14 years, in any manufacturing or mercantile establishment or any other occupation.
Maine	7–17	Full term.	Not exceeding $25 or imprisonment not exceeding 30 days.	15 years, in any service for hire during school hours.
Maryland	7–17	Full term.	Not exceeding $5.	14 years, in stores, factories, canning establishments, etc.
Massachusetts	7–16	Full term	Not exceeding $20.	14 years, in factories, workshops, mercantile establishments or any work for pay during school hours.
Michigan	7–16	Full term, not over nine months	Fine of $5 to $50, or imprisonment 2 to 90 days or both.	15 years, in any manufacturing or mercantile establishment, workshop, laundry, store, office, hotel, messenger service, etc.
Minnesota	8–16	Full term, not over ten months.	Not over $50 or imprisonment not over 30 days.	14 years, in factories, mills, workshops or mines or any business during school hours.
Mississippi	7–16	Eighty days.	$1 to $10; second offense, $5 to $25; subsequent, $25 or 10 days in jail or both.	14 years, in any mill, workshop, manufacturing establishment or cannery, except fruit and vegetable canneries.
Missouri	7–16	Full term.	$10 to $25 or imprisonment 2 to 10 days or both.	14 years, in any gainful occupation.
Montana	8–16	Full term; in no case less than sixteen weeks.	$5 to $20, 10 to 30 days imprisonment.	16 years, in mines, underground works and factories, etc., where machinery is used.
Nebraska	7–16	Full term.	$5 to $100 or not over 3 months in jail.	14 years, in any manufacturing or mercantile establishment, office, hotel, etc.
Nevada	7–18	Full term.	First, not over $10 or imprisonment not over 5 days; subsequent, $10 to $50, or imprisonment 5 to 25 days or both.	14 years, in any business or service during school hours.
New Hampshire	8–16	Full term.	First, $10; subsequent, $20.	14 years, in any manufacturing establishment, store, etc.
New Jersey	7–16	Full term.	First, not over $5; subsequent, $25.	14 years, in factories, stores, workshops, mills or manufacturing establishments.
New Mexico	6–16	Full term.	$5 to $100 or imprisonment 5 to 90 days.	14 years, in any gainful occupation.
New York	7–16	Full term.	First, not over $5 or imprisonment 5 days; subsequent, not over $50 or imprisonment 30 days or both.	14 years, in factories, including canneries. Similar provisions apply, in places of over 3,000 population, to work in mercantile establishments, business offices, restaurants, hotels, etc.
N. Carolina	7–14	Full term.	$5 to $25 or 30 days in jail.	14 years, in any store, factory or manufacturing establishment, including canneries.
N. Dakota	7–17	Full term.	First, $5 to $20; subsequent, $10 to $50.	14 years, in factories, workshops, mercantile establishments, etc.
Ohio	6–18	Full term; in no case less than thirty-two weeks.	$5 to $20; on default, imprisonment 10 to 30 days.	16 years, in any factory, workshop or other employment during school hours.
Oklahoma	8–16	Two-thirds of term.	As for misdemeanor.	14 years, in factories.
Oregon	9–15	Full term.	$5 to $25 fine or imprisonment 2 to 10 days or both.	14 years, in any factory, store, workshop, in or about any mine or other employment during school hours.
Pennsylvania	8–16	Full term; but school board of each district may reduce to not less than seventy per cent of the term for pupils fourteen years of age or over.	First, $2; subsequent, $5; on default, imprisonment not over 5 days.	14 years, in any establishment or occupation.
Rhode Island	7–16	Full term.	Not fixed.	15 years, in any factory, manufacturing or business establishment.
S. Carolina	8–14	Eighty days.	$5 to $10 or 5 to 10 days in jail.	14 years, in any factory, mine or textile establishment.
S. Dakota	8–17	Full term.	$10 to $50; subsequent, $25 to $100 or 10 to 30 days in jail or both.	14 years, in mines, factories, stores, etc.
Tennessee	7–16	Full term.	First offense, $2 to $10; second, $5 to $20.	14 years, in workshops, factories, or any business which interferes with school attendance.
Texas	8–14	100 days.	$5; $10 for second; $25 subsequent.	15 years, in mills, factories, etc.
Utah	8–18	Twenty weeks, ten consecutive; in cities of the first and second class, thirty weeks, ten consecutive.	As for misdemeanor.	16 years, in mines, quarries and coal breakers.
Vermont	8–16	Full term.	$5 to $25.	14 years, in any mill, factory or cannery, etc.
Virginia	7–15	Full term.	Not over $25.	14 years, in any gainful occupation.
Washington	8–16	Full term.	Not over $25.	14 years, in factories, stores, etc.
W. Virginia	7–16	Full term.	$3 to $20 or 5 to 20 days in jail.	14 years, in any gainful occupation.
Wisconsin	7–16	Full term in first class cities; in other cities not less than eight school months, elsewhere not less than six.	$5 to $50 or imprisonment not over 3 months or both.	14 years, in factories, workshops or any gainful occupation.
Wyoming	7–16	Full term.	$5 to $25; not over 90 days in jail for subsequent offenses.	No child whose attendance at school is required by law may be employed at any service during the time the public schools are in session.

FAMOUS STATESMEN



PARLIAMENTARY LAW

PARLIAMENTARY LAW and practice consist of those rules, precedents and usages which are generally accepted as the most convenient and practicable for the government of proceedings in deliberative assemblies or organizations. Most of the essential rules now accepted had their origin in the English parliament, although some have been changed to adapt them to the needs of our legislative bodies. The rules and usages of Congress have great weight as correct parliamentary law in the United States generally, but the legislature of each state has a code of its own containing the general rules, and special ones not commonly accepted.

Besides the common parliamentary law, which is recognized by deliberative bodies in general, each body may make rules for its own government. When there are no special rules to the contrary the body is controlled by the principles of common parliamentary practice, and these principles govern if there are no rules enacted by the body itself.



Where Parliamentary Law Received its Name

Houses of Parliament, London. Most of the principal rules now accepted in parliamentary law had their origin in the English parliament.

Uses. Parliamentary law is needed in deliberative bodies in order that there may be a mutual understanding as to what may be done, that the rights of the body and of its individual members may be protected, and that business may be transacted with expedition and also deliberation.

A gathering does not become a deliberative body until it is duly organized. This implies officers and members. The number of the former may vary according to circumstances. There must be one to preside over the deliberations. Then there should be a clerk or secretary to keep a record of the transactions.

Parliamentary practice presumes that, ordinarily, matters for discussion and decision emanate from some member or members of the meeting, and that the discussing and deciding is done by the membership.

ORGANIZATION

Temporary. At the time appointed, or a few moments later, some one steps forward and requests the meeting to come to order, and, having secured attention, he either makes a motion that a certain person, giving his name, act as chairman, or asks the assembly to nominate a chairman. And he puts motions or nominations to vote, until some one is elected to preside. The chairman then takes his place, and the organization is completed by the nomination and election of a secretary, and any other necessary officers.

A Convention of Delegates. In the case of a convention of delegates, a temporary organization is first made by electing a chairman and secretary *pro tem.* Then a committee on credentials is chosen, to ascertain who are duly authorized to take part in the deliberations and the voting. This committee next reports the names of those who are found to have proper credentials, also doubtful or contested cases, with recommendations. No one without proper credentials is allowed to vote on the report of the committee, or on any question until he is duly accepted as a delegate. The organization of the convention is finished by the nomination and election of permanent officers.

After a meeting is duly organized, it is customary for some member to state briefly the object of the meeting, and business may be introduced at once, or the time may be occupied by addresses. A committee is sometimes appointed to prepare resolutions, while addresses are being given to fill up the time, and they report as soon as possible or they may be given more time, and bring in their resolutions after a recess, or at a subsequent meeting.

Permanent. In organizing a permanent society a temporary organization is first effected, after which the chairman calls upon some person who is taking a leading part in getting up the society to state the object of the proposed organization. A motion or resolution favoring the organization is next in order, and, if carried, a committee is appointed to draft a constitution or by-laws or both. The constitution should contain five articles at least, namely: (1) name and object of the society, (2) qualifications of members, (3) officers, their election and duties, (4) meetings of the society and (5) how to amend the constitution.

At the second meeting the constitution is adopted, and after all have signed the constitution who wish to become members, by-laws are adopted if desired, and a committee is appointed to nominate permanent officers, to be elected at this or an adjourned meeting. Each officer as elected takes the place of the temporary one, and when all are elected the organization is completed.

Nominations and Elections. Generally the most prudent and expeditious way of making nominations is to place the matter in the hands of a committee created for the purpose, who, after due consideration, make the nominations and tender their report to the assembly, after which a motion is made and seconded to adopt the report of the committee. Then the names of the nominees are again read with a pause after each, to give opportunity for other nominations. Any member who is not satisfied with a nomination may move to substitute another name, and if this motion receives a second and is carried the substituted name takes the place of the regular nominee.

The vote, if by acclamation, may be taken upon each name before passing to the next, but the more common way is to vote upon the names as a whole, after the entire list has been considered.

Sometimes the chairman is authorized by the assembly to make the nominations, and in this case the names are treated the same as if brought in by a committee.

Another way of nominating is as follows: Some member obtains the floor and says, "I nominate Mr. A." In the same way another member nominates Mr. B. and another Mr. C, and so on. When a number of candidates have thus been nominated, some member moves that the nominations close, and if this motion is seconded and carried the chairman then takes the vote upon the names, in the order in which the nominations were made, and continues until one is elected. If there is more than one office to be filled, the same process must be gone through with in each individual case.

If the election is to be by ballot, and the names are on the ballots, each voter may cast his ballot as it is, or he may cross off names and write others in their places. If blank slips are used, each voter writes on his slip the names of the nominees, or substitutes other names according to his choice. A majority of all the votes cast is necessary to a choice. In case the office or offices are not filled at the first ballot, the voting must be continued until the necessary officers are elected.

CONDUCT OF BUSINESS

Officers and Their Duties. The presiding officer is generally known by the title of Chairman, President or Moderator. He should always be addressed by his title, and in referring to himself he should always use his official title thus: "It is the opinion of the chair," and so forth.

It is his duty to take the chair and call the meeting to order at the proper time, to announce in its order each item of business, to state all proper questions, to put them to vote, and to declare the result of the vote, to see that the rules of debate are not violated, to preserve order, to state points of order or course of proceeding, by request, or when he finds it necessary to do so, to receive all messages and other communications and announce them to the assembly, to act for the assembly in signing all papers and so forth.

He may sit while stating a question, but he should rise to put a question to vote, or speak to a question of order.

Vice President. The vice president acts in place of the president in his absence.

Clerk or Secretary. The recording officer, whether called clerk or secretary, keeps a correct record of the proceedings, or the *minutes*, and reads them at the next meeting. In the absence of the chairman (if there is no vice president present) it is his duty to call the meeting to order, and to occupy the chair while the assembly proceeds to elect a chairman *pro tem.*, to read papers to be acted upon when requested to do so, to call the roll of the assembly when necessary, to hand to the chairman of every committee appointed a list of the persons on the committee, and a statement of the matter committed to them, to make out in order and hand to the chairman before each meeting, the items of business for the meeting, to have at each meeting a list of all committees, to have the custody of all papers and documents, to sign his name to the minutes, and to authenticate by his signature alone, or in connection with that of the chairman, all the acts, orders and proceedings of the assembly. In some assemblies the secretary is appointed to act as treasurer also.

Treasurer. The treasurer has charge of the funds of the society, and pays them out by order of the assembly, preferably on vouchers or orders signed by the secretary. His annual report should give the amount in the treasury at the beginning of the year, the amount received, the amount paid out, and the balance on hand. This report should be examined by an auditor or by an auditing committee, and compared with the itemized accounts kept by the treasurer and the receipts he has received for payments made, and if found correct it should be approved by a vote of the society.

Committees. A committee for deliberation or investigation should be large, and should represent all classes and localities. A committee for action should be small, and should consist of those only who are in favor of the proposed action.

A committee may be nominated and elected, or the chairman may be authorized by the constitution or by-laws, or by a vote of the assembly, to appoint a committee or committees. The constitution or by-laws may also prescribe the number of members of which each committee shall be composed, or the number may be included in the motion if the appointment is ordered by the assembly.

Sometimes the assembly proposes different numbers, and in this case the number is decided by vote; the vote being taken first on the highest number proposed, and then upon the next, and so on until a vote is carried deciding the number.

A special or select committee is a committee appointed for a particular occasion. A *standing* committee is one appointed beforehand, for all matters that may arise of the same nature.

The person first named on a committee is the chairman; he calls the members together, and presides all through, or until the committee elects another chairman. In the absence of the first member, the next in order who is present acts as chairman. The committee chooses a secretary, who is usually one of its own members, but may be a non-member. It conducts its proceedings in the same manner as business is conducted in the assembly.

A committee must be assembled to do business and a quorum must be present.

A paper referred to a committee must not be altered, or rejected by them. The committee may present amendments written on another sheet, or they may recommend a substitution, or make any recommendation they see fit. The report of the committee is signed by all the members, or by the chairman alone, and he makes the report to the assembly unless another has been chosen to tender it. Only that which has been agreed to by the majority can be incorporated in the report, but the minority may also tender a report if they choose. The minority report may be substituted for the report of the committee, by a vote of the assembly. When the committee has tendered its report in full and the report has been accepted, the committee is thereby discharged, but it may be revived by having the report or some part thereof referred back to it.



The Presiding Officer

The Chairman of the Pan-Pacific Conference of Rotary International presiding at the biennial meeting in Tokyo, Japan.

Sometimes the motion to adopt the report includes a recommendation "that the committee be discharged," but the recommendation is superfluous if the report is intended to be final.

Committees may *adjourn* from time to time until their work is completed. Then the motion is to *rise*, which motion means the same as to adjourn, and is subject to the same rules.

Committee of the Whole. The object of resolving the assembly into the "committee of the whole," is to permit of less formality in the consideration of a subject than is allowed under ordinary circumstances, and the motion is, "That the assembly do now resolve itself into a committee of the whole, to consider," and so forth, specifying the subject. If carried, the presiding officer at once calls another member to the chair, and takes his place as a member of the committee. The only motions in order are "to amend," "to adopt," and "to rise and report." Before going into the "committee of the whole," the assembly may pass an order limiting debate, which order cannot be changed in the committee.

The chairman having resumed his seat, the member who presided in the committee rises and informs the chairman that he is ready to report. The report may then be received, or the time fixed when it shall be received.

The clerk keeps the minutes of the proceedings of the committee, if there is not an assistant clerk to keep them, but the only record he makes in the minutes of the assembly is the report as received from the committee. If at any time the committee becomes disorderly, the presiding officer may resume the chair and declare the committee dissolved.

The quorum of the committee of the whole is the same as that of the assembly.

Informal Action. Instead of going into a committee of the whole, the assembly may consider a question informally, with the same freedom and the same restrictions as in the committee of the whole. In this case the chairman retains his seat and there is no motion to rise and report. The chairman brings the subject that has thus been considered before the assembly, and it is treated as if reported by a committee.

Any motion except "to amend" or "to adopt," puts an end to the informal action. A temporary memorandum is kept the same as in the committee of the whole, and the clerk enters the chairman's report only in the minutes.

Quorum. A quorum of an assembly, or of a committee or a board, is such a number as is competent to transact business; and unless the number is prescribed by the constitution or by-laws, or by an order of the assembly, it consists of a majority of the members. The number may be fixed at much less than a majority. When a quorum is not present the only action that can be taken is to adjourn.

Order of Business. In the absence of special rules upon the subject, the regular order of business is as follows:

(1) Reading the minutes of the previous meeting.

(2) Reports of standing committees (boards of managers, trustees, and so forth, come under this head)

(3) Reports of special or select committees.

(4) Unfinished business.

(5) New business.

To take business up out of its order requires a suspension of the rules, but a better way, sometimes, is to lay on the table business as it comes up, and thus reach a question that it is desirable to consider first.

Introduction of Business. New business must be introduced when there is no

question before the assembly. It may be brought in in the form of a resolution or recommendation, or in the form of a simple motion. The member rises, addresses the chairman by his title, and after being recognized by a bow or having his name announced, he reads his resolution or recommendation and moves its adoption; or he makes a simple motion as suggested above. In either case another member seconds the motion.

Amendments and all other questions are introduced in the same way as new business. The table of motions shows when each motion is in order, and how the question may be treated.

The mover of a motion may modify it, or withdraw it altogether before it is stated by the chair, but after it is stated he can do neither without the consent of the assembly. If a mover modifies his motion, the one who seconded it may withdraw his support, or accept the modification.

Mere routine business may be transacted without the formality of a motion, if no one objects.

Resolutions, Recommendations and Motions—Common Forms. The following are typical forms:

"Resolved, That fifty dollars of the funds of this society be appropriated to defray the expenses of its delegates at the general convention."

"We recommend, That a committee of three be appointed by the chair to draft resolutions, or to make recommendations, respecting the establishment of a branch office in San Francisco."

First Member: "Mr. Chairman, I move that the resolutions be adopted."

Second Member: "Mr. Chairman, I second the motion."

A resolution or recommendation may have a preamble or preambles worded about as follows:

Whereas, It is desirable to procure only the best of material for our new building; and,

Whereas, We deem it necessary to send a man to personally superintend its selection; therefore,

Resolved, That . . . or We recommend, That . . .

The Motion. The basis of business—the point for discussion and decision—is called the *motion*.

A motion is a formally-worded proposition presented in a deliberative body for its consideration, and for its decision by vote.

A member having something to which he desires the meeting to agree makes a motion to that effect.

Before making his motion he must obtain the floor. To do this in an organized meeting, he rises and, addressing the chairman, says "Mr. President" (or whatever the title may be), and then waits for recognition. The chairman hearing the voice and seeing the member who has risen, recognizes him by pronouncing his name, "Mr. ——," or "The gentleman (or member) from ——," mentioning the locality he represents.

No member has a right to make a motion, discuss a question, or address a meeting until he has thus addressed and has thus been recognized by the chairman. Then he has the floor.

Having obtained the floor, the member says, "Mr. President" (or whatever the title may be), "I move . . ."

Now it is necessary for another member to indicate his desire to have the proposition considered. This is called seconding the motion. To do this the second member may rise and, after securing recognition from the chair, say: "Mr. President, I second the motion." This is the better form. However, it is considered proper in ordinary assemblies for the person who seconds the motion to remain seated if he desires, and say simply: "I second the motion."

Stating the Question. The presiding officer then says, "It has been moved and seconded that . . .," and reads the resolution, or hands it to the secretary to be read by him. After stating or reading the motion, the president says, "The question is on the adoption of the resolution or motion just read," or he may say, "You have heard the motion. Have you any remarks to make?" or, "Remarks are in order," or use some equivalent expression. This is called "stating the question."

After the chairman has thus stated the question the subject is open to discussion, but not before.

In routine work the chairman may often put a question without waiting even for a formal motion. This can be done only with common or universal consent, and should be used only in regard to minor matters. Then this method saves time, and does no injustice.

After a motion has been made and seconded and the question has been stated by the chair, the members may enter upon its discussion.

If a motion is not seconded, the chair should not state it but should say: "The motion is lost for want of a second."

Debate. In order to debate a question the member must secure the floor in the same manner he would secure it for the purpose of offering a motion. The ordinary rule is for the presiding officer to give the floor to the member whose voice he first hears. When two or more address the chair at about the same time, the chair must decide who is entitled to the floor. In such a case the member upon whose motion the subject was brought before the body, or who presents the report, if he has not already spoken to the question, has the prior claim and should be recognized, even if another addressed the chair before him. A member who has not spoken has priority over those who have.

Points of Order. It is the privilege of any member to call attention to a breach of order in debate, by obtaining the floor and saying, "I rise to a point of order." The chairman then says "Please state your point of order." When the point is stated, the chairman decides whether it is well taken or not, this decision being subject to appeal. When a question of order is raised, the speaker should at once take his seat and await the decision. Then if the decision is in his favor he may proceed, but if against him, and any one objects to his speaking further, he cannot continue without permission from the assembly.

Limiting Debate. It is the custom of bodies to limit the time of a speech and the number of times a member may speak to the same question.

The common parliamentary law is not to allow a member to speak more than once to the same question until all who desire have spoken.

If a member offers to speak a second time, and no one signifies a desire to occupy the floor, and there is no objection, the chair may permit the member to proceed. Otherwise, to obtain the privilege of speaking a second time, the question must be put to vote for the decision of the meeting.

An order limiting or closing debate can be adopted, so that, at the time specified, all discussion upon it shall cease. As a body can limit the time of a speaker, it can also extend his time. The meeting can also extend the time of the debate.

In the discussion the speakers must confine themselves to the question before the body, and avoid personalities or other improprieties.

The maker of a motion may vote against, but cannot speak against, his motion.

Putting the Question. If no one rises to speak, or the chairman thinks the debate has ended, he asks, "Are you ready for the question?" If then no one rises to debate it, he proceeds to put the question to vote.

In putting the question, as it is termed, the ordinary form will be something like the following: The chair will say, "The question is on the adoption of the motion, or resolution, which you have just heard read; as many as are in favor of its adoption will say aye." The ayes having voted, he will then say, "As many as are of a contrary opinion will say no," or "All opposed will say no." The chair, judging the comparative vote, will announce the result, stating that the motion is carried or lost, as the case may be. If he thinks the ayes are in the majority he says, "The ayes appear to have it." Then pausing, to see if any one expresses doubt, and none being raised, he says, "The ayes have it, and the motion is agreed to (is carried, or prevails)," or vice versa, if he thinks the noes have it.

Form of Voting. The following are customary forms of voting: *Viva voce* (meaning by voice), ayes and noes; show of hands, which are counted by the chairman or by tellers; rising vote, the count of those standing being made by the chairman or by tellers; voters pass between tellers, who count them; yeas and nays; ballot.

Where a hand-vote is customary the chair may say, "Those in favor of the motion or resolution will hold up the right hand," and "Those opposed will manifest it by the same sign." Excepting in a few cases a majority vote determines a question.

Discussion can be renewed even after the voting has begun, and up to the final voting of both sides.

Caution. Some chairmen make the mistake of saying: "All in favor of the motion say *aye*. Those opposed manifest it by the same sign."

The term "same sign" only applies when the vote is being taken by a show of hands, or other visible indication of the voter's preference.

When a motion is put to a vote the literal question before the house is: "Shall the mo-

tion be adopted?" The answer is either yes or no. When those in favor say "aye" (which is another form of the word "yes"), those opposed should say "no." If those who are in favor of adoption say "aye" or "yes," then if those opposed should manifest it by the "same sign," this would require them also to say "aye" or "yes," meaning that they are in favor of adoption, whereas they are not.

Division. Sometimes a motion may consist of more than one distinct idea, and therefore would be divisible into two or more distinct propositions, and it might be that some would favor one part and not another, and, consequently, would desire to vote on the parts separately. In such a case a member can move that the question be divided, and specify in his motion how it is to be divided. If the motion for a division of the question prevails then each part will be put to vote as though it were a separate motion, and one part may be carried and another lost.

When the chairman announces the result of a vote any member may express a doubt as to the accuracy of the decision by rising and saying, "Mr. President, I call for a division of the house." If a member thus calls for "division" the presiding officer shall say, "A division is called for; those in favor of the motion will rise and stand until counted." After they are counted and the number announced, he shall say, "Those opposed will rise:" and they will be counted and the number announced.

The chair or the clerk, or both, may count. After the announcement of the result a member may press the doubt further by calling for a count by tellers, and even after that has been taken there may be a demand for the yeas and nays.

Yeas and Nays. The object of calling the yeas and nays is usually to place the names of the members on record so that it will be known how each man voted. At other times it is used as dilatory motion, and is made for the purpose of consuming time. In Congress one-fifth of the members present can order the vote to be taken by yeas and nays. In some bodies it is ordered on the call of a single member. Societies should have a rule stating what small minority may order the yeas and nays. In any meeting a majority vote can order the yeas and nays. When the yeas and nays have been ordered, the presiding officer will put the question in a form similar to the following: "As many as are in favor of the adoption of the resolution will, when their names are called, answer *yea*, (or *yes*); those opposed will answer *nay*, (or *no*). The secretary (or clerk) will call the roll."

The roll is then called, and each member, as his name is called, rises and answers *yes* or *no*, (or *yea* or *nay*), which answer is noted by the clerk. When the roll-call is ended the clerk reads the names of those who voted in the affirmative, and afterward those who voted in the negative. Errors may then be corrected. The clerk then gives the number voting on each side to the chair, who announces the result.

The Ballot. Sometimes a vote is by ballot. It is common and most equitable in the election of officers.

The chairman appoints at least two tellers, who distribute slips of paper upon which the members write their votes. The tellers collect and count the votes and report the result to the chairman, who announces it to the meeting. In counting ballots all blanks are ignored. In case of an election the chair will say: "The whole number of votes cast is——; the number necessary for a choice is——; Mr. A. received——; Mr. B.——; Mr. C.——. Mr. A., having received the requisite number, is therefore elected."

Tie Vote. When there is a tie vote the motion fails. The chairman, if a member of the meeting or, authorized by constitutional law, however, has the casting or deciding vote in such a case, and, if he gives it for the affirmative, the motion prevails. He may even vote with the minority when his vote will make a tie, and thus defeat a measure, and he may vote in any case where his vote would change the result. Thus where a two-thirds vote is necessary, and his vote given to the minority would prevent the adoption of the question, the presiding officer can so cast his vote.

Classes of Motions. Motions are differently classified according to their nature and purpose, including:

(1) The principal motion or main question by which the subject is brought before the body.

(2) Those which bear upon the main question. These are called subsidiary motions, and are as follows: (*a*) to postpone indefinitely, (*b*) to amend, (*c*) to refer (commit or recommit), (*d*) to postpone to a certain day or time, (*e*) the previous question, (*f*) to lay on the table.

(3) Incidental questions, so called because they are occasioned in a casual way during the consideration of other questions. From their very nature they must be decided before the questions which give rise to them. They cover: (*a*) suspension of the rules, (*b*) withdrawal of a motion, (*c*) reading of papers, (*d*) objection to the consideration of a question, (*e*) questions of order (including appeals from the decision of the chair).

(4) Privileged questions, so called because of their pressing importance and their need of immediate attention; therefore they may interrupt other proceedings. They are: (*a*) calls for the orders of the day, (*b*) questions of privilege, (*c*) the motion to adjourn, (*d*) the motion to fix the time to which to adjourn.

Order of Precedence. The motions below numbered 1 to 9 take precedence over all others in the order given, and any one of them, except to amend or substitute, is in order while a motion of a lower rank is pending.

(Letters refer to rules following)

Closing a meeting.									
1. To fix time to which to adjourn									B
2. To adjourn (in committees, to rise), or to take a recess, without limitation					A	E	F		
Concerning Orders, Rules and so forth									
3. For the orders of the day					A	E	H	N	
To make subject a special order								M	
To amend the rules								M	
To suspend the rules					A	E	F	M	
To take up a question out of its proper order							A	E	
To take from the table						A	E	G	
Questions touching priority of business								A	
4. To lay upon the table						A	E	G	
To bring up a question the second time.									
To reconsider debatable question					D	E	F	I	
To reconsider undebatable question					A	E	F	I	
Questions of privilege.									
Asking leave to continue speaking after indecorum									A
Appeal from chair's decision touching indecorum					A	E	H	L	
Appeal from chair's decision generally						E	H	L	
Question upon reading of papers							A	E	
Withdrawal of a motion							A	E	
Suppressing or extending debate.									
5. For the previous question					A	E	M		
To limit, or close, debate							A	M	
To extend limits of debate								A	
Deferring action.									
6. To postpone to a fixed time									C
To refer to committee.									
7. To commit (or recommit)									D
Modifying or amending.									
8. To amend or to substitute, or to divide the question									K
Suppressing the question.									
Objection to consideration of question					A	H	M	N	
9. To postpone indefinitely								D	E

Rule A. Undebatable, but remarks may be tacitly allowed.
Rule B. Undebatable if another question is before the assembly.
Rule C. Limited debate allowed on propriety of postponement only.
Rule D. Opens the main question to debate. Motions not so marked do not allow of reference to main question.
Rule E. Cannot be amended. Motion to adjourn can be amended when there is no other business before the house.
Rule F. Cannot be reconsidered.
Rule G. An affirmative vote cannot be reconsidered.
Rule H. In order when another has the floor.
Rule I. A motion to reconsider may be moved and entered when another has the floor, but the business then before the house may not be set aside. This motion can only be entertained when made by one who voted originally with the prevailing side. When called up it takes precedence of all others which may come up, excepting only motions relating to adjournment.
Rule K. A motion to amend an amendment cannot be amended.
Rule L. When an appeal from the chair's decision results in a tie vote, the chair is sustained.
Rule M. Requires a two-thirds vote unless special rules have been enacted.
Rule N. Does not require to be seconded.

General Rules. No motion is open for discussion until it has been stated by the chair.

The maker of a motion cannot modify it or withdraw it after it has been stated by the chair, except by general consent.

Only one reconsideration of a question is permitted.

A motion to adjourn, to lay on the table, or to take from the table, cannot be renewed unless some other motion has been made in the interval.

On motion to strike out the words, "Shall the words stand as part of the motion?" unless a majority sustains the words, they are struck out.

On motion for previous question, the form to be observed is, "Shall the main question be now put?" This, if carried, ends debate.

On an appeal from the chair's decision, "Shall the decision be sustained as the ruling of the house?" the chair is sustained if the vote is a tie.

On motion for orders of the day, "Will the house now proceed to the order of the day?" This, if carried, supersedes intervening motions.

When an objection is raised to considering questions, "Shall the question be considered?" objections may be made by any member before debate has commenced, but not subsequently.

HIGH SCHOOL LITERARY SOCIETY

Model for Organization. The following is suggested as a correct procedure in forming a literary society for a high school.

A group of students who are interested have met in a class room. Mr. White, a young man who has been active in bringing them together, takes his place on the platform, raps on the desk, and says:

"The meeting will please come to order. Nominations for Temporary Chairman will be received."

Mr. Smith (rising): "I nominate Mr. Jones."

Miss Brown (either rising or seated): "I second the nomination."

Mr. White: "It has been moved and seconded that Mr. Jones act as Chairman. All in favor will say *aye*."



High School Literary Society

After considering the number voting aye, Mr. White says: "All opposed say *no*."

If satisfied that a majority have voted aye, Mr. White says: "The motion is carried. Will Mr. Jones please take the chair?"

If satisfied that a majority have voted no, Mr. White says: "The motion is lost. Other nominations are in order."

If more than one are nominated, Mr. White puts to a vote each name in the order nominated, until one receives a majority.

Mr. Jones (or whoever is chosen) takes the chair and addresses the group somewhat as follows:

"I thank you for the honor. I consider that it is greatly to our advantage to have a literary society in our high school, and I trust we shall make it a source of credit to our school. Nominations for Secretary are in order."

Miss Ames (rising): "Mr. Chairman."

The Chairman: "Miss Ames."

Miss Ames: "I nominate Miss West."

Mr. Black (either rising or seated): "I second the nomination."

The Chairman: "Are there any other nominations?" (After a pause) "There being no further nominations, we will proceed to vote. It has been moved and seconded that Miss West act as Secretary of the meeting. All in favor say *aye*." (After considering the number voting aye) "All opposed say *no*. The motion is carried. Will Miss West please take her place as Secretary?"

Miss West does so, and thereafter keeps a record of all motions made, seconded and carried; of officers elected, communications received and other business transacted.

The Chairman: "I will ask Mr. Randall to state the object of this meeting."

Mr. Randall (rising): "Mr. Chairman."

The Chairman: "Mr. Randall."

Mr. Randall: "It has been evident for some time that a literary society is needed in this high school. It will give us a chance to learn many things which we cannot get from our regular studies. For example, we shall become trained in parliamentary law. We shall acquire the art of speaking in public. We shall obtain practice in debating. To that end I move the adoption of the following resolution, which I will ask the Secretary to read."

He hands it to the Secretary, who reads it aloud:

> "RESOLVED, That a literary society be formed in this high school for the purpose of self-improvement of the members."

Miss Arnold: "I second the resolution."

(The person who seconds a motion or resolution need not rise nor address the chair. All others wishing to take part in the proceedings should first rise, address the presiding officer by his or her appropriate title, and wait for recognition by the chair before speaking.)

The Chairman: "Are there any remarks?"

Several persons present speak for or against the resolution.

The Chairman: "Are you ready for the question?"

No one rises to speak, but several persons call out: "Question."

The Chairman: "You have heard the resolution, which has been duly moved and seconded. All who are in favor of the adoption of the resolution will say *aye*. All opposed say *no*. The resolution is adopted."

Miss Stewart (rising): "Mr. Chairman."

The Chairman: "Miss Stewart."

Miss Stewart: "I move that the Chairman appoint a committee of three to draft a constitution and by-laws, and to report at our next meeting."

Mr. Cox: "I second the motion."

The Chairman: "It has been regularly moved and seconded that the Chairman appoint a committee of three to draft a constitution and by-laws, and to report at our next meeting. Are there any remarks?" (Hearing none) "Are you ready for the question?" (Several say *Question*) "All who are in favor of the motion will say *aye*. Those opposed say *no*. The motion is carried. I will appoint Mr. White, Miss Ames and Mr. Green as the committee."

(Mr. White, being named first, is Chairman of the committee.)

Mr. Adams: "Mr. Chairman."

The Chairman: "Mr. Adams."

Mr. Adams: "I move we adjourn."

Miss Moore: "I second the motion."

This motion is not debatable, cannot be amended, and takes precedence over all other business. It must be put to a vote at once unless a motion is made to adjourn to a fixed time or place, as follows:

Miss Turner: "Mr. Chairman."

The Chairman: "Miss Turner."

Miss Turner: "I move that we adjourn to meet again in this room two weeks from today at three o'clock in the afternoon."

Mr. Pope: "I second the motion."

This motion is debatable, and may be amended, as for example:

Mr. Long: "Mr. Chairman."

The Chairman: "Mr. Long."

Mr. Long: "I move to amend the motion to read that we adjourn to meet one week from today at four o'clock in the afternoon."

Miss Clarke: "I second the amendment."

The Chairman: "The question is first on the amendment. Are there any remarks? All who are in favor of the amendment will say *aye*. Those opposed say *no*. The amendment is carried. The question is now on the motion as amended. Are there any remarks? All who are in favor of the motion as amended will say *aye*. Those opposed say *no*. The motion is carried, and the meeting now stands adjourned to meet again in this room one week from today at four o'clock in the afternoon."

If the amendment is lost the Chairman will announce it thus: "The amendment is lost. The question is now on the original motion." (Proceed in the regular order by asking for remarks, and so forth.)

If the motion to adjourn is lost it cannot be renewed until some business has been transacted.

One week later, at four o'clock in the afternoon, the second meeting is held, with the Temporary Chairman and Temporary Secretary still performing their respective duties.

The Chairman: "The meeting will please come to order. The Secretary will read the minutes of the previous meeting."

The Secretary does so.

The Chairman: "You have heard the minutes. Are there any corrections or additions? If not, they will stand approved as read."

If corrections or additions are made, the announcement will be: "The minutes as corrected (or enlarged) will stand approved."

The Chairman: "The next order of business will be the report of the committee on

constitution and by-laws, of which Mr. White is Chairman."

Mr. White: "Mr. Chairman."

The Chairman: "Mr. White."

Mr. White: "Your committee submits the following proposed constitution and by-laws."

He hands the manuscript to the Secretary.

The Chairman: "What is your pleasure? Shall we read the constitution and by-laws and vote upon their adoption as a whole, or shall we read and vote upon them article by article?"

Miss Wood: "Mr. Chairman."

The Chairman: "Miss Wood."

Miss Wood: "I move that we vote upon the constitution and by-laws as a whole."

Mr. Dean: "I second the motion."

The Chairman: "It is moved and seconded that the meeting vote upon the constitution and by-laws as a whole. All who are in favor will say *aye*. Those opposed say *no*. The motion is carried. The Secretary will read the proposed constitution and by-laws."

The Secretary does so.

Mr. Young: "Mr. Chairman."

The Chairman: "Mr. Young."

Mr. Young: "I move the adoption of the constitution and by-laws as read."

Miss Faris: "I second the motion."

The Chairman: "It is regularly moved and seconded that the constitution and by-laws as read be adopted. Are there any remarks? Are you ready for the question? All who are in favor will say *aye*. Those opposed say *no*. The motion is carried, and the constitution and by-laws are adopted."

If the motion to adopt as a whole is lost, or if no such notion is made, the following should be the procedure:

Miss Gale: "Mr. Chairman."

The Chairman: "Miss Gale."

Miss Gale: "I move that the constitution and by-laws be considered and adopted article by article."

The motion is seconded and adopted.

The Chairman: "The Secretary will read the first article." (The Secretary does so.) "Are there any amendments or additions?"

If members desire to amend or add to the article, motions to that effect may be made and seconded, and the Chairman will put them to a vote until the article is satisfactory to a majority of those present; and so on with the succeeding articles.

If there are no amendments or additions the Chairman, after a pause to ascertain the fact, will say: "All who are in favor of Article I as read will say *aye*. Those opposed say *no*. The ayes have it, and Article I as read is adopted." (And so on with the rest.)

Another method, equally proper, is for the Chairman to say: "Are there any amendments or additions to this article? Are there any objections? Hearing none, I will ask the Secretary to read the next article."

In either case, after all the articles have been read and either passed by or acted on, they should be adopted as a whole; thus:

Mr. Hart: "Mr. Chairman."

The Chairman: "Mr. Hart."

Mr. Hart: "I move that the entire constitution and by-laws (as amended, if that has been done) be adopted as a whole."

Miss Knox: "I second the motion."

The Chairman: "It is regularly moved and seconded that the constitution and by-laws as amended be adopted as a whole. Are there any remarks? Are you ready for the question? All in favor will say *aye*. Those opposed will say *no*. The motion is carried and the constitution and by-laws are adopted as a whole."

The Chairman: "We will now take a recess for ten minutes, during which time all persons present who wish to become members of the new literary society will please sign the constitution and by-laws." (They do so.)

At the conclusion of the recess the Chairman raps for order again and says: "The next order of business will be the election of officers in accordance with the constitution. How will you have them selected? Shall we appoint a committee on nominations or shall we have nominations from the floor for each office?

Mr. Burton: "Mr. Chairman."

The Chairman: "Mr. Burton."

Mr. Burton: "I move that the Chairman appoint a committee on nominations consisting of three members, who shall retire and report back to this meeting as soon as they have made their selections."

The motion is seconded and carried. The Chairman appoints Mr. Burton, Chairman; Miss Knox and Mr. Hart. They retire.

The Chairman: "While we are waiting for the committee on nominations to report, I suggest that we have expressions of opinion from several present as to what our proposed literary society should do." Various suggestions are made. The committee returns to the room.

The Chairman: "Is the committee on nominations ready to report?"

Mr. Burton: "Mr. Chairman."

The Chairman: "Mr. Burton."

Mr. Burton: "The committee on nominations recommends the election of the following persons to serve as permanent officers of this literary society":

Mr. Burton may read the report himself or hand it to the Secretary, who reads it.

"For President, Mr. Hill; for Vice President, Miss Pierce; for Recording Secretary, Miss Abbott; for Corresponding Secretary, Miss Early; for Treasurer, Mr. Noble."

Mr. Kane: "Mr. Chairman."

The Chairman: "Mr. Kane."

Mr. Kane: "I move that the candidates named by the committee on nominations be declared elected."

Miss Page: "I second the motion."

The Chairman: "It is regularly moved and seconded that the candidates named by the committee on nominations be declared elected. Are there any other nominations? There being no other nominations, are you ready for the question?"

Mr. Foster: "Mr. Chairman."

The Chairman: "Mr. Foster."

Mr. Foster: "I rise to a point of order."

The Chairman: "Please state your point of order."

Mr. Foster: "My point of order is that the constitution provides that all elections for officers shall be by ballot. Hence the motion now before the house proposes a method of election that would be illegal."

The Chairman: "The point of order is well taken. The motion that the candidates named by the committee on nominations be declared elected is out of order."

Mr. Hopkins: "Mr. Chairman."

The Chairman: "Mr. Hopkins."

Mr. Hopkins: "I move that the Secretary be instructed to cast one ballot in favor of the election of the candidates named by the committee on nominations."

Miss Cooper: "I second the motion."

The Chairman: "It is regularly moved and seconded that the Secretary be instructed to cast one ballot in favor of the election of the candidates named by the committee on nominations. Are you ready for the question? All who are in favor of the motion will say *aye*. Those opposed say *no*. The motion is carried, and the Secretary is so instructed."

The Secretary writes the names and offices on a ballot, and reports: "Mr. Chairman."

The Chairman: "Madam Secretary."

The Secretary: "The ballot has been cast in favor of the election of the following: For President, Mr. Hill; for Vice President, Miss Pierce; for Recording Secretary, Miss Abbott; for Corresponding Secretary, Miss Early; for Treasurer, Mr. Noble."

(In practice, it is not necessary for the Secretary actually to write the names on a ballot, but it is sufficient if the Secretary states to the Chairman that the ballot has been so cast.)

The Chairman: "The ballot has been cast for the candidates named, and I declare them duly elected to their respective offices. Will Mr. Hill please come forward and take the chair, and will Miss Abbott please take her place as Recording Secretary of the meeting?" (They do so.)

If there are other nominations from the floor for any office, then the Secretary cannot be instructed to cast a ballot for that office. The Chairman takes up in turn each office for which additional nominations are made, beginning with the President, and says:

"Are there any other nominations for President? Hearing none, we will proceed to vote on the candidates in the order in which their names were proposed."

Or somebody may move that nominations be closed, which must be seconded and put to a vote. If carried, the Chairman proceeds:

The Chairman: "Mr. Hill, Miss Blake and Mr. Hood have been nominated for President. According to the by-laws, all elections for officers shall be by ballot. The Secretary will prepare ballots and distribute them to the persons present who are entitled to vote. All persons who have signed the constitution and by-laws are entitled to vote. Each member will write upon the ballot the name of the candidate for President preferred. Then fold the ballot and hand it to one of the tellers. The Chairman appoints Mr. Taylor and Miss Faris as tellers, who will collect the ballots and count them, and report the result of the vote."

If there are factions, the chair should appoint a teller from each faction, so far as possible.

The tellers collect and count the ballots, Mr. Taylor, having been named first, reports:

Mr. Taylor: "Mr. Chairman."

The Chairman: "Mr. Taylor."

Mr. Taylor: "The result of the vote is as follows:

Whole number of votes cast, 37; necessary to a choice, 18.

Mr. Hill received 19 votes; Miss Blake received 10 votes; Mr. Hood received 8 votes."

Or the tellers may hand the report to the Secretary, who reads it.

The Chairman repeats to the meeting the result of the vote, and adds: "Mr. Hill, having received a majority of all the votes cast, is duly elected President. Will Mr. Hill please take the chair."

If no one has received a majority, the Chairman says: "No one having received a majority of the votes cast, you will prepare your ballots again." And so on until one receives a majority.

The successful candidate for President takes the chair.

The same procedure is followed for the other candidates.

Instead of appointing a committee on nominations, all nominations may be made from the floor. Where nominations are made from the floor, the procedure will be as already outlined after the committee on nominations makes its report. Thus:

The Chairman: "Nominations for President are in order."

Miss Page: "Mr. Chairman."

The Chairman: "Miss Page."

Miss Page: "I nominate Mr. Hill."

(Nominations need not be seconded.)

Mr. Gray: "Mr. Chairman."

The Chairman: "Mr. Gray."

Mr. Gray: "I nominate Miss Blake."

Mr. Nolan: "Mr. Chairman."

The Chairman: "Mr. Nolan."

Mr. Nolan: "I nominate Mr. Hood."

The Chairman: (After a pause) "Are there any further nominations?" (No response) "If there are no further nominations for President, I declare the nominations closed."

Or, somebody may move that nominations be closed, which motion is seconded and carried.

The Chairman: "You will prepare your ballots." (The votes are collected and counted by the tellers; they report the result to the Chairman, who announces it to the meeting, as already outlined.)

The same procedure is followed for all the officers.

If there is only one nomination, someone after being recognized by the Chairman may say: "I move that the Secretary cast one ballot for Mr. Hill for President."

If seconded and carried, the Secretary reports: "Mr. Chairman, the ballot has been cast in favor of Mr. Hill for President."

The Chairman: "The ballot has been cast for Mr. Hill, and I declare him duly elected President."

The foregoing is not intended to cover all possible variations in the organization of a society, but to furnish a model that may be safely followed.

Model Constitution and By-Laws. The constitution provides the framework, while the by-laws take care of the working details. The former is the carriage; the latter, the power. The line is not closely drawn, however, and often the whole may be merged and called either the one or the other.

The following is offered as a model that contains the main essentials:

CONSTITUTION

ARTICLE I

NAME. The name of this organization shall be the Adelphian Literary Society of the Springfield High School.

ARTICLE II

OBJECT. The object of the Society shall be the self-improvement of the members in public speaking, debating, essay writing, parliamentary law and kindred subjects.

ARTICLE III

MEMBERS. Members shall consist of two classes—active and honorary. Active members shall comprise students in good standing in their studies in the Springfield High School, who may sign the constitution and pay the required dues. Honorary members shall comprise teachers, alumni and guests, who shall not be required to pay dues.

ARTICLE IV

OFFICERS. The officers of the Adelphian Literary Society shall be a President, a Vice President, a Recording Secretary, a Corresponding Secretary and a Treasurer, who shall be elected by ballot from the active members of the society at the last meeting in each semester of the school year. The officers shall assume office at the first regular meeting in each semester, and shall serve for a term of one semester and until their successors shall be elected and take office. A vacancy in any office may be filled at any regular meeting, for the balance of the term. The officers shall have the customary powers of such offices in parliamentary bodies.

ARTICLE V

COMMITTEES. There shall be the following standing committees, of three members each, to be appointed by the President:

Membership, Program and Entertainment.

The Membership committee shall endeavor to secure desirable members for the Society. All applications for membership shall first be passed on by the membership committee, who shall recommend to the Society such names as the committee approves.

The Program committee shall arrange for the programs of each meeting.

The Entertainment committee shall provide for special entertainment features not included in the regular programs.

Other committees, either standing or special, may be appointed as seems necessary. Unless otherwise provided for in the resolutions creating them, all special committees shall be appointed by the President.

ARTICLE VI

MEETINGS. Regular meetings shall be held at four o'clock in the afternoon of Wednesday of each week while school is in session. Where the regular meeting day falls on a holiday, the meeting shall be held on the day previous. Special meetings may be called by the President or by any five members, by posting notice thereof on the regular bulletin board of the High School, at least two days before the meeting is to be held. Such notice shall state clearly the time and place of the meeting.

ARTICLE VII

AMENDMENTS. Amendments to the constitution may be presented at any regular meeting, but shall not be voted on until the next regular meeting. A majority vote of all active members present at the meeting shall be necessary for adoption.

BY-LAWS

ARTICLE I

QUORUM. A majority of all the active members shall constitute a quorum. (If the membership is large, a smaller number than a majority may be declared a quorum.)

ARTICLE II

RIGHTS AND DUTIES OF MEMBERS. Active members may serve on committees and hold office. Honorary members shall have the right to be present at all meetings, and may take part in the discussion of any question, but shall not have the right to vote. They may serve on committees, but shall not hold office.

New members shall be admitted in the following manner:

At each regular meeting the name of an applicant may be proposed by an active member. All names proposed shall be referred to the membership committee who shall report at the next regular meeting. If the committee's report is favorable, each name shall be voted on separately. A majority vote of all active members present is necessary to elect to membership.

ARTICLE III

DUES. The dues of active members shall be one dollar for each semester, payable during the first two weeks of the semester. If not paid within two weeks, the member shall stand suspended until the dues are paid. During suspension a member may attend meetings, but shall not take part in the program, nor serve on committees nor hold office. If the dues are not paid by the end of the semester, the member's name shall be stricken from the membership roll. To become a member again his name must be proposed and passed on by the membership committee, and voted on by the membership as in the case of other applicants.

ARTICLE IV

RULES OF ORDER. All questions of parliamentary law shall be governed by *Robert's Rules of Order*, Revised Edition.

ARTICLE V

DUTIES OF OFFICERS. The President shall preside at all regular and special meetings, and appoint all committees not otherwise provided for. The Vice President shall perform the duties of the President when the President is absent or otherwise unable to act. The Recording Secretary shall keep the minutes of all regular and special meetings in a book to be kept for that purpose. The Corresponding Secretary shall send out written notices and attend to such correspondence as may be required. The Treasurer shall collect the dues and pay such bills as have been approved for payment in open meeting. He shall keep an accurate record of all receipts and disbursements. He shall present a report at each regular meeting showing the balance on hand. At the end of his term of office he shall turn over all of the money, with his books and records, to his successor.

ARTICLE VI

ORDER OF BUSINESS. At every regular meeting, the order of business shall be:

1. Roll call
2. Reading minutes of preceding meeting
3. Program
4. Receipt of communications, bills, and so forth
5. Reports of standing committees
6. Reports of special committees
7. Unfinished business
8. New business
9. Adjournment

By a two-thirds vote at any regular meeting, the order of business may be set aside for that meeting.

The reading of the minutes may be dispensed with by a majority vote.

ARTICLE VII

AMENDMENTS. Amendments to the by-laws may be presented at any meeting, whether regular or special, but shall not be voted on until the next meeting, either regular or special. A majority of a quorum present at the meeting shall be necessary for adoption.

DICTIONARY OF POLITICAL SCIENCE TERMS

Absolutism. A form of government in which the supreme power of the state is placed in one person whose rule is unlimited.

Admiralty. A branch of law which deals with civil and criminal cases arising on the high seas. In the United States, admiralty implies jurisdiction by the Constitution in the Federal Courts. In England, admiralty designates that department of government which has jurisdiction over the naval forces of the Empire and over all merchant vessels flying the British flag.

Alabama Claims. During the American Civil War, ships built by British firms, sent from British ports and sailing under the Southern flag, attacked Northern shipping. The most notorious case was that of the *Alabama*. The British government had warning that the *Alabama* was to be used by the Confederates. But partly by neglect and partly by misfortune, the authorities did not act in time. For a period of about two years this ship attacked Northern shipping. A number of futile attempts were made to settle the claims for damages. However, by the treaty of Washington, various outstanding questions were settled and the *Alabama* claims were referred to a court of five arbitrators sitting at Geneva. A solution of the controversy was finally found. The award was fixed at £3,250,000, or $15,795,000.

Alien. One who is "of another country," consequently, a person residing in a country, who is not a natural born citizen, or who has not been naturalized, is an alien in that country. A child born in a country takes the citizenship of his father. In United States a person born out of the jurisdiction of the United States who has not been naturalized is an alien.

Amnesty. An act of government granting exemption from criminal prosecution and punishment. It is often extended to a class or group, as was the case with the South after the Civil War. Unlike pardon, it is granted before conviction rather than afterward.

Anarchism. The socialist contends that society needs more government; the anarchist believes that there should be less government. The fundamental principle of anarchism is that if man were left unhampered by the restrictions of government and were properly developed by education, he would develop in such a way that the best interests of every one would be taken care of in an ideal way.

Aristocracy. Aristocracy was a term used by the ancient Greeks to denote government by the best qualified. With the Ancients, the aristocracy not only monopolized office and power, but citizenship

as well. There were no citizens but they; they were the State.

The word aristocracy is applied also to the nobility in countries where monarchical institutions exist; and so, by analogy, refers to those who assume superiority in social standing or personal qualities.

Belligerency. The condition whereby regularly organized fighting becomes entitled to the protection of recognized laws and usages of war. The international rules of warfare provide that troops, in order to be entitled to these privileges; must be part of the military force of a recognized belligerent; must be commanded by properly commissioned officers; must wear distinctive uniform; must carry arms openly, and must not violate the usages of war among civilized nations. Some of the rights of belligerents are: the right of surrender and capture rather than death upon the field; trial by court-martial before execution; and humane treatment as prisoners of war. Mere rebels or insurgents do not have any of the rights of belligerents.

Bicameral System. In the federal government of the United States, as in the states, the law making power is vested in a double legislature: a Congress consisting of a Senate and a House of Representatives. Unlike the two houses of a state legislature, however, the two houses of Congress have distinct characters. The Senate differs from the House not only in the number of its members, but also in the principle of its composition. It represents the federal principle upon which the government rests, for its members represent the states. The House of Representatives, on the other hand, represents the national principle upon which, also, the government has now been finally established. Its members represent the people. All legislation comes from the two houses acting in concert; but three additional functions of government are performed by the Senate alone: (1) it has the power to confirm or reject nominations of executive officials by the President, (2) it shares treaty-making power with the President, (3) it sits as a court of impeachment. In all matters of legislation the two houses have equal authority, except for the special constitutional prerogative of the House of Representatives to initiate revenue bills; but this has proved of little practical significance. In the state governments, the two-chamber system is usually justified as a check on hasty or unwise legislation.

Bloc. A French term, meaning "mass" or "group." It has been introduced into political usage to mean an association of legislative members or of political workers of different parties, formed to support a certain proposition or ministry. The term has recently been introduced into American politics through the union of members of Congress pursuing certain agrarian policies in what is called the "agricultural bloc."

Boodle. Money used in bribing public officials or in improperly influencing elections.

Bounty. A grant of land, money or other consideration by the government to private individuals, either to reward services that have been performed, or to encourage activities deemed of public benefit such as highways, railroads and steamship lines.

Cabinet. In carrying on his duties the President is aided by executive officials, ten of whom form an advisory Cabinet, a body not mentioned in the written Constitution. At present, the Cabinet consists of the Secretaries of State, Treasury and War, Attorney-General, Postmaster-General and the Secretaries of the Navy, Interior, Agriculture, Commerce and Labor.

Campaign, Political. Organized effort by a political party or group to secure the election of its candidates to office. The campaign may occupy the entire time between the nominations and the elections, or it may be limited chiefly to the months preceding the polling of the votes. The campaign is conducted by the party committees. In a presidential campaign, for example, there is a special national executive committee whose chairman, for months, directs the campaign, and whose members assume the task of persuading or convincing voters. Money must be obtained to pay the expenses of printing campaign literature and to secure the services of speakers, while personal efforts must be used to obtain the support of doubtful voters, and to bring all of the party's supporters to the polls. In a city election, the general conduct of the campaign, including the raising and distributing of funds, belongs to the city committee; and the ward committees under its charge, organize clubs, hold meetings and perform active duties on election day.

Caucus. A political caucus is a meeting of members of a political party to determine what stand the party will take toward local, state or national problems. A caucus may be a meeting of national leaders to determine what person is the most promising individual for President, or a meeting of ward politicians in any city to determine the party policy on any petty issue.

Citizenship. Often the terms "citizen" and "voter" are confused. A voter is a person who is allowed by law to take part in the government. A citizen is a member of the nation. A citizen of the United States is a member of the large society which we call the United States of America.

In the United States, citizenship is defined in the Fourteenth Amendment to the Constitution as: "All persons born or naturalized in the United States and subject to the jurisdiction thereof, are citizens of the United States and of the state wherein they reside."

Civil Law. In civil cases the individual who has been offended brings action before the court. The state has no concern in such cases except to see that justice is done. The subjects upon which suits may be brought are innumerable. Perhaps the most important branch of the law has to do with property, the holding of land and the transfer of title by sale, inheritance or will. Other important considerations are the collection of debt, the rights of public utilities and the right of corporations.

Closure Rule. A usage in parliamentary bodies to close debate upon a bill or proposition. First, a motion is made that the question be acted upon. In the event that this motion is carried, the matter under discussion is at once put to vote, without further debate. This term had its origin in the French Parliament.

Coalition. An alliance of persons, parties or states for offensive or defensive purposes.

During the World War there were not only coalitions of governments but also of parties in many of the governments, in order to present a united front for the prosecution of the war.

Collectivism. An economic and social theory based on the idea that a "productive capital" should belong to the community, and the share of each individual should be determined by the worth or social utility of his contribution to the social income. For practical purposes this theory is synonymous with the term socialism.

Commission Government. A large number of cities in the United States, chiefly of medium size, have sought to remedy the defects in municipal government by a radical change in municipal organization. In place of a council with a mayor, these cities select a body of commissioners, usually five in number, who become the governing body of the city. The commissioners are elected at large and afterwards assigned to different departments of the city's administration. The commission is both a legislative and an administrative body.

Common Law. Crimes are usually defined by statute; however, when no distinct statutes have been passed, offences in most states may be punished under common law—that is the nature of the offence and penalty are to be ascertained from the practice of the courts in England and America. In this way, law is built up and developed by judicial precedents.

Communism. A system of economic and social organization in which all property is owned by the state or group, and is to be shared in common or to be distributed among the members of the community equally, or in proportion to their needs. Communism practically abolishes the theory of private property. It goes much further than either collectivism or socialism, which aim to bring only productive capital, such as land, factories, mines, railways and public utilities, under public ownership.

Conservation. A policy of governmental regulation of the use and development of the natural resources of the country, so as to prevent waste, exhaustion and destruction by private ownership. Conservation sometimes goes further, and attempts to provide a systematic development of those resources in the interest of the general public. An example of this is the interest of the state and federal governments in the problem of conservation and regrowth of our forests.

Conservative. A conservative is one who is satisfied with present day conditions. He wishes to conserve the present and has a fear of change, for he has a feeling that any change is apt to bring disaster to our social and political structure.

Consul. A representative of a government in a foreign country, who is primarily a commercial agent and performs a large number of routine duties; but his first and foremost duty is that of a commercial representative.

Contraband. An article that is sent from a neutral to a belligerent country in time of war for military or naval use. Under international law, such merchandise may be seized and confiscated if taken upon the high seas or within the territory of the enemy. Usually, confiscation follows the judgment of a prize court where the neutral owner may have the right to appear and defend his title. The World War so completely engaged the entire resources of the world that it would now be very difficult to say what is not contraband in time of war.

Criminal Law. Each state determines just what is crime and in a criminal case, the state is always the prosecutor. Cases may be suggested by the injured person or his friends, but must be tried by a public prosecutor. The usual penalty for crime is a fine or imprisonment, or both; and in most states death is the penalty for the most serious crimes.

De Facto Government. A government that has actual control of the government in a territory, regardless of its legal authority. A *de facto* government differs from a *de jure* government in that the latter is based on legal right and recognition by international argument.

Direct Legislation. See Referendum.

Diplomatic Representation. The President of the United States is our official spokesman in dealing with other nations, but the actual conduct of foreign affairs is vested in the Secretary of State. The Department of State of which the Secretary of State is the head, was organized by Congress in 1789.

The diplomatic group is divided into four classes: (1) ambassadors extraordinary and plenipotentiary, (2) envoys extraordinary and ministers plenipotentiary and special commissioners, (3) ministers resident and (4) charges d'affaires.

A diplomatic representative enjoys, under the rule of international law, several special privileges and immunities. Any injury or affront to him is an offence against the country which he represents, and against international comity. The house in which he resides is under the particular protection of the law: it may not be entered or disturbed by any one against his will. A minister is entitled to special protection while traveling on land or sea. He and his official family, including even his domestic servants, are exempt from arrest—in short, from all criminal and civil processes at all times.

The duty of a minister is not confined to the transmission of instructions from his government. He should, also, cultivate friendly personal relations with the officers of the government to which he is accredited, so that on proper occasions he may have easy access to them and, having thus gained their confidence in advance, may converse freely with them. It is, therefore, necessary for the ambassador to adapt himself to the life of the official class of the country in which he is stationed. When issues arise between his country and the foreign government, he must endeavor to adjust matters as informally and genially as possible without resorting to any official representations or discussions. The success of a diplomat depends upon the tranquillity which he is able to maintain in the relations of his government with the foreign country.

Downing Street. A street in London on which are situated the Prime Minister's official residence and the residences of many government officials, including the Colonial Office.

Economic Interpretation of History. The theory of the economic interpretation of history rests upon the concept that social progress in general is the result of contending economic interests in society—some favorable, others opposed to change.

Electors, Presidential. The Constitution contains very few clauses with regard to the actual choice of the President. In the first place, it contemplates a system of indirect election; each state shall appoint, in such manner as the legislature thereof may direct, a number of electors equal to the number of Senators and Representatives to which the commonwealth is entitled in Congress. To remove electors from any direct contact with the federal government, it was added that no Senator or Representative or a person holding any office of trust under the United States should be appointed an elector.

The electors chosen by each state at first cast their votes for two persons. Since the adoption of the Twelfth Amendment in 1804, each elector is required to designate his choice for President and Vice President. The vote is sent to the president of the Senate, who, in the presence of both houses of Congress, opens the certificates and counts the ballots from all states.

The choice of the President and Vice President by electors has become a mere form. Since 1800, the electors have exercised no individual judgment, but have followed the dictates of the parties to which they belonged.

Embargo. An order of a country prohibiting vessels or merchandise from leaving its ports. An embargo has as its object that of damaging another country by depriving it of its usual commerce. An embargo may be directed merely against the citizens of the country that has placed it; or it may be directed against some particular foreign power or group of powers, or it may be applied to all nations.

Eminent Domain. The state enjoys and often makes use of the right of eminent domain, by which private real estate may be appropriated for public purposes on payment of a reasonable sum. If an owner of real estate will not accept a price which the government considers reasonable the state submits the matter to a court and lets the court decide what is a suitable price. The right of eminent domain belongs to the states and also to the federal government for federal purposes. The states also allow the local governments to exercise this power for their needs.

Ex Post Facto Law. For many centuries in England and continental Europe, people were punished for acts which were not forbidden by law when the act was committed. This caused much injustice. To prevent this in the United States a clause in the Constitution states that no ex post facto law can be passed either by Congress or the state legislatures.

Extradition. The extradition of criminals, long an international practice based on treaty stipulations between independent countries, was carried over into the federal Constitution by this provision; that any person charged with crime, fleeing from justice and found in another state, shall be delivered upon demand of the executive authority of the state from which he fled, to be removed for trial in the state having jurisdiction of the crime. Chief Justice Taney ruled that the governor of a state is under a moral obligation to surrender criminals, but he may use his discretion in the matter.

Fabianism. A method of bringing about social revolution through the education of public opinion. The Fabian Society was founded in London in 1883 by Sidney and Beatrice Webb, E. R. Pease and other sociologists who have since become famous. George Bernard Shaw joined this society during the first year of its existence. Its aim is "the reconstruction of society in accordance with the highest moral possibilities."

Fascism. Originally an expression of the post-war

restlessness of the demobilized Italian shock-troops This expression of dissatisfaction was directed into organized channels by leaders (of the Fascist party) imbued with doctrines of direct action and violence and inspired by a negative patriotism. Their aim was to nationalize aliens, to destroy Socialism, to curtail the secular influence of the Church and to uproot Pacifism. They hoped, by making use of the discontented middle class element, to create a strong and efficient Italy. In the agrarian districts, this party adopted a program of land subdivisions, and built up its labor organizations on a patriotic appeal for coöperation between capital and labor. It proposes to make Italy supreme in the Mediterranean. The "Black Shirts" began their organized military march on Rome on October 28, 1922. Two days later, Benito Mussolini, leader of the Fascists, was made Premier of Italy, and soon thereafter he was invested with dictatorial powers.

Federal Courts. The Constitution of the United States makes only slight provision for the structure of the federal courts. It merely states that the judicial power of the federal government shall be vested in one Supreme Court and in such inferior courts as Congress may from time to time ordain and establish.

All federal judges are nominated by the President and appointed by and with the advice and consent of the Senate. All federal judges hold office during good behavior and, therefore, cannot be removed except by impeachment.

Congress has set up the following courts:

(1) The Supreme Court is composed of nine judges—a Chief Justice and eight Associate Justices. Six judges must be present at each trial and a majority is necessary for a decision. The salary of the Chief Justice is $20,500 yearly and of the associate justices $20,000. The most important business of this court is questions of Constitutional law brought up from lower federal courts or from state courts.

(2) Immediately under the Supreme Court is a Circuit Court of Appeals in each of the nine circuits into which the United States is divided. In the circuits which have a large amount of business, there are four judges, in the smaller circuits two and in the remainder three. Each of the Justices of the Supreme Court is allotted to one of the nine circuits.

This Court has the right to review the decisions in the lower District courts and its decision is final in practically all cases, in which no question of Constitutional law is involved. However, the Circuit Court may ask the Supreme Court for instructions on any point of law.

(3) The lowest federal tribunal is the District Court. The whole country is divided into some eighty or ninety districts and in each there are one, two, three or four judges, according to the business to be transacted. The jurisdiction of this court is over all questions of federal law, which cannot originate in the Circuit Court of Appeals or in the Supreme Court.

In close relation to the judiciary are the Department of Justice and the United States Attorneys and Marshals. The head of the Department of Justice is the Attorney-General of the United States.

Filibuster. A parliamentary practice used to prolong debate and to prevent a vote. The device of making time-consuming speeches is the usual method followed in filibustering.

Franking Privilege. A privilege given to members of Congress and other branches of the federal government, of sending official mail free of postage charge. A penalty is attached to the use of this right in the private mail of those authorized to use it officially.

Gerrymander. In order that the majority party may secure as many members in Congress as possible, resort has been made to a method of creating Congressional districts called "gerrymandering." This is done by massing the voters of the opposing party in a small number of districts, giving them overwhelming majorities there, while allowing the dominant party to carry the other districts by very small minorities. The same process is often followed in state and municipal politics.

Habeas Corpus. Any person who thinks that he or another person is unjustly imprisoned may represent the facts to a court, which may then issue a writ of habeas corpus, directing whoever may have in custody the person described in the writ to produce such person in open court (unless charged with treason or felony) and state the reason for his detention.

Under our system whenever there is a conflict between the state and federal authorities the matter is settled by the United States Supreme Court.

Habeas corpus may be suspended in case of civil war or of foreign war; it was suspended during the Civil War and more than thirty thousand people were arrested on the responsibility of President Lincoln. Many authorities are of the opinion that the writ can be legally suspended only by an Act of Congress.

Immigration. The immigration law of May 15, 1924, limits the quota of aliens admissible from each country to two per cent of the persons born in that country who resided here in 1890. This ratio was set up to increase the proportion of Nordics. Japanese, Chinese and other yellow races are entirely excluded, while blacks are admitted in small numbers. In the year ending June 30, 1924, 10,114 persons were turned back after arriving at Ellis Island. Under the new law, the Department of Labor issues only enough certificates to cover the quota. During the six months ending December 31, 1924, 4,448 were turned back after arrival. For the fiscal year ending June 30, 1929, 18,127 were debarred.

Organized labor opposes unrestricted immigration. Capitalists desire cheap foreign labor, but fear an influx of Bolshevists. Radicals believe the world should be free for all to move about in as they see fit.

Impeachment. A special method of determining the guilt or the innocence of public officers charged with crime is impeachment. The process is distinctly set forth in the federal Constitution. Under it the House of Representatives "impeaches," that is, by a majority vote it presents articles of accusation. The Senate then tries the officer accused by the House.

Impeachment is the process of bringing an official to trial for removal from office and may either succeed or fail at removal. Thus President Andrew Johnson was impeached, but not convicted. This process is employed in the state governments as well as in the national government.

Income Tax. Because of the difficulties of assessing direct taxes and apportioning them among the states, the Constitutional limitation became almost a prohibition. However, in 1913, after a long agitation over the matter, the Sixteenth Amendment to the Constitution was adopted, authorizing Congress to lay taxes upon private incomes from all sources without reference to any census or enumeration. After the Underwood Tariff Act was passed in 1913, which materially reduced the federal income, Congress levied a tax on incomes to replenish the national treasury.

Industrialism. A general designation for the present stage of industry in this country where large scale enterprise is conducted for profit; where populations crowd into large cities, and where material, rather than aesthetic and spiritual values, have first place in social life.

Initiative. The initiative is a system by which a given number of voters may on petition require the legislature to pass a statute of a designated kind and submit it to popular vote, or may actually draw up a bill in detail and demand a vote upon it.

Injunction. The writ or bill of injunction is an order of court giving orders concerning a matter, and the violation of the order is regarded as contempt of court. Sometimes the injunction takes the form of an order to persons or a corporation to perform certain acts; sometimes the injunction takes the form of a temporary restraining order forbidding a party to alter the existing condition of things in question until the merits of the case may be decided; again it is in the form of a permanent order directing a party not to perform some act, the results of which can not be remedied by any proceeding in law.

Organized labor is opposed to the use of injunctions, because this legal process has been employed so often in labor disputes.

Internationalism. The body of principles which regards the interests of all nations as superior to the interests of any one national group. It differs from cosmopolitanism in that it is compatible with patriotism and with a broad nationalism, seeking not to obliterate distinctions of culture, but to render them supplementary to one another.

I. W. W. The I. W. W., or Industrial Workers of the World, is a radical organization of international scope, which has for its object the improvement of the social and economic conditions of labor. This organization adheres to the principle that the end justifies the means. When occasion demands, intimidation, force or even violence may be employed to accomplish an end that the organization has in view. The method of operation of this organization stands out in contrast to those organizations which favor social and political reform through the orderly process of education.

Juries. A grand jury is composed of a number of citizens ranging from twelve to twenty-three. It holds its sessions either for the purpose of investigating the causes of crimes which have been committed, bringing indictments against those whom jury believes guilty, or in order to investigate the conditions of some department of the government.

A petit jury is usually composed of twelve citizens before whom evidence is submitted in a trial and who render a decision, or verdict, on the basis of the evidence presented. The decision or verdict must be unanimous.

Juvenile Courts. In many of our large cities special courts called Juvenile Courts have been set up for hearing of cases brought against minors. In a Juvenile Court, the child is not treated as a criminal.

The child, with his accuser and sponsors, meet the judge in a rather informal way. The judge has a heart-to-heart talk with the offender, if the judge thinks the child is guilty. If found guilty, the youthful offender is placed upon probation and an effort is made to care for him in such a way that he will develop into a useful citizen.

Lobbying. By the lobby is meant those men, and sometimes women, who make it their business to argue with legislators and to solicit their votes. Some of these lobbyists are paid attorneys of corporations; many of them are former members of Congress, who understand the inner workings of the body. The same influence is often exerted in state and municipal legislative bodies.

Lockout. An employer's strike or temporary closing down of industry in an effort to force the workers to come to terms.

National Banking System of the United States. In addition to gold and silver coins, we have in use several kinds of paper money. Some of these, the gold and silver certificates, are paper substitutes for gold and silver, which is too heavy and bulky for ordinary use. During 1929 the size of the paper certificates was reduced. Another form of paper money which is being retired as rapidly as possible, consists of United States notes, or greenbacks, which were originally issued during the Civil War.

Much of our paper money at present consists of bank notes issued by banks which have been chartered by the national government. Our present national banking system was established in 1863 for the purpose of creating a market for bonds of the United States in order to secure additional funds to finance the Civil War. National banks are permitted to issue notes on the United States bonds which they have bought and deposited with the Treasurer of the United States. Since these notes are secured by government bonds, which are of unquestioned value, they have excellent stability. However, they lack elasticity, for there is a limit to the volume of bonds which the banks have bought and may buy. In order to provide elasticity, which is necessary, as when much currency is required to move the crops in the autumn, the Federal Reserve Act was passed in 1913. Under this act all notes issued by individual banks will be gradually retired and by 1935 they will no longer be in circulation.

The Federal Reserve Act provides for a single Federal Reserve Board, consisting of the Secretary of the Treasury, the Controller of the Currency and five other members appointed by the President and Senate for a term of ten years each. This board has supervision of the Federal Reserve Banks and the administration of the Federal Reserve Act.

The United States is now divided into twelve districts, as shown on the map in our Atlas. In each of these divisions there is a Federal Reserve Bank, which may issue notes in large quantities, but these notes are safeguarded against depreciation by good security. These banks do not do business with the public, but with banks which are members of the Federal Reserve System.

In 1916 a law was passed creating twelve Land Loan Banks, which were placed under a single Federal Board. These banks loan money to associations of farmers at comparatively low rates of interest, to be repaid in installments over a long period of time.

National Nominating Conventions. Political parties and all of the machinery of the parties are extra-legal political institutions. By that we mean that they are not created by any national or state law. They are not recognized as such by law.

The national conventions of the different parties meet in some conveniently located city of importance, usually in June or July. The day and place are decided by the national committee, which consists of one member from each state, elected by the delegates from that state to the national convention, which nominates the candidates for President and Vice President. In fact, the national committee really manages the convention, because if any state sends two sets of delegates to the same party convention, it decides in advance which delegates are entitled to seats in the convention. In doing this it usually favors its friends.

After the convention has adopted a platform setting forth the principles of the party the roll of the states is called in alphabetical order and nominations are then made. Even when there is no doubt about which Presidential candidate will be selected, the names of favorite sons from different states are often placed in nomination out of respect for them. Usually from five to ten names are placed, each of which is nominated in a laudatory speech. After the nominations have been closed the roll of the states is again called and the chairman of each delegation announces its vote. After the candidate for President has been selected, the convention proceeds to choose a nominee for Vice President.

The Republican convention requires only a majority vote of the delegates to elect, while the Democratic requires two-thirds. If no nominee receives the requisite majority on the first ballot the process is repeated until some one secures the proper number of votes.

Naturalization. Naturalization is the acquirement of citizenship. In the United States an alien can become an American citizen in five years. At any time he may declare his intention of becoming a citizen. He must do this before a federal court. Not less than two years later, nor more than seven years later, if he has resided in this country at least five years altogether, he must go before a federal court or a state court of record, forswear his allegiance to the country of which he was formerly a citizen and prove to the satisfaction of the court that he is of good moral character, not an anarchist and will obey the Constitution. His naturalization includes also his minor children. Since 1922 a wife may be naturalized on her own account by fulfilling the usual requirements, provided her husband is eligible to become naturalized.

Nihilism. The name applied to a small group of extreme anarchists and revolutionists in Russia during the Czarist regime. They believed in the complete overthrow of all forms of the existing order and, at times, preached the need for the assassination of high officials in the Russian government as one of the means of attaining these ends.

Non-Resistance. The literal fulfillment of the precept, "Resist not evil, but overcome evil with good." The non-resistance theory opposes all war, and sometimes also the strike and the boycott.

Open Shop. A shop where either union or non-union workers are employed—often together and on the same terms.

Orangemen. The name given about the end of the seventeenth century by Roman Catholics to Protestants in Ireland, on account of their support of William III, Prince of Orange.

Pacifism. An attitude of extreme opposition to war. Some pacifists, like Tolstoy, teach the doctrine of complete non-resistance; others admit the justice of defense, but oppose all forms of preparation for national defense.

Pan-Americanism. The doctrine that the nations of the American hemisphere have common interests and institutions not generally shared by the people of the rest of the world, and that these should be the bases of a common understanding and of common political and commercial actions among American governments.

Party Whip. A member of a legislative body assigned by the party to secure the votes of legislators on important measures and to hold them in line with party policy.

Peonage. A system of compulsory labor enforced by means of keeping the worker in a state of indebtedness to the master. It is practiced extensively in Latin America.

Picketing. The patrolling of the avenues of approach to a shop where a strike is in progress, for the purposes of inducing workers to refuse to work for an "unfair" employer. Picketing is legal in most states of the union, if persuasion only is involved. Time and again, however, courts have held that picketing which involves even a possibility of coercion is illegal and can be enjoined.

Pigeonholing. The laying aside of a bill or other matter by a legislative committee, apparently for future consideration, but in reality with the intent of allowing the measure to die through failure to act upon it. Similar action is often taken by an executive, because it is equivalent to a veto.

Plurality. A plurality is the number of votes secured by a successful candidate in excess of the number cast for the next highest candidate for office. The election laws may be so formed that a plurality vote may elect. If there are more than two candidates, it may happen that a candidate is elected even though he fails to obtain a majority of the total number of votes cast.

Political "Boss." The "boss" in politics is a man who concerns himself very little with policies and very much with the bringing together of a majority which will enable him to keep his friends in office. He has no concern for the service which the government should render to the public. He is interested in government in order to get therefrom all that he can for himself and his friends.

Political Parties. The political forces by which our government is operated are the political parties. In all forms of popular government, wherever men are striving to govern themselves and to realize government by the people, political parties exist. People divide according to their views on public measures. Our parties of today have for their avowed purpose the solving of our national and state problems by putting into operation the principles for which the party stands, which are maintained to be fundamental for the nation's peace and prosperity. The state and national platforms of each party formulate the principles each party holds relative to the political problems of the country.

Presidential Succession. Upon the death of the President of the United States he is succeeded by the Vice President and the Vice Presidency remains vacant until the next Presidential election. In case of death or disability of the Vice President the Presidency is filled by a member of the Cabinet in the following order: Secretary of State, Treasury, War, Attorney-General, Postmaster-General, Secretary of the Navy, Interior, Agriculture, Commerce and Labor.

Primaries. At the present time practically all states of the United States provide that nominations for elective officers shall be made, not by conventions of party delegates nor by a caucus of political leaders, but by the voters in direct elections.

A few weeks before an election, on a day set by law, an election is held similar to a regular election. Instead of having a single ballot for all parties, each party has a separate ballot, and, in some states, separate dates for the primary election. Only those voters are allowed to take part in this election who have affiliated themselves openly with some party. The object of the direct primary is to place more responsibility in selecting public officials in the hands of the voters and less power in the hands of politicians.

Progressive. A progressive is an individual who believes that the proper solution of political and social problems is to be found by progressively improving present conditions.

Radical. A radical is one who believes that political development should be made by extreme departure from the present political and social notions. The radical contends that our present political ideals and institutions are the product of an unscientific past and that there should be a complete readjustment in harmony with the latest discoveries of political and social science.

Reciprocity. A reciprocal agreement between two nations especially for mutual tariff concessions.

Referendum. The referendum is the process whereby laws may be enacted or unpopular laws done away with by the direct vote of the people. If a state law has been proposed by iniatiative and the legislature has neglected to act upon it a referendum vote on it may be taken at the next election. On the other hand, if the legislature has passed a law which is disapproved by many people they can, on petition, temporarily suspend the law and compel the state to submit it to popular vote. The State of Oregon has made the most use of the referendum.

Rider. A measure, doubtful of passage or of executive approval, attached to a bill which is sure of passage or approval, such as an appropriation bill, in order that the doubtful measure may "ride in" with the main bill. This procedure is often effective in the federal government because the United States cannot veto a part of a bill without invalidating all of it. However, in many states, the governor now has the authority to veto a part of a bill and approve the remainder.

Sabotage. A term applied to the conscious effort of the worker, while remaining at work, to injure the interest of his employer. Workers have sabotaged the employer (1) by loafing while employed, (2) by insisting on carrying out to the letter company or government regulations, (3) by producing an inferior quality of goods, (4) by misdirecting packages, (5) by annoying customers and (6) by stopping or injuring machinery. The object of sabotage is so to injure the business of the employer as to cause him to grant certain concessions to the workers.

Scab. A term used by American trade-unionists to designate one who has been disloyal to the union. Usually the term is applied to one who takes the place of a worker out on strike.

Scratching. A method of voting whereby the voter instead of voting a straight ticket marks out from the party ballot one or more of the regularly nominated candidates.

Short Ballot. Since it is practically impossible for even the most intelligent voter to inform himself on the merits of so many candidates as we now have for public offices, there has been in recent years a strong tendency to simplify the ballot. The short ballot advocates believe that public officials whose duties are entirely administrative should be appointed by some responsible person who can judge the fitness of the applicants for that work better than it can be determined by the average voter. Of course, the public under this system retains indirect control of these administrative officials inasmuch as it elects the persons who appoint them.

Single Tax. It is a well known fact that the value of ground in our large cities increases with astonishing rapidity, not through the effort of the owners, but through the growth of industry and population. In view of this fact Henry George advocated the idea that a single tax on the unearned increase on land values would be the most equitable form of taxation and would solve many of the economic problems of today. Some authorities on taxation today advocate a single tax on incomes.

Smuggling. The illegal importing of goods into a country without submitting them to the customs authorities and paying the duties imposed by law.

Socialism. Socialism is the political doctrine that advocates the further extension of the authority of the State, until the State owns all means of production and reshapes human society upon new and better lines for the well being of all the people.

Socialization. As generally interpreted, socialization means the transfer of industry from private to social ownership. Social ownership might take the form either of ownership by the nation, the state, the municipality, or by voluntary coöperative groups. The word as used in America generally includes in its meaning a plan for democracy of administration. It is also used rather vaguely by certain economists to describe a general trend toward a more social point of view in industry, or a wider participation of the worker in the ownership of stock in corporations.

Soviet. A soviet or council, is a political body made up of delegates from trades, factories, industrial and professional groups. The Russian Soviet provides a means for direct proportional representation on the basis of occupation rather than residence.

Spoils System and Civil Service Reform. From the time of President Jackson to President Arthur the whole Civil Service was demoralized every four years by wholesale political removals, and even more recently the federal service has been weakened by unnecessary removals from office. However, since 1871, the President has been authorized to prescribe regulations for the admission of persons into the Civil Service and to ascertain the fitness of each candidate. Under the new system an employee can not be removed except for cause.

The several states in varying degrees have followed the example set by the national government.

State Courts. The state courts are the great tribunals of the citizen for the protection of his personal and property rights.

At the bottom of the state judiciary, stand the justices of the peace, who have jurisdiction over civil cases involving very small amounts and petty offences. In large cities, the police courts handle petty criminal matters and the municipal civil courts take care of minor civil actions.

In most states there are county courts. They have jurisdiction over actions involving considerable sums and usually are appellate courts from the justices of the peace. They usually have jurisdiction over most criminal matters of a serious nature.

Often there is a superior, circuit or district court immediately above the county court, which has unlimited original jurisdiction and may try all cases over which the lower courts have no jurisdiction.

At the head of the judiciary of each state, stands the appellate court of last resort, which ordinarily deals only with appeals on points of law and not of fact. Various names are applied to this court in different states, such as supreme court, court of appeals, court of errors and appeals or supreme judicial court.

Statute of Limitations. A law which states a definite limit of time within which a legal right or remedy must be prosecuted in the courts, or be barred for any action in the future. This principle of law is intended to protect the individual against state demands when, from lapse of time, death of witnesses, failure of memory or other causes, the true facts of a case may be obscured.

Steam Roller. A term used to describe the manner in which the faction in control of a political convention or legislative body may force through a program previously determined upon.

Steering Committee. The Speaker of the House of Representatives and two members, one of whom is usually the chairman of the Ways and Means Committee, assume the same kind of leadership that in England is taken by the ministry. Since they can answer only for the lower House, the complete working out of the system requires what is called the "Steering Committee" an unofficial conclave of members of the Senate and the House. As guides to the majority, the Steering Committee practically decide what measure to press to a vote and what measures to drop; from this it has been a short step for it also to decide what kind of party measures shall be introduced and what shall be their text.

Strike. A concentrated withdrawal from work on the part of the workers for the purpose of securing certain specified ends, such as better wages, shorter hours, union recognition, greater control of shop conditions or of aiding other workers. Strikes for the improvement of conditions of the workers involved are legal. Sympathetic strikes and strikes for closed shops, under certain conditions, have been generally regarded as illegal.

Suffrage. Under our constitutional system, the regulation of the suffrage is left to the states. The federal Constitution avoided the creation of a uniform national suffrage by requiring that voters for Presidential electors and representatives should be the same as those for the most numerous branch of the state legislatures. Under this arrangement every enlargement of the state suffrage was a corresponding extension of national suffrage in that state. Of course, the Nineteenth Amendment to the Constitution grants suffrage to women in every state.

In the states there are three practically universal requirements for voters. The first is residence, which provides that a person must be a bona fide resident of the precinct, county and state in which he wishes to cast his vote. The second is an age requirement of twenty-one years. The third requirement is that of citizenship.

All classes on which the right to vote is not directly conferred are debarred from voting. In addition, persons who are insane or incompetent or convicted of crime are denied the right of voting. Some states require all voters to be able to read and write. A few Southern states have adopted "grandfather clauses," to exclude negroes from voting. These states provide that any person who failed to meet the requirements for voting—ability to read or possession of property—should not be excluded, if he or one of his ancestors had voted before 1867.

Sweat Shop. A place where work is conducted under subnormal working conditions, where wages are usually inadequate, working conditions unsanitary, hours long and so forth. Rooms in tenement houses are often utilized as sweat shops.

Tariff. Alexander Hamilton, as first Secretary of the Treasury of the United States, secured the passage of a tariff for the protection of American industries and brought money into the empty federal treasury. The farming and planting South, except a few of the large towns, presented an almost solid front against the tariff. Here we have the beginning of the tariff controversy, which has lasted to our day. On the one hand, we find the industrial sections favoring a high protective tariff; on the other, the agrarians and producers of raw material are in favor of a low tariff. The Republican party at present champions a high protective tariff, while the Democratic party advocates a tariff primarily for revenue, with slight protection to American business interests.

The Trust. The popular conception of a trust is a large business organization that has control of some important industry. Legally and historically this is not true.

In 1892, a group of oil interests founded an organization, placing all their stocks in the hands of trustees, among whom was John D. Rockefeller. The trustees, in turn, issued certificates representing the share to which each participant was entitled and took over the management of the entire business. This was the origin of the "trust."

Legally there is no such thing as a "trust" at the present time, for the Supreme Court has declared that a combination that creates monopoly, unless it is under control of the government, is illegal.

Ultimatum. The final step in the negotiations between two Powers setting forth the minimum terms one Power is prepared to accept, the rejection of which may involve an immediate rupture of diplomatic relations and may lead to a declaration of war.



Courtesy Pennsylvania Railroad

Independence Hall, Philadelphia

DECLARATION OF INDEPENDENCE

IN CONGRESS, JULY 4, 1776

THE UNANIMOUS DECLARATION OF THE THIRTEEN UNITED STATES OF AMERICA

(*Literal Print*)

When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth, the separate and equal station to which the Laws of Nature and of Nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation.

We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.

That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed.

That whenever any Form of Government becomes destructive of these ends, it is the Right of the People to alter or to abolish it, and to institute new Government, laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect their Safety and Happiness. Prudence, indeed, will dictate that Governments long established should not be changed for light and transient causes; and accordingly all experience hath shewn, that mankind are more disposed to suffer, while evils are sufferable, than to right themselves by abolishing the forms to which they are accustomed. But when a long train of abuses and usurpations, pursuing invariably the same Object evinces a design to reduce them under absolute Despotism, it is their right, it is their duty, to throw off such Government, and to provide new Guards for their future security.

Such has been the patient sufferance of these Colonies; and such is now the necessity which constrains them to alter their former Systems of Government. The history of the present King of Great Britain is a history of repeated injuries and usurpations, all having in direct object the establishment of an absolute Tyranny over these States. To prove this, let Facts be submitted to a candid world.

He has refused his Assent to Laws, the most wholesome and necessary for the public good.

He has forbidden his Governors to pass Laws of immediate and pressing importance, unless suspended in their operation till his Assent should be obtained; and when so suspended, he has utterly neglected to attend to them.

He has refused to pass other Laws for the accommodation of large districts of people, unless those people would relinquish the right of Representation in the Legislature, a right inestimable to them and formidable to tyrants only.

He has called together legislative bodies at places unusual, uncomfortable, and distant from the depository of their public Records, for the sole purpose of fatiguing them into compliance with his measures.

He has dissolved Representative Houses repeatedly, for opposing with manly firmness his invasions on the rights of the people.

He has refused for a long time, after such dissolutions, to cause others to be elected; whereby the Legislative powers, incapable of Annihilation, have returned to the People at large for their exercise; the State remaining in the mean time exposed to all the dangers of invasion from without, and convulsions within.

He has endeavoured to prevent the population of these States; for that purpose obstructing the Laws for Naturalization of Foreigners; refusing to pass others to encourage their migration hither, and raising the conditions of new Appropriations of Lands.

He has obstructed the Administration of Justice, by refusing his Assent to Laws for establishing Judiciary powers.

He has made Judges dependent on his Will alone, for the tenure of their offices, and the amount and payment of their salaries.

He has erected a multitude of New Offices, and sent hither swarms of Officers to harass our people, and eat out their substance.

He has kept among us, in times of peace, Standing Armies without the Consent of our legislatures.

He has affected to render the Military independent of and superior to the Civil power.

He has combined with others to subject us to a jurisdiction foreign to our constitution, and unacknowledged by our laws; giving his Assent to their Acts of pretended Legislation:

For quartering large bodies of armed troops among us.

For protecting them, by a mock Trial, from punishment for any Murders which they should commit on the Inhabitants of these States:

For cutting off our Trade with all parts of the world:

For imposing Taxes on us without our consent:

For depriving us in many cases, of the benefits of Trial by jury:

For transporting us beyond Seas to be tried for pretended offences:

For abolishing the free System of English Laws in a neighboring Province, establishing therein an Arbitrary government, and enlarging its Boundaries so as to render it at once an example and fit instrument for introducing the same absolute rule into these Colonies:

For taking away our Charters, abolishing our most valuable Laws, and altering fundamentally the Forms of our Governments:

For suspending our own Legislatures, and declaring themselves invested with power to legislate for us in all cases whatsoever.

He has abdicated Government here, by declaring us out of his Protection and waging War against us.

He has plundered our seas, ravaged our Coasts, burnt our towns, and destroyed the lives of our people.

He is at this time transporting large Armies of foreign Mercenaries to compleat the works of death, desolation and tyranny, already begun with circumstances of Cruelty & perfidy scarcely paralleled in the most barbarous ages, and totally unworthy the Head of a civilized nation.

He has constrained our fellow Citizens taken Captive on the high Seas to bear Arms against their Country, to become the executioneers of their friends and Brethren, or to fall themselves by their Hands.

He has excited domestic insurrections amongst us, and has endeavoured to bring on the inhabitants of our frontiers, the merciless Indian Savages, whose known rule of warfare, is an undistinguished destruction of all ages, sexes and conditions. In every stage of these Oppressions We Have Petitioned for Redress in the most humble terms: Our repeated Petitions have been answered only by repeated injury. A Prince, whose character is thus marked by every act which may define a Tyrant, is unfit to be the ruler of a free people. Nor have We been wanting in attentions to our British brethren. We have warned them from time to time of attempts by their legislature to extend an unwarrantable jurisdiction over us. We have reminded them of the circumstances of our emigration and settlement here. We have appealed to their native justice and magnanimity, and we have conjured them by the ties of our common kindred to disavow these usurpations, which, would inevitably interrupt our connections and correspondence. They too have been deaf to the voice of justice and of consanguinity. We must, therefore, acquiesce in the necessity, which denounces our Separation, and hold them, as we hold the rest of mankind, Enemies in War, in Peace Friends.

We, therefore, the Representatives of the United States of America, in General Congress, Assembled, appealing to the Supreme Judge of the world for the rectitude of our intentions, do, in the Name, and by authority of the good People of these Colonies, solemnly publish and declare, That these United Colonies are, and of Right ought to be Free and Independent States; that they are Absolved from all Allegiance to the British Crown, and that all political connection between them and the State of Great Britain, is and ought to be totally dissolved; and that as Free and Independent States, they have full Power to levy War, conclude Peace, contract Alliances, establish Commerce, and to do all other Acts and Things which Independent States may of right do.

And for the support of this Declaration, with a firm reliance on the protection of Divine Providence, we mutually pledge to each other our Lives, our Fortunes and our sacred Honor.

NOTE: The signers, with important data about them, are given in the following table:

SIGNERS OF THE DECLARATION OF INDEPENDENCE

Name	Order*	Colony	Occupation	Born	Birthplace	Died	Age†
Adams, John	6	Massachusetts Bay	Lawyer	Oct. 30, 1735	Quincy, Mass.	July 4, 1826	90
Adams, Samuel	2	Massachusetts Bay	Merchant	Sept. 22, 1722	Boston, Mass.	Oct. 3, 1803	81
Bartlett, Josiah	9	New Hampshire	Physician	Nov., 1729	Amesbury, Mass.	May 19, 1795	67
Braxton, Carter	51	Virginia	Planter	Sept. 10, 1736	Newington, Va.	Oct. 10, 1797	62
Carroll, Charles	31	Maryland	Lawyer	Sept. 20, 1737	Annapolis, Md.	Nov. 14, 1832	96
Chase, Samuel	44	Maryland	Lawyer	April 17, 1741	Somerset Co., Md.	June 19, 1811	71
Clark, Abraham	14	New Jersey	Lawyer	Feb. 15, 1726	Elizabethtown, N. J.	Sept., 1794	69
Clymer, George	38	Pennsylvania	Merchant	Jan. 24, 1739	Philadelphia, Pa.	Jan. 23, 1813	75
Ellery, William	22	R. I. and Prov. Plan.	Lawyer	Dec. 22, 1727	Newport, R. I.	Feb. 15, 1820	93
Floyd, William	5	New York	Farmer	Dec. 17, 1734	Setauket, N. Y.	Aug. 1, 1821	87
Franklin, Benjamin	46	Pennsylvania	Printer	Jan. 17, 1706	Boston, Mass.	April 17, 1790	85
Gerry, Elbridge	8	Massachusetts Bay	Merchant	July 17, 1744	Marblehead, Mass.	Nov. 23, 1814	71
Gwinnett, Button	40	Georgia	Merchant	1732	.....England	May 27, 1777	45
Hancock, John	1	Massachusetts Bay	Merchant	Jan. 12, 1737	Braintree, Mass.	Oct. 8, 1793	57
Hall, Lyman	47	Georgia	Physician	1731	.....Conn.	1784	53
Harrison, Benjamin	54	Virginia	Farmer	1740	Berkeley, Va.	April, 1791	51
Hart, John	13	New Jersey	Farmer	1715	Hopewell, N. J.	1780	65
Hewes, Joseph	35	North Carolina	Lawyer	1730	Kingston, N. J.	Nov. 10, 1779	49
Heyward, Jr., Thos.	56	South Carolina	Lawyer	1746	St. Luke's, S. C.	March, 1809	63
Hooper, Wm.	23	North Carolina	Lawyer	June 17, 1742	Boston, Mass.	Oct. 1790	49
Hopkins, Stephen	12	R. I. and Prov. Plan.	Farmer	March 7, 1707	Scituate, Mass.	July 13, 1785	79
Hopkinson, Francis	29	New Jersey	Lawyer	1737	Philadelphia, Pa.	May 9, 1791	54
Huntington, Sam'l	11	Connecticut	Lawyer	July 3, 1732	Windham, Conn.	Jan. 5, 1796	64
Jefferson, Thos.	32	Virginia	Lawyer	April 13, 1743	Shadwell, Va.	July 4, 1826	83
Lee, Richard Henry	48	Virginia	Soldier	Jan. 20, 1732	Stratford, Va.	July 19, 1794	63
Lee, Francis Lightfoot	55	Virginia	Farmer	Oct. 14, 1734	Stratford, Va.	April, 1797	63
Lewis, Francis	7	New York	Merchant	March, 1713	Llandaff, Wales	Dec. 30, 1803	91
Livingston, Philip	3	New York	Merchant	Jan. 15, 1716	Albany, N. Y.	June 12, 1778	63
Lynch, Jr., Thos.	43	South Carolina	Lawyer	Aug. 5, 1749	Pr. George's Co., S. C.	1779	30
M'Kean, Thos.	39	Delaware	Lawyer	March 19, 1734	New London, Pa.	June 24, 1817	84
Middleton, Arthur	50	South Carolina	Lawyer	1743	Middleton Pl., S. C.	Jan. 1, 1788	44
Morris, Lewis	15	New York	Farmer	1726	Morrisania, N. Y.	Jan. 22, 1798	72
Morris, Robert	24	Pennsylvania	Merchant	Jan. 20, 1734	Lancashire, England	May 8, 1806	73
Morton, John	16	Pennsylvania	Surveyor	1724	Ridley, Pa.	April, 1777	53
Nelson, Jr., Thomas	49	Virginia	Statesman	Dec. 26, 1738	York, Va.	Jan. 4, 1789	51
Paca, William	28	Maryland	Lawyer	Oct. 31, 1740	Wye Hall, Md.	1799	59
Paine, Robert Treat	4	Massachusetts Bay	Lawyer	1731	Boston, Mass.	May 11, 1814	84
Penn, John	18	North Carolina	Lawyer	May 17, 1741	Carolina Co., Va.	Sept., 1788	48
Read, George	41	Delaware	Lawyer	1734	Cecil Co., Md.	1798	64
Rodney, Caesar	52	Delaware	General	1730	Dover, Del.	1783	53
Ross, George	37	Pennsylvania	Lawyer	1730	Newcastle, Del.	July, 1779	49
Rush, Benjamin	27	Pennsylvania	Physician	Dec. 24, 1745	Berberry, Pa.	April 19, 1813	68
Rutledge, Edward	34	South Carolina	Lawyer	Nov., 1749	Charleston, S. C.	Jan. 23, 1800	51
Sherman, Roger	19	Connecticut	Shoemaker	April 19, 1721	Newton, Mass.	July 23, 1793	73
Smith, James	36	Pennsylvania	Lawyer	1710	.....Ireland	July 11, 1806	96
Stockton, Richard	10	New Jersey	Lawyer	Oct. 1, 1730	Princeton, N. J.	Feb. 27, 1781	51
Stone, Thomas	30	Maryland	Lawyer	1742	Pointon Manor, Md.	Oct. 5, 1787	45
Taylor, Geo.	33	Pennsylvania	Physician	1716	.....Ireland	Feb. 23, 1781	65
Thornton, Matthew	17	New Hampshire	Physician	1714	.....Ireland	June 24, 1803	89
Walton, George	53	Georgia	Lawyer	1740	Frederick Co., Va.	Feb. 2, 1804	64
Whipple, William	20	New Hampshire	Sailor	1730	Kittery, Me.	Nov. 28, 1785	55
Williams, William	26	Connecticut	Statesman	April 8, 1731	Lebanon, Conn.	Aug. 2, 1811	81
Wilson, James	42	Pennsylvania	Lawyer	1742	St. Andrews, Scotland	Aug. 28, 1798	56
Witherspoon, John	21	New Jersey	Minister	Feb. 5, 1722	Yester, Scotland	Nov. 15, 1794	73
Wolcott, Oliver	25	Connecticut	Physician	Nov. 26, 1726	Windsor, Conn.	Dec. 1, 1797	72
Wythe, George	45	Virginia	Lawyer	1726	Elizabeth Co., Va.	June 8, 1806	80

*Order in which they signed. †Age at death.

ARTICLES OF CONFEDERATION

TO ALL TO WHOM THESE PRESENTS SHALL COME, WE THE UNDERSIGNED DELEGATES OF THE STATES AFFIXED TO OUR NAMES, SEND GREETING:

Whereas the delegates of the United States of America in Congress assembled did on the 15th day of November in the year of our Lord 1777, and in the second year of the independence of America agree to certain Articles of Confederation and perpetual union between the States of New Hampshire, Massachusetts Bay, Rhode Island and Providence Plantations, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina and Georgia, in the words following, viz.:

ARTICLES OF CONFEDERATION AND PERPETUAL UNION BETWEEN THE STATES OF NEW HAMPSHIRE, MASSACHUSETTS BAY, RHODE ISLAND AND PROVIDENCE PLANTATIONS, CONNECTICUT, NEW YORK, NEW JERSEY, PENNSYLVANIA, DELAWARE, MARYLAND, VIRGINIA, NORTH CAROLINA, SOUTH CAROLINA, AND GEORGIA.

ARTICLE I.

The style of this confederacy shall be "The United States of America."

ARTICLE II.

Each State retains its sovereignty, freedom and independence, and every power, jurisdiction and right, which is not by this confederation expressly delegated to the United States, in the Congress assembled.

ARTICLE III.

The said States hereby severally enter into a firm league of friendship with each other, for their common defense, the security of their liberties, and their mutual and general welfare, binding themselves to assist each other, against all force offered to, or attacks made upon the, or any of them, on account of religion, sovereignty, trade, or any other pretense whatever.

ARTICLE IV.

The better to secure and perpetuate mutual friendship and intercourse among the people of the different States in this union, the free inhabitants of each of these States, paupers, vagabonds, and fugitives from justice excepted, shall be entitled to all privileges and immunities of free citizens in the several States; and the people of each State shall have free ingress and regress to and from any other State, and shall enjoy therein all the privileges of trade and commerce, subject to the same duties, impositions and restrictions as the inhabitants thereof respectively, provided that such restriction shall not extend so far as to prevent the removal of property imported into any State, to any other State of which the owner is an inhabitant; provided also that no imposition, duties or restrictions shall be laid by any State, on the property of the United States, or either of them.

If any person guilty of, or charged with treason, felony, or other high misdemeanor in any State, shall flee from justice, and be found in any of the United States, he shall upon demand of the Governor or executive power, of the State from which he fled, be delivered up and removed to the State having jurisdiction of his offense.

Full faith and credit shall be given in each of these States to the records, acts and judicial proceedings of the courts and magistrates of every other State.

ARTICLE V.

For the more convenient management of the general interest of the United States, delegates shall be annually appointed in such manner as the legislature of each State shall direct, to meet in Congress on the first Monday in November, in every year, with a power reserved to each State, to recall its delegates, or any of them, at any time within the year, and to send others in their stead, for the remainder of the year.

No State shall be represented in Congress by less than two, nor by more than seven members; and no person shall be capable of holding any office under the United States, for which he, or another for his benefit receives any salary, fees or emolument of any kind.

Each State shall maintain its own delegates in any meeting of the States, and while they act as members of the committee of the States.

In determining questions in the United States, in Congress assembled, each State shall have one vote.

Freedom of speech and debate in Congress shall not be impeached or questioned in any court, or place out of Congress, and the members of Congress shall be protected in their persons from arrests and imprisonments, during the time of their going to and from, and attendance on Congress, except for treason, felony, or breach of the peace.

ARTICLE VI.

No State without the consent of the United States in Congress assembled, shall send any embassy to, or receive any embassy from, or enter into any conference, agreement, alliance or treaty with any king, prince or State; nor shall any person holding any office of profit or trust under the United States, or any of them, accept of any present, emolument, office or title of any kind whatever from any king, prince or foreign State; nor shall the United States in Congress assembled, grant any title of nobility.

No two or more States shall enter into any treaty, confederation or alliance whatever between them, without the consent of the United States in Congress assembled, specifying accurately the purposes for which the same is to be entered into, and how long it shall continue.

No State shall lay any imposts or duties, which may interfere with any stipulation in treaties, entered into by the United States in Congress assembled, with any king, prince or State, in pursuance of any treaties already proposed by Congress, to the courts of France and Spain.

No vessels of war shall be kept up in time of peace by any State, except such number only, as shall be deemed necessary by the United States in Congress assembled, for the defense of such State, or its trade; nor shall any body of forces be kept up by any State, in time of peace, except such number only, as in the judgment of the United States, in Congress assembled, shall be deemed requisite to garrison the forts necessary for the defense of such State; but every State shall always keep up a well regulated and disciplined militia, sufficiently armed and accoutred, and shall provide and have constantly ready for use, in public stores, a due number of field pieces and tents, and a proper quantity of arms, ammunition and camp equipage.

No State shall engage in any war without the consent of the United States in Congress assembled, unless such State be actually invaded by enemies, or shall have received certain advice of a resolution being formed by some nation of Indians to invade such State, and the danger is so imminent as not to admit of a delay, till the United States in Congress assembled can be consulted: nor shall any State grant commissions to any ships or vessels of war, nor letters of marque or reprisal, except it be after a declaration of war by the United States in Congress assembled, and then only against the kingdom or State and the subjects thereof, against which war has been so declared, and under such regulations shall be established by the United States in Congress assembled, unless such State be infested by pirates, in which case vessels of war may be fitted out for that occasion, and kept so long as the danger shall continue, or until the United States in Congress assembled shall determine otherwise.

ARTICLE VII.

When land forces are raised by any State for the common defense, all officers of or under the rank of colonel, shall be appointed by the legislature of each State respectively by whom such forces shall be raised, or in such manner as such State shall direct, and all vacancies shall be filled up by the State which first made the appointment.

ARTICLE VIII.

All charges of war, and all other expenses that shall be incurred for the common defense or general welfare, and allowed by the United States in Congress assembled, shall be defrayed out of a common treasury, which shall be supplied by the several States, in proportion to the value of all land within each State, granted to or surveyed for any person, as such land and the buildings and improvements thereon shall be estimated according to such mode as the United States in Congress assembled, shall from time to time, direct and appoint.

The taxes for paying that proportion shall be laid and levied by the authority and direction of the legislatures of the several States within the time agreed upon by the United States in Congress assembled.

ARTICLE IX.

The United States in Congress assembled, shall have the sole and exclusive right and power of determining on peace and war, except in the cases mentioned in the sixth article—of sending and receiving ambassadors

—entering into treaties and alliances, provided that no treaty of commerce shall be made whereby the legislative power or the respective States shall be restrained from imposing such imposts and duties on foreigners, as their own people are subjected to, or from prohibiting the exportation or importation of any species of goods or commodities whatsoever—of establishing rules for deciding in all cases, what captures on land or water shall be legal, and in what manner prizes taken by land or naval forces in the service of the United States shall be divided or appropriated—of granting letters of marque and reprisal in times of peace—appointing courts for the trial of piracies and felonies committed on the high seas and establishing courts for receiving and determining final appeals in all cases of capture, provided that no member of Congress shall be appointed a judge of any of the said courts.

The United States in Congress assembled shall also be the last resort on appeal in all disputes and differences now subsisting or that hereafter may arise between two or more States concerning boundary, jurisdiction or any other cause whatever; which authority shall always be exercised in the manner following. Whenever the legislative or executive authority or lawful agent of any State in controversy with another shall present a petition to Congress, stating the matter in question and praying for a hearing, notice thereof shall be given by order of Congress to the legislative or executive authority of the other State in controversy, and a day assigned for the appearance of the parties by their lawful agents, who shall then be directed to appoint by joint consent, commissioners or judges to constitute a court for hearing and determining the matter in question: but if they cannot agree, Congress shall name three persons out of each of the United States, and from the list of such persons each party shall alternately strike out one, the petitioners beginning, until the number shall be reduced to thirteen; and from that number not less than seven, nor more than nine names as Congress shall direct, shall in the presence of Congress be drawn out by lot, and the persons whose names shall be so drawn or any five of them, shall be commissioners or judges, to hear and finally determine the controversy, so always as a major part of the judges who shall hear the cause shall agree in the determination: and if either party shall neglect to attend at the day appointed, without showing reasons, which Congress shall judge sufficient, or being present shall refuse to strike, the Congress shall proceed to nominate three persons out of each State, and the secretary of Congress shall strike in behalf of such party absent or refusing; and the judgment and sentence of the court to be appointed, in the manner before prescribed, shall be final and conclusive; and if any of the parties shall refuse to submit to the authority of such court, or to appear or defend their claim or cause, the court shall nevertheless proceed to pronounce sentence, or judgment, which shall in like manner be final and decisive, the judgment or sentence and other proceedings being in either case transmitted to Congress and lodged among the acts of Congress for the security of the parties concerned: provided that every commissioner, before he sits in judgment, shall take an oath to be administered by one of the judges of the supreme or superior court of the State, where the cause shall be tried, "well and truly to hear and determine the matter in question, according to the best of his judgment, without favor, affection or hope of reward": provided also that no State shall be deprived of territory for the benefit of the United States.

All controversies concerning the private right of soil claimed under different grants of two or more States, whose jurisdictions as they may respect such lands, and the States which passed such grants are adjusted, the said grants or either of them being at the same time claimed to have originated antecedent to such settlement of jurisdiction, shall on the petition of either party to the Congress of the United States, be finally determined as near as may be in the same manner as is before prescribed for deciding disputes respecting territorial jurisdiction between different States.

The United States in Congress assembled shall also have the sole and exclusive right and power of regulating the alloy and value of coin struck by their own authority, or by that of the respective States—fixing the standard of weights and measures throughout the United States—regulating the trade and managing all affairs with the Indians, not members of any of the States, provided that the legislative right of any State within its own limits be not infringed or violated—establishing or regulating post offices from one State to another, throughout all the United States, and exacting such postage on the papers passing through the same as may be requisite to defray the expenses of the said office—appointing all officers of the land forces, in the service of the United States, excepting regimental officers—appointing all the officers of the naval forces, and commissioning all officers whatever in the service of the United States—making rules for the government and regulation of the said land and naval forces, and directing their operations.

The United States in Congress assembled shall have authority to appoint a committee, to sit in the recess of Congress, to be denominated "A Committee of the States," and to consist of one delegate from each state; and to appoint such other committees and civil officers as may be necessary for managing the general affairs of the United States under their direction—to appoint one of their number to preside, provided that no person be allowed to serve in the office of president more than one year in any term of three years; to ascertain the necessary sums of money to be raised for the service of the United States, and to appropriate and apply the same for defraying the public expenses—to borrow money, or emit bills on the credit of the United States, transmitting every half year to the respective States an account of the sums of money so borrowed or emitted—to build and equip a navy—to agree upon the number of land forces, and to make requisitions from each State for its quota, in proportion to the number of white inhabitants in such State; which requisition shall be binding, and thereupon the legislature of each State shall appoint the regimental officers, raise the men and clothe, arm and equip them in a soldierlike manner, at the expense of the United States; and the officers and men so clothed, armed and equipped shall march to the place appointed, and within the time agreed on by the United States in Congress assembled: But if the United States in Congress assembled shall, on consideration of circumstances judge proper that any State should not raise men, or should raise a smaller number than its quota, and that any other State should raise a greater number of men than the quota thereof, such extra number shall be raised, officered, clothed, armed and equipped in the same manner as the quota of such State, unless the legislature of such State shall judge that such extra number cannot be safely spared out of the same, in which case they shall raise, officer, clothe, arm and equip as many of such extra number as they judge can be safely spared. And the officers and men so clothed, armed and equipped, shall march to the place appointed, and within the time agreed on by the United States in Congress assembled.

The United States in Congress assembled shall never engage in a war, nor grant letters of marque and reprisal in time of peace, nor enter into any treaties or alliances, nor coin money, nor regulate the value thereof, nor ascertain the sums and expenses necessary for the defense and welfare of the United States, or any of them, nor emit bills, nor borrow money on the credit of the United States, nor appropriate, nor agree upon the number of vessels of war, to be built or purchased, or the number of land or sea forces to be raised, nor appoint a commander in chief of the army or navy, unless nine States assent to the same: nor shall a question on any other point, except for adjourning from day to day be determined, unless by the votes of a majority of the United States in Congress assembled.

The Congress of the United States shall have power to adjourn to any time within the year, and to any place within the United States, so that no period of adjournment be for a longer duration than the space of six months, and shall publish the journal of their proceedings monthly, except such parts thereof relating to treaties, alliances or military operations, as in their judgment require secrecy; and the yeas and nays of the delegates of each State on any question shall be entered on the journal, when it is desired by any delegate; and the delegates of a state or any of them, at his or their request shall be furnished with a transcript of the said journal, except such parts as are above excepted, to lay before the legislatures of the several States.

ARTICLE X.

The committee of the States, or any nine of them, shall be authorized to execute, in the recess of Congress, such of the powers of Congress as the United States in Congress assembled, by the consent of nine States, shall from time to time think expedient to vest them with; provided that no power be delegated to said committee, for the exercise of which, by the Articles of Confederation, the voice of nine States in the Congress of the United States assembled is requisite.

ARTICLE XI.

Canada acceding to this Confederation, and joining in the measures of the United States shall be admitted into, and entitled to all the advantages of this union: but no other colony shall be admitted into the same unless such admission be agreed to by nine States.

ARTICLE XII.

All bills of credit emitted, moneys borrowed and debts contracted by, or under the authority of Congress, before the assembling of the United States, in pursuance of the present Confederation, shall be deemed and considered as a charge against the United States, for payment and satisfaction whereof the said United States and the public faith are hereby solemnly pledged.

ARTICLE XIII.

Every State shall abide by the determinations of the United States in Congress assembled, on all questions which by this Confederation is submitted to them. And the articles of this Confederation shall be inviolably observed by every State, and the union shall be perpetual; nor shall any alteration at any time hereafter be made in any of them; unless such alteration be agreed to in a Congress of the United States and be afterwards confirmed by the legislatures of every State.

And whereas it hath pleased the Great Governor of the World to incline the hearts of the legislatures we respectively represent in Congress, to approve of, and to authorize us to ratify the said Articles of Confederation and perpetual union. Know ye that we the undersigned delegates, by virtue of the power and authority to us given for that purpose, do by these presents, in the name and in behalf of our respective constituents, fully and entirely ratify and confirm each and every of the said Articles of Confederation and perpetual union, and all and singular the matters and things therein contained: And we do further solemnly plight and engage the faith of our respective constituents, that they shall abide by the determinations of the United States in Congress assembled, on all questions which by the said Confederation are submitted to them. And that the articles thereof shall be inviolably observed by the States we respectively represent, and that the union shall be perpetual.

In witness whereof we have hereunto set our hands in Congress. Done at Philadelphia in the State of Pennsylvania the ninth day of July in the year of our Lord, 1778, and in the third year of the independence of America.

State of New Hampshire—Josiah Bartlett, John Wentworth, Jun., August 8, 1778; State of Massachusetts Bay—John Hancock, Samuel Adams, Elbridge Gerry, Francis Dana, James Lovell, Samuel Holten; State of Rhode Island and Providence Plantations—William Ellery, Henry Marchant, John Collins; State of Connecticut—Roger Sherman, Samuel Huntington, Oliver Wolcott, Titus Hosmer, Andrew Adams; State of New York—James Duane, Fraser Lewis, William Duer, Gouverneur Morris; State of New Jersey—John Witherspoon, Nathaniel Scudder, November 28, 1778; State of Pennsylvania—Robert Morris, Daniel Roberdeau, Jonathan Bayard Smith, William Clingan, Joseph Reed, July 22, 1778; State of Delaware—John Dickinson, May 5, 1779, Nicholas Van Dyke, Thomas M'Kean, February 12, 1779; State of Maryland—John Hanson, March 1, 1781, Daniel Carroll, March 1, 1781; State of Virginia—Richard Henry Lee, John Banister, Thomas Adams, John Harvie, Francis Lightfoot Lee; State of North Carolina—John Penn, July 21, 1778; Cornelius Harnett, John Williams; State of South Carolina—Henry Laurens, William Henry Drayton, John Matthews, Richard Hutson, Thomas Heyward, Jun.; State of Georgia—John Walton, July 24, 1778, Edward Telfair, Edward Langworthy.

CONSTITUTION OF THE UNITED STATES

PREAMBLE

WE, the people of the United States, in order to form a more perfect Union, establish justice, insure domestic tranquility, provide for the common defence, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, do ordain and establish this Constitution for the United States of America.

ARTICLE I.

SECTION 1. (Legislative powers; in whom vested.) All legislative powers herein granted shall be vested in a Congress of the United States, which shall consist of a Senate and House of Representatives.

SECTION 2. (House of Representatives, how and by whom chosen. Qualifications of a Representative. Representatives and direct taxes, how apportioned. Enumeration. Vacancies to be filled. Power of choosing officers, and of impeachment.)

1. The House of Representatives shall be composed of members chosen every second year by the people of the several States, and the electors in each State shall have the qualifications requisite for electors of the most numerous branch of the State Legislature.

2. No person shall be a Representative who shall not have attained to the age of twenty-five years and been seven years a citizen of the United States, and who shall not, when elected, be an inhabitant of that State in which he shall be chosen.

3. Representatives and direct taxes* shall be apportioned among the several States which may be included within this Union according to their respective numbers, which shall be determined by adding to the whole number of free persons, including those bound to service for a term of years, and excluding Indians not taxed, three-fifths of all other persons. The actual enumeration shall be made within three years after the first meeting of the Congress of the United States, and within every subsequent term of ten years, in such manner as they shall by law direct. The number of Representatives shall not exceed one for every thirty thousand, but each State shall have at least one Representative; and until such enumeration shall be made, the State of New Hampshire shall be entitled to choose 3; Massachusetts, 8; Rhode Island and Providence Plantations, 1; Connecticut, 5; New York, 6; New Jersey, 4; Pennsylvania, 8; Delaware, 1; Maryland, 6; Virginia, 10; North Carolina, 5; South Carolina, 5, and Georgia 3.

4. When vacancies happen in the representation from any State, the Executive Authority thereof shall issue writs of election to fill such vacancies.

5. The House of Representatives shall choose their Speaker and other officers, and shall have the sole power of impeachment.

SECTION 3. (Senators, how and by whom chosen. How classified. State Executive, when to make temporary appointments, in case, etc. Qualifications of a Senator. President of the Senate, his right to vote. President pro tem., and other officers of the Senate, how chosen. Power to try impeachments. When President is tried, Chief Justice to preside. Sentence.)

1. The Senate of the United States shall be composed of two Senators from each State, chosen by the Legislature thereof, for six years; and each Senator shall have one vote.

2. Immediately after they shall be assembled in consequence of the first election, they shall be divided as equally as may be into three classes. The seats of the Senators of the first class shall be vacated at the expiration of the second year, of the second class at the expiration of the fourth year, and of the third class at the expiration of the sixth year, so that one-third may be chosen every second year; and if vacancies happen by resignation, or otherwise, during the recess of the Legislature of any State, the Executive thereof may make temporary appointments until the next meeting of the Legislature, which shall then fill such vacancies.†

3. No person shall be a Senator who shall not have attained to the age of thirty years, and been nine years a citizen of the United States, and who shall not, when elected, be an inhabitant of that State for which he shall be chosen.

4. The Vice President of the United States shall be President of the Senate, but shall have no vote unless they be equally divided.

5. The Senate shall choose their other officers, and also a President pro tempore, in the absence of the Vice President, or when he shall exercise the office of President of the United States.

6. The Senate shall have the sole power to try all impeachments. When sitting for that purpose, they shall be on oath or affirmation. When the President of the United States is tried, the Chief Justice shall preside; and no person shall be convicted without the concurrence of two-thirds of the members present.

*Partly superseded by Article XIV, Amendments.

†See Article XVII, Amendments.

7. Judgment in cases of impeachment shall not extend further than to removal from office, and disqualification to hold and enjoy any office of honor, trust, or profit under the United States; but the party convicted shall nevertheless be liable and subject to indictment, trial, judgment and punishment, according to law.

SECTION 4. (Times, etc., of holding elections, how prescribed. One session in each year.)

1. The times, places and manner of holding elections for Senators and Representatives shall be prescribed in each State by the Legislature thereof; but the Congress may at any time by law make or alter such regulations, except as to places of choosing Senators.

2. The Congress shall assemble at least once in every year, and such meeting shall be on the first Monday in December, unless they shall by law appoint a different day.

SECTION 5. (Membership. Quorum. Adjournments. Rules. Power to punish or expel. Journal. Time of adjournments, how limited, etc.)

1. Each House shall be the judge of the elections, returns and qualifications of its own members, and a majority of each shall constitute a quorum to do business; but a smaller number may adjourn from day to day, and may be authorized to compel the attendance of absent members in such manner and under such penalties as each House may provide.

2. Each House may determine the rules of its proceedings, punish its members for disorderly behavior, and with the concurrence of two-thirds expel a member.

3. Each House shall keep a journal of its proceedings, and from time to time publish the same, excepting such parts as may in their judgment require secrecy; and the yeas and nays of the members of either House on any question shall, at the desire of one-fifth of those present, be entered on the journal.

4. Neither House, during the session of Congress, shall, without the consent of the other, adjourn for more than three days, nor to any other place than that in which the two Houses shall be sitting.

SECTION 6. (Compensation. Privileges. Disqualification in certain cases.)

1. The Senators and Representatives shall receive a compensation for their services, to be ascertained by law, and paid out of the Treasury of the United States. They shall in all cases, except treason, felony, and breach of the peace, be privileged from arrest during their attendance at the session of their respective Houses, and in going to and returning from the same; and for any speech or debate in either House they shall not be questioned in any other place.

2. No Senator or Representative shall, during the time for which he was elected, be appointed to any civil office under the authority of the United States which shall have been created, or the emoluments whereof shall have been increased during such time; and no person holding any office under the United States shall be a member of either House during his continuance in office.

SECTION 7. (House to originate all revenue bills. Veto. Bill may be passed by two-thirds of each House, notwithstanding, etc. Bill, not returned in ten days, to become a law. Provisions as to orders, concurrent resolutions, etc.)

1. All bills for raising revenue shall originate in the House of Representatives, but the Senate may propose or concur with amendments, as on other bills.

2. Every bill which shall have passed the House of Representatives and the Senate shall, before it becomes a law, be presented to the President of the United States; if he approve, he shall sign it, but if not, he shall return it, with his objections, to that House in which it shall have originated, who shall enter the objections at large on their journal, and proceed to reconsider it. If after such reconsideration two-thirds of that House shall agree to pass the bill, it shall be sent, together with the objections, to the other House by which it shall likewise be reconsidered; and if approved by two-thirds of that House it shall become a law. But in all such cases the votes of both Houses shall be determined by yeas and nays, and the names of the persons voting for and against the bill shall be entered on the journal of each House respectively. If any bill shall not be returned by the President within ten days (Sundays excepted) after it shall have been presented to him, the same shall be a law in like manner as if he had signed it, unless the Congress by their adjournment prevent its return; in which case it shall not be a law.

3. Every order, resolution, or vote to which the concurrence of the Senate and House of Representatives may be necessary (except on a question of adjournment) shall be presented to the President of the United States; and before the same shall take effect shall be approved by him, or being disapproved by him, shall be repassed by two-thirds of the Senate and House of Representatives, according to the rules and limitations prescribed in the case of a bill.

SECTION 8. (Powers of Congress.) The Congress shall have power:

1. To lay and collect taxes, duties, imposts, and excises, to pay the debts and provide for the common defence and general welfare of the United States; but all duties, imposts and excises shall be uniform throughout the United States.

2. To borrow money on the credit of the United States.

3. To regulate commerce with foreign nations, and among the several States, and with the Indian tribes.

4. To establish an uniform rule of naturalization and uniform laws on the subject of bankruptcies throughout the United States.

5. To coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures.

6. To provide for the punishment of counterfeiting the securities and current coin of the United States.

7. To establish post offices and post roads.

8. To promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.

9. To constitute tribunals inferior to the Supreme Court.

10. To define and punish piracies and felonies committed on the high seas, and offences against the law of nations.

11. To declare war, grant letters of marque and reprisal, and make rules concerning captures on land and water.

12. To raise and support armies, but no appropriation of money to that use shall be for a longer term than two years.

13. To provide and maintain a navy.

14. To make rules for the government and regulation of the land and naval forces.

15. To provide for calling forth the militia to execute the laws of the Union, suppress insurrections and repel invasions.

16. To provide for organizing, arming and disciplining the militia, and for governing such part of them as may be employed in the service of the United States, reserving to the States respectively the appointment of the officers, and the authority of training the militia according to the discipline prescribed by Congress.

17. To exercise exclusive legislation in all cases whatsoever over such district (not exceeding ten miles square) as may, by cession of particular States and the acceptance of Congress, become the seat of the Government of the United States, and to exercise like authority over all places purchased by the consent of the Legislature of the State in which the same shall be, for the erection of forts, magazines, arsenals, dockyards, and other needful buildings.

18. To make all laws which shall be necessary and proper for carrying into execution the foregoing powers and all other powers vested by this Constitution in the Government of the United States, or in any department or officer thereof.

SECTION 9. (Provision as to migration or importation of certain persons. Habeas corpus. Bills of attainder, etc. Taxes, how apportioned. No export duty. No commercial preference. Money, how drawn from treasury, etc. No titular nobility. Officers not to receive presents, etc.)

1. The migration or importation of such persons as any of the States now existing shall think proper to admit shall not be prohibited by the Congress prior to the year one thousand eight hundred and eight, but a tax or duty may be imposed on such importation, not exceeding ten dollars for each person.

2. The privilege of the writ of habeas corpus shall not be suspended, unless when in cases of rebellion or invasion the public safety may require it.

3. No bill of attainder or ex post facto law shall be passed.

4. No capitation or other direct tax shall be laid, unless in proportion to the census or enumeration herein before directed to be taken.

5. No tax or duty shall be laid on articles exported from any State.

6. No preference shall be given by any regulation of commerce or revenue to the ports of one State over those of another, nor shall vessels bound to or from one State be obliged to enter, clear, or pay duties in another.

7. No money shall be drawn from the

Treasury but in consequence of appropriations made by law; and a regular statement and account of the receipts and expenditures of all public money shall be published from time to time.

8. No title of nobility shall be granted by the United States. And no person holding any office of profit or trust under them shall, without the consent of the Congress, accept of any present, emolument, office, or title of any kind whatever from any king, prince or foreign state.

SECTION 10. (States prohibited from the exercise of certain powers.)

1. No State shall enter into any treaty, alliance, or confederation, grant letters of marque and reprisal, coin money, emit bills of credit, make anything but gold and silver coin a tender in payment of debts, pass any bill of attainder, ex post facto law, or law impairing the obligation of contracts, or grant any title of nobility.

2. No State shall, without the consent of the Congress, lay any imposts or duties on imports or exports, except what may be absolutely necessary for executing its inspection laws, and the net produce of all duties and imposts, laid by any State on imports or exports, shall be for the use of the Treasury of the United States; and all such laws shall be subject to the revision and control of the Congress.

3. No State shall, without the consent of Congress, lay any duty of tonnage, keep troops or ships of war in time of peace, enter into any agreement or compact with another State, or with a foreign power, or engage in war, unless actually invaded, or in such imminent danger as will not admit of delay.

ARTICLE II.

SECTION 1. (President; his term of office. Electors of President; number and how appointed. Electors to vote on same day. Qualification of President. On whom his duties devolve in case of his removal, death, etc. President's compensation. His oath of office.)

1. The Executive power shall be vested in a President of the United States of America. He shall hold his office during the term of four years, and, together with the Vice President, chosen for the same term, be elected as follows:

2. Each State shall appoint, in such manner as the Legislature thereof may direct, a number of electors equal to the whole number of Senators and Representatives to which the State may be entitled in the Congress; but no Senator or Representative or person holding an office of trust or profit under the United States shall be appointed an elector.

3. The electors shall meet in their respective States and vote by ballot for two persons, of whom one at least shall not be an inhabitant of the same State with themselves. And they shall make a list of all the persons voted for, and of the number of votes for each, which list they shall sign and certify and transmit, sealed, to the seat of the Government of the United States, directed to the President of the Senate. The President of the Senate shall, in the presence of the Senate and House of Representatives, open all the certificates, and the votes shall then be counted. The person having the greatest number of votes shall be the President, if such number be a majority of the whole number of electors appointed, and if there be more than one who have such a majority, and have an equal number of votes, then the House of Representatives shall immediately choose by ballot one of them for President; and if no person have a majority, then from the five highest on the list the said House shall in like manner choose the President. But in choosing the President, the vote shall be taken by States, the representation from each State having one vote. A quorum, for this purpose, shall consist of a member or members from two-thirds of the States, and a majority of all the States shall be necessary to a choice. In every case, after the choice of the President, the person having the greatest number of votes of the electors shall be the Vice President. But if there should remain two or more who have equal vote, the Senate shall choose from them by ballot the Vice President.*

4. The Congress may determine the time of choosing the electors and the day on which they shall give their votes, which day shall be the same throughout the United States.

5. No person except a natural born citizen, or a citizen of the United States at the time of the adoption of this Constitution, shall be eligible to the office of President; neither shall any person be eligible to that office who shall not have attained to the age of thirty-five years and been fourteen years a resident within the United States.

6. In case of the removal of the President from office, or of his death, resignation or inability to discharge the powers and duties of the said office, the same shall devolve on the Vice President, and the Congress may by law provide for the case of removal, death, resignation or inability, both of the President and Vice President, declaring what officer shall then act as President and such officer shall act accordingly until the disability be removed or a President shall be elected.

7. The President shall, at stated times, receive for his services a compensation which shall neither be increased nor diminished during the period for which he shall have been elected, and he shall not receive within that period any other emolument from the United States, or any of them.

8. Before he enter on the execution of his office he shall take the following oath or affirmation:

"I do solemnly swear (or affirm) that I will faithfully execute the office of President of the United States, and will, to the best of my ability, preserve, protect and defend the Constitution of the United States."

SECTION 2. (President to be Commander-in-Chief. He may require opinions of Cabinet officers, etc.; may pardon. Treaty-making power. Nomination of certain officers. When President may fill vacancies.)

1. The President shall be Commander-in-Chief of the Army and Navy of the United States, and of the militia of the several States when called into the actual service of the United States; he may require the opinion, in writing, of the principal officer in each of the executive departments upon any subject relating to the duties of their respective offices, and he shall have power to grant reprieves and pardons for offences against the United States except in cases of impeachment.

2. He shall have power, by and with the advice and consent of the Senate, to make treaties, provided two-thirds of the Senators present concur; and he shall nominate and by and with the advice and consent of the Senate shall appoint ambassadors, other public ministers and consuls, judges of the Supreme Court, and all other officers of the United States whose appointments are not herein otherwise provided for, and which shall be established by law; but the Congress may by law vest the appointment of such inferior officers as they think proper in the President alone, in the courts of law, or in the heads of departments.

3. The President shall have power to fill up all vacancies that may happen during the recess of the Senate by granting commissions, which shall expire at the end of their next session.

SECTION 3. (President shall communicate to Congress. He may convene and adjourn Congress, in case of disagreement, etc. Shall receive ambassadors, execute laws and commission officers.) He shall from time to time give to the Congress information of the state of the Union, and recommend to their consideration such measures as he shall judge necessary and expedient; he may, on extraordinary occasions, convene both Houses, or either of them, and in case of disagreement between them with respect to the time of adjournment, he may adjourn them to such time as he shall think proper; he shall receive ambassadors and other public ministers; he shall take care that the laws be faithfully executed, and shall commission all the officers of the United States.

SECTION 4. (All civil offices forfeited for certain crimes.) The President, Vice President and all civil officers of the United States shall be removed from office on impeachment for and conviction of treason, bribery or other high crimes and misdemeanors.

ARTICLE III.

SECTION 1. (Judicial powers. Tenure. Compensations.) The judicial power of the United States shall be vested in one Supreme Court, and in such inferior courts as the Congress may from time to time ordain and establish. The judges, both of the Supreme and inferior courts, shall hold their offices during good behavior, and shall at stated times receive for their services a compensation which shall not be diminished during their continuance in office.

SECTION 2. (Judicial power; to what cases it extends. Original jurisdiction of Supreme Court. Appellate. Trial by jury, etc. Trial, where.)

1. The judicial power shall extend to all cases in law and equity arising under this Constitution, the laws of the United States, and treaties made, or which shall be made, under their authority; to all cases affecting ambassadors, other public ministers and consuls; to all cases of admiralty and mari-

*This paragraph in force only from 1788 to 1803; superseded by Article XII, Amendments.

time jurisdiction; to controversies to which the United States shall be a party; to controversies between two or more States, between a State* and citizens of another State, between citizens of different States, between citizens of the same State claiming lands under grants of different States, and between a State; or the citizens thereof, and foreign states, citizens or subjects.

2. In all cases affecting ambassadors, other public ministers, and consuls, and those in which a State shall be party, the Supreme Court shall have original jurisdiction. In all the other cases before mentioned the Supreme Court shall have appellate jurisdiction both as to law and fact, with such exceptions and under such regulations as the Congress shall make.

3. The trial of all crimes, except in cases of impeachment, shall be by jury, and such trial shall be held in the State where the said crimes shall have been committed; but when not committed within any State the trial shall be at such place or places as the Congress may by law have directed.

SECTION 3. (Treason defined. Proof of. Punishment of.)

1. Treason against the United States shall consist only in levying war against them, or in adhering to their enemies, giving them aid and comfort. No person shall be convicted of treason unless on the testimony of two witnesses to the same overt act, or on confession in open court.

2. The Congress shall have power to declare the punishment of treason, but no attainder of treason shall work corruption of blood or forfeiture except during the life of the person attained.

ARTICLE IV.

SECTION 1. (Each State to give credit to the public acts, etc., of every other State.) Full faith and credit shall be given in each State to the public acts, records, and judicial proceedings of every other State. And the Congress may by general laws prescribe the manner in which such acts, records, and proceedings shall be proved, and the effect thereof.

SECTION 2. (Privileges of citizens of each State. Fugitives from justice to be delivered up. Persons held to service having escaped, to be delivered up.)

1. The citizens of each State shall be entitled to all privileges and immunities of citizens in the several States.

2. A person charged in any State with treason, felony, or other crime, who shall flee from justice, and be found in another State, shall, on demand of the Executive authority of the State from which he fled, be delivered up, to be removed to the State having jurisdiction of the crime.

3. No person held to service or labor in one State, under the laws thereof, escaping into another shall, in consequence of any law or regulation therein, be discharged from such service or labor, but shall be delivered up on claim of the party to whom such service or labor may be due.

SECTION 3. (Admission of new States. Power of Congress over territory and other property.)

1. New States may be admitted by the Congress into this Union; but no new State shall be formed or erected within the jurisdiction of any other State, nor any State be formed by the junction of two or more States, or parts of States, without the consent of the Legislatures of the States concerned, as well as of the Congress.

2. The Congress shall have power to dispose of and make all needful rules and regulations respecting the territory or other property belonging to the United States; and nothing in this Constitution shall be so construed as to prejudice any claims of the United States, or of any particular State.

SECTION 4. (Republican form of government guaranteed. Each State to be protected.) The United States shall guarantee to every State in this Union a Republican form of government, and shall protect each of them against invasion, and, on application of the Legislature, or of the Executive (when the Legislature cannot be convened), against domestic violence.

ARTICLE V.

(Constitution; how amended. Proviso.) The Congress, whenever two-thirds of both Houses shall deem it necessary, shall propose amendments to this Constitution, or, on the application of the Legislatures of two-thirds of the several States, shall call a convention for proposing amendments, which in either case, shall be valid to all intents and purposes, as part of this constitution, when ratified by the Legislatures of three-fourths of the several States, or by conventions in three-fourths thereof, as the one or the other mode of ratification may be proposed by the Congress; provided that no amendment which may be made prior to the year one thousand eight hundred and eight shall in any manner affect the first and fourth clauses in the Ninth Section of the First Article; and that no State, without its consent, shall be deprived of its equal suffrage in the State.

ARTICLE VI.

(Certain debts, etc., declared valid. Supremacy of Constitution, treaties and laws of the United States. Oath to support Constitution, by whom taken. No religious test.)

1. All debts contracted and engagements entered into before the adoption of this Constitution shall be as valid against the United States under this Constitution as under the Confederation.

2. This Constitution and the laws of the United States which shall be made in pursuance thereof and all treaties made, or which shall be made, under the authority of the United States, shall be the supreme law of the land, and the judges in every State shall be bound thereby, anything in the Constitution or laws of any State to the contrary notwithstanding.

3. The Senators and Representatives before mentioned, and the members of the several State Legislatures, and all executive and judicial officers, both of the United States and of the several States, shall be bound by oath or affirmation to support this Constitution; but no religious test shall ever be required as a qualification to any office or public trust under the United States.

ARTICLE VII.

(What ratification shall establish Constitution.) The ratification of the Conventions of nine States shall be sufficient for the establishment of this Constitution between the States so ratifying the same.

Done in convention by the unanimous consent of the states present the seventeenth day of September in the year of our Lord one thousand seven hundred and eighty-seven and of the independence of the United States of America, the twelfth. In witness whereof we have hereunto subscribed our names.

Attest: William Jackson, Secretary; George Washington, President and deputy from Virginia; New Hampshire—John Langdon, Nicholas Gilman; Massachusetts—Nathaniel Gorham, Rufus King; Connecticut—William Samuel Johnson, Roger Sherman; New York—Alexander Hamilton; New Jersey—William Livingston, David Brearley, William Paterson, Jonathan Dayton; Pennsylvania—B. Franklin, Thomas Mifflin, Robert Morris, George Clymer, Thomas Fitzsimons, Jared Ingersoll, James Wilson, Gouverneur Morris; Delaware—George Read; Gunning Bedford, Jr., John Dickinson, Richard Bassett, Jacob Broom; Maryland—James McHenry, Dan of St. Thomas Jenifer, Daniel Carroll; Virginia—John Blair, James Madison, Jr.; North Carolina—William Blount, Richard Dobbs Spaight, Hugh Williamson; South Carolina—J. Rutledge, Charles Cotesworth Pinckney, Charles Pinckney, Pierce Butler; Georgia—William Few, Abraham Baldwin.

The Constitution was ratified by the thirteen original States in the following order: Delaware, December 7, 1787, unanimously; Pennsylvania, December 12, 1787, vote 46 to 23; New Jersey, December 18, 1787, unanimously; Georgia, January 2, 1788, unanimously; Connecticut, January 9, 1788, vote 128 to 40; Massachusetts, February 6, 1788, vote 187 to 168; Maryland, April 28, 1788, vote 63 to 12; South Carolina, May 23, 1788, vote 149 to 73; New Hampshire, June 21, 1788, vote 57 to 46; Virginia, June 25, 1788, vote 89 to 79; New York, July 26, 1788, vote 30 to 28; North Carolina, November 21, 1789, vote 193 to 75; Rhode Island, May 29, 1790, vote 34 to 32.

Twelve amendments to the Constitution were proposed at the First Session of Congress, begun and held at the City of New York, on Wednesday, March 4, 1789. The first two were not adopted. The following ten were adopted by the necessary number of States and now stand as the first ten amendments to the Constitution. The original proposal of these amendments were preceded by the following preamble and resolution:

THE conventions of a number of the States having, at the time of their adopting the Constitution, expressed a desire, in order to prevent misconstruction or abuse of its powers, that further declaratory and restrictive clauses should be added, and as extending the ground of public confidence in the Government will best insure the beneficent ends of its institution.

Resolved, By the Senate and House of Representatives of the United States of America, in Congress assembled, two-thirds of both Houses concurring, that the following articles be proposed to the Legislatures of the several States, as amendments to the Constitution of the United States; all or any of which articles, when ratified by three-fourths of the said Legislatures, to be valid to all intents and purposes, as part of the said Constitution, namely:

*See Article XI, Amendments

The following ten original amendments were declared in force December 15, 1791.

ARTICLE I.

Religious Establishment Prohibited. Freedom of Speech, of the Press, and Right to Petition. Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech or of the press; or the right of the people peaceably to assemble and to petition the Government for a redress of grievances.

ARTICLE II.

Right to Keep and Bear Arms. A well-regulated militia being necessary to the security of a free State, the right of the people to keep and bear arms shall not be infringed.

ARTICLE III.

No Soldier to Be Quartered in Any House, Unless, etc.) No soldier shall, in time of peace, be quartered in any house without the consent of the owner, nor in time of war but in a manner to be prescribed by law.

ARTICLE IV.

Right of Search and Seizure Regulated. The right of the people to be secure in their persons, houses, papers and effects, against unreasonable searches and seizures, shall not be violated, and no warrants shall issue but upon probable cause, supported by oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.

ARTICLE V.

Provisions Concerning Prosecution, Trial and Punishment—Private Property Not to Be Taken for Public Use, Without Compensation. No person shall be held to answer for a capital or otherwise infamous crime unless on a presentment or indictment of a Grand Jury, except in cases arising in the land or naval forces, or in the militia, when in actual service, in time of war or public danger; nor shall any person be subject for the same offence to be twice put in jeopardy of life or limb; nor shall be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use without just compensation.

ARTICLE VI.

Right to Speedy Trial, Witnesses, etc. In all criminal prosecutions, the accused shall enjoy the right to a speedy and public trial, by an impartial jury of the State and district wherein the crime shall have been committed, which districts shall have been previously ascertained by law, and to be informed of the nature and cause of the accusation; to be confronted with the witnesses against him; to have compulsory process for obtaining witnesses in his favor, and to have the assistance of counsel for his defense.

ARTICLE VII.

Right of Trial By Jury. In suits at common law, where the value in controversy shall exceed twenty dollars, the right of trial by jury shall be preserved, and no fact tried by a jury shall be otherwise re-examined in any court of the United States than according to the rules of the common law.

ARTICLE VIII.

Excessive Bail or Fines and Cruel Punishments Prohibited. Excessive bail shall not be required, nor excessive fines imposed, nor cruel and unusual punishments inflicted.

ARTICLE IX.

Rule of Construction of Constitution. The enumeration in the Constitution of certain rights shall not be construed to deny or disparage others retained by the people.

ARTICLE X.

Rights of States Under Constitution. The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.

The following amendment was proposed to the Legislatures of the several States by the Third Congress on the 5th of March, 1794, and was declared to have been ratified in a message from the President to Congress, dated January 8, 1798.

ARTICLE XI.

Judicial Powers Construed. The Judicial power of the United States shall not be construed to extend to any suit in law or equity, commenced or prosecuted against one of the United States, by citizens of another State, or by citizens or subjects of any foreign state.

The following amendment, in lieu of the third paragraph of the first section of the second article of the Constitution, was proposed to the Legislatures of the several States by the Eighth Congress on the 12th of December, 1803, and was declared to have been ratified in a proclamation by the Secretary of State, dated September 25, 1804. It was ratified by all the States except Connecticut, Delaware, Massachusetts and New Hampshire.

ARTICLE XII.

Manner of Choosing President and Vice President. The Electors shall meet in their respective States, and vote by ballot for President and Vice President, one of whom at least shall not be an inhabitant of the same State with themselves; they shall name in their ballots the person voted for as President, and in distinct ballots the person voted for as Vice President; and they shall make distinct lists of all persons voted for as President, and of all persons voted for as Vice President, and of the number of votes for each, which list they shall sign and certify, and transmit, sealed, to the seat of the Government of the United States, directed to the President of the Senate; the President of the Senate shall, in the presence of the Senate and House of Representatives, open all the certificates and the votes shall then be counted; the person having the greatest number of votes for President shall be the President, if such number be a majority of the whole number of Electors appointed; and if no person have such majority, then from the persons having the highest numbers, not exceeding three, on the list of those voted for as President, the House of Representatives shall choose immediately, by ballot, the President. But in choosing the President, the votes shall be taken by States, the representation from each State having one vote; a quorum for this purpose shall consist of a member or members from two-thirds of the States, and a majority of all the States shall be necessary to a choice. And if the House of Representatives shall not choose a President, whenever the right of choice shall devolve upon them, before the fourth day of March next following, then the Vice President shall act as President, as in the case of the death or other constitutional disability of the President. The person having the greatest number of votes as Vice President shall be the Vice President if such number be a majority of the whole number of Electors appointed, and if no person have a majority, then from the two highest numbers on the list the Senate shall choose the Vice President; a quorum for the purpose shall consist of two-thirds of the whole number of Senators, and a majority of the whole number shall be necessary to a choice. But no person constitutionally ineligible to the office of President shall be eligible to that of Vice President of the United States.

The following amendment was proposed to the Legislatures of the several States by the Thirty-eighth Congress on the 1st of February, 1865, and was declared to have been ratified in a proclamation by the Secretary of State dated December 18, 1865. It was rejected by Delaware and Kentucky; was conditionally ratified by Alabama and Mississippi; and Texas took no action.

ARTICLE XIII.

Slavery Abolished.

SECTION 1. Neither slavery nor involuntary servitude, except as a punishment for crime whereof the party shall have been duly convincted, shall exist within the United States, or any place subject to their jurisdiction.

SECTION 2. Congress shall have power to enforce this article by appropriate legislation.

The following, popularly known as the Reconstruction Amendment, was proposed to the Legislatures of the several States by the Thirty-ninth Congress on the 16th of June, 1866, and was declared to have been ratified in a proclamation by the Secretary of State dated July 28, 1868. The amendment received the support of twenty-three Northern States; it was rejected by Delaware, Kentucky, Maryland, and ten Southern States. California took no action. Subsequently it was ratified by the ten Southern States.

ARTICLE XIV.

Citizenship Rights Not to Be Abridged.

SECTION 1. All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside. No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property without due process of law, nor deny to any person within its jurisdiction the equal protection of the laws.

Apportionment of Representatives in Congress.

SECTION 2. Representatives shall be apportioned among the several States according to their respective numbers, counting the whole number of persons in each State, excluding Indians not taxed. But when the right to vote at any election for the choice of Electors for President and Vice President of the United States, Representatives in Congress, the executive and judicial officers of a State, or the members of the Legislature thereof, is denied to any of the male inhabitants of such State, being twenty-one years of age, and citizens of the United States, or in any way abridged, except for participation in rebellion or other crime, the basis of representation therein shall be reduced in the proportion which the number of such male citizens shall bear to the whole number of male citizens twenty-one years of age in such State.

Power of Congress to Remove Disabilities of United States Officials for Rebellion.

SECTION 3. No person shall be a Senator or Representative in Congress, or Elector of President and Vice President or hold any office, civil or military, under the United States, or under any State, who having previously taken an oath, as a member of Congress, or as an officer of the United States, or as a member of any State Legislature, or as an executive or judicial officer of any State, to support the Constitution of the United States, shall have engaged in insurrection or rebellion against the same, or given aid and comfort to the enemies thereof. But Congress may, by a vote of two-thirds of each House, remove such disability.

What Public Debts are Valid.

SECTION 4. The validity of the public debt of the United States, authorized by law, including debts incurred for payment of pensions and bounties for services in suppressing insurrection or rebellion, shall not be questioned. But neither the United States nor any State shall assume or pay any debt or obligation incurred in aid of insurrection or rebellion against the United States, or any claim for the loss or emancipation of any slave; but all such debts, obligations and claims shall be held illegal and void.

SECTION 5. The Congress shall have power to enforce by appropriate legislation the provisions of this article.

The following amendment was proposed to the Legislatures of the several States by the Fortieth Congress on the 27th of February, 1869, and was declared to have been ratified in a proclamation by the Secretary of State, dated March 30, 1870. It was not acted on by Tennessee; it was rejected by California, Delaware, Kentucky, Maryland and Oregon; ratified by the remaining thirty States. New York rescinded its ratification January 5, 1870. New Jersey rejected it in 1870, but ratified it in 1871.

ARTICLE XV.

Equal Rights for White and Colored Citizens.

SECTION 1. The right of citizens of the United States to vote shall not be denied or abridged by the United States or by any State on account of race, color, or previous condition of servitude.

SECTION 2. The Congress shall have power to enforce this article by appropriate legislation.

The following amendment was proposed to the Legislatures of the several States, by the Sixty-first Congress on the 12th day of July, 1909, and was declared to have been ratified in a proclamation by the Secretary of State, dated February 25, 1913. The income tax amendment was ratified by all the States except Connecticut, Florida, Pennsylvania, Rhode Island, Utah and Virginia.

ARTICLE XVI.

Income Taxes Authorized. The Congress shall have power to lay and collect taxes on incomes, from whatever source derived, without apportionment among the several States, and without regard to any census or enumeration.

The following amendment was proposed to the Legislatures of the several States by the Sixty-second Congress on the 16th day of May, 1912, and was declared to have been ratified in a proclamation by the Secretary of State, dated May 31, 1913. It received the vote of all the States except Alabama, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Rhode Island, South Carolina, Utah and Virginia.

ARTICLE XVII.

United States Senators to Be Elected By Direct Popular Vote.

SECTION 1. The Senate of the United States shall be composed of two Senators from each State, elected by the people thereof, for six years; and each Senator shall have one vote. The electors in each State shall have the qualifications requisite for electors of the most numerous branch of the State Legislatures.

Vacancies in Senatorships, When Governor May Fill by Appointment.

SECTION 2. When vacancies happen in the representation of any state in the Senate, the Executive authority of such State shall issue writs of election to fill such vacancies: Provided, That the Legislature of any State may empower the Executive thereof to make temporary appointment until the people fill the vacancies by election as the Legislature may direct.

SECTION 3. This amendment shall not be so construed as to affect the election or term of any Senator chosen before it becomes valid as part of the Constitution.

The following amendment was proposed to the Legislatures of the several States by the Sixty-fifth Congress, December 18, 1917; and on January 29, 1919, the Acting Secretary of State proclaimed its adoption by 36 States, and declared it in effect on January 16, 1920.

Early in 1920, the validity of the Eighteenth Amendment was upheld by the Supreme Court of the United States, in suits to void, brought by the States of Rhode Island and New Jersey, and by various brewers and distillers.

ARTICLE XVIII.

Liquor Prohibition Amendment.

SECTION 1. After one year from the ratification of this article the manufacture, sale, or transportation of intoxicating liquors within, the importation thereof into, or the exportation thereof from the United States and all territory subject to the jurisdiction thereof for beverage purposes is hereby prohibited.

SECTION 2. The Congress and the several States shall have concurrent power to enforce this article by appropriate legislation.

SECTION 3. This article shall be inoperative unless it shall have been ratified as an amendment to the Constitution by the Legislatures of the several States, as provided in the Constitution, within seven years from the date of the submission hereof to the States by the Congress.

The following amendment was proposed to the Legislatures of the several States by the Sixty-fifth Congress, having been adopted by the House of Representatives, May 21, 1919, and by the Senate, June 4, 1919. On August 26, 1920, the Secretary of State proclaimed it in effect, having been adopted (June 10, 1919-August 18, 1920), by three-quarters of the States. The Tennessee House, August 31, rescinded its ratification, 47 to 24.

ARTICLE XIX.

Giving Nation Wide Suffrage to Women.

SECTION 1. The right of citizens of the United States to vote shall not be denied or abridged by the United States or by any State on account of sex.

SECTION 2. Congress shall have power to enforce this article by appropriate legislation.

ARTICLE XX.

Terms of president and vice-president to begin on Jan. 20; those of Senators and Representatives, on Jan. 3.

The following amendment was proposed to the Legislatures of the several States by the Seventy-second Congress, in March, 1932, a joint resolution to that effect having been adopted, first by the House, and then, on March 2, by the Senate. On Feb. 6, 1933, the Secretary of State proclaimed it in effect, 39 of the 48 States having ratified. By Oct. 15, 1933, it had been ratified by all of the 48 States.

SECTION 1. The terms of the President and Vice-President shall end at noon on the 20th day of January, and the terms of Senators and Representatives at noon on the 3rd day of January, of the years in which such terms would have ended if this article had not been ratified; and the terms of their successors shall then begin.

SECTION 2. The Congress shall assemble at least once in every year, and such meeting shall begin at noon on the 3rd day of January, unless they shall by law appoint a different day.

SECTION 3. If, at the time fixed for the beginning of the term of the President, the President elect shall have died, the Vice-President elect shall become President. If a President shall not have been chosen before the time fixed for the beginning of his term, or if the President elect shall have failed to qualify, then the Vice-President elect shall act as President until a President shall have qualified; and the Congress may by law provide for the case wherein neither a President elect nor a Vice-President elect shall have qualified, declaring who shall then act as President, or the manner in which one who is to act shall be selected, and such person shall act accordingly until a President or Vice-President shall have qualified.

SECTION 4. The Congress may by law provide for the case of the death of any of the persons from whom the House of Representatives may choose a President whenever the right of choice shall have devolved upon them, and for the case of the death of any of the persons from whom the Senate may choose a Vice-President whenever the right of choice shall have devolved upon them.

SECTION 5. Sections 1 and 2 shall take effect on the 15th day of October following the ratification of this article (Oct., 1933).

SECTION 6. This article shall be inoperative unless it shall have been ratified as an amendment to the Constitution by the legislatures of three-fourths of the several States within seven years from the date of its submission.

ARTICLE XXI.

Repeal of the Eighteenth (Prohibition) Amendment by Conventions in the States.

The following proposed amendment to the Constitution, embodied in a joint resolution of the 72nd Congress (Senate, Feb. 16, 1933, by 63 to 23; House, Feb. 20, 1933, by 289 to 121), was transmitted to the Secretary of State on Feb. 21 and he at once sent to the governors of the States copies of the resolution. The amendment went into effect on Dec. 5, 1933, having been adopted by 36 of the 48 States—three-quarters of the entire number. The amendment is:

SECTION 1. The eighteenth article of amendment to the Constitution of the United States is hereby repealed.

SECTION 2. The transportation or importation into any State, Territory, or Possession of the United States for delivery or use therein of intoxicating liquors, in violation of the laws thereof, is hereby prohibited.

SECTION 3. This article shall be inoperative unless it shall have been ratified as an amendment to the Constitution by conventions in the several States, as provided in the Constitution, within seven years from the date of the submission hereof to the States by the Congress.

Up to Sept. 12, the Repealer Amendment had been ratified by all of the States except Georgia, Kansas, Louisiana, Mississippi, Nebraska, North Carolina (rejected); North Dakota, Oklahoma, South Carolina (rejected); and South Dakota—38 States for repeal; 2 against; 8 having taken no action, although Nebraska and South Dakota were scheduled to elect, on Nov. 6, 1934, delegates to conventions, to vote on the question of repeal. Of the 38 States that voted for repeal, 37 acted in 1933, and Montana voted on Aug. 6, 1934.

The internal revenue taxes reaped by the United States Government in consequence of the adoption of the Repealer Amendment have been as follows, in year ended June 30, 1934—on distilled spirits and wines, $89,951,747; on fermented malt liquors, $168,959,585.

The various States also derived large sums from liquor licenses and other forms of tax. In New York state, from Dec. 5, 1933, to July 31, 1934, the receipts exceeded $10,500,000, from 12,000 licenses.

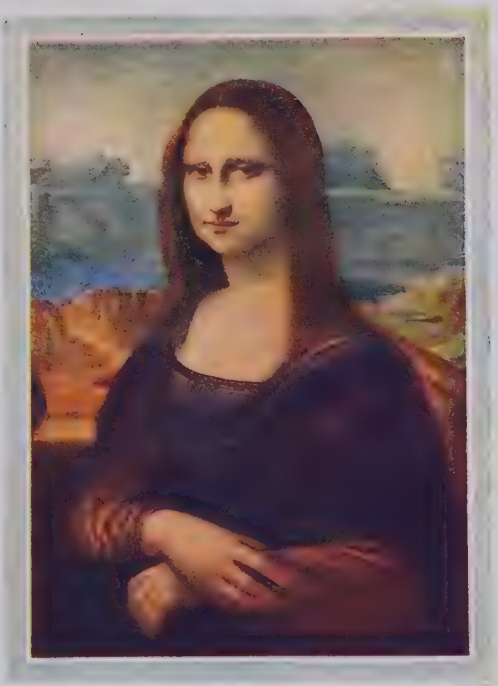
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FINE ARTS

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ITALIAN SCHOOL



SYNDICS OF THE CLOTH MERCHANTS' GUILD—*Rembrandt*
DUTCH SCHOOL



PORTRAIT OF MY MOTHER—*Whistler*
AMERICAN SCHOOL



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THE SCHOOLMISTRESS—*Fragonard*
FRENCH SCHOOL

BOOK XIV

FINE ARTS

THE two simplest divisions that man can make of what he sees about him are nature and art. A thing is either natural or artificial; either God made it or man made it. The things that man can make are usually either useful or beautiful; or they are a combination of beauty and utility, as in architecture. The beautiful arts are called the "fine arts," and are usually listed as architecture, painting, sculpture, music and poetry; of these the most nearly related—the sister arts—are architecture, painting and sculpture.

Just what the meaning of art is has caused philosophers to ponder through the ages, and to fill volumes with their speculations. It used to be thought that art was the premeditated creation of the beautiful; but many things, especially some modern paintings, are not beautiful in the sense that we have heretofore understood beauty. But unquestionably they are art. So a more modern definition is that art is the expression of an emotion. Art is surely an evidence of the divine in man. It is something that distinguishes him from all the rest of creation. It is a message that the artist receives from his Creator, and it is his duty and joy to pass it on to humanity. This is the reason why the artist has always been revered.

There are other fine arts—some more, some less fine—such as dancing, the drama, oratory and the opera; and there are those industries where the arts of painting, sculpture or architecture are closely intermingled, as ceramics, leaded and stained glass, jewelry, weaving, cabinet making, and many others.

The general terms that divide art into chronological or historical divisions are unfortunately very loose and uncertain. Usually they are listed: Prehistoric, Ancient, Medieval, Renaissance and Modern.

Prehistoric Art. It is only during the last fifty years that we have discovered that a truly great and noble pictorial art existed among our ancestors 50,000 years ago. The Cromagnon men, who lived in caves in Europe in the Paleolithic, or Old Stone Age, left drawings and carvings of animals long since extinct which compare very favorably with the work of the early Greeks. This work we call prehistoric art, and so also can be classified the work of any race produced before the dawn of its recorded history; such was the art of the lake dwellers of Switzerland and of the mound builders and cliff dwellers of America.

Ancient Art. About 5000 B.C. the Egyptians built the first of their tombs and invented the system of picture-writing, or hieroglyphics. This makes a convenient date for the beginning of ancient art. The course of ancient art continues through the lives of the ancient inhabitants of Chaldea, Babylonia, Assyria, Persia, Phoenicia, Crete, Greece (where in the sixth and fifth centuries B.C. it reached its greatest glory) and Rome. The art of Greece and Rome is termed "classic," and on it alone is based all the subsequent art of Europe and our art of today. In the fall of Rome and the Western Empire in 426 A.D., ancient art may be considered to have ended.



A Smiling Angel

Angel of the thirteenth century in Reims Cathedral, France. This beautiful conception by an unknown sculptor is an important contribution to art.

Medieval Art. Medieval is the name given to the period of a thousand years that followed the fall of Rome. This span of time we call the "Dark Ages" and the "Middle Ages" in western Europe and in the Eastern Empire in Byzantium, now called Constantinople. The Middle Ages has to do politically with the beginnings of modern western nations out of the wreck of the ancient Roman Empire, and socially with the gradual civilizing of the northern barbarian hordes which had overthrown Rome. Its most important phenomenon was the rise and increasing power of Christianity as exemplified in the Roman Catholic Church, with its head, the Pope, in Rome. Throughout the Middle Ages the Pope ruled with temporal and spiritual powers often greater than those of any king or emperor. This was also the romantic period of chivalry and of the feudal system, of King Arthur and his Round Table, of knights and ladies, of castles and dungeons. During the Middle Ages occurred the Crusades, the romantic and long-drawn-out struggle of the Christian nations to recover the Holy Land from the Moslems. Christianity triumphed over Mohammedanism in the struggle for the possession of Europe. England was won by William the Conqueror. Fearful plagues, decimating the populace, swept time and again across the land. While the Middle Ages often descended to the depths in ignorance, poverty, cruelty and wretchedness, at the same time it was a period glorified by the highest examples of chivalry, ecstatic faith and courage.

The art of the first half of the Middle Ages was termed Romanesque in western Europe, and Byzantine in the Near East. They are contemporary, and have many things in common. The second half is glorified by the art which in painting, sculpture and architecture we call the Gothic. Its greatest expression and achievement was the cathedral, which marked the culmination of the art of the Middle Ages.

The Renaissance. Renaissance means "re-birth" and refers to a re-birth of classic ideals—the ideals of Greece and Rome. The Renaissance is used, in a strict sense, to cover the period from 1420 to 1500; and, in a broad sense, it includes the entire period up to the present time. In architecture and sculpture, Europe, beginning with Italy in the early fifteenth century, began to use again the ancient forms and methods of Greece and Rome. In learning, there was a corresponding interest in Greek and Roman literature. This intellectual activity spread to science and exploration. Perspective was discovered, and a new beauty of the human body, both of which gave birth to modern painting. Printing, gunpowder, the telescope, the circulation of the blood, the Copernican theory of the universe, the discovery of America—all are early Renaissance gifts, where "Man discovers himself and the world."

The early years of the Renaissance were concerned with spreading the new arts over Europe, and with wars determining the boundaries of European nations; the later years, generally speaking, were concerned with the development of science and industry. The outstanding event of the Renaissance was the discovery and rise of America. The

Renaissance witnessed the Reformation, the French Revolution, the Independence of America and, in its later phases, it beheld the discovery of the steam engine, anesthetics, the telegraph, the telephone, the incandescent light, the radio, the automobile, the airplane. This interesting era also saw the displacement of a love of the fine arts in the minds of people by a greater interest in science and the useful arts. In the opinion of many, the period of the Renaissance in its broadest sense came to an end in the World War.

Modernism. We are so close to modern events that it is difficult properly to appraise their significance. There is no doubt that vital changes, social and artistic, were accomplished by the World War; and the world we live in today is a very different one from that of 1913. In fact, there are many reasons for believing that we are seeing the birth of a new era in culture and art—an era that future historians will classify as following the Renaissance and, perhaps, as being as different from it as the Renaissance was different from the Middle Ages. We are so close to the scene that it is difficult for us to realize in its proper perspective what is going on about us.

Divisions of the Fine Arts. Architecture has often been called the "mother of the arts"; and certainly, in her sheltering arms, painting and sculpture have been nourished and protected. It is architecture, therefore, that best shows in its development the chronology of art described above, but all of the arts to a greater or less degree keep step with architecture in their march through the centuries.

Sculpture, the eldest, is ever present. In ancient Egypt, every building was adorned with carving or attended with statues in the round. In Greece, in the age of Pericles, sculpture reached a height which in perfection of craftsmanship, beauty of form and nobility of conception it has never surpassed and which, in significance, it has never since attained. In the Middle Ages sculpture shared, side by side, the fortunes of architecture: they begged by the roadside in the Dark Ages, but were the hosts of popes and kings in the portals of magnificent cathedrals of the thirteenth century. At no other period were their fortunes so closely interwoven. From the time of the Renaissance, sculpture has strayed farther and farther from the mother fold of architecture; but there are indications that after four hundred years of brilliant and often wayward independence she, for her own salvation, will return to her ancient protector. The possibilities of free-standing sculpture sometimes seem almost exhausted, yet there are tremendous opportunities opening up for the sculptural adornment of the mighty creations of modern architecture.

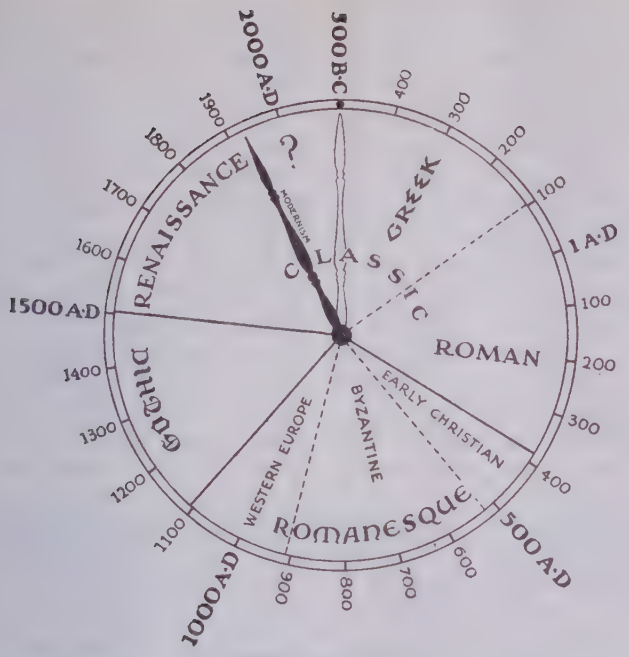
If we go back to the adornment of the Pleistocene caves, the art of the Cromagnons —a combination of painting and engraving— appears to antedate architecture, although obviously anything in the nature of a structure could not have survived the enormous stretch of the centuries. We know much of the pictorial and painted art of the Egyptians. We know that it was bound with the chains of priestly tradition and law, and in consequence it seldom rose above the level of a decoration. Of Greek painting we know little, but it seems to have been a neglected Cinderella sitting at the fireside of architecture and sculpture. In medieval times, painting appeared in new forms garbed in the gorgeous beauty of stained and leaded glass, in the somber dignity of Byzantine mosaics, and in the countless varieties of the art of the weaver and the illuminator. Painting and its sister arts, drawing and engraving of various kinds, did not come to full flower until the Renaissance. First, in late medieval times, came the fresco and altar-piece; and in the fifteenth century, appeared the art of perspective, painting in oils, development of the easel picture and engraving of various kinds. Painting was no longer the handmaid of architecture and of the Church; it became the independent and splendid consort of a new era. The painting of the Renaissance is certainly comparable to the sculpture of Greece in the Periclean Age. The graphic arts, which include painting, are, with the possible exception of music, the most popular and widely distributed of all arts. Besides the various forms of painting in oils on canvas, such as murals, portraits, still life and landscapes, there are water-colors, wash-drawings, line-drawings of many kinds, etching, aquatints and dry-points, mezzotints, steel and copper plate engraving, woodcuts and wood-blocks, lithography, and the many commercial and mechanical forms of reproduction, such as halftones, zinc etchings and color reproduction. Interior decoration and the design of furniture is, and always has been, more closely allied to architecture than has any other art. So true is this that characteristic ornament often occurs simultaneously in furniture and architecture. Such features as choir stalls, if movable, would be regarded as furniture; connected to the structure they become a part of the architecture, and the same is true of other decoration. The fine arts, in graphic form, have never been with us and about us more than they are today. If science and the machine have crowded them out of the position closest to our hearts, they are nevertheless as indispensable to a happy and healthy life as they ever were. It is our duty, and should be our joy, to know them and love them.



Court of Honor, World's Columbian Exposition

A jewel in a setting of grandeur was the Court of Honor at the Columbian Exposition in Chicago in 1893. The colossal fountain in the foreground by MacMonnies, one of the greatest of American sculptors, was one of the outstanding beauty spots of the exposition.

ARCHITECTURE



Architectural Clock

This diagram shows the lapse of time in terms of architectural style from 500 B.C., when our architecture began, through nearly twenty-five hundred years to the present time. Note the large space on the dial, nearly two-thirds of the whole, in which Classic influence prevailed.

THE art of building beautifully is architecture. Sheds and silos are not architecture unless some effort is made to make them beautiful. Architecture, from the dawn of history, has constantly so touched and mingled with human life in the home, the shop and the temple that often it is the best history and commentary we have of the life of its creators. On account of its universality and its ancient origin, it is often called "the mother of the arts." Today, next to agriculture, architecture employs more people directly and indirectly than does any other occupation. It is the most useful of the fine arts, and the noblest of the useful arts.

Construction. There are three elemental types of construction that alone, or in combination, control the form of all architecture. They are: first, the lintel, in which openings are spanned by a flat slab or beam supported at each end by uprights; second, the arch, where the opening is covered by a number of pieces of masonry arranged usually in a curved form (the vault and the dome are forms of the arch); third, the truss, where pieces of wood or metal are joined together in triangular formation and supported at each end. The modern invention of reinforced concrete, whereby concrete is immensely strengthened by embedded steel bars, is often regarded as a fourth.

The lintel form was used exclusively by the Egyptians and the Greeks. The Romans added the arch, and used both. In the sixteenth century the truss was invented, and this made possible the roofing of great areas. Today, with reinforced concrete we have the advantage of using all these methods.

Style. The architecture of different countries and of different periods in the same country vary in marked degree in appearance. These differences, which may be fundamental but are usually superficial, are classified into styles. They are much like family likenesses. All of the architectural styles of Europe and America, except aboriginal styles such as the splendid Mayan of Yucatan in Mexico, are derived through ancient Rome from Greece. In the broadest sense they may be grouped in three great divisions: Classic, Romanesque and Gothic.

Egyptian Architecture. Egypt is extraordinary and marvelous in many ways. The earliest Greek architecture dates from about 650 B.C., but in Egypt, on account of its climate and its isolated position, there are buildings in excellent preservation that were built four or five thousand years ago. Notwithstanding the vastness and sublimity of Egyptian architecture, it had almost no effect on the architecture of Greece, and has none at all on ours. In that sense it is a dead art, whereas Greek art is still a vital thing and an inspiration to every architect today.

The Egyptian buildings that have come down to us are tombs and temples. The temples were probably palaces as well. They employed exclusively the lintel type of construction. The buildings were built of stone or granite, usually of huge size, and the walls were covered with word pictures, or hieroglyphics, and with figures of men and gods, which were usually colored. The great pyramids built, perhaps, about 3500 B.C., are the most impressive of the tombs. There were other rock-cut tombs, such as that of Tutenkhamon, which have given us not only the mummified bodies of the royal occupants themselves, but their furniture, jewelry, toys and even food. Besides the tombs there were obelisks, sphinxes and great figures of the kings, who were regarded as gods. The temple-palaces were equally extraordinary—that of Karnak being a vast assemblage of pylons, colonnades and the hypostyle hall, covering in all an extent of 1,215 feet in length by 376 feet in width. The great columns are seventy feet in height and twelve feet in diameter. Other great temples are at Edfou, Luxor, Denderoh and Philae.

Egyptian art lasted until about 300 A.D.,



Temple of Ammon, Karnak

Built about 2200 B.C. Although our architecture owes no debt to ancient Egypt we view such magnificent remains of an ancient civilization with admiration and astonishment.

long after the conquest by Rome, and maintained its character to the last.

Chaldea. Recent excavations at Ur, the ancient Biblical capital of Chaldea and the birthplace of Abraham, indicate that the art and culture of Chaldea are as ancient as those of Egypt. The Chaldeans were greatly handicapped by having little, other than mud, to build with; but they did the best they could. They made the mud into bricks and with these they built low buildings with



The Parthenon (in ruins)

Built about 447 B.C. on the Acropolis in Athens, the masterpiece of Greek Classic architecture and generally regarded as the building nearest approaching architectural perfection. It is in the Doric style.

immensely thick walls on the top of stupendous terraces of brick and clay. Decorative effects they secured by applying glazed colored tiles and carved slabs of precious alabaster to the face of the walls. Not having stone or even wood of large sizes, their rooms, as we should expect, are very narrow; possibly some were vaulted, as the Chaldeans seem to have understood the use of the arch. No evidence of windows has been discovered, and these strange hall-like rooms reflected from their tiled walls only the flickering light of lamps and the daylight that entered the single door. Many houses today, in the same locality, dispense with windows as a protection against the terrific heat. The principal remains of Chaldean art and architecture are found at Ur, Birs-Nimroud and Nippur. Babylon became the capital of Chaldea about 1900 B.C. Of its vast hanging gardens, which in ancient times were one of the Seven Wonders of the World, and of its proud magnificence, only shapeless mounds of clay are left.

Assyria. To the north of Chaldea, in the valley of the Euphrates, was its fierce rival, Assyria. The Assyrians possessed stone and wood in limited quantities, and understood well the arch and vault. Nevertheless, they copied the uncomfortable plans of the Chaldeans, and their ornament seems to have been derived equally from Chaldea and Egypt. Very strangely, they seem never to have made use of the column. The remains of architecture in Assyria are extensive owing to their use of stone, and are to be found at the great Palace of Sargon at Khorsabad, Nineveh and Nimroud.

Persia. From 536 to 525 B.C. the Persians, under Cyrus the Great and Cambyses, became masters of ancient Assyria, and Chaldea, and Egypt as well. At Persepolis and Susa they built great palaces from the remains of which we can form excellent conceptions. The Persians continued the building traditions of Assyria and Chaldea in the use of glazed brick and tile on terraces and thick walls; but they added the use of the column, thereby attaining vast rooms in which slender columns of stone, of a curious design, supported timber roofs. The arts which they borrowed from the conquered countries were, in a sense, the cause of their downfall; for, sunk in the softness of oriental luxury, they were unable to protect themselves against the attacks of youthful Alexander and his Greek phalanxes, and the great Persian empire fell in 331 B.C.

Syria. Of Jewish and Syrian architecture our knowledge comes almost solely from the Bible, which contains a detailed description of the Temple built by Solomon. Added to and rebuilt by different rulers it presented, during the life of Christ, an extraordinary combination of Egyptian, Assyrian and Roman elements, and must have been one of the most magnificent buildings of its day. The great contribution of the Hebrews to civilization is in the realms of religion, literature and law, not in art.

Greek Classic Architecture. As we have said before, our architecture owes little or nothing to the great civilizations that preceded or existed side by side with that of Greece. Their architecture more properly lies in the realms of archaeology. The great stream of art that now covers Europe and the two Americas began as a tiny rivulet in the rocky peninsulas and islands anciently called Hellas, but glowing in the minds of all of us as Greece.

The mind of the Greek was sharply distinguished from that of the Egyptian, the Assyrian or the Hebrew. Joined to a love of nature, of whose attributes he created deities, was a highly intellectual, analytical and symmetrical mind. The Greek lived close to the sea (a circumstance which made him a trader and traveler), and in a land rich in structural, if not in agricultural, resources. The Egyptian had granite; the Assyrian, clay; the Greek, marble. The beginnings of Greek art, "intimations of immortality," are original, vivid and human. The art of Egypt was frozen; that of Assyria, monstrous. So at Knossos in Crete, and in Mycenae on the mainland, we find remains that, for all their antiquity, are strangely modern.

However, it is with the invention of the orders, about 700 B.C., that Greek architecture takes a definite form. The type of construction adopted by the Greeks was exclusively of the lintel form; the arch and vault, if not unknown, were at least never used. The lintels were upheld by posts or columns. These columns, together with the lintel which they supported, were of three distinct varieties, called "orders." The first had sturdy columns from five to seven diameters in height, without any base, and with a cap of great simplicity and beauty composed of a square block (abacus) above a curved molding (echinus). The lintel, more properly in this case called the entablature, was composed of three members, the architrave, frieze and cornice, each arranged in a characteristic fashion. This is the Doric order, and supposedly was invented by a vigorous northern tribe of Greeks called Dorians. The Ionian Greeks gave us the second order, called, in their honor, the Ionic. The curious and beautiful capital, with its delicate spirals (volutes), is its characteristic feature. The entablature is divided into three parts, but is differently ornamented from the Doric. The columns have bases as well as caps, and are more widely spaced. The Doric, even by the ancients, was likened in its vigor to the masculine form; and the Ionic, in its grace, represented the feminine. The third order is the Corinthian, little used among the Greeks, and the last in origin. It is the same as the Ionic except for the cap. This is an inverted bell in form, richly decorated with acanthus leaves arranged below four small protruding volutes. The shafts of all these columns were lined vertically with delicate grooves (flutes); and temples, particularly in the Doric style, were highly colored. These orders, while usually



The Colosseum

One of the greatest monuments of the Roman Classic styles; completed in 82 A.D. Its great arena furnished amusement for its many thousands of spectators.

used exclusively in a building, were sometimes mixed.

The Greek solved his problem perfectly, but we must admit it was very simple. Buildings that have come down to us were chiefly of two kinds, temples and theaters. The temples were composed of a rectangular room, to which in various ways was attached a colonnaded portico often embellished with sculpture. The theaters were usually semicircular, uncovered, and occupied a natural depression in a hill. The noblest period of Greek architecture is the age of Pericles, 460 to 410 B.C. To it belong the three gems of Greek architecture—the Parthenon, the Erectheon and the Propylaeum. Greek architecture became more florid in the age of Alexander the Great, 300 to 100 B.C., but lasted through the Roman domination, from about 100 B.C. to 200 A.D.

Roman Classic Architecture. The five or six hundred years in which the Western World was under Roman domination, from about 100 B.C. to the fall of Rome, form one of the great cultural eras of mankind. This era was fitly expressed by a characteristic architecture. The Roman was ambitious, hard-headed, a great organizer and builder. He was not the artist or the individualist that the Greek was. His architecture is based on the three Greek orders, which he altered and elaborated. His favorite was the Corinthian, which became the principal vehicle for the "grandeur that was Rome." In construction, the Roman made great and original contributions. He developed the arch, the vault and the dome from the primitive arched construction of the Etruscans, and these he united with the column and lintel of the Greeks. He used concrete for vaults and walls, facing it with stone and marble. Where the Greeks had but one or two types of building, the Roman had a dozen, and these often on an enormous scale. Temples, basilicas, theaters, amphitheaters, circuses, triumphal arches, vast baths, palaces and houses in their ruins attest the might and engineering skill of the Romans. In every Roman city, from Italy to Britain, was a forum or civic center adorned with statues, colonnades and monumental buildings. The greatest of these that have come down to us are the Pantheon, the Baths of Diocletian and of Caracalla, the Colosseum, the Forum and many arches—all in Rome; the Maison Carrée in France; ruined temples in Timgad, Africa; Palmyra and Baalbec in Syria; and, perhaps most interesting of all, the entire city of Pompeii, at the foot of Mount Vesuvius, in Italy. In 79 A.D. this Roman suburban city was entirely engulfed by mud and ashes from the volcano, and has thereby been preserved through the ages. The excavated houses and other buildings show us, in minute detail, the daily life and surroundings of a Roman citizen in the century in which Christ lived. The great pagan Roman empire became Christian by an edict of Constantine in 313 A.D., and hardly more than 100 years later, in one of the most extraordinary cataclysms in history, it fell before the onrush of vast hordes and tribes of northern barbarians. Civilization was almost snuffed out, and a period of a thousand years ensued, called the "Dark Ages," in which a new culture slowly emerged from the ruins of the mighty Roman Empire.



Sancta Sophia (interior)
In Constantinople, ancient Byzantium. One of the great masterpieces of architecture; built 532-7 A.D.; earliest and best example of the eastern form of the Romanesque known as Byzantine. The ugly disks are Turkish additions.

Romanesque Architecture. The architecture and art of Europe between 500 and 1100 A.D. is called the "Romanesque," which of course means "like Roman" or "derived from Roman." While it was derived from Roman art, it soon developed characteristics that made it very distinct. There was very little building after the fall of the Empire. Temples and villas lay empty and forlorn. The artists and artisans had been killed or dispersed, and their knowledge had died with them. The small amount of construction was done with fragments of imperial buildings. The only thing the Romans had not built in profusion was churches. The early Christians refused to use pagan temples, but had no objection to using the law courts, or basilicas. These were low, oblong buildings, usually divided by two parallel rows of columns into a central space, or nave, with an aisle on either side. At the end opposite the entrance was a bay, or apse, that held the judge's seat. The Christians replaced the seat with an altar, and the basilica made an excellent church. Our own churches today can be traced back, step by step, to the basilica. The great Christian basilicas of St. Paul, St. John Lateran and many others in Rome have come down to us. Romanesque art is almost entirely concerned in the building of churches and monasteries. Columns soon took a secondary place, and Romanesque buildings are usually attempts, often crude, to use the arch in decorative forms and some kind of vault or dome to cover the aisles and nave. Heavy walls, deep shadows, recessed doors and windows, with rough and barbaric carvings of animals and men, often gave the buildings a fierce and gloomy aspect.



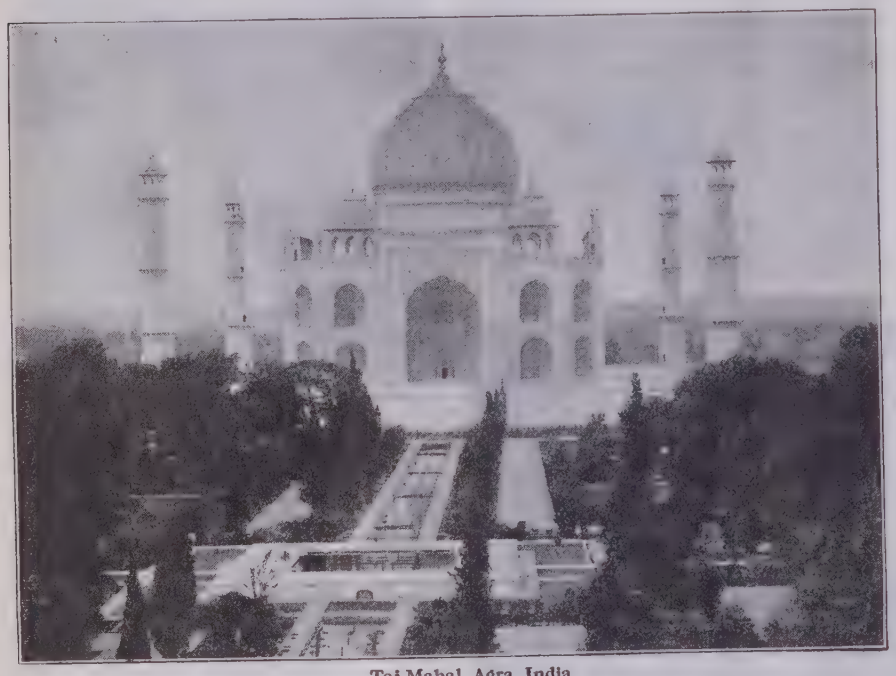
St. Trophîme
The entrance portal of the church of St. Trophîme at Arles, France, built in the twelfth century. This is an excellent example of the Romanesque style of western Europe. Witness the round recessed arches and the rude ornament.

In the East, at Constantinople (or Byzantium, as it was called), the Romanesque appeared in a startlingly different form—the



Notre Dame Cathedral
In Paris. One of the masterpieces of the Gothic style.

Byzantine. It appeared suddenly, fully developed, in one magnificent building—Sancta Sophia, built by the Emperor Justinian, 532–7 A.D. This is one of the most precious buildings in the world; perhaps it ranks next to the Parthenon in importance and, except for certain Mohammedan disfigurements, exists in its pristine splendor. In it a great structural device appears for the first time; Justinian's architects, Anthemius and Isodorus, supported the great dome on the top of four mighty arches, filling in the space between the arches with four spherical triangles (pendentives). This became the method used thereafter, in the building of domes, as it made possible the roofing of a square plan by a dome. The Byzantine dependence on color by the use of inlays of marble and mosaic for their decorative scheme became the basis of all Mohammedan and Near-Eastern art, and the exquisite arabesques and inlays of the Alhambra, built by the Moors in Spain, are all offspring of Sancta Sophia.



Taj Mahal, Agra, India

Although said to have been designed by a European is nevertheless regarded as the pearl of Indian architecture. The perfect setting and superb workmanship are important factors in its beauty.

The principal monuments of the Romanesque elsewhere in Europe are: in Italy, Saint Mark's in Venice, showing strong Byzantine influence, and the Leaning Tower, Cathedral and Baptistery in Pisa; in France, many vaulted churches which vary in their constructional scheme according to their locality; in England, all the Norman churches and cathedrals, such as those at Durham and at Canterbury; along the Rhine, a number of fine brick churches of which the Cathedral of Mayence is a good example; and in Spain, many churches (such as that at Salamanca), often altered into the succeeding Gothic.

The Gothic Style. The fifth century B.C. in Greece, and the thirteenth century A.D. in France, are usually regarded as marking the highest peaks to which architecture, as a fine art, has attained. Perhaps future historians will place our present epoch beside them. In the thirteenth century in France and in other European countries were built the great cathedrals which have immortalized the Middle Ages. Their style is called "Gothic"—not a very appropriate name, but one too firmly entrenched to be uprooted.

Romanesque architecture rather suddenly developed into Gothic through the invention of three architectural devices. The first was the ribbed vault; the second, the flying buttress; the third, the pointed arch. All three made it possible to build naves of great height (Beauvais is 165 feet in the clear); but it is the pointed arch which gives the style its characteristic appearance, because this form was uniformly used in ornamental as well as in structural features.

Whereas the Romanesque found its limited opportunity in the abbey church, the monastery and the fortress, the Gothic found a broader and more magnificent field in the great cathedral and in secular buildings of various kinds, such as town halls, palaces and college buildings. The Gothic style owed much to its sister arts, sculpture, stained glass, and even painting. Every cathedral with its piers, buttresses and towers leading heavenward, its niches filled with statues of saints and kings, its great windows glowing with the fires of stained and leaded glass, its altars hung with rare fabrics and painted with scenes from the Scriptures, became a symphony of beauty and exaltation. No wonder they thrill us today! The Gothic style can usually be dated by its window tracery, which became, in its development, more complicated and ornate.

The monuments of the Gothic style are far too numerous to list. Some of the great cathedrals are: in France—Chartres, Amiens, Rheims, Paris; In England—Salisbury, Westminster Abbey, York, Canterbury; in Germany—Cologne, Strassburg, Freiburg; in Belgium—Antwerp; in Spain—Seville, Burgos, Toledo; in Italy—Florence, Orvieto, Siena, Milan. Other examples of Gothic occur in Belgium's town halls and Italy's civic buildings.

The Classic Renaissance. The meaning of the Renaissance has already been suggested, and its architectural peculiarity—the abandonment of medieval forms and the return to the classic—(the architecture of Greece and Rome) has been pointed out. Architecturally, the Renaissance began in 1420 when Brunelleschi, the architect, used classic forms in the addition of the great dome to the Cathedral of Florence. Classic art became the fashion; Gothic was looked upon with contempt. We know the names of very few ancient or medieval architects. With the Renaissance they became important personalities. Alberti, Bramante, Peruzzi, Raphael, Michelangelo, Palladio, Vignola—all followed the example of Brunelleschi, and developed the application of Classic art to modern problems.

About 1500 the Renaissance, partly through French conquest, but mostly through fashion, spread to France. Here it became associated with the reigns of brilliant kings, each of whom developed it in some characteristic fashion, and gave his name to the period,



St. Peter's, Rome

The largest church in Christendom is the greatest monument of the Renaissance. It was built during the sixteenth century by a number of architects, the greatest of whom was Michelangelo.

such as Francis I, Henry II, Henry IV, Louis XIV, Louis XV, Louis XVI, The Empire (Napoleon).

The English work in its early stages was less sophisticated and much cruder than her models. Here the periods are named from the reigning families or rulers, such as Tudor, Elizabethan, Jacobean, Georgian. England has given us perhaps the best known of all architects, Sir Christopher Wren, the builder of Saint Paul's Cathedral.

Germany, through the influence of its great artist, Albrecht Dürer, adopted the Renaissance. Here it developed in a manner somewhat similar to that of England. Spain produced in the Plateresque and Churrigueresque styles the most fantastic variations of Classic motives that are to be found.

The American colonies, before our government was founded, were active participants in the Renaissance. Our beautiful Colonial is an importation of the English Georgian, tastefully adapted to our needs and materials.

The only thing which the Renaissance held in common with the Gothic was its dependence on the sister arts. Renaissance buildings, particularly in Italy, were embellished with the most beautiful painting and sculpture. The art of the landscape architect was a new development; and great palaces, such as those at Versailles in France, owe much of their effect to the gardens, fountains and trees. Though the architects of this period borrowed the orders and most of their constructional features from ancient Rome, and their dome construction from Sancta Sophia, yet they used great ingenuity and a high degree of skill to conform these to the complexities of modern life. They also, in the invention of the true truss, added a great structural principle to architecture. The amount of building in the Renaissance vastly exceeded that of all the preceding periods, and almost all of it exists today. Only the briefest summary can be made here.

Italy. This land, which had so woefully lagged behind in the Gothic period, inaugurated and predominantly led in the Renaissance. The Pitti and Strozzi Palaces in Florence; the library of Saint Mark in Venice; palaces and churches almost without number in such cities as Sienna, Milan, Vicenza, Genoa; and especially the Farnese Palace, the Vatican, and the greatest church in Christendom—Saint Peter's in Rome, culminated one of the most brilliant architectural epochs in history.

In France we find the chateaux of the pleasure-loving monarchs, such as Blois and Fontainebleau; great churches, like the Invalides and St. Sulpice in Paris; and the magnificent palaces of Versailles and the Louvre.

England gives us many manor houses, the palace of Whitehall by Inigo Jones, and the famous churches and Saint Paul's Cathedral, all from the mighty hand of Sir Christopher Wren.

In Germany the buildings were fewer, comprising town halls of picturesque design and the ruined castle of Heidelberg.

The architecture of Spain varies between the greatest exuberance, as at Salamanca, to the utter frigidity of the Escorial, the palace and tomb of Philip II.

Town halls and churches were built in lesser degree in Holland, Belgium and Scandinavia.

Later Architecture in Europe. About 1800 the Greek buildings of the Acropolis in Athens became, for the first time, widely known. This gave rise to an architectural fashion known as the Greek Revival. Its best monuments in England are Saint George's Hall, Liverpool, and the British Museum. Germany gives us its art museums and the Brandenburg Gate; France, much more original, the beautiful Madeleine and the magnificent Arc de Triomphe. Towards the middle of the century there was a Gothic revival in England that produced the houses of Parliament; and in France, a rich form of Classicism under Napoleon III that has given us the gorgeous Opera House in Paris. At the close of the century Italy produced the ostentatious Victor Emmanuel Monument. Our own century has seen the birth of secessionism, or "modern art," in Europe. Most original and interesting work has been done in Germany and the north countries, especially the railroad station at Helsingfors, Finland, and the city hall in Stockholm. At the present day, modernism, which is a departure from classic examples, is growing apace; and in the direction particularly of construction and of planning, America is exerting an increasing influence in Europe.



Mount Vernon

The home of Washington is a beautiful example of our Colonial, sometimes called Georgian, architecture. It was built about the time of the Revolutionary War and stands on the banks of the Potomac near Alexandria, Virginia.

Mohammedan Architecture. From the eighth century A.D. onward for a thousand years, a characteristic and often magnificent type of architecture was practiced at varying times in the great stretch of territory from Spain on the west along the southern shores of the Mediterranean to northern India on the east. The style is based on the Byzantine. Structurally, it depends on the dome and vault; decoratively, on the elaborate geometrical surface ornament and on color (rather than on light and shade), for effect. Its buildings are principally mosques, palaces, tombs and city gates. Its great centers are in the Moorish cities of Spain where the Alhambra, the Mosque of Cordova and the Giralda Tower furnish magnificent examples; in the Arabic city of Cairo, with its many mosques, of which the mosques of Omar and of Sultan Hassan are characteristic; in Constantinople, where the Turks have built the great Mosque of Suleiman; in Persia, with its tomb at Sultaniyeh; and finest and noblest of all, the buildings of the great Mogul Empire in northern India. The Taj Mahal at Agra, the gem of the style, was built as a tomb by Shah Jehan about 1650. In beauty of material, proportion, workmanship and setting it is hardly surpassed by any building in the world.

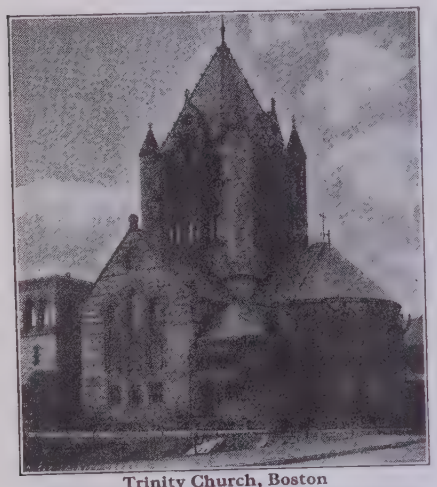
Oriental Architecture. The Hindu and Buddhist styles of India and the architecture of China and Japan are so remote, and their contact with our arts so slight, that a description of them must be very brief. Indian architecture dates as far back as 279 B.C. It has various manifestations, and the buildings are either domical shrines to Buddha (called "topes"), rockcut temples, or monasteries. Use was made of both domes and columns, and surfaces were elaborately carved with ornament and allegorical figures. Horizontal emphasis predominates. Monuments are scattered over the whole land, but predominate in the South.

Chinese and Japanese Architecture. The architecture of China and Japan has been chiefly of wood and perishable material, and is oriental in general appearance. With the exception of tower-like pagodas, the temples are low and insignificant, and are usually aggregations of small buildings. It is remarkable that the splendid sense of beauty in decoration in both these races has not led to a noble architecture. Perhaps this is responsible for the fact that European architecture is supplanting the native styles.

Architecture in the United States. Architecture in the United States used to be summarized in, and dismissed with, a paragraph or two. The extraordinary development and expansion of building in the last thirty-five years has, however, raised America to world supremacy, and its architectural development has become a thrilling story that all should know.

Colonial Style (1630-1800). Our colonists and the citizens of our infant republic looked to England for their models in

building; so the early American houses built before 1700 were small, crude, very simple, and without architectural detail, very like houses of the reign of Elizabeth in England. Such is the Capen house, Toppsfield, Massachusetts, or the Paul Revere house in Boston. About 1730, safety, prosperity and regular intercourse with England were established, and with them the architectural style of the mother country was imported. This is the



Trinity Church, Boston

Georgian, a form of the Renaissance which makes great use of the orders and classic detail. The orders, with excellent taste, were altered in proportion to fit American material, which was for the most part good white pine. For the greater part of the century the style was vigorous and robust—the influence, doubtless, of Sir Christopher Wren. After the Revolution the style became delicate and attenuated, following the mode dictated in London by the Adam brothers, famous architects and designers. Buildings were limited to houses, churches and a few town halls. Good examples exist in Mount Vernon, the home of Washington; Old South Church, Boston; St. Michaels, Charleston; and Independence Hall, Philadelphia.

Post Colonial (*1790-1820*). Thomas Jefferson, on his return from France, where he had been the American minister for four years, turned our eyes from England to France. Jefferson built three important buildings—Monticello, his home; the capitol at Richmond, and the University of Virginia. Professional architects began to appear, such as Charles Bulfinch. The old City Hall in New York City was built in the French manner. At Washington the Capitol was under construction, and the White House was built.

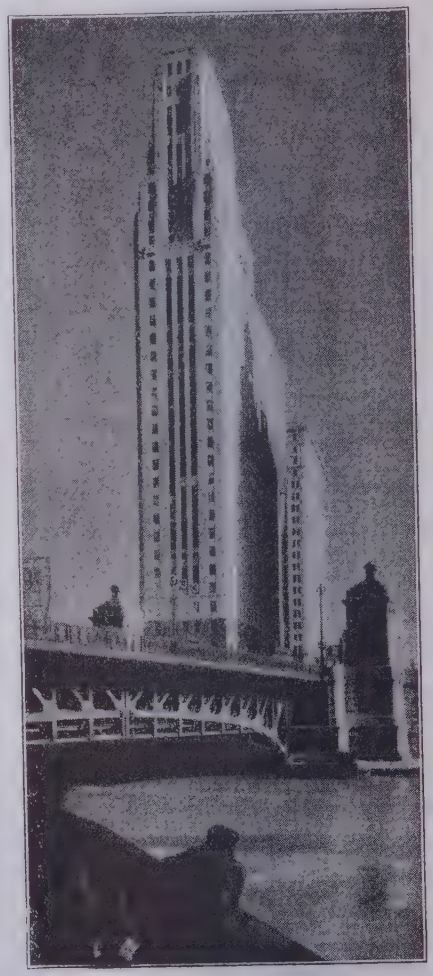
Greek Revival (*1820-1850*). We have mentioned the Greek Revival in Europe. It was introduced into America by a famous architect, Benjamin Latrobe, and, curiously enough, it flourished among our pioneers. The Greek style was used for every kind of building from the Atlantic Ocean to the Great Salt Lake and throughout the Southern States. Arlington, Virginia, the home of Robert E. Lee, is a fine example; perhaps the best is Girard College, Philadelphia.

Parvenu (*1850-1880*). Our attitude toward architecture was decidedly provincial in the years immediately preceding and following the Civil War. These years mark the low ebb of taste in America. We attempted to borrow the architectural fashions of the hour from England, and, at the same time, from France. The first exists in many examples of a debased form of Gothic made popular in England by John Ruskin; and the second, by the fashionable and elaborate Classic style, popular in Paris under Napoleon III. Look about you for houses with cupolas and mansard roofs. They all belong to this period. Good examples exist in Memorial Hall, Harvard University and in the Philadelphia City Hall. The Centennial Exposition, Philadelphia, 1876, marked the high point of the Parvenu era.

Romanesque Revival (*1880-1893.*) H. H. Richardson, a famous architect, built Trinity Church, Boston, in 1877. It caused a sudden and extraordinary vogue for building in the Romanesque style, second only in popularity to the rage for Greek art of fifty years before. During this era, about 1886, the skeleton steel frame for skyscrapers was invented, of which the first completed example, now torn down, was the Tacoma Building in Chicago.

Eclecticism, 1893, to the World War. The World's Fair in Chicago, 1893, of which Daniel H. Burnham was architect-in-chief, overthrew the Romanesque revival almost overnight, and reintroduced the Classic style in its various forms. McKim, Mead and White in the Boston Public Library became leaders in taste, while Ralph Adams Cram and Bertram Goodhue revived the Gothic. Many professional architects appeared after the Fair, and all styles were practiced with skill. More or less standardized types of buildings were developed, such as railroad stations, banks, Y.M.C.A. buildings and high schools. Great examples are the Pennsylvania Station, New York; the Union Station, Washington, D. C.; St. Thomas's Church, New York; the New York Public Library; Harkness Memorial, New Haven. Beautiful villas were built in Newport, in Santa Barbara and in Lake Forest, Illinois. Throughout the country, architects struggled with the problem of the skyscraper, and although they developed it mechanically, they failed to find its true form of artistic expression. Some of the great skyscrapers of the period are the Times Building and Woolworth Tower, New York City. Louis Sullivan, a courageous and brilliant architect of Chicago, in his Transportation Building at the World's Fair, suggested an original kind of design which attracted many young men who hoped from it to develop a purely "American style." Sullivan's dictum was that form must express function. The best-known disciple of Sullivan is Frank Lloyd Wright. His Midway Gardens, Chicago, was an excellent example. The Eclectic period is by all odds our most prolific one, and reflects the vast wealth and power of our country as developed in the last thirty-five years.

Modernism. Vast changes have occurred in the culture and art of the world since, and perhaps on account of, the World War. In architecture this is made evident by the use of new forms in ornament, and by a vast improvement in the designs of the skyscraper which is, after all, America's greatest contribution to architecture. The second prize design in the Tribune Tower competition by Eliel Saarinen, in which he eliminated all cornices, had a great deal to do with this; so did the New York building laws, which enforced "step-offs" and thereby gave buildings a terrace-like effect. All great skyscrapers are now built according to the new inspirations. Famous examples are the Telephone, the Chrysler and the Empire buildings in New York City, the Palmolive, the Daily News, the Civic Opera buildings in Chicago and the Telephone Building in St. Louis. The Merchandise Mart in Chicago and the new State House in Lincoln, Nebraska, are important examples of the modern style. The Caddo Parish Court House in Shreveport, Louisiana represents well the modernized Classic. The Bok Singing Tower in Florida is in the Gothic tradition treated with modern freedom.



The Skyscraper

The 333 North Michigan Avenue Building, Chicago, is typical of the new era of the American skyscraper. In the whole history of the world no nation has approached America in the extent and cost of its architectural productions.

You who have read this article are living in a wonderful age. You are seeing greater things being created in architecture than the world has ever seen before. You are witnessing perhaps the birth of a new era. It is a glorious opportunity. Know it, and be a part of it!

SCULPTURE

SCULPTURE, in the strict sense of the term, refers only to works carved or cut by hand in some solid substance; but it is extended to include all plastic forms, cast, molded, hammered, carved or engraved—everything, in fact, where a surface is changed by man's intervention directly or indirectly.

The Materials of Sculpture. Almost every imaginable material has been used, the most popular being gold, silver, bronze, ivory, marble and other stones, clay, enamel, wax and plaster. Sometimes several materials are combined. In the chryselephantine (from the Greek words meaning "gold" and "ivory") sculpture of the Greeks, some parts of the surface of a statue were of gold and others of ivory. In many medieval and Renaissance wood carvings the surface was entirely concealed by a thin coating of plaster which, in turn, was colored; silver was often gilded, and stone and terra cotta were coated with stucco.

Polychromy. We are so accustomed to a colorless sculpture in stone that we forget how large a part was played in the past by polychromy, or the art of giving a colored surface to sculpture. This was particularly the practice among the Babylonians, Egyptians, Assyrians, Persians and early Greeks. It even survived through the best Greek periods and was also used by Etruscan, Roman, Medieval and Renaissance art. Of course most of this color gradually wore off when exposed to the weather, and this makes it difficult for us to understand exactly how a great deal of the sculpture appeared when it came from the sculptor's hand. One method, the glazed and colored terra cottas, was permanent. The lions and other animals and figures built up of enameled tiles in relief, found at Babylon, Susa and Khorsabad, show how familiar this method was to the ancient Orient. The most famous later examples are the terra cottas of the Italian Renaissance, called "Robbia" ware. Many medieval and Renaissance ivories, wood carvings and stuccoes also preserve a rich coloring.

The polychromatic remains of Greek sculpture are naturally much less well preserved, but there is enough to show that brilliant and heavy coloring was used at an early date, especially in architectural sculptures. As soon as marble replaced other stone it was not necessary to stucco and paint the entire surface, and the polychromy was gradually restricted to patterns and borders, to shading the eyes, the hair and other details. The interesting statues of women found on the Acropolis, after being buried there since about 480 B.C., show the most exquisite of the early coloring. The so-called "Sarcophagus of Alexander" in Constantinople is the best preserved example of the latest and most delicate work. We are told that Nikias, a famous painter, was accustomed to color the masterpieces of the Greek sculptor, Praxiteles.

Surface Treatment. There is great variety in the treatment of surfaces, from sculpture in the round, at one end, to intaglio at the other. In the process of intaglio (depressed below the surface), used particularly in precious and semi-precious stones, the design is excavated and often reversed. Sometimes the design is merely scratched or outlined on the surface, as in Greek and Etruscan bronze mirrors and jewel cases. Next comes work in which the background is but slightly lowered (stiacciato), the figures being kept flat with cameo-like unreality, sometimes in connection with figures in higher relief in the same composition.



The Age of Bronze
By Auguste Rodin. One of his first important works and counted by many one of his finest.

In low relief, whether Oriental or Greek, it was the early custom to carve all figures on the same plane. The Romans added the idea of combining figures on different planes in a single composition in which the figures in the foreground are so nearly detached as to be held by only one or two members of the figures behind them, giving practically the effect of statuary.

Statuary and sculpture in the round is where the surface is free standing on all sides, as in statues that stand out on pedestals, to be viewed from any point. But the majority of such works in the past have been made to stand against some background, in a niche, in the gable of a temple, in the portal of a Gothic cathedral and in similar locations; they were often left unfinished in the parts that could not be seen.

The Mission of Sculpture. Sculpture of the human figure has a triple mission: to express plastic beauty of form; to embody thought and feeling, and to act as a chronicler of facts. It was not always able to carry out this triple mission; in fact it did so only during three periods: the Greco-Roman, the Gothic and the early Renaissance. The particular genius of sculpture assigned to it certain limitations. If could not, of course, tell a story with the same detail as painting. On the other hand it could embody—better than could painting—the deeper, broader moods of typical humanity.

At the other extreme is sculpture turned into pictorial channels; this was mainly in relief work, especially when the Romans had, as we have already seen, opened up the way by using a multiplicity of figures in several planes. The Alexandrine reliefs of Greco-Roman art—with their backgrounds of landscape and architecture and the spiral narrative of Trajan's column—lead up to such elaborate compositions as the early Renaissance scenes in Ghiberti's *Gates*.

THE HISTORY OF SCULPTURE

Considering its broad historic lines, we find that sculpture has had a history of nearly 6000 years. For the first 3500 years (from about 4000 B.C. to 500 B.C.) it remained a form of narrative, an embodiment of certain facts or persons. It was instructive, but not intended to convey any pleasure. It had little or no esthetic value. Such was the sculpture of Egypt, Babylonia, Assyria, Persia and other nations of the East.

About 500 B.C. the Greeks began to make of it not only a vehicle of thought and feeling, but an end in itself—a thing of beauty and interest. Sculpture then became in every way an art. The Romans continued this idea, with variations and a gradual loss of beauty, until the final downfall, about 300 A.D.

Sculpture had thus been of esthetic value for about eight centuries. It then lapsed once more into an embodiment of fact; but, more than in its earliest stages, it was used to express thoughts and beliefs, though with infirmity of technical skill. This esthetic eclipse, this dark age, lasted for nine centuries, from about 300 A.D. to 1200.

Then, contemporary with the Gothic impulse in the North, came to Italy a new birth similar to that of Greece, combining in the same way a love of nature and artistic imagination, perfection of technique and a wealth of ideas to be expressed. Sculpture once more was complete and practiced for its own sake. During the Renaissance, imagination gradually gave way to an emphasis of naturalism. Types were displaced by individuals. Post-Renaissance work becomes somewhat artificial and spectacular, leading to the simplicity of the neo-Classic revival as a reaction. But, dissatisfied with its cold artificiality, the leading sculptors of the nineteenth century have in various ways sought the secret of plastic expression mainly through naturalism, simplicity and occasionally by a forceful realism that is inspired as if by the primitive passions of earth.

Egypt. Aside from the crude figures of prehistoric animals outlined on the rocks by cave men, the earliest sculptures are those of Egypt. There is a monotonous uniformity in

Egyptian sculpture during the 4000 years of its history; but a real vitality appears at two periods: at its beginning and again under the Ptolemies. This shows itself especially in portraiture. The heads may be rigid, but they are certainly realistic; this realism was less a matter of art than of religion. It was believed that the soul of the deceased would return at intervals to inhabit the body, and in case anything should have happened to the body, portrait statues were provided with heads so realistic that the soul would be sure to recognize it. Hence the fanatic pains to reproduce every smallest peculiarity and hence, also, the filling of the chamber tombs of Egypt with such statues. With the waning of religious belief came also a decline in this realism. The famous *Seated Scribe* in the Louvre, the *Kneeling Washerwoman* and the *Mayor of the Village* at Cairo, are among the most extraordinary works in this style thus far found.

In royal and divine figures, Egyptian sculpture is sometimes vastly impressive.



An Egyptian Queen

Nefertete, Queen of Egypt and wife of Iknahton, "The Heretic King," (fourteenth century, B.C.). A vivid presentation of refined beauty.

The statue of *King Khufu* of the Great Pyramid, at Cairo, and the colossal rock-cut statues at Ipsambul, are plastic embodiments of the genius of Egypt and rise to the dignity of works of art. They are the exceptions. There is decorative value and delicacy of detail in much Egyptian relief work, especially in the Middle Empire; but the dead hand of traditionalism always checked progress in the study of the figure.

Babylonia, Assyria and Persia. Although sculpture began in Babylonia almost as soon as in Egypt—not long after 4000 B.C.—it never equaled it either in amount or value. The sculptors suffered from lack of adequate material, and the hard diorite, an imported rock, gave an even more disagreeable stiffness to statuary than was the case in Egypt. The statues from Tello in the Louvre are typical.

In Assyria (Babylonia's successor in artistic leadership in western Asia), numerous quarries of soft limestone gave an opportunity to develop relief sculpture and to spread the exploits of the Assyrian kings on the inner palace walls. In this same way the walls of tombs and temples had been covered in Egypt. Although sculpture was still chiefly narrative and still hampered in movement, we must confess to receiving a distinct impression of force from the muscular and energetic Assyrian warriors, and of animal vitality from the hybrid monsters who guard the portal of the palaces. The Assyrians were great sportsmen and hillmen; they therefore knew and studied animal life and could reproduce animals far more faithfully than men. The lions, wild asses, deer and hounds that we see in the royal hunts—wounded, slain or led—are full of character and realism. In fact, in the opinion of some critics, one must go forward 2500 years to the modern work of Barye to find equal understanding of animals in action. One Assyrian reproduction of a wounded lioness, with paralyzed spine, dragging herself along, is famous.

All the other peoples of the Near East practiced sculpture to a certain extent; but among the numerous works of Persian, Hittite and Phoenician artists, nothing emerges of especial interest. Nearly everything is a more or less lifeless imitation of Babylonia and Assyria, or, occasionally, of Egypt.

The Sculpture of Greece. Greek sculpture may be divided into four periods: the archaic style, before 480 B.C.; the grand style of the fifth century; the beautiful style of the fourth century; the dramatic and picturesque style of the Hellenistic Age.

First Period. A few carvings of an ancient Aegean art have been preserved. Recently other interesting remains from the Minoan period have been found in Crete and in the Peloponnesus. The Dorian invasion seems to have wiped out this strange civilization, and it is not until the sixth century B.C. that sculpture reappears. Two distinct racial schools were formed: the Ionic, originating in Asia Minor, and the Doric, with its center in Greece, in the Peloponnesus. We are accustomed to these styles in architecture; they were quite as real in sculpture. The Ionian school developed relief work and the draped female figure, and showed poetry and imagination in types of gods, heroes, legends and myths. The Dorian school studied particularly the nude male figure, and perfected the athletic type. Both schools made an attempt at portraiture and realism in details, a fact which proves considerable power of observation, though as yet there was no sense of life. It was an age of incubation. The most interesting exceptions are those fascinating "priestesses" from the Athenian Acropolis, each a different character study.

The famous statues of the gables of the Temple of Aegina, now at Munich, are the best works of the pure Doric school. The recent discoveries at Delphi have given notable works of both schools to this age: the unique *Bronze Charioteer*, purely Doric, and a series illustrating the development of relief sculpture during the century preceding the Parthenon (550-450 B.C.).

The reaction against the stiffness of the early athletic figures, with arms glued to their sides, already evident at Aegina, is emphasized in the group of the tyrant killers, *Harmodius* and *Aristogiton*, carved by Critius and Nesiotes, of which a copy is in Naples. They are rushing forward vehemently to strike the tyrant Hipparchus. This vehemence is itself eliminated in the works of the greatest predecessor of Phidias, Myron, in which mastery of physical form in action is complete and yet repressed. His two masterpieces, of which copies remain, are the *Discobolus* (disk thrower), bending low for the throw, and the *Marsyas* (a god of nature, resembling Pan), starting back as he sees the flutes of Athena. The *Marsyas* is in the Lateran at Rome. All traces of the archaic have disappeared except in such minor details as the hair. Yet the grand style does not appear, for Myron was a materialist, and great art required the creative imagination of a Phidias. The charming *Girl Runner* in the Vatican shows a similar mastery of the trained female form at this time.

Another preparatory work was the gable sculpture at the Temple of Zeus in Olympia, excavated by the Germans. It represented, at one end of the buildings, a fight between Lapiths and Centaurs, and at the other a chariot race. The grouping and posing are freer than at Aegina; here there is promise of great achievement soon to follow. Apparently the artists, said to be Paeonius and Alcamenes, relied considerably on polychromy and distance. The stately Apollo in the center is still somewhat archaic, while the reclining seer is a realistic portrait. It is archaic art made supple and human before the advent of the Phidian types.

Second Period. The decorations of the Parthenon are the greatest works of sculpture of any age. They are nearly all collected in the British Museum. It is impossible to say whether Phidias himself actually handled any part of them, or whether he did more than merely plan them; but as all his famous masterpieces, such as the colossal statues of *Athena Parthenos* and the *Olympian Zeus*, have disappeared, they are our only clue to his style. The two pediments stand closest to Phidias. One pictured the *Birth of Athena*, the other the *Contest between Athena and Poseidon for Athens*. The most wonderful of the remaining male nude figures are the *Theseus* and the *Cephisus* or *Ilissus*, both reclining. Of the females, the group of the *Three Fates* is perhaps the grandest in existence—grand in its majestic beauty; in the drapery, minute yet broad, free yet clinging; in the full yet supple forms, showing so richly in Ionic softness.

The frieze representing the Panathenaic procession in honor of Athena had an average relief of only one inch and a half, but the extraordinary modeling makes the figures appear to project much farther, and this effect is increased by the skillful overlapping managed through inclining the planes. The most beautiful of the figures in repose is the group of the three gods from the east frieze, still in Athens; but it is difficult to select one slab as more perfect than another among the graceful groups of Athenian horsemen and maidens. They are the embodiment of idealized humanity expressed by an art as subtle in the rendering of personality as in that of form and texture.

There was another great master in the fifth century, Polyclitus. Being Dorian rather than Attic, he naturally excelled in athletic figures. His masterpieces are the *Diadumenos*, a young victor binding the fillet around

his head, and the *Doryphoros*, an athlete with a spear. The latter embodies in his square, massive build the law of proportions for the human body which Polyclitus established as a rule to be followed by all sculptors. The bronze originals are lost; but Roman copies in marble, more or less accurate, remain in various museums. Another noted work was a wounded Amazon, of which the best copy is in Rome (Vatican). Polyclitus' colossal statue of *Hera* (Juno) was as much admired as the *Olympian Zeus* of Phidias; the bust of the *Ludovisi Juno* in Rome and another in Naples have been supposed to reproduce its noble head.

Third Period. Praxiteles, about 350 B.C., introduced a new ideal of grace and beauty, a different feeling for textures and postures, a more humanized and less lofty esthetic ideal. This humanism was heralded by Cephisodotus, in his *Irene and Plutus* (Peace nursing Wealth), preserved at Munich in the marble copy of the bronze original. The most beautiful of Praxiteles' statues was considered by antiquity to be the *Aphrodite of Cnidus*. Of the lost original, the best copy is in the Vatican. It was the most famous of Greek nude Aphrodites: soft and voluptuous, yet broadly developed; shrinking, yet conscious of her beauty. She has the melting, dreamy gaze characteristic of Praxiteles. Almost as famous was the *Satyr*, of which an admirable torso is in the Louvre; but the best copy, as a whole, is in the Capitoline Museum (Rome), where he rests against a tree-trunk with left hand on hip, careless and playful. There are many less artistic replicas. But there remains one original by the hand of Praxiteles himself which, though less famous in antiquity, is far more precious to us because it gives his own handling, which was so great a part of his art. It is the statue of Hermes holding the infant Dionysus, found at Olympia, a masterly combination of strength and tenderness, of structure and finish. The feeling for texture is equally exquisite in flesh, hair and drapery.

Another sculptor, quite as great as Praxiteles, and as dramatic as Praxiteles was self-poised, was Scopas. His is the spirit that heralds the coming age. He took part in the most ambitious sculptural work of the times, the Mausoleum of Halicarnassus, built after 351 B.C. Many superb pieces are in the British Museum, especially the majestic colossal statue of Mausolus himself, and the frieze of the Amazons, which is interesting to compare with fifth century work. It is less crowded, more delicate and lithe. The museums are full of the statues of the schools of Scopas and Praxiteles: gods and goddesses (particularly Eros and Aphrodite), satyrs and fauns, as well as various portrait statues of poets and philosophers. This period was the golden age for well poised, beautiful, calm humanistic types. There was also, however, the dramatic and pathetic side to this art, represented especially by Scopas, and there are copies of one group of statues in particular that render this spirit splendidly: the statues of Niobe and her children being slain by Apollo and Artemis. The best are in Florence. Among the numerous figures, the son of Niobe with upstretched arm and sweeping drapery and Niobe herself protecting her youngest child, are especially appealing. Among single figures the *Meleager* of the Vatican is typical of Scopas and typical, too, of Roman translation.

Latest of the fourth century masters is Lysippus, a prolific and popular artist who headed the Dorian or Sicyonian school. He revived the Polyclitan idea of a canon, or rule of proportion, of the human figure, which he made slenderer and with smaller head. The best copy of his masterpiece, the *Apoxyomenos* or the athlete cleaning himself with a scraper, with its light pose and agile strength, probably embodies his law. *Agias*, a more recent find at Delphi, is believed to come closer to the actual art of Lysippus.

The most beautiful work of the end of this age, and the best preserved work of Greek sculpture, is the *Sarcophagus of Alexander* from Sidon, in Constantinople. Its hunting and battle scenes between Greeks and Persians are even more picturesque than the Amazon frieze of Halicarnassus; and the effect is enhanced by the perfect condition of the surface, on which every detail of the delicate polychromy remains to show us how perfect art can eliminate the hard whiteness of the marble.

Fourth Period. The conquest of Alexander assisted in the spread of Hellenic sculpture throughout the East, and changed its character by creating new centers of artistic production. Athens, and even Greece itself, ceased to lead. The principal schools were at Alexandria, Rhodes, Pergamon and other cities of Asia Minor. Sculpture became more pictorial, dramatic, realistic. Landscape, portraiture, genre, child life, colossal figures and groups, historic scenes and theatrical episodes became the fashion. The placidity and grace of the previous age were lost. Many among the best known Greek originals and copies belong to this period. Conspicuous is the *Apollo Belvedere*, a Roman copy in marble of a bronze Greek original of Apollo as an archer—a graceful figure which became famous at a time when few Greek originals were known. The statue of Apollo's sister, *Artemis* (Louvre), as huntress is a companion to it.

To continue examples of types of the Olympian gods: the famous Otricoli head of *Zeus* (Vatican), popularly thought to represent the Phidian Jupiter, is a splendid conception of this time in a Roman copy. There are two spectacular figures of Hercules, the originals of which are of the school of Lysippus: one is the *Farnese Hercules* (Naples), an exaggerated muscular figure in repose, the other is the much admired *Torso Belvedere* (Vatican). Of the figures of Venus or Aphrodite, the foremost and the only Greek original is the wonderful *Venus de Milo* (Louvre), which rises above the achievements of our age, and is a thing of such serene beauty as to stand on a level with even the sculpture of the Parthenon. The exquisite handling of flesh and drapery, and the grace of the pose, are subordinated to the artist's conception of the goddess as superwoman.

A Greek original dating from the very beginning of this age (about 306 B.C.) is the statue of *Victory* found at Samothrace (Louvre), a nobly exultant work adorned with flying drapery.



The Fates

From the east pediment of the Parthenon. Considered by many the noblest sculptural group in the world. "A most marvelous translation into marble of flesh and of drapery—the highest ideal of womanhood in Greek art."

Pergamum, in Asia Minor, was the seat of the Attalid kings. Its greatness was due to Attalus (241 B.C.), whose victories over the hordes of Gauls were commemorated in a group of bronze statues. The intensely dramatic figure of the *Dying Gaul* (Capitol, Rome) is an early marble copy of one of these masterpieces, and a realistic study of a barbarian hero. Another copy from this series is the Gaul slaying himself and his wife in preference to falling a captive (Terme Museum, Rome). Eumenes, the direct successor of Attalus, built at Pergamum the great *Altar of Zeus*, called "one of the Seven Wonders of the World." It was surrounded by an enormous carved frieze, large parts of which have been excavated and are in the British Museum. The subject is *The Battle of the Gods and Giants*. It is for the Hellenistic age what the Parthenon sculptures are for the fifth century. The two finest sections are those where Zeus, in one case, and Athena, in the other, are engaged in combat. There is an exuberant and massive vigor about the figures, a restlessness and intricacy, a contrast of light and shade, a clashing of lines in the composition that, combined with the size of the figures, make it quite overpowering. The relief is so high that the figures are almost detached and have the effect of gable, rather than of frieze, sculptures. For nearly three centuries this great Pergamene altar influenced art.

This influence is shown in the spectacular group of the *Laocoon*, by Agesander and his

two sons. They were of the Rhodian school, and completed their work about 100 B.C. We see in this struggling and writhing mass an artificial form of the dramatic art of the earlier Pergamenians, in which everything is sacrificed to technical display. It corresponds to the late baroque style of Bernini after Michelangelo. To the same school and date belong the group of the *Farnese Bull* in Naples, representing the punishment of Dirce, fastened to a bull by her stepsons.

Portraiture was also developed. There are a number of characteristic heads of Alexander, conspicuous for his leonine locks, his deep-set eyes and his neck drawn down to one side. In the Naples Museum are many bronze heads from Herculaneum of this age, some supposed to be portraits of the Ptolemies; others are of the famous Greek philosophers and poets. The boy with a goose, in the Louvre, after Boethus, and similar pieces in the Vatican, show the genre work that was so popular in Alexandria.



Louis d' Orleans
By Frémiet, a French sculptor, noted for his equestrian statues. At Pierrefonds, France.

Roman Sculpture. Rome added certain new elements to the heritage of sculpture. These were principally in portraiture, in historic relief, in equestrian statuary and in decorative sculpture. This is indeed a wide field.

Portraiture. In almost any of the large museums one is impressed by some characteristic Roman bust or portrait statue. Ancestor worship and the use of realistic wax figures and painted terra cotta portraits so common in Republican Rome explain why, under the Empire, portraiture in marble and bronze attained to a perfection never equaled before or since. It is a realistic art in which there is enough of idealism to save it from being a mere photograph of nature. This art kept its excellence for nearly three centuries. To compare the seamed and gnarled old man with near-sighted eyes in the marvelous head of the time of Cicero, with the serene countenance of Augustus from his statue in the Vatican, is to see the two sides of this art in its earliest stage. The technique is perfect but unobtrusive. One can gain a clearer idea of Roman character from these heads than from reading Latin literature. Heads of the equally rotund and unintellectual emperors, Vitellius and Vespasian, are amazingly characterized. And, before the art begins to stiffen, these are followed by numerous excellent portraits of Trajan and Hadrian. Even then there are remarkable exceptions, such as the heads of Caracalla, a masterly transcript of unbalanced fury, and vicious return to primitive type. How different all this is from the Greek ideal of concealing the emotions under a serene and perfectly balanced exterior, and of giving to sculpture the form of types instead of the form of individuals!

Many of the portraits belong not to busts but to life-size or colossal statues, in which one may say that Hellenic and Roman peculiarities were combined. The emperors were represented often as gods, and as nude or slightly draped figures of Hellenic type. They were also shown as orators and benefactors, in statues of a kind similar to those of Sophocles or Demosthenes produced by later Greek art. But they also appear as generals in full military panoply, like the Vatican Augustus, and this form is typically Roman. There never was a time in the history of sculpture when so many honorary portrait statues of persons of every sort, men and women, were erected. The squares of every town, the basilicas and porticos, the villas, the baths, the theaters and hippodromes, were all peopled with hundreds of these works. So we may say that the Romans throughout the world, were surfeited with sculpture to an extent unknown even to the Greeks.

Historic Relief Sculpture. The second peculiarly Roman field was historic relief sculpture. This was made possible by the new form given to work in relief. Roman artists revolutionized the art. Their realism seized on sculpture as a medium for expressing national and political life as well as mythological scenes. They attempted at first to do this without radically breaking away from the Greek methods. We see this in the reliefs covering the marble parapet that encircled the famous Altar of Peace. Erected in the Field of Mars at Rome in 12 A.D., its purpose was to celebrate the pacification of the world by Augustus. In contrast with the Hellenic symbolism, which left out the personality of Pericles and the other Greeks whose position corresponds to that of the Romans, we see here the imperial family headed by Augustus on their way to the great commemorative sacrifice.

Out of this graceful semi-Hellenic Augustan style it took a century to develop what was characteristically Roman—forceful, dramatic, picturesque and story-telling. A halfway stage was marked in 81 A.D. by the well-known relief on the Arch of Titus, with its triumphal procession and the carrying of the seven-branched candlestick. It was in 114 A.D., in the reliefs of the Arch of Trajan at Beneventum, that the final stage was reached and perfectly expressed. In them nearly all the principal events on Trajan's reign were represented: his triumph over the Dacians, his Eastern wars, his army reforms, his efforts to restore prosperity by the encouragement of agriculture and commerce. In order to tell these stories effectively the sculptor has adopted the method of placing his figures in three planes, in perspective, one behind the other. The figures in the front plane are sometimes almost detached, being held by an arm so that they have almost the effect of statues; the figures in the background, on the other hand, are almost flat, and sink back. This gave the sculptor the opportunity for the greatest variety of pose and direction, of groupings and composing. There is great play of light and shade, and this helps to give dramatic effect. To us, this may seem almost a commonplace; but until then these had all been unknown factors in sculpture. So carried away were the Romans of this time with the story-telling possibilities of relief-sculpture, that the same men who decorated this arch carved a continuous spiral band that unwinds itself on the column of Trajan in Rome, which tells the entire history of his two Dacian wars. It is in very low relief, and local touches are given by details of architecture and landscape, while originally its effectiveness was increased by brilliant coloring.

Equestrian Statues. Equestrian statues were used by Greek sculptors before the time of Alexander, whose figure on a prancing steed, engaged in battle, was a famous work often copied by Roman artists. The colossal bronze *Marcus Aurelius*, in the square of the Capitol, is the most famous equestrian statue in the world, and served as a model for many artists during the Renaissance and later. It is a powerful work and dramatic in a somewhat heavy style.

Decorative Sculpture. Another interesting innovation was the increased use of decorative sculpture, lavishly employed and fantastically varied. Encouraged by late Hellenistic suggestions, there developed a rank exuberance, a richness of decorative work, a charming mingling of figures and ornament. What could be more exquisite than some of the carved marble vases and altars in the Vatican Museum, or than many of the pilasters that served as models for the fanciful designs of the Italian Renaissance.

Even figures alone were made to serve a decorative purpose, as in the charming stuccoes in the walls of certain tombs on the Via Latina and in the Terme Museum at Rome. The artist would sketch, in the wet stucco on the walls, with a hand admirably sure, little genre scenes that have never been surpassed in delicacy and effectiveness.

During and after the reign of Septimius Severus there came a gradual decline. At the close of the third century, under Diocletian, figure sculpture had become lifeless and almost puppet-like.

Early Christian and Medieval Sculpture. It was the natural result of the decay of Roman society, rather than enmity to sculpture, that eliminated it from the field of art at about the time when Christianity became the religion of the State under Constantine. The friezes of the arch of Constantine—about the only parts of its sculpture that were not robbed from the earlier monuments—and the figures of consuls of this time found in the Roman Forum show that the growing incapacity of sculptors is a sufficient explanation, without bringing in the idea that the Christian church prohibited the art because it so frequently represented the idols of paganism. The decay was general throughout the Roman world, both East and West.

For a short time the Christian tombs were

able, in their reliefs, to tell in a mechanical way the story of Christian belief in the Bible and immortality; but even this phase, which left sculpture without esthetic value and on the same story-telling plane as in the pre-Hellenic days of Egypt and Assyria, came to an end in the fifth century. Painting alone was then used to teach the people the facts of faith and history.

After this, sculpture remained in eclipse for nearly seven hundred years, while the world went through many changes; the crumbling of the Old World, the invasion of the northern races, the rise of Mohammedanism, and the gradual growth of the nationalities and the culture of European peoples under the guidance of the Church. Architecture and painting fluctuated, yet survived; but sculpture did not rise above the level of industrial carving until, in the twelfth century, the later Middle Ages awoke once more to the joys of esthetic beauty, in a manifold and glorious effort to rejuvenate the world.

Gothic Style. It was at the close of the age we call "Romanesque" that sculpture, after having been reduced to decorating book-covers and reliquaries, once more assumed a really monumental rôle, and began an evolution that has no parallel except that of Greece. Even the Greeks and Romans had succeeded less completely in making of the plastic art an integral element, a logical assistant of architecture. This happened when the new art reached its flower in the Gothic style of the thirteenth century. This new union was fundamental, because the Gothic architects were usually sculptors as well, and not only furnished the drawings for a cathedral but carved its portals or its capitals with their own hands. By doing this they went further than either the Greek or Renaissance artists in the way of a practical union of the two arts.

France was not only the birthplace of the Gothic style but established its purest and best forms as well. The new sculpture was used to express the knowledge and the ideas then current throughout Europe. Artists and men of letters were aiding each other in the work. The cathedrals usually were the one place where all the people congregated, not only for worship, but for plays, for fairs, for public and political meetings; the cathedrals were used as the means for instructing the masses. Their walls and portals were carved with figures and relief which systematically summed up all the teaching and the knowledge of the time.

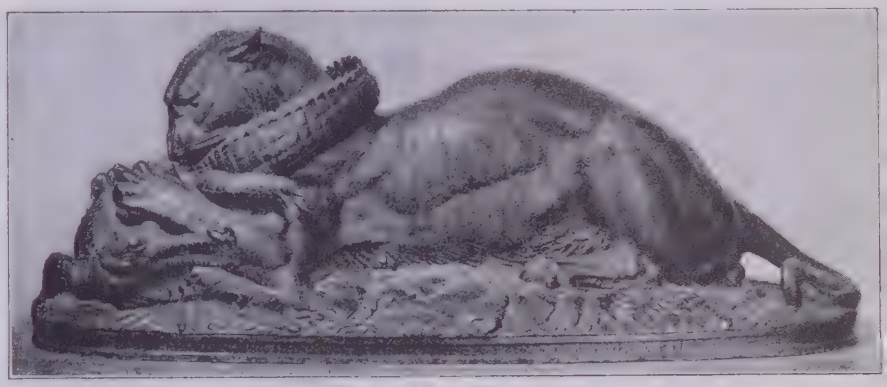
It took more than a half century to achieve this result. The figures set in the old porches of the cathedrals of Chartres and Le Mans have an architectural stiffness similar to an ancient Apollo or Artemis. They are intentionally elongated and straightened in order to give them almost the function of a column or a caryatid. In some faces we see even a reflex of the archaic smile. The artist is at the same pains to reproduce exactly the details of the face and costume of his models. He aims at a portrait rather than a type and, like the Greek sculptor before Phidias, he misses the sentiment of life. This realistic phase was just as necessary with the French as it had been with the Greeks in order to enable the artist, by careful study, to attain to that perfection of technical skill and knowledge of nature that will let him use his art freely. The sculptor is once more a man with a mission as he was in Greece in the fifth century B.C. Each cathedral is a museum of masterpieces, beginning at Notre Dame in Paris and continuing at the cathedrals of Bourges, Chartres, Reims, Amiens and others.

The perfection of early French sculpture is shown in the 530 figures which decorate the west facade of Reims cathedral. We have here a breadth of style, a grand treatment of drapery and a majesty of pose that reminds us of the Parthenon pediments. At the same time there is the greatest variety. A sense of humor is shown in many heads, as in the *St. Joseph*, and a capacity for grotesque effects that is quite Leonardesque, appears in many of the corbel masks. One of the apostles recalls an antique philosopher or poet—a Sophocles or Aeschines; St. Elizabeth is like a Juno.

Although it is true that most of the heads are types rather than portraits, there is an evident study of nature. This is seen, for instance, in the charming youthful head of the Virgin and in the piquant angel at Reims. Some of the finest statues are those dividing the main portal. The *Beautiful Christ* at Amiens, and the severer one at Chartres, the dignified *Virgin* at Notre Dame, the smiling and coquettish *Virgin* at Amiens and the rather self-conscious *Grande Dame* at Reims are all masterpieces. As a composition, one of the most symmetrical and artistic is the tympanum of the left doorway at Notre Dame, with the *Resurrection and Coronation of the Virgin.* Mannerisms and studied richness in drapery appeared later in the century, as in the apostles at the Sainte Chapelle. And the sculptors became more and more artificial as the fourteenth century advanced, until from the north, especially Flanders, came a wave of realism and character study, notable in the school of Burgundy, in the monuments of Dijon, in the tombs of the Dukes of Burgundy and in Claux Sluter's fountain called the *Well of Moses.*

Spain. French artists carried to Spain their decorative system and subjects. There are fine portals at Burgos, Leon and Toro, of the thirteenth century, and sculpture was more abundant here than in Italy or Germany; but though the designs were good, we seldom find the beauty of French work.

Germany. The Gothic movement reached Germany from France quite as soon as, if not sooner than, the corresponding architectural wave. Germany had begun an interesting use of monumental sculpture in the Romanesque age, especially in Saxony and neighboring provinces; and it was here, in the middle of the thirteenth century, that one finds the first works of real genius, with a mastery of technique and expression to rival the French works. These are the Golden Gate of the cathedral of Freiberg, the portals of Magdeburg cathedral and especially the statuary and portals of Bamberg, where the crudity of Germanic realism is modified. The most famous single figure is the equestrian statue of the Emperor Conrad III at Bamberg. There is little of the French idealism or love of pure beauty, little of creation of types; but rather there is a strong personality, sometimes artificial and clumsy. This art reaches great force in certain large figures in the choir of the cathedral at Maumburg, especially the twelve statues of the great nobles. Bold, free, strong and full of life, they have all the qualities and none of the defects of German naturalism, and are the most perfect embodiments of the feudal pride of the Saxons. Perhaps the finest are the Margrave Eckardt and his wife, Uta. Their date is about 1270.



Tiger and Crocodile
An incomparable rendering of animal ferocity. Although in miniature this is fundamentally monumental art. By Barye, the French sculptor.

At Strassburg Cathedral we find other great German masterpieces of a few years later, though in this Rhenish School French influence is much more dominant. The earliest part is the extraordinary *Angels' Pillar* inside the transept, which is still archaic; and the most perfect are the two famous statues of *The Church* and *The Synagogue*, outside the south transept. On the main façade the statues of the *Wise Virgin* and the *Foolish Virgins*, and of the *Prophets*, are less perfect but very striking and dramatic. They show the approach of the rather exaggerated art of the fourteenth century. The grand style now disappears; the center of production shifts to Nuremberg, to Cologne and Ulm.

Besides architectural sculpture the Germans were active in sepulchral monuments and shrines, which are better preserved there than in France, where the Revolution destroyed so much. Terra cotta and wood, also, were more generally used than in France, and here we can see more traces remaining of the polychromy originally in Gothic sculpture.

The Pre-Renaissance. We usually speak of the "revival" of art, in the sense of an early Renaissance, as beginning in Italy during the thirteenth century, with Giotto in painting and Nicola Pisano in sculpture. Yet Italy was far inferior to France during the Gothic age in the amount and quality of her sculpture. Nicola Pisano was her first great sculptor, and the famous pulpit in the Baptistery at Pisa, completed in 1260, his earliest masterpiece. In its bas-reliefs we see an interesting adaptation of Roman, Byzantine and French Gothic models. In the *Adoration of the Magi*, the Virgin is a Juno, and the angel seems taken from some work of the Emperor Justinian. The figures have none of the Gothic vivacity and slenderness, but are majestic and heavy, and an occasional nude figure shows plainly the study of the antique. Another pulpit at Siena is the work of the master with the help of his son Giovanni and several scholars. Here enters a dramatic element which was developed by Giovanni, who is far more of a typical Gothic artist than is his father: his pulpit at Pistoia, in St. Andrea, is his best. The great fountain of the square at Perugia is a joint work. Giovanni entered into the spirit of Gothic symbolism, as is evident in the caryatid figure of his pulpit for the cathedral at Pisa. He became over dramatic in his later works, but several of his statues of the Virgin with the Child are full of dignity.

This school of the Pisani spread over the entire peninsula. At Bologna is the shrine of St. Domenico, while the royal tombs in Naples prove how quickly the new movement conquered the south. In Florence and Orvieto, however, are the school's two most extensive undertakings. The façade of the cathedral of Orvieto is unique in Italy. Four broad piers separate the portals and are covered with a series of low reliefs representing a vast Christian poem in four scenes: *Genesis*; *the Tree of Jesse* with a choir of the Prophets of the Redemption; *the Life of Christ*; *the Last Judgment*. This epitome of the world from Creation is given in a charmingly poetic, and at times dramatic, style.

Giotto's tower in Florence has many five-sided reliefs (fifty-four in all), which were planned by Giotto himself, mainly in the spirit of allegory—the virtues and vices, the arts and sciences, the glorification of labor, commerce, industry and organized society. Of greater beauty and grace are the reliefs in the bronze doors of the Baptistery by Andrea Pisano, mainly devoted to the life of John the Baptist. These charming framed and grouped scenes are of a classic simplicity, and are quite perfect in their directness and grace. They remind one of the best French work, which they certainly equal. The last notable master of this school was Andrea Orcagna whose famous tabernacle at Or San Michele in Florence is a happy combination of architectural design and color with sculpture. This brings us to the eve of the Renaissance.

Of English Gothic sculpture there is little to be said. It is very abundant at Wells cathedral and fairly so at Lichfield and Salisbury, but not well arranged and too much addicted to isolated statuary. There are no individual statues of great artistic beauty as in France or Italy.

The Renaissance. Italy now wrests the leadership from France. The Renaissance was born in Tuscany at the beginning of the fifteenth century, and the revolutionary movement invaded all the arts almost simultaneously. Three men took the lead in the field of sculpture: Donatello, Ghiberti and Jacopo della Quercia.

Earlier Italians. Donatello was by far the greatest, and exercised the widest influence. His *St. George* is one of the famous statues of the world, standing solidly and earnestly, a masterpiece of simplification. On the other hand, nothing more rollicking and joyous can be imagined than his dances of merry children. His portraits are startingly vivid. He hewed great figures out of the rock, and he modeled tiny reliefs of exquisite delicacy. He shaped the first beautiful nude figure since classic times and created, in his *Gattemelata*, the first great equestrian statue since the *Marcus Aurelius*.



Saint George

One of the famous statues of the Renaissance, by Donatello. It has often been called the "Ideal Christian Hero."

Ghiberti, his contemporary, is chiefly famous for the bronze gates of the Florentine Baptistery. He is a connecting link with the Gothic past. In the first gate he imitates so closely the neighboring gate of 1336 by Andrea Pisano, with its small simple compositions, that he seems thoroughly medieval. A few years later he adopted an absolutely opposite scheme for his second gate—a scheme which Michelangelo thought worthy of *Paradise*. Here the scenes were few and large, the figures numerous and small. These reliefs, with their vanishing planes, their picturesqueness and elaborate scenario, struck an entirely new note in sculpture.

Jacopo della Quercia, the third in this early trio, was the forerunner of Michelangelo in his love of anatomy, his dramatic power, and above all in his feeling for mass. This is especially evident in his work at St. Petronio, in Bologna, in the reliefs of the portals in the façade and the group of the Virgin holding the Child. He was at the same time master of a delicate and penetrating charm, which he shows in the exquisite reclining figure of Ilaria del Carreto, on her tomb at Lucca, on a cenotaph decorated with children holding a long wreath, the most beautiful instance of a favorite motive copied from some Roman original.

Later Italians. The latter part of the fifteenth century is so crowded with talent, not only of Florentines (and other Tuscans) but also of Lombards, that it is difficult to single out special men and works. Mino da Fiesole's bust of Bishop Salutati, with its keen, ascetic face, is a highly finished example of Tuscan skill. Among the numerous sepulchral monuments in which decoration and figures were more happily combined than in any other class of works, the Marsuppini tomb by Desiderio da Settignano, and the tomb of Leonardo Bruni by Bernardo Rosellino, stand supreme. Among the pulpits the most harmonious is that in Santa Croce in Florence by Benedetto da Majano.

Robbia School. Luca della Robbia, a serene religious artist, is most noted as the creator of that form of relief sculpture in polychromatic glazed terra cotta known from him as "Robbia ware." It was extremely popular throughout Tuscany and farther south. His nephew, Andrea, almost equaled him in talent and productiveness. Later the coloring became more and more elaborate until under Andrea's son, Giovanni, it was at times crude. The Robbia school was the great representative of religion in the Italian sculpture of the Renaissance, as Fra Angelico and the Sienese artists were in painting.

As the culminating work of the early Florentine school came the greatest equestrian statue the world has seen, the *Bartolommeo Colleoni* in Venice by Andrea del Verrocchio, the faultless ideal of a fearless Renaissance adventurer. Horse and man are one, and full of force and life.

However, the days of masterpieces passed away for a short time; even the men who led the Florentine school just before Michelangelo, such as Sansovino and Rovezzano, were second-rate men.

Michelangelo was essentially a plastic genius, a sculptor "by first intention." It is evident even in his works of architecture and painting. He cut himself loose from traditions and schools. At first he steeped himself in classic sculpture, and imitated it so well in his *Faun* as to deceive the best critics. Then he passed through a phase of normal religious themes, as is evidenced in his *Pieta* at St. Peter's. This work of art, with its highly-finished surface, presents a magnificent group completed before its author was twenty-six years old. Michelangelo reached the full realization of his colossal talent in two works: the tomb of Pope Julius II, which was never completed, and of which the famous statue of Moses was a detail; and the monuments of the Medici at San Lorenzo in Florence, of which the tombs of Giuliano and Lorenzo were almost finished. We have in these works primitive, elemental sculpture used to convey general ideas of life and death. The mystery that has enveloped the reclining figures that we call *Dawn* and *Twilight*, *Day* and *Night*, has been continuous since the day of their execution. The *Lorenzo*, popularly called *Il Penseroso*, is far more than a portrait; it is brooding introspection. No artist before

Michelangelo had so openly played with the human form, and yet none had been so completely an idealist. His heads, especially the *David*, the *Brutus* and the *Lorenzo*, make an undying and vital appeal.

After Michelangelo came a decline. Benvenuto Cellini, to be sure, was an extraordinary technician. His *Perseus* with the head of Medusa shows that he could produce things other than the works of delicate and decorative beauty for which he was famous. Ammanati and Bandinelli were inflated and debased followers of Michelangelo's tempestuous mood. Giovanni da Bologna had better taste, and was the last classicist of any merit.

The French Renaissance. Though Italy certainly overshadowed the rest of Europe during the Renaissance, a great deal of interesting sculpture was produced in France, and its national character is now being more clearly seen. Its greatest representative in the sixteenth century was Jean Goujon, whose influence transformed the French school, combining with it characteristics both Italian and Flemish. His most famous figures are the *Water Nymphs* for the Fountain of the Innocents, in Paris, and the *Diana of the Fountain* for the Chateau at Anet. There is a touch of artificiality in pose and drapery, a self-conscious grace that is not at all disagreeable. The work of his predecessor, Michel Colombe, while quite different from the Italian style, is more closely related to it. There is a great deal of picturesqueness and atmosphere in his relief of *St. George Fighting the Dragon*, made for the Chateau of Gaillon. Germain Pilon left masterpieces in the tombs of Francis I and Henry II at St. Denis. So also did Jean Juste in his tomb of Louis XII.

The German Renaissance. The German Renaissance hardly ever reached a high level. Something seemed to prevent its sculptors from passing beyond a rather commonplace naturalism. One great exception was Peter Vischer. His exquisite shrine of St. Sebald at Nuremberg, with its beautiful apostles, shows Italian influence; his colossal bronze statues of Kings Arthur and Theodore at Innsbruck are quite original, and deserve to take their place beside the Gothic *St. Theodore* at Chartres and Donatello's *St. George*. It is curious that in all Germany, Austria and the Netherlands there is so little during the fifteenth and sixteenth centuries that is at all notable, considering that so much was produced in mere quantity: carved portals, stations of the Cross, altarpieces, sepulchral monuments. It is a national trait that wood should then be preferred to stone or marble by most sculptors. A notable example of this interesting art is the *Madonna of Nuremberg* by Veit Stoss.

Modern Sculpture. The seventeenth and eighteenth centuries were a rather futile period for sculpture. The spirit of the Renaissance was dead; the modern spirit, not yet born. There was nothing real or simple in art; all was artificial, and exaggerated, and designed to display technical skill. Bernini led this baroque style in Italy; Girardon and Puget in France, Andreas Schlüter in Germany. Draperies were inflated, attitudes twisted, compositions overdramatic. The *Vision of St. Theresa* by Bernini is more characteristic of him and of the mawkish religious sentimentality of the age than are his classic pieces, and the same is true of Girardon's monument to Richelieu. Puget's *Milo of Crotona*, *Andromeda* and *Alexander and Diogenes* introduced the manner even into classic themes. The climax of theatrical art so characteristic of the age of Louis XV is embodied in such works as the monument of the *Marshal of Saxony* by Pigalle at Strassburg.

One may perhaps date the real beginning of modern sculpture at the French Revolution, and preface it with Houdon's vivacious figure of *Voltaire*, its prophet. It was at first largely characterized by a new classic revival, necessarily artificial because it had no connection with the age. Canova, a Venetian, and Thorwaldsen, a Dane, were its leaders. Canova's influence became universal. Rome inspired them all.



Moses

Michelangelo's work, now in Saint Pietro in Vincoli, Rome. Designed to adorn the tomb of Pope Julius II. Considered one of the most sublime of all sculptural works.

Canova was an unusually prolific artist. Of his many works the early *Cupid and Psyche* and the *Pauline Borghese* as Venus are especially famous and illustrate his charm of line and softness of texture. The essential coldness of his style, however, kept his art from becoming great.

Thorwaldsen showed dependence on the antique—even more literal and more Hellenic. His frieze at the Quirinal in Rome proves that he was as accomplished in relief work as in statuary. Dannecker spread the new style in Germany; witness his *Ariadne* at Frankfort. Flaxman did the same in England, though his design was better than his modeling. Sculpture as the real reflection of the age had, however, its representatives, and grew stronger with the years. On the Arc de Triomphe in Paris, the stupendous group embodying the French Revolution, known as the *Chant du Depart* and the *Marseillaise*, is a work of vital drama by François Rude. A similar quality appears in his pupil, Carpeaux, whose nervous force is best expressed in the group of the *Dance* (1869) at the Opera in Paris. Barye came also with his wonderful interpretations of animal life, so familiar to Americans, and was followed by the strenuous Frémiet.

In Germany, Schadow created many public monuments and graceful works, well illustrated by his *Queen Louise and her Sister*. Then came Rauch, whose statues are perhaps the finest in Germany; especially is this true of his *Maximilian I* at Munich, and his *Frederick the Great* at Berlin. His pupil, Rietschel, was an excellent artist, but did not reach his master's level. His statues of *Lessing* (Brunswick) and *Luther* (Worms) and his *Pieta* at Potsdam are impressive.

Recent Sculpture. France has been the leader in the last two generations. National schools of sculpture have long since died, so far as style is concerned; the art is becoming rapidly international, and France has struck the keynotes. There has been the greatest variety in her styles. Dubois with his *Florentine Singer*, his *Young St. John* and his tomb of General Lamoricière; and Mercié with his *David*, his *Gloria Victis* and *Quand Même*, were inspired by the Tuscan Renaissance. Another sculptor of high rank was Chapu, whose *Joan of Arc* has been placed in the Louvre. Dalou sometimes suggests a combination of Rubens and the Hellenistic tradition, as in his *Triumph of Silenus*, and sometimes embodies modern realities, as in his *Mirabeau*. His monument to Delacroix is a paroxysm in bronze. Falguiére was a master of marvelous virtuosity; Saint-Marceaux, an artist of unusual imagination.

With Rodin we reach the ultimate break with the academic school, with all traditions, and with all recurrences to past types. He was at times as naturalistic as Donatello in his beginnings; as primeval as Michelangelo without the Italian's idealism. His *Kiss* is an embodiment of passion; his *Thinker*, the ruminant spirit of brute force. The weird group *The Burghers of Calais*, is extraordinarily original and full of power. Rodin's ill-balanced and extreme individualism made his works very uneven, sometimes "monstrous and abnormal."

Noted leaders in France today are: Bourdelle, Maillol, Despiau and Bernard. Less discussed, but perhaps of more lasting worth, are such admirable sculptors as Bouchard, Landowski and Jean Boucher.

Belgium has produced one great sculptor in modern times, Constantin Meunier (1831-1910). His simple and sympathetic renderings of workingmen, and particularly of coal miners, brought him the appellation of the "Millet of the Mines."

Among the prominent English sculptors of the last generation were Thornycroft (*The Mower*), Onslow Ford (statue of Henry Irving), Gilbert and Frampton. Gilbert Bayes, Alfred Drury, Bertram MacKennal, Albert Toft and W. Goscombe John are doing notable work today. In Sweden, the leading name is that of Carl Milles.

In Germany there are many sculptors of distinction, as Lederer, Metzner, Elkan, Hahn, Hoetger, Kolbe, Wackerle and Gaul (the latter making a specialty of animal subjects).

Italy has today, as always, many clever sculptors, but possesses few who can be called great. Bistolfi of Turin, and Andreotti of Florence, are well known.

Most important perhaps of all living sculptors is Ivan Mestrovic, born in Dalmatia in 1883. His *Fragments of the Temple of Kosovo* are among the truly sculptural products of our time. His religious reliefs are deeply tinged by the Byzantine inheritance of his people. His portrait of his *Mother* is a masterpiece.



My Mother
A masterpiece by the Jugoslav sculptor, Ivan Mestrovic. From copy in Art Institute, Chicago.

Brief is the story of sculpture in the United States, but its achievements give great promise for the future. Horatio Greenough (1805-52) was America's first professional sculptor and the first to study abroad. Like his contemporary, Hiram Powers, he was unavoidably influenced by the neo-Classic vogue of his day, and his *Washington*, like Powers' *Greek Slave*, might have been carved in the workshop of Canova. Thomas Crawford made a grandiose pediment for the national capital, and a lamentable equestrian *Washington* for Richmond. Other pioneers were Thomas Ball, Henry Kirke Brown, Randolph Rogers, John Rogers, William W. Story, Erastus D. Palmer, and William H. Rinehart. John Q. A. Ward was long the dean of American sculptors and will be remembered for his fine *Henry Ward Beecher* in Brooklyn. Our greatest sculptor was Augustus Saint-Gaudens (1848-1907) who, from his *Farragut* to his second *Lincoln*, produced a series of magnificent works. Among these are the standing *Lincoln*, the *Puritan*, the *Shaw Memorial*, *Adams Memorial* and *General Sherman*. Daniel Chester French has likewise created a host of admirable works, like the *Angel of Death and the Young Sculptor*, and the great *Lincoln* in Washington. He is the author of several of our finest equestrian statues. Frederick MacMonnies (1863) has won a great name both at home and abroad. He lived in France for many years and there he modeled his *Stranahan*, *Nathan Hale*, *Shakespeare*, *Bacchante* and *Columbian Fountain*. Equally well known abroad is Paul Bartlett whose *Columbus* and *Michelangelo* for the Congressional Library are very distinguished conceptions. His equestrian *Lafayette* stands in the court of the Tuileries in Paris. George Gray Barnard is characterized by much originality and vigor. His large groups for the State House of Pennsylvania are among the most remarkable of American sculptures. Herbert Adams has modeled female heads of exquisite beauty. MacNeil, Weinman, Dallin and Fraser are a few among an army of well trained artists. Of the later school, products of the American Academy in Rome, we have such men as Manship, Polasek, Keck, Fry, Gregory, Jennewein and others. Never has there been such skill in our studios, never so much demand for good sculpture. The outlook for the art in this country is indeed bright.



Adams Memorial
This sculpture, by Augustus Saint-Gaudens, in Rock Creek Cemetery, Washington, D. C. It is variously called "Grief" and "Death" and sometimes "The Peace of God." The greatest work thus far produced in America.

LEADING SCULPTORS

Italy
- Andreotti, Libero (?)
- Benedetto da Majano (1442–1497)
- Bernini, Giovanni Lorenzo (1598–1680)
- Bistolfi, Leonardo (1859–)
- Bologna, Giovanni da (1525?–1608)
- Canova, Antonio (1757–1822)
- Cellini, Benvenuto (1500-1572)
- Desiderio da Settignano (1428–1464)
- Donatello (or Donato) (1385–1466)
- Ghiberti, Lorenzo (1378–1455)
- Michelangelo Buonarroti (1475–1564)
- Mino da Fiesole (1431–1484)
- Orcagna, Andrea (1316–1376)
- Pisano, Andrea (1270?–1348)
- Pisano, Giovanni (1250–1329)
- Pollaiuolo, Antonio (1432–1498)
- Quercia, Jacopo della (1375?–1438)
- Robbia, Andrea della (1435–1525)
- Robbia, Luca della (1400–1482)
- Rossellino, Antonio (1427–1478)
- Rossellino, Bernardo (1409–1464)
- Sansovino, Jacopo (1486–1570)
- Verrocchio, Andrea del (1435–1488)

France
- Barrias, Louis Ernest (1841–1905)
- Barye, Antoine Louis (1796–1875)
- Bernard, Joseph Antoine (1870–)
- Bouchard, Henri (1875–)
- Boucher, Jean (1870–)
- Bourdelle, Emile Antoine (1861–1929)
- Carpeaux, Jean Baptiste (1827–1875)
- Chapu, Henri (1833–1891)
- Coustou, Guillaume (1677–1746)
- Coustou, Nicolas (1658–1733)
- Coysevox, Antoine (1640–1720)
- Dalou, Jules (1838–1902)
- D'Angers, David (1788–1856)
- Despiau, Charles B. (1874–)
- Dubois, Paul (1829–1905)
- Falguière, Alexandre (1831–1900)
- Fremiet, Emmanuel (1824–1910)
- Girardon, François (1628–1715)
- Houdon, Jean Antoine (1741–1828)
- Landowski, Paul (born in Poland) (1875–)
- Maillol, Aristide (1861–)
- Mercié, Antonin (1845–1916)
- Pigalle, Jean Baptiste (1714–1785)
- Puech, Denys (1859–)
- Puget, Pierre (1620–1694)
- Rodin, Auguste (1840–1917)
- Rude, François (1784–1855)
- Saint-Marceaux, Charles René de (1845–1915)

Germany
- Begas, Reinhold (1831–1911)
- Dannecker, Johann Heinrich (1758–1841)
- Elkan, Benno (1877–)
- Gaul, August (1869–)
- Hahn, Hermann (Bavarian) (1868–)
- Hildebrand, Adolf (1847–)
- Hoetger, Bernhard (1874–)
- Hundreiser, Emil (1846–)
- Klinger, Max (1857–1920)
- Kolbe, Georg (1877–)
- Lederer, Hugo (1871–)
- Lehmbruck, Wilhelm (1881–)
- Rauch, Daniel Christian (1777–1857)
- Rietschel, Ernst (1804–1917)
- Schadow, Johann (1764–1850)
- Schluter, Andreas (1664–1714)
- Siemering, Rudolf (1835–1905)
- Stoss, Veit (1431–1533)
- Tuaillon, Louis (1862–)
- Vischer, Peter (1460–1529)
- Wackerle, Joseph (?)

England
- Bayes, Gilbert (1874–)
- Brock, Thomas (1847–)
- Drury, Alfred (1859–)
- Flaxman, John (1755–1826)
- Ford, E. Onslow (1852–1901)
- Frampton, Sir George J. (1860–)
- Gilbert, Alfred (1854–)
- John, Sir William Gascomb (1860–)
- MacKennal, Bertram (?)
- Thornycroft, W. Hamo (1850–)

Switzerland
- Haller, Hermann (1880–)

Netherlands
- Sluter, Claus (? –1406)

Belgium
- Meunier, Constantin (1831–1905)

Yugoslavia (Dalmatia)
- Mestrovic, Ivan (1883–)

Sweden
- Milles, Carl (1875–)

Denmark
- Thorwaldsen, Bertel (1770–1844)

Austria
- Metzner, Franz (1870–)

America
- Adams, Herbert (1858–)
- Aitken, Robert I. (1878–)
- Bachelder, Evelyn Longman (1874–)
- Ball, Thomas (1819–1911)
- Barnard, George Grey (1863–)
- Bartlett, Paul (1865–)
- Bitter, Karl (born in Vienna) (1867–1915)
- Brown, Henry Kirke (1814–1886)
- Crawford, Thomas (1813–1857)
- Dallin, Cyrus E. (1861–)
- Fraser, James E. (1876–)
- French, Daniel Chester (1850–)
- Frishmuth, Harriet W. (1880–)
- Fry, Sherry E. (1879–)
- Grafly, Charles (1862–1929)
- Greenough, Horatio (1805–1852)
- Gregory, John (born in London) (1879–)
- Hoffman, Malvina (1887–)
- Hyatt, Anna Vaughn (1876–)
- Jennewein, Carl Paul (born in Germany) (1890–)
- Keck, Charles (1875–)
- MacMonnies, Frederick (1863–)
- MacNeil, Hermon A. (1866–)
- Manship, Paul (1886–)
- Mills, Clark (1815–1883)
- Palmer, Erastus D. (1817–1904)
- Polasek, Albin (born in Czechoslovakia) (1879–)
- Powers, Hiram (1805–1873)
- Proctor, A. Phimister (born in Canada) (1862–)
- Rinehart, William H. (1825–1874)
- Rogers, John (1829–1904)
- Rogers, Randolph (1825–1892)
- Saint-Gaudens, Augustus (born in Ireland) (1848–1907)
- Scudder, Janet (1873–)
- Story, William W. (1819–1895)
- Taft, Lorado (1860–)
- Vonnoh, Bessie Potter (1872–)
- Ward, John Q. A. (1830-1910)
- Warner, Olin (1844-1896)
- Weinman, Adolph A. (born in Germany) (1870–)
- Zorach, Wm. (born in Russia) (1887–)

PAINTING

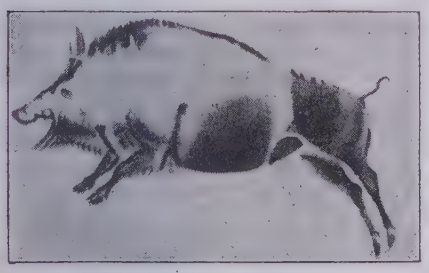
THE art of painting is expression in terms of color, light and dark, and line. The spatial arrangement of these elements, the visual form that constitutes a painting, has two aspects—representation and design.

Representation refers to the meaning suggested by the arrangement, for instance, a solid body, a flower, a spacious landscape, a trait of character, a story. Design refers to the arrangement as such. Design and representation cannot be separated; they grow together in the creative mind of the artist. Any change in representation affects pattern and any change in pattern affects meaning—they are two aspects of a single whole. Artists vary in their emphasis, some being greatly interested in representation, others caring only for the fine organization of their color, light and line.

Fine quality in design seems to depend on the vitality and order of the pattern. Fine quality in representation seems to depend on the vitality and order of the meaning. There are various ways in which such order is manifested in a work of art: in balance, in similarity or repetition, in easy sequence or clearly felt gradation, and in that final unity, like that of a living organism, in which every part is essential to every other part. These are the so-called "principles of design" but no great painting was ever achieved merely by following them. The life and order of a great work of art is so complex and so subtle that it eludes our crude attempts to analyze. As one critic has said, artists can only work for order and hope for beauty.

ANCIENT PAINTING

Old Stone Age. The oldest paintings that we know were painted thousands of years ago by men of the Paleolithic or Old Stone Age on the walls and ceilings of caves in southern France and northern Spain. These men were hunters and painted their familiar world, a world of animals—the reindeer, wild horse and mammoth, the bison,



Galloping Wild Boar
Painted in a cave at Altamira, Spain. Perhaps about 15,000 B.C.

wolf and wild boar. Sometimes they were shown at rest or grazing, but more often they were depicted running, galloping, fighting; and always they were painted with the most astonishing keenness of vision, and with a line that was swift and sure.

There was a development covering thousands of years, from the early drawings cut into the rock with a sharp flint, or sketched in red or yellow chalk, to the great polychrome period of some 15,000 years B.C., when the strong contour lines were filled in with shaded color masses of red, yellow, brown and black—earth colors mixed with animal oil or fat.

Probably later, perhaps toward 10,000 B.C., a different people in the south and east of Spain left in caves and under overhanging rocks some remarkable paintings of human figures. These people had the bow and arrow, and their paintings were largely of bowmen in action—in the hunt, fight or war dance; occasionally there were other scenes, such as a man taking honey from a tree while the angry bees fly about him. There was no such realism of form or rhythm of line as was shown by the animal painters, but there was a great aptitude for expressing movement.



Hind
With small drawing of a bison. Painted in a cave at Altamira, Spain. Perhaps about 15,000 B.C.

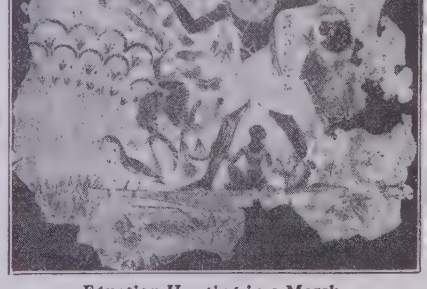
New Stone Age. By 10,000 B.C. it is supposed that the climate and geography of Europe had become about the same as it is today; and with this change the Paleolithic men seem to have disappeared. The people of the Neolithic or New Stone Age were a different people with a very different art. Neolithic man learned to cultivate grain and domesticate animals; he built houses, wove cloth and made pottery. In Europe his painting was confined to geometric designs on pottery—lines, zigzags, curves, spirals—with rarely any suggestion of the human figure. Such designs had more meaning for him than they have for us, but the full representation of the Old Stone Age had completely disappeared.

Egyptian Painting. In the years between 4000 and 3000 B.C., when Europe was still in the Stone Age, Egypt had discovered metal, invented a system of writing and started to build up a high civilization. Before 2000 B.C., paintings were not very numerous, and we must trace the pictorial tradition in painted low reliefs. But after that there is a continuous history of painting down to the Christian Era. The Egyptian loved the out-of-doors so much that he brought it into his house, painting the floors with lotus, ducks, birds and fishes; the walls with trees, and the ceiling with stars in a blue sky. But the houses have perished, and only fragments of such painting remain. There were also paintings in temples, in papyrus manuscripts and on the coffins of the dead; but most Egyptian painting is found on the walls of tombs.

This tomb painting is not a gloomy art: far from it. There are pictures of the Egyptian's gods, of his adventures in war, but especially of his own intimate little world. He loved life and all its hard-won luxury and, being quite materialistic, he wanted depicted on the walls of his tomb all the good things of his life on earth as reassurance that they would continue in the life hereafter. We see him gliding in his reed boat in the marshes hunting ducks, perhaps accompanied by his wife and daughter, who are gathering lotus; or harpooning fish, or feasting at a banquet where dancing girls sway to the music of harps. We see his butchers cutting, his masons building, his slaves reaping and threshing the grain, picking grapes and making wine.

The Egyptian painter worked in outlines and flat color tones: long, swift, continuous lines strong harmonies of vivid blue, green, red and yellow. He liked symmetry, and since he ignored light and shade, volume and distance, his painting is flat and decorative.

Representation caused him trouble. At first he could not see in his imagination the figure as a whole, from a single point of view. He drew the face in side view, eye front, shoulders front; and then, by a mysterious twist he drew the body below the waist in side view. This rendering became traditional and scarcely changed through the centuries. By the Eighteenth Dynasty (1580-1350 B.C.) considerable progress had been made; greater freedom in pose and movement, more nowing line, overlapping of figures, an occasional face in front view. In the time of Iknahton (1375-1358), the great king who believed in one God, there was a great outburst of naturalism; but with his son-in-law Tutenkhamon came a reversion to the old forms in art as in religion.



Egyptian Hunting in a Marsh
From a Theban tomb of the Eighteenth Dynasty (1580–1350 B.C.). In the British Museum, London.

There is no deep space in Egyptian painting. If an object is to appear as behind another, it is placed above. A pool of water is drawn in floor plan and not as it appears to the eye. The flesh of men is always dark, that of women light. But in spite of all his difficulties the Egyptian tells his story well, with expert craftsmanship and a feeling for fine design.

Aegean Painting. In Europe it was the

part nearest Egypt that first emerged from the Stone Age—the lands around the Aegean Sea, Greece, Asia Minor and the nearby islands, especially Crete. Apparently it was in Crete that the new culture arose and attained its greatest height, and from there spread throughout the region. Excavations of the great palace at Knossos (built about 1500 B.C.) have revealed a series of frescoes in vivid colors that tell a story of luxury and splendor and of an amazing art.

We see a strangely modern looking people with irregular European features, pinched waists, elaborate coiffures, tight bodices and flounced skirts. A youth marches in procession bearing a silver vase, a naked boy picks crocuses, women in low cut gowns watch a bull fight from a balcony, and youths and maidens engage an angry bull. A vivacious young girl, with a curl in the middle of her forehead, presents her profile with a large front-view eye—for the Cretans had the same trouble with the human figure as did the Egyptians.



Ceremony at a Cretan Tomb

Painted on the side of a sarcophagus. About 1450 B.C. On the right a boat and two calves are being offered to the spirit of the dead man. On the left a priestess pours a libation into a vase placed between columns surmounted by double axes. In the Candia Museum, Crete.

A fresco from Melos (perhaps 1600 B.C.) shows flying fish darting through the water in rhythmic movement.

Cretan paintings, like Egyptian, are in outlines and flat color tones; they have no distance, neither have they light and shade; and the similar convention of brown for the skin of men, white for that of women is seen. But their line is less continuous; it has a quicker and more lively tempo and the contours have more individuality. While not so splendid in pattern, the Cretans knew better how to seize the dramatic moment and to create the impression of movement and of life.

Greek Vase Painting. It was an invasion of barbarians from the north that finally destroyed the Aegean civilization. About 1400 B.C. the palace of Knossos was burned; by 1100 the whole of Aegean culture had been overturned. Gradually this new people developed into the Greeks of historic times, and the Cretan world lived only in Greek myth and legend.

The earliest Greek painting (1100-800) consisted of geometric designs on pottery, with human figures and animals almost as geometric as the bands and zigzags. The eighth and seventh century pottery showed contacts with the Near East in its rows of animals and backgrounds filled with rosettes. In the sixth century, sudden progress foretold the glory of the fifth. Athens began to manufacture a splendid ware of great refinement of shape and beauty of decoration. There were water jars, mixing bowls, drinking cups, wine pitchers, oil flasks. In the sixth century they were black-figured, the decoration being painted in black glaze on the natural red-orange of the clay, with details of features and drapery scratched into the glaze, disclosing the clay beneath. The flesh of the woman was painted white, and white and purple were used for details.

Toward 500 B.C. this style was gradually being supplanted by the red-figured, in which the background was painted with black glaze and the figures and decoration were left in the reddish clay. Now all the details, instead of being cut into the glaze, could be freely executed with the brush. All through the black-figured period the Greeks had been making progress in representation, but in the first half of the fifth century they made the most amazing progress. They learned not only how to draw a consistent profile but also how to show three-quarters and front view. The figure becomes flexible; it bends and twists; its contours suggest some volume and solidity; stiff draperies change to flowing folds.

These vase pictures tell the stories of the Greek gods—those very human gods made in the image of man and enjoying all that he enjoyed—and of the heroes, the labors of Hercules, the adventures of the Trojan War. And they give a very remarkable picture of Greek daily life; we see children at school, women weaving, athletes at their games. There is still no deep space—a mountain is indicated by a tree, and the sea by dolphins. But there is always a splendid sense of pattern in line and mass.

Greek Painting. These humble vase paintings, which flourished until the fourth century B.C., are one of our best clues to the mural and panel painting of Greece, all of which has perished. This loss is a great tragedy in art history, for we know that the Greeks esteemed their painting as highly as their sculpture. Literature tells us about the famous painters, such as Polygnotus (active 480-450 B.C.), who still painted in outlines and flat color tones but who introduced the new freedom in representation that is reflected by the vases; it also tells us about the theatrical scene painters of the middle of the century who were interested in deep space and perspective and about Apollodorus who introduced light and shade and thus determined the future of European painting.

In the fourth century, murals for the home as well as for temple and public building became popular. Panel paintings increased. Portraits and scenes of everyday life rivaled the ancient myths and national wars. The conquests of Alexander were of tremendous importance in the history of art. After his death in 323 B.C. Greek culture was spread over all his vast empire. Athens yielded to new art centers in Asia Minor and in Egypt. Greek art thus transported to the Near East was destined to travel even to China and influence the art of the Far East. In this Hellenistic period (323-146 B.C.) painting rapidly became more expressive of emotion, of movement, of individual character; costumes grew realistic, landscape appeared—all this, however, often at the cost of great design.

Roman Painting. Rome in the second and first centuries B.C. became mistress of nearly all the countries bordering on the Mediterranean and of western Europe as well. From the third century her victorious generals had collected works of Greek art and pillaged conquered provinces. But the first century B.C. and A.D. saw a golden age of art production in Rome herself. There are many paintings of this period, some in and about Rome, but most from the excavated cities of Pompeii and Herculaneum, buried by Vesuvius in 79 A.D. The artists were mostly Greek or Greek trained. Many of the paintings were copies of old Greek works of the fifth and fourth centuries, others were in the Hellenistic mode of the day. Design often suffers, but there is convincing expression of the volume and weight of the modeled figures, and variety in pose and action.

These pictures, framed by painted architecture, give the Roman house, with its few windows, the effect of opening out on gardens and spacious vistas. They give an impression of bright color in subdued light, of garlands of fruit and flowers, gods and goddesses, half veiled dancers. Cupids play at being merchants, goldsmiths, wine dealers; they race in chariots on land, and on crabs and dolphins on the sea.

Landscape backgrounds had probably originated at Alexandria in Egypt, but on Roman soil they ceased to be mere backdrops and began to give the illusion of real space in which the figures took their proper places. This was the Roman contribution to Hellenistic naturalism.

Early Christian Painting. From the early years of the Christian Era we have paintings in the catacombs of Rome—those galleries below the ground where the early members of the new faith, forced to secrecy, buried their dead and held certain services. These frescoes belong to the second to fourth century, most of them probably to the fourth. The beginnings of Christianity caused no more upheaval in Roman art than in Roman life. Early Christian artists were Roman artists working in the Hellenistic style. Decorative settings were quite Pompeian. Only the subject matter was new—the Greek and Roman story was supplanted by the Jewish, and many of the old pagan forms were used as symbols to express new Christian meanings. The great change was in the quality of the painting; it became very poor. Design fell apart, and figures lost their relation in space as well as in meaning.

In the fourth century, when Christianity became a legal religion, Christians emerged

from the catacombs and began to build churches. The fifth century was a period of rich decoration of Christian buildings, mostly in mosaic with great splendor of color and gold. Ravenna was the chief center. The first frescoes and mosaics were distinctly classical; but in the sixth century a new style came in, called "Byzantine" because it was brought from Byzantium (capital of the Eastern Roman Empire) and the Near East.

Byzantine Painting. Byzantine was really an old Greek style that had been given an oriental point of view. When this Greek style traveled to the Near East, the Asiatic artists gradually flattened the rounded figures of the Greeks and turned their light and dark into a decorative pattern. We can trace this flattening out of the Greek forms through Asia Minor and Syria and even down to Egypt. Christian illuminated manuscripts best tell the story. These are the early Christian books written by hand on vellum, lavishly illuminated in gold and colors, and illustrated with pictures called "miniatures."

In the sixth century, when the mosaicists of Byzantium came to decorate the churches of Ravenna with pictures of Christ and the Virgin, solemn processions of apostles and of saints, gorgeous portraits of the Emperor and his court, they brought with them this new Eastern style which became so popular that it dominated art in Italy for centuries. Although highly decorative and emotional in its rich color, gold ground and rhythmic pattern, it was from the start quite lacking in any physical reality. Gradually it declined into mere lifeless repetition in which even the fine qualities of Byzantine pattern finally were lost.

But in the eleventh century there came a new period of building, and decoration received a new wave of influence from the Near East. This was the developed Byzantine style, still highly decorative and otherworldly, but not so flat, not so lifeless. Gold backgrounds are occasionally pierced by a clump of trees; figures show considerable modeling and are sometimes in vigorous movement. Painters, perhaps from Alexandria, who had kept alive the old Hellenistic spirit, must have given new life to early Byzantine art. It was still, however, an unrealistic art, solemn and gorgeous, well planned to inspire the awe and reverence that the medieval church desired and, through its color and its line, to create a religious mood. It remained the style of Italy until the thirteenth century.

EARLY ITALIAN PAINTING

In the last years of the medieval period there came about the changes that in the thirteenth century ushered in a new culture and a new art—the Renaissance or rebirth which reached its climax in the sixteenth century. The Crusades, the growth of the cities, the fervent religious revivals, all played their part in the tremendous stir of thought and feeling that characterized the thirteenth century. Men no longer looked to a future life as the only one of value but enjoyed their part in the present world.

A new naturalistic art was the result of two discoveries: the old naturalism of ancient art, now very congenial, and a fresh vision of the world of nature and of simple human things. In this new vision there was no greater influence than that of St. Francis of Assisi who brought man back to the nature from which the earlier Christianity had torn him. St. Francis praised the Lord for the earth and all its creatures, for the sun and moon and stars, for his brother the wind, for his sister water and brother fire. In 1226 he died, and immediately there grew up about him a whole cycle of picturesque stories, with a local Italian background, that furnished the artist with a new and very human world.

Early Florentine Painting. The great church erected over the tomb of St. Francis at Assisi has been called the cradle of Italian painting, for on its walls we find the beginning of almost all that was to come. There Cimabue, first of the Florentine school, tried to make the old Byzantine forms express the new fire and passion. There the colder



The Miracle of the Spring

Probably painted or designed by the Florentine, Giotto, at the end of the thirteenth century. In response to the prayer of St. Francis a spring appears to quench the driver's thirst. In the Church of St. Francis at Assisi.

Cavallini of Rome drew his solid forms inspired by old Roman sculpture. And there Giotto, their young assistant, learned from them both and then created a new form of expression that was to determine the whole future of the art of Florence.

We are not certain as to what his share was in the fine series of St. Francis stories at Assisi—*St. Francis Preaching to the Birds*, *The Miracle of the Spring*, and many others. But in the Arena Chapel at Padua we are on sure ground. There Giotto told the story of the Virgin, her birth and childhood, her suitors and her marriage; there, also, he told the story of Christ, from his birth and the flight into Egypt through all the episodes of his life to that final scene of the women mourning over his pale body, while the men stand by in silent, helpless grief, and frantic little angels fly about the sky. He turned the whole of the Arena Chapel into a gallery of such pictures, all in soft, bright colors against an azure ground that suggests the sky.

His figures are massive, sculptural. Solid bodies underneath the clothes are suggested by the simplest line and light and shade. There is little space—a tree stands for a landscape, a stone portal for a town. There are troubles with perspective, but such difficulties pass unnoticed in the dramatic telling of the story and the unity of the design.

In 1337 Giotto died. After that all the painters of Florence adopted his manner, but throughout the fourteenth century not one approached his height. At most they made some progress in representation. As religious intensity lessened, the Bible stories tended to become events of the day, rich in incident and detail. So naturally there was improvement in showing landscape, architecture and objects of everyday life.

Sienese Painting. The founder of the Sienese School was Duccio, who lived about the same time as Giotto. In Siena the new naturalism never did away with old Byzantine ideals. Painters still delighted in rhythmic pattern of line, in rich color, brocaded stuffs, inlay, ornament. And they began to care very much for space, but the figures within the space had a tendency to flatness, and even when highly modeled had not the solidity of Giotto's. Space, harmonious line and lack of insistence on the physical gave the Sienese painting a religious feeling akin to that of Byzantine, but tempered with a sweetness of expression quite unlike the old Byzantine gloom.

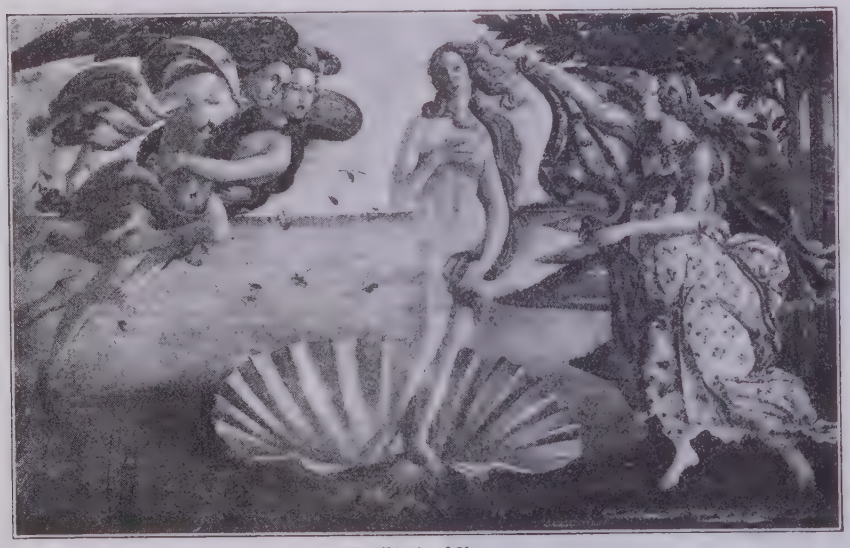
Duccio's altarpiece executed for the Cathedral of Siena contains the elements of all later Sienese painting. On the front is the Virgin with the Child, enthroned in majesty, encircled by angels. At her feet kneel the patron saints of Siena; beside her extend long lines of girl martyrs and bearded evangelists. It is a flat decorative pattern of gold, deep color, flowing line. But on the back are thirty-eight scenes from the life of Christ and the Virgin, each a lively narrative, not so simple and dramatic as in Giotto, but with even more naturalism. In *Christ Entering Jerusalem*, for instance, the city towers stretch into the distance; an orchard appears beyond a wall, with people in the trees; a great crowd of diverse types streams from the city gate.

Sienese painting developed along these two lines; the decoration in line and color, and the narrative. Simone Martini of the next generation told some sprightly tales in paint, but he was chiefly the artist of the decorative altarpiece as shown in his exquisite *Annunciation* in the Uffizi in Florence. Ambrogio Lorenzetti, however, was the good story-teller. Sienese art had considerable influence on individuals in other Italian schools and even influenced French art when Simone Martini was called to Avignon in 1339 to paint at the court of the exiled pope. But for the most part it could not withstand the pressure of other schools, and although Siena continued, even in the fifteenth century, to produce artists of the old ideal, such as Sassetta, it was an ideal so little congenial to the spirit of the Renaissance that it finally died away or merged with other tendencies.

Fifteenth Century in Florence. Masaccio came at the beginning of the fifteenth century and lived only twenty-seven years. As one critic has said, he was Giotto born again and instantly making his own all that

had been gained in the years that came between. His figures are majestic in their breadth and mass; they look like real people and one can move around and among them. Both architecture and landscape assume a more normal relation to the figures; there is deep space and atmosphere—objects become increasingly blurred as they retreat. Light is used not merely to model up the figure but is a real light, casting shadow. There is interest in the nude and in facial expression. And the story-telling is as simple and direct as Giotto's.

As far as the religious subject is concerned, Masaccio is a true child of the approaching Renaissance. He humanized it, converted it into a story of man and his immediate world. At times he even let religious meaning be overpowered by some human element, such as the powerful realism of a naked man shivering with cold in his *St. Peter Baptising the Heathen.* As the century advanced, the religious subject was to yield more and more to other interests. Portraits became common, with plain or landscape background. There were battles, tournaments, historical scenes, and finally many subjects from ancient Greek and Roman literature, then being eagerly read in the great revival of classical learning that was the dominating characteristic of the Renaissance.



The Birth of Venus

Painted about 1487 by the Florentine master, Botticelli. Venus, born of the sea, is blown by the winds to an island. A nymph brings a rose-colored mantle to cloak the goddess. In the Uffizi, Florence.

All through the fifteenth century painters thought about the same things as did Masaccio. There were exceptions, it is true. The monk, Fra Angelico, for instance, somewhat older than Masaccio, showed in certain works that he was not unaffected by the new realism; but he preferred a pattern of sweeping rhythmic line and of bright harmonious colors. He is always deeply religious and has something in common with the spirit of Siena and also with the earlier illuminators of manuscripts.

LATER ITALIAN PAINTING

Early Renaissance in Florence. For the most part, however, fifteenth century painters carried forward the interests of Masaccio. They were not content with expressing the large essentials of form and movement. They studied anatomy because they wanted to be able to show the body in every variety of posture and of movement. They studied perspective to help them in showing the changes that objects undergo as they appear at increasing distance from the eye. They were ambitious to represent deep space, the vista of a long room, the far-sweeping Tuscan landscape. Sometimes they were so intent upon what they were representing that they quite forgot design and became recorders of facts instead of artists. But this was never true of the great men of the school. Their ability to show deep space and movement and three-dimensional form only added to the richness and variety of their expression and design.

Uccello had a passion for perspective and is sometimes rather amusing in his exaggeration of the rate at which his distant hills recede, and in those battle scenes where he fills the ground with broken lances, armor, dead cavaliers—all directed toward the "vanishing point." But he uses the new lines and spaces to make very rich designs.

Most powerful of all the realists was Castagno who knew all the secrets of bone and muscle and built up three dimensional forms of tremendous vigor and powerful design. Antonio Pollaiuolo made a systematic study of anatomy. He contributed an extraordinary knowledge of movement, especially of the nude figure fighting, wrestling or in other violent action.

Piero della Francesca, although an Umbrian (the Umbrian school derived originally from Siena), was in spirit Florentine. He wrote a treatise on perspective, but apparently his scientific interests only helped him as artist for he became one of the greatest designers of his day.

However, not all painters made contributions of this sort. Many, notably Fra Filippo Lippi and Ghirlandaio, were content with illustrating the stories and depicting the panorama of the Florentine life of their time. Especially do individual Florentines live for us in the amazing portraits of Ghirlandaio.

High Renaissance in Florence. Botticelli and Leonardo da Vinci both lived into the sixteenth century. Botticelli springs from Fra Filippo Lippi and Pollaiuolo, and his early work is what one might expect from an accomplished painter with his training. But he turned aside to indulge a passion for movement, not only of moving figures and fluttering draperies, but also of pure line—long and quiet or swiftly changing as a flame. He was quite willing to distort the figure, twist and bend it, lengthen legs and arms, if thereby he might better express its movement or weave his lines into a more living arabesque. He gives us idylls of the ancient world. Venus, born of the sea, sails shoreward, lightly poised upon a shell and wafted by the winds; or watches the coming of Spring, blown in by the West Wind, while Flora scatters flowers and the Graces dance for Mercury. But these visions of the ancient world after so many centuries are seen through Tuscan eyes and tinged with melancholy.

Leonardo cared for light and shade as Botticelli cared for line, not only for the sake of form but for its own sake, for the pure melody of its gradations. Leonardo used without a trace of effort all that the Florentines had achieved in representation since the days of Giotto. His figures surpass any before in delicate modulations of light and shade that suggest flesh as well as bone and muscle. His outlines waver in a veil of atmosphere. Landscape backgrounds, filled with air, recede into a far and luminous distance. Oil painting, which had come in during the fifteenth century, made possible a softer edge than tempera. His religious subjects are very human. His Christ Child is a real baby. His *Last Supper* is a dramatic rendering of the effect of one startling sentence, "One among you shall betray me," on twelve different men.

High Renaissance in Rome. Michelangelo was quite unlike Leonardo. He was chiefly a sculptor and wanted no lost edges or veil of air to soften the massive bulk and structure of his figures. He bends them back and forth in space in splendid balanced forms, and stops at no exaggeration that would increase the solid weight or rhythm of their forms. His great work is the ceiling decoration of the Sistine Chapel in Rome. A multitude of gigantic figures are held together by moving line and a subdued color tone of gold and violet. The subject is the drama of Genesis, the Creation and Fall and man's continued struggle. Painted architecture and nude athletes connect the paintings, and supporting this framework are great seated figures of sibyls and of prophets. Michelangelo is the culminating figure in Florentine expression of form and movement.

Raphael was not a Florentine but went to Florence in 1504 and fell under the spell of Leonardo and Michelangelo. He was Umbrian and he reflects all the outside influences of the Umbrian school—Sienese line and pattern, sweetness of facial expression and fondness for space, modified by Florentine realism, with its vigorous form and movement, and its powerful design. Raphael was always the skillful adapter of traits of other men, but he did create a combination that was quite

his own. In 1508 he was called to Rome to decorate certain rooms in the Vatican, and it is in these vast murals and in his masterly portraits rather than in his story-telling pictures and long series of Madonnas that his real achievement lies. His major interests were in line and in space, which he carried back further than had other Italian painters, and in splendid symmetrical designs.



Madonna and Child

By Baldovinetti, Florentine painter of the fifteenth century. The Virgin is placed against a landscape of hills and winding rivers and a pale blue sky. She wears a deep red robe and a mantle of old blue. In the Louvre, Paris.

Early Renaissance in Venice. In Venice there was such close relation to the East that the Byzantine influence lasted longer than elsewhere in Italy. In the fourteenth century it was softened by a new naturalism more suited to this gay, luxurious, nature-loving people. But it was not until the early years of the fifteenth century that Venetian painting was really stirred into new life. Then Sienese and Florentine traditions came to Venice through the visiting Umbrian painter, Gentile Fabriano, and his Verona follower, Pisanello.

The movement was carried on by Jacopo Bellini, the so-called "father of Venetian painting," and his sons Gentile and Giovanni. Jacopo's daughter married Mantegna of Padua, and this brought a fresh outside influence into Venice. Padua more than any other Italian city was under the spell of antiquity. Mantegna studied Squarcione's famous collection of ancient sculpture and whenever possible he used in his paintings Roman architecture, costumes and details of every sort. His fine form did not come from the antique alone—he knew also the frescoes of Giotto in the Arena Chapel and other work from Florence.

The early works of Giovanni Bellini show the Paduan style of Mantegna in their form and severe contour. But gradually Giovanni begins to modulate his light and dark, to clothe with flesh the skeleton. His style broadens; rich color takes on the beginning of Venetian glow; pastoral backgrounds foretell Giorgione's poetic landscapes. Giovanni lived to be ninety years old and took part in the whole development of Venetian painting from the Paduan influence to the triumph of those broad, simplified surfaces of light and color, with edges lost in atmosphere, that were created by his great pupils, Titian and Giorgione.

Venetian painting stands primarily for light and color. It never deserted the solid structure of the body but saw it in terms of light and color. It did not emphasize line as did Florentine painting—line, color and light entered together into Venetian design. Oil technique was very helpful in producing effects of light and air. Venetian art was not religious; it was quite worldly and delighted in depicting the joy of living. The Venetian loved beautiful textures, picturesque costumes, architecture, processions and pageants, civil or religious. He treated religious subjects in an intimate, everyday fashion. Carpaccio's *Vision of St. Ursula* becomes a picture of a Venetian room in early morning light, with a young girl asleep. The altarpieces of Madonnas and saints are in reality pictures of happy, healthy Venetians. Humanizing the religious subject removed symmetry of design in favor of an equally well balanced but more natural grouping. There is new emphasis on the nude and on landscape.

High Renaissance in Venice. With Giorgione we approach the High Renaissance. He abolishes the edge, discovers the color in deep shadows, builds his forms in broad masses of rich, glowing color. In his *Sleeping Venus* at Dresden he also weaves his lines into fine rhythmic pattern. Landscape is a natural outcome of feeling for color and light. It is not so much a background as in Florentine painting; the figures are not always in front of it but often in it. Giorgione made the greatest progress up to this time in landscape—luminous distance, luxuriant trees or bare trees patterned against the sky, the weather, the heat of a summer day or the cool of evening, the lightning flashes of a coming thunder storm. His portraits have a mood of reverie, his Arcadian idylls belong to some past golden age.

With Titian we reach the climax of the school. He was born a year before Giorgione and outlived him sixty-six years, dying in 1576, aged ninety-nine. At first he resembles his master Bellini, then Giorgione. But gradually his own personality asserts itself—he changes from the lyrical to the more dramatic style shown in the vigorous action and exuberance of his *Bacchus and Ariadne.* He is more complicated and powerful than Giorgione, more solid and real, and still more splendid in color. His range was vastly greater—he left a huge number of works of all kinds, portraits, altarpieces, nudes, classic myths and great decorations. He can be thoughtful and profound, as in the splendid *Entombment* of the Louvre; his portraits are often intense studies of character. His large altarpieces, although often grandiose, are always rich designs in line, light and color.

Tintoretto's style is quite different. There is no trace of calm and serenity. All is tremendous energy, movement and drama, due largely to the brilliant lighting of parts and their dramatic contrast with shadow and also to swirl of line. Tintoretto carries space further back than Raphael; he composes his lines and light in depth. He also uses his brush in a new way, with evident delight in the strokes as such.

Veronese, who came from Verona to Venice in 1528, painted enormous canvases of great decorative richness—usually very spectacular pictures with imposing architectural backgrounds giving the illusion of great space. He turns the *Last Supper* and the *Marriage at Cana* into contemporary Venetian banquets. He does not retain the Venetian glow but paints in cooler tones.

The Decadence in Italy. The decline of painting was not so rapid in Venice as elsewhere in Italy. Even in the seventeenth century Venice produced sound painters, and in the eighteenth had a brief but brilliant Renaissance of which Tiepolo was the greatest master. The decline everywhere began with the imitation and exaggeration by lesser men of the obvious traits of the great masters of their time: Michelangelo's muscles and twisted torsos, Raphael's "ideal" figures and grace of line, Correggio's light and shade. Correggio's influence was especially destructive. He was a north Italian painter who lived in the first half of the sixteenth century. In certain churches he actually painted away the architecture, giving an overpowering illusion of real figures soaring into clouds with hosts of angels. His light and shade, derived from Leonardo but carried further, lent itself to very sentimental and exaggerated treatment by his followers.

The Eclectics (meaning "choosers") tried to revive art by combining "the line of Angelo, the color of Titian and the grace of Raphael," but their ambition was not rewarded. There was one new movement in the sixteenth century in revolt from the artificiality of the Decadence—that of the Realists headed by Caravaggio of Naples, who painted murders, quarrels and the like, and used even for his religious paintings Neapolitan types of the day. These he painted with most striking effects of narrow



The Storm

By the Venetian master, Giorgione, painted at the beginning of the sixteenth century. The lightning and the coming rain show his new naturalism in landscape. In the Giovanelli Palace, Venice.

lights coming out of dense shadows, and with very limited color. His treatment of impressions of light was later to influence Rembrandt and Velasquez and thus be passed down to modern art.

MEDIEVAL PAINTING IN THE NORTH

By northern painting we mean chiefly that of England, France, Germany, the Netherlands and Spain. Not many mural and panel paintings of the period before the fifteenth century Renaissance have survived. But there are many paintings in illuminated manuscript books throughout the Middle Ages, and also considerable stained and painted glass of Gothic period, in which we can trace a continuous history of the period.

These manuscript books were the product of the monasteries, written and illuminated by the monks who civilized and Christianized the men of the north and preserved for them the remains of ancient culture. Some were copies of old Greek and Roman manuscripts but most of them were religious books: Bibles, lives of the saints, books of devotion, service books for the church. The paintings in them were a mixture of the native art of the north and the traditions brought from Rome and Byzantium.

Celtic Painting. The chief quality of native northern art was line movement. In Ireland and England this was most developed. Irish painting is entirely unrealistic, mostly ornament. Ribbons and spirals are elaborated with animal features; birds, dragons and serpents are stretched into patterns, their tongues and tails prolonged into ribbons interlaced and tied with wonderful dexterity. Human beings become purely geometrical animals very much like the kings and queens of playing cards. The unity lies in the continuous, rhythmic movement. The most important manuscripts preserved belong to the seventh century A.D.

Continental Painting. When Charles the Great restored the Roman Empire (800 A.D.) he wanted to make his court at Aix the home of all the ancient culture that had survived, and the center of a new culture that would radiate to all parts of his empire. To that end he gathered scholars and artists from Italy, England, Spain and wherever he could. The pictures in the magnificent volumes executed at his court show a curious mixture: Celtic ornament combined with classical and Byzantine, stiff Byzantine portraits of Evangelists in frames of architecture, or perhaps with a perspective background that hints at Hellenistic sources.

Away from Aix, especially at Reims, we find the old Hellenistic naturalism preserved. One important book, the *Utrecht Psalter* (ninth century), seems to be a translation into outline drawing of some old Hellenistic painting, but with a greater sweep of line and movement due to the northern temperament. It shows an immense number of small, restless figures in the most lively action, draperies fluttering wildly, in a spacious landscape that looks like windswept dunes.

The style of the *Utrecht Psalter* had an enlivening influence on painting after Charlemagne's time, and when it was imported into England in the tenth century, its rhythmic linear movement proved so agreeable to Anglo-Saxon artists that it became the favorite style for two centuries. And when England was brought into the fold of the continent by the Norman invasion of the eleventh century, the linear style returned to the continent and became the inspiration of Romanesque painting and sculpture in France.

Gothic Painting. For the arts, the twelfth and thirteenth centuries are periods glorious and unique. With architecture



Angel of the Annunciation

From the masterpiece of the Flemish painters, Hubert and Jan van Eyck, in the Cathedral of St. Bavon, Ghent. Finished in 1432. The angel, on the outside of the left wing, faces the Virgin who is on the right.

dominating, sculpture, painting, illumination, stained glass, tapestry, embroidery and all the allied crafts were joined in an amazing unity. The center is no longer the monastery; it is the town and the cathedral. The artists begin to be laymen instead of monks. Subject matter is no longer exclusively religious; manuscripts, for instance, include historical, literary and scientific subjects. As the cathedral rose to dizzy heights and the openings grew larger, painting was transferred from the walls to the glass of the windows. More splendid color has never been produced. The colors are luscious shades of rich reds and deep blues, yellows and greens in smaller quantity. The pieces of colored glass are very small, and when from a distance the difference between the colors is lost, the whole becomes a purple of wonderful richness. Details were painted in brown enamel on the colored glass and then fired, thus fusing enamel with the glass. The figures, always small in the early twelfth century glass, were used in a series of medallions, each one telling some sacred or legendary story. Thirteenth century glass was much the same except that some larger figures appear. In the fourteenth century large figures are everywhere, shadows and relief appear, as does a whole range of delicate half-tones. But the glory of the earlier centuries has vanished.

Thirteenth Century. For painting proper our chief source is still the manuscript. Books became small in this century and pictures delicate and minute. Books are resplendent with burnished gold and rich colors, especially blue and red, reflecting the brilliance of stained glass—black outlines even suggesting the leading of the glass. Backgrounds were commonly of gold, blue or red, with no suggestion of surroundings other than perhaps a tower or patterned tree. Later in the century the little figures became supple and delicate in body and feature, slightly modeled in color, and took on a certain gentle gayety—in form and spirit they resembled Gothic sculpture.

Fourteenth Century. Naturalism increases. Drawing becomes more flexible, lines are more flowing, the figure becomes elastic and swaying, the narrative more lively. Colors are still rich but more varied. Modeling creates an effect of third dimension. Backgrounds become elaborate with stippled gold and pattern. Occasionally they are broken to admit a bit of landscape or interior view. By the fifteenth century the formal background yields entirely and the figures take their place in natural surroundings, interior or landscape.

The subject matter has been broadening. In the late fourteenth and fifteenth centuries, literary and historical works increase and manuscript books of all sorts are made in great numbers, not only for churches and monasteries, but especially for the magnificent libraries of the great princes and nobles. In the fourteenth century we can trace the gradual changes that mark off English, French, Flemish, Dutch and Spanish manuscripts as the life of the different countries takes on distinct national character. In general we may say that illuminated manuscripts, with their rich imagination, incredibly fine craftsmanship, brilliant colors and lavish gold upon the silken texture of fine vellum, are among the most exquisite remains of the Middle Ages.

NORTHERN RENAISSANCE PAINTING

Paris was the great artistic and intellectual center of the fourteenth century, and a brilliant French Renaissance was about to unfold there when civil war and later disasters plunged France into misery. The Renaissance of northern painting took place in Burgundy at the hands of Flemish artists. In the fifteenth century the dukes of Burgundy had united under their peaceful and prosperous rule all the Netherlandish provinces. Netherlandish art flourished and even the manuscripts of the great French patrons were done by Flemish painters. (Flemish is a time-honored term for the art of the whole Netherlands until the seventeenth century when the term Dutch is used for the separated provinces—Holland—in the north.)

Panel paintings had been increasing in the fourteenth century, but the fifteenth was their real flowering period. Paintings were now made for the home, guild hall and town hall as well as for church and chapel. Religious feeling was still fervent but no longer dominated; art tended to become a record of

the splendor and great wealth of princely merchants and manufacturers.

Flemish, Fifteenth Century. The greatest Flemish painters were the brothers Hubert and Jan van Eyck, whose altarpiece at Ghent, *The Adoration of the Lamb*, was all —and more—to painting of the north that Masaccio's frescoes were to that of Italy. In this painting all the interests of the Flemish school are revealed. When the wings are opened the color has the blazing splendor of stained glass. Above, a great figure of God in jeweled robes is enthroned, with Mary (a Flemish Virgin, fair and blonde) and John beside him. On either side are singing and playing angels in rich brocades heavy with gold embroidery and with jewels. Beyond are naked figures of Adam and Eve shown in stark realism. Below is a Paradise of green with violets, cowslips, daisies, roses and purple flags; in the far distance are the towers of a city and snow-capped mountains against a blue sky. In the meadow, angels with rainbow wings surround the Lamb on the altar. Hosts of worshipers stand and kneel —popes and cardinals, poets and philosophers —while from either side hermit, pilgrim and warrior saints wind through a wooded country toward the scene of adoration. On the outside of the wings are portraits of the donor of the altarpiece and his wife, solid, weighty forms, full of character.

These were the qualities handed down to northern painting of the fifteenth century by Hubert and Jan van Eyck: brilliant color; a rugged realism; minute detail; delight in the texture of stuffs, of jewels, wood and stone; a tendency to angular line pattern instead of curves; an enthusiasm for portrait and landscape. Jan van Eyck's little portraits are powerful renderings of form and character, and unified in design in spite of their detail. Landscape was very spacious, with a high horizon giving what is often called "bird's-eye-view perspective" because the point of view is from a height. It was an assembled landscape in the sense that many bits studied from nature were put together in an imaginary whole.

The Van Eycks have been credited with the invention of oil painting. It was not oil painting in the modern sense but the use of an oil varnish mixed with the white or yolk of egg (or both) as a medium for the ground pigments. Probably the Van Eycks perfected this method and it became the traditional technique of the north just as was tempera in the south before the introduction of real oil painting in the sixteenth century.

A quite different personality was Roger van der Weyden whose home was in the southern part of the country and who was more like the French in temperament. His religious pictures express most intense emotion and are bound together by a rhythmic flow of line. Dirk Bouts of Haarlem contributed to the color and light of landscape; Hugo van der Goes made further contributions to realism in his study of light and everyday types of people.

Memlinc, who lived some fifty years after Jan van Eyck, put flesh upon the bony structures of the Van Eycks with his more delicate transitions of light and dark. He loses their powerful form, however; his figures have little weight or solidity—they are ethereal and other-worldly. His line is flowing and his design is beautifully patterned within the limits of a strict symmetry. On the panels of a little shrine he tells the story of the martyrdom of St. Ursula and her eleven thousand virgins in the spirit of a medieval fairy tale on a background of castles and the swelling sails of boats. He is never dramatic but he does impart a definite spiritual quality to his religious pictures even when he must introduce in the foreground careful portraits of the donor and his five sons and the donor's wife and her eleven daughters.



Mystic Marriage of St. Catherine

Painted in 1479 by the Flemish master, Memlinc. The child places the betrothal ring upon the finger of St. Catherine. St. Barbara is reading beside her tower. Beyond the figures of St. John the Baptist with his lamb and St. John the Evangelist with the poisoned cup are shown various scenes from their lives. In the Hospital of St. John at Bruges.

Flemish, Sixteenth Century. Quentin Matsys, transitional between the fifteenth and sixteenth century, played a rôle similar to that of Leonardo in Italy in his humanizing and dramatizing of the religious story, in his enthusiasm for light and dark and in his creation of form by softly modulated tones. Sometimes the genre element overwhelmed the religious sentiment, as in the case of a martyrdom of St. John in which the fiendish stokers are obviously of more interest to the painter than is the exalted saint in the caldron of boiling oil. The next step was to paint the genre subject for its own sake, and in this Matsys was the pioneer. Matsys has the splendid color of the earlier men with more variety, shimmer and sparkle.

Jerome Bosch and Pieter Bruegel were both from the Holland country. Bosch was the inventor of a world of nightmares and monstrous beings, a master of caricature and satire, always in the splendid color tradition of his school. From him descended Bruegel, humorist, satirist of the vices and foibles of humanity, but a painter of such broad interests that he could turn from the most involved allegory to the depiction of a village fair, a peasant dance, or a landscape more natural than any we have seen before. With Bruegel, landscape becomes truly local instead of an imaginary assemblage of bits. Often he lowers the horizon line so that his perspective is from the "normal" point of view. He is distinguished for his light and color and for his spatial pattern.

Bosch died early in the sixteenth century; Bruegel lived through the middle. Both men were the natural outgrowth of the Van Eyck tradition. But in the early years of the century there had developed a new and elaborate style which reflected the changing taste of the time. In this new painting there was an abundance of impossibly fanciful architecture, and saints and Virgin appeared in the latest fashions of the day. This extravagance was further complicated by Italian influence.

In the fifteenth century the Italians had been eager to learn the secrets of Flemish craftsmanship, but after the Italian Renaissance had culminated in the achievements of Leonardo, Michelangelo and Raphael, the

situation was quite different. Early in the sixteenth century the Flemings were fired with enthusiasm for Italian art, and there was a pilgrimage of artists to Italy with the most unfortunate results. They could not make their natures Italian, and the outcome was a strange mixture that sometimes reached the grotesque. They imitated the great compositional schemes of the Italians and especially their treatment of the nude; it became the height of ambition to be known as the Flemish Raphael. Probably the leading artists were Jan Gossaert and Van Orley.

No period is wholly decadent and there was some progress made, chiefly in greater breadth and freedom in representation. Pictures of contemporary life and the portrait flourished. Landscape became of more importance than the figure interest, thus pointing the way to the seventeenth century development of landscape for its own sake with no figure interest at all.

French Painting. In France in the fifteenth century there are few famous names. Certain anonymous paintings such as the great *Virgin of Pity* from Villeneuve, now in the Louvre, illustrates perfectly the French style with its northern realism modified by feeling for line, its emotion and masterly arrangement. Ever since Simone Martini went to Avignon during the exile of the popes there had lingered a Sienese influence very agreeable to the French temperament. This, in the course of the fifteenth century, yielded to realistic Flemish influence as shown in the work of Nicholas Froment. Jean Fouquet is the greatest name of the century, a painter of simple and direct portraits and also of miniatures in manuscripts, some of which give intimate pictures of his country and his time.

In the sixteenth century France, like Flanders, was in the grip of Italianism. Italian artists were even brought to the court to cover palace walls with paintings in the southern manner. But unlike Flanders, France was able to adopt Italian tradition and to build upon it a new style. Pictures of allegory and mythology with many nude figures grew common, but at the same time there was an intense enthusiasm for portraits. Jean Clouet, of Flemish origin, and his two sons, François and Corneille, were the most famous of the portrait painters. Their portraits are light, delicate, with few colors and few lines, but they express the personalities of the aristocracy of the time with great vitality.

German, Fifteenth Century. In the fourteenth century a school of painting had emerged from manuscript illumination, supposedly under the leadership of one Master Wilhelm of Cologne. The style of this school was not expressive of ceremony but rather of private devotion. There were small Madonna pictures for private oratories, and Paradise pictures with Virgin and Child surrounded by saints in a medieval garden.

In 1430, Stephen Lochner, a stranger from Swabia, came to Cologne and became the leading master of the school. Lochner quite lacked the force and grandeur of the Van Eycks—he is simple and human with no trace of the austere realism of the Flemings. The Virgin sits in a garden, eyes lowered, smiling and ecstatic, holding the Child; small angels gather around her in clear tones of red, blue, green and rose. Flesh tones are luminous and the bright colors have a soft modulation.

As the century advanced the religious story took on the flavor of everyday life; painting deserted the mystic garden and told new stories in the spirit of naturalistic observation. After 1450 Flemish influences, especially of Bouts and van der Weyden, turned the school from fourteenth century idealism and fondness for line to realism and modeling in light and dark.

From about 1480 Flemish influence, especially that of van der Weyden, came to predominate in the south also. The most influential painter of this epoch was Martin Schongauer. In general the German schools may be distinguished from the Flemish by their harsher and heavier color, their angularities of gesture and attitude and their more crowded and less organized designs.

German, Sixteenth Century. In the sixteenth century came the same Italianism that had overwhelmed the other countries. But several great artists learned from Italy and still maintained their German spirit. Chief of these was Dürer. He was the learned artist of the time, curious, theoretical. He worked for a time in Italy, and developed



Anne of Cleves
By Holbein, German painter of the sixteenth century. The fourth wife of Henry VIII, in crimson velvet and gold against a ground of peacock blue. In the Louvre, Paris.

from the Venetians an absorbing interest in light. In spite of an incredible amount of detail his compositions are held together by their lighting which is emotionally expressive —somber gloom, unearthly glitter, soft sunshine. He adopted Italian schemes of design and absorbed all of Italian progress in representation. He tried to carry his expression even to the point of symbolizing abstract ideas. He advanced from a very complicated style to the simple broad unity of his last powerful work, the *Four Apostles*.

Two generations of artists continued more or less in Dürer's manner. Grünewald stands out as a great original colorist and master of emotional expression. His colors and his distorted forms can be agitating and harrowing, tragic and ecstatic. Grünewald as well as Dürer very strongly influenced Altdorfer, who is known for his color and light and for his landscape.

Hans Holbein, who was born and who died some twenty years after Dürer, fell early under Italian influence and was occupied with picturesque effects of strange and violent lighting, vast shadows and flickering lights. Then he went to England as court painter and became almost like a fifteenth century Fleming in his amazing realism, and with few exceptions painted portraits for the remainder of his life. He depicts not only the bodies but also the minds of his subjects. And he is never the mere recorder of facts; always he is emphasizing or reducing, enhancing a line or gradating a color, so that in the end his form seems quite perfect and unchangeable.

THE SEVENTEENTH CENTURY

In this century we find certain changes that contain all the germs of modern art. Interest in landscape led to a great interest in space. Tintoretto had carried his figures back into space; but beyond the figures space tended to flatten down and lose reality. Certain painters of the seventeenth century carried their realization of depth even to the horizon. Space stretched out as never before, not in parallel planes as was usual with Renaissance painters, but through great diagonals or curves that led attention in and out of the picture space. Space existed between objects. Design was no longer a matter of the surface, in relation to the rectangle of the picture, but moved in and out of depth.

At the same time an absorbing interest in light and color tended to break down expression of space and volume in favor of a mosaic of light and color that anticipated the nineteenth century impressionists.

Flemish Painting. With the giant Rubens a new golden age of Flemish painting emerged from the sixteenth century decline. Rubens, born in 1577, about the time of Titian's death, went to Italy and was able to assimilate Italian ideals without damage to his Flemish traditions, and to pass on to later centuries the elements of both. He has Venetian feeling for color masses, with Florentine sense of form and expressive line; but Venetian glow becomes reddish with Rubens, the strong modeling of Michelangelo is softened, line grows atmospheric and turns to shorter curves and double curves, Venetian composition becomes more florid.

Whether he painted myths, battles, animals, markets, peasant fêtes, altarpieces, landscapes, portraits, still-life—everything is in movement; if it is not a drama of human beings in movement, it is a drama of moving color, light and dark, and line. One has the impression of a great energy in continual transformation, but of a controlled and ordered energy, for Rubens is a great designer —a designer in space—even to the smallest unit of his great canvases. His chief followers were Jordaens and Van Dyck; and after them came the Flemish decadence.

Dutch Painting. In the seventeenth century the southern part of the Netherlands, modern Belgium, was still Catholic and was under the rule of Spain; but the northern Netherlands, modern Holland, had become Protestant and independent. There were no palaces for which the Dutch could paint, and no churches, because Protestantism disapproved of the decoration of churches.



A Canon of the Church
Painted in the early sixteenth century by the Flemish master Quentin Matsys. In the Liechtenstein Gallery, Vienna.

Instead they painted for the private house, the town hall, the homes of the various guilds and institutions. There was great enthusiasm for paintings of everything that had to do with their own people and their own country, now especially dear to them in their new and hard-won independence. Artists began to specialize as painters of portraits, of landscapes, of genre.

Frans Hals, next to Rembrandt, was the greatest of the portrait painters. He has left us a panorama of the Dutch people, the merchants and their wives, the archers of the civic guard, directors of the poorhouse, a laughing servant, a jolly toper, an old witch with her owl. He is known for his expression of life, due partly to catching his subject in a lively mood, partly to his vigorous and dashing brush strokes.

Rembrandt, the greatest genius of the Dutch school, painted not only portraits but scenes of everyday life, landscapes, still-life and a vast number of religious subjects. These were not monumental paintings for the church but stories of the Old Testament, told with splendor of imagination and with feeling for the ancient East, and pictures of the New Testament in the simple spirit of the Gospels. He treats of all ages, all emotions and all conditions of people. Most of his early paintings were executed with a sober realism and attention to form in minute detail. But in 1642, in his *Sortie of the Civic Guard*, he allowed himself, in his passion for light and dark, to forget the careful representation of form so dear to the Dutch heart. Only a few figures emerge clearly from the moving light and shadow—and the result was his immediate decline in popularity. Rembrandt's light is not natural but a light that is all his own, with which he brings volumes from the shadows into golden light and then lets them retreat again into gloom. Sometimes his fascination with light so dominated that his lights and darks mass into patterns that quite destroy form and foretell the complete visual impressionism of the nineteenth century.

The Dutch of the seventeenth century gave genre painting a distinct character. Their works are small, minute in technique, splendid in craftsmanship; placid little pictures that repeat over and over again favorite themes of peasant life, such as the fête, dance or market, or scenes from the home life of the rich burghers, as the music lesson and card party. The story is of little importance; the real concern is with color, texture and the decorative whole. The chief men were Ter Borch, Steen, Vermeer and De Hooch. The last two were fascinated with natural light, air filled space, effects of sunlight. Vermeer could show the most delicate differences in value (amount of light) of every spot of color.

Of the Dutch landscapists, Hobbema and Ruisdael were the greatest. Ruisdael studied the forms of trees and their manner of growth, the solid ground and vastness of the sky; his clouds have bulk and carrying power. Sometimes it is the country around his native Haarlem; again, with romantic imagination, he treats of strange rocks and hills and waterfalls.

Realism did not extend to color; Dutch landscape, with few exceptions, transposed the colors of nature into a scheme of browns and brown-greens, sparingly enlivened with blue and red.

French Painting. Italianism was less disastrous to France than to other countries. It continued even into the seventeenth century with happy results in the work of Poussin and Claude Lorrain. Poussin admired Raphael and ancient sculpture, and his work shows the spirit of the Italian Renaissance through French eyes. His sculptural figures are tied together in varied and rhythmical arrangements. His favorite subjects were stories of classical antiquity against a background of landscape carefully studied for its clouds, tree forms and the solid structure of the ground. When landscape was his chief interest he carried his design into deep space.

Claude Lorrain was primarily a landscape painter, although he always introduced some small and unimportant figure interest, biblical or classical. His special contribution lay in light and atmosphere. His landscapes are romantic, majestic, with great tree masses placed against a vast and mist-filled distance. Color is secondary, being submerged in a warm or silvery light enveloping the whole. Because of his fondness for introducing classical architecture he is often called "the father of classical landscape." It is an assembled landscape, built on the study of nature but entirely imaginary in its final form.

Spanish Painting. The history of Spanish painting during the Renaissance is largely one of foreign influences, but of influences that immediately took on a Spanish character. They were Flemish in the fifteenth century—Jan van Eyck visited Spain—and Italian in the sixteenth. A distinguishing feature of Spanish style in the fifteenth century was the primitive fondness for gold backgrounds—plaster relief covered with gold. The Eclectic Italians dominated the sixteenth century with their twisted torsos, exaggerated muscles, striking darks and lights.

In the late sixteenth century there came to Spain a foreign painter, Domenico Theotocopuli. He came from Crete and was popularly called El Greco (The Greek). He had studied Titian and knew the works of Michelangelo. In Spain his warm Venetian colors cooled, became dulled with black, and his whites became silvery. More than any other painter he expresses the religious emotion of the Spanish temperament. He is unique in the restless, flame-like rising of his forms, the flickering lights, the elongated, undulating bodies that he does not hesitate to bend at will for the sake of his emotion and design.

El Greco worked into the seventeenth century. Quite unlike him were the Realists, Zurbaran and Velasquez, who lived some fifty years later. Velasquez began as the accomplished student of all the traditions of his time. Later in his life he became court painter of Philip IV of Spain, and in the long series of portraits of the king and queen, the infantas, dwarfs and the whole nobility of the Spanish court, he revealed himself



Don Balthasar Carlos
Painted in 1635 by the Spanish painter Velasquez. The six-year-old son of the King of Spain rides on his pony through the royal hunting grounds. In the Prado, Madrid.

in a new and individual manner. In the cool, diffused light of the Spanish palace there were no strong shadows to throw forms into relief; instead they tended to appear as color masses of various degrees of light. Velasquez became engrossed with purely visual impressions. So sensitive was he to the exact relations of values that at times he produced an uncanny illusion of space; but he

did it solely with his color and not with line or shadow. He was never a mere reproducer of nature's light and color, but always achieved a decorative unity by arranging his masses of color and light in finely balanced patterns. He grew fond of low-toned colors, casting aside the warm glow of the Italians for cool subtleties of blacks and whites and silver grays, with notes of rose red, blue and yellow. Velasquez was the chief influence on modern Impressionism.

THE EIGHTEENTH CENTURY

English. Painting was still on its downward slope in Italy and in Germany; Holland and Flanders, after the brilliant seventeenth century, had not a single great name. In England and France however, there was an art founded on that of Rubens. England had not developed a national school since the Middle Ages. In the sixteenth century she had imported Holbein from Germany as court painter; in the seventeenth, Van Dyck from Flanders. The first English painter was Hogarth, a portraitist and story-telling painter who satirized the social life of his day—as in *Marriage à la mode.*

About the middle of the century, chiefly under the influence of Rubens and Van Dyck and of the Venetians, there grew up a school of English portrait painters with Reynolds and Gainsborough as leading masters. Compared with the older masters whose secrets they sought to recapture, they have only surface charm; but their portraits of Garrick, Mrs. Siddons, Dr. Johnson and of the whole English aristocracy are a valuable record of the artificial elegance of the England of their day. Reynolds' form and design were better than Gainsborough's; but the latter had his own charm of light and texture and of vivacity and movement, with an undercurrent of romantic melancholy. The school ended with brilliant but shallow painting early in the nineteenth century.

French. The master who brought into France the color, light and movement of Rubens and of the Venetians was Watteau. He painted fairy-like fêtes of lovers in romantic landscapes and the Harlequins, Columbines and other actors of French and Italian comedy. He is slight as compared with Rubens, light and vivacious; but within his scope he is a master. His delicately modulated light and dark moves rhythmically in and out of space, his color breaks into jewel-like and iridescent bits. His fairyland art degenerated in the hands of his followers into shallow and frivolous imitation.

The ingenious decoration of salon walls and ceilings with make-believe shepherdesses, dairymaids and classical divinities had a special vogue in the eighteenth century. Painters like Boucher tried to merge the classical art of Poussin with the tradition of Rubens with resulting weakness but decorative charm. Fragonard was more successful. Nattier was the painter of many portraits, artificial but decorative, of the French aristocracy posing as classical divinities.



The Hay Wain
Painted in 1821 by the English landscapist, Constable. Exhibited at the Paris Salon of 1824, it became an important influence on French painting. In the National Gallery, London.

Chardin, next to Watteau, was the finest painter of the century. He was a genre painter who turned the most trivial subjects into poetry. He painted his wife and children, their kitchen, the vegetables, meats, pots and pans, and achieved a triumph in texture, color and design.

About the middle of the eighteenth century came the first important discoveries among the ruins of Pompeii and Herculaneum. French taste of the day turned to the classical subject. Louis David inaugurated a classical movement in painting which successfully put an end to the frivolities of the salon decorators but at the same time destroyed the whole tradition of northern art. David succeeded in imposing his style upon almost the whole of Europe—the classical subject, figures like marble statues in their clear cut contours and hard texture, flat tones of lifeless color, statuesque rigidity instead of movement.

Spanish. Goya, who like David lived through the first quarter of the nineteenth century, stands out in vivid contrast. His style descended from Velasquez, and he likewise was a painter of the Spanish court. He is distinguished for his character portrayal, his fine patterns of light and dark and his delicate color harmonies. In another aspect, in his illustration and satire of the corruptions and weaknesses of his day, he suggests the Flemish Bosch and Bruegel.

THE NINETEENTH CENTURY

Classical Movement. David's classical art proved to be only a curious break in the chain of tradition. Ingres, his greatest follower, also subordinated color to line; but his classical works had much more life, and there was movement and vitality in his linear patterns. Prud'hon was even romantic in his veiling of classical forms and his emotional use of light and dark.

French Romanticism. Classical art could not hope to express the emotion and passion for liberty let loose by the French Revolution. Swift on the heels of Classicism came the Romantic movement—life and color, play of light and shadow, the atmospheric edge, emotional expression, movement, the tradition of Rubens reinstated. Subject matter changed to heroic events of the day or, in reaction against the classical subject, to the medieval story—the Crusades, tales from Dante, Shakespeare or Byron. Delacroix was the leader. His special contribution lay in color which he used to express emotion and to contribute to the drama of the situation. Sometimes he let color dominate so that we see his pictures as a pattern of color masses before we can distinguish what the patches of color represent. In this he anticipated Impressionism.

Naturalism in England. Revolt against the idea that only subjects strange or remote in time or place were suitable for painting brought about a new naturalism—painters insisted upon expressing their fresh impressions of the world about them. This is sometimes called a new aspect of romanticism because of the emotional attitude toward nature. The greatest impetus came from England in the work of Constable who painted intimate scenes of his own England with the same love that the Dutch had lavished on the Holland country. He dared to cast away their green-brown scheme of color and paint nature's greens, making them more vital by painting what he called a "multitude of greens" in separate strokes instead of mixing them upon the palette. Constable painted only in the English summer but he caught its exact character, its breezes, heat and heavy coloring, storms, rainbows and sudden sunshine.

Constable is a great contrast to his contemporary, Turner, who painted landscapes in the tradition of Claude Lorrain—vast, majestic, artificial, but with great luminosity and brilliance of color. His technique for achieving this was like Constable's, placing spots of color side by side for the eye to mix.

The Barbizon School. Paintings by

Constable shown at the Paris Salon in 1824 stimulated Delacroix to further study of color, and inspired a little group of revolutionary spirits who were founding a new school of French landscape painting. Rousseau settled in the little village of Barbizon on the edge of the Forest of Fontainebleau and began to paint intimate scenes of the French countryside. The permanence and strength of nature appealed to Rousseau; he built up the solid structure of his trees and placed them against a blue sky or flaming sunset. Daubigny, Diaz and Dupré were also at work in the forest—all different personalities but filled with the same sincere desire to express their vision of the world about them.

Millet added to the new landscape, and, in the same spirit, the human figure. He had a great reverence for Poussin and Michelangelo, and this appears in his simple paintings of the French peasant when he seizes just the essential lines to indicate a movement or to create the solid volume of a figure against a far-reaching plain.

Corot never lived at Barbizon but he was allied in spirit to the group. His art was descended directly from Claude and Poussin. He introduced small classical figures into his landscapes and like Poussin created arabesques of line and mass. He was especially the painter of morning light, of the cool blue-green of foliage, of vanishing distance half-hidden by mist. He was even more important as a figure painter although less known as such. Corot as well as Rousseau and his group express the form of things in their



Girls at Piano
Painted in 1892 by Renoir, French Impressionist. In the Luxembourg Museum, Paris.

early work. Later, having become interested in color and light, they tend to see the world as a mosaic of color patches and, like Delacroix, anticipate the Impressionists.

Realism. It was not Millet but a more fighting personality, Courbet, who came to Paris in 1839 and succeeded in putting to rout the historic-romantic subject. He painted such subjects as a *Funeral at Ornans* and the *Stonebreakers*, and many landscapes and marines of great vigor and breadth and fine design.

Courbet was inspired by the old Spanish masters. Daumier, who was also important in the cause of realism, was descended from Michelangelo, Rembrandt and Bosch. He painted in rich, somber color, giving only the essential volumes of his figures and binding them into strong spatial designs. Expressive line is important in the part of his work devoted to satire and character studies.

Impressionism. Courbet had painted his out-of-door figures with the colors and shadows of the studio. Manet, who had discovered Velasquez, wanted to show the natural subject in natural light. Unlike Velasquez, his interest in light became so absorbing that he lost to a large extent his interest in form; and both his figures and background tended to become flat color masses. These he simplified so that they appeared to have almost no modeling and bound them into a decorative whole.

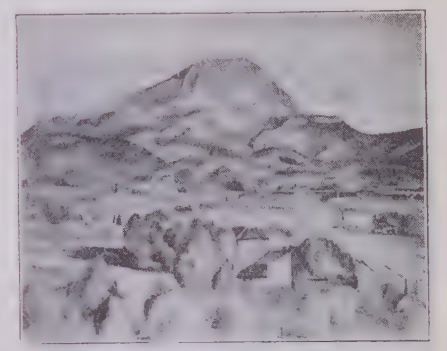
Light, as Manet once said, became the principal person in the picture. But Manet never went so far as his landscapist friends, Monet and Pissarro, who dissolved all form into atmosphere and broke up Manet's simple color masses into a wealth of changing hues. About 1870, Monet and Pissarro, in their desire to add to Manet's light the brilliance of out-of-door color, adopted a special technique of broken or divided color, based on the fact that a blue and red, for instance, placed side by side on the canvas, will produce a more luminous and brilliant violet than when mixed upon the palette. The stained glass painters of the twelfth century had understood this; so, to some extent, had Watteau, Constable and Turner. But the color impressionists made a scientific study of this technique; its possibilities stimulated new observation of nature and suddenly a whole new world of color was revealed, not the rich jewel-like gleam of the Flemish and Venetians, but splendid in quite another way, in the shimmer, glitter and radiance of the light and atmosphere of out-of-doors.

Impressionism took the final step in freedom of subject matter for when light and color became the chief interests no subject was too commonplace to interest the painter.

Post-Impressionism. The great Impressionists always designed, some of them, like Manet, Degas and Whistler, creating novel patterns in line and color under the influence of Japanese prints. But there was a general tendency merely to imitate the momentary appearance of some fragment of nature in some particular light.

The movement against Impressionism had two aspects, first a desire to recover for painting the interests that the Impressionists had lost, especially volume; second, a conscious endeavor to design. The new movement arose within the ranks of the Impressionists themselves. Renoir, one of the greatest of the group, became interested in volume and solidity and in his last work actually threw away his wealth of color, adopting a reddish monochrome because it helped his line create voluminous forms arranged in rhythmic movement back and forth in space. Seurat, although he carried the scientific study of color much further than the Impressionists, used his color technique not to record his fleeting color vision but to build up fine design.

But the real father of Post-Impressionism was Cézanne, who wanted to make something solid of Impressionism. He wanted volume and space as well as color. He began to use color to intensify his form, painting not the accidental patches of light and dark and color



Mont Saint Victoire
By the French Post-Impressionist, Cézanne. The rhythms of line, light, color and volume carry the eye through every part of the landscape. In the Barnes Foundation, Merion, Pa.

that destroy form, but studying the way in which hues change as they advance into light and recede into gloom and using such advancing and receding colors to help build up his forms. Volume in itself has no artistic merit but Cézanne's paintings, whether of apples and dishes on his kitchen table or of the far reaching plains and distant mountains of his home in southern France, have their volumes composed, ordered in some fine relation.

THE TWENTIETH CENTURY

The reaction against Impressionism began in the eighties but did not acquire momentum until the late years of the nineteenth century; from the time of Cézanne's death in 1906 it became a very definite movement. Cézanne was the most influential of all the Post-Impressionists. The term is very inclusive for the men who belong to the era "After Impressionism" are quite different in their interests. They are held together only by certain broad qualities such as these: a desire to express any impressions or ideas except the color and light mosaic of the Impressionists; a tendency on the part of many artists to express volume and solidity, and of others to paint in sober color, because this was the opposite of Impressionism; a greater simplicity for the sake of better emotional expression; a comparative indifference to subject matter because they believed that the real value of a painting lay in the organization of its color and form.

The frequent distortions of modern art are due to the fact that in the reaction against Impressionism the appearance of things to the eye had become of no importance, so that painters distorted at will in order to express better their ideas or emotions, or in the interest of better design.

Thus Cézanne altered color and light to achieve effects of form and space, or distorted his dynamic lines to create a new balance. Gauguin, in his idylls of Tahiti and the South

Seas, freely used his color and line in the cause of emotion and design. Van Gogh, the Hollander, used quite unreal color for its emotional value and carried his desire for emotional expression even into the use of his brush—the strokes of pure color being drawn into writhing forms that give not only a sense of life and motion in the world depicted but express directly the artist's own emotional excitement. Matisse was the leader of a group that made a still further



Nude Descending Stairs
Cubist painting by the French artist, Marcel Duchamp.

departure from visual appearance in the interest of such "expressionism."

Cubism. Cézanne, being interested in form, once said that nature could be expressed with the cube, cone and cylinder. Thereupon the Cubists—Picasso and Braque were the driving spirits—undertook to reduce nature to those geometrical essentials. Later in an effort to escape farther from the limitations of appearance to the eye, they substituted for the single aspect of an object the many aspects that might be preserved in the memory. These were arranged together, intersecting, or superimposed. Gradually emphasis on design turned Cubism into flat pattern although a few men continued to make their designs in space—in the very shallow space that is possible when dealing with cones and cylinders instead of spacious landscape.

There was a great development of other cults just before and after the World War. Germany, especially Munich, came to the fore as a new center. In general there seems now to be a tendency away from the more extreme forms of modernism toward those in closer touch with tradition. The intentions of modern painters are very diverse, but one desire at least seems to bind them together—a highly conscious effort toward creative design.

PAINTING IN THE UNITED STATES

Ever since the early nineteenth century Paris has been the clearing house for the painters of all Europe. Even ideas that came from other countries, notably England, matured there. There were always individuals who were not allied with any group, but in general we can trace in all European countries a development corresponding to the broad movements of modern French painting, and usually under direct French influence. This was true also of America.

Colonial Painting. In America the Colonial painting of the eighteenth century was really a branch of the English school. The leading portraitists, Copley and Stuart, spent years of their lives in England. Benjamin West left America in 1763 to settle in London and became the master of most of the American painters who came to London for instruction, such as Trumbull, the historical painter, and Sully, who continued the tradition of the English portrait school past the middle of the nineteenth century.

Nineteenth Century. When the influence of England declined after the first quarter of the nineteenth century painters turned to Düsseldorf, Munich, and finally Paris for their training. At the same time there was a native development in landscape known as the Hudson River School (Cole, Durand, Church). The accomplishment of these painters was not great but inspired by a new national enthusiasm for their surroundings they laid the foundation for the landscape development that has become a distinguishing feature of painting in the United States.

Of the next generation of landscapists, which was on quite a different level, the most important were Homer Martin, Wyant and George Inness. They correspond to the Barbizon group in France. The landscapes of Inness are distinguished for their harmony of color and mass and their emotional expression of nature's moods. His contemporary, John La Farge, was a painter of wide range, including large murals of religious subjects. Through wide travel he became familiar with Oriental as well as European traditions and played an important part in American painting through his influence as well as achievement. His emotional use of color suggests Delacroix and his technique, the Impressionists. He carried his color experiments also into the field of stained glass.

Realism and Impressionism. Winslow Homer, a powerful painter of the sea and the Maine coast, might be called the American Courbet. Thomas Eakins, the portrait painter, belongs also to the realistic movement. As in France there were always artists who worked apart from the general tendency, such as the visionary romanticist, Albert Ryder, the sensitive George Fuller, and, later, the poetic Arthur B. Davies.

The chief exponent of early Impressionism was Whistler who is also claimed by the British because he made London his permanent home. He was formed chiefly under the influence of Velasquez, the Japanese and of his friends, the Impressionists. Design was his chief motive—subtle patterning of line and tone and color. Even the meaningful portrait of his mother he calls *Arrangement in Grey and Black.*

Sargent also made London his permanent residence. He belongs to the Velasquez tradition but goes to the extreme in sacrificing form and often design to an accurate record of impressions of light. His brush work is very brilliant and stirring. Mary Cassatt, the painter of a long series of mother and child pictures, lived for the most part in Paris and was a follower of Degas. Corresponding to the color Impressionists are J. Alden Weir, Twachtman, Childe Hassam, Ernest Lawson, Glackens and Prendergast. Robert Henri belongs to the Manet tradition.

In the period of Post-Impressionism there was far more conservatism in the United States than in Europe. There were exponents of Cubism, Futurism and other ventures, but on the whole the painters who outlived Impressionism, such as George Bellows, Sloan, Kroll, Speicher, Henry McSee, are as firmly linked with the tradition of the old masters as with the new ideas of their age.



The Fog Warning
Painted in 1885 by the American artist, Winslow Homer. In the Museum of Fine Arts, Boston.

GREAT PAINTERS

	Italy			Netherlands	Germany	France
	Florentine	Sienese				
Thirteenth and Fourteenth Centuries	**Cimabue** ca.* 1240-1301 **Pietro Cavallini** (Rome) 1250-1330 **Giotto** 1276-1336 **Taddeo Gaddi** ca. 1300-1366 **Andrea Orcagna** 1308?-1368 **Spinello Aretino** ca. 1330-1410	**Guido da Siena** 13th century **Duccio di Buoninsegna** ca. 1260-1319 **Simone Martini** ca. 1285-1344 **Pietro Lorenzetti** active 1305-1348 **Ambrogio Lorenzetti** active 1323-1346?			**Wilhelm of Cologne** active ca. 1358-1378	**Jean d'Orleans** 1305-1408 **André Beauneveu** active 1360-1390 **Jacquemart de Hesdin** active 1384-1400
	Florentine	Umbrian	Venetian and North Italian			
Fifteenth Century	**Masolino** ca. 1384-ca. 1440 **Masaccio** 1401-1428 **Fra Angelico** 1387-1455 **Andrea del Castagno** ca. 1397-1457 **Paolo Uccello** 1397-1475 **Fra Filippo Lippi** 1406?-1469 **Benozzo Gozzoli** 1420-1498 **Baldovinetti** 1425-1499 **Antonio Pollajuolo** 1429-1498 **Andrea Verrocchio** 1435-1488 **Sandro Botticelli** 1447?-1510 **Domenico Ghirlandajo** 1449-1494 **Leonardo da Vinci** 1452-1519 **Filippino Lippi** 1457-1504 **Lorenzo di Credi** 1459-1537	**Gentile da Fabriano** 1360-1427 **Sassetta** (Siena) 1392-1450 **Giovanni da Paola** (Siena) ca. 1403-1483 **Piero della Francesca** 1416?-1492 **Melozzo da Forlì** 1438-1494 **Luca Signorelli** 1441-1523 **Pietro Perugino** 1446-1523 **Pinturicchio** 1454-1513	**Squarcione** (Padua) 1394-1474 **Jacopo Bellini** active 1430-1470 **Antonio Vivarini** active ca. 1440-1470 **Antonella da Messina** 1430-1479 **Cosimo Tura** (Ferrara) 1430-1495 **Gentile Bellini** 1429-1507 **Giovanni Bellini** ca. 1430-1516 **Bartolommeo Vivarini** ca. 1431-1499 **Mantegna** (Padua) 1431-1506 **Carlo Crivelli** ca. 1450-ca. 1493 **Francia** (Bologna) 1450?-1517 **Cima da Conegliano** ca. 1460-1517	**Limbourg Brothers** 15th century **Hubert van Eyck** 1370?-1426 **Jan van Eyck** 1390?-1441 **Robert Campin** 1378-1444 **Jacques Daret** active 1427-1468 **Roger van der Weyden** 1400-1464 **Dirk Bouts** (Dutch) ca. 1400-1475 **Peter Christus** ca. 1410-1473 **Aelbert van Ouwater** (Dutch) active ca. 1450-ca. 1480 **Hans Memlinc** ca. 1430-1494 **Hugo van der Goes** 1435?-1482 **Justus van Ghent** active 1460-1480 **Jerome Bosch** ca. 1460-1516 **Gerard David** ca. 1460-1523 **Geertgen Tot Sint Jans** (Dutch) ca.-1465-ca. 1493 **Quentin Matsys** 1466?-1530	**Stephen Lochner** active 1430-1451 **Michael Wolgemut** 1434-1519 **Martin Schongauer** ca. 1445-1491 **Bartholomäus Zeitblom** 1450-1518 **Master of Life of Mary** active 1460-1490	**Engerrand Charonton** 15th century **Henri Bellechose** active ca. 1415-1440 **Jean Fouquet** 1415-ca. 1485 **Jean Bourdichon** 15th century **Nicolas Froment** active 1476 **Master of Moulins** active 1480-1500
	Florentine	Venetian				
Sixteenth Century	**Fra Bartolommeo** 1475-1511 **Bernardino Luini** ca. 1475-ca. 1531 **Michelangelo** 1475-1564	**Carpaccio** active 1478-1522 **Marco Basaiti** ca. 1470-1527 **Giorgione** 1478-1510 **Titian** 1477-1576		**Jan Gossaert (Mabuse)** ca. 1472-1542 **Jan Mostaert** (Dutch) 1474-1556	**Hans Holbein the Elder** 1460-1524 **Albrecht Dürer** 1471-1528 **Lucas Cranach the Elder** 1472-1553 **Hans Burgkmair** 1473-1531 **Hans Baldung (Grün)** 1475?-1545	**Jean Clouet** 1475-1540

*ca, abbreviation of **circa**, meaning "about."

GREAT PAINTERS—Continued

Sixteenth Century—Cont.

Italy — Florentine—Cont.	Italy — Venetian—Cont.	Spain	Netherlands	Germany	France
Raphael (Umbria) 1483-1520 **Andrea del Sarto** 1486-1531	**Palma Vecchio** 1480-1528 **Sebastiano del Piombo** ca. 1485-1547 **Lorenzo Lotto** 1490-1556		**Joachim de Patinir** ca. 1485-1524 **Joos van Cleef the Elder** 1490-1540 **Bernard van Orley** ca. 1491-1542 **Lucas van Leyden** (Dutch) 1494-1533 **Jan Schoorel** (Dutch) 1495-1562	**Albrecht Altdorfer** ca. 1480-1538 **Matthias Grünewald** 1485-1530 **Hans Holbein** 1496-1543 **Christopher Amberger** 1500-1561	**Corneille de Lyon** 1500-1575 **François Clouet** 1505-1572
Bronzino 1502?-1572	**Correggio** (Parma) 1494-1534	**Morales** 1509?-1586	**Peter Pourbus** (Dutch) ca. 1510-1584 **Antonio Moro** (Dutch) 1519-1576 **Peter Breughel the Elder** ca. 1525-1569		
Agostino Carracci (Bologna) 1557-1602 **Annibale Carracci** (Bologna) 1560-1609 **Caravaggio** (Naples) 1560?-1609	**Tintoretto** 1518-1592 **Moroni** (Brescia) ca. 1520-1578 **Veronese** 1528-1588	**El Greco** 1545-1614			

Seventeenth Century

Italy	Spain	Holland		Flanders	France
Guido Reni 1575-1642	**Herrera the Elder** 1576-1656	**Frans Hals** 1580?-1666		**Peter Paul Rubens** 1577-1640 **Frans Snyders** 1579-1657	
Domenichino 1581-1641	**Ribera** 1589-1652	**Jan van Goyen** 1596-1656		**Jacob Jordaens** 1593-1678	**Le Nain Brothers** (3) ca. 1586-1648, 1593-1648, 1607-1677 **Nicolas Poussin** 1594-1665
	Zurbaran 1598-1662 **Velasquez** 1599-1660	**Rembrandt** 1606-1669 **Gerard Ter Borch** 1611-1681 **Albert Cuyp** 1620-1691 **Jan Steen** 1626-1679 **Peter de Hooch** 1629-1677 **Nicholas Maes** 1630-1693 **Van der Velde** 1633-1707	**Van Ostade** 1610-1675 **Ferdinand Bol** 1616-1680 **Paul Potter** 1625-1654 **Jacob Ruisdael** 1628-1682 **Gabriel Metsu** 1630-1667 **Vermeer of Delft** 1632-1675 **Meindert Hobbema** 1638-1709	**Anthony van Dyck** 1599-1641 **Adriaen Brouwer** 1606?-1638 **David Teniers the Younger** 1610-1690	**Claude Lorrain** 1600-1682 **Pierre Mignard** 1610-1695 **Charles Le Brun** 1619-1690
	Murillo 1617-1682				

Eighteenth Century

Italy	United States	England	Germany	France	
				Nicholas Largillière 1656-1746 **Antoine Coypel** 1661-1722 **François Le Moine** 1688-1737 **Jean Nattier** 1695-1736 **Jean Baptiste Chardin** 1699-1779	**Hyacinthe Rigaud** 1659-1743 **Antoine Watteau** 1684-1721 **Nicolas Lancret** 1690-1743 **Jean Baptiste Pater** 1695-1736
Tiepolo 1696-1770 **Canaletto** 1697-1768 **Pietro Longhi** 1702-1762 **Francesco Guardi** 1712-1793		**William Hogarth** 1697-1764 **Richard Wilson** 1714-1782 **Sir Joshua Reynolds** 1723-1792		**François Boucher** 1703-1770 **Joseph Vernet** 1714-1789	**Quentin de la Tour** 1704-1788 **Vien** 1716-1809
Belotto 1724-1780		**Thomas Gainsborough** 1727-1788 **George Romney** 1734-1802	**Raphael Mengs** 1728-1779	**Jean Baptiste Greuze** 1725-1805 **Jean Honoré Fragonard** 1732-1806	
	John S. Copley 1737-1815 **Benjamin West** 1738-1820 **Gilbert Stuart** 1755-1828 **John Trumbull** 1756-1843	**Sir Henry Raeburn** 1756-1823 **William Blake** 1757-1827 **John Hoppner** 1758-1810 **John Crome** 1769-1821	**Spain** **Goya y Lucientes** 1746-1828	**Gabriel Moreau** 1740-1806	**Louis David** 1748-1825

GREAT PAINTERS—Continued

	United States		England	France		Other Countries
Nineteenth Century and Early Twentieth Century				Pierre Prud'hon 1758-1823	Georges Michel 1763-1843	**Germany**
				Antoine Jean Gros 1771-1835		Adolph Menzel 1815-1905
			John Constable 1776-1837			Franz von Lenbach 1836-1904
			William Turner 1775-1851	Dominique Ingres 1780-1867		Hans von Marées 1837-1887
	Thomas Sully 1783-1872	Asher B. Durand 1796-1886		Theodore Géricault 1791-1824	Eugène Delacroix 1798-1863	Wilhelm Leibl 1844-1900
				Delaroche 1797-1856	Camille Corot 1796-1875	Max Liebermann 1847-
			Richard Bonington 1801-1828	Paul Huet 1803-1864	Honoré Daumier 1808-1879	**Switzerland**
				Constant Troyon 1810-1865	Théodore Rousseau 1812-1867	Arnold Böcklin 1827-1900
				Jean François Millet 1814-1875	Thomas Couture 1815-1879	Ferdinand Hodler 1853-1918
			Alfred Stevens 1817-1875	Charles Daubigny 1817-1878		
			George F. Watts 1817-1904	Theodore Chassériau 1819-1856	Gustave Courbet 1819-1877	**Sweden and Norway**
	George Fuller 1822-1884	William Morris Hunt 1824-1879	Holman Hunt 1827-1910	Eugène Boudin 1824-1898	Puvis de Chavannes 1824-1898	S. Thaulow (Norway) 1847-1906
	George Inness 1825-1894			Gustave Moreau 1826-1898	Jules Breton 1827-1906	Carl Larsson (Sweden) 1853-1919
			Dante Gabriel Rossetti 1828-1882	Edouard Manet 1832-1883	Camille Pissarro 1830-1903	Anders Zorn (Sweden) 1860-1920
				Alfred Sisley 1829-1899	Claude Monet 1840-1927	Eduard Munch (Norway) 1863-
			Sir Edward Burne-Jones 1833-1898		Berthe Morisot 1841-1895	**Spain**
	A. H. Wyant 1836-1892	John La Farge 1835-1910		Edgar Degas 1834-1917		Fortuny 1838-1874
	Winslow Homer 1836-1910	Homer Martin 1836-1897		Fantin-Latour 1836-1904		Sorolla 1863-1923
	J. McNeil Whistler 1834-1903	Elihu Vedder 1836-1923		Auguste Renoir 1841-1919		Zuloaga 1870-
				Paul Cézanne 1839-1906	Odilon Redon 1840-1916	Pablo Picasso 1881-
	Thomas Eakins 1844-1916	Mary Cassatt 1845-1926				**Holland**
	Albert Ryder 1847-1917	Edwin Blashfield 1848-				Jongkind 1819-1891
	Frank Duveneck 1848-1919	William Chase 1849-1916		Eugène Carrière 1849-1906	Paul Gauguin 1851-1903	Joseph Israels 1829-1911
	Theodore Robinson 1852-1896	J. Alden Weir 1852-1919				Jacob Maris 1837-1899
	John Twachtman 1853-1902	John W. Alexander 1856-1915				Van Gogh 1853-1890
	John Singer Sargent 1856-1925	Childe Hassam 1859-		Georges Seurat 1859-1891	Lucien Simon 1861-	**Italy**
	Arthur B. Davies 1862-1928			Paul Signac 1863-	Toulouse-Lautrec 1864-1901	Monticelli 1824-1886
	Robert Henri 1865-1929		Frank Brangwyn 1867-	Henri Matisse 1869-		Segantini 1850-1899
	John Sloan 1871-		Sir William Orpen 1878-			
			Augustus John 1879-			
	George Bellows 1882-1925	Charles W. Hawthorne 1872-1930		Georges Braque 1882-		

FAMOUS PAINTINGS IN IMPORTANT GALLERIES

I. In the Rijks Museum, Amsterdam

Title of the Painting	Painter	School	Comments
The Pantry	Peter de Hooch (1629–1677)	Dutch	A study of light and space. The rectilinear pattern is characteristic of Dutch art.
William of Orange and Mary Stuart	Van Dyck (1599–1641)	Flemish	The betrothal of William of Orange and Mary Stuart executed by the artist when he was painter at the Court of England.
The Mill	Jacob Ruisdael (1628–1682)	Dutch	The fine cloud structure and dramatic play of light and dark are characteristic of the artist.
Woman Reading a Letter	Vermeer of Delft (1632–1675)	Dutch	Masterly in values of light, balance of spaces and harmony of color.
Sortie of the Civic Guard	Rembrandt (1606–1669)	Dutch	This picture, much darkened and miscalled the "Night Watch," cost Rembrandt his popularity because he presented the members of this hooting company not as sober portraits but as objects for the rich play of shifting light and shade.
Syndics of the Cloth Guild			A triumph of his last years in which he holds in one unified impression six powerful and individual portraits.
Madonna and Child	Fra Angelico (1387–1455)	Florentine	The gold brocaded curtain and the pattern suggest the tradition of the illuminated manuscripts.

II. In the Royal Museum, Antwerp

Entombment	Quentin Matsys (1466–1530)	Flemish	Ordered in 1508 by the Antwerp Joiners' Guild. Shows innovations in the realism of the types and the brilliance and diversity of color.
The Seven Sacraments	Roger van der Weyden (1400–1464)	Flemish	Blends daily life of the people with medieval mysticism. The great cross appears supernatural in size and awe inspiring because it fills the high nave of a Gothic church.
The Mandolin Player	Ter Borch (1611–1681)	Dutch	A typical subject by Ter Borch who painted intimate home life of the Dutch aristocracy of his day.
The Dauphin of France	François Clouet (1505–1572)	French	Son of Francis I. Every stroke of the brush counts in the simple, vivid characterizations of the Clouets.
Saskia	Rembrandt (1606–1669)	Dutch	Portrait of the wife of Rembrandt, painted in one of the many elaborate costumes he himself had designed.

FAMOUS PAINTINGS IN IMPORTANT GALLERIES—Continued

II. In the Royal Museum, Antwerp—Continued

Title of the Painting	Painter	School	Comments
St. Barbara	Jan van Eyck (1390–1441)	Flemish	An unfinished panel revealing the method of painting in the fifteenth century; pigment used as a glaze after the picture had been completely drawn and modeled in monotone.
Adoration of the Magi	Rubens (1577–1640)	Flemish	The first work of his third period when his light and color reached the same height as his dramatic quality.
The Crucifixion			Known also as *Le Coup de Lance*. The calm majesty of the Christ is well contrasted with the violence of the two thieves.
Christ and Angel Musicians	Memlinc (ca. 1430–1494)	Flemish	Painted for the decoration of an organ in a church in Spain; figures, over life-size, stand out in soft, light tones against a gold background with clouds above and below them.

III. In the Kaiser Friedrich Museum, Berlin

Hieronymus Holzschuer	Dürer (1471–1528)	German	A powerful characterization of one of Dürer's friends, a man of impressive personality.
Madonna of the Goldfinch			Painted while Dürer was in Venice and showing the influence of Venetian light and color.
Portrait of a Lady			Lady against the sea. Executed in Italy with Leonardesque breadth of light and shadow.
The Pearl Necklace	Vermeer of Delft (1632–1675)	Dutch	A splendid relation of tones and of color—blue and old gold against a gray ground vibrant with light.
Altar of John the Baptist	Roger van der Weyden (1400–1464)	Flemish	A very small altarpiece showing the Baptism of Christ in the center, the Nativity on one wing and the Beheading of John the Baptist on the other.
Adoration of the Christ Child	Fra Filippo Lippi (1406–1469)	Florentine	Against a decorative background of rocks and dense fir trees, the Virgin adores the Child; above them, the Dove and the protecting Almighty.
The Concert	Ter Borch (1611–1681)	Dutch	An example of the perfect craftsmanship of the Dutch Little Masters. The textures and the coral color against the cool notes of the room are splendidly rendered.
The Prophet Elijah	Dirk Bouts (ca. 1400–1475)	Dutch	Shows the jewel-like color, the calm stiff figures and the angular pattern so characteristic of the artist; also his important innovations in landscape.
Man with the Pink	Jan van Eyck (1390–1441)	Flemish	Powerful and uncompromising realism in depiction of age and character.
St. John of Patmos	Geertgen (1465–1493)	Dutch	Brooding figure of St. John in a spacious and decorative landscape.
Madonna and Child	Quentin Matsys (1466–1530)	Flemish	Matsys changes the exalted Virgin into a very human mother kissing her child.
Etienne Chevalier and St. Stephen	Jean Clouet (1475–1540)	French	Portrait of the King's treasurer and his patron saint.
Hille Bobbe	Frans Hals (ca. 1580–1666)	Dutch	The rollicking soothsayer of Haarlem painted in the loose, bold brush strokes that contributed to the vitality of Hals' style.
Nurse and Child			Another aspect of his style showing a more minute technique in rendering flesh and texture but with no sacrifice of lifelike quality.
Portrait of Two Canons	Antonio Moro (1519–1576)	Flemish	Two impressively truthful portraits by one of the most illustrious Netherlandish portrait painters of the sixteenth century.
Lavinia	Titian (1477–1576)	Venetian	The daughter of Titian; showing his usual skill in the treatment of flesh and sumptuous fabrics.
Adoration of the Shepherds	Hugo van der Goes (1435–1482)	Flemish	Shows Van der Goes' interest in the realism of daily life in the shepherds excitedly rushing in to see the newly-born Infant.
The Bladelin Altarpiece	Roger van der Weyden (1400–1464)	Flemish	The Nativity—with the donor, Peter Bladelin—occupies the center; the wings show the Christ Child appearing in the sky as a star to the Magi and the Tiburtine Sibyl revealing to the Emperor Augustus a vision of the Virgin and Child.

IV. In the Museum of Fine Arts, Boston

Catalonian Fresco	(12th century)	Byzantine	Splendid Byzantine decoration of the apse of a little Romanesque church in Spain.
Infanta Maria Theresa	Velasquez (1599–1660)	Spanish	Painted after the artist's second visit to Italy in 1651, showing mastery of color values and relations, texture and brush.
St. Luke Painting the Virgin	Roger van der Weyden (1400–1464)	Flemish	Shows some influence of the Italians who were active when van der Weyden visited Italy in 1450. This one is thought to be the original of which various copies were made.
The Quarry	Gustave Courbet (1819–1877)	French	Hunting the roebuck in the high Jura. The artist himself is listening as the horn sounds the Hallali.
Emma and Her Children	George Bellows (1882–1925)	American	One of the most important works of this artist—a portrait of his wife and children. The bold technique, design and color are reminiscent of Goya, Daumier and Manet.
Portrait of George Washington	Gilbert Stuart (1755–1828)	American	Painted from life in 1796, at Philadelphia, and considered the standard likeness of Washington.

V. In the Art Institute of Chicago

Retable and Altar Frontal	(14th century)	Spanish	Scenes from the life of Christ and the Virgin in the style of an enlarged miniature dated 1396, with portraits of the donor and his family.
Assumption of the Virgin	El Greco (1545–1614)	Spanish	In this altarpiece El Greco uses the Titian motive of the soaring Virgin but the treatment shows the beginning of his own peculiar style.
Life of St. John the Baptist	Giovanni da Paolo (ca. 1403–1483)	Sienese	A masterpiece by this artist showing his imaginative and dramatic quality and his fantastic treatment of landscape.
Wings of Altarpiece	School of Amiens (15th Century)	French	Seven panels, all that remains of an altarpiece of great decorative quality painted for an ancient monastery near Abbeville.
St. George Combating the Dragon	Catalan Master (15th Century)	Spanish	Splendidly decorative and highly important in the history of the Catalan School.
Madonna and Child	Roger van der Weyden (1400–1464)	Flemish	Brilliant jewel-like color and texture.
The Story of Rinaldo	Tiepolo (1696–1770)	Venetian	A great decoration in a brilliant style telling the idyllic love story of Armida and the young Crusader Rinaldo.
In the Circus	Renoir (1841–1919)	French	Two little jugglers, notable in design as well as in color and radiant envelope of light.
Stoke-by-Nayland, Suffolk	Constable (1776–1837)	English	A very important landscape by Constable in his most spontaneous and vigorous manner.
Sunday at the Grande Jatte	Seurat (1859–1891)	French	A masterpiece of Seurat illustrating his pointillist technique and vigorous design.
The Bedroom at Arles	Van Gogh (1853–1890)	Dutch	The artist's own room at Arles showing the emotional intensity with which he could invest the most insignificant subject.
The Basket of Apples	Cézanne (1839–1906)	French	One of the artist's finest achievements in design and in expression of form through color.
The Interrupted Reading	Corot (1796–1875)	French	Showing Corot's mastery of the figure for which he is too little known.
The Home of the Heron	Inness (1825–1894)	American	Sensitive romantic treatment of mood in landscape.

VI. In the Dresden Gallery

The Sistine Madonna	Raphael (1483–1520)	Umbrian	The Virgin and Child float forward in the clouds. Pope Sixtus and St. Barbara kneel before them.
Sleeping Venus	Giorgione (1478–1510)	Venetian	Brilliant color and golden glow—prototype of a long series of Venetian paintings of the nude Venus.
Tribute Money	Titian (1477–1576)	Venetian	The story is told by two half length figures, the realistic tax collector and classic Christ, sharply contrasted in character and color.

FAMOUS PAINTINGS IN IMPORTANT GALLERIES—Continued

VI. In the Dresden Gallery—Continued

Title of the Painting	Painter	School	Comments
The Cheat	Caravaggio (1560–ca. 1609)	Neapolitan	An example of Caravaggio's realism and of his experiments in light.
Lady Washing Her Hands	Ter Borch (1611–1681)	Dutch	A sensitive treatment of the intimate scene, especially fine in rendering of textures.
Holy Night	Correggio (1494–1534)	Venetian	One of the later pictures of Correggio with movement and excitement among the figures and a dramatic light contrasted with night out of doors.
Finding Moses	Veronese (1528–1588)	Venetian	A splendid design in swinging curves. The Pharoah's daughter and the other figures wear gorgeous costumes of Veronese's day and Egypt is represented by an Italian landscape and the great bridge of Verona.
Madonna and Four Saints	Titian (1477–1576)	Venetian	A painting of beautiful texture and brilliant color in which Titian breaks up the old symmetry of the altarpiece by moving the radiant Virgin and playful Child to one side.

VII. In the Pitti Gallery, Florence

The Concert	Giorgione (1478–1510)	Venetian	Some critics attribute this to Giorgione; others think the strong form and dramatic quality of the central figure point to Titian.
Pope Julius II	Raphael (1483–1520)	Umbrian	One of Raphael's greatest character interpretations.
Granduca Madonna			So called because the Grand Duke Ferdinand was so fond of it that he took it with him on his travels.
Portrait of Ippolito de' Medici	Titian (1477–1576)	Venetian	A superb portrait of Ippolito in Hungarian hunting dress of rich purple velvet.
Portrait of Cardinal Bentivoglio	Van Dyck (1599–1641)	Flemish	A distinguished portrait, in a scheme of brilliant reds, painted in 1624 when Van Dyck was in Rome.
Madonna and Child	Fra Filippo Lippi (1406–1469)	Florentine	The design is well adapted to the circular panel. In the background are shown the meeting of Joachim and Anna and the birth of the Virgin.

VIII. In the Uffizi, Florence

Birth of Venus	Botticelli (1447–1510)	Florentine	Born of the sea foam, the goddess is wafted ashore by the breath of the Winds.
Adoration of the Magi			The group includes three of the de'Medici family and at the right the figure of Botticelli himself.
Spring			The goddess of Love presides over a springtime festival. Her son Eros aims his dart at the Graces who are dancing before Hermes. Flora scatters flowers before the Spring who advances in the embrace of the Wind.
Madonna Enthroned	Cimabue (1240–1301)	Florentine	New life injected into the Byzantine formula by the first great master of the Florentine School.
The Annunciation	Simone Martini (1285–1344)	Sienese	An exquisite decoration on a background of gold; Byzantine expression and gesture modified by Sienese feeling.
Heracles and Hydra	Antonio Pollajuolo (1429–1498)	Florentine	Hercules engages the many headed Hydra—an example of the artist's contribution to representation of the body in violent movement.
Madonna of the Harpies	Andrea del Sarto (1486–1531)	Florentine	So named from the harpies which are carved on the pedestal.
Portrait of the Duke of Urbino	Piero della Francesca (1416–1492)	Umbrian	Remarkable for realism of characterization and for unity of linear pattern.
Madonna of the Goldfinch	Raphael (1483–1520)	Umbrian	Raphael's characteristic pyramidal grouping against a spacious landscape.
Altar of the Portinari Family	Hugo van der Goes (1435–1482)	Flemish	One of the most important Flemish altar pieces, so called because it was ordered by Tommaso Portinari, representative of the Medici Banking House. Portraits of Portinari, his wife and their children are on the wings.
Holy Family	Michelangelo (1475–1564)	Florentine	One of the rare panels painted by Michelangelo. His interest lay in the composition and form of his figures, not in their religious significance.
Coronation of the Virgin	Fra Filippo Lippi (1406–1469)	Florentine	Painted for the nuns of St. Ambrosio—radiantly informal, joyous and exciting.
Deposition	Fra Angelico (1387–1455)	Florentine	Showing broad, panoramic treatment in the Lorenzetti tradition; rendered in pure sparkling color.
Adoration of the Magi	Leonardo da Vinci (1452–1519)	Florentine	This has been called the richest, most complicated, most beautifully ordered picture of the century. Unfinished.
Baptism	Verrocchio (1435–1488)	Florentine	It is supposed that the delightful angel at the left was added by Leonardo.

IX. In the Haarlem Museum, Haarlem

Officers of St. George	Frans Hals (ca. 1580–1666)	Dutch	Nineteen men alive and alert; ruddy flesh tones set off by black costumes with crimson sashes.
Banquet of Officers of St. George			One of Hals' earliest known pictures. A vivid portrayal of the group of banqueters caught with the most natural attitudes and gestures.
Officers of St. Adrien			Probably the most successful of his large group pictures of companies of archers; a wonderful canvas in which the subjects are completely characterized and bound into a decorative whole.
Regents of St. Elizabeth's Hospital			Such portrait groups of directors of charitable and other public institutions were much in demand in seventeenth century Holland.
Lady Governors of St. Elizabeth's			An impressive work in which every figure is a remarkably individualized portrait. Executed when Hals was past eighty years old.

X. In the Royal Museum, The Hague

Robert Cheseman	Holbein (1497–1543)	German	Portrait of the king's falconer richly dressed in fur-lined coat with red sleeves; textures marvelously rendered, especially the feathers of the falcon.
Anatomy Lesson	Rembrandt (1606–1669)	Dutch	Professor Tulp demonstrates on a cadaver. A group of excellent portraits in Rembrandt's manner before he had attained a greater unity through his use of light and dark.
Isabella Brant	Rubens (1577–1640)	Flemish	An impressive portrait of Rubens' first wife, suggestive of his Venetian inheritance.
Helena Fourment			A seated portrait of Rubens' second wife.
View of Haarlem	Jacob Ruisdael (1628–1682)	Dutch	Dramatic play of light and dark on a linen bleaching scene near Haarlem.
Anna Wake	Van Dyck (1599–1641)	Flemish	Showing Van Dyck's splendid portrayal of texture and interesting pattern, especially in the lace collar, sleeves, jewelry and fan.

XI. In the Hermitage, Leningrad

Evening	Claude Lorrain (1600–1682)	French	One of a group of landscapes expressing the mood of morning, noon, evening and night in this artist's imaginative and classical style.
The Swamp	Jacob Ruisdael (1628–1682)	Dutch	Sunlight playing through twisted trees, showing Ruisdael in his romantic attitude toward nature.
Isabella Brant	Rubens (1577–1640)	Flemish	Last and most interesting portrait of Rubens' first wife, with curtain and architecture in the Venetian tradition.
Helena Fourment			Impressive full length portrait of artist's second wife against a stormy sky.
Slav Prince	Rembrandt (1606–1669)	Dutch	Portrait of a magnificent Pole in a great head-dress and gleaming with the fire of jewels.

FAMOUS PAINTINGS IN IMPORTANT GALLERIES—Continued

XI. In the Hermitage, Leningrad—Continued

Title of the Painting	Painter	School	Comments
Return of the Prodigal Son	Rembrandt (1606–1669)	Dutch	Showing the intense feeling with which Rembrandt interpreted the Old Testament stories and his dramatic use of light and dark to give accent and mystery.
Sacrifice of Abraham			
Danaë			One of this artist's few essays in the nude figure.
Old Woman in Black Head-dress			No one before Rembrandt so well realized the picturesque possibilities for play of light and dark on wrinkled face and knotted hands.
Old Man with White Beard			
Card Player	Chardin (1699–1779)	French	Charm of subject together with a color, texture and pattern that delight the eye.
Philip, Lord Wharton	Van Dyck (1599–1641)	Flemish	Van Dyck in his best vein of sensitive portraiture.
Queen Henrietta			Wife of Charles I of England.

XII. In the National Gallery, London

Avenue at Middelharnis	Meindert Hobbema (1638–1709)	Dutch	Shows the splendid expression of distance developed in this century.
Jan Arnolfini and His Wife	Jan van Eyck (1390–1441)	Flemish	Minute detail does not ruin the power of this portrait; a new realism of light in every part.
Man with Red Turban			The great red turban sweeping around the impressive head contributes to the vitality of the portrait.
Madonna of the Rocks	Leonardo da Vinci (1452–1519)	Florentine	Believed to be either a later replica by Leonardo or a copy by his assistant, Ambrogio da Predis, of the Virgin of the Rocks in the Louvre.
Chapeau de Paille	Rubens (1577–1640)	Flemish	Portrait of the sister of Rubens' second wife who, after his wife, was the artist's favorite model.
Judgment of Paris			An example of Rubens' mastery of form and rendering of golden flesh against an atmospheric background.
Château Steen			Late in life Rubens bought the country place of the Dutch painter, Jan Steen, and from that time on landscape became a prominent interest.
Doge Leonardo Loredano	Giovanni Bellini (ca. 1430–1516)	Venetian	A direct, forceful portrait; beautiful play of color—white, gold and orange against the old blue of the background.
Origin of the Milky Way	Tintoretto (1518–1592)	Venetian	Figures lightly poised in air with a feeling of space around them; subdued color harmony and luminous shadows.
Bacchus and Ariadne	Titian (1477–1576)		Story of Ariadne, deserted by Theseus, overtaken by Bacchus. The effect of impetuous movement is carried through the whole group.
The Tailor	Moroni (ca. 1520–1578)	Brescian	Well designed in a cool color scheme suggestive of the Spanish.
Lord Heathfield	Sir Joshua Reynolds (1723–1792)	English	One of his best works; a complete picture of English characteristics.
Lady Hamilton	Romney (1734–1802)	English	A delicate portrait free from sentimentality.
Valley Farm	Constable (1776–1837)	English	An exhilarating, fresh, unaffected study of light in a landscape showing out-of-door colors and effective masses of clouds.
The Shrimp Girl	Hogarth (1697–1764)	English	Spontaneous, live painting; fresh color and bold handling.
Canon and Patron Saints	Gerard David (1460–1523)	Flemish	Strongly individualistic portrait of the canon and saints in a simple unified composition.
Mystic Marriage of St. Catherine			Shows the influence of Memlinc in the delicate treatment of light but the figures portrayed are much less spiritual.
Cornelius van der Geest	Van Dyck (1599–1641)	Flemish	Strong interpretation of character and masterly drawing. Supposed to have been done when the artist was only twenty-one years old.
Court of Dutch House	Pieter de Hooch (1629–1677)	Dutch	A spacious and luminous composition—a study of a bright day without sunlight.
Mrs. Siddons	Gainsborough (1727–1788)	English	The face with its brilliant painting of flesh holds the interest; the figure and surroundings are enveloped in harmonious color haze.
Philip IV of Spain	Velasquez (1599–1660)	Spanish	Extremely simple and subtle in its rendering of form by color values.
A Franciscan	Zurbaran (1598–1662)	Spanish	A study of an impressive figure of simple and powerful design.
Artist's Father	Dürer (1471–1528)	German	The most minute observation of wrinkles, veins, blunt fingers, and the intense vitality of the old man's eyes.
Self Portrait	Rembrandt (1606–1669)	Dutch	Portrait of the artist in later life—shabby, gray-haired, with deeply lined face; simple in representation but subtle in its pattern of light and dark.
The Fighting Temeraire	Turner (1775–1851)	English	Turner's brilliant color. The famous battleship is being towed to her last berth.

XIII. In the Prado, Madrid

The Young Cardinal	Raphael (1483–1520)	Umbrian	Striking portrait of Cardinal Alidoro in brilliant red robe and cap.
Family of Charles IV	Goya (1746–1828)	Spanish	The royal family group is presented with ruthless characterization in the richest color and sparkling light.
Marie Louise of Parma			An unusually live portrait, a full length figure in an interesting combination of blues and greens.
The Entombment	Titian (1477–1576)	Venetian	Titian, as Joseph of Arimathea, is supporting the body of Christ; the emotional effect is achieved by movement of figures and the play of light upon them.
Charles V on Horseback			A great portrait of the emperor as the victor of Mühlburg, imaginative rather than realistic, but highly expressive of the emperor's character.
Crucifixion	El Greco (1545–1614)	Spanish	An example of the painter's mature style; the elongated forms and swift contrasts of light and dark heighten the emotional tension.
Don Roderigo Vazquez			Subdued color harmony in yellows and greenish blacks. Face and features, ruff and chain all accentuate the triangular motif.
Portrait of a Man	Dürer (1471–1528)	German	A splendid portrait, strong in characterization, of Hans Imhof, a Nuremberg banker.
Martyrdom of St. Bartholomew	Ribera (1589–1652)	Spanish	Typical example of work of this artist in its striking treatment of light and in its scientific study of various movements of the body.
Marie de' Medici	Rubens (1577–1640)	Flemish	Painted when the queen summoned Rubens to Paris to decorate the galleries of the Luxembourg with the story of her life.
Maids of Honor	Velasquez (1599–1660)	Spanish	Picture of the Infanta Margarita as she, with her maids, dwarfs and dogs, wandered into Velasquez' studio while he was painting a portrait of her parents, the king and queen of Spain.
Infanta Maria Theresa			The Infanta, in rose and silver against a red curtain, stands facing the light. A splendid example of the magic of Velasquez' running, slippery brush stroke.
The Tapestry Weavers			In the royal tapestry works of Madrid. The women in the foreground spin wind and card the wool; the distant figures in the sunlight are cleverly differentiated from the realistic figures of the tapestry.
The Topers			The amazing life and realism of Velasquez' early manner. Painted for the king in 1628.
The Surrender of Breda			Often called The Lances. Represents the Spanish General Spinola receiving in 1625 the keys of the city of Breda.
Queen Mary of England	Antonio Moro (1519–1576)	Flemish	A gorgeous court portrait of the determined queen by a painter who preserved the best traditions of Flemish painting through the sixteenth century.
Adoration of the Magi	Jerome Bosch (ca. 1460–1516)	Flemish	The mystery of the Nativity is treated seriously but the artist's satiric fancy is shown in the actions of the rustics climbing on the roof and peeking around corners.
Donor and St. John the Baptist	Robert Campin (1378–1444)	Flemish	Two panels of a triptych in which the furniture and accessories are treated with the extraordinary minuteness characteristic of Campin.
St. Barbara			

FAMOUS PAINTINGS IN IMPORTANT GALLERIES—Continued

XIV. In the Alte Pinakothek, Munich

Title of the Painting	Painter	School	Comments
The Four Apostles	Dürer (1471–1528)	German	Last work of Dürer—life sized, intense and powerful figures showing a breadth and grandeur not found in his other work.
Daughters of Leucippus	Rubens (1577–1640)	Flemish	Extraordinary rendering of form and movement; illustrating the story of Castor and Pollux carrying off the daughters of Leucippus.
The Lion Hunt			The dramatic struggle of wild animals defending their lives against man. Even such violence of movement Rubens organizes into fine design.
Landscape with Cattle			One of Rubens' last pictures; showing command over representation of space and of design in depth.
Elevation of the Cross	El Greco (1545–1614)	Spanish	Swift contrasts of light and dark heighten the emotional effect.
Deposition of Christ	Rembrandt (1606–1669)	Dutch	Rembrandt manipulates his light for drama, emotional expression, and the revealing of significant forms.
Seven Joys of the Virgin	Memlinc (ca. 1430–1494)	Flemish	An altarpiece, depicting events in the life of the Virgin, painted in 1480 for the guild of Tanners; in a romantic landscape the minute figures stand out in brilliant and subtle gradations of color.

XV. In the Metropolitan Museum, New York

Ville d'Avray	Corot (1796–1875)	French	A river with trees "drenched with light," characteristic of Corot's work in the cool blue-greens of early morning light.
Abduction of Rebecca	Delacroix (1798–1863)	French	A spirited and romantic illustration of Scott's Ivanhoe depicting Rebecca being carried from the burning castle.
Portrait of Philip IV	Velasquez (1599–1660)	Spanish	Known as the Villahermosa portrait because it hung in the Villahermosa Palace in Madrid for many years.
Wheatfields	Jacob Ruisdael (1628–1682)	Dutch	Extraordinary illusion of moving light; sudden illumination of parts with clouds scudding across the wheatfields.
Woman Opening Casement	Vermeer of Delft (1632–1675)	Dutch	An effect of diffused light, as if from a northern exposure, throughout the picture.
Woman with a Parrot	Manet (1832–1883)	French	An extremely subtle color study in tones of yellow-rose showing the artist's special technique of broad areas of light and color.
Portrait of Madame X	John Singer Sargent (1856–1925)	American	The brilliant style of Sargent at his simplest and best.
The Nativity	El Greco (1545–1614)	Spanish	Flame-like movement throughout the canvas.
Don Sebastian Martinez	Goya (1746–1828)	Spanish	Portrait of lawyer and art patron of Cadiz; subtle range of color and economy of means in rendering the stiff texture contrasted with the detail given to the head.
James, Duke of Lennox	Van Dyck (1599–1641)	Flemish	Has the quality of distinction characteristic of Van Dyck and his splendid rendering of varied textures.
Junker Ramp and His Sweetheart	Frans Hals (1580–1666)	Dutch	A lively picture of a tavern scene. An example of Hals' early work in rich and varied color.
The Maine Coast	Winslow Homer (1836–1910)	American	By the American realist whose marines are known for their depth and weight and power.
Christ after the Resurrection	Roger van der Weyden (1400–1464)	Flemish	The third panel of a famous triptych, the other parts of which are in the Cathedral of Granada.
Holy Family	Rubens (1577–1640)	Flemish	Life size figures of Virgin and Child with infant St. John. St. Francis is at the left, St. Joseph at the right, and St. Elizabeth stands back of the mother and child.
Landscape	Poussin (1594–1665)	French	Showing depiction of far distance space, which was one of the chief innovations of the seventeenth century.
Madame Charpentier and Children	Renoir (1841–1919)	French	In the cool delicate color of Renoir's early period.
Meditation	Carpaccio (1460–1522)	Venetian	Two hermits meditating on the death of Christ; similar to Giovanni Bellini in design.

XVI. In the Louvre, Paris

Mona Lisa	Leonardo da Vinci (1452–1519)	Florentine	Often called La Gioconda. The most subtle interpretation of character and an equally subtle modeling of form.
Madonna of the Rocks			An original and intense conception of the Virgin and Child, little John, and an angel in a romantic setting.
Madame Récamier	Louis David (1748–1825)	French	The classical portrait at its best—a finely organized pattern of flowing line.
The Gleaners	Millet (1814–1875)	French	A poem of peasant life—powerfully constructed figures in rhythmic movement against a vast plain.
Marriage at Cana	Veronese (1528–1588)	Venetian	The Bible story converted into a gorgeous banquet of the Venetian Renaissance.
Man with the Glove	Titian (1477–1576)	Venetian	One of the great portraits of all time, in the lyrical spirit of Titian's youth.
The Entombment			A dramatic and poignant rendering of the subject, rich in color and in arabesque of line.
The Lace Maker	Vermeer of Delft (1632–1675)	Dutch	The broad and simple treatment of light in a scheme of blue and yellow that was characteristic of Vermeer.
Olympia	Manet (1832–1883)	French	Famous example of early Impressionism; remarkable for the delicacy of flesh set off by the varied whites of the scarf and linen.
Shepherds in Arçadia	Poussin (1594–1665)	French	Reminiscent of the ideal figures of Raphael and of ancient sculptured reliefs; a French version of the classical tradition of the Italian Renaissance.
Supper at Emmaus	Rembrandt (1606–1669)	Dutch	Showing Rembrandt's simple telling of the gospel story and his use of light and dark to create deep religious feeling.
Hendrickje Stoffels			Splendid modeling of the face with Rembrandt's characteristic illumination; suggestive treatment of fur, rich fabrics and sparkle of jewels.
Banker and his Wife	Quentin Matsys (1466–1530)	Flemish	One of the earliest examples of *genre* painting for its own sake, executed with the skill and detail characteristic of the Flemings.
Gipsy Girl	Frans Hals (1580–1666)	Dutch	Showing the artist's ability in creating an impression of life and movement and his dashing use of the brush.
Mystic Marriage of St. Catherine	Correggio (1494–1534)	Venetian	A study in light and in brilliant transparent color, like that of Venetian glass.
Pastoral Symphony	Giorgione (1478–1510)	Venetian	Showing the romantic quality of Giorgione's idylls and the warm glow of color characteristic of the Venetians.
La Belle Jardiniére	Raphael (1483–1520)	Umbrian	One of the finest of Raphael's series of pyramidal compositions of the Madonna and Child and little John in a spacious Italian landscape.
Virgin and Child with Chancellor Rolin	Jan van Eyck (1390–1441)	Flemish	Showing Jan van Eyck's jewel-like color, his portrayal of character, of texture, and of the intimate and picturesque details of Flemish life.
Portrait of Erasmus	Holbein (1497–1543)	German	Powerful characterization has seldom been carried so far as in this portrait.
Embarkation for Cythera	Watteau (1684–1721)	French	The lovers of Watteau's fairyland embark for the island of Aphrodite. The light suffusing the canvas moves in rhythmic pattern.
La Source	Ingres (1780–1867)	French	The simple modeling, the delicacy and truth of line reveal the classical qualities of Ingres; painted when he was seventy-six.
La Kermesse	Rubens (1577–1640)	Flemish	Realistic and exuberant portrayal of Flemish peasant life. The tumultuous and sweeping action is bound into a masterly design.
Landing of Marie de' Medici at Marseilles			One of the series of twenty-one decorative canvases of episodes in the life of Marie de' Medici.
Infanta Margarita	Velasquez (1599–1660)	Spanish	Exquisite color and subtle tone values in the satin dress and silky hair of this small daughter of Philip IV of Spain.
Charles I	Van Dyck (1599–1641)	Flemish	One of the artist's greatest achievements in color and clever subordination of unimportant figures.

FAMOUS PAINTINGS IN IMPORTANT GALLERIES—Continued

XVI. In the Louvre, Paris—Continued

Title of the Painting	Painter	School	Comments
The Mother	Whistler (1834–1903)	American	A subtle characterization although the artist said that his real interests were expressed in his title, "An Arrangement in Gray and Black."
The Burial at Ornans	Courbet (1819-1877)	French	This sincere and vigorous painting initiated the realistic movement. The mourners are Courbet's relatives and friends in his native town of Ornans.
Dante and Virgil	Delacroix (1798–1863)	French	Virgil escorts Dante across the river Styx. The dramatic intensity and rich emotional color are significant of the new Romanticism.
The Blue Vase	Cézanne (1839–1906)	French	A still-life by Cézanne alive with movement that is resolved into perfect order of line and color and space.
Madonna	Memlinc (ca. 1430–1494)	Flemish	Madonna adored by Jacques Floreins, his wife and their sixteen children, showing the artist's seductive color and polished technique.

XVII. In the Villa Borghese, Rome

Sacred and Profane Love	Titian (1477–1576)	Venetian	Titian at his height in richness of color and in the texture of nude forms and sumptuous fabrics. Misnamed by this title. Some think it shows Venus persuading Helen to harken to Paris or calling upon Medea to aid Jason.
The Entombment	Raphael (1483–1520)	Umbrian	Showing the struggles of Raphael to adapt the various influences to which he was open upon his arrival in Florence.
Diana and Her Nymphs	Domenichino (1581–1641)	Bologna	Spirited nude girls in a landscape setting, by an eclectic Italian whose influence may be traced all through Poussin's masterpieces.
Danae	Correggio (1494–1534)	Venetian	Showing Correggio's powers in illusion of depth and his imaginative treatment of the Greek myth.

XVIII. In the Vatican Gallery, Rome

Transfiguration	Raphael (1483–1520)	Umbrian	Good example of Raphael's space design and use of gesture to unite figures but over-dramatic and lacking in complete unity; lower part finished by Giulio Romano.
Madonna di Foligno	Caravaggio (1560–1609)	Naples	With portrait of Sigismondo Conti as donor.
The Entombment			One of his two most important paintings in which the artist turns the story into drastic contemporary tragedy.
Madonna in Glory with Six Saints	Titian (1477–1576)	Venetian	Below the Mother, Child and angels are the six saints, Catherine, Nicholas of Bari, Peter, Anthony, Francis and a sad Sebastian.
Portrait of Sixtus IV	Melozzo da Forli (1438–1494)	Umbrian	Historical portrait group of Sixtus IV, his librarian, and attendant cardinals, executed to commemorate the reorganization of the Vatican library by Sixtus IV in 1475.
St. Antonio and Saints	Antonio Vivarini (active ca. 1440-1470)	Venetian	Paintings of this altarpiece, dated 1464, are characteristic of conservative tendencies in Venetian painting before advances of the remarkable Bellini family.

XIX. In the Royal Gallery of Fine Arts, Venice

Madonna of the Trees	Giovanni Bellini (ca. 1430–1516)	Venetian	Showing the breadth of modeling and the life and vitality of the developed Bellini.
Ursula's Vision	Carpaccio (1460–1522)	Venetian	The angel offers to the dreaming Ursula the martyr's palm; one of nine canvases telling the picturesque adventures of Ursula.
Presentation			Ruskin considered this the most beautiful baby Christ in all Venetian art. Below is the Bellini motive of music-making angels which became a characteristic feature of Venetian painting.
Miracle of St. Mark	Tintoretto (1518–1592)	Venetian	Irresistible downward rush of figure in mid air, rhythm of movement in space and golden brilliance of color.
Death of Abel			Dramatic and poignant in expression; superbly balanced masses of light and shade.
Procession in Piazzo of San Marco	Gentile Bellini (1429–1507)	Venetian	A procession on Corpus Christi day showing the artist's capacity as painter of light and air; valuable as a record of the Square about 1492.

XX. In the Imperial Gallery, Vienna

Madonna of the Cut Pear	Dürer (1471–1528)	German	Showing Dürer's German type of Madonna painted with minuteness and precision.
Madonna with Cherries	Titian (1477–1576)	Venetian	In this early picture Titian shows the more mature type of Virgin and the informal composition that were to distinguish later Venetian painting.
Gipsy Madonna			This picture, under the influence of his master, Giovanni Bellini, foreshadows the splendor of his later coloring.
Portrait of Jane Seymour	Holbein (1497–1543)	German	Portrait of the third wife of King Henry VIII rendered in the miniature-like style that Holbein occasionally adopted.
Portrait of Helena Fourment	Rubens (1577–1640)	Flemish	Portrait of Rubens' second wife, nude with a fur coat about her.
Miracle of St. Ildefonso			One of his later masterpieces in which light and color had become major interests. The Virgin gives a chasuble to St. Ildefonso and the archduke Albert and his wife kneel at either side.
Infanta Margarita Theresa	Velasquez (1599–1660)	Spanish	A portrait of the Infanta in a color scheme of silver, black and coral that was characteristic of Velasquez.
Hunters in the Snow	Breughel (ca. 1525–1569)	Flemish	An innovation in landscape and representation of great space.
The Rustic Wedding			The wedding feast serves as a pretext for displaying all the artist's excellence of color; the red caps, white coifs and the yellow omelettes are combined in an unusual color harmony.
Portrait of His Mother	Rembrandt (1606–1669)	Dutch	Rembrandt was probably the first artist to interpret old age with sympathy.
Madonna of the Meadow	Raphael (1483–1520)	Umbrian	Painted in 1506 during Raphael's stay in Florence and under the influence of Leonardo da Vinci.
Birth of Christ	Gerard David (1460–1523)	Flemish	Remarkable for its effect of light which emanates from the Child's body and encompasses the Virgin and three adoring angels.
Virgin and Donor	Memlinc (ca. 1430–1494)	Flemish	One of Memlinc's small masterpieces depicting the Virgin and worshiping donor in the central panel, with full-length figures of the two St. Johns on the inside of the shutters and of Adam and Eve on the outside.

This list is merely an introduction to the great galleries of the world and certain of their treasures. It does not include all the great museums, omitting especially the smaller galleries which may be very important on account of the masterpieces they possess. Neither does it represent the most important paintings of the world, for there are many such paintings that are not in museums but in churches and buildings for which they were originally painted. For instance, we do not go to museums to see the works of Giotto, the great Florentine, but to the Arena Chapel at Padua; and the greatest paintings of Rome are not in the galleries of Rome but in the apartments of the Vatican decorated with the great frescoes of Raphael, and in the Sistine Chapel where Michelangelo spread upon the ceiling his great drama of creation.

THE GRAPHIC ARTS

THE graphic arts include the making, with tools, of pictures or designs on copper, zinc, stone and wood; and include the printing by hand or on presses for that purpose. The prints are made with ink on paper, vellum and, in some instances, on fabrics. The forms, named for the methods employed, are etching, soft ground etching, drypoint, engraving, aquatint, mezzotint, woodcut, block print and lithograph.

The advantage of the graphic arts over painting and sculpture lies in the wide dissemination of pictures at a moderate cost. It has been authoritatively stated that the world has been influenced more profoundly by the printed, than by the painted picture. Great paintings and sculpture are found in art galleries, museums and private collections where but limited numbers have the opportunity to study them. There are reproductions of these masterpieces; but they are reproductions only and are merely reductions of the originals.

In the graphic arts there may be varying numbers of prints up to hundreds, each print being an exact duplicate of the plate of metal, stone or wood from which it is made. Each is therefore an original—not a reproduction of the artist's work, but a duplication.

Printing involves the use of ink, usually black. This, however does not deprive the graphic arts of the range of color possible to painting; for methods of printing have been developed to such a high degree of perfection as to present all the range of color used in painting; this is accomplished chiefly through lithography.

An additional factor in the enjoyment, knowledge and possession of the products of the graphic arts is the fact that prints may be, and mostly are, limited to a size for easy handling. They range from plates no larger than a postage stamp to the average size which comprises most collections in portfolios, coming within the range of fifteen by twenty inches. Prints have been and are made in large sizes, the large lithographic posters on billboards being examples. Size is and should be determined by the medium used. Size has nothing to do with the quality of art, the acme of which may be included in a small space.

When the matter of rarity enters, printed pictures may equal paintings in cost, but first published prices are usually nominal and within the reach of moderate purses. Enthusiastic collectors of prints enjoy a game that brings deep satisfaction and the power to share it with others.

ETCHING

Chronologically, etching belongs at the end of the list of graphic arts; but because, at this writing, it is receiving more attention in America than it has in fifty years, it shall be considered first.

No etcher after Dürer made a lasting impression until Rembrandt began his notable work between the years 1628 and 1665. In him, the art reached its greatest perfection and found its widest expression; in all the intervening years no one has arisen to dethrone him. Before him, and somewhat after, etching was used as a mere adjunct of engraving with no separate existence of its own until he raised it to a high art; since then it has suffered periodical decadence and restoration to favor, coincident with the rise and fall of specialized interest in art.

The method of etching is suggested by its name translated from the Dutch (where it was first used): *etsen*, or the German *essen*, "to eat"; applied specifically, it denotes the eating or corrosive action of acids on metal.

This reference to acid should make it clear that etchings are not drawings in pen and ink, nor are they reproductions by photography. They are printed from a metal plate, usually copper or zinc, upon which the lines have been etched or deepened by acid.



Etching

Halftone of a self-portrait of Rembrandt, richly dressed, leaning on a stone sill. The greatest of all etchers did his work between 1628 and 1665.

Preparation of the Plate. The plate of polished metal is about one-sixteenth of an inch thick, cut to the dimensions required. In order to subject it safely to the action of acid, usually nitric, the plate must be covered with a protecting substance. This is found in a preparation of wax, asphaltum and pitch called a "ground," which is melted and spread thin by roller or dabber on the hot plate. When cold, this thin covering, free from impurities and holes, forms a smooth, hard surface, made black by smoking over a candle flame, through which lines are drawn by a steel needle.

Making the Drawing. Some artists work from the subject directly upon their plates with the needle, just as they would sketch with pencil on paper. In this case the drawing, when printed, will be in reverse. Others make careful drawings with ink or pencil on paper and transfer them, by various methods, to the plate in reverse. Such a picture, when printed, will be a positive. The transferred lines are visible on the wax ground, and may be followed with the needle. This insures greater accuracy in drawing and placing, inasmuch as all corrections may be made before the transfer; but the careful procedure is not so likely to convey that spontaneity and freshness of inspiration that is apparent when a well directed needle records the impressions of the moment upon the metal itself.

As the lines are drawn only through the wax, they must be made permanent upon the plate. This is accomplished by applying acid, usually nitric, nitrous fuming, Dutch mordant or perchloride of iron, in one of two ways: either by dropping it on the plate and moving it about with a feather, or by entirely submerging the plate (held by waxed strings) in a glass or porcelain dish. The strength of the acid to be used is determined by the atmosphere. If warm, it calls for a weak solution, say three parts of water to one of acid. Cold, on the other hand, produces sluggish chemical action and the solution must be strengthened accordingly.

If the lines have been drawn with a fine needle, they may be varied in strength and depth by submitting them to the acid in longer or shorter intervals. Delicate lines representing distance should be exposed but a short time, probably a minute or two, according to the strength and biting of the acid. The plate is then taken out of the solution, washed carefully in cool water, dried and the finest lines covered by a small brush with stopping-out varnish. When dry, the plate may be returned to the acid, and exposed for the next grade of lines for a period of several minutes or more, after which the process of washing, drying and stopping out is repeated. In this way the work is carried forward until the variety of line desired is gained. Some etchers vary their lines by using fine and coarse needles, giving but one biting. Others work on the plate while it lies in the acid, putting the heaviest lines in first, and ending with the lightest. There is no way of determining, except approximately, what the acid is doing until the wax ground is removed by kerosene or turpentine after the plate is warmed.

There are three distinct chances for failure in making an etching: in the drawing, the biting and the printing. An artist may be an excellent draftsman and draw lines on the copper faultlessly, but the etching will not be a success unless he possesses the knowledge of how to bite lines into the copper. Again, he may have the skill to draw and bite, but his plate will be useless if it is not well printed. Many etchers do not attempt the printing, but leave it to persons who make that their profession. The most satisfactory results are obtained when the artist does his own work from the first drawing to the final print, but the expense of the necessary equipment is so great as to prohibit etching as a pastime. The practice involved in acquiring skill in printing plates is such as to put it out of the hands of most etchers for anything but the simplest proofs of their work.

The chief joy of an etching is its spontaneity. In the hands of a skillful worker, it may be rushed through to completion, and the etcher may look upon the moist print of his copper plate before the white heat of his enthusiasm cools. This joy is unknown to the artist who must send his plate to a professional printer for a proof. Even a day is too long to wait, and a day may turn into weeks. So the etcher who can take his plate out of the acid, wash and dry it for the last time, warm and remove the wax ground and

turn at once to his press to prove his hopes is the only one to taste the full fruition of pleasure in his work.

Printing. A thoughtful etcher will have prepared his paper before it is time to print by dipping it in clean water, or by sponging it, and putting it in little piles between blotters upon which are heavy weights. If he grinds his own ink, which is made of a fine black powder and plate oil, he will have that ready also.

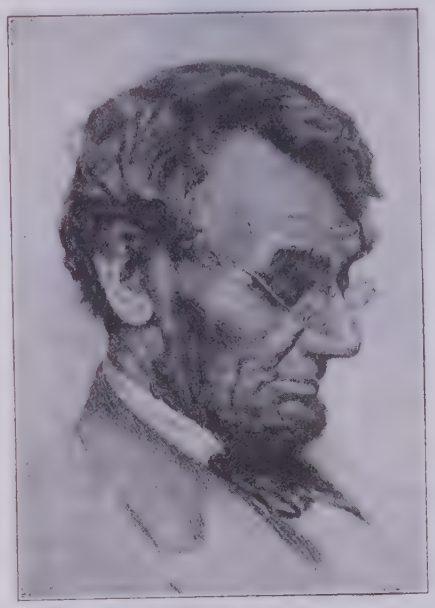
With a smooth roller, or dabber, the thick ink that stands up in a shiny heap, is forced into the lines. The whole surface of the plate is solidly black. With a pad of open meshed cloth—tarlatan is best—the ink lying on the surface of the plate is carefully wiped off, leaving the sunken lines full. At this point, it might be stated, there are many methods of manipulation which would result in the production of various effects. An explanation of these, however, would be interesting and comprehensible only to a printer. Both bare hand and cloth may be used to free the plate from superfluous ink and yet leave what is necessary to produce the effect desired.

The plate, which should be warm, is laid on the steel bed of the press; over it is laid a sheet of paper moistened with water until it is limp and soft, but not wet. Over this are placed several fine white blankets woven for this purpose. Then the bed passes between two heavy steel rollers, as clothes are fed into a wringer, coming out and stopping on the other side. The pressure should be even and as heavy as it can be and still allow the bed to pass between the rollers. The soft blankets force the moist paper into the lines, and the sheet takes up all the ink it finds there. When the blankets are lifted and the paper peeled off the metal plate, permanently embossed upon the paper will be the ridges of ink that filled the etched lines, together with any tone left on the surface. This is the crucial moment in the whole work of etching. Up to this time there has been no certainty of what has been accomplished. The lines may be clearly seen upon the plate, but it is not enough merely to make a line; there should be fine lines, heavy lines, deep and shallow lines, black, gray, rich and ragged lines. The success of the biting lies in the quality of the lines. Hence it is a staid heart that does not quicken when the first proof of an etched plate is lifted.

Alterations. If the proof is satisfactory, the plate is ready for further printing. If some lines are too heavy, they are first scraped with a sharp edged scraper, burnished with a smooth polished burnisher and rubbed down with fine charcoal and a buffer, reducing them to the desired depth. If the lines are too light, the plate may again be covered with a wax ground and the lines bitten deeper. Lines may be added or erased, but never with ease; it is a slow and tedious process to make alterations on a plate.

Color. The color of an etching results from, and corresponds with the color of the ink with which it is printed. There may be color on the print where there are no lines; this is a thin film of ink left on the surface of the plate. Wiping a plate clean puts the whole burden of the story on the lines. If they are not expressive and full of quality, the picture may as well have been drawn with pen and ink. But a printer with a painter's touch knows how to make hard lines sympathetic, and draws them all together with a bond of tone. A plate, however well it may be etched, is not complete nor desirable unless it is well printed. Although etching is primarily a linear process, colors other than black are used; but they are always put on the plate and never on the paper, except in the way described above.

Paper. Both paper and ink are large factors in the success of an etching. Any plate that can stand the test of white paper and black ink is likely to be well done, for it is a severe combination. Ink that is slightly warmed by brown, printed on paper of a creamy tone, is generally more pleasing. Soft Japan paper is still more mellow, but not brilliant. All Japanese papers are likely to grow woolly with handling, and are difficult to clean. Handmade papers are desirable for their texture and lasting qualities. An etcher who makes prints for the future must look carefully to the paper he chooses. Most attractive of all are the precious sheets of old handmade paper made in early centuries, some of which are still discoverable in old shops in Italy, Germany, France and Holland. A rare proof may be seen on a worm-eaten sheet of paper, on the other side of which may be found accountant's notes of three centuries ago. But with its very age has come a tone and quality that cannot be duplicated in modern paper.



Drypoint

A halftone reproduction of a drypoint, portraying Lincoln reading. By O. S. Schneider of Chicago.

Perfect tonality is difficult in an etching, except with great labor and skill, and labor is the one thing that should not be apparent in an etching. The action should appear effortless and spontaneous, just as one would pen a letter to a friend. This is why etching is called the most autographic of all arts. Its strong points are brevity, freedom, precision and power; but coarseness of line is not to be confused with strength, nor does delicacy of lines indicate weakness. Etching is the intimate art—the art of the home and of the hand. Poring over a portfolio of master prints is a recreation that never palls, because the final word is never said; there is always a new impression to meet a different mood.

DRYPOINT

Drypoint is so frequently used and confused with etching, both as to method and result, that only those familiar with the work may be expected to name it correctly. The general term "drypoint etchings" (used even by dealers carrying prints), is the safe, though compromising, ground taken, the assumption being that if the print does not happen to be an etching, it may be a drypoint. True, it can be both, if both mediums have been used in the plate; but this is not easy for the amateur to distinguish.

An etching is etched with acid, as its name implies; a drypoint, on the other hand, is a method of engraving on metal with a sharp cutting needle or diamond point without the intervention of acid, hence the term "drypoint." The work is different and the result is different from etching, as the student will quite readily detect and understand with observation.

With a sharp steel point or, better, with a ruby or diamond set in a handle which is held in a slanting position, lines are cut into the metal plate lightly or deeply, doing at once what the acid takes longer to do. As the cutting edge acts much like a plow throwing a furrow, so the edge of a drypoint line holds a burr which, unless removed with a scraper, is the one distinguishing characteristic of the method. When the plate is wiped and inked, the burr catches it and spreads it like the edge of a tiny feather along the line, thereby producing a rich, velvety appearance not made by any other line. Not only the lightest line possible, but also the heaviest, makes drypoint a desirable medium for portraits and subjects in which great variation and delicacy are required. It lacks the freedom of the etched line because, in its making, it must be guided with pressure sufficient to carve out the metal. Moreover, a drypoint plate yields fewer proofs than an etched one because the delicate burr quickly wears away with the manipulation of inking and wiping the plate. Since the mechanical work of biting a plate is the greatest stumbling block in etching, the omission of grounding and biting and the directness of the method leads many artists to drypoint; but as they are more difficult to print than an etched plate, the preference is not without its drawbacks.

SOFT GROUND ETCHING

It is not recorded how or why a line that looks like a pencil or lithographic line was preferred to the clear sharp one given by regular etching. But probably soft ground etching was invented for the purpose of producing a line that may be used with perfect harmony in aquatints, which is a method employing tone made up of small dots.

Instead of using a pointed steel needle, soft ground etchings are drawn with a lead pencil on a metal plate covered with a wax ground which is soft instead of hard. Ordinary etching ground is mixed with tallow in such correct proportions that whether it be used

in summer or winter, it does not become hard. Over the plate is stretched a sheet of thin grained paper upon which a drawing is made with a lead pencil. When the paper is removed, it will be found that the ground has adhered to it wherever the pencil was used, leaving the lines exposed. These lines are bitten with acid in the regular way, producing varied depths by stopping out, just as in the regular etching. The principle of printing is the same. The result looks like a pencil drawing or a lithograph.

MEZZOTINT

This, also, is a method of engraving in tone, not in lines, but the work is done with tools and without acid. A metal plate is uniformly roughened by means of a toothed instrument called a "rocker," or "cradle"—a method which dates back, as far as records tell us, to 1611. There may be from forty to 120 fine teeth to the inch of the tool. It is rocked in every direction, either by hand or by machinery, to produce tiny indentations with a slight burr on its edge like a shallow vol-



Aquatint

A scene in Coblentz. By Sir Frank Short of London. Considered one of the greatest craftsmen in aquatint and mezzotint, as well as etching.

AQUATINT

The art of engraving upon metal in tones with acid or, as it is technically called, "aqua fortis," produced the aquatint. The result strongly resembles a water color or wash drawing when printed in black or brown, hence the name "aqua tinto," or "aquatint." There are several ways of preparing a ground, the two principal ones being by powdered resin and spirit ground (resin dissolved in alcohol), poured on the plate and allowed to evaporate. There are elaborate devices for spreading dust, such as boxes with a fan to set the dust flying, or screens of cloth through which the dust is sifted on the plate. But simplest of all is to put powdered resin in a small bag of fine mesh which can be held in the hand and which may be struck lightly with a ruler, thus causing the particles to drop. The disadvantage of the latter method is that the particles might not be distributed as evenly as when allowed to settle from the air in a box. The plate must be carefully handled while it is being put on a heater where each grain of resin is crystallized, forming a hard but porous surface. Where no color on the plate is desired, the highest lights are painted out with stopping out varnish, and succeeding steps are followed as in biting etched lines: short intervals for shallow spaces, and longer intervals for deep ones. The removal of the ground, and printing, is the same as with etching, except that the tiny sections of copper that stand up will not yield as many impressions as the depressed lines. Aquatint is capable of many gradations of tones, and represents the painter's point of view rather than the etcher's. To lovers of etching it is less popular than the pure line, which requires more understanding.

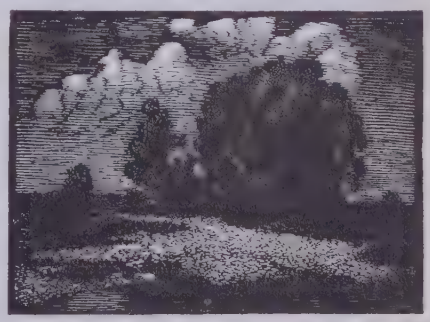
canic crater. When the ground is completely covered with dots, the process may require as many as eighty rockings in all directions. If inked and printed, the result is a rich solid black surface. The object is to let the light through this dense black and to outline the subject, which is done by means of a bayonet-shaped scraper and a burnisher. Where a clear surface is desired, all indentations must be removed and the surface polished with a burnisher; this takes the plate back to its first state. From this point to the deepest, blackest shadows, it is a question of controlling the scraper in the leveling process in producing varying gradations of tones. The complete result, when inked, wiped and printed as already described, is the richest combination of light and shade that can be produced. But like drypoint, which depends upon burr for its richness, and like aquatint, which has shallow indentures, the yield of proofs is limited. Were it not for an invention called "steel-facing," which has been in use about sixty years, much of the fine work would have been limited to very few proofs. Steel-facing consists in laying on the copper plate a thin film of steel (by electroplating methods) which protects the soft copper and preserves a uniformity of excellence in the prints for the edition which the artist determines. Without steel-facing, the plate itself determines the number of proofs that may be taken; for as it wears and loses its fine values, it is no longer printable and should be canceled or destroyed.

ENGRAVING

When the word "engraving" is mentioned, most hearers unconsciously add the word "steel," because it seems difficult to disassociate the two. All engraving work previous to 1820 was on copper, but finding that metal too soft for large editions, steel was used for a while. When a process was discovered which would harden the surface of copper, engravers went back to it.

This is the oldest of the intaglio processes. It originated in the fifteenth century with the work of goldsmiths, who cut designs in gold and silver plates for ornaments called *nielli*. In filling these lines with a black substance so that the design might be seen more clearly, the engraver found that an impression could be made on paper. This discovery eventually developed into engraving for the sake of the picture. From a mere record of a design, engraving passed into an art which became lucrative for the translation and interpretation of paintings and other work. The creative work of the artist lapsed into laborious and tedious copying which, although resulting in superlative technique, furnished the world, except in a few notable instances, with no masterpieces. For the whole interesting history of the art, students must consult special books on the subject. It will have to suffice to explain in the briefest way, how engravings are made.

If a design to be cut is first put upon the copper plate, each artist has his own way of doing it. The lines themselves are carved with a tool called an "engraver," or "burin." It is a steel rod about four inches long, lozenge-shaped and sharpened by being cut obliquely at the end. The wooden handle is shaped like half of a mushroom to fit the palm of the hand, while the rod is held between the thumb and second finger and is pushed forward cutting a clear V-shaped furrow without burr. Such a laborious method cannot approach the etched line in its freedom and spontaneity; it results in stiffness and formality. Stipple engraving makes use of dots instead of lines, although it is sometimes used with the line. The printing of engravings, in principle, is like that of all metal



Woodcut

Clump of trees. This woodcut is by J. J. Lankes, an American.

intaglio plates. It is done with a view to keeping the lines clear, and employs less tone than does etching.

WOODCUTS

Broadly speaking, engraving may be applied to an incision made in any material, but its use has narrowed to that of metal. Hence an engraving on wood is generally referred to as a "woodcut." This classification is further divided into white line and black

line process, the product of the latter being designated as a "block print." All previous methods have been intaglio process on metal plates; that is to say, what is to be printed is indented. Now we deal with wood, and what is printed is in relief, or stands up with the indentations not printed.

The oldest and simplest process known is that of carving on wood and printing, first by hand, later by machines. The tools used are knives and the engraver, or burin. The block of wood (usually boxwood) is sawed across the grain, the design is drawn upon it, and outlines of the subject are cut out as white lines on a black surface.

Block Prints. In block prints the wood is cut the length of the grain and the black line stands up to be printed. This is the method used for Japanese prints and is the one best adapted for color. In the latter case a block



Woodcut

The scene is of La Montagne Sainte Genevieve. This woodcut is the work of the great French artist, Auguste Lepere.

is made for each color, and the designs superimposed. The artist draws a design on very thin paper which is pasted, face down, on the block. With knives and gouges, lines are cut standing up with sloping sides like dikes, to give solidity, and large spaces are gouged out more deeply to avoid printing. At each of two opposite corners, for registering, there is a triangular mark which the Japanese call *kento* (meaning "to aim at"). The damp paper, all cut the same size, is fitted to these marks and laid on the face of the block which has been charged with color by short brushes. Over this is gently rubbed a flat disk, about four inches in diameter, called a "baren," which presses the paper to the block and absorbs the color. This may be followed by any number of blocks until the color scheme is completed. And last of all, or it may be first, using India ink, is printed the outline, called the "key block," which ties the subject together. This is the



Block Print

Bridge in Winter. By B. J. O. Nordfeldt. In the manner of the Japanese, who carried the art to its highest perfection.

method used by the Japanese who have carried the art to its highest perfection. Today there are many variations in methods and printing in which machines play a part.

LITHOGRAPHY

Metal plate lines are in intaglio; wood, in relief, and now we come to printing from the surface, or plane, in lithography. A lithograph is a crayon drawing on stone, done in the manner of a crayon or charcoal drawing on paper, the difference being that by means of a printing press and inking, the drawing on stone may be multiplied as it is in etching and engraving. The stone is a form of calcium carbonate cut in slabs two or three inches thick. The best stone comes from Solnhofen, Bavaria. The crayon is composed of a greasy substance which sinks into the stone wherever it is touched by the crayon. When the drawing is finished, the stone is moistened with water. As water and grease do not combine, the parts drawn upon repel the water; parts not drawn upon absorb it. A roller charged with greasy ink is then passed over the surface, and for the same reason the ink is repelled by the wet parts and adheres to every part drawn upon. A sheet of paper is next placed upon the stone, which is passed under a heavy roller. The ink becomes transferred to the paper and produces an exact facsimile of the original drawing. These are the principles of lithography, though there are mechanical details connected with the printing of interest only to workers.

It may be well to mention here, since it is often a subject of controversy between collectors of lithographs as to artistic value, that drawings may be made on prepared paper and sent to lithographic printers who transfer them to stone. This process permits the making of drawings in and from places where large and cumbersome stones may not be taken; such, for instance, as the large, drawings of Panama Canal subjects made by one of the best lithographers, Joseph Pennell, deceased. Since the drawing transferred to the stone is exactly as made by the artist, it seems a distinction too fine for general comprehension that the resulting lithograph is any less artistic than the one drawn on the stone itself by the artist.

No other graphic art possesses the immense scope, or has been called upon for such a variety of purposes, as has lithography.

There is no other multiplying medium as sensitive to the artist's touch. The most delicate grays as well as the strongest blacks may be reproduced exactly as the artist made it. It was discovered in 1796 by Aloys Senefelder, a Bavarian, and was introduced into the United States about 1835.



Lithograph

Memories of San Ildefonso. The American Indian of the Southwest, showing houses and in the background a mesa. By C. A. Seward of Wichita, Kansas.

NOTED ARTISTS



FINE ARTS TERMS USED IN ARCHITECTURE, SCULPTURE, PAINTING AND THE GRAPHIC ARTS

Abutment. A lateral support usually for an arch.
Amphitheater. A building with rising tiers of seats around an arena, generally elliptical in form.
Angels. In medieval art divided into nine degrees: Seraphim, Domination, Princedom, Cherubim, Virtues, Archangels, Thrones, Powers, Angels. The Cupid-like angels were introduced in the time of the Renaissance.
Antae. Rectangular pilasters forming the ends of the walls of the cella of a Greek temple, and supporting the extremities of the architrave. A temple of this form was called a temple "in antis."
Applique. Anything in art applied to a background.
Apse. A projecting part of a church, generally semicircular in form and surmounted by a semi-dome.
Arabesque. An ornament composed of stems, foliage, leafage of plants, scrolls and fantastic animals. Not, as the name implies, an Arab invention but found in Greek and Roman architecture. Also any design of interwoven flowing lines.
Arch. A curved structure, generally a segment or segments of the circle. Semicircular arches were used by the Romans; horseshoe arches by the Byzantines and Moors; pointed arches formed of two intersecting segments of circles by the Gothic builders.
Architrave. Lowest member of entablature.
Archivolt. Molding decorating face of arch.
Ashlar. Smooth pieces of stone laid up to form a wall.
Atlantes. Human male figures, employed instead of columns to support the architrave.
Atrium. A covered court in a Roman house, with an opening in the center (compluvium) and roof sloping inward.
Attic. Upper story or order in a Classic composition.
Baldachino. A canopy over seats and other places of honor.
Baroque. Bizarre, fantastic; a term applied to a style of art in the late sixteenth and seventeenth centuries.
Base. Member on which a column shaft rests. Upright architectural cylinder.
Basilica. A rectangular hall divided by rows of columns into three naves, and used by the Romans as a court of justice; adopted as the typical form of early Christian churches.
Bas Relief (Basso Relievo). Figures sculptured on panel projecting less than half their proportions from the surface.
Body Color. Opaque color.
Buttress. A piece of wall built at right angles to the wall of a building to strengthen the structure, either immediately against the wall or connected by an arch called a "flying buttress."
Byzantine. The style of architecture and painting in use at Constantinople from the sixth to the twelfth century.
Cameo. Design carved in relief against a background of a different color.
Campanile. A high slender tower, Italian in form.
Cartoon. A preliminary drawing for a painting.
Cartouche. An architectural ornament composed of a plain center in an elaborate frame.
Caryatid. Female figure, employed instead of a column to support the architrave.
Cast. The result of pouring molten metal or other material into a mold.
Cella. The internal part inclosed by the walls of a Greek or Roman temple.
Chancel. Part of a church, containing choir and apse.
Chevet. A form of apse inclosed by an arcade with a series of chapels around it, common in Romanesque and Gothic churches in France.
Chevron. A V-shaped ornament.
Chiaroscuro. The distribution of light and shade.
Chryselephantine. Made of or adorned with ivory and gold.
Cinquefoil. An ornamental foliation, consisting of five projecting cusps.
Classic. Art of, or based on that of, Greece and Rome.
Clerestory. Upper portion of church above the aisle roof.
Cloister. A quadrangular covered walk, forming a portion of a monastic building.
Clustered Column. A pier formed by a number of shafts clustered together, either united or separate.
Colonial. The art of the American colonies and early republic, eighteenth century.
Color Etching. A print in color from an etched plate.
Column. A pillar with base, shaft and capital.
Composition. The studied relation of parts in a design.
Console. In architecture, a bracket.
Cornice. Top member of entablature.
Corona. A crown molding; a cymatium.
Craftsmanship. Technical skill in any art.
Cruciform. Like a cross in form.
Crypt. A subterranean chapel beneath a church.
Cusp. Pointed foliation in architectural tracery.
Cymatium. A crown molding; a corona.
Damascened. Metal ornamented by inlaying another metal.
Decorated. The second of the pointed or Gothic styles of architecture in England.
Dentil. Ornament like small cubes in a cornice.
Design. An arrangement of line, color or material to give a desired effect.
Dolmen. A monument of prehistoric stones set up for unknown purposes.
Dome. An arched roof, usually circular in plan.
Dormer. A gable window in the sloping side of a roof.
Encaustic. Method of painting with pigments combined with heated wax.
Engraving. A print from a metal plate engraved with sharp tools.
Entablature. Horizontal superstructure resting on tops of columns, composed of architrave, frieze and cornices.
Entasis. Slope in contour of a column.
Exedra. Curved seat of stone.
Façade. The front side of a building.
Fan Tracery. Elaborate carved work spread over an arched surface.
Fenestration. A system of window openings.
Fillet. A plain band used in architecture to separate ornaments and moldings.
Finial. An ornament of carved work representing foliage on a pinnacle or spire.
Flamboyant. The style of French architecture peculiar to the fifteenth century, contemporary with perpendicular in England.
Flèche. Small thin spire.
Flute. Small semicircular groove or channel cut in the shaft of a column or a pilaster.
Foreshortening. The apparent shortening of an object by viewing it in front.
Fresco. Method of painting on wet plaster with pigments mixed with water; also a painting so executed.
Fret. An angular, interlaced architectural ornament.
Frieze. Middle member of entablature.
Gargoyle. A grotesquely carved water spout, often used solely for ornamentation.
Genre. A subject dealing with everyday life.
Georgian. English and American architecture of eighteenth century; Colonial.
Gesso. A prepared plaster used as a ground for painting or making reliefs.
Gothic. Art of Europe of the twelfth to fifteenth centuries, or the style or architecture that employs the pointed arch.
Gouache. Water color mixed with white body color.
Graffito. Design usually in plaster obtained by scratching through one layer to that of another color.
Grisaille. A style of painting in gray by which solid bodies are represented as if in relief.
Groin. The angular curve formed at the intersections of a vaulted roof.
Guttae. Small drop-like form hanging from triglyph.
Half Timbered. Visible timber framework filled in with plaster or brick.
Hatching. Covering with fine crossed lines.
High Light. The brightest point in a picture.
Historiated. Ornament with some pictorial character instead of pure design; historiated initials in illuminated manuscripts.
Hypostyle. A roof supported by columns.
Impasto. The thickness of the body of pigment laid on to a painting.
Inlay. A design made by pieces of different color set into the same or another material with a flush surface.
Intaglio. An incised design, usually in gems.
Intensity. Strength of a color compared with neutral gray.
Keystone. Outer stone put last in place in an arch ring.
Klaft. A royal Egyptian headdress forming a kind of hood and terminating in two flaps which form over the breast.
Lancet. A pointed arch, high and thin.
Lantern. A small turret above the roof of a building having windows all around it.
Lierne. Thin stone decorative rib in a Gothic vault.
Lintel. The stone or beam placed across the top of a door or window.
Lithograph. A print from an engraved stone.
Loggia. The gallery or corridor of a place.
Lotus. A water lily. In Egypt it is held very sacred.
Mansard. A steeply sloping attic with a flat roof.
Marquetry. Inlaid work of ornamental woods and stones of various colors.
Medallion. A circular or oval tablet on the face of a building.
Medium. Vehicle or liquid with which pigment is mixed, such as water, oil, egg, wax. Also any material of a work of art such as stone and wood.
Metope. Square space, often carved, between triglyphs in an entablature.
Mezzanine. A low or intermediate story.
Mezzo Relievo. Sculpture in relief in which half of the figure projects.
Miniature. A painting in color in an illuminated manuscript. Also any very small painting, especially on ivory.
Model. Something which is copied. To fashion or shape, as in clay or wax.
Modillion. A bracket beneath a cornice.
Monolith. Composed of one stone.
Mosaic. A design composed of small stones or other material of different colors.
Mural. A painting made on a wall.
Mutule. Bracket-like form beneath a Doric cornice.
Narthex. The vestibule of a church or basilica.
Nave. The middle part or body of a church from the choir to principal entrance between the aisles.
Neolithic. New or later Stone Age.
Nimbus. A halo or circular disk around the head of sacred personages.
Obelisk. Tapering stone shaft, square in section with pointed top.
Ogee. An arch described with four centers so as to be concave in lower and convex in upper part.
Order. A division of Classic architecture denoted according to the character of its columns, as Doric, Ionic or Corinthian.
Oriel. A projecting angular window, generally triangular or pentagonal in shape.
Ornament. Decoration.
Ovolo. A convex molding much used in Classic architecture.
Pagoda. A towerlike, storied structure, usually a temple, of the Orient.
Palaestra. A place for wrestling, formerly part of the gymnasium.
Paleolithic. Old or ancient Stone Age.
Palette. A thin wooden plaque on which paint is placed to be used; the set of colors that a painter uses.
Panel Painting. Painting executed on a wooden panel.
Patina. The fine skin or color which age gives.
Pediment. A triangular crowning of a portico usually supported by a row of columns.
Pendentive. Spherical triangle occurring between supporting arches and the bottom of a dome.
Peristyle. A system of roof-supporting columns about a court or building.
Perspective. The art of representing on a flat surface the appearance of objects from one given point of view.
Pier. A square-shaped column.
Pilaster. Square pillar on a wall partly imbedded in it, less than one-fourth of its thickness projecting.
Pinnacle. A small spire.
Piscina. A stone basin in a church.
Plinth. A pedestal.
Polychrome. Of many colors.
Pronaos. The portico situated in front of a temple.
Propylaeum. Entrance to a temple or an enclosure.
Pylon. High rectangular Egyptian structure on either side of temple entrance.
Quatrefoil. An ornament in pointed architecture, consisting of four lobes, or foils.
Quoin. One of projecting blocks alternately long and short, on the corner of a building.
Relief. Projection.
Renaissance. Rebirth. The art specifically of the fifteenth century. The era between the fifteenth century and the World War.
Rococo. Florid ornament, eighteenth century.
Romanesque. Round, arched architecture of Europe between the sixth and twelfth centuries.
Rose Window. Circular window filled with geometrical tracery.
Rubble. Rough stones and broken bricks, used to fill up between walls.
Rustication. Hewn stone masonry, the joints of which are rendered conspicuous by grooves or channels.
Sarcophagus. A stone coffin.
Scumbling. Rubbing or dragging paint lightly over a painted surface.
Shade. Shadow, lack of light or variation in color.
Sizing. A preparatory coat of thin glue.
Sketch. A rough or hasty preliminary drawing.
Soffit. Underside of beam or arch.
Spandrel. The wall space between two arches.
Sphinx. Egyptian figure with a human head on a lion's body.
Stele. A Greek upright carved slab.
Stencil. Oiled paper with openings through which paint is applied to a surface.
Still Life. Painting of inanimate objects.
Stipple. To paint by daubing instead of by working.
Stone Age. Age when stone only was used for tools or weapons.
Stylobate. Continuous basement supporting columns.
Taenia. A band which separates the Doric frieze from the architrave.
Technique. Method of working in any art.
Tempera. A method of painting with pigments mixed with egg.
Texture. The markings or quality of a surface.
Torso. The trunk of the statue of a human figure.
Tracery. Decorative stone divisions in a Gothic window.
Transept. A transverse nave, passing in front of the choir and crossing the longitudinal nave of a church.
Trefoil. An ornament of three lobes or foils.
Triforium. Small story in a church between nave arches and clerestory.
Triglyph. An ornament, consisting of three flutings or upright groupings, separating the metopes in a Doric frieze.
Triptych. A form of pictures in three panels.
Truss. A combination of wood or metal members arranged in triangles to span large spaces.
Tympanum. The triangular space between the horizontal and sloping cornices. The name is also given to the space included between the lintel of a door and the arch over it.
Value. The amount of light in a color. A light color is of high value; a dark color has a low value.
Values. The effect of an object in nature on art relative to other objects in the same view.
Vault. An arched ceiling or roof of stone.
Vehicle. Water or oil mixed with pigment to make it applicable.
Volute. A spiral scroll which forms the chief feature of the Ionic capital.
Voussoir. Any one of the radial stones composing an arch.
Water Color. Color mixed with water as a vehicle.
Woodcut. A print from a wooden block cut out to form the design.
Zoöphorus. (Literally, "bearing animals.") A continuous frieze, decorated with figures of animals, conventional and real.



Egyptian Musicians

The three priestesses at the left are carrying sistra. In the center is shown a sistrum, nine inches high, from the Berlin Museum. The procession of men and women at the right are singing to the lyre, double-pipe and harp.

MUSIC

MUSIC has been called the "Universal Language," for of all the arts, it is the one which speaks most directly to and from the human heart. Everyone loves to sing, and even among the most barbaric peoples a response to rhythm is an outstanding characteristic. Yet in the history of civilization, music is the last of the arts to reach its development. This is probably because architecture, painting and sculpture are "visible arts" and our eyes have been trained to see far more than have our ears to hear. Moreover, these visible arts leave a permanent impression, while every time the greatness of music is to be felt, its message must be recreated. Therefore we have come to regard music as something understandable only to those who have been technically trained to interpret its message. And this is one of the very greatest mistakes which the present day civilization has made regarding any art. Music should be a part of the life of everyone, for it brings greater happiness than any other art expression.

In days gone by musical education for everyone was demanded, and at certain great periods in the world's history, such as the "Golden Age" in Greece, music was of such importance that it was one of the two studies listed in the curriculum for the education of the Greek youth. During the Elizabethan Era in England anyone unable to read music at sight, to sing or to play on some instrument, was considered an illiterate. That is why there is such a constant reference to music in all of Shakespeare's works.

Music, being a natural art, should therefore be easily understood; for its simple and direct appeal is felt by all.

THE THREE PARTS OF MUSIC

Music is made up of three component parts (1) rhythm, which is the pulsation of accented groups of tones; (2) melody, which is the tune or air developed from the use of higher and lower contrasting tones in some definite series of rhythmic progressions; and (3) harmony, which is the grouping of related tones when they are heard simultaneously. Every musical composition is dependent on all three of these elements, although one may overshadow the others. This frequently does occur in certain compositions. In a rapid and fiery folk dance the rhythmic element is particularly discernible, while in a simple bright little folk song it is the melody which makes the most immediate appeal. Yet often, too, it is the harmony that gives the true beauty to the musical message.

When we listen to Negroes singing their marvelous spirituals, we feel the true beauty of their harmonies; while as we hear their rapid syncopated dances, we realize how great is the power of rhythm. Yet rhythm, melody and harmony are to be found in both the dances and the spirituals.

EARLY HISTORY OF MUSIC

Primitive Music. There is in the world little primitive music which has not been influenced by the white man's civilization. In some of the tribes of darkest Africa drum beating, which is the earliest type of music, is still in use. Our first instruments were those used only to accent rhythm. Through the use of drums not only were warlike passions aroused but actual messages were, and still are, communicated from one tribe to another in a sort of musical telegraphy.

The drums were later supplemented by wind instruments made of the horns of animals. Horns were made more durable in later days by being cast in metal. The use of these instruments, with the drums, was confined almost exclusively to war. For the gentler side of life—home, pastoral joys and love—the wind instruments made of reeds were the most popular. The last development was of a rude type of stringed instrument, which was used with the wind instruments and small drums to accompany recreational dances.

The history of music is almost identical with the development of civilization; for, like the other arts, music reflects the age in which it was created.



Procession of Assyrian Musicians
(From the ruins of Nineveh)

Music of the Ancients. We know but little of the ancient peoples save as their civilization has been reflected in their visible art. On some of the gigantic stones, which are our chief clues as to what Assyrian civilization must have been, we find carved outlines of many men marching, carrying instruments of the percussion type, drums and cymbals. Some have wire stringed hand harps with metal janglers, and others blow on long trumpets.

Egyptian Music. On Egyptian wall paintings there are figures playing on huge, many-stringed harps, or blowing on long double pipes; some are carrying small stringed instruments.

We know from these art fragments that the Assyrians were a warlike race, using their music as an incentive to their martial activity, whereas the Egyptian instruments prove that on the banks of the Nile lived a pleasure-loving, sensuous race whose music was used chiefly for recreation and enjoyment. And history tells us exactly the same thing.

The Egyptians possessed probably the earliest science of music; it dates from 3000 B.C. Their music was closely associated with their religion. The harp was their favorite instrument, and was used both for religious services and for social diversion. The Egyptians had many varieties of harps, ranging from the small hand harp to the huge temple harp of twenty-three strings. Hand drums were used to accent the rhythm, but large drums and brass instruments were employed only in time of war. The Egyptian sistrum was frequently copied by both the Hebrews and the Greeks. It was a horse-shoe-shaped metal bar with janglers which rattled as it was held in the hands of the dancers.

Hebrew Music. It was from the Egyptians that the Hebrews obtained their great knowledge of the science of music, although the love of the art is inborn in the race.

The Hebrews left no record of any art, for they believed literally that graven images should never be made. Yet their music has come down through the centuries practically untainted, and the orthodox Jewish chants are the oldest music in the world, constituting the connecting link between ancient days and the present age.

There is frequent mention of music throughout the Bible, although it must be remembered that the translators naturally used the names of instruments they knew; for at the time of King James little research in ancient art had been made.

The Psalms were originally sung with musical accompaniment. It is certain that the Hebrews possessed a knowledge of musical therapy, for this fact is proven by the story of the great influence which David's harp playing had over the wicked King Saul.

King Solomon, in his magnificent temple, had music worthy of his faith. Josephus tells of 200,000 silver trumpets, of the same number of resplendent coats worn by the Levite priests who led the immense choruses, and of 40,000 harps and psalteries which belonged to King Solomon's musical collection.

The earliest instrument of the Hebrews was the ram's horn trumpet, known as the "shophar," which is still used in Jewish temples on holy days. The cantor, who occupies the next important place to the rabbi, leads the singing, the congregation responding and answering his phrases in a manner known as "antiphonal chanting." Many of the antiphonal chants still used in Jewish synagogues date back to early times. This form of church chanting was borrowed from the ancient Hebrews by the early Christians, and is still used in the music of the Roman Catholic and Episcopal churches.



Harp
Egyptian harp of eleven strings

MUSIC AMONG THE GREEKS

Legends Regarding Music. The earliest Greek legends regarding music prove that it was from the Egyptians that the Greeks first learned of the power of tone. While walking on the banks of the Nile, Apollo found the tortoise shell with its dried sinews so stretched across the empty shell that they vibrated when plucked with the fingers. From this gift of Nature, Apollo made his first four-stringed lyre. Later the lyre became an instrument of seven strings said to represent the seven gates of Thebes.

The creation of wind instruments is told in the delightful story of Pan and the nymph Syrinx, while in the legend of that remarkable contest between Apollo and Marysas, the son of Pan, it was forever proven that stringed instruments were more powerful and more important than wind instruments.

In the stories of Orpheus we learn of the first virtuoso, or artist musician; for it was Orpheus who charmed stones and rocks, as well as beasts, with his wonderful music.

The Greek Science of Music. The earliest epic poetry of the Greeks was accompanied by music, and the study of the art was considered of the utmost importance. The science of music, originally learned from the Egyptians, developed marvelously in Greece. When the Pythian Games were established in 1000 B.C., musical contests were included; but it was not until the fifth century B.C. that great names became actually associated with music. Terpander, Pythagoras and Arion were but a few of those who had definite theories about tonal vibration, while among the leading poets and dramatists of the time, music was in constant use.

The later Alexandrian period was, like the Roman days, merely a copying of the great art that had preceded it.

The Greek scales were based on four tones, the original four tones of the early lyre. This scale was known as the "tetrachord." It existed in several forms, for in certain parts of Greece the half tone came between the third and fourth tones, as it still does in our major scales, while in other places it was found between the first and second or between the second and third. When additional strings were added to the lyre, a seven-toned scale came into being. Sometimes these double tetrachords were made by simply doubling the original four-toned scale as is the case in our major scale. But sometimes the first tetrachord was followed by a different one; that is, the first four-note scale might have the half tone between the first and second notes, and it might be followed by another having the notes combined in exactly the same way; or the second tetrachord might have its half tone in a different place from that found in the original tetrachord. This gave to the Greek scales, or "modes," as they were called, a great variety of tonal expression; and it is the very reason why many of the ultra-modern composers are now returning to the use of the old Greek scales.

Instruments. The Greeks favored stringed instruments, such as the lyre and the cithara. They also used the long flute, or auloe, in both a single and a double variety; and the syrinx, or Pan's pipes, a mouth organ of seven reeds bound together. They had few percussion instruments, those in use being tambourines, cymbals and sistra. The Greeks rarely used trumpets or brass instruments, although these became popular in Roman days.

Dances and choruses were important parts of the Greek theater; in fact, the first actors on the Greek stage were the chorus leaders who sang their lines to the accompaniment of the lyre.

Notation. The Greeks had a method of writing their music, engraving the words on stone with letters above them to indicate the pitch. It was from the system of the Greeks that the early musical notation of the Christian church was developed.

ORIENTAL MUSIC

In the Far East the same music has been in existence for many centuries, and each country has many legends regarding music. All the music of China, Japan and India is of great antiquity, some dating back to 1500 B.C. This Oriental music sounds strange to our ears because we have been trained to hear certain harmonic progressions which are very different from the Oriental ideas. Our scale is formed of seven tones which are divided into whole and half notes. The Oriental peoples have many different types of scales, many tones being divided into quarters and eighths, so that often there are as many as twenty-two tones in a single scale. The rhythmic accent is also a striking characteristic of this music, and in this respect it is very different from ours. Oriental musical science has influenced our modern music but little. Some lovely airs came into the Western World at the time of the Crusades and when the Saracens invaded Sicily and Spain.

In the modern Russian school of music, many composers have naturally been influenced by the beautiful Oriental melodies of their neighbors.

The Music of India. Brahmanism is founded on music, and all Hindu music is closely allied to religion. Every Hindu scale, and there are over seventy, has its own attributes and is used to depict such emotions as love, hate, anger, peace and fear. Some may be used only at certain hours, others at particular seasons or on certain days of the week. The most popular instruments in India are the *vina* (a guitar-like instrument with gourd resonators and metal strings) and the flute.



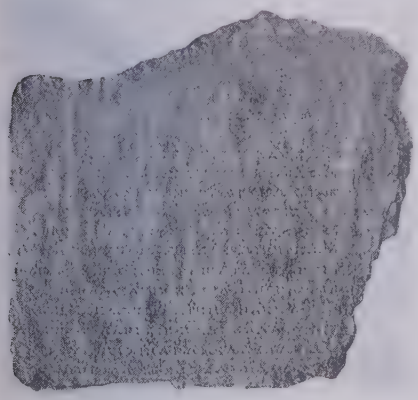
Apollo and His Lyre
Illustrating a primitive form of the lyre.

Chinese Music. The music of China is also closely affiliated with religion. Confucius declared that one could tell from the music of a people whether they were moral and well governed. The Chinese have always preferred percussion instruments, and their orchestras consist of sixteen varieties of drums, gongs and bells, and of only four types of wind and stringed instruments. The most popular Chinese instrument is the *cheng*, which looks like an old-fashioned teapot, into

which bamboo pipes have been fitted. The player blows through the spout and the air, vibrating in the tubes, produces the tones. The *kin*, the best-liked stringed instrument, resembles the medieval lute. The *che*, an elaborately developed zither, is extremely popular.

The Music of Japan. Although the Japanese have adopted many of the Western customs regarding music, they still consider it an important part of their religion. Many of their instruments are similar to those of the Chinese, and undoubtedly both have come from the same source. The most favored instrument in Japan is the *samisen*, a small guitar resembling the Chinese *kin*, while the Chinese *che* is reproduced in the Japanese *koto*. The Japanese are partial to descriptive music, and many of their songs are accompanied by imitative and humorous effects.

Arabian Music. Of all Oriental music, that of Arabia sounds most familiar to our ears. It is a blending of the music of Persia, Armenia and Egypt; and it was this music which the Crusaders knew, and brought home to Europe. It was also from Arabia that we obtained many of our musical instruments. The Arabian *ooud* became the medieval lute, which is the ancestor of many folk instruments like the guitar, banjo, mandolin and the balalaika. The Arabian *rebec* became the modern violin. To the accompaniment of the pipes and the *rebec*, with castanets, tambourines and hand drums to accent the rhythm, the Arabian dancers of the Moorish invasion left an indelible impression on the music of Italy and Spain.



Hymn to Apollo
One of two stones engraved with the hymn in the old Greek notation. Found on the island of Delos.

FOLK MUSIC

The first musical impulse in every nation springs from the folk, and it is natural to look to folk music for the germ of all that later will be found in the great musical compositions of every nation. Yet in considering folk music, there are several points to remember.

First, there is the influence of actual geographical conditions. All dwellers in the mountains lift or lower their voices in song to correspond to the peaks rising above them, while those on the vast plains show a monotony in their songs quite as apparent as that of the landscape; and people living by the sea reflect the rocking of the waves in the rhythm of their songs.

Second, there is the difference in racial characteristics. For example, all the music of the Slavic race has points of striking similarity, whether it be found in Russia, Poland, Serbia or Czechoslovakia. The fiery music of the Slav is in direct contrast with the more stolid plodding type of Teutonic music found among the German and Scandinavian peoples. All Latins, whether they live in Italy, Spain, France or Rumania, show similar musical characteristics, and their music is unlike that of the other races. Interesting examples of racial similarity are to be found in the music of Scotland and Ireland, for both these lands have inherited many melodies from the Gaelic race. The folk airs of the Welsh and of the people of northern France are similar, which is not strange when one recalls that both are of the Celtic race. Probably the most striking instance of racial influence is found in the music of the Hungarians and the Finns, both coming from the Magyar race.

Third, political conditions have influenced the folk music of the world. Thus Germany claims many folk airs belonging to Austria, to Poland, to Lithuania, to Alsace, to Lorraine, to Bohemia and to Switzerland. Russia has usurped many folk airs of the Ukraine, of Georgia, of Poland, of Lithuania, of Latvia, of Estonia and of Finland.

Historical events have left their mark on folk music. Many of the greatest patriotic airs were born during war days.

Five Classes of Folk Music. Folk music is usually divided into the following classes:

(1) Folk Dance Songs, the earliest type of folk music, sung by the people as an accompaniment to their simple games and dances.

(2) Legendary Folk Songs, airs sung for so many generations that the composer's name, if it ever was known, has long since been forgotten.

(3) Composed Folk Songs, usually of a later period; the name of the composer is known.

(4) Patriotic Songs, reflecting a love for native land and a desire to serve it. There are many patriotic songs of the legendary type, though the composer is generally known.

(5) National Compositions, musical works in which folk themes have been used. Sometimes the composer uses folk music from a land other than his own, an outstanding example being the opera *Carmen*, which uses Spanish characteristics, though the opera was written by a Frenchman, Georges Bizet.

A study of the folk music of every land will give one an amazing understanding of geographical and historical facts. Our modern music has been greatly influenced by folk music, and much of the national music of the past fifty years has been founded on nationality.

EARLY CHRISTIAN MUSIC

The history of modern music corresponds to the history of modern civilization since the beginning of Christianity. The early Christians, meeting in their secret chapels in the catacombs, based their chants on music that they knew. Therefore, many of their early chants were similar to those used by the Hebrews, the Greeks and the Romans. No musical instruments were permitted—partly because the Church fathers associated all instruments with the orgies of the Roman emperors, and partly because the Christians' services were held in secret.

Many chants were used by the various sects of the Church in the early centuries. When Saint Ambrose (340-397) became Bishop of Milan, these chants were collected. Desiring great music for his new church, and, anticipating the beneficial influence of music on the "barbarians of the North," Ambrose declared his Chant to be the standard of the



The Antiphonarium
Pope Gregory dictating the *Antiphonarium*.

Church service. It was based on the early Greek scales and was metrical; otherwise little is known regarding it. The collections of Ambrose were supplanted in the sixth century by chants arranged by the order of Pope Gregory (540-604). These are still the established chants of the Roman Catholic church. Gregory established schools for choristers and gave a definite form to the church service. The Gregorian Chants were founded on the later Greek modes, or scales, and were written down in a large book called the *Antiphonarium*, in a notation which indicated where the breath of the singer was to be taken. The Gregorian Chant spread throughout the Christian world, and in the monasteries and convents the science of music began its development.

In the tenth century, Hucbald, a monk of Flanders (840-930), made certain reforms in notation, using parallel lines to indicate the difference in pitch of the various tones. Hucbald believed that all harmonious combinations of tones should be based on the scientific relation of vibrations. A century later an Italian monk, Guido of Arezzo (995-1050), made some important discoveries regarding music and laid the foundation for all study of music since his time. A favorite hymn sung by Guido's choristers was called "To Saint John the Baptist." Noticing that each verse of the song followed the seven natural tones of the scale, Guido took the

Latin syllables of the text: *ut, re, mi, fa, sol, la* and *te* to represent the scale, and taught his singers by a system known as *solfeggio*, which is still in use. Guido used colored lines for his notation and employed the letters C, G and F to indicate each line. From this developed the clef signatures of our modern notation.

All these changes dealt principally with harmony and melody. No attempt to regulate rhythm was made until the thirteenth century, when Franco of Cologne established a system of notation for measuring music.



The Monochord
Guido explaining the monochord to Theodorus. From an ancient manuscript.

By the use of four kinds of notes he made it possible to indicate rhythm through notation. He was also the first theorist to distinguish between duple and triple time, and declared that triple measure represented the Trinity and was therefore the "perfect measure" for all church music.

MUSIC OF THE MEDIEVAL PERIOD

During medieval days, while the science of music was being developed by the monks of the Church, the really joyous folk music was sung and played by the people. The minstrel musicians traveled throughout Europe, recounting tales of adventure and romance to the accompaniment of the hand harp and rude stringed instruments played with a bow.

In France, such musicians were known as "jongleurs" or "jugglers." Often they were in the employ of the lordly troubadours or trouveres, who were gentlemen musicians of noble ancestry.

In Germany, the minstrel knights were called Minnesingers ("singers of love"). During the Age of Chivalry (twelfth and thirteenth centuries), they went to the Crusades and brought back more poetry, beautiful melodies and unusual musical instruments.

Among the lordly troubadours were such men as Richard the Lion Hearted, Thibaut, King of Navarre and Adam de la Halle. The latter, a hunchback of Arras, wrote *Robin and Marion*, and thus was the first person to attempt to tell a folk story through music. So popular were the tunes in this little operetta that several found a place in the church service and were sung for two centuries as a part of the church ritual.

The Minnesingers held their annual contests of song in the Wartburg Castle in Thuringia, Germany. Among the famous men of this order were Wolfram von Eschenbach, who wrote the earliest German legends of the Holy Grail; Gottfried von Strassburg, whose poem, *Tristan and Isolde* is of rare beauty; Walter von der Vogelweide; and Heinrich Tannhäuser. The Minnesingers were immortalized by Richard Wagner in the opera *Tannhäuser*. He received from their poetic works the inspiration for all his later music dramas.

When the nobility went to the Crusades, music passed into the hands of the common people. The guilds of jongleurs were started in France, while those of the Meistersinger (Mastersingers) flourished in Germany. The most famous German guild was that of Nürnberg, whose great poet-musician, Hans Sachs (1494-1576), was the contemporary of the wonderful painter, Albrecht Dürer. The Meistersingers had very strict rules for the construction of their songs, yet they did much to develop a love of beautiful music among the common people.

It was natural that during this period a love of music should spread all over Europe, and many definite schools of composition came into being. When the University of Paris was established (1100), the professor of music was given as high a rank as that of any other. In England, during the thirteenth century, there must have been a very remarkable musical school, for many great compositions date from that period. The most interesting is the old spring song "Sumer is icumen in," which is written in five independent parts in a style known as the "canon."

These schools of music spread through northern Europe, the most outstanding one being that of the Netherlands, which existed from the fifteenth to the seventeenth century. At this period the Netherlands led the world politically and commercially, so it was not strange that art and music should have been of the first rank there. All composed music at that time was written for choruses of singers. In the Gregorian or antiphonal chant, the two choirs answered each other. There then developed a new form known as "polyphonic" (many-voiced), each part having its individual development, but all being worked out by a method called "counterpoint," each voice conforming to the other voices.

In England, during the latter part of the sixteenth century (the Elizabethan Era), there was a great development in all the arts. Music attained such importance that every educated person was taught to sing, or to play on a musical instrument. The singing of simple ditties known as "rounds" or "catches," was a popular sport, those participating not realizing that they were indulging in a type of music which is today considered very difficult of performance.

The large Italian lute was the popular instrument of the nobility. This was a stringed instrument originally brought by the Crusaders from the East. It was exceedingly difficult to play and has become practically obsolete, its place being taken today by the mandolin and guitar.

The virginals, named from Elizabeth, "the Virgin Queen," were the favorite keyboard instrument. They were later superseded by the harpsichord, spinet and clavichord, which were the ancestors of our present-day piano.

In all the great courts of the world, particularly in those of England, France, Spain, Austria and Italy, dancing became more and more the vogue. Originally dances of the French peasants, the minuet and gavotte, became increasingly popular, vying with each other for favor during the seventeenth and early eighteenth centuries.

The minuet takes its name from the dainty small steps of the dancers; it is in $\frac{3}{4}$ time and of a stately, dignified nature. The gavotte took its name from the district in southern France where it was first danced, the people of the Pay du Gaps being known as "gavots." It is in $\frac{4}{4}$ measure, with its accent on the weak beat.

Other dances which became popular during the seventeenth century were the German peasant dance, the *allemande*; the *saraband*, a Spanish dance of Moorish type which the Italians developed; the *musette*, a shepherd dance accompanied by the bagpipes (musettes), from which it took its name; the *rondo* (rondeau), as popular in dance form as it was in verse; and the *gigue* (jig) a lively dance still popular in the British Isles.



Eisenach in Thuringia
The Wartburg Castle where the Minnesingers held their annual contests of song in the thirteenth century. Bach was born in Eisenach.

As these dances were originally folk tunes, they followed a definite three part pattern —dance, trio, dance. This grew out of folk dancing, as it was the custom for the two groups of dancers to alternate. The first group used one air and the second a contrasting theme, both then dancing to the original tune. As the second group was always accompanied by three instruments, the name "trio" was given to this section.

Some folk dances have only two parts, but the most used dance form was the three part pattern.

BIRTH OF OPERA AND ORATORIO

Meanwhile, as the science of music had developed great choruses and the folk were using instruments more generally, there appeared a great new musical form which combined the choruses, individual voices, instruments and dances. That form, which we call "opera" today, was first known as "music drama." It was born in Florence at the end of that great period of artistic development, the Renaissance.

At the close of the sixteenth century a group of Florentine noblemen, who were interested in restoring to the world the ancient Greek drama, decided that there must have been musical accompaniment to these early dramatic works. Because these men met in a room at the home of Count Bardi, they called themselves *the camerata* (*camera* being the Italian name for "room"). Two of the noblemen—Peri, a poet, and Rinuccini, a musician—produced in 1597 a work called *Dafne* in which the music, the drama and the interpreters were considered of equal importance. This early opera was lost. The first opera which has come down to us is *Eurydice*, written in 1600 for the marriage of Maria de' Medici to Henry the Fourth of France. Scores of this work were printed, and it was sent to all the courts of Europe with the result that interest in this new form, comprising all the arts. naturally grew apace.

In Rome, at the same time that the *camerata* were at work, a pious priest, St. Philip Neri, brought together the young people of his congregation to enact with musical accompaniment certain scenes from the Bible. As these were given in the Oratory of St. Philip's Church, the group of performers were named the "oratorians," and the scriptural music dramas which they enacted were called "oratorios."



Fifteenth Century Musicians

From Memlinc's *Christ and Angels*, in the Antwerp Museum. Executed originally for an organ case. Memlinc was a supreme detailist, and gives us the accurate manner in which these musical instruments were played. The two angels at the left are playing trumpets; the middle figure, a portable organ; next, a hand harp; at the right, a viol.

These two forms spread over Italy. In Venice, where a century before masters from the Netherlands had established a great instrumental school, the orchestra was of supreme importance. In Rome, where choruses were considered as the greatest factors in music, the oratorio was developed; while in Naples, where the art of beautiful solo singing (*bel canto*) had been ever popular, the great solo artists began to appear.

In France, Italian opera featuring dancing and the ballet was encouraged at the court.

In Germany, the Thirty Years' War made expensive productions of opera impossible; but there grew up at this time a great interest in the folk music of those countries engaged in this bloody struggle. The oratorio became a popular form with the German composers, and was used by both the Catholic and the Lutheran musicians.

In England, the early operas were preceded by dramatic works called "masks," which had musical accompaniments. Henry Purcell (1658-1695), who is still regarded as the greatest composer England ever produced, wrote several excellent operatic works.



The First Opera

The first page of the earliest opera, *Eurydice*, written in 1600 for the marriage of Maria de' Medici to Henry the Fourth of France.

In the early eighteenth century, opera and oratorio were the most popular choral forms, while the various dances were being developed by instrumental composers as *entr'actes* for all operas.

GREAT COMPOSERS OF MUSIC

Händel and Bach. The first half of the eighteenth century is dominated by two great composers, Händel and Bach. Born in the same year, 1685, and both Germans, they were the greatest organists and composers of their day. Yet neither ever saw the other nor heard him play, and probably knew nothing of his music.

Johann Sebastian Bach (1685-1750) was born in Eisenach beneath the shadow of the great Wartburg Castle. He was never out of Germany. He was first the court musician for the Prince of Anthalt-Cöthen, where he wrote his early suites and solo instrumental compositions, and later remained quietly at Leipsic as director of music of the St. Thomas Church (Lutheran). Here his greatest choral works and organ compositions were written. It has been said that if all the music written since Bach should be destroyed, it could be re-created on the foundation which Bach left.

The best Bach manuscripts were unknown until the middle of the nineteenth century. His greatest works were his Church cantatas, oratorios, *B minor Mass*, *Passion Music* for choruses, suites for orchestra, organ preludes and fugues, *Well Tempered Clavichord*, studies, concertos and sonatas for violin. He brought the fugue form to its culmination.

Georg Friedrich Händel (1685-1759) is identified not only with the German classical school by reason of birth, but because of education and circumstance is also associated with the Italian and English schools. Händel was a brilliant musician of Hanover who, attracted by the Italian opera, pursued his study in Italy. The form of *opera seria* held sway at this time, and Händel's works were written in that now obsolete form. That, then, is the reason why one rarely hears more than an occasional aria from any of the forty operas which Händel composed. Händel lived for many years in England, where he directed Italian opera. In his later life he devoted his entire time to oratorio, and his greatest works, *The Messiah*, *Samson*, *Saul* and *Judas Maccabeus*, are in this form.

Although a brilliant organist, Händel wrote little for the instrument and left but few orchestral compositions. However, his use of the instruments in his great choral works proves that he had a real understanding of their worth.

The forms in use at the time of Bach and Händel were: the suite, a collection of the old dances preceded by an overture; the serenade, a collection of simple song melodies similar to the suite; the sonata, generally in three movements; the concerto grosso, which was a combination of the sonata and the suite and was written for the orchestra. The orchestra in those days was divided into two

antiphonal choirs—one group being the soloists, the other, the accompanists. The term symphony (from the Latin *sonare*, "to sound") was used to designate any instrumental music in distinction to that which was sung. Shorter forms used at this time were the prelude, the fantasia and the fugue.

Gluck, A Reformer of Opera. In the field of opera in the late eighteenth century, a great and needed reform was brought about by Christoph Wilibald Gluck (1714-1787) who, although an Austrian by birth, was educated in Italy and gave to France her own school of opera, sung in the French language. Gluck realized that the opera had lost much of its true dramatic value through the over indulgence of singers and their desire to display their attainments. He therefore boldly returned to the principles of the *camerata*: that music, drama, interpreter and audience should be of equal importance. His overtures became a part of the musical work, serving to prepare the audience for what should follow; his arias, duets and concerted numbers were dramatically conceived, and singers were not allowed to interrupt dramatic narratives to sing meaningless roulades and trills. Gluck declared that "simplicity and truth are the sole principles of the beautiful in art." He wrote thirty operas of which *Orfeo*, *Alceste*, *Armide*, *Iphigenia in Aulis* and *Iphigenia in Taurus* are the greatest.

Haydn, Father of the Symphony Orchestra. While Gluck was working out the problems of opera, another Austrian composer, Franz Joseph Haydn (1732-1809), was doing a similar service for the orchestra. Haydn is known as the "Father of the Symphony Orchestra," for it was he who divided the orchestra into its present four choirs, grouping the instruments according to their families—strings, woodwinds, brasses and percussion instruments. Haydn established the string quartette, an organization which consists of first and second violins, viola and violoncello (cello).

He established, too, the pattern on which the greatest instrumental music has been built since his day. This is the sonata form, developed from the old forms used by Bach and his son, and by the later Italian composers. Haydn's pattern consists of a short, slow, introduction (sometimes omitted) and a rapid movement developed from two contrasting subjects. These subjects, which are in related keys, are first stated, then repeated, followed by a development which the composer called the "free fantasia," and then restated (both in the same key), after which a short coda, or summing up of the material, brings the work to a conclusion. This sonata form became at once the accepted pattern for the first movement (sometimes the final one, also) of sonatas, trios, quartettes and symphonies, and with slight modifications became the plan for overtures and concertos. The sonata for a single instrument or for any two, the trios, and quartettes generally consisted of three movements. First, an *allegro* or slightly rapid, gay movement, following always the sonata form; second, a slow *andante* or *adagio*, usually in the song form. Occasionally, however, the sonata form or the theme and variations form were used. The third or last movement was in the rondo form. This developed from the popular verse of the day and existed in several patterns, the most used being: theme, first contrasting theme, original theme, second contrasting theme, original theme, first contrasting theme, original theme. The finale sometimes was in the sonata form, and occasionally it was a theme and variations. Often introduced between the second and last movements was a dance movement—generally the ever-popular minuet—always following the regular dance pattern of minuet, trio (contrasting dance), minuet. The minuet was always used as the third movement of Haydn's symphonies, and is found in almost all of his trios and string quartettes.

Haydn wrote nearly 700 instrumental compositions, of which 125 are symphonies, seventy-seven are string quartettes, and thirty are trios (violin, cello and piano). He also wrote a number of operas, now obsolete, and several excellent oratorios of which *The Creation* and *The Seasons* are considered his best. Haydn was the teacher of both Mozart and Beethoven.

Mozart, Musical Prodigy. The first great musical prodigy, Wolfgang Amadeus Mozart (1756-1791), was one of the most spontaneous melodic composers in the history of music. As a boy, this wonder-child, playing both the violin and harpsichord, traveled all over Europe. When he settled in Vienna, he was familiar with every type of musical expression. His genius poured forth a continuous stream of over a thousand musical compositions, many of which were never published. Of his forty-nine symphonies, three—in *G minor*, in *E flat* and *Jupiter*—written in six weeks during the summer of 1788 are considered among the world's greatest works in this form. His sonatas, trios, quartettes and concertos still rank with the highest expressions in those forms.

Mozart's operas have held the stage because of their sparkling melodies and great beauty, despite the fact that Mozart heeded but slightly the reforms suggested by Gluck. Mozart's greatest operas are *Marriage of Figaro*, *Magic Flute* and *Don Giovanni*.

Beethoven, Master of the Symphony. The greatest personality in the history of music was Ludwig van Beethoven (1770-1827), a man whose colossal genius has been frequently compared to that of the mighty painter and sculptor, Michelangelo.

The personal history of this great man was tragic, for deafness came upon him while he was still young and his entire life seems to have been a struggle against fate. It has been the custom to refer to Beethoven as the last of the Classic School, and the beginning of the Romantic; for, while he used the classic forms, he was the first composer to reflect in music his personal feelings. Living at the time when Napoleon was changing the map of the world; when "universal brotherhood" was the cry of all nations, it is not strange that Beethoven's works should have overstepped the formal restrictions of the days of kings and petty princes. Beethoven wrote in all forms, his greatest works being the nine symphonies for orchestra, five concertos for piano, one for violin, the opera *Fidelio*, the oratorio, *Mount of Olives*, the *Mass in D*, thirty-two sonatas for piano alone, nine violin sonatas, sixteen quartettes, and many smaller works for chamber music combinations. He also wrote about 250 songs, of which over 150 are settings of folk songs from Great Britain.

Beethoven's works are regarded as the supreme models of symphonic writing. He brought the sonata form to its culmination, yet he also opened the way to the future by his dramatic use of the orchestral instruments, and through his descriptive music.

Schubert, a Spontaneous Musician. Living at the same time as Beethoven was one of the greatest spontaneous musicians ever known. Exquisite melody flowed from his pen and he wrote in all forms. This great genius was Franz Schubert of Vienna (1797-1828)—a man who, throughout his short life, wrote over 650 songs (including part songs and masses), eighteen dramatic works, twenty-four piano sonatas, twenty string quartettes and ten symphonies, besides a countless number of short instrumental fragments. Many of Schubert's compositions he never heard; they were found after his death by Robert Schumann.

Although all of Schubert's compositions are rarely beautiful, his songs are his outstanding contribution to music. His musical accompaniments are of as great importance as is the voice part in reflecting the dramatic meaning of the text.

Weber and the Romantic School in Germany. Contemporaneous with Beethoven and Schubert was another German, Karl Maria von Weber (1786-1826). *Der Freischutz* (The Freeshooter), Weber's first opera, produced in 1821, gave to Germany her first opera sung in the German language by German singers, telling a German folk story through the medium of German folk music.

It is the custom to speak of this period as the Romantic School, in contradistinction to the Classic School, which had preceded it. In art and literature, as well as in music, the Classic Period was the time when there was reflected in every creative work ideal beauty which followed definite, formal patterns of construction. The Romantic Period was that time when formal restrictions were changed or discarded, in order that the artist might present his individual thoughts in his own way. This individuality in music is generally expressed through program or descriptive music, by the use of national folk music idioms, or by brilliant instrumental passages of such difficulty that only a virtuoso (one possessing rare technique) could interpret them.

Mendelssohn and Schumann. The two greatest composers associated with the German Romantic School are Felix Mendelssohn-Bartholdy (1809-1847) and Robert Schumann (1810-1856). Both were highly educated, refined men who brought their rich background of historical and literary associations to their music. Mendelssohn possessed a greater melodic gift, but Schumann was more dramatic. Mendelssohn wrote in all forms except opera, although his incidental music for Shakespeare's *A Midsummer Night's Dream* ranks with any operatic work. His greatest oratorios were *St. Paul* and *Elijah*. He also wrote four symphonies, seven concert overtures, two piano concertos, a violin concerto, seven quartettes and other compo-

sitions for chamber combinations, eight books of piano numbers known as *The Songs Without Words*, many short compositions for piano and other instruments, and eighty songs, duets and quartettes.

Schumann was not only a great composer but the first great music critic. His praises introduced to the musical world Berlioz, Chopin, Liszt, Wagner and Brahms, besides making known the true greatness of Bach and Schubert. As a composer, Schumann excelled in short but exquisite compositions for the piano. For orchestra he left four concert overtures and four symphonies, beside concertos, sonatas and many chamber music compositions. His opera, *Genoveva*, was not successful; but his incidental music for *Faust* and *Manfred* is still given. Schumann wrote over 200 songs, many ranking with those of Schubert.

At this time a new form, the concert overture, came into existence. It bore a title, and was program music inasmuch as it was descriptive and told a definite story; it was a free adaptation of the sonata form pattern.

Composers of the Romantic School in France. In France, the ideals of romanticism were carried to a far greater extreme than in Germany. The Court of Louis Philippe attracted to Paris all the greatest artists of the day, while the French public, satiated with the horrors of the recent Revolution, demanded that their literature and art should all be extremely sensational. To Paris came the great violinist, Niccolo Paganini (1782-1840), whose dazzling technique laid the foundation for the present-day school of violin playing; came also Franz Liszt (1811-1886), the brilliant Hungarian pianist, and Frederic Chopin (1810-1849), the young "poet pianist" of Poland. The greatest French composer of the day was Hector Berlioz (1803-1869), called by Schumann the "uncompromising champion of program music." Berlioz wrote almost exclusively for the orchestra. He possessed a dazzling virtuosity in orchestral composition, and his uses of the instruments were always startling and unusual. All his compositions were descriptive, and he frequently used a definite theme, which he called "the fixed idea," to designate certain characters. His operas are rarely given today, although his dramatic cantata, *The Damnation of Faust*, is frequently produced in the world's opera houses. His greatest works are his dramatic symphonies, *Episode in the Life of an Artist*, *Harold in Italy* and *Romeo and Juliet*.

Chopin, Poet of the Piano. Frederic Chopin came to Paris from his native Poland in 1831, and his poetic genius attracted the attention of the musical world. With the exception of a few songs, Chopin wrote only for the piano. His two concertos are his largest works. He also wrote four sonatas, but his greatest compositions were his small pieces for his chosen instrument. Chopin was the first great composer to use the folk dances of his native land; and his mazurkas, polonaises and waltzes are among his most popular works. He left nineteen nocturnes, twenty-five preludes, twenty-seven études, four ballades, three fantasias, besides many other short compositions.

Franz Liszt, Dazzling Virtuoso. Franz Liszt, who was a Hungarian by birth, went to Paris to pursue his education as a composer. His pianistic ability attracted such attention that he soon became the center of the artistic group of the French capital, and was recognized as the most dazzling pianist of his day. In 1849 he accepted the position of Court music director at Weimar, and from that time was known chiefly as a composer. Liszt used Hungarian melodies in the same remarkable manner that Chopin had used those of Poland. His fourteen *Hungarian Rhapsodies* are still his most popular works. He wrote with great dramatic intensity for orchestra, all of his works following the lines of program music. His greatest symphonies are based on Dante's *Divine Comedy* and Goethe's *Faust*, while his symphonic poems were inspired by various literary and historical works. Liszt created a new form in the symphonic poem (an adaptation of the sonata form), a work which bore a title and followed a definite dramatic program. There were two main subjects, but these were so developed that frequently the entire character of the work itself was changed. Liszt did much to aid the musicians of his time, and his help to Wagner was chiefly responsible for the development of the Wagnerian music drama.

Writers of French Grand Opera. The French Romantic School brought forward the French grand opera, which supplanted the earlier *opera seria* of Händel's day. Many of the great names associated with this form are of Italian composers, who came to Paris at this time.

Luigi Cherubini (1760-1842) was for many years head of the Paris Conservatory. Gasparo Spontini (1774-1851); Gioachino Rossini (1792-1868), whose *Barber of Seville* and *William Tell* are still popular; Gaetano Donizetti (1797-1848), composer of *Lucia di Lammermoor*, *Daughter of the Regiment*, and *Don Pasquale;* and Vincenzo Bellini (1801-1835), whose *Norma* and *Sonnambula* are the joy of coloratura sopranos, are among the great Italians identified with this school.

The most spectacular opera composer of the day was a German who took the Italian name of Giacomo Meyerbeer (1791-1864). His works were all written to dazzle and amaze. His operas, *Robert the Devil*, *The Huguenots* and *The Prophet* are still given all over the world.

There were also a few French composers of opera at this period, among them being Méhul, Boieldieu, Auber, Hérold and Halévy. Although they wrote excellent operas, these men were completely overshadowed by the more spectacular works of their foreign competitors.

Richard Wagner and the Music Drama. A great change came at the end of the Romantic School through the advent of the mighty Richard Wagner (1813-1883)—a figure who stands in the same relation to the music drama that Beethoven does to the symphony. In his first opera Wagner strove to outdo the French grand opera composers, and *Rienzi* (1842) brought him fame and fortune. But Wagner, while writing this work, realized the dramatic absurdities of this type of expression. He felt that the only right principles for dramatic composition were those which had been held by the Florentine *camerata* and by Gluck in his attempted reforms. In *The Flying Dutchman* and later in *Tannhäuser* and *Lohengrin*, Wagner set forth his amazing new ideas which, although based on principles before attempted, were still new. Wagner used for each character, as well as for many inanimate objects, a definite characteristic theme or leitmotif (leading motive). To make these themes more prominent, each character had his own individual instrument or group of instruments. The overture or prelude was written to prepare the audience for the action which was to follow on the stage, and each act was preceded by its own prelude.

Wagner wrote his own librettos, basing them on great German legends. His greatest works following *Lohengrin* (1850) were *The Ring of the Nibelungs*, a cycle which consists of four operas: *The Rhinegold*, *The Valkyrie*, *Siegfried* and *Dusk of the Gods* (Götterdämmerung); *Tristan and Isolde*, *The Mastersingers* and *Parsifal*.

Feeling that these great works needed an ideal performance, Wagner and his friends, aided by the generosity of Ludwig II of Bavaria, "The Mad King," erected in Bayreuth, Germany, an opera house devoted exclusively to the production of Wagner's works. Wagner used the orchestra in a most striking and unusual manner. His influence on the composers who have followed him is far greater than that of any other writer of music. Every composer since his day has reflected Wagner's principles. This is particularly noticeable in the operas of the great Italian, Giuseppi Verdi (1813-1901), whose early works were modeled after the Italian operas of the period.

Verdi and his Followers in the Modern Operatic School of Italy. In *Rigoletto*, produced the year after *Lohengrin*, Verdi shows a great dramatic power. This opera was followed by the rapid composition of *Il Trovatore*, *Traviata*, *Sicilian Vespers*, *Masked Ball* and *Force of Destiny*—all composed within ten years. His third period produced his greatest works (which clearly show Wagner's influence), and have rightly placed Verdi in the seats of the immortals. *Aïda*, *Otello* and *Falstaff*, the last written when the composer was eighty, are regarded as the most significant Italian operas.

Following Verdi in the modern operatic school of Italy were Arrigo Boito (1842-1918), whose greatest work was *Mefistofele;* Amilcare Ponchielli (1834-1886), with *Gioconda;* Ruggiero Leoncavallo (1858-1919), *I Pagliacci* and *Zaza;* Pietro Mascagni (1863-), *Cavalleria Rusticana* and *Iris;* Alberto Franchetti (1860-), *Germania;* Umberto Giordano (1867-), *Andrea Chénier*, *Fedora* and *La Cena della Beffe;* Giacomo Puccini (1858-1924), *La Bohème*, *Tosca*, *Manon Lescaut*, *Madame Butterfly* and *Girl of the Golden West;* Ermanno Wolf-Ferrari (1876-), *The Secret of Suzanne* and *The Jewels of the Madonna;* Riccardo Zandonai (1883-), *Conchita* and *Francesca di Rimini;* and Italo Montemezzi (1875-), *The Love of Three Kings*.

Of these composers, Puccini was not only the most popular, but the most prolific as well. His works have been successful all over the world. Possessed of a great dramatic gift, Puccini always used broad and beautiful melodies, and his operas are regarded as the most popular works of the modern day.

Italian Instrumental Composers. There was practically no instrumental school in Italy from the seventeenth century until that founded by Sgambati (1843-1914), a pupil of Liszt. Among his followers were Martucci (1856-1909), Busoni (1866-1924) and Bossi (1861-1925). Perosi (1872-) has written great church music in the style of Palestrina. The greatest modern masters of Italy today—Respighi (1879-) Cassella (1883-), Malapiero (1882-), and Pizzetti (1880-)—are chiefly concerned with instrumental development.

Brahms and Absolute Music. Johannes Brahms (1833-1897) was the greatest modern master of absolute music; that is, music in which formal pattern is of greater importance than descriptive program. Ranked with Bach and Beethoven, Brahms is considered as one of the greatest symphonic writers in the history of music. He wrote no operas, his largest choral work being *The German Requiem*. He left many short piano compositions, exquisite songs, quartettes and chamber music, concertos for violin and piano, and four great symphonies.

Other modern masters of absolute music in Germany were: Joseph Rheinberger (1839-1901); Anton Bruckner (1824-1896); Max Bruch (1838-1920); Gustav Mahler (1860-1911); Georg Schumann (1866-1924); Max Reger (1873-1916).

MODERN SCHOOLS OF MUSIC

Modern German Writers. German, writers, who followed after Wagner and Liszt were: Karl Goldmark (1832-1915), a Hungarian by birth; Engelbert Humperdinck (1854-1921), whose *Hänsel and Gretel* is one of the most popular operas today; and Hugo Wolf (1860-1903), who was one of the greatest masters of song writing. A modern German, who has startled the musical world by his disregard of all established rules of form and composition, is Arnold Schoenberg (1874-). His followers, Franz Schrecker (1878-), Ernst Krenek (1900-) and Erich Korngold (1897-), are attempting musical combinations that seem impossible.

The Modern French School. In France, the operatic genius following Meyerbeer was Charles Gounod (1818-1893), whose *Faust* is the outstanding opera in popular favor. Gounod's other operas, except *Romeo and Juliet*, are rarely heard.

Also popular is the opera *Mignon* by another French composer, Ambroise Thomas (1811-1896), whose other works for the operatic stage are not often presented.

Contemporaneous with Brahms in France was César Franck (1822-1890), rightly regarded as the true founder of the Modern French School. Franck wrote in the polyphonic (many-voiced) style of Bach, yet all his compositions were filled with poetic mysticism. His greatest choral work was *The Béatitudes*. He wrote many compositions for piano and organ, exquisite works for chamber music combinations, many beautiful songs, symphonies and symphonic poems. His *Symphony in D minor* ranks with the greatest works in that form.

Franck had many followers, among them being Vincent d'Indy (1851-), Alexis Chabrier (1841-1894), Alfred Bruneau (1857-), Ernest Chausson (1855-1899), and the great organists, Alexandre Guilmant (1837-1911), Théodore Dubois (1837-1924), Gabriel Fauré (1845-1924) and Charles Widor (1845-).

Camille Saint-Saëns (1835-1921) was one of the most prominent of modern French composers. He wrote in all forms, his greatest works being the opera *Samson and Delilah*, and his symphonic poems.

The most unique of modern composers was Claude Debussy (1862-1918), who was the most prominent of those modern musicians who have returned to the old Greek scales and modes. Debussy left many short pieces for piano, exquisite songs, and chamber music compositions. His largest and most important work was the music drama, *Pelléas and Mélisande*. Debussy had many followers in every land, the best French composers who have made use of his principles being Maurice Ravel (1875-), Florent Schmitt (1870-) and Paul Dukas (1865-).

A strange genius of the Modern French School was Erik Satie (1866-1925) who, with Schoenberg and Stravinsky, has utterly abolished past rules of composition. A group of his followers are known as "The Six." Of these strange musicians, Milhaud, Poulenc and Honegger (the latter in his opera *Judith* and with his compositions for orchestra) are attracting world recognition.

The Russian School. The feeling for national expression which came into music with the Romantic School has developed and increased among modern composers of every country. In addition to the existing schools of Italy, France, Germany and England, the last half of the nineteenth century also saw the development of great national schools in Russia, Scandinavia and Bohemia. Of these the Russian School, founded by Anton Rubinstein (1830-1894), is undoubtedly the most important. The early composers identified with the Russian School were men of other professions, who gave up their work for the cause of Russian music.

The first great Russian composer was Michael Glinka (1804-1857) whose opera, *A Life for the Czar*, was the first Russian work in this form. Associated with Anton and Nicholas Rubinstein in the new Russian Schools of St. Petersburg and Moscow were Cesar Cui (1835-1918); Borodin (1839-1881); Rimski-Korsakow (1844-1908); Moussorgsky (1839-1881); Balakirew (1837-1910), and Tschaikowsky (1840-1893). The latter ranks as one of the most popular of modern composers. He wrote in all forms. His operas, *Eugen Onégin*, *Jeanne d'Arc* and *Pique Dame*, are regarded as his best. He left six great symphonies, concertos for piano and violin, many dramatic concert overtures, ballet suites, much chamber music, and many short piano compositions and songs. Like the other Russian musicians, many of his compositions are based on Russian folk songs. He used the orchestra always in a striking and unusual manner, his characteristics being excessive melancholy or extreme gayety. Rimski-Korsakow was a popular, brilliant master of orchestration and had many followers, chief among them being Alexandre Glazounow (1865-1921), Anton Arenzky (1861-1906) and Sergei Rachmaninoff (1873-), a great pianist as well as composer.

One of the most amazing of modern day composers was Alexandre Scriabin (1872-1916) who, in his later years, led an open revolt against all formal restrictions and rules of composition. Followers of Scriabin are Sergei Prokofieff (1891-) and Igor Stravinsky (1859-), the latter being rightly regarded as one of the greatest leaders of present day music.

Other great Russians of today are Ippolitow-Ivanow (1859-), Gliere (1875-), Gretchaninow (1864-), Rebikow (1866-), Medtner (1879-). All of these writers use Russian folk themes, but are also deeply imbued with the most extreme theories of modern tonal combinations.

Modern Music of Scandinavia. The founder of the Scandinavian School of music was Niels Gade (1817-1890), a Dane who was greatly influenced by the Romanticism of Schumann and Mendelssohn. The great Norwegian violinist, Ole Bull, (1810-1880), was exceedingly fond of the folk tunes of his native land, and played them all over the world. He encouraged Edvard Hagerup Grieg (1843-1907) in his musical work, and Grieg became the most popular of the composers of Norway. Grieg wrote no symphonies and but few large orchestral works; yet his shorter compositions for piano and violin, and his many lovely songs, won for him world recognition. The incidental music for Ibsen's drama, *Peer Gynt*, as arranged in two orchestral suites, is Grieg's best-known work. Also popular are his great piano concerto and his sonatas for violin and piano. All of Grieg's works are in the Norwegian musical idiom, and are outstanding examples of modern national composition. Other Norwegian composers are Johann Svendsen (1840-1911) and Christian Sinding (1856-), the latter regarded as Grieg's successor.

Sweden has not yet produced a Grieg, although Sodermann (1837-1876), Sjogren (1853-1918) and Tor Aulin (1866-1914) have all used Swedish folk material effectively in their compositions.

Finland, except by location, should not be linked with Scandinavia, yet its music school is generally classified in this way. An amazing musical personality is found today in Finland in the person of Jan Sibelius (1865-) who, in his great tone poems for orchestra, as well as in his songs and smaller compositions, has imbued all his works with the mysticism and rare beauty of his far-away land. Jarnefelt (1878-) and Palmgren (1869-) are using ultra-modern methods of expression, yet have retained many characteristics of the Finnish folk music.

Bohemian Composers. Czechoslovakia or Bohemia, as part of it was known before the war, has always been regarded as a most musical country, although it has only been in the modern day that this land has possessed its own school of music. Friederich Smétana (1824-1884), a pupil of Liszt, was the first to write a Bohemian opera. His *Bartered Bride* tells a folk tale in the Bohemian language with Bohemian folk tunes. Smétana also wrote six symphonic poems descriptive of scenes in Bohemia and of events in her history.

The greatest Bohemian composer was Anton Dvořák (1841-1904), who wrote in all forms and is regarded as the greatest modern master of national composition. He used

original themes, but always in such a characteristic manner that they seemed to have been born of the people. Dvořák lived in America for several years, and was the first to bring to the attention of the musical world the importance of America's native folk music. His symphony, *From the New World*, is based on American folk music. Dvořák's greatest works are the *Slavonic Dances*, five symphonies, symphonic poems, many charming chamber music compositions and songs. His operas are rarely presented; but his oratorios, *Stabat Mater* and *Requiem*, are frequently given by choral organizations.

Two later Bohemian composers were Suk (1874-1924) and Fibich (1850-1900).

Modern Spanish Composers. A recent group of national composers to attract the attention of the musical world come from Spain. The founder of the modern school in Madrid was I. Albeniz (1860-1909), a pupil of Liszt. He used Spanish folk airs as the basis for his compositions. The greatest talent of his school was Enrique Granados (1869-1916) whose remarkable opera, *Goyescas*, received international recognition. Granados lost his life during the World War when the boat on which he was returning from America was sunk by a German submarine. Manuel de Falla (1876-) is now attracting much attention because of his remarkable ability to combine the folk melodies of Spain with the most extreme principles of modernism.

Modern English Composers. In England the outstanding composer today is Sir Edward Elgar (1857-), who ranks among the greatest of living musicians. Elgar's largest works are the oratorios, *Dream of Gerontius* and *Caractacus*. He has written several symphonies, concertos and overtures for orchestra, as well as chamber music, organ compositions and songs.

An unusual composer was Samuel Coleridge Taylor (1875-1912), an English Negro, who used African and American Negro melodies in many of his works.

Other modern English composers include Sir Arthur Sullivan (1842-1900) who, together with the talented librettist, W. S. Gilbert, gave the world several of its best comic operas—*Pinafore*, *Pirates of Penzance*, *Iolanthe* and *Mikado;* Arthur Goring Thomas (1850-1892), Edward German (1862-), Liza Lehmann (1862-1918), and Granville Bantock (1868-).

A unique personality of the modern English school is Percy Grainger (1882-) who, although born in Australia and now a naturalized American, is using English folk tunes in the ultra-modern manner.

Cyril Scott (1879-), known as "The English Debussy" is a follower of the French master, but he uses English folk melodies. So, also, does Ralph Vaughn Williams (1872-), whose *London Symphony* is regarded as one of the greatest recent works.

Other English composers of today are Frank Bridge, Frederick Delius, Arnold Bax, Gustav von Holst and Eugene Goosens.

American Music. Our music in America is only in its earliest development for, like every other country, we have had to wait until the position of our country as a world power should be firmly established. Since the World War, a remarkable interest in American music is taking place throughout the world. Although all of our greatest musicians in the past were trained in foreign schools or were of foreign birth, we had much native talent here which was unrecognized.

The music of the American Indian is of far greater importance to American music than many of us realize. Each tribe had its own music as it had its own language. The savage tribes, constantly on the warpath, used the drums or tom toms with reiterated rhythms; but among the peace-loving tribes, the flute songs were the most popular, the flute being the most cherished possession of the Indian chief. The Navajos, outstanding lovers of peace, are said to possess more than 15,000 different songs. All the Indian songs have legendary stories, for they recall the important ceremonies and history of the different tribes. Indian mothers sing lullabies to their babies, sometimes using as a refrain the flute love call theme which was sung as a wooing song during the days of the father's courtship. Many tribes have work songs, while the medicine men use songs and dances for the cures for all diseases. Indian themes have been used as the basis of musical works by many American composers, including Charles Wakefield Cadman, Thurlow Lieurance, Arthur Farwell and Charles Sanford Skilton.

The music of the American Negro is more interesting than any other American folk expression. It was but natural that, during the days of slavery, a distinctive musical expression should come into being. All people who are oppressed or denied political freedom reflect in their rhythmic expression their desire for liberty. This breaking-over of rhythmic laws is called syncopation. Singing always binds closely any oppressed people and the high, close harmonies heard when Negroes sing together is an outstanding characteristic of their music. Like other primitive peoples, the Negro always showed his religious enthusiasm by his personal appeal to his Maker, and the Negro spirituals are rightly regarded as the most unique and beautiful "folk songs of sorrow" found in musical literature. There are two types of spirituals: those of the "Lower South" being intensely sad and reflecting the dread of being sold into deeper slavery "down river," while the "Upper South" spirituals are of a happier character, frequently using dance rhythms and reflecting the carefree nature of the Negro whose life on the plantation was a fairly contented one. Negroes have always sung as they have worked, and many of their work songs are characteristic of the occupation of the singers. The dance and play songs are very gay and lively. Among the Louisiana Negroes, many of the songs are tinged with French feeling and Spanish rhythms. Many American composers have used Negro themes and there have also developed, in recent years, a distinctive group of composers of Negro blood, among them being Henry Burleigh and Nathaniel Dett.

Another distinctive folk expression of America is the music of the cowboys. Just as in medieval days, the singing of ballads by the bard or minstrel was the chief entertainment of any large group, so in the old ranch houses, after a hard day's work, the cowboys used to meet and sing songs telling of their various adventures. Some of the airs were old ballad tunes which they had known in their homes in the East; others they made up as they sang. When driving the cattle "over the trail," in search of the fresh, green grass, the chief danger to the cowboys was that of a stampede. In order to quiet the cattle and avert a panic, the cowboys would ride around the herds all night singing to the cattle the "Dogie Songs" or "Cattle Lullabies." To keep the dogies (yearlings) on the trail, the cowpuncher used sharp, rhythmic cries, which developed into a definite type of cowboy song.

Another distinctive type of American folk song is to be found among the mountaineers of the Appalachian range. Many of these were originally old folk songs of Great Britain. Many of the words of these songs were changed by the different conditions under which the singer was living. Also many entirely new songs have developed. The young people of the mountains loved to dance to the old fiddle tunes of their ancestors and many of our simple pioneer dance tunes, like "Turkey in the Straw," "Arkansas Traveler" and others came into being from the old mountain fiddlers.

From the beginning of America's first settlements, music has been coming to our land from other countries, and much of this has been assimilated and made our own. The Puritans did not believe in singing and dancing, and they chanted their hymns and psalms in a monotonous drone. Yet some fine old hymn tunes developed from the Puritans. When the early Scotch and Irish colonists came into New England, they brought their love of song with them.

The first English settlers of Virginia brought their old ballads and their homes were filled with the stately dance-tunes they had known at home. But when the Negro musicians began to play for their masters minuets and gavottes and the gayer country dances, popular in England, the character of these compositions changed most decidedly and became the "Virginia Reel" and the old jig tunes so popular in Colonial America.

The French colonists brought many interesting songs, which are to be found, not only in French Canada, but all through the Great Lakes region and down the Mississippi to New Orleans. When the French Canadian pioneer ventured forth into the wilderness, he was called a "voyageur," and as many of these brave men were identified with America's lumber industry, their songs became identified with the logging camps. The "Voyageur" songs are another important addition to the folk music of America.

Spain made her colonies in America chiefly in the Southwest and in California, and here is to be found another distinctive type of American folk music. This Spanish influence is also to be noted among many of the Indian tribes of the Southwest.

At the time of the American Revolution, the majority of the popular songs of America were those that had come from other lands. One of the signers of the Declaration of Independence, a man who was Washington's legal adviser and helped to make the American Constitution a reality, was Francis Hopkinson (1737-1791); he was also a com-

poser of many excellent songs in the style of his day.

The greatest writer of composed folk songs was Stephen Foster (1826-1864), whose lovely plantation airs are known all over the world.

During the Civil War, the greatest patriotic songs any country has ever possessed became the inheritance of America. George F. Root was doubtless the most popular writer of the day, and his great songs, "Battle Cry of Freedom" and "Tramp, Tramp, Tramp" are still sung and loved. Henry C. Work, Walter Killridge and Louis Lombard also wrote popular favorites. The tune of "The Battle Hymn of the Republic" was originally an old hymn tune written by William Steffe, which many people believe was at first a spiritual. Julia Ward Howe, the great Boston poetess, wrote the verses we now sing to the old air.

Since the Civil War, much of the folk music of the old world has been brought into America by those who have come here from other lands. Our future American folk music will doubtless contain many of the old songs which the immigration of the late nineteenth century brought to us.

The most individual genius in America's music was Edward MacDowell (1861-1908). MacDowell used both Indian and Negro folk idiom in many compositions; yet in all his works he reflected the highest ideals of true American spirit. His largest works were his symphonic poems, two orchestral suites (one of which is founded on the airs of the American Indian) and his concertos. MacDowell wrote four great piano sonatas, many beautiful songs, and countless short tone poems for his favorite instrument, the piano; but his fame rests chiefly on such poetic and fanciful short piano compositions as the "Woodland Sketches," "New England Idyls," "Sea Pieces" and "Fireside Tales."

It is hard to classify the American composers, for they are many, and we are too near them to recognize their true greatness. To mention but a few of the early school who received recognition in Europe as well as America, we record John Knowles Paine (1839-1906), Director of Music at Harvard University; Dudley Buck (1839-1909), who exerted a great influence on organ playing and choral development; Horatio Parker (1863-1920), the Director of Music at Yale, and George W. Chadwick (1854-), the Director of the New England Conservatory. Edgar Stillman Kelley (1857-), Henry Gilbert (1868-1928), Ethelbert Nevin (1862-1901), Reginald De Koven (1859-1920) and Victor Herbert (1859-1924) all have won world-wide fame. Our "March King," John Philip Sousa (1854-), is known in every land.



House of Dreams Untold

The "House of Dreams Untold"—the log cabin in the woods at Peterboro, New Hampshire, where MacDowell composed, and where most of his later music was written.

Among our adopted Americans are Charles Edward Loeffler (1861-), Walter Damrosch (1864-), Ernest Bloch (1880-) and Frederick Stock (1872-).

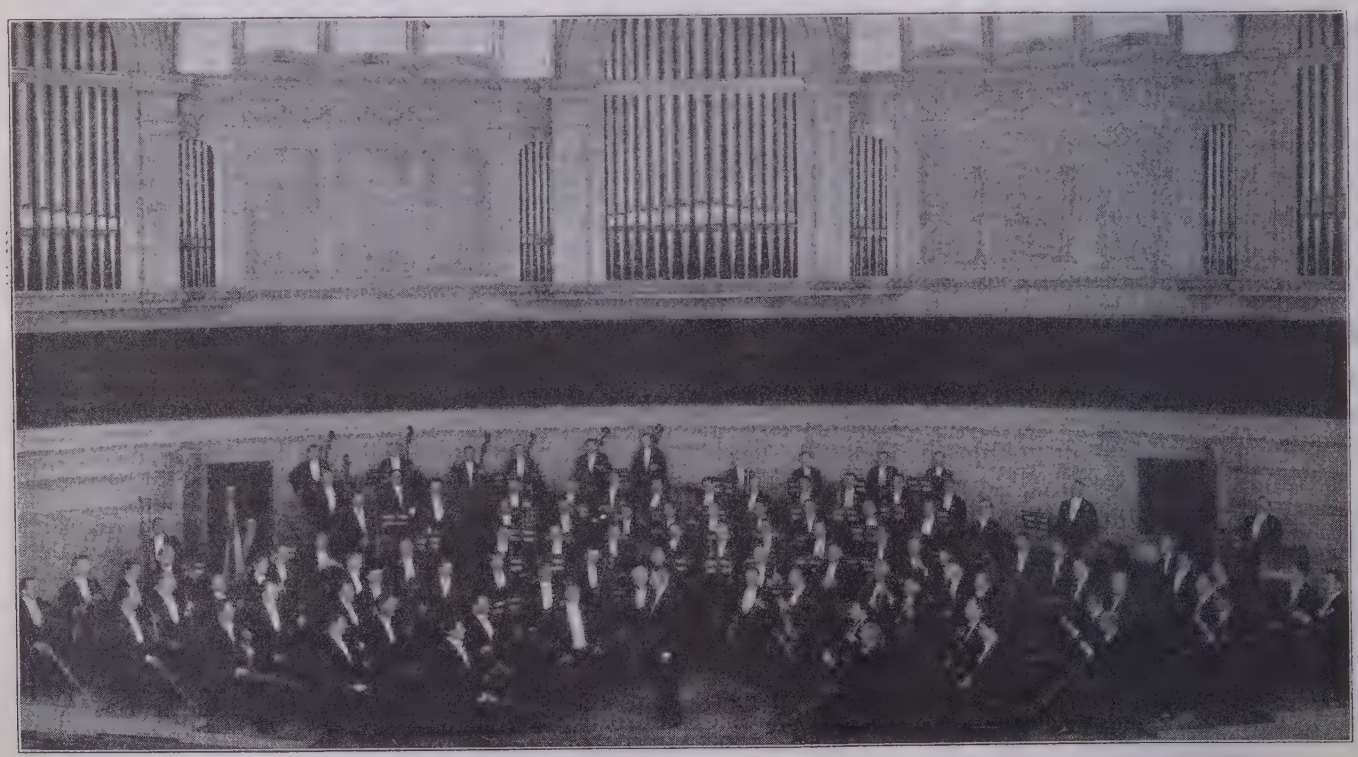
The greatest woman composer now living is Mrs. H. H. A. Beach (1862-), an American who is recognized all over the world.

Outstanding American composers of today are Ernest Schelling (1876-), John Alden Carpenter (1875-), Deems Taylor (1885-) and Leo Sowerby (1895-).

MODERN MUSICAL INSTRUMENTS

The Symphony Orchestra. The most important group of musical instruments is the symphony orchestra, which is divided into four groups, or choirs, of instruments related by their tonal character and style of construction.

The string choir consists of violins (divided into two parts), violas, violoncellos and double basses. The wood-wind choir is composed of flutes, piccolos, oboes, English horn, clarinets, bass clarinet, bassoons and contra bassoon. The brass choir includes the trumpets, French horns, trombones and tuba. The percussion choir, or "the battery," consists of the drums and bells; the tympani or kettledrums, side and bass drum, tom-tom and tambourine belong to the first section;



Chicago Symphony Orchestra

Founded in 1891 by Theodore Thomas, supported by a number of public-spirited Chicagoans. This orchestra, has had but two conductors—Theodore Thomas from 1891 to 1905, and Frederick Stock, since 1905. The orchestra owns its own home—Orchestra Hall, where this photograph is taken. Its popular concerts (established in 1914) reach a clientele scarcely touched by the symphony series. It is the third oldest orchestra in America.

the triangle, cymbals, bells, glockenspiel, celesta, xylophone, castanets and gongs belong to the latter section. The harp is not classified as a member of any definite choir.

The Stringed Instruments. The strings are the most important division of the orchestra. Their range is the most extensive. Not being dependent on the breath of the performers, they can hold a single note far longer than can the wind instruments, and also they can play from the softest pianissimo to the loudest fortissimo.

There are many important effects possible to the strings, but the most outstanding are the *tremolo* and *pizzicato*. Tremolo is produced by drawing the bow over the strings backward and forward with great rapidity. *Pizzicato* (an Italian word meaning "plucked") signifies that the strings are plucked by the fingers, the tone produced being similar to that of the guitar. The great compass of the violin may be increased by the use of harmonics. These are the overtones which are not consciously heard because the fundamental tone always overshadows them. When, however, a vibrating string is touched lightly with the finger, the vibrations of the fundamental tone are stopped and the harmonics or overtones are heard.

The violins are divided into two groups; the second violins play the second soprano or contralto voice to the first violin.

The viola is sometimes the contralto of the string choir, though its voice is usually the tenor of the quartette. It is a larger instrument than the violin and is tuned a fifth lower. Its tone is not as brilliant or penetrating as that of the violin, but possesses a lovely pathetic quality.

The violoncello is one of the favorite instruments. Its tone is more like that of the human voice than any other instrument. The cello is tuned in fifths, like the viola, but an octave lower in pitch. In the string quartette the cello serves as the bass; in the orchestra it is used as the baritone, and sometimes as the tenor.

The bass of the strings is the huge double bass, like the viola and cello a descendant of the viol family. Until Beethoven's time it was used chiefly to double the bass parts by the cello, but modern composers have used it as an important individual voice. Both the *tremolo* and *pizzicato* of the basses are frequently heard in dramatic music.

Although a primitive instrument, the harp is of recent introduction in the symphony orchestra. Developed through the centuries from the old harp of the Hebrews, Egyptians and Greeks, the harp has ever been a favorite folk instrument and was used by many peoples, although chiefly identified with the music of the Gaelic race.

The harp has forty-seven strings of varying lengths. These are plucked with the finger to produce the broad chords and *arpeggios* with which this instrument is chiefly identified. *Glissando*, the result of sliding the hands rapidly over the strings, and harmonics, produced by stopping a string and causing the overtones to be heard, are two effects used mostly by solo harp players.

The Wind Instruments. The wind instruments are of two classes, designated as wood winds and brasses. In all wind instruments the tone is produced by the vibration of a column of air in a hollow tube. This air column may vibrate as does a string, in parts as well as the whole. The larger the tube the lower is its tone. A tone is produced in the tube by covering or uncovering the holes at its side, as in the wood winds, or by directly contracting its length, as in trombones, or by means of crooks as in the other brass instruments. The bending of a tube makes no difference in its tone. If the French horn were straight it would be seventeen feet long.

The Wood Winds. The wood-wind family is of three types: the flute with an embouchure or hole on the side where the breath is regulated; the double reeds—oboe, English horn, bassoon, contra bassoon—played by the



Viol da Gamba
The ancestor of the present violoncello. From an old print.

vibration of double reeds set in the ends of the instruments (side of bassoon); the single reed clarinets and bass clarinets where the tone is produced by the vibration of a flat reed at the end of the instrument.

The flute, oboe and clarinet have nearly the same range, all being soprano instruments. The flute lacks much of the deep, sincère beauty of the oboe and the clarinet. It is extremely agile, well adapted to serve as a coloratura voice. It is useful in light, graceful passages, but is less brilliant and penetrating than its orchestral companions. The octave flute or piccolo has a voice very high and shrill; it is used chiefly in military music.

The oboe is the soprano of the double reed family and is essentially a pastoral instrument. Its voice is more reedy in quality than that of the clarinet, and, although it may play soft, tender passages, its tone is always penetrating. It is very difficult to play the oboe, for such a small amount of air sets its reeds in vibration that the player is constantly holding his breath. The oboe gives the tuning A to the orchestra.

The alto oboe is the English horn, an instrument longer and larger than the oboe, and bell shaped at the end. The tone of the English horn is always sad and plaintive, and it has been best used to sound a note of melancholy or sorrowful longing.

The bassoon is the bass of the double reed family. Although its voice is deep, the instrument possesses such agility of execution that its tones often sound grotesque; therefore it is frequently called "the clown of the orchestra." Yet it possesses a lovely pastoral singing voice in its upper registers.

The deepest wood wind is the double bassoon or contra bassoon, the double bass of the wood-wind family. The bassoons are called *fagottes* (from the Italian for "a bundle of sticks") because they are bent back and forth like sticks.

The clarinet is the soprano of the single reed family. It is a little larger than the oboe and has a very extensive range which gives its voice a fuller and deeper tone quality. The deep voice of the clarinet is found in the bass clarinet, an instrument similar in shape to the saxophone with a bell of brass turning upward like a pipe. Its voice is deep and impressive and similar to that of a pipe organ.

Although brass instruments, the French horns have a sympathetic tone quality which causes them to blend remarkably with the wood-wind instruments.

The Brass Choir. The instruments of the brass choir may be used as a quartette—trumpet, soprano; horn, alto; trombone, tenor, and tuba, bass. However, the usual method is to use the four horns in harmony, the three trumpets or three trombones with the tuba as a quartette. The lips of the players act as the reeds of the brass instruments, each tone being produced by a different lip pressure. It is very difficult to play these instruments.

The trumpet is the highest voice of the brasses. Its noble, brilliant tone quality is one of the most penetrating in the orchestra. The French horn has perhaps one of the most exquisite voices of any orchestral instrument. Originally the hunting horn, its genial, happy voice was used first to depict hunting scenes. But its beautiful, romantic tone quality may express many varying moods. The trombone is different in construction from the other brasses; its tubes slide into each other, contracting its length and regulating its tone. The voice of the trombone is of great majesty and beauty, and when used with the full orchestra adds dignity and solemnity. The tuba is the bass of the brasses, giving impressive strength to the brass choir. Sometimes a tenor tuba is used by modern composers.

The Percussion Instruments. The percussion instruments accent the rhythmic rather than the melodic or harmonic character of music. The most important drums are the tympani or kettledrums, which are tuned to different pitches. They are copper kettles with vellum heads held in place by key screws which work on rings. There are three, often four, in a symphony orchestra. The drummer uses two sticks. He must have a perfect rhythmic sense, but also he must have absolute pitch, as frequently he must tune one or more drums to a new key while the orchestra is still playing in the old key. The side or snare drum is cylindrical. It has thin pieces of gut (snares) stretched under the vellum on one side which, as the player beats upon it, produces a sharp, incisive tremolo frequently needed in military music. The bass drum is the largest instrument in the group. In military music it is played *for-*

tissimo. The roll of the bass drum, played *pianissimo*, is very impressive in funeral marches.

The tambourine, sometimes classed with the drums because of its construction, is one of the oldest instruments in the world and has remained in use as an accompaniment for the dance for over two thousand years.

The orchestral bells are of various kinds and sizes. Some are cylindrical or tubular, consisting of eight tubes of different lengths hung from a wooden bar. The tom-tom or gong is a broad circular plate of metal that hangs from a bar and is struck with a drumstick. The effect is sinister and it is used to depict horror or the supernatural. Other bells are the glockenspiel or carillon, consisting of flat metal bars fastened to a wooden frame and struck by small drumsticks. The celesta, which has superseded the older glockenspiel, is a small keyboard instrument producing a sparkling bright tone as the player strikes the hammers with his fingers through a mechanism similar to that of the piano. The xylophone is an instrument made of different sized bars of wood struck by wooden hammers. In the cembalon flat wires are strung over two bridges and played with wire hammers. The triangle is a bent piece of steel shaped like a triangle. It is struck with a steel rod and gives out a clear, bell-like tone, often used to accent bright, joyous dance music. The cymbals are large cylindrical plates of metal that are either clashed together or struck with a drumstick. The castanets are similar in shape to the cymbals, but very small and made of wood. Dancers in Spain and Italy hold these clicking instruments in their hands to accent the rhythm of their dances.

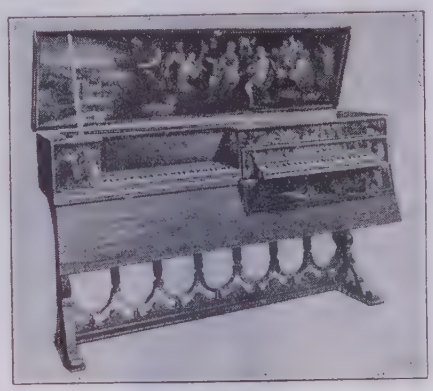
The Brass Band. The brass band is composed of three choirs instead of the four found in symphony orchestras. Since the chief function of the band is to play in the open air, those instruments affected by climatic changes are usually eliminated and few stringed instruments are used, although occasionally double basses and harps are found in bands playing in halls.

The wood wind section comprises a predominance of flutes and single reed instruments, such as clarinets and saxophones. Few double reed instruments (oboes, English horns and bassoons) are used. The brass section is made up of French horns, trumpets or cornets, trombones and tubas. The percussion section corresponds to that found in the regular symphony orchestra.

The Pianoforte. The pianoforte (from the Italian, meaning "soft loud") is the most popular keyboard stringed instrument in general use. Our modern instrument was developed in the early eighteenth century by Cristofori, an instrument-maker of Florence, from the older keyboard forms of virginals, harpsichords and clavichords.

The chief difference between the modern piano and these earlier instruments is that in the pianoforte the tones are produced by vibrating strings struck by hammers, which are controlled by a keyboard. The mechanism is so constructed that the force of the blow struck by the hammers is under the control of the player's fingers, therefore the tone may be very soft or very loud; hence the name pianoforte. The early keyboard instruments were based on the principle of the strings being plucked by a quill, or plectrum, controlled by the keyboard; but there was no opportunity for dynamic difference in tone.

It is interesting to note that Bach wrote his works for the clavichord, which was still in use at the time of Beethoven. Mozart



Virginal

An old keyboard instrument of 1590, known also as the "double spinet," one of the predecessors of the modern piano.

used the harpsichord but preferred the new pianoforte. Since Beethoven every great composer has written for this, the most important of musical instruments.

The Organ. The largest and most intricate of musical instruments is the pipe organ, which has reached its present day perfection through centuries of development. One of the oldest of musical instruments, the organ was developed from the ancient Pan's pipes.



Courtesy Metropolitan Museum of Art

The First Piano

The first type of the modern piano, made by Cristofori of Florence in the early eighteenth century.

In medieval days, organs had about five hundred pipes, but the air pressure was supplied by blowers (or treaders), often as many as seventy men acting in this capacity. The keyboard was limited, and tone was produced by a blow from the clenched fist.

The tone of the modern organ is produced from a graduated series of pipes by means of compressed air, the player controlling the tone through a system of keyboards similar to the keyboard on a piano. The instrument is entirely in the control of a single player, the organist, who sits at the console. The wind pressure and pneumatic devices, which make the keyboard of the organ as easy to manipulate as that of the piano, are controlled by electricity.

The player produces the lower harmonic scale by using foot pedals. The "swell" enables him to increase or diminish the tone, while the "couplers" connect the several manuals, or keyboards, and add octaves above or below those which the player's fingers are producing. The "mixtures" bring into the maze of tone the artificial overtones. Thus there is today no effect in the orchestra not possible of imitation on the organ.

Folk Instruments. *The Accordion* is the most popular folk instrument in the world today. It is of recent origin, being the invention, in 1829, of a Viennese instrument maker, Damian. It consists of a pair of hand bellows to which is attached a keyboard having from five to fifty keys, according to the size of the instrument. As the player presses a key a valve opens and the air is admitted to the metal reeds, one sounding when the air is expanded and the other when it is compressed. The right hand plays the keys and the left hand works the bellows.

The Bagpipe is one of the oldest folk instruments and is still found in a primitive form among the shepherds of all the countries of Europe. The bagpipe is not an easy instrument to play. The bellows, held under the player's arm, force the air into the bag, while the pipes, fitted into the side, give out various tones as they are set in vibration by the player's breath. The "chanter pipe" has eight holes in the side, which are operated by the player's fingers. The bagpipe is the national instrument of the Scotch Highland regiments. During the seventeenth and eighteenth centuries the bagpipe, known as the *musette*, was the popular instrument of the ladies of the court.

The Balalaika is a Russian descendant of the medieval lute. It is a stringed instrument, played like the mandolin with a plectrum held in the player's right hand, while the strings are stopped with his left hand. The balalaika is triangular in shape, having a very long neck over which the two, often three, strings are stretched. The instrument is made in four sizes, forming a complete quartette. It is the most popular instrument of the Russian gypsies.

The Banjo is the typical folk instrument of the American Negroes. The natives of Senegambia possess an instrument called the "bania" which is similar to the banjo, having a long neck and a round head covered with skin or parchment. It is generally believed that the African Negroes modeled their instruments from the old Arabian *ooud*, which was the ancestor of the medieval lute of the Troubadours. Although the banjo came into America with the Negro slaves, it has reached a high state of development in this country.

The Cembalon, popular instrument of the Hungarian gypsies, is a descendant of the primitive dulcimer of Biblical days. It is a flat, wooden frame over which are stretched strings which are attached to tuning pins at either end. There are two, sometimes three, strings for each tone. Tone is produced by striking the strings with small, leather covered hammers. The compass of the cembalon is about three octaves.

The Concertina is an instrument similar in character to the accordion and was, incidentally, invented in the same year (1829) in England. The concertina has a keyboard at each end, the bellows being between. The same tone is produced when the bellows are compressed as when they are expanded. The compass of the concertina is much greater than that of the accordion, and as it is possible to play very intricate harmonies, the concertina is a very popular instrument in America today.

The Guitar, one of the survivors of the lute family, is found in its oldest form in Spain and southern Italy, where it was brought at the time of the Moorish invasions. The guitar has a flat back and curved sides and is now made in several sizes. The present day guitar has six strings, giving the instrument a range of about three and a half octaves. The tone is produced by plucking the strings with the fingers of the right hand, while the left hand stops the string on the frets of the neck.

The Mandolin resembles the old lute more closely than any of its family. It is a native of Italy. The mandolin in general use had four pairs of strings, tuned in fifths with the same tonality as the violin. These strings are of wire and vibrate as they are plucked by a quill or by a plectrum of shell. The player stops the strings with his left hand, the pitch being indicated by frets on the long-necked keyboard.

The Ukulele is the Hawaiian adaptation of the guitars and mandolins brought to the South Seas by the Portuguese and Spanish sailors. A miniature guitar in shape, the tiny metal strings of the ukulele are capable of many new and interesting chord combinations.

The Zither is native to the Bavarian Highlands and the Tyrolese Mountains. It is a descendant of a very old instrument—the *cithara* of ancient Greece. In China the *che*, and in Japan the *koto*, are instruments of the same type. The zither consists of a flat box, which lies on a table. Across this are stretched five metal strings which pass over frets. The melody is played by a plectrum attached to the player's right thumb; this plucks the string as the tones are stopped by the player's left hand. In addition to the five melody strings there are from twenty-five to forty open strings; these are played as an accompaniment to the melody, being struck harp-fashion by the fingers of the right hand.

GREAT NAMES IN MUSIC

FOURTH TO THIRTEENTH CENTURY

Italy
- St. Ambrose (340–397)
- St. Gregory (540–604)
- Guido of Arezzo (995–1050)

Switzerland
- Notker Balbulus (830–912)

Netherlands
- Hucbald of Flanders (840–930)

Germany
- Franco of Cologne (about 1200)

Early Secular School
- Troubadours (12th and 13th centuries)
- Richard I of England (1157–1199)
- Chatelain de Coucy (1157–1192)
- King Thibaut of Navarre (1201–1287)
- Adam de la Halle (1240–1287)

Minnesingers
- Wolfram von Eschenbach (1165–1220)
- Gottfried von Strassburg (—)
- Walter von der Vogelweide (1165–1230)
- Heinrich von Meissen (—1318)

Mastersingers
- Hans Sachs (1494–1576)

FOURTEENTH AND FIFTEENTH CENTURIES

Gallo-Belgic School
- William de Machaut (1300–1372)
- Guillaume Dufay (1400–1474)

England
- Walter Odington (—1330)
- John Dunstable (1370–1453)

Netherlands
- Johannes Okeghem (1430–1513)
- Jacob Hobrecht (1430–1506)
- Johannes Tinctor (1446–1511)

SIXTEENTH CENTURY

Italy
- Giozeffo Zarlino (1517–1590)
- Claudio Merulo (1533–1604)
- Andrea Gabrielli (1510–1586)
- Giovanni Gabrielli (1557–1612)
- Giovanni Pierluigi Palestrina (1526–1594)
- Filippo Neri (1515–1595)
- Emilio de Cavalieri (1550–1602)
- Giovanni Maria Nanini (1545–1607)

Germany
- Martin Luther (1483–1546)
- Sethus Calvisius (1556–1615)
- Hans Leo Hassler (1564–1612)

England
- Thomas Tallis (1516–1585)
- Thomas Morley (1557–1603)
- Thomas Weelkes (dates unknown)

Netherlands
- Josquin des Pres (1450–1521)
- Adrian Willaert (1480–1562)
- Cyprian de Rore (1516–1565)
- Jacob Arkadelt (1514–1560)
- Claude Goudimel (1502–1572)
- Orlando de Lassus (1520–1594)
- Philip de Monte (1521–1603)

SEVENTEENTH CENTURY

Italy
- Felice Anerio (1567–1620)
- Jacopo Peri (1561–1633)
- Guilio Caccini (1546–1618)
- Marco da Gagliano (1575–1642)
- Claudio Monteverdi (1567–1643)
- Girolamo Frescobaldi (1583–1644)
- Gregorio Allegri (1584–1652)
- Francesco Cavalli (1600–1676)
- Giacomo Carissimi (1604–1674)
- Marc Antonio Cesti (1620–1669)
- Giovanni Legrenzi (1625–1690)
- Francesco Provenzale (1610–1704)
- Alessandro Stradella (1645–1682)
- Alessandro Scarlatti (1659–1725)
- Arcangelo Corelli (1653–1713)
- Bernard Pasquini (1637–1710)

France
- Pierre Perrin (1620–1675)
- Robert Cambert (1628–1677)
- Giovanni Lully (Italian born) (1633–1687)

Germany
- Hieronymus Pratorius (1560–1629)
- Heinrich Schutz (1585–1672)
- Johann Froberger (1600–1693)
- Johann Kaspar Kerll (1628–1693)
- Georg Muffat (1635–1704)
- Dietrich Buxtehude (1637–1707)
- Johann Pachabel (1653–1706)

England
- Orlando Gibbons (1538–1623)
- William Byrd (1543–1623)
- John Dowland (1562–1626)
- John Bull (1543–1623)
- William Lawes (1582–1645)
- Henry Lawes (1595–1662)
- Pelham Humphrey (1647–1674)
- Henry Purcell (1658–1695)

EIGHTEENTH CENTURY

Italy
- Benedetto Marcello (1683–1739)
- Giovanni Battista Bonocini (1660–1750)
- Antonio Lotti (1667–1740)
- Antonio Vivaldi (1675–1743)
- Francesco Veracini (1685–1750)
- Francesco Durante (1684–1755)
- Nicolo Porporo (1686–1766)
- Giuseppe Tartini (1692–1770)
- Pietro Locatelli (1693–1764)
- Giovanni Sammertini (1704–1774)
- Giovanni Pergolesi (1710–1736)
- Baldassare Galuppi (1706–1784)
- Raniero da Calsabigi (1714–1795)
- Niccolo Jommielli (1714–1774)
- Antonio Sacchini (1734–1786)
- Gaetano Pugnani (1731–1798)
- Niccolo Piccini (1728–1800)
- Domenico Cimarosa (1754–1801)
- Luigi Boccherini (1743–1805)
- Giovanni Viotti (1758–1824)
- Muzio Clementi (1752–1832)
- Giovanni Paesiello (1741–1816)
- Nicolo Logrosino (1700–1763)
- Antonio Salieri (1750–1825)

France
- Jean Philippe Rameau (1683–1764)
- Jean Jacques Rousseau (1712–1778)
- Jean Le Claire (1697–1764)
- Louis Daquin (1694–1772)
- François D unican-Philidor (1726–1795)
- Pierre Alexandre Monsigny (1729–1817)
- André Grétry (1741–1813)
- Etienne Méhul (1763–1817)
- François Gossec (1734–1829)
- Jean François Le Sueur (1760–1837)
- Luigi Cherubini (Italian born) (1760–1842)

Germany
- Johann Kuhnau (1660–1722)
- Johann Sebastian Bach (1685–1750)
- Georg Friedrich Händel (1685–1759)
- Georg Philipp Telemann (1681–1771)
- Johann Adolph Hasse (1699–1782)
- Johann Matheson (1681–1764)
- Karl Heinrich Graun (1701–1759)
- Karl Philipp Emanuel Bach (1714–1788)
- Christoph Wilibald Gluck (1714–1787)
- Friedrich Wilhelm Marpurg (1718–1795)
- Franz Joseph Haydn (1732–1809)
- Karl von Dittersdorf (1739–1799)
- Wolfgang Amadeus Mozart (1756–1791)

England
- Henry Carey (1685–1743)
- John Pepusch (German born) (1667–1752)
- Thomas Arne (1710–1778)

NINETEENTH CENTURY

Italy
- Gasparo Spontini (1774–1851)
- Gioachino Rossini (1792–1868)
- Gaetano Donizetti (1797–1848)
- Vincenzo Bellini (1801–1835)
- Nicolo Paganini (1782–1840)
- Giuseppe Verdi (1813–1901)
- Amicare Ponchielli (1834–1886)

France
- Louis Joseph Hérold (1791–1833)
- Daniel François Auber (1782–1871)
- Adolphe Adam (1803–1856)
- Hector Berlioz (1803–1869)
- Fromental Halévy (1799–1862)
- Félicien David (1810–1876)
- Jacques Offenbach (German born) (1819–1880)
- Jean Robert Planquette (1848–1903)
- Édouardo Lalo (1823–1892)
- Léo Delibes (1836–1891)
- Ambroise Thomas (1811–1896)
- Friedrich von Flotow (German born) (1812–1883)
- Charles François Gounod (1818–1893)
- Georges Bizet (1838–1875)
- Benjamin Godard (1849–1895)
- César Franck (1822–1890)
- Ernest Chausson (1855–1899)
- Alexis Chabrier (1842–1894)
- Alexandre Guilmant (1837–1911)

Germany
- Ludwig von Beethoven (1770–1827)
- Karl Maria von Weber (1786–1826)
- Franz Peter Schubert (1797–1828)
- Louis Spohr (1784–1859)
- Gustave Lortzing (1803–1859)
- Heinrich Marschner (1795–1861)
- Carl Loewe (1796–1869)
- Robert Franz (1815–1892)
- Felix Mendelssohn-Bartholdy (1809–1847)
- Robert Schumann (1810–1856)
- Giacomo Meyerbeer (1791–1864)
- Ferdinand David (1810–1873)
- Richard Wagner (1813–1883)
- Robert Volkman (1813–1883)
- Joachim Raff (1822–1882)
- Peter Cornelius (1824–1874)
- Anton Bruckner (1824–1896)
- Johann Strauss (1825–1899)
- Johannes Brahms (1833–1897)
- Max Bruch (1838–1920)
- Hugo Wolf (1860–1903)
- Engelbert Humperdinck (1854–1921)
- Gustav Mahler (1860–1911)
- Ludwig Thuille (1861–1907)

England
- Michael Balfe (1808–1870)
- Julius Benedict (1804–1885)
- Sir Arthur Sullivan (1842–1900)
- Arthur Goring Thomas (1850–1892)

Czechoslovakia (Bohemia)
- Friedrich Smétana (1824–1884)
- Anton Dvořák (1841–1904)
- Zedenko Fibich (1850–1900)

Hungary
- Franz Liszt (1811–1886)
- Alphons Czibulka (1842–1894)
- Albert Kéler-Béla (1820–1882)

Poland
- Frederic François Chopin (1810–1849)

Denmark
- Niels Gade (1817–1890)

Norway
- Ole Bull (1810–1880)
- Halfdan Kjerulf (1815–1868)
- Edvard Grieg (1843–1907)

Sweden
- August Sodermann (1837–1876)

Russia
- Michael Glinka (1804–1857)
- Alexander Dargomiski (1813–1869)
- Anton Rubinstein (1830–1894)
- Modest Mussorgski (1835–1881)
- Nikolay Rimski-Korsakow (1844–1908)
- Petr Ilich Tschaikowsky (1840–1893)
- Anton Arensky (1861–1906)

Spain
- Pedro Albeniz (1795–1835)
- I. Albeniz (1860–1909)

TWENTIETH CENTURY

Italy
- Arrigo Boito (1842–1918)
- Giovanni Sgambati (1843–1914)
- Giacomo Puccini (1858–1924)
- Ruggiero Leoncavallo (1858–1919)

Alberto Franchetti....(1860–....)
Marco Enrico Bossi....(1861–1925)
Pietro Mascagni....(1863–....)
Umberto Giordano....(1867–....)
Lorenzo Perosi....(1872– ...)
Ermano Wolf-Ferrari....(1876–....)
Riccardo Zandonai....(1883–....)
Italo Montemezzi....(1875–....)
Ortorino Respighi....(1879–....)
Alfredo Cassella....(1883–....)
Ildebrando Pizzetti....(1880–....)
Mario Castelnuovo-Tedesco....(1895–....)

France

Camille Saint-Saëns....(1835–1921)
Jules Massenet....(1842–1912)
Claude Debussy....(1862–1918)
Xavier Leroux....(1863–1919)
Vincent d'Indy....(1851–....)
Paul Dukas....(1865–....)
Alfred Bruneau....(1857–....)
Gustave Charpentier....(1860–....)
Maurice Ravel....(1875–....)
Florent Schmitt....(1870–....)
Erik Satie....(1866–1925)
Arthur Honegger....(1892–....)
Darius Milhaud....(1892–....)
Francis Poulenc....(1889–....)

Germany

Max Reger....(1873–1916)
Georg Schumann....(1866–1924)
Moritz Moszkowski (Polish born)....(1854–1928)
Richard Strauss....(1864–....)
Eugen d'Albert....(1864–....)
Felix Weingartner....(1863–....)
Max Schillings....(1868–....)
Arnold Schoenberg....(1874–....)
Franz Schrecker....(1878–....)
Ernst Krenek....(1900–....)
Erich Korngold....(1897–....)

England

Charles Hubert Parry....(1848–1918)
Frederic Cowan....(1852–1924)
Charles Villiers Stanford....(1852–1924)
Liza Lehman....(1862–1918)
Samuel Coleridge Taylor....(1875–1912)
Sir Edward Elgar....(1857–....)
Granville Bantock....(1868–....)
Edward German....(1862–....)
Frederick Delius....(1863–....)
Cyril Scott....(1879–....)
Percy Grainger....(1882–....)
Ralph Vaughn Williams....(1872–....)
Joseph Holbrooke....(1878–....)
Frank Bridge....(1879–....)
Arnold Bax....(1883–....)
Gustav von Holst....(1874–....)
Eugene Goosens....(1893–....)

Czechoslovakia (Bohemia)

Josef Suk....(1874–1924)

Hungary

Karl Goldmark....(1832–1915)

Poland

Ignace Jan Paderewski....(1860–....)

Norway

Johann Svendsen....(1840–1911)
Christian Sinding....(1856–....)

Sweden

Emil Sjogren....(1853–1918)
Tor Aulin....(1866–1914)

Finland

Jan Sibelius....(1865–....)
Selim Palmgren....(1869–....)
Arnas Jarnefelt....(1878–....)

Russia

Mily Balakirew....(1837–1910)
Cesar Cui....(1835–1918)
Alexandre Glazounow....(1865–1921)
Alexandre Scriabin....(1872–1916)
Ippolitow Ivanow....(1859–....)
Igor Stravinsky....(1859–....)
Sergei Rachmaninoff....(1873–....)
Reinhold Gliere....(1875–....)
Sergei Prokofieff....(1891–....)

Spain

Felipe Pedrell....(1841–1922)
Enrique Granados....(1869–1916)
Manuel de Falla....(1876–....)

AMERICA—FROM 1700 TO THE PRESENT

Francis Hopkinson....(1737–1791)
Dr. Lowell Mason....(1792–1872)
Stephen Foster....(1826–1864)
George F. Root....(1820–1895)
John Knowles Paine....(1839–1906)
Edward MacDowell....(1861–1908)
Dudley Buck....(1839–1909)
Horatio Parker....(1863–1920)
Ethelbert Nevin....(1862–1901)
Reginald DeKoven....(1859–1920)
Victor Herbert....(1859–1924)
John Philip Sousa....(1854–....)
Edgar Stillman Kelley....(1857–....)
George W. Chadwick....(1854–....)
Arthur Foote....(1853–....)
Frederick Converse....(1871–....)
Henry K. Hadley....(1871–....)
Mrs. H. H. A. Beach....(1862–....)
Walter Damrosch....(1864–....)
John Alden Carpenter....(1876–....)
Ernest Schelling....(1876–....)
Charles Wakefield Cadman....(1881–....)
Rubin Goldmark....(1872–....)
Daniel Gregory Mason....(1873–....)
Rossetter Cole....(1866–....)
Arne Oldberg....(1874–....)
Eric Delamarter....(1880–....)
Leo Sowerby....(1895–....)
Walter Kramer....(1890–....)
Deems Taylor....(1885–....)

DICTIONARY OF MUSICAL TERMS

A cappella (It.) (*ä käp-pĕl'lä*). In the old church style; vocal music unaccompanied, especially those pieces of the Italian school.

A capriccio (It.) (*ä kä-prēt'chō*). At will; according to the individual taste.

Accelerando or **Accelerato** (It.) (*ät-shĕl-ĕr-än'dō* or *ät-shĕl'ĕr-ät'ō*). Gradually increasing the speed.

Accent. A stress or emphasis upon a certain note or passage to mark its position in the bar, or its relative importance in regard to the composition. The first beat of each measure has *primary* accent. In $\frac{4}{4}$ time, the third beat has *secondary* accent; in $\frac{9}{8}$ time the fourth has secondary accent, the seventh *tertiary*. Notes specially accented are marked with the sign ∧, called *sforzando*, abbreviated *sf.*, *sfz.*, or *fz*.

Accessory Notes. Small embellishing notes which are located one degree above or one degree below the principal note.

Accidentals. Sharps, flats, double sharps, double flats and naturals which are not provided for in the signature.

Accompaniment. A separate part or parts, for voices or instruments, added to a solo or concerted piece, to enrich or support the general effect, or to produce such effects as would be otherwise unattainable.

Acoustics. The science which treats of the nature and laws of sound.

Action. The mechanism attached to the keys of piano or organ; also the mechanism attached to the pedals of a harp, which changes the pitch of the strings by shortening them.

Adagio (It.) (*ä-dä'jō*). Slowly; quicker than *largo* but slower than *andante;* also, a name given to a movement written in that time.

Ad libitum (Lat.) (*äd lĭb'ĭ-tŭm*). At will; in passages so marked, the time may be altered at the will of the performer; also, the part so marked may be omitted.

Agitato (It.) (*ä'jē-tä'tō*). An agitated or restless style of playing or singing, in which the time and expression are broken and hurried.

Air. In its modern sense, a tune, or the tune, or melody, with or without words; the part of the composition which carries the melody.

Alla breve (It.) (*äl'lä brā'vĕ*). A direction that the notes are to be made shorter, that is, the pace taken quicker than usual. Expressed in the signature by $\frac{2}{2}$.

Allegretto (It.) (*äl'lā-grät'tō*). (1) Rather light, cheerful and quick; slower than allegro. (2) A movement in this time.

Allegro (It.) (*äl-lā'grō*). Quick, lively. Sometimes used to describe a whole movement of a quartet, sonata or symphony.

Allegro con brio (It.) (*äl-lā'grō kōn brē'ō*). Quickly and with spirit.

Alto. One of the chief divisions of the human voice; female altos are more properly called contraltos. In mixed chorus, it is the next part below the soprano sung by the low female voice; a tenor violin, or viola; term formerly given to the highest male voice or part.

Amateur. One who pursues the practice of any art for pure love, in distinction to one who is engaged in its employment for pay.

Andante (It.) (*än-dän'tĕ*) (Literally, walking.) Moderately slow, but flowing easily; often qualified by other words, as *con moto, largo, maestoso.*

Andantino (It.) (*än'dän-tē'nō*). A diminutive of andante, by some understood to mean *not so slow* as andante; by others, rather *slower than* andante.

Anthem. A vocal composition, the words of which are usually selected from the Bible, used in church either with or without accompaniment.

Appassionato (It.) (*äp-päs'syō-nä'-tō*). With feeling, passion or affection.

Appoggiatura (It.) (*äp-pōd'jä-tōō'rä*). An accessory note, placed before a principal note. If it is marked with a diagonal line through the stem and hook, it is called *short* and is played with the least possible duration; if it is without a diagonal line, it is called *long* and has definite time value as indicated.

Arabesque, Arabesk. An embellished work.

Aria (It.) (*ä'rē-ä*). (1) An air. (2) A vocal solo with instrumental accompaniment, generally threefold in form. The words consist frequently of two sentences.

Arioso (It.) (*ä rē-ō'sō*). In the style of an air; the direction that the music to which it refers is to be performed tunefully, sweetly, in the style of an aria.

Arpeggio (It.) (*är-pĕd'jō*). Playing the notes of a chord in succession instead of striking them together; marked with a wavy line before the chord.

Articulation. (1) In singing, the art of distinct pronunciation. (2) In instrumental music, the art of producing proper tone by a right adjustment of the fingers, or the lips.

Augmentation. The introduction of a subject of a fugue or canon, in the course of its progress, in notes of longer duration.

Authentic Cadence. A final close, in which the common chord of the tonic is immediately preceded by the common chord of the dominant.

Auxiliary Notes. Notes not essential to the harmony, introduced for the sake of breaking monotony, or of giving freedom of motion to one or more of the parts. They may occur on either the accented or the unaccented part of the bar, and if introduced below the melody should be only a semitone from the proper note of that melody, but if above they may be either a tone or a semitone as the position in the scale would warrant, or taste suggest.

Ave Maria (Lat.) (*ä'-vä' mä-rē'ä*) (Hail! Mary). The angel's salutation of the Blessed Virgin Mary, used in the Roman Catholic Church as an Antiphon, etc.

Bagatelle (Fr.) (*bäg-ä-tĕl'*). Sketch, short piece, trifle.

Ballad. A short, simple song of natural construction, usually in the narrative or descriptive form.

Ballet (Fr.) (*bäl'lä*). A theatrical representation of some story by means of dances, or pantomimic action, accompanied by music.

Bar. A line drawn from the top to the bottom of the stave to denote the division of the time in a piece of music, and the place of the strong accent.

Barcarolle (Fr.) (*bär-kä-rōl'*). A song or air sung by the Venetian gondoliers, or boatmen, while at work.

Baritone. A male voice intermediate between bass and tenor; also applied to any musical instrument between bass and tenor.

Bass. The lowest part in a musical composition, the lowest male voice; the lowest of a family of instruments.

Baton (Fr.) (*bä tôn'*). Stick used by a leader in beating time.

Beat. A single motion of the hand, or baton, in beating time. A division of a bar, or measure.

Bell. The lower termination of any tubular musical instrument which by the outward turning of the rim assumes the form of a bell.

Berceuse (Fr.) (*bĕr sûz'*). A cradle song.

Binary Form. The form of a movement which is founded on two principal themes or subjects.

Bolero (Sp.) (*bō-lā'rō*). A Spanish dance in triple measure with strongly-marked accent, similar to the cachucha. It is accompanied by singing and castanets.

Bowing. The art of managing the bow; the proper manner of using the bow, indicated by certain marks; ⊓ for down bow; ∧ for up bow; two dots over a note for *spiccato* or *bounding bow.*

Break. (1) The point of junction in the quality of tenor, soprano and alto voices. A genuine bass voice has no break. (2) Break, in an organ stop is the sudden alteration of the proper scale-series of the pipes by returning to those of an octave lower in pitch.

Bridge. A piece of wood which, on instruments having a resonance-box, performs the double duty of raising the strings above the belly, and of terminating at one end their vibrating portion.

Brindisi (It.) (*brēn'dē-zē*). A drinking song.

Burden. The chorus or refrain of a song.

Cachucha (Sp.) (*kä-chōō'chä*). A Spanish dance, resembling the bolero.

Cadence. (1) A close in melody or harmony, dividing it into numbers or periods, or bringing it to a final termination. (2) The end of a phrase, formerly called fall, either in melody or harmony.

Cadenza (It.) (*kä-dent'sä*). A florid ornamental passage introduced before the cadence of a song or instrumental solo.

Canon. A contrapuntal composition in which the melody is taken by the leading voice, and then taken up in turn by the second, third and fourth voices at intervals of a definite number of beats or measures.

Cantabile (It.) (*kän-tä'bē-lĕ*). In a singing manner.

Cantata (It.) (*kän-tä'tä*). A short work in the musical form of an oratorio without action.

Canticle. A song or hymn in honor of God, or of some special sacred event.

Canto (It.) (*kän'tō*). The upper voice part in concerted music, so called because it has the melody or air.

Cantor (Lat.) (*kăn'tôr*). A singer; a precentor.

Cantus firmus (Lat.) (*kăn'tus fĕr'mŭs*). (1) The *tenor* or chief melody. (2) A fragment of plain-song, to which counterpoint has been added. (3) Any subject chosen for contrapuntal treatment, generally a short diatonic passage of semibreves or other long notes.

Canzona, Canzone (It.) (*kän tsō'nä*). A short song, the music being more important than the words.

Capellmeister (Ger.) (*kä-pĕl'mis'tĕr*), (1) The musical director of a church or chapel. (2) A conductor of a band or an opera.

Capriccio (It.) (*kä prēt'chō*). A freak; whim; fancy. A composition irregular in form.

Carillon (Fr.) (*kăr'ĭ-lôn* or *kăr ĭ-yon'*). A set of bells upon which a melody can be played; an instrumental piece in the style of carillon music.

Carol. A song of praise, applied to a species of songs sung at Christmastide; originally a song accompanied with dancing.

Castanet. A musical instrument of percussion introduced into Spain by the Moors. Originally they were of dried chestnut husks, but later were made of hard wood.

Catch. A round for three or four voices, in which each singer in turn "catches" up the melody; later usually with comic effect.

Cavatina (It.) (*ka-va-tē'na*). A melody or a more simple form than the *aria.*

Celeste (Fr.) (*sā-lĕst'*). A direction for the use of the soft pedal.

Chaconne (Fr.) (*shā-cŏn'*). A slow dance in $\frac{3}{4}$ time.

Chamber Music. Vocal or instrumental compositions suitable for performance in a small hall, as opposed to a concert-room; instrumental music in the sonata form, for a small group of string or woodwind instruments, with or without piano.

Chanson (Fr.) (*shăn'son'*). A song; a vocal solo with piano accompaniment; formerly a ballad.

Chant. (1) A simple melody, generally harmonized in four parts, to which lyrical portions of the Scriptures are set, part of the words being recited *ad libitum*, and part sung in strict time. (2) To recite musically.

Characters. A general name for the signs employed in music, such as brace, bind, bar, sharp, flat, natural, clef, stave, shake, turn, beat and the signs of words indicating time and expression.

Chime. A set of bells tuned to a musical scale; music played upon a set of bells; music or melody; to sound in harmony.

Choir. A group of singers, usually connected with a church; that part of a church edifice set apart for the singers.

Choir Organ. In a large pipe organ, that group of pipes and the corresponding manual having a soft tone and therefore suitable for the accompaniment of vocal music.

Choral. (1) Of, or belonging to the choir, concert or chorus. Choral service, a service with music. (2) A hymn or psalm tune.

Chorale (Ger.) (*kō-rāl'*). Psalm or hymn tune; a form of sacred song introduced by Luther.

Chord. A combination of musical sounds, consonant or dissonant.

Chorister. A member of a choir whether juvenile or adult.

Chorus. A group of singers; a choir; a composition intended for a chorus; a refrain.

Chromatic. Progression by semitones.

Chromatic Scale. Including every tone within the octave.

Chromatic Signs. Marks used in musical notation to indicate that a note should be played a semitone higher or lower than it is written. These marks are: the sharp (♯); the flat (♭); the natural (♮); the double sharp (𝄪); and the double flat (♭♭).

Clef. A character used to determine the name and pitch of the notes on the staff to which it is prefixed.

Close Harmony. Harmony produced by drawing the parts which form it closely together.

Coda (It.) (*kō'dä*). The tail of a note; the bars occasionally added to a contrapuntal movement after the close or finish of the *canto fermo;* that closing adjunct of any movement, or piece, specially intended to enforce a feeling of completeness and finality.

Coloratura (It.) (*kŏl-ō-rä-tûr'ä*). Ornamental passages, runs, trills, embellishments, in a vocal or instrumental solo; a high soprano voice of great flexibility and unusual brilliancy.

Common or **Double Time.** Time with two beats in a bar, or any multiple of two beats in a bar.

Compass. The whole range of sounds capable of being produced by a voice or instrument.

Composer. An author of music.

Composition. (1) A piece of music, for voices or instruments, or a combination of both effects, constructed according to the rules of art. (2) The act and the art of writing original music.

Concert. A public performance of music, in which a number of singers or instrumentalists, or both, take part.

Concerto (It.) (*kŏn-chĕr'to*). (1) A concert. (2) An extended composition in sonata form for a solo instrument with orchestral accompaniment.

Concertmeister (Ger.) (*kŏn-tsĕrt mīs'tĕr*). The leader of the band, the conductor; the leader of the first violins, who is next in rank to the conductor.

Conductor. The director or leader of an orchestra or chorus.

Con sordini (It.) (*kŏn sôr-dē'nē*). With the mutes on; with the soft pedal at the pianoforte held down.

Contra (It.) (*kŏn'trä*). Against. In compound words this signifies an octave below.

Contrabass (It.) (*kŏn'trä-bās'*). The double bass; the deepest toned stringed instrument played with a bow.

Contralto (It.) (*kŏn-träl'tō; kŏn-träl'tō*). The voice of deepest tone in females.

Cotillon (Fr.) (*kō-tĭl'yŭn* or *kō'tē-yon'*). A lively, spirited dance, introducing a great variety of figures, such as the pyramid, the two flowers, the coquette, a quadrille.

Counterpoint. The art of adding one or more parts to a given theme or subject.

Country-Dance. A rustic dance, of English origin in which performers were arranged face to face, and performed certain prescribed figures.

Courante (Fr.) (*koō-rănt'*). "Running." A dance of French origin in triple time; the second part in the old *suites des danses.*

Cremona. (1) A violin made in the town of Cremona. (2) A reed stop in the organ.

Crescendo (It.) (*krē-shĕn'dō*). Increasing, a gradual increase in the force of sound expressed by the sign . . <, or the abbreviation *cresc.*

Czardas (*chär'däsh*). The Hungarian national dance.

Da Capo (It.) (*dä kä'pō*). From the beginning.

D.C. Abbreviation for da capo.

Debut (Fr.) (*dā'bū'*). A first appearance.

Degree of a Scale. A stop in the tone-ladder; it may consist of a semitone, a tone, or—in the minor scale—an augmented tone.

Descant. The addition of a part or parts to a tenor or subject.

Development of a Subject. The elaboration of a given theme, according to the rules of art.

Diapason (Eng.) (*dī-ä-pā'zŏn*). (1) An octave. (2) The name given in this country to the most important foundation stops of an organ, termed in other countries more properly *Principal.*

Diatonic (Gr.) (*dī'ä-tŏn'ĭk*). Pertaining to the major and minor scales of eight tones to each octave, in any key.

Dilettante (It.) (*dē'lĕt-tän'tē*). An amateur.

Diminished Chord. A chord composed of a fundamental, a minor third, and a diminished fifth.

Diminuendo (It.) (*dē-mēn'ōō-ĕn'dō*). Decreasing in power of sound.

Dirge. A solemn piece of music, of a funeral or memorial character, so called from the first word of the Antiphon, "Dirige, Domine Deus meus, in conspectu tuo, viam meam."

Discord. A chord which, when struck or sung, requires to be resolved into a concord.

Dispersed Harmony. Harmony in which the notes composing the chord are at wide intervals from each other.

Dissonance. An interval or chord displeasing to the ear and requiring to be followed by another in which the dissonant note is resolved.

Divertimento (It.) (*dē-vĕr'tē-mān'tō*). (1) An instrumental composition in several movements (six or seven), like a *serenada* or *cassation.* (2) A potpourri.

Divisi (It.) (*dē-vē'zē*). A direction that instruments playing from one line of music are to separate and play in two parts. The reunion of the parts into unison is directed by the words "*a due.*"

Dominant. The fifth degree of the scale; the reciting note of Gregorian chants.

Double Bar. A sign formed of two single bars showing (1) the end of a piece; (2) the end of a movement of a work; (3) the end of a portion to be repeated; (4) the commencement of a change of key; (5) the commencement of a change of time; (6) the end of a line of words set to music as in a hymn tune.

Double Bass. The largest of the stringed instruments played with a bow.

Double Flat. A sign (♭♭) used before a note already flatted in the signature, which depresses the note before which it is placed another half tone. It is contradicted by a natural and a flat.

Double Octave. The interval of a 15th.

Double Sharp. A sign (𝄪) used before a note already sharp, to indicate that it is desired to raise the pitch by a semitone. It is contradicted by a natural and a sharp.

Down Beat. The first beat in each bar is so called because in counting time the hand or conducting stick is allowed to fall at that place.

Doxology (Gr.). The hymn or song of praise—the Gloria in Excelsis and the Gloria Patri as sung in the Christian church; also any metrical form of the same.

Drone. The largest pipe of the bagpipe, sounding only one note, which serves as a bass for every tune; the chorus or burden of a song.

Duet. A composition for two voices or instruments, or for two performers upon one instrument, or for two instruments of the same kind.

Dynamics. That part of musical science which deals with differences and contrasts in loudness of tones.

Echo. A sound produced by reverberation.

Eighth. The interval of an octave; *Eighth note*—a note whose value is $\frac{1}{8}$ that of a whole note.

Encore (Fr.) (*än' kôr'*). Again; more; a demand for the reappearance of a performer, as by applause; the performance given in response to such a demand.

Enharmonic. (1) One of the three genera of Greek music, the other two being the Diatonic and Chromatic. (2) Having intervals less than semitone. (3) An enharmonic modulation is a change as to notation, but not as to sound.

Ensemble (Fr.) (*än'sän'bl*). Together; the whole. (1) The general effect of a musical performance. (2) The union of the whole company of performers in a concerted piece.

Entr'acte (Fr.) (*än'träkt'*). Music played between the acts or divisions of an opera, drama or other stage performance.

Episode. A term in fugue writing, applied to those phrases which are supplemental to the main subjects or their answers.

Etude (Fr.) (*ā-tūd'*). A study, exercise or lesson.

Euphony. Sweet sound. An agreeable combination of sounds.

Exercise. (1) Preparatory practice in order to obtain skill. (2) A composition intended for the improvement of the singer or player. (3) A composition or thesis, required of candidates for degrees in music in the universities.

Expression. The power or act of rendering music so as to make it the vehicle of deep and pure emotion; the *spirit* of music as opposed to the mere mechanical production of sound. Expression marks are given in compositions to aid the performer in the proper interpretation of the number.

Extemporize. To play *extempore,* that is, to create melody and harmony without premeditation.

Extravaganza (*ĕks-trăv'ä-găn'zä*). A composition in burlesque style.

Facile (Fr.) (*fäs'ĭl*). Easy.

Falsetto (It.) (*fäl-sät'tō*). The artificial or supplementing tones of the voice, higher than the chest or natural voice.

Fandango (Sp.) (*făn-dăng'gō*). A lively Spanish dance in triple time, derived from the Moors. It is danced by two persons, male and female, and accompanied by the sounds of a guitar.

Fanfare (Fr.) (*făn'fâr'*). A flourish of trumpets, a call.

Fantasia (It.) (*făn'tä-zē'ä*). A composition in a style in which form is subservient to fancy.

Fermata (It.) (*fär-ma'tä*). A pause—from *fermare,* to stay or stop.

Fifth. A diatonic interval of five notes. The interval between a fundamental tone and the fifth tone above.

Figure. A form of melody or accompaniment maintained throughout the phrase in which it is suggested. In a melody, figure is called sequence. In harmony a figure relates to the rhythmical observance of a certain form in all the accompanying chords to the melody. (2) A musical phrase. (3) A florid melody.

Finale (It.) (*fē-nä'lĕ*). The conclusion; the last piece of any act of an opera; the concluding number of a concert; the last movement of a composition in the sonata form.

Fine (It.) (*fē'nā*). The end; used to show the end of a piece or movement; often a repeat, or partial repeat.

Fingering. The art of placing and using the fingers properly in performing upon a musical instrument.

Flat. The sign (♭), which directs the lowering of the tone to which it is prefixed by one semitone; singing or playing is said to be *flat* when the sounds produced fail to reach the true pitch.

Foot. (1) A metrical measure. (2) A drone bass. (3) The chorus of a song. (4) The part of an organ pipe below the mouth. (5) To foot, to dance.

Form. The pattern or design in which musical ideas are presented.

Forte (It.) (*fôr'tĕ*). Loud; powerful.

Fortissimo (It.) (*fôr-tēs'sē-mō*). Very loud.

Forzando (It.) (*fôr-tsän'dō*). Forced; emphasis upon one note or chord; marked >.

Fourth. An interval of four notes.

Free Style. Composition not absolutely according to the strict rules of counterpoint.

Fugue (*fūg*). A polyphonic composition constructed on one or more short subjects or themes, which are harmonized according to the laws of counterpoint, and introduced from time to time with various contrapuntal devices.

Full Score. A score in which all the parts for voices and instruments are displayed.

Fundamental. The lowest element of a tone, the other elements being its harmonics; applied also to the lowest note of a chord when the chord is founded upon that note.

Fundamental Tones. The tones from which harmonics are generated; that is the first, fifth and fourth tones of any diatonic scale.

Galop (Fr.) (*găl'ŭp*). A lively dance in $\frac{2}{4}$ time, originally a separate and independent dance, but now also forming a portion of a set of quadrilles.

Gavotte (*gä-vŏt'*). A dance tune of a lively yet dignified character, said to be of French origin, and to take its name from the Gavots; in quick common time, introduced at the French Court in the sixteenth century, the step characterized by raising of the feet instead of sliding; a composition in gavotte style.

Gigue. See Jig.

Glee. A vocal composition of three or four more or less independent parts, not necessarily gleeful; popular in England between 1760 and 1830.

Glissando (It.) (*glēs-sän'dō*). Slurred; in a gliding manner.

Grace Notes, Graces. Ornamental notes or short passages, introduced as embellishments into vocal or instrumental music, not actually essential to its harmony or melody. Grace notes are written small and are not counted as part of the measure.

Gregorian Chant. A style of church music without definite rhythm, written in one of the eight church modes or scales, formerly attributed to Pope Gregory. It is now believed that he did not originate it, but merely arranged and edited such music as existed.

Half-note. A note having half the time value of a whole note and twice that of a quarter note.

Half-rest. A pause equal in duration to a half note.

Harmonic Modulation. The change from one key to another in a succession of chords.

Harmonics. Higher partial tones present in practically every musical sound, which can also be sounded separately upon many musical instruments.

Harmony. A combination of tones which, sounded simultaneously, produce a pleasing effect; the structure of music with respect to the composition and progression of its chords, as contrasted with melody and rhythm; music consisting of a progression of chords, as distinguished from counterpoint, which consists of melody added to melody.

Harp. A stringed instrument of triangular form, furnished with gut strings. It has a compass varying from three to six octaves and a half, according to the size of the instrument.

Head-voice. The sounds produced above the chest-register, but not in falsetto.

Hold. An old English name for the sign of a pause (𝄐).

Homophony (Gr.) Unison of voices or instruments of the same character.

Hymn. A lyric for use in worship.

Imitation. The repetition of a short subject by another part.

Impresario (It.) (*ĕm prĕ-sä'rē-ō*). A designer, conductor or manager of a concert or opera party. This term is often applied to a man who trains singers, or obtains them for public performances.

Impromptu (Fr.) (*ĭm-prŏm'tŭ*). A piece of music written or played without previous preparation of the subject.

Improvisation. The act and the art of composing and rendering music without previous preparation.

Inflection. Any change in the pitch of the voice.

Interlude. A piece of music either impromptu or prepared, played between the acts of a drama, the verses of a canticle or hymn or between certain portions of a church service.

Intermezzo (It.) (*ēn'tĕr-mĕd'zō*). An interlude; a short movement in the symphony; one of the parts of the old suite.

Interval. The distance between any two sounds; *harmonic*, if between two tones sounded together and *melodic*, if between two tones sounded in succession. The intervals of the diatonic scale are do, *unison* or *primo*; do-re, *second*; do-mi, *third*; do-fa, *fourth*; do-sol, *fifth*; do-la, *sixth*; do-si, *seventh*; do-do, *eighth* or *octave*. Of these, the *unison*, *fourth*, *fifth* and *octave* are classified as *perfect*. The *second*, *third*, *sixth* and *seventh* are *major* in the major scale. The *minor intervals* are a chromatic half step smaller than the major intervals of the same name. *Augmented intervals* are a chromatic half step larger than perfect and major intervals. *Diminished intervals* are a chromatic half step smaller than perfect and minor intervals. Intervals not exceeding an octave are called *simple;* those greater than an octave, *compound*.

Intonation. The method of producing sound from a voice or an instrument; correctness of pitch; the method of chanting certain portions of the church services.

Introduction. An opening strain or short movement which prepares the way for the main body of a composition.

Inversion. Changing the position of notes forming intervals, chords or themes.

Jig or **Gigue** (Fr.). A lively dance which may be performed by one or more dancers.

Key. (1) In its modern sense, it is the starting point of the definite series of sounds which form the recognized scale. Different starting points require the relative proportion of the steps of the scale to be maintained by means of sharps or flats in the signature. The key of C requires no flats or sharps for this purpose, hence it is called the *Normal* key. (2) Mechanical contrivance for closing or opening ventages, as in flutes, clarinets, etc.

Keyboard. The range of keys upon a pianoforte or organ. Keys played by the fingers are called *manuals;* those by the feet are called *pedals*.

Key-note. The note which, according to the signature, forms the starting point of the scale. The tonic, or first note of the scale, as "do."

Keys, Related. Those differing by not more than one accidental in their respective signatures.

Larghetto (It.) (*lär gät'tō*). (dim. of *largo*.) At a slow pace but not as slow as *largo*.

Largo (It.) (*lär'gō*). Slow; broadly.

Larynx. The organ by means of which we produce vocal sounds. It is situated at the top of the trachea or windpipe, of which it forms a continuation, and its position is known popularly by that of the "Adam's apple," the prominence of one of the cartilages or masses of gristle which form it.

Leading Note. The seventh degree of the ascending major scale. It is called *leading* because of its tendency to rise or lead up to the tonic.

Ledger Lines. Short lines drawn above or below the ordinary stave at the relative distances at which the whole lines would be placed.

Legato (It.) (*lĕ-gä'tō*). Smooth and connected, opposite of *staccato*.

Leitmotif (Ger.) (*līt'mō-tēf'*). A guiding theme associated with a special person, act or sentiment in an extended composition.

Libretto (It.) (*lē-brät'tō*). Literally, little book; the text of an opera or oratorio.

Lied (Ger.) (*lēt*). A song, but the word is especially applied to that class of song which owes its origin and evolution to the German temperament, poetic leanings and national tastes.

Ligature. A slur; a group of notes sung to one syllable or in one breath, or bowed with one stroke.

Litany. A prayer, or supplication; in particular, that early form of prayer in which a minister recites a petition and the people answer "Lord, have mercy."

Lullaby. A cradle song.

Lyre. One of the most ancient stringed instruments.

Madrigal. An unaccompanied song, usually a love song, for three or more voices, often six or eight, making use of counterpoint and imitation; perfect about 1450 in the Netherlands.

Major. Greater. A major third consists of four semitones, a minor third of three; used to signify standard or normal as opposed to minor, diminished and augmented; applied to intervals, chords and keys.

Major Mode or **Scale.** The ordinary diatonic scale, having semitones between the third and fourth, and seventh and eighth degrees.

Manual. A key or digital of a keyboard; the keyboard of an organ played by the hands, as opposed to the pedal board played by the feet.

Marcato (It.) (*Mär-kä'tō*). Marked, or emphasized.

March. A musical composition so arranged as to be suitable for accompanying troops in marching. There are quick and slow marches, in double and triple time, besides marches peculiar to certain nationalities.

Mass. Name given to the Communion Office, Eucharist Service or Liturgy, from the words "Ite missa est" (Depart; the congregation is dismissed), sung by the priest or minister, just before the end of the service. The subdivisions are: Kyrie, Gloria, Credo, Sanctus, Benedictus and Agnus Dei.

Mazurka (Pol.) (*mä-zoor'kä*). A Polish dance of lively, grotesque character, the music of which is in $\frac{3}{4}$ or $\frac{3}{8}$ time, with a peculiar rhythm; a composition in the rhythm of this dance.

Measure. Time; pace; rhythm; the contents of a bar; also the space lying between two adjoining bars. In England the name used for a very stately dance, slow in movement, supposed to be somewhat like the Minuet and in favor on occasions of high Court functions, somewhat like our Grand March.

Mediant. The third degree of any scale.

Meistersinger (Ger.) (*mīs'tĕr-sing-ĕr*). A title given to the most renowned musician of a township or district in Germany during the Middle Ages.

Medley. A mixture; a composition made up of detached passages from other compositions; usually applied to vocal music.

Melodrama. A dramatic piece in which the interest is heightened by the character of the vocal or instrumental music accompanying certain situations.

Melody. An agreeable succession of simple sounds, produced by a single voice or instrument, and so regulated as to give a pleasing effect, or to be expressive of some kind of sentiment; opposed to harmony, which consists of two or more tones sounded simultaneously; the leading part of a composition.

Meter, Metre. The grouping of notes or beats into units of measure to form rhythm; the distribution of long and short, accented and unaccented notes in the measure.

Metronome (Gr.) (*mĕt'rô-nōm*). An instrument said to have been invented in 1816 by Maelzel, for the purpose of measuring the relative duration of the notes in a piece of music. The machinery is of clock work, and the various grades of time are measured on a balance-rod serving the purpose of a pendulum, the speed being regulated by a shifting or sliding weight. To be correct, the metronome should beat seconds when set at 60.

Mezzo (It.) (*mĕd'zō*). Medium, half, as *mezzo bravura* —semi bravura style.

Mezzo-Soprano (It.) (*mĕd'zō-sō-prä'nō*). A female voice, the range of which lies between the soprano and the alto.

Middle C. The note standing on the first ledger line above the bass stave and the first ledger line before the treble stave.

Minor (Lat.) Less; smaller; applied to intervals and to chords, scales, and keys having intervals a semitone less than major.

Minor Scale. A scale having its third and sixth minor. There are three forms: *Normal* or *natural minor* which has half steps between 2 and 3, and 5 and 6. *Harmonic minor* which is the same except that the 7th tone is raised a semitone. This makes it a scale with half steps between 2 and 3, 5 and 6, 7 and 8, and one step and a half between 6 and 7. The *Melodic minor* has half steps between 2 and 3, and 7 and 8 ascending, while in descending it usually has the form of the normal minor.

Minuet. A slow, graceful dance in triple rhythm, said to have been invented in Poitou about the middle of the seventeenth century; a composition in the rhythm of this dance.

Missa (Lat.) (*mē'zä*). A mass; as *missa pro defunctis*, a requiem mass.

Mode. A scale; a species of scale, as *major mode*, *minor mode;* a church scale.

Modulation. Going from one key to another, by a certain succession of chords, either in a natural and flowing manner, or sometimes in a sudden and unexpected manner; inflecting the voice musically.

Moll (Ger.) (*mōl*). Minor.

Molto (It.) (*mōl'tō*). Much; very; as *molto adagio*, very slow.

Monody (Eng.) (*mŏn'-ô-dĭ*). A song for a single voice, generally of a plaintive character. The term was originally applied to vocal solos in the church service.

Monotone. To recite words on a single note without inflections.

Motet. A vocal composition in harmony, set to words generally from the Scriptures, or to paraphrases of the sacred writing.

Motion. Melodic progression. (1) Motion of a single part, *conjunct* if by single degrees, *disjunct* if by skips. (2) Of two parts, *contrary* or *opposite* if one ascends while the other descends; *oblique* if one remains stationary while the other ascends or descends; *parallel* if both ascend or descend together. (3) Of several parts, *mixed* if two of these motions occur at the same time.

Moto (It.) (*mō'tō*). Motion; movement, as *con moto* with spirited movement, keeping up the interest of the music.

Motive. A musical figure or phrase which serves as the germ from which a composition or a movement is developed.

Movement. Same as *Motion:* style of rhythm, as waltz movement; a distinct division of a composition having its own key, rhythm, themes and general character.

Mute. A small instrument of brass, wood or ivory, so made that it can be readily fixed upon the bridge of a violin or violoncello, to muffle or deaden the sound. The direction for its use is written *con sordini*, or *muta*, its discontinuance by *senza sordini*.

Natural. A sign (♮) which restores a note to its position in the natural scale. It has the effect of sharpening a note previously flatted, or of flatting a note previously sharpened.

Natural Keys. Those having no sharps or flats in the signature, as C major and A minor.

Neapolitan Sixth. A name, apparently without much reason, given to a chord occurring on the subdominant of a minor key, and consisting of a minor third and minor sixth.

Nocturne. Originally a kind of serenade, or night piece; now a piece of music of gentle and quiet character.

Notation. The act and the art of representing music by means of notes and other symbols; these notes and other symbols taken collectively.

Nuances. Shades of musical expression.

Obbligato (It.) (*ŏb'blē-gä'tō*). An instrumental part or accompaniment of such importance that it cannot be dispensed with.

Octave. The interval of an eighth—major, minor or augmented; the whole series of tones within the interval.

Offertory (*ŏf'ĕr-tô-rĭ*). In the Roman Catholic Church an anthem or instrumental piece performed while the bread and wine are 'presented" to God before consecration, and during which a collection may be taken; in Protestant churches, music performed while an offering is being taken.

Open Score. When each part has a separate line assigned to it, music is said to be in *open score*. When more than one part is written, in *close* or *short score*.

Opera. A drama set to music, for voices and instruments, and with scenery, decorations and action.

Operetta. A little opera, generally of a light and playful character.

Opus (Lat.) (*ō'pŭs*). A work; a composition, as Opus No. 1, the first work of a composer. Properly the number of an opus refers to the order of publication, not of the composition. May include several numbers or may consist of a single piece.

Oratorio (*ŏr'ä-tō'rĭ-ō*). A sacred work analogous to an opera, but without action, scenery or costume.

Orchestra (*ôr'kĕs-trä*). (1) A band of musicians performing upon various instruments. The modern orchestra employs four kinds of instruments: (a) *stringed*—belonging to the violin family; (d) *woodwind*—flutes, oboes, clarinets and bassons; (c) *brass* —trumpets, horns, and trombones; (d) *percussive*— kettledrums, cymbals, triangle and bells. (2) The space in a theater occupied by the band or orchestra.

Organ Point (Pedal Point). A tone sustained by one part through a succession of harmonies of which it forms no part.

Ornamental Notes. Unessential notes introduced for the purpose of embellishment, such as *acciaccatura, appoggiatura, grace notes, trill, turn*.

Overture (Eng.) (*ō'vĕr-tûr*). An introduction to an oratorio, opera or other large composition.

Parallel Motion. The motion of two or more parts at fixed intervals as thirds, sixths. Parallel fifths are under certain limitations forbidden.

Paraphrase. The rearrangement of a composition for some other instrument than that for which it was originally written.

Part. The music for any one voice or instrument; division of a work.

Partita (It.) (*pär-tē'tä*). A composition consisting of a collection of dance tunes, which came into vogue about 1700; also called *suite*.

Part Song. An unaccompanied song for three or four voices, which originated in Germany.

Passage. A phrase of music; a figure; a run.

Passion Music. Music set to the narrative of our Lord's Passion in the Gospels, similar to a cantata or an oratorio.

Pastoral. A simple melody in $\frac{6}{8}$ time in a rustic style; a cantata, the words of which are founded on pastoral incidents; a complete symphony, wherein a series of pastoral scenes is depicted by sound-painting, without the aid of words.

Patetico (It.) (*pä-tĕt'ĭ-kō*). In a pathetic manner.

Pause. A rest or pause; a bar's rest.

Pedal. A foot lever, as piano pedal, organ pedal, harp pedal.

Pedal Keys. A set of pipe organ keys played by the feet.

Pedal Point. See Organ Point.

Pentatonic Scale. A name given by Carl Engel to the ancient musical scale which is easiest described as that formed by the black keys of the pianoforte. It consists of the 1st, 2nd, 3rd, 5th and 6th degrees of a modern diatonic scale.

Percussion. An ingenious contrivance whereby a hammer strikes the tongue of a reed and sets it in motion simultaneously with the admission of air from the windchest, thus securing the rapid speech of the reed; the instruments sounded by striking, as drums, cymbals, triangles, tambourines, bells, chimes, castanets and the xylophone.

Period. A complete musical sentence; it is composed of two or more phrases usually of four measures each, and closes with a cadence.

Phrase. A musical clause, corresponding to a line of a poem.

Phrasing. A musical punctuation; in piano music, it refers to varieties of touch; in violin music, to bowing; in singing, to breathing places.

Phrygian (Gr.) (*frĭ'jăn*). One of the Greek modes; the name of a cadence.

Piano (It.) (*pĭ-ăn'ō*). Softly; *pianissimo*, as softly as possible.

Pitch. The position of a sound with reference to the number of vibrations which cause it; as standard of pitch as *International pitch*, now used in all civilized countries except England, in which the A above middle C has 435 vibrations a second.

Pizzicato (It.) (*pēt'sē-kä'tō*). A direction to violinists to produce the tone by plucking the string with the finger instead of using the bow.

Plagal. Church modes beginning a fourth below the authentic and distinguished by the word hypo; also the name of a cadence formed when a subdominant chord immediately precedes the final tonic chord.

Plain Song. A non-metrical chant in one of the ecclesiastical modes, common in early church music; such a melody serving as *cantus firmus* in a contrapuntal composition; any simple tune or melody.

Polacca (It.) (*pō lăk'kä*). Polish. A title applied to melodies written in imitation of Polish dance tunes. Synonymous with the French word polonaise.

Polonaise (Fr.). See Polacca.

Polyphony. Music in which the parts or voices are melodically independent while at the same time in harmony; contrapuntal music; opposed to *homophony*, in which one part carries the melody.

Position. A chord is said to be in its *original position* when the ground note is in the bass, in other *positions* when the relative arrangement of the component notes is changed; a *position*.

Postlude. A concluding voluntary; a piece played at the end of the service.

Potpourri (Fr.) (*pō'pōō'rē'*). A medley, a collection of various tunes linked together.

Precentor. The leader of a church choir or of congregational singing.

Prelude. A movement played before, or an introduction to, a musical work or performance.

Presto (It.) (*prĕs'tō*). Quick; rapid.

Program Music. Music intended to portray or suggest a definite series of objects or events; first applied to Beethoven's "Pastoral Symphony."

Progression. *Melodic progression* is a succession of sounds forming a tune or melody; *Harmonic progression* is the movement of one chord to another, and is diatonic or chromatic.

Psalm. A sacred song.

Quadrille (Fr.) (*kwä-drĭl'*; *kä-drēl'*). A French square dance of five figures in $\frac{2}{4}$ or $\frac{4}{4}$ time; the music for such a dance.

Quartet. A composition in four parts, or for four performers; part of a movement sung by four voices *soli* as opposed to *coro*; the four performers rendering the quartet.

Quintet. A composition in five parts, or for five performers.

Recitative (It.) (*rĕs'ĭ-tä-tēv'*). Musical declamation.

Recitative Accompaniment. Recitative with accompaniment.

Refrain. The *burden* or *chorus* of a song, repeated at the end of each stanza.

Register. An organ stop; the range of voice or musical instrument.

Relative Key. A key whose tonic chord is a relative chord; that is, a key whose first, third and fifth degrees form a common chord made up of notes of the key to which it is related.

Repeat. A sign that a movement or part of a movement is to be twice performed. That which is to be repeated is generally included within the sign of two or four dots in the spaces of the staff.

Requiem (Lat.) (*rē'kwĭ-ĕm* or *rĕk'wĭ-ĕm*). A mass for the dead; a musical setting for the same.

Rests. Signs enjoining the silence of a performer for a given length of time.

Rhapsody (*răp'sō-dĭ*). A composition of irregular form, and in the style of an improvisation.

Rhythm (*rĭth'm*). Movement characterized by regular, measured or harmonious recurrences of stress or impulse, beat, sound accent or motion.

Ritardando (It.) (*rē'tär-dän'dō*). With gradually increasing slowness of pace.

Romance. A vocal or instrumental composition of a romantic character, without a fixed form.

Rondo (It.) (*rŏn'dō*). A vocal or instrumental composition in which the first strain recurs after each of the other strains.

Root. Called also fundamental note, generator and ground note. The lowest note if the chord is in its natural position, but some other if the chord is inverted.

Round. A composition in which several voices starting at stated distances of time from each other, sing each the same music, the combination of all the parts producing correct harmony.

Rubato (It.) (*rōō-bä'tō*). Literally, robbed; some notes are held for more, and others for less than their strict duration.

Run. A rapid succession of notes.

Saraband (Eng.) (*săr'a-bănd*). Spanish dance of Moorish origin, for a single performer, who accompanies himself with the castanets, in triple rhythm.

Scale. A "ladder"; a series of tones ascending by regular intervals, and descending, usually in the same order. The interval scheme of the modern scale is the octave. The standard and most common form is called *major*. The three *minor* scales are the *normal*, *harmonic* and *melodic*. Another variant form is the *chromatic*.

Scena (It.) (*shä'nä*). The largest vocal solo form, usually part of an opera, but sometimes an independent composition.

Scherzo (It.) (*skĕr-tsō*). Literally, jest; instrumental composition of a humorous, playful or whimsical character.

Schottische (Ger.) (*shŏt'tĭsh*). Literally, Scotch; a slow dance of modern introduction, written in $\frac{2}{4}$ time; the music for such a dance.

Score. A copy of a musical work in which all the component parts are shown, either fully, or in a compressed form.

Second. The interval between a fundamental tone and the next diatonic tone above.

Secondo (It.) (*sā-kŏn'dō*). Second; as *violino secondo*—second violin.

Semitone. A half a tone, or an approximate half a tone.

Sequence (Eng.) (*sē'kwĕns*). The recurrence of a harmonic progression or melodic figure at a different pitch or in a different key to that in which it was first given.

Serenade (Fr.) (*sĕr'ĕ-nād'*; *sā'rā-nād'*). Originally a vocal or instrumental composition for use in the open air at night, generally of a quiet, soothing character; now any composition of that general character.

Seventh. The seventh diatonic tone above a fundamental; the interval between a keynote and the seventh step.

Sextet. A composition for six voices or instruments; the performers of such a composition.

Sforzando (It.) (*sfôr-tsän'dō*). Emphasis upon a certain note or chord, marked *sf.* or (∧) or (>).

Shake. An ornament produced by the rapid alternations of two notes, either one tone or a semitone apart, as the case may be. The sign of the shake is *tr.*, the first two letters of the word trillo placed over the chief note.

Sharp. The sign (♯) which raises a note one semitone above the normal or natural pitch; above the proper pitch, as one sings or plays sharp.

Signature. The signs placed at the commencement of a piece of music. There are two kinds of signature, the time-signature and the key-signature—the latter requiring a clef to show the pitch.

Sixth, Cord of the. The first inversion of the common chord; it consists of a note with its third and sixth.

Slur. A curved line placed over notes directing that they are to be played or sung legato.

Solfeggio (It.) (*sōl-fäd'jō*). A singing exercise in which a single vowel or the syllables do, re, mi, fa, sol, la, si are used.

Solo. Alone; as *voci soli*—voices alone.

Sonata (It.) (*sō-nä'tä*). An instrumental composition made up of three or four movements in different though related keys and in different forms and moods.

Sonatina (It.) (*sō'nä-tē'nä*). A short sonata. One in which the subjects are not developed at length.

Song. A short poem intended for music; a musical setting of a short poem or portion of prose.

Soprano (It.) (*sō-prä'nō*). The highest kind of female or boy's voice. Also the singer possessing that voice.

Sotto Voce (It.) (*sŏt'tō vōt'shĕ*). In an undertone.

Space. The degree or interval between two lines of the staff.

Stabat Mater (Lat.). A well-known Latin hymn on the Crucifixion, sung during Passion week in the Roman Catholic Church.

Staccato (It.) (*stäk-kä'tō*). Detached; taken off; separated. Sometimes a dot over a note is called a staccato mark, but it is more properly the sign of a spiccato.

Staff. The five horizontal lines, on and between which music is written.

Stop. The pressure by the fingers of the strings upon the finger board of a stringed instrument; a fret upon a guitar or similar instrument; a collection, register or row of pipes in an organ.

Strain. A musical subject forming part of, and having relation to, a general whole; a complete period, its close being indicated upon the staff by a double bar.

String Quartet. Music written for four stringed instruments, usually two violins, a viola and a cello; the performers of such music.

Style. Character; form or temperament of music with reference to the result of individual influence; the conformity of music to the purpose for which it was written; the conventional or national method of performance, or its construction.

Subdominant. The dominant below; the fourth tone of the diatonic scale, which is in the same relation to the keynote from below as the dominant is from above.

Subject. The theme or principal phrase of any movement from which all the subordinate ideas spring or are developed.

Submediant. The sixth of the scale.

Subtonic. The seventh tone of the diatonic scale.

Suite (Fr.) (*swēt*). A set; series, or succession of movements in music; a large orchestral composition consisting of a series of movements in any one of a number of forms and in different keys; sometimes a collection of distinct compositions.

Supertonic. The tone one degree above the tonic in the diatonic scale.

Suspension. The holding or prolongation of a note in any chord which follows, thereby often producing a discord or dissonance which is resolved by moving the discordant tone into the chord tone which it had displaced.

Symphony. A composition for an orchestra, similar in construction to the sonata, which is usually for a single instrument.

Syncopation. Suspension or alteration of rhythm by driving the accent to that part of a bar not usually accented.

Tablature (Eng.) (*tăb'lä-tûr*). Now obsolete systems of notation, differing for each instrument, indicating the string, finger hole or key to be used instead of the note to be played.

Tarantella (It.) (*tä'rän-tĕl'lä*). A rapid Neapolitan dance in triplets, so called because it was popularly thought to be a remedy against the supposed poisonous bite of the tarantula spider. Others say that the bite of the spider causes this delirious dance, which ends fatally.

Technic (*tĕk'nĭk*). Manner of execution; musical skill.

Tema (*tĕ'mä*). Theme; subject.

Tempo (It.) (*tĕm'pō*). Time or measure; the rate of speed at which a composition should be played. Indicated at the beginning by such terms as *tempo rubato*—robbed or stolen time; *tempo di marcia*—in marching time.

Tenor. The third of the four kinds of voices arranged with regard to their compass; a musical instrument, the range of which corresponds to the high male voice.

Tetrachord (Gr.). A scale-series of four notes; half an octave.

Theme. One of the divisions of a subject in the development of sonata-form; the *cantus firmus* on which counterpoint is built; the subject of a fugue; a simple tune on which variations are made.

Thesis. The downward wave of the hand to denote the absence of accent.

Tie. A curved line placed over two or more notes in the same position on the stave, indicating they should be played as one.

Timbre (Fr.) (*tăm'bĕr* or *tăn'br'*). Literally, texture; the quality of tone or sound.

Time. The rate of speed at which a piece of music should be played.

Toccata (It.) (*tŏk-kä'tä*). A prelude or overture; a composition for the organ or harpsichord, popular in the sixteenth century, free in style, resembling the cappriccio.

Tone. Sound; quality of tone; a sound whose vibrations are sufficiently regular to give it a definite pitch.

Tonic Sol-fa. A letter-system of notation, and of teaching vocal music, employing the syllables do, re, mi, fa, sol, la, and si, with modifications for sharps and flats.

Touch. The resistance made to the fingers by the keys of a pianoforte or organ; the peculiar manner in which a player presses the keyboard, whether light, heavy, firm, etc.

Transition. A modulation; a passing; a change from one theme to another.

Transposition. A change of key; an inversion of parts in counterpoint.

Treble. The highest vocal or instrumental part, sung by women or boys, or played by violins, flutes, oboes, clarinets or other instruments of acute tone.

Treble Clef. The G clef on the second line of the stave used for treble voices and instruments of high and medium pitch, such as flutes, oboes, etc.

Tremolo (It.) (*trĕm'-ō-lō*). The rapid repetition of a note or chord which produces the effect of trembling or quivering; the stop of a pipe organ, which, when brought into use, causes the tones to tremble or flutter.

Triad. A chord of three notes; a common chord composed of a fundamental tone and the third and fifth above.

Trill. See Shake.

Trio. A composition for three voices or instruments; a part of a minuet, march, etc.

Triplet. A group of three notes performed in the time of two. The triplet is always indicated by a slur and the figure 3. ($\overset{3}{\frown}$).

Tuning Fork. An instrument of steel with two prongs, which, when set in vibration, gives out a musical sound varying in pitch according to the thickness of the metal or the length or width apart of the prongs; useful as a standard of pitch in tuning musical instruments.

Tuning. The adjustment of the sounds naturally produced by any instrument to some standard pitch and to their proper relation to each other.

Turn. An embellishment following a note, which consists of rapid alternation between the principal note, the note a step above, and the note a half step below, indicated by the sign (∾).

Tutti (It.) (*tōō'tē*). All; the whole, as *tutta forza*—the full power or force.

Unison. Having the same number of vibrations; identical in pitch; another name for the interval *prime*.

Variations. Certain modifications with regard to the time, tune and harmony of a theme proposed originally in a simple form.

Verse. Those portions of an anthem or service intended to be sung by a single voice to a part; a separate stanza of a song or a ballad.

Vibrato (It.) (*vē-brä'tō*). A tremulous quality of tone as opposed to a pure equal production.

Viol. A stringed instrument, shaped like the violin but of larger size.

Virtuoso (It.) (*vēr'tōō-ō'sō*). A skilled performer on some particular instrument, especially the violin.

Vivace (It.) (*vē-vä'tshĕ*). Quickly; sprightly.

Vocal. For or by the voice; music intended to be sung.

Voice. Sound produced by the vocal organs in singing or speaking; the faculty of uttering sound.

Voicing. The regulation of the tone and power of an organ pipe.

Volume. A term applied to the power and quality of the tone of a voice or instrument, or of a combination of sounds.

Voluntary. An organ prelude; an organ solo played before, during or after an office of the Church.

Waltz. A round dance in triple rhythm, performed by couples whirling around and advancing around the room; music in the rhythm of this dance.

Whole Note. The longest note in common use. Shorter notes are timed as parts of the whole note.

Whole Rest. A rest equal in duration to a whole note.

Whole Step. A major second; the interval between a fundamental tone and the next diatonic tone above.

CERAMICS

IN THE broadest sense the term ceramics includes the whole field of the compounds and mixtures of which the foundation is silica and to which solidity and permanence are given by the action of fire. In this term, therefore, are included not only pottery and porcelain but bricks, tiles, terra cotta, stoneware, glass, the hydraulic cements and enamels for steel ware and for use in jewelry. The practical production in each case involves mixing or preparation, shaping or application and firing or fusion.

The study of ceramics may be approached from many sides. The historical view concerns itself with the gradual development of the nations as expressed in fictile ware; the artistic is founded upon the historical and deals with clay, glaze and color as means of art expression; the technical and scientific considers the methods by which results are produced and the industrial or utilitarian view deals with the production of wares upon a large scale and as a commercial proposition.

Materials. Certain rocks and minerals are the foundation of all ceramic work. Clays of all kinds, feldspars, quartz, limestone, steatite, cryolite and fluorspar are used more or less, together with, for glazing, the compounds of lead, zinc, barium, boron, potash and soda. Some of these substances are easily fusible, others resist the action of very high temperatures and the remarkable variety of ceramic products is due to the possibility of wide variation in the nature of the compounds. Two things are, in the main, necessary, a sufficient resistance to the action of fire and a sufficient yielding to produce the solidity due to partial fusion. Some clays, such as those used for brick or terra cotta, possess both these properties naturally balanced, others, such as the white clays used for porcelain and fine earthenware, possess only the refractory nature, the yielding to heat must be induced by an admixture. Thus all white wares are more or less artificial in that the material is not found in nature ready for use. In fact almost the only wares which are made from unmixed clays are bricks, roofing tile, pipes for drainage and conduits for wiring.



Arretine Bowl—Roman

Red Arretine pottery, depicting, in relief, men fighting bears. This piece bears the stamp of Marcus Perennius. First century B.C. to first century A.D.

DEVELOPMENT OF CERAMICS

The development of clay-working among the nations has been through similar phases in all parts of the world although in some cases the beginning has been with the brick, in others with the pot. Broadly speaking the brick was evolved from adobe and was manufactured only under climatic conditions such as make sun-dried clay a possibility. The pot was evolved from the basket, leather or bark vessel and was made by primitive peoples in many parts of the world. Possibly sun-dried pots were made at the first but no specimens remain. The origin of burning or baking the clay is unknown. The Britons placed pots in the funeral pyre and afterwards collected the bones and buried them in one of the vessels, using others to contain food and water.

While the earliest pottery was shaped by hand alone, numerous examples formed on the potter's wheel have been found in settlements dating from 4000 B.C. The wheel of that period was very crude but the evidence of its use is definite.

The Greeks. As producers of pottery from natural clays the Greeks were supreme. Thousands of their vases are now to be seen in museums. The work is classified under certain well marked styles. The earliest wares were plain or simply decorated with bands; then came the Geometric style in which, as the name implies, the pieces were covered, more or less completely, with lines arranged in angular patterns. This was succeeded by the black figured ware in which animals, birds and human figures were painted in black silhouette upon the brown or red clay. The finest period was that of the red figured ware in which the black pigment was used as a background the figures being reserved in the natural red. All these wares are fired only once, the pigment being laid upon the unburned clay.

The Romans. The Roman potters carried their art into many lands using often local clay. The black ware commonly known as Upchurch from the locality in England where much of it has been found was made of a common red clay and was turned black in the burning by the action of smoke. Castor ware is a variety which is characterized by painting in white clay upon a black or brown body. Arretine ware was molded from a bright red clay and glazed. None of these ancient wares has been perpetuated with the possible exception of the Castor ware which may have been the remote ancestor of the early English slip decorated wares. The treatment is similar though there does not seem to have been any continuity of production.

Chinese Influence. The whole trend of the pottery idea was changed by the influence of Chinese porcelain upon the Western world. Up to about the thirteenth century dark colored wares from natural clays had been made exclusively but as soon as the porcelains of the Chinese became known through the channels of trade the whole ceramic world strove for the production of white pottery. In the Near East the expedient was adopted of coating the dark clay with a white veneer of ground quartz mixed with a little pipe-clay. The knowledge of this process was confined to the Persians, Arabs and Moors but upon the invasion of Spain by the last named people the ware known as Majolica was originated. The characteristic feature of this is a glaze rendered opaque by the use of tin oxide which serves, as did the earlier white veneer, to conceal the dark colored clay of the body. Nearly every country in Europe participated in this development. The Majolica of Italy, the Delft of Holland, and the different styles of faience made at Nevers, Rouen, Moustiers and other places in France are technically almost identical. Wide differences are, of course, apparent in design and form but the essential technique is the opaque tin enamel.



Lykaon Vase

Greek red-figured vase, amphora. Fifth century B.C. Warrior bidding farewell to his family. Attributed to the "Lykaon painter."

Majolica derives its name from the island of Majorca in the Mediterranean whence these wares were exported. The term was first applied only to the lustered pottery which originated in Spain and was afterward made with such great success in Italy, but it is now generally used for all wares with the stanniferous enamel or tin glaze. Whether the knowledge of this was carried from Spain to Italy or was communicated to the Italian potters by Oriental workmen is a debatable point. In any case it was in Italy that the art reached its fullest perfection. The names of Luca della Robbia, Giorgio Andreoli and even Michelangelo himself are connected with this product while it is from the town of Faenza that the word *faience* is derived. The world is fortunate in possessing a manual of the potter's art in Italy during the sixteenth

century by Piccolpasso, a contemporary writer. In this most exhaustive work detailed information is given as to the production of the wares of the time and every modern writer has drawn liberally upon this source.

Soft Porcelain may be said to have grown naturally from Majolica, first in Italy where the rare Medici porcelain was made about the year 1580, and afterward in France at St. Cloud in 1695, at Chantilly in 1725 and at Vincennes the forerunner of Sèvres. The aim of the early porcelain makers was to produce a translucent white ware which should approach the Chinese masterpieces in appearance. No pure white clay had then been discovered in Europe so that the result had to be accomplished by artificial means. A mixture was made of sand, gypsum, salt, alum and niter and was fused in crucibles to a solid slag known as "fritt." This was then ground



Italian Majolica

Tazza, Italian, sixteenth century (1524?), Gubbio; Maestro Giorgio (maker). Predominately blue and green with ruby and gold luster.

to a fine powder and to it was added a small portion of a plastic calcareous clay. This clay tended to darken the color so that it was not possible to use enough to impart a working plasticity to the mass. Hence the porcelain makers were driven to use such emollients as soap and mucilage before the paste could be shaped. So tender was this ware in its resistance to fire that heavy losses were experienced in the kilns and it was eventually superseded by the hard porcelain which now constitutes the staple European product. No more beautiful ware than the French "pâte tendre" has ever been made. The glaze was a very fusible glass composed largely of lead oxide and, consequently, the paintings, which were executed with consummate skill by artists of repute, sank into the glaze in the burning and acquired their lustrous beauty. To this fact is also to be attributed the superb quality of the ground colors, the inimitable turquoise, the apple green, the rose du Barry and the blue du Roi.

Development in France. France gave birth, in the sixteenth century, to two notable departures from the established methods. These were the faience known as Henri II and the ware of Bernard Palissy. The former has been the subject of much discussion as to its place of origin. It was first attributed to Helene de Hangest who was a woman of refined taste, the chatelaine of the Chateau of Oiron. It was said that she and her librarian together made this pottery as a labor of love. Only about sixty pieces are now known to exist. The characteristic feature of the ware is that a light, yellowish clay is inlaid, somewhat after the method of a bookbinder, with clays of darker color, the whole being covered with a transparent glaze. Other locations have been given to this ware but the name Henri Deux is accepted as the most satisfactory.

Bernard Palissy was born in 1510 and his life has inspired many a theme. His aim was to make a perfect white enameled pottery and though he struggled for fifteen years he never realized his purpose. He made, however, the beautiful colored glazes which will always be associated with his name. Being a devoted student of nature he modeled reptiles and fishes on his platters and covered the clay with glazes in the natural colors.

Neither of these two wares had any appreciable effect upon the ceramic industry nor is either of them made at the present time.

Hard Porcelain. Chinese porcelain is generally conceded to be the criterion, as it is the prototype of this class of ware. The ingredients are the pure clay known as kaolin, feldspar and quartz. The glaze is composed of lime, clay, feldspar and quartz. Both body and glaze are burned together at a very high temperature. The perfection of the work of the Chinese potters was reached between the fourteenth and the seventeenth centuries to which period most of the finest pieces are referred. It was this porcelain which inspired the European connoisseurs as already stated. France led the way at St. Cloud with a purely artificial ware but the first hard porcelain made in Europe must be accredited to Saxony. In the year 1709 one Johann Friedrich Böttger, being employed as chemist by the Elector of Saxony, was shown some infusible, white earth. He had become interested in porcelain through the fine collection of Chinese and Japanese wares in the possession of the Elector and at once essayed its production. The result was the famous porcelain of Meissen, also known as Dresden. The production of porcelain now became the passion of princes. One after another the rulers of the German states established studios or small factories in which the fashionable art could be pursued. Vienna, Höchst, Berlin, Nymphenburg and many other places became centers of production, but in the majority of cases the work ceased upon the death of the patron. Meissen, Vienna and Berlin still flourish together with a large number of modern manufactories which are successfully producing commercial wares.

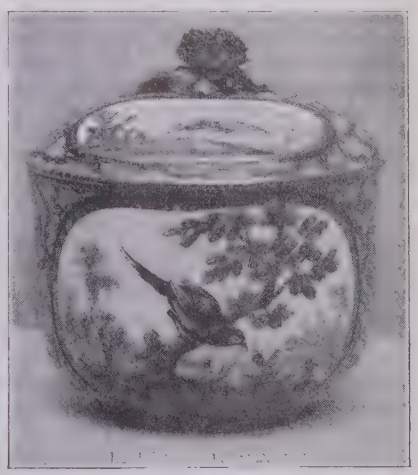
Kaolin or porcelain clay was discovered in France in the year 1768 and after some experiments the manufacture of hard porcelain was begun. For some years both wares were produced at Sèvres but in 1804 the soft paste was finally abandoned.

ENGLISH PORCELAINS

England soon became involved in the passion for porcelain, three manufactories being established within a very brief period. These were Bow (1744), Chelsea (1748), and Worcester (1751). The work of each was in almost close imitation of the French in technical treatment but influenced by the Chinese as to motive. The china made at Bow contained as one of the ingredients a white earth which was imported from America, from the "back of Virginia" a locality whence china-clays are now procured. There was a factory in Derby which was flourishing in 1756 though the exact date of its origin is unknown. Worcester, now known as "Royal Worcester" is the only one of these establishments which survives, though a new factory has been set up at Derby.

Hard porcelain in England has had but two exponents. When, in 1756, William Cookworthy discovered china clay in the county of Cornwall he set up a factory at Plymouth, the nearest important town, for the purpose of using the clay. He made a kaolinic porcelain after the manner of the Chinese but so imperfect were his methods that a piece of Plymouth porcelain without a flaw is unknown. The venture did not succeed and in 1770 the factory was removed to Bristol where Richard Champion was already engaged in making a similar porcelain. The works at Bristol are now engaged in the manufacture of earthenware only.

About this time the characteristic English china was perfected. This is known as "bone china" from the fact that the paste contains about forty per cent calcined bone. This ware differs from both soft and hard porcelains and may be regarded as a compromise.



French Soft Porcelain

Sèvres soft porcelain (pâte tendre) sugar bowl (part of a set). Eighteenth century (1761?). In 1759 Louis XV became sole proprietor of the Sèvres factory.

It is not as tender as the French soft paste and is glazed with a compound which is much softer than that necessary for hard porcelain. Much of the success of English table wares may be attributed to the quality of this china.

English Types. While the manufacture of porcelain came to England as an alien art the production of pottery is indigenous to the soil. From the days of the ancient Britons there were potters in the land. They wrought the native clays and evolved the slip painted wares, the combed and marbled wares, the tortoise shell, the agate and the mottled of modern museums. They also made a beautiful white stoneware, glazed with salt after the German fashion and decorated with trans-

parent colors. From the ranks of these men arose Dwight and Toft and Astbury and Whieldon to be topped in turn by Josiah Wedgwood. The potters foregathered in North Staffordshire where clays and coal were abundant and thus were founded the Staffordshire potteries, a federation of small towns which have separate entities but one interest. Here are the famous Minton, Copeland, Wedgwood, Doulton, Meakin, Johnson and a hundred other flourishing factories whose wares are on every table. Nearly all of the English potters make both china and earthenware. The latter is a white ware, light and porous, which is much cheaper than china. Native clays are almost exclusively employed but feldspar is imported from Sweden.

The type of ware known as "Grès de Flandres" originated in Germany and was exported from the low countries, hence the name. It was also, from its hardness, known as "stoneware" and was the forerunner of the recent wares of this type. The first glazing was by a unique and previously unknown process. When the pottery was in the kiln and at a glowing heat a quantity of common salt was thrown upon the fire. This was vaporized by the heat and the fumes attacked the hot clay forming a glassy coating over the surface. This process, while still in demand for decorative wares, has been superseded in the manufacture of common jars by a cheaper method.

POTTERY IN AMERICA

The aboriginal pottery of the United States constitutes a rich field of study to those who are specially interested, but it has no connection whatever with the product of the present day. American pottery apart from the work of the Indian began with the industries of the early settlers in Virginia and Pennsylvania. Brick and roofing tile were probably the first to be made for there is evidence that in Virginia brick were burned in the year 1612, and Professor Morse states that the German immigrants to Pennsylvania introduced the manufacture of roofing tile after the German pattern. Very early in the settlement of the country white or light colored wares were made by those who brought with them a knowledge of the potter's art. Native clays were used, but at that time the country had been so little explored that the finer clays were unknown. Naturally the potters settled where the clays were found and so the pottery centers were established. As a foil to the importation of American clays by English potters it is related that Josiah Wedgwood was greatly exercised in mind over the fact that an English workman named Bartlem emigrated to South Carolina in 1766 and attempted to establish a pottery there. Wedgwood, in a private letter, deplored this, stating that "an amazing quantity of white stoneware" was being exported to the "continent of North America" and expressing the fear that if English potters should begin to practice their art in the "colonies" the trade of the mother country would suffer. Recent developments have shown that his fears were without foundation.

Eighteenth Century. During the eighteenth century a number of small potteries were established in the Eastern counties of Pennsylvania, mainly by the German settlers. Dr. E. A. Barber has made a special study of the wares produced in this district and has written a good deal upon the subject. He thus describes the process of "sgraffiato" as practiced by the Pennsylvania potters—"The decorative process consisted in covering the red clay with a thin layer of lighter colored slip, through which the designs were scratched with a style to expose the darker color below. A coating of transparent glaze, slightly clouded with green and yellow oxides, was then applied to the surface, and, after the final firing, the ware presented the appearance of a rich red intaglio beneath a greenish or mottled-yellow ground."

The slip decoration which was a contemporary of this consisted in using a fluid clay as a pigment. It was usually a light clay painted upon a darker surface but the reverse



Chelsea Plate

Chelsea porcelain (1750-1775), English. Molded rocaille rim, gilded, with exotic birds and flowers.

was also used. Many interesting pieces of these wares are to be found in most museums.

Nineteenth Century. During the opening years of the nineteenth century attempts were made in many parts of the eastern states to establish the industry of pottery manufacture. At first the potters paid but little heed to the location of the clays, thus departing from the practice of their predecessors. Stoneware was attempted in more than one place in New York state where no stoneware clays are to be found. Gradually, however, the matter of the raw material prevailed and segregation began. The first pottery in East Liverpool, Ohio, now one of the most important seats of the industry, was built in 1839 by James Bennett who selected this location on account of the superior quality of the clay for the manufacture of yellow ware. It is interesting to note, as an evidence of the progress of the art, that while this clay is still used, the bulk of East Liverpool wares are now made from clays found elsewhere. Mr. Bennett was joined by his three brothers one of whom, the late Edwin Bennett of Baltimore, was in 1851, the originator of the well-known teapot with the bas-relief of Rebekah at the Well, a design which has been copied by teapot makers all over the world. The next few years saw some important developments. Men bearing the now well-known names of Harker, Taylor, Goodwin, Knowles, Vodrey and Lee settled on the Ohio river and built their kilns until there are now in East Liverpool nearly fifty establishments engaged in the manufacture of clay products.

The first kiln in Trenton, New Jersey, was set up in the year 1852 by Taylor and Speeler, according to Barber. As in the Ohio field the first product was yellow ware made from local clay. In order to improve the quality of the wares extensive search was made for better material with the result that kaolin deposits were found in Delaware and Pennsylvania. Feldspar was also found in Pennsylvania and quartz in Maryland. The potters, coming for the most part from England, were able only with difficulty to adjust themselves to the new materials and heavy losses resulted. Gradually, however, the obstacles were overcome and distinctive wares developed. One of these, known as "Hotel China" is a fine earthenware which closely approaches hard porcelain in character, being white and translucent. This ware is in constant demand wherever severe usage is expected and under such conditions it has no superior. The body is composed of kaolin or porcelain clay, a plastic clay known as ball-clay, feldspar and quartz. The glaze is a compound of lead oxide, lime, potash, soda, boron sesquioxide, alumina and silica. These ingredients, when melted, form a hard glass which protects the body and offers great resistance to wear. The decoration is usually printed beneath the glaze and therefore lasts as long as the china itself.

Belleek. Another development was the soft porcelain known as "Belleek." The name is that of a village in Ireland where a porcelain of similar character was originally made. Not finding any natural substance which would fuse at a sufficiently low temperature, the experimenters, Messrs. Brewer and Bromley, constructed an artificial feldspar or "fritt" to which they added a sufficient amount of plastic clay, thus following the plan of the early workers in France. Belleek ware is of a soft yellow color and is usually made extremely thin. It is much in demand for decorative pieces but is too tender for severe use on the table. The demands of recent years have given rise to the manufacture of sanitary goods in large quantities, some important concerns being exclusively engaged in their production. A strong earthenware is extensively made for general trade, constituting, in fact, the bulk of the household pottery used in the country.

American Decorative Pottery. In pottery which claims to be decorative and ornamental, America has achieved some notable results. The general type of wares made is best defined as faience, that is, glazed earthenware produced at a low or moderate temperature. The glazes are both brilliant and matt and the decorations are either beneath the glaze or consist in colors added to the glaze itself. The pioneer in this field has been the Rookwood Pottery Company of Cincinnati, Ohio.

Rookwood has become, by reason of the variety and technical excellence of its products, a household word among ceramists and a study of the career of the concern will prove to be very instructive. In addition to the production of rare and beautiful vases in the standard brilliant glaze, Iris, matt glaze

and the inimitable vellum, Rookwood has embarked in the manufacture of tiles and architectural faience. Some very important works in interior decoration have been carried out in the cities of the Middle West and it is evident that there are unlimited opportunities for development.

In addition to a number of factories, large and small, where wares of similar character but of less artistic value are being made, there has sprung up a vogue of individual craftsmanship. Many artists are designing and producing decorative wares of originality and beauty for which there is a fair demand.

Commercial and Structural Pottery. In structural pottery, brick, roofing tile and terra cotta, great progress has been made in America in recent years. Common brick, made from soft clay in wooden molds, stands first as to quantity for all structural work needs it in the concealed parts. Many alluvial clays are used in the manufacture.

Refractory wares such as firebrick, tuyeres, locomotive blocks, gas retorts and furnace linings in general form an important section of the ceramic field.

Architectural Terra Cotta is now recognized as the most satisfactory fire-proof building material. For the most part the coal-measure clays are the best because of the demand for light colors. These clays are buff colored when burned and therefore do not destroy the light surface tints as red clays would. All terra cotta is either glazed with a dull face or coated with a thin film of prepared clay which both secures uniformity of tint and also the desired color effect. The surface is impervious to water and is easily cleaned. The weight of the pieces makes it impossible to dip them in the liquid so that the coating is sprayed on by means of compressed air.

Electrical Porcelains. Recent advances in the use of electric power have made it necessary to transmit high tension currents for long distances. This has created a large demand for insulators capable of resisting the strain. Glass, while suitable for currents of low voltage will not, on account of the irregularities of structure caused by rapid cooling, stand the heating which is inseparable from the transmission of currents at high pressure and recourse has been had to porcelain. The body structure is the same as that used for all porcelain wares except that color is not of great importance. It is found, however, that the white porcelains are the best because they can be burned at a higher temperature than those of impure color, in fact the color of the ware is an indication of the purity of the clay. The wares are glazed with the lime-feldspar compound already mentioned and are burned at an intense heat, approximating 1400 C. They are tested under an enormous voltage for the detection of flaws.

The arrival of the automobile and the airplane has created a large demand for porcelain spark plugs. These are made in several varieties according to the requirements of the case. The operations have been so standardized as to be almost entirely automatic and great mechanical perfection has been attained.

TABLE I. POTTERY AND EARTHENWARE

Country	Date	Nature of Product	Remarks
Egypt	B.C. circa* 3000	Unglazed pottery.	Household vessels, mostly wheel made.
Egypt	1900	Glazed stoneware.	Rich blue glaze. Figures and charms molded.
Assyria	800	Unglazed pottery.	Utensils both hand and wheel made.
Assyria	700	Inscribed tablets.	Cylinders and slabs with impressed letters.
Babylonia	700	Unglazed pottery.	Utensils.
Greece	1800	Pottery, Minoan.	Primitive decoration. Wheel made.
Greece	700	Polished pottery, also called Mycenaean.	Geometric style. Interlaced lines in dark color. Wheel made.
Greece	600	Polished pottery, also called Mycenaean.	Wheel made. Archaic style. Birds and animals in black silhouette, the details scratched in
Greece	600	Polished pottery, black figured ware.	Wheel made. Human figures in black, faces in profile, eyes fronting.
Greece	500	Polished pottery. Red figured ware. Finest period.	Wheel made. Background in black, figures in natural color of clay. Faces and eyes in profile; drapery in detail.
Greece	400	Polished and ornamental ware. Decadent period.	Figures and embossments in color.
Rome	100 to A.D. 40	Black and gray ware, called Upchurch from the English locality where much is found. Found also in France and Germany.	Wheel made. Lines polished. Black color produced by smoke in burning.
Rome	A.D. 40	Dark ware with white decoration. Called Castor from the English locality.	The beginning of "slip" painting. Hunting scenes and scrolls.
Rome	40	Samian or Arretine ware.	Bright red glazed pottery. Molded with decorative scenes and scrolls.
India	900 et seq.	Pottery of natural clay with colored glazes.	Wheel made. Decorated with floral arabesques under the glaze.
Japan	200	Common pottery glazed and unglazed.	The art introduced by Korean potters.
Persia	1300	Engobe or slip coated pottery.	A natural dark clay covered or veneered with a white coating, colored and glazed.
Persia	1400	So-called "Gombroon ware," attributed to Chinese influence.	A porcelaneous earthenware of fine quality. Perforated and filled in with semitransparent glaze. Sometimes decorated in blue.
Syria and Arabia	1400	Engobe ware of the same general type as the Persians.	Decorated under the glaze with fine arabesques in color.
Asia Minor	1500	Engobe ware of the same general type as the Persians.	Characterized by the use of a red earth as a pigment.
Spain	1320	Tin enameled ware, known as Majolica.	A dark natural clay covered with an enamel opacified by tin oxide. Lustered and decorated in color.
Italy	1350	Tin enameled ware, known as Majolica A most extensive and important product which emanated from many centers.	Elaborately decorated in color and embellished with rich paintings. Lustered and sometimes with a brilliant overglaze.
Italy (Luca della Robbia)	1450	Architectural modeled work coated with the characteristic tin enamel.	Luca della Robbia is believed to have greatly improved the quality of the enamel.
Italy (Giorgio Andreoli)	1520	Ruby pots, dishes and platters.	The Maestro Giorgio worked at Gubbio and his ruby lusters are unique.
France (Nevers)	1580	Tin enameled wares in Italian style.	The maker of these wares came from Faenza, hence the term "faience."
France (Rouen)	1540	Tin enameled wares of superior quality.	The style is entirely French. Figures and conventional ornament.
France (Moustiers)	1680	Tin enameled wares of superior quality.	Painted with hunting and domestic scenes on a very pure enamel.
France (Henri Deux)	1520	Glazed cream-colored pottery, inlaid with dark clays.	Also called Faience d'Oiron from the supposed place of origin. A very rare and valuable ware; only fifty-three pieces are known.
France (Palissy)	1560	Light colored earthenware with richly toned glazes.	Modeled embossments of natural objects glazed in proper colors. Also some modeled figures.
Germany	1540	Salt glazed stoneware.	Brown, gray or cream clays, embossed and sometimes decorated in blue.
Holland	1600	Tin enameled pottery decorated in blue.	The well-known delftware.
England	B.C. 400	Primitive hand-formed pottery.	Used in funeral ceremonies and found in burial mounds
England	A.D. 490	Anglo-Saxon pottery.	Crude and unglazed.
England (Malvern and other places)	1250	Encaustic tiles. Parti-colored clays.	Made for church use, by the monks.
England (Fulham Mortlake and Staffordshire)	1550	Salt glazed ware.	The knowledge derived from Germany.
England (Staffordshire)	1610	Lead glazed pottery on colored clays.	Primitive in character. Either wheel made or shaped by hand.

* **Circa** or **ca.**, meaning "about."

TABLE I. POTTERY AND EARTHENWARE—Continued

Country	Date	Nature of Product	Remarks
England (Wrotham and Staffordshire)	1620	Slip decorated wares	A characteristic English product. Dark clay with ornamentation in light-colored slips.
England (Lambeth, Staffordshire, Liverpool)	1635	Tin enameled wares	Introduced from Holland.
England (Staffordshire)	1680	Combed and marbled wares in parti-colored clays	A domestic pottery largely made in cottage homes.
England (Etruria)	1762–1776	Wedgwood wares, queensware and jasper	The beginning of modern manufacture.
England (Leeds)	1770	White earthenware	Perforated and glazed.
England (Staffordshire)	1784	Willow pattern, introduced by Spode	Spode was the forerunner of the house of Copeland.
England (Lambeth, Doulton)	1818 (still working)	Stoneware	A salt glazed ware, decorated in sgraffiato and otherwise commonly known as "Doulton ware."
England (Staffordshire, Furnivals)	The date of origin of these factories is unknown		A fine quality of earthenware for table use.
England (Staffordshire, Meakin's)	They developed from the domestic industry of the seventeenth century		An excellent earthenware, largely in demand for table services.
England (Staffordshire, Johnson's)			One of the best of the English earthenwares.
China	A. D. circa. 800	The first hard porcelain	Porcelain was a gradual development. The first undoubted product appears in the Sung dynasty.
China	1368	Ming dynasty. The finest period	The works of this time constitute the crowning glory of Chinese porcelain.
China	1661	"Famille vert." (Jacquemart)	The porcelain was finished and glazed in the usual way, then decorated in black and covered with a fusible green enamel.
China	1723	"Famille rose." (Jacquemart)	Overglaze decoration in which a rose color made from gold is the characteristic feature.
Italy (Florence)	1580	A semihard porcelain with blue decoration	The famous and rare Medici porcelain. Only twenty-six pieces are known.
Italy (Capo di Monte near Naples)	1743	Soft porcelain	Modeled figures colored over the glaze.
Spain (Buen Retiro)	1760	Soft porcelain	Removed from Capo di Monte when King Charles of Naples became King Charles III of Spain.
France (St. Cloud)	1695 to 1773	Soft porcelain	The first French porcelain.
France (Vincennes)	1745	Soft porcelain	Vincennes was the forerunner of Sèvres. In 1753 the king of France purchased one-third of the stock and gave the title "Royal" to the factory.
France (Sèvres)	1756	Soft porcelain (pâte tendre)	Removed from Vincennes. In 1759 Louis XV became sole proprietor.
France	1769	Hard porcelain (pâte dure)	Kaolin or porcelain clay was discovered at St. Yrieix in 1768 and the production of hard porcelain followed. The pâte tendre was finally discontinued in 1804. The factory still exists as the most important national porcelain works in the world.
France (Limoges)	1779 et seq.	Hard porcelain	The famous works of Haviland, Guerin, Pouyat and others now manufacture very large quantities of the well known French china.
Germany (Meissen or Dresden)	1709	Hard porcelain	No porcelain was made in Germany until the discovery of kaolin. Böttger was the first man to make hard porcelain in Europe.
Germany (Vienna, Anspach, Bayreuth, Höchst, Fürstenberg, Berlin, Frankenthal, Nymphenburg, Ludwigsburg, etc.)	1718 to 1758	Hard porcelain	Nearly every German prince desired a porcelain works during this period. There is not much to choose between the wares as regards quality, but the decorations, largely over the glaze, bore different characteristics. Few of these factories are now in existence.
Denmark (Copenhagen)	1760	Soft porcelain	This factory was closed in 1768. The paste is good and the painting of excellent quality.
Denmark	1772	Hard porcelain	Became a royal manufactory in 1779. Is now noted as one of the first in the world.
England (Bow)	1744	Soft porcelain	Bow was at one time called "New Canton." It is believed that bone ash was here first used in English china. The factory was closed in 1776 when Duesbury removed the equipment to Derby.
England (Chelsea)	1745	Soft porcelain	Patronized by the king and the duke of Cumberland. The style of treatment was French. Purchased in 1769 by Duesbury and the equipment removed to Derby.
England (Derby)	1750 (uncertain)	Soft porcelain	Derby was concerned in the making of china probably as early as 1745. In 1769 Duesbury combined with the Derby works the resources of Bow and Chelsea. Hence the term Chelsea-Derby.
England (Derby)	1877	Bone porcelain and other wares	Edward Phillips of the Worcester factory built the new Derby works and began the manufacture of "Royal Crown Derby" porcelain. The factory now stands among the foremost in England.
England (Worcester)	1751	Soft porcelain. Ivory porcelain. Bone porcelain	Founded by Dr. Wall and for a time occupied chiefly in producing Chinese patterns. Consolidated with Chamberlains in 1840. The present company formed in 1862 and now manufactures the famous Royal Worcester wares.
England (Coalport)	1814	Soft porcelain. Bone porcelain	The successor of Jackfield and Caughley. This factory is still in existence and produces fine wares.
England (Plymouth)	1768	Hard porcelain	This, the first factory in England for the manufacture of hard porcelain, was established by Cookworthy as a consequence of the discovery of porcelain clay in Cornwall. Removed to Bristol in 1771.
England (Bristol)	1768	Hard porcelain	Champion began to make porcelain in Bristol and in 1771 purchased the Plymouth patent. The works still exist, but for the production of earthenware only.
England (Burslem, Doulton)	1880 (still working)	Bone porcelain and other wares	The factory of Pindar, Bourne & Co. was purchased by the firm of Doultons, Lambeth and the work produced now ranks with the first of English wares.
England (Stoke-on-Trent, Mintons)	1793 (still working)	Bone porcelain, earthenware and pottery	Begun as a manufactory of earthenware, the house of Minton, under the leadership of Campbell and Arnoux, took the lead in the well known Staffordshire potteries. The wares are of the finest.
England (Stoke-on-Trent, Copeland)	1779 (still working)	Bone porcelain, ironstone china and other wares	Copeland was the successor to Spode. Considerable success has been achieved in all kinds of table services. Ornamental wares have been made also.
England (Cauldon Place, Brown-Westhead, Moore & Co.)	1794 (still working)	Bone porcelain and earthenware	The present house is the successor of Ridgway & Sons. They are noted for china dinner ware.
England (Etruria, Wedgwood)	1762 (still working)	Bone porcelain and earthenware	The original house of Wedgwood has taken up and developed all the modern styles with much success.

GLASS

Some authorities have objected to the inclusion of glass under the term "ceramics" believing that only clay wares should be so classed. The fact is, however, that the difference is only a matter of fire. Any mixture of clays and rocks such as constitutes a ceramic product can be made into a glass if fused at a temperature sufficiently high. The art of the ceramic worker involves the ability to adjust composition and temperature to each other so as to achieve the desired result. The same limited range of materials is used in each case, varying only in respective proportions. Glass consists essentially of silica, lime, soda, potash, the oxides of lead, zinc, barium and boron with or without small quantities of alumina. Not all of these are present in any one compound. Thus window, plate and bottle glass contain silica, soda and lime. Flint glass contains silica, lead oxide and potash while optical glasses contain some or all of these with proportions of the other oxides named.

The ingredients are carefully weighed and mixed. Small batches are melted in clay pots shaped for the purpose from which the workers gather the material as required. In mass production huge tanks are built of refractory clay blocks. The mixture is fed to the tanks at one end and the workers or machines gather the molten glass at the other. None of the other ingredients named contributes color to the glass batch. Colors are produced by the oxides of cobalt, copper, iron, manganese, nickel or chromium. Ruby glass is colored by gold or selenium. Opal glass contains opacifying substances such as the oxides of tin, antimony and zirconium.

History. The origin of glass is lost in obscurity. Pliny, the historian, relates that certain Phoenician mariners landing upon the Syrian coast took from their vessel some blocks of soda in order to support their cooking pots; that the soda fused by the fire and glass was formed with the sand of the beach. Perhaps the blocks were the soda bearing rock known as "trona," common in Egypt. It seems more likely that glass originated during the firing of pottery for many clays and rocks are quite fusible. It is certain that glass was known in Egypt as early as 2600 B.C. for on the tombs at Beni Hassan there are drawings of glass-blowers at work. Glass from Egypt or Greece is not common but in Roman times there was a large production. The glass is not clear even when uncolored. Some coloring oxides were used but the brilliant prismatic colors familiar in museum collections are the result of disintegration, the material was imperfectly fused and the influence of atmosphere or earth has brought about a separation of delicate films through which light is refracted. The Romans also made window glass. Stained glass, such as that used in church windows was produced in its greatest beauty between the twelfth and sixteenth centuries.

While glass for table and household use was made quite extensively in the Near East during the Middle Ages there was no great improvement or development until the sixteenth century when all the arts were stimulated by the great Renaissance. Venice took the lead. It is said that the purity of the sand on the island of Murano led to the establishment there of the industry. Venetian glass has long been regarded as the finest exemplar of the art. The industry was soon developed in Germany, France and England but generally with a more utilitarian purpose. Bohemian table glass is unexcelled and of late years the English factories in London and Stourbridge have produced some of the most beautiful examples. In America fine cut glass and beautiful decorative glass are made at Corning, N.Y., and at Long Island studios, but the predominating output consists of bottles, window glass, plate glass, chemical glass, cooking ware, railroad signal lights and optical glass.

Modern Glass Making. Bottles are blown into molds by the use of compressed air. This is accomplished by complicated automatic machines. Window glass is drawn out in cylindrical form. The cylinder is split and flattened. Plate glass is poured upon a large iron table and rolled out to the desired thickness by a metal roller which runs on guide bars. Optical glass is sometimes made by the same method, sometimes by allowing the melting pot to become cold. The pot is then broken and the glass fragments shaped, ground and polished. The primitive mouth-blowing method is now almost confined to decorative and ornamental glass.

All ceramic illustrations are by courtesy Metropolitan Museum of Art.

TABLE II. GLASS

Country	Date	Nature of Product	Remarks
Egypt	B.C. circa 2400	Dark blue glass. Semi-opaque.	The earliest dated specimen is a small lion's head in the British Museum.
Egypt	1450	Transparent green glass.	A bead found at Thebes.
Nineveh	712	Pale green transparent.	A small vase in the British Museum bears the name of Sargon, king of Assyria.
Greece or **Phoenicia**	circa 400	Colored glass. Waved, striated and sometimes carved.	Numerous small bottles. Beads and ornaments.
Rome	circa 30 B.C. to 309 A.D.	Common green glass. Colored and ornamental glass, carved, cut and woven glass.	Enormous quantities of glass of every description, even including window glass, were produced.
China	circa 140 B.C.	Small vessels ornamented and embossed.	The statements regarding early glass in China are very uncertain. But few specimens remain.
Constantinople (Byzantium)	A.D. 800 to 1200	Heavy molded glass in dark colors. Some window glass.	Classic models were followed, but the wars of the period caused much interchange of plunder, and the origin of many specimens is doubtful.
Damascus and the East	1200 to 1400	Vessels of clear glass often richly ornamented.	Many lamps and vessels for religious use are found in mosques.
Italy (Venice and Murano)	1090	Every description of fancy glass.	Glass mosaics preceded the general manufacture of glass in Venice. The furnaces were removed to Murano probably about 1300. Venetian glass is the model for the world.
Italy (Murano)	1490	Mille fiore (thousand flowers) glass.	This had been made by the Romans. Canes of colored glass were cut into short lengths and these, with the cut ends showing, were fused into the body of the vessel.
Italy (Murano)	1500	Vitro-di-trina (lace glass).	Threads of opaque white glass were fused in a geometric pattern into the clear glass of the vessel.
France	A.D. circa 500 to 800	Glass vessels.	Scarcely any specimens remain. The work was probably of Roman origin.
France	1400 to 1600	Utensils of various sorts colored and decorated. Window glass.	Small manufactories of glass existed in many parts of France but most of the product was unimportant.
Spain	circa 500 to 800	Cups, vials and bottles.	As in the case of France, the Roman influence was felt in Spain.
Spain	1400 to 1600	Utensils and drinking cups.	Some Spanish glass bears evidence of Venetian influence. Colored and reticulated forms are found.
Germany	circa 700	Drinking cups.	The influence of Rome is apparent here also.
Germany	1400 et seq.	Steins and goblets. Window glass.	The stein was even then a feature in Germany. A great variety of form and treatment is found. Some highly ornate pieces are preserved.
Great Britain	circa 600	Beads, crude cups, window glass.	Both Roman and Saxon specimens are found. The original "tumbler" was a glass drinking horn which could not be set down until empty.
Great Britain	1300 to 1600	Cathedral glass. Vessels of many sorts.	En lish stained glass for church windows is of the finest. The vessels were generally plain and useful.

Modern Productions	
Italy (Venice and Murano)	The glass is much on the old style. Every description of colored, blown, woven and reticulated glass is produced. The material is still of the lime-soda mixture.
France	A great deal of modern French glass is crystal of the lead-potash compound. The molded glass is very fine. Some French craftsmen have produced wonderful effects in colors.
Bohemia	This glass is well known in the small and inexpensive bric-a-brac of the stores. A good deal of it is decorated in color and gold.
Germany (Jena)	In optical and chemical glass the Jena works lead the world.
England	The English glassmakers are surpassed by none. Table glass of pure crystal, cut glass and ornamental pieces are made in great variety. The Stourbridge district is the most famous.
America	Much of the American glass is molded in the form of tumblers and household vessels. Fine cut glass is made at Corning, Toledo and other places. Plate glass is an important part of the industry.

FURNITURE

THE history of furniture is so interwoven with that of the fine arts that separation is difficult. To understand the rise and development of furniture design the subject must be studied against an architectural and decorative background. Manners and customs and those events which influenced domestic life have had an important bearing on the evolution of household fitments.

Egypt is the cradle of many of the arts, and to Egypt we are indebted for the first light thrown on furniture making. Due to the preservation afforded by the dry air of tombs and temples it is possible to obtain a fairly adequate idea of early Egyptian designing. Excavations have brought to view examples of household equipment constructed of stone, metal and wood. On the theory that the souls of the dead would be aided in a future state by the presence of familiar objects of this life, burial places were filled with domestic furniture and utensils indicative of the rank, position and wealth of the deceased. In the tombs of kings have been found chairs, couches and tables made of ebony, cedar and sycamore, and sometimes ornamented with horn, ivory, silver and gold.

DEVELOPMENT OF FURNITURE

Egyptian. Egyptian art is symbolic, formal and full of restrained vigor. It reflects dignity and seriousness. It lacks the beauty of Greek art and the diversity of Roman, but contains principles which strongly influenced both. Although largely derived from natural forms, it is highly conventionalized. Motives which are repeated over and over, and often found in the embellishment of furniture, are the palm, the lotus and the papyrus. Other important symbols are the scarab or sacred beetle, the asp and the ram. Mythical figures in which wings are an important element appear in all forms of the decorative arts, as do borders composed of frets, circles, triangles, scrolls, leaves, buds and flowers.

Our knowledge of this remote era has been greatly increased by the many representations of domestic life discovered from time to time in the way of painted walls, carved friezes, and crude drawings on rolls of papyrus. Most of our large museums contain Egyptian sections where originals or replicas may be profitably studied. It is possible to obtain a clearer idea of the household art of this far-away day than of the art of several later periods, notably the Dark Ages. Roughly spanned by the sixth and ninth centuries, they have been called thus, as someone has suggested, because we are so in the dark about them.

Assyrian is similar to Egyptian, but not so fine in conception or workmanship. Neither climatic conditions nor the life of the people fostered its preservation. The Assyrians were more warlike, and expressed themselves accordingly. Woods and metals, as well as marble and stone, were employed in the construction of their household furniture. We are indebted to the Bible for much of our insight into the life and times of the Assyrians and the Babylonians with Nineveh and Babylon as the two great centers. The Babylonians were builders of temples, palaces and hanging gardens. Again museums have much to offer the student of these ancient peoples. Plaster casts of friezes found in the palaces of the Assyrian kings impress us with the spirit and action of the participants. Decorative details suggest Egyptian sources, but expressed with greater force and with more dependence on animal forms. The bull, the lion and the griffin predominate, often with human faces. It is a symbolic art, but turned to the pursuit of war rather than peace.

Among the Greeks. Greek art was the supreme expression of its day, and has remained the standard by which we measure proportion, order and beauty. While embodying many of the motives of Egyptian ornament, it developed on lines of greater purity. As a race, the Greeks strove to express beauty in every phase of living and to endow every object with utility and grace.



St. Peter's Chair

One of the earliest examples of wooden furniture. This famous example of ancient wood carving shows a strong Byzantine influence.

The anthemion or honeysuckle, the laurel and the acanthus occur frequently in decoration, together with such borders as the egg and dart fret, guilloche, Greek key, scroll and dentil. Furniture shows many of the characteristics of Egyptian and Assyrian pieces, but suggests a greater regard for line and a more refined feeling for ornament.

Our sources of information are many when we reach this period of the world's industrial history. Greek vases alone with their well painted figures and accessories throw much light on manners, customs and costumes.

Roman Furniture as with Roman architecture and Roman civilization, followed Greek inspiration; but the Roman character and the Roman approach to life differed widely. Carving, inlaying and veneering were known at this time, as was embellishment by means of elaborate mosaics. Among decorative motives may be mentioned all those previously listed with the addition of wreaths, swags or garlands, festoons, emblems of war, emblems of the chase, and many beautiful arrangements of leaves such as the oak, laurel, olive and cypress. The acanthus lost the severe lines of the Greek interpretation and became very complicated in its many foliations. The *curule* chair was the great Roman contribution to furniture making, and as such is worthy of a firm place in the history of domestic art. After the lapse of centuries, Napoleon revived this piece of furniture which is now usually associated with his name.

Pompeian. While Pompeian furniture hardly merits treatment as a distinct subject, it must be remembered that the excavations of entire rooms at Pompeii have added materially to our knowledge of Greek and Roman eras. In many instances walls with their decorations, floors and ceilings, as well as complete sets of furniture, have been found in almost perfect condition.

Byzantine Art. Following the fall of Rome, 476 A.D., we approach a long period in which classical motives are more or less submerged in the Byzantine, which combined Oriental influence with that of early Christian art. In 328 the Roman Emperor Constantine changed the name of the ancient city of Byzantium to Constantinople, and at the same time established Roman rule. Thus Byzantine forces had been, for more than a century, a factor in decorative schemes. This is a fascinating phase to the student of historic ornament, combining as it does Asiatic details with the primitive themes of Christian art; but it has little bearing on the subject of furniture. The same may be said of the Orient in general, and for this reason Oriental influences will not be dwelt upon now. The greatest gift of the Near East to household art was its rug weaving, and that of the Far East, its pottery and porcelain; but these topics, interesting and instructive as they are, lie outside the scope of this article. The famous chair of St. Peter at Rome, said to be the oldest piece of wooden furniture in existence, is an example of Byzantine work. It is inlaid in gold and ivory in an intricate and beautiful manner, the details of which are lost in the illustration.

Romanesque. The great architectural style of the early Middle Ages, the Romanesque, united a blending of late Byzantine and the last of the classic traditions with a more vigorous influence derived from France and the north of Italy. Architects make careful distinctions between French or Norman Romanesque and the development of the style farther south with its more pronounced Byzantine quality. Students of furniture will find that these phases form an important background to their subject and an interesting preface for the great Gothic era spanned by the twelfth and fifteenth centuries.

Gothic Handicraft. In order to understand the significance of Gothic art and its bearing upon all handicraft of the period, it is necessary to consider the conditions that gave birth to this last and greatest of medieval styles. The Romanesque type of building had long been the accepted model; the time was at hand for a change; as in all great innovations, the new movement swung far from the old; the pointed or Gothic arch

solved a problem of construction which the round or Romanesque arch failed to do; and finally the enthusiasm of the people, inspired by the Crusades and the attempt to win the Holy Sepulchre, sought to express itself in new forms.

The leading characteristics of the early Gothic style as applied to furniture designing were the pointed arch, the trefoil (three divisions), the quatrefoil (four divisions), and simple tracery. Furniture was massive, and Gothic motives were confined to ornament. Construction was at first little affected. The prominent features of the later Gothic style as expressed in furniture were the divided Gothic arch, the quatrefoil, the cinquefoil (five divisions), and an intricate scheme of tracery. The number of pieces in actual use at this period were chests of many varieties, cupboards, presses, stools, benches, chairs, bedsteads and bedstocks, the latter being built into the wall.

The Hall. During the twelfth and thirteenth centuries, both in England and France, the hall was the main room in the house—in many cases the one room of the dwelling. In the homes of the nobility it was a lofty apartment which served the purpose of both kitchen and dining room, and afforded the only living room. Meals were served on trestle tables, the lord and lady of the manor sitting on a dais, which elevated them a few inches above their guests.

Below the dais the long and narrow table was set with viands less costly than those served to the master and the mistress. Here were gathered the barons and the retainers. The placing of the salt divided the guests from the serving-people, and the expression, "below salt," is one which has endured until today. On the dais were chairs with high backs and canopies. The latter were convenient in case of rain, for the raftered roof was not always proof against the weather. Benches without backs for the guests, and stools for the servants, constituted the rest of the dining room furniture. Between meals the tables were placed against the wall, and the chairs drawn to the fire. At night the serving-men slept on pallets of straw on the hearth.

The Drawing Room. The fourteenth century added another room in the home of the affluent—a "withdrawing" room—the beginning of our modern drawing room. Here the mistress of the house with her ladies in waiting could retire when the music from the minstrels' gallery became too loud, or the jester's jokes too broad, or the drinking and fun too boisterous.

THE FIFTEENTH CENTURY

The fifteenth century was an important milestone in the march of progress. By this time the hall had lost its early character. It was large and often a meeting place for the owner and his friends; but as rooms multiplied, it ceased in turn to be parlor, kitchen and dining room. It was gradually approaching the great entrance hall of the seventeenth and eighteenth centuries. It retained its fine proportions and its lofty dimensions, but the raftered roof had given place to a beamed or vaulted ceiling. The big fireplace had grown more architectural, though still retaining its generous hearth. The rough walls were replaced by oak panels and fine tapestries, the latter imported from Flanders, for the day of the French looms had not arrived.

During this period, furniture was of two general types—movable articles which could be transported with ease, and massive pieces which could be left behind with safety. It would be a bold thief who would try to escape with a heavily carved chair weighing several hundred pounds and made more unwieldy by a wooden canopy. In the same way the bedstead of the day was also quite immovable, for it, too, was well incased in wood and finished with a canopy. Both canopies had the same origin—namely, to protect the occupant from rain in case the roof should not be sufficient shelter. And while the wooden canopies in a milder form survived long after better building methods came into existence, they had their beginning in defective house building. When houses became water-tight and air-tight, furniture gradually assumed different aspects.



Typical Interior of the Middle Ages
The fireplace in the center of the room still survives in Penshurst, England. From model in the Metropolitan Museum, New York.

Origin of Modern Chair. In the late fifteenth century, except in ecclesiastical chairs, the canopy was discarded. This straight back design was the ancestor of our everyday chair—although three centuries of furniture making intervened between the two. Flemish designers in the sixteenth century had an active hand in its evolution. They remodeled or revised the chair on new lines and sent it to England where, in the seventeenth century, it underwent other changes. But the part the old Gothic designers had in making all this possible must not be forgotten: they took the crude pieces of the Dark Ages—the bench, the chest and the bedstock—and transformed them into things of beauty. They made not only objects of beauty but, in comparison with earlier efforts, articles of real comfort and convenience. Their constructive work was built for centuries rather than for years, yet the delicacy and charm of their carving, now almost as perfect as when it left their hands, still stand as models for the world.

THE RENAISSANCE IN FURNITURE

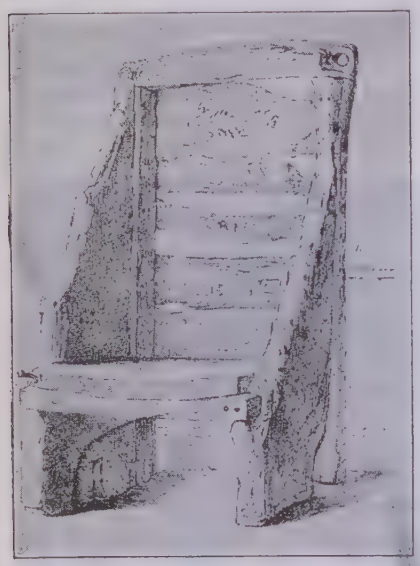
With the sixteenth century came a transformation in living. The Renaissance ("new birth"), beginning in Italy, gradually spread throughout Europe. The house was no longer a stronghold; it had become a home.

Periods. The Renaissance had three distinct styles. The first was developed between the years 1300 and 1400, and its influence was confined to architecture and sculpture. This is known as *trecento.* The second, or *quatrocento* belonged to the fifteenth century, and was a more classic style than its predecessors. The *cinquecento* belonged to the sixteenth century, and was the culmination of the art of the Renaissance. The former styles were but a preparation for the architecture, sculpture, painting and decorative arts of the sixteenth century.

It was not until the *cinquecento* period that furniture showed traces of the classic revival. Woodworkers clung to Gothic designs long after stonecutters had discarded them. Thus some of the *trecento* and *quatrocento* motives are exhibited in the furniture of the sixteenth century. It is well, in studying the woodwork of this epoch, to keep in mind the leading features of the three styles. The *trecento* consisted of interlacing lines combined with simple tracery and conventionalized foliage. The *quatrocento* blended the festoon, the garland, the band, and the cartouche with

naturalistic fruit and flowers. The *cinquecento* was a restoration of classic details and included the fret, the arabesque, the anthemion, or honeysuckle, the scroll and the acanthus.

The Renaissance raised furniture making to an equality with the other industrial arts. Pupils were apprenticed to a master and studied with him until they had perfected their craft, after which they opened workshops of their own. The pieces produced in these great studios united beauty with utility.



Venerable Bede Chair

Chair of rough-hewn wood said to have been used by the Venerable Bede, English monk and ecclesiastical historian, born in Durham in the seventh century.

For the first time designs were made with reference to their setting. The furniture of the private dwelling was suggestive of neither cathedrals nor abbeys. It was made with a careful regard for the needs of the owner, his station and manner of living. Thus houses possessed a harmony which had hitherto been absent.

French Renaissance. The "new birth" in France may be divided into the following epochs: first, Transition, 1453-1515, including the reigns of Charles VIII and Louis XII; second, Francis I, 1515-1547; third, Henry II and Henry IV, 1547-1610; fourth, Louis XIII, 1610-1643. Under Charles VIII the great tide of the Renaissance extended northward.

Francis I and his Successors. The reign of Francis I was one of great activity in all lines of artistic achievement. This monarch, unwilling to be outdone by Henry VIII of England and Charles V of Germany, summoned to his court the greatest architects, painters, designers and woodcarvers of Italy and Flanders. Under his patronage were erected many beautiful buildings, which, in part at least, give some hint of what the French Renaissance accomplished.

France has had but one other such royal patron, Louis XIV. Both sovereigns were nearly equal in power. Francis had the advantage of coming to the throne at a more interesting period of the world's history. His reign, a little more than a quarter of a century in length (1515 to 1547), represented extraordinary achievement. The combined reigns of the five succeeding monarchs—Henry II, Francis II, Charles IX, Henry III and Henry IV—completed the century, and brought to a close the most important years of the French Renaissance. Of these sovereigns, so different in character—four of whom represented the many virtues and vices of the House of Valois—Henry II and Henry IV alone were worthy successors to the great Francis I. They exerted a helpful influence on the fine and industrial arts and left much to testify to their taste and generosity. Both have been immortalized in a "Style," the Henry II being the more celebrated.

Renaissance Details, at first were combined with Gothic construction. It was not until the sixteenth century was well under way that the real force of the Renaissance was felt. France was the birthplace of Gothic art and the transitional period was of longer duration than in Italy.

In the reign of Francis I, chairs became more varied in treatment. The cane design of Flanders was early adopted; the plain high Dutch chair became a favorite, but was somewhat reconstructed. The French seem at all times to have been very much concerned about comfort, far more so than the English who, until the seventeenth century, were more or less indifferent to many of the refinements of life. And it was then by way of France that many minor comforts reached England.

As the sixteenth century advanced, French cabinets developed on high and narrow lines. Those of the Francis I period show carved panels, moldings and pilasters, but seldom anything ponderous—although at this time presses and armoires were built on heavy models. Distinctions between these pieces of furniture were always made in France, where subtle dividing lines were recognized. French furniture makers also made a distinction between designs for the *salon famille*, or family rooms, and the *salon campagnie*, or rooms for more formal use, and this is the reason why so much French furniture which comes to this country is unfitted for our living rooms. It was never intended for anything but gala apartments and, naturally, looks out of place elsewhere.

Henry II in many ways did as much for France, artistically speaking, as did Francis I. He did not build in the lavish way of his father, but two very clever women ruled his court, and each in different ways had a tremendous influence on the arts of the day. One was Catherine de Medici, whose tastes were naturally Italian; the other, Diane de Poitiers, was easily the most remarkable woman of her time. Diane's emblem, the crescent, is found combined with Henry's monogram in one of the beautiful rooms in Fontainebleau. The chimney piece shows the early stages of the beautiful Renaissance pattern known as "strapwork" a carved pattern of interlaced lines, so popular with workers in stone, wood and silver in both France and England. It is seen in woodwork, in furniture, in the Grolier bookbindings, and in the Oiron pottery, also known as Henry II ware.

Between the reigns of Henry II and Henry IV (the latter better known as Henry of Navarre), no marked changes took place in handicraft. By the time the latter came to the throne, a good deal of the beauty of early Renaissance ornament had disappeared. The simple arabesques, seen to such charming advantage in the Francis I style, and the equally simple strapwork of the Henry II style, lost favor with decorators and woodcarvers. Shell ornament, which was destined to play such an important part in the decorative arts of France for nearly two centuries, came into great prominence during the Henry IV period, although known at an earlier date.

During the reign of Louis XIII came many changes in domestic comfort. The upholstered chair, in the modern meaning of the term, came into existence. It was an armchair, and the seat was lower and broader than that of previous periods; and the upholstery, instead of being any rich and sumptuous material which the designer of the chair could command or the owner



French Gothic Chair

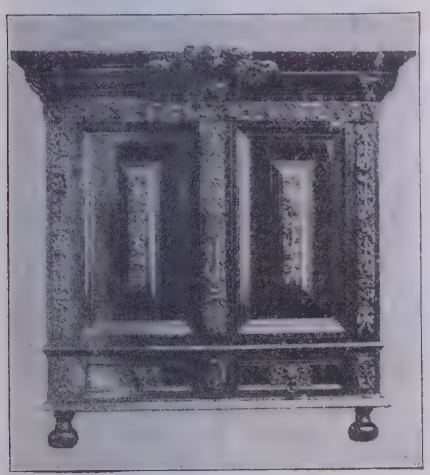
happened to possess, was an especially selected covering so designed as to correspond with other chairs or to harmonize with the wall treatment. Window draperies were also selected with great care and were more than a mere protection against air and sunlight. The age of upholstery had arrived.

Wall treatment received especial attention and was carried to a very elaborate point in France during Louis XIII's reign. Simon Vouet, who bore the same relationship to

Louis XIII that his famous pupil, Le Brun, did to Louis XIV, was responsible for most of the florid decoration of the day. Furniture makers were always a little behind the decorators, and while many of the wall schemes of the day are too ornate from the modern viewpoint, at least the beautiful chairs, tables and cabinets are well worth studying. Flemish influence was strong in the early part of the seventeenth century, due indirectly, it is said, to Rubens' visit to the French Court.

Characteristics of the French Renaissance. There was a transitional period similar to that of Italy, but of longer duration; for Gothic art was more firmly rooted in France than in the south. The ornament of the French Renaissance was in a lighter vein than that of the Italian, and less dependent upon antique models. Delicate arabesques and pierced shields were used by furniture makers and decorators. Later in the sixteenth century woodcarvers combined an interlaced ribbon or strap ornament with the lozenge and the cartouche, and this was followed by the introduction of the shell and the ornate scroll. From that date woodcarving lost much of its charm.

Flemish and Dutch Renaissance. The Renaissance reached Flanders and Holland tardily. Gothic traditions lingered late in the north, and the long transitional period lasted well into the sixteenth century. Holland was always more independent politically than Flanders, and her work was less influenced by outside conditions. This fact makes Dutch work comparatively easy of identification, while that of the Flemish, being more mixed, sometimes raises a question. Spanish and French influences are more often present in the early Flemish work. Charles, King of Spain and Emperor of Germany, was also Count of Flanders and Duke of Burgundy. The intercourse between these countries and provinces grew decidedly intimate at this period. The Italian Renaissance had waned when the Flemish Renaissance was at its height.



Flemish Cabinet
Beautiful carved cabinet of the late seventeenth century. In the Bruyn Collection, Mechlin, Belgium.

Holland and Flanders were far enough away from Italy to be quite independent of her influence. When Italian influence reached Flanders it came by way of France, with a strong mixture of French feeling added. When this complex influence was carried into England it had gained another element in addition to the Franco-Italian, and this is one reason why the English Renaissance swings so far from the classic. In the sixteenth century, particularly, English work showed far more Flemish influence than either French or Italian. In the seventeenth century it was more Dutch than Flemish in feeling, and remained so until the pendulum swung once more toward French designs, this movement giving way to the classic revival of the late eighteenth century.

Flemish Carvings. Primarily the Flemings were great carvers. They had carved for centuries, and having carried Gothic ornament to a fine point, it was quite natural that they should continue to carve when a totally different style came into vogue. They were less bound by classic traditions than the Italians, and maintained a simpler mode of living. The Flemings, in their woodwork, have always used the human figure. Heads of men and women decorate many of their pieces, particularly in such articles as cabinets, cupboards and sideboards, and where there are large expanses of wood to be covered.

Paneling, ribbon bandeaux, garlands of fruit and flowers, strapwork and kindred things are more harmonious in a modern dining room or living room than masks, animal heads or the human figure, clever as they may be in execution. The linen fold pattern, sometimes called the "parchment scroll" is a survival of Gothic ornament. It is found in much of Flemish furniture of the sixteenth century and is one of the simplest and best patterns of that day.

Many Flemish ideas exist in our everyday furniture, but we have long since accepted them as entirely modern. They do not suggest to the casual observer anything bordering on period styles, and are only "period" through long years of transforming and adapting. Flemish furniture makers did much in promoting the evolution of the chair. For example, they rebuilt, as it were, the beautiful Gothic chair, lowering the seat as well as the back, and substituting horizontal braces for the heavily carved arched braces of the fifteenth century. Flemish chairs were of several varieties, but two types were prominent—the upholstered chair with turned legs and braces, and the carved chair with a cane back and a cane seat.

Dutch Furniture. The Dutch at this time were achieving fame in different lines. They were not a nation of carvers. They were great in a different way. Marquetry and inlay were favorite Dutch methods of ornamenting furniture during the seventeenth century. While "inlay" and "marquetry" are often confused, they are quite different in workmanship and appearance. Inlay is of ancient origin and is made by filling in a depression cut from the surface of the wood. The Italian word is *intarsia*, meaning "to insert." Marquetry is of later origin and is, in reality, an "overlay," best described as a thin veneer of different woods fitted together to form a pattern. The veneer, when applied to the surface of the cabinet or other piece of furniture, apparently becomes a part of the construction. In the hands of an expert, there is opportunity for varied and colorful effects with marquetry. Dutch craftsmen have achieved marked success in this field.

The special value of the Flemish and the Dutch Renaissance, from our viewpoint, is the effect it had on the furniture making of England; for by this time (late seventeenth century) we of America had our own furniture interests. If we date the Colonial Period from the time when it really began, 1620, our own era had come into existence; and though no one knew it, least of all ourselves, we were making furniture history.



Dutch Chair Showing Italian Influence
A seventeenth century chair with turned arms, legs and stretchers and carved finials. Private collection, Berlin. Courtesy Metropolitan Museum.

In summing up the contributions of Flanders and Holland to furniture making, special emphasis should be laid on the cane work of the former country and the marquetry of the latter. But Dutch marquetry, beautiful as it is, pertains to decoration rather than construction, and it is to Flemish designers that the greater glory belongs.

German and Spanish Renaissance. Two phases of the Renaissance, German and Spanish, terminate the great Classic Revival on the Continent. In Germany there was a long transitional period during which the lingering traditions of Gothic art died slowly. The early phases of the Renaissance show the grafting of the new upon the old. This mixture of Gothic and Renaissance was less successful in that country than in France, where a happier union prevailed.

The best examples of German woodcarving of the early sixteenth century were of ecclesiastical origin. Choir stalls and altar pieces were richly decorated in the manner of the day. In domestic furniture, the combination of Gothic construction and Renaissance ornament was less harmonious.

The great presses and cabinets are the most characteristic pieces. Made of oak and walnut with carved panels and heavy doors, they are as substantial today as when they came from

the hands of their maker. The cabinet shown has an unusually fine scheme of decoration. The plain surfaces are well distributed and the ornament, although elaborate, is neither heavy nor fantastic. The lock is concealed in the carving, while the key repeats the lines of the ornament. The ball feet are worthy of note, as they indicate a new feature of furniture making.

From her oriental colonies, Spain imported ebony and ivory and other costly adjuncts to furniture making. The elaborate metal work, which today is the most interesting part of a great deal of this furniture, is Spain's most important addition to furniture designing.

The Moors. Damascening, niello-work (the inlaying of metals) and kindred crafts had long belonged to Spain, following closely on the Moorish invasion. In Granada, the city of the Moors, were fashioned many of the



Wainscot Chair of Elizabethan Design
Furniture of the Elizabethan period had a sturdy appearance. Chairs had flat seats and the style was rich and impressive.

most elaborate chests and coffers, and long after the Moorish expulsion, Granada still remained the center of fine cabinet work. Those who visit the Alhambra today can trace many similarities between the wall decorations of this famous palace and the embellishments of old Spanish furniture. The Gate of Justice and the Gate of Judgment recall in a grander, bigger way certain motives in inlay and metal relief, and the whole architectural and decorative scheme brings to mind the comparison that it is all a grandiose kind of jewelry.

The cabinet, elevated on high-turned or carved columns, was a characteristic piece; and as one or more examples are usually found in every museum and in many private collections, it is as typical a specimen as could be selected. One type is quite plain, apparently, but the whole front lowers at the turn of a key and reveals an exquisite inlay of ivory and metals with ornamental bosses. And there are many variations of this beautiful style. Iron is used most attractively at times, and the inlay includes bone, horn, shell, and occasionally painted decorations. In the city of Vargua these colorful pieces were made.

The influence of the Flemish cane chair on the furniture makers of Europe has been mentioned. The leather chair of Spain equaled it in importance. Both had high backs and carved legs and braces, but there the resemblance ended. The Spanish design consisted of a sturdy frame of oak, chestnut or walnut, a back completely encased in leather, turned stretchers, a carved underbrace and hoof feet. English furniture makers of the seventeenth century gained inspiration from both Flemish and Spanish models in their famous Jacobean designs of wood and cane.

The English Renaissance. By the middle of the seventeenth century, French and Italian furniture, like the wall treatments of that day, became heavy and ornate. The vitality of the Renaissance in these countries had ended. It was the age of beautiful surfaces and of elaborate ornamentation. Constructively, neither the Italian nor the French had as much to their credit as in the previous century. Craftsmen were painting the lily and gilding refined gold.

English craftsmen never interpreted the Renaissance as did furniture makers of the continent. When the classic wave reached England, it had gained and lost much on the way. There were French and Flemish influences, and English traditions too firmly planted to be uprooted.

Historic Periods. The characteristics of the sixteenth and seventeenth centuries in English designing may be summarized briefly:

First, the English Renaissance, or Tudor, which was a mingling of Flemish and Italian grafted upon Gothic; second, late Tudor or Elizabethan, showing greater unity (strapwork and paneling were features of this period); third, Jacobean, covering nearly a century, and including many types. Furniture was paneled and carved until the introduction of walnut, when veneer and marquetry became popular. Among Jacobean characteristics were the spiral leg, the rising panel and spindle ornaments. With the accession of William of Orange in 1688, Dutch influence prevailed, and English furniture was slowly developed on more graceful lines.

English Renaissance, Tudor, late Tudor or Elizabethan and Jacobean, are terms associated with the sixteenth and seventeenth centuries—a long period to sum up in a sentence, but one which, in spite of "mixed motives," was remarkably homogeneous.

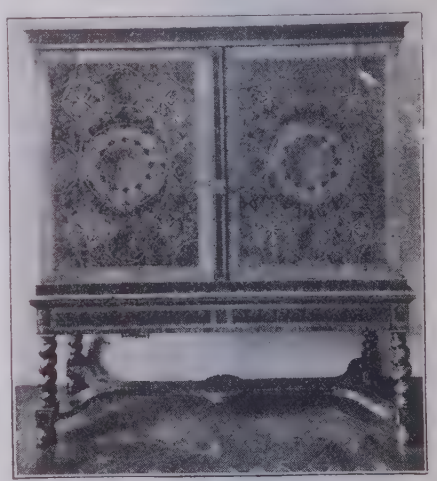
Queen Elizabeth was, of course, very much a Tudor, but having been honored by a style all her own, the term "Tudor" is usually applied to the reigns of Henry VII, Henry VIII and Mary.

Henry VII's reign, beginning in 1485, was contemporaneous with the reigns of Charles VIII and Louis XII. Elizabeth's long term ended in 1603 while Henry of Navarre was on the French throne. The early and late Tudor periods thus covered 118 years, the Virgin Queen (Elizabeth) appropriating nearly fifty. In company with Victoria, she is quite entitled to her own "style."

The Henry II period is very closely allied to the Elizabethan, because of the strapwork motive in wood carving which was popular in Flanders, England and France. Strapwork is seen in many English cupboards of the late sixteenth century and also in chimney breasts and wall treatments. It is one of the most valuable contributions to design of the Elizabethan period, and ranks with the linen fold motive of an earlier day, and with the "rising panel" of a later one.

Styles in English furniture were of slow growth, with much overlapping and intermingling. The Jacobean period was well under way before many changes in design took place, and it was not until Charles I ascended the throne that the popularity of certain Elizabethan patterns waned. Even then the outlines of furniture changed little. The court and livery cupboards were modified to suit a simpler scheme of carving; but oak was still the chief wood, and so long as it remained in use, massive furniture continued to be made. The Protectorate caused a break in the crafts, and by the time it was over and Charles II safely placed on the throne (1660), many new influences shaped and developed English handiwork.

Jacobean furniture is roughly divided into two parts—"Early" and "Late." Early



Mosaic Cabinet
Choice example of marquetry work in English furniture of the seventeenth century.

Jacobean preceded the Commonwealth, covering the reigns of James I and Charles I. Late Jacobean followed the Commonwealth, including the reigns of Charles II and James II. The Commonwealth, or Protectorate, with Oliver Cromwell at its head, was too turbulent to be very productive of the arts.

After the Restoration, all English furniture became more graceful. Charles II had been brought up at the court of Louis XIV, and quite naturally returned to England with French ideas of comfort and refinement.

The furniture of Charles II's time is worthy of its present revival. Designers retained the best of the many motives bequeathed from the earlier part of the century, and combined

them with newer schemes. Paneling remained in favor, but was diversified by nailhead and spindle ornaments.

The introduction of walnut brought about a decided change in English furniture. It made possible a lighter, more graceful construction, and an entirely different scheme of decoration. Carving was largely superseded by marquetry, which was well adapted to walnut and to the Dutch designs which William introduced.



Metcalf Bowler House

Late seventeenth and early eighteenth century furniture against a paneled background. From the Metcalf Bowler house, Portsmouth, Rhode Island. American Wing of the Metropolitan Museum.

The William and Mary period is a brief but important link between seventeenth-century oak and eighteenth-century mahogany. During this period the revocation of the Edict of Nantes caused many Huguenots to take refuge in England. A large portion were of the craftsman class, and readily found employment. This added another and very refined element in furniture designing.

Walnut was used during Queen Anne's time, and continued in favor until mahogany was well established between 1720 and 1730. The cabriole, or curved, leg is credited to the reign of William and Mary, and a most valuable accessory it proved to be. Inasmuch as William and Mary ruled jointly, (a share-and-share-alike plan unique in English history), their brief period has an additional claim to consideration.

THE EIGHTEENTH CENTURY

French—Louis XIV, Louis XV, Louis XVI. When Madame de Maintenon wrote to a friend, "The King will have us buried in symmetry," she expressed characteristic features of the Louis XIV style. It was symmetrical, balanced, beautifully proportioned, cold, formal, lacking in imagination and, from modern viewpoints, oppressively grand—like the monarch for whom it was named. Thirty years ago there were probably fifty rooms in this country furnished in Louis XV, to one furnished in Louis XIV. The latter had not been popularized by the professional decorator. It belonged to that remote century, the seventeenth, which for some strange reason has always seemed several hundred years away from the eighteenth.

Characteristics of Styles. French styles may be briefly characterized as follows:

Louis XIV was a formal rococo in which proportion and balance were the chief features. Important details were the shell, the classic acanthus, the ram's head, the mask and the satyr. In the early period, furniture was massive, and the designs of the Louis XIII style were perpetuated. Carving was largely displaced by marquetry and by chiseled mounts of metal. Boulle furniture belongs to this reign, and is among the most valuable of the period. André Charles Boulle was a talented man; but his fame rests chiefly on a unique marquetry of tortoise shell and brass with which he ornamented furniture. Brilliant effects were obtained by lining the shell with color, and by the addition of ormulu mounts. Ormulu was a mixture of mercury and copper which, when added to the metal brass, gave the tone and texture of gold. Much French furniture of the time was thus embellished.

The period of French designing known as the Regency was the work of that brief time between the death of Louis XIV and the coming of age of Louis XV, when the Duke of Orleans was Regent. The Regency forms an important link between the Louis XIV style and that of the real Louis XV. It is, however, extremely ornate, and least worthy of admiration of any of the French periods.

In the Louis XV period, balance and symmetry were less important in the eyes of the furniture makers than were richness of ornament and flawless execution. Angles gave way to curves, and the talents of the goldsmith and the painter were employed in designing furniture which, in point of workmanship, has never been surpassed.

In the time of Louis XVI, simplicity of construction and severity of ornament were dominant. Rococo details disappeared, and classic emblems replaced them. Important features were the fluted column, the bay leaf, the oak and the acorn, the bell flower or "corn husk," the Greek band and the acanthus. Straight lines took the place of curves, and ornament was a means instead of an end.

The long reign of Louis XIV witnessed many changes and developments in furniture designing. The reign of the next Louis was briefer, but quite long enough to make any one phase impossible; however, with the final Louis—if we leave out Louis XVIII, whose importance is slight so far as "periods" in furniture are concerned—the designing of the eighteenth century seems to have been crystallized. All the furniture of these three great epochs shows marvelous execution. Whether it be a Louis XIV cabinet, a Louis XV chair or a Louis XVI table, the workmanship is unsurpassed.

Metal played a very important part in many of the designs and added tremendously to their cost. Furniture decorated with insets of porcelain, usually of Sèvres, formed one class of furniture; and fine upholstery of Beauvais and Aubusson were important accessories in both Louis XV and Louis XVI designing.



Armchair of the Early Eighteenth Century

An armchair of the early eighteenth century showing the curved leg called the "cabriole" or "bandy," and, in this instance, having the flat or web foot.

English. *The Early Eighteenth Century.* In our devotion to English furniture of the late eighteenth century we are apt to overlook the rich legacy bequeathed to us by the early eighteenth, or to confuse it with other periods. Yet the first half of this fascinating century was almost as important—a period of great variety of design, of many men working in many veins, of old ideas slowly giving way to new. If less unified than the latter half, it was nevertheless full of picturesque vigor and of sturdy simplicity—partly Dutch and

partly a survival of Jacobean traditions which lingered in spite of changed conditions.

The perpetuation of Dutch motives—such as the cabriole leg and the web foot continued until the fourth decade of the century. The web foot or flat foot we find in most of the furniture of Queen Anne's time, and a charming adjunct it is to the designing of the day. Chippendale preferred the ball-and-claw foot which he used with distinction. He was one of the first English furniture makers to use the square leg, and one of the first to adopt the curving French leg of the Louis XV period; but he clung to the cabriole, or bandy leg, in its various forms until about 1740.

Chippendale was the first English furniture maker to have his name perpetuated by a style. Celebrated designers had preceded



Chippendale Chair

Chippendale chair showing cabriole leg, shell knee, pierced splat and ball-and-claw foot.

him, but their identity is submerged in that of their sovereign. Chippendale raised his craft to such a point of excellence that his own name became associated with it.

What furniture of the eighteenth century would have been if mahogany had been unknown, is a difficult question to answer. It is impossible to imagine Chippendale's designs in oak, just as it is impossible to conceive the heavy furniture of the seventeenth century executed in mahogany.

The chairs and settees from the Chippendale shop in Martin's Lane comprised many different styles. Among them were the early Dutch types with ball-and-claw feet and plain splats and these same Dutch types with pierced splats. These two distinct backs were also combined with straight legs, and later there were other variations. The curved leg of the Louis XV style was a favorite with Chippendale, but was usually combined with an elaborate back. There were several distinct "ribbon" styles, a rather uncommon one having an intricate leaf pattern carved with the ribbons. After 1740 the "Gothic manner" and the "Chinese taste" fascinated Chippendale, and about 1750 he became extremely rococo. The English designer is not at his best in copying the Frenchman, and Chippendale pleases us least in his rococo furniture; nor do we like him nearly so well in his Gothic and Chinese absurdities as in his earlier and simpler pieces.

Chippendale's great point of excellence was his ability to take the designs he found at hand and so improve them that they took on new life and meaning. He was a past master at adapting; in other words, he was much less of an originator and much more of a free and most successful translator of all that came to his hand. That he had more than his just reward is perhaps true. That he did not make or even design half the furniture bearing his name must also be conceded. But that he gave permanent fame to much that would have perished but for his indefatigable efforts must always be placed to the credit of "T. Chippendale of St. Martin's Lane."

The Late Eighteenth Century. Thomas Sheraton, Thomas Shearer, George Hepplewhite and Robert Adam are the names which stand out brightest in the roster of the late eighteenth century. Possibly Robert Adam should come first, and Shearer, fourth. Transpose them as you will, but place Sheraton near the top. It might be well to mark both Adam and Sheraton "one," for it is hard to divide the honors.

Adam Furniture. Robert Adam, fresh from his studies in Italy, returned to England at an opportune time. With him came Bartollozi, the engraver, and the painters, Pergolesi and Cipriani—both destined to play an important part in English furniture making.

We recognize the urn and the oval rosette as Adam; and we recognize certain motives like the acanthus, the ribbon band, the arabesque and the garland as both Adam and Louis XVI. There is a good deal of similarity between the two styles. We find in the English style a greater slenderness and a totally different treatment of the wood. The Adam Brothers used carving very sparingly; many of their finest pieces have not a trace of it. They also brought to perfection painted furniture, employing Pergolesi, Cipriani and Angelica Kauffman for the finer work.

In Adam furniture a charming light green is often seen; there is also a burnished gold which almost equals Vernis-Martin, the celebrated varnish invented by the Martin family of France. Cipriani had many Italian secrets of mixing colors, and a good deal of this work is from his hand.

Cane Furniture was designed by Adam and is today the type most frequently reproduced by American furniture makers. The chair back is usually oval, and the cane webbing follows the lines of the frame. The round leg, instead of the square, was preferred by Adam. Hepplewhite chose the square leg instead of the round; Shearer did likewise. Sheraton used both the plain round leg and the square leg; he also had a marked liking for the fluted leg of the Louis XVI style. In most of the Sheraton furniture in this country, the fluted leg is found. In the sideboards especially, it is a characteristic feature.

Inlaid Work. By the last decade of the century, the fancy was no longer for mahogany of any kind. Inlaid furniture of satinwood and painted furniture of satinwood represented the taste of the hour. Many writers have credited to Sheraton the introduction of satinwood. If this be true, he gave almost as much to the Adam Brothers as they gave to him.

Sheraton. Sheraton's furniture creations may be divided into three classes—carved, inlaid and painted. His sideboards and chairs come usually under the first head; his cabinets and tables (the latter found in great variety in England) to the second; and to the third belongs a large portion of the work he did for the Adam Brothers, which is extremely scarce in this country. Some of his inlay has as much color as if executed with the brush.

Hepplewhite. Hepplewhite's greatest characteristic was his masterly use of heart and shield-shaped motives. Most of his chairs have shield backs, but it was in his dressing tables and kindred articles that this motive is seen in its most charming guise. Charm is truly the word to give to his work. The strength of Chippendale or the proportions of Sheraton we do not find. His range is limited; he repeats one theme over and over. His knowledge of woods did not equal Sheraton's, nor had he any of Chippendale's mastery of



Hepplewhite Chair

Hepplewhite chair showing shield back and square tapering legs.

construction. But he had a fine intuitive feeling for beauty, and he expressed it in his work. He was not a carver of note, like Chippendale, nor a master inlayer like Sheraton; yet so great was his popularity that he employed many men to help him fill his orders. His reputation was so well established that after his death in 1775 his widow successfully carried on his business for years.

Neither Sheraton nor Hepplewhite could rob Chippendale of his supremacy as a chair maker. Sheraton's designs with straight legs and rectangular backs are not his most at-

tractive work. In Hepplewhite's chairs, his famous shield seems to lack constructive force. Chippendale still held his field. Sheraton's sideboards, cabinets, tables and bedsteads are very commendable. Hepplewhite's sideboards and tables are also greatly to his credit. To Sheraton we accord a grasp of proportion and a feeling for restraint which were not equaled in his generation. If we place him at the head of the furniture makers of his century it is because he expresses the ideals of our own day—simplicity, proportion and reserve. Chippendale produced a far greater variety of designs, not alone because variety of design appealed to him, but because he lived at a time when fashions in furniture were extremely diversified. The last quarter of the eighteenth century was a remarkably unified period, and here tribute must again be paid Robert Adam for being largely responsible for producing it.

Thomas Shearer must be mentioned as a designer of distinction—particularly successful with sideboards and bookcases. The serpentine sideboard is supposed to have been originated by him. Hepplewhite gave this type a lasting value, and it is his name that we associate with it.

The French Empire. The Empire style marked the last of the great historic periods in furniture and decoration. It was cold and formal, reflecting the personality of Napoleon, the man so closely identified with it. The Revolution brought chaos to the industries of France which had flourished under the old regime. Cabinetmakers and metalworkers were thrown out of employment. Many suffered imprisonment or death by the guillotine. With few exceptions the artist-artisans of the Louis XVI period had little part in the handicraft of the Empire. The Directory and the Consulate were periods of construction. In the arts, the process of rebuilding is slow. David's name is associated with this transition from old forms to the new, and with him must be mentioned Charles Percier and Pierre Fontaine. Percier was architect to Napoleon during the Consulate, and ranks with Fontaine as a celebrated craftsman of the period. Napoleon was not a patron of the arts, yet no monarch of the old regime had so dominated a style. The letter "N" is stamped over the entire decorative scheme of the Empire.

Designers of Louis XVI's day lauded the classic, but seldom to the extent of the Empire artists, and never to the glory of one man. The laurel leaves of the preceding style were rearranged and twisted into a victor's wreath. The fluted column upheld a torch. Roman and Grecian emblems were used lavishly. "Paris was to become a new Athens, Napoleon a Caesar, and France a second Roman empire." The craze for the antique transformed the dress of the day. Statesmen wore togas, and court ladies donned the gowns of Greek goddesses. Architects, decorators and furniture makers were imbued with the spirit of the hour. The classic lived again and, if somewhat inconsistent, the enthusiasm of the day overlooked all shortcomings.

The chief characteristics of the Empire style were the wreath, the torch, the Roman eagle, the Athenian bees, the Greek fret and the honeysuckle. After the campaign in Egypt the sphinx was added to the medley, and became a conspicuous feature in both furniture and decoration. Distinctive qualities of the furniture of the period are few and easily mastered. Constructively, the plain column and the claw-foot are the most salient features; decoratively, the wreath and torch are most prominent. Marquetry was discarded, and plain surfaces were covered with ornamental mounts of chiseled metal. Chairs showed a square frame with a plain round leg, ornamented with mounts of characteristic patterns.

In the plainer form, the Empire style was full of dignity. If it lacked the charm of the graceful Louis XVI style it had, on the other hand, qualities of repose and stability which placed it far above some of its predecessors. One of the most interesting phases was the strong influence it exerted upon American furniture making of the early nineteenth century.

The term Colonial, used in its literal sense, includes the household effects of the colonists from the time of the settlement at Jamestown until the war of the Revolution. This restricted definition excludes the work of the great English cabinet makers of the late eighteenth century, and similarly excludes all pieces which owe their origin to the style known as the Empire. Thus the furniture of Sheraton and Hepplewhite, together with those massive mahogany shapes having carved columns and claw-feet which have long been the stronghold of colonial connections, are debarred from this category. Correctly speaking, these pieces should be classed as late Georgian and American Empire. To limit the adjective "Colonial" to the furniture imported or made by the colonists prior to 1776 would disqualify more than half of the furniture in this country. The word has been used so long in a wider sense, and has been applied so continually to everything in furniture from the earliest possessions of the Pilgrims to the designs in vogue as late as 1820, that it is doubtful if the literal meaning is ever accepted. From one point of view the broader use of the term is the right one. It was not until 1830 that American furniture makers ceased to be governed by the standards of the Old World. English taste in house furnishing prevailed long after English supremacy was at an end. The Colonial period in furniture outlived the Colonial period in history by fifty years.

In the accepted definition, two centuries of furniture making are covered—1620-1820. The first hundred years may be called the age of oak, the second, the age of mahogany. During the earlier period, the history of all handicraft in this country was closely allied to that of England and Holland. In the later



Late Eighteenth Century Furniture

Furniture of the late eighteenth century against a slightly later background. Pictorial paper affords a characteristic setting From the Duncan house, Haverhill, Massachusetts. American Wing of the Metropolitan Museum.

AMERICAN FURNITURE

Early American. After pioneer days the colonists modeled their homes on those of their native land. Heavy oak of the old country provided the first furniture, but pine and hickory pieces made in the colonies soon followed. Toward the end of the seventeenth century, the transition from massive to more graceful forms took place. The introduction of mahogany in England rapidly influenced furniture making on this side of the water, and for fifty years Chippendale, Hepplewhite and Sheraton were the guiding stars of American designers. Early in the nineteenth century English patterns declined in favor, and French influence became paramount. The Empire style marked the end of Colonial furniture making.

epoch Dutch influence lessened, and England shared with France the molding of taste in America.

American Empire. After the War of 1812 English models lost their prestige and furniture makers turned to France for inspiration. The American development of the Empire style is a lasting credit to the designers of this country, and forms a fitting close to the second century of Colonial furniture making.

While the Empire style in America followed in a general way the trend of the movement



American Highboy

American high chest or highboy with straight cornice and slender cabriole legs. Early American, or Colonial, dating about 1720.

in France, it was free from the incongruities which marred many of the foreign pieces. Carved columns, claw-feet, pineapple finials and ornamental brasses were the hall marks of the American Empire. Realistic heads of lions and griffins and many Egyptian details to which the French furniture makers resorted were happily absent from the work of the Americans.

Survival of the Fittest. In the past there has been a survival of the fittest in furniture. The transitional Gothic and traditional Renaissance pieces are not nearly so numerous as are pure specimens; and so it is with Elizabethan furniture, with Charles II pieces, with Queen Anne designs, with examples of Chippendale and his contemporaries. The experimental pieces—which might be called the failures—have apparently disappeared. Modern furniture makers have rendered marked assistance in reproducing the best—the most typical specimens—and thus perpetuating the good.

Reproductions are usually more successful than adaptations; faithful copies, than free translations. This is particularly true of mahogany designs. The oak furniture of the seventeenth century may sometimes be more freely interpreted if there be skill of hand and taste and discrimination back of the skill. But with the furniture of the succeeding century, he is wisest and most successful who does not alter the line, but reproduces truthfully.

Nineteenth Century Designers. Duncan Phyfe, of Scotch birth but of New York residence, takes high rank among furniture makers on this side of the Atlantic. He drew his inspiration from later Sheraton types, but infused much individuality into everything he touched. He gave lightness and charm to tables and chairs at a time when most of his contemporaries were working on heavy Empire models. It is said that his name was originally Fife; but, not wishing to be confused with another and less gifted designer, he adopted a different spelling. Time has evidently obliterated the other man, for today there is but one Phyfe.

Another New York designer, John Belter, achieved much success about 1850 with rosewood furniture which he constructed on elaborately carved lines to meet the taste of the day. Genuine Belter pieces had a brief revival a few years ago but were too ornate to endure. Following the vogue for rosewood came black walnut, and with it the twilight of furniture making. Ponderous tables upheld marble slabs, black horsehair formed the upholstery of chairs and sofas, and the art impulse of the moment expressed itself in Rogers groups, china dogs and chromos. A little later the golden oak sponsored by Eastlake in England found favor in this country, retaining its popularity long after it had been discarded across the water.

When William Morris—with a sounder philosophy and a truer art—succeeded Eastlake, a return to simpler forms gradually took place. Undoubtedly the Morris chair had a part in the development of the Mission style. Mission furniture, heavy and clumsy as it often was, by its very severity and directness brought about a necessary leaven of simplicity. Straight lines and plain surfaces replaced the jig saw carving and pressed ornament of golden oak.

Early Twentieth Century. A revival of Colonial architecture and furniture marked the opening of the twentieth century, followed by a keen quest for Old English. In rapid sequence, Italian, Early American and Spanish styles have dominated the collector, the decorator and the maker of reproductions. The vogue for Italian and Spanish furniture grew out of the rise in popular favor of the Italian and the Spanish house as adapted by our architects. The demand for Early American furniture stimulated interest in many long-neglected woods, notably pine and curly maple. Rush chairs, ladder-backs and the various types of Windsors replaced, for the time being, the more familiar models of mahogany. Old painted furniture was included in this American renaissance, with a profitable study of actual craftsmen.

The present demand for old furniture has turned to the work of an American group growing yearly in prominence. Mahogany was the usual medium of these gifted men who now rank almost as high as the great English cabinet makers of the eighteenth century. Among the number may be mentioned Goddard, Savery, Gillingham, Gostelow and Randolph. The block-front desks of John Goddard of Newport, Rhode Island, and the lowboys of William Savery, of Philadelphia justly merit fame. The list of American designers is being extended in proportion as research brings to light data bearing on the lives and work of local craftsmen. Much cabinet work long attributed to English sources is now being reclassified.

Modern Furniture. What shall we place in our homes today when we have such a storehouse of riches from which to choose? Shall we turn back to period styles or express ourselves in new forms? Whether or not we are in full sympathy with the movement termed *Art Moderne*, we cannot ignore it. If we look beneath the surface, we see a sincere striving on the part of many craftsmen to express the life of today as truly as the great designers of the past strove to interpret the life of their generation.

Extreme advocates of the new furniture claim that the old traditional forms no longer meet the requirements of modern existence; that inasmuch as we live in a machine age, an age of new methods of transportation, of new means of communication, of new trends of thought, there must be new conceptions to meet changed conditions. To these enthusiasts the old order has passed. More conservative minds welcome the best of the modern cult, but hold fast to old and tested forms.



Twentieth Century American

Dining table in white lacquer with mirror top. The chairs are covered with white leather. P. T. Frankl, designer.

Not all of the new movement is as modern as its name implies. Many of the furniture motives hark back to very early times. Inspiration has been drawn from the tombs of the Egyptian kings, from ancient Aztec drawings and from other obscure sources. In fact, a fascinating study is presented to students wishing to fathom the impetus of the present day designers who quite rightly call themselves "Twentieth Century Primitives."

Just what verdict the future will place on modern decorative art remains for later historians to chronicle. If optimistic prophets may be believed, it will rank as the great period style of the first half of the twentieth century, taking its place with the traditional movements of the past.

INTERIOR DECORATION

INTERIOR decoration is the art of making our homes livable and beautiful. Whether the problem be mansion or cottage, a knowledge of certain fundamentals will be found necessary. Natural taste reënforced by study will enable a person of moderate means to accomplish more than the possessor of wealth unaided by these essentials, although no claim is made that houses can be furnished without an adequate expenditure.

Form, color and texture are an inseparable trio in the arts, and are invariably connected with every phase of interior decoration. A feeling for color is usually stronger than for form, although a highly developed color sense is rare.

IMPORTANT PRINCIPLES IN INTERIOR DECORATION

Five principles which the decorator will find as vital to success as does the artist are proportion, balance, rhythm, emphasis and harmony. Scale, order and unity also belong to the decorator's dictionary, as do simplicity, charm and individuality. The latter two are difficult to define in people and even more so in houses; but proportion and scale may be reduced to mathematical exactness. Many writers have defined proportion—some with clearness, others with such intricate phrasing as to be of little service to the amateur.

Proportion. The Greeks were masters of the subtleties of proportion, and a study of Grecian architecture is recommended to those who wish to go into the fine points of the subject. The decorator must understand this principle in so far as it involves the selecting and grouping of objects in relation to their background and to each other.

If the architect has done his work faithfully it will not be necessary to struggle with problems of proportion so far as the structural part of rooms is concerned. Faulty dimensions may sometimes be minimized by skillful decorative treatment, although it should not be the mission of decoration to correct architectural blunders.

Balance is that principle by which repose is attained. There are two kinds of balance—bisymmetric and occult. Bisymmetric balance is formal, full of dignity and produces a feeling of complete rest. The Colonial mantel with its perfectly matched pairs is a good example of bisymmetric arrangement. A line drawn through the center of the mantel would show two identical halves.

Occult, or hidden, balance produces a feeling of equilibrium, but is attained by more subtle means. The two halves of a mantel, side wall or whatever the composition in question may be, are not identical, but suggest repose by skillful arrangement. Occult balance is more imaginative than bisymmetric, and infinitely more difficult. The Japanese are masters of occult balance. Interesting arrangements in this type are often seen in studios. Artists naturally devote much time and thought to pleasing compositions. Still life, as grouped for a canvas, often exhibits this principle in a convincing and charming manner. The decorator brings a different viewpoint to bear on the subject; he is less concerned with composition as composition and more as to the general effect—not merely of one room taken independently, but of the house as a whole.

Rhythm is movement, or that attribute by which the eye is carried from one point to another. When correctly interpreted, movement is graceful, melodious and satisfying; when incorrectly expressed, restless and irritating. Books and pictures are among the objects which may be made rhythmic or discordant according to their arrangement. This principle of movement is very closely connected with that of order, which in this case does not mean the housekeeper's order. A room may be in order from the housekeeper's standpoint, and yet violate order in the decorator's meaning of the term. When the two orders go hand in hand, much has been secured. This combination means a spotless room, and expresses, in addition, balance, repose and serenity.

Emphasis. In emphasis we have a principle not difficult to understand. Every picture, every room, needs some point of interest to hold the attention. Too many points of emphasis end in confusion, a result almost as unfortunate as a complete lack of interest.

Scale is one of the most important words in the decorator's vocabulary. It might be defined as "relative size." When furniture too large in dimensions has been chosen for a small space, we say it is out of scale. The same is true of small pieces placed in a large area. Scale and proportion are closely allied. Sometimes the word "proportion" is used for the architectural features of a room, and "scale," for the decorative. As with other terms, the meaning becomes clear with the working out of actual problems. An hour spent in arranging objects on a mantel will be found more helpful than pages devoted to a discussion of bisymmetric and occult balances. In the same way the placing and grouping of furniture against different backgrounds will be found the surest way to understand scale. Invariably when a mammoth tree or rock is photographed, the photographer will ask somebody to stand in the foreground. He knows that in so doing the actual height of the object will at once be realized. The tree or rock might be much more impressive without the person, but it would not seem so large. Here is the matter of scale convincingly demonstrated—relative size.

Harmony and Unity are less easily defined. They are more flexible and consequently less tangible. No one thing in a room produces harmony. Harmony is attained by the successful blending or combining of many things. Unity is secured when the various attributes mentioned have been adequately handled. And it may be added that beauty need not be sought. Its presence will be felt immediately. Sometimes a room failing in some of these aspects will have individuality and charm. Sometimes a room apparently quite faultless will be lacking these qualities. It is precisely because interior decoration is not an exact science that it is so fascinating. The human element is always present.



Bisymmetric Balance

Interesting example of a mantel arrangement at "Oriel," Baltimore, Maryland. Any treatment but a formal one would be out of harmony with the stately setting. In the American Wing of the Metropolitan Museum.

COLOR IN INTERIOR DECORATION

The old discussion as to which is of greater importance, color or form, is seldom heard today. It has been the subject of endless controversies in the past. Sir Joshua Reynolds and Thomas Gainsborough, the renowned English painters, argued the matter over and over. Reynolds contended that form was greater; Gainsborough, that color should have first place. George Romney overheard the conversation one day—Romney not so fine a draftsman as Sir Joshua, not so

subtle a colorist as Gainsborough, but a painter of rare charm. Said Romney, "Why separate form and color? Why not unite them? Is not line merely where one color ends and another begins?" Wise Romney!

Reynolds and Gainsborough had a discussion which ended their friendship. Reynolds contended that a composition could not be painted successfully where blue predominated; Gainsborough, that it could. Reynolds declared that England could not produce the man. Then Gainsborough painted "The Blue Boy"—and Sir Joshua took to his bed. When Romney heard of the circumstance he is said to have murmured, "Plainly a case of the blues!"

Color in History. Color is a powerful agent in the hands of the decorator. Health and happiness, as well as beauty, are closely allied with it. Just as certain temperaments



Louis XVI Room
Showing mantel. Metropolitan Museum.

respond to certain musical harmonies, so it is with melodies of color. Highly sensitive persons are distressed by discords, sometimes positively harmed by them.

But before discussing color theories, the historical side of the subject should be briefly surveyed. The artist and the scientist have their particular angles, while the historian concerned with facts, brings another viewpoint to bear.

As with many matters relating to the arts, Egypt is our earliest source of information. Unshaded color in combinations of three tones, as red, yellow and black; blue, white and yellow; black, yellow and white are found over and over again in Egyptian adornment. Assyrian decorations show a stronger use of red, while early Persian schemes are dominated by blue. These three nations, Egypt, Assyria and Persia, form the preface to the great history of the industrial arts. Persian blue has endured until today and may be found in many forms. Rugs, pottery, enamels and illuminations show this beautiful color which is approached by Italian blue, but not surpassed by it.

We associate form with the Greeks and rightly so, but we should also pay tribute to their highly developed color sense. It is said that the Greeks were the first to use shaded color and to make liberal use of green and purple. Certain it is that at an early date they were familiar with Tyrian purple, that superb color which took its name from the ancient city of Tyre. Shellfish from the Aegean Sea yielded the dye for this famous hue which, centuries later, was to be known as "lost Tyrian." The Aegean Sea still abounds in shellfish, but this matchless color is made no more. Tyrian purple became the property of the Roman Emperors, a fact that gave rise to the term "Royal Purple."

Roman color schemes reflected Roman civilization. In the excavated rooms of Pompeii and Herculaneum, wall panels have been found painted in orange, black and white, and in that deep red we call "Pompeian"—a color akin to the once popular "terra cotta."

When the seat of the Roman government was transferred from Rome to Byzantium by the Emperor Constantine, and the name of the city changed to Constantinople, the art of the East began to filter westward. This influence, known as Byzantine, is mentioned at greater length in the article on "Furniture." Byzantine decoration was richly colored and often combined with gold.

Following this era, the fifth century, came a long period in which color played a small part. The Dark Ages were somber in contrast with the brilliancy of earlier centuries. With the long Gothic period, color came again into its own, but in a quieter form if comparison be made with Persian, Roman and Byzantine schemes, or with the sumptuous colors of the Renaissance. Famous are Gothic blues and greens which we find at their best in the tapestries of that day. Our large museums contain fine specimens which may be studied with advantage. Combined with the blues and greens are tans, soft yellow and delicate pink. Quite unlike these subdued tones are the warmth and richness of Renaissance colors—Venetian red, Florentine blue, Neapolitan yellow, and a wide range of greens and purples. There were brilliancy and subtlety, depth and delicacy, to Renaissance color schemes. It was an age of beautiful textiles used in a most regal way. We know from portraits how colorful were the costumes; we know that the medieval dwelling, with its perpetual twilight, gave place to the Renaissance house with its more homelike livable interiors. The study of color from this point leads to many countries, forming a fascinating theme. Within the scope of this article it is possible to indicate only a few of its phases. The student is urged to follow the subject first on English soil with the Tudor century (the sixteenth) and with the Jacobean century (the seventeenth), and to make comparison with contemporary periods in France. It will be noted that English color schemes are cooler and more conservative than those of France, yet admirably suiting paneled oak and sturdy oak furniture.

It will be seen that French interiors were more elaborate. Gold was used both in wall decorations and in furniture. Color schemes were more brilliant. With the eighteenth century, both in England and France, new elements will be traced. Backgrounds changed greatly in England; walls paneled in oak gave place to painted walls; furniture of oak and walnut was superseded gradually by mahogany. Costumes assumed a lighter, more graceful, aspect, and manners conformed to a different standard. Color schemes showed less vigor and more refinement. Backgrounds became fitting settings for powdered hair, lace and brocade. The connection between background and foreground has been close in all historic periods. The similarity that costumes bear to both, might be cited. Many parallels could be drawn between Elizabethan architecture, furniture and costumes. In the same way the next period in English decoration is equally consistent. Furniture and fitments are less massive than in the preceding epoch, and costumes lighter in color and texture. Comparisons could be drawn between Louis XIV furniture and the gorgeous apparel of the day; between the more ornate furniture of the reign of Louis XV and the greater extravagance in fashions; between the simpler Louis XIV furniture and the return of the French court under Marie Antoinette to a more refined mode of dress; between the classic furniture of Napoleon's time and the severe gowns of the Empire; and between the stately furniture of the Colonial period and the equally stately costumes. Turning backward to the Gothic period, the pointed arch was long a dominant note in furniture as well as in architecture. This was the age of the high pointed headdress for women, the peaked hat for men, and pointed shoes for all persons of rank.

All through these important decorative periods, color schemes were changing, expanding, developing—making a highly interesting study as a preface to present day color harmonies. Modern colors—modernistic colors, to speak more correctly—have been well summed up in the following paragraph quoted from a well known magazine on house furnishing. To read the list is to realize anew that we are living in an age of wonderful opportunities; the old decorators might well envy so rich a field.

"The most interesting new colors and combinations of color come from the modernists. They are responsible for the use of stripes in blends of one color in preference to contrasting hues. This treatment is found in fabrics, wall papers, rugs, porcelain and painted walls. Among the colors for walls this season are peach and apricot, beige, tan with a pink cast, blue-green, crisp lettuce green, mauve, ashes of roses, primrose, yellow, hydrangea blue, chalk blue and turquoise. If you are a modernist you will indulge in such colors as chartreuse green, citron yellow, honey beige, coral, henna, lacquer red, sky-blue, pencil blue; peach shading into brown with accents of copper; gray and black with touches of silver; orange, yellow and silver; chartreuse, blue and silver; white with honey beige; silver, dark blue and jade; tete de negre with lemon yellow and cream; lacquer red, lemon yellow and beige, and brown shading through beige to cream. Chartreuse green and lemon yellow are favorite colors of the modernists;

silver is widely used and all white is extremely effective."

Theoretical Color. There are many theories in regard to color. The artist holds to certain principles based on the spectrum, or rainbow, and expresses himself in pigments —actual paints. The scientist studies the spectrum from the angle of light, and expresses himself in terms too technical for the average person to follow.

Valuable and important as are the color deductions based on light, they have little bearing on interior decoration. They are for the laboratory, not the studio or the workshop, and lead only to confusion when a practical demonstration is attempted by the student. The old theory of the spectrum is the safest to follow, easiest to understand, and simplest in its application. With this theory, red, blue and yellow are the primaries; and green, orange and violet are the secondaries. The secondaries are obtained, as most of us learned in our kindergarten days, by combining two primaries: thus red and yellow make orange; blue and yellow, green; and blue and red, violet. The complementary color of red is green, because no red enters into the composition of green; violet is the complement of yellow, for there is no yellow in violet; and so with blue and its complement, orange. There is no blue in orange. All this we studied in early grades; but we also learned that the tertiary colors are formed by blending two secondary colors, and that they are slate, russet and citrine. Possibly we went a step farther, mixing the imaginary colors and finding olive, sage and plum.

When we turn to the actual decorating of a room we often travel far from these familiar principles. We find that we prefer green and orange, green and violet, yellow and green, yellow and blue to the actual complements. We may also find that we prefer a three-color harmony to the more direct and primitive two-color combinations. Still, the value of the spectrum as a working base upon which to build theoretical color schemes is too great to be disregarded. And in this connection a color chart or series of charts will be found a necessity.

Using Color Charts. There are several on the market. The Prang set of eight color plates is an excellent working guide. Chart I shows the three primary colors; Chart II, the primaries and the secondaries arranged in a circle in the order of the spectrum. Chart III repeats the circle, adding a group of normal colors and tints, as orange, light orange and lighter orange; blue, light blue and lighter blue. Chart IV retains the circle of primaries and secondaries, adding normal color, tints and shades, as yellow, light yellow and dark yellow, and green, light green and dark green. Chart V introduces neutral gray in the center of the circle, showing by means of small squares how gray is secured from the complementary colors. One part yellow and one part violet make neutral gray; one part red and one part green make neutral gray, and in the same way one part blue and one part orange make neutral gray. Also on this chart we have gray-red, gray-green, gray-yellow, gray-violet, gray-blue and gray-orange. Chart VI presents the circle extended to include the intermediate colors as yellow-green between yellow and green, blue-green between green and blue, blue-violet between blue and violet, red-violet between violet and red, red-orange between red and orange and yellow-orange between orange and yellow.

The process by which these intermediate tones are secured is clearly shown. Three parts red and one part yellow make red-orange; three parts red and one part blue make red-violet, and so on around the circle. In Chart VII the circle of Chart VI is repeated with the addition of the grayed colors. The process by which the grayed colors are secured is given. As is the case with neutral gray, a standard color is united with its complement; but instead of an equal-part mixture, it is in the ratio of three to one. Three parts yellow and one part violet make gray-yellow; three parts orange and one part blue make gray-orange; three parts green and one part red make gray-green, and so with gray-red, gray-blue and gray-violet.

In the final Chart, No. VIII, colors in one half and one fourth intensity are shown together with monochromatic, analogous and complementary schemes. A monochromatic scheme is composed of different tones of one color, either of value or intensity, as light blue, blue and dark blue; or these same colors grayed in varying degrees of strength; and so on with all the spectrum's hues. Analogous color schemes are those similar in tone and adjacent in the color circle, as yellow, yellow-green and green or blue, blue-violet and violet. Complementary schemes call for no comment except to emphasize the fact that in addition to the three principal complements, as red and green, blue and orange, yellow and violet, there are three additional complements, more subtle and consequently more useful to the decorator. They are red-violet and yellow-green, blue-violet and yellow-orange, red-orange and blue-green.

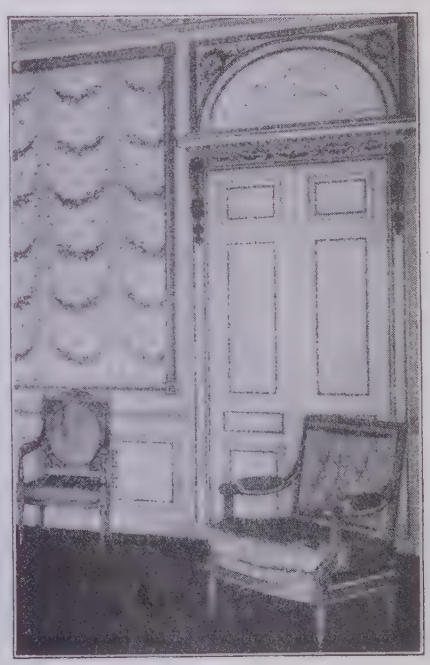
Color charts are valuable inasmuch as they demonstrate the laws of color and their application. While it is unnecessary to be closely bound by them, it is instructive and stimulating to give them at least a brief study. Many people have a natural color sense and instinctively choose harmonious combinations, while others lack this gift. The latter will find in moments of doubt that the charts are useful as reference. Many successful decorators pay little attention to the spectrum, and might not pass a simple examination as creditably as a third grade pupil. Others find it useful, and often very interesting, to be able to verify a color harmony. It is gratifying to find a reason for the instinctive selection of yellow-orange to accompany blue-violet, or red-violet to combine with yellow-green.

Color Preferences. The members of one family seldom have the same likes and dislikes. Red pleases one and offends another; yellow strongly appeals to a third; while blue is the chosen color of a fourth. These are not merely whims; there are reasons why one color produces pleasure, and another, the reverse. To many people green is restful, red stimulating and blue depressing. But under certain conditions these colors may have quite a different effect. Blue when combined with green or certain tones of yellow is anything but depressing; while red, if placed in a dark room, will so absorb the light as to make a room positively gloomy. Green holds its own, but is warm or cold according to the proportion of blue or yellow with which it is composed. Pure yellow is the most sunshiny color in existence, and more satisfactory in a north room than is red.

Color has the power, apparently, to alter the proportions of a room. Red contracts; blue and yellow expand; green, unless very dark, has little effect upon the room and keeps the walls, as decorators say, "well in place." Tan, gray and pink have the effect of adding space; while brown, unless very light, has the same quality as green.

If color is such an important factor in adding or diminishing space, in creating an impression of light or darkness, its possibilities are worthy of study. The difference between a successful interior and an unsuccessful one frequently hinges on this point.

Choosing Color Schemes for Rooms of Various Exposures. Before deciding the color scheme of a room the amount of light must be taken into consideration, and this condition will be governed by the exposures, the number and size of the windows, and by the nearness of other buildings. If the house is in the country, there will be other considerations. Sometimes the living room is shaded by trees and sometimes by a porch, both of which make a difference in the amount of light.



Louis XVI Room
Showing chairs. Metropolitan Museum.

In rooms with windows facing south and east, cool greens, blues, mauves (if they contain a good deal of blue) and most of the grays can be used. Mauve is a color little favored in decoration in America. It is not recommended with oak; but when used as English decorators employ it, with ivory paint and certain shades of green and often rose and soft blue, it is very effective. In rooms having only eastern exposures, cool colors should again be used; but they would better be a shade lighter than when chosen for south-

east rooms, as east rooms are comparatively dark in the afternoon.

Northeast rooms are attractive in warm but not intense tones. The difference between the apparent light of a room hung in blue-green and one in yellow-green, is marked. North rooms are brightened by buff, yellow, orange, light yellow-green, and warm gray. Green for a north room should be of a yellow cast. True red should never be used for walls, for it absorbs light, nor should it be selected for a small room, no matter what exposure, because it contracts. Mauve possesses this latter quality, though in a lesser degree. The portly Queen Anne of England wore deep crimson on state occasions because it made her look smaller. The average house needs expansion rather than contraction. An occasional room is helped by claret, mulberry, Venetian red, or old-fashioned crimson; but it must be chosen by "one who knows," otherwise the color will be unduly prominent and proclaim itself in no gentle manner.

Sometimes a crimson textile the color of old vestments is used with telling effect as a wall covering, but only when a background is needed for old Italian furniture, or for rare Chinese teak, or for something else equally unusual. Where fine furniture has to be taken into consideration, the woodwork is often especially designed for it and the conditions are not those of the average room. Crimson makes a beautiful background for the faded gold of old Florentine frames, and for brass candlesticks and bronze lamps.

Northwest rooms receive a steady light from the north all day, and a strong light from the west in the afternoon. The colors should be warm but not bright, else the room will seem garish at a time when it is most used. West rooms are comparatively dark in the morning, and well lighted in the afternoon. A morning room facing west needs quite a different treatment from a living room facing west. What would make one cheerful and cozy would cause the other to be too bright. If a living room with a western exposure is shaded by a piazza it can take a fairly warm tone; for nothing so successfully cuts off the sun as a piazza, a fact which has practically doomed the long veranda.

Color treatment in relation to the amount of light received in a room is a broad subject, and all such suggestions must be general, unless certain rooms are under discussion. Color schemes change from time to time. The strong colors in vogue for walls a few years ago have given place to lighter, more transparent tones, but never at any time have such brilliant and fascinating colors been used in accessories as today.

PLANNING THE DECORATIVE TREATMENT

Before the decorative scheme of a room is determined, the architectural features must be taken into consideration—whether the room has a wainscot or merely a baseboard; whether there is a wooden cornice; and finally, whether the doors and windows are so constructed that certain treatments are prohibitive. The custom of the past in regard to the interior of our houses is seldom considered today. If it were, we would treat our wall as an order, and insist on the classic, divisions. The dado, intermediate wall space frieze and cornice are survivals of the old idea that the interior wall must be treated with the same architectural balance and symmetry that was once accorded the exterior. In other words, the wall of a room must embody or at least suggest the divisions of a column with base, pedestal, shaft, capital and so forth. It would be interesting to note this development from Greek and Roman times, through its various phases, down to the mid-nineteenth century, when the dado and the frieze were a part of every wall paper pattern. The Greeks and Romans used stone and marble for an interior finish; later a crude plaster, then wood, next tapestry combined with wood, and finally wall paper were used. The paper dado was a substitute for the early base of marble and the later base of wood.



Mid-Eighteenth Century Curtain Treatment

Typical curtain treatment in a room from the Hewlitt House, Woodbury, Long Island, New York. Mid-eighteenth century. American Wing, Metropolitan Museum.

There are theoretical decorators who still make a strong plea for a more architectural division of walls; who insist that there should always be a strong supporting base; and who contend that the cornice should appear to be supported—if not by columns or pilasters, which would be the ideal way—at least by something.

The paper dado, often made to look like marble or wood, was a tremendous sham. It was darker than the paper used above, and looked more solid—that was all; even when strips of paper suggesting wood or marble were used vertically at the corners of the room, nothing was gained architecturally. A later taste discarded the dado, found the frieze ugly, and went to the extreme of papering the side wall from baseboard to cornice with one pattern, using a plain ceiling in place of a figured ceiling paper.

The modern room has a truer architectural feeling, but it is due to the architect, not to the decorator, which is quite as it should be. It is not the decorator's mission to keep the walls in place, nor to prevent the ceiling of the room from looking as though it would tumble down on the heads of the occupants. The decorator was out of his field when he was trying to hold the room together by means of a paper dado.

The architect of today uses wood as it was made to be used—as a structural part of the room. We are speaking now of the trim of the room, of the exposed woodwork. Possibly architects of the middle of the nineteenth century shirked their duties, and threw the responsibility on the decorator, who in turn fell back on the wall paper manufacturer.

Harmonizing Furniture and Background. Probably the hardest, as well as the most common, problem of house furnishing is to reconcile old furniture with new woodwork: not antique furniture which can, with a little care, be adapted to the newest setting, but furniture neither old nor new and which might be called "middle-aged." It does not match the woodwork, nor does it harmonize. Matching is not required; in some cases it is to be avoided, but harmony is essential. Mahogany furniture and white woodwork do not match; but no background so satisfactory as simple white paint has yet been found for Colonial furniture. Its historical accuracy is an important factor, but that does not explain all its charm. There are several combinations, founded on precedent, which do not give the same satisfaction.

The style of the room should, if possible, determine the contents; and happy are those who can build first and then buy their furniture. The logical sequence is: first the floor and wall treatment, both based on architectural conditions; and then the furniture. If the house is of the half-timbered style, with an interior finish conforming to the exterior, the best effects are obtained by oak furniture of the same general tone as the trim. The designs should be sturdy and simple and in harmony with the setting. Old oak is particularly appropriate with walls of plaster and a sturdy trim.

Old oak suggests, to many minds, pieces

so scarce and expensive as to be almost unattainable; but if purchased under favorable circumstances they can be secured at prices which compare well with those of old mahogany. Old furniture is now regarded by the decorator with almost as keen an interest as that of the collector. According to Allen French, we no longer collect old furniture. We furnish our houses with it, and thus get the interest on our money from the use of the things we buy.

Whether the furniture be old or new, unity should be preserved if possible; but unity must not be confused with monotony. A certain diversity of tone and texture is necessary; but the juxtaposition of mahogany furniture and dark oak woodwork, or light oak furniture and white paint, should be avoided.

With the severe trims now favored by many architects and growing in popularity, furniture to be in harmony must be of severe lines also. This does not mean that all pieces should match or all be cut on angular lines. It does mean that gilt-framed chairs should be absent, that ornate pieces if numbered among the household possessions should be placed elsewhere, and that a general harmony should prevail. This harmony may include furniture of different periods if there is a structural similarity and the woods do not conflict. But there must be taste and discrimination back of the selections. Oak and walnut and even mahogany, if the latter be of a brown tone and not the ruddy color of the American Empire style, could, under some circumstances, be placed in one room.

When the interior is finished it is seldom possible to change the permanent features. Therefore, the choice of furniture should be postponed until the fundamental features of each room have been decided. Better spend less on the house than build at such an outlay that the furniture of an outworn and outgrown home must be used. Not that all furniture which is neither antique nor very new should be thrown away. A great deal can be accomplished by a skilled workman in "doing over" unsatisfactory pieces. Clumsy black walnut can be remodeled, light oak can be scraped and refinished, and the services of an upholsterer can be put to most excellent use. But a careful weeding-out process is imperative lest the new home will be less successful than the old where the rooms, if faulty, were at least consistent.

In a Colonial house where the interior is designed to accord with the exterior, furnishing presents few perplexities. Mahogany of Colonial design should be chosen for the main rooms of the first floor and preferably for the bedrooms. The merits of well-made reproductions should be emphasized. Where rooms are detached from the main part of the house, the treatment may be more individual. Studies, libraries and smoking rooms are often so located as to permit a different scheme of decorating and furnishing.

When a good deal of fine old mahogany is owned by a prospective builder, it is well to take this fact into consideration, and to plan the rooms to fit the furniture. People who care a great deal for old furniture usually wish a Colonial house, and in that case the problems of designing and furnishing are reduced to a minimum. But the jewels must be worthy of the casket. It is folly to build on Colonial lines for the sake of a few old blue plates and a four-post bedstead. Modern housebuilding proceeds on clearly defined lines. The interior trims are designed with infinite pains; doors, windows, mantels are usually part of a consistent whole. The architect has given every possible assistance to the decorator and furnisher.

The Living Room. Of late the word "library" has lost its original significance, and is often used interchangeably with living room. The average house does not contain sufficient space for a book room pure and simple; so the tendency has been to combine the sitting room with the library, a plan which has both advantages and disadvantages. There is an undoubted charm to the well-appointed living room with its books, pictures and comfortable furniture. It is often the largest room in the house, and has grown to be an expected feature of the modern house. The shrinkage in the hall in the modern ground-floor plan is largely due to the increased size of the living room. It is in this big room that not infrequently the architect does his best work.

If the decorator is equally successful, the color scheme is quiet and restful, and the room is probably the most attractive of the house; but it cannot be called a book room, and the term "library" is usually misapplied. If the room has but a few books, so that low, built-in cases on either side of the fireplace will suffice for their keeping, the word library is inappropriate, and it is better to use the term "living room." Where bookcases extend around the entire room and the atmosphere is one of books "library" might be used, although in the average house this room will also be the living room.

Whether the room has few or many volumes it has several distinctive features; and since it is the part of the house most used by the family, it is worthy of the decorator's best efforts. In the well-designed house the architect has given every assistance to the decorator; and if the latter does not err the room cannot fail to be attractive, unless it is marred by the unfortunate final touches which many householders consider necessary. There is really very little to do to the living room, for the architect has done so much. The well-designed trim, usually in the form of a high wainscot; the generous fireplace, often extending to the ceiling; and the built-in bookcases occupy most of the wall space. There is little space to be decorated, and the simpler this little is treated, the better.

Where the trim is oak, the ceiling beamed, and the fireplace of brick, sand-finished plaster furnishes a satisfactory wall treatment. It provides a consistent background for the simple, sturdy furniture necessary in a room used as a library. Such a wall treatment makes superfluous the use of many pictures. In fact the room is better for their absence, unless they be few in number and carefully selected. Prints suit well the atmosphere of this room, but should be of secondary importance to the books. If there are many prints, a plain paper or textile makes a better background than does plaster; for it, by reason of its largeness and simplicity, is ill-suited to many pictures. It is a decoration in itself with its lights and shadows, and shows to best advantage when seen in large, unbroken masses. Whether stained or left in its natural color, it has claims to consideration, particularly in a half-timbered house. Unstained plaster, if there is a good deal of oak woodwork in the room, gives splendid results. Many people find it colorless; but this is because they do not see color except in strong tones. They are not gifted with an eye for color, and have not been trained to look for it. Ivory plaster is an attractive wall finish; so are the lighter grays and some yellows.



Decorative Value of Metals Skillfully Arrayed

Broadly speaking, rooms finished in dark wood need stronger tones than rooms where white paint or light woods are used. But there are many exceptions, notably the combination of unstained plaster with dark oak. A beautiful living room is recalled where the trim is Circassian and the furniture old Italian walnut. On the walls is an oil stain of warm ivory color. Old rose curtains and rugs in which old rose is the principal color, form the only strong color notes. Soft related color, as silver-blue and mignonette-green, are combined with the rose and ivory.

In a Colonial living room an old landscape paper is sometimes very effective, particularly if the bookcases are low, and the paper is regarded as a decoration and not made a background for pictures. Some of these old papers are in two tones of gray, whereas others are

more brilliant and require plain curtains and comparatively plain rugs. The rugs for a library are usually deeper in coloring than those selected for a drawing room, for the whole scheme of color is in a lower key. A rug lighter than the walls will throw a room out of scale, and it is well to remember the old rule that the floor should be darker than the walls, and the walls darker than the ceiling.

In a room where the trim is white, built-in bookcases should be white also. Detached cases of mahogany are harmonious in a library done in Colonial style. Sometimes a high, old-fashioned bookcase of mahogany is effective in a room where the built-in cases are painted white. Placed between two windows, or where it will balance a door, it usually helps the proportions of the room. When finished with traceried glass it forms a



Dining Room
Dignity and character are here portrayed in the massive furniture of this room.

fitting storing-place for books with fine bindings. Such a piece of furniture is particularly useful where there are rare books, for most built-in bookcases are without glass doors. If there are many books, and the locality is a dusty one, glass is necessary for protection, although the charm of the open shelf admits of no dispute. There is something very intimate and personal about shelves filled with volumes in reach of every member of the family; but the bindings often suffer from dust, dampness, and particularly from heat, which is one of the great enemies of books.

Where a library is constantly growing, sectional cases have many desirable features, and there is no question of the protection that this type of bookcase gives. Great improvements have been made in sectional designs, and it is now possible to buy bookcases which conform to all styles of interior trims. The old criticism that they were unnecessarily deep and consequently took up a great deal of room does not hold good, for the improved type is of admirable proportions. They are also recommended on the ground of economy and durability.

The low, built-in bookcase has been extensively used in this country, but its popularity is now diminishing. A scheme growing in favor is to sink the shelves in the walls and, if the room is paneled, to place them in such a way as to add to architectural value. Frequently, when a real book room is desired, the shelves are built flush with the walls; and if the books are not of sufficient number to line the room, the additional space is paneled. Sometimes these panels are made with doors which can be removed at any time as additional shelves are needed. Rooms of this character have a dignity which it is not possible for the living room to achieve; and while doubtless more costly in the beginning on account of the paneling, the extra cost, if space permit, would be justified.

In a living room, the space on each side of the fireplace could be filled with shelves built flush with the walls, or one end of the room could be thus treated, and if the shelves balanced a fireplace or a group of windows, an additional beauty would be gained. Architects delight in planning such schemes, and would doubtless be glad to depart oftener from cut-and-dried traditions.

In one delightful city house the bookcases are in the form of alcoves, such as are seen in the Bodleian at Oxford and other famous English libraries. A great many volumes can be housed in this way, but it needs a master-hand to design the cases, and it also requires a large room where the light is well distributed. Such a place is always the library—never the living room.

What the living-room-library walls should contain besides books, depends on the extent of the wall space and the taste of the owners. It is seldom in the decorator's province to plan the pictures. This is sometimes fortunate, sometimes otherwise. Many beautiful living rooms are ruined by crowded walls quite as often as by cluttered mantelpieces. If the walls are hung in grass-cloth, buckram, burlap, or other plain textile, an excellent background is provided for photographs, prints or engravings. Where the bookcases extend around the room, a print collection looks very well strung along the wall, over the cases. Black-and-white prints are particularly effective thus treated. A good many prints may be used in this manner without marring the quiet of the room whereas if hung differently, they would seem to fill the wall space. If, after the books are in place, a few big things are added such as a beautiful picture, a decorative bas-relief, or a really fine piece of bronze, little more is needed. The books in their colored bindings are part of the wall treatment, and this fact should be taken into consideration in planning the decorative scheme. The books, the well-designed woodwork and the comfortable furniture, the generous fireplace and above all the homelike and livable atmosphere, make of this room the very heart of the house.

The Dining Room. For many years it was an accepted idea that dining rooms should be massive in treatment no matter what the rest of the house was like. This theory gave us the really beautiful room hung in subdued leathers and furnished in carved oak. It also gave us the dining room walled in dark paper, furnished in black walnut, and curtained in maroon. Maroon in a dining room was not cheering; it seldom waited on digestion.

The "baronial" type, when well executed, had dignity and a certain heavy beauty. Today, in houses where there are two dining rooms—one for the family and one for entertaining—carved oak and walls of Cordova leather still make an acceptable combination; but the color scheme is not quite the same as it was in the late seventies. The walls are never gloomy, and the great improvement in lighting causes these rooms to have an atmosphere that they could not have in the days of the garish chandelier. Old Flemish oak, Spanish oak, Jacobean oak or well-executed modern copies are usually found in these apartments, and all the details are carried out admirably. Such schemes are expensive. They cannot be imitated in a cheap way, and the wise decorator does not try to do it.

A dining room treatment usually gives best results when it conforms to the general scheme of the house, and presents no startling contrasts in the way of woodwork and furniture. There are exceptions, however. Sometimes a dining room may be decorated and furnished in Colonial style and the rest of the house in oak; but the architect must pave the way for this arrangement.

The beauties of a Colonial dining room are many. The conditions are clearly defined and well known. Possibly the walls are paneled and, if so, no further adornment is needed. The old furniture makers were inspired when it came to their designs for dining rooms. Therefore, if you select old mahogany pieces or authentic reproductions, your room cannot fail to have charm. Do not combine a Sheraton sideboard with an American Empire table. If you wish your table to have a round center column, select a sideboard to harmonize with it. Both will then be American Empire. It may be that an old sideboard is the beginning of the dining room furniture. The table and chairs may then be purchased to correspond. Often it will be necessary to buy chairs of modern make. Do not put new chairs of Chippendale style with the sideboard and table of American Empire. If you wish chairs of Chippendale pattern, choose a sideboard of contemporary design. It is now believed that Chippendale made no sideboards, but several contemporaries achieved success in this line. Shearer, Hepplewhite and Sheraton made designs which may be used with Chippendale chairs. Hepplewhite and Sheraton were also famous chair makers, and it is sometimes possible to secure their designs.

Furniture makers of today have given special prominence to the American Empire table. It is one of the most substantial of designs, may be easily extended, and seldom interferes with the feet of diners—three important considerations.

There are of course houses where a Colonial dining room would be out of place. In many instances an oak treatment would be more harmonious, particularly where the main rooms of the ground floor are finished in oak. An oak dining room may be made extremely attractive. There is greater latitude in furnishing in this wood than in mahogany, for the variety of design is more extensive. An oak dining room may contain furniture of plainest design or old oak, where every piece represents a large outlay. Perhaps oak of the Tudor or Jacobean periods will be used, or rarer still, Gothic types of French or Italian extraction. There are also dining rooms decorated in various French styles, or in Italian Renaissance or early Spanish. Occasionally, too, rooms which are Pompeian,

Grecian or Byzantine may be found. A few of these unusual apartments represent the highest skill of the architect and the decorator, and a cultivated taste on the part of the owner. Unfortunately, however, a greater number are neither accurate nor beautiful, and suggest only a vast outlay of money. Others are beautiful in themselves, but out of harmony with their surroundings.

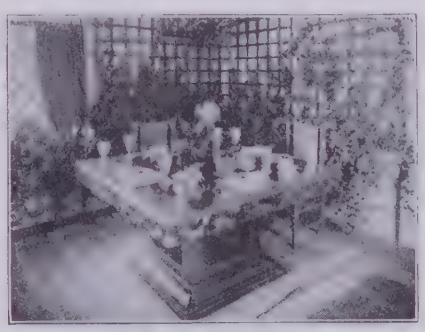
The wisdom of period decorating must be determined by the householder. Sometimes the period room is very successful. Sometimes it leaves much to be desired. It is a mistake to think that it costs more to limit the decoration and furnishing to one style than to furnish in a more general manner. Many period schemes are expensive but many are not, and there are countless rooms in Colonial, Louis XVI and Jacobean styles which cost no more than the rather indefinite way of furnishing found in the average house. It is not so easy to make mistakes in a dining room as in other portions of the house, for the requirements are clearly defined. It is not possible to place the miscellaneous bric-a-brac and pictures often found in a living room, and this absence has more to do with the beauty of many dining rooms than the actual presence of fine furniture and silver. A very simple room, and often a very inexpensive one, has more charm than a room richly furnished if filled with articles which plainly do not belong there. A dining room should never be made a curio place, for utility must come first, and out of utility will grow beauty.

Many dining rooms, in spite of beautiful furniture and harmonious color schemes, produce an impression of tiring confusion. Too much has been attempted in the way of embellishment, and the result is a crowded room less satisfactory than many cheaper apartments where a finer restraint is shown.

A dining room in the country is recalled where the woodwork is painted white and the walls are covered in gray paper carrying white stripes and baskets of flowers in pinks and lavenders. The design is formal and full of decorative feeling. In this room the furniture is light gray picked out with white. The floor is painted gray and the one big rug has a green ground, the color of the leaves, with short-stemmed flowers in pink and lavender forming a thick border. The rug is an imported one and Walter Crane in feeling. The green is not pronounced, and the effect is flat and decorative. The curtains are in leaf-green lined with lavender, and the china is peasant ware painted in splashy nosegays and outlined in green. The room contains no pictures. The only ornaments, if ornaments they may be called, are small bay trees in green boxes and flowers arranged in a rather formal manner in plain green jars.

The Breakfast Room. Many large dining rooms have a breakfast bay which contains a table smaller than the main dining table. Here breakfast is served, and often the informal luncheon. Such a scheme is convenient and a great saving in service. Where there is sufficient space a breakfast room fills the requirements even better, and such a place offers scope for an interesting treatment. This room may well be quite different from the rest of the main floor, as it is usually placed where it does not become a part of the decorative scheme of the house. Therefore quite a radical treatment is permissible. Painted furniture goes well here, as do papers of gay and striking patterns. It is a day room, consequently the question, "How will it look with artificial light?" does not have to be answered.

Furniture, painted white, when combined with a white trim and walls of decorative pattern, gives good results; so does furniture painted green, and one charming breakfast room is recalled where the furniture and the woodwork were painted a peacock blue. The paper had a white ground with small, brilliantly colored peacocks seen through branches of green leaves. A rug of Scotch weave with a green center and a border in which peacock shades were blended with green, covered the floor to within six inches of the wall on all



Breakfast Porch

Climbing vines add charm to this porch in a summer home at Easthampton, Long Island.

four sides. This floor matched the trim and furniture. White ruffled curtains hung at the windows without additional draperies—an old fashioned treatment which is sometimes very attractive. In the paper was a little orange, and this was repeated in a runner on the long, narrow table. The runner was of coarse canvas and had for a border small bay trees in green cross-stitch. On a narrow mantel were two dwarf trees in tubs painted blue. Inexpensive peasant china suited the room in a manner that more costly pieces would not have done.

Another room was equally interesting, though more difficult of execution. Six old rush-seated chairs with yellow frames decorated in grapes suggested the scheme of decoration for this room. A round table of common pine was painted yellow and embellished with bunches of grapes in a wide border. They were painted in the manner of the old chairs, which was a crude but an effective treatment. Leaves as well as grapes were painted, forming a deep band which was enclosed by a broad painted line. Something unusual was wanted for the walls and finally a paper was found, a copy of a pattern made in 1820. The wall had the effect of being paneled in small squares in green and yellow with a basket holding fruit in the center of each. This design was in line with the chairs and was, in fact, the same period. The woodwork and the floor were painted green and a large circular rug in black, green, gray and yellow was used.

The Bedroom. The essentials in a bedroom are good ventilation, sunshine, soundproof floors, convenient furniture, sufficient space and a pleasing scheme of decoration.

Architects, in discarding the old-fashioned spacious bedroom, went to the other extreme and designed rooms far too small for adequate treatment. The pendulum is now swinging back.

A fault with the usual bedroom is that it contains so many unnecessary things; photographs and trifling little articles which serve no use, possess little beauty, and make order extremely difficult. If any room should be simple in all its appointments, it is a bedroom. A few pictures and two or three interesting accessories are all the room needs, and the latter should be useful. A second fault is a restless wall treatment, and this point raises the important question as to whether the wall covering should be plain or figured. This is largely a question of individual preference, but other considerations enter into the matter. If the room when completely furnished is crowded, the walls should be plain. A patterned wall, no matter how pleasing, will add a certain confusion. Figured walls at all times demand a rather bare scheme of furnishing. Use plain schemes if you have much furniture, or if the wall space is broken by many doors and windows. It is needless to say that pictures against a figured wall are fatiguing and uninteresting—a condition very unfair to the pictures, which deserve a more discriminating treatment. Just how many family photographs should congregate here is also a personal matter. A plea might be made to keep unframed photographs in a portfolio, and to keep out all small snapshots only so long as they are of real interest, or to conceal them entirely. Their interest is usually fleeting.

Where a figured wall is desired—and in a spacious room it may be made very attractive—there are many admirable American, English and French papers from which to make selections. The same principles of balance, harmony, emphasis amd rhythm hold good here as elsewhere. Restful, but not monotonous, schemes; cheerful, but not garish, are desirable. If a plain wall is preferred, there are many preparations on the market, the merits of which may be emphasized. A plain wall is most effective when there is a slight roughness to the surface. A perfectly smooth, even finish lacks tone and texture. As decorators say, it "flattens out," making a poor background at all times, growing hard and harsh by artificial light. Many wall preparations are satisfactory from a sanitary standpoint, and some may be washed without detriment. These features are especially desirable in a sleeping room, and well worth considering in other parts of the house. Plain tones are pleasing in combination with chintz hangings. Bedroom schemes may be carried out in many ways. Success is not bound up in any one kind of wall treatment, nor in any one style of furniture; nor is expense always a factor. A room may have costly furniture and be a flat failure as a sleeping room, and it may have painted cottage furniture of the plainest kind and be a haven of rest. But whatever it may or may not have, air, sunshine and order are essentials.

Rugs. Oriental rugs are divided into four general classifications based on geographical sections. Chinese rugs form a fifth and im-

portant addition. Persian designs are largely floral; Turkish, conventionalized in pattern; Caucasian, geometric; and Turkoman, octagonal. The four general divisions are:

(1) Persian (Iran), including Bijar, Feraghan, Gorevan, Hamadan, Herat, Herez, Ispahan, Kara-Dagh, Kermanshah, Khorassan, Kirman, Kurdistan, Kashan, Meshed, Mosul, Muskabad, Saraband, Sarakhs, Saruk, Sehna, Shiraz, Sultanabad, Tabriz, Teheran;

(2) Turkish (Asia Minor) embracing Anatolian, Bergamo, Ghiordes, Kaisarish, Karaman, Kir-Shehr, Kulah, Kurd, Ladik, Meles, Oushak, Smyrna, Suruk;

(3) Caucasian, comprising Baku, Cashmere, Daghestan, Derbend, Genghis, Kabistan, Karabagh, Kazak, Lesghian, Malgaran, Shirvan, Soumak, Tcherkess, Tzitzi and

(4) Turkoman (Afghanistan, Turkestan and Beluchistan) including Afghan, Beluchistan, Bokhara (Tekke, Khiva, Yomud), Kashgar, Samarkand, Yarkand.

On the choice of the rugs for a house often hangs the success or failure of a decorative scheme. Better delay the furnishings than compromise on unsatisfactory floor coverings. At the outset, one question should be given careful consideration: are the rugs to be plain or figured, to be part of the background or part of the decoration? Taste in interior fitments goes to extremes. At one time no rug but an Oriental pleased us; today there is a revival of the large rug of one solid tone. If the use of the Oriental sometimes became the abuse of the Oriental, it is no less true that the plain floor covering has received an undue amount of attention. Both have their place in the scheme of things. Sometimes the rug of one tone holds and binds the scheme; sometimes a figured surface is needed to give balance and contrast. In either case the real mission of the rug is to act as a foundation. If it does not meet this test it is a failure, regardless of cost or beauty. This viewpoint is that of the decorator, not the rug collector who, naturally, brings a different aspect to bear on the subject.

Many people well posted on Van Dyck and Rembrandt, who would not confuse Chippendale with Sheraton, nor mistake Wedgwood for Crown Derby, have very vague ideas about rugs. "Oriental" is an elastic term covering everything made in the Asiatic countries. "Prayer" rugs, by reason of their distinctive design, stand apart; and Bokharas, thanks to numerous reproductions, are easily recognized. But the broad classifications of Persian, Turkish, Caucasian and Turkoman are regarded as too complicated for the average mind.

Writers on the subject have discouraged the amateurs by seldom agreeing on a common basis of terms, and by illustrating the rarest specimens in the respective groups. The famous rugs of the world are very important as object lessons. They represent the highest skill of the old weavers; and their place in history, romance and the arts cannot be disputed. But a book dealing with modern rugs in relation to modern rooms; rugs classified by color and pattern; rugs best suited to mahogany, to oak, to painted furniture, would be of practical value. The amateur decorator is seldom a connoisseur.

The devout Oriental removing his shoes at the threshold has no counterpart in our civilization. We put our beautiful rugs to base uses when measured by the standards of the East. We place on our floors rugs intended to be hung on the walls, and we grind under our heels the precious prayer designs.

Possibly the attitude of the modern weaver is growing commercial. Aniline dyes and Western influence have altered the old traditions. But even today to a great extent does the Turk, if not the Persian, regard the prayer rug as sacred.

In choosing Oriental specimens, another point must be taken into consideration. Does the design lie flat? Is the composition one that may be viewed from four sides, or is there a top to the pattern? Without going too deeply into the fascinating phase of realistic, semi-realistic and conventionalized designs, it may be said that the Turkish,



Courtesy Marshall Field & Co.

Prayer Rug

Kashan Persian rug with "tree of life" motive.

Turkoman and Caucasian examples show a more geometric rendering than the Persian. Bokhara is a good example under the Turkoman or Turkestan group. Indeed the flatness and simplicity of this design have given it a tremendous vogue. Not only has the Bokhara octagon been woven over and over in European and American rugs, but it has been copied in other mediums.

The rich wine shades of Bokharas are well adapted to oak paneling, oak furniture and to the color schemes which are often selected for living rooms and libraries. Old specimens, whether of the so-called Royal or Princess class, are very valuable, having a bloom which time alone can give. Modern Bokharas compare favorably with modern Kazaks, Kelims, Samarkands and Kabistans in wearing qualities and in price. Modern Persians, woven after old designs but sometimes with different dyes, present so many phases that they must be studied first-hand. The various names beckon to further investigation, so associated are they with the golden age of Asiatic weaving—Gorevans, Kashans, Sennas, Feraghans, Serabands, Saruks, Sultanabads, Herats, Kermanshas, Khorasans and others.

Persian designers are masters of the use of floral and animal forms. In rugs, in missals and enamels, in tiles and pottery, their skill is set forth. Especially in the old "hunting rugs" is their ability in this particular most cleverly shown. No matter how covered the surface may be with flowers, birds and animals, the effect is that of a design, not a picture. Even when there is a top, as is the case with many of the garden rugs and always with the prayer rugs, the composition is beautifully handled. European weavers have seldom attained this wonderful flatness in the arrangement of floral motives. One has merely to mention carpet designing of the Victorian period to call to mind the opposite effect. Body Brussels in rose pattern, for instance, when petals were apparently crushed with every footstep, is a typical example.

"Hunting" rugs are seldom copied in modern weaves, but the "garden" and "tree of life" designs are occasionally found in the shops. As wall decorations, these beautiful old designs in modern wool and silk are wonderfully effective; and this brings us to a neglected phase in the use of rugs. We are all familiar with museum specimens hung on walls for preservation; but few of us ever see in a private house, unless that of a collector, a rug used as a wall decoration. Yet many rooms would gain in beauty and distinction if this plan were followed. Naturally an interesting example must be chosen—one with a design composing well as an upright panel, and with a color harmony carefully related to the room. Particularly where a plain textile is used on the floor would the patterned rug lend interest to the wall.

As covers for tables, the smaller Caucasian designs are well worth considering—one or two in a house, perhaps, chosen like the wall rug, with much discretion, and used only where both beauty and utility are served. Cushion rugs are now on the market and these, under favorable circumstances, have their place for interior use. Chinese mats are beautiful in tone and design, as are the scarcer Turkish and Turkoman mats. Cushions covered with these colorful articles are most effective when used in a formal row on a narrow, straight settee. They are never lounging cushions, and their value lies in their rich color and dignified character.

No mention of modern Persian rugs would be complete without reference to the Sharistans woven by hand on looms owned in this country. The designs are based on famous rugs of the fifteenth and sixteenth centuries, and made to order. The best traditions of the past are revived in these beautiful articles which have the life of a new rug combined with the bloom and glow of the treasured antique. The wonderful color harmony of the Sharistan—suggesting the softening influence of time, air and sunlight—is entirely a matter of weaving, not of washing or artificial aging. The fact that these rugs may be woven to fit any given space makes them very desirable for large rooms, while the color schemes are entirely in harmony with modern ideas of interior decoration.

The beauty of Chinese rugs needs no emphasis, so finely adapted are they to modern houses. The soft tans, deep yellows, pomegranate and apricot shades combined with black and imperial blue make a color foundation upon which many changes may be wrought in the way of furniture and accessories. Given a Chinese rug and the opportunity to build the scheme, a beautiful room may be evolved.

Few people realize the variety and scope of the weaving industry in this country. Rugs and tapestries setting forth the standards of the old French looms are being made under most interesting conditions. Flemish and French weavers design and work as their ancestors did in the seventeenth and eighteenth centuries. In one studio may be seen an Abusson rug designed by a Gobelin artist twice decorated by the French Government, as well as beautiful examples of Savonnerie rugs.

New industries have sprung into existence while a great stimulus has been given to established activities. For years America has taken high rank in the making of plain rugs and carpets and in the beautiful two-toned effects which decorators now use so extensively. Oriental patterns in the hands of several manufacturers have been reproduced with consummate skill, notably in such types as Anglo-Persian and Imperial Ispahan.

Mention must also be made of the old-fashioned hooked and braided rugs, either old or reproductions, finely adapted to certain rooms and growing in popularity. Within the next half dozen years great achievements may be expected from our own rug industries, and they will be well worth watching.

Pictures. Taste in decorative matters goes to extremes. The reaction against the overcrowded room with wall thickly strewn with pictures threatened to give us the pictureless house. And today many decorators claim that pictures mar, quite as often as they make, a room. This is undoubtedly true, but the subject is such an extensive one that it is impossible to dismiss it with a few platitudes; and it would be quite as sensible to say "Have no tables and chairs in your house" as to say "Have no pictures." Better no pictures than poor ones by all means; but also better no rugs than poor ones; better no curtains than poor ones, and so on through all household lines. Pictures as well as books are an education, and at no time in the world's history have both been so easy to procure as today. The very ease with which good photographs, prints and other reproductions may be purchased has made it fatally simple to obtain good things to hang on our walls, and the tendency to overdo the matter must be carefully guarded against.

Not only must pictures be carefully chosen and suitably framed, but they must be in keeping with their environment. When Henry Ward Beecher said that a house without pictures was like a body without a soul, he might have added, "when they are in harmony with their surroundings." Quite as many mistakes are made in the choice of frames for certain rooms as in the choice of frames for certain pictures. In fact both matters are too closely related to be separated.

Those who have always associated gold frames with oils do not realize what excellent results are occasionally obtained by the use of oak frames. A certain country house has woodwork of exceptional beauty, of the tone seen in Austrian interiors of the new school. In the living room and hall the trim is oak, stained gray with just a hint of green in it. The owner of this house is a collector of pictures, particularly of the modern Scandinavian landscapists. He did not wish to turn his house into a picture gallery, but he did want his masterpieces about him. Their broad decorative quality admirably suited the house, but their gold frames clashed with the whole architectural and decorative scheme. Even those framed in plain flat moldings seemed to proclaim the fact that they were bound in gold. An experiment was tried which proved very successful, and solved not only the framing problem but greatly enhanced the beauty of the landscapes. Broad flat frames of oak were stained to match the woodwork, and the canvases were hung against the plaster background. Each picture took on additional beauty. The broad sweep of sky and moor, of sea and coast, gained a new dignity. This treatment suited these particular pictures in this particular house, and it proved that the owner knew a good deal about the relation of canvas to wall treatment. In a large room on a second floor, on walls hung in the old red which is seen in many art galleries, are placed canvases of earlier and more diversified schools, and the frames are in gold of varying tones and styles each suiting the subject without any special reference to the woodwork or to the other pictures. It is a gallery, not a room. It is an interesting place to visit; but it would never tempt one to linger as do the big rooms downstairs where the landscapes, in their simple oak frames, form the chief interest.

Another point to be mentioned in connection with frames of pictures and trims of rooms, is that the greater the unity the more satisfactory the permanent result. If one wishes to hang many pictures it will be necessary to consider the framing in relation to wall treatment, else a very haphazard effect will be the result. If there are but a few pictures a diversity of framing will not make so much difference. Indeed it will in some cases be advisable, but if there are many pictures, the matter is not so easily settled.

Collections of black and whites, old or new color prints, and in fact all collections of uniform character, present few difficulties. It is the average miscellaneous assortment inherited or acquired at different times and purchased to conform with varying tastes, that makes a real problem of picture framing and picture hanging. Such assortments usually comprise water colors, oils, prints and photographs of old masters—the latter being by far the easiest to treat satisfactorily.

Many foreign photographs are sepia in tone, and simple wood frames without moldings are generally a safe choice. Circassian walnut suits many photographs, particularly the old Italian and French masters. Frames of Circassian are usually flat, or show a slight curve or rise well suited to a veneer. There is a variety of color in walnut, which is at present one of the most popular woods the frame maker has to offer. Sometimes walnut is almost as red as rosewood; again it is quite gray. If anything as ruddy as rosewood is wanted it is better to use that wood; and for certain color prints, rosewood with ebony corners is especially attractive. Sometimes a rosewood mat with an outer molding of ebony, the two presenting a perfectly flat surface, is a charming solution of the frame problem. Such a scheme is usually successful in a Colonial room. English color prints of the eighteenth century look very well in rosewood and in mahogany frames, and both rosewood and mahogany are harmonious with woodwork painted white.

Gold frames of certain character are attractive in rooms with a white trim, particularly if they are narrow oval frames or those of other old types. These may occasionally be picked up in the genuine, and at all times in good reproductions. Sometimes a color print looks better in wood, again it seems to need the gold to be at its best. These points may be decided by trying various frames, or by seeking the advice of the person who does the framing, for usually he knows whereof he speaks. He may not be familiar with the conditions in your rooms, but once they are known, he will be quick to seize the possibilities and give most helpful suggestions regarding the kind of frame, the proportion of the mat (if the picture is to be matted), the width of the molding and all the niceties to which the average person has paid little attention.

Mats at present are not so much in vogue as they were a few years ago; but it must be admitted that many pictures gain in beauty when mats are used. Water colors are usually helped by mats. White mats and white frames, once inseparably associated with water colors, are fortunately seldom seen. Gold mats and gold frames suit certain water colors well, as do mats of soft neutral tone when blending with both picture and frame.

Mats in relation to photographs may be profitably studied at the various photograph salons, where the problem is invariably handled with great skill. It is impossible to give definite rules about the use of mats. One woman who has a large collection of photographs used mats for all platinum prints and those of kindred finish, choosing them to harmonize with the tone of the photographs—gray or brown, as the case may be. All foreign photographs, which are of brighter surface, are framed "close" and are never hung side by side with the others.

Regarding all period framing, particularly Louis XV and Louis XVI, Empire and Renaissance, the picture dealer is usually better informed than the layman, who oftentimes does not know what he wants and therefore should be safely guided. Useful advice may be gained in regard to the tone of gold, if gold is to be used—whether red, yellow or green gold, and whether or not gold should be combined with wood. Sometimes an edge of gold inside a frame of wood gives tone and interest; again the picture is helped when the dark frame meets the picture without a line of separation. Photographs of old masters, particularly if they are large and destined for libraries, school rooms and similar places, are occasionally improved by a gold edge set within the frame. This gives

a better effect when in the form of a flat band rather than a beading. In a room with several gold frames and with several of stained wood (the first, for instance, framing colored prints and the others enclosing Braun photographs), the narrow edge of gold within the wood frame might be a decided help, tying the pictures together, as it were. This decorative scheme might also be a help to the walls. But if the room contained, in the way of pictures, only a collection of photographs, a better result would be gained by discarding the gold edge altogether.

Among gold frames, those of early Italian design are particularly interesting and usually more at home in the average living room than are those of the French periods. Louis XV and Louis XVI frames are at their best in rooms decorated in those styles and containing French subjects; but the Italian frame in low relief, and of a charming dull tone, falls into harmony against paneled wood, against any harmonious plain tone (whether paper, textile or calcimine) and under some conditions against a figured wall. Tapestry papers, if comparatively low in tone, make good background for Italian frames, particularly where color prints are used. And the exquisite color prints, color engravings, even colored photographs should not be overlooked by those fond of Renaissance subjects.

Colored engravings and various other color processes should be carefully studied. That distinguished bit of portraiture, *Beatrice d'Este* and the better known *Belle Ferroniere*, both attributed to Leonardo da Vinci, are remarkable for their depth of tone in colored engraving. Dull gold frames showing a bit of Renaissance detail admirably suit these subjects, and the slight ornamentation of the frame accentuates, and never subordinates, the picture. If the latter were the case, the frame would poorly fill its purpose. When a frame proclaims itself at the expense of the picture, the frame has not been wisely selected. It is too large, too ornamented, or possibly not correct in tone. The portraits mentioned may be purchased in photographs, plain or colored. If plain, Renaissance frames in walnut are advised; if colored, gold frames would be a better choice. Francesco's *Portrait of a Lady* comes out well in a colored photograph. And turning back a little to the early Florentines, what a host of beautiful things there are in color and in black and white—the Botticellis and Lippis and Fra Angelicos! They are good things to live with, whether we have Italian rooms or not; and if they be harmoniously framed they become just that much more livable and interesting.

Mezzotints in color form a class by themselves. Here we find French and English subjects more or less familiar. Many of these look well in gold frames.

Fragonard's *Lady Carving Her Initials*, however, looks better in Circassian or rosewood, for it seems to need wood tones. This fact indicates that no ironclad rules may be made about framing. The Louis XVI and Empire frames have a restraint which makes them more in tune with the average house than the Louis XV designs, and in many Colonial rooms will blend more effectively with walls and furniture.

English subjects of the eighteenth century, whether in monotone or color, seem to gravitate to mahogany and rosewood. The charm of these prints, whether old or new, needs no emphasis. Of modern mezzotints in color may be mentioned *Lady Hamilton as Nature* by Romney, engraving by Fred Millar; *Little Miss Maitland* by the same artist, engraved by Stevenson; *Lady Compton* by Sir Joshua Reynolds, engraved by Skrimshire, and a host of others, eighteenth century notables, who please a larger public than the earlier Italian subjects.

Let us not forget "modern art" in our quest for suitable subjects. The best of the modern movement will doubtless be beyond the average purse, but excellent reproductions in color and in black and white may be obtained. The frames for these highly decorative pictures must be carefully studied. Often the color scheme of the composition may be repeated in the inner framing, but remember that the mission of a frame is to enclose, to limit, and that the matter is not well handled if this principle is absent.

It is impossible to make rules for other people in regard to the kind of pictures they should buy. To the person who admires *A Yard of Pansies* it is folly to recommend Botticelli's *Spring*; and the wisdom may be questioned of advising people to purchase what they do not like on the ground that it is what they ought to like or should be made to like. If certain pictures are an acquired taste it would be better to acquire the taste first and then the pictures. But whatever the choice may be, remember that the frame can add or detract immeasurably, and that no frame is satisfactory unless it is in harmony with the room in which it is placed.

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USEFUL MISCELLANY

An Alphabetically Classified Department of Information on many Important Subjects. Interesting Fugitive Facts and Valuable and Timely Statistics. Description, Illustrations, Tables.....Page 1181

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THE SEVEN WONDERS OF THE ANCIENT WORLD

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BOOK XV

USEFUL MISCELLANY

IN this department of Useful Miscellany will be found, arranged in alphabetical order, a series of articles that contain much useful and interesting information readily available for instant use and comparison. When a number of related subjects can well be grouped, for example: Bridges; National Parks; Organizations, a number of minor topics come together. Totally unrelated entries are entered alone. Cross references assist the student, and in addition, the general index will be found useful.

AERONAUTICS

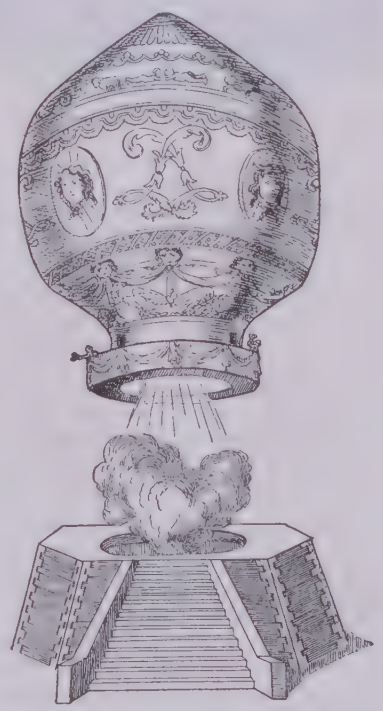
The science of aeronautics, or navigation of the air, is now composed of many distinct branches. There is a growing tendency on the part of people to become acquainted with the facts and principles involved in the various phases of this subject and many, in order to obtain a more intimate knowledge of aeronautics, are studying it in detail. Wherever possible, this is done at some flying or ground school in order that practice and theory may be combined.

Ordinarily speaking, the vehicles in which navigation of the air is accomplished may be divided into two classes according to their principle of suspension: (1) the lighter-than-air type, as exemplified by balloons and airships, which are supported by gases lighter than the atmosphere, and (2) the heavier-than-air type, of which the airplane is the most common example, which depend for their support upon the dynamic reaction of the atmosphere under the moving surfaces. To this latter group belongs the hydroplane, which is an airplane designed to land and rise on water.

These various types of air vehicles provide a new mode of transportation. Men have traveled on and under the water; they have traveled on and under the land, and now they journey more swiftly above both land and water. The air is everywhere, and therefore the airplane, in particular, serves as a new mode of transportation on the most expansive of all highways.

Transportation is an ever-present problem of civilization, and every improvement in the means of transportation has brought about a marked advance in the intelligence and comfort of civilized peoples. Great has been the effect upon the life of America in the development of mechanical transportation on land and water, and greater still may be the ultimate effect of air transportation.

Early History of Flying. Undoubtedly the desire has always been in the mind and heart of man to have the wings of a bird and thus propel himself through the air. Ancient poets wrote of men flying through the clouds and their contemporary artists depicted these dreams on stones and parchment. All through the centuries legends have appeared, giving accounts of flights supposed to have taken place, and at the present time it is difficult to separate fact from fiction. It is related, for example, that Simon the Magician, early in the Christian era, manufactured a machine that resembled a fiery chariot and flew over Rome several times. He came to grief by falling into the Forum, breaking his neck. It is also related that Saracen of Constantinople,



Montgolfier Balloon

The fuel in the pit was set on fire, the bag was inflated, and the first practical balloon started on its journey. This flight took place in Annonay, France, in 1783.

equipping himself with a long flowing robe stiffened with rods, and leaning into the wind, jumped from the tower of the Hippodrome. He rose like a bird at first, then fell, killing himself.

Chroniclers of flights between this very early period and the year 1500 write with an appearance of simple fidelity, but modern scientific knowledge of aeronautics forces us to believe that the feats chronicled never were achieved. Had the flights been designated as "proposed," rather than "accomplished," these narratives would doubtless possess the accuracy they now lack.

Beginning with the sixteenth century, however, accounts of flights and men's experiments in aeronautics are well substantiated. From 1490 to 1500 Leonardo da Vinci made a study of aircraft from the engineer's point of view. He wrote a *Treatise on the Flight of Birds*, clearly indicating thereby his knowledge of the intricacy of the subject. His investigations, however, were not widespread. He made models that mechanically lifted themselves into the air without employing light gases. Da Vinci also made a helicopter, the vertical lift type of craft, and planned a parachute.

In the seventeenth century, Borelli, Lana and Robert Hooke are mentioned for their interest in air navigation. Besnier, a locksmith of Sable, around 1675 or 1680 made a glider and sold it to a traveling showman. Singularly, he did not have any imitators.

The early part of the eighteenth century was almost without experiment save for the flight which the Marquis of Bacqueville attempted across the Seine toward the Tuileries. Halfway across he fell on one of the many floats used by the Parisian laundresses and broke his leg. In the latter part of the century, however, a rather notable aeronautical discovery was made in the form of the Montgolfier balloon.

The Balloon. There lived in France two brothers, Stephen and Joseph Montgolfier by name. Manufacturers of paper by day, they amused themselves at night by filling paper bags with hot air and watching them rise to the ceiling—only to turn over, lose the heated air and fall to the floor. Soon, however, their attitude of amusement changed to one of seriousness, and they became desirous of devising a means of preventing the bags from turning over. One evening, after they had been nonplussed for a long time, the housewife entered the room and observed the experiments. Noting their difficulty, she suggested suspending from the bag a small pot containing fire. This they did, and found that not only was the bag thereby kept in a vertical position, but the means of maintaining a constant supply of hot air for the bag had been found. This was the genesis of the balloon, and the consequent division of aircraft into two parts: heavier- and lighter-than-air machines.

By June 5, 1783, the Montgolfier balloon had been perfected, and a crowd assembled at Annonay, a town close to Lyon, to see the first balloon flight. The fire pit was filled with wood, chopped wool and straw; around the top of the pit was a large wooden ring to support the fire pot; lying over the top of the pit and extending flat on the ground was the large bag. The torch was applied to the fuel; flames shot up into the air; the bag was inflated almost immediately; the men holding the ropes released them, and the first full-sized balloon started its journey! It sustained flight for several miles, and then descended only to be hurriedly hacked to pieces by neighboring peasants who thought it some monster from the skies.

Later Montgolfier balloon flights carried "passengers" of sheep, roosters and ducks to an altitude of 13,000 ft. In November, 1783, Pilâtre de Rozier defied the fears of the people and the unknown air and made the first authentic trip through the air in a balloon. Later in the same year, through the efforts of the Montgolfiers and a French chemist, Charles, the first hydrogen balloon made a successful flight.

In England, little was accomplished until the 1800's. Perhaps the outstanding student and writer on scientific lines was Cayley, who is called the "Father of British Aeronautics." He built a glider in 1809, but there is no record of his having flown in it. Thomas Walker was also an early student of flight but not a practical flyer.

In 1840, George Peacock (or Pocock) of Bristol made his "kite carriage." This vehicle, lifted by a huge kite, had been so improved that, by 1846, it sustained sixteen people in a flight from Bristol to London. Perhaps unknowingly Peacock demonstrated in this flight that air, moving against inclined plane surfaces, will provide sufficient lifting force to sustain the weight of a man.

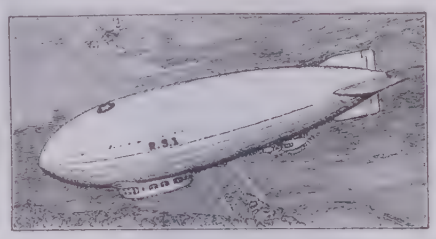
The Dirigible. Up to this point in the history of aeronautics the free balloon had been most commonly employed as a means of transportation and an object of experimentation. This type, although it offered an unusual means of travel, was not satisfactory, for the voyagers of the air were at the mercy of the winds. The pilot could, of course, ascend or descend at will, but the direction of flight depended upon his ability in taking advantage of the winds that favored him.

Realizing this great deficiency, engineers and experimenters suggested and tried various means of meeting the situation. For example, in 1852, M. Gifford of Paris equipped an elongated balloon with a steam engine. In 1872, Dupey de Lome conceived the idea of driving a balloon by man power. Other inventors suspended steam engines or electric motors below the elongated bags, and in this manner provided the motive power which would permit of steering, making the balloon "dirigible."

Impressed by the qualities and regular working of the electric motor which had been used experimentally from time to time, Albert and Gaston Tissandier (or Tissandre) built, in 1883, a dirigible airship driven by an electric motor. After a preliminary trip in October, 1883, the balloon, in September, 1884, sailed for two hours at an independent speed of four meters per second. It was not able to go against the wind, but was able to complete numerous evolutions to the right or left of the direction of the latter. The Tissandier balloon was the first dirigible driven by electricity.

La France, constructed in 1884 by Captains Renard and Krebs of the French army, is the most prominent example of advance in experimentation. The propelling power was provided by an electric motor and heavy storage batteries. Fourteen and one-half miles an hour was the average speed obtained.

Before 1890 nearly all the experiments with dirigibles were made by simply adding a propelling device to an elongated gas bag, without providing means of stiffening the bag. This type was known as the "non-rigid," and to Santos-Dumont, a Brazilian, belongs the credit of bringing this type of airship to a practicable stage. From 1888 to 1901 he experimented, but not to his full satisfaction. However, on September 6, 1901, he completed the flight around the Eiffel Tower, covering 11 kilometers in 29 minutes, 30 seconds. His flight from the airdrome to his house in Paris on June 23, 1903, is remarkable because it necessitated travel between rows of buildings with a drag-rope trailing through the streets.



America's First Semi-rigid Airship
The *RS-1* represents an early type of American dirigible.

Count Ferdinand von Zeppelin of Germany was the most enthusiastic advocate of the "rigid" type of dirigible, although authorities do not agree that he should be credited with the original idea of the rigid airship. His first design was made in 1873, but it was received with so little consideration that Count Zeppelin resigned from the army in 1891 so that he could devote all of his time to the development of his invention. In 1898 a factory was built at Friedrichshafen, on Lake Constance, and from this emerged, on July 2, 1900, the first airship with rigid frame, that is, one with a strong framework inside the envelope. The Zeppelin type divides the interior into a number of compartments, each containing a gas bag. Von Zeppelin made three flights at a speed of 17.8 miles per hour. In 1905 the Z-2 made several flights, and in 1906 the third rigid ship made a flight of eight hours while traveling at a distance of over 200 miles at a maximum speed of 28 miles per hour. The Count, then sixty-eight years old, had given the world a new form of transportation.

One of the developments in America was the semi-rigid airship, *RS-1*, shown in the sketch on this page.

In 1916 the British constructed a number of small non-rigid airships known as "blimps" (from the official name, "B-limp"). They were used chiefly for reconnoitering during the World War.

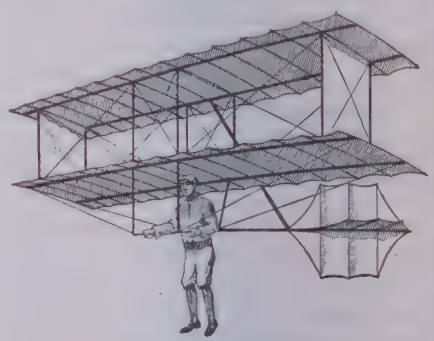
The Airplane. The modern airplane with its broad wings that supply a flat surface to meet the resistance of the wind, is thrust forward by its motors and propellers, and the wind, rushing past, exerts a pull similar to that in a vacuum cleaner.

The period between 1840 and 1903 has well been called "the period of gliders," for the outstanding men in aeronautics during these fifty-three years believed in the principle that the first step toward making heavier-than-air machines practicable was to employ gliders experimentally in order that more knowledge of wing forms could be secured and to determine the effect of wind currents on the wings and control surfaces. The motors and propellers were a later development.

Stringfellow and Henson of England in 1842 built a model flying machine which quite closely resembled our early monoplanes. The model is credited in history as being the first self-propelled, self-driven, heavier-than-air machine to sustain itself in the air by its own generative power. Despite this fact Stringfellow became discouraged and, due to lack of financial assistance, stopped further experiments.

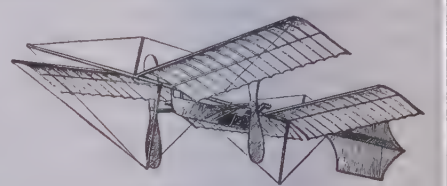
Two of the principal figures during this early time were the Lilienthal brothers of Germany; for they, about 1885-1889, discovered the flight possibilities of curved wings. Otto Lilienthal made many flights from a hill, gliding out over the valley for several hundred feet. He found, as had the Tissandier brothers before him, that he could steer either to the right or to the left. In testing a new horizontal steering arrangement he fell fifty feet and was killed. Fortunately, however, this great experimenter left a mass of valuable data for others to study.

Octave Chanute, of Chicago, forged the next link in the chain in departing from former practice by making the control surfaces of his glider movable. In 1895 he built five large machines of four different types.



Chanute Glider of 1895

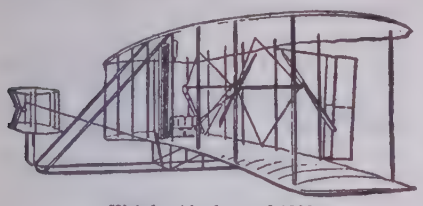
The first was a Lilienthal machine built by his able assistant, A. M. Herring. Chanute next built and tested a "multiple-winged" machine and then the "double deck" type which is now called a "biplane," with which several hundred flights were made around the sand dunes of Indiana near Gary.



Langley Tandem (side view)
Langley steam-driven aerodrome No. 5, immediately after its two flights of May 6, 1896, showing its condition after two descents from heights of nearly 100 feet, during each of which the aerodrome flew something over half a mile, descending in safety. (Drawing from official photograph, U. S. Army Corps. Description by same.)

In 1891 Dr. Samuel P. Langley, an American scientist of the Smithsonian Institution at Washington, began to build a flying machine. On May 6, 1896, in Washington, his power-driven airplane, or "aerodrome," flew for a little more than a minute and then

dropped down on the Potomac River. Langley's machine did not carry any passenger. During this same time Wilbur and Orville Wright, of Dayton, Ohio, achieved better practical results than Lilienthal, Chanute or Langley, and the early work of the Wright brothers is stamped indelibly upon present

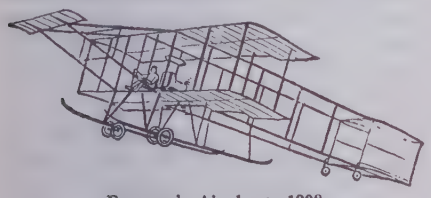


Wright Airplane of 1903
The plane that made the historic flight at Kitty Hawk, North Carolina.

day aircraft. The history of American invention contains no more fascinating story than that of the years of study and work by the Wright brothers preceding that memorable seventeenth of December, 1903, at Kitty Hawk, North Carolina, when, after trials, changes and disappointments without number, their airplane, fitted with a sixteen horse power four-cylinder gas motor and twin propellers, rose of its own power and carried Orville Wright on the first successful flight of any man. It was only for 12 seconds and a few hundred feet, but it electrified the world, and with good reason—man had learned to fly. The hope of centuries had become a reality.

The success of the Kitty Hawk flight led to further experiments, culminating on October 5, 1905, in a flight by the Wrights of 24½ miles, lasting 38 minutes at 38 miles an hour.

Airplane activity then seems to have been transferred to France for a time, where experiments were carried on by such pioneers as Santos Dumont of Brazil and the Frenchmen, Henri Farman, the Voisin brothers, Delagrange and Bleriot.



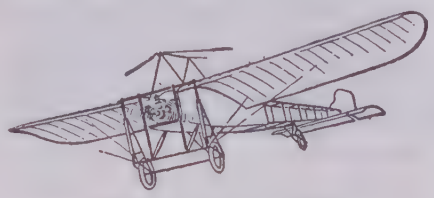
Farman's Airplane, 1908

Following closely the Wright brothers was Glenn H. Curtiss, the man who won the *Scientific American* Cup for the first preannounced public demonstration flight on July 4, 1908. In the year following, he put floats under the wings of an airplane and thus developed the first hydroplane to rise from and land on water. In 1909 he won the first Gordon Bennett Cup Race at a speed of 50 miles an hour.

As a comparison with present planes, it is interesting to record the specifications issued in 1907 by the U. S. Army for a flying machine of advanced type. It was required to carry two men, remain aloft one hour continuously, maintain an average speed of 40 miles an hour and be able to carry sufficient fuel for 125 miles of flying.

It was in connection with trial flights under these government specifications that Wright astounded the world by a flight over the Fort Myer drill ground lasting a trifle over an hour. Delays and difficulties attended the flights of this first government airplane, but on July 27, 1909, Wright again sailed triumphantly over Fort Myer field, this time for 1 hour, 12 minutes and 40 seconds, to the delight of 10,000 spectators, including President Taft and members of his cabinet.

At a meeting in Reims, France, in 1909, when aviators awed spectators by creeping cautiously to a height of 500 feet, it was confidently predicted that 1,000 feet was the greatest altitude possible; yet in 1910 Legagneux established a record of 10,747 feet. No sooner, in fact, did some timid prophet say a thing was impossible, than a courageous pilot proceeded to prove that it could be done.



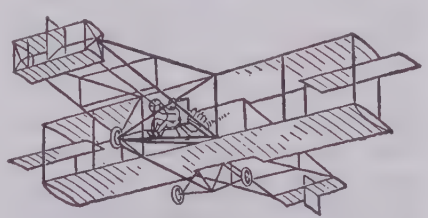
Bleriot's Monoplane, 1909

Bleriot, a Frenchman, in a machine built by himself, made the first "overseas flight" across the English Channel from Baraquas to Dover, at the same time giving a new type of airplane, the monoplane, its first real test.

The Modern Development of Aeronautics. From 1909 on, the development of aeronautics can best be pictured by a review of the outstanding events of each year. The recital of these events grows monotonous unless the reader keeps in mind that each one, at the time, was a courageous and glorious adventure. Constant development appears in the year-by-year proof of improved construction, increased skill in piloting, and growing confidence in man's right to fly.

At the close of 1909 world records had been established as follows: a cross-country flight of 40 miles in 1 hour and 3 minutes with a speed of 49.99 miles per hour and altitude of 1,486 feet; Henry Farman had made the first recorded flight with a passenger; Madame Piltier of France had demonstrated that women could fly; Wilbur Wright had circled the Statue of Liberty, and Count de Lambert had flown over the Eiffel Tower in Paris.

The year 1910 brought the first airplane exposition at Brussels, and a hundred organized meets and exhibitions in America, including that at Belmont Park with 29 aviators

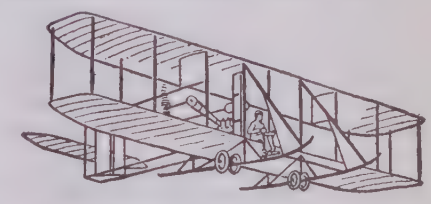


Curtiss' Airplane of 1908

and 37 planes entered, 10 of which were once in the air at the same time. "Dips" and "spiral dives" and "banking" earned places in aviation language. Paulhan flew from London to Manchester in 12 hours. Curtiss flew from Albany to New York, 142½ miles, in 2 hours and 25 minutes at 50 miles an hour.

In 1911 the International Aviation Meet was held at Chicago, where from 10 to 15 airplanes could be seen in the air at one time. During the meet a new altitude record of 12,828 feet was made by Lincoln Beachey in a Curtiss pusher, an airplane with the propellers at the rear of the supporting surfaces. Shortly following this great aviation meet, C. P. Rogers made the first American coast-to-coast flight, starting from Sheepshead Bay, New York, September 17, and landing on November 5 at Los Angeles. The first air mail in the United States was from Nassau Boulevard Airdrome, L. I., to Mineola, L. I.; Ely demonstrated that an airplane could rise from a battleship; McCurdy flew from Key West, Florida, to Cuba; Beachey dipped over Niagara Falls and flew through the gorge; Prier of France made the first non-stop flight from London to Paris, 250 miles in about 4 hours.

The year 1913 brought reports of Sikorsky, a Russian, flying with seven passengers, thus again showing the possibilities of the airplane as a common carrier. An American flew over the Panama Canal. A statement in the House of Representatives that "five years ago no one would fly in a wind blowing five miles, but today (1913) flying is done in puffy winds of forty to forty-five miles per hour" was immediately proved by a pilot flying in a



Wright Airplane of 1910

50-mile wind. The same year contributed a non-stop flight from Paris to Berlin; and one of 930 miles from Paris to Warsaw in 11 hours. Two American pilots flew from Chicago to Detroit by way of the Great Lakes, a distance of 900 miles. M. Pegoud in France made the first intentional "loop the loop" in an airplane.

Previous records were shattered in 1914; altitude now stood at 26,246 feet; speed at 126.66 miles per hour; duration at 21 hours, 38 minutes and 48 seconds. Parmelee, an American pilot, flew over Mont Blanc, and Silas Christofersen flew 1,000 feet over the peak of Mt. Whitney in California. Garaix, a French pilot, established a world record by carrying 3 passengers for 4 hours, 3 minutes and 29 seconds; and W. C. Robinson of Grinnell, Iowa, in a monoplane built by himself, broke the American cross-country record.

During the next four years, with the World War going on in Europe, aviation passed largely from record breaking and cup racing to more grim pursuits, bringing radical changes in the design of planes, and adding heroes of a new type to history's roll.

A few outstanding peace events also claimed attention: a flight by Victor Carlstrom, Chicago to New York, with two stops, actual flying time 8 hours, 28 minutes: a

non-stop flight of 590 miles by Ruth Law in 8 hours, 55¾ minutes.



Curtiss' Airplane of 1916

In 1918 a world altitude record of 28,900 feet was made by Maj. R. W. Schroeder, U. S. A. The first regular air mail service in the world was established between New York and Washington.

Building on the great progress made during the World War and with energy released from the strain of war, 1919 witnessed some remarkable achievements. First moves were made toward municipal air fields; small passenger-carrying companies sprang up over the country; the carrying of air mail increased and exhibition flights again claimed attention. The first speed and handicap race was held between New York and Toronto. Fifty-two planes entered and 32 finished. The first transatlantic flight, Newfoundland to Portugal by way of the Azores was made by Lieut. Com. A. C. Read, U. S. N., in the *NC-4*.

The following year, 1920, was marked by a number of notable flights: the first non-stop flight across the Atlantic from St. Johns, Newfoundland, to Clifton, Ireland, by John Alcock and A. W. Brown of England; a non-stop flight from Paris to Morocco; a flight from Buenos Aires to Valparaiso, Chile; the first non-stop flight from Chicago to New York, 727 miles, by Capt. Earl White; a flight over the Andes Mountains by Lieut. Cortinez; a flight from London to Darwin, Australia, 11,500 miles, between November twelfth and December tenth, by Capt. Ross Smith. A U. S. Navy plane was launched from a flying dirigible.

In 1920, Maj. Schroeder made a new altitude record of 33,113 feet. A new speed record of 194 miles per hour was made. Four planes made a successful trip from New York to Nome, Alaska, and return—9,000 miles in 112 flying hours. The transcontinental mail route, New York to San Francisco, was inaugurated.

The next two years were comparatively quiet ones, but included an altitude record of 34,507 feet by John A. Macready. The air mail from San Francisco to New York established a new time record of 33 hours and 20 minutes; Lieut. Doolittle flew from Jacksonville, Florida, to San Diego; Lieuts. Kelly and Macready made a non-stop flight from San Diego to Fort Benjamin Harrison, Indiana, a distance of 2,060 miles; two Portuguese flyers flew from Portugal to Brazil, a total of 3,490 miles; Sir Alan Cobham made tours covering 8,000 miles in Europe and flew from Belgrade to London in a day.

In 1923 the air mail, now five years old, had five routes in operation, with the planes flying 1,589,389 miles during the year. Lieut. Rittenhouse, U. S. N., won the International Seaplane Race off the Isle of Wight; Lieuts. Kelly and Macready of the air service made another non-stop record flight from the Atlantic to the Pacific Coast in 26 hours, 50 minutes and 38 seconds.

In the history of American aeronautics, the flights and fate of the *ZR-1*, better known as the *Shenandoah* (an Indian name, meaning "Daughter of the Stars"), are indelibly written. On September 4, 1923, at the Naval Air Station at Lakehurst, N. J., this navy rigid airship made her first flight. The flight inaugurated a new epoch in the science of air transportation, for it was the first time in the history of aviation that a rigid ship had flown when inflated with the non-inflammable gas, helium. The first flight was of about an hour's duration, covering a distance of 20 miles each way. The big craft did not attempt to travel over 35 miles an hour, nor at a higher altitude than about 1,100 feet. Thirty men constituted the crew and 15,000 people witnessed the flight. It took two years to build this 30-ton ship, and the cost was $2,000,000.

Two years after the *Shenandoah* was launched, it started out on its fatal trip to the Middle West. On the night of September 3, 1925, manned by a crew under Commander Lansdowne, it encountered a terrific storm in Ohio, and the first American airship, built for the navy to use in time of war, fell to the earth—a mass of wreckage.

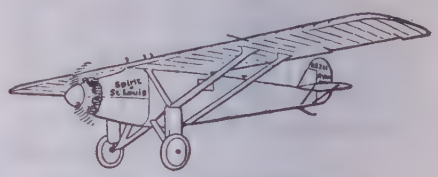
The *Los Angeles*, formerly the *ZR-3*, another famous American airship, was built in Germany as a part of the agreement made with the United States by Germany at the close of the World War. It arrived in this country in 1924, a year after the *Shenandoah* was launched, and shared the big hangar with her sister ship. The *Los Angeles*, still in service (1931), is equipped with all modern conveniences, for it was built to carry passengers, not guns.

World interest at the beginning of 1924 centered on the attempt of the Army Air Service to fly around the world. Four planes left Seattle on April 6, and on September 28 two of them finished the 27,534-mile trip. There were 65 days of actual flying time at an average speed of 76.36 miles per hour. This year also saw the first dawn-to-dusk American transcontinental flight—2,645 miles in 21 hours, 48 minutes—by Lieut. Russell Maughan.

In 1925 occurred the first of many attempts to fly across the Pacific Ocean when the naval plane *PN-9, No. 1*, made a brave but unsuccessful attempt to fly to Hawaii. A new non-stop record was established by French aviators of 2,732 miles in 45 hours and 12 minutes; Sir Alan Cobham flew from London to Rangoon and back, and also to Cape Town and back to London; MacMillan put airplanes to new use in his exploration of the Arctic. In 1925 the air mail planes flew a total of 2,076,764 miles, carrying 9,300,520 letters.

The year 1926 marked the opening of many new air mail routes operated by private capital. Commander Richard E. Byrd and Floyd Bennett flew from Svalbard (Spitsbergen) to the North Pole and back in 15 hours, to be followed a few days later by Captain Roald Amundsen, whose dirigible flew from Svalbard to Teller, Alaska, 2,700 miles, over the top of the world. French airmen made a non-stop flight from Paris to Jask, Persia, 3,313 miles; U. S. Army airplanes made a good-will flight around Latin America, covering 20,000 miles; and the altitude record moved up to 37,569 feet.

Lindbergh's Transatlantic Flight. Lindbergh inaugurated the historic airplane year of 1927. The world suddenly became acutely air-minded when the unknown air mail pilot took off one day from San Diego, broke the record to St. Louis, then flew to New York, and, in his own good time, flew out over the Atlantic and in 33 hours, 30 minutes landed



Lindbergh's *Spirit of St. Louis*

The Ryan monoplane in which Lindbergh made his historic flight from New York to Paris in 1927.

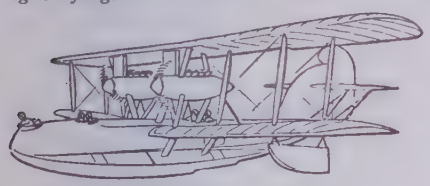
in Paris. It may be said that American and, indeed, world aviation had a new birth with Lindbergh's memorable flight. His supreme confidence was contagious.

There followed with breath-taking rapidity a series of exploits that only a few years before would have been pronounced incredible. They include Commander Byrd's transatlantic flight to the north coast of France, 3,477 miles in 42 hours and 6 minutes; Clarence Chamberlain's flight to Germany, 3,905 miles in 42 hours and 45 minutes, thus establishing a new distance record; the first successful flight to Hawaii by Lieuts. Maitland and Hegenberger, 2,407 miles; Smith and Bronte's flight to Hawaii in a small monoplane; the race to Hawaii, won by Goebel and Davis in 25 hours, 17 minutes; a flight by Chamberlain from the ocean liner, Leviathan, 120 miles out from New York; Lindbergh's tour of the United States, 22,350 miles, visiting all the States, 82 cities, and, in every instance except one, arriving at his destination on schedule time; Lindbergh's non-stop flight to Mexico City and his good-will tour of Latin America, covering 7,860 miles in 101 flying hours; the second Arctic expedition by Sir Hubert Wilkins; a new endurance record by the German flyers, Risticz and Edzard of 52 hours, 23 minutes and 11 seconds; a new altitude record by Champion of 38,474 feet; the Newfoundland-to-Japan flight by Brock and Schlee; and the round-the-world tour of the French pilots, Coste and LeBrix. During the winter of 1927-28, Sir Alan Cobham flew all around Africa in a seaplane, laying out the African through-route for airplanes.

Aeronautical courses were established in educational institutions; the air express service was inaugurated, and the air mail counted 11,446 miles of routes in operation with an authorized 8,000,000 miles of flying. And to this practical everyday demonstration of flying by the air mail pilots, aviation owes a great debt.

Great as were the 1927 accomplishments, 1928 saw some of them eclipsed. There was a new distance record of 4,763 miles, and a duration record of 65 hours and 25 minutes. The year brought the first westward flight over the North Atlantic by the monoplane *Bremen*, from Dublin to Greenly Island, north of Newfoundland; a non-stop flight from Point Barrow, Alaska, to Spitsbergen, by

Capt. Wilkins and his pilot, C. B. Eielson; Miss Amelia Earhart, in the *Friendship* piloted by Stultz and Gordon, was the first woman to negotiate a successful transatlantic flight; the *Southern Cross*, with Capt. Kingsford-Smith and three companions, made the memorable flight from Oakland, California, across the Pacific to Australia—the longest over-water flight ever made; Goebel flew eastward across the United States in 18 hours and 58 minutes; Bert Hassel, in the *Greater Rockford*, flew from Rockford, Illinois, to Greenland; a speed record of 319 miles per hour made by an English pilot, and a successful flight across the English Channel by an autogyro or "windmill" plane. This type, incidentally, holds an interesting promise for the future. Development of the airplane along commercial lines was even more marked. The production of airplanes in 1928 was two and one-half times that of the preceding year. Airplane time-tables became a commonplace, and 13,000 miles of airways were lighted for night flying.



Navy Hydroplane of 1928

In 1929 there was great progress in air travel, with 125,000,000 miles covered and 3,500,000 passengers carried. This development was brought about by the improvement in large transport airplanes, navigation equipment, fog flying instruments, radio beacons and weather reports by radio. The establishment of new airports everywhere did much to afford facilities for the owner of an aircraft. In the United States about 7,000 airplanes were sold during the year. About 600 flying training schools were opened, pilots numbered about 10,000 of whom 7,000 were licensed by the U. S. Department of Commerce.

Around the World by Airship. In 1929 the giant German airship, *Graf Zeppelin*, made the first round-the-world flight of a lighter-than-air craft. The qualities of the ship had been amply proved during the round trip flight across the Atlantic in the previous year. The world flight began at Friedrichshafen, Germany, on July 31 and ended at the same place on September 4, the total mileage being 21,238. The ship was commanded by Dr. Hugo Eckener, although he remained at Lakehurst, N. J., on the return flight, leaving the ship to be piloted to its home hangar by Capt. Ernest Lehman, second in command.

Practical application of commercial aviation got well under way. For instance, refueling an airplane in midair was well demonstrated by Jackson and O'Brine during a 420 hour endurance flight in a Curtiss *Robin*.

The experimental "blind flying" tests by Lieut. James Doolittle, in which he made a flight entirely by instruments without seeing either land or sky, was an accomplishment well worth while.

The South Pole by Airplane. The Byrd expedition to the South Pole was an outstanding event. After many scientific explorations with Little America as a base, the successful flight to the South Pole was accomplished on November 29, 1929. With Admiral Byrd were Bernt Balchen as pilot, Capt. Ashley McKinley as aerial surveyor, and Harold I. June as radio operator.

Transatlantic flights again were in evidence. Williams and Yancey flew from America to Rome, Italy. Assolant, a Frenchman, flew from Maine to Spain. The South Atlantic was crossed twice, by Jiminez and Iglesias and shortly thereafter by Larre-Borges and Challe. The world's record for speed made by the British pilot Orlebar, jumped to 357.7 miles an hour. The world's altitude record was raised to 41,794 feet by Neuenhofen in Germany. Capt. Hawks made a flight from New York to California and return in 36 hours and 48 minutes. The year came to a close with the winning by the Curtiss *Tanager* of the $100,000 prize for the Safe Airplane Competition sponsored by the Guggenheim Foundation for Aeronautics.

The year 1930 was memorable in aeronautics. After a series of flights started more than a year previously, Wing-Commander Charles Kingsford-Smith, of Australia, completed a world flight in the airplane *Southern Cross*.

In July, the British dirigible *R-100* crossed from England to Montreal, Canada, in 72 hours. A few days later the big ship flew back to England. In October, a sister ship, the *R-101*, a few hours after starting on a flight to India encountered a storm in France and crashed, destroying the ship and killing most of the passengers and crew.

In July and August, O'Brine and Jackson of St. Louis in the airplane *Robin* set a duration flight record of 647 hours, 28½ minutes, thus breaking a duration record set a few weeks earlier by the Hunter brothers of Chicago.

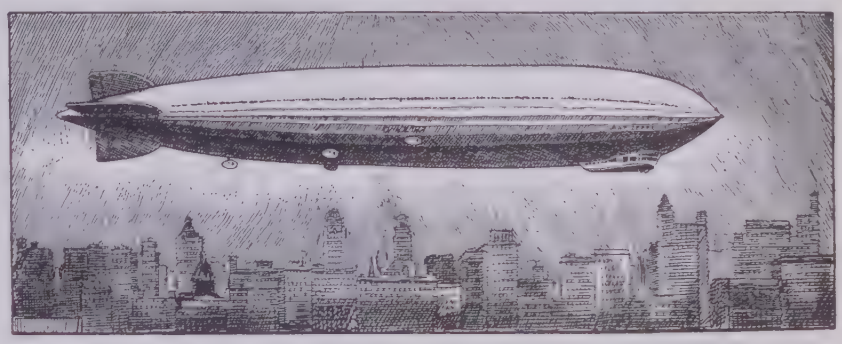
In August, Capt. Wolfgang von Gronau made an unheralded flight from Germany to New York, stopping at the Faroe Islands, Iceland, Greenland and Nova Scotia.

In August, Capt. Frank Hawks made two transcontinental records: a flight from New York City to Los Angeles in 14 hours, 50 minutes; and a return flight over the same course in 12 hours, 25 minutes, 3 seconds.

In September, Coste and Bellonte, of France, in the red airplane *Question Mark*, made the first non-stop flight from Paris to New York City in 37 hours, 18½ minutes.

In November, Capt. Roy W. Ammel landed at France Field, Balboa, Canal Zone, having flown 3,189 miles from Brooklyn, N. Y. to the Panama Canal in 24 hours, 35 minutes, the first solo non-stop flight between these points.

A striking development of 1930 was that of a large parachute capable of supporting an entire airplane. Successful tests made with a Park biplane indicated important possibilities in the parachute adding to the confidence of the traveling public.



The *Graf Zeppelin*

A notable event of 1929 was the circumnavigation of the globe by the German airship, *Graf Zeppelin*. In many flights this great ship has proved herself.

Early in 1931 the 6,500,000 cubic-foot navy dirigible *Akron* was completed. This American-built ship, if stood on end, would be as high as an 80-story building.

Looking back over the record to 1903, the greatest distance covered in that year by an airplane was 852 feet—about one-sixth of a mile; in 1930 an airplane made a 5,088-mile non-stop record. In 1903 the duration record was 12 seconds; in 1930 it was 647 hours, 28½ minutes. In 1903 the speed record was 25 miles per hour; in 1930 it was 357.7 miles per hour. In 1903 the altitude record was 27 feet; in 1930 it was 43,166 feet. And the achievement record of aeronautics is being written every day.

The present trend is toward larger airplanes. The Junkers, in Germany, and the Fokker, in America, each carry 32 passengers and heavy additional loads of freight and mail. The Commodore flying boats, of America, carry 20 passengers. The Italian Caproni 90 P.B., a great land plane fitted for use as a bomber, could also be used as a passenger plane carrying approximately 100 persons. The great flying boat of Germany, the Dornier Do-X, with a capacity of about 112 persons, has carried as many as 169 persons on a flight.

Safety of air travel is engaging much attention. The National Advisory Committee for Aeronautics has entered upon a study of the causes of "spinning," in an attempt to reduce this danger. The Department of Commerce licenses airlines and grants licenses only to those showing satisfactory personnel and equipment. Radio is a great factor in safety in flying. The Bureau of Standards has worked out a system of radio beacons and is studying the problem of landing in a fog. A Diesel type of engine allows the burning of a heavy fuel oil and is reducing the fire hazard. The licensing of schools, pilots and mechanics generally is improving the operation of aircraft.

AIR

Air is the gaseous substance which fills the atmosphere surrounding our planet. It is elastic, and is destitute of taste, color and smell. It contains by weight: oxygen 23.10 parts, and nitrogen 76.90; and by volume: oxygen 20.90, and nitrogen 79.10; or of 10,000 parts there are in perfectly dry air: nitrogen 7,912, oxygen 2,080, carbonic acid 4, carbureted hydrogen 4, with a trace of ammonia. But air never is dry; it has always in it a varying amount of water vapor. When exhaled from the lungs it is saturated with moisture, and contains about 4.35 parts of carbonic acid. The prevalence of this latter gas in abnormal quantity is prejudicial to human life, while air with a high percentage of oxygen in it is healthful and invigorating.

The density of air being fixed at the round number 1,000, it is made the standard with which the specific gravity of other substances is compared. If water be made unity, then the specific gravity of dry air is .0012759. At 62 degrees Fahrenheit it is 810 times lighter than water, and 11,000 times lighter than mercury. At the surface of the sea the mean pressure is sufficient to balance a column of mercury 30 inches, or one of water 34 feet in height.

The exact height of the atmosphere is unknown. At 2.7 miles above the surface of the earth half its density is gone, and the remainder is again halved for every further rise of 2.7 miles. Some small density would remain at 45 miles high. At 80 miles this would have all but disappeared. But from sundry observations, made at Rio de Janeiro and elsewhere, on the twilight arc, it has been estimated that the extreme limit of the atmosphere is between 198 and 212 miles. In the lower strata of the atmosphere the temperature falls at least a degree for every 352 feet of ascent; hence, even in the tropics, mountains of any considerable elevation are snowcapped. The atmosphere appears to us blue, because absorbing the red and yellow solar rays, it reflects the blue ones. It revolves with the earth, but being extremely mobile, winds are generated in it, so that it is rarely long at rest.

AIR BRAKE

In 1869, George Westinghouse Jr. invented the air brake whereby the brakes are forced against the wheels of a railroad car by means of compressed air. This has been a marvelous invention for the railroad since it gives the engineer complete control of the train at all times and enables him to make a stop in far shorter time than with old-style brakes.

The air brake is so arranged that to release the brakes the system must be in good order. When the machinery gets out of order the compressed air which holds the brake away from the wheel ceases to function and the train is automatically stopped.

ALMIGHTY DOLLAR

In this phrase, coined by Washington Irving, we have a personification of the supposed object of American worship. It is intended as a satire on the mad race for wealth that has at different times and in divers places characterized the American people.

AMERICAN RHINE

The Hudson River, "unrivaled among American rivers for picturesque and magnificent scenery." Though destitute of the numerous architectural remains of bygone ages that crowd with interesting reminiscences the banks of its Old World namesake, the Hudson is equally enriched by nature, and is not without its share of legendary lore.

AMERICA'S CUP RACE

In 1851 the yacht *America*, owned by Commodore Stevens of the New York Yacht Club, beat all entries in a race around the Isle of Wight and was awarded the prize cup. Hence this famous competition has since been called the America's Cup Race. Many of these races have since been held between English and American ships. Since 1899 Sir Thomas Lipton has built boats and attempted to capture this famous race for England. His sailing vessels were named *Shamrock I, II, III, IV*, and *V* respectively. Including the 1930 race he lost five times.

ANATOMY AND PHYSIOLOGY, UNIQUE ITEMS ABOUT

The following items concerning human anatomy and physiology have been gathered from a number of authentic sources:

Blood. An adult has ordinarily 28 pounds of blood; at each pulsation of the heart, 10 pounds are sent through the arteries and veins. The pulsations average 120 per minute in infancy, 80 in manhood, and 60 in old age, and are rather more rapid in women than in men.

Temperature of the Human Blood.

Good health	98.6 (Fahrenheit).
Fever	101.3 (Fahrenheit).
Strong fever (morning)	102.2 (Fahrenheit).
Strong fever (evening)	104.0 (Fahrenheit).

Brain. According to Bastian and others, the following brain weights are given of different nationalities:

Scotch	50.0 oz.
Germans	49.6 oz.
English	49.5 oz.
French	47.9 oz.
Zulus	47.5 oz.
Chinese	47.2 oz.
Italians	46.9 cz.
Hindus	45.1 oz.
Gypsies	44.8 oz.
Bushmen	44.6 oz.
Eskimos	43.9 oz.

Capacity of Brain-Case.

Anglo-Saxon	105 cu. in.
German	105 cu. in.
Negro	96 cu. in.
Ancient Egyptian	58 cu. in.
Hottentot	58 cu. in.

Brain Weights. The average weight of the human brain, as given by Quain, is 49½ ounces avoirdupois for males, and 44 ounces for females. This general result was obtained by comparing and combining the tables prepared by Sims, Clendinning, Tiedemann and Reid. The number of male brains weighed was 278, and of female brains, 191. In males, the minimum weight was 34 ounces, and the maximum, 65 ounces. In females, the minimum weight was 31 ounces, and the maximum, 56 ounces. In new-born infants, the brain weighs about 11.65 ounces for the male, and 10 ounces for the female.

In both sexes, the weight of the brain generally increases rapidly up to the seventh year, then more slowly to between 31 and 40, at which time it reaches its maximum point. Beyond that period, there appears a slow but progressive diminution in weight of about one ounce during each subsequent decennial period; thus confirming the opinion that the brain diminishes in advanced life.

Bricklayer, aged 38; fair intelligence, but could neither read nor write (reported by Dr. James Morris)	67.00 oz.
Cuvier, aged 63 (Archives generales de medecine, 1832)	64.33 oz.
Abercrombie, aged 63 (reported by Dr. Adam Hunter)	63.00 oz.
Congenital epileptic idiot (reported by Dr. Tuke)	60.00 oz.
Ruloff, aged 53; above medium stature; executed for murder in 1871; well versed in languages, imagining that he had discovered new and important principles in philology (reported by Dr. George Burr)	59.00 oz.
James Fisk, Jr., killed in New York, in 1872; illiterate, but said to possess great executive ability; notorious for colossal and unscrupulous financial speculations (reported by Dr. Marsh)	58.00 oz.
Spurzheim (Medico-Chirurgical Review, 1836)	55.06 oz.
Adult man; an idiot since two years of age (Wagner)	54.95 oz.
Daniel Webster, aged 70 (reported by Dr. John Jeffries)	53.50 oz.
Executed criminal, aged 45; medium stature; of less than ordinary intelligence, and uncultivated (Lelut)	53.12 oz.
Dupuytren, aged 58 (Cruveilhier, Husson, and Bouillaud)	49.68 oz.
Day-laborer, aged 49 (Wagner)	48.85 oz.
Celebrated philologist, aged 54; 5 feet 7½ inches tall (Wagner)	47.90 oz.
Executed criminal, aged 34; small stature; intelligence developed and cultivated (Lelut)	47.79 oz.
Celebrated mineralogist, aged 77; above medium stature (Wagner)	43.24 oz.
Man, 44 years of age; idiocy very profound; a little below medium stature (Lelut)	34.39 oz.

A careful study of the weights given in this table shows the impossibility of applying to individuals an absolute rule that the greatest brain-power is connected with the greatest amount of brain-substance.

Chemical Composition of Man. Huxley's table on the "Chemical composition of man of the average weight of 154 pounds" was for years the standard, but it has been superseded by the appended one that was authorized by the French Academy of Sciences.

Elements	*Pounds*	*Ounces*	*Grains*
Oxygen	111	8	0
Hydrogen	21	6	0
Carbon	21	0	0
Nitrogen	3	10	0
Phosphorus	1	2	88
Calcium	2	0	0
Sulphur	0	0	219
Chlorine	0	2	47
Sodium (Salt)	0	2	116
Iron	0	0	100
Potassium	0	0	290
Magnesium	0	0	12
Silica	0	0	2

Coughing. We cough because the respiratory organs are excited by the presence of some body foreign or unnatural to them. A cough is an effort on the part of the air tubes to free themselves from some source of irritation. And so important are the organs of breathing to the welfare of the body, that the muscles of the chest, back, and abdomen unite in the endeavor to get rid of the exciting substance.

Freckles. The action of the sun's rays on certain kinds of skin causes small parts of the second layer to give out a yellowish brown pigment. Persons of fair complexion and hair generally are more subject to freckles. Other people, because of a different kind of skin, do not freckle, regardless of exposure to the sun. Though some freckles are permanent, in most cases cold weather causes them to disappear.

Hair. The number of hairs on an adult's head averages from 129,000 to 150,000. A healthy scalp has a certain amount of natural oil that lubricates.

Hiccough is caused by a spasmodic twitching of the diaphragm, a thin muscular membrane which divides the chest from the abdomen. It generally arises from sympathy with the stomach; and it is highly probable that the muscular twitches and jerks are so many efforts on the part of the diaphragm to assist the stomach to get rid of some undigested matter.

Laughter. Laughing is caused by influences the very opposite of those that produce sighing. The nervous system is highly excited by some external cause. The impression is so intense, and the mind so fixed upon it, that the respiratory process is irregular, and uncontrolled. Persons excited to a fit of laughter generally hold their breath until they can hold it no longer, and then suddenly there is a quick expiration causing eccentric sounds, the mind being too intently fixed upon the cause of excitement either to moderate the sounds or to control the breathing.

Pulse. The beat or shock felt in an artery when slight pressure is made on it, caused by the systole of the heart. At birth the number of beats are about 140, at the end of the first year 120, at the end of the second 110; during middle life between 70 and 80, and in old age usually a little more. It is slower in man than in woman, and is also affected by the position of the body, being about five beats more in the sitting than in the recumbent posture, and 10 more per minute the standing than in the sitting posture.

Correlation of Pulse and Temperature. As a general rule the correlation of pulse and temperature may be stated as follows:

An increase of temperature of one degree above 98 degrees Fahrenheit corresponds with an increase of 10 beats of the pulse per minute, as in the following table:

Temperature of 98° corresponds with a pulse of 60.
Temperature of 99° corresponds with a pulse of 70.
Temperature of 100° corresponds with a pulse of 80.
Temperature of 101° corresponds with a pulse of 90.
Temperature of 102° corresponds with a pulse of 100.
Temperature of 103° corresponds with a pulse of 110.
Temperature of 104° corresponds with a pulse of 120.
Temperature of 105° corresponds with a pulse of 130.
Temperature of 106° corresponds with a pulse of 140.

Respiration. Respiration is the act of inhaling air into the lungs, and again expelling it. The quantity of carbonic acid gas exhaled in 24 hours is as follows:

Person	*Age*	*Ounces Exhaled*
Girl	10	9
Boy	10	10
Young woman	19	12
Young man	16	16
Man	28	17

Sighing. The action of sighing arises from very similar causes to those of yawning. But in sighing, the nervous depression is caused by *grief*; while in yawning, it is the result of *fatigue*. In sighing, the effect is generally caused by an *expiration*—in yawning by an *inspiration*. The mind, wearied and weakened by sorrow, omits for a few seconds to continue the respiratory process; and then suddenly there comes an involuntary expiration of the breath, causing a faint sound as it passes the organs of the voice.

Sleep is understood to be that state of the body in which the relation of the brain to some parts of the body is temporarily suspended. There are some parts of the body that never sleep; such are the heart, the lungs, the organs of circulation, and those parts of the nervous system that direct their operations.

But when sleep overtakes the system, it seems as if the relations of those parts under the control of the will were temporarily suspended; as if, for instance, those nerves which move the arms, the legs, the eyes, the tongue, were all at once unfastened, just as the strings of an instrument are relaxed by the turning of a key, or the throwing down of a bridge over which they were stretched.

What is meant by the suspension of the relation of the brain to some parts of the body, may be thus explained. Notice a man when he sits dozing in a chair; at first his head is held up, the brain controlling the muscles of the neck, and keeping the head erect. But drowsiness comes on, the brain begins to withdraw its influence, and the muscles of the neck becoming as it were "unstrung," the head drops down upon the breast. But the sleep is unsound, and disturbed by surrounding noises. The brain is therefore frequently excited to return its influence to the muscles, and draw up the head of the sleeper. He gives a sudden start, every muscle is tightened in an instant, up goes the head, the eyes open, the ears listen, until a feeling of security and composure returns; the sleep again deepens, the nervous connection is again withdrawn, and then down drops the head as before.

Sneezing. We sneeze because particles of matter enter the nostrils and excite the nerves of feeling and of smell. In sneezing, as in coughing, the effort is to free the parts affected from the intrusion of some matters of an objectionable nature. And in this case, as in the former one, there is a very general sympathy of other organs with the part affected, and an energetic effort to get rid of the evil.

Snoring is caused by air sweeping through the passages that lead from the mouth through the nostrils, and which, in our waking moments, are capable of certain muscular modifications to adapt them to our breathing. But as in sleeping, the nervous control over them is withdrawn, they are left to the action of the air which, in sweeping by them, sets them in vibration.

Tears. Tears are salty because salt when properly mixed with water makes a perfect wash for the eyes and nature makes the proper solution.

Yawning and Stretching. When we are bored or sleepy or tired, we do not breathe as deeply as we should and our blood does not receive enough oxygen from the air. When our brain learns that there is insufficient oxygen in our blood, it orders us to take a great deep breath, or to stretch, or both. This great big breath is called a yawn. Thus yawning and stretching are real helps to the body. It is not considered polite to yawn or stretch in front of another person because that implies that one is tired of the other person's company.

APOSTLES, FATE OF

It is generally believed that only one of Christ's Apostles, John, escaped martyrdom. Matthew is supposed to have been slain with a sword in Ethiopia. James, son of Zebedee, was beheaded at Jerusalem. James, the Less, son of Alpheus, was thrown from a pinnacle of the Temple and then beaten to death with a fuller's club. Philip was hanged up against a pillar at Hieropolis, a city of Phrygia. Bartholomew was flayed alive at Albanapolis, in Armenia. Andrew suffered martyrdom on a cross at Patræ, in Achaia. Thomas was run through the body with a lance at Coromandel, in the East Indies. Thaddeus was shot to death with arrows. Simon Zelotes was crucified in Persia. Peter was crucified, head downward it is said, during the Neronian persecution. Matthias was first stoned and then beheaded, and Paul was beheaded at Rome by the tyrant Nero. Judas Iscariot, after the betrayal of our Lord, hung himself.

APRIL FOOL'S DAY

The origin of the custom of April fooling cannot be traced with any degree of certainty. The first reference to it in English literature is in 1687, in Congreve's *Old Bachelor*, 1, IV, "That's one of Love's April-fools, is always upon some errand that's to no purpose." In the literature of the eighteenth century there are found many references to it. One suggestion is that the custom of playing tricks on the first day of April was derived from some ancient pagan custom, such as the Huli festival among the Hindus, or the Roman Feast of the Fools. One fact, however, we do know, and that is that the practice prevails in many countries, under various names, which would seem to indicate that it dates back to the early history of the race. There is a tradition among the Jews that the custom of making fools on the first of April arose from the fact that Noah sent out the dove on the first of the month corresponding to our April, before the water had abated. To perpetuate the memory of the great deliverance of Noah and his family, it was customary on this anniversary to punish persons who had forgotten the remarkable circumstance connected with the date, by sending them on some bootless errand similar to that on which the patriarch sent the luckless bird from the windows of the ark.

ASHES

When a tree grows it takes up from the earth, by means of its roots, certain minerals called "salts." These salts, which all plants need as much as they do air, become a part of the wood of the tree. When a stick of wood is burned, most of it is turned into gas, and goes off into the air. All that is left is the ashes, which cannot burn, as they are the salts which the tree took up from the earth when growing. If the ashes be spread over the ground, the salts will go back into the earth again, and this is the reason why wood ashes make good manure for land: the salts which have been taken from it by growing plants are given back to it in the ashes, and help other trees and plants to grow. Some kinds of wood give more ashes when burned than others. Willow gives more than twice as much as oak, and about one-fourth more than elm. The bark of all trees makes more ashes than the solid wood. The salts found in ashes are valuable and are much used in the arts.

ASTRAL SPIRITS

According to the mythology of the Persians, Greeks and Jews, each star had its special spirit, which may be termed its soul, or vital principle. Paracelsus maintained that every man had his attendant star, which received him at death, and took charge of him till the great resurrection.

ASTROLOGY

A term originally applied to the science of the heavenly bodies and their supposed influence over human affairs. At the present day, however, the word is limited in its meaning to the doctrine of the influence of the stars over the destinies of men. Astrology is one of the oldest of superstitions, and has been sedulously cultivated by the Egyptians, Chaldæans, Hindus, Chinese and Etruscans. The Arabs also pursued the study with great zeal from the seventh to the thirteenth century, and it was in great vogue in Italy and France during the sixteenth century. In England it was cultivated by Bede (673-745) and Roger Bacon (1214-1292). Queen Elizabeth (1558-1603) was a dupe of the astrologer Dee, and Lord Burleigh is said to have calculated the nativity of the "Virgin Queen." Sir William Lilly was frequently consulted by Charles I (1625-1649). Nostradamus was the great astrologer of the sixteenth century, after which time this pseudo-science failed to attract superior minds. The discoveries of Copernicus, Kepler and Galileo were death-blows to astrology, which, however, continues to attract believers even at the present day. Astrological almanacs are still published, and fortune-tellers still drive a thriving trade among the ignorant and superstitious. (See also **Character by the Month.**)

AURORA BOREALIS

The aurora polaris is a phenomenon of the atmosphere called *aurora borealis* in the northern hemisphere. These northern lights are the bright clouds of light which are often seen in the northern sky in the night. *Aurora* is a Latin word meaning "the light of the morning," and *borealis*, also Latin, means "northern"; and the two together mean "the northern morning-light," because it often looks like the daybreak in the east. In the southern hemisphere the aurora is known as *aurora australis*. The aurora is sometimes very beautiful, forming across the sky great arches of light through which flash bright streaks of red, blue, green, purple and yellow flame. It is supposed to be made by electricity or lightning passing through bodies of air of different thickness. A similar appearance may be produced by sending electric sparks through a glass vessel filled with rarefied air.

AUTOMOBILE

An automobile is a vehicle which travels on the ground by its own power. Siegfried Markus of Germany invented what was probably the first gasoline automobile in 1875. Most automobiles consist of a steel frame containing an engine fastened by axles and springs to four wheels. The flywheel of the engine is connected with the transmission gears through a clutch and a gear shifting device. By increasing the amount of gasoline and by shifting to a larger transmission gear the speed of the automobile is increased. By the differential gear the outside rear wheel travels faster than the inside rear wheel when going around a curve. A storage battery furnishes power to the electric motor which turns the flywheel and starts the engine. When the car is running the battery is recharged. The rear axle turns, but the front axle does not turn, the wheels being attached to it by movable joints, connected by a bar called the "drag link." An automobile is steered by a steering wheel equipped with a screw thread which brings about a forward or backward movement of the steering arm. A connecting rod applies this movement to the steering knuckle. The modern automobile is equipped with engines having from four to sixteen cylinders. The automobile propelled by electricity was at one time popular but never could compete with the gasoline-driven machine. A few types of automobile engines are air-cooled like the airplane engine, but the majority are water-cooled.

The first successful automobile built in America was by Duryea in 1892. In 1893 Henry Ford built a car, and in that year, also, a Benz automobile was imported for the World's Fair at Chicago. The following year Elwood Haynes' automobile appeared. Commercial automobile history in America began in 1898 when a Winton was sold, this being the first car sold in the United States. The Ford automobile was not marketed until 1903.

BARBER'S POLE

The spiral red stripe on a barber's pole is said to symbolize the winding of a ribbon or bandage around the arm of a patient upon whom the barber had operated in the capacity of surgeon. In former times, when the operation of bleeding was extensively practiced, blood-letting was one of the barber's duties.

BAROMETER

Torricelli, who studied under Galileo, invented the barometer in 1643, a device for measuring the pressure of the atmosphere. He filled a glass tube about one yard in length with mercury, then placing his finger over the open end of the tube, placing this end downward in a container of mercury, he then removed his finger and found that the fall of mercury from the closed end of the tube was determined by the air pressure. The pressure of the air upon the surface of the mercury in the container balanced the weight of mercury in the tube. Water may be substituted for mercury by using a tube about 33 feet long. For convenience, aviators, engineers and explorers usually use the aneroid barometer, which is a metal vacuum box with levers and an indicator attached so that an increase of atmospheric pressure on the box slightly depresses the box and this movement is enlarged several hundreds of times at the indicator.

Aviators find the barometer valuable in indicating their distance above sea level. The higher they go the lighter is the air pressure and therefore the barometer falls. In the mercury barometer the mercury falls about one-quarter of an inch for each 110 feet of rise.

The barometer is most valuable for predicting weather conditions and altitudes. Preceding a storm atmospheric pressure is light. Therefore, when the barometer falls this indicates that a storm is near at hand. Increasing pressure, indicated by a rising barometer, predicts fair weather. Continued fair weather is indicated by a continuous high barometer.

BEACON HILL

A famous locality in Boston. The old beacon, shown in all the early plans of the city, and which gave the name to Beacon Hill, was erected in 1634 and 1635 to alarm the country in case of invasion. It stood near the present State House, the exact spot being the southeast corner of the reservoir formerly standing on Temple Street. It was a tall mast, standing on cross timbers placed upon a stone foundation, supported by braces, and was ascended by treenails driven into it; and sixty-five feet from the base, projected a crane of iron, from which an iron skeleton frame was suspended, to receive a barrel of tar or other combustibles.

BEARS AND BULLS

Words often used in connection with the purchase and sale of stocks. The "bears" are those who seek to depress the value of stocks and securities, while the "bulls" are those whose interests prompt them to act in the other direction.

BEES, HUMMING OF

A bee's wings move very rapidly, vibrate and cause the air to move. It is this which brings about the humming sound.

BENEFIT OF CLERGY

Through an enactment in 1087, England granted to any man condemned to death the opportunity to save his life by proving himself to be a clerk or man of education. A certain verse of Scripture was chosen. If he could read it satisfactorily, he was freed. This law was officially withdrawn in the eighteenth century, but the phrase remains and has been used in a variety of ways. For example, "without benefit of clergy" is used today to mean "without the marriage ceremony."

BIBLE, MODERN TRANSLATIONS OF

The earliest translation of the New Testament of the Bible in Greek is that of the fourth century, and the Old Testament in Hebrew is from the ninth century. The earliest translation into Italian was made by Waldenses in the thirteenth century. In 1471 was printed the first Bible in Italian at Venice. The first French Bible was printed in 1477 and the first Spanish Bible in 1478. The accepted Protestant version was translated by Olivetan in 1535. In 1550 the Louvain Bible was translated into French and accepted as the Catholic version. The famous translation by Luther was printed in German in 1534.

About 1382 John Wiclif published an English translation of the Bible from the Latin version. This, revised by John Purvey, was called the Wiclif-Purvey Bible. The first English translation from the Greek was made by William Tyndale in 1525. The earliest complete English Bible was

published by Miles Coverdale in 1535. The following are later English translations: 1537, by Mathew; 1540, by Cranmer; 1560, by British exiles at Geneva, Switzerland; 1611, the famous King James Bible; 1582, the Reims New Testament, accepted by the Catholics; 1609, the Douai Bible, accepted by the Catholics; 1885, the Revised Version; 1901, American Revised Version.

BIRTH STONES

Two classifications are here given, the ancient (a) and modern (m).

January: the garnet (a), and the jacinth or hyacinth (m), symbolizing constancy and fidelity.
February: the amethyst (a and m) symbolizing peace of mind, sobriety, and sincerity.
March: the aquamarine (a), and bloodstone (m), symbolizing courage and success in dangerous enterprise.
April: the sapphire (a), symbolizing wisdom, and the diamond (m), symbolizing repentance and innocence.
May: the agate (a), and the emerald (m), symbolizing happiness and success in love.
June: the emerald (a), and the agate (m), symbolizing happiness. The agate also indicates long life and health. The pearl is preferred by many for June.
July: the sardonyx or onyx (a), and ruby (m), symbolizing respectively conjugal felicity and contented mind.
August: the carnelian (a), and sardonyx (m), symbolizing respectively cure of evils resulting from forgetfulness, and felicity.
September: the chrysolite (a), and sapphire (m), symbolizing wisdom, and also hope.
October, the opal (a), and tourmaline (m), symbolizing hope.
November: the topaz (a and m), symbolizing fidelity and friendship.
December: the ruby (a), and turquoise or the lapis lazuli (m), symbolizing prosperity and success.

BLACK MARIA

Black Maria, a name sometimes used for the closed wagon in which prisoners are carried to and from jail, originated in Colonial days. Maria Lee, a brawny negress proprietor of a sailors' boarding house in Boston, so often aided the police in taking unruly persons to jail that "call Black Maria" came to mean "arrest the person."

BLARNEY STONE

Blarney is a village in Ireland, in County Cork, about five miles from the far-famed city of Cork. It is chiefly celebrated as giving the name to a peculiar kind of eloquence which is said to be characteristic of the light-hearted natives of the Emerald Isle. The old castle at Blarney contains the identical stone, the kissing of which is believed to give the person peculiar skill in speech.

BLUE LAWS OF CONNECTICUT

These laws, enacted by the people of the "Dominion of New Haven," became known as the "Blue Laws" because they were printed on blue paper. They were as follows:

The governor and magistrates convened in general assembly are the supreme power, under God, of the independent dominion. From the determination of the assembly no appeal shall be made.

No one shall be a freeman or have a vote unless he is converted and a member of one of the churches allowed in the dominion.

Each freeman shall swear by the blessed God to bear true allegiance to this dominion and that Jesus is the only king.

No dissenter from the essential worship of this dominion shall be allowed to give a vote for electing of magistrates or any officer.

No food or lodging shall be offered to a heretic.

No one shall cross a river on the Sabbath but authorized clergymen.

No one shall travel, cook victuals, make beds, sweep houses, cut hair, or shave on the Sabbath Day.

No one shall kiss his or her children on the Sabbath or feasting days.

The Sabbath Day shall begin at sunset Saturday.

Whoever wears clothes trimmed with gold, silver, or bone lace above one shilling per yard shall be presented by the grand jurors and the selectmen shall tax the estate £300.

Whoever brings cards or dice into the dominion shall pay a fine of £5.

No one shall eat mince pies, dance, play cards, or play any instrument of music except the drum, trumpet or jewsharp.

No gospel minister shall join people in marriage. The magistrate may join them, as he may do it with less scandal to Christ's church.



Under the Blue Laws
The Blue Laws of Connecticut placed the ban on finery and provided a heavy penalty.

When parents refuse their children convenient marriages, the magistrate shall determine the point.

A man who strikes his wife shall be fined £10.

A woman who strikes her husband shall be punished as the law directs.

No man shall court a maid in person or by letter without obtaining the consent of her parents; £5 penalty for the first offence; £10 for the second, and for the third imprisonment during the pleasure of the court.

BLUE SKY

In the sky are many tiny dust particles. The rays of the sun are white in color, and what appears to be white light is in reality a combination of all the various colors. These rays of light from the sun striking the specks of dust in the sky are largely absorbed. However, short rays of light are reflected from these dust particles to us and these short waves are blue. Thus the sky appears blue to us.

BLUE SKY LAWS

The colloquial term for a law providing regulation and supervision of sale of stocks, bonds and other securities, so called because the proposer of the first such law in Kansas, in 1911, said that some companies sought to "capitalize the blue skies."

BLUE STOCKINGS

The term "blue stocking" originated in England in the days of Doctor Johnson and was applied to ladies who cultivated learned conversations at assemblies to which literary men were invited. One of the most popular members of one of these societies was said to have been a Mr. Stillingfleet, who always wore blue stockings, and by degrees the term "blue stockings" was applied to all clubs of the kind described, and, later, to ladies who attended them.

BOOK SIZES

The name indicates the number of pages in the sheet, thus: in a folio book, 4 pages or 2 leaves = 1 sheet; a quarto, or 4to, has 8 pages or 4 leaves to a sheet; an octavo, or 8vo, 16 pages or 8 leaves to a sheet. In a 12mo, 24 pages or 12 leaves = one sheet, and the 18mo, 36 pages, or 18 leaves = 1 sheet, and so on. The following are the approximate sizes of books:

Royal folio	19	inches	× 12
Demy	18	inches	× 11
Super imp. quarto (4to)	15½	inches	× 13
Royal 4to	12½	inches	× 10
Demy 4to	11½	inches	× 8½
Crown 4to	11	inches	× 8
Royal octavo	10½	inches	× 6½
Medium 8vo	9½	inches	× 6
Demy 8vo	9	inches	× 5½
Crown 8vo	7½	inches	× 4½
Foolscap 8vo	7	inches	× 4
12mo	7	inches	× 4
16mo	6½	inches	× 4
Square 16mo	4½	inches	× 3½
Royal 24mo	5½	inches	× 3½
Demy 24mo	5	inches	× 2½
Royal 32mo	5	inches	× 3
Post 32mo	4	inches	× 2½
Demy 48mo	3½	inches	× 2½

BRIDE, THROWING SHOE AFTER

The custom of throwing a shoe after a departing bride and groom originated far back in the dim and mystical past. It is by some thought to typify an assault, and is a lingering trace of the custom among savage nations of carrying away the bride by violence. Others claim that it has a likeness to a Jewish custom mentioned in the Bible. Thus, in the Book of Ruth, when the kinsman of Boaz gave up his claim to the inheritance of Ruth, and to Ruth also, he indicated his assent by plucking off his shoe and giving it to Boaz. Also, we read in Deuteronomy that when the brother of a dead man refused to marry his widow she asserted her independence of him by "loosing his shoe."

BRIDGES

A bridge is a roadway over a stream, a valley, or low ground. A bridge for carrying a canal or water to supply a city is an aqueduct (water leader); one over which a railway passes is a viaduct (road leader). The first bridges were made of wood by laying beams from one bank of a stream to the other, or, when these were too wide apart, resting them on posts or stone piers in the middle. The Chinese built bridges at a very early date, but it is supposed that the Romans were the first to construct stone bridges, and some of them, more than 2,000 years old, are still in use.

Geographical necessities in a country intersected by large and rapid streams compelled the Romans to give much attention to the

building of bridges. A splendid bridge was built by Augustus, near Narnia, on the Flaminian road, about sixty miles from Rome. Some of the arches, as is attested by one which is still standing, had a span of 150 and a height of 100 feet; but the greatest of all Roman bridges was that of Trajan across the Danube. It rested on twenty piers 150 feet in height from their foundation, and 170 feet apart, its width being 60 feet. This bridge was destroyed by the next emperor, Hadrian, who pled for his act the danger that the barbarians might get possession of it.

After the fall of the Roman empire not much was done in the way of bridge building for some centuries. In the twelfth century the order of the Fréres Pontiers was established, and by them the great bridge of Avignon, since destroyed, was built. It was about 3,000 feet long and rested on 18 arches. A bridge built over the Allier in 1454 had an arch 184 feet in span, almost the greatest reached by any existing stone bridge. The span of the Rialto of Venice is 98½ feet. Perronet's bridge over the Seine, at Neuilly, consists of five arches each with a span of 128 feet and a rise of 32 feet.

As wooden bridges are likely to catch fire, those made of iron and steel have largely superseded wooden construction.

Bridges that are not held up from below, but hung on some kind of ropes or chains, are called suspension bridges (Latin *suspendere*, to hang). The Chinese in very ancient times constructed this kind of bridge of iron chains, and the Peruvians made them of bark ropes. Modern suspension bridges are built of strong cables, composed of many small wires twisted together. Among the most celebrated suspension bridges are those of New York, Philadelphia and Detroit.

Bridges made so that they can be moved in order to let a vessel pass are of various kinds: (1) drawbridges, which include the ordinary bascule or jackknife type that is swung open like a pocket knife, and the vertical truss type that lifts straight up between two towers; (2) swing bridges to turn round on a pivot; and (3) rolling or sliding bridges, to roll backward and forward on little wheels or rollers.

Bridges that are to be used for only a little while, like those built for soldiers to cross rivers in time of war, are sometimes made by fastening many small boats together and laying a floor over them. Casks and rafts have also been used for the same purpose. Military bridges are usually supported by floats called pontoons, made of frames of timber covered with copper, tin, leather, tarred sail-cloth, or indiarubber cloth, or of copper cylinders. The pontoons are laid from bank to bank and securely fastened, and the bridge platform is then placed upon them.

Viaducts are bridges carried over valleys or other low levels.

Notable Bridges of the World. The number of bridges that are famous for their length or construction is constantly increasing. The following list includes noted and important bridges of the world.

Albany, N. Y. (over the Hudson). Iron drawbridge; length of draw, 400 feet.

Ambassador Bridge (spanning Detroit River between Detroit, Michigan, and Sandwich, Ontario, completed in November, 1929. Length of river span is 1,850 feet, length of bridge structure 7,400 feet, distance from entrance to exit 9,000 feet. Capacity 5,000 automobiles per hour. Unobstructed roadway, 47 feet wide with a capacity of five lanes of traffic and an 8-foot sidewalk. Cost, $20,000,000.

Berne, Switzerland. Over the river Aar, main span, 367 feet.

Bear Mountain Bridge, crossing Hudson River, north of Peekskill, N. Y., for vehicles. Length, 2,258 feet. Span, 1,632 feet. Completely built in one year, eight months and two days. Cost, $6,000,000. Completed 1924.

Blackwell's Island, N. Y. Crosses East River, steel cantilever, 7,636 feet long; cost $12,500,000.

Bonn, Germany. Steel arch, 1,800 feet long.

Bridge of the Holy Trinity (at Florence, Italy). Was built in 1569. It is 322 feet long, constructed of marble, and stands unrivaled as a work of art.

Britannia Tubular Bridge, carrying the Chester and Holyhead railway across the Menai straits in Wales, consists of two parallel rectangular wrought-iron tubes resting on three piers. There are two central spans of 459 feet, and two shore spans of 230 feet. The central pier is built on the Britannia rock, and its erection was begun 1846. The height of the tube within is 30 feet at the center, diminishing to 23 feet at the shore ends. The bridge has a clear headway above high water of 103½ feet.

Brooklyn Bridge. A wire cable suspension bridge connecting New York with Brooklyn; designed by John A. Roebling, and built by his son, W. A. Roebling. Length, with approach, 6,016 feet; length of central span, 1,595½ feet, two side spans of 930 feet each, with a clear headway under the center of the bridge of 133 feet above high water; total height of towers above high water, 278 feet; there are four suspension cables, composed of 5,296 galvanized steel wires, bound together, but not twisted; width of bridge, 85 feet; cost, $17,909,000; bridge begun 1870; opened, 1883.

Cabin John Bridge, D. C. Stone aqueduct with span of 220 feet; constructed, 1857-1864 at which time it was the longest stone arch in the world.

Cairo, Ill., crossing the Ohio River, a truss bridge, 20,461 feet long, including approaches; cost, $3,500,000.

Carquinez, over Carquinez Straits, Cal.; length, 4,482 feet; cost, $8,000,000.

Charleston, S. C. Bridge over Cooper River; length, 3 miles; cost, $6,000,000.

Chicago, Ill. (1) Halsted Street Bridge over Chicago River; noted lift bridge, with towers of steel framework, and a suspended truss span. (2) Michigan Avenue bridge, erected in 1918-20, a general traffic double-deck, two leaf bascule bridge. The bridge is 92 feet wide, 340 feet long and weighs 10,000 tons.

Cincinnati and Covington (over the Ohio). Built 1867; reconstructed, 1897; length, 2,720 feet; suspension.

Cincinnati Iron Truss Railway Bridge (across the Ohio River). Planned for a double-track railroad and two roadways and two sidewalks in addition. Total structure one mile in length; the center span 550 feet, and two spans flanking the main channel 490 feet each. Caissons sunk in 1887; completed, 1890.

Cleveland, Ohio, high level bridge crossing Cuyahoga River, 96 feet above water level. Two-deck bridge 81½ feet wide, 2,880 feet long, upper level roadway 45 feet wide. Twelve concrete arches, central span of steel, 174 feet between arches.

Clifton, now known as the Upper Arch (over Niagara River). Length, 1,268 feet. Longest single steel arch span in the world. Blown down 1889, rebuilt in 1898, replacing the Niagara and Clifton suspension, which was a chain bridge 702 feet long.

Danube River, at Cerno-Voda; length, with approaches, 12 miles.

Douro Bridge, an arched iron structure near Oporto, Portugal, total length, 1,150 feet, span of arch, 520 feet, height from low water to crown of arch, 198 feet. Opened in 1877.

Eads, St. Louis, Mo. Cast-steel arch, 6,434 feet long; opened, 1874.

Forth Bridge. Over the Firth of Forth, Scotland; cantilever; iron and steel; length, nearly two miles, including approaches; channel span, 1,710 feet. Opened in 1890; cost, $15,800,000.

Fribourg Suspension Bridge. Over the Sarine valley, Switzerland. 870 foot span; 167 feet above the river; built by N. Chaley, 1833-34.

Garabit Viaduct. Over the Truyère, in the south of France. The total length is 1,849 feet; the main portion, 1,469 feet in length, is of steel, and consists of five openings of from 170 to 182 feet, spanned by lattice girders and a trellis parabolic arch with a span of 541 feet, and a clear height above the river of 356 feet. The rail level is 401 feet above the river. Designed by M. Eiffel and built without scaffold. Begun, 1879; completed, 1884.

Harlem River Aqueduct (High Bridge). Stone; length, 1,450 feet; semi-circular arch.

Hell Gate Bridge. A steel arch bridge, 18,000 feet long, crossing East River in New York City from Manhattan to Brooklyn. Main span, 1,017 feet. Construction cost, $15,000,000. Opened, 1917.

Hudson River Bridge (Ft. Washington to Ft. Lee). New York City. Toll bridge of suspension type, built by the Port of New York Authority across the Hudson River between Ft. Washington Point (178th Street) and Ft. Lee, New Jersey. Begun in 1927. Length of span, 3,500 feet; length of side spans, 650 feet. Total length of bridge and approaches, 7,800 feet. Clearance above mean high water at center of main span, 213 feet. Height of towers above mean high water, 635 feet. Four cables, 36 inches in diameter, each cable of 26,424 galvanized wires 0.192 inches in diameter. Cables placed nine feet apart in pairs and side by side. Distance between center of cable pairs, 106 feet. Total width of bridge, 118 feet. Estimated cost, $75,000,000. Eight lanes of vehicular traffic, four rapid transit tracks and two sidewalks. The cables are anchored in solid rock on the New Jersey side and in concrete anchorage blocks on rock on New York side. Tower foundation on rock. Granite-faced masonry work.

International Bridge. A railroad bridge between San Angelo, Tex., and Chihuahua City, Mexico, was opened in November, 1930.

International Peace Bridge. A toll bridge over the Niagara River from Fort Porter, at Buffalo, N. Y., to Fort Erie, in the Province of Ontario, Canada, was opened on August 7, 1927. The bridge is of steel, with five granite-covered concrete piers. It is 4,150 feet long; with a vertical clearance of 100 feet above the river, and a horizontal clearance of about 345 feet above Black Rock Canal which parallels the Niagara. The only vehicular bridge spanning the Great Lakes border between Duluth, Minn., and Niagara Falls; it has a capacity of 3,000 automobiles an hour; cost, $4,500,000.

Interstate, a vertical lift bridge crossing the Columbia River at Vancouver, between states of Oregon and Washington. It is 23,000 feet long, 150 feet in height. The main span is 275 feet. Completed 1917.

Kansas City, Mo., crossing the Missouri River, vertical lift 5,340 feet.

Karlsbrücke (Charles' Bridge), over the Moldau at Prague. Built by Emperor Charles IV. of Germany, 1384. 1,855 feet long. Gate towers at either end, ornamented with groups of statuary. Greatly damaged by flood, September, 1890; since repaired.

Keithburg, Ill., crossing the Mississippi River, vertical lift, 3,804 feet.

Loa Viaduct, a lattice girder iron bridge by which the Antofagasta railway of Bolivia crosses the canyon of Loa at an altitude of 10,000 feet above the sea level. The bridge was put together in nine months under the supervision of Peter and John Fisher, who went from England for the purpose.

London Bridge. One is said to have existed, 978. A bridge built of wood, 1014, was partly burned in 1136. The old London bridge was the first stone bridge. It was commenced in 1176, and completed in 1209. Its founder, Peter of Colechurch, was buried in the crypt of the chapel erected on the center pier. The new bridge was designed by John Rennie, and built by his sons, John and George. The first pile was driven 200 feet to the west of the old bridge, March, 1824; the first stone was laid by the lord mayor, alderman Garratt, June, 1825; opened by William IV. and his Queen, August, 1831. Total cost, $7,291,000; length of central span, 152 feet.

Louisville, Ky. (Over the Ohio.) Length, 5,310 feet.

Luxembourg. Stone, containing span of 277 feet; largest single arch stone bridge in the world.

Maintenon Aqueduct. Stone; length, 16,367 feet; semi-circular arch.

Manhattan. A suspension bridge crossing the East River in New York City, 135 feet above high water. Length is 6,855 feet; main span, 1,470 feet. Construction cost, $16,700,000. Opened for traffic 1909.

Metropolis, Ill., crossing the Ohio River. Truss, 5,700 feet.

Mid-Hudson Bridge, Poughkeepsie, N. Y., over the Hudson River to Lloyd, Ulster County; total length, 4,072 feet; clearance above mean high water, 135 feet; height of towers above mean high water, 308½ feet; estimated cost, $6,000,000. Begun, 1925.

Minneapolis, Minn., the Cappellon Memorial Bridge, 1,015 feet long; completed in 1923. At that time the longest concrete arch in the world. Has one 400-foot arch; two 200-foot arches, and two 55-foot arches.

Montpelier Aqueduct. Stone; length, 3,214 feet; semi-circular arch.

Niagara Falls Suspension Bridge. Across the gorge, two miles below the falls. Built by John A. Roebling. Length of span between towers, 800 feet; supported by four wire cables, each containing 3,640 wires; height of track above the water, 245 feet; carriage-way beneath the track; cost of bridge, $400,000; work begun, 1852; first locomotive crossed, March, 1855.

Philadelphia-Camden. Suspension. Length, 8,126 feet; height, 135 feet; span, 1,750 feet. Cost, $29,000,000. Completed 1926.

Pier Viaduct Bridge, across the mouth of the Tay, near Dundee, Scotland; 85 spans; total length over 10,500 feet; opened in 1887.

Pittsburgh, Pa., over Alleghany River. Simple truss, length, 2,122 feet; opened in 1921.

Quebec. Cantilever bridge at Quebec, Canada. Length, 3,240 feet; height, 150 feet; span, 1,800 feet. Completed 1917, at cost of $9,000,000.

Queensborough, N. Y. Iron cantilever bridge across the East River; when opened, in 1909, was the largest of its kind in the world, bearing traffic; length, 7,449 feet; has four elevated railroad tracks, four trolley tracks, two walks for pedestrians. Cost, $15,000,000.

Rockville Bridge. Near Harrisburg, Pa., four-track stone railway bridge. Length, 3,810 feet. It contains forty-eight 70-foot stone arches and cost $1,000,000.

Samar, over the Volga River, Russia; length, 4,500 feet; cost, $3,500,000.

Sault Ste. Marie, Mich. Canadian Pacific Railroad bridge. Two-leaf bascule, 914 feet long.

Sciotoville, Ohio, across the Ohio River, a continuous truss bridge, 3,436 feet long.

Severn, England. Length, 4,163 feet; cost, $5,000,000.

Sidi Rached, Constantine, Algieria, a masonry arch, 1,468 feet long.

Spokane, Portland R. R., Portland, Ore., swinging truss, 1,762 feet, largest of its type in the world.

St. Louis (across the Mississippi). Minnesota and North Western R. R.; iron; 1,825 feet long; draw span 412 feet long, the latter being one of the largest and heaviest in the world. The width on top, between rails, is 50 feet. The piers rest on the bedrock of the river, 136 feet below high water mark. Captain James B. Eads was the engineer; cost, $10,000,000.

St. Louis Municipal Bridge. Simple truss, crossing the Mississippi River at St. Louis, Mo. Length is 17,922 feet; length of main span is 668 feet. Height, 65 feet. Opened 1913.

Sukkur Cantilever Bridge, crossing the Rori branch of the Indus at Sukkur, with a single span of 790 feet; opened in 1889.

Sydney Harbor, Australia. The largest bridge of the arch type in the world. A single span of 1650 feet, with over-all length, including approaches, of 3770 feet. Cost $40,000,000.

Tay Bridge, a girder bridge that crosses the Tay at Dundee, Scotland, and has a total length of 10,612 feet. Engineer, Sir Thomas Bouch. Begun, 1871; completed, 1877; opened, 1878. Partly destroyed by a gale while a N. British mail-train was passing over it; the train and passengers disappeared, none escaping. A gap of about 3,000 feet was made in the bridge.

Thebes, Ill., crossing the Mississippi River. Cantilever, 3,695 feet long.

Third Avenue, New York City. Length with approaches, 2,228 feet; length of span, 300 feet; height above water, 24 feet; opened in 1898. Cost of construction, $1,783,412; with land, $3,997,076.

Tower Bridge. Steel and masonry bascule drawbridge across the Thames below London bridge. It has a central opening of 200 feet between two high towers, connected near the top by a fixed foot-bridge 139½ feet above the river and reached by elevators or stairways in the towers. There are two side spans of 270 feet covered by chain suspension bridges, and between the towers, at a height of 29½ feet above high water, a double bascule, each leaf 100 feet in length and forming a flat arch when down, at a level with the main bridge. Foundation laid in 1886; opened in 1894. Cost, $7,786,400.

Victoria Bridge over the Thames at Pimlico, London, consists of four wide wrought-iron arches. Begun, 1859; completed, 1860; widened, 1865-66.

Victoria Bridge, Montreal, one of the most famous in the world, is nearly two miles in length. It rests on 24 piers, the height being 60 feet above summer level of the river; begun, 1854; formally opened by the Prince of Wales, August, 1860. Replaced, 1898-1899, by a pin-connected truss bridge of 25 spans; and in 1906 by a new steel bridge.

Washington Bridge (across Harlem River valley, N. Y.); two steel arches of 509 feet span; roadway, 80 feet wide; length, 2,375 feet; height above the Harlem River, 133½ feet; opened, December, 1888. Construction cost, $2,851,000.

Waterloo Bridge (over the Thames at London). Length within abutments, 1,242 feet; width within balustrades, 42 feet; span of each arch, of which there are nine, 120 feet. It was opened on the anniversary of the Battle of Waterloo, the duke of Wellington and others being present, June, 1817. Cost, $2,400,000.

Willamette River, Portland, Ore. Two-deck vertical lift, 1,623½ feet long.

Williamsburg. Across East River, connecting Manhattan and Brooklyn. Total length, 7,308 feet; main span, 1,600 feet; width, 118 feet; height above mean high water, 135 feet; cost, $15,000,000, exclusive of real estate. Opened in 1903.

(See also **Natural Bridges.**)



BRITISH LION

This term symbolizes the spirit of pugnacity of the British nation, as opposed to "John Bull," which symbolizes the substantiality, obstinacy and solidity of the British nation, with all its prejudices and national peculiarities. To rouse John Bull is to tread on his corns; to rouse the British lion is to blow the war trumpet in his ears.

BROTHER JONATHAN

This name is a collective personification of the people of the United States. When General Washington, after being appointed commander of the army of the Revolution, came to Massachusetts to organize forces and make preparations for the defense of the country, he found a great want of ammunition and other means necessary to meet the powerful foe he had to contend with; and he found it very difficult to obtain them. If attacked in such condition, the cause at once might be hopeless. On one occasion, at that anxious period, a consultation of the officers and others was had, when it seemed no way could be devised to make such preparation as was necessary. His excellency, Jonathan Trumbull, the elder, was then governor of the state of Connecticut. On Trumbull's judgment and aid the General placed the greatest reliance, and remarked: "We must consult Brother Jonathan on the subject." He did so, and the governor was successful in supplying many of the wants of the army. When difficulties afterward arose, and the army was spread over the country, it became a byword, "We must consult Brother Jonathan."

BUILDINGS AND MONUMENTS

Probably the most famed monuments in the United States are the memorials to Washington and Lincoln and the monument at Bunker Hill.

Another important monument is that of the tomb to the unknown soldier of the United States. In the Northwest a memorial lighthouse commemorates the pioneers who opened up that vast empire.

Washington Monument. Notwithstanding the fact that the plan of a monument to General Washington was approved by Congress in the latter part of December, 1799, nothing was done in the matter until 1833, when an association of prominent persons undertook the raising of the needed funds by subscription, and on July 4, 1848, had so far succeeded in their undertaking that the cornerstone of a monument was laid, and during the succeeding eight years the shaft was carried to a height of 156 feet. The plans were prepared by Robert Mills, an architect. The work was then suspended, at first for lack of funds, then because of the Civil War, and finally because the foundations were believed to be insecure.

In 1876 Congress undertook the completion of the monument. The base was first strengthened, and the work of rebuilding the shaft was resumed in August, 1880. The placing of the 3,300-pound capstone marked the completion of the work, Dec. 6, 1884. The shaft is 555 feet 5⅛ inches high. The base is 55 feet 1½ inches square. At 500 feet above the ground the monument has four sides, each of which is 35 feet wide. The capstone is crowned by a pyramid of aluminum. The monument is constructed of white Massachusetts marble for the first thirteen courses. Above these the courses are of white Maryland marble backed with granite up to 452 feet. Above that the walls are wholly of marble.

Lincoln Memorial, situated in West Potomac Park, Washington, D. C., was erected by authority of Congress and dedicated on May 30, 1922. The architect was Henry Bacon of New York. The building is constructed of marble, granite, limestone, brick and concrete, while the ceiling consists of bronze beams with rectangular openings in which are placed thin slabs of Tennessee marble. These admit the light from overhead, a glass skylight covering the building. The building is nearly 202 feet long. There is a central Memorial Hall with two wings. There are thirty-six columns in the colonnade, excluding the two which stand in the entrance. These stand for the thirty-six states that existed at the time of Lincoln's death. The statue of Lincoln, by Daniel Chester French, is of white marble, a seated figure, measuring nineteen feet from the top of the plinth to the top of the head, and the extreme width is the same. Weatherproof decorations on canvas by Jules Guerin represent the emancipation of a race and reunion and progress. On the walls are Lincoln's Gettysburg speech and his second inaugural address.

The Memorial is approached by a series of steps rising from a small pool in which the building is mirrored on a clear day.

Bunker Hill Monument. The cornerstone of this monument was laid on the fiftieth anniversary of the battle of Bunker Hill, June 17, 1825, by Lafayette, and the oration was pronounced by Daniel Webster. It is a square shaft of Quincy granite, 221 feet high, 31 feet square at the base, and 15 feet at the top. Inside the shaft is a round, hollow cone, 7 feet wide at the bottom, and 4 feet 2 inches at the top, encircled by a winding staircase containing 224 stone steps, which lead to a chamber 11 feet in diameter immediately under the apex. The chamber has four windows, and contains two cannons, named Hancock and Adams, respectively. These cannons were used in the Revolution. The monument was completed and was dedicated June 17, 1843.

Tomb of the Unknown Soldier. In Arlington National Cemetery, Va., is a block of white marble, a monument "to the unknown soldier of the United States." An inscription dedicates the tomb to all the unidentified American dead who fell in the World War. It has become a shrine that is sought out by thousands. Visiting rulers, statesmen and soldiers customarily make pilgrimages to Arlington and lay wreaths of honor on the plain marble tomb.

In Great Britain the tomb of her unknown warrior is within the confines of Westminster Abbey in London among the great personages of history. France has placed her unknown soldier under the Arc de Triomphe in Paris and there keeps a perpetual light burning. In Italy the unknown soldier of that nation lies beneath a splendid monument on a prominent site in Rome. In Belgium the unknown soldier of that country lies at the base of the Congress Colonnade in Brussels and a perpetual light is kept burning there.

A memorial lighthouse, at the mouth of the Columbia River, was dedicated in July, 1926. It is designed as a monument to those pioneers of the Northwest, Robert Gray, who discovered the Columbia and named it after his sailing vessel; Lewis and Clark, who made the first overland exploration trip across the United States to the Northwest, and to John Jacob Astor, under whose guiding hand the development of the region began.

Buildings, Highest. The newer buildings in the United States, especially the tall hotel, apartment and business structures in the larger cities, are characteristically American in form. Built of steel on concrete base, they rise to great heights. Among the highest buildings in the world are:

Name of Building	*Height in Feet*
Empire State, New York	1,248
Chrysler Tower, New York	1,046
Eiffel Tower, Paris	989
60 Wall Tower, New York	942
Woolworth, New York	792
393-411 Lexington Ave., New York	755
Terminal Tower, Cleveland	708
Metropolitan, New York	700
Chanin Tower, New York	680
American Exchange, Irving Trust, New York	645
Manufacturers Club, Philadelphia	640
Lincoln, New York	638
Sherry-Netherland Hotel, New York	620
Mercantile, New York	617
10-14 East 40th Street, New York	617
Singer, New York	612
New York Life Insurance, New York	610
Board of Trade, Chicago	600
Transportation, New York	586
Municipal, New York	580
Penobscot, Detroit	557
Pittsfield, Chicago	557
Chicago Temple, Chicago	556
20 North Wacker Drive, Chicago	555
701-719 First Ave., New York	553
Equitable Trust, New York	550
Ritz Tower, New York	540
Bankers' Trust, New York	539
City Hall, Philadelphia	548
One North La Salle, Chicago	530
Ulm Cathedral, Germany	529
Morrison Hotel (addition), Chicago	526
Travers, Hartford, Conn	525



Empire State Building

The highest building in the world, in New York City.

BURY THE HATCHET

Let bygones be bygones. The Great Spirit commanded the North American Indians, when they smoked the calumet or peace pipe, to bury their hatchets, scalping knives and war clubs in the ground, that all thought of hostility might be buried out of sight.

The ceremony was a solemn function and was regarded by the Indians in the same light that civilized man regards a signed treaty of peace between nations.

> Buried was the bloody hatchet;
> Buried was the dreadful war-club;
> Buried were all warlike weapons,
> And the war-cry was forgotten:
> Then was peace among the nations.
>
> Longfellow, *Hiawatha*

CAPITAL PUNISHMENT IN THE UNITED STATES

The crime of murder is punished by death in most of the states and by the federal government of the United States. The federal penalty is hanging. Some states that formerly had no death penalty have instituted one for specific crimes.

Punishment by hanging is the penalty in California, Idaho, Iowa, Kansas, Louisiana, Maryland, Mississippi, Missouri, Montana,

CALENDAR FOR READY REFERENCE

For ascertaining any day of the week for any given time within the two hundred years from the introduction of the new style, 1753 to 1952, inclusive.

Years 1753 to 1952									Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1753g 1754d	1781g 1782d	1800e 1801a	1828q 1829a	1856q 1857a	1884q 1885a	1900g 1901d	1928h 1929d	a	4	7	7	3	5	1	3	6	2	4	7	2
1755e 1756p	1783e 1784p	1802b 1803c	1830b 1831c	1858b 1859c	1886b 1887c	1902e 1903a	1930e 1931a	b	5	1	1	4	6	2	4	7	3	5	1	3
1757c 1758f	1785c 1786f	1804h 1805d	1832h 1833d	1860h 1861d	1888h 1889d	1904k 1905f	1932k 1933f	c	6	2	2	5	7	3	5	1	4	6	2	4
1759g 1760q	1787g 1788q	1806e 1807a	1834e 1835a	1862e 1863a	1890e 1891d	1906g 1907d	1934g 1935d	d	2	5	5	1	3	6	1	4	7	2	5	7
1761a 1762b	1789a 1790b	1808k 1809f	1836k 1837f	1864k 1865f	1892k 1893f	1908l 1909b	1936l 1937b	e	3	6	6	2	4	7	2	5	1	3	6	1
1763c 1764h	1791c 1792h	1810g 1811d	1838g 1839d	1866g 1867d	1894g 1895d	1910c 1911f	1938c 1939f	f	7	3	3	6	1	4	6	2	5	7	3	5
1765d 1766e	1793d 1794e	1812l 1813b	1840l 1841b	1868l 1869b	1896l 1897b	1912m 1913e	1940m 1941e	g	1	4	4	7	2	5	7	3	6	1	4	6
1767a 1768k	1795a 1796k	1814c 1815f	1842c 1843f	1870c 1871f	1898c 1899f	1914a 1915b	1942a 1943b	h	7	3	4	7	2	5	7	3	6	1	4	6
1769f 1770g	1797f 1798g	1816m 1817e	1844m 1845e	1872m 1873e		1916n 1917g	1944n 1945g	k	5	1	2	5	7	3	5	1	4	6	2	4
1771d 1772l	1799d	1818a 1819b	1846a 1847b	1874a 1875b		1918d 1919e	1946d 1947e	l	3	6	7	3	5	1	3	6	2	4	7	2
1773b 1774c		1820n 1821g	1848n 1849g	1876n 1877g		1920p 1921c	1948p 1949c	m	1	4	5	1	3	6	1	4	7	2	5	7
1775f 1776m		1822d 1823e	1850d 1851e	1878d 1879e		1922f 1923g	1950f 1951g	n	6	2	3	6	1	4	6	2	5	7	3	5
1777e 1778a		1824p 1825c	1852p 1853c	1880p 1881c		1924q 1925a	1952q	p	4	7	1	4	6	2	4	7	3	5	1	3
1779b 1780n		1826f 1827g	1854f 1855g	1882f 1883g		1926b 1927c		q	2	5	6	2	4	7	2	5	1	3	6	1

Note. The letters in the list of "Years from 1753 to 1952," refer to the table headed with the Months; the figures in which refer to the same figures at the head of the Table of Days. For example: To know on what day July 4, 1911, fell, look for 1911 in the Table of Years. The letter "f" is attached. Look for the same letter in the Table of Months and in a parallel line under July is the figure 6, which directs to column 6 in the Table of Days below, in which it will be seen that July 4, 1911, fell on Tuesday.

TABLE OF DAYS

1		2		3		4		5		6		7	
Monday	1	Tuesday	1	Wednesday	1	Thursday	1	Friday	1	Saturday	1	SUNDAY	1
Tuesday	2	Wednesday	2	Thursday	2	Friday	2	Saturday	2	SUNDAY	2	Monday	2
Wednesday	3	Thursday	3	Friday	3	Saturday	3	SUNDAY	3	Monday	3	Tuesday	3
Thursday	4	Friday	4	Saturday	4	SUNDAY	4	Monday	4	Tuesday	4	Wednesday	4
Friday	5	Saturday	5	SUNDAY	5	Monday	5	Tuesday	5	Wednesday	5	Thursday	5
Saturday	6	SUNDAY	6	Monday	6	Tuesday	6	Wednesday	6	Thursday	6	Friday	6
SUNDAY	7	Monday	7	Tuesday	7	Wednesday	7	Thursday	7	Friday	7	Saturday	7
Monday	8	Tuesday	8	Wednesday	8	Thursday	8	Friday	8	Saturday	8	SUNDAY	8
Tuesday	9	Wednesday	9	Thursday	9	Friday	9	Saturday	9	SUNDAY	9	Monday	9
Wednesday	10	Thursday	10	Friday	10	Saturday	10	SUNDAY	10	Monday	10	Tuesday	10
Thursday	11	Friday	11	Saturday	11	SUNDAY	11	Monday	11	Tuesday	11	Wednesday	11
Friday	12	Saturday	12	SUNDAY	12	Monday	12	Tuesday	12	Wednesday	12	Thursday	12
Saturday	13	SUNDAY	13	Monday	13	Tuesday	13	Wednesday	13	Thursday	13	Friday	13
SUNDAY	14	Monday	14	Tuesday	14	Wednesday	14	Thursday	14	Friday	14	Saturday	14
Monday	15	Tuesday	15	Wednesday	15	Thursday	15	Friday	15	Saturday	15	SUNDAY	15
Tuesday	16	Wednesday	16	Thursday	16	Friday	16	Saturday	16	SUNDAY	16	Monday	16
Wednesday	17	Thursday	17	Friday	17	Saturday	17	SUNDAY	17	Monday	17	Tuesday	17
Thursday	18	Friday	18	Saturday	18	SUNDAY	18	Monday	18	Tuesday	18	Wednesday	18
Friday	19	Saturday	19	SUNDAY	19	Monday	19	Tuesday	19	Wednesday	19	Thursday	19
Saturday	20	SUNDAY	20	Monday	20	Tuesday	20	Wednesday	20	Thursday	20	Friday	20
SUNDAY	21	Monday	21	Tuesday	21	Wednesday	21	Thursday	21	Friday	21	Saturday	21
Monday	22	Tuesday	22	Wednesday	22	Thursday	22	Friday	22	Saturday	22	SUNDAY	22
Tuesday	23	Wednesday	23	Thursday	23	Friday	23	Saturday	23	SUNDAY	23	Monday	23
Wednesday	24	Thursday	24	Friday	24	Saturday	24	SUNDAY	24	Monday	24	Tuesday	24
Thursday	25	Friday	25	Saturday	25	SUNDAY	25	Monday	25	Tuesday	25	Wednesday	25
Friday	26	Saturday	26	SUNDAY	26	Monday	26	Tuesday	26	Wednesday	26	Thursday	26
Saturday	27	SUNDAY	27	Monday	27	Tuesday	27	Wednesday	27	Thursday	27	Friday	27
SUNDAY	28	Monday	28	Tuesday	28	Wednesday	28	Thursday	28	Friday	28	Saturday	28
Monday	29	Tuesday	29	Wednesday	29	Thursday	29	Friday	29	Saturday	29	SUNDAY	29
Tuesday	30	Wednesday	30	Thursday	30	Friday	30	Saturday	30	SUNDAY	30	Monday	30
Wednesday	31	Thursday	31	Friday	31	Saturday	31	SUNDAY	31	Monday	31	Tuesday	31

New Hampshire, Oregon, Washington, West Virginia. Utah permits either hanging or shooting. Electrocution is authorized in Alabama, Arkansas, Connecticut, District of Columbia, Florida, Georgia, Illinois, Indiana, Kentucky, Massachusetts, Nebraska, New Jersey, New Mexico, New York, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, Vermont and Virginia. Arizona, Colorado, Delaware, Nevada, North Carolina and Wyoming use lethal gas. Life imprisonment is the most severe sentence in Maine, Michigan, Minnesota, North Dakota, Rhode Island, South Dakota and Wisconsin. In some of these states where imprisonment is the only penalty for murder, hanging is inflicted on a person who, while serving a life term, kills another. Similarly, in some death penalty states, the jury may fix the punishment at life imprisonment.

CARPETBAGGERS

Corrupt and often ignorant politicians—mostly from the North—who flocked to the South during the era of reconstruction. They were uniformly greedy of gain, and were responsible for much of the venality and rascality that disgraced that period of the history of the South.

CASTE AMONG THE HINDUS

Caste is a term applied to the division into social classes in India. To each of these classes certain pursuits are limited by the Laws of Manu, B.C., 960.

(1) The Brahman or priestly class, which "issued from the mouth of Brahma."

(2) The Kshatriya or military class, which "sprang from the arm of Brahma."

(3) The Vaisya or mercantile class, which "sprang from the thigh of Brahma."

(4) The Sudra or laboring class, which "sprang from the foot of Brahma."

(5) The pariahs are lower in caste and usually work for the farmers. The chandalas are the lowest caste, considered the lowest of mortals.

CAVES

Caves or caverns are hollow places formed in the earth or rocks, usually the result of the eroding action of water or dislocation of rock strata. Caves are found throughout the world. Early in human history Europe sheltered tribes known as the Cave Dwellers. In many of these ancient caverns are found human remains. A cave in Java contained a skull and certain other fragments that indicate man's existence at a very remote period. In Spain are famous caverns on the walls of which are found some of the earliest of picture writing with pictures of animals long extinct whose fossil bones are now found in ancient glacier trails. The caves at Combarelles, France, contain over 400 animal sketches, including mammoths, reindeer, ibexes, wolves, bears, horses, and one of a lion.

Kent's Hole, in Torquay, England, in 1824 yielded fossil bones and teeth of animals long extinct in that country. The famous basaltic Fingal's Cave in the island of Staffa, Scotland, rivals the Blue Grotto of Capri in beauty. Tofière, or Cave of the Doubs, on the frontier of France and Switzerland, lying more than 3,200 feet above sea level, is the source of the Doubs River. Near the entrance of the cave are inscriptions indicating that two kings have visited this cavern.

The most widely known caverns in the United States are the Carlsbad, Luray, Mammoth and Wyandotte caves.

Carlsbad Caverns, in the foothills of the Guadalupe Mountains, New Mexico, were designated as a National Monument by President Coolidge. These immense limestone caverns have been only partially explored. Near the entrance are found vast colonies of bats, many of them of the Mexican free-tailed species that produce the valuable fertilizer, guano. In the caves are millions of stalactites and stalagmites of every form and design, composed of purest onyx. Many rooms are covered by sheets of drapery that look like fabric but are made of stone, translucent, and less than an inch thick. Water charged with carbon dioxide and lime water springs are found in the caverns and the chemical action of these waters has helped change the character of the stone. Many rooms are walled by marble, the Dome Room, 150 by 50 feet in size, being covered with onyx and with pink and yellow marble that hang like carefully pleated draperies from walls and ceiling. In some places great domes, 30 to 40 feet high, rise from the top of flowstone mounds that are 50 feet high.



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Carlsbad Caverns

Stalagmites of monster proportions in the Big Room, a subterranean chamber more than three-fourths of a mile long, with a maximum width of 625 feet and a maximum ceiling height of 300 feet.

Luray Caverns in the Shenandoah Valley, Virginia, are a series of beautiful rooms with particularly fine doming and stalactite formations. Discovered in 1878, the caves cover about a hundred acres.

Mammoth Cave, discovered in 1809, is the largest known cavern in the world. It is situated in Edmonson County, Kentucky, 99 miles from Louisville. The immediate district is one abounding in large caves and the surface is characterized by thousands of sinkholes. It is estimated that there are 4,000 sinkholes and 500 open caverns. An area of 8,000 square miles in Kentucky and Tennessee is of more or less the same character. There is almost no surface drainage, the surface water immediately finding its way into the sinks and through the subterranean caverns and channels that everywhere abound. Green River, which gathers most of these waters, flows from 300 to 600 feet below the general level of the upland country and many of the caverns reach down to this underground water level. This action is now known to be the origin of the caves and sinks. The oölitic subcarboniferous limestone in which most of them occur has been dissolved along its joints by the percolating water, a not unusual process in other limestone regions.

Mammoth Cave is in reality a complex series of more than 200 rooms, chambers, domes, abysses, pits, grottoes, avenues and galleries extending nine miles underground. In certain of the lower caverns there are rivers, cataracts and lakes, varying in volume with local rain supply.

The most remarkable portions are the great pits and domes, which are caverns of unusual vertical extent. They are in reality the same pits extending downward and domes upward from the main points of observation. Crevice Pit with Klett's Dome, which is a part of it, is 150 feet in total vertical measurement. The Bottomless Pit is 105 feet in depth. Broadway, an avenue that is three miles long, sixty feet wide in parts, and forty feet high, is the longest roadway. Many parts of the cave are beautifully incrusted with gypsum and other deposits, while stalactites and stalagmites are abundant in some of the lower portions. Where these crusts are covered with crystals, their sparkling is especially impressive, resembling a fairyland.

The Dead Sea, Lake Lethe, the Styx, and the Crystal and Echo rivers are the largest stretches of water.

The outer galleries of the cave are inhabited by multitudes of bats. There are two species of blind fish, crayfish, crickets, and a few other insects.

Wyandotte Cave in Indiana is famous for its crystals, said to be more beautiful than those found in Mammoth Cave. The Pillared Palace and Monument Mountain are among the famous features of the cave, which is about twenty-three miles long.

There are many other American caves of interest. Among those which have been recognized and protected by the United States as national monuments are Lewis and Clark Cavern in Montana, Shoshone Cavern in Wyoming, Jewel Cave and Wind Cave in South Dakota, Lehman Caves in Nevada, Oregon Caves in Oregon and Timpanogos Cave in Utah. See also **National Monuments; National Parks.**

CENTER OF AREA AND POPULATION OF THE UNITED STATES

The center of area of the United States, excluding Alaska and Hawaii and other possessions, is in northern Kansas, in approximate latitude 39 degrees, 55 minutes, and approximate longitude 98 degrees, 50 minutes.

The centers of population, indicated below, are, therefore, considerably east of the center of area.

Date	Center of Population Approximate Location of Important Towns	Westward Movement During Preceding Decade In Miles
1790	23 miles east of Baltimore, Md.	..
1800	18 miles west of Baltimore, Md.	41
1810	40 miles northwest by west of Washington, D. C.	36
1820	16 miles north of Woodstock, Va.	50
1830	19 miles W. S. W. of Moorfield, in the present State of W. Va.	39
1840	16 miles south of Clarksburg, in the present State of W. Va.	55
1850	23 miles S. E. of Parkersburg, in the present State of W. Va.	55
1860	20 miles south of Chillicothe, Ohio	81
1870	48 miles east by north of Cincinnati, Ohio	42
1880	8 miles west by south of Cincinnati, Ohio	58
1890	20 miles east of Columbus, Ind.	48
1900	6 miles southeast of Columbus, Ind.	14
1910	Bloomington, Ind	39
1920	1.9 miles west of Whitehall, Ind.	9.8

CHARACTER BY THE MONTH

Here is an old astrological prediction (see **Astrology**), said to indicate the character of a girl according to the month in which she happens to be born:

If born in January, she will be a prudent housewife, given to melancholy, but good-tempered.

If in February, a humane and affectionate wife and tender mother.

If in March, a frivolous chatterbox, somewhat given to quarreling.

If in April, inconstant, not intelligent, but likely to be good-looking.

If in May, handsome and likely to be happy.

If in June, impetuous, will marry early, and be frivolous.

If in July, passably handsome, but with a sulky temper.

If in August, amiable and practical, and likely to marry rich.

If in September, discreet, affable, and much liked.

If in October, pretty and coquettish, and likely to be unhappy.

If in November, liberal, kind, of a mild disposition.

If in December, well proportioned, fond of novelty, and extravagant.

CHRISTMAS TREE

The Christmas tree, which has become an almost universal symbol, and is by most persons supposed to have originated in Germany, had its origin in Egypt at a period long before the Christian era. The palm tree is known to put forth a branch every month, and a spray of this tree, with twelve shoots on it, was used in Egypt at the time of the winter solstice, as a symbol of the year completed. In northern regions a fir was substituted for the palm.

CITIES, POPULAR NAMES OF

Certain cities have received popular names because of their identification with particular religious beliefs, observances, educational or literary pre-eminence, topography, resemblances to other cities, location, dominant industries, surroundings, or for similar reasons.

Aberdeen, Scotland. Granite City, from the prevalence and use of this stone.

Agra, India. Rome of Hindustan. It was the seat of the Mohammedan empire in India, and its ancient structures are on a scale of great magnificence.

Alexandria, Egypt. (1) Delta City, from the delta of the Nile. (2) Mother of Books, because there was deposited the largest collection of books ever gathered together prior to the invention of printing.

Allahabad, India. Holy City of the Indian Mahammedans.

Amiens, France. Little Venice, because it is so intersected by different branches of the Somme and the numerous bridges over them, as to have moved Louis XI. to bestow on it the above name.

Amsterdam, Holland. Venice of the Netherlands, because of its canals.

Antioch. (1) Queen of the East, because it was formerly the capital of Syria, and the place of residence of the Macedonian kings and Roman governors. (2) Mother of Christian Mission. From thence (Acts xiii, 1-3) Paul started on his first missionary journey.

Athens, Greece. (1) The Violet Crowned, so named by Pindar, in allusion to the violet crowns offered to the god at the Dionysiac festivals. It soon became a stock phrase, and, according to Aristophanes, every stump orator could win over his audience by judicious use of "violet-crowned city," or "ancient violet-crowned Athens." (2) Religious City, a name given by the old writers. It is said that there were 30,000 temples, statues and sacred places dedicated to worship of the heathen gods. (3) Eye of Greece, because the most renowned of Greek cities.

> Athens, the eye of Greece, mother of arts
> And eloquence, native to famous wits
> Or hospitable.
>
> Milton, *Paradise Regained*, Book iv.

Atlanta, Ga. The Gate City, so named by Jefferson Davis during the Civil War, it being, in his estimation, the most important inland position, from a military point of view, in the South.

Baalbec, Syria. City of the Sun, the Heliopolis of the Greeks, is often referred to by this title, which is a translation of its two names. It is celebrated for its superb ruins, yet extant, of an ancient temple dedicated to the sun.

Baghdad, Irak. City of Peace.

Baltimore, Md. Monumental City. It contains the Washington and Battle monuments and many others.

Berlin, Germany. City of Intelligence, from its numerous educational institutions.

Birmingham, Ala. Magic City, so named on account of its rapid rise into size and prominence.

Birmingham, England. The Midland Capital from its geographical location.

Bologna, Italy. The Fat City. In the days of the Italian republics the city of Bologna was so named.

Boston, Mass. (1) Athens of America, because famed alike for its institutions of learning and the culture of its citizens. (2) City of Notions, referring to numerous manufactured articles of all kinds commanding a large sale. (3) Tri-Mountain City, from the three hills on which it was originally built. (4) Hub of the Universe; a humorous appellation popularly applied, originated with Oliver Wendell Holmes.

Batavia, in Java. Queen of the East, being the metropolis of the Dutch East Indian possessions.

Benares, India. Holy City of the Hindus.

Brighton, England. Queen of Watering Places, from its popularity as a seaside resort.

Brooklyn, N. Y. City of Churches, from the large number of churches.

Buffalo, N. Y. Queen City of the Lakes, because of its commanding position on the Great Lakes.

Calcutta, India. City of Palaces, from the number of elegant residences.

Chicago, Ill. Windy City, from the winds blowing from Lake Michigan.

Cincinnati, Ohio. Queen City, so called when it was the commercial metropolis of the Middle West.

Cleveland, Ohio. Forest City, from the number of trees on its streets.

Cologne, Germany. (1) City of the Three Kings, in reference to the old legend which makes Cologne the burial place of Balthazar, Melchoir, and Jasper, the "wise men of the East." (2) Rome of the North, so called in the Middle Ages, from its wealth, power and ecclesiastical foundations.

Columbus, Ohio. The Arch City, from the memorial arch to William McKinley (with sculpture by H. A. MacNeil).

Constantinople, Turkey. City of the Golden Horn, from the name of its harbor.

Cordova, Spain. Athens of the West; under its Mohammedan rulers it attained great eminence in the domain of letters.

Cork, Ireland. Athens of Ireland, because it was the domicile or the birthplace of many erudite and eminent Irishmen.

Cuzco, Peru. Holy City of the Ancient Incas.

Damascus, Syria. Pearl of the Desert, because of its beautiful site.

Denver, Colo. Queen of the Plains.

Detroit, Mich. City of the Straits, from its location on the strait connecting Lake St. Clair and Lake Erie.

Dresden, Germany. German Florence, so named for its wealth in works of art and scientific treasures.

Duluth, Minn. Zenith City of the Unsalted Seas; thus named by Proctor Knott in a famous speech in Congress.

Edinburgh, Scotland. (1) Auld Reekie, so named on account either of (a) its filthy and ill-smelling thoroughfares, or (b) the canopy or cloud of smoke that seems to overhang the city when viewed from a distance. (2) Maiden Town. An old legend has it that it was to this place the fair daughters of the Pictish monarchs were consigned for safety in time of war. (3) Modern Athens. It is the headquarters of learning in Scotland; as a literary town it is second only to London.

Florence, Italy. (1) Lily of the Arno. (2) The Gentle. In the palmy days of the Italian republics Florence was so named. "In the mouth of an Italian this adjective includes all the amenities and agreeableness resulting from a high state of civilization."

Foochow, China. Happy City. Foochow means "happy" in Chinese.

Galway, Ireland. City of the Tribes, because, in 1235, there settled here thirteen clans, named Athy, Blake, Browne, Budkin, Burke, D'Arcy, Ffont, Joyce, Kirwan, Lynch, Martin, Morris and Skerrett.

Geneva, Switzerland. Rome of Protestantism. Under the guidance of Calvin and his associates it became a stronghold of the Reformation.

Genoa, Italy. The Superb was what medieval Italy called her.

Halifax, Nova Scotia. Warden of the North, from its importance as a British fort and naval base.

Hannibal, Mo. Bluff City, from its location on the bluffs of the Mississippi River.

Hartford, Conn. Charter Oak City, after the oak tree in which Connecticut's Colonial charter is said to have been concealed.

Holyoke, Mass. Paper City, from its extensive paper mills.

Indianapolis, Ind. Railroad City, from its being a great railroad center.

Jerusalem, Palestine. (1) City of Peace; its ancient name, Salem, signifies "peace." (2) Holy City of the Jews and Christians. (3) City of the Great King, so named in the Scriptures. (4) City of David, so named by King David, who captured it from the Canaanites, 1049, B.C.

Keokuk, Iowa. Gate City, from its situation at the foot of the Mississippi Rapids.

Leningrad, Russia (U. S. S. R.). (1) City of Perspectives; its streets and quays are famous for the long vistas they present. (2) City of Snow; for nine months in every year it is shrouded in a canopy of snow.

Lhasa, Tibet. Rome of Buddhism. It is the holy city of the Buddhists in Asia.

Liverpool, England. The Modern Tyre, after the important seaport of antiquity.

London, England. (1) City of Masts, so named from the spectacle formerly presented by its vast array of shipping. (2) Modern Babylon. In point of size it is the greatest in the modern world, as Babylon is believed to have been of the ancient. (3) Lud's Town. So called after Lud, a mythical king of Britain.

Louisville, Ky. Falls City, from the falls of the Ohio River at Louisville.

Lowell, Mass. City of Spindles, from its large manufacturing interests.

Lucknow, India. City of Roses, because embowered with them.

Lynchburg, Va. Hill City; Tobacco City; tobacco is one of the chief staples of trade.

Manchester, England. Cottonopolis, on account of its extensive manufactures of cotton.

Mecca, Hejaz. Holy City of the Mohammedans.

Medina, Hejaz. Prophet's City. To this place Mohammed fled for refuge during the Hegira, July 16, 622; and here is his tomb.

Milan, Italy. Little Paris, in allusion to its similarity to the French capital in point of gaiety.

Milwaukee, Wis. Cream City, from the cream-colored brick manufactured there.

Minneapolis, Minn. Flour City, from its extensive flour mills.

Montpelier, Vt. The Green Mountain City, from its location.

Montreal, Canada. Island City. It is built on an island of the same name.

Moscow, Russia. Holy City (under the czarist regime).

Naples, Italy. The Beautiful, from its location on the Bay of Naples.

Nashville, Tenn. City of Rocks, from its natural surroundings.

New Haven, Conn. City of Elms, from the great number of elms it contains.

New Orleans, La. Crescent City, from its position on a curve of the Mississippi.

Newport, R. I. (1) City by the Sea, famous as a fashionable summer resort. (2) City of Mansions.

New York, N. Y. (1) Empire City, from its being the chief city of the United States. (2) Gotham a, colloquial term applied in *Salmagundi* by Washington Irving and James K. Paulding, and supposed to hint sarcastically at the worldly wisdom of its inhabitants.

Niagara Falls, N. Y. Power City, since the falls generate tremendous electric power.

Padua, Italy. The Learned City. For many centuries the seat of a great university.

Paris, France. City of the Lily, or City of Louis.

Pernambuco, Brazil. City of the Reef; the harbor is protected by an extensive reef of rocks.

Perth, Scotland. The Fair City, because elegantly built and picturesquely situated.

Philadelphia, Pa. (1) City of Brotherly Love, from the meaning of the name. (2) Quaker City, planned and colonized by William Penn and other members of the Society of Friends. (3) City of Homes.

Pittsburgh, Pa. (1) Iron City, from the extent of its iron manufactures. (2) Smoky City, from the smoke which overhangs it.

Portland, Me. Forest City, from the number of trees lining its streets.

Portland, Ore. The Rose City, from its beautiful rose gardens.

Quebec, Quebec. Gibraltar of America, after the heights on which the city is founded.

Rochester, N. Y. (1) Flower City, from the profusion of flowers and extensive nurseries there. (2) Kodak City, from the manufacture of photographic cameras there.

Rome, Italy. (1) Holy City. (2) City of Seven Hills. (3) Mistress of the World. (4) Imperial City. (5) City of Palaces. (6) Eternal City.

San Francisco, Cal. City of the Golden Gate.

Santa Fe, N. M. City of the Holy Faith.

Salt Lake City, Utah. City of the Saints; here is located the headquarters of the Mormon hierarchy, the Church of Latter-Day Saints of Jesus Christ.

Savannah, Ga. Garden City, from its parks and gardens.

Seattle, Wash. Queen City of Puget Sound.

Seven Cities, The. Egypt, Jerusalem, Babylon, Athens, Rome, Constantinople, and either London or Paris. They are often grouped under this title, as embodying wealth, antiquity, greatness and magnificence.

Springfield, Mass. City of Homes.

Springfield, Ohio. Flower City, from the beauty of its flowers.

St. Louis, Mo. Mound City, from the artificial mounds found there.

Stockholm, Sweden. Venice of the North, from the many islands and waterways.

Thessalonika (Modern Salonica), Greece. Orthodox City. It was for centuries a bulwark of Christianity, but in 1430 was captured by Amurath II.

Venice, Italy. (1) City of St. Mark. (2) City of the Seventy Isles.

Washington, D. C. (1) City of Magnificent Distances, from its being laid out on a large and regular scale. (2) Federal City.

Worcester, Mass. The Faithful City, so called from its motto: *Floreat Semper Civitas Fidelis.*

COAL

Coal is a black mineral substance, consisting largely of carbon, the remainder being hydrogen, oxygen, nitrogen and the earthy impurities that form the ash when coal is burned. Living vegetation that died and was buried in swampy lands some millions of years ago forms the coal of today. Water protected the fernlike trees that fell in that far-off time so that the air could not reach them and gradually a chemical change turned the wood into peat. Then sand and mud filtered in with great floods of water so that the peat was buried at the bottom of lakes and rivers where, pressed closer by the weight above, and further cut off from the action of the air, the peat turned into coal. When the proportion of carbon is about ninety per cent, coal is called "hard" or "anthracite." A sixty to seventy per cent carbon content is found in "soft" or "bituminous" coal. Semi-anthracite has a content of carbon between these two, and "lignite" is imperfectly carbonized vegetable matter with less than sixty per cent of carbon, yet more inflammable than peat.

More than half the known coal beds of the world lie within the United States. North America, Asia and Europe are the chief sources of the world's coal, and South Africa, Australia and New Zealand have considerable deposits. Chile and Argentina are the only countries in South America mining any great amount of coal. (Further information may be found by consulting the index. Also see illustrations of coal mining on page 327.)

Coal produces a large number of valuable by-products, the chief of which are illuminating and heating gas, coke, coal tar and ammonia. Coke and coal tar also produce by-products so that coal is the basic source of many dyes, scents, explosives, saccharine, carbolic acid, salicylic acid, coumarin (a vanilla flavoring substitute), creosote oils, naphthalene, and all the numerous bakelite products.

COKE

Coke, a by-product of coal, consists mainly of carbon, burns with a pure, steady flame that is free from smoke and gives off intense heat. It is used in smelting ores and in other industries where great heat is required. When coke is to be made, coal is washed, sorted by size and placed in the coke ovens. In modern plants this work is done by machinery. The old-style beehive oven with a cone-shaped top through which the gases escaped is being largely replaced by the by-product oven which collects the coal tar, ammonia and other by-products thrown off by the charring coal. Even the yield of coke is less in a beehive oven than in the newer type. Much coke is obtained as a by-product during the manufacture of illuminating gas. About a third of the coke produced in the United States comes from Pennsylvania.

COLOR COMBINATIONS

The question of harmony or inharmony of colors is constantly encountered in interior decoration, in dress, in ornamentation and in other avenues. The chart below indicates the results secured by combining certain colors. A fairly exact description of a color is required, hence the use of such terms as "peacock" blue or "sky" blue, "night" green or "olive" green. The use of "strong" indicates an excellent combining result.

CHART OF COLOR COMBINATIONS

	Buff	Chocolate Brown	Emerald Green	Gray	Grass Green	Lavender	Magenta	Maroon	Navy Blue	Night Green	Olive Green	Orange	Orchid	Peacock Blue	Poppy Red	Powder Blue	Purple	Salmon	Sky Blue	Tan	Topaz	Yellow
Buff		Good	Good	Bad	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Bad	Bad	Bad
Chocolate Brown	Good		Fair	Fair	Fair	Bad	Bad	Bad	Good	Fair	Good	Bad	Bad	Good	Bad	Good	Fair	Bad	Good	Bad	Bad	Bad
Emerald Green	Good	Fair		Good	Bad	Fair	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Fair	Bad	Fair	Fair	Bad
Gray	Bad	Fair	Good		Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Bad	Bad	Fair
Grass Green	Good	Fair	Bad	Good		Fair	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Fair	Bad	Fair	Fair	Bad
Lavender	Good	Bad	Fair	Good	Fair		Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Good	Good	Bad
Magenta	Good	Bad	Bad	Good	Bad	Bad		Bad	Good	Fair	Bad	Bad	Bad	Fair	Bad	Fair	Bad	Bad	Bad	Good	Good	Fair
Maroon	Good	Bad	Bad	Good	Bad	Bad	Bad		Fair	Fair	Fair	Bad	Bad	Fair	Bad	Fair	Bad	Bad	Bad	Fair	Fair	Fair
Navy Blue	Good	Good	Bad	Good	Bad	Bad	Good	Fair		Fair	Good	Strong	Bad	Bad	Fair	Bad	Bad	Strong	Good	Good	Good	Strong
Night Green	Good	Fair	Bad	Good	Bad	Bad	Fair	Fair	Fair		Bad	Fair	Bad	Strong	Good	Strong	Strong	Fair	Bad	Fair	Fair	Bad
Olive Green	Good	Good	Bad	Good	Bad	Bad	Bad	Fair	Good	Bad		Strong	Bad	Fair	Bad	Fair	Bad	Bad	Bad	Bad	Bad	Bad
Orange	Good	Bad	Bad	Good	Bad	Bad	Bad	Bad	Strong	Fair	Strong		Bad	Fair	Bad	Good	Strong	Bad	Bad	Fair	Fair	Bad
Orchid	Good	Bad	Bad	Good	Bad	Bad	Bad	Bad	Bad	Bad	Bad	Bad		Bad	Bad	Bad	Bad	Bad	Bad	Good	Good	Fair
Peacock Blue	Good	Good	Bad	Good	Bad	Bad	Fair	Fair	Bad	Strong	Fair	Fair	Bad		Fair	Bad	Bad	Fair	Bad	Good	Good	Strong
Poppy Red	Good	Bad	Bad	Good	Bad	Bad	Bad	Bad	Fair	Good	Bad	Bad	Bad	Fair		Fair	Bad	Bad	Bad	Good	Fair	Fair
Powder Blue	Good	Good	Bad	Good	Bad	Bad	Fair	Fair	Bad	Strong	Fair	Good	Bad	Bad	Fair		Bad	Fair	Fair	Good	Good	Strong
Purple	Good	Fair	Bad	Good	Bad	Bad	Bad	Bad	Bad	Strong	Bad	Strong	Bad	Bad	Bad	Bad		Bad	Bad	Good	Good	Strong
Salmon	Good	Bad	Fair	Good	Fair	Bad	Bad	Bad	Fair	Fair	Bad	Bad	Bad	Fair	Bad	Fair	Bad		Fair	Good	Good	Bad
Sky Blue	Good	Good	Bad	Good	Bad	Bad	Bad	Bad	Good	Bad	Bad	Bad	Bad	Bad	Bad	Fair	Bad	Fair		Good	Good	Fair
Tan	Bad	Bad	Fair	Bad	Fair	Good	Good	Fair	Good	Fair	Bad	Fair	Good	Good	Good	Good	Good	Good	Good		Bad	Bad
Topaz	Bad	Bad	Fair	Bad	Fair	Good	Good	Fair	Good	Fair	Bad	Fair	Good	Good	Fair	Good	Good	Good	Good	Bad		Bad
Yellow	Bad	Bad	Bad	Fair	Bad	Bad	Fair	Fair	Strong	Bad	Bad	Bad	Fair	Strong	Fair	Strong	Strong	Bad	Fair	Bad	Bad	

COMPASS

An instrument for indicating direction. A compass may be made by attaching a magnetized needle to a small portion of wood or cork and placing this in water. The needle will quickly come to rest pointing north and south.

The compass is important in the navigation of ships. Previous to the invention of the compass, navigators had only the stars to guide them. The compass was first used in the thirteenth century; it was made of a magnetized needle attached to a piece of wood and floated on water. The use of an improved compass made it possible for Columbus to sail across the Atlantic to America.

The mariner's compass is a highly improved device wherein several needles are permanently fastened to the lower surface of a round sheet of mica or paper. Set into the center of the paper is usually a small piece of agate which rests on a sharp metallic point enabling the card to turn easily. A copper ring or large glass-covered bowl contains the needles and cards. The bowl may be filled with a water and alcohol mixture in order to help support the card. Two rings of copper support this compass in such a way that it may easily shift in any direction with the roll of the ship. The mariner's compass is located in front of the steersman.

In addition to the magnetic compass, there is the gyroscopic type, or gyrocompass, invented in 1910 by E. A. Sperry. It is valuable in navigating ships made largely of steel which have a disturbing effect upon the magnetic compass. The gyrocompass has been installed in a high percentage of the steel ships. The underlying principle of the gyrocompass is based upon the rotation of the earth and that physical quality of a rapidly turning body to maintain a definite direction in relation to the earth. This type of compass consists of a heavy wheel which whirls easily and turns vertically or horizontally. The wheel is placed in a vacuum tube and turned by a motor at a rate of about 9,000 revolutions a minute. The gyroscope establishes a north and south direction and continues to do so as long as the wheel is kept turning at an even rate of speed. The compass card indicates the direction.

Inasmuch as the magnetic poles do not coincide exactly with our north and south poles, the reading of the magnetic compass is not correct and has to be adjusted by scientific calculations. The north magnetic pole is located about 70 degrees north latitude and 97 degrees west longitude. The south magnetic pole is located about 72 degrees south latitude and 153 degrees east longitude. The north and south magnetic poles change their position slightly at certain times. When placed in a torpedo a gyroscope causes the torpedo to go in a straight direction through the waves. The gyroscope is used to stabilize ships in a stormy sea and to keep the monorail car upright even when going around curves.

If a gyroscope is turned on its side, with support at only one end, it will not fall, but seemingly contrary to the laws of gravity will move in a horizontal circle, about the point of its support. This motion is called "precession," and in direction is opposite to that in which the wheel is rotating. The earth forms a fine example of a gyroscope, turning on its axis and at the same time revolving around the sun.

Aircraft compasses are especially designed to resist engine vibrations. A sun-compass, devised in 1925 by Albert H. Bumstead, is much used by aircraft navigators.

CONGRESSIONAL GOLD MEDALS

These medals are awarded by a special act of Congress for outstanding service to the United States or to mankind in general. Over 1,800 Congressional medals have been awarded, among them being the following:

Recipient	*Occasion of Award*	*Date*
George Washington.	The Capture of Boston.	1776
Horatio Gates.	Surrender of the British Army.	1777
Anthony Wayne.	Capture of Stony Point.	1779
François L. T. de Fleury (Silver Medal).	Capture of Stony Point.	1779
Henry Lee.	Surprise of Pawlus Hook.	1779
John Paulding, David Williams, Isaac Van Wart (Silver Medal).	Capture of Major Andre.	1780
Daniel Morgan.	Victory of Cowpens.	1781
William A. Washington (Silver Medal).	Victory of Cowpens.	1781
John Eager Howard (Silver Medal).	Victory of Cowpens.	1781
John Paul Jones.	Capture of *Serapis*.	1787
George Washington.	First President of the United States.	1787
John Adams.	Second President of the United States.	1787
Thomas Truxton.	Action with the *Vengeance*.	1800
Thomas Jefferson.	President of the United States.	1800
Edward Preble.	Naval operations against Tripoli.	1805
James Madison.	President of the United States.	1805
Isaac Hull.	Capture of the *Guerriere*.	1813
Jacob Jones.	Capture of the *Frolic*.	1813
Stephen Decatur.	Capture of the *Macedonian*.	1813
William Bainbridge.	Capture of the *Java*.	1813
Oliver H. Perry.	Battle on Lake Erie.	1814
Jesse Duncan Elliott.	Battle on Lake Erie.	1814
James Lawrence (Nearest relative).	Capture of the *Peacock*.	1814
Thomas Macdonough.	Victory of Lake Champlain.	1814
Robert Henley.	Victory of Lake Champlain.	1814
Stephen Cassin.	Victory of Lake Champlain.	1814
Lewis Warrington.	Capture of the *Epervier*.	1814
Johnston Blakeley.	Capture of the *Reindeer*.	1814
Jacob Brown.	Victories of Chippewa, Niagara and Erie.	1814
Peter Buel Porter.	Victories of Chippewa, Niagara and Erie.	1814
Eleazer Wheelock Ripley.	Victories of Chippewa, Niagara and Erie.	1814
James Miller.	Victories of Chippewa, Niagara and Erie.	1814
Winfield Scott.	Victories of Chippewa, Niagara and Erie.	1814
Edmund P. Gaines.	Victory of Erie.	1814
Alexander Macomb.	Victory of Plattsburg.	1814
Andrew Jackson.	Victory of New Orleans.	1815
Charles Stewart.	Capture of the *Cyane* and of the *Levant*.	1816
James Biddle.	Capture of the *Penguin*.	1816
James Monroe.	President of the United States.	1816
William Henry Harrison.	Victory of the Thames.	1818
John Quincy Adams.	President of the United States.	1818
Andrew Jackson.	President of the United States.	1818
George Croghan.	Defence of Fort Stephenson.	1835
Martin Van Buren.	President of the United States.	1835
John Tyler.	President of the United States.	1835
John Knox Polk.	President of the United States.	1835
Zachary Taylor.	Victories on the Rio Grande.	1846
Zachary Taylor.	Capture of Monterey.	1847
Winfield Scott.	Mexican Campaign.	1848
Zachary Taylor.	Victory of Buena Vista.	1848
Zachary Taylor.	President of the United States.	1848
Millard Fillmore.	President of the United States.	1848
Franklin Pierce.	President of the United States.	1848
Duncan N. Ingraham.	Release of Martin Koszta.	1854
James Buchanan.	President of the United States.	1854
Frederick Henry Rose.	Kindness and humanity. (Dr. Rose was a British subject who by permission of his commander boarded a United States war vessel that had been visited by an epidemic of yellow fever and took care of the sick).	1758
Abraham Lincoln.	President of the United States.	1858
Ulysses S. Grant.	Victories of Fort Donelson, Vicksburg and Chattanooga.	1863
Cornelius Vanderbilt.	Free gift of steamship *Vanderbilt*.	1864
Andrew Johnson.	President of the United States.	1864
Cyrus West Field.	Laying of the Atlantic Cable.	1867
George Peabody.	Promotion of industrial education.	1867
Ulysses S. Grant.	President of the United States.	1867
George Foster Robinson.	For saving the life of William H. Seward, Secretary of State, on April 14, 1865, when he was attacked by the assassin Payne, one of the conspirators against Lincoln and his cabinet.	1871
John Horn, Jr.	For saving over one hundred people from drowning on various occasions.	1874
J. S. Crandall and others.	For rescuing the passengers and crew of the steamer *Metis* off Watch Hill, R. I.	1874
Joseph Francis.	For life-saving appliance.	1888
David H. Jarvis, Ellsworth P. Bertholf, Samuel J. Call.	In recognition of the heroic services rendered by them in connection with the expedition of 1879-1898, for the relief of the whaling fleet in the Arctic regions.	1902
Orville Wright and Wilbur Wright.	For services rendered the science of aerial navigation.	1909
Capt. Arthur Henry Rostron.	For service in giving relief to passengers of the wrecked steamship, *Titanic*.	1912
Kroonland, officers and crew.	Relief of *Volturno*.	1914
Señors de Gama, Noan and Suarez.	Mediation between U. S. and warring parties in Mexico.	1915
Maj. John O. Skinner (Medal of Honor).	Gallantry during Modoc Indian campaign of 1873.	1915
Unidentified British and French soldiers in Westminster Abbey and Arc de Triomphe.		1921
Robert Edward Cox, Chief Gunner, U.S.N.	Heroism at accident on U.S.S. *Missouri*, 1904.	1921
Unidentified American soldier in Arlington Cemetery.	(Congressional Medal of Honor and Distinguished Service Cross).	1921
Unidentified Italian soldier in Rome.		1921
Army World Flyers—Major Fred L. Martin, Captain Lowell H. Smith, Lieutenants Leigh Wade, Leslie Arnold and Erik Nelson, and Sergeant Alva L. Harvey.	(Distinguished Service Medals).	1925
Richard E. Byrd, Rear-Admiral U.S.N., retired.	North Pole flight by aircraft.	1927
Floyd Bennett, aviation pilot, U.S.N.	Services in Byrd Arctic Expedition.	1927
Col. Chas. A. Lindbergh, U.S.A. C.R.	New York-Paris flight.	1927
Thomas Eadie.	Saved companion diver, risking his own life over two hours to do so.	1927
Col. De Pinedo, Coste, Le Brix, von Huenefeld, Fitzmaurice and Koehl.	(Distinguished Flying Cross.) Several aircraft flights.	1928
Thomas A. Edison.	In recognition of achievements.	1928
Commander John H. Towers and crew of *NC-4*.	Transatlantic flight of 1919.	1929
Walter Reed, James Carroll and twenty others.	Services in yellow fever investigations in Cuba.	1929
Lieut. Deming Bronson.	Gallantry in action, Eclisfontaine, France.	1929
Michael Valente (private).	Capture of two machine gun nests, Ronssoy, France.	1929
Col. Edward D. Rickenbacker.	Attack on seven airplanes and destruction of two of them at Billy, France.	1929
Christian F. Schilt.	Saved three lives and carried aid by airplane at Quilali, Nicaragua.	1930



CONTINENTAL CONGRESS, PRESIDENTS OF

Fourteen men served as President of the Continental Congress, Peyton Randolph being chosen in 1774 and again the following year.

Peyton Randolph, Virginia	1774
Henry Middleton, South Carolina	1774
Peyton Randolph, Virginia	1775
John Hancock, Massachusetts	1776

Henry Laurens, South Carolina 1777
John Jay, New York 1778
Samuel Huntington, Connecticut 1779
Thomas McKean, Delaware 1781
John Hanson, Maryland 1781
Elias Boudinot, New Jersey 1782
Thomas Mifflin, Pennsylvania 1783
Richard Henry Lee, Virginia 1784
Nathaniel Gorham, Massachusetts 1786
Arthur St. Clair, Pennsylvania 1787
Cyrus Griffin, Virginia 1788

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CRESCENT

According to tradition, "Philip, father of Alexander, meeting with great difficulties in the siege of Byzantium, set the workmen to undermine the walls, but a crescent moon discovered the design, which miscarried; consequently the Byzantines erected a statue to Diana, and the crescent became the symbol of the state." By another legend, Othman, the sultan, saw in a vision a crescent moon, which grew until it reached from east to west, whereupon he adopted the crescent for his standard.

DATE LINE, INTERNATIONAL

The International Date Line is an imaginary line approximately at the 180th meridian, at which dates change; later by one day for those who cross the line from east to west; and earlier by one day for those crossing it from west to east. It is a somewhat irregular line drawn through the Pacific Ocean in a north and south direction, separating the islands of the Pacific in such a manner that all those lying to the east of it carry the same date as the United States while those west of it carry the same date as Japan and Australia. The date on the American side of the line is a day behind that on the Asiatic side of the International Date Line.

The International Date Line has not been universally accepted for change of time. Changes are known to have been made in Alaska, the Philippines and other places. When the Russians first colonized Alaska they conformed to the Russian date line. When the Americans migrated there, considerable confusion resulted, as each race carried its own date and the Sunday of the Americans was the Monday of the Russians. However, when Alaska was purchased from Russia in 1867 the date in use there was made to conform to that used in the United States.

DEATH SENTENCE PASSED UPON JESUS CHRIST

The following is a copy of the most memorable judicial sentence which has ever been pronounced in the annals of the world, that of death against Jesus Christ, the knowledge of which must be interesting in the highest degree to every Christian. The sentence reads:

SENTENCE PRONOUNCED BY PONTIUS PILATE, INTENDANT OF THE PROVINCE OF LOWER GALILEE, THAT JESUS OF NAZARETH SHALL SUFFER DEATH BY THE CROSS. IN THE SEVENTEENTH YEAR OF THE REIGN OF THE EMPEROR TIBERIUS AND ON THE 25TH OF THE MONTH OF MARCH, IN THE MOST HOLY CITY OF JERUSALEM, DURING THE PONTIFICATE OF ANNAS AND CAIAPHAS, PONTIUS PILATE, INTENDANT OF THE PROVINCE OF LOWER GALILEE, SITTING IN JUDGMENT IN THE PRESIDENTIAL SEAT OF THE PRAETORS, SENTENCES JESUS CHRIST OF NAZARETH TO DEATH ON A CROSS BETWEEN TWO ROBBERS, AS THE NUMEROUS AND NOTORIOUS TESTIMONIALS OF THE PEOPLE PROVE: (1) JESUS IS A MISLEADER. (2) HE HAS EXCITED THE PEOPLE TO SEDITION. (3) HE IS AN ENEMY TO THE LAWS. (4) HE CALLS HIMSELF THE SON OF GOD. (5) HE CALLS HIMSELF FALSELY THE KING OF ISRAEL. (6) HE WENT INTO THE TEMPLE FOLLOWED BY A MULTITUDE CARRYING PALMS IN THEIR HANDS. ORDERS: THE FIRST CENTURION, QUINTUS CORNELIUS, TO BRING HIM TO THE PLACE OF EXECUTION, FORBIDS ALL PERSONS, RICH OR POOR, TO PREVENT THE EXECUTION OF JESUS.

The sentence is engraved on a plate of brass in the Hebrew language, and on its sides are the following words: "A similar plate has been sent to each tribe." It was discovered in the year 1280 in the city of Aquill (Aquilla) in the kingdom of Naples, in a search made for the discovery of Roman antiquities, and remained there until it was found by the Commissaries of Art in the French army of Italy. Up to the time of the campaign in southern Italy it was preserved in the sacristy of the Carthusians, near Naples, where it was kept in a box of ebony. Since then the relic has been kept in the Chapel of Caserta. The Carthusians obtained permission to keep the plate as an acknowledgment of the sacrifices which they made for the French army. The French translation was made literally by members of the Commission of Arts.

DAMS, NOTED MODERN

Dams to control water flow are constructed for purposes of irrigation, to supply cities and towns with water, to aid navigation and to supply power. The following list embraces most of the important larger modern dams, together with their location and size.

NAME, LOCATION AND DATE OPENED	HEIGHT, FEET	LENGTH, FEET	STORAGE CAPACITY, MILLION GALLONS
United States			
American Falls, Idaho, Snake River, 1927	78	4,971	553,946
Arrowrock, Idaho, Boise River, 1915	349	1,100	91,238
Ashokan, Olive Bridge, N. Y., Catskill Watershed, 1915	252	4,650	130,400
Belle Fourche, S. Dak., 1909	122	6,493	.....
Boonton, N. J.	103	2,150	.....
Conowingo, Md., Susquehanna River, 1928	105	4,633	107,000
Coolidge, Ariz., Gila River, 1928*	250	600	391,020
Croton Falls, N. Y., Croton Watershed, 1911	167	1,900	15,753
Croton Lake, N. Y., Croton Watershed, 1915	297	2,168	33,815
Dix River, Ky., 1925	275	1,020	.....
Don Pedro, Cal., Tuolumne River, 1923	283	1,040	95,000
Elephant Butte, New Mex.-Tex., Rio Grande River, 1916	306	1,155	860,000
Exchequer, Cal., 1926	330	930	31,000
Gatun, Panama, 1913	105	7,800	.....
Hale's Bar, Tenn., Tennessee River, 1913	60	1,200	.....
Hoover, Ariz.-Nev., Colorado River, formerly called Boulder Dam, began 1930	.....	.....	.....
Kensico, N. Y., Bronx and Byram Watershed, 1915	307	1,825	38,000
Keokuk, Iowa, Mississippi River, 1913	53	4,360	.....
Los Angeles, Flood Control District, 1929	262	570	3,900
Pathfinder, Neb.-Wyo., N. Platte River, 1922	218	432	348,660
Pecos Valley, Tex., 1893	52	1,686	.....
Roosevelt, Ariz., Salt River, 1911	280	1,080	533,515
Schoharie, Schoharie Co., N. Y., Catskill Watershed, 1924	182	2,000	20,000
Shoshone, Wyo., Shoshone River, 1910	328	200	148,783
Tallapoosa River, Ala.	160	1,248	80,000
Tieton, Wash., Yakima River, 1925	222	905	65,985
Wachusett, Mass., Nashua River, 1906	207	1,476	.....
Wilson, Muscle Shoals, Ala., Tennessee River, unfinished, ultimate capacity to be 612,000 h. p.	142	4,500	.....
Yadkin, Stanley, N. C., 1916	217	1,400	.....
Foreign			
Ashti, India, Ashti River, 1878	58	12,709	.....
Aswan (Assouan, Assuan), Egypt, Nile River, 1912	113	6,400	281,388
Barberine, Switzerland, Simplon, 1921	271	933	82,809
Bassano, Alberta, Canada, Bow River, 1913	39	7,750	.....
Burrinjuck, New South Wales, Australia	148	784	251,317
Camarasa, Spanish Pyrenees, 1920	333	460	.....
Dnieper River, Southern Europe, under construction	200	2,500	291,800
Möhne, Germany, Heve River, 1913	....	1,346	.....
Sennar, Sudan, Blue Nile River, 1926	128	9,900	140,000
Van Ryneveld's Pass, South Africa	152	1,170	208,600
Vyrnwy, Wales	136	1,350	.....

*See p. 340.

DEW

Dew is moisture condensed from the atmosphere upon the surface of certain bodies. The higher the temperature the more water vapor the atmosphere can retain in solution. The diminution, therefore, of heat, which takes place when day is succeeded by night, in many cases renders the air incapable of retaining some of the moisture which it held in the form of vapor during the day. This is deposited on any bodies which at the time are colder than the adjacent atmosphere. It scarcely ever happens that the air is saturated with vapor, or, as it is more correctly worded, that the water vapor is in the condition of greatest possible density for the temperature. As Aristotle long ago observed, dew is deposited chiefly on calm nights. It is more plentiful in spring and autumn than in summer. A cloudy night inteferes with the condensation, for the clouds intercept radiation from the earth, and, in many cases, prevent the temperature falling to the dew point. Dew when congealed becomes hoarfrost.

DIXIE

A name popularly applied to the states south of Mason and Dixon's line. Also, in folklore, a fabulous realm of peace, plenty and indolence, whose charms form the burden of many a negro melody. Brewer says that a Mr. Dixie was a slaveholder of Manhattan Island, compelled by public opinion to remove his human chattels to the South. In their new abode they had to toil ceaselessly, and often sighed for their old home in the North, which lapse of time and distance invested with a halo of paradisaic pleasures. This "Dixie Land" became to the entire colored race in the South a species of Utopia, similar to the Scottish "Land 'o the Leal" or the Fortunate Islands of the ancients.

The song, "Dixie," composed in 1859 by Dan D. Emmett, is one of the most popular of American songs.

DOE, JOHN AND ROE, RICHARD

Formerly, two well-known names representing a species of legal fiction. They originated in the custom, on arresting a person, of finding two sureties who were bound over in heavy penalties that the pursuer should prove the justice and the legality of his claim; otherwise, the pursued should receive indemnity from the parties thus bound over. This custom, however, in process of time, degenerated into the mere nominal recognizances or sureties of "John Doe and Richard Doe." In 1852, these two celebrated characters ceased to have any legal existence.

DOLLAR MARK

Writers are not agreed as to the derivation of the sign ($) to represent dollars. Some say it comes from the letters U.S., which after the adoption of the federal Constitution, were prefixed to the federal currency, and which afterward, in the hurry of writing, were run into one another, the U being made first and the S over it. The more probable explanation is that it is a modification of the figure eight, and denotes a piece of eight reals or the dollar which was formerly divided into eight parts and designated by the figures 8-8.

DOMES OF FAMOUS BUILDINGS

Name	Diameter Feet	Height Feet
Pantheon, Rome	142	143
Duomo, Florence	139	310
St. Peter's, Rome	139	330
Capitol, Washington, D. C.	135½	287½
St. Sophia, Constantinople	115	180
Baths of Caracalla (ancient), Rome	112	116
St. Paul's, London	112	215
Mosque of Sultan Solyman, Constantinople	95	187
Les Invalides, Paris	92	350
Santa Maria della Salute, Venice	80	133
Escorial, Madrid	60	320
Santa Maria della Consolazione Todi, Italy	50	180

DRACONIAN LAWS

In modern usage, statutes of unusual severity. The laws of Draco, enacted by him when archon of Athens (B. C. 621), on account of their rigor were said to be written in blood. This code was set aside by the laws of Solon, B. C. 594, which were founded on the principle of making property, not birth, the title to the honors and offices of the state.

DREAMS

A dream is a collection of ideas which come to the mind when one is asleep. When dreaming one does not have control over the trend of his thoughts, and the principle of suggestion is in control. The images that appear in dreams are usually completely lacking in coherency but sometimes the mind develops wonderful brilliancy during sleep. It is generally accepted that dreams result from natural causes. Internal bodily impression or the preceding state of mind or body usually cause and mold a dream. Dreams, therefore, look backward over time past, instead of anticipating the future; and yet throughout the world in all the ages, many people have interpreted dreams as prophesying future events.

EAGLE

The eagle is chosen to support the lectern, or reading-desk in churches because it is the natural enemy of the serpent. The Old and the New Testaments correspond to the outspread wings of the eagle. In royal banners it is the ensign of the ancient kings of Babylon and Persia, of the Ptolemies, Seleucides and Romans. The French under the empire adopted the same device. The two-headed eagle signifies a double empire, assumed by Austria, which claims to be the successor of the Caesars and Charlemagne; in 802 the second head was added to her standard, on the union of Rome and Germany. Czarist Russia, by virtue of uniting Poland to her possessions, adopted the same emblem. It was first used by Constantine. The golden eagle and the spread eagle descend from the Crusades, where they were first employed by the emperors of the East.

EARTHQUAKE

A quaking, vibratory, undulating, or other movement of a portion of the earth's crust produced by forces acting from beneath. Certain premonitory symptoms are believed to herald the approach of a great earthquake. These are said to be: irregularities in the seasons, sudden gusts of wind interrupted by dead calms; violent rains at unusual seasons, or in countries where they rarely occur; a reddening of the sun's disc and a heaviness in

DIAMONDS OF NOTE

Carats (Uncut)	Carats (Cut)	Name	Discovered	Possessor
	516½	Cullinan I (also called Star of South Africa)†	1905	King George V of England.
3106*	309⅜ and over 100 smaller stones.	Cullinan II	1905	
1680	Never cut	Braganza	1741	Republic of Portugal.
971	Cut into 10 pieces, 69 to 13 each.	Excelsior	1893	Sold privately.
787½	367.9	Rajah of Mattan	1756	Rajah of Mattan (Borneo).
787½	279 9/16	Great Mogul	1650	Probably lost.
650	245‡	Jubilee	1896	Great Britain. Used at Queen Victoria's Jubilee.
	199.6	Orloff		Diamond Treasure of the Union of Soviet Republics.
410	143.2	Pitt or Regent	1701	Louvre, Paris.
150	138½		1775	Republic of Portugal.
	137.25	Florentine (cinnamon-colored)	before 1657	Austrian Government.
242½		Tavernier	1668	Stolen in 1792.
254	128.5§	Star of the South (a Brazilian Diamond)	1853	Gaekwar of Baroda, India.
	128.5	Tiffany Yellow	1878	Tiffany and Co., New York.
296	123	Stewart	1872	English private ownership.
119½		English Dresden	1857	Gaekwar of Baroda.
186½	106.1	Kohinoor	B.C.	Jewel Room, Tower of London.
	88.7	Shah of Persia	before 1591	Diamond Treasure of the Union of Soviet Republics.
	85.8	Pigot	before 1775	Destroyed, 1882.
89½	78⅝	Nassac		Marquis of Westminster last known owner.
288⅝		Light Yellow		Stewart (diamond).
150		Porter Rhodes, found in South America	1872	
83	55	Sancy	about 1570	Maharajah of Patiala (Farrington, Lady Astor (Kunz).
	51	Empress Eugenie		Gaekwar of Baroda, India.
	49.8	Dresden Green	before 1743	Green Vaults, (Grüne Gewölbe) Dresden.
83½	46½	Star of South Africa or Dudley	1867	Countess of Dudley.
112¼	45.5‖	Hope Blue		Mr. Edw. B. McLean, Washington, D. C.
	40	Pacha of Egypt		Egyptian Government.
	40	Polar Star		Diamond Treasure of the Union of Soviet Republics (?).
	26	Star of Este		Archduke Franz Ferdinand of Austria-Este (Assassinated 1914).

*Oliver C. Farrington, *Famous Diamonds*, Chicago, 1929. Geo. F. Kunz gives 3,024.
†As christened by King George V of England. ‡Kunz gives 239 carats. §Kunz gives 254 carats.
‖Kunz gives 41¼ carats.

the air continuing, it may be, for months; an evolution from the soil of electric matter, inflammable gas, with sulphurous and mephitic vapors; subterranean noises like those of artillery or thunder; cries of distress emitted by animals; and drowsiness with a feeling of seasickness in men.

When the fatal moment arrives, the ground at some spot is heaved upward, and becomes the center of vibrations or undulations, somewhat like those produced by the ripple wave propagated in a continually enlarging circle around the spot where a pebble has been cast into a pond. The earth swells and heaves like a rolling sea; cracks and rents are produced in all directions. Great funnel-like holes yawn open. New lakes are formed. Houses and other buildings may, with their inhabitants, be destroyed over the greater part of a city in a few moments, though it is a suggestive fact that this destruction is often limited to those built on one geological stratum. Precipitous cliffs fall into adjacent seas or rivers, in the latter case more or less damming them up and producing floods. Landslips take place with similar consequences. The sea becomes agitated, and after first receding from the land, rolls in upon it with a wave of enormous height. This is more especially the case if the focus of agitation be beneath the sea. The sensation on board ship when an earthquake occurs is as if the vessel had struck a rock.

There are certain regions to which both the points of volcanic eruption and the movements of great earthquakes are confined. The two, therefore, have probably a common origin, as in steam and molten matter. These force an exit to the external atmosphere, generating a volcano, and the similar explosive materials still seeking for vent, produce an earthquake. Connected with the latter, as with the former, are such phenomena as the ejection from the ground of torrents of water discolored by mud, and emitting mephitic vapors which, if intense, are fatal to animal life. Not uncommonly an old volcano goes into eruption, or, more rarely, its upper part and crater fall in and a new one is generated in the midst of an earthquake. Great upheavals of land are normal earthquake effects, though in exceptional cases there are subsidences.

NOTABLE EARTHQUAKES

Location — *B. C.*

One which made Euboea an island — 425
Ellice and Bula, in Peloponnesus, swallowed up — 372
One at Rome, when, in obedience to an oracle, M. Curtius, armed and mounted on a stately horse, leaped into the dreadful chasm it occassioned. (*Livy*) — 358
Duras, in Greece, buried, with all its inhabitants; and twelve cities in Campania also buried — 345
Lysimachia and its inhabitants totally buried — 283

A. D.

Ephesus and other cities overturned — 17
One accompanied by the eruption of Vesuvius; the cities of Pompeii and Herculaneum buried — 79
Four cities in Asia, two in Greece, and two in Galatia overturned — 107
Antioch destroyed — 115
Nicomedia, Cæsarea and Nicæa overturned — 126
In Asia, Pontus and Macedonia, 150 cities and towns damaged — 357
Nicomedia again demolished, and its inhabitants buried in its ruins — 358
One felt by nearly the whole world — 543
At Constantinople; its edifices destroyed, and thousands perished — 557
In Africa; many cities overturned — 560
Syria, Palestine and Asia; more than 500 towns were destroyed and loss of life enormous — 742
In France, Germany and Italy — 801
Constantinople overturned; all Greece shaken — 936
One felt throughout England — 1089
One at Antioch; many towns destroyed, among them Mariseum and Mamistria — 1114
Catania, in Sicily, overturned, and 15,000 persons buried in the ruins — 1137
One severely felt at Lincoln — 1142
Calabria; one city and all its inhabitants overwhelmed in the Adriatic Sea — 1186
One again felt throughout England; Glastonbury destroyed — 1274
In England; the greatest known there — 1318
At Naples; 40,000 persons perished — 1456
At Lisbon; 1,500 houses and 30,000 persons buried in the ruins; several neighboring towns engulfed with their inhabitants — 1531
London; part of St. Paul's and the Temple churches fell — 1580
In Japan; several cities made ruins, and thousands perished — 1596
Terrible one at Calabria — 1638
In China, when 300,000 persons were buried in Pekin alone — 1662
One severely felt in Ireland — 1690
One at Jamaica, which totally destroyed Port Royal, whose houses were engulfed forty fathoms deep, and 300 persons perished — 1692
One in Sicily, which overturned fifty-four cities and towns, and 300 villages. Of Catania and its 18,000 inhabitants not a trace remained; more than 100,000 lives were lost — 1693
Palermo nearly destroyed; 6,000 lives lost — 1726
Again in China; and 100,000 people swallowed up at Pekin — 1731
In Hungary; a mountain turned round — 1736
One at Palermo, which swallowed up a convent; but the monks escaped — 1740
Lima and Callao demolished; 18,000 persons buried in the ruins — 1746
In London; a slight shock, February 8, but severer shock, March 8 — 1750
Adrianople nearly overwhelmed — 1752
At Cairo; half of the houses and 40,000 persons swallowed up — 1754
Quito destroyed — 1755
Great earthquake at Lisbon. In about eight minutes most of the houses and upward of 50,000 inhabitants were swallowed up, and whole streets buried. The cities of Coimbra, Oporto, St. Ubes and Braga suffered. In Spain, a large part of Malaga became ruins. One-half of Fez, in Morocco, was destroyed, and more than 12,000 Arabs perished there. About half of the Island of Madeira became waste; and 2,000 houses in the Island of Mytilene, in the Archipelago, were overthrown. This earthquake extended 5,000 miles; even to Scotland — 1755
In Syria, extended over 10,000 square miles; Baalbec destroyed — 1759
At Martinico, 1,600 persons lost their lives — 1767
At Guatemala, which, with 8,000 inhabitants, was swallowed up — 1773
A destructive one at Smyrna — 1778
At Tauris; 15,000 houses thrown down, and multitudes buried — 1780
Messina and other towns in Italy and Sicily overthrown; 40,000 persons perished — 1783
Archindschan wholly destroyed, and 12,000 persons buried in its ruins — 1784
At Borgo di San Sepolcro; many houses and 1,000 persons swallowed up — 1789
Another fatal one in Sicily — 1791
In Naples; Vesuvius overwhelmed the city of Torre del Greco — 1794
In Turkey, where, in three towns, 10,000 persons lost their lives — 1794
The whole country between Santa Fe and Panama destroyed, including Cuzco and Quito, Peru; 40,000 people buried in one second — 1797
At Constantinople, which destroyed the royal palace and many other buildings, and extended into Rumania and Wallachia — 1800
A violent one felt in Holland — 1804
Frosolone, Naples, 6,000 lives lost — 1805
At the Azores; a village of St. Michael's sunk, and a lake of boiling water appeared in its place — 1810
Awful one at Caracas — 1812
Several throughout India; district of Kutch sunk; 2,000 persons buried — 1819
Genoa, Palermo, Rome and many other towns damaged; thousands perished — 1819
Aleppo, Syria, 22,000 lives lost — 1822
One in Calabria and Sicily — 1826
In Spain; Mercia and numerous villages devastated; 6,000 persons perish — 1829
In the Duchy of Parma; no less than forty shocks were experienced at Borgotaro; and at Pontremoli many houses were destroyed — 1834
Calabria; Cosenza and villages destroyed; 1,000 persons buried — 1835
Calabria; 1,000 buried at Rossano, etc. — 1836
In many cities of Southern Syria, by which hundreds of houses were thrown down, and thousands of lives lost — 1836
Martinique; nearly half of Port Royal destroyed; nearly 700 persons killed, and the whole island damaged — 1839
Ternate; the island made a waste, and thousands of lives lost — 1840
Awful and destructive earthquake at Mount Ararat, in one of the districts of Armenia — 1840
Zante, where many persons perished — 1840
At Cape Haytien, Santo Domingo, destroyed nearly two-thirds of the town; between 4,000 and 5,000 lives were lost — 1842
Point à Pitrie, Guadaloupe destroyed — 1843
At Rhodes amd Macri, when a mountain fell in at the latter place, crushing a village, and destroying 600 persons — 1851
At Valparaiso, Chile; 400 houses destroyed — 1851
In South Italy; Melfi in ruins; 14,000 killed — 1851
In Philippine Islands; Manila nearly destroyed — 1852
Thebes, in Greece, nearly destroyed — 1853
St. Salvador, South America, destroyed — 1854
Amasca, and Simoda, Japan, destroyed; Jeddo much injured — 1854
Brusa, in Turkey, nearly destroyed — 1855
Several villages in Central Europe destroyed — 1855
Jeddo nearly destroyed — 1855
Moluccas, nearly 3,000 lives lost — 1856
In the Mediterranean; at Candia, 500 lives lost; Rhodes, 100; and other islands, 150 — 1856
Calabria, about 22,000 lives lost — 1857
Corinth nearly destroyed — 1858
Quito, Ecuador; 5,000 killed; great property loss — 1859
Erzerum, Asia Minor; above 1,000 persons said to have perished — 1859
At San Salvador; many buildings destroyed; no lives lost — 1859
Mendoza, Argentina; about two-thirds of the city and 7,000 lives lost — 1861
Greece; North Morea and Corinth injured — 1861
Peru and Ecuador; 25,000 lives lost — 1861
Guatemala; 150 buildings destroyed — 1862
Manila, P. I., great destruction of property — 1863
Cities of Arequipa, Iquique, Tacna and Chincha, and many small towns in Peru and Ecuador destroyed; about 25,000 perished — 1868
Cities in Guatemala destroyed — 1874
Manila; Philippine Islands, 3,000 lives lost — 1880
Java and neighboring isles desolated — 1883
Several Spanish towns destroyed — 1884
Province of Granada, Spain; 690 perished — 1885
Charleston, S. C., 41 lives and $5,000,000 worth of property lost — 1886
Severe shock in southern Europe, especially in the Riviera; estimated that 2,000 perished — 1887
Japan; 4,000 perished, 50,000 houses destroyed — 1891
Islands of Zante and Stromboli; great loss of lives and property at Zante — 1893
Japan; 27,000 lives lost, 60,000 homeless — 1896
Assam, India; many killed — 1897
Monte Pelée, Martinique, W. I.; 30,000 lives lost — 1902
Northern India, over 1,600,000 square miles affected, 20,000 lives lost — 1905
Chile, especially Valpariso and Santiago; 5,000 lives and $100,000,000 property lost — 1906
Severe shocks in California, San Francisco wrecked. Greatest fire in history, lasting two days. $400,000,000 property destroyed; 300,000 homeless; April 18 — 1906
Large part of Kingston, Jamaica, destroyed — 1907
Turkestan; 14,000 lives lost — 1907
Sicily and Calabria; Messina and Reggio destroyed; 96,000 dead; 1,000,000 homeless — 1908
Cartago, Costa Rica; 1,500 lives lost — 1910
Guadalajara, Mexico; great part of city destroyed — 1912
Turkey; 3,000 lives lost, 6,000 persons injured, 40,000 homeless — 1912
Sakura, Japan; 43 killed, 855 houses destroyed — 1914
Sicily; 200 killed, 1,000 injured — 1914
Central Italy; 29,978 killed. Avezzana destroyed, 372 communes damaged — 1915
Guatemala, Guatemala; 2,500 killed — 1917
Porto Rico; 100 killed — 1919
Java, Dutch East Indies; Mt. Kalut, 5,000 killed — 1919
San Salvador, Salvador; nearly all the city's houses destroyed — 1919
Mugello Valley, Italy; 100 killed — 1919
Giarre and other towns in Sicily destroyed — 1920
Kansu province, China; 100,000 killed; 10 cities destroyed — 1920
Mendoza province, Argentina; 100 killed in city of La Valle — 1920
Orizaba district, Mexico; 3,000 killed — 1920
Southern Albania; 42 killed — 1920
Elbasan, Albania; 14 killed — 1921
Chile; 900 killed. Copiapo partly destroyed; Oralle, Coquimbo, Vallena, Chanaral and San Fernando damaged — 1922
Chile; 1,800 killed — 1923
Japan, Tokio and Yokohama destroyed. Dead 200,000; injured 125,000; missing 235,000; homeless 2,000,000. 634,000 houses destroyed, including the Library of the Imperial University, with library of 700,000 volumes. Money loss of $933,000,000. — 1923
San José, Costa Rica, partly destroyed — 1924
Santa Barbara, California, partly destroyed — 1925
Island of Rhodes, in the Aegean Sea, 200 houses destroyed — 1926
Managua and Leon, Nicaragua, partly destroyed — 1926
Central Japan, 2,500 killed — 1927
Palestine and Transjordania, hundreds killed — 1927
Namangan, Turkestan, 106 casualties; 4,850 houses destroyed — 1927
Messina, Greece; 200 houses destroyed — 1927
Lanchau, District of Kansu, China; 500,000 killed — 1927
Philippopolis, Papazli and Tchirpan in Bulgaria; 153 killed; enormous property loss — 1928
Southern Italy, centering in the village of Melfi; approximately 3,000 killed; over 4,000 injured — 1930
Ancona, Senigallia and Pesaro in Italy; 21 killed; property loss, $15,000,000 — 1930
Managua in Nicaragua; 2,000 killed; $20,000,000 property loss — 1931

ECHO

The repetition of a sound in the air, caused by reflection from an obstacle is an echo. A very sharp, quick sound can produce an echo when reflecting surface is fifty-five feet distant. At 112.5 feet monosyllables can be reflected; at twice that distance dissyllables; at three times as far off trisyllables; and so on for greater distances.

EDIBLE BIRDS' NESTS

Edible nests are made by various species of small swifts inhabiting the mainland of Asia, the Philippine Islands, numerous islands in the Indian Ocean, and a few islands in the Pacific. These nests, which are usually attached to cliffs or the walls of caves, are composed almost entirely of the dried mucus secreted by the salivary glands of the birds. They are eagerly sought by epicures in China and several other countries as the chief ingredient of a kind of soup. Their value depends largely on their color and purity, for frequently they are mixed with feathers and other foreign substances. The dry glutinous substance resembles isinglass.

EXPECTATION OF LIFE

The following table is based on the records of births and deaths in the registration area of the United States. The figures show a lowering of the death rate over records of earlier years up to the age of thirty-seven, after that age little improvement in mortality rates was recorded.

Expectation of Life for Specified Ages in 1926, 1927 and 1928, United States Registration States as of 1920, Total Persons*.

Age	1928	1927	1926
0	58.18	59.10	57.74
1	60.52	61.48	60.51
2	60.17	61.07	60.32
3	59.49	60.38	59.69
4	58.71	59.60	58.94
5	57.88	58.78	58.12
6	57.04	57.93	57.28
7	56.17	57.06	56.42
12	51.63	52.52	51.87
17	47.19	48.07	47.42
22	43.01	43.86	43.27
27	38.89	39.71	39.16
32	34.74	35.56	35.03
37	30.67	31.47	30.97
42	26.74	27.51	27.04
47	22.96	23.68	23.24
52	19.32	19.99	19.57
57	15.95	16.57	16.17
62	12.82	13.39	13.00
67	10.06	10.60	10.23
72	7.82	8.33	7.95
77	5.93	6.36	5.96
82	4.44	4.82	4.45
87	3.34	3.66	3.38
92	2.51	2.76	2.55
97	2.07	2.17	2.10
102	1.65	1.69	1.68

*Both sexes, white and colored population.

EXPLOSIVES

While the early uses of explosives were mainly those of warfare, they have many modern industrial uses also. In mining, rock blasting, uprooting of tree stumps and in destroying ice and other barriers that threaten safety, explosives do the work of hundreds of men, and do it quickly. The chief explosives are:

(1) Mixtures of a combustible but non-explosive material with an oxidizing agent, especially a nitrate and a chlorate, as in ordinary gunpowder and blasting powders. The usual formula for gunpowder is 70 to 80 per cent of saltpeter with 20 to 30 per cent of charcoal and sulphur.

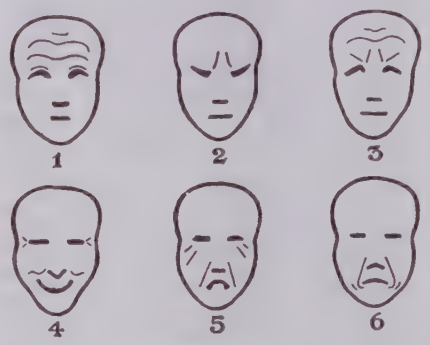
(2) Cotton soaked in a mixture of strong nitric and sulphuric acids forms guncotton. This, mixed with other ingredients, notably nitroglycerin, makes the smokeless powder that has so largely superseded gunpowder for use in firearms.

(3) Nitroglycerin absorbed in kiselguhr, sawdust, charcoal or other porous material to form dynamite. Dynamites containing a nitro substitution product or mixture, such as lyddite, capable of taking part in the explosion, are safer than nitroglycerin, being less liable to explode as the result of minor shocks.

(4) Fulminating powders, such as fulminate of mercury, used as detonators. These explosives have practically instantaneous action and are used largely as signals.

(5) Sprengel explosives, named after their inventor, are high explosives formed by mixing, just before use, an oxidizing and a combustible ingredient, neither of which alone is explosive. Among these are rackarock and hellhofite.

Gunpowder, the first explosive in common use, is said to have been invented at an early period by the Chinese, later being taken to Europe, where its use was common in the fourteenth century.



Facial Expressions

With a few lines, the artist has depicted: (1) Astonishment, (2) Reflection, (3) Pain, (4) Mirth, (5) Sorrow, (6) Contempt.

FACIAL EXPRESSION

Facial expression depends on muscular action as well as on the way the face is constructed. The muscles, like the brain and nerves, are developed by exercise. Character shows in the face, for thoughts influence the muscles into characteristic action. Muscles that draw up the corners of the mouth make for a happy expression; a drooping mouth shows temper or discouragement, as does also a furrowed brow. Controlling the thoughts helps the muscles express the character one desires to have, but this works the other way in some degree, and people who cultivate a pleasant expression find it easier to carry thoughts of a pleasant nature. Try to smile and still keep gloomy thoughts and it will be found that the muscles influence thought in no little degree.

FIRE

When the union of oxygen with some other element takes place slowly, heat is made, but no fire or light is visible; when the union takes place quickly, both heat is felt and fire or flame is seen. When iron rusts it is the same kind of burning as when wood blazes in the fire; but the oxygen of the air unites with the iron so slowly that the heat is not enough to be felt. If the union be made to take place quickly, heat will be felt and light will be seen. When the nails on the heel of a shoe strike a stone, one often sees a spark fly. This is burning iron. The iron nail in the heel of the shoe strikes the stone, a bit of it is knocked off, and heat enough is made by the blow to cause the iron to unite with the oxygen of the air, and thus it may be seen to burn. A piece of iron or steel may easily be heated enough to make it burn in a jar of oxygen, and a most brilliant light will be given off by it. When wood or coal is set on fire, it gives out both heat and light; but if it could be given still more oxygen it would burn still brighter. This happens when one blows a fire with the bellows, and this is the reason why it then blazes up and burns more briskly. Some things take fire—that is, unite with oxygen—much more easily than others. When one scratches a match it at once bursts into flame.

The match has a little phosphorous on the end, which unites so readily with oxygen that the phosphorous has usually to be kept in water to prevent burning. The phosphorous on the end of the match is mixed with glue to prevent it from taking fire; but when the match is scratched on any rough surface, enough heat is caused for the phosphorous to unite quickly with the oxygen of the air and the top of the match bursts into flame.

Wood and coal have not so great a liking for oxygen as phosphorus, and it requires much more heat to make them ignite.

FIRES, GREAT AND HISTORIC

Fire has cost the world many beautiful buildings and historic records. Forest fires each year kill thousands of fine trees. In the United States the annual loss of human life by fire is about 15,000. The following list notes only the great fires since the earliest Christian times.

Rome, Italy, A. D. 64. Conflicting data on disaster.
London, England, Sept. 2-6, 1666. 89 churches, 13,200 houses destroyed; 400 streets laid waste; 200,000 persons homeless. Ruins covered 436 acres.
London, England, 1794. 650 houses destroyed, $5,000,000 loss.
Richmond, Va., Dec. 26, 1811. Governor and many leading citizens perished.
Moscow, Russia, 1812. The famous firing of the city by the Russians at the approach of Napoleon I; 12,000 houses burned, also palaces and churches; $150,000,000 loss.
New York, N. Y., Dec. 16, 1835. 600 buildings; loss $20,000,000.
Washington, D. C., Dec. 15, 1836. General post-office and patent office destroyed, with 10,000 valuable models, drawings, etc.
Petrograd, Russia, 1836. Lehman's Theater; 700 people burned.
New York, N. Y., Sept. 6, 1839. $10,000,000 worth of property lost.
Hamburg, Germany, 1842. $35,000,000 loss.
Canton, China, 1845. Fire in theater; 1,670 lives lost.
Pittsburgh, Pa., April 10, 1845. 1,000 buildings; loss, $6,000,000.
Quebec, Canada, 1846. 200 lives lost in theater.
Petrograd, Russia, 1847. Carlsruhe theater; 200 lives lost.
Philadelphia, Pa., July 9, 1850. 400 buildings; loss, $1,500,000; 39 persons killed.
St. Louis, Mo., May 4, 1851. Large proportion of the city burned; loss, $15,000,000.
San Francisco, Cal., May 3-5, 1851. 2,500 buildings; loss, $3,500,000.
Washington, D. C., Dec. 24, 1851. Congressional library, 35,000 volumes, with works of art burned.
London, England, 1861. Fire in Tooley Street; $10,000,000 loss.

Santiago, Spain, Dec. 8, 1863. A fire in the church of the Campania; 2,000 persons killed, mostly women.
Charleston, S. C., Feb. 17, 1865. Almost totally destroyed, with large quantities of naval and military stores.
Richmond, Va., April 2 and 3, 1865. Great part destroyed by fire at time of Confederate evacuation.
Portland, Me., July 4, 1866. Almost entirely destroyed; loss, $15,000,000.
Constantinople, Turkey, 1870. 7,000 buildings burned; loss, $25,000,000.
Shanghai, China, 1871. Fire in theater. 120 lives lost.
Chicago, Ill., Oct. 8-9, 1871. Three and one-half square miles laid waste; 17,450 buildings destroyed; 200 persons killed; 98,500 made homeless; loss over $200,000,000.
Michigan and Wisconsin, Oct. 8-14, 1871. Great forest fires; 2,000 lives lost.
Boston, Mass., Nov. 9-11, 1872. 800 buildings; loss, $73,000,000; 15 killed.
Trenton, N. J., 1872. Fire in theater; 600 lives lost.
Chicago, Ill., July 14, 1874. Another great fire; loss, $4,000,000.
Fall River, Mass., Sept. 19, 1874. Great factory fires; 60 persons killed.
St. John, N. B., June 20, 1877. Loss, $12,500,000.
Brooklyn, N. Y., Dec. 5, 1876. Theater burned, 300 lives lost.
Vienna, Austria, 1881. Ring Theater; 640 lives lost.
Berdichev, Russia, 1883. Theater fire; 268 lives lost.
Exeter, England, 1887. Theater fire; 200 lives lost.
Paris, France, 1887. Opéra Comique; 100 lives lost.
Oporto, Portugal, 1888. Fire in theater; 200 lives lost.
Seattle and Spokane, Wash., 1889. About $10,000,000 each.
Minnesota, 1894. Forest fires, $25,000,000 damage; 418 lives lost.
Hoboken, N. J., 1900. $4,627,000 loss; 215 lives lost.
Hull and Ottawa, Canada, 1900. $10,000,000 loss; 18,000 homes.
Jacksonville, Fla., May 3, 1901. Property loss $10,000,000.
Chicago, Ill., Iroquois Theater, Dec. 30, 1903. Entailed a loss of 639 lives.
Baltimore, Md., Feb. 7-8, 1904. Financial loss, $85,000,000.
Rochester, N. Y., Feb. 26, 1904. Fire in business center; loss, $2,700,000.
Toronto, Canada, April 9, 1904. Destruction in business district; loss, $12,000,000.
San Francisco, Cal., April 18-19, 1906. Fire and earthquake (see earthquakes); loss, $400,000,000.
Iloilo, P. I., April 19, 1907. 20,000 homeless.
Coney Island, N. Y., July 28, 1907. Loss, $1,500,000.
Boyerstown, Pa., January 13, 1908. 25 persons burned in a theater.
North Collinwood, Cleveland, Ohio, 1908. 167 children burned in a public school.
Chelsea, Mass., April 12, 1908. Loss, $6,000,000.
Kootenay Valley, B. C., Aug. 4, 1908. Forest fires burned three towns and $6,000,000 worth of property.
New Orleans, La., Aug. 30, 1908. Loss, $1,500,000.
Acapulco, Mexico, 1909. Flores Theater; 250 lives lost.
Albany, N. Y., 1911. State Capitol Bldg.; $1,500,000 loss.
Coney Island, N. Y., 1911. Amusement Park; $2,725,000 loss.
Porcupine District, Ont., 1911. Mining property, lumber mills, etc., $3,500,000 loss.
Houston, Tex., 1912. Business district; $4,500,000 loss.
New York, N. Y., 1912. Equitable Bldg.; $3,000,000 loss.
Salem, Mass., 1914. 1,700 buildings destroyed; $14,000,000 loss.
Jersey City, N. J., 1916. Railroad terminal warehouses and steamer; $11,000,000 loss.
New York Harbor, N. Y., 1916. Black Tom Island; $11,000,000 loss.
Ottawa, Can., 1916. Parliament Bldgs.; $3,000,000 loss.
Halifax, N. S., 1917. 1,500 killed. Explosion of war materials and fire; 20,000 homeless; 4,000 injured; $50,000,000 loss.
Kingsland, N. J., 1917. Munition factory; $12,000,000 loss.
Minnesota, 1918. Forest fires; $35,000,000 loss.
Morgan Station, N. J., 1918. Munition plant; $20,000,000 loss.
St. Louis, Mo., 1918. Government warehouse; $3,000,000 loss.
Minnesota and Wisconsin, 1918. Forest fires; 1,000 dead; $100,000,000 property loss.
Long Island, N. Y., 1919. Oil works and other plants; $4,250,000 loss.
Savannah, Ga., 1919. Fertilizer factory, cotton and railroad terminals; $4,000,000 loss.
Galveston, Tex., 1920. Morgan line piers and warehouses; $3,250,000 loss.
Old Point Comfort, Va., 1920. Chamberlain Hotel; $2,000,000 loss.
Hoboken, N. J., 1921. 4 piers, 20 lighters; $6,000,000 loss.
Tokyo, Japan, 1921. 1,000 houses in residence district; $12,500,000 loss.
Smyrna, Asia Minor, 1922. Great loss of life. City almost completely destroyed. 100,000 homeless; $12,500,000 loss.
Berkeley, Cal., 1923. 600 residences covering 35 blocks; $5,000,000 loss.
Mexicali, Mexico, 1923. 30 killed. Fire started in theater; $5,000,000 loss.
Japan, 1923, with earthquakes, houses destroyed by fire, 447,128.
Jersey City, N. J., 1924. $8,000,000 loss on waterfront.
Lake Denmark, N. J., 1926. 21 killed, 80 buildings wrecked and $85,000,000 property and ammunition destroyed by explosions and fires when lightning struck navy munition reservations.
Turkey, 1928. 60 buildings burned at Brusa; 100 buildings at Kutaia.
Hamburg, Germany, 1929. North German Lloyd line damaged by $3,000,000 fire.
Tatavia, Turkey, 1929. 400 houses destroyed, many dead.
Igolkmo, Russia, 1929. Film theater; 114 dead.
Cleveland, Ohio, 1929. Clinic; 123 dead.

FLAG, UNITED STATES

On June 14, 1777, the United States Congress passed a resolution declaring "that the flag of the thirteen United States be stripes alternate red and white; that the Union be thirteen stars, white in a blue field, representing the new constellation." In 1794, Congress decreed that after May 1, 1795, "the flag of the United States be fifteen stripes, alternate red and white, and that the Union be fifteen stars white in a blue field." This change was made to mark the admission of Vermont and Kentucky into the Union. The stars and stripes were then equal and a star and stripe were to be added with the admission of each new state. It was realized, however, that the addition of a stripe for each new state would soon render the flag too large, and a resolution was accordingly passed by Congress, April 4, 1818, reducing the number of stripes to thirteen—representing the original Union—and making the stars twenty in number. It was furthermore enacted that a new star should be added for each new state admitted into the Union. The flag now contains forty-eight stars, corresponding to the forty-eight states.



The First Flag

At the request of a committee consisting of George Washington, George Ross and Robert Morris, Betsy Ross undertook to make the first American flag. She suggested that the stars be five-pointed instead of six-pointed, and her recommendation was accepted. The American flag today still has five-pointed stars, although the number has increased from the original thirteen to forty-eight.

According to tradition the first flag, known as the "Stars and Stripes," was made by Mrs. Betsy Ross of Philadelphia, about whom succeeding years have thrown a glamour of patriotic romance.

FLAG ETIQUETTE

There is no federal law now in force concerning the manner of displaying, hanging or saluting the United States flag, but there are certain fundamental rules that are generally accepted.

The flag should be displayed only between sunrise and sunset, or between such hours as may be designated by proper authority. It should be displayed on national and state holidays and on historic and special occasions.

The flag should always be hung with the union, or stars, at the top. The only time that the flag should be displayed with the union down is as a distress signal by a vessel at sea.



Salute to the Flag

The American national emblem now carries forty-eight stars.

When carried in procession the flag of the United States should be carried on the marching right, or when there is a line of other flags, that of the United States should be borne in front of the center of that line.

International usage forbids the display of the flag of one nation above that of any other nation in times of peace. When flags of two or more nations are displayed they should be flown from separate staffs or from separate halyards of the same size and on the same level. When hung from buildings or over a street, the flag of the United States should be hung vertically with the union to the north in an east-and-west street, and to the east in a north-and-south street.

When flags of states, or cities or other special flags are flown with that of the United States, the national flag must always be raised first and be at the peak.

It is considered better form to display the flag hung flat and not festooned. For this purpose and for covering a speaker's desk or draping the front of a table or platform bunting of national colors should be used, with the blue stripe at the top, since the blue union of the flag is always above.

When flown at half-mast, the flag is hoisted to the peak for an instant, then lowered to half-mast. Before lowering for the night, the flag is again run up to the top of the staff for a moment. On Memorial Day the flag is displayed at half staff from sunrise until noon, and at full staff from noon until sunset.

When the national flag is used on a bier or casket at a military funeral, the union is placed at the head of the casket and over the left shoulder of the soldier, and the casket is carried foot first. The flag must not be allowed to touch the ground nor is it lowered into the grave.

FLOODS

Since earliest times floods have destroyed man and his possessions. Formerly endured as acts of Providence, latter day science has learned in considerable degree to prevent these disasters, although their havoc is still great. The following list gives brief information on many of the world's great water disasters, some of which came together with tornado or earthquakes.

GREAT FLOODS

Location	*Effect*	*Year*
Zealand, Denmark	1,300 drowned	1717
Yorkshire, England	Great property loss	1771
Navarre, France	2,000 persons drowned	1787
Dublin, Ireland	River Liffey overflowed, causing great property damage	1802
Lorca, Commune of Murcia, Spain	Floods caused great property damage	1802
Hungary	Overflow of Danube River destroyed 24 villages	1811
Austria, Hungary, Poland	Great loss of life and property; 4,000 persons said to have been lost	1813
Prussian Silesia	6,000 drowned; ruin of Macdonald's French army accelerated by the flood	1813
Germany	Great loss of life and property	1816
England	5,000 acres flooded in the Fen country	1819
St. Petersburg and Kronstadt, Russia	Neva River flood took 10,000 lives	1824
Danzig	Vistula River broke its dikes, many lives lost, much property destroyed	1829
Vienna, Austria	50,000 houses under water	1830
France	Over 600 houses swept away at Avignon, LaGuillotière, Vaise, Marseille, Nimes	1840
France	Floods in central and western France destroyed property valued at over 100,000,000 francs	1846
New Orleans, La.	1,600 houses flooded	1849
Sheffield, England	Bradfield reservoir burst, drowning about 250 people	1864
England	Yorkshire, Lancashire and Derbyshire, farms were destroyed, mines inundated, mills demolished	1866
Italy	Thousands of people made homeless	1872
Mill River valley, near Northampton, Mass.	Several villages destroyed, 144 people perished	1874
Eureka, Nev.	30 people drowned	1874
Pennsylvania	220 persons drowned in western part of state	1874
Toulouse, France	1,000 lives lost	1875
Szegedin, Hungary	77 persons drowned, town nearly destroyed, only 331 houses out of 6,566 remained	1879
Commune of Murcia, Spain	1,000 lives lost; 2,000 houses wrecked	1879
Iowa, Kans., Minn., Mo.	Much property damage	1881
Ohio and Mississippi valleys	138 lives lost; $15,000,000 property loss	1882
Ohio, Pa., Ky.	Heavy floods, especially destructive at Cincinnati	1883
Java and Sumatra	Tidal wave as result of earthquake, 30,000 killed	1883
Ohio River	15 drowned; 5,000 homeless	1884
Floods in New England, Pa., N. Y.	Great loss of property	1886
Texas	38 lives lost; Galveston suffered great damage from storm and flood	1886
Honan, China	Hwang River overflowed; millions perished	1887
Shantung, China	Yellow River overflowed; great loss of life	1889
Johnstown, Pa.	2,235 persons perished; Johnstown and several small towns swept away as result of dam burst above the city	1889
Consuelga, Spain	1,781 lives lost; town nearly destroyed	1891
Galveston, Tex.	6,000 lives lost; 3,000 buildings wrecked; $30,000,000 property loss	1900
Kansas City, Mo., Mississippi River towns	Many lives lost; great destruction of property	1903
Hepner, Ore.	300 drowned in cloudburst and flood	1903
Hong Kong, China	10,000 drowned	1906
Paris, France	Seine River flood; several persons drowned; $200,000,000 property damage	1910
Mississippi valley	200 drowned; 200,000 homeless; $45,000,000 property damage	1912
Dayton, Ohio	84 drowned; city partly destroyed; $128,000,000 property damage	1913
Japan	Typhoon kills 1,100	1913
Ohio, Ind.	River floods drowned 730 people; destroyed 60,000 buildings; $180,873,000 property damage	1913
China	2,000 drowned, $90,000,000 damage in provinces of Kwangtung, Kwangsi, Kiangsi	1915
States along Gulf of Mexico	300 drowned; $20,000,000 property damage	1915
Shanghai, China	500 drowned; $5,000,000 damage	1915
Cabin Creek valley, W. Va.	100 lives lost; 5,000 homeless; $5,000,000 property loss	1916
South Atlantic coast	50 drowned; $15,000,000 damage	1916
Tientsin, China	15,000 square miles flooded; millions homeless; $50,000,000 damage	1917
Porto Rico	116 lives lost; $3,500,000 property loss	1919
Pueblo, Colo.	120 dead, 140 missing; $20,000,000 property loss	1921
Mississippi valley	20,000 square miles flooded; about 100 dead; 700,000 homeless; property damage over $270,000,000	1927
New England	112 lives lost; property loss over $40,000,000	1927
California	St. Francis dam broke in hills near Los Angeles; over 250 dead; 15,000 homeless	1928
Harriman, Tenn.	20 persons drowned in river flood	1929
Tokyo, Japan	Heavy property loss	1929
Vera Cruz (state), Mexico	Many towns damaged; several hundred drowned; crop losses over $2,000,000	1930

FLOWERS, SYMBOLISM OF

Poetry, tradition and common usage have attached particular meanings to a great many flowers. The Greeks and Romans had an extensive flower language purporting to symbolize thoughts and feelings. During the Middle Ages, chivalry, as well as the Roman Church, revived floral symbolism. Such symbolism is, at best, unauthoritative and contradictory. However, it has been found interesting for sentimental reasons.

Flower	*Meaning*
Amaranth	Immortality
Anemone	Weakness
Apple blossom	Esteem
Aspen	Dread
Buttercup	Prosperity
Calla	Beauty
Camelia, white	Loveliness
Candytuft	Indifference
Cardinal flower	Superiority
Carnation, white	Disdain
China aster	Variety
Clover, four leafed	Be mine; good fortune
Clover, red	Industry
Clover, white	Think of me
Columbine	Folly
Cornflower	Tenderness
Cowslip	Charm of youth
Cyclamen	Indifference
Cypress	Sorrow
Daisy	Innocence
Daisy, colored	Beauty
Dandelion	Coquetry, flirtation
Everlasting	Eternal love
Fern	Fascination, sincerity
Forget-me-not	Sincere love
Foxglove	Deceit
Fuchsia, scarlet	Taste
Geranium, horseshoe	Stupidity
Geranium, rose	Preference
Geranium, scarlet	Consolation
Goldenrod	Encouragement
Heather	Lonesomeness
Heather, white	Good luck
Heliotrope	Devotion
Hepatica	Wrath
Hollyhock	Ambition
Honeysuckle	Friendliness
Hyacinth, purple	Sorrow
Hyacinth, white	Loveliness
Ivy	Friendship, trustfulness
Jasmine, white	Amiability
Laurel	Glory
Lilac	Discernment
Lily, white	Purity
Lily, yellow	Gayety
Lily of the valley	Unconscious sweetness
Marigold	Disdain
Myrtle	Love
Narcissus	Pride
Oak leaf	Love of country
Olive branch	Peace
Orange blossoms	Marriage
Oxalis	Sorrow
Palm leaf	Conquest
Pansy	Thoughts
Poppy, white	Forgetfulness
Passion flower	Faith
Peony	Anger
Primrose	Inconstancy
Rose	Love
Rose, damask	Beauty ever new
Rose, white	Worthiness
Rose, yellow	Jealousy
Rosebud	Confession of love
Rosemary	Fond memory
Rue	Disgust
Scotch thistle	Vengeance
Shamrock	Faithfulness
Smilax	Constancy
Snowdrop	True friendship
Sweet pea	Departure
Sweet william	Chivalry
Thistle	Sternness
Tuberose	Dangerous pleasures
Tulip, yellow	Despairing affection
Violet	Modesty
Wallflower	Patient affection
Water lily	Simplicity, purity of heart

FROST

Frost consists of crystals of frozen dew. When the water vapor in the air is so cool that it cannot condense or turn to water without going below the freezing point (32 degrees Fahrenheit), it will fall to the earth in the shape of frost crystals instead of dew. This is called "hoar frost," and sometimes "white frost." This is different from freezing, commonly called "frost," which is simply the hardening of water and moisture from the cold of winter. The frost work on the inside of window panes in warm rooms in cold weather, which sometimes takes the form of ferns or feathers of ice, is also a freezing and not a true frost. Moisture from the warm air of the room gathers on the glass, just as dew falls on grass, and is cooled and frozen there. But true frost is not frozen dew, that is, moisture which falls as dew and freezes afterward, but moisture which falls already formed in ice crystals. On cloudy nights the ground cools more slowly than when it is clear and frost is less probable. Farmers watch the sky closely in autumn. Frost kills many growing crops. This is because the freezing of the juice, which is largely water, in the plant, causes the bursting of the plant cells.

GARDENS OF THE WORLD, POPULAR

Most of the famous "gardens" were particularly fertile areas, but the Hanging Gardens of Babylon, one of the Seven Wonders of the Ancient World, were terraced to 300 feet in height in the palace grounds of King Nebuchadnezzar. (See **Seven Wonders of the Ancient World.**)

Garden of Eden. (1) First abode of man, supposed to be located near the city of Babylon. (2) A name often applied to Eden Park, Cincinnati, Ohio.

Garden of England. The Isle of Wight, and the counties of Worcestershire and Kent have all been so named.

Garden of Erin. Carlow in Leinster, Ireland.

Garden of Europe. Italy; on account of its healthful climate, picturesque scenery, astonishing fertility, and the great variety of its agricultural products.

Garden of France. The District of Indreet-Loire, noted for its rich soil and lovely landscapes.

Garden of Gethsemane. East of Jerusalem, near the Brook Kedron.

Garden of Helvetia. Name given to Thurgau, Switzerland.

Garden of Hesperides. In the western part of the mythological world.

Garden of India. Oude.

Garden of Italy. The Island of Sicily, which bears the same relation to Italy, in respect of beauty and fertility, that Italy bears to the rest of Europe.

Garden of Kentucky. Bourbon County, in that State.

Garden of Scotland. Morayshire has been so named.

Garden of Spain. Andalusia. It is fertile to the highest degree.

Garden of South Wales. The southern division of Glamorganshire.

Garden of the West. A name sometimes applied to the whole of that vast arable district west of the Mississippi, on account of its generous yield of grain, but more particularly applied to Kansas.

Garden of the World. An appellation often bestowed on that vast expanse of fertile country watered by the Mississippi and its tributaries.

Garden of Argentina. Tucuman, a province of Argentina.

Garden of the East. Ceylon and Burma. Both so called. Ceylon is also called "The Resplendent"; the "Jewel of the Eastern Sea"; the "Gem of Paradise." Its climate and productions are quite unrivaled.

Garden of the Gods. Near Colorado Springs, Colorado. Famous rock formations: Cathedral Spires, Balanced Rock, Siamese Twins, Seal and the Bear, which names the rocks resemble, were caused by the action of wind and water on the red and white sandstone.

GAS

The common gas which we burn for heat, power and light is obtained from coal. It can be easily made by breaking a piece of bituminous or soft coal into bits, filling the bowl of a tobacco pipe with them, and covering the mouth with moist clay. When the clay is well dried the bowl of the pipe should be put into the fire, where it will heat red hot. In a short time yellow smoke will issue from the stem of the pipe, which when lighted will burn with a bright flame.

This smoke is coal gas, but it is not pure. If the end of the pipe stem be put under water, the gas will rise through the water in bubbles. These bubbles of gas can be collected in a bottle or other vessel in a very simple way. Fill the bottle with water and turn it upside down in a bowl of water. The water will not run out of the bottle, because the pressure of the air on the water in the bowl will keep it in its place. If now the end of the pipe stem be put under the mouth of the bottle, the bubbles of gas will ascend into it and gradually push the water down; if there be gas enough in the pipe bowl, it will fill the bottle, taking the place of the water. Thus will have been obtained a bottle of gas, which will burn when lighted. Much of the gas used in cities and towns is made and collected in the same way, except that the coal is heated in great brick or iron ovens, and the gas is collected in immense iron gasholders.

If now the clay be removed from the pipe, some coke will be found in the bowl. A part only of the carbon went off with all the hydrogen to make the gas and the rest remained in the form of coke. When we burn coal in the open air we get from it flame and ashes, but when it is consumed in tight ovens, gas and coke are obtained. In making gas the coal is not really burned, but distilled, and the gas passes from the coal without producing any flame. Several ovens, or retorts, for distilling coal are usually built together, so that they may all be heated by one furnace, for there must be a fire outside the retort to heat the coal inside. When the retorts are filled with coal, the doors are closed tightly and the coal inside is heated red hot, when it gives off air, steam, tar, ammonia and gas. All these pass off by means of a great pipe at the back of the retorts; the tar and ammonia run off into cisterns, and the hot gas goes into coolers. When cold, it is purified by passing over lime, which takes up all the acids in it, and lastly it is put into the gas tanks, whence it is piped to the buildings where it is consumed.

GEYSERS

Intermittent hot springs that force their water flow up into the air, either at regular or irregular periods, are known as "geysers." They have a basin, usually composed of silica deposited by the water, and an opening, or tube, that leads underground. Geysers are found in various portions of the earth, the most notable specimens being those in the Yellowstone region of the Rocky Mountains and those of the southwestern division of Iceland, about thirty miles from Mount Hekla. Nearly 100 of the latter are said to break out within a circle of two miles. Few of them play longer than five or six minutes at a time, although sometimes they go on for half an hour.

The largest is the Great Geyser. It has a pipe seventy-eight feet in vertical depth, and from eight to ten feet in diameter, but gradually widening as it rises into the basin. The latter is fifty-six feet long by forty-six feet broad, and is lined with an incrustation of silica deposited from the hot water, the process being aided by the alkali soda, which, with minute quanities of various salts, exists in the water. When the geyser is about to act, subterranean noises are heard like the distant firing of cannon, and the earth is slightly shaken; then a column of the liquid element is thrown up to the height of from 90 to 100 feet. Steam after a time makes its way out of the rent, and the fountain ceases to play. Geyser action is produced by the heating of the lower part of the geyser tube, as Professor Tyndall showed.

There are geysers in the Northern Island, New Zealand, as remarkable as those of the Yellowstone Park or of Iceland. Among the most famous geysers in Yellowstone Park is Old Faithful. It erupts regularly at intervals of sixty-five minutes and continues about four and a half minutes, the water thrown to 120 to 170 feet in the air. The Giantess, when in action, is more powerful than Old Faithful, but erupts at intervals of about once a year. The Giant Geyser throws a jet 200 feet high, but erupts at irregular intervals. Castle Geyser is noted for its beautiful white basin.

GIANT'S CAUSEWAY

This remarkable group of basaltic rocks lies on the north coast of County Antrim, Ireland, eight miles east by northeast of Portrush. It consists of a vast number of columns, generally pentagonal or hexagonal. The causeway proper is a low promontory formed of closely packed columns. Altogether there are about 40,000 pillars, fitting into each other most perfectly, and jointed horizontally. Various more or less detached groups are known as the Giant's Loom, Giant's Organ, and the Lady's Fan. East of the causeway proper is the Giant's Amphitheater, a small bay with cliffs 350 feet high, formed in its upper part of two tiers of basaltic columns from sixty to eighty feet in height. Beyond this is Spanish Bay, the scene of the wreck of an armada vessel; and still farther east the noble promontory of Pleaskin Head, 400 feet high, with double tiers of lofty columns separated by a band of ochre. The peculiar columnar structure of the causeway rocks is shown by geologists to result from the contraction in cooling of the lava of which they are composed. The Giant's Causeway derives its name from the legend which ascribes its construction to Finn M'Cool, or Fingal, who bridged the channel between Ireland and Scotland in order that the giants might pass from Antrim to Staffa.

GLACIER

A glacier is a river of ice that slowly descends a mountain side. It commences primarily as a mass of snow, formed above the line of perpetual freezing, and consolidated partly by pressure and partly by the freezing of water infiltered into it from its surface. In the Swiss Alps the glaciers are between twenty and thirty miles long, their greatest breadth two or three miles, and their depth more than 600 feet.

Between Glacier Bay and Kenai Peninsula in Alaska are found some twenty-five active glaciers, the most noted being Muir Glacier, which is over a mile wide and 500 feet high at the point where it reaches the ocean. Malaspina Glacier, four miles wide at the coast and 1,200 square miles in extent, lies on the southern slope of Mount St. Elias.

Why the glacier descends has been a disputed question. Agassiz and Forbes discovered that the glacier, like an ordinary river, moved faster on the surface than below, and faster in the middle than at the sides. Tyndall attributed it chiefly to regelation, that is, to parts of it melting and freezing again. When, in descending a mountainside, the glacier has to force its way through a narrow channel, the brittle ice is crushed and broken, but by virtue of regelation it freezes anew when it has cleared the obstruction. Tyndall imitated the whole process artificially on a small scale, and his is now the accepted explanation of glacier-movement. As a glacier descends, it carries with it stones, which, on its melting, are deposited in a moraine. When these move beneath it, and project from it, the subjacent rocks are polished and scored with parallel furrows, known as striae. When the glacier moves over uneven ground, the ice may develop great cracks, called crevasses. The moving glacier scoops out lakes. If it reaches the sea, it floats off as an iceberg.

GLASSES TOUCHED BEFORE DRINKING

As athletes usually shake hands before the beginning of a contest, in the olden days persons who fought duels paused before their fighting and drank a glass of wine. To make sure that there was no poison in either glass, the habit was formed of pouring some of the wine from each glass into the other, so that if one contestant was poisoned, the other would be, too. This practice still continues, although there is no longer thought of poison, and drink is no longer actually poured from one glass to the other. Merely the act of touching the glasses is sufficient to express friendliness and good will. Thus touching glasses together in drinking, before a conference, is nicknamed "hob-nobbing" because of the material used in that action long ago. The flat part of the open hearth where water and syrup were warmed was called a "hob" and a "nob" was the small table at which people sat when thus engaged. Hobnobbing now refers to any familiar chat.

HAIL

There are two kinds of hail: the small grains, like fine shot, which often fall in winter, but rarely summer, and which generally come before snow; and larger hail, which falls usually in hot weather, and is most severe in extremely hot climates. The first is caused by the freezing of rain drops as they pass in falling through colder air than that from which they started; the second, or common hail, results from the meeting of two currents of air, one very warm and loaded with vapor, the other cold.

It is known that the air is not all of the same heat, but is divided into cold and warm parts or layers, a layer of very cold air much below freezing, often lying between two warm parts. When bodies of warm damp air move upward into one of these layers of cool dry air, the damp air is at once changed into ice, and hail falls. Sometimes the hailstones thus formed are very small, and sometimes many meet and freeze together into large masses.

HALL OF FAME

The Hall of Fame of great Americans, University Heights, New York City, is affiliated with New York University. The funds for the building were given by Mrs. Finley J. Shepard (Helen Gould) in 1900. The structure is a semicircular colonnade containing 150 panels for memorial bronze tablets and busts of famous Americans, native or foreign-born, men and women. No names are considered except of persons deceased at least twenty-five years. Fifty tablets were to be inscribed in 1900, and five at the close of each five-year period thereafter, until the year 2000 A. D., when the quota would be filled. The public was asked to suggest names, but only twenty-nine of those offered were accepted by the judges in 1900, and subsequent elections have not brought the quota to its full limit. Groups of distinguished citizens form the committees to make final selections. The substructure is devoted to a museum of letters, portraits and other memorials of those in the Hall of Fame.

PERSONAGES IN THE HALL OF FAME

NAME	BIRTHPLACE	DATES OF BIRTH AND DEATH	EDUCATION	VOCATION
John Adams	Braintree, Mass.	1735–1826	Harvard	Statesman
John Quincy Adams	Braintree, Mass.	1767–1848	Harvard	Statesman
Louis Agassiz	Motier, Switzerland	1807–1873	University of Munich	Naturalist
John James Audubon	Aux Cayes, Haiti	1785–1851	In France	Ornithologist
George Bancroft	Worcester, Mass.	1800–1891	Harvard	Historian
Henry Ward Beecher	Litchfield, Conn.	1813–1887	Amherst	Preacher, Orator
Daniel Boone	Berks Co., Pa.	1735–1820	Elementary	Explorer
Edwin Booth	Belair, Md.	1833–1893	Self-educated	Actor
Phillips Brooks	Boston, Mass.	1835–1893	Harvard	Preacher
William Cullen Bryant	Cummington, Mass.	1794–1878	Williams College	Poet
William Ellery Channing	Newport, R. I.	1780–1842	Harvard	Preacher, Essayist
Rufus Choate	Ipswich, Mass.	1799–1859	Dartmouth	Jurist
Henry Clay	Hanover Co., Va.	1777–1852	Elementary	Statesman
Samuel Langhorne Clemens (Mark Twain)	Florida, Mo.	1835–1910	Common Schools	Humorist, Writer of Fiction
James Fenimore Cooper	Burlington, N. J.	1789–1851	Yale	Novelist
Peter Cooper	New York City	1791–1883	Elementary	Philanthropist
Charlotte Saunders Cushman	Boston, Mass.	1816–1876	Private Musical	Actress
James Buchanan Eads	Lawrenceburg, Ind.	1820–1887	Self-educated	Engineer
Jonathan Edwards	East Windsor, Conn.	1703–1758	Yale	Theologian, Preacher
Ralph Waldo Emerson	Boston, Mass.	1803–1882	Harvard	Essayist, Philosopher
David Glasgow Farragut	Near Knoxville, Tenn.	1801–1870	United States Navy	Admiral
Benjamin Franklin	Boston, Mass.	1706–1790	Elementary	Statesman, Writer
Robert Fulton	Lancaster Co., Pa.	1765–1815	Elementary	Inventor
Ulysses Simpson Grant	Point Pleasant, Ohio	1822–1885	West Point	Soldier, Statesman
Asa Gray	Paris, N. Y.	1810–1888	Fairfield Academy	Botanist
Alexander Hamilton	Charles Town, Nevis, W. I.	1757–1804	Columbia	Statesman
Nathaniel Hawthorne	Salem, Mass.	1804–1864	Bowdoin College	Poet, Essayist
Joseph Henry	Albany, N. Y.	1799–1878	Albany Academy	Scientist
Patrick Henry	Hanover Co., Va.	1736–1799	Common Schools	Lawyer
Oliver Wendell Holmes	Cambridge, Mass.	1809–1894	Harvard	Poet, Essayist
Mark Hopkins	Stockbridge, Mass.	1802–1887	Williams College	Educator
Elias Howe	Spencer, Mass.	1819–1867	Elementary	Inventor
Washington Irving	New York City	1783–1859	Academic and Legal	Novelist, Diplomat
Andrew Jackson	Waxhaw Settlement, N. C.	1767–1845	Elementary	Soldier, Statesman
Thomas Jefferson	Shadwell, Va.	1743–1826	William and Mary College	Statesman
John Paul Jones	Kirkcudbrightshire, Scotland	1747–1792	Elementary and Naval	Naval Officer
James Kent	Putnam Co., N. Y.	1763–1847	Yale	Lawyer, Jurist
Robert Edward Lee	Stratford Co., Va.	1807–1870	West Point	Soldier
Abraham Lincoln	Hardin Co., Ky.	1809–1865	Self-educated	Statesman
Henry Wadsworth Longfellow	Portland, Me.	1807–1882	Bowdoin College	Poet
James Russell Lowell	Boston, Mass.	1819–1891	Harvard	Poet, Diplomat
Mary Lyon	Buckland, Mass.	1797–1849	Academic, Private	Educator
James Madison	Port Conway, Va.	1751–1836	Princeton	Statesman
Horace Mann	Franklin, Mass.	1796–1859	Brown University	Educator
John Marshall	Fauquier Co., Va.	1753–1835	Privately	Jurist
Matthew Fontaine Maury	Spottsylvania Co., Va.	1806–1873	Harpeth Academy	Naval Officer, Scientist
Maria Mitchell	Nantucket, Mass.	1818–1889	Privately	Astronomer
James Monroe	Westmoreland Co., Va.	1758–1831	William and Mary College	Statesman
Samuel Finley Breese Morse	Charlestown, Mass.	1791–1872	Yale	Inventor, Artist
William Thomas Green Morton	Charlton, Mass.	1819–1868	Harvard Medical School	Physician
John Lothrop Motley	Dorchester, Mass.	1814–1877	Harvard	Historian, Diplomat
Alice Freeman Palmer	Colesville, N. Y.	1855–1902	University of Michigan	Educator
Francis Parkman	Boston, Mass.	1823–1893	Harvard	Historian
George Peabody	Danvers, Mass.	1795–1869	Self-educated	Merchant, Philanthropist
Edgar Allan Poe	Boston, Mass.	1809–1849	West Point	Poet, Short Story Writer
Augustus Saint-Gaudens	Dublin, Ireland	1848–1907	Beaux Arts	Sculptor
William Tecumseh Sherman	Lancaster, Ohio	1820–1891	West Point	Soldier
Joseph Story	Marblehead, Mass.	1779–1845	Harvard	Jurist, Law Writer
Harriet Beecher Stowe	Litchfield, Conn.	1811–1896	Litchfield Academy	Novelist
Gilbert Charles Stuart	Narragansett, R. I.	1755–1828	London, with West	Portrait Painter
George Washington	Westmoreland Co., Va.	1732–1799	Academic	Soldier, Statesman
Daniel Webster	Salisbury, N. H.	1782–1852	Dartmouth College	Orator, Statesman
James Abbott McNeill Whistler	Lowell, Mass.	1834–1903	Privately and Imperial Art Academy, Leningrad	Painter, Etcher
Walt Whitman	Westhills, L. I., N. Y.	1819–1892	Public Schools	Poet
Eli Whitney	Westboro, Mass.	1765–1825	Yale	Inventor
John Greenleaf Whittier	Haverhill, Mass.	1807–1892	Haverhill Academy	Poet
Emma Willard	Berlin, Conn.	1787–1870	Hartford Academy	Educator
Frances Elizabeth Willard	Churchville, N. Y.	1839–1898	Northwestern Female College	Temperance Reformer
Roger Williams	Wales	1607–1684	Cambridge University, Eng.	Religious Reformer

HALL OF JOURNALISTIC FAME

The University of Illinois dedicated its Hall of Journalistic Fame on Nov. 21, 1930, when it unveiled bronze busts of twelve great newspaper editors who have left their mark on Illinois, national, or world journalism. Among them are the founders of two great press associations: E. W. Scripps, who established the United Press associations, and Melville E. Stone, founder of the Associated Press. Both men were newspaper editors as well as pioneers in establishment of news services, Scripps having founded the Scripps-McRae league of newspapers now the Scripps-Howard newspapers, and the Newspaper Enterprise association. The other men honored were Victor Lawson, of the *Chicago Daily News;* Joseph Medill, editor of the *Chicago Tribune;* Elijah P. Lovejoy, the martyr anti-slavery editor of the *Alton Observer*, who was shot to death by his opponents; William Osborn Davis, for forty years editor of the *Bloomington Pantagraph;* John W. Bailey of the *Bureau County Republican*, who laid the foundation for the largest weekly paper in the world; John W. Clinton, editor of the *Polo Press*, who led that paper to high distinction; David Wright Barkley, who made the *Wayne County Press* the model weekly of southern Illinois; Simeon Francis, editor of the *Springfield Illinois State Journal* during the life of Abraham Lincoln; Henry Clendennin, editor of the Springfield, Illinois, *State Register*, and Henry M. Pindell, diplomat and editor of the *Peoria Transcript.*

It is planned to add one name each year to the roster of famous journalists whose busts will adorn this room.

HANDS, SHAKING

Shaking hands with the right hand started in the days when everyone carried a knife or a sword. In those ancient days it was customary to indicate a friendly feeling by holding out the right hand, thus showing that there was no sword or knife concealed therein for attack.

HARP OF IRELAND

The origin of the harp in the arms of Ireland is said to have been the result of presenting the harp of Brian Boru to Henry the Eighth, who thereupon was induced to change the arms of Ireland by placing on her coins a representation of the relic of her most celebrated native king.

HIGHWAYS, FAMOUS

It is of interest to motorists to know that the highest thoroughfare in the world is Main street, Denver; the narrowest street is the Via Sol, Havana, Cuba, which has a width of forty-seven inches; the shortest is the Rue Ble, in Paris. The dirtiest is that of Tchangsti, Nankin, China; the cleanest is the Via Castile, in Seville, Spain; the most aristocratic is Grosvenor Place, in London; the most beautiful is the Avenue des Champs Elysées, Paris; and the oldest is the Appian Way, built by Julius Caesar in the days of the Romans, and still in use and good repair. Modern highways, such as the Dixie Overland Highway from Savannah, Ga., to San Diego, Cal., the Dixie Highway, from Miami, Fla., to Mackinaw City, Mich., the Yellowstone Trail from Boston, Mass., to Seattle, Wash., and Lincoln Highway that runs between New York and San Francisco, together with a number of others, can well compare with the greatest highways of the world.

HOBSON'S CHOICE

Thomas Hobson, the keeper of a livery stable, operated as a drayman between London and Cambridge in the seventeenth century. Hobson considered that he was treating his customers fairly by insisting that when they hired a horse they must take the one nearest to the door, and it was thus that the phrase "Hobson's choice" came to mean no choice at all.

HOLIDAYS AND FESTIVALS

Each nation has its own holidays, some of which, like Christmas, are celebrated throughout the Christian world, and others that receive only local recognition. Just as the United States celebrates July 4 as its Independence Day, France recognizes July 14, the anniversary of the fall of the Bastille, as its Day of Independence. The following list covers the chief holidays celebrated in the United States and Canada. (See **Legal Holidays,** p. 1066.)

Arbor Day was first celebrated in 1872, when J. Sterling Morton of Nebraska persuaded the legislature of that state to set aside a day for tree planting. Other states adopted the idea and Arbor Day is now widely observed in England, Canada and the United States. A number of states have made it a legal holiday. The date is in April or May in the North, while an earlier date is preferred in the South, Florida celebrating in January. Arbor Day is made the occasion for teaching school children the importance of tree planting and protection and has encouraged the practice of planting millions of trees each year.

Armistice Day, celebrated on November 11, a memorial to the men who fell in the World War. The armistice ending the war was signed November 11, 1918.

Ash Wednesday. In ancient times the Jews placed ashes on their heads and dressed in sackcloth. As early as the eighth century the Catholic Church established Ash Wednesday as the first of the forty-day Lenten period. For the ceremonial, palms that were blessed on Palm Sunday of the previous year are burned into ashes. On Ash Wednesday the priest blesses these ashes; the congregation assembles at church, and upon coming forward, the priest places the ashes on each person's forehead in the form of a cross, at the same time saying in Latin, "Remember, man, that thou art dust and unto dust thou shalt return."

Candlemas or Ground-Hog Day. The ancient Romans burned candles on February 2 in honor of the Goddess Februa. The Catholic Church observes Candlemas Day as the feast of the Purification of the Virgin Mary. On this day candles are blessed for use during the following year, and from this blessing of candles comes the name.

There is a popular superstition that if the ground hog comes up from the ground and sees his shadow on February 2, he will go back and six more weeks of severe winter weather will ensue before he reappears. Hence, February 2 is sometimes called Ground-Hog Day. The Canadians replace the ground hog with a bear in their version of the belief.

Christmas. The anniversary of the birth of Christ has been celebrated by a special church festival since the early centuries of Christianity. The English name is derived from two early English words, "Christes Messe," meaning Christ's Mass. In Germany this feast is called Weihnacht, and the French call it Noël, which means "birthday." In early times the date of Christmas varied in different countries, some churches observing it in December, others in January, April or May. This was due to the absence of historical data as to the exact date of Christ's birth. In the Eastern Church, January 6 was the usual date and still continues to be in the Armenian Church. In the fourth and fifth centuries, December 25 came to be the



Christmas Morning

usual date, but calendar differences still cause variations in the date of celebration.

One reason why December 25 was chosen was probably because this marks the beginning of the great winter solstice festival of the pagan Gauls, Germans and Britons. Pagan festivals were replaced by Christian ones in a number of instances, the old pagan customs and symbols being adapted to the Christian holiday, as in the case of the mistletoe, holly and yule log. During the Middle Ages, Christmas became the most popular of festivals. Churches were decorated and groups gave dramas that told of the early life of Christ. Others sang their tales, and thus the "manger songs" and carols had their origin. In Shakespeare's time Christmas was celebrated for twelve days, during which work stopped and the people spent their time merrymaking and feasting. In 1644 the Puritans caused Parliament to prohibit any festivities whatsoever. They enforced the same ruling in New England. Later the celebrations were renewed, but confined to Christmas Day.

Throughout the Christian world today, people of all faiths observe the Christmas season. This is especially true of children. The exchange of gifts, a custom that dates from medieval days, is universal. In America and England children look for Santa Claus to come in a sleigh drawn by reindeer, climb down the chimneys and fill their stockings which are hung at the fireplace. In Italy the children look to the Urn of Fate for their gifts. In Norway the presents are found hidden throughout the home. In France presents are supposed to be brought by Bonhomme Noël (Father Christmas) and put in wooden shoes placed at the fireside,

the same place the Dutch St. Nicholas puts the gifts. In some Baltic countries the Christ Child is said to bring the remembrances.

Beginning in Germany in the sixteenth century the Christmas tree, frost-covered and adorned with lights, and topped by a golden star, has played an important part at Christmas throughout the Christian world. In Spain and Italy elaborate fireworks are set off. In Scandinavian countries grain is placed on a pole for the birds. In the United States a custom has grown up of placing food outdoors for the birds. Evergreen trees growing in front of homes are frequently adorned with electric lights. A large Christmas tree, preferably a fir, is often placed in the center of a community and crowds gather and sing carols about the lighted tree at night. An important part of Christmas is the songs. The beautiful German Kristlieder and Noël song of the French, bring happiness throughout the whole world. American Christmas songs are noted for their harmony.



On Easter Day
The cross and the Easter lily figure prominently in the celebration of this day.

Columbus Day, celebrating the discovery of America, is celebrated on October 12. Schools and other public institutions are frequently closed on that day.

Dominion Day, celebrated on July 1, is a national holiday in Canada. It commemorates the formation of the Dominion in 1867. By the British North American Act the various parts of continental Canada were united under one federal government on that date.

Easter. The chief Christian festival is that which celebrates the resurrection of Christ. Easter is derived from the name of the Anglo-Saxon goddess of spring, *Eostre*, while the French name for the festival, *Pâques*, is derived from a Greek word that signifies "passing over." Easter is celebrated on the first Sunday after the full moon which follows the vernal equinox, and if that full moon falls on a Sunday, Easter occurs on the Sunday following. A number of the customs commonly observed at Easter, such as the coloring and hunting of Easter eggs, and the legend of the Easter rabbit, are of Norse origin.

Empire Day, also known as Victoria Day, is celebrated in Canada on May 24, to emphasize the unity between the various parts of the British Empire.

Fathers' Day, the third Sunday in June, was first suggested by Mrs. John Bunce Dodd, of Spokane, Wash., who launched the movement to establish this holiday as a tribute to her own father, William J. Smart, a Civil War veteran. While not an established holiday, the day is frequently observed.

Flag Day. On June 14, throughout the United States, this holiday is observed, celebrating the adoption of the Stars and Stripes as our national emblem by the Continental Congress, on June 14, 1777. The custom is to display flags and hold patriotic exercises in schools, where the story and meaning of our flag is explained. (See **Flag, United States.**)

Good Friday is the Friday before Easter and commemorates the Crucifixion of Jesus Christ. Made a legal holiday by the Roman Emperor Constantine in the fourth century, it is observed in a number of countries, and while not a legal holiday in the United States, it is largely observed. Local ruling closes schools, city departments and banks in some cities. The custom of serving hot cross buns dates back to early times.

Halloween is the night of October 31, the eve of All Saints', or All-hallows Day, which is November 1, and is probably a relic of pagan times or of medieval superstitions, as it has nothing whatever to do with the church festival. In England and Scotland it is especially selected as the time for trying spells and divinations in love affairs. The superstitious tradition regarding it is that it is the night of all others when supernatural influences prevail; when spirits of the invisible and visible world walk abroad, for on this mystic evening it was believed that the human spirit was enabled, by the aid of supernatural power, to detach itself from the body and wander through the realms of space. There is a similar superstition in Germany concerning Walpurgis Night—the night preceding the first of May. On this night the German peasants believed that there was a witch festival, or gathering of evil spirits, on the summit of the Brocken in the Harz Mountains, and that the malign influence of this convocation was to be felt all over the surrounding country. It was an old custom, and still observed in some places, to light great bonfires of straw or brush on that night to drive away the spirits of darkness supposed to be hovering in the air. Considering that All Saints' Day was originally kept on May 1, there would appear to be but little doubt that All-hallows Eve and Walpurgis Night have a common origin, which dates back to the earliest belief in a personal and all-powerful Evil One—the Chaldean's Power of Darkness.

Independence Day. A national holiday in the United States. On this, the greatest of United States holidays, is celebrated the birth of the American Republic. On July 4, 1776, Congress adopted the Declaration of Independence.

Labor Day. In 1882 the Knights of Labor celebrated improved labor conditions on the first Monday in September. Enthusiasm gradually developed concerning the plan. Colorado, in 1887, declared this day a legal holiday. Canada, and almost all states of the United States now observe this holiday. Labor Day in Europe is the first day of May.

Lincoln's Birthday, a legal holiday in many of the states, is celebrated on February 12 with patriotic exercises.

May Day was originated by the ancient Romans in honor of Flora, Goddess of Flowers. In medieval times, German, French and English youths, on the first day of May went through the countryside gathering flowers. They then selected a young girl and crowned her "Queen of the May." A maypole was then erected and covered with flowers. Merrymaking and dancing followed.

About 1890, European labor organizations selected May 1 as the occasion for celebrating improved labor conditions, much as Labor Day is observed in America.

Memorial Day or Decoration Day. Southern women first started the practice of placing early spring flowers on the graves of their dead. This beautiful custom gradually spread, until General John A. Logan, Commander in Chief of the Grand Army of the Republic, in 1868, named May 30 on which to beautify graves of soldiers.

This date has been made a legal holiday in most of the states for honoring dead American soldiers. Alabama, Georgia, Florida and Mississippi celebrate April 26, while the Carolinas observe May 10.

Mardi Gras. Mardi Gras (literally, "fat Tuesday") is the festival on Shrove Tuesday preceding the first day of Lent, or Ash Wednesday. Mardi Gras is a day of pleasure in most Roman Catholic countries. It is the carnival of the Italians, the Mardi Gras of the French, and the Pancake Tuesday of former times in England. Most of the distinctive ceremonies now annually performed in New Orleans were originally introduced by the French population as early as 1827. The day is a legal holiday, and the entire city of New Orleans is for the time ostensibly placed under the control of the great Rex, king of the carnival. There are two principal pageants. The first, in the daytime, is the escort of the beloved Rex, Lord of Misrule, through his favorite city; the other, or night pageant, is known as the Mystic Krewe of Comus. This has a character altogether unique, especially in the presentation at night of tableaux on floats in the streets and also the carnival ball. The first display was in 1857. On Twelfth Night, January 6, the Twelfth Night Revelers have a display analogous to the Mardi Gras, but more exclusively burlesque, in which they satirize the follies of the age. The public carnival season opens with Momus' appearance the Thursday before Mardi Gras.

Mothers' Day. In 1907, Miss Anna Jarvis, of Philadelphia, urged that on the second Sunday of each May a carnation be worn in honor of one's mother. The day was first observed in Philadelphia, May 10, 1908, and is now widely celebrated. In England, Mothers' Day was first observed in 1913, although there already existed an ancient rural custom of visiting one's parents on Mothering Sunday in Mid-Lent. For living mothers a carnation of any color may be worn; for a mother not living the flower should be white. Remembrances are now also presented to mothers on that day.

New Year's Day. In France, Scotland and some other European countries, China,

Japan and the Orient, this first day of the new year is considered a greater holiday and celebrated more elaborately than Christmas. It is one of the oldest and most universal holidays throughout the civilized world. The celebrations are different in different parts of the world. In Japan and China, gifts are exchanged, and there is much merrymaking. In America, New Year's Eve and New Year's Day are given over to social entertainment and visiting. At twelve o'clock midnight or New Year's Eve, explosives are set off, horns are blown, bells rung, and whistles announce the coming of the New Year. George Washington, when President, inaugurated a custom of holding a reception on this holiday and this has been observed by his successors. In Christian churches, New Year's Day is the feast of the Circumcision of Jesus Christ, and midnight mass ushers in the new year in many Catholic churches.

Saint Patrick's Day. On this day the Irish people throughout the world honor their great national saint. At the age of 106 years, St. Patrick died on March 17, 493 A.D., at Saul, County Down, and was buried at the Chieftain's Fort, about two miles from town. Bishops, priests and laymen gathered from all parts of Ireland around the burial place of their beloved leader.



Valentines
The custom of sending valentines dates back to ancient Rome and has survived to the present day.

St. Valentine's Day. The custom of sending valentines can be traced to a practice among the ancient Romans. At the feast of the Lupercalia, which was held on February 15, in honor of the god Pan, the names of all the virgin daughters of Rome were put in a box and drawn therefrom by the young men, and each youth was bound to offer a gift to the maiden who fell to his lot, and to make her his partner during the time of the feast. This custom probably became allied to the name of St. Valentine, only through a coincidence in dates. St. Valentine was bishop of Rome during the third century. He was of most amiable nature, possessed remarkable gifts of eloquence and was so successful in converting the pagan Romans to Christianity that he incurred the displeasure of the Emperor, and was martyred by his order on February 14, 270 A.D. When the saint came to be placed in the calendar, his name was given to the day of his death, and this was made a festival to offset that of the Lupercalia, and an effort was made to substitute the names of saints for those of girls in the lottery, but naturally without success. Many other customs of medieval and later times which have become allied in name to a holy saint of the church are unquestionably of purely secular, even pagan origin.

Thanksgiving Day. The President of the United States and the governors of the various states usually name the last Thursday in November as a day of Thanksgiving. The Pilgrim Fathers, after landing at Plymouth, had a very poor harvest in the summer of 1621. Although in great need, after getting the harvest in, they gathered together and thanked God for what He had given them.

Thanksgiving Day was annually recommended by Congress during the Revolution, but was discontinued from 1784 until 1789, when Congress recommended Washington to name a day of Thanksgiving for the adoption of the Constitution. In 1795 President Washington appointed a Thanksgiving Day upon the suppression of insurrection. In 1815 President Madison, upon recommendation from Congress, named a Thanksgiving Day in honor of peace. In 1863 and 1864 President Lincoln named a Thanksgiving Day and recommended that these be held annually. Since then Thanksgiving Day has been an annual event.

Twelfth Night is the eve of Old Christmas or Twelfth Day, and is the occasion of masked parties and dances.

Victoria Day. See **Empire Day.**

Washington's Birthday, February 22, is celebrated as a patriotic holiday in all states, territories and possessions of the United States.

HOT SPRINGS

A hot spring is a flow of water that has passed over hot rock or lava deep in the earth, and, as result, reaches the surface of the earth at a high temperature. Hot springs frequently carry mineral content that gives them curative qualities. Springs are known as *thermal* or *warm* when they exceed 70 degrees Fahrenheit in temperature, and as *hot* when over 98 degrees. When springs erupt intermittently and send their waters to a considerable height they are known as *geysers*, instead of *springs*. Among the famous hot springs in America a number are in National Parks. The Yellowstone contains many hot springs; the seventy-two springs on a ten acre tract near the city of Hot Springs, Ark., are famous for their curative value. They are under government control, army and navy hospitals being located there. The water has a temperature of from 72 to 157 degrees. Eureka Springs, also in Arkansas, lie in the Ozarks; Warm Sulphur Springs, Greenbrier County, W. Va., were a popular watering place at the time of the American Revolution; Hot Springs, Bath County, Va., the springs on the French Broad River, N. C., and the thermal springs near the city of Hot Springs, N. Dak., are also popular resorts.

In Europe, the hot springs in Baden-Baden and Wiesbaden in Germany are much frequented, while Carlsbad in Czechoslovakia draws patrons from all over the world. The Carlsbad Springs vary in temperature from 117 to 167 degrees Fahrenheit, and the daily flow is estimated at 2,000,000 gallons. The principal spring, the Sprudel, is of great volume and the water rises three feet from the ground. Sulphate of soda is the chief medicinal ingredient in this water. The whole town appears to be situated on a vast cauldron of boiling water, the springs forming safety valves.

HOYLE, ACCORDING TO

A colloquialism, meaning "according to the strict rules." This expression is applied today not alone, as it was at first, to cards, but to any field of endeavor. The phrase owes its origin to Edmond Hoyle, an Englishman, (1672-1769) who became the highest authority on whist through his systematizing of the rules of that game. He enjoyed this distinction until 1862 when Cavendish introduced the modernized form of play.

ICE

Water congealed so as to be rendered solid by cold is called *ice*. Ice is transparent owing to the close contact of the crystals which compose it. Water freezes at 32 degrees Fahrenheit, or zero Centigrade. Its greatest density is at about 40 degrees Fahrenheit, or about 5 degrees Centigrade; hence ice floats on water. The surface of sheets of water is frozen while their mass remains liquid. Ice one inch and a half thick will support a man.

ICEBERG

An iceberg is a hill of ice which is either floating in the ocean or has somewhere taken to the ground. An iceberg generally exists first as a glacier but when this in its onward progress reaches the cliffs and glides down them into the ocean, it ceases to be a glacier and becomes an iceberg. Captain Sir John Ross saw several together in Baffin's Bay aground in water 1,500 feet deep. One seen off the Cape of Good Hope was two miles in circumference and 150 feet high. Others were from 250 to 300 feet above the surface of the sea. For every cubic foot above there must be about eight below. Icebergs which escape from the North Polar regions in proximity to Europe usually drift to the westward and they rarely reach Britain. Many impinge upon the eastern shores of Iceland; escaping that island they are borne away in the direction of the eastern shores of America. The largest icebergs come from the west coast of Greenland, travel southward in the Polar Current to Newfoundland, enter the Gulf Stream and melt rapidly in that warm current. When an iceberg reaches a coast and melts, it generates chilling fogs, and so reduces the temperature of the adjacent land.

Icebergs carry with them earth and rocks obtained when they were in the glacier state. Icebergs often transport animals and seeds of plants to great distances. They are a menace to shipping and the chief "ship lanes" are planned to avoid the areas in which icebergs frequently travel. The wreck of the Titanic is an outstanding example of a vessel destroyed by an iceberg.

INVENTIONS

The inventive genius of man has made him supreme on the earth over all other creatures. An invention is the process of finding some new means, instrument or method of achieving an object, or a new combination of matter, or discovery in art.

The history of invention is the history of the world. When man first learned to make a fire, to raise crops from the soil, to speak, to write, to paint pictures, to build caves, houses and cities, to make laws and build institutions of learning, he created the beautiful story of the advance of civilization.

Great as were the advantages derived from inventions, mankind has not always favored them. Many inventors have been imprisoned, exiled and even put to death because of their inventive knowledge. Today the world hails the inventor, gives to him the benefit of his product, and under certain conditions issues a patent assuring him the sole use of his invention for a period of time. In the United States a patent thus protects its owner for seventeen years. Almost two million patents have been issued by the United States Patent Office alone.

Throughout each century the feeling has existed that practically all worth while inventions have already been made. But the following century sees a flood of new inventions vastly surpassing the old. The adjoining table lists inventions in chronological order.

JOHN BULL

A collective nickname for the English people. The name was first used in Arbuthnot's satire, *The History of John Bull*, as the name of a character representing the English nation. John Bull is regarded as a typical Englishman. (See also **British Lion.**)

LIBERTY BELL

The Liberty Bell was cast in London in 1752 by order of the Pennsylvania Assembly, for use in their State House. The bell reached Philadelphia the following year. It cracked without any apparent reason when rung to test the sound, and it was necessary to have it recast. This was done by Philadelphia workmen. In June, 1753, the bell was again hung in the belfry of the State House. Around it were inscribed the words: "By Order of the Assembly of the Province of Pennsylvania, for the State House, in the City of Philadelphia, 1752," and underneath, "Proclaim liberty through all the land unto all the inhabitants thereof—Levit. xxv. 10." On July 4, 1776, when the Continental Congress declared the colonies independent of Great Britain, the bell was rung for two hours, so the story goes, by the old bellman, who was so filled with enthusiasm and excitement that he could not stop. It was taken down and hidden when the British threatened Philadelphia in 1777, but was returned to the State House in 1778, when a new steeple was built for it. A few years afterward it cracked under a stroke of the hammer, and although an attempt has been made to restore its tone by sawing the crack wider, this has been unsuccessful. Since 1854 the bell has rested on a thirteen-sided pedestal in the rotunda of the State House, Philadelphia.

GREAT MODERN INVENTIONS

Invention	Date	Inventor	Nationality
Printing from movable type*	1438	L. J. Koster	German
Printing from movable cut metal type*	1450	Johannes Gutenberg	German
Knitting machine	1589	William Lee	English
Microscope, compound*	1590	Zacharias Janssen	Dutch
Thermometer	1593	Galileo	Italian
Telescope*	1608	Jan Lippershey	Dutch
Rifle, spiral grooved	1620	August Kotter Gaspard Koller	English Austrian
Adding machine	1642	Blaise Pascal	French
Barometer*	1643	Evangelista Torricelli	Italian
Multiplying machine	1671	G. W. Leibnitz	German
Steam engine, atmospheric	1705	Thomas Newcomen	English
Piano	1709	Barthommeo Cristofori	Italian
Typewriter*	1714	Henry Mill	English
Flying shuttle	1733	John Kay	English
Leyden jar	1745	E. G. von Kleist	German
Lightning rod	1752	Benjamin Franklin	American
Carding machine	1760	James Hargreaves	English
Spinning jenny	1764	James Hargreaves	English
Steam engine, separate condenser	1765	James Watt	English
Bifocal lens	1780	Benjamin Franklin	American
Pen, steel	1780	Samuel Harrison	English
Balloon	1783	J. E. & J. M. Montgolfier	French
Loom, power	1785	Edmund Cartwright	English
Threshing machine	1786	Andrew Meikle	Scotch
Steamboat, first	1787	John Fitch	American
Nail machine	1787	Jacob Perkins	American
Coal gas for lighting	1790	William Murdock	English
Cotton gin*	1793	Eli Whitney	American
Plow, cast-iron	1797	Charles Newbold	American
Lithography	1798	Alois Senefelder	Bohemian
Steam engine, high-pressure	1799	Oliver Evans	American
Electric battery, primary	1799	Alessandro Volta	Italian
Loom, pattern	1801	J. M. Jacquard	French
Locomotive, steam, on rails	1804	Richard Trevithick	English
Tack machine	1806	Thomas Blanchard	American
Steamboat, successful	1807	Robert Fulton	American
Food preservation, canning process	1810	François Appert	French
Printing press, cylinder	1811	F. König	German
Mowing machine	1812	Peter Gaillard	American
Safety lamp, miner's	1815	Sir Humphry Davy	English
Stethoscope	1816	René T. H. Laënnec	French
Diver's suit	1819	A. Siebe	German
Electromagnet	1823	William Sturgeon	English
Portland cement	1824	Joseph Aspden	English
Pin-making machine	1824	L. W. Wright	American
Matches, friction	1827	John Walker	American
Locomotive, steam, first successful	1829	George Stephenson	English
Reaper*	1834	Cyrus H. McCormick	American
Ice machine, compressor system	1834	Jacob Perkins	American
Revolver	1835	Samuel Colt	American
Telegraph, electric*	1835	Samuel F. B. Morse	American
Shotgun, practical breech-loading	1836	Casimir Lefaucheux	French
Electrotyping	1838	Moritz H. von Jacobi Thomas Spencer	German English
Screw propeller, successful	1839	John Ericsson	American
Photography	1839	Louis J. M. Daguerre	French
Vulcanized rubber	1839	Charles Goodyear	American
Photography, first human face	1840	J. W. Draper	American
Bicycle	1840	Kirkpatrick Macmillan	Scotch
Gas meter, modern dry	1843	William Richards	American
Wood pulp, for paper, mechanical process	1844	Keller and Voelter	German
Pneumatic tire	1845	R. W. Thompson	English
Guncotton	1846	Christian F. Schönbein	German
Sewing machine*	1846	Elias Howe	American
Printing press, rotary cylinder*	1846	Richard M. Hoe	American
Steel, Bessemer process	1847 1855	William Kelly Sir Henry Bessemer	American English
Stereoscope, lenticular	1849	Sir David Brewster	English
Watches, machine-made	1850	Dennison and Howard	American
Locomotive, electric	1851	Theodore N. Vail	American
Airship	1852	Henri Giffard	French
Matches, safety	1855	Lundstrom	Swedish
Gas engine, electric ignition	1857	Barsonti and Matteucci	Italian
Spectroscope	1859	Kirchoff and Bunsen	German
Monitor (warship)	1861	John Ericsson	American
Machine gun	1861	Robert J. Gatling	American
Pneumatic tool	1865	George Law	English
Dynamite	1866	Alfred Nobel	Swedish
Block signals, railway	1867	Thomas S. Hall	American
Typewriter, first practical	1868	C. L. Scholes	American
Refrigerator freight car	1868	Davis	American
Torpedo, self-propelled	1868	Whitehead	English
Air brake*	1869	George Westinghouse, Jr.	American
Oleomargarine	1869	H. Mège-Mouries	French
Celluloid	1870	J. W. and I. Hyatt	American
Welting machine	1871	Charles Goodyear	American
Car-coupler, automatic	1873	E. H. Janney	American
Telegraph, quadruplex	1874	Thomas A. Edison	American
Siphon recorder, submarine telegraph	1874	William Thompson	English
Barbed wire machine	1874	Glidden and Vaughan	American
Water gas, modern process	1875	T. S. C. Lowe	American
Automobile, gas engine*	1875	Siegfried Markus	German
Telephone*	1876	Alexander G. Bell	Scotch
Microphone	1877	Emile Berliner	American
Phonograph*	1877	Thomas A. Edison	American
Gas engine, four cycle	1877	Nicholas A. Otto	German
Arc lamp, practical electric	1878	C. F. Brush	American
Incandescent lamp	1879	Sir Joseph Swan Thomas A. Edison	English American
Cash register	1879	J. Ritty	American
Gasoline motor, automobile, patented	1879	George B. Selden	American
Cream separator, centrifugal	1879	C. G. P. deLaval	Swedish
Electric railway, first built	1880	Thomas A. Edison	American
Harvester, automatic knot-tying machine	1880	J. F. Appleby	American
Chrome tanning	1884	Schultz	American
Linotype*	1885	Ottmar Mergenthaler	American

*See separate article on this subject. Consult the index for further material on subjects listed.

GREAT MODERN INVENTIONS (Cont'd)

Invention	Date	Inventor	Nationality
Electric furnace reduction	1885	Cowles	American
Aluminum, Hall process	1886	Charles M. Hall	American
Smokeless powder	1886	Paul Vielle	French
Photography, roll film, modern	1887	Hamilton Goodwin	American
Monotype*	1887	Talbert Lanston	American
Motor, split-phase induction	1887	Nicola Tesla	American
Converter, rotary	1887	Bradley	American
Adding machine, recording	1888	William S. Burroughs	American
Trolley car, practical system	1888	F. J. Sprague	American
Photographic film, transparent	1888	George Eastman	American
Calcium carbide	1888	T. L. Willson	American
Rayon (artificial silk)	1888	H. deChardonnet	French
Electric welding	1889	Elihu Thompson	American
Gas mantle, incandescent burner	1890	Carl Auer von Welsbach	Austrian
Cyanide process for ores	1890	Forrest and MacArthur	Scotch
Electrolytic alkali production	1890	Hamilton Y. Castner	American
Carborundum	1891	E. G. Acheson	American
Automobile, first commercial gas engine	1891	Lavassor	French
Coherer, wireless wave detector	1892	E. Branly	French
Vacuum bottle	1892	James Dewar	English
Photography, color	1892	Frederick E. Ives	American
Motor, alternate current	1892	Nicola Tesla	American
Diesel engine	1893	Rudolph Diesel	German
Motion-picture machine	1893	Thomas A. Edison	American
Dry air process, blast furnace	1894	Gayley	American
X-ray machine	1895	William K. Roentgen	German
Wireless telegraphy, low frequency	1895	Sir William H. Preece	Welsh
Wireless telegraphy, high frequency	1895	Guglielmo Marconi	Italian
Airplane, carrying no person	1896	Samuel P. Langley	American
Torpedo, radio controlled	1897	Bradley A. Fiske	American
Steel, electric	1900	Paul T. L. Heroult	French
Diesel oil motor	1900	Rudolph Diesel	German
Caterpillar tractor	1900	Benjamin Holt	American
Submarine boat, first successful	1900	John P. Holland	American
Steel, high speed	1900	Taylor and White	American
Vacuum cleaner	1902	David T. Kenney	American
Airplane, first practical	1903	Orville and Wilbur Wright	American
Depth bomb	1903	W. T. Unge	Swedish
Grid amplifier, radio	1906	Lee DeForest	American
Gyrocompass	1906	H. Anschütz-Kämpfe	German
Bakelite	1907	L. H. Baekeland	American
Silencer for firearms	1909	Hiram P. Maxim	American
Gyrocompass, modern	1910	Elmer A. Sperry	American
Hydroplane	1911	Glenn H. Curtiss	American
Pulmotor	1911	Alexander B. Dräger	German
Tank, military	1914	Gen. E. D. Swinton	English
Motor, Liberty	1917	Vincent and Hall	American
Submarine detector	1917	Max Mason	American
Gas engine, compound	1921	C. Eickemeyer	American
Rotor ship	1924	Anton Flettner	German
Talking motion pictures, practical	1928	Bell Telephone Co. Western Electric Co. Warner Bros.	American

*See separate article on this subject. Consult the index for further material on subjects listed.

LIBERTY, STATUE OF

Symbolic of the spirit of liberty and opportunity in the New World, this gigantic statue of a woman clad in a Greek tunic and mantle, facing incoming vessels, and holding aloft in her right hand an enormous torch, is on Bedloe's Island, New York Harbor. The statue weighs 225 tons, and measures 301 feet 3 inches from the water level to the top of the torch.

The total cost of the work was about $600,000. The statue itself, designed by M. Frederic Bartholdi, paid for by popular subscription in France, and unveiled in 1886, was a gift from the people of France to the United States. The cost of the pedestal was met by popular subscription in the United States. The light in the top of the torch is maintained by the United States Lighthouse Service. Since 1916, the New York World has provided funds by popular subscription for the illumination of the entire statue. Stairs lead up to the head of the statue, which is open to the public during the day.

LIGHTNING

Lightning is the dazzling light emitted by a large spark darting from clouds charged with electricity. In the lower regions of the atmosphere it is white; in the upper somewhat violet, as is the spark of an electrical machine in a vacuum. Lightning does not always take the zigzag form conventionally represented. It is seen sometimes like a sharp and rugged antler standing upright, and across it a line of gleaming circles like a series of huge golden coins or a string of illuminated beads, and other forms. In the upper regions of the sky, where the air is rarefied, it tends to take the form of sheet lightning, or heat lightning; in the lower regions it becomes more concentrated and moves in lines. As a rule lightning strikes objects from above, though occasionally ascending lightning has been seen. The loftiest buildings are most in danger from its effects, and so are tall trees; the resin of pines, interfering with their efficiency as conductors, makes them more safe. When it sinks deeply into the ground, it sometimes vitrifies the rocks, producing fulgurites. Light travels with such speed that a flash is seen the instant it occurs. Thunder, which is simply the noise of the explosion, takes about five seconds to travel a mile, hence the distance of any flash, followed by thunder, may be calculated.

LINOTYPE

Otto Mergenthaler of Baltimore, an American of German birth, in 1885 invented the linotype machine. From the days of Gutenberg, in the fifteenth century, type had been cast and set by hand, letter by letter, an operator setting about fifty words a minute. There had been many improvements in printing presses during the centuries but it remained for Mergenthaler to change the method of typesetting and casting. A good operator can set approximately 175 characters a minute on the Mergenthaler machine.

The linotype machine sets up a whole line of type and casts it into one piece, or slug. The operator handles a keyboard similar to that of a typewriter, with ninety or more keys. For instance, when the letter "T" is pressed on the keyboard, the brass matrix with "T" on it is moved from its place and automatically carried to its position in the line of type. The operator touches the key for each letter desired, using the spacer between words, just as one does on a typewriter. When the matrices of the whole line of type have been assembled, the operator touches a special key and extra spacers are automatically pushed up between the matrices so that the words are spread to fill the line completely. A heating apparatus keeps the type metal molten and when a line of type is ready for casting a lever lets the hot metal flow through a long narrow slot. Poured against the matrices, this molten metal is cast into a line and cooled quickly; knives mechanically trim the slug to exact size, and the slug is conveyed by a metal arm to a box where it is dropped into place to form a column. The matrix letters are mechanically sent back to their original place for future use in making lines of type.

The modern linotype machine can carry eight alphabet sets, and these, with punctuation marks, provide a total of 720 characters that are operated from one keyboard. A whole line must be reset in order to correct an error but this can be done much more quickly than by the old hand-setting method, and the type is not mixed or pied if a line is dropped. The linotype machine has revolutionized the making of newspapers and magazines by the increased rapidity of typesetting.

LITTLE CHURCH AROUND THE CORNER

This is the popular name for the Church of the Transfiguration, located at 1 East 29th Street, in the heart of the business section of New York City. In 1870, the famous actor, Joseph Jefferson, in his effort to arrange for the funeral of a brother actor, George Holland, was advised to go to "a little church around the corner" where the funeral of an actor could be held. Ever since, members of the stage profession have had a marked affection for this church, and there today is located the headquarters of the Episcopal Actors' Guild.

LONGEVITY, HUMAN

The following list of instances of remarkable longevity is given on the authority of Prichard, Whitehurst, Bailey, and Easton.

Name	*Date of Death*	*Age*
Apollonius of Tyana	99 A. D.	130
Attila	500 A. D.	124
Llywarch Hen	500 A. D.	150
St. Coemenge	618 A. D.	120
St. Mongah or Kentigern	781 A. D.	185
Piastus, King of Poland	861 A. D.	120
Countess of Desmond	1612 A. D.	145

Name	Date of Death	Age
Thomas Parr	1635 A. D.	152
Thomas Damme	1648 A. D.	154
Dr. Mead, Hertfordshire	1652 A. D.	148
James Bowles, Kenilworth	1656 A. D.	152
Henry Jenkins	1670 A. D.	169
William Edwards	1688 A. D.	168
Petrarch Czartan	1724 A. D.	185
Margaret Patten	1739 A. D.	137
John Roven	1741 A. D.	172
Mrs. John Roven	1741 A. D.	164
John Effingham, Cornwall		144
Thomas Winslow, a captain under Cromwell	1766 A. D.	146
Draakenburg, a Dane	1772 A. D.	146
Jonas Warren, Ballydole	1787 A. D.	167
Jonas Surington, Bergen, Norway	1797 A. D.	159
Demetrius Grabowsky, Poland	1830 A. D.	169
Bridget Devine	1845 A. D.	147
Bruno Cotrim, Buenos Aires	1897 A. D.	150
Robert Tyler, England	1898 A. D.	134

LYNCH LAW

Lynch law is summary punishment, especially death, without form of law. It is frequently mob law, or, as in the case of the vigilance committees of the old West, the mode of ridding an outraged community of its incorrigible offenders.

There are various accounts of the origin of the term. One, which is perhaps as probable as any, is to the effect that the phrase, "lynch law," was derived from a native of Campbell Co., Va., old Colonel Lynch, who, during the American Revolution, was in the habit of administering summary punishment to miscreant Tories of every description, without paying any attention to the ordinary process of law. Hence he was called "Judge Lynch," and this, it is said, is the true origin of the terms "lynching" and "lynch law."

The Carolina Regulators, 1770, administered whippings to offenders on Lynch's creek, and this is another possible explanation of the term.

MAELSTROM

The Maelstrom, which means, literally, "grinding stream," is situated on the Norwegian coast, southwest of the Loffoden Isles, and is the most remarkable whirlpool in the world. It runs between the Island of Moskenes and a large solitary rock in the middle of the straits. The strong currents, rushing between the Great West Fiord and the outer ocean, through the channels of the Loffoden Isles, produce a number of whirlpools, of which the Maelstrom is by far the most dangerous. During severe storms from the west, for instance, the current runs continually to the east at the rate of six knots an hour, without changing its direction for rising or falling tide, and the stream boils and eddies in such mighty whirls that the largest steamer could hardly contend successfully with the waters. The depth of the whirlpool is only twenty fathoms, but just outside the straits soundings indicate a depth of from 100 to 200 fathoms.

MAN IN THE MOON

One of the most ancient as well as one of the most popular superstitions concerns the man in the moon, a shadowy figure suggested by the dark lines and spots upon the surface of the moon. The legend is supposed to have originated in the account given in the Book of Numbers, xv, 32-36, of a man stoned to death for gathering sticks on the Sabbath. In one of the drawings representing this character, he appears as a man with a staff over his shoulder, on which he carries his fatal bundle of sticks. He is followed by a dog.

MASON AND DIXON'S LINE

The boundary line that was established between the colonies of Maryland and Virginia and the colony of Pennsylvania has long been known by the names of the men who ran it. With the exception of about twenty-two miles, the line was laid by the English surveyors, Charles Mason and Jeremiah Dixon, who did the work between November 15, 1763 and December 26, 1767. During the excited debate in Congress, in 1820, on the question of excluding slavery from Missouri, the eccentric John Randolph of Roanoke made great use of this phrase, which was caught up and re-echoed by every newspaper in the land until it gradually came to mean the line of division between the free and the slave-holding states.

MAYFLOWER COMPACT

The following is a list of the male passengers who signed the Mayflower Compact, agreeing as to the government of the colony. The ship landed at Plymouth on December 21, 1620. The following forty-one signers represented the entire company which numbered 101.

John Alden
Isaac Allerton
John Allerton
William Bradford
William Brewster
John Billington
Peter Brown
Richard Britteridge
John Carver
Francis Cook
James Chilton
John Crackstone
Richard Clarke
Edward Doly
Francis Eaton
Thomas English
Samuel Fuller
John Howland
Stephen Hopkins
Edward Leister
Christopher Martin
William Mullins
Edward Margeson
Degory Priest
Thomas Rogers
John Ringedale
Edward Fuller
Moses Fletcher
John Goodman
Richard Gardiner
George Soule
Capt. Myles Standish
Edward Tilley
John Tilley
Thomas Tinker
John Turner
Edward Winslow
William White
Richard Warren
Thomas Williams
Gilbert Winslow

MICROSCOPE

A microscope is an optical instrument for magnifying minute objects so as to render them visible for purposes of investigation. A simple microscope, whether of single or of several lenses, gives a view of the object directly. A compound microscope furnishes a reversed and magnified view of the object. The objective lens at one end of the metal tube is placed near the object. The ocular or eye piece lens also magnifies the object.

A Hollander, Zacharias Jansson, is believed to have invented the first compound microscope in 1590. Benjamin Martin first made pocket microscope in London in 1740. However, the discovery of the magnifying power of the lens was made long before the Christian era. Reading glasses and rude magnifying glasses have been found in ancient Egyptian ruins. Some historians give the credit of inventing the microscope to Galileo, the famous astronomer.

The strength of a microscope depends upon the strength of the object glass, the ocular glass and the distance that these are placed apart. The greater the distance the more powerful the microscope. For the human eye, enlargement has customarily been made 2,000 times the size of the object. For photographic purposes, enlargement has been 5,000 times the actual size. The only limit to the power of the microscope seems to be that no object smaller than one-half the wave length of the light by which it is seen can be shown in its true form. The microscope has been tremendously valuable in aiding physicians to ascertain diseases and trace various forms of bacteria to their source. Surgeons accurately examine new growths on the body by means of the microscope. Bacteriologists, biologists and botanists, use the microscope in their studies, thus greatly enlarging man's control of nature. The microscope betrays impurities in drugs, food, paint and in the physical structure of copper, iron and steel.

MILITARY ACADEMY OF THE UNITED STATES

Congress founded the military academy at West Point in 1802. This government reservation, including Constitution Island, consists of about 3,575 acres. The buildings and beautiful grounds are valued at $25,000,000. During the Revolution, Kosciusko directed the fortifications built here. Benedict Arnold planned to betray this fort to the British, but discovery of his plot was made when Major Andre was captured. The ruins of the old revolutionary Fort Putnam may still be seen.

The academy, considered one of the finest military schools of the world, is an institution established by the United States Government for the practical and theoretical training of young men for the military service. Its cadets are given a comprehensive and general education of collegiate grade and a sufficient basic military training to enable them to enter upon the duties of a second lieutenant in any branch of the army to which they may be assigned. The maximum number of cadets is 1,378. Four are selected from each state at large, two from each congressional district, two from each territory, four from the District of Columbia, two natives from Porto Rico, four from the Philippine Islands, 122 from the United States at large, of whom two are appointed upon the recommendation of the Vice President and twenty are selected from among the honor graduates of those educational institutions which have officers of the Regular Army detailed as professors of military science and tactics and which, upon the determination of their relative standing at the last annual inspection regularly made by the War Department, were designated as "honor military schools." Of these, forty are chosen from among the sons of veterans who were killed in action or died prior to July 2, 1921. One hundred eighty are chosen from among the men of the Regular Army and of the National Guard in number as nearly equal as practicable. This enumeration represents the maximum allowed at the military academy at any one time, hence no appointments can be made from any source except to fill a vacancy.

There are three methods of meeting the educational requirements for admission: (1) by successfully passing the regular entrance examination, (2) by submitting a satisfactory educational certificate to be validated by special examination or (3) by submitting an educational certificate which does not need

a validating examination. These examinations are held on the first Tuesday in March each year, and again on June 25 at West Point to fill vacancies which occur after the March examination. Candidates from the Philippine Islands appear for mental and physical examination on the second Tuesday in January before a board of army officers who convene at such a place in the Philippines as the commanding general of the Philippine Department may designate.

MIRAGE

A mirage, or looming, is an optical illusion sometimes seen at sea, on large lakes, on the icy wastes of the polar regions, and on deserts and arid plains. In mirages, images of various distant objects appear, usually top side down, while the objects themselves may or may not be within sight. Sometimes mirages appear as enlarged images of distant and invisible objects, thrown in relief against the sky. Mirages are caused by the refraction and reflection caused when light, in reaching a person from a distant object, passes through layers of air that are unequally heated, and which are therefore of different densities. When the reflecting layer of air is level and lower than the eye of the observer, the mirage often appears as a sheet of wind-ruffled water, a form of mirage common in the desert. When the reflecting layer of air is higher than the eye, the image appears to be located in the sky. A looming is a form of mirage in which objects appear greatly magnified both vertically and horizontally. The "Specter of the Brocken," seen in the Harz Mountains of Germany, is a well-known example of this type of mirage. The exploring parties with Commander Byrd's Antarctic expedition in 1929 sometimes saw a looming of the district they were to traverse the following day, great crevassed areas to be faced on the morrow.

MISSING LINK

The gap between the monkey and man is called the "missing link." According to Darwin, the present host of animal life began from a few elemental forms, which developed, and by natural selection propagated certain types of animals, while others less suited to the battle of life died out. Thus, beginning with the larvae of ascidians (a marine mollusk), we get by development to fish lowly organized (as the lancelet), thence to ganoids and other fish, then to amphibians. From amphibians we get to birds and reptiles, and thence to mammals, among which comes the monkey, between which and man is a "missing link."

MOLLY MAGUIRES

The first organization of Molly Maguires was formed in Ireland, in 1843, with the object, it is believed, of generally misusing process-servers and others engaged in the prosecution and eviction of tenants, and was composed of young men who, in some localities, assumed women's clothing, blackened their faces, and otherwise disguised themselves. It remained, however, for the American "Mollies" to terrorize whole counties, intimidate mine owners and officers of the law, and leave a blood-red trail behind them in the coal regions of Pennsylvania in 1854. There is no recorded instance where the disguise of women's clothes was assumed in the United States. Through the effort of James McParlan, a detective, the secrets of the order were finally revealed, rioting was stopped, and an end was put to the organization and many of its members were brought to justice in 1877.

MONOTYPE

The monotype equipment consists of two machines: a composing machine and a type-caster. The operator sits at a keyboard similar to that of a typewriter, but having 260 keys. By depressing a key he makes holes in a moving strip of paper, each combination of holes designed to control the casting of a letter corresponding to that which the operator depressed. When a line is nearly set, an automatic indicator tells the operator the exact amount of space needed to fill the line. The perforated paper is called the "controller paper" because, when inserted in the casting machine each type is separately cast in the order indicated on the paper, each set of perforations bringing into motion its corresponding matrix from which the type is cast. Next, the machine forces into the mold molten metal from a container that is heated by gas or electricity. The width of the type mold alters automatically to fit the width of each letter as it is cast, becoming narrow for an "I" and expanding to its widest for "M." Thus the type is cast, and the machine then automatically gathers the letters in order until a line is formed. Special spacers fall in to fill or justify the line to the required length, and the lines are carried in order to the case. Five alphabets can be cast from one machine, and different faces of type and various type sizes be reproduced. The machine was invented in 1887 by Talbert Lanston, long a clerk in the pension office at Washington. While the linotype machine is usually preferred for newspaper work, the more careful typesetting required for book, magazine and fine job printing work generally employs the monotype machine. *The Volume Library* is set by monotype.

MONTHS OF THE YEAR

The word "month" is derived from *mona*, the Anglo-Saxon word for "moon," the month lasting from one new moon to the next. A lunar month—*luna* is the Latin word for "moon"—was twenty-eight days, twelve hours, and a fraction over forty-four minutes long. The solar month, which we use, is practically one-twelfth the length of time it takes the earth to revolve around the sun. Calendar months are of different lengths but they total almost one full revolution around the sun in a year, the slight extra time each year being set straight by the extra day in every fourth, or leap year.

The months bear names that remind us of the old Romans, for January was so called in honor of the two-faced god, Janus, who guarded Rome; February was thus named because on the fifteenth of that month was held the *februa*, a Roman festival of expiation and purification; March for Mars, the great god of war. March was the first month of the year in the old Roman calendar. Then came April, Aprilis in Latin, said to derive from *aperire*, to open or blossom; May, named in honor of Maia, the goddess of growth and the mother of mercury; June, Junius, in honor of a powerful Roman family. July honored Julius Caesar. Augustus Caesar named the following month August to honor himself. The seventh month of the old calendar was September, *septem*, meaning seven; October, from *octo*, or eight; November from *novem*, or nine; and December *decem*, meaning ten, the old tenth month.

Monuments. See **Buildings and Monuments.**

MOONSHINERS

The term arose in the mountains of North Carolina and Tennessee, where the practice of making illicitly distilled whiskey was carried on chiefly at night in order to avoid payment of the government excise tax. Since the passage of the Volstead Act, the word *moonshine* has been applied to any illicitly-brewed whiskey.

MORGANATIC MARRIAGE

A morganatic or left-handed marriage is one between a man of superior and a woman of inferior station, in which it is stipulated that the woman and her children shall neither enjoy the rank nor inherit the possessions of her husband. Such marriages are not uncommon in the families of sovereign princes and of the higher nobility, in certain European countries; but they are restricted to personages of these classes.

MOTION PICTURES

After the invention of photography, many attempts were made to depict various objects while they were in motion. The most successful of these early efforts were those of Edward Muybridge who placed twenty-four cameras in a row, attached strings in such fashion that a horse trotting by them broke the strings in succession and made exposures that showed his successive motions. The photographs thus obtained were pasted in a strip and moved rapidly to give the effect of continuous motion. But this was in 1872, and Muybridge had to work with glass plates. It was not until Goodwin invented the convenient bendable form of continuous film in 1887, and Eastman perfected and produced it the following year, that modern methods of photography became possible. After considerable experimentation, Edison produced the kinetoscope in 1893, a machine that used photographs on an endless strip of celluloid. It was a successful motion picture machine, but with the drawback that only one person could use it at a time. Then came Thomas Armat, who devised a means of projecting pictures on a screen so that many could see them at once. C. F. Jenkins worked out the device whereby the film moves intermittently, and the modern motion picture was born.

The theory on which motion pictures work is based on a peculiarity of the human eye which allows it to seem to see an object for a fraction of a second after it is gone. Thus the eye holds an image long enough for the next picture to be presented and gets an effect of continuous action. The motion picture machine changes the pictures so rapidly that

the screen is in darkness for less than one-fiftieth of a second and the effect of continuous vision is produced. In modern motion pictures each image is at rest for about one-twentieth of a second, and about sixteen pictures are shown in a second. The various motion picture companies make film and pictures of uniform size. A reel is 1,000 feet long, a strip is 200 feet long and one and three-eighths inches wide. Each picture is an inch by three-quarters of an inch in size, the film being enough wider to leave a narrow margin on each side with sixty-four perforations to the foot. The perforations enable the machine to hold the film securely while the shutter of the moving picture camera is open. When the shutter closes, the whole film is pulled forward exactly three-fourths of an inch. A fine lens is used, and the shutter is a perforated, revolving disk.

After exposure the film is developed and a great many positive films made from the negative. These are pasted in proper sequence and sent out to exhibitors. When a picture is projected on a screen, an electric arc usually produces the light in the projecting machine. This light passes through the positive film and through the projecting lenses to the screen. There the picture appears in greatly enlarged form. Nearly all film is made of highly inflammable and explosive celluloid, so the projecting machine is provided with an automatic shutter that protects the film from the light if the machine accidentally stops. When not in use, film is stored in asbestos-lined boxes. A special fireproof room is provided for the projecting machine and its operator in practically all modern motion picture houses.

Many unusual effects can be obtained by trick photography. One actor may play two parts, apparently fall off of high cliffs, scale the straight side of a high building, or appear in transparent ghostliness. Colored motion pictures are produced by projecting pictures through color screens. Cartoons and action drawings are created by reproducing the picture of a large number of individual drawings. But not the whole picture needs to be drawn each time. If a cartoon shows a man who is moving only his arms, a photograph of the quiet part of the body is made in quantity, and the artist pastes these up and draws on to each one the successive pictures of the moving arms. In this way the required amount of drawing is greatly diminished.

Motion pictures may be instructive as well as entertaining. Activities in every part of the globe are portrayed, making graphic tales of geography, history, chemistry, zoölogy and biology. Games of skill and the methods employed by expert athletes are brought before people by means of the slow-motion picture which provides opportunity to see action slowed down so that it is possible to learn how a thing was done. Industrial firms give technical instruction by means of slow-motion pictures; surgeons study the efficient methods of operating carried on in distant hospitals. Mechanically-timed exposures permit photographing opening flower buds, birds emerging from the shell, and similar phases of nature that would take hours to watch in actual life, but that can be shown on a motion picture screen in a few minutes.

The motion picture industry that began in a little paper-covered shanty, with Edison and a single assistant as the entire staff, has grown until it employs several hundred thousand people and pays wages and salaries of over $130,000,000 each year. The industry is divided into three divisions: production, distribution and exhibition. The films produced in the United States supply about ninety per cent of the world's market, Germany being second in production and distribution. Great production "lots" are found in various parts of the United States, the chief ones being in California and in the environs of New York City. The greatest of actors appear in films. Sarah Bernhardt paved the way, being lured by the thought that only in that manner could her art be preserved for the future. But the art of the motion picture is different from that of the regular stage. To eliminate waste movement,



Amateur Motion Picture Camera
This camera is simple in operation and is widely used. The sighting devices are shown in position.

the director has the scenario writer list all the different scenes separately so that all the action supposed to take place in certain surroundings, or with a given group of actors may be photographed together and save using a set over a long period of time. The characters may meet in a living room in the first scene and not meet there again until near the end of the play, yet all scenes in that room must be acted in succession. Some unusual character may appear in only a couple of scenes, a person who can spare but a short time, and the scenes in which he appears are photographed without relation to the story as a whole. The camera records only that which is directly in the angle of view, and actors must learn to bear that in mind.

Many people do not photograph well and therefore find the motion picture field closed to them. Others require unusual make-up in order to "register" well on the screen. The advent of the talking motion picture brought about a new code of requirements for motion picture actors. The improvements in color photography brought another problem to the motion picture producer. There is constant change and growth in the industry as invention solves old problems and, in so doing, creates new ones for the industry that has brought entertainment within the reach of the most remote town and to the person whose limited time or spending capacity has kept him out of the regular theater.

Motion Pictures in the Home. The motion picture was commonly believed to have reached its highest peak about 1920, yet two developments since then have carried the pictures to a national niche never before reached. These developments are the talking motion pictures and the apparatus for producing motion pictures at home.

More people are watching motion pictures today than ever before, and in addition, a host of average citizens are acting before their own cameras.

The number of American families that are playing roles in their own motion pictures is well above 100,000, according to estimates. They use cameras built to hold amateur standard safety film, which is non-inflammable and which is sixteen millimeters wide as against thirty-five millimeters for professional film. Most of the cameras are simple in operation and capable of taking pictures indoors or on dark days. They are held in the hands and sighted at either eye level or waist level, and driven by a spring motor released with a trigger. The only preparation for "shooting" is setting the diaphragm in accordance with the amount of light needed for the picture, deciding on the distance from the object to the camera, in the case of the newer models, and then winding the motor.

The advent of color photography was a great boon to motion picture makers. It is one of the outstanding photographic achievements of all time. At the mere pressure of a finger beautiful natural-color pictures can be made, simply by slipping a color filter into the lens barrel of the camera that takes black and white pictures, and using a different film.

Motion picture makers are finding panchromatic film next best to color. This film, although producing black and white pictures, renders them in their correct tonal values. For instance, red photographed with ordinary film shows up black on the screen. When panchromatic film is used, red photographed next to some darker color, say dark blue or brown, shows up lighter, thereby establishing its difference in tonal value.

Families which are making the best use of their cameras take pictures systematically of family episodes and eras, preserving a unique family record. Families widely separated frequently send motion pictures of themselves to each other.

But amateur motion picture cameras are used in other ways. Doctors use them to photograph operations so that classes of medical students may be taught more systematically and doctors away from medical centers may keep in touch with the advance of surgery. Industrial establishments use cameras and projectors to film their products and send motion picture reproductions of them in place of catalogs or salesmen's display cases. The small cameras are employed in dozens of other scientific and industrial uses. Pictures have been used as evidence in court, and amateur dramatic organizations write, produce, act and photograph their own scenarios.

Amateur motion picture projectors are on a simple scale commensurate with the cameras. The most up-to-date models have arrangements for stopping the action, projecting one "frame" at a time, like a still picture, and for reversing the action, "the

diver leaping backward out of the water and onto a springboard" sort of thing which amuses an audience.

The ultra-modern library projector has the mechanism contained in a case and has a small translucent screen attached that makes it suitable for an audience of only two or three. A cabinet, made as a base for the projector, has storage space for humidors of film, an emergency splicing outfit, a larger screen for projection before groups which can be used for either black and white or color pictures and a shelf to lay the empty humidors on while projecting.

The introduction of home motion pictures entailed economies in the film. First, amateur film is slightly less than half as wide as professional film, and a 100-foot reel of amateur film contains as long a motion picture as a 250-foot reel of professional film. The meaning of these comparative dimensions is that the same length of motion picture film requires more than five times the area of film with a professional motion picture camera as with an amateur camera. An equal amount is saved by the ingenious "reversal process," which eliminates the necessity of printing motion picture negatives on separate film and instead turns the negative itself into a positive. It is principally this very great saving in film which has made motion picture photography sufficiently inexpensive for private families to enjoy and yet retain the photographic quality of amateur film.

Talking Motion Pictures. The attempt to synchronize, or cause time agreement of sound with motion pictures is almost as old as the motion picture itself. Gaumont in France, and Edison in the United States. succeeded in producing talking motion picture machines in the last decade of the nineteenth and in the early years of this century.

A small group of engineers in the employ of the Bell Telephone laboratories, in 1914, began a series of experiments which led to the development of an apparatus to record and reproduce sound electrically. The first application of the new electrical method of recording was made by the Victor and Columbia phonograph companies in 1924, causing a great revival of the phonograph business which had been seriously affected by the radio. The experiment worked out so effectively that a plan of synchronously recording and reproducing sound and motion picture was soon begun. Within a short time a special type of motor was developed which made it possible to operate a number of cameras and recording machines in exact synchronism with each other.

The cycle of operations in recording is by way of the microphone through the amplifier to the recording machine. In reproducing, the cycle is reversed. From the disk the recorded vibrations are transmitted by means of a needle to an electromagnet; the resulting current is amplified and transmitted to a loud-speaker, which is nothing more than an elaborate telephone receiver. This is located at the back of the stage immediately behind the picture screen.

Another method of recording makes use of photography, the record being made at one edge of the motion picture film. A variable current, representing the sound waves, causes two tightly stretched wires placed close together in a magnetic field to vibrate in exact conformity to the vibrations of the sound waves. A bright light is focused through the aperture between these vibrating wires to a moving piece of film, resulting in an impression consisting of a series of small parallel lines of varying density and distance apart. A slight deviation from this method is to vary the intensity of the light source by connecting the wires leading from the microphone to the terminals of the lamp and projecting through a fixed aperture. The former process is called the "light value" method, the latter the "flashing lamp" method.

To reproduce a film record, it is passed through a bright beam of light focused through an opening to a photo-electric cell, which is a kind of vacuum tube, having the property of generating an electric current when light strikes it. The current goes to the same amplifier as the current from the needle of the disk reproducer and thence to the loud-speaker. The entire projector mechanism is driven by a single motor through mechanical gearing so that with a record or film started correctly, sound and picture go on simultaneously. It is, however, possible that lip movement and sound do not fit together properly, the words being heard too soon or too late, making a most ludicrous effect.

In the room where sound pictures are taken the walls and roof are covered with sound-proof material to deaden the echo. The movietone, a product of Fox laboratories, permits the taking of talking-pictures in the open. In every sound studio there is a monitor room from which a man "listens in" and controls the volume of sound current received by each of the microphones in use in the studio below.

With the advent of sound on the screen there came also a revolutionary effect on many phases of production. Electrical and acoustical engineers at once came into prominence. The erection of sound-proof stages also helped to bring about the development of the voice for screen purposes so that the "talking" picture has popularly replaced the silent picture, a solely pantomimic art.

The advantages of the sound picture are many, particularly in the educational field. A committee from the National Education Association reported its views on a program of subjects that might well be taught by the film in the schoolhouse. The sound picture also opens the field of opera to people who have no other opportunity both to see and hear the great actor-singers of their day. Forward-looking religious bodies are experimenting with the religious pictures as a means of stimulating greater interest in church and young people's classes. With the passing years it seems possible that the talking picture may be instrumental in bringing about a better understanding between nations and furthering the movement toward universal peace by affording the opportunity of presenting to the masses of each generation an almost living replica of the leaders and great men of their nations.

MOURNING

Although black is the conventional garb of mourning in the United States and most of the Western nations, various colors are used in other lands. Aside from America, the following listing gives the garb for a number of countries and peoples.

Black. The color of mourning in Europe; also in ancient Greece and Rome.
Black and white striped. Expressive of sorrow and hope combined; worn by the South Sea Islanders.
Grayish brown. The color of the earth; worn in Ethiopia.
Pale brown. The color of withered leaves; worn in Persia.
Sky blue. Expressive of hope for the deceased; worn in Syria, Cappadocia and Armenia.
Deep blue. The mourning of Bokhara, in central Asia; worn also by the Romans under the Republic.
Purple and violet. Denotes royalty: worn for cardinals and the kings of France.
Violet. Used in Turkey.
White. Mourning of China. Until 1498 it was the mourning of Spain.
Yellow. Mourning worn in Egypt and Burma. Yellow may be regarded as a token of exaltation.

NATIONAL ANTHEMS

Nearly every civilized country has its officially recognized national anthem. Sometimes there are other songs, like *America* in the United States, which are as popular as the official anthems. Sometimes there is a song that is the popular song in one section of a country, like *Dixie* in the Southern States. Again, a change of government may bring a change in the official anthem, as has happened in a number of European countries since the World War. While there is some question as to the official anthem in a few instances, notably in modern Russia, the following list is representative.

Argentina. *Oid, mortales, el grito sagrado* (Mortals, Hear the Heavenly Call). The music is by D. V. Lopez.
Australia. *Song of Australia.* Words by Mrs. Carleton and music by Singer.
Belgium. *La Brabançonne.* The words of this song of "the people of Brabant" were written during the revolution of 1830, when Belgium obtained her freedom. The music was composed by François van Campenhout, a member of the theater orchestra in Brussels, and the words were by Louis Dechez Jenneval, who was killed in action near Antwerp.
Bohemia. *My Fatherland* and *War Song of the Hussites*, have for centuries been the two well known national anthems of Bohemia.
Brazil. *Hymno da Proclamacão da Republica* (Hymn of the Proclamation of the Republic). Music by Leopoldo Miguez and words by Medeiros e Albuquerque.
Burma. *Kayah Than* (Blow the Trumpet).
Canada. *The Maple Leaf Forever.* Words and music by A. Muir.
Chile. *Dulce Patria.* Words and music by Carnicer.
Costa Rica. *De la Patria.* Written by M. M. Gutierrez.
Czechoslovakia. *Kde Domov Muj?* (Where is My Fatherland?)
Denmark. *King Kristian stod ved höien Mast.* (Beside the Mast Stood King Christian). Music by Hartmann, words by Ewald.
Ecuador. *Salve, O Patria* (We Greet Thee, Our Fatherland).
Egypt. *Salaam Effendi* (The Khedive March).
Finland. *Vårt Land* (Our Fatherland). Music by F. Pacius, words by J. L. Runeberg.
France. *La Marseillaise* was the inspiration of Rouget de l'Isle, who wrote both words and music in one night in 1792. It was sung at a civic dinner at Marseille and met with such instant success that copies were printed and distributed to the volunteers who sang it as they entered Paris on their way to the storming of the Tuileries. The delighted Parisians named the song in honor of the city of Marseille and soon its strains were heard in every corner of France. There was some dispute as to authorship but Rouget de l'Isle's claims were fully established in 1865.
Germany. *Heil Dir im Siegerkranz* (Hail Thee, Whose Victor's Crown), was the anthem of the German Empire, written in 1790 by Heinrich Harries, and sung to the tune of *God Save the King.* Two old favorite patriotic songs have taken its place, *Die Wacht am Rhein* (The Watch on the Rhine) by C. Wilhelm and M. Schneckenburger, and *Deutschland über Alles* (Germany Above All) with words by H. von Fallersleben set to the music of J. Haydn.
Great Britain. *God Save the King.* The authorship of this song has been greatly disputed, but probably the honor belongs to Henry Carey, who sang the words set to his own music at a dinner given in 1740 to celebrate the capture of Portobello by Admiral Vernon on November 20, 1739. The earliest known printed copy was published in the *Harmonia Anglicania* about 1742. The tune, while almost the same, differed

from the latter in several bars. In 1745, during the Scottish rebellion, it was sung in theaters as "a long song or anthem." Its first public presentation occurred at Drury Lane on September 28, 1745. Other countries have adopted the melody for their own use, notably the United States, in *America*.

Greece. *Sons of Greece, Come, Rise.* During the Greek war for independence in 1821-1829, the words and music were written.

Hungary. *Isten áld meg a Magyart* (Lord Bless the Hungarian). Music by F. Erkel.

Italy. *Marcia Reale Italiana* (Royal Italian March), by G. Gabetti. Equally popular is *The Garibaldi Hymn* by Luigi Mercantini. Probably because of lack of political unity Italy for many centuries had no national hymn, the people contenting themselves with the rather trivial composition written about 1834 by Gabetti. The people created a hymn for themselves during the stormy period around 1858. To the verses of Luigi Mercantini the military bandmaster, Allessio Olivieri set a genuine Italian melody which, under the name of *The Garibaldi Hymn* has become the popular song of the nation.

Japan. *Kimi Ga Yo Wa* (May Our Sovereign Lord Remain). At the beginning of the tenth century the Emperor Daigo commanded a collection of poems to be compiled under the title of the *Kokinshu* and the words of "Kimi Ga Yo Wa" were included, but the author is unknown.

Latvia. *Dievs sveti Latviju* (God Bless Latvia).

Mexico. *Mexicanos, al grito de guerra* (Mexicans, Arise to War). Music by James Nunó and words by F. G. Bocanegra.

Netherlands. *Wein Neerlandsch Bloed* (Ancient Blood of the Netherlands) by H. C. Tollens, and the stirring *Wilhelmus van Nassouwe* (William of Nassau).

Nicaragua. Blas Villatas wrote the national song.

Norway. *Sang for Norge* (Song for Norway). The words are by the great Norwegian author, Björnstjerne Björnson.

Persia. *Salamati Shah* (Salute the Shah). Music by A. Lemaire.

Peru. *Somos libres, seámoslo siempre* (We are Free, So Let us Remain Forever).

Poland. *Jeszcze Polska Nie Zginela* (Never Shall Poland Die).

Portugal. The *Portuguese National Hymn* was written by A. Keil. Until Portugal became a republic in 1910, her anthem was *O Patria, O Rei, O Povo* (O Fatherland, O King, O People), written by Dom Pedro who wrote the song in 1822 when he became Dom Pedro I of Brazil. When he succeeded to the Portuguese throne four years later, as Dom Pedro IV, Portugal also adopted the song as its anthem. Brazil, like Portugal, discarded the song as its national anthem when it became a republic.

Rumania. *Traeasca Regale* (Long Live the King). The first move toward a national hymn was the composition of a fanfare for Prince Alexander Johannes Cusa (1820-1873). The winner of the competition begun for this end was Edward A. Hubsch. When Rumania was raised to a kingdom words were written by Vasil Alexander.

Russia. *Boshe Zaria Chrani* (God Save our Noble Czar) was the national anthem of Imperial Russia, written by General Livoff at the command of Czar Nicholas. The general, who was a fine violinist, set the work to words written by Joukovsky, and in 1833 this stately anthem was given to the world.

The Hymn of Free Russia, by Gretchaninoff, superseded the czarist hymn, but the *Internationale* is the commonly recognized song of the entire Union of Socialist Soviet Republics.

Salvador. *Saludemos la Patria* (Let Us Salute our Country). Music by J. Aberle and words by J. J. Canas.

Serbia. *God in His Goodness*, and *Rise, O Serbia.* The words of the former song are said to have been written by Nicholas I of Montenegro in 1867, set to music by Davorin Jenko in 1872. Modern words are ascribed to the Serbian poet, J. Gjorgevic, and adapted to the melody by Jenko.

Spain. Music of *Himno de Riego* (Hymn of the King) was written by Huerta.

Sweden. *Ur Svenska Hjertans djup* (From the Bottom of Swedish Hearts). Music by Lindblad, words by Strandberg.

Switzerland. *Dem Vaterland* (To the Fatherland). Written to the music of *God Save the King*; words by J. R. Wyss, author of *Swiss Family Robinson.*

United States. *The Star Spangled Banner* is the national anthem. It was written by Francis Scott Key on Sept. 14, 1814, when the British were bombarding Fort McHenry. Key went to secure the release of a friend, but was detained all night by the battle, and in the early morning, seeing the American flag still waving from the fort, he took an old envelope from his pocket and wrote the song which he entitled *The Defense of Fort McHenry.* The poem at once spread far and wide. The words were set to music by Ferdinand Durang who used an old air, *Adams and Liberty.* The song at once met with tremendous applause. *America*, although not the official song, is probably the most popular one, the words being by Samuel F. Smith and set to the tune of *God Save the King.*

Uruguay. *Himmo Nacional de la República Oriental del Uruguay.* (National Hymn of the Republic of Uruguay).

Venezuela. *Gloria al bravo pueblo* (A Brave Nation Honored). Music by J. Sandaeta, words by V. Salvias.

Yugoslavia. The national anthem of Yugoslavia is made up of a combination of the Serbian *Boze Pravde*, the Croatian *Liepa Nasa Domvina*, and the Slovene *Napred Zastava Slave.*

NATIONAL CEMETERIES

National Cemeteries were authorized by an Act of Congress, July 17, 1862, and by subsequent acts.

LOCATION	AREA IN ACRES		INTERMENTS		TOTAL
	TOTAL	INCLOSED	KNOWN	UNKNOWN	
Alexandria (Pineville), La.	8.24	8.24	2,299	2,380	4,679
Alexandria, Va.	5.50	5.50	3,454	124	3,578
Andersonville, Ga.	120.	25.	12,697	1,040	13,737
Andrew Johnson (Greenville), Tenn.	15.	15.	53	0	53
Annapolis, Md.	4.125	4.125	2,355	206	2,561
Antietam (Sharpsburg), Md.	11.	9.50	2,899	1,923	4,822
Arlington (Ft. Myer), Va.	408.03	408.03	32,938	4,713	37,651
Balls Bluff (Leesburg), Va.	.0057	.0057	1	24	25
Barrancas, Fla.	8.56	7.10	2,179	808	2,987
Baton Rouge, La.	7.50	7.50	2,772	536	3,308
Battle Ground (Takoma Park), D. C.	1.033	1.033	44	0	44
Beaufort, S. C.	29.	29.	5,135	4,598	9,733
Beverly, N. J.	1.	1.	253	7	260
Camp Butler (Springfield), Ill.	6.02	6.02	1,455	166	1,621
Camp Nelson, Ky.	9.50	8.25	2,428	1,245	3,673
Cave Hill (Louisville), Ky.	4.29	4.29	4,701	593	5,294
Chalmette (Arabi), La.	16.	13.60	7,684	5,746	13,430
Chattanooga, Tenn.	129.53	75.	9,333	5,059	14,392
City Point, Va.	7.49	6.60	3,776	1,435	5,211
Cold Harbor (Richmond), Va.	1.75	1.75	692	1,279	1,971
Corinth, Miss.	20.	18.33	1,760	3,995	5,755
Crown Hill (Indianapolis), Ind.	1.37	1.37	1,029	37	1,066
Culpepper, Va.	6.	6.	466	912	1,378
Custer Battlefield (Crow Agency), Mont.	640.	6.91	1,370	276	1,646
Cypress Hills (Brooklyn), N. Y.	18.14	18.14	11,626	440	12,066
Danville, Ky.	.31	.31	354	9	363
Danville, Va.	8.50	3.17	1,172	159	1,331
Fayetteville, Ark.	6.63	6.	570	810	1,380
Finns Point (Salem), N. J.	2.50	2.50	2,622	30	2,652
Florence, S. C.	3.76	3.73	217	2,802	3,019
Fort Donelson (Dover), Tenn.	15.34	5.	170	512	682
Fort Gibson, Okla.	6.90	5.70	362	2,208	2,570
Fort Harrison (Richmond), Va.	1.55	1.55	237	582	819
Fort Leavenworth, Kan.	15.	15.	2,816	1,583	4,399
Fort McPherson (Brady), Neb.	20.	4.50	555	558	1,113
Fort Scott, Kan.	10.26	10.26	957	126	1,083
Fort Smith, Ark.	14.74	9.	1,129	1,466	2,595
Fredericksburg, Va.	12.005	12.005	2,482	12,738	15,220
Gettysburg, Pa.	14.87	14.87	2,109	1,642	3,751
Glendale, Va.	2.12	2.	243	959	1,202
Grafton, W. Va.	3.40	3.40	681	657	1,338
Hampton, Va.	10.611	19.611	12,907	635	13,542
Jefferson Barracks, Mo.	50.	20.50	10,955	3,028	13,983
Jefferson City, Mo.	2.	2.	465	446	911
Keokuk, Iowa	2.75	2.75	1,005	45	1,050
Knoxville, Tenn.	9.85	9.83	2,740	1,163	3,903
Lebanon, Ky.	2.50	2.38	603	277	880
Lexington, Ky.	.75	.75	1,121	106	1,227
Little Rock, Ark.	23.12	23.12	4,325	3,039	7,364
Loudon Park (Baltimore), Md.	3.69	3.69	4,577	348	4,925
Marietta, Ga.	24.	21.05	7,489	3,095	10,584
Memphis, Tenn.	43.91	37.	6,043	8,864	14,907
Mexico City, Mexico	2.	2.	812	751	1,563
Mill Springs (Somerset), Ky.	3.50	1.75	344	402	746
Mobile, Ala.	2.68	2.68	1,037	1,416	2,453
Mound City, Ill.	10.50	8.	2,793	2,759	5,552
Nashville (Madison), Tenn.	65.	60.60	12,755	4,121	16,876
Natchez, Miss.	11.07	11.07	876	2,786	3,662
New Albany, Ind.	5.46	5.46	2,611	732	3,343
Newbern, N. C.	7.69	7.69	2,352	1,110	3,462
Philadelphia (Pittsville Sta.), Pa.	13.26	13.26	4,495	40	4,535
Poplar Grove (Petersburg), Va.	8.65	8.65	2,161	4,071	6,232
Port Hudson, La.	8.	8.	619	3,240	3,859
Quincy, Ill.	.459	.459	263	57	320
Raleigh, N. C.	7.83	6.90	699	550	1,249
Richmond, Va.	9.74	9.74	945	5,704	6,649
Rock Island, Ill.	1.79	1.79	526	46	572
Salisbury, N. C.	6.	6.	156	12,036	12,192
San Antonio, Tex.	3.63	3.63	3,312	318	3,630
San Francisco (Presidio Sta.), Cal.	11.8	11.8	10,754	510	11,264
Sante Fe, N. M.	9.44	9.35	920	461	1,381
Seven Pines (Richmond), Va.	1.55	1.47	168	1,238	1,406
Shiloh (Pittsburg Landing), Tenn.	10.05	9.	1,232	2,405	3,637
Soldiers Home, D. C.	16.	16.	8,586	291	8,877
Springfield, Mo.	11.	10.90	1,470	1,248	2,718
St. Augustine, Fla.	1.33	1.33	320	1,553	1,873
Staunton, Va.	1.15	1.15	227	547	774
Stone River (Murfreesboro), Tenn.	20.10	18.455	3,605	2,559	6,164
Vicksburg, Miss.	40.	34.50	4,448	12,910	17,358
Wilmington, N. C.	5.	4.50	806	1,609	2,415
Winchester, Va.	4.89	4.89	2,124	2,436	4,560
Woodlawn (Elmira), N. Y.	2.36	2.36	3,303	20	3,323
Yorktown, Va.	3.	3.	758	1,446	2,204
Sitka, Alaska	1.19	1.19	70	0	70
Zachary Taylor (St. Matthews), Ky.	16.43	16.43	2	0	2
TOTAL	2,126.6797	1,241.9747	257,854	154,801	412,655

NATIONAL (AMERICAN PERMANENT) CEMETERIES IN EUROPE

NAME	LOCATION	ACRES	CAPACITY	INTERMENTS	KNOWN	UNKNOWN
Brookwood	Brookwood (near London), England	4¼	452	452	410	42
Flanders Field	Waereghem, Belgium	3	368	366	345	21
Meuse-Argonne	Romagne-sous-Montfaucon, Meuse, France	130	14,177	14,177	13,720	457
Oise-Aisne	Seringes-et-Nesle, Aisne, France	32	6,160	6,004	5,388	616
St. Mihiel	Thiaucourt, Meurthe-et-Moselle, France	30	4,208	4,151	4,034	117
Somme	Bony, Aisne, France	13	2,096	1,829	1,698	131
Suresnes	Suresnes, Seine, France (near Paris)	7½	1,691	1,534	1,528	6
Aisne-Marne	Belleau, Aisne, France	34	2,348	2,270	2,018	252
	TOTAL	256	31,500	30,783	29,141	1,642

NATIONAL FORESTS

The net area of the National Forests in the United States is estimated at 159,750,520 acres. About 19,026,819 of these are in California, 21,345,925 in Alaska, and some 19,300,773 in Idaho. Twenty-eight of the forests extend into two or more states. The two largest are in Alaska: Tongass, 16,546,242 acres, and Chugach, 4,799,683 acres. Third is Tonto in Arizona, 2,262,044 acres. Among the best known of these forests are the Black Hills in South Dakota and Wyoming; Shenandoah in Virginia and West Virginia; Tahoe in California and Nevada; Umatilla in Oregon and Washington; White Mountains in Maine and New Hampshire; Sequoia in California; Bitterroot, Flathead and Kootenai in Montana; Cascade and Mt. Hood in Oregon; Chelan, Olympic and Rainier in Washington; Big Horn, Shoshone and Teton in Wyoming. Besides all the National Forests, there are State Forests which include more than 10,100,000 acres, a fifth of these being in New York.

NATIONAL LEAGUE OF WOMEN VOTERS

When, in 1920, the amendment giving suffrage to women was added to the federal Constitution, the National American Woman Suffrage Association had achieved its purpose. Led by Mrs. Maude Wood Park, the National League of Women Voters was formed in 1921 to improve citizenship, pass desirable legislation, promote international peace and improve government machinery.

Associated with the National League of Women Voters are many individual leagues from the United States, Hawaii and the District of Columbia. Likewise associated are the National Council of Jewish Women, and the Ladies of the Maccabees.

In 1924 the National League of Women Voters chose from twelve different lines of endeavor the most famous living American women. They include:

Name	*Activity*
Jane Addams	Social reformer
Cecelia Beaux	Portrait painter
Annie Jump Cannon	Astronomer
Carrie Chapman Catt	Suffrage leader, lecturer
Anna Botsford Comstock*	Naturalist, wood engraver
Minnie Maddern Fiske	Actress
Louise Homer	Singer, dramatic contralto
Julia Lathrop	Humanitarian
Florence Rena Sabin	Anatomist
M. Cary Thomas	Educator
Martha Van Rensselaer	Home economist
Edith Wharton	Novelist

*Since 1924, deceased.

NATIONAL MONUMENTS

There are over sixty National Monuments in the United States, over half of which are administered by the National Park Service, the others about equally divided between the Department of Agriculture and the War Department. They were established under a law entitled "An act for the preservation of American antiquities," passed in 1906, which gives the President of the United States authority to declare by proclamation historic landmarks, historic and prehistoric structures and other objects of historic or scientific interest that are situated upon lands owned or controlled by the United States, to be National Monuments.

The National Monuments are varied in character, including battle fields, ruins of archaeological value, caverns, volcanic areas and canyons that are of great geological interest, and places of peculiar beauty. Aztec ruins in New Mexico; Shoshone Cavern in Wyoming; Fort Marion, Florida; Katmai, Alaska, including the famous volcanic area of the Valley of Ten Thousand Smokes; the tract in Tennessee containing the grave of Meriwether Lewis, and the natural bridges in Utah are among the varied types of reservation listed as National Monuments.



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Glacier National Park

On the way to the summit in Glacier National Park, Montana. The rugged scenery in this park has been compared with that of the Alps in Switzerland.

NATIONAL PARKS

Both the United States and Canada have designated as National Parks certain areas of great scenic beauty or unusual geologic or historic value in order to preserve them for the people. The Department of the Interior in each country has supervision of the parks which are administered through a Director of National Park Service. The United States has established twenty-two of these parks with others in the making and proposed.

Acadia (formerly Lafayette National Park.) Part of Mt. Desert Island and Schoodic Point, Maine, comprise this park which is an area of 16.72 square miles of woods and of surf-swept rocky seashore; first established in 1919.

Bryce Canyon, established in 1928, preserves the pink cliffs of Bryce Canyon and the surrounding rugged country as a public park. Situated in Utah; 22.60 square miles.

Carlsbad Caverns, established 1930, was a National Monument. It covers 1.12 square miles. See page 1193.

Crater Lake, established in 1902, lies in southwestern Oregon, extending into northern California, and covers 249 square miles. The lake lies in the crater of an extinct volcano.

Everglades (proposed), 1930, in the Cape Sable region, Florida, is being projected.

General Grant. This park was formed in 1890 in order to preserve the General Grant tree, a redwood 40.3 feet in diameter. Christmas festivities are held at the foot of this tree each year, a custom begun in 1925. The park covers four square miles in central California.

Glacier, in northwestern Montana, established in 1910, has an area of 1,534 square miles. It is a rugged mountainous district, resembling the Swiss Alps. There are 250 glacier-fed lakes of great beauty, 60 small glaciers, peaks of peculiar shapes and precipices of great depth.

Grand Canyon, in Arizona, near the Kaibab Forest, preserves the Grand Canyon of the Colorado, one of the greatest examples of erosion in the world. The canyon is noted for its vivid colorings. The park was established in 1919 and covers 1,009 square miles in north central Arizona.

Grand Teton, Wyoming, lies in the Teton Mountains, about eleven miles south of Yellowstone, and borders the Jackson Hole country. The park covers 150 square miles, Alpine in character, with the Great Teton towering in its midst. The country is full of wild life. The park was established in 1929.

Great Smoky Mountains (proposed), 1930. In North Carolina and Tennessee, 248.22 square miles of mountain country.

Hawaii, located in the Hawaiian Islands, was created in 1916. It covers 245 square miles, and includes the volcanoes of Kilauea, Mauna Loa and Haleakala, as well as the great lava lake near Kilauea.

Hot Springs, reserved by Congress in 1832, was established as a park in 1921. It is in the middle of Arkansas, covers one and one-half square miles, and contains 46 hot springs, valued for their curative properties. The flow is over 850,000 gallons a day.

Lassen Volcanic, established in the northern part of California in 1916, has an area of 163.3 square miles. Mt. Lassen continues to steam and is the only active volcano in the United States proper. There are geysers and hot springs, a boiling lake and many active sulphur springs.

Mammoth Cave (proposed), in Kentucky. By 1930 funds for this park had been raised.

48 square miles of glacier, some of it 50 to 500 feet thick. The glaciers are receding slowly. Nisqually and Ingraham are the best known among them, and many of the glaciers are deeply crevassed. There are subalpine wild flower fields, and from the crater of Mt. Rainier still issues enough heat to produce ice caverns and odd ice forms about its edges.



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Yellowstone Falls

A view of the superb lower falls, 310 feet in height, in Grand Canyon of the Yellowstone National Park.

Mesa Verde was founded in 1906 in southwestern Colorado and covers 80.11 square miles. Here are found the most notable and best preserved prehistoric cliff dwellings in the United States. Archaeological expeditions have unearthed many finds.

Mt. McKinley, established in 1917 in south central Alaska, covers an area of 2,645 square miles and includes within its limits Mt. McKinley, the highest mountain on the continent.

Mt. Rainier was founded in 1899 and comprises 325 square miles in west central Washington. This is the largest single-peak glacier system accessible and contains 28 glaciers,

Platt was founded in 1902 and is situated in southern Oklahoma. Its one and one-third square miles are covered by sulphur, sodium chloride and other mineral springs, prized for their curative value.

Rocky Mountain was founded in 1915 and lies north of the center of Colorado and comprises 400.52 square miles. It embraces a showy range of peaks in the heart of the Rockies, some of which are 11,000 to 14,255 feet high.

Sequoia, in the east central part of California, was established in 1890 to protect the great trees growing in its 604 square miles. There are within its borders thousands of sequoias of more than 10 feet in diameter. The park contains several mountains, and it is popular for winter sports.

Shenandoah (proposed), in Virginia. In 1930 land was being acquired.

Sully's Hill, in North Dakota, was established in 1904. It is a wooded tract on Devil's Lake, 1.2 miles in area.

Wind Cave took its place among the other National Parks in 1903. It covers an area of seventeen square miles in South Dakota in the Black Hills. There are no lakes or long streams in the region, the chief attractions being the rugged hills and the big limestone cavern that contains passages over ninety miles long, and rooms of great beauty.

Yellowstone, established in 1872, lies mainly in Wyoming but extends into Idaho and Montana, covering 3,426 square miles in all. The park is almost surrounded by great mountains whose tops are snow-covered throughout the year. They are 10,000 to 12,000 feet above sea level, the park itself being largely on a high plateau, 8,000 feet above the sea. The park is now easily accessible to travelers by rail and automobile.

Yellowstone River traverses the park and merges with Yellowstone Lake, then leaves the lake and enters the Grand Canyon of the Yellowstone, through which it passes in a series of waterfalls and rapids. Other rivers in the park are the Gallatin, the Snake, the Madison and the Lewis. Since the Continental Divide passes through the park from northwest to east, some rivers rising in the park drain into the Pacific and others into the Atlantic Ocean. Yellowstone Lake, with an area of about 200 square miles, is the largest of a great number of lakes to be found in the park.

Great evergreens grow below the timber line; there is a variety of flowers in certain areas, and the park is a protected home for many wild animals, including bears of various kinds, moose, elk, deer, antelopes, mountain sheep and wild buffalo herds, as well as those raised on a buffalo ranch.

A great variety of geysers is found in the park. The most famous, Old Faithful, spouts regularly at short intervals. Other active geysers are the Daisy, Riverside, Grand, New (first active in 1928), Beehive, Great Fountain, Imperial, Castle, Giant and Giantess. Many of the geysers bubble and foam; others send up small streams at various angles, while the large ones erupt to a great height. While some are regular in the time of eruption, others are decidedly irregular, and some are regular for a time and then become intermittent.

Wonderfully colored hot springs and mud volcanoes are found in the park. Some of these have brought to the surface vast quantities of white mineral deposits, thus building high terraces over which the hot water runs. Among the best known are those at Mammoth. Many of the basins through the agency of algae, are colored in brilliant reds, pink, green and bluish gray. The surrounding mountains and plateaus are made of volcanic ash and lava, and there is a remarkable petrified forest along the Lamar River in which fossil trees stand upright in the faces of almost perpendicular cliffs rising 2,000 feet above the plateau. The volcanic origin of the region is

the explanation of these petrified trees that were buried for thousands of years and brought to light again by great floods and glacial movement.

Yosemite, established in 1890, is situated in east central California and covers 1,138.78 square miles. River erosion and glaciers in ancient times produced this country of beautiful lakes, mountain peaks 13,000 feet high, lofty waterfalls, valleys, canyons, gorges, cascades and cataracts. The greatest scenic marvels are the Yosemite Valley, the Mariposa Grove of giant trees, Tuolumne Canyon and the Hetch Hetchy Valley. The Waterwheel Falls in Tuolumne Valley throws its waters from fifty to eighty feet into the air. In the Mariposa Grove is the second finest group of sequoias in the country, the greatest tree being the Grizzly Giant, 204 feet high, 29½ feet in diameter and 93 feet in girth. Through Wawona tree runs an automobile road 26 feet in width. The Washington tree is almost as large as the Grizzly Giant, while the Columbia is 294 feet high.

The Yosemite Valley is eight miles long and about a mile wide, and through it flows the Merced River which has a fall of 31 feet in this short distance. After the drop at Ribbon Falls and Bridalveil Falls, the Cathedral Spires, a group of high and pointy rocks, are encountered. Sentinel Rock stands opposite Yosemite Falls. These falls make a vertical drop of 1,430 feet, then 800, and the final plunge of 320 feet brings the water to a low talus of rock at the foot of the precipice. The Vernal Falls, also called Cataract of Diamonds, and the Nevada Falls lie beyond the Yosemite Falls.

Zion, 148.26 square miles in area, in southwestern Utah, was made a National Park in 1919. Zion Canyon, which is 2,500 feet deep in some parts, is the chief feature of this park.

There are also eleven national military parks and other parks under the jurisdiction of the Secretary of War, most of which are historic battlefields.

The Canadian National Parks number over a dozen, *Jasper Park* in Alberta being the largest on the North American continent, 4,200 square miles in area. Established in 1907, it is a mountain wilderness with great peaks, deep lakes, great gorges and canyons within its borders. Mt. Edith Cavell and Mt. Robson are the most famous peaks. Alberta also contains the 2,585 square miles of *Banff Park*, formerly Rocky Mountain Park, in which lie Banff and Lake Louise. On the southern edge of Alberta, adjoining the U. S. Glacier Park, is the 220 square miles of *Waterton Lakes Park*, famed for its snowy peaks, lakes and waterfalls. In Alberta are also *Nemiskam Park*, 8½ square miles; *Wawaskesy Park*, 54 square miles; *Elk Island Park*, at Lamont, 51 square miles, and *Buffalo Park*, at Wainwright, 197½ square miles, famous for its great herds of buffaloes.

In British Columbia are *Glacier Park*, 521 square miles, set aside in 1886 to preserve the Illecillewaet and Asulkan glaciers and the Nakimu caves; *Yoho Park*, 507 square miles, founded in 1886, and containing a natural bridge, Yoho Falls and Emerald Lake; *Kootenay Park*, 587 square miles, including the Briscoe Range and Radium Hot Springs; and *Mount Revelstoke Park*, of 100 square miles, founded in 1916. In Saskatchewan lies *Prince Albert Park*, 1,869 square miles. *St. Lawrence Islands* were set aside in 1904, and total about 180 acres, while *Pt. Pelee Park*, 6.01 square miles extending into Lake Erie is the southernmost point in Canada. These are both in Ontario, as is *Georgian Bay Islands Park*, 29 islands in all, 4.63 square miles. In Manitoba lies *Riding Mountain Park*, 1,148.04 square miles of mountains and forests.

There are several animal preserves and bird sanctuaries, and Fort Anne, in Nova Scotia, and Fort Beausejour in New Brunswick are historic sites set aside as parks. The former is 31 square miles and the latter is 59 square miles in extent. Several areas have been set aside but not yet developed, and there are also a number of great parks maintained by the individual provinces.



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The Rainbow Bridge of Utah

The size of this great natural bridge is shown by the inserted photograph of the well-known Flatiron Building of New York City.

NATURAL BRIDGES

There are about fifty great natural bridges in the United States besides many smaller ones. Stream erosion, volcanic action or the constant beating of waves are the principal causes of these formations of natural stone arches. There is a famous Rainbow Bridge in Utah and one of the same name in Arizona.

NAVAL ACADEMY, UNITED STATES

The United States Naval Academy is located at Annapolis, Maryland, where it was established by a special act of Congress in 1845, to give practical and theoretical training to young men for the naval service of the United States. This institution owes its foundation primarily to the untiring efforts of the historian, George Bancroft, Secretary of the Navy at that time.

The students of the Naval Academy are called "midshipmen." There are received at the Academy four midshipmen for each Senator, Representative, Delegate in Congress, and the Vice President, two for the District of Columbia and fifteen appointed each year from the United States at large. The appointments from the District of Columbia and fifteen each year at large are made by the President. The President customarily gives the appointment of midshipmen at large to the sons of officers and enlisted men of the Regular Army, Navy and Marine Corps, because officers and enlisted men, owing to the nature of their duties, are unable to establish permanent residence and thus be in a position to secure nominations for their sons from their Senators and Representatives. The vacancies from the District of Columbia are filled by competitive examination of candidates residing in the District. The selection of candidates, by competitive examination or otherwise, for nomination for vacancies in the quota of Senators, Representatives and Delegates in Congress is entirely in the hands of each Senator, Representative and Delegate in Congress having a vacancy. In addition, 100 enlisted men are selected each year as a result of a competitive examination given to enlisted men of the regular Navy and Marine Corps. The law also authorizes the appointment of twenty-five midshipmen each year from the Naval Reserve and Marine Corps Reserve who attain highest ratings in the competitive examinations. Candidates must not be more than twenty years of age on April 1 of the year in which they are appointed, and who have seen a year of service by July 1 of that year.

An act of Congress approved on June 8,

1926, authorizes that the number of midshipmen now allowed by law at the United States Naval Academy be increased by forty from the United States at large, to be appointed by the President from among the sons of officers, soldiers, sailors and marines of the Army, Navy and Marine Corps of the United States who were killed in action or died prior to July 2, 1921, of wounds or injuries received or disease contracted in line of duty during the World War; provided, that one-half shall be appointed from among the sons of officers and one-half from among the sons of warrant officers, soldiers, sailors and marines of the Army, Navy and Marine Corps. One midshipman is allowed from Porto Rico. He must be a native of that island. The appointment is made by the President on the recommendation of the Governor of Porto Rico. Finally, four Filipinos designated by the Governor-General of the Philippine Islands are allowed to receive instructions at the Naval Academy but are not entitled to appointment at any commissioned office in the United States Navy. All candidates, except the four Filipinos, are required to be citizens of the United States and must not be less than sixteen nor more than twenty years of age on April 1 of the calendar year in which they enter. All candidates must be unmarried, and remain unmarried until after graduation. The course for midshipmen is four years.

Examinations for midshipmen to the Academy are held on the third Wednesday in February and on the third Wednesday in April under the supervision of the Civil Service Commission. A cash entrance deposit of $100 must be made by the candidate on entering. Besides this, $250 necessary for such supplies as uniforms, clothing and text books is advanced by the Government but later deducted from the midshipman's pay of $780 per annum in monthly installments.

The beautiful grounds of the Academy contain 125 major buildings, including officers' quarters. In 1895 a plan of construction and reorganization of new school buildings was commenced. Seventeen years later the Post-graduate School was established. Select officers are sent here for a year or more of advanced training in engineering subjects. In 1927 another graduate course, consisting of a year's study in professional subjects was established. This is followed by a year's course at the Naval War College at Newport, Rhode Island.

NEWBERY PRIZE

The Newbery Prize is a medal awarded annually to the best book for children published during the year in the United States. The medal is named in memory of John Newbery, an early bookseller in St. Paul's Churchyard, London. He encouraged authors to write for young readers, issued small-sized juveniles, and was a friend and patron of Oliver Goldsmith, who is said to have written *Goody Two-shoes* at the instance of Newbery. The award is determined by a special committee of the Children's Librarians Section of the American Library Association, and the medal is the gift of the publisher of *Publishers' Weekly*. The winners of the award since its establishment are:

NEWBERY PRIZE WINNERS

YEAR	AUTHOR	BOOK TITLE
1922	Hendrik Van Loon	The Story of Mankind
1923	Hugh Lofting	Voyages of Mr. Doolittle
1924	Charles B. Hawes	Dark Frigate
1925	Charles J. Finger	Tales From Silver Lands
1926	Arthur B. Chrisman	Shen of the Sea
1927	Will James	Smoky
1928	Dhan Gopal Mukerji	Gay Neck
1929	Erik Kelly	The Trumpeter of Krakow
1930	Rachel Field	Hitty: Her First Hundred Years
1931	Coatsworth	The Cat Who Went to Heaven
1932	Armer	Waterless Mountain
1933	Lewis	Young Fu of the Upper Yangtze
1934	Cornelia Meigs	Invincible Louisa
1935	Monica Shannon	Dobry
1936	Carol R. Brink	Caddie Woodlawn

NOBEL PRIZE

The Swedish inventor and scientist, Alfred B. Nobel, inventor of dynamite, died in 1896, bequeathing $9,000,000, the interest of which should annually be distributed to those who had mostly contributed to the benefit of mankind during the year preceding in the fields of chemistry, physics, medicine or physiology, literature, promotion of international peace. The awards are made by designated committees: the peace award, by a group selected by the Parliament of Norway; physiology or medicine by the Caroline Institute of Stockholm, Sweden; physics and chemistry by the Swedish Royal Academy of Sciences; literature by the Swedish Academy. The value of each prize is $46,299. Both men and women from every nation of the globe are eligible for Nobel prizes. When the committee decides that two or more people have equally contributed to the welfare and progress of the world, the prize is divided.

The first prizes were awarded in 1902 and, except during the World War, most of the prizes have been awarded each year.

NOBEL PRIZE WINNERS

YEAR	PHYSICS	CHEMISTRY	MEDICINE	LITERATURE	PEACE
1901	W. C. Röntgen (G.)	J. H. van't Hoff (D.)	E. A. von Behring (G.)	R. F. A. Sully-Prudhomme (F.)	H. Dunant (Swi.) Fr. Passy (F.)
1902	H. A. Lorentz (D.) P. Zeeman (D.)	E. Fischer (G.)	Sir Ronald Ross (E.)	Th. Mommsen (G.)	E. Ducommun (Swi.) A. Gobat (Swi.)
1903	H. A. Becquerel (F.) P. and Marie Curie (F.)	S. A. Arrhenius (Swe.)	N. R. Finsen (Dan.)	B. Bjornson (N.)	Sir W. R. Cremer (E.)
1904	Lord Rayleigh (E.)	Sir Wm. Ramsay (E.)	I. P. Pawlow (R.)	F. Mistral (F.) J. Echegaray (Sp.)	Institute of International Law
1905	Ph. Lenard (G.)	A. von Baeyer (G.)	R. Koch (G.)	H. Sienkiewicz (P.)	Baroness von Suttner (Aus.)
1906	J. J. Thomson (E.)	H. Moissan (F.)	C. Golgi (I.) S. Ramon y Cajal (Sp.)	G. Carducci (I.)	Th. Roosevelt (A.)
1907	A. A. Michelson (A.)	E. Buchner (G.)	C. L. A. Laveran (F.)	R. Kipling (E.)	E. T. Moneta (I.) L. Renault (F.)
1908	G. Lippmann (F.)	E. Rutherford (E.)	P. Ehrlich (G.) E. Metchnikoff (R.)	R. Eucken (G.)	K. P. Arnoldson (Swe.) F. Bajer (Dan.)
1909	G. Marconi (I.) F. Braun (G.)	W. Ostwald (G.)	Th. Kocher (Swi.)	Selma Lagerlof (Swe.)	A. M. F. Beernaert (B.) Baron de Constant (F.)
1910	J. D. van der Waals (D.)	O. Wallach (G.)	A. Kossel (G.)	P. Heyse (G.)	Int'l. Peace Bureau (Swi.)
1911	W. Wien (G.)	Marie Curie (F.)	A. Gullstrand (Swe.)	M. Maeterlinck (B.)	T. M. C. Asser (D.) A. H. Fried (Aus.)
1912	Gustaf Dalén (Swe.)	V. Grignard (F.) P. Sabatier (F.)	Alexis Carrel (A.)	G. Hauptmann (G.)	Elihu Root (A.)
1913	H. K. Onnes (D.)	A. Werner (Swi.)	C. Richet (F.)	R. Tagore (Beng.)	H. LaFontaine (B.)
1914	M. von Laue (G.)	T. W. Richards (A.)	R. Barany (Aus.)	No award	No award
1915	W. H. Bragg (E.) W. L. Bragg (E.)	R. Willstatter (G.)	No award	Romain Rolland (F.)	No award
1916	No award	No award	No award	Verner Heidenstam (Swe.)	No award
1917	Charles G. Barkla (E.)	No award	No award	K. Gjellerup (Dan.) H. Pontoppidan (Dan.)	International Red Cross of Geneva
1918	M. Planck (G.)	F. Haber (G.)	No award	No award	No award
1919	J. Stark (G.)	No award	Jules Bordet (B.)	Carl Spitteler (Swi.)	W'drow Wilson (A.)
1920	C. E. Guillaume (Swi.)	Walther Nernst (G.)	A. Krogh (Dan.)	Knut Hamsun (N.)	L. Bouregois (F.)
1921	Albert Einstein (G.)	Fred'k Soddy (E.)	No award	Anatole France (F.)	K.H.Branting (Swe.) Chr. L. Lange (N.)
1922	Niels Bohr (Dan.)	F. W. Aston (E.)	A. V. Hill (E.) O. Meyerhoff (G.)	J. Benavente (Sp.)	F. Nansen (N.)
1923	R. A. Millikan (A.)	Fritz Pregl (Aus.)	F. G. Banting (Can.) J. J. R. McLeod (Can.)	W. B. Yeats (Irish)	No award
1924	K. M. G. Siegbahn (Swe.)	No award	W. Einthoven (D.)	Wladislau Reymont (P.)	No award
1925	Jas. Franck (G.) Gust. Hertz (G.)	Richard Zsigmondy (G.)	No award	G. B. Shaw (E.)	C. G. Dawes (A.) A. Chamberlain (E.)
1926	Jean B. Perrin (F.)	T. Svedberg (Swe.)	Johan Fibiger (Dan.)	Signora G. Deledda	Aristide Briand (F.) G. Stresemann (G.)
1927	Arth. Compton (A.) C. T. R. Wilson (E.)	Heinrich Wieland (G.)	J. Wagner Jauregg (Aus.)	Henri Bergson (F.)	Ludwig Quidde (G.) Ferd. Buisson (F.)
1928	O.W.Richardson(E.)	Adolf. Windaus (G.)	Ch. Nicolle (F.)	Sigrid Undset (N.)	No award
1929	Duc de Broglie (F.)	A. Harden (E.) H. von Euler-Chelpin (Swe.)	F. G. Hopkins (E.) E. Eijkmann (G.)	No award	Frank B Kellogg (A.)
1930	Sir C. V. Raman (In.)	Hans Fischer (G.)	Karl Landsteiner (A.)	Sinclair Lewis (A.)	Nathan Soederblom (Swe.)
1931		Carl Bosch (G). and Fred. Bergius (G.)	Otto Warburg (G.)	Erik A. Karlfeldt (Swe).	Dr. N.M. Butler (A)
1932	W. Heisenberg (G.)	Irving Langmuir (A.)		John Galsworthy (E.)	Jane Addams (A)
1933	P. A. M. Dirac (E.), E. Schroedinger(G.)		Charles Sherrington (E.) and D. Adrian (E.)	Iyan Bunin (R.)	
1934		H. C. Urey (A.)	G. R. Minot, W. F. Murphy, and G. H. Whipple (A.)	Luigi Pirandello(I.)	Arthur Henderson (E.)
1935	J. Chadwick (E.)	F. Joliot and Irene Curie (F.)	Hans Spemann(G.)	No award	C. von Ossietzky (G.)
1936	C. Anderson (A.) and V. Hess(Aus.)	P. Debye (D.)	Sir H. Dale (E.) and O. Loewi (Aus.)	Eugene O'Neill (A.)	Carlos S. Lamas (Arg.)

A., American; Arg., Argentine; Aus., Austrian; B., Belgian; Beng., Bengalese; Can., Canadian; D., Dutch; Dan., Danish; E., English; F., French; G., German; I., Italian; In., British Indian; N., Norwegian; P., Polish; R., Russian; Sp., Spanish; Swe., Swedish; Swi., Swiss.

OLYMPIC GAMES

When the Roman Emperor, Theodosius, put an end to the ancient Olympic Games in 396 A. D., he stopped a custom that had endured over a thousand years. In fact, the Olympic Games are said to have originated in Greece in 776 B. C. and they were held every fourth year in honor of the great god Zeus. The word "olympiad" came to mean a four-year period. The games were held on the Plain of Olympia in Elis and nearby stood the great temple erected to Zeus and the ivory and gold statue of the god that was counted one of the Seven Wonders of the Ancient World.

All free-born honorable citizens from the Grecian states were invited to take part and, after the Roman domination began, those from other countries were welcomed. Hostilities were suspended during the celebration. The early contests were foot races, but later came the pentathlon, a five-fold contest in which the participants took part in five events, these usually being leaping, running, wrestling, throwing the discus and hurling the javelin. Later still, other events were scheduled. The prizes were simple olive wreaths made from branches taken from the sacred grove back of the statue of Zeus.

After fifteen centuries these games were revived at Athens in 1896, and all the nations of the earth were invited to send chosen representatives. Only amateurs were permitted to contend and the games included most forms of athletics. The modern Olympic Games, like the ancient ones, are held every four years, but take place in different countries. Only during the World War were they suspended. In 1900 they were held in Paris; 1904 in St. Louis; 1908 in Athens; 1912 in London; 1920 in Antwerp; 1924 in Amsterdam; 1928 in Paris.

ORGANIZATIONS

The number of societies and other organizations in the United States is too great to list in its entirety, but the following review notes some of the leading groups. New ones rise to prominence, older organizations become inactive, and there is constant change, so any list must be representative rather than exhaustive.

Aeronautical Chamber of Commerce of America, Inc. An association of those interested in the progress of aeronautics; publishes an authoritative yearbook on that subject.

American Academy of Arts and Letters. A society begun in 1904 and limited to those who have attained distinction in literature or the fine arts. It is an outgrowth of the National Institute of Arts and Letters. Membership is limited to fifty. Somewhat similar in scope to the French Academy.

American Federation of Labor. An organization of the various trades-unions, with headquarters in Washington, D. C. Organized in 1881, its membership in 1930 was over 3,396,000.

American Legion. A patriotic non-military organization of those who served honorably during the World War in the armed forces of the United States. The legion is an outgrowth of a meeting of officers and enlisted men in Paris in 1919, and has local posts which are grouped into departments, of which there is one for each state or territory, Canada, Mexico, the District of Columbia, and Europe.

American Association for the Advancement of Science. The leading scientific association in America, is an outgrowth of the Association of American Geologists. It meets in summer and holds a number of departmental gatherings at that time, each devoted to a different branch of science: mathematics, chemistry, mechanical science and engineering, social and economic science, education, and other sciences. There is a similar society in Great Britain, founded in 1831, some years before the American one was formed.

Audubon Societies, National Association of. An endowed association, named in honor of the pioneer American ornithologist; furthers protection of wild life in America.

Big Brother and Big Sister Federation. Founded in 1917, this is a central group representing eighty-six individual organizations doing club and welfare work with boys and girls in the larger cities.

Boy Rangers. See page 1023.

Boy Scouts. See page 1023.

Camp Fire Girls. See page 1024.

Chamber of Commerce of the United States. A national organization to study business conditions and give information on business matters. Founded in 1912, this organization maintains headquarters in Washington, D. C.

Cincinnati, Society of the. George Washington was first president of this society, formed May 13, 1783, at the last encampment of the Continental army. Membership is hereditary, and numbers about 1,000.

Daughters of the American Revolution. A patriotic society of women organized in 1890 and later incorporated. Its objects are the fostering of patriotism and liberty. There are local chapters throughout the United States and national headquarters in Washington, D. C. The name is commonly abbreviated, D. A. R.

Daughters of the Confederacy, United. A patriotic society of women related to those who served in the Confederate forces. Organized in 1894 at Nashville, Tenn. It maintains local branches in the various states and holds an annual reunion.

Daughters of the Revolution. A group who wished more rigid membership requirements than were demanded by the D. A. R. and who, therefore, withdrew from that society in 1891. Members must be direct descendants from those who took active part in the American Revolution.

Eastern Star, Order of the. A charitable and benevolent society to which only Master Masons or women members of their families are eligible. See also **Masons.**

Elks, Benevolent and Protective Order of. A fraternal organization founded in 1868, an outgrowth of an earlier society composed mainly of members of the theatrical profession. Only one lodge is permitted in a city, and then only if the population numbers over 5,000.

Foresters, Orders of. Known originally as the Royal Order of Foresters, early in the nineteenth century, and carrying out benevolent projects. Various societies have sprung from the original English organization, there being three distinct benevolent orders in the United States, besides several smaller groups.

Four-H Clubs. See page 1024.

Girl Scouts. See page 1024.

Grand Army of the Republic. A patriotic society of members of the armed Union forces in the Civil War, including state militia on active duty. Established in 1866, the membership grew to 409,489, but after that time began to decline as the members died. The name is commonly abbreviated, G. A. R.

Gyrator. An association of local business clubs formed on the principle of Rotary, one member of each line of business being eligible in each club. Better business ethics and practice, good citizenship and business acquaintanceship are the objects. The name is "Rotary," spelled backward, with the initial "G" added.

Izaac Walton League of America is a national organization of sportsmen and sportswomen actively interested in the preservation and restoration of America's recreational areas and the perpetuation of sports in field and stream. This league has done much active work in the preservation of fishing streams and of forests.

Kiwanis International is the union of a large number of chartered Kiwanis clubs in cities throughout the world. Organized in Detroit, Mich., in 1915. Two men are permitted from each business and profession in a city, usually only one representative coming from any one firm. Social and civic service and better business standards are the aims of Kiwanis, together with promotion of good will through better understanding.

Knights of Columbus. A fraternal and beneficiary society of Roman Catholic men, organized in 1882. There are two classes of membership, insurance and associate. Besides the insurance of members, the society devotes itself to promotion of charitable work and vocational education. The ritual requires four degrees before attaining full membership. This organization rendered valuable service during the World War.

Lions Clubs, International Association of. Organized in 1917, this is a group of business clubs similar to Rotary, Kiwanis and Gyrator. The international organization has developed rapidly. Composed of business and professional men, the club activities work to promote civic and social service and good fellowship among its members. The club's motto of five words, the initials of which spell the world "Lions," is: "Liberty, Independence, Our Nation's Safety." The rules of membership permit one representative from each business or profession. An associate of each member may be granted associate membership.

Maccabees. A benevolent, secret fraternal society, with insurance features, organized in Canada in 1878 by members of the Order of Foresters. The local bodies are called "tents" and the main governing body is the "supreme tent."

Masons. The Masonic fraternity is the largest, oldest and most widely distributed secret society in the world. Lodges of Masons are found throughout the world. A few lodges can be traced back to the seventeenth century. The fraternity as it is known today

is an English creation, dating back to London, in 1717. The Masons come down in a general way in English history as operative stone mason lodges, survivals of the guilds which built churches, cathedrals and bridges during the Middle Ages. Masonry was introduced into America in 1730 by the Grand Lodge of England when Dan Coxe, of New Jersey, was made Provincial Grand Master of Pennsylvania, New Jersey and New York.

Although there have been scores of Masonic rites, but five of importance survive. The English rite consists of the first three degrees of Apprentice, Fellowcraft and Master Mason and includes the Holy Royal Arch. The American, or York, rite adds to these three the following four degrees: Mark Mason, Past Master, Most Excellent Master and Royal Arch Mason. These are conferred in Chapters. Those conferred in Councils are: Royal Master, Select Master, Super-Excellent Master. In the Commandery of Knights Templar are conferred the orders of Companion of the Red Cross, Knight of Malta and Knight Templar. At Charleston, S. C., the Scottish rite became one of thirty-three degrees. This organization consists of Lodges, Councils, Chapters and Consistories. The thirty-third degree is composed of active and honorary members.

The Shrine (Ancient Arabic Order of Nobles of the Mystic Shrine) is a social fraternity composed of Commandery or Consistory Masons.

The Grotto is a social fraternity composed of third degree Masons.

Moose, Loyal Order of. A fraternal order that does not carry the compulsory life insurance policy of many similar organizations. It is a secret beneficiary society, pledged to no particular cause, founded in 1888. It maintains a home for needy members, orphans and half-orphans of members and has excellent vocational schools at Mooseheart, Illinois.

National Safety Council. An organization to promote safety practices in school, home, street and factory. It has fifty-nine local councils in large cities in the United States, and publishes safety posters and literature. Over 5,000 unit memberships are maintained, many of these being the single membership of some large industrial institution that subscribes for safety publications in quantity.

Odd Fellows, Independent Order of. A secret and beneficial fraternal society founded in England before the middle of the eighteenth century, was the Odd Fellows, the Independent Order being a seceding group formed in 1809. The American society began early in the nineteenth century, there being some dispute as to the founders. Three degrees are conferred, after which the member is eligible to the encampment where three further degrees are conferred. The highest degree, that of Patriarchs Militant, is open only to those who have received the Royal Purple degree of the encampment. The Rebekah degree for women was started in 1851.

Radio Relay League, American. An organization of amateur radio operators founded in 1915. These amateurs have been instrumental in picking up messages from outlying corners of the earth. Their membership extends into distant parts of the world, and the operators stand ready at all times to coöperate with government agencies in gathering or sending important messages.

Red Cross, American National. In 1859, at the end of the Battle of Solferino, a young Swiss, Henri Dunant, gathered volunteers from the nearby Italian village to help him care for the wounded of all the armies engaged. Afterward he wrote a pamphlet in which he appealed for an organization that should care for those wounded in battle without regard to nationality. As a result, an international conference met at Geneva, Switzerland, in 1864, and adopted what is known as the Red Cross Treaty. This treaty was revised at The Hague in 1906 to provide for the protection of relief societies of any nationality by all other nationalities. In compliment to Dunant the flag adopted was a reversal of that of Switzerland which has a white cross on a red field. Mohammedan Turkey uses a crescent instead of the cross, and calls its organization the Red Crescent Society. Each country maintains its independent organization, but international conferences are held every few years at Geneva, Switzerland.

The Red Cross officiates in disaster relief as well as in war, though its largest work was during the World War. There had been forerunners of the Red Cross, the work of Florence Nightingale in the Crimea and of the Sanitary Commission during the Civil War being in line with Red Cross practice. The American Red Cross, with membership open to any citizen or resident of the United States, numbered 22,000,000 during the World War, with a Junior Red Cross of 8,000,000 school children. Founded in 1881 by Clara Barton, the society went under the supervision of the United States government in 1905.

Red Men, Improved Order of. A beneficiary, benevolent fraternal society organized in 1833 and based upon the manners and traditions of the American Indian. Local bodies are known as "tribes," while the central body is called "the great council of the United States." The ritual is divided into three sections or degrees.

Rotary International. The original Rotary Club was started in the city of Chicago in February, 1905, by a lawyer, Paul P. Harris, who found himself a stranger in a large city where to outward appearances the chief stimulus to human activity was not the Golden Rule but the desire for gold and silver. Mr. Harris decided to found a club wherein the members might not only become acquainted with one another but also devise means of making themselves proficient in thoughtfulness of and helpfulness to each other. He surrounded himself with men, each engaged in a different form of service to the public. This basis of membership still exists in Rotary. The members of the club originally met in rotation at the offices or places of business of the various members, and this suggested the name "Rotary."

Today Rotary stands for better business practices and higher ideals in business and professional intercourse, for service to one's city, state or province, nation and to society in general, and for the development of international understanding and peace. A little more than three years after the organization of the first Rotary Club in Chicago, the second club came into existence in San Francisco, and very shortly after the organization of the second group other clubs came into existence, first on the Pacific coast and later in New York, Boston and other cities in the United States; and then in Canada, England, Ireland and many other countries. In 1910 Rotary International was formed. Since then annual conventions of the associated clubs have been held in the United States, Scotland, Canada, Belgium and Austria. On July 1, 1930, there were 3,349 Rotary clubs with a total membership of over 153,000.

A Rotary Club forms its membership on the plan of one active and representative man from each line of business and profession in the community. Meetings, held each week at luncheon or dinner, are characterized by good fellowship, the development of true and helpful friendships, and the encouragement of the impulse to serve.

The objects of Rotary are to encourage and foster: (1) the ideal of service as the basis of all worthy enterprise; (2) high ethical standards in business and professions; (3) the application of the ideal of service by every Rotarian to his personal, business and community life; (4) development of acquaintance as an opportunity for service; (5) recognition of the worthiness of all useful occupations and the dignifying by each Rotarian of his occupation as an opportunity to serve society; (6) the advancement of understanding, good will and international peace through a world fellowship of business and professional men united in the ideal of service.

Royal Arcanum. A fraternal, beneficiary and benevolent society founded in 1877. Safe insurance at a minimum cost is the chief object of the society.

Salvation Army. A religious society founded by William Booth in England in 1865 as a means of giving spiritual and material aid to people not reached through the usual channels. The Salvation Army was started in the United States in 1880, and beside its religious work the organization has developed many social relief features in the poorest parts of cities, and now has hotels and hospitals, employment bureaus, food kitchens and prisoners' aid work in many centers of population. The Salvation Army rendered valuable service during the World War.

Tammany, Society of, or Columbian Order was formed in 1789, being the effect of a popular movement in New York, having primarily in view a counterweight to the so-called "aristocratic" Society of the Cincinnati. It was essentially anti-Federalist or Democratic in its character, and its chief founder was William Mooney, an upholsterer, and a native-born American of Irish extraction. It took its title from a noted, ancient, wise, and friendly chief of the Delaware tribe of Indians, named Tammany, who had, for the want of a better subject, been canonized by the soldiers of the Revolution as the American patron saint. The first meeting was held May 12, 1789. The act of incorporation was passed in 1805. The Grand Sachem and thirteen Sachems were designed to typify the President and the Governors of the thirteen original states. The society is nominally

a charitable and social organization, and is distinct from the general committee of the Tammany Democracy, which is a political organization.

United American Mechanics is a secret benevolent and benefit society with patriotic and political aims. Founded in 1845, its membership is open only to native-born Americans. It fosters the display of the American flag on schoolhouses, and opposes any union of church and state.

United Confederate Veterans. A federation of various organizations of former members of the fighting forces of the Confederacy, formed in 1890 to preserve material for authentic history, promote fellowship and care for widows and orphans of comrades.

United Spanish War Veterans. A patriotic society of those who took part in the Spanish-American War, the Philippine insurrection, and the Chinese expedition. This society was formed in 1904 by the union of four separate societies of veterans.

United Workmen, Ancient Order of. A fraternal, beneficiary society founded in 1868. Full membership is attained after three degrees, and the society issues insurance to members.

Veterans of Foreign Wars of the United States. A national society of ex-service men who have taken part in campaigns upon foreign soil or in foreign waters; open to army, navy and marine corps men. Organized in 1899, its objects are to foster patriotism, care for needy veterans or their families, and provide comradeship.

Volunteers of America is a religious society with a military organization like that of the Salvation Army and devoted largely to care of the needy. It was organized in 1896, at New York City, by Commander and Mrs. Ballington Booth, the former being the second son of the founder of the Salvation Army.

Woman's Christian Temperance Union is an organization of women, founded at Cleveland, Ohio, in 1874, to fight the liquor traffic. It later expanded its activities to influence other matters affecting human welfare, including habit-forming drugs. Due to Frances E. Willard, long its leader, an international association was formed in 1883.

Woodcraft League. See page 1025.

Woodmen of America, Modern. A fraternal, beneficiary society started in 1883, with insurance features for its membership of over a million.

Woodmen of the World. A fraternal, beneficiary society, founded in 1890, with insurance for its members.

Young Men's Christian Association. This organization was founded in 1844, in London, by George Williams, to promote the spiritual, intellectual, social and physical welfare of young men. The World's Alliance, with headquarters at Geneva, Switzerland, unites the Y. M. C. A. groups throughout the world. In the United States the Y. M. C. A. was founded in 1851. It has national headquarters in New York City, combining about 1,500 associations and nearly a million members. The Y. M. C. A. of Canada maintains central headquarters in Toronto and has over seventy associations and about 50,000 members.

Young Men's Hebrew Association, founded in 1874, at New York City, has branches in many cities. Its objects are the mental, moral and physical welfare of Jewish young men.

Young Women's Christian Association. In 1855 two movements started in England, quite independently of each other, but both designed to serve young women. One, started in the south of England by Miss Robarts, was a prayer union; the other, founded by Lady Kinnaird, in London, opened homes and institutes for business women. Thirty-two years later, in 1887, these two societies merged in the Y. W. C. A., which retains the ideals of both original societies and has spread over the Christian world. It was not until 1906 that the National Board of Young Women's Christian Associations was formed to unite and unify the various groups, and to advance the physical, social, intellectual, moral and spiritual interests of young women. The membership of the association in the United States is over 60,000. Biennial conventions are held. Many of the local groups support residences for their members, and others maintain lunch rooms, gymnasiums and swimming pools, in addition to doing educational and nonsectarian religious work.

Zonta is a business women's organization, similar in form to Rotary. It has clubs in various cities with a central organization, admits only one woman in any line of business to each local club, holds weekly noonday meetings and stands for ethical business practices and good citizenship. Zonta has a number of clubs in Canada and one in Vienna, Austria. The first "classified" club for women was Quota. There are also Altrusa and Siroptomist.

PASSION FLOWER

Early Spanish missionaries in America named the passion flower, which they fancied to be a representation of our Lord's passion. The flower grows in tropical America and in the southern part of the United States.

The leaf is symbolic of the spear that pierced His side. The five anthers are the marks of the wounds; the tendrils, the cords or whips; the column of the ovary, the upright of the cross; the stamens, the hammer; the three styles, the nails; the filamentous process, the crown of thorns; the calyx, the glory or halo; the white tinge, purity; the blue tint, heaven. The passion flower remains open for three days, and typifies His three years' ministry.

PASSION PLAY

A play that portrayed the sufferings and death of Christ was made a part of the Good Friday ritual of the Catholic Church and developed into the passion plays of the thirteenth century. During the fifteenth century these plays developed into great pageants and were given in many towns in Europe, often lasting a week or more. The passion play is still given in some villages in the Tyrol and southern Bavaria, but the one best known in modern times is that at Oberammergau, a small town forty-five miles southwest of Munich, in the valley of the Ammer. To this little mountain village every tenth year go crowds of people to see the passion play given today as it has been for over three centuries. In the year 1633 the district was plague-ridden and Oberammergau lost 84 of its 600 inhabitants. Then the members of the council went to the village church and there made a solemn vow to hold the passion play every ten years from then on. And it is recorded that not another inhabitant died from the plague thereafter.

Because of this vow the play was performed the following year, 1634. After the performance in 1674 the people decided to give it again in 1680 and keep it on the decennial. The only exceptions have been the years 1811, 1815, 1871 and 1922. During these centuries the community and the church shared the heavy expenses of giving the play, and the people, some 700 in all, gave their services. Even today, with great throngs of people from all over the Christian world gathering to see this medieval mystery drama of the Passion of Christ, the expenses are heavy. When there is a surplus, the actors receive one-fourth, and the remainder is divided between local charities, civic improvements and the church. Tradition forbids married women to take part and only men and maidens of unquestioned integrity are permitted in the play, so that it is considered an honor to take part. This group of villagers who are wood carvers, shopkeepers, housekeepers, butchers and bakers have built up a tradition and each tenth year a play is given by them that is the essence of beauty and reverence and simple faith. A number of the actors have taken their parts until too old for them. Thus Anton Lang, the Christus of earlier years, became the speaker of the prologue and one of the disciples in 1930. Many a young girl has delayed her marriage until after the play in order to take her part therein.

PASSOVER

This most solemn festival of the Jewish people is in commemoration of the night when the Lord, smiting the first-born of the Egyptians "passed over" the homes of the Jews and spared their children. The celebration is during the full moon of the month of Nisan, corresponding to the March of the Gregorian calendar. It begins on the fourteenth day of Nisan, the extremely orthodox Jews celebrating for eight days instead of seven. It begins, as do all Jewish holy days, at sundown on the evening before the date given. The father of a family sits at the head of his table and recites the story of Passover, while before him are several dishes of food symbolic of the flight, and these are partaken of at stated times. They include matzoth, or unleavened bread, to commemorate the unraised dough carried in the hurried flight from Egypt; a roasted lamb bone and roasted egg to symbolize the burnt offerings made for their deliverance; horseradish or bitter herbs to represent the bitterness of life under the Egyptian rule, and a stiff paste of apples, nuts and spices to typify the mortar used by the Jews in their heavy toil during their captivity. Before the holiday begins there are special dishes brought forth for cooking and serving and no leavened bread is permitted in the house during the days of Passover.

PATENTS

A government grant to an inventor, securing to him for a stated time the exclusive right to make, use or sell any new and useful machine, manufacture, process or new composition of materials is called a "patent." It also permits the patentee to sell or authorize others to use his patent. Improvements on existing machinery and processes may be patented. Every article protected by a patent must be marked with the word "patented" or "pat'd" and also the date of patent issue or serial number.

The Patent Office is one of the oldest branches of the federal government, provided for in the Constitution itself. In 1790, Congress created the first patent commission and after some time came Samuel Hopkins to take out the first patent issued in the United States, protecting a new process for making pot- and pearl- ash. After that, the requests for patent came faster and faster until now about 200 a day are applied for. Americans hold a third of the patents issued by civilized nations, all of which have some form of patent grant. An international agreement protects an article that has been patented in one country from infringement in another.

Not every new idea is patentable, for it must be deemed useful as well as original in order to be given protection. The present American system was established in 1836 and revised in 1870. It became the model for other countries. There is a thorough examination as to the usefulness and novelty of each idea submitted, and then it is checked to avoid duplication. The person applying for a patent must submit a written description and drawings of his invention and pay a small fee when he applies. If the patent is granted he is then protected for seventeen years in the enjoyment of his idea, and frequently works out improvements before the end of that time that can also be patented and so protect him for a further number of years. That is, if he makes a paper-cutting machine that is much used, and a dozen years later makes an improvement on his first model, he can be granted a patent on the improvement. When the patent for the original machine runs out, suppose someone else does begin making it? They will not be able to sell the machine without the improvement, and that is still protected.

PATRON SAINTS

During the Middle Ages those saints that were supposed to watch over and protect the interests of particular persons, places and trades were known as Patron Saints. The following is a list of some of the more prominent of these:

Place	*Patron Saint*
Aberdeen	St. Nicholas
Antwerp	St. Norbert
Austria	SS. Colman and Leopold
Brussels	St. Gudule
Cologne	St. Ursula
Edinburgh	St. Giles
England	SS. George and Mary
Flanders	St. Peter
France	SS. Mary, Michael and Denis
Genoa	St. George
Germany	SS. Martin, Boniface and George
Holland	St. Mary
Ireland	St. Patrick
Italy	St. Anthony
Lisbon	St. Vincent
Milan	St. Ambrose
Naples	St. Januarius
Paris	St. Genevieve
Portugal	SS. Sebastian, James and George
Prussia	SS. Mary, Adalbert and Andrew
Rome	SS. Peter and Paul
Russia	SS. Nicholas, Andrew, Wladimir and Mary
Scotland	St. Andrew
Spain	SS. James the Great, Michael, Thomas à Becket and Edward
Venice	SS. Mark, Justina and Theodore
Vienna	St. Stephen
Wales	St. David

PAWNBROKER'S SIGN, ORIGIN OF

It is generally held that the three golden balls used by pawnbrokers as a sign were adopted from the armorial bearings of the Medici family of Italy by the Lombard merchants, among whom were several representatives of that family. This sign was used in London in very early times by some of those merchants who had emigrated from Italy and established the first money-lending establishments in England. The Medici coat of arms, in turn, seems to have been derived from the golden bezants, coins received by the crusaders as payment for their services.

PEAT

Peat is a deposit formed in bogs by the decay of vegetable matter, frequently consisting almost entirely of sphagnum, or bog-moss. In composition it differs from coal only in the relative proportion of its constituents. Thus, peat contains: carbon, 55.62 per cent; hydrogen, 6.88; oxygen and nitrogen, 37.50; while coal consists of: carbon, 88 to 94 per cent; hydrogen, 2.5 to 5.5; oxygen, 2.5 to 6.0. Peat forms extensive deposits in various parts of northern Europe, notably in parts of Ireland, where it is commonly known as "turf," and is largely used as fuel.

PHONOGRAPH

When Thomas A. Edison invented the phonograph in 1877, he reversed the principle whereby the telegraph works. Sound is the result of vibrations in the air and when these are brought in contact with a thin, flexible diaphragm, this vibrates in response. Reversing this idea, if a flexible disk is made to vibrate in like manner, vibrations of the air will result. These, striking on the ear, produce what we call sound.

In order to record sound, Edison attached a cutting needle to the center of a diaphragm and allowed it to rest against a cylinder covered with tin foil. Voice and music then created vibrations of air to which the delicately poised needle responded; the cylinder was rapidly revolved and the needle cut a spiral path around it. A strong magnifying glass would show that this path was one of humps and depressions of varying size. Then, by reversing the process, with the cylinder set turning and the needle resting in the groove already cut, it reproduced in sound its own recording, loud or soft according to the depth it had cut into the cylinder.

The modern commercial method of making records is upon a wax cylinder or disk. Graphite, which is a conductor of electricity, is placed upon the wax record and copper electroplates can then be made. The electroplate is then covered with nickel to make it more permanent. This is the master record, from which is made a second master record. This latter serves as a mold from which many other records are produced for sale.

One of the problems that has arisen in the development of the phonograph has been to eliminate the scratching sound of the needle in passing over the disk. An effective method causes the vibration to pass through a tube containing substances which eliminate the short waves of scratching sounds.

An application of this same principle is found in the modern dictaphone to which business correspondence is dictated. Correspondence is rapidly dictated and impressions are made on a wax composition cylinder. This cylinder is then changed to a transcribing machine and the dictation reproduced.

The phonograph is a modern miracle. The magnificent voice of Caruso and other great singers will live forever because of this invention. The most beautiful music of the age is thus carried to the most remote corners of the earth. Music and languages are also taught by means of the phonograph. It is a great gift to the blind. Collections of graphophone records are being made which will preserve for posterity the customs, folklore and speech of the people of our age.

PHOTOGRAPHY

Photography is the process of producing pictures by the action of light on substances that have been sensitized by the use of various chemicals. The action of light on chloride of silver was discovered in the sixteenth century. Thereafter men experimented with the new process, but it was not until 1727, when J. H. Schultz succeeded in photographing writing, that definite results were obtained. Schultz prepared a level surface with a mixture of chalk and silver nitrate and over this laid the translucent paper on which he had written. The sun's rays passed through the paper, blackened the silver compound, and the first true negative had been produced.

Sir Humphry Davy and Thomas Wedgewood began experimenting with photography and in the course of their work Davy discovered that silver chloride was more sensitive than the nitrate. They produced copies of pictures by means of the action of light, but it was not until 1814 that a permanent photograph was produced by Niepce, a Frenchman. In 1839, Louis J. M. Daguerre produced his daguerreotype. This exposed a silver-coated copper plate to the fumes of iodine, and silver iodide was formed on the surface. When exposed in the camera no picture was visible on the plate, but when treated with vapor of mercury the image emerged. It was in 1840 that Draper, an American, made the first daguerreotypes of the human face. These pictures, like Daguerre's, were positive prints and could not be used for printing duplicates.

In 1841, Talbot patented his calotype process whereby a paper negative produced many copies of a picture. Professor Bond, of Cambridge, Mass., first photographed the heavens, in 1851. In the same year Archer brought out the process whereby sensitive silver salts are produced in a film of collodion placed on a glass plate. The present modern dry plate of the silver bromide gelatin wash was basically discovered by Maddox in 1871. George Eastman, in 1884, introduced a film of paper, and three years later Goodwin patented the transparent celluloid film which is the basis of our modern roll film. This

was done by placing a wash of gelatin over the film or glass plate containing the bromide and iodide of silver.

Today the camera has gone to every part of the known world. Pictures of the north and south poles, undersea life taken in the depths of the ocean, pictures of mines far below the surface of the earth, and views taken from airplanes high in the air carry their story to every corner of the earth.

A camera usually consists of a tightly closed box with a small tube in front containing the lens. A shutter in this tube is opened or closed to permit light to come in when desired. In order that the lens may be moved nearer or farther from the back, a bellows similar to an accordion is used. The distance behind the lens at which the image is formed depends both on the kind of lens used and on the distance of the object from the camera. Therefore the front of the camera must be adjusted until the photographer, looking in his finder, can see the desired image clearly or "focused" properly. Sensitized glass is at the back of the camera. The image of the picture to be taken appears upside down on this glass. The farther the object to be photographed is from the camera the greater the distance must be from the back of the camera to the lens in front. The lens is shut and the film or plate placed near the back of the camera. When ready to take the photograph, the lens is opened for a short space of time and the image exposed on the film or plate. This plate or film is then taken into a dark room in which there is only orange or red light. The plate appears the same as before until it is washed in the developer. It is next washed in sodium hyposulphite. Then, upon looking at the plate in the light, the image appears backward. The positive print of the picture is made by placing the plate over sensitized paper and exposing it to the light. Where the plate is dark the positive print is light. This photographic paper is washed in a fixing solution, stretched and dried, and the photograph is completed.

The white light of the sun is composed of all the colors. The blue and violet rays produce most of the photographic power of light, while the red and orange rays have little effect. Red objects appear as black, blue objects as white. By using filters or screens which separate light into its violet, green and red parts, photographs can be made in natural colors.

The camera can detect objects not visible to the eye. Time exposures have discovered stars that man has never seen in the heavens; mapping cameras in airplanes have shown the topography of lands still inaccessible to travel; the instantaneous picture records details of action that would escape an onlooker.

Principles of Photography for Beginners. The modern camera with its easily-handled shutter and roll of film makes photography simple for the amateur. The beginner is satisfied to get a clear picture of the view or person he tries to photograph. His camera makes records of persons and things, so that the collections of amateur photographs are a diary in picture form. But when the amateur begins to want beauty, realizes that sharp detail is not usually as desirable as getting the spirit of the subject and the mood of the scene, he begins to do artistic work. Before a photographer can get satisfactory results he must know certain facts about his camera, its use, and the first stages of dark room procedure.

Time. All pictures are made by time exposure. The question is one of how much time to allow. The "instantaneous" exposure in the average small camera is about one-



Home Photography

twenty-fifth of a second. With care, a camera may be held steadily enough in the hand for this exposure, but a longer time exposure requires a tripod or other firm support to hold the camera. The photographer should practice with an empty camera, open so the flash of light can be seen through the shutter. Counting can be tried until the amateur has control of one-fifth second, one-half second or any number of seconds in opening and closing the shutter. One-fifth second is about the time that it takes to move the exposure lever quickly from one end of the slot and back again to its original position, with the shutter adjusted for time exposure, or when it is set for a "bulb" exposure. The lens collects the reflected rays of light from every object before it, crosses these, and then brings them back in proper order, but reversed, and it is



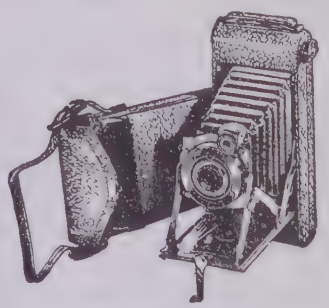
Vacation Photographs

Safely carried in a case, the camera provides a treasured record of vacations.

thus that they reach the plate or film. The amateur must learn to notice whether the objects to be photographed are light or dark, from what direction the light strikes them, and also whether the day is light or dark, clear or misty, for these all have their effect on the time required for getting a good picture.

Aperture. Every camera has some means of controlling the amount of light that goes through the lens. Evidently the larger stops, or light openings, let in more light than the small stops, and the greater the light the more quickly the work is done. With a three-stop camera, use the largest stop opening for snapshots of all ordinary outdoor subjects such as nearby subjects in open field, park or garden, street scenes or ordinary landscapes. Such pictures should be made with the subjects in the direct sunlight, and during the time between two and one-half hours after sunrise and two and one-half hours before sunset. The smaller the opening the greater the detail, so it is occasionally worth while to use the smallest stop opening, place the camera on a steady, firm support and make a short time exposure.

Light. When making ordinary snapshots, the subject should be in the open sunlight, but the camera must not. The sun should be behind the photographer's back or over his shoulder. If it shines directly into the lens it will blur and fog the picture. When making portraits out-of-doors with the sun shining brightly, it is best to have the subject



Folding Camera

A popular type for the amateur photographer.

in the shadow of a building or a large tree, but with clear and unobstructed sky overhead. By following this rule, unpleasant and distorting shadows on the face will be avoided.

In general, one should expose for the deepest shadows in his field of view, rather than for the brightly lighted spots. Few pictures are hopelessly over-exposed, but under-exposure is an everyday occurrence.

When making indoor portraits, near a bright window, with reflection and portrait attachment, use the middle-sized opening, distance three and one-half feet between subject and lens, and expose from four to ten seconds according to the light. Interior views should be made from three hours after sunrise until three hours before sunset. Exposure should be from about four seconds to about five minutes and twenty seconds, according to color of walls, number of windows and kind of light outdoors. Pull down the shades facing the camera.

Developing Negatives. Development is simple if care is taken and the following equipment provided.

(1) A dark room is required, with a light photographically safe. Such a light comes through red or orange glass. Windows should be darkened and a red bulb put in the electric light socket and around it an orange cloth or paper. A candle lantern or enclosed kerosene lamp can be made safe with orange or ruby

glass. (2) The developing solution can be bought ready for use with exact directions on the package. In measuring, it is well to remember that an ordinary drinking glass holds eight ounces. (3) The acid fixing powders or hypo solution keeps indefinitely and should be used until it loses its effectiveness in clearing a film. One of the indications of exhausted hypo is its tendency to become frothy when stirred. Fixing powders, unlike hypo, can be used only on one roll of film. (4) Directions for developing roll film come with film tanks, but in order to see the pictures come in the negatives, three trays may be used in a dark room with safe light. Tray 1 contains developer solution, Tray 2 contains rinsing water, and Tray 3 holds acid hypo. To use these, take the film out of its wrapper and off its spool. Holding it at each end, wet it in Tray 2, which contains water only, to avoid staining. Then draw back and forth, film or emulsion side down—the film is on the inner side of the roll—through the developer in Tray 1 until the high lights (that is, the dark spots of the negative) are heavy on the film side and show through fairly clearly on the back. This takes about five or six minutes. Rinse by drawing similarly a few times through Tray 2. Fix with same motion in Tray 3 until the negative is clear, with no trace of milkiness on the back. The film should be left in the fixing bath four or five minutes after it has cleared. Wash the film for about half an hour in running water, or for five minutes each in six changes of water. The films must be moved about during the time of washing to separate them and insure thorough washing.

Drying. Hang the film up to dry. To keep it from rolling and twisting, clip a straight edge of some sort, perhaps a piece of stiff cardboard, on each end.

Photographic Papers. Beginners had best use a paper that is cheap, slow enough to control, and selected to fit the purpose. For dense, flat, or thin negatives that lack contrast, a different paper is needed than that used for good, average negatives, or for obtaining softened prints from negatives that show sharp contrasts. For each type of negative and for each sort of print the proper paper should be used.

Printing. When the films are dry, cut them into single negatives. Lay the printing frame glass side down, take out the cover, put in the first negative, with emulsion or dull side up, and against this place a sheet of paper, emulsion down, and clamp the cover on. Expose to a lamp. Remember that the two sensitized surfaces come together, making a print by actual contact. A sheet of dry photographic paper almost always shows some tendency to roll with emulsion side inside. The two sides of the dry paper feel unlike to the touch. If these tests do not satisfy, bite the corner of the paper and the emulsion, or sensitive side, will stick to your teeth. This is an unfailing test.

In printing, hold the frame at a distance from the lamp equal to the diagonal of the negative. A postcard negative, for example, may be held six and one-half inches from the light. With a sixty-watt lamp, ordinary negatives print in about ten to fifteen seconds. If the negative lacks contrast, it is better to underprint a bit and prolong the development. Economy suggests the use of trial strips to determine the printing time, until one becomes expert in judging negatives. If one side of the negative is stronger than the other, hold the printing frame obliquely towards the light in order to favor the darker area. If the dense areas, or weak spots, are local in the middle of the negative, for instance, a "dodger" may be kept in motion over the thin area, to protect it during part of the exposure time. By the use of a "dodger" and double printing, clouds may be introduced from special cloud negatives into landscapes otherwise bare at the top.

Developing Prints. Developing prints requires about the same process as developing negatives. If the prints develop too fast they are probably over-printed. Time should be cut for the next print. Rinse the print and place it in a fixing bath similar to the one that was used for the film. The same bath should not be used for both films and prints.

Unless all the hypo is washed out of the print it will slowly fade and discolor. Prints will not wash in contact with each other. They must either be kept moving by running water or must be individually handled through about six or eight changes of water, leaving the prints in each change for five minutes. Transfer the prints separately from one tray to another to insure thorough washing. Dry the prints by spreading them out, picture side down, on any clean cloth surface. Cheesecloth frames make the quickest driers, but it is often easier to spread the prints on bed covers.

Trimming. Avoid as much trimming as possible by studying the composition of each picture before making the exposure. The next best thing is to make a set of printing masks, one by one as needed, so that each print has a margin and includes only what is essential to the picture. But if a print is badly proportioned and has bald sky, barren foreground or unnecessary detail at the sides, trim it.

Mounting. Photographic albums are convenient, but if each picture is to show on its own merits, it should be mounted separately. In mounting prints, either on cards or in albums, dry mounting tissue is the most satisfactory adhesive.

PHRENOLOGY

Phrenology is a hypothesis of Dr. F. J. Gall (1758-1828), a German physician, and afterward expounded and developed by his pupil, Dr. Spurzheim. It is based on four fundamental statements: (1) The brain is the organ of the mind. (2) The mental faculties can be analyzed and reduced to a definite number. (3) Different parts of the brain are appropriated to these different mental faculties. (4) Capacity and character are indicated by the external form of the skull.

According to early phrenologists, the mind was divided into twenty-six faculties, associated with a corresponding number of areas on the cranium. Later these were increased to forty-three faculties.

The hypothesis of phrenology has today no standing among scientists. It is here recorded only as an item of historical interest, since science has proved that the surface of the skull is no index to either mind or character.

PLYMOUTH ROCK

On December 22, 1620, the Pilgrim Fathers set foot on a bare rock on the bleak coast of Massachusetts Bay. This rock became known as Plymouth Rock, and is to New England what the Palladium was to ancient Troy, or the shield of Minerva to Athens. In course of time the rock became broken into two pieces. One part remained in its original position at Hedge's Wharf, Plymouth; the other was taken to the center of the town and surrounded by an iron railing. This portion which had been dragged into Plymouth in 1774 was, in 1880, returned to its original position.

POTTER'S FIELD

This was a piece of ground which, according to the statement in Matthew, xxvii. 7, was purchased by the priests with the thirty pieces of silver rejected by Judas, and converted into a burial ground for Jews not belonging to the city. Here is the passage: "And they took counsel and bought with them the potter's field to bury strangers in." With us the term "potter's field" denotes the ground where unidentified persons and the bodies of unclaimed paupers are buried.

PRESS ASSOCIATIONS

The beginnings of a news agency that gathered news and sent it out to various subscribing newspapers began about 1830, when several New York newspapers combined to gather shipping news for their common use. There are three types of news distributing agencies. The Associated Press is a coöperative service, the members sharing the expenses between them. No newspaper is a member of the Associated Press, some individual on each paper taking the membership. The United Press is probably the largest of the news agencies that are on a strictly commercial basis, selling its news to its member-newspapers. International News Service, Universal News Service, and Scripps-McRae Press Service are other agencies of this type. There is also the news agency that sends out propaganda of a business or political nature, and this is sent free as a general rule, although some services charge a small fee.

The Associated Press and the Canadian Press work in close coöperation and receive foreign reports from such European press agencies as Reuter's in Great Britain, Wolff in Germany, Havas in France, and also from their own special agents located in large cities all over the world. The news agencies began their great growth when the telegraph became a practical machine, and again a forward thrust was felt when the cable was perfected. Wireless has increased the news-gathering power of the agencies by connecting them with the world's outposts.

PRINTER'S DEVIL

The origin of this term is ascribed to the fact that in the early days of printing the apprentice's duties included the inking of the forms with bags containing ink or besmeared with it. In the performance of this work his face and hands became so daubed with ink that in appearance he suggested the devil. Hence the name.

PRINTING PRESSES

The printing press, as we know it, was invented shortly before Columbus discovered America. Men had painted and cut records on stone in prehistoric days, and many books and scrolls were hand lettered before and during the early Christian centuries. Block printing followed, each letter being carved on wood and the whole impression then made on paper. When men learned to carve each letter on a separate block and move these blocks about to be used in various combinations a great step forward was made. Johannes Gutenberg is generally credited with having invented and used movable metal types which he cast from a type mold. Some claim that Coster, a Dutchman, was the inventor of movable types. In any event, the discovery was made about 1450 A. D. and was used in Mainz, Germany. When that city was captured in war, the men who knew the secrets of the new printing process were scattered abroad and carried their presses with them.

Suddenly, printing came into general use. The first presses were crude affairs. The type, held in a frame, was set in a wooden press; the surface was inked by passing ink-soaked balls of feathers or of wool-filled leather over the type faces, and after the paper was laid on, a heavy plate or platen was screwed down to ensure a firm, even impression upon the paper. The printers learned to produce beautiful books by this slow method. Whole families, generation after generation, used the same process.

The first printing press in the United States was set up at Harvard College, Cambridge, Mass., in 1639, and was the start of what today is *The University Press*. But no radical improvement was made in printing presses until near the end of the nineteenth century. Earl Stanhope, of London, invented the iron press in 1798; Clymer, of Philadelphia, invented the Columbian hand press in 1816, doing away with the screw; König, a Saxon, working in England, created the continuously revolving cylinder press in 1811.

Then, in 1846, Richard M. Hoe, a young American, built a two-cylinder press that could produce 20,000 copies an hour, printing one side of the paper. In 1865, William Bullock, of Philadelphia, built the first machine to print from a continuous web or roll of paper using the huge rolls of cheap paper made possible by Fourdrinier's invention of a paper-making machine in 1827. Utilizing this new paper roll, in 1871, Hoe produced his web press, a rotary perfecting press using forms that were cylindrical in shape and that printed as rapidly as the paper could go through. This machine printed on both sides of the paper at a rate of 12,000 an hour and was the beginning of modern rotary press printing which permits sixty-four pages of a modern newspaper to be passed through the presses at the rate of over 100,000 an hour, printing and folding the whole paper. Modern presses gear several of these unit presses together and a newspaper plant in a large city uses several 12-unit presses to handle its work. But the underlying principle is that of the Hoe press of 1871.

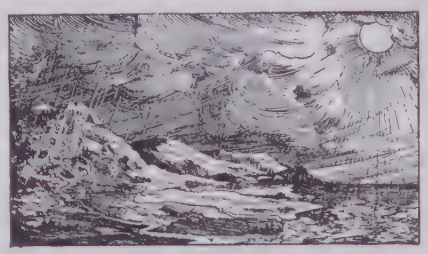
There have been improvements in printing methods since the days of Hoe, but probably the most important have to do with type-setting. The old method of setting type by hand has given way to the machine, the typesetter operating a keyboard to set his lines of type. Only special work and a few fine books are now set by hand. (See **Linotype; Monotype.**)

PULITZER PRIZES

Joseph Pulitzer, who was publisher of the *New York World*, donated funds for annual awards to be given for the best publications in certain lines. The prizes range from $500 to $2,000 in amount and are awarded for the best American novel, play, book of poetry, historical work relating to the United States, cartoon, most outstanding example of newspaper reporting, most outstanding editorial, and the best biography teaching patriotic and unselfish service. The first awards were made in 1917, and have been given annually since then.

RAIN

Rain is the fall of water in drops from the clouds, or the drops which fall. A cloud consists of water vapor, the individual units of which are very small. The heat of the sun draws the water into the air in the form of vapor and this gradually unites to form clouds. Rainfall takes place when the vapor condenses and grows heavy. Several tiny particles of vapor unite and then the action of gravity makes them fall, and we have rain. Twenty inches of rainfall a year is considered a minimum for ordinary agriculture. Walfisch Bay, West Africa, has only three-tenths of an inch of rain a year. The heaviest fall is in parts of India where 450 inches fall annually and the air is always damp and debilitating.



The Water Cycle

The sun draws the water upward in the form of water vapor, and clouds are the result. With condensation, rainfall ensues, completing the water cycle.

RAINBOW

A luminous bow or arch appearing in the clouds opposite to the sun when they are resolved into rain. Theoretically several bows may co-exist; generally, however, there is but one. Sometimes there are two, very rarely three or even four, which is the largest number authentically on record. Every rainbow exhibits the prismatic colors. When there are two bows, the lower, or primary, is very bright, and has the red highest; the outer, or secondary, is more faint, and has the violet the highest color. Rainbows are produced chiefly by the refraction and dispersion of the light in passing through the raindrops, partly also by its reflection from the back of the drops, without which the appearances would not reach the eye. The secondary bow ceases to be visible when the sun is fifty-four degrees above the horizon.

Red Cross. See **Organizations.**

RED LETTER DAYS

As a long-standing custom, church calendars indicate holy days and saint's days, by the use of red ink. Hence the phrase "red letter day" means one of great joy to be long remembered.

RED TAPE

Official and public documents are often tied with red tape and Lord Minto is said to have been the first to use the phrase "red tape" in 1775, to signify official formality and delay.

RHODES SCHOLARSHIPS

Rhodes scholarships were founded by the will of Cecil John Rhodes which provides in perpetuity for the support at Oxford University for a term of three years each of about 176 selected scholars from British colonies, the United States and Germany. The scholarships were apportioned: Rhodesia, 9; Cape Colony, 12; Natal, 3; Australia, 18; New Zealand, 3; Canada, 6; Newfoundland, 3; Bermuda, 3; United States, 2 for each state and territory, a total of 104; Germany, 15. The scholarships have an annual value of 300 pounds each and are donated for the purpose of bringing about a more complete unity of the English-speaking race.

The German scholarships, of 250 pounds each, were added when the former kaiser made the study of English compulsory in German schools. When the war was declared against Germany, an act was passed in 1916 transferring the German scholarships to Alberta, Saskatchewan, the Transvaal, the Orange Free State and alternately to Kimberly and Port Elizabeth. Awards were suspended during the World War.

Those receiving the scholarships are not restricted as to subjects to be studied. They may work for the degree of Bachelor of Science, Bachelor of Literature or Doctor of Philosophy, or, if not already prepared for these, they may enter any of the Oxford Honor Schools.

All those between the ages of 19 and 25 who are unmarried and have had at least two years of college training may compete. An applicant may try for the scholarship in his own state or that in which he has received the greater part of his education. Selections are made by the committee in each state appointed for that purpose and based on the candidate's record in school and college according to scholarship, character, interest in outdoor sports, and interest in one's fellows and instincts for leadership, which were the points outlined in the Rhodes will.

ROSE FESTIVALS

Battle of Flowers. In Nice, France, originated this celebration in carnival time. People drive along the principal street, saluting friends by throwing flowers at them, and being pelted in return. This custom was adopted by many other European cities and may take place any time in April, May or June.

Rose Festival. In early June of each year, Portland, Ore., famed for its beautiful roses, holds its Rose Festival. At this time the roses are at their best. Athletic games, a water celebration and a magnificent display of roses are presented.

Tournament of Roses. In 1890, the City of Pasadena, Cal., inaugurated this celebration, held on January 1 each year, in which the gorgeous flowers of California play an important part. People come from every part of the earth to witness the display of flowers, flower-covered carriages and automobiles, floats, and the football games and races. Many other cities of southern California take part in this pageant.

RUBICON

The Rubicon was the ancient name of a small stream, known today as the Fiumicino, in Italy. It formed the boundary between Italy and Cisalpine Gaul. It is celebrated from Cæsar's having hesitated about crossing it with his army and initiating civil war in the year 49 B. C. When Cæsar came to the river he paused upon the brink, but finally saying, "The die is cast," spurred on his horse, and dashed into the water. Hence, to "pass the Rubicon" denotes the taking of the first step in a momentous undertaking from which one cannot or will not recede.

S O S

The radio distress call letters, "S O S" have no meaning in themselves. They were selected by the International Radiotelegraph Conference at London in 1912 because the combination of dots and dashes—three dots, three dashes, three dots—was so simple that the most inexperienced radio operator would have little difficulty in detecting it. Before 1912 the distress call was "C. Q. D." The words "Save Our Ship" or "Save Our Souls" have been given as the meaning of the distress call, but U. S. Naval Communications is authority for the statement that the "S O S" letters stand for no words.

SABBATH-DAY'S JOURNEY

A Sabbath-day's journey, according to Dr. Adam Clark, was seven and one-half furlongs, or about 1,650 yards. The rabbis fixed it at 2,000 cubits, which is about 1,350 yards. Josephus says that the Mount of Olives was five stadia, or 625 paces, from Jerusalem, which would make the allowable Sabbath-day's journey about 1,050 yards.

SABBATICAL YEAR

The ancient Israelites were compelled by law to let their fields lie fallow every seventh year in order to allow the land to enrich itself. Even the crops were left ungarnered to be turned back later into the ground. Adapting this idea, a number of colleges and universities grant members of their faculties a long vacation, approximately every seventh year, for study, travel and rest, in order that they may return with fresh ideas and energy.

SALUTES

Salute to the Union. This is one gun for each state, and is commemorative of the Declaration of Independence. It is fired at noon of the Fourth of July, at every military post, and on board commissioned naval vessels belonging to the United States.

The National Salute is twenty-one guns. This is the salute for the national flag, the President of the United States, presidents of foreign republics, or sovereigns of foreign states, visiting the United States.

The Vice-President of the United States, American and foreign ambassadors receive a salute of nineteen guns.

The President of the Senate, Speaker of the House of Representatives, members of the Cabinet, the Chief Justice, a Congressional Committee, Governors within their respective states or territories, Viceroy or Governor General of provinces belonging to foreign states, a General of the Army, an Admiral of the Navy, and same ranks in foreign armies and navies are given a salute of seventeen guns.

American or foreign Envoys, Ministers Plenipotentiary, Assistant Secretaries of the Navy or War, a Lieutenant General, or a Major General commanding the army and corresponding ranks in the navy, and foreign armies and navies are accorded a salute of fifteen guns.

Ministers-Resident accredited to the United States, a Major General, a Rear-Admiral, and corresponding ranks of foreign armies and navies receive a salute of thirteen guns.

Charges d' Affaires, a Brigadier General, a Commodore, and corresponding ranks in foreign armies and navies are given a salute of eleven guns.

Consul Generals accredited to the United States receive a salute of nine guns.

Salutes are fired only between sunrise and sunset, and not on Sundays, except in international courtesies. The national colors are always displayed at the time of saluting. The salute of the flag is the only one which is returned, and this must be done within twenty-four hours. United States vessels do not return a salute to the flag in United States waters if there is any fort or battery there to do it, nor do United States vessels salute United States forts or posts.

If there are several batteries or forts within sight or within six miles of each other, one of them is designated as the saluting fort, and returns all salutes of foreign men-of-war. In New York, Castle William, on Governor's Island, is the saluting fort.

SANTA CLAUS

The children's Christmas deity in the United States is Santa Claus, a corruption of St. Nicholas, or Klaus, the Dutch form used in Holland, and later in New Amsterdam, for the patron saint of children. He was, in life, the Bishop of Myra in Lycia, Asia Minor, and died in 345 or 352 A. D.

SCIENCE, THE FIVE FOLLIES OF

These are usually said to be: The squaring of a circle; the establishment of perpetual motion; the philosopher's stone; charmation, or the discovering of secrets by magic; and judicial astrology.

SCYLLA AND CHARYBDIS

Scylla is a rocky cape on the west coast of south Italy, jutting out boldly into the sea so as to form a small peninsula at the northern entrance to the Straits of Messina. About the beginning of the fifth century B. C. a fort was built upon the rock (which is about 200 feet high, and much hollowed out below by the action of the waves), and in course of time a small town grew up, straggling down the slopes toward the sea. The navigation at this place was looked upon by the ancients as attended with immense danger, which, however, seems to have been much exaggerated, for at the present day the risk is no more than attends the doubling of any ordinary cape. Charybdis, now called Galofaro, is a celebrated whirlpool in the Straits of Messina, nearly opposite the entrance to the harbor of Messina in Sicily, and in ancient writings always mentioned in conjunction with Scylla. The navigation of this whirlpool is, even at the present day, considered to be dangerous, and must have been exceedingly so to the open ships of the ancients, so that, having escaped one peril at Scylla, mariners had to face a second one at Charybdis. Hence the phrase, "between Scylla and Charybdis" is used figuratively to mean "between two perils."

SEVEN WONDERS OF THE ANCIENT WORLD

The Seven Wonders of the Ancient World were: the Pyramids of Egypt, the Colossus at Rhodes, the Temple of Artemis (Diana) at Ephesus, the Pharos, or Lighthouse, of Alexandria, the Hanging Gardens at Babylon, the Statue of Zeus (Jupiter) at Olympia, and the Mausoleum at Halicarnassus. The Walls of Babylon are sometimes listed as an alternative seventh. The Seven Wonders are faithfully depicted in colors as a frontispiece to this Book of Useful Miscellany (opp. p. 1181).

The Pyramids are numerous, and were constructed of blocks of red or syenitic granite, and of a hard calcareous stone. These blocks were of extraordinary dimensions and their transportation to the sites of the pyramids and their adjustment in their places indicate a surprising degree of mechanical skill. The Great Pyramid covers an area of between twelve and thirteen acres. The masonry consisted originally of 89,028,000 cubic feet, and still amounts to about 82,111,000 feet. The present vertical height is 450 feet, against 479 feet originally, and the present length of the sides is 746 feet, against 764 feet originally. The total weight of the stone is estimated at 6,316,000,000 tons.

The Colossus at Rhodes. The city of Rhodes was besieged by Demetrius Poliorcetes, King of Macedon, but, aided by Ptolemy Soter, King of Egypt, the enemy were repulsed. To express their gratitude to their allies and to their tutelary deity, they erected a bronze statue to Apollo. It was 105 feet high, and hollow, with a winding staircase that ascended to the head. After standing fifty-six years, it was overthrown by an earthquake, 224 years before Christ, and lay nine centuries on the ground, and then was sold to a Jew by the Saracens, who had captured Rhodes, about the middle of the seventh century. It is said to have required 900 camels to remove the metal and from this statement it has been calculated its weight was 720,000 pounds.

The Temple of Artemis (Diana) at Ephesus was built at the common charge

of all the Asiatic states. The chief architect was Chersiphon, and Pliny says that 220 years were employed in completing the temple, whose riches were immense. It was 425 feet long, 225 broad, and was supported by 125 columns of Parian marble (60 feet high, each weighing 150 tons) furnished by as many kings. It was set on fire the night of Alexander's birth by an obscure person named Erostratus, who confessed on the rack that the sole motive which prompted him was the desire to transmit his name to future ages. The temple was again built, and once more burned, this time by the Goths in their naval invasion, A. D. 256.

The Colossal Statue of Zeus (Jupiter) at Olympia was the work of Phidias. It was in gold and ivory, and sat enthroned in the temple for 800 years, finally being destroyed by fire about A. D. 475.

The Hanging Gardens at Babylon appear to have been a magnificent building on the terraced roofs of which were planted trees, flowers and shrubs. This edifice is supposed to have been built by Nebuchadnezzar for the gratification of his Median Queen, because the Babylonian plain seemed dreary to her in comparison with the mountain scenery of her native land. According to Strabo the structure was a square, four plethra in area; it rested on arches supported by hollow pillars of burnt brick, filled with earth, in which roots of trees were planted; the top consisted of terraces, and a force of men constantly pumped water from the Euphrates River for irrigation.

The Pharos, or Lighthouse, of Alexandria is on a rocky island off the western extremity of the Egyptian coast opposite the town of Rakotis. When Alexander chose the site of Alexandria, he connected the island with the mainland by the Heptastadium or Seven-furlong Mole. This made it possible to build two harbors. Hence, on the eastern side of the island Ptolemy I began the erection of a great lighthouse which was completed by his son, Ptolemy Philadelphus. The lighthouse was a lofty tower with a square base. Light was furnished by a beacon fire on the summit. After this lighthouse had stood nearly 1,600 years one side was destroyed by an earthquake on August 7, 1303. By 1346 it was completely in ruins. The name of Pharos was borne by at least twenty other lighthouses in the ancient world.

The Mausoleum at Halicarnassus. In the old kingdom of Caria where the Turkish town of Budrum now stands was the city of Halicarnassus. In 377 B. C., Mausolus and his sister-wife, Artemisia, came to the throne. Great prosperity was enjoyed under their rule and considerable sums were spent beautifying the city. When Mausolus died in 353 B. C., his wife immediately set about to honor her husband and preparations were begun for the erection of a tomb.

The sculptors were Scopas Leochares, Bryaxis, and Timotheus. The foundation was laid upon a rock 127 feet from east to west and 108 feet from north to south. Upon this foundation stood a rectangular podium or basement 114 by 92 feet. This supported a pteron, or square stage, with fluted columns of Ionic architecture. Between the columns stood marble statues, and above them was said to be the wonderful frieze with which the greatest artists of the ancient world sought to perpetuate their fame. On one side was sculptured the combat between the Greeks and the Amazons. On another was a battle of the Centaurs. Above the frieze was the cornice with a sculptured lion's head at each of its corners. Next came the frieze, measuring at the base of its longest side about 108 feet. Surmounting the pyramid was a platform about 22 feet long and about 17½ feet wide to support a great chariot. To this were attached four huge horses, each 12 feet long. Within the chariot stood a statue of King Mausolus.

At the beginning of the Christian era, Halicarnassus was almost completely depopulated and the Mausoleum, which still remained, was unguarded. Before the year 1402 a severe earthquake shook the Mausoleum, hurling the chariot group from its pedestal. The pyramid collapsed, the statues of Mausolus and Artemisia were broken and the friezes fell amid the ruins. In the year 1402, when the Knights of St. John of Jerusalem took Halicarnassus, the stones were taken from the Mausoleum to build the castle of St. Peter and the sculptures were converted into lime for cement.

SEWING MACHINE

Since the middle of the eighteenth century, inventors have endeavored to build a machine that would do the work of the needle. Thomas Saint in 1790 produced a model for a successful sewing machine. A Frenchman, Thimonnier, in 1830 built a crude sewing machine with which to make uniforms. His factory was destroyed by a crowd of needle-workers who thought that the machine would deprive them of their occupation. About 1833, Walter Hunt, a mechanic, invented a lock stitch machine with an eye-pointed needle; but he did not realize the value of his invention and sold it to a man who refused to get a patent. In 1853, Hunt himself tried to get a patent but was refused because he had waited so long. In 1846 Elias Howe patented a machine having a needle with the eye near the point and the lock stitch. This was the first really successful sewing machine. Howe's machine worked horizontally instead of vertically, as do most modern machines. John Bachelder, in 1849, patented the first machine with a continuous feed and the horizontal table. This continuous feed was a leather belt holding small steel pins to move the cloth along. In 1854, the four-motion feed which continually moves the cloth along was patented. The first machine with a rigid overhanging arm, a vertical needle making a lock stitch and operated by the foot, was invented by Isaac M. Singer in 1851. The chain stitch machine was invented by a farmer, A. E. Gibbs, and later improved by Willcox.

The sewing machine has been the greatest labor saving device for use in homes throughout the world of any invention of the nineteenth century. Basically, there are two kinds of machine, the lock stitch and the chain stitch. The lock stitch is usually preferred because it does not ravel easily. It uses two threads. The first passes through the eye of the needle and is forced through the cloth and drawn back, leaving a loop below. The second thread is forced through this loop by a shuttle, locking the stitch. The material is pushed forward and another stitch taken. In the chain stitch the loop of each stitch passes through the cloth and by means of a hook secures the loop of the preceding stitch, as in crocheting. A great variety of sewing machines has been developed for sewing clothing, leather, canvas, embroidery, upholstery, making buttonholes, feather-stitching, pattern stitching, tucking, ruffling, smocking and hemstitching. Some machines have two, four, six or eight needles, and some, like the fur-workers' machines, operate horizontally.

SMOKE

Smoke is any volatile, and specially any carbonaceous matter, escaping from a burning substance. Although much smoke is made up of particles of carbon, the composition of smoke depends on what is burned. When wood or coal is in process of combustion, it emits, not merely minute particles of unconsumed carbon, but invisible gaseous matter. Appliances for consuming smoke aim simply at preventing the rise of the carbonaceous particles, ignoring the unseen gases. These appliances attempt to furnish a supply of air containing an abundance of oxygen, the absence of which is the reason why any carbon escapes unconsumed.

SPHINX, RIDDLE OF

A famous enigma of antiquity was the riddle of the Sphinx. The story runs that Juno sent a monster, the Sphinx, to ravage the territory of Thebes. This monster had been taught riddles by the Muses, and she propounded one to the Thebans: "What is that which has one voice, is four-footed, two-footed, and at last three-footed?" or, as some have it, "What animal is that which goes on four feet in the morning, on two at noon, and on three at evening?" An oracle told the Thebans that they would not be delivered from her until they had solved her riddle. They often assembled to try their skill, but as often failed, when the Sphinx always carried off and devoured one of their number. At length Oedipus came forward and gave the correct answer, "Man," who when an infant creeps on all fours, at manhood stands erect on two legs, and in old age hobbles about with the aid of a crutch.

STATUARY HALL

Statuary Hall is the popular name given to the historic chamber in the Capitol formerly used by the House of Representatives at Washington. It is now utilized for the statues of historic Americans.

By the terms of an Act of Congress, approved by President Lincoln on July 2, 1864, the chamber was officially designated as a national Statuary Hall and an invitation was extended to all states to contribute statues. Each state was permitted space for marble or bronze statues of two of her most distinguished citizens, men or women; but no person still living was to be so honored. The table on the following page lists the statues now installed.

STATUES IN STATUARY HALL

STATE	NAME OF STATUE	NAME OF SCULPTOR
Alabama	J. L. M. Curry	Dante Sodini
	Gen. Joe Wheeler	Berthold Nebel
Arkansas	Uriah M. Rose	F. W. Ruckstull
	James P. Clarke	Pompeo Coppini
Connecticut	Roger Sherman	C. B. Ives
	Jonathan Trumbull	C. B. Ives
Florida	John Gorrie	C. A. Pillars
	Kirby Smith	C. A. Pillars
Georgia	Alexander H. Stephens	Gutzon Borglum
	Dr. Crawford W. Long	J. Massy Rhind
Idaho	George L. Shoup	F. E. Triebel
Illinois	James Shields	L. W. Volk
	Frances E. Willard	Helen Farnsworth Mears
Indiana	Oliver P. Morton	C. H. Niehaus
	Lew Wallace	Andrew O'Connor
Iowa	James Harlan	Nellie V. Walker
	S. J. Kirkwood	Vinnie R. Hoxie
Kansas	John J. Ingalls	C. H. Niehaus
	George W. Glick	C. H. Niehaus
Kentucky	Henry Clay	C. H. Niehaus
	Ephraim McDowell	C. H. Niehaus
Maine	William King	Franklin Simmons
Maryland	Charles Carroll	R. E. Brooks
	John Hanson	R. E. Brooks
Massachusetts	Samuel Adams	Annie Whitney
	John Winthrop	R. S. Greenough
Michigan	Lewis Cass	D. C. French
	Zachariah Chandler	C. H. Niehaus
Minnesota	Henry M. Rice	F. E. Triebel
Missouri	Francis P. Blair	Alex. Doyle
	Thomas H. Benton	Alex. Doyle
New Hampshire	John Stark	Carl Conrads
	Daniel Webster	Carl Conrads
New Jersey	Richard Stockton	H. K. Brown
	Philip Kearney	H. K. Brown
New York	Robert R. Livingston	E. D. Palmer
	George Clinton	H. K. Brown
North Carolina	Zebulon B. Vance	Gutzon Borglum
Ohio	James A. Garfield	C. H. Niehaus
	William Allen	C. H. Niehaus
Oklahoma	Sequoyah	Vinnie R. Hoxie
Pennsylvania	J. P. G. Muhlenberg	Blanche Nevin
	Robert Fulton	Howard Roberts
Rhode Island	Nathanael Green	H. K. Brown
	Roger Williams	Franklin Simmons
South Carolina	John C. Calhoun	F. W. Ruckstull
	Wade Hampton	F. W. Ruckstull
Tennessee	Andrew Jackson	Belle Kinney Sholz and L. F. Sholz
Texas	Stephen F. Austin	Elisabet Ney
	Samuel Houston	Elisabet Ney
Vermont	Ethan Allen	L. G. Mead
	Jacob Collamer	Preston Powers
Virginia	George Washington	Jean Antoine Houdon
	Robert E. Lee	Edward V. Valentine
West Virginia	John E. Kenna	Alex. Doyle
	Francis H. Pierpont	Franklin Simmons
Wisconsin	James Marquette	G. Trentanove
	Robert LaFollette	Jo Davidson

STEAM ENGINE

While the practical steam engine dates from the eighteenth century, in the second century B.C., Hero of Alexandria is said to have invented a toy which was revolved by steam. In 1698, Savery raised water by a steam engine. Seven years later Papin added the use of the piston to Savery's invention. The same year Newcomen made the first successful engine wherein pressure was applied to a piston. Humphrey Potter attached cords to the valves and thus invented the first automatic valve gear. But it remained for James Watt to bring about the greatest advance. In a series of inventions he (1) condensed the steam in a condenser, allowing the cylinder to remain hot; (2) covered the cylinder to prevent it from cooling; (3) stopped the entrance of steam when the stroke of the piston was partially made, thus allowing the remainder of the stroke to be accomplished by the expansion of the steam, forcing the piston back by steam entering at the other side of the cylinder; (4) built an air pump to remove the condensed steam and keep a vacuum. Watt developed many other inventions and may well be called "the father of the modern steam engine." His first successful engine was built in 1765.

The first steam engines were for the purpose of pumping water from mines in England, and the usual question upon purchasing a steam engine was how many horses it would replace. Thus came the custom of rating the strength of a steam engine in "horsepower." An engine of one horsepower is able to lift 33,000 pounds one foot in one minute.

The position of the cylinder determines whether a steam engine is "horizontal," "inclined" or "vertical." An engine is classified as "high" or "low" dependent upon its speed, medium being 150 revolutions per minute. If the exhaust is directly into the atmosphere it is called a "non-condensing" engine, but if the exhaust steam is cooled by running water it is a "condensing" engine. A simple engine is one that has a single cylinder and therefore only one expansion. When it has two or more cylinders, therefore two or more expansions, it is called a "compound" engine, and gives more horse power per unit of fuel than a single-cylinder engine. If the motion of the piston is circular the engine is called a "rotary" engine. The connecting rod and crank on a fly wheel attached to a piston moving forward and backward gives a rotary motion.

In a "reciprocating" engine the piston is forced back and forth inside a hollow cylinder by steam acting alternately on both sides of the piston. The steam enters behind the piston by the action of valves. The exhaust is connected with the front part of the cylinder. The piston moves in one direction; then, when the steam is cut off, the piston completes its stroke, and the valve mechanically changes so that the motion is reversed. Although the reciprocating type of engine is far more common, the "steam turbine" engine is more efficient. Here the steam comes through an opening and the steam turbine, being a rotary engine, causes the piston to rotate. Leaving the moving vanes, the steam comes in contact with stationary blades which turn it off against another row of vanes. In 1879 DeLaval applied the turbine to driving a cream separator. In 1884 Parsons built the first successful power turbine.

A boiler is used for heating water to produce the steam for steam engines. These are usually constructed of steel to withstand steam pressure of from 200 to 250 pounds per square inch. The water tube type of boiler has tubes containing circulating water around which the heat is placed. Lowering of the temperature or increasing the pressure on saturated steam results in water condensation. Dry steam is that in which less than three per cent of water is found. The white clouds visible when steam escapes result from water condensation. Steam is transparent, invisible and colorless. Usually there are attached to a boiler: (1) a pump for supplying the boiler with water; (2) a water gauge to show the amount of water in the boiler; (3) a steam pressure gauge; and (4) a safety valve to release steam if the pressure should become too great.

SUBMARINE

The submarine dates from 1620, when Cornelius Van Drebel, a Dutchman in the service of James I of England, is said to have built such a vessel. It was not, however, until 1776 that a submarine was used for war purposes. In 1887, John Philip Holland, an Irish-born American, built a clumsy wooden submersible. For twenty years he worked on his idea, and in 1900 constructed the successful torpedo boat which at once became the model for the American navy's submarines. In France, the first naval submarine, built by Dupuy de Lame, but somewhat modified in design by Gustave Zede was launched in 1888. Soon other submarines were developed, and with the passing years improvements were wrought in this nautical vessel.

Like other types of war craft the submarine has steadily increased in size. The first American boats displaced 120 tons when submerged, while the fleet submarines designed in 1915 had a tonnage of more than 1,500. Similar development also took place in other navies. The British and German ships which made long cruises during the

World War were of 800 to 900 tons displacement.

Submarines are kept on an even keel by ballast tanks and horizontal rudders. The water is moved by compressed air acting on the surface of the water in the tanks and by pumps. The horizontal rudders are operated by hand or by motors.

To submerge a submarine several tanks designated "main ballast tanks" are completely flooded and a less number of smaller tanks are partially flooded. These tanks, when filled, submerge the vessel. To bring the boat to the surface the water is expelled from the tanks by means of compressed air and pumps. The time required to submerge and emerge depends upon the size of the boat, the reserve displacement, and the capacity of ejecting and pumping equipment.

When a submarine nears an enemy it is submerged until only its periscope is visible. This instrument, attached as part of the submarine equipment, permits an outlook on the water when the boat is submerged. The periscope is, however, almost useless at night unless the vessel is at rest.

Up to 1914, submarines were divided into two classes, the patrol and the coastal. The former was of 600 to 800 tons surface displacement with good speed and endurance and capable of detached duties at some distance from its base, while the coastal submarine was of 250 to 400 tons and was intended primarily for the defense of naval ports and bases. Later, the fleet submarines, to accompany fleets, and the cruiser submarine with a relatively powerful gun armament were introduced. Besides these may also be added the monitor submarine, the mine-laying submarine and the submarine-destroyer submarine, the names of which clearly indicate the purposes for which they are used.

TELEGRAPH

The telegraph is, in the broadest sense, an instrument for sending signals to a distant point. The American Indians sent news by placing a blanket over a fire and allowing clouds of smoke to arise in accordance with a definite signal system. At the beginning of the American Revolution, signal lanterns were placed in the belfry of Old North Church. Two lanterns announced the coming of the British by sea; and one, by land. Napoleon used the heliograph whereby flashes of sunlight from mirrors or highly polished metal carried signals to distant points. Our navy still uses the changing of position of the arms of a semaphore to send messages. Thus the telegraph is not altogether modern. It has come, however, to be restricted to the conveying of signals by electric transmission.

A telegraph system is made up of a line of wire, a steady supply of electric current, a key for transmitting signals and a sounder whereon the signals may be heard. One wire between stations is sufficient because each terminal may be connected with the ground and thus a complete circuit is made. A transmitter simply opens and closes the electric circuit. Pressure on the key closes the circuit. Release of the key allows a spring to lift it and breaks the circuit. The current flows and stops upon the closing and opening of the circuit. Electricity travels so fast that the signal is received upon the sounder thousands of miles away in the fraction of a second. This sounder is made of two electromagnets with a piece of steel attached close to their ends. These cause an arm to strike a brass plate and the current is opened and closed. Thus a sound is caused both from the closing and opening of the circuit upon the sounder. The period of time between the up and down sound is the signal system. A "dot" is a short space of time, a "dash" a longer space of time. The Morse code, using dots and dashes, is used throughout the world. In the United States and Canada spaces are also used as well as dots and dashes.

Samuel F. B. Morse is considered the inventor of the electric telegraph although many others previously made scientific research along the same line. The Morse telegraph was first publicly used in 1844, although invented earlier.

One problem in modern telegraphy has been to increase the number of words that may be sent over a wire each minute. Automatic sending machines are capable of transmitting 350 words a minute. However, by using currents which differ in strength and direction or both, the multiplex system permits many messages to be sent in both directions over the same wire at the same time. Sending-machines today with keyboards like typewriters send messages which are automatically printed by the receiving machine.

The telautograph is an elaboration of the telegraph. By this invention the receiving pen writes exactly the words written by the sender on the transmitter. The telautograph is especially useful in hotels, railroad stations, and large business houses. This invention also permits the transmission of pictures, maps and charts.

TELEPHONE

On February 14, 1876, Alexander Graham Bell applied at the United States Patent Office for a patent on a method of reproducing sounds at a distance by means of electricity. Two hours later Elisha Gray of Chicago also filed an application on a very similar device. The patent was granted to Bell and he is therefore considered the inventor of the telephone. After a long legal battle the United States Supreme Court upheld Bell's patent.

The telephone consists of a transmitter, batteries or other sources of direct electrical current, an induction coil, and a receiver connected by copper wires.

When we speak into the sound-sensitive transmitter of a telephone the sound waves which spread in every direction strike the thin metallic diaphragm and cause it to vibrate in uniformity with the waves. This disk is part of a circuit having a current of electricity, and the current is affected by the different vibrations of the diaphragm. Electric impulses are thus created in the wire and are carried very quickly to the other end of the wire regardless of distance. Passing through electromagnets, these electric impulses cause the magnets to make an iron disk vibrate exactly like the transmitting diaphragm against which the sound was made. This latter operation is in the receiver of the telephone. The vibrations caused in the air produce the same sound as was uttered so accurately that it is easy to recognize the voice of a friend thousands of miles away.

A telephone exchange is the means by which telephone calls are connected. Each line has a hole in the switchboard and near each hole is a small electric light. When the



receiver is taken from the hook of a telephone this small lamp lights. The operator then places a wire in the hole and secures the number desired. The other end of the wire is also placed in the hole of the number of the telephone wanted and a switch rings the bell of the telephone desired. When the receiver of the telephone is hung up a light flashes on the switchboard and the operator removes the connecting wire.

Telephone users may call one another without the aid of an operator. The person calling sets this automatic exchange system in motion by lifting the receiver and moving a dial to letters and numbers indicating the number called, allowing it to return to its starting position after each number or letter. Then without human aid the machinery in the switchboard selects the desired line and causes the bell to ring which may be heard at both ends. On a busy line a buzzing signal is given. Thus, when one desires to call number 582 a pencil is placed in the hole numbered "5" of the dial and pulled as far to the left as possible, then allowed to return to its former position, the "500" trunk line is thus connected. When "8" is likewise pulled, connection is made with the "80" trunk line. When dialing number "2," connection with an individual line is made.

The first successful telephone was shown at the Centennial Exposition in Philadelphia in 1876 and aroused great interest. The first telephone exchange was in New Haven, Connecticut in 1878. In the United States there are now more than 10,000 telephone companies, although most of these are associated with the Bell System which originally secured the patents of Dr. Bell. Over sixty per cent of the telephones in use in the world are in the United States. As tremendous improvements have been made in the telephone in the past, so they are expected for the future. Large departments of research are devoted to constantly improving the telephone.

Telephoning and telegraphing are now carried on without wires and both are included under the term "radio," which is the subject of a special article, beginning on page 955.

THIRD DEGREE

A system used by the police to compel a suspected criminal to tell the truth. The suspect is constantly questioned over a long period of time until his strength of will and mind are so exhausted that he no longer withholds the facts. The authorities favor the third degree on the grounds of necessity and justice, although serious accusations of cruelty have often been made against the police, because of this form of extracting information from a suspect.

THUNDER

Thunder is the violent report which follows a flash of lightning. It commences the same moment as the flash; but as the sound travels at the rate of only about 1,100 feet a second, while light moves at the rate of 186,000 miles, the flash of the lightning is the first to be perceived. Thus a means is afforded of calculating the distance of the lightning. The noise of the thunder arises from the disturbance produced by the sudden expansion of the air in the path of the lightning discharge. The amount of lightning generated and its force both affect the loudness and length of the thunder peal. When the distance is considerable the sound becomes rolling, due to the reflection from ground, clouds, high buildings and other reflectors of sound.

TINKER'S DAM

The expression, "tinker's dam," indicates utter uselessness and originates from the little heap of clay or dirt which a tinker or plumber, in repairing a leak or soldering a joint places around the soft, heated solder until it cools and hardens. This dam of clay can never be used again and is thrown away as worthless.

TIP

A tip is a gift given to servants for services. Many explanations are given as to how this word originated. One is that it is made of the initials of the three words "to insure promptness." Another, that a slight "tip" or tap on the arm by a servant is a gentle suggestion that a gratuity be given. The English used the word also for a small money gift to a child, especially to a schoolboy.

TRADE-UNIONS

A trade-union is an association of workers in the same trade who are banded together for the purpose of maintaining satisfactory working conditions. They are interested in wages, hours, sanitary regulations, apprenticeship, restriction of output, collective buying, their legal rights, arbitration of disputes and conciliation. Many trade-unions also provide insurance for their members, unemployment allowances, social and educational opportunities. Whether or not the modern trade-union is a descendant of the guilds of the Middle Ages, both forms of association worked for the betterment of conditions of work. Great strides have been made in collective bargaining and in coöperation between employer and employee groups, since the beginning of the twentieth century. There are fewer strikes and lockouts.

The "strike," or refusal to work by the group regularly employed at certain tasks, is the union's weapon to gain its ends when demands are refused. A "sympathetic strike" is a strike made by members of the union not directly affected by the matter under dispute, who strike in order to enforce the demands of their striking mates. A "boycott" is a combination of people to withhold all business dealings with an individual or organization. It is a refusal to sell to or buy from the one who is boycotted. In both strikes and boycotts attempts are made to influence coöperation from others outside the union or group involved. The employer may use as a weapon in labor disputes the "lockout," which deprives the workers of their work with him. There is a growing tendency toward arbitration in labor disputes, a number of unions maintaining joint boards of arbitration and conciliation on which are representatives of both worker and employer, together with persons not connected with either side, who are chosen by both sides.

While there were unions in America long before the Revolution, there was a great increase in their number and strength between 1792 and 1810, and the first central organization of unions was formed at Philadelphia in 1827, the Mechanics Union of Trade Associations. Six years later, twenty-nine trade organizations formed the New York Trades Union. Other cities followed suit and in 1834 the unions of six cities met in convention and formed the National Trades-Union. It should be noted that a trade-union includes individuals who work at the same trade, while a trades-union is made up of unions in various trades.

There are a number of national trade-unions, the printers having formed the first national group in the Typographical Union in 1850, followed by the stone cutters three years later. Then, too, before 1870 two national organizations were formed that admitted workers of any trade. These were the National Labor Union, founded in 1866, and the Noble Order of Knights of Labor, started in 1869 as a secret society, but this phase was soon discontinued. In 1881 the Federation of Organized Trades and Labor Unions of the United States and Canada was founded at a meeting in Pittsburgh, and five years later this organization joined with other groups to form the American Federation of Labor, the "A.F. of L." which today is the great labor organization, composed of groups in all trades in America. Certain groups, such as the railway unions, the Amalgamated Clothing Workers, and the Industrial Workers of the World, (an organization of revolutionary character), maintain separate organization. The largest single organization within the American Federation of Labor is the United Mine Workers of America, with a membership of over 400,000, while the organization as a whole has about 3,000,000 membership. The British federation has about the same total membership.

TRAIN SIGNALS

The following signals are displayed to the rear of every train:

By day the marker lamps are not lighted.

By night, while running on a single track, with the current of traffic on a double track and with the current of traffic on passenger tracks where there are three or more tracks, green lights are displayed to the front and side, and red to the rear. When on a siding, to be passed by another train, green lights are shown to the front, side, and rear.

A train running by night with the current of traffic on slow speed track, where there are three or more tracks, displays green to the rear on the side next to the high speed track in the direction of the current of traffic, and a red light on the opposite side.

The rear of a train running by night on any track against the current of traffic where there are three or more tracks, displays green to the rear, with a red light on the platform or the cupola.

Cabooses equipped with revolving signal lamps on cupolas display green when running at full speed. Red is displayed at the moment speed is reduced and until full speed is resumed, except when the train is on a siding clear of the main track, when green is displayed.

The following signals are displayed to the rear of every train, as markers, to indicate the rear of the train: by day, marker lamps (not lighted); by night, green lights to the front and side, and red lights to the rear, except when the train is clear of the main track, when green lights are displayed to the front, side and rear. When a train is turned out against the current of traffic, green lights are shown to the front and side, a green light to the rear on the side next to the main track on which the current of traffic is in the direction the train is moving, and a red light to the rear on the opposite side.

All sections except the last display two green flags and, in addition, two green lights by night in places provided for that purpose on the front of the engine.

Extra trains display two white flags and, in addition, two white lights by night in the places provided for that purpose on the front of the engine. A blue signal displayed at one or both ends of an engine, train, or car signifies that workmen are under or about it; when thus protected, it must not be coupled to or moved. Each class of workman displays the blue signals and the same workman is alone authorized to remove them. Other equipment may not be placed on the same track so as to intercept the view of the blue signals without first notifying the workmen.

Color Signals. Red indicates: Stop.

Yellow indicates: Proceed at restricted speed. (Other uses prescribed by the rules.)

Green indicates: Proceed. (Other uses prescribed by the rules.)

Green and white indicates: Flag stop.

Blue indicates: Workmen busy about train. (Other uses prescribed by the rules.)

Purple indicates: Stop indication for dwarf signals.

The explosion of two torpedoes is a signal to proceed at restricted speed. The explosion of one torpedo indicates the same as two, but the use of two is required.

TRANSPORTATION

Since man was created he has moved about from place to place, carrying his possessions with him. Gradually he sought methods that would relieve him of carrying his burdens. He made yokes for his own shoulders that carried weight easily, and soon transferred the yoke to various animals that he

ODD FORMS OF TRANSPORTATION



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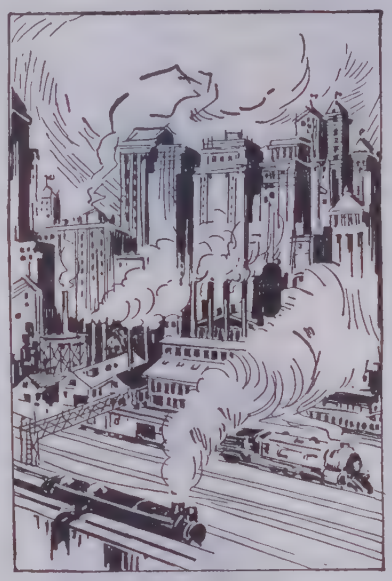
1—India—Street scene showing ox carts loaded with cotton. **2**—Siam Howda—Traveling in northern Siam via elephant express. **3**—India Cashmere—An inflated ox skin used as a ferry boat. **4**—Drawing water from a native well near Delhi, India. **5**—Burma, Rangoon—Working elephants at Rangoon. **6**—Jamaica. **7**—Ceylon, China—Rickshaws on a country road. **8**—Ceylon—A native peddler selling live poultry. **9**—An Alaskan pack train.

domesticated as beasts of burden. He formed rude sledges on which his loads were pulled over the ground. Then he relegated these to use on snow and ice after he had cut solid and circular pieces of tree trunk to serve as wheels. The ox and the ass pulled wagons and plows in Egypt 2,700 years before the Christian era. The horse, used first in Asia, was transported to Egypt, and thence to Europe, but it was essentially a war animal and not a beast of burden for many centuries. The camel was the transport animal over the deserts, the elephant served in India, the llama in South America, the yak in Tibet, the carabao in the Philippines. The Eskimo used reindeer, and later used dogs also. In Belgium and Holland dogs are still used for lighter burdens and often carry milk through the streets of the towns.

But roads were poor and often dangerous in early times, and men hollowed a tree or inflated a skin and made better progress on a river than they could on their roads. With a flat piece of wood as a rudder and a couple more as oars they moved about, carrying goods from place to place. Civilization sprang up along the waterways; men began to build larger boats and made their slaves row their great galleys from one trading place to another. The Egyptians were the great traders in Biblical days, although by 1000 B.C. the Phoenicians became the important merchants on the Mediterranean, carrying goods to Greece, whence the Greeks took them inland. Then Greece became the greatest of the trader nations, and when the power of Rome rose, she became a still greater trading nation, daring her vessels on the Atlantic. The people of Venice, Genoa and Florence grew rich from trading with the Orient. The Roman Empire was a great road-builder, and though this was done largely for military purposes, the trader followed the soldier, and in his wake went civilization for countless wild hordes of northern Europe.

All this time men had guided their way through forest and over the water by the sun and stars, and it was not until 1300 A.D., when the compass came into use, that man had a reliable aid in direction-finding. The compass allowed men to go farther from known trails on land and sea. Soon Columbus had reached America and Magellan had circumnavigated the globe. But travel was slow. Animal power was used on land and oars were the only means of moving on water when the winds failed to fill the sails. It took months for vessels to sail from London or Paris to New York a century ago.

With the invention of the steam engine came a great step forward in transportation. Both land and water travel were speeded greatly, and much larger loads could be transported than had before been possible. The first stagecoach traveled from New York to Philadelphia in 1756, but men still found it more comfortable to go on horseback, with saddlebags for their goods when they were in a hurry, for roads were bad and coaches and wagons often sank their wheels into mud to their hubs. Thomas Twining, an English merchant from India, came to the United States during Washington's administration and wrote of the bad roads he encountered in his several days' journey by stagecoach from Philadelphia to the new city of Washington. It was because of this slowness of travel in the early days of the Republic that there was such a long wait between the time when a new president was elected and the time of his inaugural. Many weeks were needed less than a century and a half ago for a man to travel a few hundred miles, and so ample time was given for the incoming President to reach the capital.



The Steam Engine

Probably the greatest advance in transportation was due to the development of the steam engine.

The steam engine was probably the greatest agent in improving transportation, but electricity marked another era in transportation advance. Electric street cars and electricity on vessels brought more universal travel and the carrying of goods into smaller communities. Then came the gasoline engine, and the automobile developed into a great factor in transport. The automobile increased the demand for good roads, and all over the civilized world there was road construction and the consequent spread of transportation. The truck and bus began to displace the railroad for short hauls.

The gasoline engine also made possible the practical use of the air. Aeronautics became a fact instead of a mere theory. The discovery of the non-inflammable helium gas for use in dirigibles was another step forward in safe use of air transport. Men have crossed the North American continent by airplane between sunrise and sunset, and a regular passenger service allows a traveler to sleep at a hotel during the night while making a thirty-six hour coast-to-coast journey, covering a distance that the pioneers, in their ox-drawn covered wagons, took several months to achieve.

The oil-burning Diesel engine on steamships is making the firing of engines a clean and easy matter compared with the work of half-naked firemen who toiled to feed coal to the old-style engines. Seaplanes skim the surface of the water and are much used for short distance transportation. A great Zeppelin has circumnavigated the globe and a number of planes have done likewise. Both the North and South poles were reached by Admiral Byrd by airplane, and Captain Amundsen flew over the North pole from Europe to America. Planes are used to carry the mails, passengers, express and other valuable goods, and to bring perishables to market.

The history of transportation tells the history of civilization, for it was the early traders who carried ideas and news from one community to another and gave men a broader outlook on life, a desire for more civilized comforts, and sent them adventuring to the farthest corners of the globe in search of new markets and, incidentally, made of them explorers.

TREES, NOTED

A number of trees are preserved as monuments marking scenes of historic value; but others have perished as a result of disease, or of man's disregard of their worth. The important task of caring for trees is illustrated on the following page. Some of the most noted trees are:

Burgoyne Elm. At Albany, N. Y., associated with the ill-fated British general, Burgoyne, during the American Revolution.

Cary Tree. Planted by the roadside in 1832 by Alice and Phoebe Cary. It is a large sycamore standing on the turnpike between College Hill and Mount Pleasant, Hamilton County, Ohio.

Charter Oak, The. A tree celebrated in American (legendary) history. It formerly stood in Hartford, Conn., and according to tradition, when Governor Andros came to Hartford in 1687 to demand of the Assembly the surrender of the colonial charter, the debate in that body over the governor's demand was prolonged beyond daylight, when suddenly the lights were extinguished, and in the darkness a patriot, Captain Wadsworth, escaped with the charter and hid it in a hollow oak. There is, however, no contemporary record of this event. The Charter Oak was overthrown by a storm in 1856.

Elm, Old Liberty. A famous tree on Boston Common, which stood near the "long walk," at the foot of Flagstaff Hill. It was a tree of unknown age, believed to have stood before the settlement of the town in 1630 and already decrepit as long ago as 1755. It was over seventy-two feet high, and measured twenty-two and a half feet in circumference one foot above the ground. After resisting many a storm, it was blown down in the winter of 1876. An iron fence surrounds the spot where it stood.

Fairlop Oak. A giant oak in Hainault Forest, Essex, England, whose girth was forty-eight feet, and beneath whose widely spreading branches an annual fair was held on the first Friday in July. The tree was blown down in February, 1820.

Judas Tree. A corruption of Kuamos tree, the leguminous or bean tree. The corrupt name has given rise to the tradition that it was upon one of these trees that Judas Iscariot hanged himself.

Mather's Willow. The weeping-willow over the grave of Cotton Mather in Cop's burying-ground, near Bunker Hill, taken from a tree that shaded the grave of Napoleon at St. Helena.

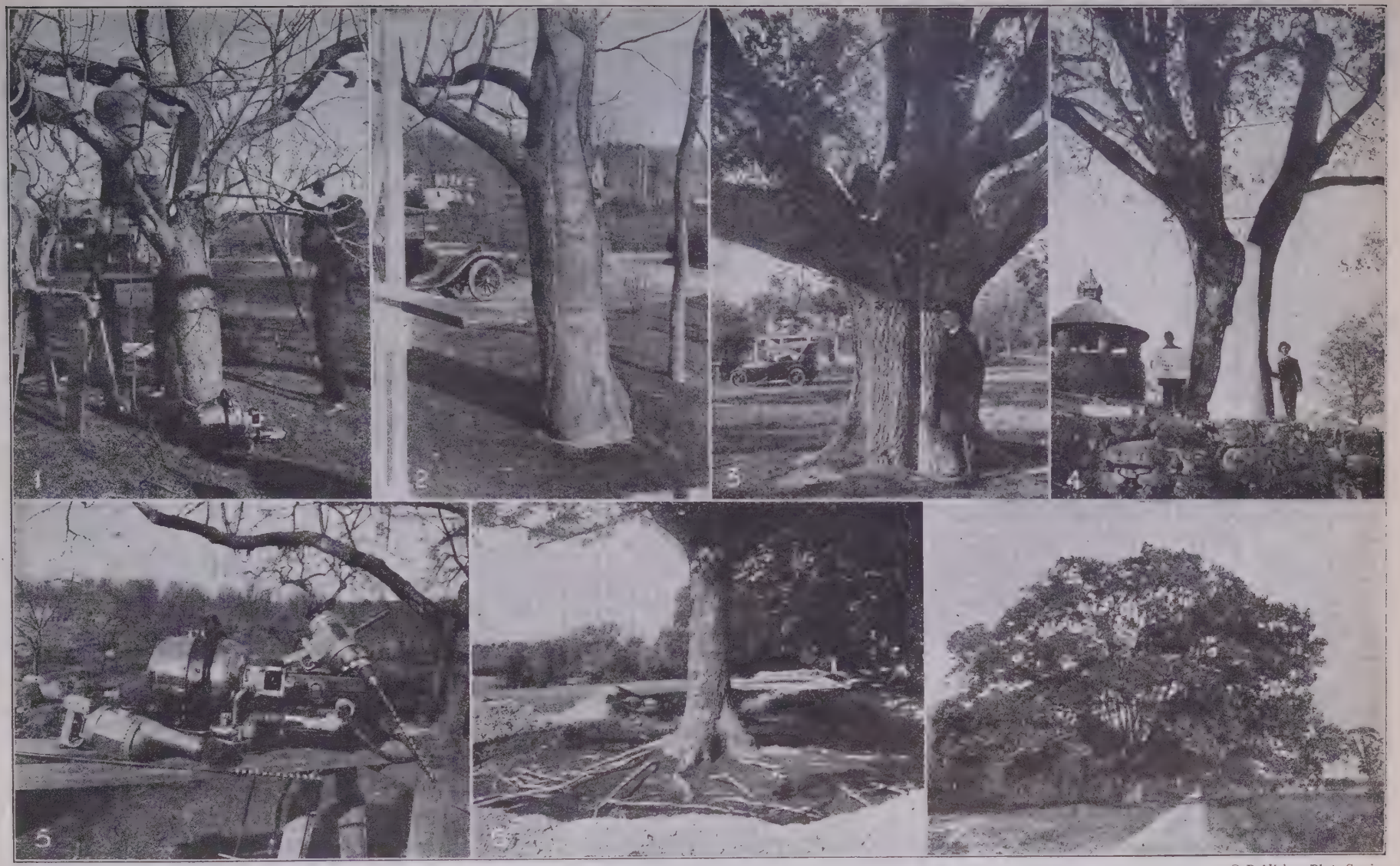
Mt. Vernon Ashes. The immense ash trees planted by General Washington at Mount Vernon, and now the admiration of visitors.

Old Moses. One of the largest trees in the world is that discovered, in 1874, in a grove near Tule River, in California. Though the top has broken off, it is 240 feet high, and the diameter of the tree where it has been broken is twelve feet. This giant of the forest is called Old Moses from a mountain in the neighborhood, and is calculated to be over 4,850 years old. The hollow of its trunk, which is 111 feet, will hold 150 persons. It is hung with scenes of California, carpeted and fitted up like a drawing room, with table, chairs, sofa and piano.

General Sherman Tree. This is the largest of the sequoias, 273.9 feet high, 37.3 feet in diameter at the base, and 18.7 feet in diameter 100 feet from the ground. It stands in the Sequoia National Park.

Washington Elm, The. The noted elm under which George Washington took command of the Continental army, in Cambridge, Mass. While being trimmed by workmen, this tree fell, October 26, 1923. On its site now stands a small granite slab with the inscription in bronze letters: HERE STOOD THE WASHINGTON ELM UNDER WHICH WASHINGTON TOOK COMMAND OF THE AMERICAN ARMY, JULY 3, 1775.

An offshoot of the famous elm was presented, as a gift from the University of Washington, and planted on Cambridge common in the spring of 1931. The shoot from the parent tree had grown, from the time of its planting in 1896, to a height of forty feet.



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TREES AND THEIR CARE

Modern care of trees includes scientific methods in both the planting and care of the growing tree. As these pictures show, many trees that would otherwise die are saved by scientific treatment. A number of the great historic trees have received similar care and have thus been preserved to contribute to the enjoyment of generations to come.

1. Drilling out the decayed matter from the tree. 2. A concrete trunk, over which the bark will gradually close in the course of years. 3. The bark has closed over the concrete. 4. Concrete trunk of a tree that is seventeen feet in circumference. 5. Drill used in cutting out decayed matter from the inside of trees. Note the burring tool on the end of the machine. 6. Treating the roots of the tree. A tree requires proper nourishment. It also needs the earth about its roots kept loose enough to permit some air to filter through, and thus prevent the earth from growing sour. 7. A beautiful tree that was saved by scientific care.

TUNNELS, FAMOUS

Men build tunnels for many purposes: as passageways for pedestrians and vehicles, to carry water (aqueducts), sewage or gas, for pneumatic tubes, pipes and cables. Ancient peoples cut their tunnels through the rock with crude hand tools; modern man blasts his way through with explosives. Mine tunnels were excavated centuries before the Christian era. The earliest ones probably were made for religious purposes. The famous catacombs at Rome were great tunnels under the city's streets in which the early Christians sought safety, and where they held services and buried their dead. Lords of medieval castles had tunnels constructed from their underground vaults that they might escape when the enemy pressed them too hard. Today tunnels are constructed under rivers and cities and through mountains to provide greater and faster transportation facilities. The following list of tunnels includes those famous in history and noted as engineering feats.

Arlberg, a railroad tunnel under the Alps at the Arl Mountains, extending from Langen to St. Anton, 6¾ miles long, was opened in 1884 and cost $7,500,000.

Arthur's Pass, a railroad tunnel in South Island, N. Z., has a total length of 5.38 miles. Completed in 1912, the approximate cost was $3,000,000.

Baltimore Tunnels. The Baltimore and Ohio railroad was the first to make use of electric motive power on the railroads in this country, in 1895 at Baltimore, Md. The main line of this railroad passes under the city through tunnels which were completed in 1894. The main tunnel under Howard Street is over 7,000 ft. long. Through the quicksand areas, the adjacent ground was solidified by forcing large quantities of thin cement into it. Power was supplied from overhead wires until a third-rail system was installed in 1902. The electrified section totals about seven miles in length.

The Pennsylvania Railroad has two tunnels in Baltimore. The Union Tunnel, lying north of Union Station was built by the Union Railroad Company of Baltimore in 1871 under the bed of Hoffman Street from Bond Street to Greenmount Avenue. Baltimore Potomac Tunnels lying south of Union Station were built by the Baltimore and Potomac Railroad Company in 1873. Tunnels under Wilson Street from North Avenue to Pennsylvania Avenue and under Winchester Street, Fremont Avenue to Gilmore Avenue, total 7,150 ft. in length.

Belmont tunnel of the Interborough Rapid Transit Co., New York City, lies under the East River from Forty-second Street, New York to Long Island City. The portion under water consists of two single-track tubes with cast-iron rings 16 ft. 10 in. outside diameter, and a clear inside diameter of 15 ft. 6 in. Construction was completed on January 1, 1908. Train operation was begun on June 22, 1915.

Big Bend tunnel drains the Feather River in California. It is two miles long, and was opened in 1886.

Bitter Root Mountains. This tunnel, lying in Montana and Idaho is 10,100 ft. long.

Blackwell, a tunnel under the River Thames in England, a mile and a half in length, was opened in 1897.

Brooklyn-Manhattan Transit Corporation tunnel in New York City extends from Whitehall Street, Manhattan to Montague Street, Brooklyn. The length between bulkhead lines is 3,900 ft., and the inside minimum diameter is 15 ft. The outside minimum diameter is 17 ft. 2 in. Work was begun July, 1914 and the tunnel was opened on August 1, 1920.

Busk-Ivanhoe tunnel, a single-track bore, 9,600 ft. long, used by the Colorado Midland R.R., lies under the Continental Divide in Lake and Pitkin Counties, Colorado.

Caldera, a railroad tunnel in Peru, S.A., 1¾ miles long, was built in 1893.

Cascade Mountain, a tunnel running through the Cascade Mountains in Washington, 8 miles in length, was opened in 1928.

Catskill Aqueduct, covering 92 miles to New York City, and 35 miles of distributing tunnels deep under the city itself, was completely opened in 1917. The Shandaken tunnel, a part of the Catskill water supply system, is used to deliver the water of Schoharie Creek to the Ashokan Reservoir. It is 18.1 miles long, the longest tunnel in the world. It is concrete-lined, 10½ ft. wide and 11½ ft. high, with a capacity of 600,000,000 gallons a day; it was opened early in 1924.

Clark Street Tube of the Interborough Rapid Transit Co., New York City, consists of twin tubes lying underneath the East River, connecting the Interborough Seventh Avenue Subway in Manhattan with the Fulton Street-Flatbush Avenue Subway of the Interborough in Brooklyn. They were completed and put in operation in 1919. They are 5,047 ft. long, with an outside diameter of 17 ft. 6 in. and inside diameter 15 ft.

Col Des Montets, a tunnel on the narrow-gauge electric railway from Fayet, France, to the Swiss frontier, about 1½ miles in length, was opened in 1918.

Connaught, a double track railroad tunnel running through the Selkirk Mountains, lies under Rogers Pass, British Columbia. Five miles long, its approximate cost was $6,500,000. Operations were completed in 1916.

Croton Aqueduct, carrying water 33½ miles to New York City, was opened in 1888.

Cumberland, a tunnel lying under the Cumberland Mountains in Tennessee, is 8,000 ft. long.

Detroit-Canada. A railroad tunnel under the Detroit River from Detroit, Mich., to Windsor, Ont., is 1.6 miles in length and was opened in 1910. Cost $10,000,000.

Detroit-Canada. A vehicular tunnel, with a capacity of 1,000 automobiles an hour in each direction, was opened between Detroit and Windsor in November, 1930. This tunnel, excepting the Holland tunnel in New York which connects New York with New Jersey, was the largest built, at the time of its opening. It is 5,135 ft. long, which is approximately a mile, the river section being 2,200 ft. with a 22 ft. roadway. A trench was dug and nine steel tubes floated and sunk into place to make the part under the river. An 18 in. concrete lining was then added. Customs and immigration inspectors have been assigned to work at each entrance of the tunnel.

Elizabeth Lake, Los Angeles, aqueduct was built between 1907-1911. It is 5.1 miles long and cost approximately $1,088,000.

Erie Railroad or **Bergen** tunnel, through Bergen Hill, Jersey City, was constructed between 1856 and 1861. Originally it was 4,385 ft. long, but was shortened at both ends when the Bergen Archways was constructed. The total length is now 4,162 ft. It is a two-track tunnel 28 ft. wide, center arch 21 ft. high. It has been used for freight traffic only since the construction of the Bergen Archways in 1910.

Florence Lake, an aqueduct in southern California, 12.8 miles in length, was finished in 1925 and cost $17,000,000.

Fourteenth Street, East, a tunnel in New York City from Manhattan to Williamsburg, used by the Brooklyn-Manhattan Transit Corporation. The length between bulkheads is 3,050 ft., minimum diameter inside 15 ft. and maximum diameter outside 18 ft. Begun in February, 1916, it was opened June 30, 1924.

Gallitzin tunnel, a 3,600 ft. bore extending through the Allegheny Mountains at Gallitzin, 11 miles west of Altoona, Pa., was built in 1854, for two tracks of the Pennsylvania Railroad. In 1904 a new single track tunnel was built parallel with the old tunnel, through which is operated one westbound track, another westbound track being operated through the old tunnel, replacing the original two tracks in order to give added clearance. The two eastbound tracks through the mountain lie within New Portage tunnel, 1,610 ft. long, built in 1855.

Gravehals, a railroad tunnel extending between Oslo and Bergen, Norway, 3.3 miles long was built between 1904-1909.

Grenchenberg, a railroad tunnel in the Jura Mountains, Switzerland, 5.3 miles in length, was completed in 1915 at the approximate cost of $3,500,000.

Gunnison, an aqueduct in Montrose, Colo., six miles long, was built between 1905 and 1909 at the approximate cost of $2,170,000.

Harlem River tunnel, in New York City, connecting Lenox Avenue between 142nd and 143rd Sts., Manhattan, with 149th St. There are two single cast-iron tubes 15 ft. inside diameter with a center diaphragm. The tubes are 641 ft. long. Work was begun in 1901 and completed in 1905.

Harlem River tunnel, Lexington Avenue Line, passes under the Harlem River north of 131st St. It consists of four single track steel tubes connected in center with diaphragm and concrete reinforcement. The inside diameter is 16 ft. 6 in. and the length of the tube is 1,080 ft. Begun in 1913; put in operation in 1918.

Hetch Hetchy, an aqueduct in San Francisco, 18 miles in length was built between 1920 and 1923.

Holland Vehicular Tunnel includes twin tubes under the Hudson (North) River, 9,250 ft. in length, extending from Canal Street, Manhattan, to Twelfth Street, Jersey City. Opened to commercial traffic November 13, 1927. Each tube is 29 ft. 6 in. external diameter, with interior roadway width of 20 ft. and clearance height of 13 ft. 6 in. The tunnel was built to accommodate 46,000 vehicles a day. On the first day it handled over 52,000. There are narrow sidewalks for the tube police. The total traffic for 1928 was 8,744,674 vehicles, and the maximum day in that year totaled 48,004 vehicles. On May 12, 1929, the tunnel was used by 52,178 vehicles.

Hoosac, a railroad tunnel running through the Hoosac Mountains, Mass. is 4.75 miles in length and was built between 1856 and 1873 at the approximate cost of $11,000,000.

Hudson and Manhattan Railroad north tunnels lie under the Hudson River from Jersey City to Morton St., New York. There are two single track tubes, with a minimum inside diameter of 15 ft. 3 in. The length is approximately 5,700 ft. Up-town tunnels connect with north tunnels at Morton St. and extend to 33rd St. Operations were started in March, 1904, and completed in 1910. Two single track tubes extend from the Hoboken terminal of the Lackawanna Railroad to Jersey City, with connections to the north tunnels and to the Erie Railroad Station. At Washington St. a branch runs to the Pennsylvania Railroad Station at Jersey City. Here connections are made with the south tunnels. West from Washington St., Jersey City, to a point east of Waldo Ave. is a double-track concrete subway with a center wall dividing the two tracks. West from this latter point the tracks rise to the surface and extend to Journal Square Station, Jersey City, where connection is made with the tracks of the Pennsylvania Railroad, which extend to Manhattan Transfer, Newark. Work was completed in 1911.

Interborough Rapid Transit tunnel, the first of its tubes under the East River from the Battery, New York, to Joralemon St., Brooklyn, connecting the New York and Brooklyn subways, was begun in 1903 and was in operation in 1908. There are two tubes 6,784 ft. long, with an inside diameter of 15 ft. 6 in.

Jungfrau, a railroad tunnel in the Swiss Alps, 4.47 miles in length, was built between 1897 and 1912 at a cost of $1,375,000.

Khojak Pass, a railroad tunnel extending from Quetta to Landabar, India, 2.44 miles in length, was opened in 1891.

Lackawanna Railroad, a tunnel through Bergen Hill, Jersey City, was started in 1906 and completed in 1909. It is 24 ft. from the old tunnel and of the same length, 4,283 ft. The new tunnel is double tracked, lined with concrete. Its inside dimensions are 23 ft. high and 30 ft. wide.

Lausanne, an aqueduct, 3.8 miles long, drains mines in Mauch Chunk, Pa. Completed in 1912 at an approximate cost of $380,000.

Loetschberg, a railroad tunnel running through the Alps in Oberland, Switzerland, 9½ miles long, was opened in 1913, its cost approximating $10,000,000.

Moffat, a tunnel piercing the Rocky Mountains at the Continental Divide, in Grand and Gilpin Counties, Colorado. It is on the line of the Denver and Salt Lake Railway, with its eastern portal 50 miles west of Denver; and it shortens by 23 miles the traveling distance between those cities. The bore, 39,560 ft. long, begun in 1923 and holed through on February 18, 1927, was opened in February, 1928. The tracks at the eastern end, near Tolland, are 9,198 ft. above sea level, and 9,085 ft. at the western opening, near Irving. The dimensions of the main tunnel are 24 ft. high by 16 ft. wide. A pioneer tunnel, 8 ft. square, was first built, and through cross cuts to this the refuse from the larger tunnel was removed. When the big tunnel was completed the cross cuts were closed and the smaller bore used as an aqueduct. The large bore carries a single track, laid with 110 pound rails on treated oak ties with rock ballast. The project was started by David H. Moffat, railway builder, who died in 1911.

Mont Cenis, a railroad tunnel running from France to Italy under the Col de Frejus, practically 8 miles long, was opened in 1871. The approximate cost was $15,000,000. The line is electrified between Modane and Culoz.

Mont d'Or, a railroad tunnel through the Jura Mts. between France and Switzerland, from Fresne to Vallorbe is 3.3 miles in length and was completed in 1915. It cost approximately $4,060,000.

Mt. Roberts tunnel extends from Gastineau Channel at Juneau, Alaska, into Silver Bow Basin, and is 1½ miles in length.

Mt. Royal, a railroad tunnel in Montreal, Canada, 3.22 miles long was begun in 1910 and completed six years later.

Newhouse, a tunnel for drainage and transportation in Idaho Springs, Colo., 4.17 miles long, was completed in 1910.

New York Central Railroad, Park Avenue Tunnel, was completed in 1837. It was two-track and only extended to 96th St. The railroad at that time terminated in the vicinity of City Hall. In 1872, the railroad was four-tracked, the four tracks being covered over from 56th St. north to the old tunnel at 96th St. There was a two-track tunnel in the center and a single track tunnel on either side. The length of the tunnel was approximately 10,000 ft.

Susquehanna and Western Railroad tunnel through the Palisades at Edgewater, New Jersey, constructed during the years 1892 to 1894, is a two-track tunnel partly brick-lined, 27 ft. wide and 21 ft. high to the inside of a semi-elliptical arch. Its length is 5,058 ft. and is used for freight traffic only.

Nice-Cuneo tunnel, under the Alps, was opened for rail traffic in 1928. There are two tunnels: one of 5,939 meters, at the Col de Braus; one of 3,883 meters under Mont Grazian. The entire route is 76½ miles in length.

Pennsylvania Railroad tunnels under the Hudson River extend from the Pennsylvania Railroad Station, New York, to Weehawken, N. J. There is no station at Weehawken; the electric trains from the Pennsylvania Station express to Manhattan Transfer, near Newark, N. J. Work was started in 1904 and completed in 1910. There are two tubes of cast-iron rings, comprising a 23 ft. outside diameter and 21 ft. 2 in. inside diameter. The portion under the river is 6,118 ft. long. The Hudson tubes were opened on November 27, 1910, when the road between Long Island City and Manhattan Transfer was electrified. Electrification has been in progress since 1903.

Manhattan crosstown tunnels from the Pennsylvania Railroad Station, cross New York at 32nd and 33rd Sts. to First Ave. Work was started in 1905 and completed in 1910. There are two two-track tunnels, built of concrete with the crown about 60 ft. below the surface of the street.

East River tunnels connecting the crosstown tunnels extend under the East River to Long Island City. These were started in 1904 and completed in 1910. There are four separate tubes with rings 23 ft. outside

diameter and each tube from the Manhattan shaft to the Long Island City shaft is 3,900 ft. long. The tunnels under Manhattan and the East River were opened to Long Island traffic in 1910.

Otira, a tunnel in New Zealand, is 5½ miles long.

Pirahy River, an aqueduct in Rio de Janeiro, Brazil, 5.25 miles in length, was constructed during the years 1911 to 1913.

Ricken, a tunnel in the Swiss Alps, 5.35 miles in length was completed in 1910, at an approximate cost of $2,500,000.

Roosevelt aqueduct drains mines in Cripple Creek, Colo., is 2.98 miles long; cost $428,000, and was opened in 1910.

Rothschönberg, a mine drainage tunnel in Freiberg, Sax., 18 miles in length was built between 1844 and 1887.

Rove tunnel is the southern section of the Marseille-Rhone canal in France. This piece of engineering is said to be the largest accomplished since the building of the Panama Canal. It was formally opened in April, 1927, by the President of the Republic. The underground canal, passing through a rocky ridge for a distance of 4½ miles, cost about 135,000,000 francs. Its greatest width is 72½ ft., and the width of the water channel is 60 ft. The roof is 37½ ft. above the water. Two 1,500-ton barges can pass without difficulty. This is only part of the 50-mile canal which is eventually to join the river Rhone, at Arles, to Marseille.

Samport, a tunnel in the Pyrenees Mountains, 4 miles long, extending from Pau, France, to Canfranc, Spain, was opened in 1928.

Sasago, a railroad tunnel extending from Tokio to Kofu, Japan, completed in 1902, is 2.9 miles in length.

Severn, a tunnel extending from Monmouthshire to Gloucestershire, England, 4½ miles long was opened in 1886.

Shandaken, an aqueduct between Gilboa and Allaben, New York, is 18 miles long. It was built between 1919 and 1923 at an approximate cost of $12,138,000.

Simplon, a railroad tunnel running through the Alps between Switzerland and Italy is 12½ miles long. It was built between 1898 and 1905, at a cost of $21,000,000. A twin tunnel was opened in 1921; both are electrified.

Sixtieth Street tunnel of the Brooklyn-Manhattan Transit Corporation in New York City, extends from Manhattan to Long Island City. The length between the bulkheads is 2,580 ft. with a minimum diameter inside of 15 ft. and maximum diameter outside of 18 ft. Begun in 1916, the tunnel was opened in 1920.

Snoqualmie, a railroad tunnel in the Cascade Mountains, Wash., 2.25 miles in length, was completed in 1915, and cost $2,000,000.

Southern Pacific and Central Pacific Railroad tunnels, Chatsworth Park, through Coast Range Mountains, in Los Angeles County, Cal., 1.4 miles; San Fernando, through Spur, 1.32 miles.

Spiral. The tunnels on the Canadian Pacific Railway, between Hector and Field, B.C. consist of two spiral tubes, the westerly, 3,255 ft. long, under Cathedral Mountain; and the easterly, 2,921 ft. long, under Mt. Ogden, with the Kicking Horse River between.

Stampede, a railroad tunnel in the Cascade Mountains, Wash., 1.83 miles long, was completed in 1888.

Strawberry, a tunnel running through the Wasatch Mountains.

St. Clair, a tunnel under the St. Clair River running from Sarnia, Ont., to Port Huron, Mich., 2 miles long, was opened in 1891.

St. Gothard, a tunnel running through the Alps, connecting Goschenen with Airolo, in Switzerland is 9½ miles long. It was opened in 1881, cost approximately $11,500,000, and has since been electrified.

St. Mary's tunnel, New York City, has two straight tracks on a level grade passing through the tunnel under St. Mary's Park, the Bronx. The tunnel was built in 1904 and extended from 149th St. to Jackson Ave., covering about 1,800 ft. Two types of construction were used. A flat roof composed of I-beams and concrete, resting on concrete walls and an arched roof tunnel of concrete. For the flat roof type, the dimensions were 26 ft. wide and 16 ft. high and for the arched roof type, the dimensions were 26 ft. wide and a center height of 21 ft.

Sutro, a mine drain tunnel for the Comstock Lode in Nevada, 4½ miles long, was opened in 1879.

Tauern, a railroad tunnel in the Austrian Alps, 5.31 miles in length, was completed in 1909 at an approximate cost of $6,063,000.

Tequixquiac, an aqueduct draining the City of Mexico, 6.25 miles long. It took 18 years to build, was finished in 1898, and cost $6,760,000.

Totley, a tunnel in England, is 3¾ miles long.

Trans-Andine Railway tunnel, extending from Chile to Argentina, 5 miles long and 10,512 ft. above sea level, affords direct communication between Valparaiso and Buenos Aires. It was opened in 1910.

Wasserfluh, a tunnel in the Alps between Bunnadern and Lichtensteig in Switzerland, 2 miles in length, was opened in 1909.

West Shore Railroad tunnel was built at Weehawken, N. J., and completed in 1883 at a cost of $525,000. It is double-tracked. A steel and concrete portal constructed in 1907 at the east increased its length to 4,273 ft. The normal section is 27 ft. wide and 19 ft. high. 80.500 cubic yards of rock were removed, and five vertical shafts were utilized. The tunnel is a tangent, with the exception of the extended portion of the east end at which point the freight and passenger tracks divide.

Woodhead, a vehicular tunnel extends 2.2 miles under the River Mersey between Liverpool and Birkenhead, England.

TUTENKHAMON

Lord Carnarvon of England, and Howard Carter, an American archaeologist, after excavating for seven years in the Valley of the Kings near Luxor, Egypt, in 1922 discovered in surprisingly perfect condition the tomb of Tutenkhamon, an Egyptian ruler of the fourteenth century B.C. The tomb contained splendid paintings of this era, golden shrines, vases, chariots, caskets and furniture inlaid with jewels and gold. In the coffin was found a solid gold model of the mummified ruler's face. This ancient tomb remained in perfect condition due to the fact that in excavating the tombs above, this one was buried in the debris, thus being protected both from the air and from thieves. The great variety of objects discovered makes it possible to get a true picture of Egyptian art and customs of 2,400 years ago.

TYPEWRITER

For centuries men tried to find a machine that would do their writing for them. Henry Mill secured a patent for a writing machine in 1714, and W. A. Burt took out an American patent for a cumbersome machine in 1829. Other attempts were made but none of the machines were practical. Then Christopher L. Scholes of Milwaukee built a machine on which he wrote to his friends and in which he gradually interested a number of men. A Pennsylvanian, James Densmore, helped finance the machine and also made constructive suggestions that helped Scholes better his typewriter until he interested a firm of gunmakers, Remington and Sons, and they manufactured the machine. The first ones went on the market in 1874.

There are two chief varieties of typewriter, the shuttle and the type-bar machines. The Hammond is a shuttle machine. Here the letters and marks used are on a curved plate, sometimes called a "shuttle." By depressing the key the letter on the shuttle is brought into position and the paper forced against it. It is possible to change these shuttles and thus use different styles of type and alphabets. The Blickensderfer typewriter placed the characters on a wheel striking the paper on a rubber cylinder, turning to bring the characters into place.

The first type-bar machine was the Remington. This has the letters on the ends of steel bars, forty-two in number, arranged in a horizontal semicircle. By depressing a key the arm rises quickly to a common center, thus printing the letter on the paper which lies on a rubber cylinder. This cylinder is mounted upon a machine which moves from right to left one space after each letter is printed, or the space bar pressed. The operator pushes this cylinder back to the right at the end of each line, automatically lifting the paper one line. Between the type-bar and the paper an inked ribbon furnishes the ink. In standard typewriters the keys are arranged in a convenient order and this system is called the "universal" keyboard.

The modern typewriter strikes the common center on the front of the cylinder so that the writing is visible. Each type-bar operates two or more characters, capitals and small letters, numerals and punctuation marks. These are controlled by shift keys. When several sheets of paper are inserted with carbon paper between them many copies can be made at the same time. From sixty to one hundred words a minute are written by a practiced typist which is from three to five times as fast as handwriting will do the work.

The typewriter has created a vast field in the business world for a great number of women employees. The most popular system of operating a typewriter is the touch system whereby the desired keys are hit without looking at the keyboard. Special typewriters are now made for bookkeeping, and tabulating attachments can be fastened to the ordinary machine. The first typewriters used italic letters in imitation of longhand, but the modern machine usually has roman type. Fancy type faces and type faces for many foreign languages are also obtainable.

UNCLE SAM

The practice of calling the United States Government "Uncle Sam" is believed to have originated in the following manner: During the American Revolution a man named Samuel Wilson was a beef inspector at Troy, N. Y., and was very popular with the men in his employ, who always called him Uncle Sam. After the inspection of the beef, it was shipped to a contractor named Ebenezer Anderson, and was always marked "E. A. U. S." A joking workman, being asked what those letters were the abbreviations of, replied that he did not know, unless they were for Ebenezer Anderson and "Uncle Sam." The joke was kept up and spread, until it became common to refer to all packages marked "U. S." as belonging to "Uncle Sam."

UNDER THE ROSE

The Latin *sub rosa*, literally translated is "under the rose." It means that a thing is done or said secretly, because the rose was, among the Egyptians, the emblem of Harpocrates, the god of silence. At certain entertainments, the ancients were accustomed to hang up a rose in token that nothing said was to be divulged.

UNION JACK

The origin of the term Union Jack has never been precisely ascertained. It may be an extension of its nautical use signifying a small flag or similar ensign used as a signal and also on bowsprits of men-of-war, the flag being flown from the main mast by an admiral of the fleet. It would appear, however, that the word "union" arose from the union of the three kingdoms into one great political power. As an alteration in the banner of St. George occurred in the reign of James I, it may have been a rendering of the word "Jacobus," the Latin form of James, abbreviated into Jack.

UNIVERSAL LANGUAGES

Need for a means of international communication has been felt since men began to travel from country to country. Few people

can speak more than three or four languages correctly and fluently. The ability to exceed this number is found only in those gifted with exceptional linguistic talent. As travel becomes more common, and as the telegraph, telephone and radio develop, it is by many considered increasingly desirable that people of all nations should have a common tongue. Because of national prominence, certain languages have at different times been almost universal among civilized peoples. In ancient times the Phoenician language served as a means of intercommunication among the traders of the Mediterranean, while in the Middle Ages, Latin was commonly known throughout Europe. Likewise, Greek, French and English have at times seemed the solution to finding a common language.

As the need for an international tongue grew, a great variety of languages were proposed in the seventeenth and eighteenth centuries. French, the languages of diplomats, and still the common tongue of society and diplomacy, was the favorite for international use. But gradually people came to see that no living language was likely to be adopted as a universal tongue because any choice brought forth international jealousy.

Bolak, Volapük. They therefore began to plan languages manufactured for the purpose of universal use. Bolak seemed hopeful for a time. Volapük, based mainly on English, with the rest of the vocabulary taken from Latin and the Romance languages, was published in 1880. It had an immediate vogue. Several Volapük congresses were held and the students of the language numbered more than 1,000,000. But the founder refused to accept suggested modifications, the language was found unsatisfactory, and after 1890 it fell into disuse.

Esperanto. Dr. Zamenhof published his new language, Esperanto, in 1887. Using as roots a large number of words from various European tongues, especially roots that were common to a number of them, he added various prefixes and suffixes to form the different parts of speech. He used more German roots than did Volapük, but few Russian ones. The language is pronounced as it is spelled and is more easily learned than any natural tongue. Esperanto attained wide use, although hampered by the fact that it used certain marks not commonly found in printers' fonts.

Idiom Neutral. Some of those interested in changes in Volapük constructed another language, Idiom Neutral, published in 1902. Based on words common to European languages, many having roots appearing in seven or eight languages, and nearly all appearing in three or four languages, Idiom Neutral is easily learned by anyone who is at all a linguist.

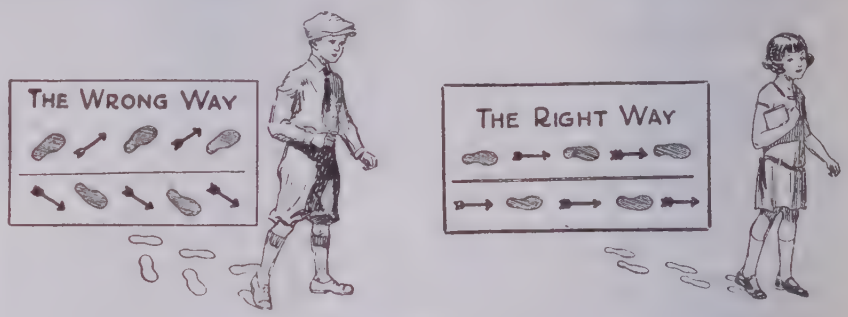
Ido. First published in 1908, Ido takes the good features from both Esperanto and Idiom Neutral.

The most successful of these proposed international languages thus far has been Esperanto, although Idiom Neutral is considered easiest to learn because its construction is simple and the roots used are the commonest in general use.

Ro is a language based on the analysis and classification of ideas instead of on existing word roots. It was devised, about 1906, by Rev. Edward P. Foster, an American.

VISION, LIMITS OF

The distance one can see varies with elevation, conditions of the atmosphere, intensity of illumination, and other modifying elements. On a clear day an object one foot above a level plain may be seen at a distance of 1.31 miles; one ten feet high, 4.15 miles; one twenty feet high, 5.86 miles; one 100 feet high, 13.1 miles; one a mile high, as the top of a mountain, 95.23 miles. This allows seven inches; or, to be exact, 6.99 inches, for the curvature of the earth, and assumes that the size and lighting of the object are great enough to produce an image.



How to Walk

Children should learn to walk the right way, with toes pointing straight ahead. (From *The Growing Child*, by Dr. Herman N. Bundesen, Chicago, 1927.)

WALKING, RIGHT WAY OF

The Indian, walking and running for hours without fatigue, points his toes slightly inward. The runner or jumper and the person who has never worn shoes all walk with toes pointed straight ahead, or else slightly inward. The old rule of "toe out" did much damage to children's feet, and was one of the causes of flat foot, or fallen arch that causes pain in the calf of the leg and makes a person tire easily. It is impossible to have free knee action when toes are turned outward and a clumsy gait is the result. Graceful, easy walking and running can be accomplished only by persons who point the foot straight ahead or slightly inward.

WATCHES OF THE NIGHT

The Jews, like the Greeks and Romans, says the Rev. Dr. William Smith in his *Bible Dictionary*, divided the night into watches instead of hours, each watch representing the period for which sentinels or pickets remained on duty. The proper Jewish reckoning recognized only three such periods, entitled the first or "beginning of the watches" (Lamentations ii, 19), the middle span (Judges vii, 19), and the morning watch (Exodus xiv, 24; I Samuel xi, 11). These would last, respectively, from sunset to 10 P. M., from 10 P. M. to 2 A. M., and from 2 A. M. to sunrise. After the establishment of the Roman supremacy the number of the watches was increased to four, which were described either according to their numerical order, as in the case of the "fourth watch" (Matthew xiv, 25), or by the terms "even," "midnight," "cockcrowing," and "morning" (Mark xiii, 35). These ended, respectively, at 9 P. M., midnight, 3 A. M., and 6 A. M.

WATER

Water is a clear, colorless, transparent liquid which has neither taste nor smell. All these qualities may come from mineral or vegetable matter in the water or, in case of color, from reflections, but the water itself possesses none of them. It is one of the most important and most widely-distributed substances in nature, occurring universally in one or other of its three physical states—liquid, solid, or gaseous. As a liquid it constitutes the great mass of the oceans, rivers, and lakes, which cover nearly three-fourths of the earth's surface; in the solid state it exists in the form of ice or snow, and as a vapor is a constituent of the aerial envelope of the earth, and the exhalations of volcanoes and boiling springs. In the course of many years water broke down rock and formed the soil. It equalizes the temperature and keeps the earth sweet and clean. Without it there could be no life on earth. It occurs in combination in many mineral substances, and also in organic bodies. Animals and plants contain from 80 to 95 per cent of water. It is the most efficient of all solvents, there being few substances which are not, to some extent, affected by it, hence natural waters never occur absolutely pure, but contain in solution more or less of the constituents of the strata through which they have passed.

Rain Water contains substances derived in minute quantities from the atmosphere, such as ammonia, nitrate of ammonia, carbonic acid, nitrous and sulphurous acids.

Spring Water always contains a much larger proportion of dissolved substances than rainwater. When highly charged with saline or gaseous constituents it has a peculiar taste or smell, and is called mineral water. When the amount of these constituents does not sensibly affect its taste, it is described as fresh water.

Sea Water is essentially a mineral water, its saline constituents consisting of the chlorides and sulphates of sodium, potassium, magnesium, and calcium, together with minute quantities of silica, bromine, iodine, phosphoric acid, and other minerals. The total solid contents of sea water in mid-ocean varies from 30 to 40 gm. per liter, being largest near the equator and smallest near the poles.

A cubic inch of fresh water at 42 degrees weighs .036126 lbs. A cubic foot weighs 62.321 lbs. A cubic foot contains 6.2321 gallons. A gallon weighs 8.3389 lbs. A

ton comprises 35.943 cu. ft. Salt water is slightly heavier than fresh.

Water was long regarded as an element, but toward the end of the seventeenth century it was shown by Lavoisier to be a compound, and to consist of two parts by weight of hydrogen to sixteen of oxygen, or two volumes of hydrogen to one of oxygen. When pure it is free from taste and smell, and at ordinary pressure is liquid between 0 degrees, and 100 degrees Centigrade, boils at 100 degrees, and freezes at 0 degrees, expanding to the extent of one-eleventh of its volume. The quantity of heat absorbed in the melting of ice is sufficient to raise the temperature of an equal weight of water 79.2 degrees; the quantity of heat rendered latent by water at 100 degrees becoming vapor would raise the temperature of water 5.37 times as much as from 0 degrees to 100 degrees. Water is 825 times heavier than air, and when converted into steam expands to nearly 1,600 volumes. One cubic centimeter at four degrees, and under a pressure of 760 millimeters of mercury, weighs 15.432349 grains, or one gram, the unit of weight in the metric system.

Water in its gaseous form is a colorless, invisible gas, quite distinct from the visible cloud which issues from a kettle, which is composed of minute drops of water produced by the condensation of the steam as it issues into the colder air. Under ordinary atmospheric pressure, water boils in an open vessel at a temperature of 100 degrees, Centigrade, and the steam always has this temperature, no matter how fast the water is made to boil. The heat which is supplied simply suffices to do the work of converting the liquid water at 100 degrees into gaseous steam at 100 degrees, without raising the temperature of the steam at all. If the temperature of steam at 100 degrees is lowered by only a very small amount, part of the steam is condensed; hence steam at this temperature is termed moist or saturated steam. At high temperatures and pressures, steam behaves like a perfect gas; but at lower pressures and at temperatures near the boiling-point of water, its behavior differs markedly from that of perfect gases; and this change of properties has to be taken into account in all calculations connected with the expansion of steam in steam-engines.

It is estimated that about 200,000,000 horse power could be obtained from water. Switzerland, without coal supplies, but with many mountain streams, depends on water to run her factories. Canada uses about 30,000,000 horse power and the United States 55,000,000 from streams and waterfalls, and this is but a small propertion of available power.

WATERFALLS

Among the famous waterfalls of the world the Yosemite makes three leaps, 1,430 feet sheer, 800 feet over rocks, and a final drop of 320 feet, for a total of 2,550 feet. Among others having great fall are: Roraima, i Guiana, 2,000 feet; Ribbon Falls, Yosemite, California, 1,612 feet; Sutherland Falls, New Zealand, 1,904 feet; Takkakaw, in British Columbia, 1,200 feet; Gavarnie, Pyrenees, 1,385 feet.

Many of the best known falls possess outstanding beauty rather than great height. Montmorency Falls in Quebec, Victoria Falls in Africa, Multnomah in Oregon, Yellowstone in Wyoming, Iguassu in Brazil, Snoqualmie in Washington, and the Falls of the Rhine are among these. The Falls of Tequendama in Colombia are one of the natural wonders of South America. The Bogota River is 140 feet wide as it flows over a tableland. Then it is suddenly contracted into a narrow, deep forty-foot bed, whence its strangled waters bound 475 feet to an abyss below, the actual depth of which is unknown. This fall was a sacred place to the ancient Indian population, and here sacrifices were offered to their gods.

Niagara Falls. Probably the best known of waterfalls is Niagara. Due to the shape of the underlying rock, the great width of the falls and the volume of flow this waterfall is one of the most beautiful in the world. It is the outlet through which four inland seas flow toward the Atlantic Ocean. These Great Lakes of the St. Lawrence river system differ little in elevation. Superior, the first of the series, lies at 602 feet, and Erie, the last of these four, at 573 feet above sea level. But Ontario, the fifth, lies in a broad valley very far below the upper plain on which Lake Erie rests, the difference between the two bodies of water being 326 feet. The upland plain joins the low valley along a bold escarpment of 200 feet or more that extends east and west continuously through western New York, passing between the two lakes into Canadian territory.

The connecting stream between all of the lakes have rapids or river characters, but that connecting Erie and Ontario, because of their great difference of level and the presence of this escarpment, had developed a cataract and series of rapids that form one of the natural wonders of the world. The stream is Niagara River and the cataract Niagara Falls.

Niagara River is only about twenty-eight miles in length, and for about nineteen miles of that distance, from Buffalo to Niagara Falls, it flows as a broad, smooth stream with low drift banks, presenting no unusual characters. There the rapids begin, and for half a mile, in which distance the descent amounts to fifty feet, the waters become a boiling torrent. In this portion several islands appear, the largest, Goat Island, dividing the river into two unequal parts. Both plunge over the precipice to a narrow, deep gorge, which turns away almost at a right angle and with a succession of foaming rapids and whirlpools finally reaches the open, low valley at its bordering escapement seven miles below. One sharper turn than the others is known as the Great Whirlpool.

The separation by Goat Island makes two falls. The smaller lies to the American side and is known as the American Fall. It has a crest of 1,060 feet, a depth of less than 10 feet and a fall of 167 feet. Under the ledges which form the chief support the spray has succeeded in forming cavernous recesses, one of which is accessible and is known as the Cave of the Winds. The part between Goat Island and the Canadian shore is much the larger. It forms a great curve with a crest 3,010 feet long, known as the Canadian or Horseshoe Falls. The amount and depth of water pouring over this crest are much greater than at the American Fall, but its fall is somewhat less, 158 feet. A further descent of 104 feet is reached by the seven miles of rapids through the gorge.

The average flow of water over both falls is estimated by the United States engineers, from the mean flow of water over a period of 40 years from Lake Erie at Buffalo, to be 222,400 cubic feet per second. This volume of water has a potential value of probably more than 3,800,000 horse power. The American side shows a recession of half a foot per year; the Horseshoe Falls recedes two to four feet.

The falls were discovered in 1678 by Father Hennepin, whose description and estimates of proportions are somewhat extravagant. The first accurate surveys were conducted by James Hall in 1842. Since that time several have been made and it is on these instrumental observations that the rate of recession is based. New York and Ontario have both created reservations to protect the falls and a special international board is in control. Several great bridges cross the gorge and the river. In 1910 twelve municipalities began to draw electric power from Niagara Falls, and the number increased to over 200 in Canada alone within the next twenty years. Several hundred thousand people annually visit Niagara.

WEATHER PROVERBS

A sort of folk lore, a group of sayings or proverbs have grown up concerning the weather, which are quite generally believed by the peoples who have originated them. Many of these proverbs seem meaningless at first; yet, when analyzed, some of them are found to be based on scientific facts. Almost any one can think of a number that are widely known and quoted. Who has not heard of "Rain before seven, clear before eleven"; "Rainbow at night, sailor's delight"; "Rainbow in the morning, sailors take warning?" These and similar proverbs have a real scientific background.

Then there are others which arise from the mistaken belief that somehow things are evened up; hence we have such expressions as "A green Christmas and a white Easter" and "A hot summer and a cold winter." There is also an unwarranted belief that plants and the lower animals somehow know what the weather is to be. For example, most of us have heard the ground hog story, or that of the thick corn husks and a cold winter, the adage concerning the early or late molting of fowl; the early, or late, migration of birds, and the like.

WEDDING ANNIVERSARIES

There are various lists given, some suggesting straw for the first anniversary, others reversing the order of the first two here noted.

First year	Paper
Second year	Calico
Third year	Muslin
Fourth year	Silk
Fifth year	Wood
Sixth year	Iron
Seventh year	Copper
Eighth year	Bronze
Ninth year	Pottery
Tenth year	Tin

Fifteenth year	Crystal
Twentieth year	China
Twenty-fifth year	Silver
Thirtieth year	Pearl
Thirty-fifth year	Coral
Fortieth year	Ruby
Forty-fifth year	Sapphire
Fiftieth year	Gold
Fifty-fifth year	Emerald
Sixtieth year	Diamond
Seventieth year	Diamond
Seventy-fifth year	Diamond

WEDDING RING

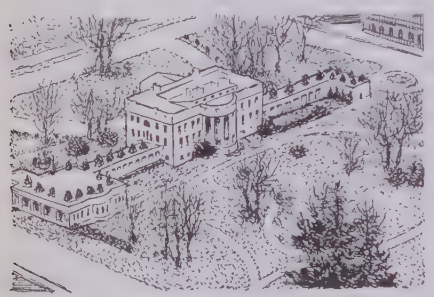
The wedding ring had its origin in remote antiquity. The ring was used anciently as binding ceremonies, making agreements and grants and evidently extended to the most solemn of engagements—marriage. The ancient Greeks held that a small nerve runs from the ring finger to the heart; and therefore it was honored with the office of bearing the ring. In many countries the bride and bridegroom exchange rings during the ceremony. The bride places her engagement ring on the other hand before the wedding ceremony, replacing it later.

WHIRLPOOL

A whirlpool is caused by the meeting of two currents of water going in different directions. The more rapid and powerful these currents are the larger is the whirlpool. It may also be caused by one current being forced against a peculiar angle of obstruction. The most famous whirlpools are the terrific Maelstrom, off the coast of Norway, that is formed by tidal currents, and that formed by the waters three miles below Niagara Falls in the Niagara River.

WHITE HOUSE

The executive mansion, the official residence of the President of the United States is known both popularly and officially as the White House. Its location is on Pennsylvania Avenue, Washington, D. C., about



a mile and a half from the Capitol. The original site of this mansion was selected by President Washington in 1791. The original plan, made by James Hoban of Dublin, was selected through competition and the cornerstone was laid in 1792. The first tenant was John Adams, who occupied it in November, 1800. It was many years later before the entire building was finished.

Originally built of gray sandstone, and unpainted, the White House received its name after the building had been partially burned by the British in 1814, when it was rebuilt and, at the suggestion of President Jackson, painted white.

The building is two stories high, has a frontage of 170 ft., a depth of 86 ft. and a surrounding park of 75 acres. On the first floor are the rooms for the President's public functions; on the second, his living apartments.

In 1902, the White House was remodeled according to the original design of J. Hoban and a presidential office building was erected at the west end of the original residence.

WHITE HOUSE WEDDINGS

Date	*Contracting Parties*
Mar. 11, 1811	Anna Todd (cousin of Mrs. Madison) to Rep. John G. Jackson.
Mar. 9, 1820	Maria* Monroe (daughter of President Monroe) to Samuel L. Gouverneur.
. . . . 1826	Helen Jackson to John Adams (son and private secretary to President John Quincy Adams).
. 183–	Mary Lewis (daughter of a friend of President Jackson) to M. Alphonse Pageot.
. 183–	Miss Easten to Mr. Polk.
Jan. 31, 1842	Elizabeth Tyler (daughter of President Tyler) to William Waller.
May 21, 1874	Nellie Grant (daughter of President Grant) to Algernon C. F. Sartoris.
June 19, 1878	Emily Platt (niece of President Hayes) to Gen. Russell Hastings.
June 2, 1886	Frances Folsom to President Grover Cleveland.
Feb. 17, 1906	Alice Roosevelt (daughter of President Roosevelt) to Nicholas Longworth.
Nov. 25, 1913	Jessie Woodrow Wilson (daughter of President Wilson) to Francis B. Sayre.
May 7, 1914	Eleanor Wilson (daughter of President Wilson) to William Gibbs McAdoo.

*Referred to as "Hester" and "Martha" in various accounts.

WIND

Wind is a current of air moving in the atmosphere in any direction or with any velocity. Winds are produced by variations of temperature in different latitudes, or at different portions of the same latitude.

Heated air tends to ascend, and, to prevent a void from arising in the lower portion of the atmosphere from which it has ascended, a current of air, colder, and therefore denser, takes its place. This phenomenon is most obvious in the tropics, from which hot rarefied air is ever ascending, one part toward the northern, and the other toward the southern polar regions. From these two regions, cold currents of air proceed near the surface of the ground or the ocean to supply the threatened void. Were the earth at rest, the hot currents would depart from, and the cold currents strike the equator at right angles, but owing to the rotation of the earth from west to east more quickly than its friction can carry the atmosphere with it, the latter is somewhat deflected to the westward, the hot currents leaving and the cold one striking the equatorial line at an oblique instead of a right angle. As the circles to be traversed by the rotating sphere or spheroid vary in magnitude in every latitude, cyclones tend to be generated which rotate in one direction, when they arise to the north, and in another when they are generated south of the equator.

The heat of the vertical, or nearly vertical, sun rarefies the atmosphere in the tropics over both land and water, not, however, to the same extent. Land is easily heated during the day and cooled during the night. Water is less easily changed in temperature, hence every tropical island is like a separate furnace, at work during the day rarefying the air and sending it upward, while, falling below the temperature of the ocean during the night, it modifies, suspends, or reverses the process, especially if the absence of clouds makes radiation great. Hence, land and sea breezes arise; the former blowing during the day from the sea to the land, the latter during the night in a contrary direction

Next, every high mountain is a refrigerating apparatus, capable of sending down its slope cooled air on all its sides, and consequently from every point of the compass. Even apart from these local complications, the higher the heated air which ascends from the tropics rises, the colder the atmospheric region into which it enters; it therefore ultimately parts with the caloric which enabled it to ascend and begins to fall, while the cold polar currents blowing toward the equator become heated and ascend.

In consequence of these causes there are eight principal directions in which winds blow: from the north, the northeast, the east, the southeast, the south, the southwest, the west, and the northwest. A north wind is one which blows from the north, not one blowing to that region, and so with the others. Classified according to the direction in which they blow, winds are divided into regular, periodical, and variable winds. The first are winds which blow all the year round in the same direction, as do the trade winds; the second those which blow regularly at the same seasons and the same hours of the day, as the monsoons, the land and sea breezes, and the simoon; the third, which blow sometimes in one direction and sometimes in another, as the prevalent winds of the temperate and arctic zones.

WORLD EXPOSITIONS

The first great international exposition in America was the Centennial, held in Philadelphia in 1876. There the telephone had its first public showing, and there many European countries exhibited their works of art and manufactures and brought to America an increased interest in arts and decoration. Among the most noted expositions, the following deserve mention. The British Empire exhibits at Wembly in 1925 and subsequent years are not international.

Date	*Name and Place*
1851	Crystal Palace, London
1855	International, Paris
1862	International, London
1867	International, Paris
1873	International, Austria
1876	Centennial, Philadelphia
1889	International, Paris
1893	World's Columbian, Chicago
1900	International, Paris
1902	International Exhibition of Modern Decorative Art, Turin
1903	International, Osaka
1904	Louisiana Purchase, St. Louis
1906	International (completion of Simplon tunnel) Milan
1915	Panama-Pacific, San Francisco
1915	Panama-California, San Diego
1926	Sesquicentennial, Philadelphia
1929	International, Barcelona
1933	Century of Progress Celebration,* Chicago

*First buildings erected in 1930.

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Manual of Classified Questions for Examinations, Reading, and Study Courses

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